



Chapter 1.	INTRODUCTION	26
1.1	PROJECT OVERVIEW	26
1.2	PROJECT BACKGROUND	26
1.3	PROJECT OBJECTIVES.....	26
1.4	SCOPE OF WORK.....	27
1.5	EXPECTED OUTPUT	27
1.6	REPORT STRUCTURE	27
CHAPTER 2.	<u>STUDY AREA PROFILE</u>	<u>29</u>
2.1	CITY AT A GLANCE	29
2.1.1	City History and Current Extends	30
2.1.2	Connectivity	31
2.2	GEOGRAPHICAL SETTING.....	33
2.2.1	Regional Setting	33
2.2.2	Regional Ecological Features	33
2.3	CLIMATE	34
2.3.1	Temperature	34
2.3.2	Rainfall.....	34
2.3.3	Wind Pattern.....	34
2.4	MORPHOLOGY AND GROWTH OF THE CITY	35
2.4.1	Origin of the City	35
2.4.2	Determinants of Urban Expansion	35
2.4.3	Extent of Spatial Growth	36
2.4.4	City Mobility.....	37
2.5	CITY FABRIC AND GROWTH OF THE CITY	46
2.5.1	Morphology	46
2.5.2	City Fabric Analysis.....	47
2.5.3	Old City Fabric – Bada Bazaar	48
2.5.4	Interface Between Colonial And Old City Fabric- Patel Chowk.....	48
2.5.5	Colonial Zone - Cantonment Area.....	51
2.5.6	Post Colonial Area	53
2.5.7	Future Growth Areas – Pilibhit Bypass	54
2.5.8	Industrial Areas - C.B Ganj	56

CHAPTER 3. SECTOR WISE EXISTING SITUATION ANALYSIS 58

3.1	URBAN PLANNING.....	58
3.1.1	Approach and methodology	58
3.1.2	Morphology and growth of the city	58
3.1.3	Demographic profile.....	62
3.1.4	Workforce Characteristics	64
3.1.5	Stakeholder Mapping	66
3.1.6	Planning Boundary and Area	69
3.1.7	Past and Current Planning Initiatives	70
3.1.8	Urban Sprawl and Mapping	71
3.1.9	Statutory Plan Analysis.....	72
3.1.10	Residential Landuse Analysis	79
3.1.11	Industrial Landuse analysis	88
3.1.12	Commercial Zone analysis	94
3.1.13	Social Infrastructure	96
3.2	TRANSPORT & MOBILITY INFRASTRUCTURE	99
3.2.1	Bareilly – A counter Magnet City	99
3.2.2	Proposed Developments around Bareilly city.....	99
3.2.3	Vehicle Growth in Bareilly	100
3.2.4	Transport system & connectivity	101
3.2.5	Public Transport System in Bareilly.....	109
3.2.6	SWOT Analysis of Bareilly Transport situation.....	111
3.3	PHYSICAL INFRASTRUCTURE.....	113
3.3.1	Environmental Service.....	113
3.4	SEWERAGE & SANITATION SYSTEM:	128
3.4.1	Overview Of Existing Sewerage & Sanitation System:	128
3.4.2	Stormwater Drain.....	134
3.4.3	SOLID WASTE MANAGEMENT.....	135
3.4.4	Projected Solid Waste Generation	137
3.5	ECONOMY	140
3.5.1	ECONOMIC PROFILE OF BAREILLY	140
3.5.2	Methodology for Existing Situation analysis.....	140
3.5.3	Gross Domestic Product (GDP) analysis	144

3.5.4	Work force participation analysis	145
3.5.5	Ease of Living Index	147
3.5.6	Economic Sector Analysis	149
3.5.7	Industries	155
3.5.8	Health and Education sector	189
3.5.9	Real estate and allied sector	202
3.5.10	Brown field development	208
3.5.11	Two-days multi-stakeholder consultation	214
3.5.12	Broad summary	216
3.6	URBAN REGENERATION & HERITAGE OF THE CITY	219
3.6.1	Vision: Developing Nath Temple Circuit	219
3.6.2	Vision: Streetscape of City Core and Development of Dargah Precinct	236
3.6.3	PROJECT – STREETScape OF MARKET STREET FROM QILA TO SHYAM GANJ ALONG WITH URBAN RENEWAL OF DARGAH PRECINCT BY DEFINING ENTRANCE GATEWAYS, CORRIDORS AND ENHANCING THE PUBLIC INFRASTRUCTURE	236
3.6.4	Vision: Development of Areas near Transit Points as New Gateways to the City	240
3.6.5	PROJECT – REDEVELOPMENT OF PILIBHIT SATELLITE BUS STAND	243
3.6.6	Vision: Promotion & Innovation of Craft Products – Kala Sanskriti	246
3.6.7	Vision: A Place for Spiritual Tourism and Nature Retreat	248
3.6.8	PROJECT – DEVELOPING MEDICAL INFRASTRUCTURE FOR NATUROPATHY AND ECO-TOURISM	250
3.6.9	Vision: Tourism Infrastructure upgradation of ASI sites	252
3.7	ENVIRONMENT	258
3.7.1	Solar Energy	258
3.7.2	City Climate Analysis	258
3.7.3	Environment	260
<u>CHAPTER 4. SECTOR WISE DEMAND ASSESSMENT.... 263</u>		
4.1	URBAN PLANNING	263
4.1.1	Approach and Methodology	263
4.1.2	Proposed Growth of the City	263
4.1.3	Demographic Profile	264
4.1.4	Workforce Characteristics	266
4.1.5	Planning Boundary and Area of Future growth	267
4.1.6	City Level Landuse Demand	269

4.1.7	Residential Landuse Demand.....	270
4.1.8	Industrial Landuse analysis	274
4.1.9	Commercial Zone analysis	277
4.1.10	Social Infrastructure	279
4.2	URBAN REGENERATION	284
4.2.1	Vision – Developing Nath Temple Circuit	284
4.2.2	Vision – Streetscape of City Core and Development of Dargah Precinct	288
4.2.3	Vision – Promotion & Innovation of Craft Products – Kala Sanskriti	292
4.2.4	Vision – A Place for Spiritual Tourism and Nature Retreat.....	296
4.2.5	Vision – City level infrastructure Development	303
4.3	HERITAGE AND TOURISM.....	305
4.3.1	Vision – Developing Nath Temple Circuit	305
4.3.2	Bouquet of Projects.....	305
4.3.3	Project 1: Ahichchhatra – Tourism Infrastructure Upgradation of ASI Site in consultation with ASI and UP Tourism Regional Managers	305
4.3.4	Project 2: Developing a Theme based Museum on First War of Independence 1857... ..	311
4.3.5	Project 3: Colonial Heritage Trail in Bareilly	317
4.3.6	Bouquet of Projects - Previously Shared	325
4.3.7	Project 4: Upgradation of Temple Precinct of Nath	325
4.3.8	Project 5: Precinct Development of Tomb of Hafiz- ul-Mulk Rahmet Khan and Tomb of Shah Dana	332
4.4	ECONOMY	338
4.4.1	Demand assessment methodology	338
4.4.2	Economic sectors	338
4.4.3	Industrial sector	339
4.4.4	Assessment of existing Handicraft policies in the state	345
4.4.5	Assessment of existing industrial policies in the state	349
4.4.6	Medi – city	371
4.5	TRANSPORT & MOBILITY INFRASTRUCTURE	376
4.5.1	Introduction to Bareilly.....	376
4.5.2	Proposed Developments around Bareilly city.....	376
4.5.3	Vehicle Growth in Bareilly	377
4.5.4	Transport system & connectivity	377
4.5.5	Public Transport System in Bareilly.....	384

4.5.6	Demand & Analysis	386
4.5.7	Strengthening of Radial Road connecting to Ganga Expressway.....	387
4.5.8	Interactive Bus Stop at various locations	388
4.5.9	Development of Cycle Track Corridor	389
4.5.10	Establishment of Freight Logistic Hub for efficient distribution of inter & intra urban freight movement in Bareilly	390
4.5.11	Electric Vehicle Charging Station along the National Highway for Cars	391
4.5.12	Lite Metro facility for Bareilly city	392
4.5.13	SWOT Analysis of Bareilly Transport situation	392
4.6	PHYSICAL INFRASTRUCTURE.....	394
4.6.1	Vision Plan	394
4.6.2	Vision Plan for Water Supply:	394
4.6.3	SEWERAGE & SANITATION SYSTEM:	400
4.6.4	Vision Plan for stormwater drain	406
4.6.5	Vision Plan for solid waste management	408
4.7	SOLAR SURVEY ANALYSIS	413
4.7.1	SURVEY ANALYSIS.....	413
4.7.2	Electrical Consumption: Government Load	416
4.7.3	PROJECTIONS	416
<u>CHAPTER 5. SECTOR WISE VISION PLANNING</u>		<u>417</u>
5.1	VISION FOR THE CITY	417
5.1.1	Vision Framework	417
5.1.2	URBAN PLANNING VISION	420
5.1.3	URBAN DESIGN VISION	423
5.1.4	HERITAGE AND TOURISM VISION	426
5.1.5	ECONOMY VISION	427
5.1.6	TRANSPORTATION VISION	430
5.1.7	INFRASTRUCTURE VISION	433
5.2	BOUQUET OF PROJECTS	436
5.2.1	Identified Project List	436
5.2.2	Proposed List of Projects	443
5.2.3	URBAN PLANNING PROJECTS.....	445
5.2.4	URBAN DESIGN PROJECTS	472



5.2.5	HERITAGE AND TOURISM PROJECTS	515
5.2.6	ECONOMY PROJECTS.....	563
5.2.7	TRANSPORTATION PROJECTS	588
5.2.8	INFRASTRUCTURE PROJECTS	596
5.2.9	SOLAR PROJECTS	634

CHAPTER 6. PRE-FEASIBILITY OF SELECTED PROJECTS639

6.1	SELECTED PROJECT LIST FOR PRE-FEASIBILITY REPORT	639
6.2	CIVIC INFRASTRUCTURE DEVELOPMENT PROJECTS.....	640
6.2.1	Project 1: Residential Housing Node	641
6.2.2	Project 2: Industrial Growth Centers,.....	651
6.2.3	Project 3: Ahichchhatra Tourism Infrastructure upgradation	661
6.2.4	Project 4: First War of Independence (1857) museum	677
6.2.5	Project 5: Urban Renewal of Nath Temple Circuit & infrastructure improvement of all Nath Temples precincts.....	690
6.2.6	Project 6: River front development.....	722
6.2.7	Project 7: Development of Aero city integrated complex near Airport	733
6.2.8	Project 8: City Plan for Water Logging / stagnant spots and flood prone areas.....	738
6.2.9	Project 9: Development of Working Shed for Zari Handicraft Artisans	759
6.2.10	Project 10: “Medicity” – designated area with multiple health business and activities 768	
6.2.11	Project 11: Demonstration of Solar Energy for streets and Gov. buildings.....	773
6.3	TRANSPORT INFRASTRUCTURE DEVELOPMENT PROJECTS	786
6.3.1	Project 12: Development of Integrated Freight Center / Logistics Hub	787
6.3.2	Project 13: Strengthening of Radial Road connectivity from Bareilly city to Ganga Expressway.....	801
6.3.3	Project 14: Development of proposed metro-lite rail system connectivity in Bareilly city 817	

CHAPTER 7. INTEGRATED INFRASTRUCTURE DEVELOPMENT STRATEGY AND ACTION PLAN828

7.1	PRELUDE.....	828
7.1.1	Planning Strategy	828
7.1.2	Population Estimation	828
7.1.3	Transport system & connectivity	829
7.1.4	Public Transport System in Bareilly.....	832



7.1.5	Regional Ecological Features	833
7.1.6	Physical Infrastructure.....	834
7.2	IDENTIFICATION OF SCHEMES, STAKEHOLDERS FOR INTEGRATED INFRASTRUCTURE STRATEGY PLANNING	835
7.2.1	Planning Boundary and Area	835
7.2.2	Past and Current Planning Initiatives	835
7.2.3	Stakeholder Mapping	837
7.3	BOUQUET OF PROJECTS	840
7.4	URBAN PLANNING.....	842
7.5	URBAN DESIGN.....	853
7.6	TRANSPORT PLANNING	877
7.6.1	Integrated infrastructure development strategy and action plan for Bareilly	877
7.6.2	PROJECT : STRENGTHENING OF RADIAL ROAD CONNECTIVITY FROM BAREILLY CITY TO GANGA EXPRESSWAY.	880
7.6.3	PROJECT : DEVELOPMENT OF PROPOSED METRO-LITE RAIL SYSTEM CONNECTIVITY IN BAREILLY CITY ..	886
7.6.4	PROJECT IMPLEMENTATION STRATEGY (RS IN CR.).....	892
7.7	INFRASTRUCTURE PLANNING.....	895
7.7.1	Water Supply	895
7.7.2	Wastewater	896
7.7.3	Storm Water Drainage.....	899
7.7.4	Solid Waste management.....	903
7.8	HARITAGE AND TOURISM	906
7.8.1	Project : Ahichchhatra – Tourism Infrastructure Upgradation of ASI Site in consultation with ASI and UP Tourism Regional Managers.....	906
7.8.2	Project : Developing a Theme based Museum on First War of Independence 1857.....	910
7.9	ECONOMY	914
7.9.1	Project : Development of “Medicity” designated area with multiple health business and activities.....	914
7.9.2	Project : Development of working shed for Zari Handicraft artisans.....	917
7.10	SOLAR.....	919
7.10.1	Vision for Solar Projects.....	919
7.10.2	SOLAR PROJECTS	920
7.10.3	Conclusion.....	921
7.11	COSTING OF PROJECTS	922



2	Review of financial statements of Bareilly Development Authority	925
3	Projects Under Vision Plan for Bareilly	929
3.1	Projects ~ Bareilly Vision Plan	929
3.2	Estimated CAPEX - projects under Bareilly Vision Plan	939
4	Project Plan & Implementation strategy	945
4.1	Short term Heritage & Tourism Projects	945
4.2	Short & Medium Term Real Estate Projects	947
4.3	Urban Infrastructure Projects	949
4.4	Transport Infrastructure Projects	950
5	Projected Income from Identified Project Components	952
6	Project Funding Strategy.....	954
7	Operational Sustainability of Implemented Projects	956

LIST OF TABLES

Table 1-1 Deliverables	27
Table 3-1: Decadal Population of Bareilly City	62
Table 3-2: Sex Ratio of Bareilly City	63
Table 3-3: Household Size of Bareilly City	64
Table 3-4: Workforce Characteristics of Bareilly City	64
Table 3-5: Decadal employment in various sector	65
Table 3-6: Category of Workers	66
Table 3-7: Land use distribution in 1971 and Proposed Land use 2001	73
Table 3-8: Details of Notified Area	75
Table 3-9: Proposed landuse for 2031 and existing landuse of 2021	77
Table 3-10: Comparison of Proposed Landuse	79
Table 3-11: Housing Typology	83
Table 3-12: Housing Need for Bareilly	86
Table 3-13: Status of Educational Institute	96
Table 3-14: Status of Healthacre Facilities	97
Table 3-15 Vehicle registration data for Bareilly	101
Table 3-16 City Bus routes in Bareilly	109
Table 3-17 SWOT analysis of the Bareilly Transport situation	111
Table 3-18 Population Growth of Bareilly M.C. Town	113
Table 3-19 Population Forecast for Spatial Extent and Entire Project area	114
Table 3-20 Ward wise Population Projection	115
Table 3-21 Summary of Population Projections of Planning Boundary, 2051	117
Table 3-22 Availability of Physical Infrastructure	120
Table 3-23 Details of Water Bodies	125
Table 3-24 List of Water Bodies	126
Table 3-25 Water Supply Demand	126
Table 3-26 Details of benchmarking analysis of city by 2019	130
Table 3-27 Sewerage Generation over Year	134
Table 3-28 Deveraniya drain – characteristic features	134
Table 3-29 Chaubari drain – characteristic features	135
Table 3-30 Nakatiya drain – characteristic features	135
Table 3-31 SWM Plant in Rajau Paraspur	135
Table 3-32 Represents the background & status of the Bakarganj SWM Plant:	136
Table 3-33 Solid waste generation projection – Municipal Area	137
Table 3-34 solid waste generation projection – planning area excluding Cantonment Board Area .	137
Table 3-35 Case study of successful SWM practice – Alappuzha	138
Table 3-36 Case study of successful SWM practice – Bhopal	138
Table 3-37 Fluctuations in annual real economic growth rate (GDDP at Current Prices) of District vs State from 2012-13 to 2019-20	144
Table 3-38 GDP of State vs District GDP	145
Table 3-39 Work force participation (WRP) for Bareilly district	145
Table 3-40 Main Workers Classification for Bareilly district	145



Table 3-41 Work force participation (WRP) for Bareilly Municipal Corporation and outgrowth area	146
Table 3-42 Main Workers Classification for Bareilly Municipal Corporation and outgrowth area	146
Table 3-43 - Overall economic sector share in GDP	149
Table 3-44 Agriculture resource produce (2018-19)	151
Table 3-45 Productivity of total food grains & wheat	152
Table 3-46 Productivity of rice & Potatoes	152
Table 3-47 Productivity of Oilseeds & Sugarcane	152
Table 3-48 Per capita production of pulses	153
Table 3-49 Percentage of areas under Kharif crop & Rabi crop in gross area sown	153
Table 3-50 Details of the mining activities.....	153
Table 3-51 DIC industrial areas in Bareilly district.....	155
Table 3-52 Following are the recent updated details of employment, output, and investment in the Bareilly district for the year 2017-18.....	159
Table 3-53 Status of 100 days 100 enterprises in Bareilly.....	161
Table 3-54 Industries classification of the “100 days 100 units in Bareilly”	161
Table 3-55 Net value added per worker & No of employees in registered working factories	163
Table 3-56 Per capita gross value of industrial production and registered working factories	163
Table 3-57 Per capita gross value of industrial production and registered working factories	164
Table 3-58 Percentage distribution of registered working factories & average workers per registered working factory	164
Table 3-59 Top 5 sectors in Bareilly district based on total output (INR in 000) in 2017-18	164
Table 3-60 Top 5 sectors in Bareilly district based on total investment (INR in 000) in 2017-18	166
Table 3-61 Top 5 sectors in Bareilly district based on total employment in 2017-18.....	167
Table 3-62 Categories of major industries within city limits	168
Table 3-63 - EMs filed in Bareilly district from 2014-17	168
Table 3-64 - Following table broadly lists a few major chemical industries present in Bareilly.	169
Table 3-65 - Landuse distribution 2001 – 2005.....	174
Table 3-66 - Proposed Landuse distribution 2031 (area in hectare).....	176
Table 3-67 - Allopathic hospitals/dispensaries	190
Table 3-68 - Ayurvedic / Homeopathic / Unani hospitals / dispensaries	190
Table 3-69 - C.H.C s /P.H.C s.....	191
Table 3-70 - List of Medical Colleges	191
Table 3-71 - Literacy rate	196
Table 3-72 - URDPFI guidelines for educational facilities	197
Table 3-73 - Pre Primary & Primary Schools	197
Table 3-74 - Secondary Schools.....	198
Table 3-75 - I.T.Is & Polytechnic College.....	198
Table 3-76 - Educational facilities gaps as per Master Plan 2031	198
Table 3-77 -Pupil Teacher Ratio at Pre – Primary School Level	199
Table 3-78 -Pupil Teacher Ratio at Primary School Level	199
Table 3-79 -Pupil Teacher Ratio at Secondary Level	199
Table 3-80 - Student Enrolment Ratio at Primary School Level	200
Table 3-81 - Drop Out Rates at Pre – Primary School Level.....	200



Table 3-82 - Drop Out Rates at Primary School Level.....	200
Table 3-83 - No of Tourists visited in Bareilly region from 2015 - 19	213
Table 3-84 -Tourist footfall trend in Bareilly region	214
Table 3-85: List of ASI sites in Bareilly district (3 sites in Bareilly, 7 sites in Ramnagar, 2 in Aonla and 1 site in Pachomi).....	252
Table 4-1: Population Projection for Municipal Corporation Area	265
Table 4-2: Summary of Population Projection	265
Table 4-3: Decadal employment in various sector	267
Table 4-4: Landuse Requirement till 2071	268
Table 4-5: Draft Master Plan 2031 comparison with URDPFI Guidelines.....	269
Table 4-6: Housing Demand till 2071	273
Table 4-7: Built Up Area w.r.t. housing need till 2071	273
Table 4-8: Projected Industrial Landuse Demand	275
Table 4-9: Projected Commercial Landuse Demand	278
Table 4-10: Projected Public and Semi-Public Landuse Demand.....	279
Table 4-11: URDPFI 2014 guidelines for educational facilities	279
Table 4-12: Demand Assessment of Education Facilities	280
Table 4-13: Demand Assessment of teachers/ faculties in education facilities.....	281
Table 4-14: Classification of health facilities.....	282
Table 4-15: Demand Assessment of health facilities.....	282
Table 4-16 List of ASI Sites in Bareilly District (3 sites in Bareilly, 7 sites in Ramnagar, 2 in Aonla and 1 site in Pachomi)	305
Table 4-17 List of ASI Sites in Bareilly	332
Table 4-18: Sectoral Contribution to GDDP in Bareilly District	338
Table 4-19: URDPFI Norms for Industrial Parks	339
Table 4-20: Details of existing industrial area in Bareilly city	339
Table 4-21: Distance of different areas from Industrial site.....	340
Table 4-22: Solid Waste Management Norms	340
Table 4-23: CPCB standards for water supply.....	340
Table 4-24: General standards for wastewater generation.....	341
Table 4-25: NMWC standards for wastewater.....	341
Table 4-26: Norms for parking facilities.....	343
Table 4-27: Norms for water requirements for industrial areas.....	343
Table 4-28: Probable industries for crop wise products & by-products.....	344
Table 4-29: Probable industries (as per NIC code classification) as per availability of crops	344
Table 4-30: Uttar Pradesh ODOP policy highlights.....	348
Table 4-31: Uttar Pradesh Industrial Investments Employment Promotion Policy 2017 highlights..	350
Table 4-32: Uttar Pradesh Private Industrial Park Scheme 2017 highlights	351
Table 4-33:Uttar Pradesh Food Processing Industry Policy 2017 highlights.....	352
Table 4-34:Uttar Pradesh Handloom Power-looms Silk Textile and Garmenting Policy 2017 highlights	353
Table 4-35:Uttar Pradesh MSME Policy 2017 highlights	355
Table 4-36: Uttar Pradesh Civil Aviation Promotion Policy 2017 highlights	355
Table 4-37: Uttar Pradesh Information Technology Policy 2017 highlights	356



Table 4-38: Uttar Pradesh Electronics Manufacturing Policy 2017 highlights.....	357
Table 4-39: Uttar Pradesh Solar Power Policy 2017 highlights.....	358
Table 4-40:Uttar Pradesh Biofuel Policy 2018 highlights	359
Table 4-41: Uttar Pradesh Tourism Policy 2018 highlights.....	360
Table 4-42: Uttar Pradesh Pharma Industry Policy 2018 highlights.....	361
Table 4-43:Uttar Pradesh Warehousing Logistics Policy 2018 highlights.....	363
Table 4-44:Uttar Pradesh Film Policy 2018 highlights.....	364
Table 4-45: Uttar Pradesh Defense Aerospace Units Employment Promotion Policy 2018 highlights.....	364
Table 4-46:Uttar Pradesh Milk Policy 2018 highlights.....	366
Table 4-47:Uttar Pradesh Electric Vehicle Mftg Mobility Policy 2019 highlights.....	367
Table 4-48:Uttar Pradesh Electronics Manufacturing Policy 2020 highlights.....	368
Table 4-49:Uttar Pradesh Startup Policy 2020 highlights.....	369
Table 4-50: Post Covid19 Accelerated Investment Promotion Policy 2020 highlights.....	370
Table 4-51:Uttar Pradesh Data Centre Policy 2021 highlights.....	370
Table 4-52 Vehicle registration data for Bareilly.....	377
Table 4-53: On-street parking in Bareilly.....	380
Table 4-54: Satellite Bus Stand in Bareilly	384
Table 4-55: Proposed City Bus routes in Bareilly	384
Table 4-56 SWOT analysis of the Bareilly Transport situation.....	392
Table 4-57: Represents the background & status of the Bakarganj SWM Plant:.....	409
Table 4-58: Solid waste generation projection – Municipal Area.....	409
Table 4-59: Case study of successful SWM practice – Alappuzha.....	411
Table 4-60: Case study of successful SWM practice – Bhopal	411
Table 5-1 Project list finalized and endorsed by Mandal Commissioner on 13th July 2022	443
Table 5-2: Population Projection for Municipal Corporation Area	445
Table 5-3: Summary of Population Projection	445
Table 5-4: Land use Requirement till 2071	446
Table 5-5: Housing Demand till 2071	450
Table 5-6: Built Up Area w.r.t. housing need till 2071	450
Table 5-7: Projected Industrial Land Use Demand.....	461
Table 5-8: Projected Commercial Landuse Demand	470
Table 5-9: Projected Public and Semi-Public Landuse Demand.....	471
Table 5-10 List of ASI Sites in Bareilly District (3 sites in Bareilly, 7 sites in Ramnagar, 2 in Aonla and 1 site in Pachomi).....	515
Table 5-11: Number of raw materials under AHVY.....	576
Table 5-12: POPULATION FORECAST FOR SPATIAL EXTENT AND ENTIRE PROJECT AREA	597
Table 5-13: Details of Water Bodies.....	601
Table 5-14: List of Water Bodies	601
Table 5-15: water requirements	601
Table 5-16: Sewerage Generation.....	606
Table 5-17: Deveraniya drain – characteristic features.....	608
Table 5-18: Chaubari drain – characteristic features	609
Table 5-19: Nakatiya drain – characteristic features.....	609



Table 5-20: SWM Plant in Rajau Paraspur	612
Table 5-21: Represents the background & status of the Bakarganj SWM Plant:.....	612
Table 5-22: Solid waste generation projection – Municipal Area	613
Table 5-23: Area requirement.....	614
Table 5-24: Estimated project cost & Implementation strategy.....	615
Table 5-25: Comparison of composting, Bio methanation and RDF technology	620
Table 5-26: Case study of successful SWM practice – Alappuzha.....	628
Table 5-27: Case study of successful SWM practice – Bhopal	629
Table 6-1: Urban Extent 2051 and 2071	641
Table 6-2 Nekpur Residential Housing Node Broad costing	644
Table 6-3 Kargaina Residential Housing Node Broad costing	645
Table 6-4 Tehtajpur Residential Housing Node Broad costing	645
Table 6-5 Ghaghoria Residential Housing Node Broad costing	645
Table 6-6 Main Industrial Zones.....	651
Table 6-7 Broad costing of Kurtara Industrial Growth Centre	656
Table 6-8 Broad costing of Rajau Paraspur Industrial Growth Centre	656
Table 6-9 Broad Costing Paraskhera Industrial Growth Centre	656
Table 6-10: Main Components of Primary Drains	749
Table 6-11: Broad Costing of Kurtara Integrated Freight Centre cum Logistic Hub.....	790
Table 6-12 Broad Cost of Faridpur proposed Integrated Freight Centre cum Logistic Hub	791
Table 6-13: Proposal locations for Integrated Freight Center cum Logistic Hub	791
Table 6-14 Land use Breakup for Logistic Hub.....	797
Table 6-15 Area Breakup Required in Logistic Hub	797
Table 6-16: Ganga Expressway Packages.....	802
Table 6-17: Node Development along Ganga Expressway	803
Table 6-18: Identified Radial Roads from Bareilly City to Ganga Expressway	804
Table 6-19 Vehicle registration data for Bareilly.....	807
Table 6-20 Average Daily Traffic in Bareilly City.....	807
Table 6-21 Peak Hour Traffic in Bareilly City.....	808
Table 6-22 Vehicular distribution at junction	809
Table 6-23 Vehicle registration data for Bareilly.....	809
Table 6-24 Capacity and Design Service Volume	810
Table 6-25 Projected Traffic at Major Junctions in Bareilly city.....	810
Table 6-26 Passenger Traffic & Aircraft Movement	817
Table 6-27 Passenger movement at Bareilly Railway Station	818
Table 6-28: Vehicle registration data for Bareilly.....	818
Table 6-29 Satellite Bus Stand in Bareilly.....	821
Table 6-30: Passenger movement at Bus Terminal	821
Table 6-31 Proposed City Bus routes in Bareilly	821
Table 6-32 Average Daily Traffic in Bareilly City.....	822
Table 6-33 Peak Hour Traffic in Bareilly City.....	823
Table 6-34 Vehicular distribution at junction	824
Table 7-1 Summary of Population Projections of Planning Boundary, 2051	829
Table 7-2 City Bus routes in Bareilly.....	832



Table 7-3 Project list finalized and endorsed by Mandal Commissioner on 13th July 2022	840
Table 7-4: Housing Demand till 2071	843
Table 7-5: Built Up Area w.r.t. housing need till 2071	843
Table 7-6: Projected Industrial Land Use Demand	847
Table 7-7 Satellite Bus Stand in Bareilly	888
Table 7-8 Passenger movement at Bus Terminal	888
Table 7-9 Passenger Traffic & Aircraft Movement	888
Table 7-10 Passenger movement at Bareilly Railway Station	888
Table 7-11: Solid waste generation projection – Municipal Area	903
Table 7-12: Solid waste generation projection – Municipal Area	904
Table 7-13 List of ASI Sites in Bareilly District (3 sites in Bareilly, 7 sites in Ramnagar, 2 in Aonla and 1 site in Pachomi)	906

LIST OF FIGURES

Figure 2-1 Study Area Map	29
Figure 2-2: Bareilly Regional Connectivity	31
Figure 2-3 Regional Setting	31
Figure 2-4 Connectivity Linkage	32
Figure 2-5: Regional Setting of Bareilly.....	33
Figure 2-6: Quadrant wise Urban Extent of Bareilly City.....	36
Figure 2-7 : Ganga Expressway Route Map	37
Figure 2-8: Road layout	38
Figure 2-9 Character Description Map, Bareilly.....	46
Figure 2-10 Key Map for defining Fabric Types, Bareilly	47
Figure 2-11 Map 3 Figure ground and built use plan of old city fabric around Bada Bazaar	48
Figure 2-12 The street section and image showing shops opening up directly on the narrow streets	48
Figure 2-13 Figure ground and built use plan of Patel Chowk.....	49
Figure 2-14 Key Section	50
Figure 2-15 Section: Part A	50
Figure 2-16 Section: Part B	50
Figure 2-175 Figure ground and built use plan of Cantonment area	51
Figure 2-18 Figure ground and built use plan of post colonial area.....	53
Figure 2-19 Figure ground and built use plan of industrial area.....	56
Figure 3-1: Origin of the City.....	59
Figure 3-2 Quadrant wise Urban Extent of Bareilly City.....	61
Figure 3-3 Work Force participation decadal growth.....	65
Figure 3-4 Decadal Urban Extent of Bareilly City	72
Figure 3-5: Land use distribution in 1971 and Proposed Land use 2001.....	73
Figure 3-6 Graphical Presentation of Landuse	75
Figure 3-7: Core Area of Bareilly City	82
Figure 3-8: Housing Typology at Pilibhit Road: Cordon 1	83
Figure 3-9 Housing Typology at Badaun Road: Cordon 4	85
Figure 3-10 Housing Typology at Shahjahanpur/Lucknow Road: Cordon 3	85
Figure 3-11 Housing Typology at Rampur/Delhi Road: Cordon 5	85
Figure 3-12 Housing Typology at Nanital Road: Cordon 6.....	85
Figure 3-13: Existing Industrial Area.....	88
Figure 3-14 Transport Nagar, Bareilly.....	91
Figure 3-15 Commercial Areas in Bareilly.....	94
Figure 3-16 Existing Situation of Commercial Areas in Bareilly	95
Figure 3-17 Healthcare Facilities in Bareilly.....	97
Figure 3-18 Location & Connectivity map of Bareilly	99
Figure 3-19 Ganga Expressway Alignment.....	100
Figure 3-20 Railway Line Connecting With Bareilly	101
Figure 3-21 Major Road Network In Bareilly City.....	102
Figure 3-22 Location map of Bus route in Bareilly	111
Figure 3-23 Water supply coverage in Nagar Nigam area within Planning Boundary	119

Figure 3-24 River Flow around Bareilly.....	125
Figure 3-25: Flow of river.....	128
Figure 3-26 Flow of river.....	128
Figure 3-27 Proposed STP site.....	129
Figure 3-28 Rajau Paraspur SWM Plant.....	136
Figure 3-29 Abandoned approach in Rajau Paraspur SWM Plant.....	136
Figure 3-30 Treatment facility in Bakarganj SWM plant.....	138
Figure 3-31 Dumping yard in Bakarganj SWM plant	138
Figure 3-32 - Growth Trend in GDP of Bareilly District.....	144
Figure 3-33 - Fluctuations in annual real economic growth rate (GDDP at Current Prices) of District vs State from 2012-13 to 2019-20.....	144
Figure 3-34 - Per capita income of Bareilly District, Uttar Pradesh and India (2019-20)	147
Figure 3-35 - Per Capita income variation of Bareilly District (2011-12 to 2019-20)	147
Figure 3-36 - Ease of Living Index 2020	148
Figure 3-37 - Growth trend of economic sectors (2011-2020)	150
Figure 3-38 - Activities contributing to Primary Sector to the district GDP	150
Figure 3-39 - Shift in the structure of Secondary Sector role to the district GDP	154
Figure 3-40 - DIC Industrial areas in Bareilly district	155
Figure 3-41 -Google map of the Paraskhera Industrial Area	157
Figure 3-42 - Images of the Parsakhera industrial area.....	157
Figure 3-43 -Trend of output (INR in 000) from industries.....	164
Figure 3-44 -Top 5 sectors in Bareilly district based on total output (INR in 000) in 2017-18.....	166
Figure 3-45 -Trend of investment in industries.....	166
Figure 3-46 - Top 5 sectors in Bareilly district based on total investment (INR in 000) in 2017-18...	167
Figure 3-47 -Trend of employment in industries	167
Figure 3-48 -Top 5 sectors in Bareilly district based on total employment in 2017-18	167
Figure 3-49 - Major industries in Bareilly city	168
Figure 3-50 - Bareilly proposed landuse map 2021.....	174
Figure 3-51 -Industrial areas proposed in Master Plan 2021.....	175
Figure 3-52 - Existing situation of Health Facilities at City Level.....	195
Figure 3-53 - Existing situation of Education Facilities at City Level.....	201
Figure 3-54 - Urban growth pattern in Bareilly (1991 to 2014)	204
Figure 3-55 - Schematic growth direction map of Bareilly	205
Figure 3-56 - Sector Map of Ramganga Nagar Awas Yojna	206
Figure 3-57 - Bareilly Jail campus area map.....	207
Figure 3-58 -Transport Nagar in Bareilly.....	208
Figure 3-59 - Proposed mode of development of slums	209
Figure 3-60 - Location of tourist places in Bareilly	212
Figure 3-61: Archival image of the site excavation activities (1940-1945).....	253
Figure 3-62: Archival image of Excavated Site (1940-1945)	254
Figure 3-63: Archival image of Excavated Site (1940-1945)	254
Figure 3-64: Archival image of Excavated Site (1940-1945)	255
Figure 3-65: Archival image of Excavated Site (1940-1945)	255
Figure 4-1: Urban Extent 2051 and 2071	264

Figure 4-2: Urban Extent 2051 and 2071.....	264
Figure 4-3: Logistic Hub	269
Figure 4-4: Residential Housing Nodes and Probable Residential Areas of Future.....	272
Figure 4-5: Proposed Industrial Growth Centers and Probable Industrial Areas of Future.....	274
Figure 4-6: Proposed Mixed Landuse Sub-City	277
Figure 4-7: Proposed Commercial Areas within Residential Housing Nodes.....	278
Figure 4-8: Nath Temple Complex.....	284
Figure 4-9: Tapeswar Nath Temple Precinct.....	286
Figure 4-10: Alakhnath Temple Precinct	286
Figure 4-11: Madinath Temple Precinct	286
Figure 4-12:Dhopeswar Nath Temple Precinct	286
Figure 4-13: Vankhandi Nath Temple Precinct	287
Figure 4-14: Pashupati Nath Temple Precinct	287
Figure 4-15: Trivati Nath Temple Precinct	287
Figure 4-16: Qila to Shyam ganj Road, Dargah e Aalahazrat and Khanqah e Niazia Precinct.....	288
Figure 4-17: Sailani Market Road	292
Figure 4-18: Ramganga Ghat and Fair Ground.....	297
Figure 4-19: Nakatiya River, Cantonment Area	301
Figure 4-20: Ramganga Ghat and Fair Ground.....	303
Figure 4-21 Archival image of the site excavation activities (1940 – 1945) Alexander Cunningham	307
Figure 4-22 Archival image of Excavated Site (1940 – 1945) Alexander Cunningham.....	307
Figure 4-23 Archival image of Excavated Site (1940 – 1945) Alexander Cunningham.....	307
Figure 4-24 Archival image of Excavated Site (1940 – 1945) Alexander Cunningham.....	308
Figure 4-25 Archival image of Excavated Site (1940 – 1945) Alexander Cunningham.....	308
Figure 4-26 The Indian Mutiny: 6th Dragoon Guards (Carabiniers) at Bareilly, May 1858 by Orlando Norie. Source: Royal Collection Trust.....	311
Figure 4-27 Sketch of Battle of Bareilly, 1858. (Source: A history of the Indian mutiny by G.W Forrest)	312
Figure 4-28 Town Hall, Partition Museum of Amritsar – Punjab	313
Figure 4-29 Town Hall, Partition Museum of Amritsar, Galleries – Punjab.....	313
Figure 4-30 Dara Shikoh Library and 1947 Partition Museum – Mori Gate, Delhi.....	314
Figure 4-31 Bareilly College – Gangapur, Bareilly Source: Project Team	315
Figure 4-32 Bareilly College – Gangapur, Bareilly Source: Project Team	315
Figure 4-33 St. Stephan’s Church – Civil Lines, Bareilly	317
Figure 4-34 The Freewill Baptist Church – Civil Lines, Bareilly.....	318
Figure 4-35 Bishop Cantonment Church - Bareilly	318
Figure 4-36 Christ Methodist Church – Civil Lines, Bareilly	319
Figure 4-37 Bareilly College – Gangapur, Bareilly	319
Figure 4-38 Dharamshala – Bareilly.....	320
Figure 4-39 North Indian Theological Seminary - Bareilly	320
Figure 4-40 <i>British Cemetery - Bareilly</i>	321
Figure 4-41: <i>British Cemetery - Bareilly</i>	322
Figure 4-42 Alakh Nath Temple – Qila Bareilly	328
Figure 4-43: Bankhandi Nath Temple – Jogi Navada.....	328

Figure 4-44 Dhopeswar Nath Temple – Sadar Bazaar (Bareilly Cantonment)	329
Figure 4-45 Trivati Nath Temple – Macnair Road	329
Figure 4-46 Pashupati Nath Temple – Pilibhit Bypass Road	330
Figure 4-47 Mausoleum of Hafiz Rahmat Khan	332
Figure 4-48 Dargah-e-ShahDana Wali.....	333
Figure 4-49 Khanqah-e-Aliya Niyazia	334
Figure 4-50 Jama Masjid – Qila Mohallah	335
Figure 4-51 Bibi Ji ki Masjid – Beharipur.....	335
Figure 4-52 Asifi Masjid - Zakhira	336
Figure 4-53: Demand assessment methodology.....	338
Figure 4-54: Broad components of Medi – City	371
Figure 4-55: Factors governing the requirement of a Medi - City.....	372
Figure 4-56: Fortis Medi-City	373
Figure 4-57: Apollo Health City, Hyderabad	374
Figure 4-58: Aster Medi-City, Kochi.....	374
Figure 4-59: Lay out plan of Aster Medi-City	375
Figure 4-60- Location & Connectivity map of Bareilly	376
Figure 4-61: Railway line connecting with Bareilly.....	378
Figure 4-62: Major Road Network in Bareilly City.....	379
Figure 4-63: Existing condition of Satellite Bus Stand	384
Figure 4-64: Location map of Proposed Bus route in Bareilly.....	385
Figure 4-65: Ganga Expressway alignment.....	387
Figure 4-66: Concept design of the mini bus stand.....	389
Figure 4-67: Cycle track in Lucknow	390
Figure 4-68: Typical Logistic hub	391
Figure 4-69: Typical charging type	392
Figure 4-70: Metro light system.....	392
Figure 4-71: Water supply coverage in Nagar Nigam area within Planning Boundary	396
Figure 4-72: Drainage Pattern of Bareilly City.....	398
Figure 4-73: Rajau Paraspur SWM Plant.....	408
Figure 4-74: Abandoned approach in Rajau Paraspur SWM Plant.....	409
Figure 4-75: Dumping yard in Bakarganj SWM plant	410
Figure 4-76: Treatment facility in Bakarganj SWM plant.....	410
Figure 5-1: Bareilly's Vision	418
Figure 5-2: Demand assessment methodology.....	427
Figure 5-3: Stakeholder Meeting at BDA	428
Figure 5-4: Alakh Nath Temple Section	Error! Bookmark not defined.
Figure 5-5: Alakh Nath Temple Connecting Bylane	Error! Bookmark not defined.
Figure 5-6: Alakh Nath Temple Entrance.....	Error! Bookmark not defined.
Figure 5-7: Alakh Nath Temple Complex	Error! Bookmark not defined.
Figure 5-8: Pathway to Devraniya River	Error! Bookmark not defined.
Figure 5-9: Bylane to Math Tulsi Sthal.....	Error! Bookmark not defined.
Figure 5-10: Math Tulsi Sthal Entrance Gate (left) Math Tulsi Sthal Complex (right)	Error! Bookmark not defined.

Figure 5-11: Madinath Temple Approach Road	Error! Bookmark not defined.
Figure 5-12: Madinath Temple Entrance Gateway	Error! Bookmark not defined.
Figure 5-13: Tapeswar Nath Temple Approach Road.....	Error! Bookmark not defined.
Figure 5-14: Tapeswar Nath Temple	Error! Bookmark not defined.
Figure 5-15: Dhopeswar Nath Temple Approach Road	Error! Bookmark not defined.
Figure 5-16: Dhopeswar Nath Temple Entrance (left) and Kund (right)	Error! Bookmark not defined.
Figure 5-17: Pashupati Nath Temple Entrance (left) and Temple (right)	Error! Bookmark not defined.
Figure 5-18: Pashupati Nath Temple Precinct	Error! Bookmark not defined.
Figure 5-19: Vankhandi Nath Temple Approach Road	Error! Bookmark not defined.
Figure 5-20: Vankhandi Nath Temple Fairground	Error! Bookmark not defined.
Figure 5-21: Trivati Nath Temple Entrance.....	Error! Bookmark not defined.
Figure 5-22: Bada Bazaar Street (Section - 1) (left) Shyamganj Market Street (section 2) (right)	501
Figure 5-23: Bada Bazaar Street (left), Shyam Ganj Market Street (right)	502
Figure 5-24: Street leading to Dargah-e -Aalahazrat (left), Dargah-e -Aalahazrat (right)	502
Figure 5-25: Street leading to Khanqah E Niazia (left), Khanqah E Niazia (right).....	502
Figure 5-26: Shyam Ganj Flyover Road Section	505
Figure 5-27: Shyam Ganj Flyover Road.....	506
Figure 5-28: Sailani Market Road	506
Figure 5-29: Dilapidated Ghat along river edge and connecting bridge (left), Vacant Land Parcel near bridge (right)	508
Figure 5-30: Provision of boating to cross the river	508
Figure 5-31: Approach Road to the land parcel (left), Existing Condition of Nakatiya (right)	511
Figure 5-32: Abandoned land parcel on Nakatiya River	511
Figure 5-33: Nakatiya River, Cantonment Area	512
Figure 5-34 Archival image of the site excavation activities (1940 – 1945) Alexander Cunningham	516
Figure 5-35 Archival image of Excavated Site (1940 – 1945) Alexander Cunningham.....	517
Figure 5-36 Archival image of Excavated Site (1940 – 1945) Alexander Cunningham.....	517
Figure 5-37 Archival image of Excavated Site (1940 – 1945) Alexander Cunningham.....	518
Figure 5-38 Archival image of Excavated Site (1940 – 1945) Alexander Cunningham.....	518
Figure 5-39 The Indian Mutiny: 6th Dragoon Guards (Carabiniers) at Bareilly, May 1858 by Orlando Norie. Source: Royal Collection Trust.....	537
Figure 5-40 Sketch of Battle of Bareilly, 1858. (Source: A history of the Indian mutiny by G.W Forrest)	537
Figure 5-41 Town Hall, Partition Museum of Amritsar – Punjab	538
Figure 5-42 Town Hall, Partition Museum of Amritsar, Galleries – Punjab.....	538
Figure 5-43 Dara Shikoh Library and 1947 Partition Museum – Mori Gate, Delhi.....	539
Figure 5-44 Bareilly College – Gangapur, Bareilly Source: Project Team	540
Figure 5-45 Bareilly College – Gangapur, Bareilly Source: Project Team	540
Figure 5-46 St. Stephan’s Church – Civil Lines, Bareilly	554
Figure 5-47 The Freewill Baptist Church – Civil Lines, Bareilly.....	555
Figure 5-48 Bishop Cantonment Church - Bareilly	555
Figure 5-49 Christ Methodist Church – Civil Lines, Bareilly	556
Figure 5-50 Bareilly College – Gangapur, Bareilly	557
Figure 5-51 Dharamshala - Bareilly	557

Figure 5-52 North Indian Theological Seminary - Bareilly	558
Figure 5-53 British Cemetery - Bareilly.....	559
Figure 5-54 British Cemetery - Bareilly.....	560
Figure 5-55: Photograph of the Zari Artisan in Bareilly	563
Figure 5-56: Lay out plan of Aster Medi-City	587
Figure 5-57: Multi-level Puzzle type parking at Kolkata	590
Figure 5-58: Typical Layout of Multi-level Puzzle Car parking	590
FIGURE 5-59 GANGA EXPRESSWAY ALIGNMENT	591
FIGURE 5-60 STRENGTHENING OF THE NH 530B ROAD.....	591
FIGURE 5-61 CONCEPT DESIGN OF THE MINIBUS STAND.....	592
FIGURE 5-62 CYCLE TRACK IN LUCKNOW	593
FIGURE 5-63 TYPICAL LOGISTIC HUB	594
FIGURE 5-64 TYPICAL CHARGING TYPE	595
FIGURE 5-65 METRO LIGHT SYSTEM	595
Figure 5-66: Water supply coverage in Nagar Nigam area within Planning Boundary	598
Figure 5-67: Drainage Pattern of Bareilly City.....	600
Figure 5-68: Rivers of Bareilly	604
Figure 5-69: Proposed STPs	605
Figure 5-70: Devraniya Drain	608
Figure 5-71: Chaubari drain	609
Figure 5-72: Nakatiya drain.....	610
Figure 5-73: Abandoned approach in Rajau Paraspur SWM Plant.....	612
Figure 5-74: Dumping yard in Bakarganj SWM plant (left) Treatment facility in Bakarganj SWM plant (right).....	614
Figure 5-75: Solar Projects Vision.....	634
Figure 6-1: Urban Extent 2051 and 2071.....	642
Figure 6-2: Proposed Residential nodes for Bareilly	646
Figure 6-3: Industrial Area in Bareilly	651
Figure 6-4: Existing Industrial area in Bareilly.....	653
Figure 6-5: Proposed Industrial Nodes locations in Bareilly	657
Figure 6-6: Site of Ahichchhatra.....	662
Figure 6-7: Ahichchhatra from Ramnagar which is the closest settlement and access to the site	662
Figure 6-8: Samarth Chandragupta fort and ahichchhatra fort within the complex of Ahichchhetra.....	663
Figure 6-9: Current condition of the site	664
Figure 6-10: Map showing protected, regulated and restricted areas of the site of Ahichchhatra ..	664
Figure 6-11: Signage on site.....	665
Figure 6-12: Signage on site	665
Figure 6-13: Location identified for amenities on site (left) Condition of dirt track with in the site (right)	666
Figure 6-14: Proposed plan for the provision of amenities	667
Figure 6-15: Concept plan for parking drinking water cloak room at the entrance of the site from Ramnagar Gate on west	668
Figure 6-16: Concept of parking and ticket counter at A on the above plan.....	668

Figure 6-17: concept plan for the cafeteria and publication counter: as on location B of above map	669
Figure 6-18: Concept for the entrance gate and boundary wall for protected site	669
Figure 6-19: provision of brick on edge flooring to access the monuments.	670
Figure 6-20: Concept layout for ticket room, cloak room , publication shop and drinking water.	672
Figure 6-21: Concept for drinking facility, Publication shop and Cafeteria	672
Figure 6-22: Concept for ticket counter and cloak room	673
Figure 6-23: Proposed toilet layout for the toilet block	673
Figure 6-24: proposed option for toilet block.....	674
Figure 6-25: conceptual view of the toilet block.....	674
Figure 6-26: conceptual view of the toilet block.....	674
Figure 6-27: proposed view for toilet block.....	675
Figure 6-28:conceptual view for ticket counter cloak room and drinking unit	675
Figure 6-29: concept view for ticket counters	675
Figure 6-30: Image of site within the college premises of pathways, boundary railings, softscape enclosures	677
Figure 6-31: Image of magnificent colonial structure run as college within the city	678
Figure 6-32: Map showing the college complex and land proposed for new museum block	680
Figure 6-33: Map showing the components with in the college complex.....	680
Figure 6-34: Image showing current condition of the library building.....	682
Figure 6-35: proposed image of Library structure post conservation.....	682
Figure 6-36: Current condition of chemistry department block	683
Figure 6-37: Chemistry department block conserved and upgradated	683
Figure 6-38: Concept for planning within in the museum block.....	686
Figure 6-39: Concept for view of museum block	686
Figure 6-40: Concept for view of museum block	687
Figure 6-41: Concept view of courtyard building in exposed brick work for the museum	687
Figure 6-42: Nath Nagri Circuit and Temples Location	690
Figure 6-43: Nath Temple Complex.....	691
Figure 6-44: Nath Circuit Cycle.....	695
Figure 6-45: Existing and proposed Public Transport Routes	705
Figure 6-46: E-Rickshaw Routes	706
Figure 6-47: Vankhandi Nath Temple Precinct	713
Figure 6-48: Vankhandi Nath Temple Approach Road	713
Figure 6-49: Vankhandi Nath Temple Approach Road	713
Figure 6-50: Vankhandi Nath Temple.....	714
Figure 6-51: Vankhandi Nath Temple Fairground	714
Figure 6-52: Precinct Development of Vankhandinath Temple.....	715
Figure 6-53: Ramganga Fair Ground Site	722
Figure 6-54: Dilapidated Ghat along river edge and connecting bridge (left) Vacant land parcels near connecting bridge (right)	723
Figure 6-55 Provision of boating to cross the River (up) Provision of boating to cross the River (down)	724
Figure 6-56: Ramganga Fairground Proposal – Key Plan	724

Figure 6-57: Ramganga Fairground Proposal Plan	725
Figure 6-58: Proposed Site for Mixed Use Development	733
Figure 6-59: Layout Development of 30 Hectare Site	734
Figure 6-60: Methodology Adopted for Plan Preparation.....	738
<i>Figure 6-61: Base map of Bareilly.....</i>	<i>739</i>
Figure 6-62: Land use map – BDA Masterplan 2031	740
Figure 6-63: NDVI Map of Bareilly	741
Figure 6-64: Contour Map of Bareilly	742
Figure 6-65: Natural Drainage Pattern	743
Figure 6-66: Flood-prone areas of Ramganga river.....	744
Figure 6-67: Low-lying Areas.....	744
Figure 6-68: Low-lying area 1 – Near Gandhi Udhyan, Civil Lines, Bareilly	745
Figure 6-69: Low-lying area – Near Mini Bypass Road, Izzatnagar, Bareilly	745
Figure 6-70: Low-lying area – Baqarganj, Bareilly	746
Figure 6-71: Low-Lying area - Hazipur Brij Lal, Bareilly	747
Figure 6-72: Low-lying area - Pilbhit Bypass Road, Dohra, Bareilly	747
Figure 6-73: Natural Drainage Channel in Varanasi	752
Figure 6-74: Representation of Bioswales and Plantation Strips.....	755
Figure 6-75: District Domestic Product y-o-y growth for Bareilly	759
Figure 6-76: Distribution of workforce in Bareilly	760
Figure 6-77: District Domestic Product y-o-y growth for Bareilly	768
Figure 6-78: DDP spread across sectors	768
Figure 6-79: Proposed Site for Medi-city.....	771
Figure 6-80: Proposed Logistics hub locations in Bareilly.....	792
Figure 6-81: Broad Conceptual Layout of Integrated Freight Centre cum Logistics Hub at Faridpur	799
Figure 6-82: Broad Conceptual Layout of Integrated Freight center cum Logistics Hub at Kurtara ..	800
Figure 6-83: Major Connecting Roads in Bareilly city.....	801
Figure 6-84: Ganga Expressway and other competing corridors in UP	803
Figure 6-85: Ganga Expressway alignment and connectivity to Bareilly city.....	804
Figure 6-86: NH 530B near Circuit House road	805
Figure 6-87: Flyover construction at Lal Phatak Railway Crossing	805
Figure 6-88: Major Bridge along Ramganga River (left) NH 530B near Binawar (right).....	805
Figure 6-89: Jumkha Chauraha, near Parsakhera Industrial Area (left), Agricultural land, near Balla Kotha (near Clutterbuck Ganj Railway Station) (right)	806
Figure 6-90: Major Bridge near Ramganga River (left), Agricultural land, Bund Road near Jallapur Ram Dayal (right)	806
Figure 6-91: Vehicular Growth in Bareilly.....	806
Figure 6-92: Peak Hour Traffic at Major Intersection in Bareilly City	808
Figure 6-93: Vehicular distribution at 12 no of Junctions.....	809
Figure 6-94: Peak Hour Traffic at the Outer Cordon	810
Figure 6-95: Typical Cross-section of 6 lane road	811
Figure 6-96: Typical Cross-section of 6 lane road with Depressed Median.....	811
Figure 6-97: Typical Cross-section of 6 lane road with Raised Median	812
Figure 6-98: Proposed Grade Separators along NH 530B.....	813

Figure 6-99: Proposed Bareilly South Bypass Road alignment mentioned in Master Plan-2031	814
Figure 6-100: Ganga Expressway alignment and Bareilly South Bypass Road	815
Figure 6-101: Typical layout design of Double Trumpet Interchange	815
Figure 6-102: Existing Road condition at Chowki Chauraha	817
Figure 6-103: Existing Carriageway opposite Gandhi Udhyan	817
Figure 6-104: Vehicular Growth in Bareilly	818
Figure 6-105: Major Connecting Roads in Bareilly city	819
Figure 6-106: Existing RoW in Bareilly City	821
Figure 6-107: Existing condition of Satellite Bus Stand	821
Figure 6-108: Peak Hour Traffic at Major Intersection in Bareilly City	823
Figure 6-109: Vehicular distribution at 12 no of Junctions.....	824
Figure 6-110: Proposed Metro Routes in Bareilly City	825
Figure 6-111: Typical view of the Bareilly Metro near Satellite Bus Stand & Gandhi Udhyan	826
Figure 7-1 Railway Line Connecting With Bareilly.....	830
Figure 7-2 Major Road Network In Bareilly City.....	830
Figure 7-3 Major Road Network In Bareilly City.....	831
Figure 7-4 Location map of Bus route in Bareilly	833
Figure 7-5: Dilapidated Ghat along river edge and connecting bridge (left), Vacant Land Parcel near bridge (right)	859
Figure 7-6: Provision of boating to cross the river	859
Figure 7-7: Approach Road to the land parcel (left), Existing Condition of Naktiya (right)	861
Figure 7-8: Shyam Ganj Flyover Road Section	869
Figure 7-9: Shyam Ganj Flyover Road Figure 7-10: Sailani Market Road	869
Figure 7-11: Bada Bazaar Street (Section - 1) (left) Shyamganj Market Street (section 2) (right)	874
Figure 7-12: Bada Bazaar Street (left), Shyam Ganj Market Street (right)	874
Figure 7-13: Street leading to Dargah-e -Aalahazrat (left), Dargah-e -Aalahazrat (right)	874
FIGURE 7-14 FLOW CHART OF PROCESS OF PROJECT PLANNING	878
Figure 7-15: Typical Cross-section of 6 lane road	882
Figure 7-16: Typical Cross-section of 6 lane road with Raised Median	883
Figure 7-17: Proposed Grade Separators along NH 530B.....	884
Figure 7-18: Proposed Bareilly South Bypass Road alignment mentioned in Master Plan-2031	885
Figure 7-19: Ganga Expressway alignment and Bareilly South Bypass Road.....	885
Figure 7-20: Vehicular Growth in Bareilly.....	887
Figure 7-21: Proposed Metro Routes in Bareilly City	890
Figure 7-22 Bareilly College – Gangapur, Bareilly Source: Project Team	911
Figure 7-23: Solar Projects Vision.....	919

Chapter 1. INTRODUCTION

1.1 Project Overview

This consultancy project is supported by the Government of Uttar Pradesh which envisions the betterment of the city of Bareilly by enhancing its comprehensive development of physical, social, and economic infrastructure by modern and innovative urban planning principles. The project is meant to deliver a Vision, Implementation Strategy, and integrated Infrastructure Plan to support objectives of holistic, sustainable, and planned development of Bareilly city. It requires taking a much broader view of planning to allow for more integrated land use and infrastructure development schemes. The project is expected to drive economic growth, improve the quality of life of people by strengthening the city's inherent potentials, innovative models for diversifying economy and augmenting its existing infrastructure. It should also contribute to enhancing the resilience of the city by incorporating policies to enable the city in coping with urban risks and climate change mitigation and adaptation. The Vision, Implementation Strategy, and integrated infrastructure plan for Bareilly in Uttar Pradesh will further pave the way for project development, management, and project implementation support.

1.2 Project Background

In view of the growing urban requirements, government in Uttar Pradesh has come up with a plan to develop 14 major cities of the state include Lucknow, Kanpur, Chitrakoot, Gorakhpur, Varanasi, Prayagraj, Agra, Jhansi, Saharanpur, Mathura, **Bareilly**, Meerut, Moradabad and Gautam Buddha Nagar (Noida). Taking fresh view of the increasing population, growing number of houses, burgeoning volume of vehicles and ever-escalating future needs, there is need to revisit the city's demand.

1.3 Project Objectives

The **key objectives** of the assignment are:

- A Vision Plan leveraging the industrial, educational, medicinal and tourism potential clean green domains of the city has to be prepared which has to be in consonance with the principles of economy and sustainability as main drivers of urban growth. This Vision Plan will be prepared through a rigorous assessment of the current situation of the city in terms of its physical, social and economic aspects.
- A comprehensive and holistic approach for development, needs to be adopted for the city to improve quality of life, creation of opportunities for employment, enhance regional development, improved socio-economic and financial planning to guide city's planned expansion in the future.
- A list of projects needs to be identified for achieving the vision planned for the city of Bareilly. Along with carrying out pre-feasibility studies denoting the level of effort required for each of these projects, these projects need to be further prioritised and an integrated infrastructure development strategy and action plan needs to be formulated which will act as a guide for the city officials to plan investments accordingly through appropriate institutional mechanisms.
- The whole process needs to be followed in a highly participatory manner where consultation with stakeholders, institutional arrangements and resource requirements adopting project structuring mechanism shall be done.

1.4 Scope of Work

A vision plan for the future development of the city will be captured through consultative process with relevant stakeholders. It presents the current stage of the city's development

- where are we now? It sets out the source of change
- where do we want to go? It identifies the thrust areas in the direction of change
- what do we need to address on a priority basis? It also suggests alternative routes, strategies, and interventions for bringing about the change
- what interventions do we make in order to attain the vision? It provides a framework and vision within which projects need to be identified and implemented. It establishes a logical and consistent framework for the evaluation of investment decisions. It aims to promote growth, regulate present and future development of towns and cities and identify lands to various uses of land.

1.5 Expected Output

The total time for the preparation of the Vision Plan is set out to be completed in 20 weeks, excluding the time taken by the Authority in providing the requisite documents or in conveying its comments on the draft reports or maturation of the stakeholder consultative process.

Table 1-1 Deliverables

Sr. No	Activity / Deliverables	*Time Duration (Week No.)
1	Inception Report	2
2	Existing Situation Analysis Report	4
3	Demand Assessment Report	9
4	Vision Plan	13
5	Draft Pre-Feasibility Report	15
6	Draft Integrated Infrastructure Development Strategy and Action Plan	17
7	Draft Business Plan	18
8	Final report on 1. Identified Bouquet of projects 2. Integrated Infrastructure Development Strategy and Action Plan 3. Business Plan	20

(Source: RFP)

**All Reports shall first be submitted as draft reports for comments of the Authority. The Authority shall provide its comments no later than next submission date from the date of receiving a draft report and in case no comments are provided within such week, the Consultant shall finalise its report.*

1.6 Report Structure

As per the ToR / RFP the suggested ToC of the Inception Report is as mentioned below in the table below, but in course of two meetings with the stakeholders, one on 6th January 2022, and second one on 22nd March 2022, the scope of report structure has undergone a modification.

Introduction: Project Background; provides the background to the vision plan of city.	
1	Profile assessment, provides an overall status of the planning area and sectoral scope of work.
2	On-going project schemes and development works are undertaken in project area
3	Approach and Methodology; details the scope of work, the proposed approach and methodology and work plan
4	Benchmarking Cities
5	Way Forward: presents the way forward for undertaking the project.

Chapter 2. Study Area Profile

2.1 City at a Glance

Bareilly is a city in North India tarai region and is classified as Class I town. It is the centre for manufacturing of cane furniture and for trade in cereal, sugar, pulse and newly rice cultivation. The city administration is headquartered to Bareilly district and Bareilly division. Bareilly is the 4th city of Uttar Pradesh which has CNG fuel stations, after Lucknow, Kanpur and Agra.

According to National Capital Region Planning Board (NCRPB) 2041 plan Bareilly has been identified as Counter Magnet Area (CMA) for future development. It is equidistant from New Delhi with 250 kilometres and Lucknow with 252 kilometres. It is located as Eastern Dedicated Freight Corridor Node. It is famously known as the Zari Nagar for Zari zardozi handicrafts works on dress materials of Uttar Pradesh.



Figure 2-1 Study Area Map

The district shares its boundary with Badaun to the south, Pilibhit and Shahjahanpur on the east, Udham Singh Nagar (Uttarakhand) to the north and Rampur on the west. City is gateway to Hill areas of Kumaon Himalaya region. The city is level and well-watered, sloping towards the south. Its soil is fertile, with groves of trees. The river Sharda or Goghra passes the eastern boundary and is the primary waterway. The Ramganga receives most of the drainage from the Kumaon Himalayan region. The Gomati (or Gumti) is also nearby Bareilly and lies 252 metres above sea level located off the left bank of Ramganga. The core city of Bareilly lies nearly 10 kilometres to the left of Ramganga river. Since the 19th century, the city has been expanding to the south, with neighbourhoods like Civil Lines and Bareilly Cantt established during British rule; however, after the Independence of India, city has been growing towards north. During British period smaller industrial clusters have been established, like



C.B. Ganj and Izzat Nagar. The city has an urban area of 106 square kilometres, while together with its metropolitan area it covers 123 square kilometres. Bareilly is one of the 100 Smart Cities being developed in India. 10 percent ethanol- blending programme on a pilot basis has been initiated under Central scheme in Bareilly. Existing major industries like B. L. Agro Refinery at Parshkhera, IFFCO plant in Aonla. An airport is also developing at Bareilly – Pilbhit road. Bareilly Development Authority is developing Ramganga Nagar Housing scheme at Dohra and Bilaspur Road for around 259 Hec and main feature in this scheme are science and technology park and zonal park of 35000 sq. mt. area.

2.1.1 City History and Current Extends

Bareilly rose to prominence during the Mughal empire. During this period the foundation of the present town was laid by Raja Jagat Singh *Katehriya*, the governor of the region. In year 1500, A.D. Jagat Singh founded a village called *Jagatpur* (now a *mohalla* in the eastern margin of the old city), and in 1537 his sons Bans Deo and Barel Deo founded the township near Jagatpur which became later popular as *Bans Bareili* after the names of two brothers.

Another story about the origin of the town goes that Jagat Singh was a *Barhela* Rajput and had two sons Bans Deo and *Nagdeo*, of whom the former built the fort called *Bans Bareili* in 1550, while the latter founded part of the new city. Later, the city is said to derive its name *Bans Bareilly* to distinguish it from another city, *Rae Bareli* in Awadh. It is further said that the neighbouring area was full of bamboo trees (Bans tree) and so it was added to the name of the city as a prefix.

Total population of Bareilly sub district is 16,28,338 out of which 33% is rural and 67% is urban. The city is administrative headquarter to Bareilly district. The city comprises of a planning area of 517 sq.km. out of which 106.43 sq.km. comes under the municipal limits and 17.12 sq.km. comes under Cantonment Board. Bareilly is the 7th Largest city of Uttar Pradesh and 50th Largest city of India.

During the time of East India company, the town and the area was coded to the company and Bareilly became the headquarters of district and since then a number of administrative and commercial activities have taken place. Further a number of new shopping zones and residential areas were added to the townscape of old Bareilly. Roads were constructed to link the city with Nainital, Pilibhit, Moradabad and Farrukhabad etc. which further facilitated the development of trade and commerce at this center. During the same period another important aspect of cultural landscape came into being with the establishment of Bareilly Cantonment in 1811 in the southern suburb of the town bounded in the east by Nakatia river.

Developed in between the city and Cantonment, the Civil Lines laid out by Britishers in the latter part of the nineteenth Century was another land mark in the extension of the townscape. The civil line was meant exclusively for civil officer's residences. The district courts, the police lines and magistrate lockup etc. were situated in the southern area near railway station. The district Jail in the west and official's bungalows including circuit house were located in this north-east part of the Civil Lines. The eastern part was developed from north to south with Mental Health Hospital (Mental hospital building), Carpentry school and company Bagh in a line. By this time the main city had extended more towards west than the east. It then consisted of two zones. The old city area to the east of Pilibhit-Shahjahanpur Road with Golganj square, having Muslim majority with areas having greater percentage of open spaces, grave yards, old mosques and dilapidated houses. The New city lies on either side of the main street from Golganj westwards. It was flanked on either side by a continuous line of neat masonry shops with two storied buildings. To the south of the main street lie the *mohallas*

of Shyamganj, Kalibari, Bansmandi etc. and they developed as business-cum-residential areas. The municipal office was also constructed here in a large triangular enclosure with a well-maintained garden as its annexe in the south. To the north different residential areas were developed. The most densely inhabited block of city at this time was in between the Nainital Road and the railway lines. Beyond the railway line in the west, important settlements were suburb of Salehnagar including HussaiBagh and the garden of Champat Rai. The Tomb of Hafiz Rahmat Khan, erected in 1834, was an important cultural landscape of that area.

The city started on points of higher elevation and grew towards the same. The introduction of cantonment board acted as a constraint to urban growth towards south and hence more development took place towards north and northeast. The drainage system got changed by the introduction of railways on embankments.

City was moving away from Ram-Ganga in initial stages. It started growing towards north due to over densification of old city area. The city grew at the expense of natural forest and eventually got covered with built-up.

The most popular 8 shiv temples are situated around the Bareilly, termed it as *Nath*. The city is likely to grow manifold with significant demand in hospitality and allied industries and envisaged to be developed as a mega centre for future tourist.

2.1.2 Connectivity

Geographically it forms the gateway to entre Uttarakhand state. The main "Inter-city Satellite Bus Stand" is located just outside the city on the intersection of National Highway 24 and Pilibhit By-pass Road. NH 24 connects Bareilly to Lucknow on one side and New Delhi to another side. Bareilly was a prominent railway junction during the 20th century, as it connects the city to the rest of the country.



Figure 2-2: Bareilly Regional Connectivity

Bareilly lies on the National Highway 30, which connects Sitarganj in Uttarakhand with Vijaywada in Andhra Pradesh. The 2040 km highway starts at the junction of NH 9 at Sitarganj, and passes through

Bareilly, Lucknow, Allahabad, Jabalpur and Raipur to end at the junction of NH 65 in Ibrahimpattam suburb of Vijaywada. Other National Highways originating in the city include NH 530 (Bareilly–Rampur Highway), NH 530B (Bareilly–Mathura Highway) and NH 730B (Bareilly–Bisalpur Highway). The UP State Highway 37 (Bareilly–Nainital Road) also originates in Bareilly; so does the MDR29 W road, which connects Bareilly to Bilaspur via Shahi and Shishgarh

Bareilly city is served by the Bareilly Airport – a civil enclave at the Indian Air Force's 'Trishul Air Base' in Izzatnagar, 6 kilometres north of the city centre. The connectivity has between city and Delhi and proposed air connectivity with Mumbai, Bangalore, and Lucknow. Six railway tracks intersect in the city. The six railway stations that serve the city are:

1. Bareilly Junction (serving both the Broad and Standard gauge),
2. C.B. Ganj Station (serving the Broad gauge),
3. Chenheti Station (serving the Broad gauge),
4. City Station (serving the Metre gauge),
5. Izzatnagar Station (serving the Meter Gauge & Broad gauge-recently introduced).
6. Bhojipura Station (serving the Meter Gauge & Broad gauge-recently introduced)



Figure 2-4 Connectivity Linkage

2.2 Geographical setting

2.2.1 Regional Setting

Bareilly is the fourth largest city located on the Ramganga River. District Udham Singh Nagar of Uttarakhand state lies in the north. It is a level landscape with various streams that flows through it, and it normally slopes to the south. Bareilly District serves as the capital of the Rohilkhand division. For administrative purposes, it is delineated into six tehsils and fifteen development blocks. Bareilly city is the administrative headquarter of the district.

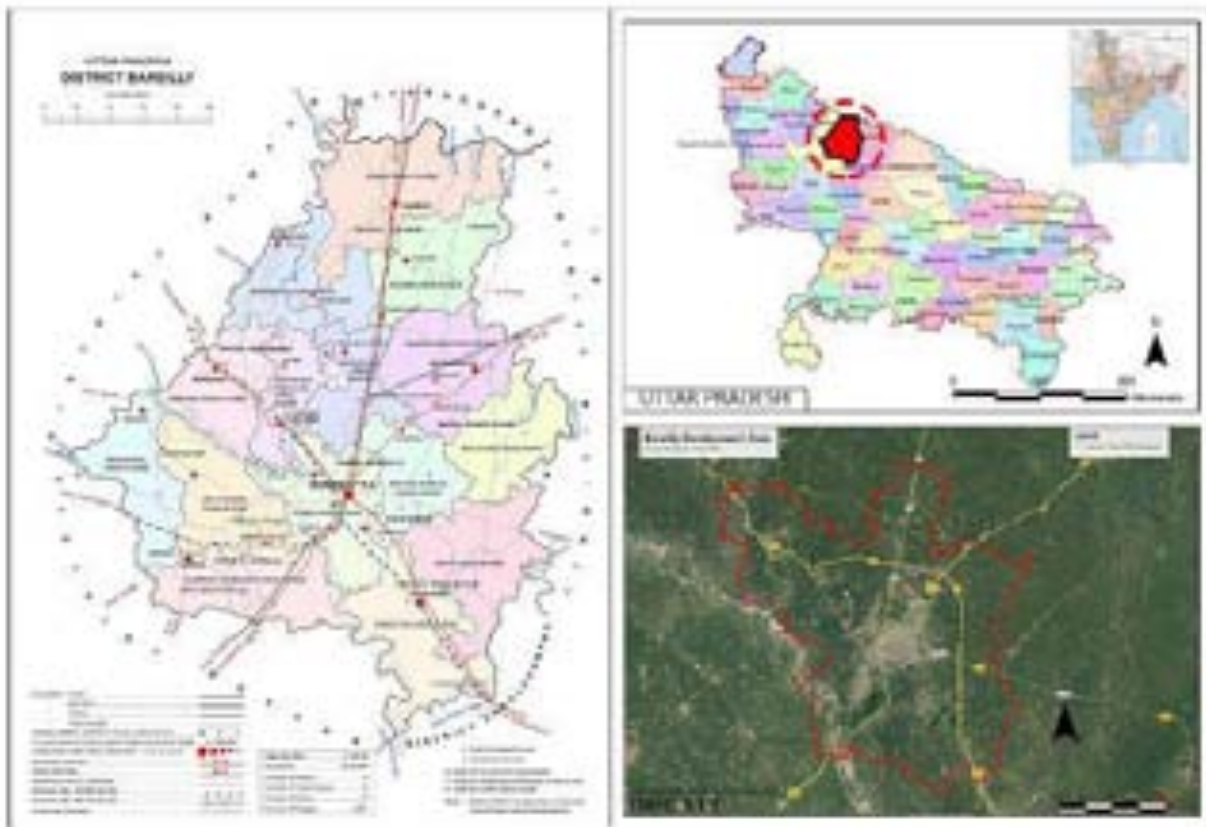


Figure 2-5: Regional Setting of Bareilly

2.2.2 Regional Ecological Features

The Ramganga is the district's primary river, which enters from the west and runs south-east. The Sidh Dejora, Bahgul, Sankha, Aril, Deoha, Deonian, and Nakatia rivers, as well as their tributaries, all start in tarai and flow across the district in southern and south-eastern directions before joining it. In terms of geology, the district is alluvial. The district is separated into three sub-micro areas based on geology, soils, terrain, climate, and natural vegetation:

- I. Bareilly Tarai
- II. Bareilly Plain
- III. Ram Ganga

Bareilly Tarai: The region is located in the district's north-western corner, encompassing a small portion of *Baheri* tehsil. It is the Tarai tract, where various streams flow in a north-south direction. The majority of them are from the Nainital tarai belt. Although it is a rice-growing region, productivity is dependent on rains due to a lack of irrigation.



Bareilly Plain: The tehsils of Baheri, Bareilly, Nawabanj, Mirganj, and Faridpur are located north of the Ram Ganga and cover the majority of the district. It is a flat plain with a north-south slant. The drainage patterns in the northern and southern parts of the area differ slightly. The frequency of the stream is higher in the north, while its offshoots diminish towards the south. Geographically, the area is made up of alluvium and Dun gravels (recent).

Ram Ganga-Aril Interfluvial Plain: It covers Aonla tehsil as well as parts of Bareilly, Faridpur, and Mirganj tehsils in the district's southern reaches. In terms of soil, drainage slope, and river characteristics, the region is physiographically distinct from others. The river Ram Ganga, which enters the region from the North-West and flows to the South-East, is a governing element in this stretch. The Aril and Pairiya rivers run parallel to the Ramganga soil as well. Soil erosion is especially noticeable along the Aril and its tributaries. The area is made up of alluvium and Dun gavel (recent) formations geologically.

2.3 Climate

2.3.1 Temperature

Climatic conditions of Bareilly can be classified as humid subtropical climate, it witnesses cold winters from November to February and hot summers from March to October. The yearly average temperature of the city is found to be 25°C. June month records an average temperature of 32.8 °C and is the warmest month of the year. January is the coldest month of the year with an average temperature of 15 °C. The relative humidity is at its highest during the peak monsoon season (August and September) and the mid-winter season (December), ranging between 79 and 84%. During the peak summer months of April and May, it drops to roughly 38%.

2.3.2 Rainfall

On average, Bareilly receives 1038.9 mm of precipitation each year. It falls from a high of over 1250 mm in the extreme northeast to a low of less than 950 mm in the extreme south. The summer monsoon, which lasts from mid-June until mid-October, is the main source of rain. The wettest months are July and August, with 319.6 mm and 312.1 mm of rainfall, respectively. The month with the least precipitation on average is November, with 5.1 mm on average. There is an average of 37.7 days of precipitation per year, with the greatest precipitation (10.3) occurring in August and the least precipitation (0.5 days) occurring in November. Although rain falls throughout the year, the summer is substantially wetter than the winter.

2.3.3 Wind Pattern

The wind direction is the same as that of the other sub-Himalayas districts of U.P. Generally, the wind is light or calm. From October to April, westerly and north westerly winds are more common, but by May, the wind zone shifts and east south-west winds predominate, which lasts through the rainy season. The average annual wind speed is 4.8 kilometres per hour, with the highest (7.3 kilometres per hour) and weakest (2.2 kilometres per hour) winds occurring in June and November, respectively. During the monsoon season, which runs from mid-June to mid-September, the air is extremely humid. April to June is the driest month of the year, with humidity levels as low as 20%.

2.4 Morphology and growth of the city

2.4.1 Origin of the City

As per Mahabharata, Draupadi, who was referred to as '*Panchali*' by Lord Krishna, was born in the Bareilly district. According to legend, Gautama Buddha paid a visit to the ancient fortified city of *Ahichchhatra* in Bareilly. At *Ahichchhatra*, the *Jain Tirthankara Parshva* is reported to have attained *Kaivalya*. Until the 6th century, it was ruled by several dynasties like the Nanda, Maurya, Gupta, and Maukharis. Later, until the invasion of the Delhi Sultanate (Mughals) in the 13th century, the region was ruled by various Rajput clans such as *Bachal*, *Gaur*, *Chauhan*, and *Rathore*. To disrupt the revolt in this region, the Mughals leased territory to Afghan villages (known as Rohilla Afghans). The encouragement was extended beyond 1700, and as a result, this tribe grew stronger, and the surrounding area became known as Rohilkhand.

In the early nineteenth century, industries existed, the most prominent of which was a "*Khandsari*" (indigenous sugar) unit on the city's outskirts. Bareilly's woodworking and furniture industries were also founded at that period. Another major industry for which Bareilly is known throughout the country is the fabrication of '*Surma*' (antimony shaped into fine powder for beautifying or medicating the eyes).

The workshop of the *Rohilkhand* and *Kumaon* Railways was established at *Izatnagar* in the early twentieth century, resulting in the establishment of several small-scale ancillary units and, later, the National Brewery Company due to the availability of molasses in large quantities in Bareilly from *Khandsari* units. The Indian Wood Product Limited was founded in 1919 in Izatnagar to extract '*catcheu*' and "*cutch*" on a large scale from the '*Khair*' tree that grows in the Himalayan foothills, and the Western India Match Company was founded in 1930 in Clutterbuckganj with raw materials sourced from the tarai forests. With the establishment of these industries at Izatnagar and Clutterbuckganj, these two points quickly developed as important industrial focal points of the town, providing for the development of small-scale industries as well as trade and commerce activity, and thus providing the necessary impetus to industrial growth in the city.

With the establishment of a sleeper creosoting plant in 1954 for treating wooden sleepers, R.R. Engineering Company was established for producing Sugar Machinery, Synthetics and Chemicals for manufacturing Synthetic rubber from alcohol, and camphor and allied products. Industrial area of Bareilly flourished with setting up of industries which produced varied products ranging from chemicals, plastic and Agro products. The city became an industrially prominent town among the cities of Uttar Pradesh. City's industrial history also witnessed cases of shutting down of some major industries including rubber factory which was a major economy generator of the city. On the other side, owing to its industrial potential, major industries such as Vadilal, Coca-Cola, B.L. Agro set up their large-scale industrial units and are operating from Bareilly. The Bareilly city is now recognised as one of the fastest growing economies in the state.

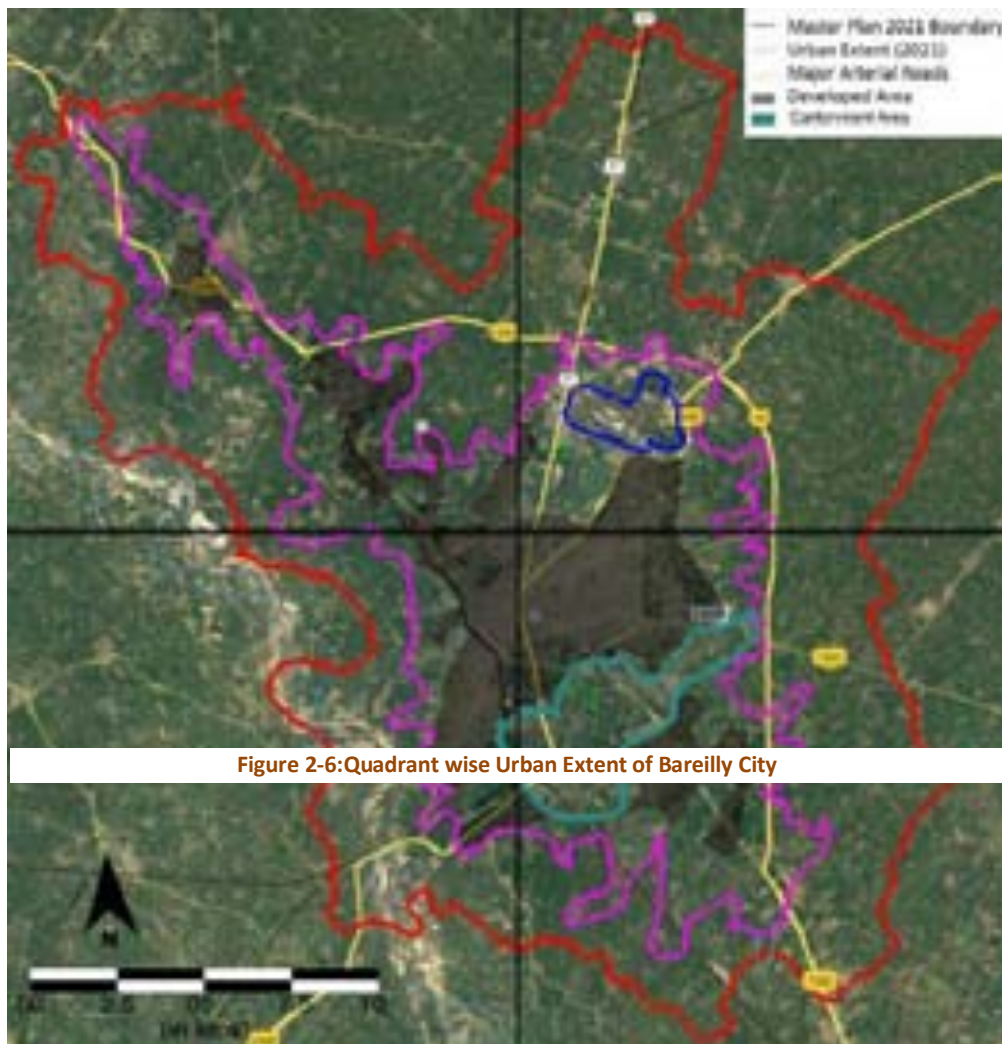
2.4.2 Determinants of Urban Expansion

Bareilly has emerged as a major city in the region. The city has flourished along the major arterial roads/highways which connects various towns and districts and invites an influx of population to the city area. As Bareilly acts as an educational hub for the entire region so various prominent educational institutes and supporting infrastructures such as hostels and housing can be seen in the peripheral areas of the town which plays an important role in urban area expansion. Natives of the surrounding village also migrate and settle in Bareilly to enjoy better job opportunities, healthcare facilities and

educational facilities. Apart from these factors other major factors which foster the urban expansion are:

- Bareilly has been identified as one of the nine counter magnets of the National Capital Region along with Dehradun, Kanpur and Lucknow. It is selected on the parameters of location, the potential of growth, population.
- It is the capital of the Bareilly division and is of historical importance because it also served as the capital of Rohilkhand region.
- Connectivity to national capital New Delhi and state capital Lucknow, famous tourism destination Nainital through road and railways.
- Major Industrial area in the region with industries like Coco-Cola, Vadilal, BL Agro. Bareilly city also has 1380.23 acres of vacant government industrial land in CB Ganj. This land is currently vacant due to the shutdown of rubber industry.
- Significant potential of setting up food processing and packaging industries.

2.4.3 Extent of Spatial Growth



North

West

Bareilly city can be considered to be developing in a linear form because of major Industrial area in this quadrant which flourishes within 1-2 km radius parallel to National Highway 530 whereas, North-East part of Bareilly city organically shows evidence of development and small residential patches can be seen around the bypass roads which better the connectivity of this zone but is hindered by Airport.

South West region witnesses concentration of population and is reflected by coverage of more area. Ramganga river on the west is a major factor that limits the urban expansion in this direction. South-East part of the city is highly concentrated and the extent of the urban expansion is most in this quadrant only. It also houses major educational institutes which are located at the cordon point of the main arterial road and bye-pass road.

2.4.4 City Mobility

The city of Bareilly displays a radial road network and the different inter-city arteries converge at the major *chowks* and *chaurahas*. In fact, resonating with the concept of **Nath Nagri**, there are seven major routes converging towards the city. These seven routes formed the base of the city's connectivity to major cities like Nainital, Delhi, Chandausi, Badaun, Lucknow, Bilaspur and Pilibhit.

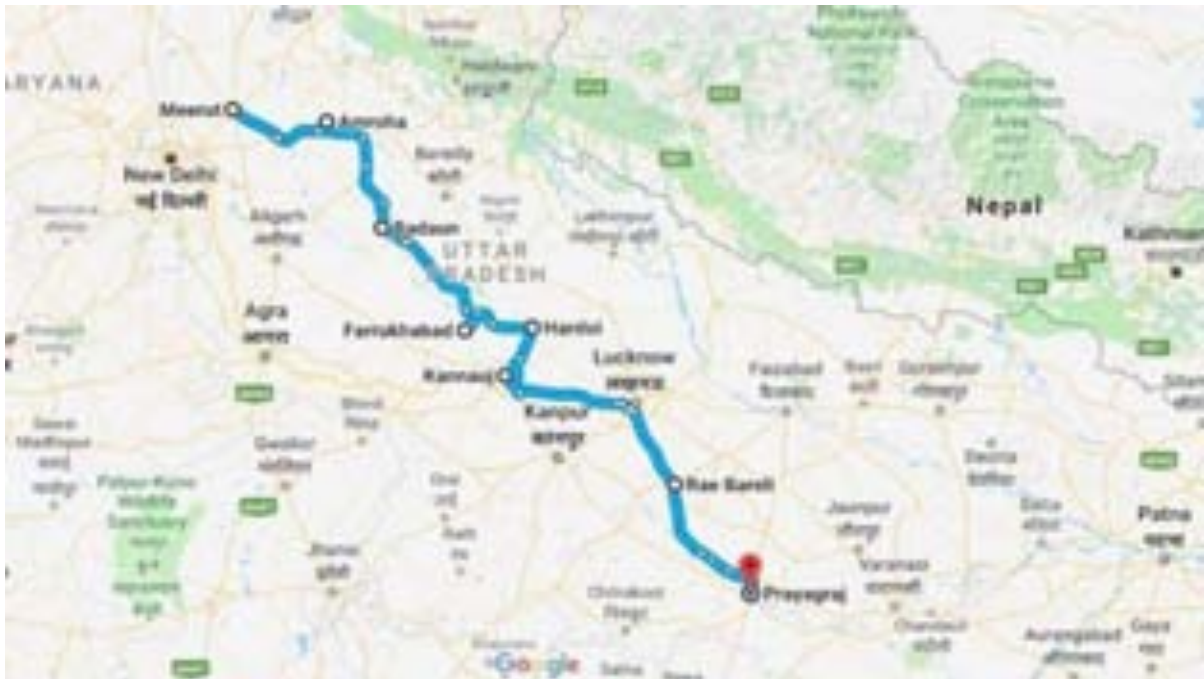
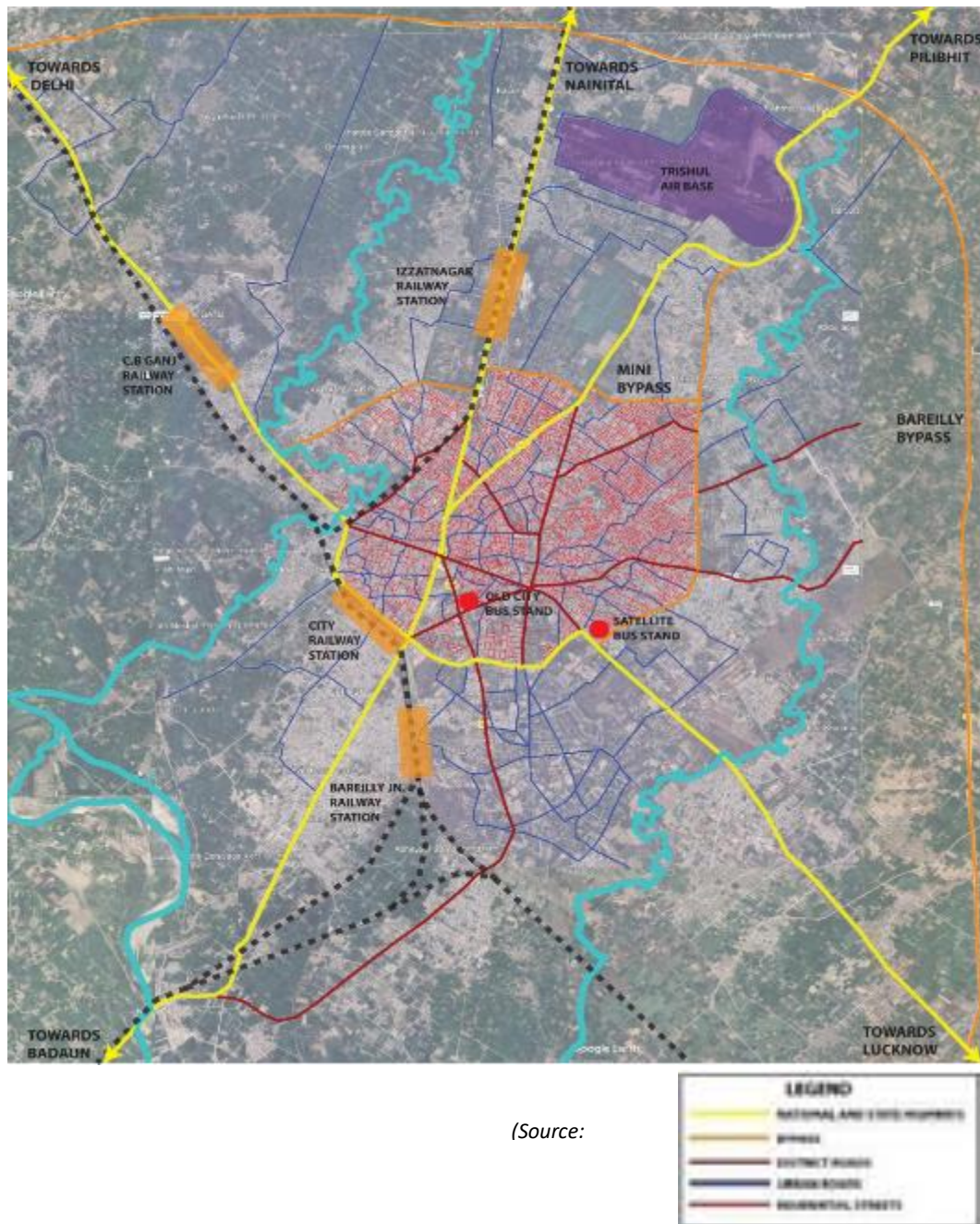


Figure 2-7 : Ganga Expressway Route Map

(Source: <https://housing.com/news/ganga-expressway/>)

Earlier, the major inter-city routes, NH 74 (Haridwar to Bareilly via Pilibhit) and State Highway 37 used to converge with NH24 (Delhi to Lucknow) at the *Darzi Chowk* near the city *Ghantaghar* (Clock tower) which further branched into the famous bazaar streets of Bareilly. But the growing congestion in the markets led to the development of City station road bypassing the bazaar streets and now these intercity routes meet at *Chowki Chauraha*. Looking at the city structure, the mini bypass formed the peripheral edge of the old city area and gradually with the city expanding outwards, a new bypass has been developed which now forms the new periphery enveloping the city defined in the masterplan planning area



(Source:

Figure 2-8: Road layout

The new by pass and the airport located towards the north-eastern edge of the city shall consequently lead to forming of a new development spine along that corridor and this shall result in the outward sprawl of the city and the mini by pass shall become a part of the city itself. The new bypass establishes a stronger connectivity towards Delhi which will enhance the growth and development rate along the spine. Furthermore, Badaun (towards south-west) shall be witnessing the development of Ganga Expressway, which will add to the Industrial and commercial development along the southwest part of Bareilly enroute to Badaun. With the city expanding and the core city getting congested, a new bus stand has also been developed, that is, the Satellite Bus Stand which now caters to inter-city movement from Delhi to Lucknow via the old city bypass. The old bus stand, on the other hand, caters to intra and intercity movement from other cities and towns.

The city features four railway stations namely City Railway station, Bareilly Junction railway station, *Izzatnagar* Railway station and C.B. Ganj Railway station. Out of these, C.B Ganj and *Izzatnagar* Railway stations are predominantly used for transporting cargo whereas the other two cater to the passenger movement. Owing to its strategic location, Bareilly is an established defence base, hence featuring the defence airport in *Izzatnagar* abutting the Bareilly bypass. The city structure features a number of *chowks* and *chaurahas* that have eventually become the orienting landmarks of the city and define the image of the city. While coming from Delhi, *Chaupla Chauraha* becomes the first entry *chowk* to the city and also marks the transition between the city core and the cantonment area. The *chauraha* further leads us in the city core where a network of *chowks* defines the character and image of the city. The prominent *chowks* that act as landmarks within the city are the *Darzi Chowk* (featuring the clock tower), *Novelty Chowk* (the marker between the old city and Civil lines area), *Patel Chowk*, *Chowki Chauraha*, *Vijay Chowk* (Cantonment area), *Veerangana Chowk* and *Shastri Chowk*.



Figure 2.1.2 Jhumka Tiraha (Entrance gateway to Bareilly)



Figure 2.1.3 Satellite Bus stand, Bareilly

Source:Author)



Figure 2.1.4 Bareilly Jn. Railway Station

(Source:Author)



Figure 2.1.5 Izzatnagar Railway Station

(Source:Author)



Figure 2.2.2 Chaupla Chauraha, Bareilly
 (Source:<https://www.jagran.com/uttar-pradesh/bareilly-city-there-are-strange-stories-of-these-crossroads-of-bareilly-19947423.html>)
 Bareilly from Delhi where the NH24 and State highway from Nainital intersect.

Figure 2.2.3 Chauki Chauraha, Bareilly
 (Source:<https://www.jagran.com/uttar-pradesh/bareilly-city-there-are-strange-stories-of-these-crossroads-of-bareilly-19947423.html>)
 The chauraha marks the transition from the old city towards the cantonment area towards lucknow



Figure 2.2.4 Patel Chowk, Bareilly

(Source: <https://www.jagran.com/uttar-pradesh/bareilly-city-there-are-strange-stories-of-these-crossroads-of-bareilly-19947423.html>)

One of the major orienting landmarks of the city, Patel Chowk marks the entry towards the old city bazaars as we move away from the Civil lines. However, the lack of organised mobility structure, the pedestrian and IPT movement remains in a chaos.



Figure 2.2.5 Novelty Chowk, Bareilly

(Source: <https://www.jagran.com/uttar-pradesh/bareilly-city-there-are-strange-stories-of-these-crossroads-of-bareilly-19947423.html>)

Novelty Chowk houses a large no of restaurants, food and eatery joints. The chowk connects to the major markets of the city, the Shyam Ganj market and Alamgiri ganj market: traffic congestion due to mix traffic.



Figure 2.2.6 Clock tower, Bareilly

(Source: <https://www.jagran.com/uttar-pradesh/bareilly-city-there-are-strange-stories-of-these-crossroads-of-bareilly-19947423.html>)

The clock tower is located in the Kutubkhona market street near the darzi chowk and becomes the major landmark of the city. However the precinct remains in a state of chaos due to poor mobility structure and lack of pedestrian infrastructure and public amenities.



Figure 2.2.7 Darzi Chowk, Bareilly

(Source: <https://www.jagran.com/uttar-pradesh/bareilly-city-there-are-strange-stories-of-these-crossroads-of-bareilly-19947423.html>)

Darzi Chowk was once the major intersection between the national and state highway and today also marks the main transition between the Bado Bazaar and the Shyam ganj market. But walking around the precinct is a tedious task as there is a massive influx of IPT, freight activity and vehicular movement which remains poorly managed.



Figure 2.2.12 Cantonment Area, Bareilly

(Source: Author)



Figure 2.2.13 Patel Chowk, Bareilly

(Source: Author)

Built on Colonial principles, the streets offer a conducive environment to pedestrians and cyclists. Also, being the defence area of the city, the IPT and vehicular movement is also properly managed. This makes walking on these streets very comfortable and safe.

Being an active market chowk and loaded with eating joints, this street attracts a lot of pedestrian usage. However, lack of crossings, unorganised IPT and vehicular movement and heavy traffic on street ruins the pedestrian experience and hampers movement.



Figure 2.2.14 Delhi – Lucknow Corridor (NH-24)

(Source: Author)



Figure 2.2.15 Kutubkhana Market, Bareilly

(Source: Author)



Figure 2.2.8 Vajay Chowk, Bareilly
(Source: Author)



Figure 2.2.9 Veerangana Chowk, Bareilly
(Source: Author)

These chowks are the major landmarks of the cantonment area and have a different character as compared to the chowks present in the old city and Civil lines. They are representative of the defence base and showcase elements of pride and honour. The chowks lead to wide and green lined avenues and the mobility structure is far more organised as compared to the other chowks of the city.

What add to the pedestrian inconvenience is the unorganised IPT movement and the extended retail activities at the street edges. Even in the Civil lines precincts adjoining the old city, where one can see wider streets and more open spaces, but due to the lack of organisation and mobility programme, pedestrian usage remains poor and inadequate. However, as we move towards the cantonment area, the streets become very congenial for pedestrian and cyclist movement. The streets in the cantonment area are wide, green lined avenues offering shade and a feeling of safety to pedestrians.



Figure 2.2.10 Boda Bazaar, Bareilly
(Source: Author)



Figure 2.2.11 Shyam Ganj, Bareilly
(Source: Author)

The narrow street is the harbour for all kinds of activity and with extended retail activities, IPT and light freight vehicles obstruct smooth pedestrian flow

Shyam Ganj market street houses a varied set of activities ranging from wood works to utensil making, however the street offers very less space for the pedestrians who are seen struggling with the IPT and market activities. Unorganised two and three wheeler parking hinders pedestrian movement therein.

The city of Bareilly has four different urban settings, the core city, civil Lines, Cantonment area and the Industrial precincts. The pedestrian usage and activities are distinctly varying in these precincts. The old city features market streets and lack of organised pedestrian facilities, hence pedestrian movement becomes really inconvenient and unsafe. Also the streets are not properly illuminated at nights which keep women users away from the streets. The streets, though characterised by different functional aspects, lack legibility and image ability.



Figure 2.2.12 Cantonment Area, Bareilly

(Source: Author)

Built on Colonial principles, the streets offer a conducive environment to pedestrians and cyclists. Also, being the defence area of the city, the IPT and vehicular movement is also properly managed. This makes walking on these streets very comfortable and safe.



Figure 2.2.13 Patel Chowk, Bareilly

(Source: Author)

Being an active market chowk and loaded with eating joints, this street attracts a lot of pedestrian usage. However, lack of crossings, unorganised IPT and vehicular movement and heavy traffic on street ruins the pedestrian experience and hampers movement.



Figure 2.2.14 Delhi – Lucknow Corridor (NH-24)

(Source: Author)



Figure 2.2.15 Kutubkhana Market, Bareilly

(Source: Author)



Satellite Chowk



Patel Chowk



Kotwali

Shyam Ganj

Glimpses of traffic congestion points in city

2.5 City Fabric and Growth of the City

2.5.1 Morphology

The city of Bareilly being strategically placed at the midpoint along the **Delhi - Lucknow Corridor** (the connection between the national capital and the state capital) has undergone many phases of developments and morphosis. The city has four distinct urban patterns and forms owing to the eras and nature of development it has witnessed. The oldest of all being the city core witnesses the densest fabric which becomes less dense and punctured with open spaces as we move away from the city core. The growth pattern of the city has always been radial in nature with major arteries converging at the core city.

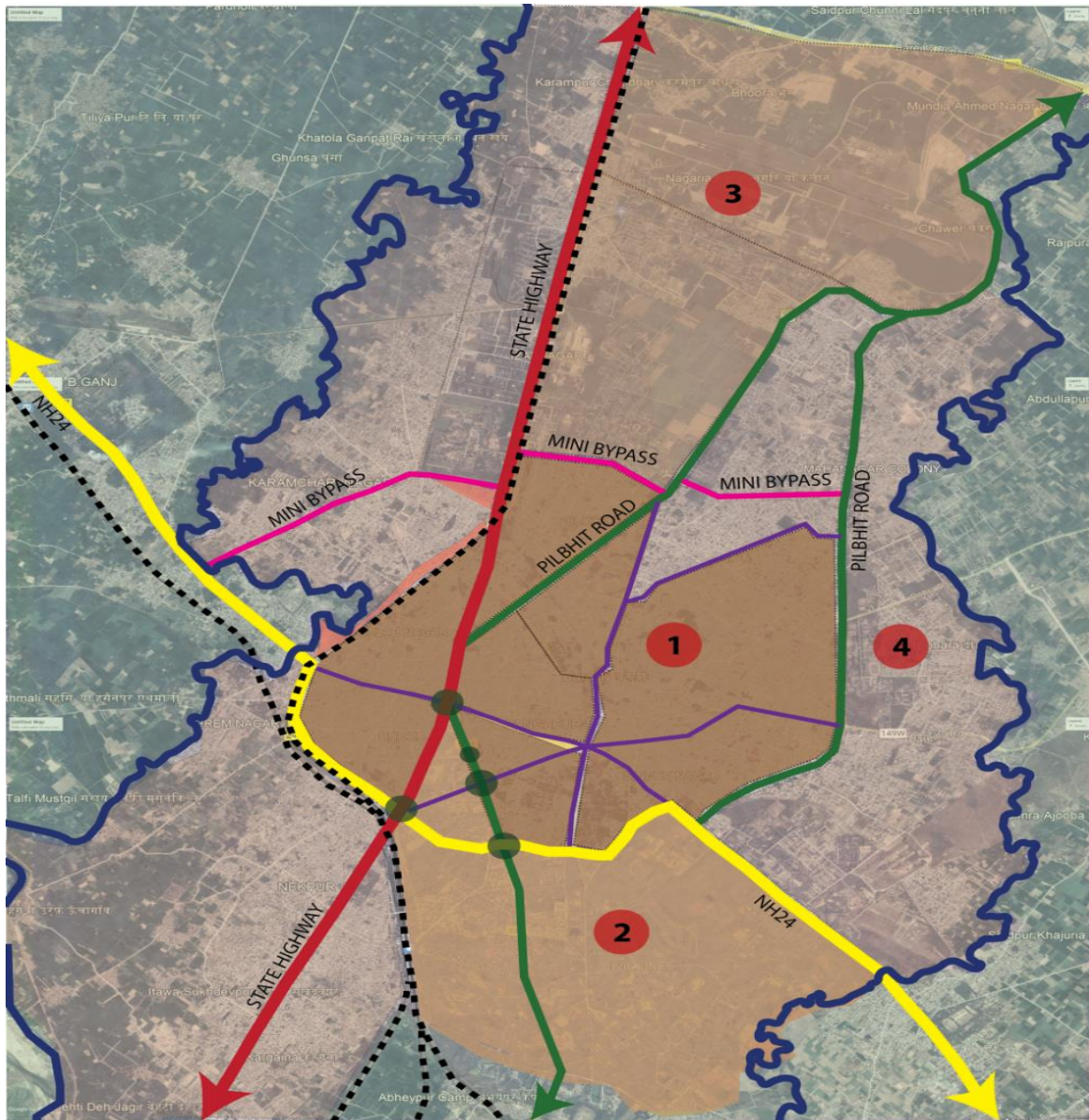


Figure 2-9 Character Description Map, Bareilly

(Source: Consultant Analysis)



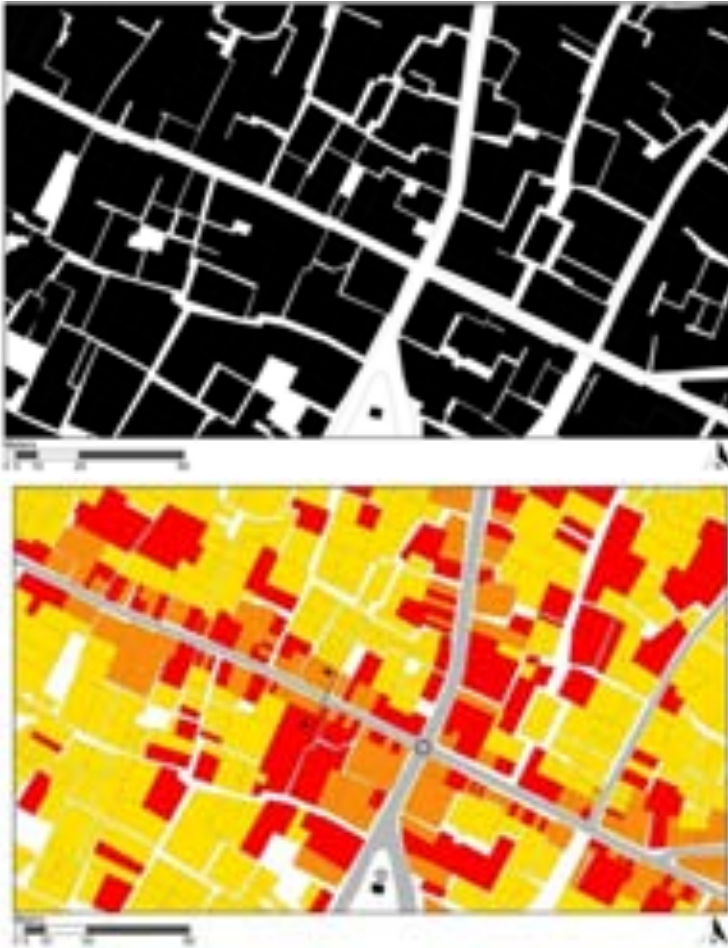
2.5.2 City Fabric Analysis



Figure 2-10 Key Map for defining Fabric Types, Bareilly

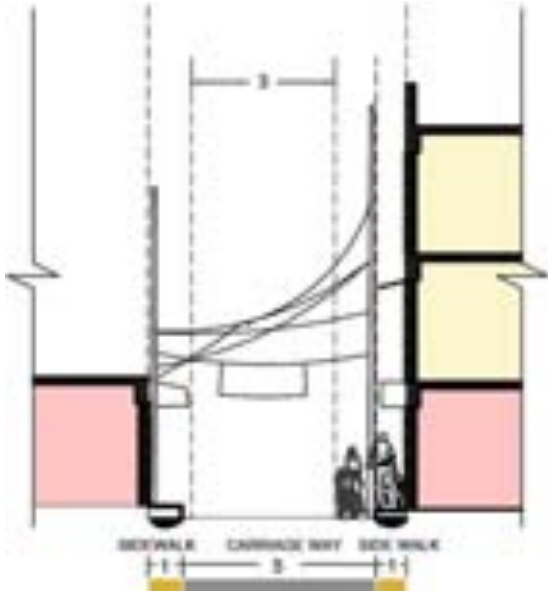
(Source: Consultant Analysis)

2.5.3 Old City Fabric – Bada Bazaar



The built-open analysis of the fabric of Old city around the Bada Bazaar suggests the presence of a highly dense fabric with minimal open spaces other than the narrow streets. Therefore, intersections and streets harbour every kind of urban activity. Furthermore, it clearly depicts the development spine where mixed use development and commercial activity is present in the Bada Bazaar street flanked by smaller galis leading to the dense residential area. The intersections become nodes featuring public activity due to high commercial activity and converging of mixed use streets (specialised merchandise) therein. The street also feature open drains on both sides where the shopkeepers use flexible metal steps that act as frontage during the day and are closed upwards along with the shops at night.

Figure 2-11 Map 3 Figure ground and built use plan of old city fabric around Bada Bazaar



LEGEND	
Yellow	RESIDENTIAL
Red	COMMERCIAL
Orange	MIXED USE
Purple	INDUSTRIAL
Light Blue	INSTITUTIONAL

Figure 2-12 The street section and image showing shops opening up directly on the narrow streets
(Source: Consultant Analysis)

2.5.4 Interface Between Colonial And Old City Fabric- Patel Chowk



Patel Chowk forms an important landmark of the Civil Lines area and helps people and visitors orient themselves in the city. The built open diagram as well as the built use map clearly signifies the importance of the chowk as a converging node for many important market streets and features heavy public activity due to predominant commercial development. However, the chowk needs improvement for pedestrian and cycle movement as well as management of IPT and NMT.



LEGEND	
■	RESIDENTIAL
■	COMMERCIAL
■	MIXED USE
■	INDUSTRIAL
■	INSTITUTIONAL
○	CHOWKS/ NODES
☆	LAND MARK

Figure 2-13 Figure ground and built use plan of Patel Chowk



Image 1 Patel Chowk, Bareilly



Image 2 Patel Chowk market, Bareilly

(Source: <https://www.jagran.com/uttar-pradesh/bareilly-city-there-are-strange-stories-of-these-crossroads-of-bareilly-19947423.html>)



Figure 2-14 Key Section



Figure 2-15 Section: Part A



Figure 2-16 Section: Part B

The street section at Patel Chowk showcases large frontages along the new market typologies. These frontages can be developed into vibrant public spaces but at present these remain flogged with unorganized parking

(Source: Consultant Analysis)

2.5.5 Colonial Zone - Cantonment Area

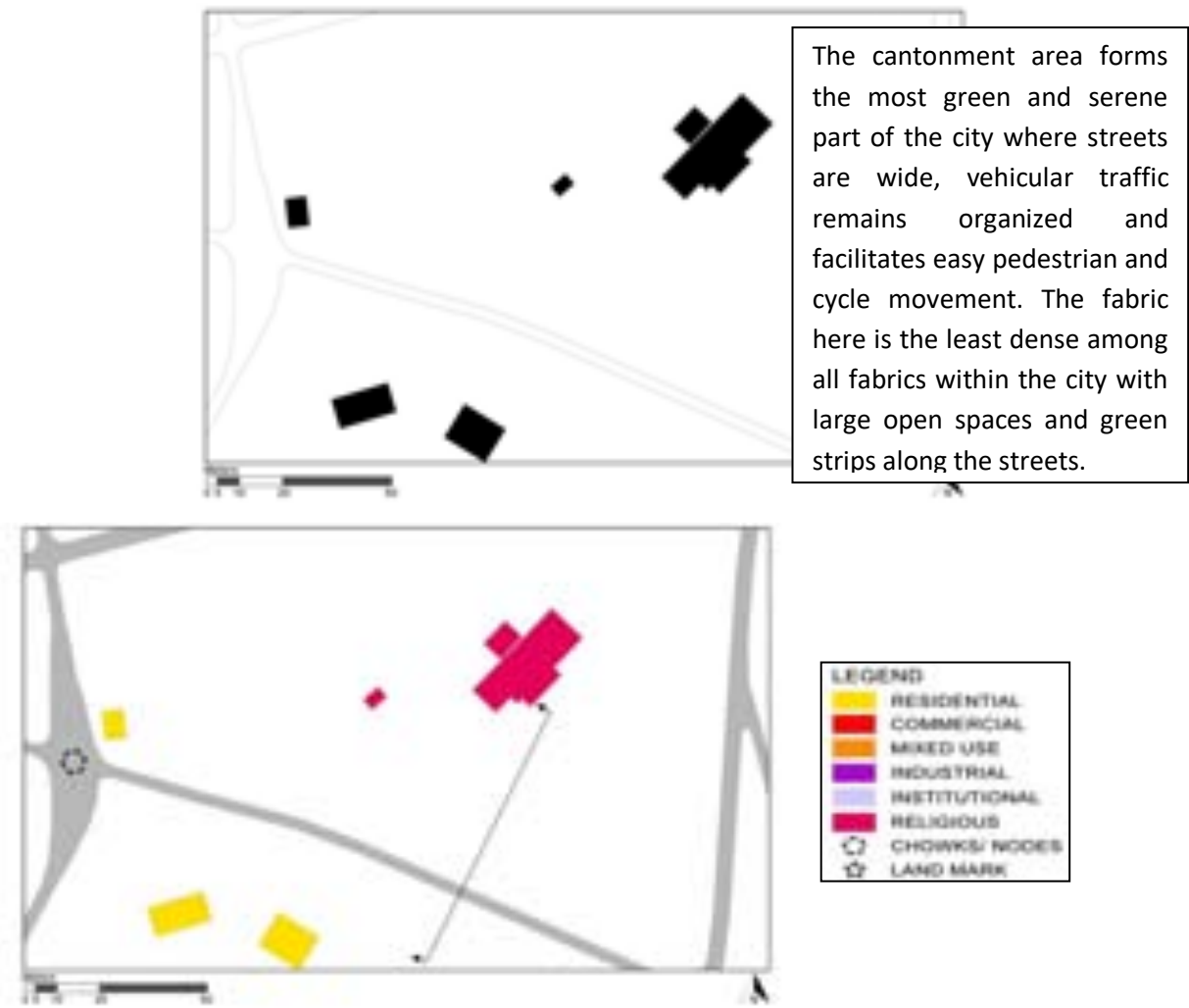
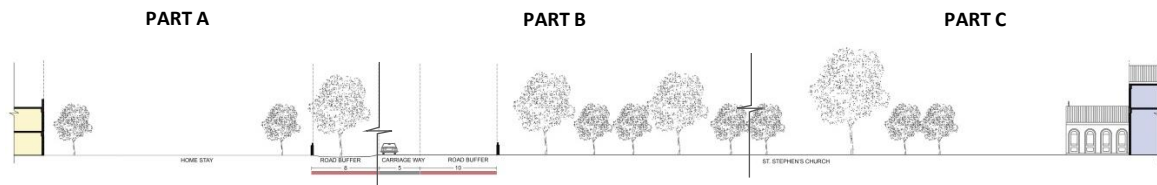


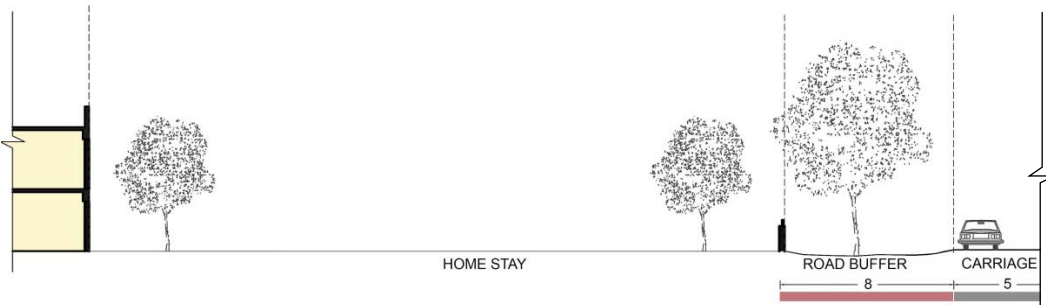
Figure 2-175 Figure ground and built use plan of Cantonment area
(Source: Consultant Analysis)



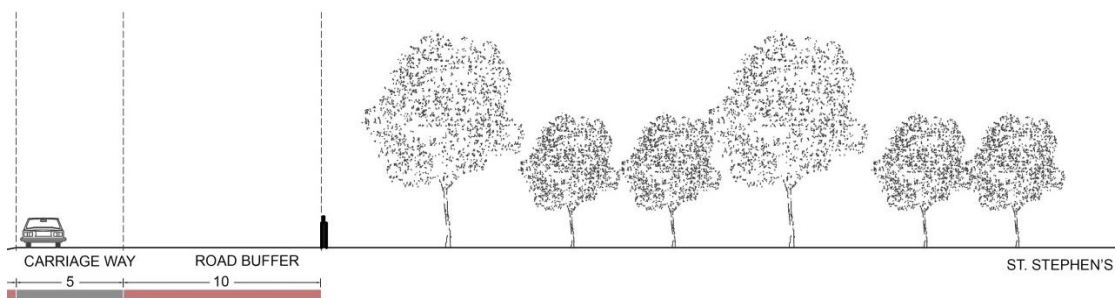
Image 3 The wide roads with green avenues on both sides



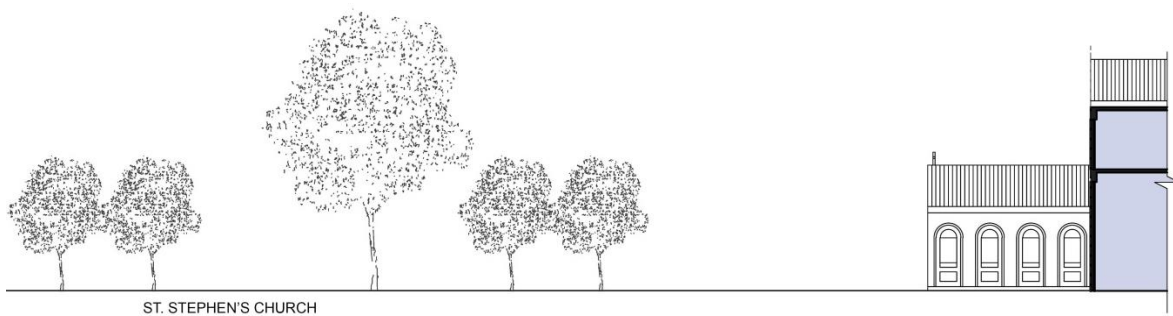
Key Section



Section: Part A



Section: Part B



Section: Part C

Image 4 The section along cantonment area clearly shows large green strips along both sides of the street and presence of colonial structures (Churches, Schools, Convents, etc.)


(Source: Consultant Analysis)

2.5.6 Post Colonial Area



The new settlement areas are the new residential developments that have come up in recent years along the periphery of the city. The fabric clearly signifies a planned residential area with a planned central green space surrounded by residences.



LEGEND	
■	RESIDENTIAL
■	COMMERCIAL
■	MIXED USE
■	INDUSTRIAL
■	INSTITUTIONAL
■	RELIGIOUS
	CHOWKS/ NODES
	LAND MARK

(Source: Consultant Analysis)

Figure 2-18 Figure ground and built use plan of post colonial area



Image 5 The Bareilly Refugees Cooperative settlement



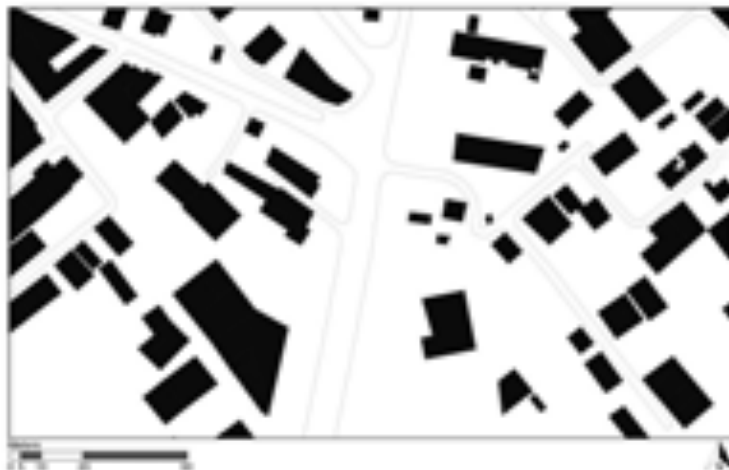
Image 6 The Stadium Road



Image 7 The section showing new settlement areas

(Source: Consultant Analysis)

2.5.7 Future Growth Areas – Pilibhit Bypass



The coming up of the Airport along the Pilibhit bypass and new bypass has created a strong anchor of development along these corridors featuring commercial, institutional as well as industrial development. The fabric clearly showcases coarse grain and sparse development.

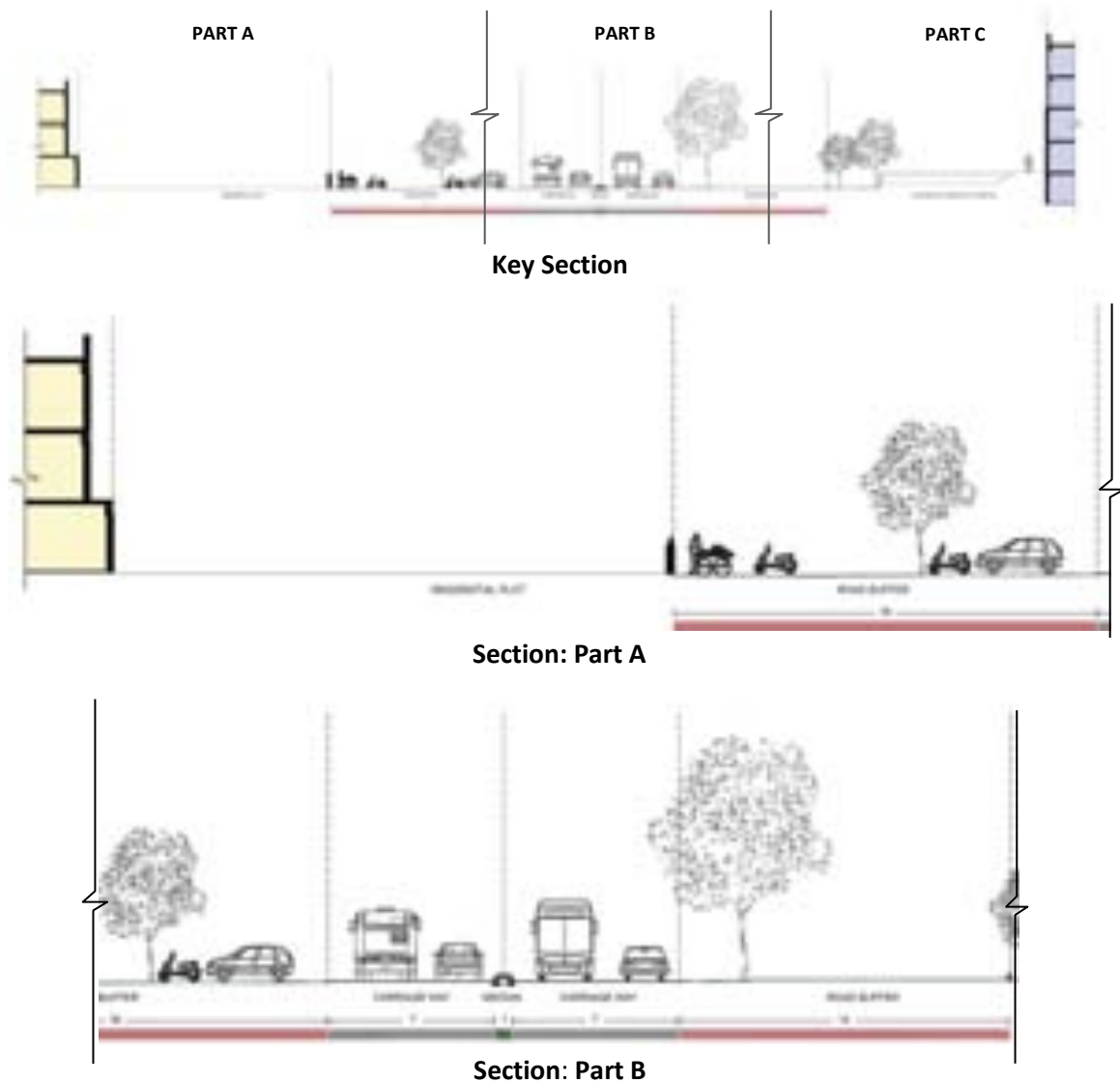


LEGEND	
	RESIDENTIAL
	COMMERCIAL
	MIXED USE
	INDUSTRIAL
	INSTITUTIONAL
	RELIGIOUS
	CHOWKS/ NODES
	LAND MARK

Image 8 Figure ground and built use plan of industrial area



Image 9 The Pilibhit Bypass Road



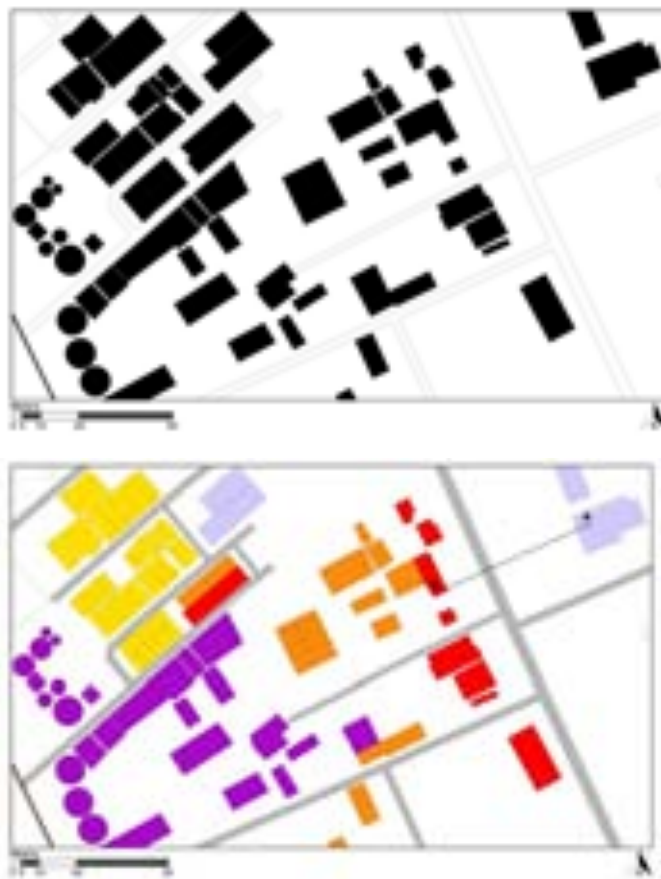


Section: Part C

Image 10 The section represents the development along the bypass with large commercial precincts and large road buffers that can be developed as public frontages featuring public activity and safeguarding pedestrian movement along the otherwise heavy traffic of

(Source: Urban Design Team)

2.5.8 Industrial Areas - C.B Ganj



The fabric of CB Ganj represents Industrial areas with industrial buildings surrounded by residences of people working in these areas. The fabric is coarse and sparse in nature with the residences around the industries eventually developed as mixed use structures and the development along the main road remains predominantly commercial. The industries are facilitated by the highway and the railway line on either side.

LEGEND	
■	RESIDENTIAL
■	COMMERCIAL
■	MIXED USE
■	INDUSTRIAL
■	INSTITUTIONAL
■	RELIGIOUS
○	CHOWKS/ NODES
☆	LAND MARK

Figure 2-19 Figure ground and built use plan of industrial area



Image 11 The Delhi-Lucknow Highway with C.B Ganj industrial area

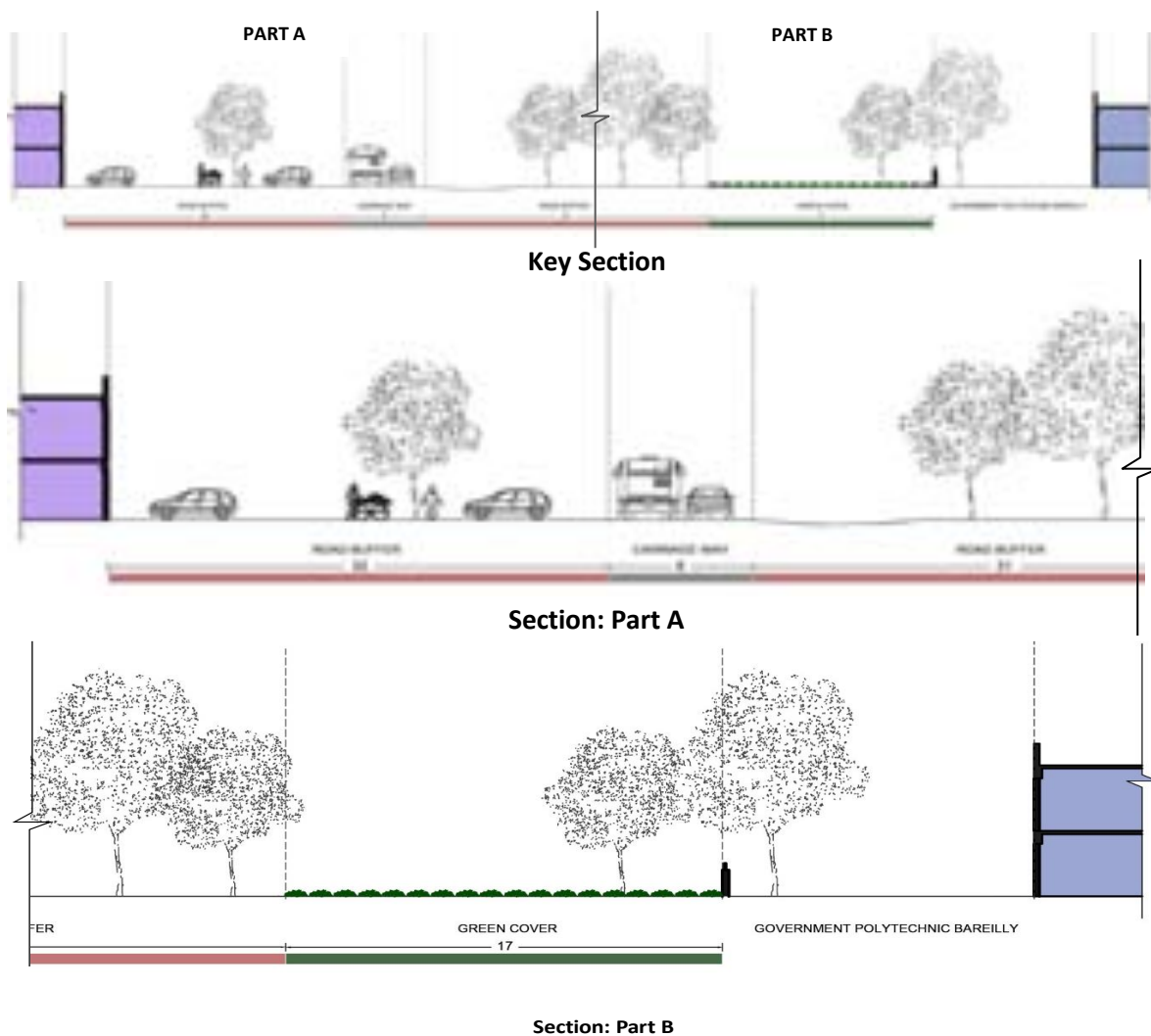


Image 12 The section along the Industrial area of CB Ganj showcases large road buffers that can ideally be developed as green strips to minimize the polluting effect of industries

Chapter 3. Sector wise Existing Situation Analysis

3.1 Urban Planning

Bareilly city is identified as the counter magnet of the National Capital Region along with nine other cities including Lucknow and Jaipur. The city has immense potential of growing as the major service provider in the region. It is also known as the educational and healthcare service hub to the surrounding districts of Uttar Pradesh and neighboring state Uttarakhand. It has a rich cultural history dating back to Mahabharata which is well depicted by Nath Temples. Bareilly is also base of industrial units producing various types of products ranging from chemicals, plastic agro etc.

3.1.1 Approach and methodology

Our strategy and planning will revolve around achieving envisioned outputs towards components of Vision Development. To achieve successful vision planning and development, these components will be studied in detail and form a part of our approach:

- Spatial Planning
- Tourism sector & visitor approach
- Industrial and Economic Base
- Heritage and cultural resource mapping
- Linkages of the proposed project, programs/schemes and strategies
- Stakeholder analysis and participation

3.1.2 Morphology and growth of the city

3.1.2.1 Origin of the City

Draupadi, who was referred to as 'Panchali' by Lord Krishna, was born in the Bareilly district as per the Mahabharat. According to legend, Gautama Buddha paid a visit to the ancient fortified city of Ahiccatra in Bareilly. At Ahichhatra, the Jain Tirthankara Parshva is reported to have attained Kaivalya. Until the 6th century, it was ruled by several dynasties like the Nanda, Maurya, Gupta, and Maukharis. Later, until the invasion of the Delhi Sultanate (Mughals) in the 13th century, the region was ruled by various Rajput clans such as Bachal, Gaur, Chauhan, and Rathor. To disrupt the revolt in this region, the Mughals leased territory to Afghan villages (known as Rohilla Afghans). The encouragement was extended beyond 1700, and as a result, this tribe grew stronger, and the surrounding area became known as Rohilkhand.

Basdeo, a Katehriya Rajput, founded the city of Bareilly in 1537, but Mukrand Rai set the basis for the modern city of Bareilly in 1657. Bareilly was named the capital of the Budaun province in 1658. In 1857, during India's First War of Independence, Bareilly (Rohilkhand) was a prominent centre. Despite having been disarmed, the Rohillas participated actively in the 1857 fight of independence against the English. In the 1857 Indian insurrection against the British, Khan Badur Khan Rohilla, the grandson of Hafiz Rahmat Khan, created his own government in Bareilly. When the Indian Rebellion of 1857 failed, Bareilly was conquered as well. On February 24, 1860, Khan Bahadur Khan was sentenced to death and hanged in the Kotwali. At that time, Bareilly thrived as a trading and market centre because of the surrounding agricultural activity, but it became economically unsustainable throughout the revolt and independence period. Later, Bareilly became the capital of the Rohilkhand area, passing through the hands of Nawab Vazir of Awadh, the East India Company, and finally India.

In the early nineteenth century, industries existed, the most prominent of which was a "Khandsari" (indigenous sugar) unit on the city's outskirts. Bareilly's woodworking and furniture industries were also found at that period. Another major industry for which Bareilly is known throughout the country is the fabrication of 'surma' (antimony shaped into fine pander for beautifying or medicating the eyes). The workshop of the Rohilkhand and Kunaun Railways was established at Izatnagar in the early twentieth century, resulting in the establishment of several small-scale ancillary units and, later, the National Brewery Company due to the availability of molasses in large quantities in Bareilly from Khandsari units. The Indian Wood Product Limited was founded in 1919 in Izatnagar to extract 'catcheu' and "cutch" on a large scale from the 'Khair' tree that grows in the Himalayan foothills, and the Western India Match Company was founded in 1930 in Clutterbuckganj with raw materials sourced from the terai forests. With the establishment of these industries at Izatnagar and Clutterbuckganj, these two points quickly developed as important industrial focal points of the town, providing for the development of small-scale industries as well as trade and commerce activity, and thus providing the necessary impetus to industrial growth in the city.

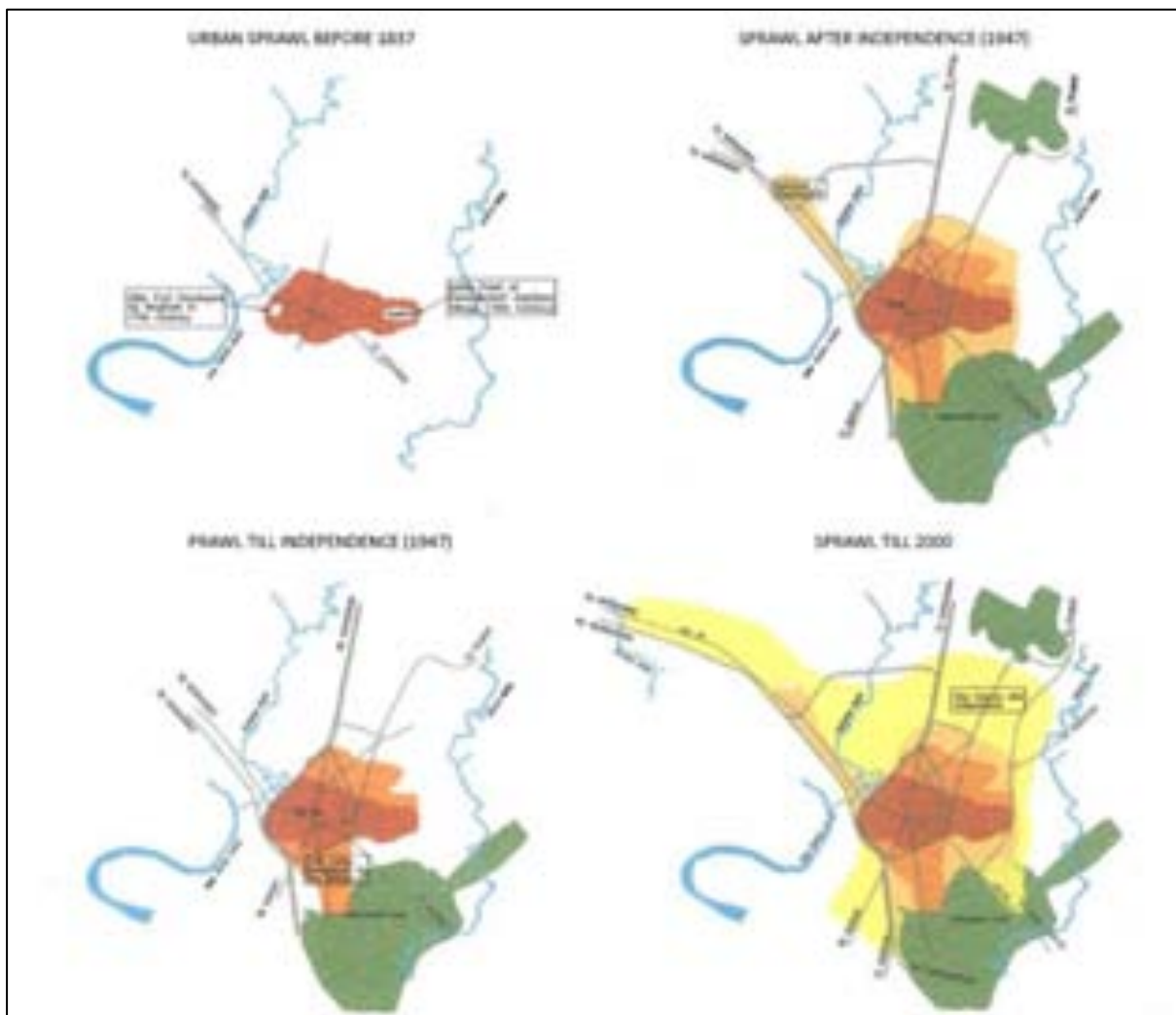


Figure 3-1: Origin of the City

With the establishment of a sleeper creosoting plant in 1954 for treating wooden sleepers, R.R. Engineering Company for producing Sugar Machinery, Synthetics and Chemicals for manufacturing



Synthetic rubber from alcohol, and camphor and allied products. Industrial area of Bareilly flourished with setting up of industries which produced varied products ranging from chemicals, plastic and agro products. The city became an industrially prominent town among the cities of Uttar Pradesh. City's industrial history also witnessed cases of shutting down of some major industries including rubber factory which was a major economy generator of the city. On the other side, owing to its industrial potential, major industries such as Vadilal, Coco-Cola, B.L. Agro set up their large-scale industrial units and are operating from Bareilly. The Bareilly city is now recognised as one of the fastest growing economies.

3.1.2.2 Determinants of Urban Expansion

Bareilly has emerged as a major city in the region. The city has flourished along the major arterial roads/highways which connects various towns and districts and invites an influx of population to the city area. As Bareilly acts as an educational hub for the entire region, so various prominent educational institutes and supporting infrastructures such as hostels and housing can be seen in the peripheral areas of the town which play an important role in urban area expansion. Natives of the surrounding village also migrate and settle in Bareilly to enjoy better job opportunities, healthcare facilities and educational facilities. Apart from these factors other major factors which foster the urban expansion are:

- Bareilly has been identified as one of the nine counter magnets of the National Capital Region along with Dehradun, Kanpur and Lucknow. It is selected on the parameters of location, the potential of growth, population.
- It is the capital of the Bareilly division and is of historical importance and also served as the capital of Rohilkhand region.
- Connectivity to national capital New Delhi and state capital Lucknow, famous tourism destination Nainital through road and railways.
- Major Industrial area in the region with industries like Coco-Cola, Vadilal, BL Agro. Bareilly city also has 1380.23 acres of vacant government industrial land in CB Ganj. This land is vacant because of shut down of rubber industry.
- Potential of setting up food processing and packaging industries.

3.1.2.3 Extent of Spatial Growth

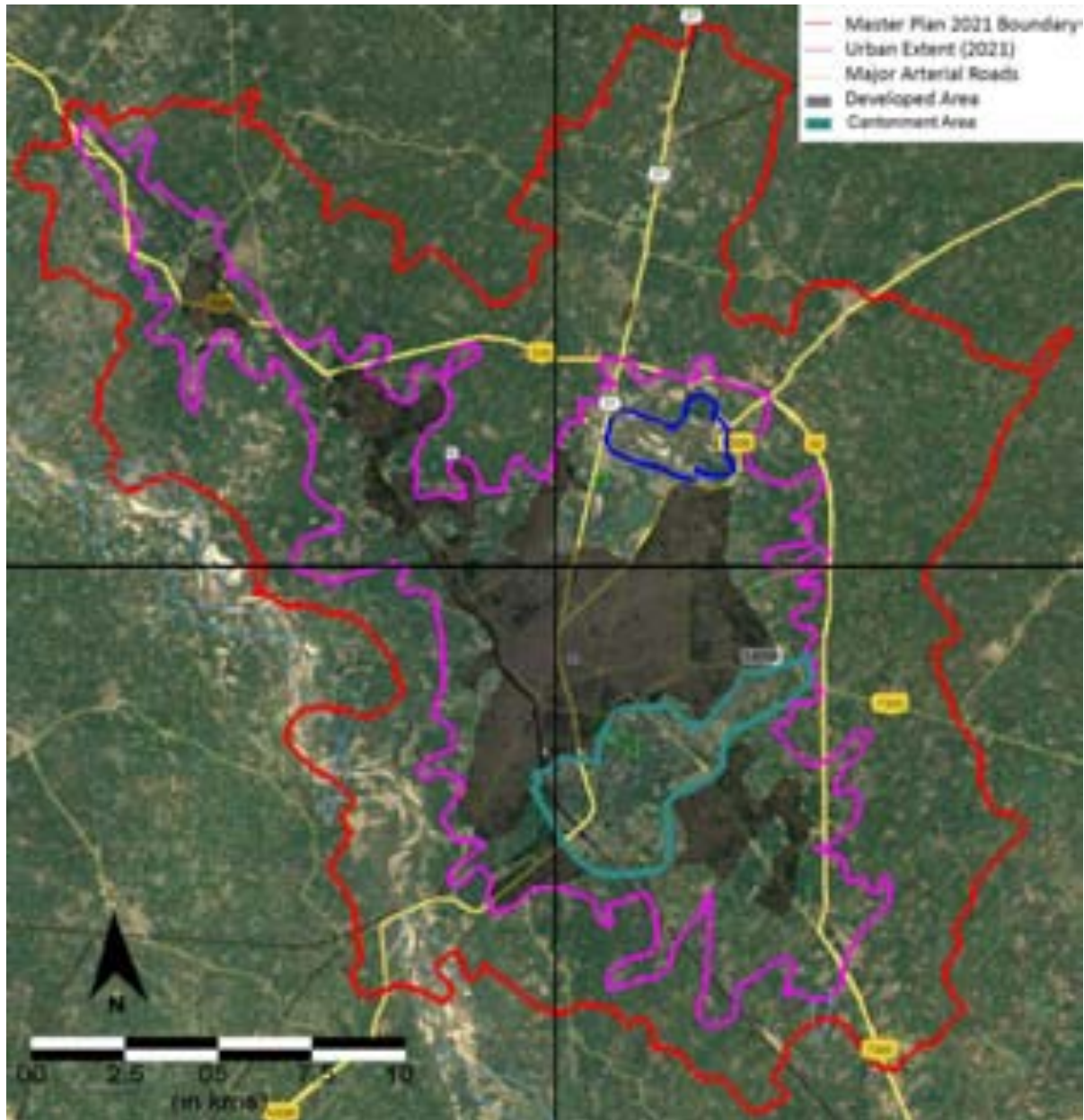


Figure 3-2 Quadrant wise Urban Extent of Bareilly City

Bareilly's extent of urban expansion for the year 2021 is 8027.61 hectares or 39.03% against the area of 20563.82 hectares of development area boundary as sanctioned in Master Plan 2021.

North West Bareilly city can be considered to be developing in a liner form because of major Industrial area in this quadrant which flourishes within 1-2 km radius parallel to National Highway 530 whereas, North-East part of Bareilly city organically shows evidence of development and small residential patches can be seen around the bypass roads which better the connectivity of this zone but is hindered by Airport.

South West region witness concentration of population and is reflected by coverage of more area. Ramganga river on the west is a major factor that limits the urban expansion in this direction. South-East part of the city is highly concentrated and the extent of the urban expansion is most in this quadrant only. It also houses major educational institutes which are located at the cordon point of the main arterial road and bye-pass road.

3.1.3 Demographic profile

3.1.3.1 Census of India Figures

The decadal rise of the population of Bareilly city has shown variable patterns, as indicated in table 1.1. During the decades 1931-41 and 1951-61, it increased by 33.78 percent and 31 percent, and during the decades 1971-81 and 1981-91, it increased by 37.82 percent and 36.07 percent, respectively. However, throughout the decades 1901-1911 and 1911-1921, the population of city fell by 2.70 percent, while the population of the state fell by 4 percent, due to a plague epidemic at the time of the 1911 census and an influenza pandemic in 1918-19.

Table 3-1: Decadal Population of Bareilly City

Census Year	Population	Decadal Population Increase (In No.)	Decadal Population growth rate (in Percentage)
1901	133167		
1911	129462	-3705	-2.78 %
1921	129459	-3	0.00 %
1931	144031	14572	11.26 %
1941	192688	48657	33.78 %
1951	208083	15395	7.99 %
1961	272828	64745	31.11 %
1971	326106	53278	19.53 %
1981	449425	123319	37.82 %
1991	607652	158227	35.21 %
2001	748353	140701	23.15 %
2011	903668	155315	20.75 %

The population of Bareilly city grew at a slower rate during the decade 1941-51, with a growth of just 7.99 percent compared to 33.78 percent and 11.26 percent during the decades 1921-31 and 1931-41, respectively.

This was due to the fact that once the country was partitioned in 1947, there was greater population emigration from Bareilly to Pakistan than refugee inflow from there.

The next decade, 1951-1961, had a significant increase of 31.11 percent, but it then dropped to 19.53 percent in 1961-71. It happened because Moradabad city which is another prominent city in the region attracted more migrants than Bareilly owing to its proximity to Delhi and established it as a trade and commerce center. During this decade Moradabad city experienced a sharp rise of 42.13 percent as compared to decadal growth rates of 13.1 percent and 18.52 percent during the 1941-51 and 1951-61 decades. However, from 1971 to 1981 and 1981 to 1991, Bareilly city grew at a stable pace of 37.82 percent and 25.21 percent, respectively.

During the decade of 1991-2001 and 2001-11, the city witnessed growth rate of 23.15 percent and 20.75 percent respectively.

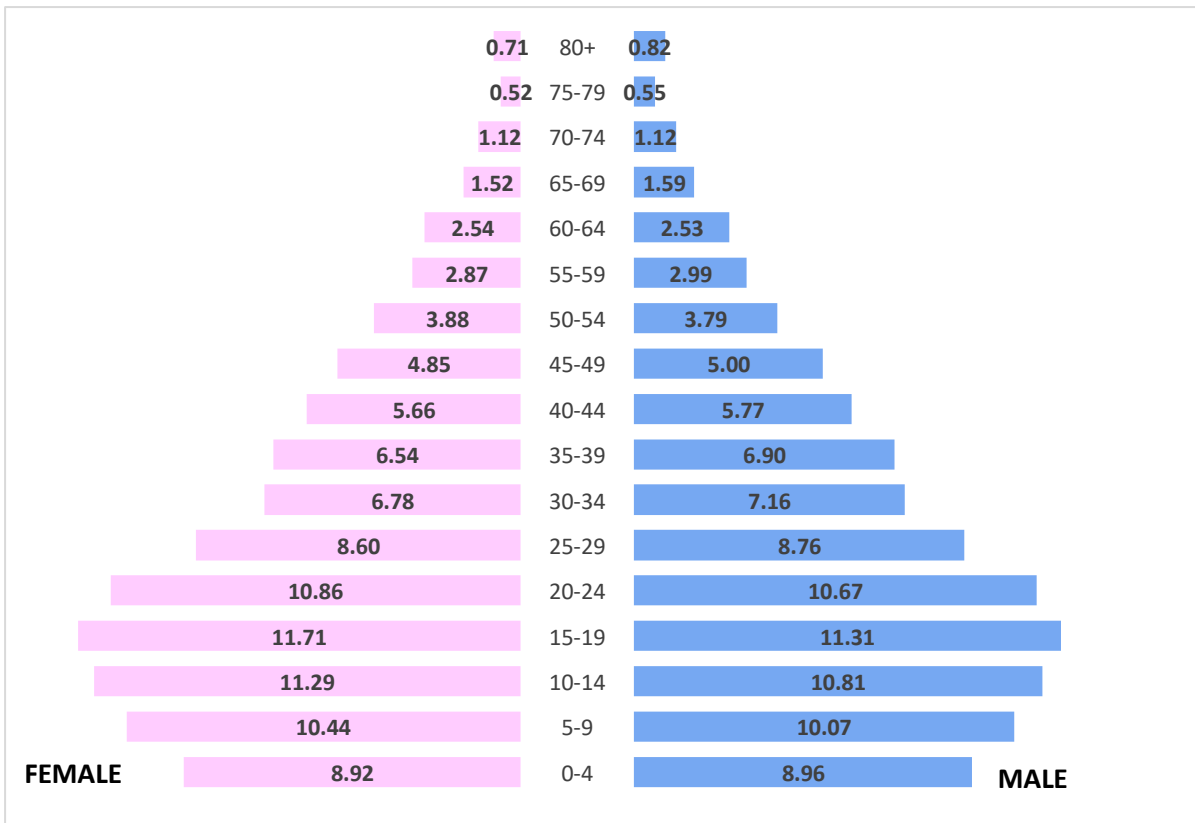


3.1.3.2 Age Sex Composition

According to the 2011 census, there were 895 females for every 1000 males in Bareilly, which is lower than the state urban average of 912 and the national urban average of 940. As compared to the last decade it is stagnant as in 2001, the sex ratio was also 895. While in 1991 and 1981, it was 882 and 830, respectively. Girls have a child sex ratio of 890 to 1000 boys.

Table 3-2: Sex Ratio of Bareilly City

Sr. No.	Year	Population	Males	Females	Sex Ratio
1	1981	394938	210208	184730	830
2	1991	590661	313991	276670	882
3	2001	720315	379871	340444	895
4	2011	903668	476927	426714	895



The population pyramid is similar to the phenomenon of a developing city as it has a wider base. Around 30 percent of the population is under 15 years of age. 63.55 percent males and 62.94 percent belong to working-age group that is between 15-59 years. 22 percent of the population belongs to the age group of 15-24 years. The dependency ratio is found to be 53.22 percent for Bareilly city. The life expectancy of females in the age bracket 70 and above is found to be more than males.

3.1.3.3 Literacy Rate

Literacy is used as a measure of a city's increasing urbanisation rate. As the urban population grows, so does the demand for qualified employees, both technical and non-technical. Furthermore, the urban population is more exposed to and willing to provide educational institutions of all grades and disciplines to their children and youth than the rural population.

In terms of education, the city of Bareilly has a total of 5,63,619 literates, with 3,16,385 men and 2,47,234 females. Bareilly's average literacy rate is 70.17 percent, with male and female literacy rates of 74.06 and 65.75 percent, respectively. The average literacy rate in slums is 51 percent.

3.1.3.4 Household Size

The household size in the year 1981 with population of 4,49,425 and total no. of household 51,055 was 5.91 which increased to 6.43 for the year 1991 for population of 607652. In the year 2001, average household size dropped to 6.20 and in year 2011 it further declined to 5.42 against the national average of 5.00 persons per household. Decline in the household size can be attributed to the shift from joint family to nuclear family.

Table 3-3: Household Size of Bareilly City

S.no	Year	Population	No. of HHs	Average HHs Size
1	1981	449425	51055	5.91
2	1991	607652	94401	6.43
3	2001	748353	102483	6.20
4	2011	903668	166447	5.42

3.1.3.5 Density

Density of 1981 for city was 90 pph which increased to 122pph in the year 1991. In the year 2001, because of the population increase Bareilly city became denser and density increased to 150pph. The core built up area density was 500pph in 2001.

3.1.4 Workforce Characteristics

Table 3-4: Workforce Characteristics of Bareilly City

Year	Population	Growth Rate	WPR (Work Participation Rate)
1991	165827		27.3%
2001	206247	24.40%	27.6%
2011	303392	47.10%	33.6%
2021	330474	21.90%	33.6%

Workforce is a metric that is used to determine the total number of potential workers in a given economy. For Bareilly city in the year 1991, when population was 1,65,827 WPR was 27.3 percent which shows a stagnant growth to 27.6 percent in the year 2001. In the year 2011 WPR increased to 33.6 percent for which credit can be accredited to major increase in manufacturing and retail business sector.

3.1.4.1 Occupational Structure

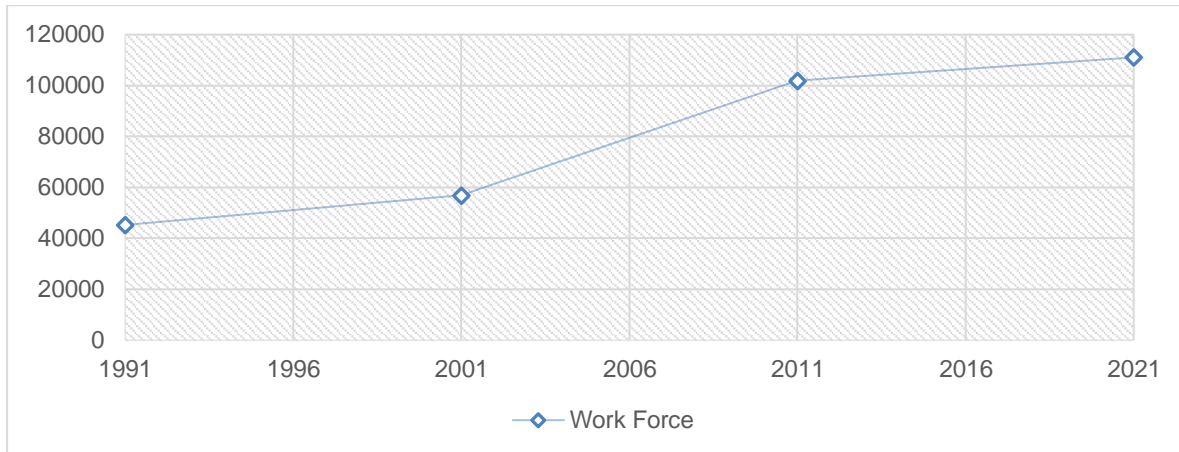


Table 3-5: Decadal employment in various sector

Figure 3-3 Work Force participation decadal growth

S.no	Economic Activity	1981	1991	2001	2011
		As per Census			Projected with average growth rate and share in total working population
1	Primary Services	3472	15006	16500	21237
2	Manufacturing	31731	28326	30937	48543
3	Construction	5373	7906	10312	15170
4	Retail	22352	35421	41249	60678
5	Transport and Communication	18610	15929	24750	36407
6	Others	38343	63239	82498	121357
	Total	119881	165827	206246	303392
	Population	449425	607652	748353	903668

Occupational structure stages the type of economic activities prevailing in the city. Census of India till 1991 provided 6 fold classification for category of workers which are Primary Services, Manufacturing, Construction, Retail, Transport and Communication, Others. Master Plan 2021 projects different sectors of workers for 2011, 2021.

Table 3-6: Category of Workers

Category of Workers	Cultivators	%	Agricultural labourers	%	Household industry workers	%	Other workers	%	Total	%
Male Workers	3933	1.99	7943	4.01	20117	10.16	165932	83.84	197925	65.24
Female Workers	843	2.23	1230	3.25	7738	20.46	28000	74.05	37811	12.46
Total Main workers	4776	2.03	9173	3.89	27855	11.82	193932	82.27	235736	77.70
Male Marginal	968	2.11	3942	8.61	4574	9.99	36314	79.29	45798	15.10
Female Marginal	495	2.26	765	3.50	3633	16.62	16965	77.61	21858	7.20
Total Marginal workers	1463	2.16	4707	6.96	8207	12.13	53279	78.75	67656	22.30
Total	6239		13880		36062		247211		303392	100

As per the census 2011, there are 77.7 percent main workers and 22.30 percent marginal workers. Main male workers are 1,97,925 and 37,811 are main female workers which accounts to 65.24 percent and 12.46 percent respectively of the total working population. Major share in this main workers is of other workers contributing to 83.84 percent followed by household workers 10.16 percent. There are 48,798 male marginal workers i.e., 15.10 percent and 21,858 female marginal workers i.e., 7.20 percent of the total working population.

3.1.4.2 Workforce Participation Rate

Workforce Participation rate for the year 1991 is 27.3 percent which increased slightly to 27.6 percent in the year 2001. WPR in 2011 increased to 33.6 percent which is ahead of Uttar Pradesh state's (Urban) WPR, i.e. 31.2 percent. This is a positive indication for exploring activities that will help in fostering economy of the city as well as region. Female FWPR that is 19.7 percent lies much ahead of the states average FWPR i.e. 11.3 percent. It will reduce the share of dependent population and thus will help in economic growth.

3.1.5 Stakeholder Mapping

3.1.5.1 Statutory Agencies

State Urban Development Agency (SUDA)

The State Urban Development Body (SUDA) has been established as the nodal agency in the Uttar Pradesh government under the Urban Employment and Poverty Alleviation Program Department. With effect from November 20, 1990, this agency is registered under the Societies Registration Act. At the district level, District Urban Development Agencies (DUDAs) have been established.

Various initiatives are being undertaken for the social and economic upliftment of the urban poor. The District Magistrate serves as the ex-officio chairman of the district's Urban Development Agency. Its members are the presidents of all of the district's municipal authorities.



Bareilly Development Authority

Bareilly Development Authority (BDA) Established in 19th April 1977 under the Uttar Pradesh Urban Planning & Development Act 1973. BDA is the principal agency of the Government of Uttar Pradesh responsible for taking ahead the tradition of planned and sustainable development of Bareilly.

Bareilly Development Authority is responsible for preparation and implementation of master plan for the development area. It takes up the infrastructural and basic amenity development for Bareilly besides environment conservation and development of rural areas around the mother city.

Bareilly Nagar Nigam

BNN (Bareilly Nagar Nigam) is a local government entity dedicated to delivering essential community services such as health care, sanitation, education, and housing. The city is organised into four zones and 80 wards, each of which has its own councillor.

Bareilly Cantonment Board

Under the provisions of the Cantonment Act, 2006, the Bareilly Cantonment Board is an autonomous organisation under the Ministry of Defence of the Government of India that performs mandatory and discretionary functions such as education, water supply, birth and death registration, etc.

3.1.5.2 Urban Development and Infrastructure development agencies

National Highway Authority of India

The Ministry of Road Transport and Highways manages the National Highways Authority of India (NHAI), which was founded in 1988 by an Act of Parliament. The National Highways Authority of India (NHAI) was founded by the Indian government as a central authority to build, maintain, and manage the National Highways entrusted to it. In February of 1995, the authority, on the other hand, commenced activities. Major highways passing from the Bareilly city are under the jurisdiction of NHAI.

Uttar Pradesh State Highway Authority (UPSHA)

U.P. State Highways Authority (UPSHA) works for the development, maintenance and management of state highways and related works. U.P. State Highways Authority is constituted by Uttar Pradesh under UP act no. 19 of 2004 dated Aug'13, 2004. All the state highways passing from Bareilly are under UPSHA.

Bareilly Smart City, Bareilly

Smart City, Bareilly is a Special purpose vehicle established as a company incorporated under the companies Act, 2013 and works under MoHUA. The SPV main function is to plan, appraise, approve, release funds, implement, manage, operate, monitor and evaluate the Smart City development projects. Smart City, Bareilly works as a SPV which is headed by a full time CEO and have nominees of Central Government, State Government and ULB on its Board.

UP Housing and Development Board

The UP Housing and Development Board is in charge of enacting and enforcing housing and some urban planning laws and policies. The board is also in charge of providing affordable housing to those in need through the Uttar Pradesh Housing and Development Board.

UPRERA (Uttar Pradesh Real Estate Regulatory Authority)

As a government agency, the State Real Estate Regulatory Authority aims to protect homebuyers while also assisting in the growth of the real estate business. It makes recommendations to the appropriate government on issues concerning the development and promotion of the real estate industry.

3.1.5.3 Industrial Development

District Industries Centre

The District Industries Centre (DIC) is a government relevant government aimed at fostering small village and cottage industries in a certain area. The DIC was founded in 1978. The District Industries Centres, which are located at the district level, provide all of the required services and support to help entrepreneurs develop MSMEs (Micro, Small and Medium enterprises).

Uttar Pradesh State Industrial Development Authority

The Uttar Pradesh State Industrial Development Authority (UPSIDA), originally the Uttar Pradesh State Industrial Development Company, is a government-owned corporation that supports industry and builds industrial infrastructure in Uttar Pradesh. The Uttar Pradesh State Industrial Development Authority is a Government of Uttar Pradesh Public Sector Undertaking. It fosters the development of industrial infrastructure in Uttar Pradesh, as well as assisting in the development of industrial zones and delivering iconic industrial locations. UPSIDA's mission is to enable entrepreneurs establishing enterprises and factories in Uttar Pradesh with modern infrastructure facilities and services.

3.1.5.4 Tourism Development

Archaeological Survey of India

The Archaeological Survey of India (ASI), which is part of the Ministry of Culture, is the country's leading archaeological research and preservation body. The ASI's primary focus is the preservation of ancient monuments, archaeological sites, and national-historical relics. Furthermore, it governs all archaeological operations in the country in accordance with the rules of the Ancient Monuments and Archaeological Sites and Remains Act, 1958, as amicable under the AM & ASR (Amendment & Validation Act 2010). The Antiquities and Art Treasure Act of 1972 is also governed by it. ASI for its effective work is branched into various circles. Bareilly city is currently part of newly formed Meerut ASI Circle.

Airport Authority of India

The Airports Authority of India (AAI) is a statutory agency that is controlled by the Directorate General of Civil Aviation of the Ministry of Civil Aviation of the Government of India. It is in charge of developing, improving, maintaining, and managing India's civil aviation infrastructure. Bareilly civil airport which is a wing of Trishul Air Base is governed by Airport Authority of India.

UP Tourism

Uttar Pradesh Tourism Department is a state government body in India that is responsible for tourism promotion in the state of Uttar Pradesh. The department is also in charge of designing and implementing Uttar Pradesh's tourism policies, which include heritage, air service, and eco-tourism regulations.

3.1.5.5 Private Sector Associations

Indian Industries Association

The Indian Industries Association (IIA) is a powerful representative organisation for Micro, Small, and Medium Enterprises (MSME). It works with business, governmental, academic, and other thought leaders to influence global, regional, and industry agendas. In today's ever-changing and increasingly competitive industrial climate, IIAs focuses on creating an enabling environment for the development of MSMEs. In Bareilly, there IIA functions through its local chapter which has 360 registered units. Bareilly chapter actively participates in works related to industrial development. It also supports its member in getting finance, incentives through state and central policies, advocacy, etc.

Indian Medical Association

The Indian Medical Association is the only body in Bareilly which is a national level volunteer organisation of doctors practising the Modern Scientific System of Medicine. Its primary function is to promote and enhance medical and allied sciences in all of their forms, as well as to improve public health and medical education in India.

Confederation of Real Estate Developers' Associations of India (CREDAI)

The Confederation of Real Estate Developers' Associations of India (CREDAI) is India's top association of private real estate developers. This is an organization which is working in Bareilly to promote with the goal of changing the face of the real estate business with a mandate to promote housing and habitat.

3.1.6 Planning Boundary and Area

3.1.6.1 Bareilly Development Authority

To govern the development and expansion of the city under proper planning, on November 1, 1971, regulated area of Bareilly city was declared under the Uttar Pradesh (Regulation of Construction Works) Act, 1958. This was enacted to limit the unauthorized use and development of land, as well as the increasing tendency of unplanned construction of buildings and low-level colonies. Bareilly development area boundary included the area of municipality and 198 surrounding revenue villages outside the municipality. Aggregately, an area of 36,558.70 hectare was included in the limits of the development authority. In May 2008, the development area of Bareilly was expanded to include an additional 66 revenue communities. As a result, the Bareilly development area encompasses a total of 264 revenue villages.

3.1.6.2 Bareilly Nagar Nigam

In the year 1858, Bareilly Municipal Board was constituted with the purpose to provide basic services. Now, Bareilly Nagar Nigam (Municipal Corporation) is spread in an area of 106.41 sq.km. or 10641 hectares. For efficient performance and better administration, it is divided into 4 zones, these zones are sub divided into 80 wards.

3.1.6.3 Bareilly Smart City

Bareilly Smart City works under two heads, Area Based Development and Pan City Development. Bareilly Municipal Corporation in consultation with citizens identified an area of 50 acres for redevelopment. This redevelopment will result in the replacement of the present built-up environment, as well as the co-creation of a new layout with improved infrastructure through the use of mixed land use and higher density. Pan City Development which focuses to strengthen city wide infrastructure covers an area of 276 sq.km.

3.1.6.4 Bareilly Cantonment Board

Bareilly Cantonment Board is an organisation under Ministry of Defence which was established in 1811 for administrative and civil representation purposes. It covers 4259.42 acres, with a notified civil area of 139.5026 acres included. The board has been divided into seven wards.

3.1.7 Past and Current Planning Initiatives

3.1.7.1 Statutory Master Plan

Master Plan which acts as the statutory document to guide the regulated development of area and to develop different sectors have been formulated and are listed as follows:

Bareilly Master Plan 2001

The first master plan of Bareilly was made in 1971 for the year 1999 which was later revised in the year 1986 and was proposed for year 2001. Before this, the development of the city took place in small pockets all across the city. Development area for the proposed Master Plan 2001 was proposed for 10,500 Hectares to accommodate the projected population of 9.10 lakhs.

Bareilly Master Plan 2021

Master Plan 2021 which was enacted in 2008 was proposed for the year 2021. It aims to facilitate projected population of 14.21 lakhs and covers a total area of 16721.83 hectares (as per Master Plan 2021) and area of 20563.82 (as per the GIS Survey carried out for making Master Plan 2031) . This Master Plan was prepared by Town and Country Planning Department and Bareilly Development Authority.

Bareilly Master Plan 2031 (Draft)

Master Plan 2031 for Bareilly development area is proposed for a population of 18,94,211. Proposed Master Plan covers an area of 22815.76 Hectares and is prepared by V.K. Supreme Consultants Pvt. Ltd.

3.1.7.2 Other Planning Initiatives

Apart from the Master Plan there are several other planning initiatives which focuses on different sectors.

City Development Plan (2003-2023)

City Development Plan with a horizon year 2023 was prepared by Wilbur Smith Associates in association with Bareilly Development Authority.

Slum Free City Plan of Action (Bareilly)

The Indian government launched the "Rajiv Awas Yojana" (RAY) to envision a slum-free India. Under this scheme Slum Free city plan of Bareilly city was prepared Regional Centre For Urban And Environmental Studies – OU, Hyderabad. The plan of action included line estimates for housing and infrastructure shortages, as well as civic amenities proposed in accordance with RAY principles. The report also requested approval and action to produce DPRs.

City Wide Sanitation Plan

The National Urban sanitation Policy launched during 2008 envisages “All Indian cities and towns become totally sanitized, healthy and livable and ensure and sustain good public health and environmental outcomes for all their citizens with a special focus on hygienic and affordable sanitation facilities for the urban poor and women.” In the same line City wide sanitation plan have been prepared by Administrative Staff College of India in partnership of Uttar Pradesh Government and Nagar Nigam Bareilly.

3.1.7.3 Infrastructure Development Schemes

The following are the various infrastructure development schemes for various sectors:

Atal Mission for Rejuvenation and Urban Transformation (AMRUT):

AMRUT was established in June 2015 with the goal of establishing infrastructure that would allow for appropriate and reliable sewage networks and water supplies for urban transformation through the implementation of urban revival projects.

Smart Cities Mission: It was launched on June 25, 2015, with the goal of promoting cities that use 'smart solutions' to offer basic infrastructure, a clean and sustainable environment, and a reasonable quality of life for their residents.

Housing Schemes:

- Pradhan Mantri Awas Yojna (Housing for All)
- Manyawar Shri Kanshiram Ji Shahri Garib Awas Yojna
- Asra Yojna
- Ramganga Nagar Awasiya Yojna
- Rajiv Awas Yojna (RAY)

Commercial Schemes:

- Transport Nagar, Bareilly
- Commercial area in Ramganga Nagar Scheme

3.1.7.4 Industrial Development Scheme

The different industrial development schemes are listed below:

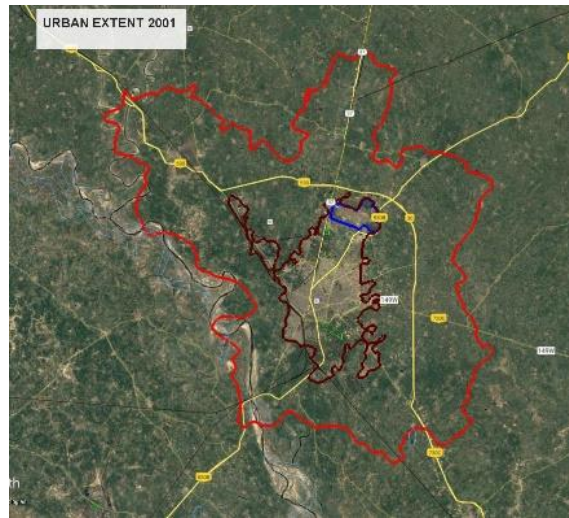
- One District One Product (ODOP)
- Mukhyamantri Yuva Swarojgar Yojana, U.P
- Prime Minister's Employment Generation Programme (PMGEP)
- District Skill Development Plan for Bareilly

3.1.8 Urban Sprawl and Mapping

As per the historical imagery it can be traced out that in 1991, city was concentrated in the core area with some prominent growth centers in the south east and south west area. In 2011, City started growing linear towards the North West taking CB Ganj and Paraskhera Industrial area in the extent of urban expansion. In 2011, there were major expansion witnessed in the city considerably in South West and South East. Growth in North East part of the city was limited and no major growth happened in that area. As per the current status in 2021, urban expansion has followed the same pattern as before and continued to grow linearly on North West side parallel to Nation Highway connecting to Delhi. Major development currently taking place is in South East and South West. Development on the North East can now be traced to be developing at a very slow pace.



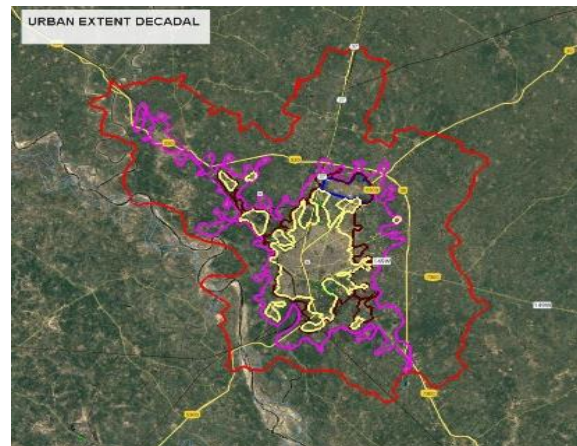
Urban Extent 1991



Urban Extent 2001



Urban Extent 2011



Urban Extent 2021

Figure 3-4 Decadal Urban Extent of Bareilly City

3.1.9 Statutory Plan Analysis

3.1.9.1 Master Plan 2001

Main Proposals

1. Development area was divided into 29 zones called ‘Development Zones’ for which development plans were prepared.
2. Master Plan was again reviewed and revised in 1986, and industrial sector was given a thrust by increasing industrial landuse to 18.8 percent.
3. The revised Master Plan also emphasized on recreational and open areas, thus landuse was increased to 17.32 percent.

Land use breakup (existing and proposed)

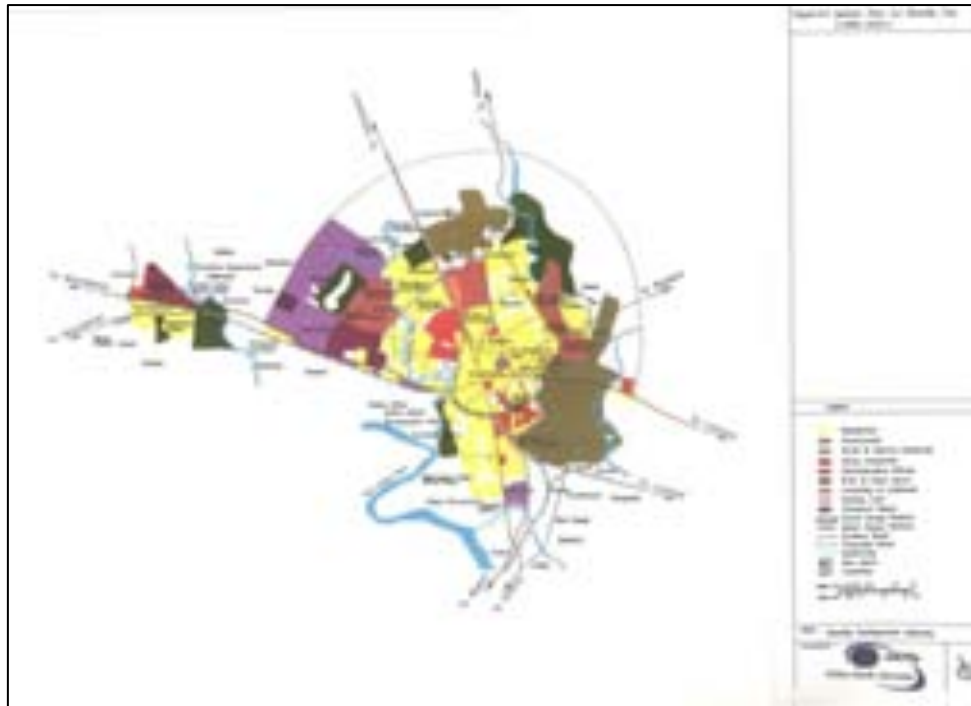


Figure 3-5: Land use distribution in 1971 and Proposed Land use 2001

Table 3-7: Land use distribution in 1971 and Proposed Land use 2001

S. No.	Landuse	Existing Landuse 1971	Proposed Landuse 2001
1	Residential (Built-Up Area)	732.10	3390.00
2	Commercial	58.60	308.90
3	Industrial	53.90	1919.00
4	Official	69.70	252.00
5	Public and Semi Public	217.5	1344.00
5	Traffic and Transportation	199.4	1090.00
6	Parks and Recreational	42.50	1769.00
7	Railways	-	220.00
	Total	1373.40	10211.00

As per the Master Plan 2021 total 10,211 hectares of land was covered under the development area and landuse for the same was proposed. This Projected population for 2011 was estimated to be 9.10 lakhs.

Residential Landuse

As per the Master Plan 2001 proposed residential area was 3390.00 hectares which accounts to 39.17 percent of the total area which very narrowly exceeds the URDPFI guidelines which recommends residential use to be 36-38 percent.

Industrial Landuse

As Industries are the major economy generator and major industrial cities have an average of 18-20 percent as existing industrial landuse. 1919 hectares i.e. 19.17% of the total landuse with a vision to develop the city as major industrial city.

Residential Density

Projected population for the year 2011 was 9.10 lakhs. Proposed residential area was 3390 hectares. Taking both figures into consideration net residential density is reckoned to be 270 pph.

Other Special Uses

Open Areas or Parks accounts to 1769 hectares i.e. 17.32 percent. One of the special uses that is mentioned in the Master Plan 2001 is Railways which was allocated 220 hectares.

3.1.9.2 Master Plan 2021

Main Proposals

1. The roads partly owned by Bareilly Development Authority, U.P. developed by Housing and Development Council or any other agency and the adjoining plot is allotted for residential use. The land use will not be considered commercial.
2. The right of way area of the market road is minimum 12 meters or the width proposed in the master plan, whichever is more, will be considered.
3. Depth of commercial use on the plots located on different right of way from the middle of the road one and a half times of the proposed right of way or the depth of the land owned by the landowner as on January 2007 (whichever is less).
4. Commercial on the ground floor and first floor in the market road, residential will be allowed on the upper floors.
5. For plots of area more than 500 sq.m., basement will be allowed as per rules.

There are proposals related to different landuse which are detailed in their respective landuse analysis.

- a) **Sub Urban Centres:** In order to reduce the increasing pressure on the city area, 08 suburban centers have been proposed with population ranging between 20 thousand to 1 lac. A provision of about 168.0 hectare area has been made under the suburban center land use.
- b) **Storage Facility:** About 106.16 hectares of land was proposed to conduct the activities of storage/warehouse/warehouse smoothly in the city.
- c) **Hospitality / (Town Centre):** A Hospitality center in the middle of Kathgodam road and Pilibhit bypass road is proposed, under which about 65.12 hectares of land has been allocated.
- d) **City Center:** A city center has been proposed between Kathgodam road and Moradabad road for which about 366.16 hectares has been kept reserved.
- e) **Knowledge Park:** A knowledge park has been proposed in the middle area between Kathgodam road to Moradabad road under public and semi public landuse, under which about 369.70 hectares of land has been earmarked.

Land use breakup (both existing and proposed)

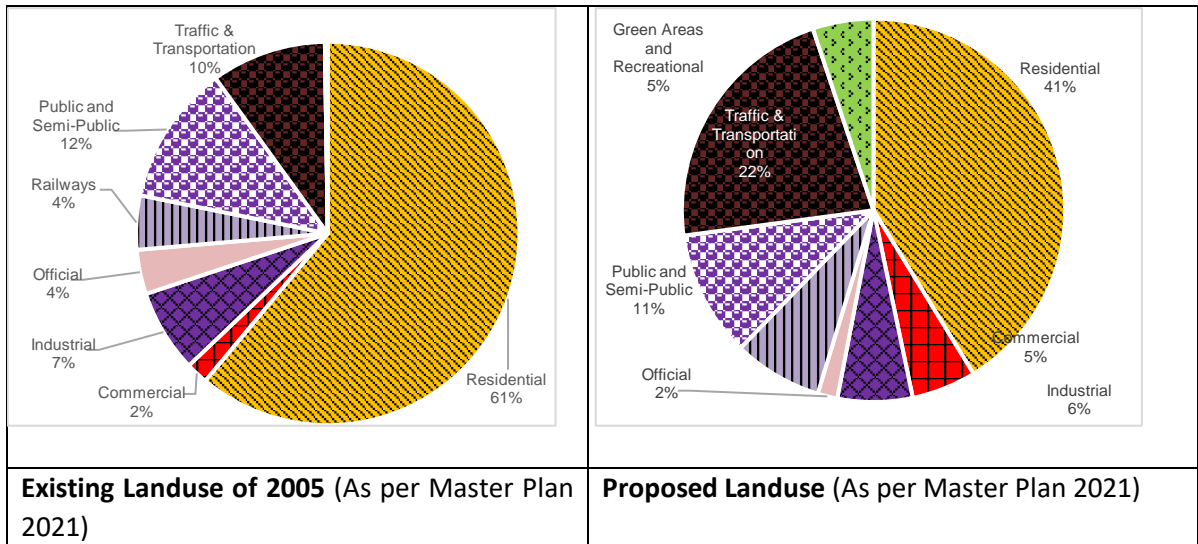


Figure 3-6 Graphical Presentation of Landuse

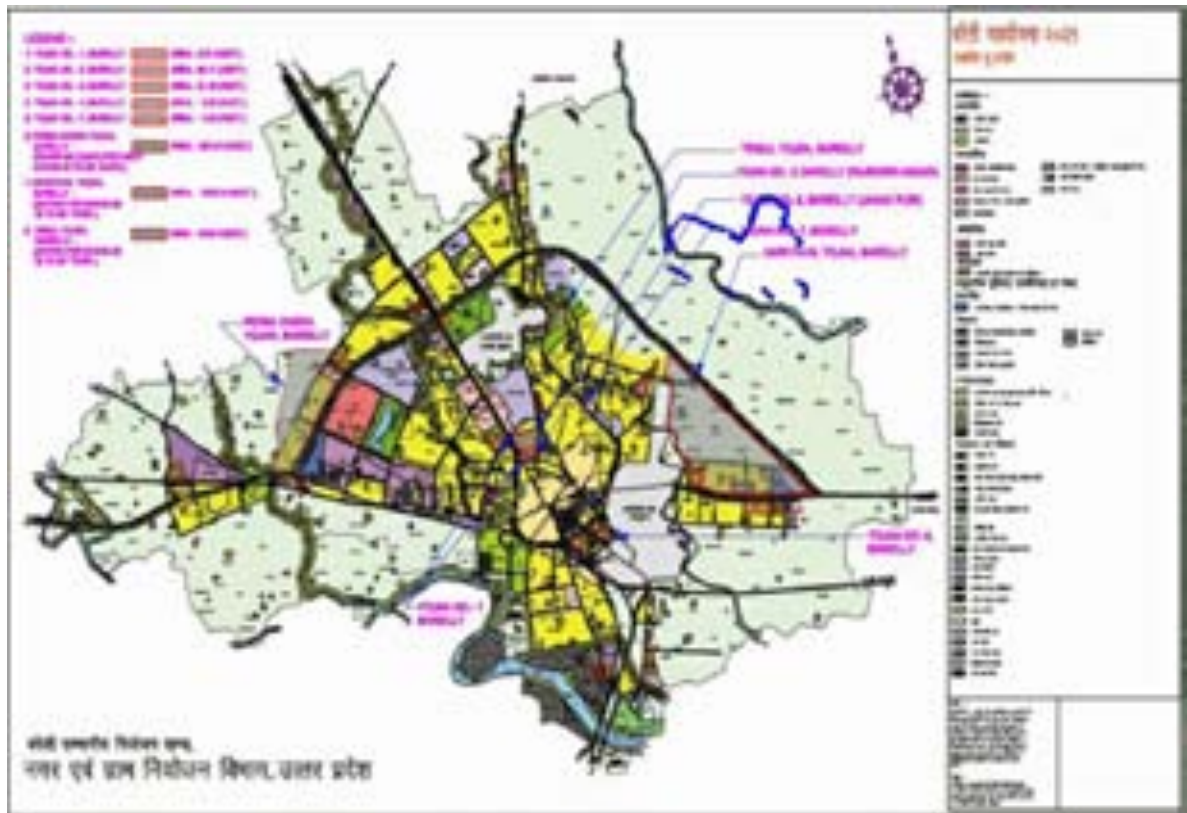


Table 3-8: Details of Notified Area

Sl. No.	Landuse	Proposed Landuse 2021		Development as per Plan		Unauthorized Development		Total Development		
		Area (Ha)	%	Area (Ha)	%	Area (Ha)	%	Area (Ha)	%	
Existing Landuse compared to Proposed Master Plan 2001										
1	Residential (Built-Up Area)	6900.15	41.26	2330.00	22.82	610.56	5.98	2940.56	28.80	
2	Commercial	911.20	5.45	33.44	0.33	56.38	0.55	89.82	0.88	
3	Industrial	1057.42	6.32	286.40	2.80	50.44	0.49	336.84	3.30	

4	Official	279.39	1.67	153.28	1.50	27.04	0.26	180.32	1.76
5	Public and Semi Public	1257.20	7.52	452.24	4.43	118.24	1.16	570.48	5.59
5	Traffic and Transportation	1782.65	10.66	468.00	4.58	-	-	468.00	4.58
6	Parks and Recreational	3675.37	21.98	11.50	0.12	-	-	11.50	0.11
7	Railways		0.00	220.00	2.15	-	-	220.00	2.15
8	Others	857.95	5.13						
	Total	16721.83	41.26	3954.86	38.73	862.66	8.44	4817.52	47.17

Residential Land use

Residential Landuse is been allocated 6900.15 hectares i.e. is 41.26 percent of the total area. Residential areas falling under the old highly populated region of the city Land, such as Sahukara, Jakati Mohalla, Kohadapir Gulabnagar, Alamgiriganj, Shahbad, Shahdana, Shayamganj, Subhashnagar, and others, were included in the Master Plan 2021 plans.

Residential Density

In the entire planning area, the proposed Gross Residential Density was kept at approximately 205 persons per hectare.

Commercial Landuse

With the proposed commercial area in the Bareilly Master Plan 2001's built area, there was a high level of commercial development on a large scale along the main roads and residential areas at a rapid pace, resulting the core built up area functioning as a commercial centre for the entire city. Some of the city's old commercial neighbourhoods include Shayamganj, Bada Bazar, Shahdana Qutubkhana, Kohadapir, Chaupula Aryasamaj Gali, etc. The Master Plan 2001's proposals for the development of various levels of the business sector were not followed. The main business operations of the city of Bareilly were developed in the historic part of town, which satisfied the needs of the existing residential neighbourhoods. Aside from that, commercial development occurred along the banks of the major highways. On the city's Pilibhit road, Mandi was created on the location of a planned market. In the Master Plan 2021, a total of 911.20 hectares of land was earmarked for commercial land use.

Industrial Landuse

Industries have an important role in the process of urbanisation and population growth, which leads to economic, social, and cultural changes in cities. Industries contribute significantly to the city's economic development and the improvement of people's living conditions. The nature of services in many cities changes as a result of industrial development, bolstering the city's economic foundation as a sign of progress. Its immediate impact is reflected in an increase in the general standard of living as a result of job availability. Bareilly city's industrial development didn't advanced in a planned manner due to a lack of order. Industrial units at that time were located near Shayamganj railway station, on Rampur road, and on Badaun road. Industrial units were not developed in the proposed industrial area under the Master Plan 2001. Additionally, large-scale industrial units have been stopped functioning in the Bareilly city area. In the Bareilly Master Plan 2021, 749.10 hectares of land was proposed for small scale industries and 308.32 hectares for large industries making it to total of 1057.42 Hectares for industrial land use.

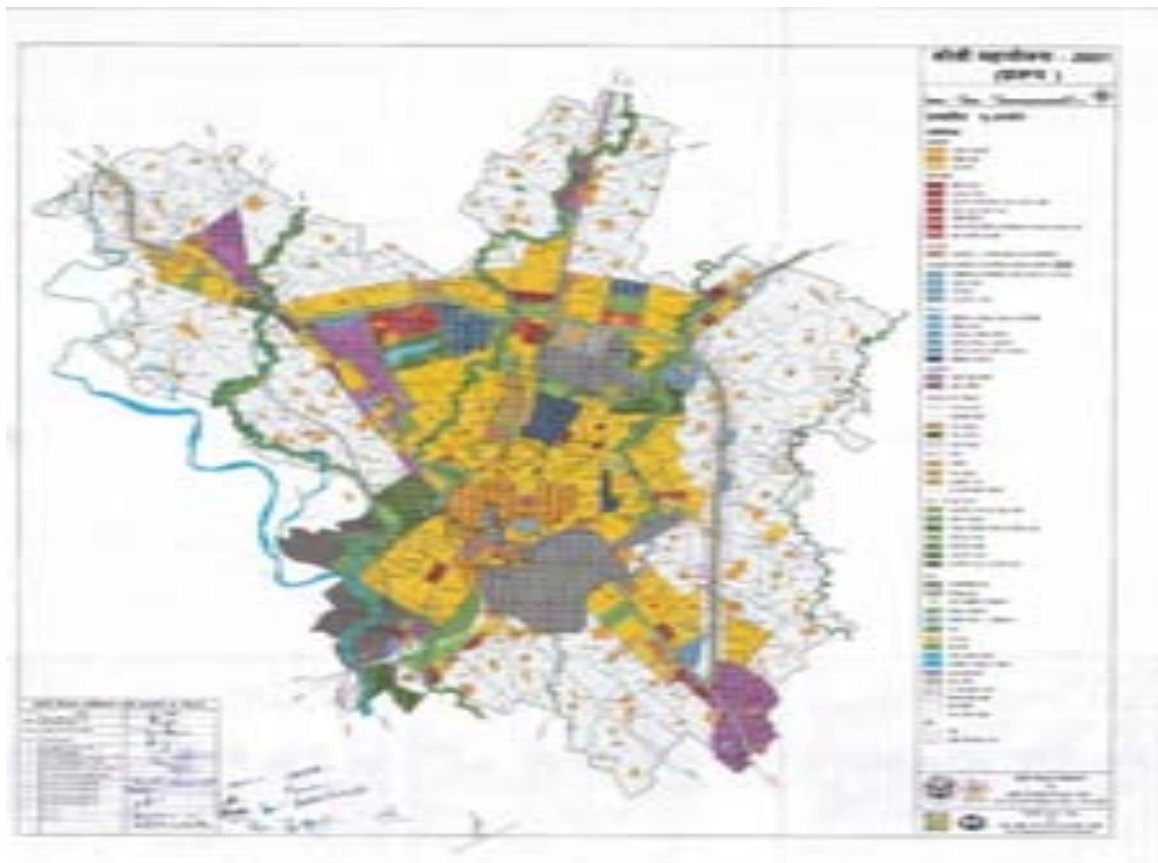
Other Special Uses

The part of the system that permits the government to carry out its policies is administration. Bareilly city, which acts as the district and divisional headquarters, is the principal administrative centre. This is where all district, local authority offices as well as state and central government offices, are located. As per the existing landuse of 2005, on 180.32 hectares of land in the city, office-related activities took place. A total of 279.39 hectares of land was proposed for the Other Special land uses in the Master Plan 2021.

3.1.9.3 Master Plan 2031

Main Proposals

1. For the purpose of community facilities in Bareilly, the land use is mainly proposed on the Bara bypass road and 4 sewerage treatment plants by the Municipal Corporation, respectively 42 MLD Haroongala Village, 20 MLD Bari Nagla Village, 1 MLD Tatarpur village 35 MLD Benipur Chaudhary village and 1 main pumping station which is proposed in Nawada Jogian village. 1 dumping site is also proposed in Sathrapur village.
2. 30 m green belt is proposed on both sides of Nakatiya river, Behgul river in the south and 30 m green belt on both sides of the road leading to Lucknow (National Highway 703C) and between the railway line going to Budaun and Aligarh.
3. NHAI has proposed a bypass, which will connect Badaun Road with Rampur Marg. It will a road of 60 meters and will act as a ring road for the city. Another bypass NHAI will connect Bareilly to Sitarganj, whose width is proposed to be 60 meters.

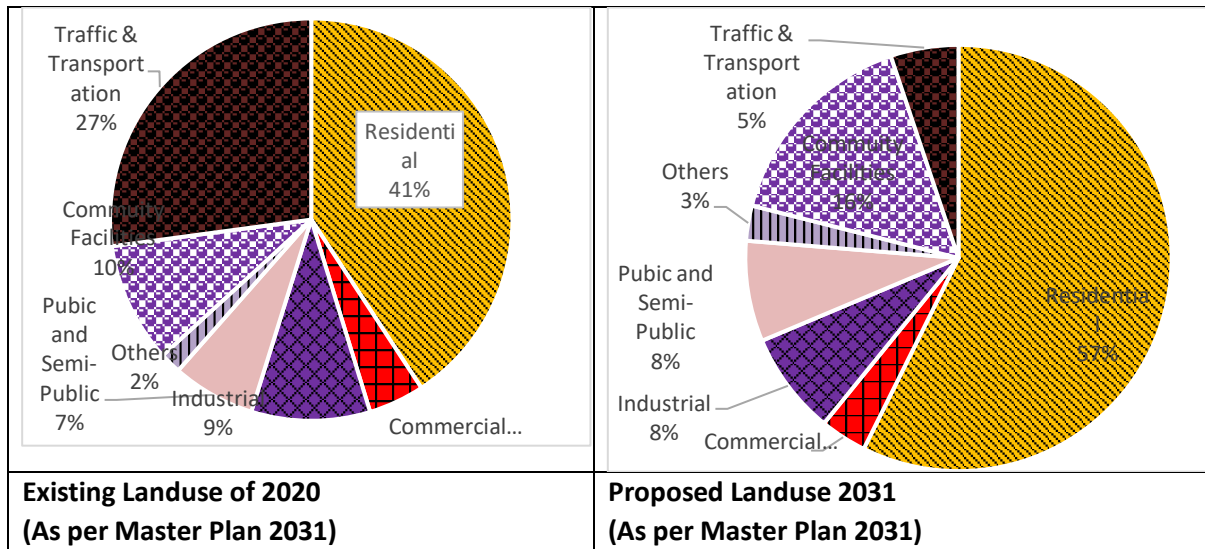


Land use breakup (existing and proposed)

Table 3-9: Proposed landuse for 2031 and existing landuse of 2021



S.No.	Landuse	Existing 2020	%	Proposed 2031	%
1	Residential (Built-Up Area)	3986.51	53.71	8580.37	37.61
2	Commercial	245.75	3.31	945.65	4.14
3	Industrial	541.62	7.30	2008.76	8.80
4	Public and Semi Public	531.1	7.16	1406.82	6.17
5	Official	184.77	2.49	360.00	1.58
5	Traffic and Transportation	1105.49	14.90	2034.72	8.92
6	Parks and Recreational	357.92	4.82	5705.74	6.17
7	Others	468.5	6.31	1773.66	7.77
	Total	7421.66	100	22815.76	100



Residential Landuse

Residential landuse has been proposed in various areas of the city for the estimated population of 1894211 people, as per the proposed land use of the year 2031. Additional to the Master Plan-2021 recommendations which proposed 8129.88 hectares of residential landuse, an extra 450.49 hectares of land has been planned. In Bareilly Nagar, residential land usage is mostly suggested north of Shahjahanpur road, on Bisalpur road, and between Nainital road. Thus, the Bareilly Master Plan proposes a total of 8580.37 hectares of land for the year 2031, which is 37.81 percent of the urbanisation area of 22815.76 hectares in 2031.

Residential Density

The proposed Gross Residential Density was kept at approximately 220 persons per hectare in the entire planning area.

Commercial Landuse

In light of the necessity and potential of various parts of the city in the intersection's business operations, Under the Master Plan-2021 recommendations, an additional 39.72 hectares of land was proposed, accommodating 905.97 hectares of land, for the commercial fulfilment of the expected population of 2031. Commercial land use in Bareilly city is mainly in the north-south of Shahjahapur road and land is proposed for Jhumka commercial center. Thus, the Bareilly Master Plan proposes a total of 945.89 hectares of land for the year 2031, which is 4.14 percent of the urbanizable area of 22815.76 hectares in 2031.

Industrial Landuse

According to the land use of the master plan year-2031, industries have been proposed in different areas of the city for the proposed population. Under the proposals of the Master Plan-2021, which accommodated 1171.86 hectares of land, an additional land of 837.90 hectares is proposed mainly on the road leading to Lucknow in the South-East direction. As a result, a total of 2008.76 hectares of land have been suggested for Master Plan-2031, accounting for 8.80 percent of the year's urbanisation area of 22815.76 hectares.

Other Special Uses

Under the proposals of the Master Plan-2021, an additional land of 47.86 hectares has been proposed by accommodating 1358.96 hectares of land. The Municipal Corporation has proposed land use on the big bypass road and four sewerage treatment plants, 42 MLD Haroongala Village 20 ML and 42 MLD Haroongala Village 20 ML, respectively, for the purpose of community facilities in Bareilly. Village of Bari Nagla Tatarpur Village, 1 MLD 35 MLD Benipur Choudhary Village, 1 Main Pumping Station in Nawada Jogian Village, and 1 Dumping Site in Sathrapur Village are proposed. Thus, the Bareilly Master Plan proposes a total of 1406.82 hectares of land for the year 2031, which is 6.17 percent of the urbanizable area of 2031 i.e., 22815.76 hectares of land.

3.1.9.4 Comparison of Master Plans

Table 3-10: Comparison of Proposed Landuse

S.No.	Landuse	Proposed 2001	%	Proposed 2021	%	Proposed 2031	%
1	Residential (Built-Up Area)	3390.00	33.20	6900.15	41.27	8580.37	37.61
2	Commercial	308.00	3.01	911.20	5.45	945.65	4.14
3	Industrial	1919.00	18.79	1057.42	6.32	2008.76	8.80
4	Public and Semi Public	1344.00	13.16	1257.20	7.52	1406.82	6.17
5	Official	252.00	2.46	279.39	1.67	360.00	1.58
5	Traffic and Transportation	1009.00	9.88	1782.65	10.66	2034.72	8.92
6	Parks and Recreational	1769.00	17.35	3675.87	21.98	5705.74	6.17
7	Others	0.00	0.00	857.95	5.13	1773.66	7.77
	Total					22815.76	100

3.1.10 Residential Landuse Analysis

3.1.10.1 Master Plan 2021

According to the Bareilly Master Plan 2001 recommendations, residential area of 2884 hectares was proposed, with 1105 hectares under low density, 1193 hectares under medium density, and 386 hectares under high density. A total of 3390 hectares of land were suggested for residential use in the master plan, with 728 hectares of urban built-up area included as well.

Illegal structures in diverse land uses have occurred in violation of the Bareilly Master Plan 2001 proposals. Residential construction has taken place on land intended for universities and research institutes. Residential development transpired in the designated green belt between Pilibhit bypass and Pilibhit road, on agricultural land near Pilibhit bypass near airport and near P.A.S on Shahjahanpur

road. Residential colonies have also sprawled near Akashvani Kendra on Badaun Road, and near Alakhnath temple and Divisional park on Nainital road near airport border. Many nursing homes have developed in residential land use, due to which parking and set back have been violated. These are the major areas where land use deviations can be spotted.

Density

In the Bareilly Master Plan 2001, the residential proposal was shown in high density, medium density and low density, but keeping in view the proper development, the residential proposal have been kept the same in Bareilly Master Plan 2021, which means that the residential proposal is not classified as high density, medium density and low density. Residential already built area which is about 728 hectares in which the residential density is reckoned to be 500 persons per hectare, under which 3,53,000 population is accommodated. For the adjustment of the remaining population 10,58,000, about 6174.15 hectares of land is being proposed whose residential density has been kept at 170 persons per hectare in this way. The Gross Residential Density has been kept around 205 per hectare in the entire planning area.

3.1.10.2 Master Plan 2031

In the current chariot, as the city's population grows, so does the population density and family size, causing the city's residential situation to deteriorate. According to a general examination of the city, the majority of the old buildings in Bareilly are in a dilapidated state, the roads are small, and the smooth flow of traffic is a major issue. The residential environment here is of poor quality; nevertheless, new residential zones have been created on the outskirts of the city by the Bareilly Development Authority, Housing Development Institute, and other private developers, which include community facilities, open spaces, and parks. The development of a proper transportation system is due to the right width of the roads.

In comparison to newly constructed areas, the old area of the city, also known as the built-up area, has a lower availability of housing, community services, parks, and open spaces. From 2010 to 2017, the Bareilly Development Authority approved the following colonies: Saidpur Hawkins, Kesar Vatika, Mega City, Tulip Gas, Affordable Housing, Harmony, Kanha Apartment, Kings Court, Sukhdevpur, South City, Sai Infra Mega Dream Homes, G.N. City, KT. India, Navjeevan, Aakash Wildtech, Mega Dream Homes Tower-1, Suryodaya, Park Avenue Regalia Garden, Inter National City. The authority's major schemes include Gandhinagar Yojna, Rajendra Nagar, and BDA Sectors 1,3,4,5,6, and 7. The biggest ones are Pilibhit Bypass Yojna, Civil Lines Yojna, and Mahanagar Colony. Aerocity, Neel Gagan Park, Park Avenue City, Ramangaga Nagar, and Royal Villa are notable residential areas, whereas Nandi Heights, Megha Dream Homes, Kamala Mansions, Rudraksh Apartment, and Safaya Apartment are important multi-story projects. By 2020-2021, residential land use will encompass 3986.51 hectares of land, accounting for 53.71 percent of the developed urban area. Under the proposed residential land use in the Master Plan-2021, an area of 110.76 hectares has been developed under unauthorized land use.

3.1.10.3 Zoning Regulations

Permissible Categories of Different Activities / Uses: The various activities/uses under the major land use zones proposed in the master plan will have the following permission categories:

Permissible Use: The activities/uses which will be ancillary to the major land-uses concerned and would normally be allowed.



Conditionally Permissible Uses: Those actions/uses which will be permissible on the basis of work fulfilment in the respective major land-uses with mandatory means and restrictions and are provided in section 6.4 of the Master Plan Document.

Permissible use with special permission of the Competent Authority: The activities/uses which are reckoned permissible during the approval process from the competent authority, based on the type of construction, infrastructure and the environmental impact on the surrounding area, shall be permissible with special conditions. These are listed in section 6.3.3 of the Master Plan Document.

Prohibited use: All activities/uses that are not permissible in the master plan's major land-uses, those listed as prohibited activities; and all such activities that are not ancillary to the main landuse or in the above three categories, or not included in the category's list of permissible actions, will be prohibited.

Floating Use: The proposal intends to improve the master plan's zoning system's flexibility. Certain activities/uses are proposed in response to a city's changing social, physical, and political context, but are not mentioned in zoning restrictions. For example; Bus/Rail/Air terminal and Whole sale market, etc.

Rainwater harvesting: The existing actual use of natural reservoirs, ponds and lakes, etc. of one acre and above area under any land-use zone proposed in the master plans / zonal development plans of metropolitan areas, for the conservation and recharging of ground water, will stay the same or supplementary thereto. The principal land use of the properties should have been shown differently in the same master plan. After listing all such reservoirs, ponds, lakes, and other bodies of water, it will be necessary to establish appropriate measures for their protection in the master plan / zonal plan layout plan.

Impact Fee: Applications for permission of certain other activities/uses in future plans approved by the Competent Authority in planned developed areas where provision has been made for ancillary activities according to the standards will be received, as per the master plan. The regulations of the Zoning Regulations will apply to such applications. If permission for high use is given in the low land use zone, it will result in an impact on the traffic-transportation infrastructure and environment in the area concerned. The impact fee options were outlined in depth in the master plan.

Exempted Landuse Conversions:

1. For commonly permitted activities/uses in built-up area.
2. Activities to be allowed temporarily (maximum time limit one week) in various major land use zones for public and semi-public facilities.
3. Activities to be developed by government and semi-government agencies in residential land use zones / for uses.
4. There will be no impact fee charged under various policies declared by the state government, such as tourist policy, information technology policy, film policy, and others, for which activities/uses have been approved in specified land-use zones as per government directives. Hotels with a star rating and information technology units / parks with a capacity of up to 5 KVA.

Procedure for Permission:

1. In any of the major land use zones under the development area, before special permission is given for other activities by the competent authority, a committee will examine in each such case and the committee's recommendation will be presented to the authority board.

The said committee will have the following members:

- a. Chief Town and Country Planner, Uttar Pradesh or his representative

- b. Vice-Chairman of the Development Authority or the officer nominated by him
- c. A non-official member of the Authority Board nominated by the Chairman Development Authority
2. The applicant shall not be entitled to any action or use under the zoning regulations. permission

Other Requirements:

1. Development/construction on a site proposed for any action or specific use under the master plan's major land use zones will be permitted only if that action or specific use is relevant to the master plan's major land use zones.
2. Existing forest areas or sites associated to public services and utilities, such as parks, playgrounds, and roads, will remain the same, regardless of where in the proposed master plan they are located.
3. If the zonal development plan or layout plan of a site/ plot has been approved by the competent authority, then in such a case the permissible land use of the said site/plot would be as specified in the zonal development plan or layout plan.
4. All development/construction works in all land use categories must comply with relevant building bye-laws under the proposed zoning regulations.

3.1.10.4 Core Area

Core area of the city is the old densely populated area which mainly comprises of Sahukara, Kohadapir, Gulabnagar, Alamgiriganj, Shahbad, Qutubkhana, Shayamganj, Subhash Nagar and the pre-built area of Madhinath etc. Due to cluster housing, areas adjacent to the Market Centre and historic area have intensive development. This is due to the accessibility of all services, cultural attractions, and employment opportunities. Due to a lack of organised growth, this area is under development pressure.



Figure 3-7: Core Area of Bareilly City

Commercial operations have been established in the Bareilly Master Plan 2001 region by demolishing existing residential structures along the roads and in the accessible open areas, in which the traffic system has been badly affected due to a lack of adequate parking and setbacks, among other things. Determination/development in the built-up use zone under the Zone Regulation of Bareilly Master Plan is permissible on the basis of predominant land use around the site, which has resulted in more commercial development in the core area.

3.1.10.5 Housing Typology

Housing typology in Bareilly city can be categorized as low-density low-rise type of housing except for the core area where housing typology is high density low rise. Housing typology on the different major roads or highways is classified in the study.

Table 3-11: Housing Typology

Cordon Point Name	Density	Structure	Gated / Non-Gated
Pilibhit Road	Medium	G+1, Multistory	Mostly Gated
Bilaspur Road	Medium	G+1, Multistory	Mostly Gated
Shahjahanpur Road	High near Core and Low near Bye Pass	G+1	Very Few Gated Communities
Badaun Road	Low Density	G+1, G+2	Very Few Gated Communities
Rampur Road	Low	G+1	Mostly Gated
Nainital Road	Low	G+1	Mostly Gated



Figure 3-8: Housing Typology at Pilibhit Road: Cordon 1



Multistory Apartment: IVRI Road



Gated Community G+1 Structure: Kurmanchal Nagar



Gated Community G+1 Structure: Jamuna Vihar



Multistory Apartment: Shish Royal Towers



G+1 Structure: Green Park



Gated Community: Mega Mansions



G+1 Structure: Padarathpur



G+1 Structure: Near Eidgah



Gated Community: International City

Figure 3-9 Housing Typology at Badaun Road: Cordon 4



G+1 Structure: Kandharpur



G+1 Structure: Kandharpur



Gated Community G+2 Structure: Doordarshan Residential Colony

Figure 3-10 Housing Typology at Shahjahanpur/Lucknow Road: Cordon 3



Figure 3-11 Housing Typology at Rampur/Delhi Road: Cordon 5



New Residential Society, G+1 Structure: Central Park



G+1 Structure: Near Bye Pass



New Residential Society, G+1 Structure: Yagya Estate

Figure 3-12 Housing Typology at Nanital Road: Cordon 6



3.1.10.6 Role of various government agencies

1) Bareilly Development Authority

The primary objectives of the Authority are:

- Preparation and Implementation of Master Plan for Planned Urban Development
- Development and Control as per Master Plan
- Acquisition of Land and Management for Urban and Housing Development
- Construction and Development of Housings and Housing Schemes
- Provision of Physical and Social Infrastructure

2) Bareilly Municipal Corporation

The municipal corporation provide basic services such as water supply, waste collection, and sanitation to new residential developments. Municipal Corporation does not execute any housing projects.

3) District Urban Development Agency

Under the auspices of the State Urban Development Body (SUDA), the District Urban Development Agency (DUDA) serves as a nodal agency for the implementation and monitoring of different centrally sponsored programmes, such as Urban Basic Services for the Poor.

4) Uttar Pradesh Housing and Development Board

The state government authority intends to plan and create state-of-the-art townships with contemporary amenities, community services, hospitals, educational institutes, and neighbourhood parks and playgrounds at an accessible price for all sections of society. Furthermore, it envisions maintaining a land bank equal to the land created the previous year and facilitating public-private partnerships (PPP) to meet the society's housing demands on time.

3.1.10.7 Current Housing Need

According to the 2011 census, the city's total households (HHs) are 1,66,447, with a population of 8,98,167. The average household size is 5.3. In 2001, there were 1,19,767 HHs, with a population of 7,20,315 people and a household size of 6. The reduction in household size is exactly proportional to the growth in the number of HHs.

Housing, which is one of the most fundamental services for the average person, has been given significant importance in the Rajeev Aawas Yojna and Pradhanmantri Awas Yojna-Urban plan development process. According to the population growth rate over the last three decades, there was a growth rate of 31% from 1981 to 1991, then 22% from 1991 to 2001, and finally 19% from 2001 to 2006. (2001-11). Housing was not upgraded to keep up with population expansion, resulting in a housing shortage.

In 2001, the average household size was 6, but by 2011 it had shrunk to 5. According to the Master Plan 2021, there will be a housing shortage in 2011 since the household size must be 5 instead of 5.3. As a result, the predicted shortage in 2011 is 13,186, based on a household size of 5 and a dilapidation rate of 2%. The same procedure is used to calculate additional household units for the years 2021, 2031, 2041 and horizon year 2051 based on population forecasts, with the results listed in Table 9 below.

Table 3-12: Housing Need for Bareilly

Year	2021	2031	2041	2051
Population	11,01,582	13,43,246	16,39,412	20,03,929

Considered HH Size	5	5	5	5
Households (Proj. Pop / 5)	220316	268649	327882	400786
Additional HH's required (Current HH's – 2011 HH's)	53869	102202	161435	234339
Total Additional HH 's units required including shortage (2011)	67055	115388	174621	247525

Source: Consultant's Analysis as per Census 2011 Data

3.1.10.8 Current Housing Schemes

To cater for the existing housing demand in Bareilly, various housing schemes were implemented or under process by the central government, state government and local authorities. Some major schemes are discussed below:

1. Pradhan Mantri Aawas Yojna (Housing for All):

On June 25, 2015, the Pradhan Mantri Awas Yojana – Urban (PMAY-U) was launched as a flagship mission of the Indian government, which is being implemented by the Ministry of Housing and Urban Affairs (MoHUA). By 2022, the Mission will have provided a pucca house to all eligible urban households in the EWS/LIG and MIG categories, including slum dwellers, addressing the urban housing shortage. It is a Centrally Sponsored Scheme except for Credit Linked Subsidy (CLS) and implemented in three phases. Based on PMAY guidelines, the four verticals are as follows:

- **In-situ Slum Redevelopment using land as Resource:**

Slums must be selected irrespective of the ownership and financially viable slum redevelopment projects must be implemented using FAR, FSI and TDR as tools.

- **Credit Linked Subsidy:**

LIG and EWS will receive a 6.5 percent interest subsidy for a period of 15 years or for the duration of the loan, whichever is shorter. The interest subsidy's Net Present Value (NPV) will be calculated using a 9% discount rate.

- **Affordable Housing Partnership:**

It is a supply-side intervention that provides central assistance to EWS houses being built with different partnerships by States/UTs/Cities at the rate of Rs.1.5 Lakh per EWS house.

- **Beneficiary-led individual house construction or enhancement**

It targets individuals eligible for EWS to either construct new houses or enhance existing houses on their own by availing central assistance of Rs.1.5 lakhs.

2. Asra Yojna: Residential Housing scheme of Uttar Pradesh Government launched in 2013 with an aim to provide low cost affordable housing to minorities and slum dwellers.

3. Ramganga Nagar Awasiya Yojna: Ramganga Nagar Awasiya Yojana is an ambitious project of the Bareilly Development Authority (BDA). It began in 2004 where a total of 12 sectors were developed with a plot size ranging between 72.50 to 1000 square metres.

4. Asra Yojna: Residential Housing scheme of Uttar Pradesh Government launched in 2013 with an aim to provide low cost affordable housing to minorities and slum dwellers.

3.1.10.9 Issues and Constraints

1. There have been deviations in the Landuse Plan.
2. Residential development in the form of unauthorised colonies in non-conforming zones.

3. There has been an increase in slum as the city continues to attract new migrants, many of whom end up in informal communities.
4. In the inner city because of the increasing population pressure, natural growth has occurred, as well as the lure of low rentals and significant numbers of migrant families.

3.1.11 Industrial Landuse analysis

3.1.11.1 Main Industrial products

1. Agro Based Products
2. Chemicals
3. Cotton Textile (Zari Zardozi)
4. Rice
5. Mentha
6. Manjha
7. Surma

3.1.11.2 Main Industrial Zones

S. No.	Name of Industrial Area	Land acquired (In Acre)	Land developed (In Acre)	No. of Plots	No. of Vacant Plots	No. of Units in Production
1	Paraskhera	367.00	367.00	286	00	286
2	CB Ganj	16.9	16.9	73	00	37
3	Bhojpura	38.3	38.3	89	00	28

Figure 3-13: Existing Industrial Area



Paraskhera Industrial Area

Paraskhera Industrial area which is a major industrial area in Bareilly was established by Uttar Pradesh State Industrial Development Authority (UPSIDA) in 1980. The industrial area covers an area of 367.00 acres with 286 plots. No. of Industrial plots which are occupied and are producing goods or products are 286. Major Industries such as Coco Cola, Bharat Petroleum LPG Bottling Plant, Vadilal Ice Creams have their large scale industries in this area only.



CB Ganj Industrial Area

Starting in 1920's, a number of industries were established here, including the Indian Turpentine & Rosin Company (established in 1926) and the Western Indian Match Company (WIMCO; established in 1937), resulting in C.B. Ganj being a key industrial centre of the city. Following India's independence in 1947, the UP State Industrial Development Corporation (UPSIDC) constructed an industrial estate in CB Ganj in 1958. The Indian Turpentine & Rosin Facility, on the other hand, stopped producing in April 1998, while the WIMCO factory, which used to provide matches across the country, closed in 2014. Area covered by CB Ganj Industrial area is 16.9 Acres with 37 units in production as per MSME Report. BL Agro is one of the major agro based industry in this area.

Bhojpura Industrial Area

Bahojipura Industrial Area is one of the important industrial area in Bareilly with 89 plots flourishing in an area of 38.3 acres. This area have different industrial units which produces a wide range of products such as Agro based spice industries, stone cutting and furnishing industries.

Lucknow Road Industrial Area

This is an industrial area which is not covered under any government scheme but is thriving on its own because of the private players. This area have industries which produce chemicals, construction bricks and agro based products.

3.1.11.3 Industrial Typology

Industries in the Bareilly have a mix typology. Large scale industries are major producer of agro based products such as beverages, oil, pickles, spices etc. Other than that, there are industries which produce chemicals and plastic products. In small scale or household industry major products are Cotton products with Zar Zardozi, Manjha, etc. Wood products specially Cane and Bamboo was once a major industry in Bareilly, but now is diminishing because of many constraints and issues.

3.1.11.4 Relevant Industrial Development Schemes

One District One Product (ODOP)

The Ministry of Food Processing Industries launched the 'One District, One Product' (ODOP) programme to assist districts in reaching their full potential, fostering economic and socio-cultural progress, and creating employment possibilities.

The Government of India defined various objectives of the One District One Product Programme of Uttar Pradesh that are given below:



- Preservation and development of local crafts/skills and promotion of the art.
- Increase in the incomes and local employment (resulting in a decline in migration for employment).
- Improvement in product quality and skill development.
- Transforming the products in an artistic way (through packaging, branding).
- To connect the production with tourism (Live demo and sales outlet – gifts and souvenir).
- To resolve the issues of economic difference and regional imbalance.
- To take the concept of ODOP to the national and international level after successful implementation at the State level.

From Bareilly Zari-Zardozi and Bamboo Craft was selected under this scheme.

Prime Minister's Employment Generation Programme (PMGEP)

The Indian government has launched the Prime Minister's Employment Generation Programme (PMEGP), a new credit-linked subsidy programme aimed at creating jobs through the formation of micro firms in both rural and urban areas.

The different objectives to develop the industrial sector of India are as follows:

- To generate employment opportunities in rural as well as urban areas of the country through setting up of new self-employment ventures/projects/micro enterprises
- To bring together widely dispersed traditional artisans/ rural and urban unemployed youth and give them self-employment opportunities to the extent possible, at their place
- To provide continuous and sustainable employment to a large segment of traditional and prospective artisans and rural and urban unemployed youth in the country, to help arrest migration of rural youth to urban areas
- To increase the wage-earning capacity of artisans and contribute to an increase in the growth rate of rural and urban employment

Mukhyamantri Yuva Swarajgar Yojana, U.P

This scheme focuses on self-employment to the youth, by providing a loan of amount up to 25 lakhs per case. Young people native of the state will be able to take loans at low interest and start their own employment.

District Skill Development Plan for Bareilly

A plan for skill gap assessment & action plan for Bareilly was prepared by Industrial training institute in partnership with Uttar Pradesh Government which mapped existing infrastructure and analysed aggregate demand in employment sector.

3.1.11.5 Proposed Industrial Development Schemes/Projects

Smart City Incubation Centre-

Under smart city, incubation centre project is proposed to promote entrepreneurship in colleges and among the city's young is planned, with the goal of triggering and enabling the successful creation of sustainable start-ups in every field of business, as well as reducing outbound migration.

3.1.11.6 Enabling Industrial Infrastructure

1. Raw Material Availability

Industries in Bareilly produce wide range of goods. For Agro based products some industries procure raw material from the agriculture produce of surrounding areas and some large scale industries such

as BL agro etc. import it from various parts of the country. Bamboo Industry and Cotton industry get raw material from the surrounding areas as well as import it from the various parts of the state as well as neighbouring states. Similarly, different industries of Bareilly get raw material from different sources as per the need and availability.

2. Waste Disposal

There are 16 Water Polluting Units in the catchment area of Bareilly out of 16 units, 02 Distillery units based upon Zero Liquid Discharge into any surface water. Rest of 14 units of Bareilly are discharging treated effluent in 2 drains, out of which the Sugar, Waste Paper based Paper units mostly recycle entire treated effluent or use it for irrigation but still there is possibility of discharge to overflow. 3 industries discharge 0.75 MLD treated industrial effluent into Dveraniya Drain, 3 industrial unit discharge 1.6 MLD into Nakatiya Drain. Both these drains carry industrial waste along with domestic waste and are untapped drains with no barmesh installed. As per the Desk Inventory of UPPCB, there are total 20 units producing hazardous waste generating units which produce 767.95 tons/annum out of which 20.9 tons is incinerable hazardous waste, 657.86 tons is land fillable waste and 90.00 tons is recyclable waste. As per the UPPCB report, there is no gap in compliance of the norms and standards in industries of Bareilly city.



Figure 3-14 Transport Nagar, Bareilly

3.1.11.7 Logistics and Transportation

As Bareilly is a producer of Industrial products of various segment, it requires supporting infrastructure to transfer goods and services. Transport Nagar in Bareilly is located on the Lucknow Highway and is a dedicated facility for Transport services.

3. Common Facility Centres

Under the ODOP scheme, a CFC (Common Facility Centre) for readymade garment is been set up with a total budget of 690.60 lakhs. As per the policy CFC should have following facilities:

- Testing Lab
- Design Development and Training Center
- Technology Research and Development Center
- Product Demonstration cum Sale Center
- Raw-Material Banks/Common Resources Center
- Common Production/Processing Center
- Common Logistics Center
- Information collection, analysis and broadcasting Center
- Packaging, Labelling and Barcoding Facilities
- Nodal organization for the development of the selected products for the concerned district to provide services and guidance to completer the missing links of the Value chain

The project is been Implemented by Uttar Pradesh Trade Promotion Authority (UPTPA).

4. Incubation Centers

Rohilkhand Incubation Foundation: Mahatma Jyotiba Phule, Rohilkhand University, Bareilly, founded the Rohilkhand Incubation Foundation (RIF), a Section 8 company. RIF is a non-profit organisation that promotes innovation, incubation, and entrepreneurship. Angel Investors, Start-Ups, Entrepreneurs, Incubatees, Innovators, Creative Minds, Investors, Corporate Partners, Academic Associations, Professional Resources, Mentors, Experts, Consultants, and Advisors are all part of a nationwide network. RIF strives to create and distribute resources like as space and infrastructure, as well as access to business support services and training programmes to help entrepreneurs, incubates, and start-ups improve their abilities. RIF strives to bring together, synergize, and leverage the numerous strands of excellence that drive innovation and entrepreneurship in a dynamic ecosystem that includes research, innovation, industry interactions, and incubation across industries. It is also registered with Government of Uttar Pradesh under Start in UP scheme.

Icon Creatos Incubator Center:

It is the second registered incubation center in Start in UP Scheme and is recognised as incubator under Department of IT & Electronics, GoUP.

CARI - Agribusiness Incubator:

CARI-Agribusiness Incubator and Institute Technology Management Unit are established by Central Avian Research Institute to serve farmers, stockholders and anyone interested in poultry and allied ventures aimed at promotion of poultry & allied businesses through commercialization of technologies and skill development of entrepreneurs through hands-on training.

5. Other Infrastructure

Paraskhera Industrial area which is under UPSIDA has good internal road connectivity but lacks connectivity to the transport nagar because of poor road infrastructure and non-functional railway goods line. CB Ganj Area and Lucknow road industrial area which is been setup privately lacks enabling infrastructure such as roads, drainage etc.

There is also a need to strengthen the supply links for these industries so as to increase the efficiency and boost economy generation.

3.1.11.8 Stakeholder Engagement and Analysis

The following are the important stakeholders who play a significant role in the growth of industry in Bareilly:

1) Uttar Pradesh State Industrial Development Authority (UPSIDA):

The Uttar Pradesh State Industrial Development Authority (UPSIDA), originally the Uttar Pradesh State Industrial Development Company, is a government-owned corporation that supports industry and builds industrial infrastructure in Uttar Pradesh. Roads, drainage, internal power lines, street lighting, and other infrastructural facilities are available in its industrial zones. UPSIDC's mission is to enable entrepreneurs establishing enterprises and factories in Uttar Pradesh with modern infrastructure facilities and services.

2) IIA (Indian Industries Association):

The Indian Industries Association (IIA) is the apex representing body for micro, small, and medium-sized businesses in India (MSME). IIAs motto is to create an enabling environment for the development of MSMEs in today's ever-changing and extremely competitive industrial scenario. All major industries in Bareilly are member of Indian Industries Association.

3) District Industries Centre (DIC), Bareilly:

The District Industries Centre is a key government department that oversees industrial activity in any district. It covers Zari Zardozi, Cane, Bamboo and other household clusters. It is also liable to implement central and state government schemes in the city.

As per the stakeholders there is a need for the following interventions.

1. Provide supporting infrastructure for the industrial area.
2. Lucknow Road industrial area needs to be regularised and provided with robust infrastructure.
3. Logistics and Warehousing facilities to be provided.
4. As the transport nagar (which is the dedicated facility for transport of goods) lies opposite to the major industrial area so there is a need for new dedicated transport area near to the already existing industrial areas.

3.1.11.9 Potential Industrial Products

1. Food Packaging Industry
2. Agro based products
3. Readymade Garments
4. Cane and Bamboo Products
5. Mint (Mantha)

3.1.11.10 Issues and Constraints

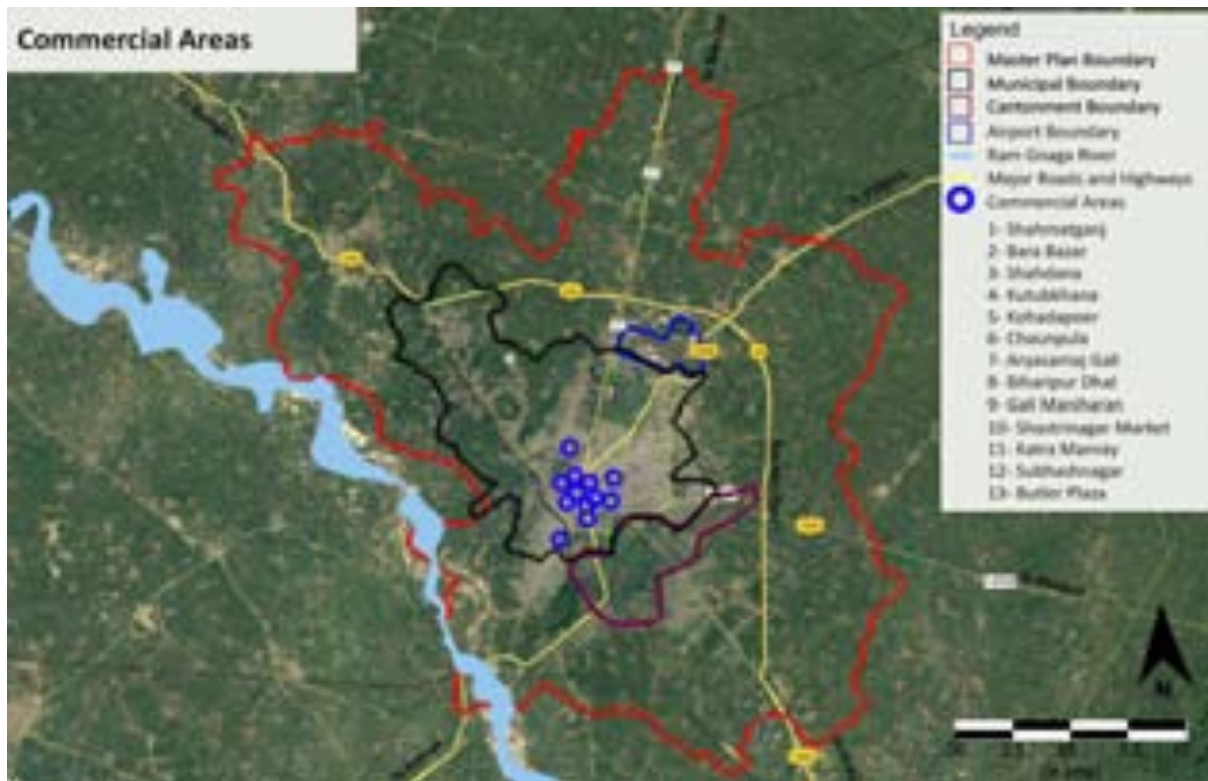
- There is a need for setting up of industrial area for economy generation.
- There is a need to strengthen enabling infrastructure in the industrial area.
- Transport Nagar situated at the opposite direction of the Paraskhera and Industrial area poses a challenge for transportation of goods.
- There is a demand from the stakeholders to connect the industrial areas with the rail transport system.
- For efficient production industries require uninterrupted power supply at lower rate.
- Industrial areas especially Lucknow road industrial area requires better road connectivity.

- Various central/state departments run similar activities/schemes with varied subsidies/limits, which need to be integrated.

3.1.12 Commercial Zone analysis

3.1.12.1 Main Commercial Areas

As per the existing landuse, 245.75 hectares of land comes under commercial land use in the year 2020, which is 3.31 percent of the total urbanized developed land. Commercial Activities are



increasing in old city area as well as in newly developed residential areas. Old commercial areas

Figure 3-15 Commercial Areas in Bareilly

include:

1. Shayamganj Square
2. Fort Crossing to Bada Bazar Square
3. Bada Bazar Square to Shahdana Square
4. Bada Bazar Square to Novelty Cinema Square
5. Bada Bazar Square to Kohadapir
6. Gali Navadan
7. Qutubkhana to Chaupula Square
8. Aryasamaj Gali
9. Bihariपुर Dhal from Jasauli
10. Gali Maniharan and Shastri Market
11. Shayamganj Square to Shahdana Square
12. Katra Manrai Gali, Sailani Bazar
13. Novelty Crossing to Bareilly College Road
14. Subhashnagar

15. Shayamganj to Roadways Workshop
16. Mechanier Road
17. Kohadapir to Kudeshia Gate
18. Kohadapir to Rajendra Nagar Railway, etc.



Figure 3-16 Existing Situation of Commercial Areas in Bareilly

3.1.12.2 Commercial Zone Typology

Retail Markets: The main production and business of Bareilly city is the trade of cane, bamboo furniture, cotton, grain and jaggery. The main market is located near Shayamganj intersection. Bada Bazar as the name suggests is a huge market which caters to the demand of middle income group people. In this market, Tailor Chowk is a very famous market which supplies all items of daily needs. Municipal Corporation's Shastri Bazar is located in the middle of the city and is the main center of trade, which provide garments, crockery and household groceries. Qutubkhana market being a prominent market which caters to all segment with garments, cosmetics, hardware etc. faces severe traffic congestion. This market is also a center of attraction for tourists. Rajendra Market, Kohadapir Market, Civil Lines Market and other Urban Haats are also the main centers of commercial activities.

Fruit Market: There is also a fruit market in Sindhu Nagar near the fruit market and Bareilly college, which is known as Bareilly college vegetable market. Rahman & Punjabi Market is located on Gangapur Road while Sirhind Market is located on Pilibhit Road.

Wholesale Markets: There is one whole sale market in Bareilly which has an area of 4 hectares and is located on Pilibhit road.

Shopping Mall and Complexes: Phoenix United Mall is a well known multi storey mall located in Mahanagar Colony. Sky Bareilly, Novelty Plaza, Bansi Tower etc. are the major shopping complexes in Bareilly city.

3.1.12.3 Master Plan 2021-2031 Proposals

Master Plan 2021

- a) **General Business Center:** For commercial activities, common commercial centers have been proposed at 04 places, for which a provision of 83.72 hectares of land has been made.
- b) **Wholesale Business Center:** In addition to the above mentioned places in the master plan, a proposal has also been made for wholesale business and mandis. In this regard a provision of 62.50 Hectares is made in the Master Plan.
- c) **Motor Market:** An area of 62.30 hectares has been proposed in the Master Plan-2021 for the sale of motor vehicle workshop and parts, which is Kathgodam Marg, Pilimet Marg, Proposed on Shahjahanpur Marg and Rampur Marg.
- d) **Building Material Site / (Suburban Centre):** Due to the storage of building materials located at different places along various roads, there is a lot of inconvenience to the traffic in the urban area and at some places there is a lot of traffic congestion. Keeping this in view, a site of about 16.64

hectares is proposed for building construction material on Kathgodam road. The land has been offered. This will provide convenience in the traffic of the city and building materials will be available at one place only.

Draft Master Plan 2031

a) Jhumka Commercial Center

3.1.12.4 Stakeholder Engagement and Analysis

The following are the important stakeholders who play a significant role in the growth of commercial areas in Bareilly.

Udhyog Vyapar Mandal: It is an elected body which takes care of the demands and needs of the commercial traders and represent their viewpoints in meetings to various bodies.

As per the Stakeholders there are suggestions which are listed below:

1. There is a suggestion to propose commercial landuse along the major arterial roads of the city.
2. Road and Transport network of the core city should be addressed.

3.1.12.5 Issues and Constraints

1. There has been unplanned development in the whole city which have attracted development of unauthorized business activities and commercial activities along the main roads.
2. Traffic congestion problem due to lack of parking and setback.

3.1.13 Social Infrastructure

3.1.13.1 Education

Educational infrastructure includes school education, college education and university level educational institutions. Under school education, there are 422 primary, 175 secondary and 82 higher secondary / inter college level schools in Bareilly Development Area. There are 18 colleges imparting education in Arts, Science and Commerce at the undergraduate level. There are 11 Engineering Colleges, 3 Polytechnic Colleges and 3 Colleges Management Colleges, 3 Medical Colleges in Bareilly city that are imparting professional education. In Bareilly, there are 18 Vocational Training / I.T.I. Industrial Training Institutes, 12 centres providing informal education and 1 school providing education to differently abled persons.

Table 3-13: Status of Educational Institute

Educational Institute	Number
Primary School	422
Secondary Institute	175
Higher Secondary / Intermediate College	82
Degree College / Post Graduate College of Arts	18
Engineering College	11
Medical College	3
Management Institutes/ Colleges	9
Polytechnic Institutes	3
I.T.I./ Vocational Training	18
Informal Educational Institute	12
School for Differently abled	1

Bareilly city houses 4 Universities respectively Mahatma Jyotirao Phule, Rohil Khand University, Invertis University on Pilibhit Bypass Road. Indian Animal Science Research Institute which is a deemed university) is located in Izzat Nagar at 12 kms on Bareilly-Lucknow (National Highway-24). Bareilly International University is located in Chandrapur, Bichpuri.

3.1.13.2 Health

Along with many hospitals and clinics in Bareilly Nagar, the Health Examination Welfare Department of the Government of Uttar Pradesh is providing important contribution in health services. Bareilly has 7 general hospitals, p multi-speciality hospitals, 60 dispensaries/health centres, 29 family health and wellness centres, 15 maternity and child welfare centres, 13 veterinary hospitals, 29 charitable hospitals/nursing homes, 1 mobile health centre, 430 medicine shops.

Table 3-14: Status of Healthacre Facilities

Facility	Number
General Hospitals	7
Multi-Specialty Hospitals	9
Dispensary / Health Center	60
Family Health / Wellness Center	29
Maternity and Child Welfare Center	15
Veterinary Hospital	13
Charitable Hospital / Nursing Home	29
Mobile Health Clinic	1
Medical Shop	430



Figure 3-17 Healthcare Facilities in Bareilly

3.1.13.3 Other

Police Stations: Bareilly city have 29 police stations and outposts along with DIG and A.D.G. of Uttar Pradesh Government office in the city.

Fire Stations: There is only 1 fire station under fire service in Bareilly city, which is located in Civil Lines.

Post Office: There are total 25 post offices in the planning area, Civil Lines post being the main post office in the city

3.1.13.4 Master Plan 2021-2031 Proposals

Master Plan 2021

Medicity: Medicity center has been proposed in the middle area from Pilibhit bypass road to Kathgodam road, under which about 88.40 hectares of land has been proposed

3.1.13.5 Stakeholder Engagement and Analysis

The following are the important stakeholders who play a significant role in the growth of commercial areas in Bareilly.

Indian Medical Association: The Indian Medical Association (IMA) was founded in 1928 as a nationwide volunteer organisation of physicians in India. It has its office in Bareilly which is actively working for the fraternity.

As per the stakeholders, these are the following suggestions:

1. Nursing homes in residential areas should be shut down as these facilities don't abide by the law or should be regularised with charges of impact fees.
2. Possibility of healthcare facilities related to alternative medicine can be looked upon.
3. Medicity in Bareilly is a suggestion so as to cater the regional healthcare needs and to provide tertiary level healthcare.

3.1.13.6 Issues and Constraints

According to the Masterplan 2031, approximately 1257.20 Ha of land was demarcated for the use of public and semi-public requirements but around 531.1 Ha (7.16%) of land has been developed as per master plan 2021.

3.2 Transport & Mobility Infrastructure

3.2.1 Bareilly – A counter Magnet City

Bareilly is the fast-growing city and commercial centre in the northern part of Uttar Pradesh. It is the present headquarter of Bareilly District and gateway to enter Uttarakhand State. The city is well known as Bans-Bareilly, due to bamboo trade & markets. Bareilly acts as counter-magnet city between New Delhi and Lucknow.

Bareilly is surrounded by districts sharing boarder are Pilibhit, Shahjahanpur and Rampur on the western side, Udham Singh Nagar District (Uttarakhand state) in North and Badaun district in South. The Bareilly city is about 252 km distance from Lucknow, 250 km from New Delhi with total population of 898,167 in 2011.

The Bareilly city plays an important role in contribution towards overall economic development of the northern region of UP. There are several industries located in Bareilly, which includes National Brewery Company, Ice Factory, Flour mill, Wood products, Turpentine & Rosin, Sugar Factory and educational Institutions. Bareilly city is well connected by road/rail/air to major cities like New Delhi, Lucknow, Agra and other cities.



Figure 3-18 Location & Connectivity map of Bareilly

3.2.2 Proposed Developments around Bareilly city

3.2.2.1 Ganga Expressway

The proposed Ganga Expressway is a greenfield project with 6 lane connecting western part of the UP with eastern part with total length of 594 km. The expressway will cover Meerut, Bulandshahr, Hapur, Amroha, Sambhal, Badaun, Shahjahanpur, Hardoi, Unnao, Rae Bareli, Pratapgarh and Prayagraj. The Ganga Expressway will link-up with other expressways in the state like Lucknow-Agar Expressway, Purvanchal Expressway, Ballia Link Expressway.

The distance between Bareilly to Badaun is only 50.0 km and as per news article the connectivity to Bareilly city is 36 km (Approx.) from expressway.

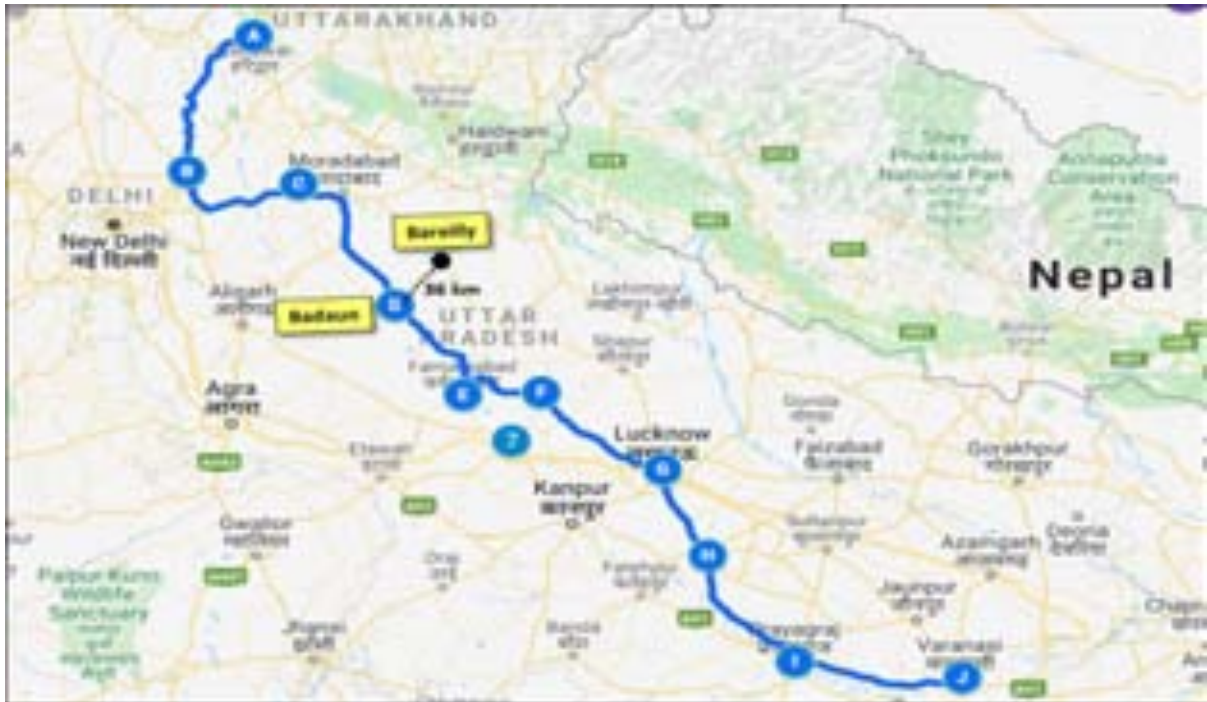


Figure 3-19 Ganga Expressway Alignment

3.2.2.2 Rail Land Development Authority (RLDA)

The Indian railways has a proposal for residential development of 62780 sqm of land at Chaupla Railway colony, Izzat Nagar. The land area is divided into two parts, 1966 sqm to be redevelopment of railway assets and 62780 sqm is to be developed for residential area. The land parcel is a residential cum commercial neighbourhood located beside the police line and Ayub khan market.

3.2.2.3 Ramganga Housing Scheme

Bareilly Development Authority has proposed expansion of Ramganga Nagar Housing scheme on 745 hectares of land. BDA has acquire the land of 12 villages in 2004. BDA has given two option to the farmers, first according to the guidelines of the government, they can take four time the circle rate of the land. Secondly, und the land pooling scheme, he can partner with the BDA of his own free will. BDA will develop their land and will give about 25 percent of the land to the farmers.

3.2.2.4 Parsakhera Industrial Area

UPSIDC has developed Parsakhera industrial estate near Bareilly. UPSIDC has 367 acres of acquired land out of which 273 acres area allotted plots. The parasakhera industrial estate is 98% allocated to the industries of various small and medium scale.

3.2.3 Vehicle Growth in Bareilly

In Bareilly, the registered vehicles have been increased moderately over the past decade. It is significant to note that about 14 to 19% of the vehicle's growth in the past decade. The increase of two-wheelers could be attributed to the comparatively better economic status of people and lack of city-wide good PT system. The increase of private modes demands more road space and has resulted in dense concentration of traffic on roads with limited right of ways.

Table 3-15 Vehicle registration data for Bareilly

Vehicle Registration Data for Bareilly							
Year	Two-Wheeler	Car	Bus	Truck	Others	Total	Growth
2014-2015	47932	5329	72	981	1203	55,517	
2015-2016	47440	6155	79	998	1135	55,807	1%
2016-2017	54016	7146	144	1235	1210	63,751	14%
2017-2018	62757	8592	323	1773	2727	76,172	19%

Source: Bareilly RTO

3.2.4 Transport system & connectivity

The existing transport system of Bareilly city, comprises of road, rail and air transport services. For the purposes of existing situation analysis of the prevailing transport infrastructure, the transport infrastructure can be broadly subdivided into the following components.

3.2.4.1 Air Connectivity

At present, the Bareilly airport is a civil terminal located in Izzat Nager, which is located 6 km from north of Bareilly city. The terminal building is 2500 sqm, and can handle 150 passengers during the peak hours. In future, a new apron 9500 m provides parking space and 150 cars parking is expanded. A new terminal building was inaugurated in 2021 as a part of airport expansion. The building is spread over 3020 sqm and has a capacity to accommodate over 300 passengers. At present, Bareilly is connected with Delhi, Bangalore, Mumbai.

3.2.4.2 Rail Connectivity

Bareilly Junction railway station is the major railway station serving city. Bareilly railway station connects the Lucknow-Moradabad line and Lucknow-Sitapur-Lakhimpur-Pilibhit-Bareilly-Kasganj Line. The Bareilly Railway station is well connected to Lucknow, New Delhi, Amritsar, Ambala, Jalandhar, Pathankot, Gorakhpur, Howrah and other major destinations. Other railways station like Bareilly Cantt, Bareilly City, Bhojipura Junction, CB Ganj, Bohna, Izzatnagar, Parsakhara, Ramganga Bridge secondary railways stations in Bareilly area.

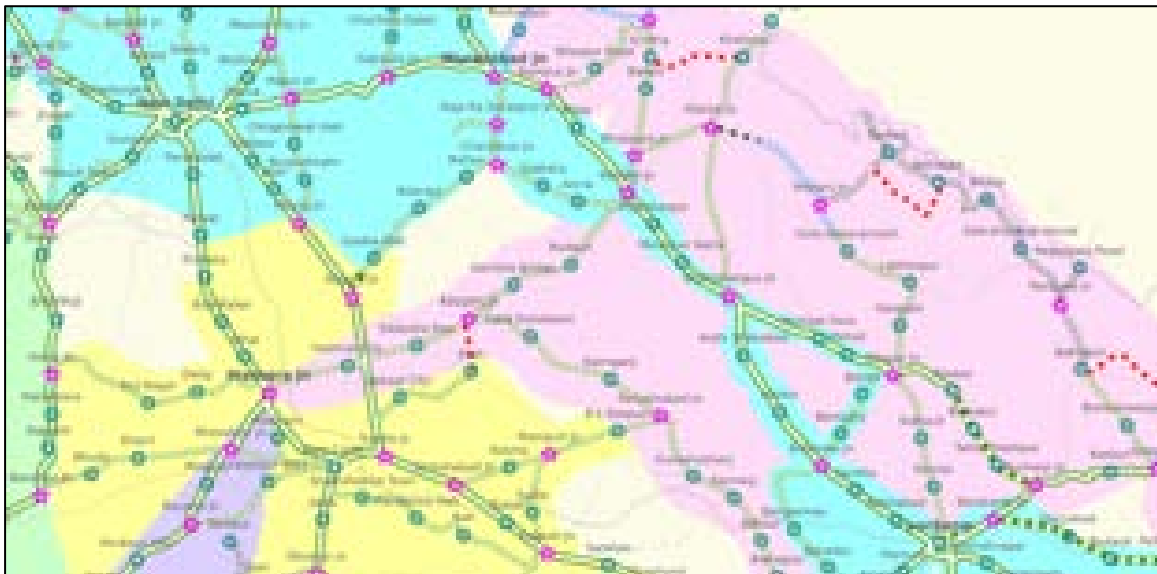


Figure 3-20 Railway Line Connecting With Bareilly

3.2.4.3 Road Connectivity

Bareilly has a radial pattern of road network. National Highways in Bareilly is well connected with its surrounding urban agglomeration, 4 major NH sections pass through Bareilly city are NH-30, NH 530, NH 530-B, NH 730-B and SH 37. The NH 30 is part of Bareilly Bypass section connects Sitarganj on the north and Lucknow, Allahabad on the south. NH 530 connect Bareilly to Rampur Road, NH 530-B connecting Bareilly to Mathura highway, NH 730-B connects (Bareilly to Bisalpur highway. UP state highway no 37 starts from Bareilly to Nainital Road. Bareilly Bypass section starts at Dhantiya village to Rajau Paraspur with total length of 30.1 km.



Figure 3-21 Major Road Network In Bareilly City

3.2.4.4 Major road corridor within Bareilly City

Some of the major roads within the Bareilly city is bearing the impact of traffic are

- a. Stadium Road: Connecting Philibhit Road to Shyam Ganj
- b. Macnair Road connecting Naintal Road to Stadium Road
- c. Pilibhit Bypass road connecting Pilibhit road to Lucknow road
- d. Sh-33 connecting Bareilly to Mathura
- e. Mini-bypass connecting Delhi road to Nainital Road
- f. Shyam ganj to Patel Chowk to CB Ganj
- g. Shyam Ganj to Chaupla Road
- h. Civil Lines Road

3.2.4.5 Parking System in Bareilly

At present situation in Bareilly city, on-street parking has been observed along the major connecting roads/market areas. which reduces the efficiency of road carriageway and leading to the road congestion. In the site reconnaissance survey, major locations like Kutub Khana Road, Choupla Road, Bareilly Railway Station Road, Mini-bypass Road, Satellite Bus Stand area, Ganta Ghar, Gandhi Udhyan and other areas.




Image 13 On-street parking at Mandi Area





Image 14 On-Street parking near Choupla Chauraha

3.2.4.6 Major Junctions within Bareilly City

Some of the Junctions within the Bareilly



	<ul style="list-style-type: none"> ● Name of the Junction: 100 Futa Tiraha (Delapeer) ● Type of Junction: 3 arm ● Directions of the road <ul style="list-style-type: none"> - Eastern side: Towards Pilibhit Bypass - Northern side: Towards Airport - Southern side: Towards Delapeer ● Traffic Signal: Yes; recently installed ● Condition of the road: Fair (Construction Work for road widening) ● Lane Marking: No; Marking is faded. ● Availability of Footpath: No; ● Street Lighting: Yes; ● On-street Parking: No; No spaces provided for parking ● Encroachment: Yes; Temporary Fruits sellers' encroachment
---	---

Junction at 100 Futa tiraha (delapeer)

	<ul style="list-style-type: none"> ● Name of the Junction: Bisalpur Chouraha ● Type of Junction: 4 arm ● Directions of the road <ul style="list-style-type: none"> - Eastern side: Towards Bisalpur - Western side: Towards Jagatpur - Northern side: Towards Pilibhit - Southern side: Towards Satellite ● Traffic Signal: Yes; recently installed ● Condition of the road: Fair ● Lane Marking: No; Marking is faded. ● Availability of Footpath: No ● Street Lighting: Yes; ● On-street Parking: Informal Parking in the side of the road ● Encroachment: No.
	<ul style="list-style-type: none"> ● Name of the Junction: Patel Chowk ● Type of Junction: 5 arm ● Directions of the road <ul style="list-style-type: none"> - Eastern side: Towards Nagar Nigam - Western side: Towards Choupla Chowk - Northern side: Towards Civil Lines Market - Southern side 1: Towards Chowki Chouraha - Southern side 2: Towards Car Bazar ● Traffic Signal: Yes; But Not working. ● Condition of the road: Bad (Under Construction) ● Lane Marking: No; Marking is faded. ● Availability of Footpath: only on one road ● Street Lighting: Yes ● On-street Parking: Informal Parking in the side of the roads ● Encroachment: No.



Junction at Bisalpur Chouraha

Junction at Patel Chowk

	<ul style="list-style-type: none"> ● Name of the Junction: Chowki Chowraha ● Type of Junction: 5 arm ● Directions of the road <ul style="list-style-type: none"> - Eastern side: Towards Gandhi Udhyan Chowk - Western side: Towards Railway Junction - Northern side 1: Towards Patel Chowk - Northern side 2: Towards Bareilly College - Southern side: Towards Cantt ● Traffic Signal: Yes; ● Condition of the road: Fair ● Lane Marking: No; Marking is faded. ● Availability of Footpath: Available but do not have proper movement. ● Street Lighting: Yes ● On-street Parking: Informal Parking in the side of the roads ● Encroachment: No.
	<ul style="list-style-type: none"> ● Name of the Junction: Delapeer Tiraha ● Type of Junction: 3 arm ● Directions of the road <ul style="list-style-type: none"> - Eastern side: Towards Airport - Western side: Towards IVRI Road - Southern side: Towards Stadium Road ● Traffic Signal: Yes; Recently Installed ● Condition of the road: Fair ● Lane Marking: No; Marking is faded. ● Availability of Footpath: Available but only on one side ● Street Lighting: Yes ● On-street Parking: Informal Parking in the side of the roads ● Encroachment: Yes; Temporary Fruits sellers' encroachment ● Issue: Traffic Junction



Chowki Chowraha



Delapeer Tiraha


	<ul style="list-style-type: none"> • Name of the Junction: Selection Point Chowk • Type of Junction: 4 arm • Directions of the road <ul style="list-style-type: none"> - Eastern side: Towards Stadium Road - Western side: Towards Sheel Chowraha - Northern side: Towards Delapeer - Southern side: Towards Koharapeer • Traffic Signal: Yes; Recently Installed • Condition of the road: Fair • Lane Marking: Yes; • Availability of Footpath: Not Available; • Street Lighting: Yes; • On-street Parking: Informal Parking in the side of the roads. • Encroachment: No. • Issue: Improper Circulation of Traffic.
	<ul style="list-style-type: none"> • Name of the Junction: Sheel Chouraha • Type of Junction: 4 arm • Directions of the road <ul style="list-style-type: none"> - Eastern side: Towards Selection Point Chowk - Western side: Towards Janakpuri - Northern side: Towards Rajendra Nagar - Southern side: Towards Ram Janki Mandir • Traffic Signal: Yes; Recently Installed • Condition of the road: Fair • Lane Marking: Yes; Marking is faded. • Availability of Footpath: Available on one road. • Street Lighting: Yes; • On-street Parking: Informal Parking in the side of the roads. • Encroachment: No. • Issue: Improper movement for pedestrians

Selection Point Chowk

Sheel Chouraha

	<ul style="list-style-type: none"> ● Name of the Junction: Circuit House Chouraha ● Type of Junction: 4 arm ● Directions of the road <ul style="list-style-type: none"> - Eastern side: Towards Circuit House - Western side: Towards SSP office - Northern side: Towards Chowki Chowraha - Southern side: Towards Post office ● Traffic Signal: Yes; Recently Installed ● Condition of the road: Fair ● Lane Marking: Yes; ● Availability of Footpath: Available on 2 roads. ● Street Lighting: Yes; ● On-street Parking: Informal Parking in the side of the roads. ● Encroachment: No. ● Issue: Improper vehicular movement
<p style="text-align: center;">Circuit House Chouraha</p>	<ul style="list-style-type: none"> ● Name of the Junction: Gandhi Udyan Chouraha ● Type of Junction: 4 arm ● Directions of the road <ul style="list-style-type: none"> - Eastern side: Towards Satellite - Western side: Towards Chowki Chowraha - Northern side: Towards Shyamganj - Southern side: Towards Cantt ● Traffic Signal: Yes; Recently Installed ● Condition of the road: Fair ● Lane Marking: Yes; Marking is faded. ● Availability of Footpath: Available on 1 road. ● Street Lighting: Yes; ● On-street Parking: Informal Parking in the side of the roads. ● Encroachment: No. ● Issue: Improper vehicular movement
	
<p style="text-align: center;">Gandhi Udyan Chouraha</p>	

 <p style="text-align: center;">Choupla Chouraha</p>	<ul style="list-style-type: none"> • Name of the Junction: Choupla Chouraha • Type of Junction: 5 arm • Directions of the road <ul style="list-style-type: none"> - Eastern side: Towards Chowki Chowraha - Western side: Towards Qila - Northern side 1: Towards Ghantaghar - Northern side 2: Towards Patel Chowk - Southern side: Towards Railway Station • Traffic Signal: No • Condition of the road: Bad; Under Construction • Lane Marking: Not Available • Availability of Footpath: Not Available • Street Lighting: Yes; • On-street Parking: Informal Parking in the side of the roads. • Encroachment: No. • Issue: Improper vehicular movement
 <p style="text-align: center;">Satellite Chowraha</p>	<ul style="list-style-type: none"> • Name of the Junction: Satellite Chowraha • Type of Junction: 3 arm • Directions of the road <ul style="list-style-type: none"> - Eastern side: Towards Shyamganj - Northern side: Towards Pilibhit Bypass - Southern side: Towards Lucknow Road • Traffic Signal: Yes; Recently Installed • Condition of the road: Poor • Lane Marking: Yes; Marking is faded. • Availability of Footpath: Available on 1 road. • Street Lighting: Yes; • On-street Parking: Informal Parking in the side of the roads. • Issue: Improper vehicular movement Congestion

	<ul style="list-style-type: none"> • Name of the Junction: Jhumka Chowk • Type of Junction: 3 arm • Directions of the road <ul style="list-style-type: none"> - Eastern side: Towards Lucknow - Western side: Towards Delhi - Southern side: Towards Bareilly • Traffic Signal: No • Condition of the road: Bad; Under Construction • Lane Marking: Not Available • Availability of Footpath: Not Available • Street Lighting: Yes; • On-street Parking: Informal Parking in the side of the roads. • Encroachment: No. • Issue: Entry Point of Bareilly
---	---

Jhumka Chowk

3.2.5 Public Transport System in Bareilly

At present in Bareilly city, 2 no of bus stands (Old bus stand and Satellite Bus Stand). Both the Bus Stand are in functional, as most of the Bus frequency is from Satellite Bus Stand. The old Bus stand is located in civil lines cater bus plying on routes towards Moradabad, Haldwani, Delhi, Naintal, Dehradun, Agra, Jaipur areas. Satellite bus station caters the bus services towards long distance to Kanpur, Lucknow, Prayagraj, and others.



Image 15 Existing condition of Satellite Bus Stand

UP State Transport Department has commissioned project for provisioning of electric buses in Bareilly city under FAME 2 Scheme, which will be taken up in two phases where phase 1 will house 23 locations for bus shelters and phase 2 will house 30 locations for bus Shelters. The Intra city bus route have been identified and passes throughout the Bareilly area.

Table 3-16 City Bus routes in Bareilly

City Transports Services Ltd						
Route Name	Route Descriptions	Distance (KM)	Running Time (Min)	Layoff Time	Frequency Headway (Min)	Number of Buses required
Bareilly Junction to Phonix Mall	Bareilly Junction to Air Force Station via Chowki Chauraha, Gandhi Udhyan, Satellite Bus Stand, Bisalpur	11.9	60	320	20	5

City Transports Services Ltd						
Route Name	Route Descriptions	Distance (KM)	Running Time (Min)	Layoff Time	Frequency Headway (Min)	Number of Buses required
	Chauraha, Ruhelkhand University, Phonix Mall					
Bareilly Junction to Cental Jail Colony via Swale Nagar	Bareilly Junction to Nagarya Prikshit via Chopla Chauraha, Dulha Miyan Mazar, Qila Pul, Swale Nagar Mini Bypass, Izzat Nagar Railway Station, Central Jail Colony	12.5	65	320	20	4
Bareilly Junction to Persakhada via Qila Pul	Bareilly Junction to Parsakhada via Chopla Chauraha, Dulha Miyan Mazar, Qila Pul, Satya Prakesh Park, CB Gunj Police Station	13.6	70	280	20	5
Bareilly Junction to Fruit Mandi via Delapir Chauraha	Bareilly Junction to peerbhora Air Force Station via Chowki Chauraha, Gandhi Udhyan, Vikas Bhavan, Shyam Ganj Flyover Bridge, Eit Pajaya Chauraha, Bareilly Stadiam, Delapir Chauraha, Fruit Mundi	10.8	55	280	20	6
Bareilly Junction to Badaun Road Patel Vihar	Bareilly Junction to Badaun road Hindustan Petrol Pump via City Mall Godown, Chopla Chauraha, Chaurasi Ganta Mandir	5.1	25	320	20	5

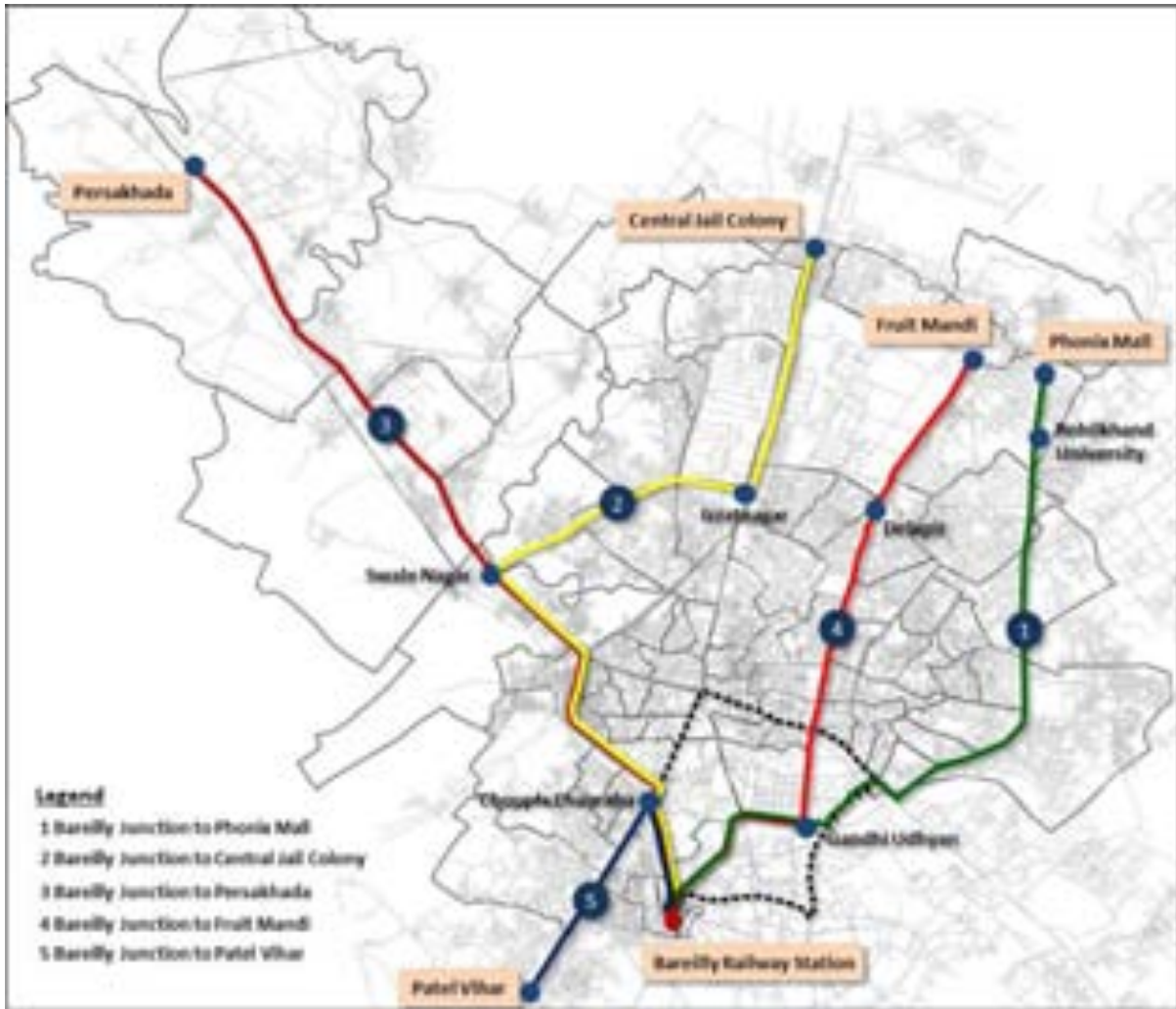


Figure 3-22 Location map of Bus route in Bareilly

3.2.6 SWOT Analysis of Bareilly Transport situation

Table 3-17 SWOT analysis of the Bareilly Transport situation

Strengths	<ul style="list-style-type: none"> a. Most of the road stretches in the Bareilly city are between 12 to 24 m RoW and thus there is a lot of scope of Development. b. It has been observed that several streets are vibrant in terms of informal sectors and there is a scope to facilitate such activities in efficiently planned manner without disturbing their order. c. Carriageway is in good condition at most of the road stretches and thus do not require intervention until it is necessary. d. A Holistic development of the roads along with the junction development project which will create a consolidated and uniform urban infrastructure system.
Weakness	<ul style="list-style-type: none"> a. Encroachment of footpath area in present state by vendors and shop owners may put the proposal at risk if enforcement is not done properly b. Irregular Parking Patterns: Common pattern noticed in Bareilly is, the citizens prefer on-street parking over off-street parking primarily because the former is cheaper than the latter. This leads to irregular parking all over the road width especially during the peak hours. In addition to this there is lack of parking bays due to which the commuter parks the car on road.



	<ul style="list-style-type: none"> c. Lack of Segregation of Traffic Modes: It has been observed in the Bareilly city that a large no. of citizens commute via two-wheelers and auto rickshaws though detailed survey of all the roads have not been done. These rickshaws tend to create a havoc on the road sides and regulate the fares according to their conveniences. Also, the citizens commuting by cars are not able to move freely due to hindrance caused by the e- rickshaws. d. Congestion during Peak Hours: The citizens generally park their vehicles on the roadsides. So, during peak hours, i.e., the morning and evening there is congestion on the roads creating unmanaged situation if not under policing. e. Lack of Pedestrian Clarity due to hawking areas: Footpaths do not exist, as they are either too narrow for people to walk on, or have been encroached by hawkers, forcing pedestrians onto the roads. f. Parking availability and the parking needs have huge gap and thus most of the roads are occupied by vehicles blocking the carriageway
<p style="text-align: center;">Opportunities</p>	<ul style="list-style-type: none"> a. Spaces along the Road carriageway could be made into public realm which will not force the pedestrian to use the roads and hence provide safety. b. There is a chance for provision for several activity zones respecting the local nature of the city and providing to all irrespective of class. c. There is an opportunity to provide designated spaces for public amenities like toilets, benches, water atms etc. d. With this proposals road can be envisioned more than just infrastructure for movement and can become one of the public spaces for the people of Bareilly e. Intelligent traffic management, clear crossings, foot over bridges, signage displays at every interval, street furniture such as dustbins bollards.
<p style="text-align: center;">Threats</p>	<ul style="list-style-type: none"> a. As it is clear the sewer trunk line shall be made before the roads proposals and the carriage way shall be disturbed. b. Encroachment on the roads needs to be controlled through effective policing. Unavailability of which may lead to design failure c. Illegal parking may continue, if parking spaces provided are not enough to cater to the demand

3.3 Physical Infrastructure

3.3.1 Environmental Service

3.3.1.1 Water Supply:

3.3.1.1.1 Overview Of Existing Water Supply System:

Bareilly city is provided with water supply from ground water sources such as bore wells fitted with hand pumps or power pumps. Existing installed capacity of water supply to the city is about 143 MLD, where the volume capacity is 138 MLD and overall demand for city is 154 MLD in year 2021. The water treatment plant is not in operation. Water is only supplied with all 51-percentage coverage. Total billable volume of water supply connection is 109 MLD.

3.3.1.1.2 Design Period:

This vision Plan has been prepared for a design period of 30 years with the initial stage taken as the year 2021, mid stage as the year 2036 and ultimate stage as the year 2051. Intermittent five years duration projection have been also assessed as under.

3.3.1.1.3 Population Projection:

The trend of city population based on last five decades is established below

Population Growth: The town population of Bareilly M.C. was 903,668 as per census 2011. The town has experienced positive population growth in the last decade (42.30% from 2011 to 2021), compared to 26.4 % average decadal growth from 1951 to 2021. 2021 Population has been considered by referring Master Plan population, Master Plan Bareilly had estimated population 12,91,000 which is also close referred 2021 population. 11,40,717 and following Parabola Population Projection estimation for 2051 project horizon as under.

Table 3-18 Population Growth of Bareilly M.C. Town

Year	Population (Nos.)	Decadal Growth (%)	
1901	133,167		
1911	129,462	-2.78	
1921	129,459	0.00	
1931	144,031	11.26	
1941	192,688	33.78	
1951	208,083	7.99	
1961	272,828	31.11	
1971	326,106	19.53	
1981	449,425	37.82	
1991	590,661	31.43	
2001	720,315	21.95	
2011	903,668	25.45	
2021	11,40,717	42.30	
Estimated Population			
Year	Final Population	Master Plan 2031 Estimated	Amrut 2.0
2021	11,40,717	11,40,717	10 lacs

Year	Population (Nos.)	Decadal Growth (%)	
2026	12,46,391		
2031	14,31,466	14,31,465	
2036	15,61,400		
2041	16,98,116		
2046	18,41,613		
2051	19,91,891		

Source: Census 2011 and Bareilly Master Plan 2021 & 2031

3.3.1.1.4 Population Forecast For Spatial Expansion:

There are total 19 census towns except M.C and Cantonment board in Project area i.e. Planning Boundary as per Enclosed list in Master Plan 2031. There are 149 villages within Project area and 54 villages are already engulfed with 2031 Master plan boundary. To account that population by following Master plan general growth method has adopted and Population estimation for Project area as under:

Table 3-19 Population Forecast for Spatial Extent and Entire Project area

Year	Municipal Area Population (Nos.)	Cantonment Board	Total Villages within Planning Boundary	Total Census Towns within Planning Boundary	Total Planning Boundary Population	Master Plan 2031 estimation of Total area
2021	11,40,717	37,388	279,655	98,273	1556033	
2026	12,46,391	41,990	314,074	110,368	1712822	
2031	14,31,466	46,591	348,492	122,463	1949012	1894211
2036	15,61,400	52,326	391,383	137,535	2142644	
2041	16,98,116	65,206	487,722	171,389	2422433	
2046	18,41,613	73,231	547,749	192,483	2655075	
2051	19,91,891	81,256	607,775	213,577	2894499	

Based on the development plan proposals, taking into consideration the present trends and absorption capacity, above pattern of population distribution over space has been identified. Although there is no major change of total requirement of area so, Master plan boundary will be useful for spatial extent for 2031 Infrastructure Plan and rest years for Visionary estimation for requirement of physical Infrastructure will be attempted.

The physical expanse of the city is expected to also incorporate as master plan suggested with the availability of physical infrastructure. As per UDPFI Guidelines Medium town density: 100-115 pph. As per trend developed area density assumed 125-135 pph (following other town with same class of

population & growth pattern) New area density assumed for planning is 75-100 pph for 2036 & 2051 respectively. To account that Spatial extent of Ward level projection has been assessed as under.

Table 3-20 Ward wise Population Projection

Ward No	Ward Name	Population 2021 Adjusted as per	2026	2031	2036	2041	2046	2051
1	Biharipur Civil Lines	13674	14995	17308	18932	20641	22435	24314
2	Jatawpura	12917	14238	16551	18175	19884	21678	23557
3	Chhoti Bihar	16110	17431	19744	21368	23077	24871	26750
4	Sugar Factory	14106	15427	17740	19364	21073	22867	24746
5	Nekpur	14914	16235	18548	20172	21881	23675	25554
6	Nwada Shekhan	14643	15964	18277	19901	21610	23404	25283
7	Veer Bhatti	15842	17163	19476	21100	22809	24603	26482
8	Model Town	14922	16243	18556	20180	21889	23683	25562
9	Naumahala	14569	15890	18203	19827	21536	23330	25209
10	Badi Bihar	15981	17302	19615	21239	22948	24742	26621
11	Katra Chand Khan	13093	14414	16727	18351	20060	21854	23733
12	Sithaura	15873	17194	19507	21131	22840	24634	26513
13	Shanti vihar	13142	14463	16776	18400	20109	21903	23782
14	Bramhapura	14264	15585	17898	19522	21231	23025	24904
15	Hajiapur	16125	17446	19759	21383	23092	24886	26765
16	Sanjay Nagar	15677	16998	19311	20935	22644	24438	26317
17	Haroonagla	15799	17120	19433	21057	22766	24560	26439
18	Railway Colony Partapur	12386	13707	16020	17644	19353	21147	23026
19	Kanjadaspur	14802	16123	18436	20060	21769	23563	25442
20	Azam Nagar	13695	15016	17329	18953	20662	22456	24335
21	Subhash Nagar	15820	17141	19454	21078	22787	24581	26460
22	Khalilpur	16046	17367	19680	21304	23013	24807	26686
23	Indira Nagar	13889	15210	17523	19147	20856	22650	24529
24	Maula Nagar	12847	14168	16481	18105	19814	21608	23487
25	Madi Nath	14409	15730	18043	19667	21376	23170	25049
26	IVRI	15460	16781	19094	20718	22427	24221	26100
27	Mathurapur	16603	17924	20237	21861	23570	25364	27243
28	Faridapur Chaudhary	12284	13605	15918	17542	19251	21045	22924
29	Raipura Chaudhary	16362	17683	19996	21620	23329	25123	27002
30	Swale Nagar	12360	13681	15994	17618	19327	21121	23000
31	Kat Ghar	16518	17839	20152	21776	23485	25279	27158
32	Gandhi Udyan	13543	14864	17177	18801	20510	22304	24183
33	Bankhandi Nath	15286	16607	18920	20544	22253	24047	25926
34	Partapur Chaudhary	12618	13939	16252	17876	19585	21379	23258
35	Rampur Bagh	13705	15026	17339	18963	20672	22466	24345
36	Jauharpur	15454	16775	19088	20712	22421	24215	26094
37	Nandausi	14910	16231	18545	20169	21878	23672	25551

Ward No	Ward Name	Population 2021 Adjusted as per	2026	2031	2036	2041	2046	2051
38	Benipur Chaudhary	15456	16777	19091	20715	22424	24218	26097
39	Kakar Tola	15612	16933	19247	20871	22580	24374	26253
40	Sahaswani Tola	12657	13978	16291	17915	19624	21418	23297
41	Biharipur Memaran	12595	13916	16229	17853	19562	21356	23235
42	Chaudhary Mohalla	15473	16794	19107	20731	22440	24233	26112
43	Akashpuram	12713	14034	16347	17971	19680	21473	23352
44	Malookpur	12792	14113	16426	18050	19759	21552	23431
45	Maheshpur Ataria	13037	14358	16671	18295	20004	21797	23676
46	Gandhi Puram	14718	16039	18352	19976	21685	23478	25357
47	Kila Chhawani	13542	14863	17176	18800	20509	22302	24181
48	Nawada Jogiyan	15931	17252	19565	21189	22898	24691	26569
49	Shastri Nagar	12212	13533	15846	17470	19179	20972	22850
50	Janakpuri	12931	14252	16566	18190	19899	21692	23570
51	Nagari Parikshit	12568	13889	16203	17827	19536	21329	23207
52	Bankhana	12618	13939	16253	17877	19586	21379	23257
53	Roli Tola	15532	16853	19167	20791	22500	24293	26171
54	Bhood	14669	15990	18304	19928	21637	23430	25308
55	Saitpur Hawkins	13837	15158	17472	19096	20805	22598	24476
56	Kunwarpur	12266	13587	15901	17525	19234	21027	22905
57	Faltoon Ganj	13818	15139	17453	19077	20786	22579	24457
58	Gulab Nagar	14355	15676	17990	19614	21323	23116	24994
59	Sarania	13551	14872	17186	18810	20519	22312	24190
60	Shahdana	15628	16949	19263	20887	22596	24389	26267
61	Kanoon Goyan	13953	15274	17588	19212	20921	22714	24592
62	Chak Mahmood	15353	16674	18988	20612	22321	24114	25992
63	Sahukara	12314	13635	15949	17573	19282	21075	22953
64	Siklapur	13855	15176	17490	19114	20823	22616	24494
65	Suresh Sharma Nagar	14215	15536	17850	19474	21183	22977	24854
66	Bajari Pooranmal	12429	13750	16064	17688	19397	21191	23068
67	Awass Vikas	16071	17392	19706	21330	23039	24833	26710
68	Khannu Mohalla	16071	17392	19706	21331	23040	24834	26711
69	Sahabad	12716	14037	16351	17976	19685	21479	23356
70	Peer Bahoda	13138	14459	16773	18398	20107	21901	23778
71	Nayi Basti	15683	17004	19318	20943	22652	24446	26323
72	Alam Giri Ganj	12514	13835	16149	17774	19483	21277	23154
73	Vidhulia	14839	16160	18474	20099	21808	23602	25479
74	Kher Shekh Mitthoo	12678	13999	16313	17938	19647	21441	23318
75	Aizaz Nagar Gotia	16068	17388	19702	21327	23035	24829	26707
76	English Ganj	12232	13552	15866	17491	19199	20993	22871
77	Saudagaran	11935	13255	15569	17194	18902	20696	22574
78	Sofi Tola	15680	17000	19314	20939	22648	24442	26320

Ward No	Ward Name	Population 2021 Adjusted as per	2026	2031	2036	2041	2046	2051
79	Chak Mahmood Nagar	15664	16984	19298	20924	22633	24427	26306
80	Rabri Tola	14150	15470	17784	19410	21118	22912	24790
	Total	1140717	1246391	1431465	1561400	1698116	1841613	1991891

So, spatial extent of the project Bareilly has three delineations:

1. Bareilly Municipal Corporation
2. Bareilly Census Villages with Extension Areas
3. Bareilly Census Towns

Table 3-21 Summary of Population Projections of Planning Boundary, 2051

	Details	2011	2021	2026	2031	2036	2041	2046	2051
A	Municipal Area	903668	1140717	1246391	1431466	1561400	1698116	1841613	1991891
B	Cantonment Board	30003	37388	41990	46591	52326	65206	73231	81256
C	Total Villages within Planning Boundary	279655	279655	314074	348492	391383	487722	547749	607775
D	Total Census Towns within Planning Boundary	98273	98273	110368	122463	137535	171389	192483	213577
E	Total Planning Boundary Population	1311599	1556033	1712822	1949012	2142644	2422433	2655075	2894499
F	Master Plan 2031 estimation of Total area				1894211				

Based on the development plan proposals, taking into consideration the present trends and absorption capacity, following pattern of population distribution over space has been identified. Although there is no major changes of total requirement of area so, Master plan boundary will be useful for spatial extent for 2031 Infrastructure Plan and followed by 2051 vision estimation has been considered.

3.3.1.1.5 Local Ground Water Sources:

Borewells. In addition to the three-surface water i.e., Ramganga, two water channel within city more than 150 bore wells do water supply to small-localized pockets. Service reservoirs in different colonies receive water from the bore wells and distribute this water through their distribution network. While many bore wells are fitted with submersible pumps, remaining bore wells are fitted with hand pumps. Ground water is available at a depth of 10.98 m in post monsoon to 9.80 m in pre monsoon in year 2021 (Source: <https://jjmup.org/wq/gwd.php>)

Total Supply from the bore wells is estimated to be about 143 MLD as per Nagar Nigam provided data. Due to scanty rainfall in last few years and excessive drawl to arise the water shortage, the ground

water table is going down, resulting in the failure of many bore wells with hand pumps. The ground water is also reported to contain slightly high fluoride contents. The transmission mains are pre stressed concrete pipelines. There are four zones in water supply as under:

Water Availability in Project Area in year 2021

Water Supply: -

Coverage = 51%

Domestic Connection (Unmetered) = 95370

Installed Capacity for Ground Water Supply = 143 MLD

Volume of water produced through Ground Water (Power Pump) = 138 MLD

Volume of water billed from Domestic Connection = 109 MLD

Volume of water billed from Non-Domestic Connection = 1 MLD

Total Volume of water unbilled (free supplies to Public Taps) = 0.8 MLD

Water Supply frequency = 8 hours per day

*(Source SLB 2019-20)

HHs Water Demand:-

Year 2021 by considering @150LPCD= 165 MLD

Year 2051 = 301 MLD

Industrial Use:

Not available

Estimated: 30 MLD by PCB

Need Augmentation and DPR Preparation

Connection

Length of distribution network = 578.20 km

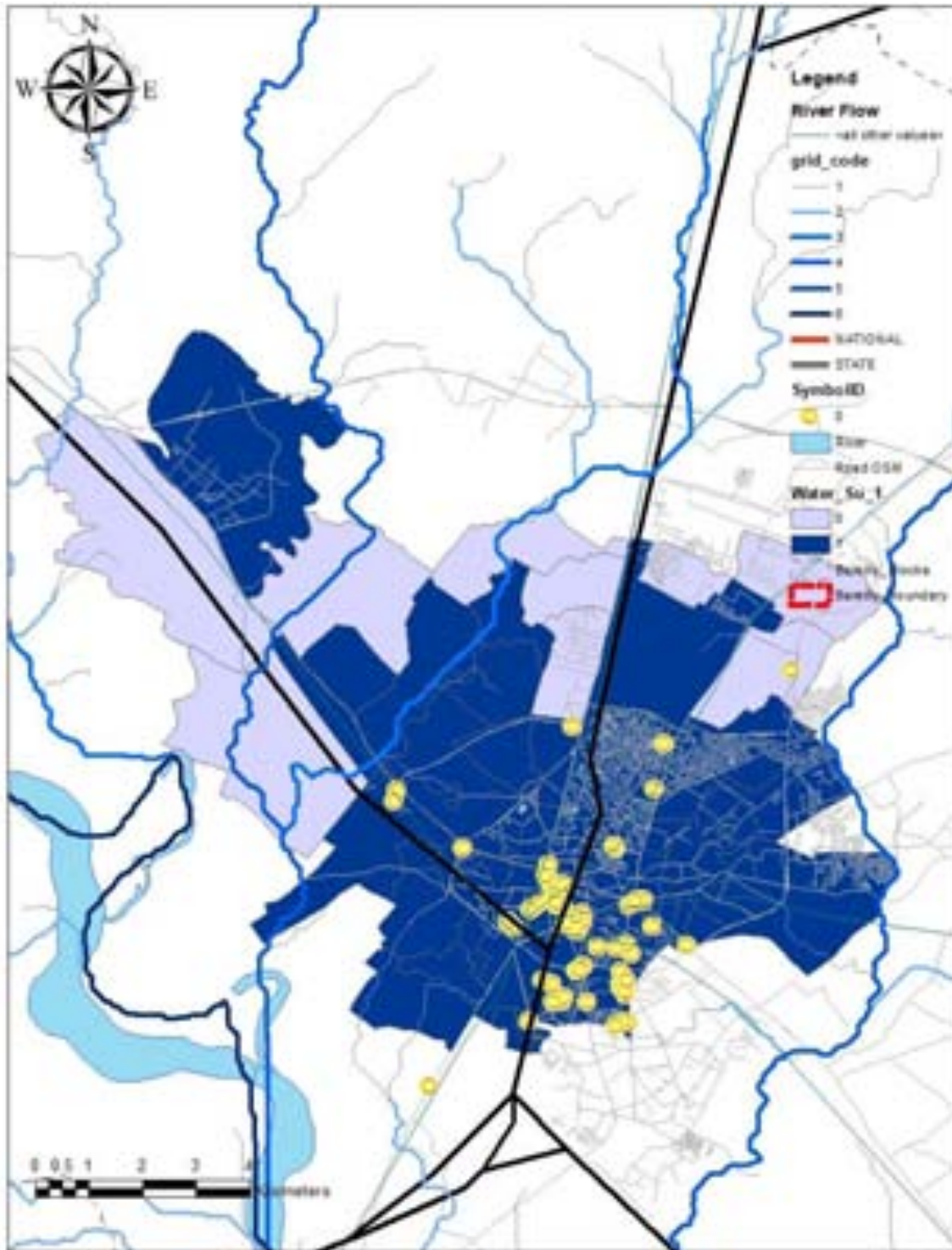


Figure 3-23 Water supply coverage in Nagar Nigam area within Planning Boundary

Basis of above analysis the availability of water supply is only 51% , and even per capital water availability is only 121 LPCD. Gap in water supply collection charges as per SLIP report 55%. Gap in NRW is almost 20% which includes leakage, free water supply to society on festivals, supply through stand post.

Water availability within municipal area is also different. On account there are more than 200 water bore wells serves city through network system . But total 25 elevated storage serve city as under.

The Green area is having full supply. Yellow area is under smart city area having full supply, blue and red area is having partial supply need augmentation of work.

Total Water reservoir is 42

Total Hand Punmp- 84

Total Water pump is 68

Total supply water bore wells are 17

Total mimi bore wells are 8

3.3.1.2 Area Wise Water Availability Analysis

Bareilly city has 80 wards. Out of total wards 38 wards are having full connection through water supply network. Addition to that in Smart city area ABD area few wards area having all 100% water supply connection. But total 7 Wards are connected partial areas and two areas still do not have any connection under Amrut 1.0. As per Nagar Nigam Water Balance report total water supply is on today is 76.29 MLD. After total Water source enhancement from 60 to 84 tubewells now per capita availability has increase as under:

Table 3-22 Availability of Physical Infrastructure

S.No	Code	Input Nomenclature		Value
	I	COVERAGE OF WATER SUPPLY CONNECTIONS	%	51.0
		<i>Water Service Coverage - Number of Connections</i>		
1	AA	Domestic Connections (Metered Functional)	Number	0
2	AB	Domestic Connections (Metered Non-Functional)	Number	0
3	AC	Domestic Connections (Unmetered)	Number	95370
4	AD	Domestic connections (Total)	Number	95370
5	AE	Bulk supply Apartments (Metered Functional)	Number	0
6	AF	Bulk supply Apartments (Metered Non-Functional)	Number	0
7	AG	Bulk supply Apartments (Unmetered)	Number	0
8	AH	Bulk supply Apartments (Total)	Number	0
9	AI	Bulk supply Layouts/Societies (Metered Functional)	Number	0
10	AJ	Bulk supply Layouts/Societies (Metered Non-Functional)	Number	0
11	AK	Bulk supply Layouts/societies (Unmetered)	Number	0
12	AL	Bulk supply Layouts/Societies (Total)	Number	0
13	AM	Others - Specify (Metered Funtional)	Number	0
14	AN	Others - Specify (Metered Non-Functional)	Number	0
15	AO	Others - Specify (Unmetered)	Number	0
16	AP	Others - Specify (Total)	Number	0
17	AQ	Total Number of Water Supply Connections	Number	95370
		<i>Water Service Coverage - Households Served</i>		
18	AR	Households served by Domestic Connections	Number	95370
19	AS	Households served by Bulk supply - Apartments	Number	0
20	AT	Households served by Bulk supply - Layouts/Societies	Number	0
21	AU	Total Households served with Water Supply	Number	95370
		<i>*Households served by own sources such as wells, handpumps shall not be included</i>		

S.No	Code	Input Nomenclature		Value
	II	PER CAPITA SUPPLY OF WATER	LPCD	106.81
		<i>Water Production Capacity</i>		
22	AV	Installed Capacity of Treatment Plants for Surface Water Sources	MLD	0
23	AW	Volume of water produced through Surface Water Sources	MLD	0
24	AX	Installed Capacity of Treatment Plants for Ground Water Sources	MLD	143
25	AY	Volume of water produced through Ground water (power pumps)	MLD	138
26	AZ	Volume of water produced through any Other Sources	MLD	0
27	BA	Total Installed Capacity	MLD	143
28	BB	Total Volume of water produced	MLD	138
		<i>Water Consumption</i>		
29	BC	Volume of water billed from Domestic Connections	MLD	109
30	BD	Volume of water billed from Bulk supply Apartments	MLD	0
31	BE	Volume of water billed from Bulk supply Layouts/Societies	MLD	0
32	BF	Volume of water billed from Non domestic Connections	MLD	1
33	BG	Volume of water billed from Public taps	MLD	0
34	BH	Volume of water billed from any other sources	MLD	0
35	BI	Total Volume of water billed	MLD	110
36	BJ	Total Volume of water unbilled (free supplies to Public taps)	MLD	0.8
37	BK	Total Volume of water unbilled (free connections eg. Religious institutions etc)	MLD	0
	III	EXTENT OF NON REVENUE WATER (NRW)	%	20.29
38	BB	Total Volume of Water Produced	MLD	138
39	BI	Total Volume of Water Billed	MLD	110
	IV	EXTENT OF METERING OF WATER SUPPLY CONNECTIONS	%	-
40	BL	Non domestic incl. commercial/Indus/Instl. (Metered Functional)	Number	0
41	BM	Non domestic incl. commercial/Indus/Instl. (Metered Non-Functional)	Number	0
42	BN	Non domestic incl. commercial/Indus/Instl. (Unmetered)	Number	942
43	BO	Non domestic incl. commercial/Indus/Instl. (Total)	Number	942
44	BP	Public taps (Metered Functional)	Number	0
45	BQ	Public taps (Metered Non-Functional)	Number	0
46	BR	Public taps (Unmetered)	Number	562
47	BS	Public Taps (Total)	Number	562
48	BT	Total number of metered and functional connections (domestic, bulk supply, others)	Number	0
49	BU	Total number of Water Supply Connections	Number	96874

S.No	Code	Input Nomenclature		Value
	IV	CONTINUITY OF WATER SUPPLY	Hours per Day	8.00
		<i>Water Supply Frequency</i>		
50	BV	Days of supply per month	Number	30
51	BW	Average duration of each supply	Hours	8
	V	EFFECIENCY OF REDRESSAL OF COMPLAINTS	%	91.3
		<i>Consumer Services</i>		
52	BX	Complaints received during the year	Number	2400
53	BY	Complaints resolved within 24 hours during the year	Number	2190
	VI	QUALITY OF WATER SUPPLIED		99.78
		<i>Treated Water Quality Surveillance</i>		
54	CA	Residual Chlorine - No. of Samples taken at the outlet of Water Treatment Plant (in a year)	Number	0
55	CB	Residual Chlorine - No. of Samples taken at intermediate points (in a year)	Number	1125
56	CC	Residual Chlorine - No. of Samples taken at consumer end (in a year)	Number	2824
57	CD	Total Samples taken for Residual Chlorine tests	Number	3949
58	CE	Number of Samples Passed	Number	3940
59	CF	Physical/Chemical - No. of Samples taken at the outlet of Water Treatment Plant (in a year)	Number	0
60	CG	Physical/Chemical - No. of Samples taken at intermediate points (in a year)	Number	0
61	CH	Physical/Chemical - No. of Samples taken at consumer end (in a year)	Number	0
62	CI	Total Samples taken for Physical and Chemical tests	Number	0
63	CJ	Number of Samples Passed	Number	0
64	CK	Bacteriological - No. of Samples taken at the outlet of Water Treatment Plant (in a year)	Number	0
65	CL	Bacteriological - No. of Samples taken at intermediate points (in a year)	Number	25
66	CM	Bacteriological - No. of Samples taken at consumer end (in a year)	Number	47
67	CN	Total Samples taken for Bacteriological tests	Number	72
68	CO	Number of Samples Passed	Number	72
69	CP	Total Number of Samples taken for all types of tests	Number	4021
70	CQ	Total Tests Passed	Number	4012
	VII	COST RECOVERY IN WATER SUPPLY SERVICES	%	94.53
		<i>Financial Information - Operating Expenses</i>		
71	CR	Regular Staff and administration	Rs. Lakhs	450.00
72	CS	Outsourced/Contract Staff Costs	Rs. Lakhs	80.00
73	CT	Electricity Charges/Fuel Costs	Rs. Lakhs	1378.57

S.No	Code	Input Nomenclature		Value
74	CU	Chemical Costs	Rs. Lakhs	10.00
75	CV	Repairs/Maintenance Costs	Rs. Lakhs	230.00
76	CW	Bulk (Raw/Treated) Water Charges	Rs. Lakhs	0.00
77	CX	Other Costs	Rs. Lakhs	0.00
78	CY	Total Operating Expenditure	Rs. Lakhs	2148.57
Financial Information - Operating Revenues				
79	CZ	Arrears at the beginning of previous year (2017-18)	Rs. Lakhs	190.00
80	DA	Revenue demand from user charges	Rs. Lakhs	180.00
81	DB	Revenue demand from tax/cess - Water Service only	Rs. Lakhs	1841.00
82	DC	Revenue demand from other revenues (eg. connection costs/Donations etc)	Rs. Lakhs	10.01
83	DD	Total Revenue Demand for previous year	Rs. Lakhs	2031.01
COLLECTION EFFICIENCY OF WATER SUPPLY RELATED CHARGES				
VII			%	90.64
84	DD	Total Revenue Demand for previous year (from user charges, taxes etc)	Rs. Lakhs	2031.01
85	DE	Collection against arrears (2017-18)	Rs. Lakhs	166.00
86	DF	Collection against the current demand of previous year (2018-19)	Rs. Lakhs	1841.00
Additional Information (Optional)				
Staff Information				
91	EA	Senior Management (Sanctioned)	Number	1
92	EB	Senior Management (Working)	Number	1
93	EC	Engineers (Sanctioned)	Number	5
94	ED	Engineers (Working)	Number	3
95	EE	Clerks/Accountants (Sanctioned)	Number	11
96	EF	Clerks/Accountants (Working)	Number	10
97	EG	Work Inspectors/Meter Readers (Sanctioned)	Number	0
98	EH	Work Inspectors/Meter Readers (Working)	Number	1
99	EI	Electricians/Fitters (Sanctioned)	Number	8
100	EJ	Electricians/Fitters (Working)	Number	5
101	EK	Lines men/plumbers (Sanctioned)	Number	0
102	EL	Lines men/plumbers (Working)	Number	0
103	EM	Labourers (Sanctioned)	Number	132
104	EN	Labourers (Working)	Number	107
105	EO	Total (Sanctioned)	Number	157
106	EP	Total (Working)	Number	127
WATER SUPPLY INDICATOR VALUES				
		Indicator	Unit	Value
1		Coverage of water supply connections	%	51.0
2		Per capita available of water at consumer end	Lpcd	106.8

S.No	Code	Input Nomenclature		Value
3		Extent of metering of water connections	%	0.0
4		Extent of Non Revenue Water	%	20.3
5		Continuity of water supply	Hours/Day	8.0
6		Efficiency in redressal of customer complaints	%	91.3
7		Quality of water supplied	%	99.8
8		Cost recovery in water supply services	%	94.5
9		Efficiency in collection of water supply related charges	%	90.6

Hydrogeological characteristics of the area shows as under:

Rainfall- The summer monsoon is the major source of rainfall, which generally lasts from mid mid-October. July and August months the wettest months.

(b) Temperature: The maximum mean monthly atmospheric temperature has been recorded during the month of May and minimum

(c) Humidity: During the peak monsoon period (i.e. August and September) and in mid (during December) the relative humidity is at highest level ranging between 79% and 84%. While it is lowest around 38% during peak summer month April and May.

(d)Geomorphology (a) In general, the area shows the following distinctive geomorphic units: 1. Lower piedmont plain of Tarai 2. Older alluvial plain or upland 3. Younger alluvial plain or low land 4. Meander flood plain (b) Soils: The soil of the district, can be classified into three major groups, based on its texture and characteristics. Bareilly Type Type-2 (Khadar or low (Upland or Bangar soils) The maximum mean monthly atmospheric temperature has been recorded during the month of May and minimum during January. During the peak monsoon period (i.e. August and September) and in mid winter season (during December) the relative humidity is at highest level ranging between 79% and 84%. While it is lowest around 38% during peak summer months of In general, the area shows the following distinctive 1. Lower piedmont plain of Tarai 2. Older alluvial plain or upland 3. Younger alluvial plain or low he soil of the district, can be classified into three major groups, based on its texture and composition characteristics. Bareilly Type-1 (Tarai soils) Bareilly -land soils) Bareilly Type-3

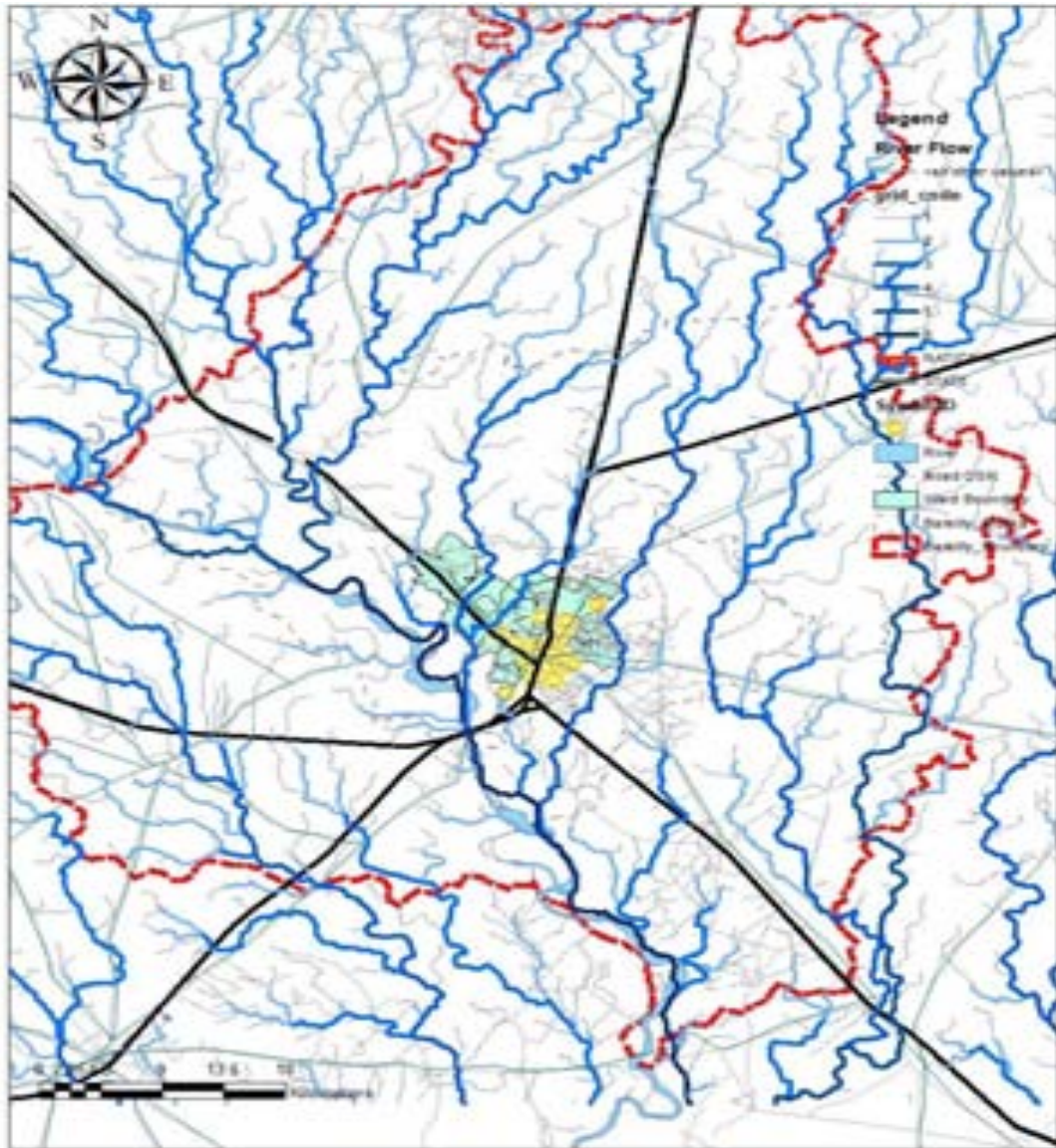


Figure 3-24 River Flow around Bareilly

The major three water body’s water quality in city is not good. There are several drains intercepts river. These drains are major causes carrying sewerage and Industrial load to water body.

Table 3-23 Details of Water Bodies

Sl. No	Data Point	Value
1	Total No of water bodies	3
2	No of water bodies with open dumpsites near them	3
3	Number of water bodies with anti-littering messages displayed	3
4	Number of water bodies with sweeping & cleanliness arrangements in place	3
5	Number of Water bodies with twin-litterbins placed in every 50 m of water bodies	3
6	Number of Water bodies with Trash Cleaners are available to trap the solid waste floating on the water bodies	3

Table 3-24 List of Water Bodies

S.No.	Ward Number	Name of Water Body	Address	Type of Water Body	Landmark
1	10	Delapeer Pond	Delapeer Chauraha	Pond	Delapeer Chauraha
2	32	Akshar Vihar	Akshar Vihar Park	Pond	Akshar Vihar Park
3	35	Sanjay Community Hall Pond	Near Elan Club	Pond	Jain Mandir

Demand Assessment:

To assess the future demand for all parts of Bareilly within Municipal area Water demand has been assessed by taking 150 LPCD i.e.. 135 LPCD with 15% unaccounted water demand of the area.

Table 3-25 Water Supply Demand

Water requirement		2021	2026	2031	2036	2041	2046	2051
A	Municipal Area	154	168	193	211	229	249	269
B	Cantonment Board	5	6	6	7	9	10	11
C	Total Villages within Planning Boundary	38	42	47	53	66	74	82
D	Total Census Towns within Planning Boundary	13	15	17	19	23	26	29
E	Total Planning Boundary Population	210	231	263	289	327	358	391

Source: Analysis

Under Amrut 2.0 all are to be covered within municipal area to address 155 LPCD which is far higher side than the requirement of MoUD i.e. 135 LPCD. So, there is not to presume additional water augmentation to feed futuristic demand for ultimate project population for 2051. But there are 11 Urban agglomeration and all villages are within planning Boundary which over the year will be amalgamated as a part of city. To estimate the population enhancement by accounting Rural to urban transformation and Urban agglomerated towns in city limit referring Master Plan 2031 document total water demand is estimated as under:

3.3.1.3 Wastage And Distribution Losses:

It has been observed that wastage of water at consumer's end in the City is substantial. Almost 30-40% of water supplied is lost in transmission and distribution.

3.3.1.4 Service Connections:

All property connections are unmetered. In addition, there are reported to be about 20, 540 public stand posts, supplying water to economically backward households and slum areas.

3.3.1.5 Issues:

1. Scarcity in Source: Presently only 75% of the population is covered by municipal water supply. Raw water scarcity is experienced in summer, due to lack of flow of present source, Agra Canal water supply network is needed to be implemented. Though, under Amrut 2.0 requirement are fulfilling total municipal area.



2. **Exploitation of Ground Water Source:** In the absence of a perennial water source, dependence on ground water continues to be high in the periphery. Apart from the municipal bores, a large number of private bores have been installed in various parts of the city. This has seriously affecting the ground water level, which is depleting at the rate of 2 to 3m annually. Thus, the reliability and sustainability of the ground water source is questionable.
3. **Operation of Water Treatment Plants:** The present operation, including chemical dosing and back washing of filters, Chlorine dosing is arbitrary. All the equipment meant for these functions needs to be repaired, if required and a formal system of testing the raw water turbidity, administering the doses based on jar test and back washing of filters, when it is due, needs to be introduced. Additional gas cylinders have to be procured.
4. **System Losses:** Around 30%-40% of the water supplied gets lost during transmission and distribution. Scada system is only commissioning in Smart City ABD area.
5. **Limited Duration of Supply:** At present, the water is supplied only for one hour on fifth day. It is proposed to supply water for 24 hours and hence necessary modification including construction of ESR at each distribution station will be carried out.
6. **Contamination of water due to old service connections:** The consumer connections are of Galvanized iron, which has a life of 7-8 years. These connections are often not replaced on time and leads to the problems of leakage, low pressure and contamination.

3.4 Sewerage & Sanitation System:

3.4.1 Overview Of Existing Sewerage & Sanitation System:

Uttar Pradesh Jal Nigam has designed and constructed sewerage scheme under Amrut 1.0 in Bareilly city and implemented by Nagar Nigam. The proposals under this Detailed Project Report have been framed on the basis of Latest Norms / Standards / Design Criteria contained in the U.P. Jal Nigam notification under the guidelines of Atal Mission for Rejuvenation and Urban Transformation and the Manual of Sewerage and Sewage Treatment, 4th Edition-2012, CPHEEO, Ministry of Urban Development, Government of India, New Delhi. Main and Prominent norms are summarized below.

The estimation has been worked out adopting the base year 2021, Middle Stage Year 2036 and Ultimate Stage Year 2051.

There are Properties with Sewer Connection 65201 and Properties with onsite sanitary disposal are 136275. Total water consumption (billed and unbilled) from ULB and Non ULB sources are accounted 110.8 MLD and volume of waste water generated from Domestic water consumption is around 88.64 MLD (Source SLB 2019-20)

There is no sewer Treatment plant. Although STP will be set up soon in two sites as shown in following figure.

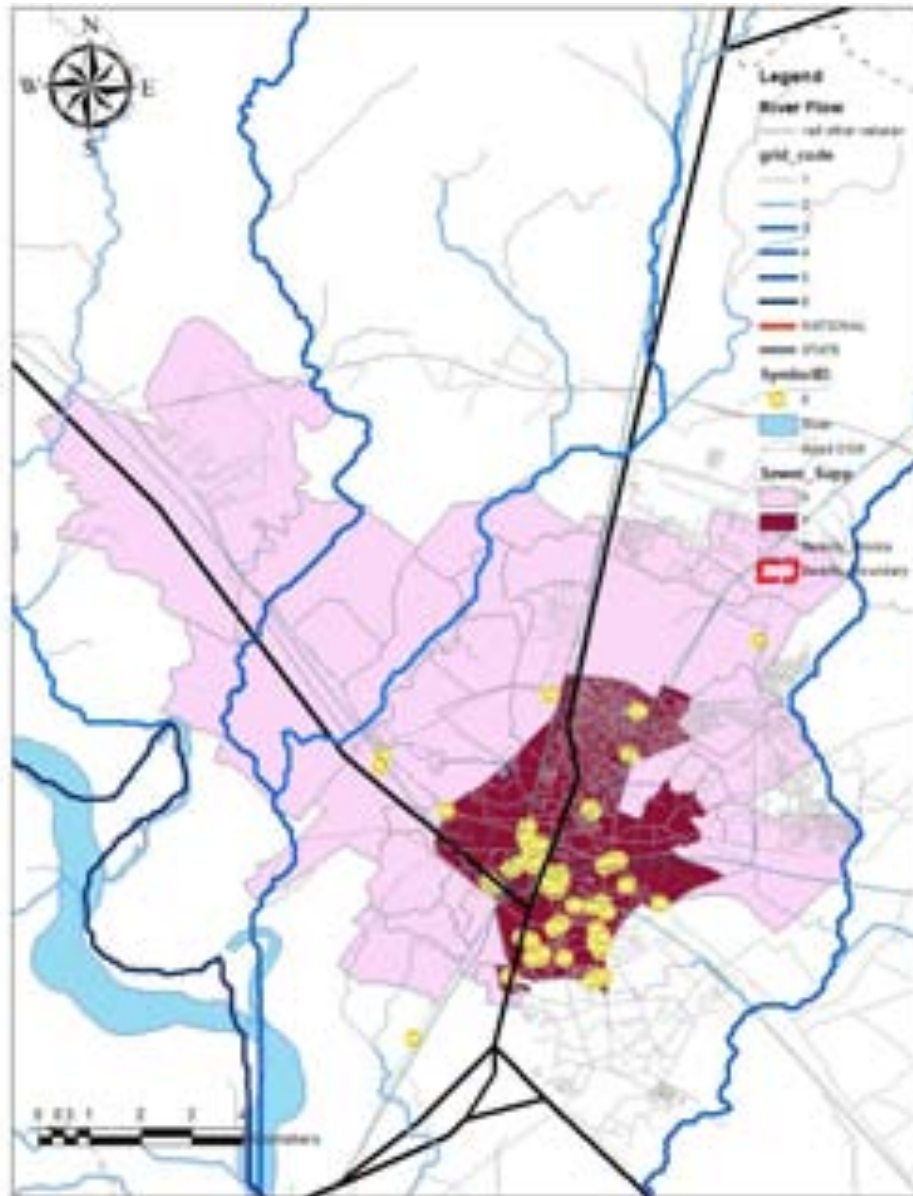


Figure 3-26 Flow of river

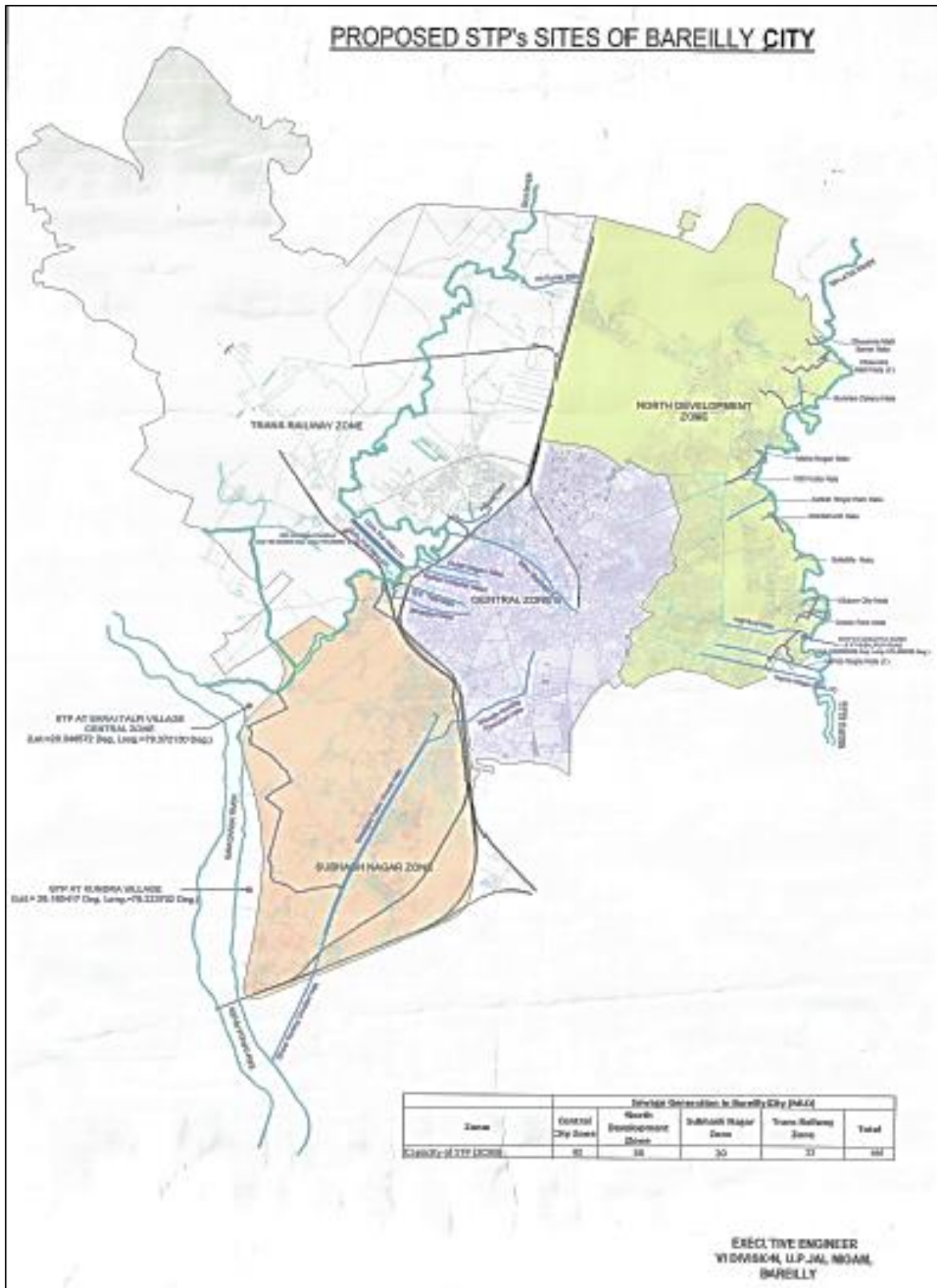


Figure 3-27 Proposed STP site

Total Length of sewerage network = 206.2 km

Total Waste water produced = 99.2 MLD

Zone	Sever Lines	
	Length	Area covered
	(km)	(sq. km)
Zone- 1	43	9
Zone -2	71	8.46
Zone -3	59	3.97
Zone -4	33	4.33
Total	206	25.76

*Source: SLB 2012, NNB

Intermediate Pumping Station and STP

ZONE-2: IPS-2 of I & D work. in zone-2 is proposed under I & D work of Bareilly city of 71 Km length . there is MPS provided in the STP campus.

Zone 3: IPS-2 of I & D work. in zone-3 is proposed under I & D work of Bareilly city of 59 Km length

ZONE-4: IPS-2 of I & D work. in zone-4 is proposed under I & D work of Bareilly city of 33 km length.

Works incorporated under this Detailed Project Report have been proposed for year of 2033.

Bareilly Smart City "ABD" Area is proposed to be covered with sewer system under Smart City Programme. Sewage Treatment Plants will also be provide for Treatment of sewage and discharge of effluent to the effluent management works for irrigation of cultivable land effluent will however by conveyed to the Natural Drainage when not required for Irrigation purposes.

Taking into consideration Topography/Gradient/Slope of Ground/Location of Railway Tracks i.e. from major drains under the Nagar Nigam area is proposed to be divided into 4 Zones.

In the proposed sewer system AC Pressure Pipes Manufactured by MAZZA Processing sizes 150/200mm and in higher sizes RCC Non-Pressure Pipes Class NP3 and NP4 have been proposed in accordance with provisions under the Guidelines issued under Atal Mission for Rejuvenation and Urban Transformation (AMRUT) Programme "Manual of Sewerage and Sewage Treatment CPHEEO" Ministry of Urban Development Government of India New Delhi and Relevant code of Bureau of Indian Standards New Delhi.

From the Sewage Treatment Plant effluent will be conveyed to effluent management works i.e. applied for Irrigation in agriculture fields during the period effluent is not required for irrigation purposes, it will be discharged into river.

Land requirement for Sewage Treatment Plant: Total Land Requirement for 7 MLD plant on SBR based technology is = 7 x 0.08 hect = 0.56 hectare land is required

Further, drains will be tapped under Namami Gange program

So benchmarking analysis of city by 2019 is as under

Table 3-26 Details of benchmarking analysis of city by 2019

S.No	Code	Input Nomenclature		Value
	I	COVERAGE OF TOILETS	%	100.5
		Sanitation Coverage		
1	XM	Total Number of Properties in the City	Number	142846
2	FA	Properties with toilets	Number	141900
3	FB	Households dependent on functional community toilets	Number	1630
4	FC	Total Number of Properties with access to toilets	Number	143530

S.No	Code	Input Nomenclature		Value
	II	COVERAGE OF SEWAGE NETWORK SERVICES	%	45.64
5	XM	Total Number of Properties in the City	Number	142846
6	FD	Properties with sewer connections	Number	65201
7	FE	Properties with onsite sanitary disposal	Number	136275
	III	COLLECTION EFFICIENCY OF SEWAGE NETWORK	%	0.00
		<i>Waste Water Production - Volume of Water Consumed and Waste Water Generated</i>		
8	FF	Volume of water consumed and billed from Domestic Connections	MLD	109
9	FG	Volume of water consumed and billed from Bulk supply - Apartments	MLD	0
10	FH	Volume of water consumed and billed from Bulk supply - Layouts/Societies	MLD	0
11	FI	Volume of water consumed and billed from Non domestic Connections	MLD	1
12	FJ	Volume of water consumed (both billed and unbilled) from Public taps	MLD	0.8
13	FK	Volume of water from free supplies (other connections)	MLD	0
14	FL	Volume of water consumed and billed from any other ULB sources	MLD	0
15	FM	Volume of water consumed from any Non ULB water sources	MLD	0
16	FN	Total Water Consumption (billed and unbilled) from ULB and Non ULB sources)	MLD	110.8
17	FO	Volume of waste water generated from Domestic Water Consumption	MLD	87.2
18	FP	Volume of waste water generated from Bulk Supply - Apartments	MLD	0
19	FQ	Volume of waste water generated from Bulk Supply - Layouts/Societies	MLD	0
20	FR	Volume of waste water generated from Non Domestic Water Consumption	MLD	0.8
21	FS	Volume of waste water generated from Public Tap Water Consumption	MLD	0.64
22	FT	Volume of waste water generated from free supplies (other connections)	MLD	0
23	FU	Volume of waste water generated from other ULB source water consumption	MLD	0
24	FV	Volume of waste water generated from Non ULB source Water consumption	MLD	0
25	FW	Total Waste Water Generated	MLD	88.64
		<i>Waste Water Collection and Treatment</i>		
26	FX	Volume of sewage actually treated at the Primary Treatment Plant	MLD	0
27	FY	Volume of sewage actually treated at Secondary Treatment Plant	MLD	0
28	FZ	Total Volume of Waste Water collected and Treated at Sewage Treatment Plants	MLD	0

S.No	Code	Input Nomenclature		Value
	IV	ADEQUACY OF SEWAGE TREATMENT CAPACITY	%	0.00
29	GA	Installed Capacity of Primary Treatment Plant	MLD	0
30	GB	Installed Capacity of Secondary Treatment Plant	MLD	0
31	GC	Total Installed Capacity (Primary + Secondary Treatment)	MLD	0
32	FW	Total Waste Water Generated	MLD	88.64
	V	EXTENT OF REUSE AND RECYCLING OF SEWAGE	%	#DIV/0!
33	FY	Volume of sewage actually treated at Secondary Treatment Plant	MLD	0
34	GD	Volume of treated waste water reused after Secondary Treatment	MLD	0
	VI	QUALITY OF SEWAGE TREATMENT	%	#DIV/0!
		<i>Discharge Compliance after Secondary Treatment of Sewage</i>		
35	GE	Number of Treated Effluent Samples Tested in the previous year	Number	0
36	GF	Number of Treated Effluent Samples Passed in the previous year	Number	0
	VII	EFFICIENCY IN REDRESSAL OF CUSTOMER COMPLAINTS	%	93.65
		<i>Consumer Services</i>		
37	GG	Sewage related Complaints received during the year	Number	1890
38	GH	Sewage related Complaints resolved within 24 hours during the year	Number	1770
	VIII	EXTENT OF COST RECOVERY IN SEWAGE MANAGEMENT	%	81.4
		<i>Financial Information - Annual Operating Expenses</i>		
39	GI	Regular Staff and Administration	Rs. Lakhs	230.00
40	GJ	Outsourced /Contract Staff Costs	Rs. Lakhs	37.00
41	GK	Electricity Charges /Fuel Costs	Rs. Lakhs	70.00
42	GL	Chemicals Costs	Rs. Lakhs	0.00
43	GM	Repairs/Maintenance Costs	Rs. Lakhs	79.00
44	GN	Contractor Costs for O&M	Rs. Lakhs	10.00
45	GO	Others (Specify)	Rs. Lakhs	90.00
46	GP	Total Annual Operating Expenses	Rs. Lakhs	516.00
		<i>Financial Information - Annual Operating Revenues</i>		
47	GQ	Arrears at the beginning of previous year (2017-18)	Rs. Lakhs	70.00
48	GR	Revenue demand from user charges - sewerage only	Rs. Lakhs	0.00
49	GS	Revenue demand from tax/cess - sewerage only	Rs. Lakhs	414.00
50	GT	Revenue demand from other sources (eg. connection costs/donations etc.)	Rs. Lakhs	6.00
51	GU	Total Revenue Demand of the previous year (Current Demand of previous year)	Rs. Lakhs	420.00
	IX	EFFICIENCY IN COLLECTION OF SEWAGE CHARGES		85.7
52	GU	Total Revenue Demand of the previous year (Current Demand of previous year)	Rs. Lakhs	420.00

S.No	Code	Input Nomenclature		Value
53	GV	Collection against arrears (2017-18)	Rs. Lakhs	58.00
54	GW	Collection against current demand (2018-19)	Rs. Lakhs	360.00
		Additional Information (Optional)		
		Staff Information		
55	HA	Senior Management (Sanctioned)	Number	0
56	HB	Senior Management (Working)	Number	0
57	HC	Engineers (Sanctioned)	Number	2
58	HD	Engineers (Working)	Number	1
59	HE	Clerks/Accountants (Sanctioned)	Number	1
60	HF	Clerks/Accountants (Working)	Number	1
61	HG	Labourers/Cleaners (Sanctioned)	Number	66
62	HH	Labourers/Cleaners (Working)	Number	53
63	HI	Total (Sanctioned)	Number	69
64	HJ	Total (Working)	Number	55
		Septage Management		
65	HL	Does the ULB practice septage management	Yes/No	Yes
66	HM	Septage sucking machines available within ULB	Number	3
67	HN	Private Septage machines licensed by ULB	Number	2
		Connection Costs for Sewerage Connections		
68	HO	Residential - General	Rs	775
69	HP	Residential - Urban Poor	Rs	775
70	HQ	Institutional	Rs	5582
71	HR	Commercial	Rs	5582
72	HS	Industrial	Rs	10373
		Sewerage Tariff Structure - Flat Rate Tariff		
73	HT	Residential - General	Rs./Month	2.5% of ARV
74	HU	Residential - Urban Poor	Rs./Month	2.5% of ARV
75	HV	Institutional	Rs./Month	2.5% of ARV
76	HW	Commercial	Rs./Month	2.5% of ARV
77	HX	Industrial	Rs./Month	2.5% of ARV
		Sewerage Tariff Structure - Volumetric Tariff		
78	HY	Residential - General	Rs./KL	0
79	HZ	Residential - Urban Poor	Rs./KL	0
80	IA	Institutional	Rs./KL	0
81	IB	Commercial	Rs./KL	0
82	IC	Industrial	Rs./KL	0

3.4.1.1 Issues:

Over the year Sewerage Generation will be as under

Table 3-27 Sewerage Generation over Year

Sewerage Generation	2021	2026	2031	2036	2041	2046	2051
A Municipal Area	123	135	155	169	183	199	215
B Cantonment Board	4	5	5	6	7	8	9
C Total Villages within Planning Boundary	30	34	38	42	53	59	66
D Total Census Towns within Planning Boundary	11	12	13	15	19	21	23
E Total Planning Boundary Population	168	185	210	231	262	287	313

Source: Analysis

1. Coverage:

The present population of Bareilly is approximately 1554063, as against the combined design population of 1140717 for stage I and stage II sewerage schemes. Thus even after the Stage II scheme, designed to cover 165 MLD for 2033 where as by 2036 the discharge wwithin Municipal area will be 169 MLD, the entire present population of the city will not be covered.

ii) Sewer Connections:

Out of total households, only 50 properties have been connected to the sewers. Even allowing for some unauthorized connections, the utilization of the sewer network appears to be extremely poor. The number of properties connected to the sewer network is abysmally small. An urgent and concerted drive to increase the number of sewer connections is called for.

1. Need of Updated Map of Sewer Network:

Unless an updated map showing all the sewers laid so far is prepared, an action plan to improve the coverage and utilization of the sewerage system will not be accurate or fruitful.

(iv) Unauthorized Lifting of Sewage:

Very little quantity of sewage appears to be reaching the treatment plant. Farmers lift the raw sewage from the manholes of out fall sewers and use it for agricultural purpose.

1. Performance of Sewage Treatment Plant

Measurement of sewage flow entering the sewage treatment plant and the characteristics of the influent and effluent needs to be done on a regular basis to know the effectiveness and efficiency of the sewer network and STP.

3.4.2 Stormwater Drain

The total length of roads in the City of Bareilly is 832 km out of which only 105 km stretch has closed stormwater drains translating to 12.62%. There are three natural drains in the city namely the Deveraniya drain, Chaubari drain and Nakatiya river/drain. Table 1-1 depicts the characteristic features of the Deveraniya drain while Table 1-2 and Table 1-3 depict the characteristic features of the Chaubari drain & Nakatiya drain respectively

3.4.2.1 Deveraniya drain

Table 3-28 Deveraniya drain – characteristic features

Sr. No	Description	Remarks
--------	-------------	---------

1	Point of origin	Sarai Talfi
2	Point of discharge	River Ramganga
3	Distance of discharge point from city limits	24 km
4	Quantity of sewage let into this drain	102.80 MLD
5	Water quality in drain (pH)	7.20
6	BOD value	39.8
7	COD value	80
8	TSS value	89

(Source: CSP Bareilly)

3.4.2.2 Chaubari drain

Table 3-29 Chaubari drain – characteristic features

Sr. No	Description	Remarks
1	Point of origin	Subash Nagar
2	Point of discharge	River Ramganga
3	Distance of discharge point from city limits	11 km
4	Quantity of sewage let into this drain	51 MLD
5	Water quality in drain (pH)	7.1
6	BOD value (mg/L)	33.2
7	COD value (mg/L)	200
8	TSS value (mg/L)	70

(Source: CSP Bareilly)

3.4.2.3 Nakatiya drain

Table 3-30 Nakatiya drain – characteristic features

Sr. No	Description	Remarks
1	Point of origin	Deen Nagar
2	Point of discharge	River Ramganga
3	Distance of discharge point from city limits	100 km
4	Quantity of sewage let into this drain	24 MLD
5	Water quality in drain (pH)	7.30
6	BOD value	44.8
7	COD value	120
8	TSS value	114

Source: CSP Bareilly)

3.4.3 SOLID WASTE MANAGEMENT

The total solid waste generated in Bareilly is 447.18 Tonnes Per Day (TPD). However, at present, the amount of solid waste collected is only 430 TPD. Of the collected solid waste (Nearly) 140 TPD is processed while the remaining 290 TPD is disposed off in the dump yard. At present, there is no household source segregation. Two solid waste management plants exist (i) At Rajau Paraspur and (ii) At Bakarganj, out of which the SWM plant in Rajau Paraspur is non-operational. Table 6-6 represents the background & status of the Rajau Paraspur SWM plant:

Table 3-31 SWM Plant in Rajau Paraspur

Sr. No	Description	Remarks
1	Land Extent	21.20 Acres
2	Status	Commissioned in 2013 and is abandoned for the past five years

3	Reason For Non-Existence In Operation	Owing to local agitation from citizens as it is located near forest land. Subsequently the National Green Tribunal (NGT), on the grounds of unsafe waste disposal practices, has suspended the functioning of the treatment plant.
4	Facilities Covered	Organic Waste Conversion (OWC) and sanitary landfill
5	Recommendation	Suitably can be relocated to another location which is free from any ecologically-sensitive hindrances. The plant thus relocated will be able to reduce the treatment burden of the existing plant at Bakarganj



Figure 3-28 Rajau Paraspur SWM Plant



Figure 3-29 Abandoned approach in Rajau Paraspur SWM Plant

Table 3-32 Represents the background & status of the Bakarganj SWM Plant:

Sr. No	Description	Remarks
1	Land Extent	17 Acres
2	Status	In operation since December 2021
3	Facilities Covered	Bioremediation I.E., conversion of waste to Refuse Derived Fuel (RDF)
4	Salient Features	<ul style="list-style-type: none"> • Dumping area: 6 acres • Operational hours: 20 • Operating capacity: 600 TPD • Incoming waste at present: 350 TPD
5	Operating Mode	Public-Private Partnership (PPP) under the “Construct Operate And Maintain” model through 10 years of concession

3.4.4 Projected Solid Waste Generation

The solid waste generation, though measured at the city level, should also be measured and calculated for the entire planning area considered in the ambit of the Vision Plan for Bareilly City. Hence, it is imperative to include those additional areas such as the Cantonment Board Area, Town Villages within the planning boundary and census towns in the planning boundary in addition to the existing Municipal Corporation Area. As a result, the total population for the Year 2021 (Base Year), the year 2036 (Intermediate Year) and the year 2041 (Ultimate Year) are considered for the projection of the solid waste generation as well. The ensuing sections discuss the solid waste generation projection for different scenarios. Table 6-8 represents the solid waste generation projection for the Municipal Corporation area of Bareilly

Table 3-33 Solid waste generation projection – Municipal Area

S. No	Population Year	Population	Solid Waste Generation (TPD)	Organic Waste (TPD)	Existing SWM Plant Capacity (TPD)	Sufficiency	Gap (TPD)	Inorganic Waste (TPD)
1	2021	1,140,717	491	294	600	No Gap	0	196
2	2036	1,561,400	671	403	600	No Gap	0	269
3	2051	1,991,891	857	514	600	No Gap	0	343

Note: If the projected organic waste is found to be higher than the existing SWM plant capacity, then a gap is observed. Inorganic waste is not considered to be treated and handled within the premises of the SWM plant at present.

Inference:

- Even upon an increase in the population up to the ultimate year (2051), the existing plant in Bakarganj shall be able to handle the organic waste to be generated over the years
- Thus, a need for the development of a new facility doesn't arise if only the municipal area solid waste generation is projected over the project horizon

Table 6-9 depicts the solid waste generation projection for the entire planning area of the Bareilly master plan excluding the cantonment board area

Table 3-34 solid waste generation projection – planning area excluding Cantonment Board Area

S. No	Population Year	Population	Solid Waste Generation (TPD)	Organic Waste (TPD)	Existing SWM Plant Capacity (TPD)	Sufficiency	Gap (TPD)	Inorganic Waste (TPD)
1	2021	1518645	653	392	600	No Gap	0	261
2	2036	1670832	718	431	600	No Gap	0	287
3	2051	2813243	1210	726	600	Gap Exists	125.82	484

Note: If the projected organic waste is found to be higher than the existing SWM plant capacity, then a gap is observed. inorganic waste is not considered to be treated and handled within the premises of the SWM plant at present.

Inference:

- In the ultimate planning year (2051), the projected organic solid waste is found to exceed the existing plant capacity of Bakarganj
- Assuming that the entire solid waste generated from the Municipal Area, Villages, and Census towns in the planning area of the overall Bareilly Master Plan area is treated in the Bakarganj

SWM plant, it is observed that until 2036, the existing Bakarganj SWM Plant will be sufficient to handle and treat the solid waste only

- It is essential to set up a new SWM plant, preferably as an alternative to the abandoned Rajau Paraspur SWM plant, wherein the maximum design capacity can be 125 TPD and the proposed new SWM plant can be developed post-2036 in a phased manner



Figure 3: Existing SWM plant



Figure 3: Existing SWM plant

3.4.4.1 Leveraging the success stories of other Cities in India

The best practices leading to successful management of collection, handling, conveyance and treatment of solid waste in various Indian cities are analysed and a few inferences are attempted in this section.

Table 3-35 Case study of successful SWM practice – Alappuzha

Case Study Location	Alappuzha
State	Kerala
Major Success Factors	<ul style="list-style-type: none"> Source-level segregation and decentralised solid waste management Marginalised community involvement in rag picking
The economic impact on corporation	<ul style="list-style-type: none"> Employment opportunities for more than 90 Self-Help Group (SHG) members Average daily earnings of Rs. 400 per member of SHG through this initiative Waste dumped into water bodies is minimised thereby improving the ecological health of the City
Relevance to Bareilly Municipal Corporation (BMC)	Engaging source-level segregation through the marginalised community will be a Win-Win situation wherein the BMC shall minimise the amount of waste being processed and also it shall employ marginalised communities thereby improving their livelihoods

Source: Atin Biswas, Subhasish Parida et al. 2021, Waste-Wise Cities: Best practices in municipal solid waste management, Centre for Science and Environment and NITI Aayog, New Delhi.

Table 6-11 represents the outcome of the case study of successful SWM practice in Bhopal in Madhya Pradesh

Table 3-36 Case study of successful SWM practice – Bhopal

Case study location	Bhopal
State	Madhya Pradesh
Major success factors	<ul style="list-style-type: none"> Source-level segregation Decentralised solid waste management Formalising awareness campaigns for citizen participation Leveraging the informal sector into the channel of formal solid waste management

The Economic Impact On Corporation	<ul style="list-style-type: none"> • Marginalised community involvement in rag picking • Reduced capital cost for SWM • Decrease in operational expenses by maximising the efficiency • Achieving 100 % source segregation has led to an increase in the efficiency of SWM • Reduced infrastructure costs and augmented the operational revenue by achieving a high rate of material processing
Relevance To BMC	<ul style="list-style-type: none"> • Engaging citizen awareness programme such as “Carry Your Own Bag” and “Community Composting” are some of the initiatives which can be replicated to attain sustainable sanitation in BMC • Over the long run, the operational efficiency of waste handling can be increased thereby resulting in decreased operational expenditure for BMC

Source:

Atin Biswas, Subhasish Parida et al. 2021, *Waste-Wise Cities: Best practices in municipal solid waste management*, Centre for Science and Environment and NITI Aayog, New Delhi.

3.5 ECONOMY

3.5.1 ECONOMIC PROFILE OF BAREILLY

Bareilly is one of the fastest growing cities of India and the reason behind its growth story is its rapidly booming economy through various sectors, however Bareilly is still an agri based economy largely but there are a few traditional sectors as well like Zari Work, Bans Work, Kite making etc. The existing industrial set up of Bareilly is flourishing mostly with agri based products.

In the field of medical and Health Care, Bareilly is among one of the leading cities of Uttar Pradesh. In terms of medical facilities, the city serves as a gateway to the patients of the Kumaun, Rohilkhand, and West Nepal region.

Bareilly is an educational hub of Western Uttar Pradesh with multiple universities and research institutes. Bareilly College, located in the heart of city, is among the oldest educational institutions in India, built prior to the Revolt of 1857. Bareilly is a seat of M. J. P. Rohilkhand University and it also hosts Indian Veterinary Research Institute and Central Avian Research Institute.

The city holds numerous Engineering Colleges, Management Colleges, Law Colleges, Medical Colleges, and also there are colleges running general courses. The city is equidistant from New Delhi (public capital) and Lucknow, the capital of Uttar Pradesh. This makes Bareilly a nodal point between two significant urban communities of India.










3.5.2 Methodology for Existing Situation analysis

This section is aimed at presenting the status of the district's economy, people and tracing the past economic growth path in a way that will facilitate the assessment of the structural changes that have occurred over a period of last 10 years (2011-12 to 2019-20). In this assessment, the three main aspects considered are:

- i. Size of the economy in terms of Gross Domestic Product (GDP) at factor cost (FC) estimated at current prices,
- ii. Per capita income estimated based on Net state Domestic Product and
- iii. Sectoral composition (Primary, Secondary, and Tertiary).
- iv. Detailed analysis of MSME
- v. Handicrafts of Bareilly
- vi. Health and education infrastructure
- vii. Real estate development

This structural analysis conducted for district identifies the growth drivers of the past. The economic profiling and assessments are conducted at the district level based on data of concerned district. The economic data obtained from the Directorate of Economics and Statistics; Government of Uttar Pradesh (UPDES) is extensively relied upon.






Broad overall methodology to carry out assessment of economy is depicted below:








As-Is Assessment - Economy			
Sector	Focus Area	Tasks	Identified Outcomes
Economy	 GDP and CPI	→ Sectoral trend based analysis	Potential & Growing sector
	 Sector of Economy	→ Primary, Secondary, Tertiary	
	 Demographic	→ Work Force participation rates	Major Contributors
	 Analysis of industries	→ Based on Output, Investment & Employment	Growing Industrial sector
	 Handicraft	→ Understanding of challenges and potential	Revival strategies
Infrastructure	 Health Infrastructure	→ Number, capacity, Gap Assessment	Gaps in comparison to URDPFI
	 Education Infrastructure	→ Number, capacity, Gap Assessment	
	 Real Estate	→ Growth Direction, Project & Pricing trend, Demand	Potential areas of development
Interventions	 Government interventions	→ Project, Proposals, Schemes, Master Plans	Induced impact of proposals

Existing situation assessment was thoroughly accompanied by the stakeholder discussions and the objectives of discussion were:

- 1) Identifying the key challenges and issues in the sector.
- 2) Identifying the factors limiting the ability of stakeholder to address pressing issues.
- 3) Identifying areas which are not covered presently or has scope for development.

Following are the list of stakeholder meetings held with respect to economic aspect assessment of Bareilly:

Component/ Item	Date	Concerned Person	Stakeholder
Industries 	25.01.2022	Mr. Abhinav Agarwal, President	Central U.P. Chamber of Commerce & Industry
Automobile industries 	25.01.2022	Mr. Alpit Agarwal, Secretary	Federation of Automobile Association
Hospitality Sector 	25.01.2022	Mr. Puneet Saxena Treasurer, HRANI Partner, Hotel Uberoi Anand	Association of Hoteliers of Bareilly
Commercial sector 	25.01.2022	Mr. Rajendra Gupta – Provincial General Secretary	U.P. Udhog Vyapar Mandal
Real Estate 	27.01.2022	Mr. Ramandeep Singh, Designation – Chairman, Position in Credai – President	CREDAI BAREILLY - Association or organization

Component/ Item		Date	Concerned Person	Stakeholder
Health Sector		28.01.2022	Dr. Vimal Bharadwaj, President IMA Bareilly	Indian Medical Association, Bareilly Chapter
Industries		28.01.2022	Mr. Ashish Khandelwal	BL Agro Industries (private industry)
Handicraft		07.02.2022	Nadeem Hussain (General Secretary)	Artisans, Dastkar Bunkar Welfare Association Bareilly, Govt. Common Facility Centre – Bamboo and Beint
Handicraft		07.02.2022	Pulkit Jain (Development Commissioner)	Office of the Development Commissioner (handicrafts)
Industries		09.02.2022	Mr. Neeraj Goel - Chapter Chairman Mr. Tanuj Bhasin - Chapter Head Mr. Mayur Dheerwani – Treasurer	Indian Industries association – Bareilly Chapter
Health Sector		09.02.2022	Mr. Harpal Singh Additional Chief Medical Officer	Office of Chief Medical Officer
Industry		15.03.2022	Mr. Atul Gangwar	Horticulture Department Bareilly

Two days multistakeholder discussion

Date: 14 th March 2022 Venue: BDA office complex	Attendees: <ul style="list-style-type: none"> Representatives from Chamber of Commerce Mr. Dinesh Goel, National Secretary; Mr. Bhasin, Secretary, Indian Industry Association (IIA) Representatives from Laghu Udyog Bharti
Date: 15 th March 2022 Venue: BDA office complex	Attendees: <ul style="list-style-type: none"> Mr Rajeev Kumar Agarwal, President, UP Nursing Home Council Mr. Durgesh Kumar, Senior Vice President, Udhog Mandal

Data sources referred:

Items	Period	Sources
GDDP	2011-2020	For GDDP and Primary, Secondary, Tertiary sector data, we have considered two sources because in first source, data up to 2016 - 2017 was given. The two sources considered are as follows: 1) District Domestic Product (2011-2017) ¹ as per UPDES Portal 2) District Domestic Product Report (2019-20) ²
Primary, Secondary, Tertiary Economic sector		
Per Capita Income		
Industrial profile	2010 - 2011 (latest)	Existing Micro & Small Enterprises and Artisan Units ³
MSME sector - Output, Investment and Employment	2013-2018 (5 years)	Annual Survey of Industries (ASI) report 2017-18 ⁴
Industries employment & investment	22 nd Dec 2020 to 31 March 2021 (4 months)	Data provided by DCI is of Industries employment & investment of 4 months only. Therefore, data from the wholistic ASI 2017-18 report is considered.
Existing Industrial Area	2022 (Latest)	U.P. State Industrial Development Authority Portal ⁵
Crop Production Statistics	2018-19 (Latest)	Crop Production Statistics for Bareilly 2018-19 ⁶
Demographic figures	2011 (Latest)	Census of India 2011
Modes of income and Literacy completion status	2011 (Latest)	Socio Economic and Caste Census (SECC) 2011 ⁷
Mines	2022 (latest)	Directorate of Geology & Mining Government of Uttar Pradesh ⁸
Tourist footfall	2015 - 2019 (latest)	Tourist footfall information ⁹
Skill mapping	Valid for period 2013-2023	District wise skill gap study for the State of Uttar Pradesh by National Skill Development Corporation (NSDC) in 2013 ¹⁰
Existing health and education infrastructure at district level	2020 (latest)	Statistical journal internet-based data entry and retrieval system, 2020 ¹¹

¹ [http://updes.up.nic.in/esd/STATE_ACC_STATISTICS/NDDP_&_GDDP/statedomestic\(b\).htm](http://updes.up.nic.in/esd/STATE_ACC_STATISTICS/NDDP_&_GDDP/statedomestic(b).htm)

² <http://updes.up.nic.in/esd/Book/DDP2019-20%20M21.pdf>

³ <http://dcmsme.gov.in/old/dips/Bareilly.pdf>

⁴ [http://updes.up.nic.in/esd/Industrial_Statistics/ASI/Industrial%20Statistics\(a\).htm](http://updes.up.nic.in/esd/Industrial_Statistics/ASI/Industrial%20Statistics(a).htm)

⁵ <https://gis.onlineupsidc.com/>

⁶ https://aps.dac.gov.in/APY/Public_Report1.aspx

⁷ <https://secc.gov.in/>

⁸ <http://dgmup.in/minerallist/home/MineralRate>

⁹ <http://www.uptourism.gov.in/pages/top/about-up-tourism/year-wise-tourist-statistics>

¹⁰ <https://nsdcindia.org/sites/default/files/files/up-sg-report.pdf>

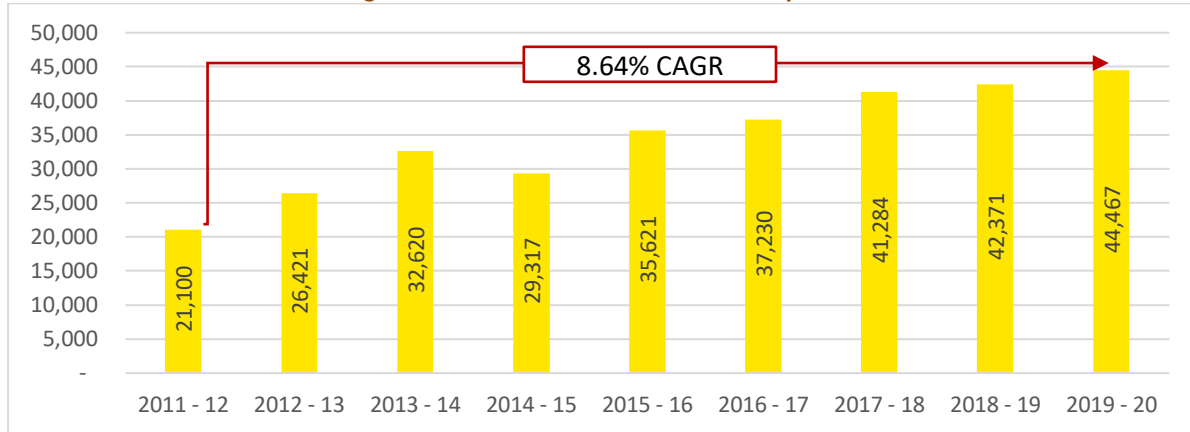
¹¹ <http://updes.up.nic.in/spiderreports/intialisePage.action>



3.5.3 Gross Domestic Product (GDP) analysis

GDP is analyzed at district level due to un-availability of the data at city level. The district economy grew at the rate of 8.64% CAGR (compounded annual growth rate) during 2011-12 and 2019-20 while the state’s economy grew at the rate of 8.72% CAGR. The GDP growth of the Bareilly district has been slightly less than the state’s economic growth over the same period.

Figure 3-32 - Growth Trend in GDP of Bareilly District



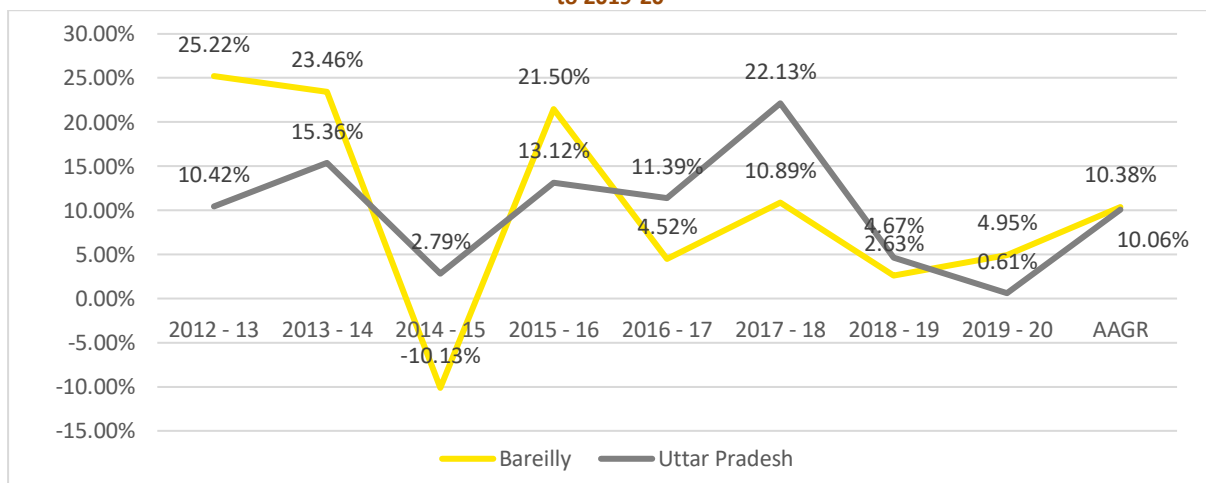
Source: Consultant analysis of data published on <http://updes.up.nic.in/esd/Book/DDP2019-20%20M21.pdf>

Table 3-37 Fluctuations in annual real economic growth rate (GDDP at Current Prices) of District vs State from 2012-13 to 2019-20

Area	2012 - 13	2013 - 14	2014 - 15	2015 - 16	2016 - 17	2017 - 18	2018 - 19	2019 - 20	AAG R
Bareilly	25.22%	23.46%	-10.13%	21.50%	4.52%	10.89%	2.63%	4.95%	10.38%
Uttar Pradesh	10.42%	15.36%	2.79%	13.12%	11.39%	22.13%	4.67%	0.61%	10.06%

Source: Consultant analysis of data published on [http://updes.up.nic.in/esd/STATE_ACC_STATISTICS/NDDP & GDDP/statedomestic\(b\).htm](http://updes.up.nic.in/esd/STATE_ACC_STATISTICS/NDDP & GDDP/statedomestic(b).htm)

Figure 3-33 - Fluctuations in annual real economic growth rate (GDDP at Current Prices) of District vs State from 2012-13 to 2019-20



Source – District Domestic Product Report 2019-20

Table 3-38 GDP of State vs District GDP

Items	2011 - 12	2012 - 13	2013 - 14	2014 - 15	2015 - 16	2016 - 17	2017 - 18	2018 - 19	2019 - 20
Share of Bareilly District in State GDP	11.61%	13.16%	14.09%	12.32%	13.23%	12.41%	11.27%	11.05%	11.53%

Source – District Domestic Product Report 2019-20

As depicted in table above, the GDDP contribution (at current prices) of region to State's economy has remained uniform from 11.61% in 2011-12 to 11.53% in 2019-20. Overall share of Districts contribution to state GDP in last 9 years have remained constant with minor changes. Though, year-on-year micro analysis suggest that the share of the district seem to be on declining trend. There is a substantial chunk (~2.5%) has eroded in the state pie from year 2013-14 to 2019-20. It indicates that the other districts are moving at faster pace and therefore capturing larger chunk of the state pie in the overall productivity. Therefore, there is a clear case of accelerating the growth and productivity in order to maintain / improve its tally in the bigger scheme of economic development.

3.5.4 Work force participation analysis

Work force participation is analyzed at district level and city level as below:

3.5.4.1 Work force participation (WRP) analysis based on Census 2011 for Bareilly district

In Bareilly district out of total population, 14 lakh were engaged in work activities which is approximately 32% of the total population. Approximately 68% of the population is identified as non-working population. 74.5% of workers describe their work as Main Work (Employment or Earning more than 6 Months) while 25.5% were involved in Marginal activity providing livelihood for less than 6 months.

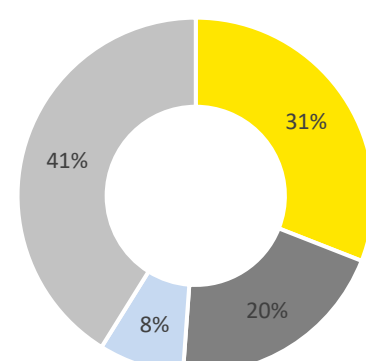
Table 3-39 Work force participation (WRP) for Bareilly district

Classification	Total	Male	Female
Main Workers	10,43,912	9,10,612	1,33,300
Marginal Workers	3,58,059	2,42,394	1,15,665
Total Workers = Main Workers + Marginal Workers	14,01,971	11,53,006	2,48,965
Non-Working	30,46,388	12,04,659	18,41,729

Source - Census of India 2011

Table 3-40 Main Workers Classification for Bareilly district

Main workers Classification	Total	Male	Female
Cultivators	3,23,067	3,03,700	19,367
Agriculture Labourer	2,10,945	1,95,910	15,035
Household Industries	80,554	50,431	30,123
Other Workers	4,29,346	3,60,571	68,775



- Cultivators
- Agriculture Labourer
- Household Industries
- Other Workers

Source - Census of India 2011

Of 14 lakh workers engaged in Main Work, approximately 3 lakh were cultivators (owner or co-owner) while approximately 2 lakh were Agricultural labourer which is more than 50% of the main workers population combined.

As per Census of India 2011, majority i.e., more than 50% of the main workers at district level are indulged in primary sector.

3.5.4.2 Work force participation (WRP) analysis based on Census 2011 for Bareilly Municipal Corporation & outgrowth area

In Bareilly Municipal Corporation & outgrowth out of total population, approximately 3 lakh were engaged in work activities which is approximately 34% of the total population and 66% of the population is identified as non-working population.

In Bareilly Municipal Corporation & outgrowth out of total population, approximately 3 lakh were engaged in work activities which is approximately 34% of the total population and 66% of the population is identified as non-working population.

Table 3-41 Work force participation (WRP) for Bareilly Municipal Corporation and outgrowth area

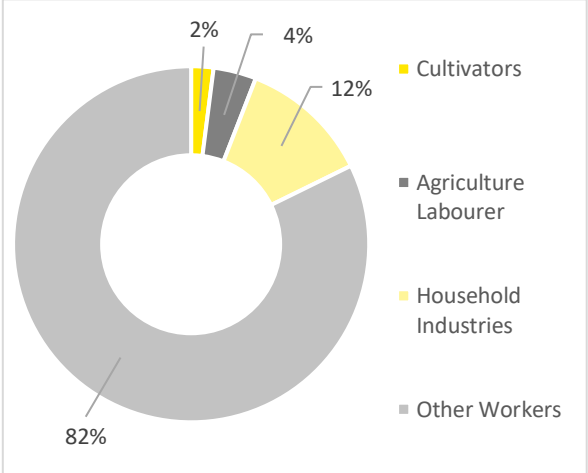
Classification	Total	Male	Female
Main Workers	2,35,736	1,97,925	37,811
Marginal Workers	67,656	45,798	21,858
Total Workers= Main Workers + Marginal Workers	3,03,392	2,43,723	59,669
Non-working population	6,01,405	2,33,792	3,67,613

Source - Census of India 2011

Out of working population, approximately 77.7% of workers describe their work as Main Work (Employment or Earning more than 6 Months) while 22.3% were involved in Marginal activity providing livelihood for less than 6 months. Of 3 lakh workers engaged in Main Work, 4,776 were cultivators (owner or co-owner) while 9,173 were Agricultural labourer.

Table 3-42 Main Workers Classification for Bareilly Municipal Corporation and outgrowth area

Main Workers Classification	Total	Male	Female
Cultivators	4,776	3,933	843
Agriculture Labourer	9,173	7,943	1,230
Household Industries	27,855	20,117	7,738
Other Workers	1,93,932	1,65,932	28,000
Total	2,35,736	1,97,925	37,811



Source - Census of India 2011

As per Census of India 2011, majority of the main workers are indulged in secondary and tertiary sector, and approximately 6% of the main workers are involved in primary sector.

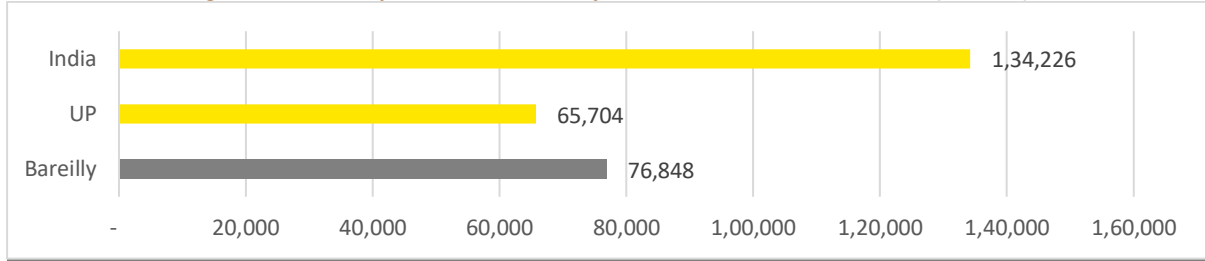


3.5.4.3 Per capita income

Per capita income measures the average income earned per person in a given area. Per capita income of Bareilly is analysed at district level due to un-availability of the data at city level.

Bareilly district’s average per capita income considered for evaluation for 2019-20 is estimated at INR 76,848 which is higher than the state’s average per capita income of INR 65,704 for the same year.

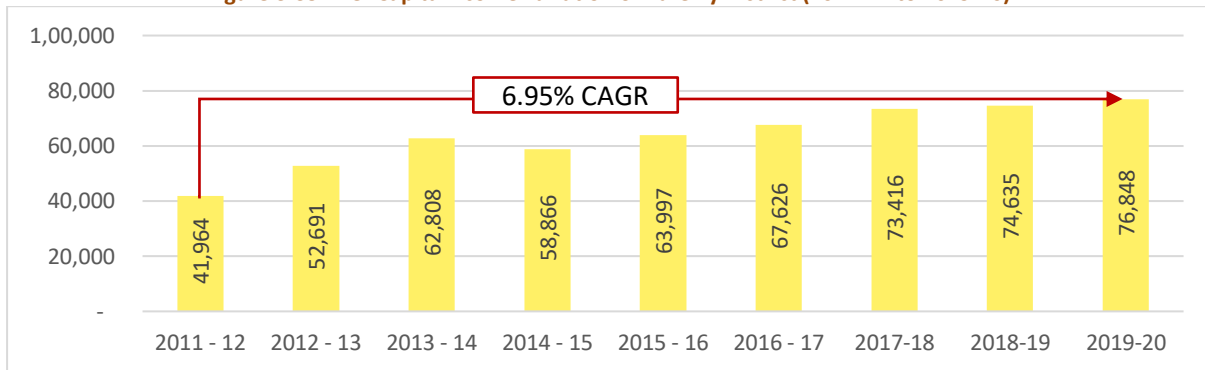
Figure 3-34 - Per capita income of Bareilly District, Uttar Pradesh and India (2019-20)



Source: http://updes.up.nic.in/esd/reports_publication_Elib_public.htm

Per capita income of the district has grown at an average rate of 6.95% between 2011-12 and 2019-20 and the growth witnessed at the state level was 8.32% during the same period. While, at the country level, the growth was at 9.8% during the same period.

Figure 3-35 - Per Capita income variation of Bareilly District (2011-12 to 2019-20)



Source – District Domestic Product Report 2019-20

3.5.5 Ease of Living Index

The Ease of Living (EOL) Index measures the wellbeing of the citizens in 111 cities, including cities identifies under the Smart City Mission, capital cities and cities with a population more than 1 million. As a data – driven evaluation tool that quantifies the performance of cities across several parameters, the index also empowers cities to use evidence – based planning and implementation. The models used for the assessment also aligns with the Sustainable Development Goals (SDGs), making EOL a convenient means to track the urban India’s progress towards achieving SDGs Goals in the cities.

The recent Ease of Living (EOL) Index 2020 for Bareilly city has shown poor performance whereas the recent Municipality Performance Index (MPI) 2020 for the city has shown a satisfactory performance. In case of EOL, Bareilly city stood at 47th Rank among 49 cities with population more than 1 million.

In order to understand the poor performance of the city in case of EOL as well as to identify the strengths and weaknesses of the city, it is important to analyse the various pillars and categories scores of Ease of Living Index (EOL) and Municipality Performance Index (MPI).

The various pillars being analyzed in terms of EOL are

- Quality of Life,

- Economic Ability¹²,
- Citizen perception and Sustainability.

Figure 3-36 - Ease of Living Index 2020



Source: City Rankings 2020 (URL - smartcities.gov.in)

From the analysis of above stated various pillars of EOL, it is inferred that Bareilly city has shown poor performance in the case of two pillars, i.e., Quality of Life and Sustainability whereas has shown worst performance in the case of Economic ability and satisfactory performance in case of Citizen perception.

¹² There are two categories to the Economic Ability pillar-

- Level of Economic Development, and
- Economic Opportunities.

While the Level of Economic Development has been measured based on per capita wages and factories present in these cities, economic opportunities focus on the accessibility to resources, in the form of credit and skills, that can help create livelihoods.

3.5.6 Economic Sector Analysis

The sector analysis has been carried out for primary (agriculture & allied activities), secondary (industrial/ manufacturing) and tertiary (services) sectors. Each of these three sectors has been examined at the economic activity level for their contribution and growth trend. Thus, the sector analysis provides insight into not only the growth pattern of each of the major economic activities in each of the sectors of the region at a micro level, but also enables identification of key constraints and issues at the sector level.

Economic sectors are analyzed at district level due to un-availability of the data at city level.

The contribution of tertiary sector to the district's GDP is approximately 52% followed by secondary sector (28%) and primary sector (20%). The detailed share of each sector is presented in table below.

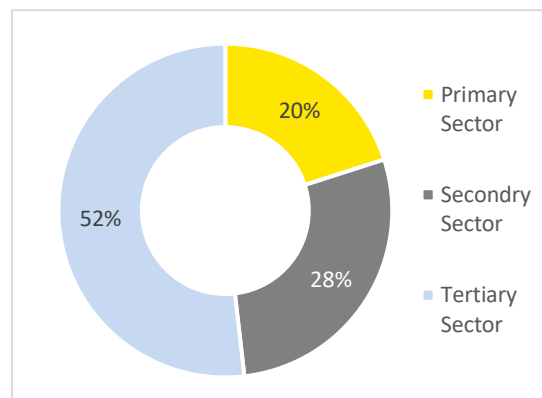


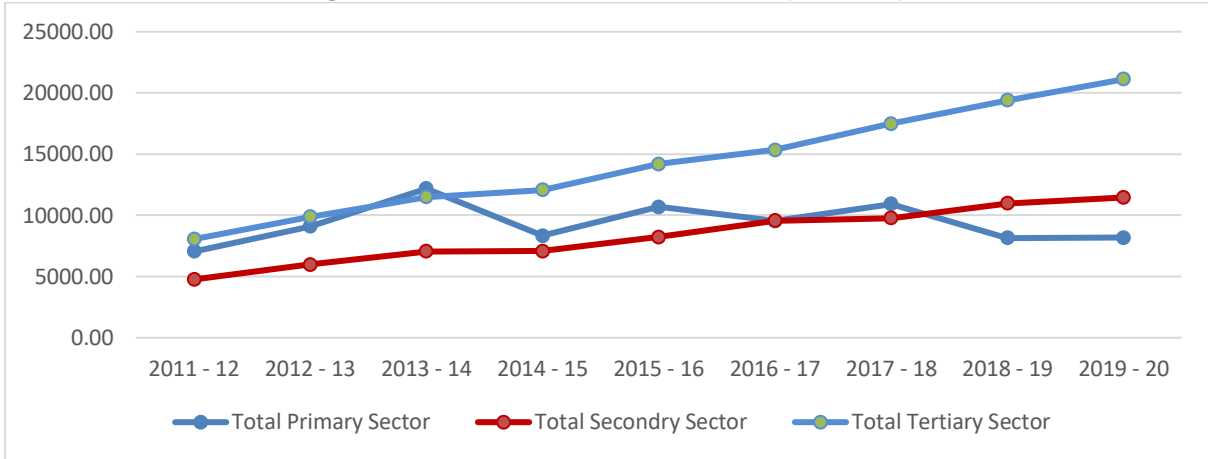
Table 3-43 - Overall economic sector share in GDP

Sectors of Economic Activity	2019 – 20	
	Share in GDP	% share to the GDP
Crops	4429.42	10.9%
Animal Husbandry	3,355.81	8.2%
Forestry & Logging	139.36	0.3%
Fishing	162.02	0.4%
Mining & Quarrying	84.9	0.2%
Total Primary Sector	8,171.52	20.1%
Manufacturing	3,729.48	9.2%
Electricity, gas and water supply	706.52	1.7%
Construction	7,022.21	17.2%
Total Secondary Sector	11,458.2	28.1%
Trade hotels and restaurants	3,350.55	8.2%
Railways	684.86	1.7%
Transport by other means	1,368.48	3.4%
Storage	110.77	0.3%
Communications	364.79	0.9%
Banking & Insurance	1,186.62	2.9%
Real estate, ownership of dwellings and business services	7,194.16	17.7%
Public administration	2,752.19	6.8%
Other services	4,120.02	10.1%
Total Tertiary Sector	21,112.44	51.8%

- Under primary sector, namely (i) Agriculture and (ii) Animal Husbandry are the major contributors.
- Under secondary sector, namely construction field is the major contributor.
- Under tertiary sector, namely - (i) Real estate, business services, (ii) Trade hotels & restaurants and other classified services are the major contributors.



Figure 3-37 - Growth trend of economic sectors (2011-2020)



The tertiary and secondary sector’s contribution has increased gradually high in comparison to primary sector’s contribution in last 10 years.

3.5.6.1 Primary sector

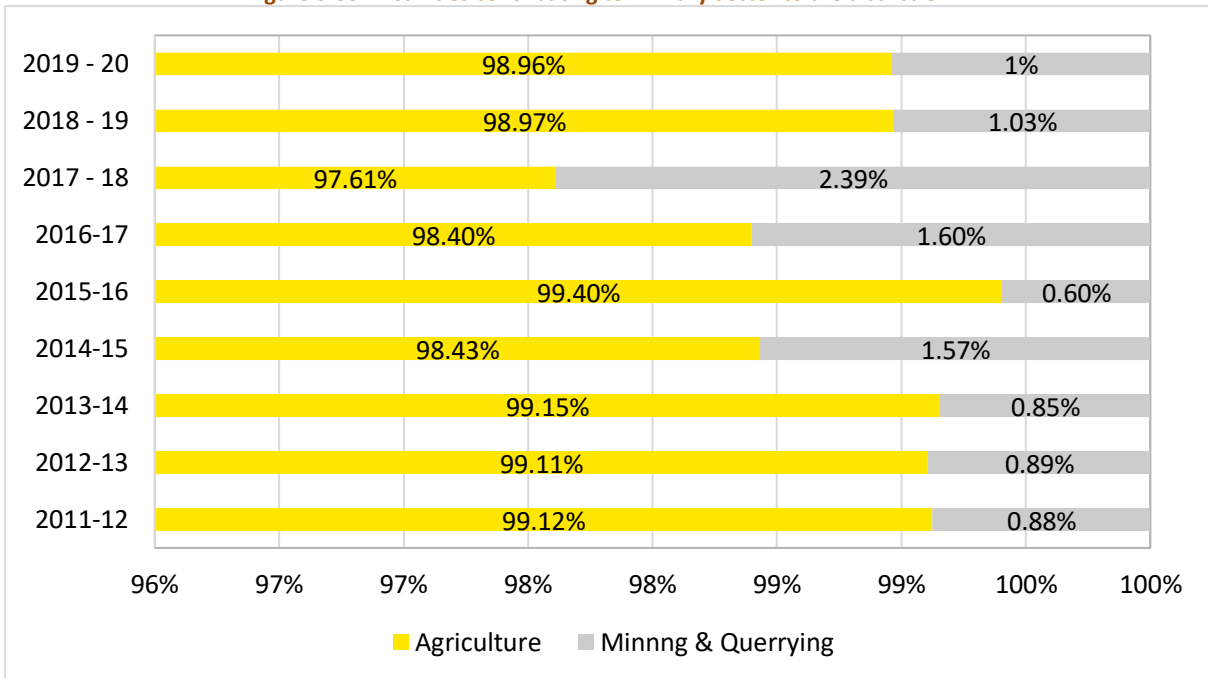
Composition: 2019-20

The contribution of primary sector to the district GDP has decreased from 35.5% in 2011-12 to 20.1% in 2019 – 20. Of the INR 8,171.52 Cr. (in 2019-20) from the primary sector, ~99% came from the economic activities of agriculture and allied sub sectors followed by mining & quarrying with 1%. Mining & quarrying activity is mainly related to sand and brick earth mining.

Structural Shift in Composition

The agriculture sub sector and mining sector’s contribution has remained similar since 2011-12 to 2019-20.

Figure 3-38 - Activities contributing to Primary Sector to the district GDP



Source: Consultant Analysis

Agriculture resource produce analysis

Based on the 2018-19 data from the **Crop Production Statistics** for Bareilly district, the crops such as **Sugarcane, Wheat, Banana, rice, and Potato** are the major crops. Based on the production, yield and area utilized for production in Bareilly District.

Table 3-44 Agriculture resource produce (2018-19)

Top 5 crops based on yield (Tonnes/Hectare)			
Crop	Area (Hectare)	Production (Tonnes)	Yield (Tonnes/Hectare)
Sugarcane	97,049	72,53,442	74.74
Banana	25	1,027	41.08
Potato	2,123	54,733	25.78
Onion	95	1,344	14.15
Sweet potato	120	1,378	11.48
Top 5 crops based on total production (Tonnes)			
Crop	Area (Hectare)	Production (Tonnes)	Yield (Tonnes/Hectare)
Sugarcane	97,049.00	72,53,442.00	74.74
Wheat	1,98,541.00	7,76,097.00	3.91
Rice	1,51,037.00	4,04,024.00	2.68
Potato	2,123.00	54,733.00	25.78
Rapeseed & Mustard	18,817.00	32,590.00	1.73
Top 5 crops based on area (Hectare) utilized for production			
Crop	Area (Hectare)	Production (Tonnes)	Yield (Tonnes/Hectare)
Wheat	1,98,541	7,76,097	3.91
Rice	1,51,037	4,04,024	2.68
Sugarcane	97,049	72,53,442	74.74
Rapeseed & Mustard	18,817	32,590	1.73
Bajra	6,539	10,377	1.59

Source – Crop Production Statistics for Bareilly 2018-19, URL – https://aps.dac.gov.in/APY/Public_Report1.aspx

Status of agriculture activity in Bareilly

Irrigated and sown area - Percentage of net irrigated area to net area sown of the Bareilly district has decreased to 1.01% over the years & on the other hand, the percentage of gross irrigated area to gross area sown has shown an increment of nearly 0.13% respectively.

Cropping intensity - Over the time, the cropping intensity in the Bareilly district has increased to 1.04%. In comparison to Western Region, the cropping intensity of the district is 1.09% less. However, in comparison to State, the cropping intensity of the district is 1.87% more respectively.

Productivity food grains & wheat - Over the time, the productivity of total food grain & wheat in the Bareilly district has increased to 16.39% & 19.90% respectively. Whereas in comparison to Western Region, the productivity of total food grain as well as the productivity of wheat in the Bareilly district are 4.00% & 7.06% less respectively. However, in comparison with the State, the productivity of total food grain as well as the productivity of wheat in the Bareilly district are 8.73% & 1.26% more respectively.

Table 3-45 Productivity of total food grains & wheat

District/Region	Productivity of total food grains (Qtls / Hectare)		Productivity of wheat (Qtls/ Hectare)	
	2011-12	2018 – 19	2011-12	2018 – 19
Bareilly	28.24	32.87 ↑	32.60	39.09 ↑
Western Region	30.07	34.24 ↑	36.90	42.06 ↑
Uttar Pradesh	25.84	30.23 ↑	32.83	38.60 ↑

Source – District wise Development Indicators 2020 Economics and Statistics Division State Planning Institute Planning Department, Uttar Pradesh, URL - <http://updes.up.nic.in/esd/reports/district%20indicators%202020.pdf>

Productivity of rice & Potatoes - Over the time, the productivity of rice in the Bareilly district has increased to 6.57% & that of potatoes in the Bareilly district has decreased to 6.56% respectively. In comparison to Western Region, the productivity of rice as well as the productivity of potatoes in the Bareilly district are 1.54% & 19.1% less respectively. On the other hand, in comparison with the State, the productivity of rice as well as the productivity of potatoes in the Bareilly district are 1.07% & 13.63% less respectively.

Table 3-46 Productivity of rice & Potatoes

District/Region	Productivity of rice (Qtls/Hectare)		Productivity of potatoes (Qtls/ Hectare)	
	2011-12	2018 – 19	2011-12	2018 – 19
Bareilly	25.10	26.75 ↑	275.92	257.81 ↓
Western Region	24.39	27.17 ↑	233.85	318.77 ↑
Uttar Pradesh	23.58	27.04 ↑	223.02	298.51 ↑

Source – District wise Development Indicators 2020 Economics and Statistics Division State Planning Institute Planning Department, Uttar Pradesh, URL - <http://updes.up.nic.in/esd/reports/district%20indicators%202020.pdf>

Productivity of oilseeds and sugarcane - The productivity of oilseeds in the Bareilly district has almost doubled & that of sugarcane in the Bareilly district has increased to 29.67% respectively. Whereas in comparison to Western Region, the productivity of oilseeds as well as the productivity of sugarcane in the Bareilly district are 15.81% & 10.71% less respectively. On the other hand, in comparison with the State, the productivity of oilseeds is 37.03% more but the productivity of sugarcane in the Bareilly district is 7.50% less respectively.

Table 3-47 Productivity of Oilseeds & Sugarcane

District/Region	Productivity of oilseeds (Qtls/Hectare)		Productivity of sugarcane (Qtls/ Hectare)	
	2011-12	2018 – 19	2011-12	2018 – 19
Bareilly	7.12	14.80 ↑	576.36	747.40 ↑
Western Region	12.96	17.58 ↑	610.39	837.11 ↑
Uttar Pradesh	8.37	10.8 ↑	595.70	808.07 ↑

Source – District wise Development Indicators 2020 Economics and Statistics Division State Planning Institute Planning Department, Uttar Pradesh, URL - <http://updes.up.nic.in/esd/reports/district%20indicators%202020.pdf>

Production of pulses - the per capita production of pulses in the Bareilly district has shown a decrease of 12.43%. In comparison to Western Region, the per capita production of pulses in the Bareilly district is 10.34% high. In comparison with the State, the per capita production of pulses in the Bareilly district is 66.72% more respectively.

Table 3-48 Per capita production of pulses

District/Region	Per capita production of pulses (kg)	
	2011-12	2018 – 19
Bareilly	4.02	3.52 ↓
Western Region	3.42	3.19 ↓
Uttar Pradesh	11.82	10.58 ↓

Source – District wise Development Indicators 2020 Economics and Statistics Division State Planning Institute Planning Department, Uttar Pradesh, URL - <http://updes.up.nic.in/esd/reports/district%20indicators%202020.pdf>

Area under Rabi and Kharif crop - the percentage share of area under Kharif crop in gross sown area of the Bareilly district has increased to 0.84% & the percentage share of area under Rabi crop in gross sown area has decreased to 0.33%. In comparison to Western Region & State, the percentage share of area under Kharif crop in gross sown area of the Bareilly district are 4.02% & 3.89% more respectively. In comparison to Western Region & State, the percentage share of area under Rabi crop in gross sown area of the Bareilly district is 2.55% & 4.16% less respectively.

Table 3-49 Percentage of areas under Kharif crop & Rabi crop in gross area sown

District/Region	Percentage share of area under Kharif crop in gross area sown		Percentage of area under Rabi crop in gross area sown	
	2011-12	2016 – 17	2011-12	2016 – 17
Bareilly	50.94	51.78	44.42	44.09 ↓
Western Region	47.31	47.76	47.51	46.64 ↓
Uttar Pradesh	45.92	47.89	50.30	48.25 ↓

Source – District wise Development Indicators 2020 Economics and Statistics Division State Planning Institute Planning Department, Uttar Pradesh, URL - <http://updes.up.nic.in/esd/reports/district%20indicators%202020.pdf>

Inferences – Cropping Intensity has increased along with productivity of total food grains, rice, wheat, oilseeds & sugarcane. Additionally, along with decline in percentage share of area under Kharif crop in gross area sown. Productivity of potatoes, pulses has decreased along with decline in percentage of area under Rabi crop in gross area sown.

Mining activity in Bareilly district

The Bareilly District is very poor in mineral resources and hence it lacks the large-scale industrial establishments. Sand, Brick earth, Kankar, Bajri and Boulders are found in this region. At present there are only two active mines which are being mined for Sand from Tiyula and Mohammadpur.

Table 3-50 Details of the mining activities

S.N.	Sub Mineral Name	Lease Detail			Lease Period	Dispatched Quantity of Minerals (Cubic Mt.)	Lease Sanctioned (Per Cubic Mt.)	Lease Status	Last Updated On
		Village	Area (Acre)	Tehsil					

1	Ordinary Sand 2	Tiyula	6.47	Baheri	20/12/2018 - 19/12/2023	6862.00	505.00	Active	06/07/2020
2	Ordinary Sand 2	Mohammadpur	5.47	Bhedi	15/11/2018 - 14/11/2023	4797.00	352.00	Active	06/07/2020
3	Ordinary Sand 2	Anjani Etmali	3.15	Aawla	21/06/2018 - 20/06/2023	0.00	450.00	Closed	-

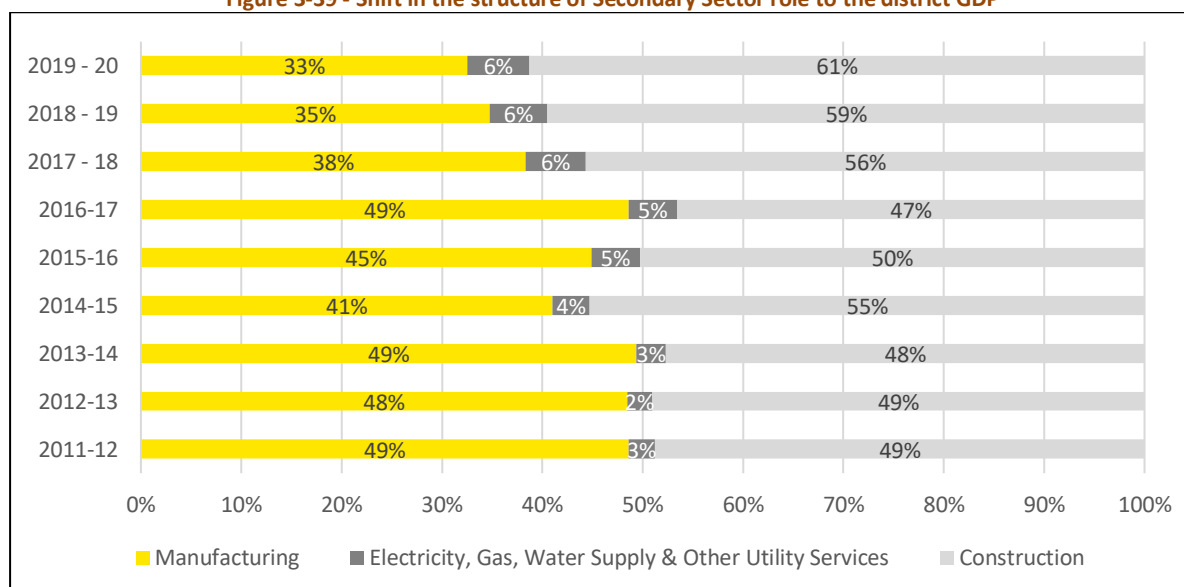
Source - Directorate of Geology & Mining Government of Uttar Pradesh, URL - <http://dgmup.in/minerallist/home/MineralRate>

3.5.6.2 Secondary sector

Composition: 2019-20 - The secondary sector contributes 28.1% to the district GDP in 2019-20, has increased from 24% in 2011-12 to 28.1% in 2019-20. Of the INR 11,458.2 Cr. (in 2019-20) from the secondary sector, 61% came from the construction activity followed by manufacturing (33%) and electricity, gas and water supply and other utility services (6%).

Structural Shift in Composition - There is marginal shift in electricity, gas, water supply & other utility services sub sector contribution to sector's performance from 3% in 2011-12 to 6% in 2019-20. The contribution of manufacturing sub sector has decreased in last 9 years from 49% to 33%. The contribution of construction sub sector has increased in last 9 years from 49% to 61%.

Figure 3-39 - Shift in the structure of Secondary Sector role to the district GDP



Source: Consultant Analysis

3.5.6.3 Tertiary sector

Composition: 2019-20 - The tertiary sector, which contributes ~69.1% to the district GDP in 2019-20, is the predominant sector. Of the INR 21,112.44 Crore from the tertiary sector, 17.7% came from of real estate sector, and professional services. Although further breakup is not readily available, it is observed that other services, banking, and transport by other means (mostly by road) are the major service activities that drive the tertiary sector performance in the district.

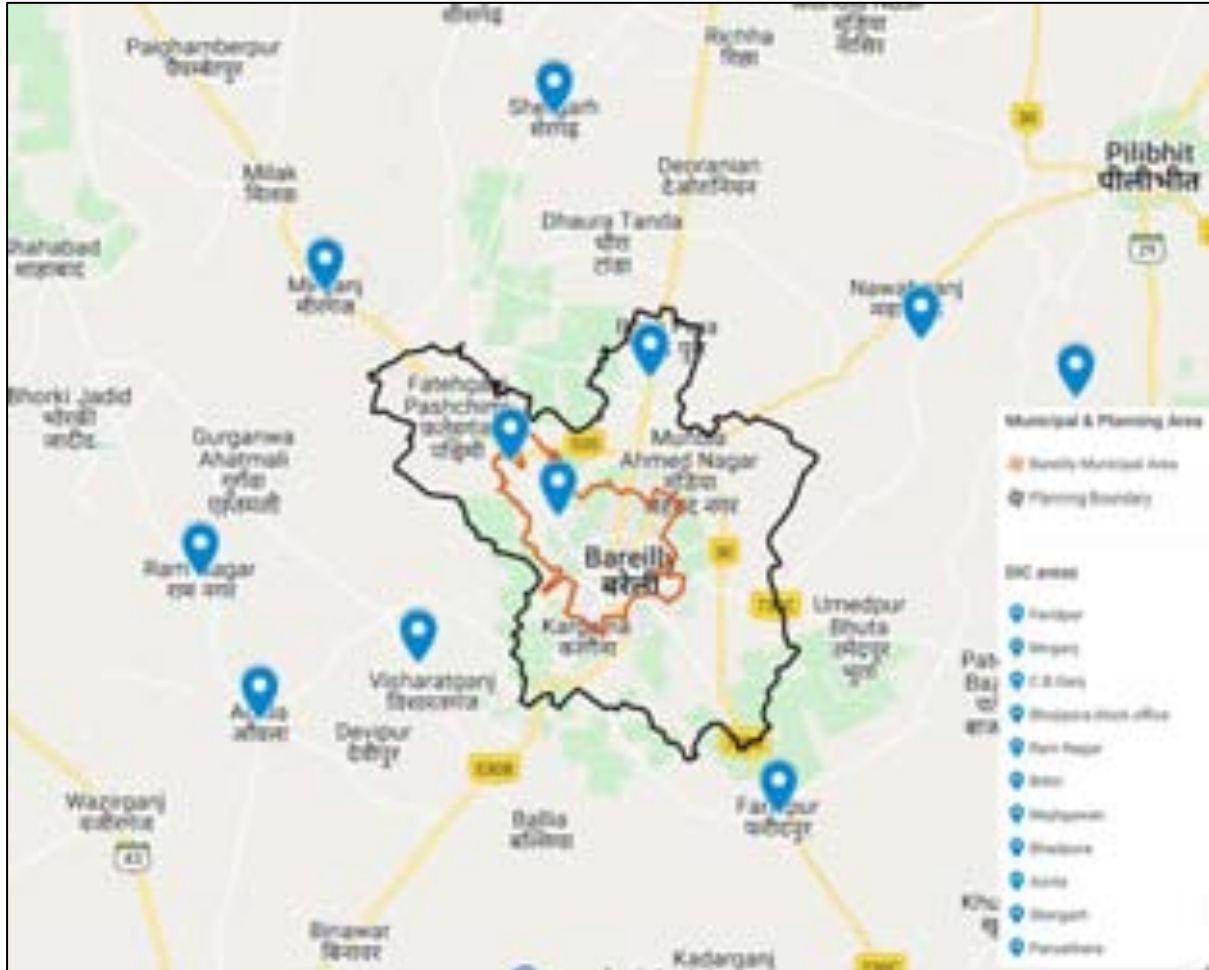
Structural Shift in Composition - Real estate and professional services activities contributes major share to the district's GDP, its share has been on the increasing side from 11.4% in 2011-12 to 17%.

3.5.7 Industries

3.5.7.1 Industrial areas in Bareilly district

There are two categories of industrial areas in Bareilly – (i) District Industries Centre (DIC) and (ii) Uttar Pradesh State Industrial Development Authority (UPSIDA). Details are as below for each category:

Figure 3-40 - DIC Industrial areas in Bareilly district



There are 11 DIC industrial areas in Bareilly with an approximate 463.2 Acre of acquired land, with 77% developed land parcels. The prevailing land rate varies from 91-1500 Rs/sq.km. Major industrial areas are namely, Parsakhera, CB ganj and Bhojipura.

Table 3-51 DIC industrial areas in Bareilly district

S.no	Name of Industrial Area	Land acquired (in acres)	Land developed (in acres)	Prevailing rate per sq km	Total No of Plots	No of allotted Plots	No of Vacant Plots	No of Units in Production
1	CB ganj	16.9	16.9	1500	73	73	0	37
2	Bhojipura	38.3	38.3	600	89	89	0	28
3	Faridpur	3	3	1000	60	60	0	1
4	Meerganj	2.5	2.5	1050	55	39	16	1
5	Ramnagar	18	9	350	161	0	0	0
6	Bithri	2.5	2.5	150	47	0	47	0
7	Majh Gaon	5	5	150	72	0	72	0
8	Bhadpura	2.5	2.5	91	65	0	65	0

S.no	Name of Industrial Area	Land acquired (in acres)	Land developed (in acres)	Prevailing rate per sq km	Total No of Plots	No of allotted Plots	No of Vacant Plots	No of Units in Production
9	Aonla	5	5	0	0	0	0	0
10	Shergarh	2.5	2.5	124	47	0	47	0
11	Parsakhera	367	273.42	1210	379	345	34	175
	Total	463.2	360.62		1048	606	281	242

Source: DIC Bareilly

UPSIDA - Industrial areas

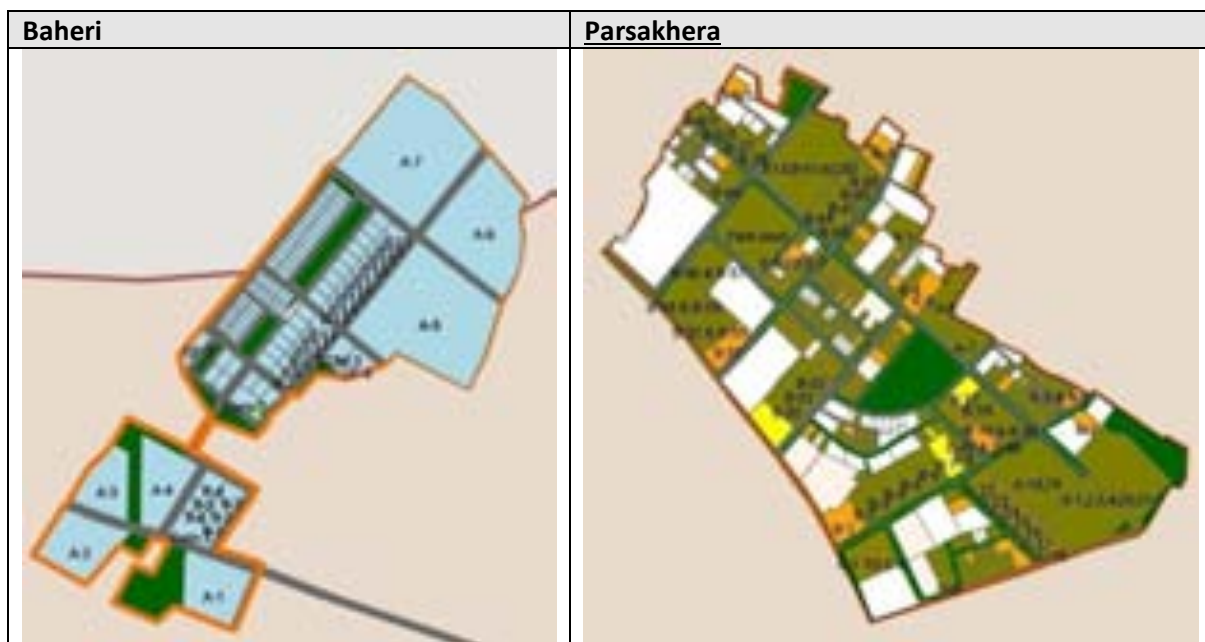
There are two UPSIDA industrial areas in Bareilly district – Parsakhera and Baheri.

Paraskhera industrial area is approximately 13 km away from the Bareilly city centre geographically and is accessible via Mini Bypass and Rampur Road and via Bareilly - Nainital Rd/Nainital Rd and NH530. Paraskhera industrial area is situated inside the Bareilly Municipal Area limits.

Whereas **Baheri industrial area** is situated at approximately 60 km away from Bareilly city centre and is accessible via Bareilly - Nainital Road.



Existing Industrial Area	No. of Plots (Nos)	Total Land Bank (Acres)
Baheri	143	251
Parsakhera	286	367



Allocated Plots	Vacant	Under Construction	Under Production	Production Stop	SOA	No Status
Un-Allocated Plots	Available for Allotment	Not available for Allotment	Land under process			

Paraskhera Industrial area, Bareilly

Latitude, Longitude – 79.4219, 28.347

Paraskhera is an area known for its Agro based industries. Paraskhera Industrial Area is spread over 367 Acres. At present no land is available for allotment. The Industrial Area Paraskhera is to be developed as a Smart Industrial area as declared by the State Government in joint venture with Bareilly Municipal Corporation & Uttar Pradesh State Industrial Development Authority (UPSIDC).

Figure 3-41 -Google map of the Paraskhera Industrial Area



Figure 3-42 - Images of the Parsakhera industrial area



Facilities and infrastructure

- Establishment of Roads, Street Lights, Railways, Banks, Health Care Services

Location Advantage

Connectivity to NH 24 connecting New Delhi & Lucknow.

Details of acquired and developed lands

- 8.67 acres of land acquired by Bharat Petroleum for Bottling Plant
- 10.33 acres of land acquired by F.C.I for warehouse.
- 11.66 acres for sub - station

Major industries:

- Bareilly Plyboards Pvt Ltd, M/s V.N. Industries, CAPLFord, B.L. Agro Industries, Vadilal Industries Ltd, JL Food products pvt ltd, M/s Brindavan Beverages

Major products

- Block Board, Commercial Plywood, Gypsum Board, Rice, Mentha, Industrial Gases, Medical Oxygen Gas Cylinder.



Baheri Industrial Area, Bareilly

Baheri Industrial Area is a flagship project of Uttar Pradesh State Industrial Development Authority (UPSIDA). Details about the Baheri Industrial Area, Bareilly is presented below:

Baheri Industrial Area, Bareilly

Latitude, Longitude - 28.7792806, 79.4818781.

Baheri is an area known for sugar industry and textile work. Baheri Industrial Area is spread over 251 Acres. Land available for allotment is approximately 163.53 Acres. The Industrial Area Baheri is to be developed as Food park under an inclusive concept and scheme of the Ministry of Food Processing.

Facilities and infrastructure

- Establishment of packaging, quality control lab, trade facilitation centre of international standards.

Location Advantage

- Situated at a distance of approx. 55-60 km from Bareilly district
- 7 km from Baheri tehsil

Details of acquired and developed lands

- 100 acres for Mega Food park
- 35 acres of land acquired by HPCL for Bottling Plant
- Rest 115.16 acres for general industrial area

Source - https://eservices.onlineupsidc.com/flagship_projects/BaheriIndustrialArea.aspx

3.5.7.2 Industries in Bareilly

Table 3-52 Following are the recent updated details of employment, output, and investment in the Bareilly district for the year 2017-18.

NIC Code	Industry name	Year 2017 - 18		
		Employment (in no.)	Output (in no.)	Investment (in Rs. Thousand)
101	Processing and preserving of meat	712	5657258	1753
103	Processing and preserving of fruit and vegetables	-	-	-
104	Manufacture of vegetable and animal oils and fats	3614	72312404	1612954
105	Manufacture of dairy products	482	6016662	539160
106	Manufacture of grain mill products, starches and starch products	801	3393724	22529
107	Manufacture of other food products	5089	17766873	6512
108	Manufacture of prepared animal feeds	-	-	-
110	Manufacture of beverages	213	432572	66903
120	Manufacture of tobacco products	800	1755313	3607650
		11711	107334806	5857461
131	Spinning, weaving and finishing of textiles	24	140679	96946
139	Manufacture of other textiles	3	387	0
141	Manufacture of wearing apparel, except fur apparel	12	23822	135
142	Manufacture of articles of fur	-	-	-
143	Manufacture of knitted and crocheted apparel	-	-	-
		39	164888	97081
151	Tanning and dressing of leather; manufacture of luggage, handbags, saddlery and harness; dressing and dyeing of fur	-	-	-
152	Tanning and dressing of leather; manufacture of luggage, handbags, saddlery and harness; dressing and dyeing of fur	-	-	-
		0	0	0
161	Sawmilling and planing of wood	-	-	-
162	Manufacture of products of wood, cork, straw and plaiting materials	1305	2044164	58848
		1305	2044164	58848
170	Manufacture of paper and paper products	199	1277542	45622
181	Printing and service activities related to printing	258	837816	18842
		457	2115358	64464
191	Manufacture of coke oven products	-	-	-
192	Manufacture of refined petroleum products	15	8740	388
201	Manufacture of basic chemicals, fertilizer and nitrogen compounds, plastics and synthetic rubber in primary forms	1873	36665047	2256190
202	Manufacture of other chemical products	171	757272	20619
203	Manufacture of man-made fibres	-	-	-
		2059	37431059	2277197

NIC Code	Industry name	Year 2017 - 18		
Level 3	Sector	Employment (in no.)	Output (in no.)	Investment (in Rs. Thousand)
210	Manufacture of pharmaceuticals, medicinal chemical and botanical products	311	2880176	16997
		311	2880176	16997
221	Manufacture of rubber products	6	6786	103
222	Manufacture of plastics products	555	2172179	51785
		561	2178965	51888
231	Manufacture of glass and glass products	-	-	-
239	Manufacture of non-metallic mineral products n.e.c.	1738	519068	18073
		1738	519068	18073
241	Manufacture of basic iron and steel			
242	Manufacture of basic precious and other non-ferrous metals	9	3826	0
243	Casting of metals	-	-	-
251	Manufacture of structural metal products, tanks, reservoirs and steam generators	114	201260	8635
252	Manufacture of weapons and ammunition	-	-	-
259	Manufacture of other fabricated metal products; metalworking service activities	36	30141	3489
		159	235227	12124
261	Manufacture of electronic components	-	-	-
262	Manufacture of computers and peripheral equipment	-	-	-
263	Manufacture of communication equipment	-	-	-
264	Manufacture of consumer electronics	-	-	-
265	Manufacture of measuring, testing, navigating and control equipment; watches and clocks	-	-	-
		0	0	0
271	Manufacture of electric motors, generators, transformers and electricity distribution and control apparatus	361	3378167	145272
272	Manufacture of batteries and accumulators	8	7256	0
273	Manufacture of wiring and wiring devices	4	15705	-50
274	Manufacture of electric lighting equipment	-	-	-
275	Manufacture of domestic appliances	-	-	-
279	Manufacture of other electrical equipment	174	195603	2691
		547	3596731	147913
281	Manufacture of general-purpose machinery	27	12563	0
282	Manufacture of special-purpose machinery	23	28528	1160
		50	41091	1160
291	Manufacture of motor vehicles	-	-	-
292	Manufacture of bodies (coachwork) for motor vehicles; manufacture of trailers and semi-trailers	-	-	-
293	Manufacture of parts and accessories for motor vehicles	-	-	-
302	Manufacture of railway locomotives and rolling stock	-	-	-

NIC Code	Industry name	Year 2017 - 18		
Level 3	Sector	Employment (in no.)	Output (in no.)	Investment (in Rs. Thousand)
303	Manufacture of air and spacecraft and related machinery	-	-	-
309	Manufacture of transport equipment n.e.c	-	-	-
		0	0	0
310	Manufacture of furniture	198	786936	57355
		198	786936	57355
321	Manufacture of jewellery, bijouterie and related articles	-	-	-
323	Manufacture of sports goods	-	-	-
324	Manufacture of games and toys	-	-	-
325	Manufacture of medical and dental instruments and supplies	-	-	-
329	Other manufacturing n.e.c.	6	18329	18
		6	18329	18
331	Repair of fabricated metal products, machinery, and equipment	-	-	-
		0	0	0
521	Warehousing and storage	180	82349	61958
522	Support activities for transportation	-	-	-
		180	82349	61958

Source – Annual Survey of Industry Report 2017-18, URL - http://updes.up.nic.in/esd/Industrial_Statistics/ASI/ASI%202017-18%20Final.pdf

100 days 100 enterprises in Bareilly

The Government of UP has launched a scheme '100 days 100 enterprises' which aimed at set up of 100 industrial enterprises in 100 days in a the district. Approximately 166 units have been established in the Bareilly district under this scheme, including industries such as (i) industries having size of 1 lakhs to 5 lakhs; (ii) 6 lakhs to 10 lakhs; (iii) 11 lakhs to 50 lakhs; (iv) 51 lakhs to 100 lakhs and (v) more than 100 lakhs. The maximums units are of Industries having size of 11 lakhs to 50 lakhs.

Table 3-53 Status of 100 days 100 enterprises in Bareilly

Type of industry (in terms of size)	Number of units	Investment (lakh rs.)	Employment
1 lakh to 5 lakhs	26	115	76
6 lakhs to 10 lakhs	27	255	156
11 lakhs to 50 lakhs	59	1,409	730
51 lakhs to 100 lakhs	13	1,061	237
> 100 lakhs	41	40,025	3,079

Source - 100 days 100 enterprise data of 22nd Dec 2020 to 15th March 2021 received from DIC

Table 3-54 Industries classification of the "100 days 100 units in Bareilly"

Type of industry	Number of units	Investment (lakh rs.)	Employment
Agro based	83	9,277	1639
Soda water	0	0	0
Cotton textile	1	475	100

Type of industry	Number of units	Investment (lakh rs.)	Employment
Woolen, silk & artificial Thread based clothes.	0	0	0
Jute & jute based	0	0	0
Ready-made garments & embroidery	7	766	287
Wood/wooden based furniture	12	6,902	492
Paper & Paper products	2	95	32
Leather based	3	12	10
Chemical/Chemical based	17	2,788	349
Rubber, Plastic & petro based	6	4,312	358
Mineral based	7	597	441
Metal based (Steel Fab.)	0	0	0
Engineering units	5	129	38
Electrical machinery and transport equipment	1	25	7
Repairing & servicing	0	0	0
Others	7	1,780	150
Misc.	14	6,626	364

Note – top five industry category is highlighted as red in terms of numbers, investment, and employment.

Source: analysis of 100 days 100 enterprise data of 22nd Dec 2020 to 15th March 2021 received from DIC.

Based on the data provided by DIC, it is evident that following categories of industries are the major ones, namely –

- Agro-based
- Ready-made garments & embroidery
- Wood/wooden based furniture
- Chemical/Chemical based
- Rubber, Plastic & Petro-based
- Mineral based

Analysis of industrial workers

Net value added per worker in registered working factories and number of employees in registered working factories:

The Net value added¹³ per worker in registered working factories & the number of employees in registered working factories per lakh of population in the Bareilly district has increased to 12.01% & 18.93% respectively.

Western region of UP has shown very high growth (more than double) in the Net value added per worker in registered working factories. Districts namely, **Rampur¹⁴, Badaun, Mainpuri, Etawah and**

¹³ Net value added is the value of output less the values of both intermediate consumption and consumption of fixed capital.

¹⁴ Mentha is the main cash crop cultivated in Rampur. Apart from mentha oil the other popular enterprises in the city are brick kiln industries, Beedi making, sugar process, textile weaving, wine making and liquor manufacturing.

Bulandshahar have highest ranking in terms of Net value added per worker in registered working factories under Western region.

In comparison to Western Region & State, the Net value added per worker in registered working factories is 21.86 % & 16.14% less respectively as well as the number of employees in registered working factories per lakh of population is also 54.98% & 9.25% less respectively.

Districts namely, **G B Nagar, Hapur, Ghaziabad, Agra and Meerut** have highest number of employees in registered working factories per lakh of population under western region.

Table 3-55 Net value added per worker & No of employees in registered working factories

District/Region	Net value added per worker in registered working factories (000 Rs)		No. of employees in registered working factories per lakh of population	
	2011-12	2016 – 17	2011-12	2016 – 17
Bareilly	951.80	1066.19	367.79	437.43
Western Region	636.01	1364.57	770.72	971.84
Uttar Pradesh	892.07	1271.39	389.02	482.04

Source – District wise Development Indicators 2020 Economics and Statistics Division State Planning Institute Planning Department, Uttar Pradesh, URL - <http://updes.up.nic.in/esd/reports/district%20indicators%202020.pdf>

Per capita gross value of industrial production and registered working factories

Per capita gross value of industrial production has become almost 1.5 times however the number of registered working factories per lakh of population in the Bareilly district has decreased to 6.00% respectively. Whereas in comparison to Western Region & State, Per capita gross value of industrial production is 26.52 % less & 50.07% more respectively.

The number of registered working factories per lakh of population is 55% less in comparison to Western Region & 13.45% less in comparison to Uttar Pradesh respectively.

Table 3-56 Per capita gross value of industrial production and registered working factories

District/Region	Per capita gross value of industrial production (000) Rs		No. of registered working factories per lakh of population	
	2011 - 12	2016 – 17	2011-12	2016 – 17
Bareilly	11,578.56	28,524.83	6.5	6.11
Western Region	23,022.41	38,825.00	12.52	13.58
Uttar Pradesh	13,456.43	19,007.52	6.64	7.06

Source – District wise Development Indicators 2020 Economics and Statistics Division State Planning Institute Planning Department, Uttar Pradesh, URL - <http://updes.up.nic.in/esd/reports/district%20indicators%202020.pdf>

Distribution of registered working factories and workers per registered working factory

Percentage distribution of registered working factories has decreased to 0.19% & average workers per registered working factory in the Bareilly district has also decreased to 1.76% respectively.

In comparison to Western Region, Percentage distribution of registered working factories is 70% less & In comparison to Uttar Pradesh, it is 98.05% less respectively.

District namely **G.B.Nagar, Hapur, Agra, Sambhal and Shamli** from western region has highest percentage distribution of registered working factories.

On the other hand, average workers per registered working factory is 1.91% more in comparison to Western Region & 6.26% more in comparison to Uttar Pradesh respectively.

Table 3-57 Per capita gross value of industrial production and registered working factories

Table 3-58 Percentage distribution of registered working factories & average workers per registered working factory

District/Region	Percentage distribution of registered working factories		Average workers per registered working factory	
	2011-12	2016 – 17	2011-12	2016 – 17
Bareilly	2.14	1.95	56.60	55.60
Western Region	69.63	71.92	61.56	54.56
Uttar Pradesh	100	100	58.56	52.32

Source – District wise Development Indicators 2020 Economics and Statistics Division State Planning Institute Planning Department, Uttar Pradesh, URL - <http://updes.up.nic.in/esd/reports/district%20indicators%202020.pdf>

3.5.7.3 Prominent growing industries

To estimate the sector wise future demand in the district based on top-down approach, the output, employment, investment, and exports for target industry manufacturing sectors have been analysed for the horizon period (2013-14 to 2017-2018).

The prominent industrial sectors which are showing consistent growth in the district under study can be ascertained through three primary parameters:

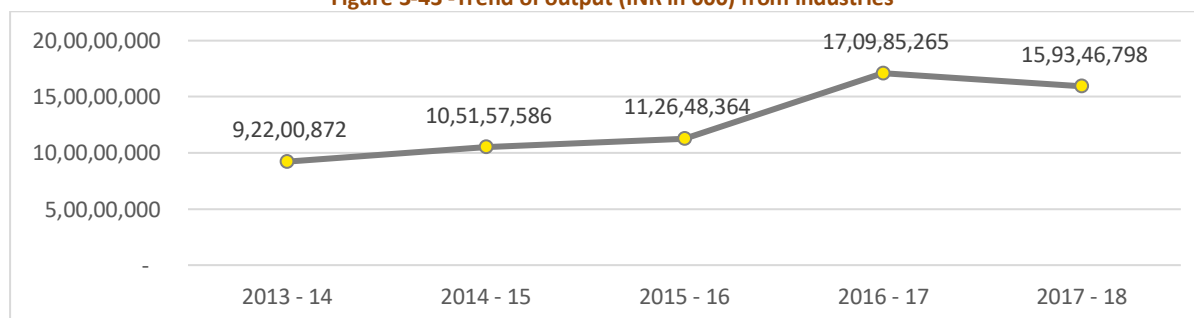
- **Industrial Output by sector for the 2017-18 period**
- **Industrial employment in numbers by sector for the 2017-18 period**
- **Industrial investment in sector for the 2017-18 period**

Based on the analysis of these prominent growing industries can be identified.

(i) Industrial scenario of Bareilly based on Output

From 2013-14 to 2017-18, sectors namely (i) Food Processing, (ii) Chemical Products, (iii) Wood products, (iv) Pharmaceuticals and (v) Electrical sectors, have remained prominently performing sector in Bareilly due to major output with respect to the investment in the respective sector.

Figure 3-43 -Trend of output (INR in 000) from industries



Source - ASI Report 2017-18

Table 3-59 Top 5 sectors in Bareilly district based on total output (INR in 000) in 2017-18

Industry name	2017 - 18	% of the total output across the district
Food Processing, Beverages, Tobacco	10,73,34,806	67.32%
Petroleum & Chemical Products	3,74,31,059	23.48%
Electrical	35,96,731	2.26%
Pharmaceuticals	28,80,176	1.81%
Rubber & Plastic	21,78,965	1.37%

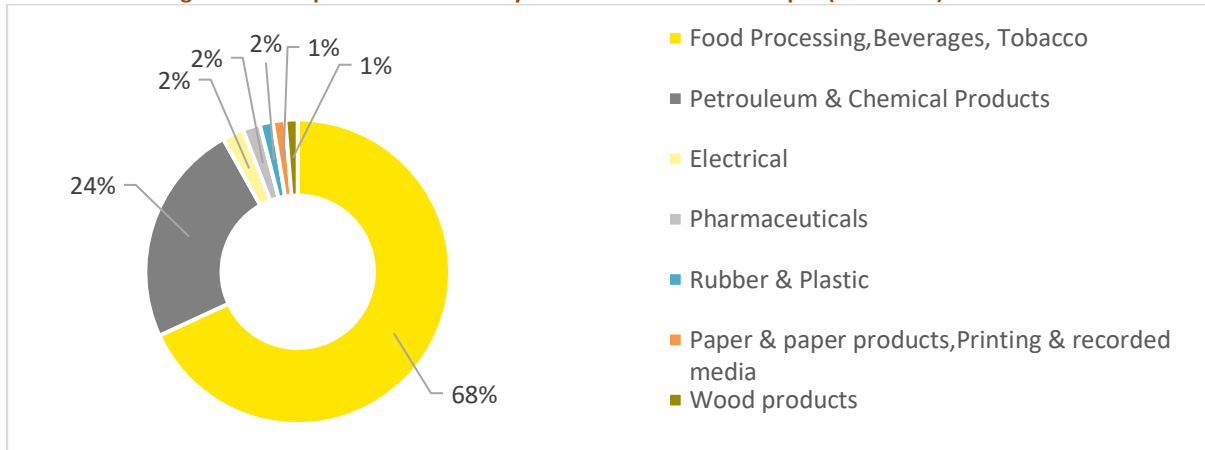


Source – ASI Report 2017-18

Two sectors namely (i) Food Processing, Beverages, Tobacco, (ii) Petroleum & Chemical Products hold for more than 92% of the total output across the district.



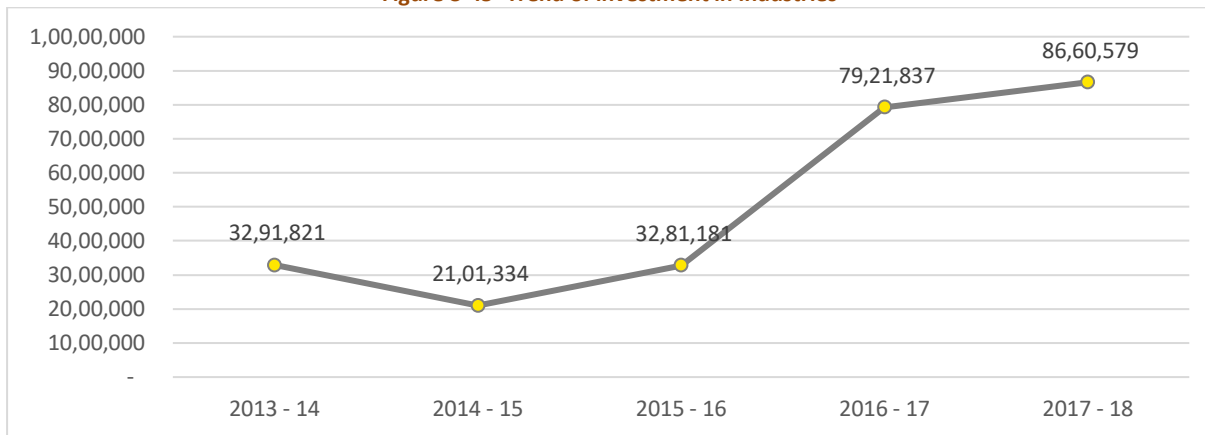
Figure 3-44 -Top 5 sectors in Bareilly district based on total output (INR in 000) in 2017-18



Source – ASI Report 2017-18

(ii) Industrial scenario of Bareilly based on Investment

Figure 3-45 -Trend of investment in industries



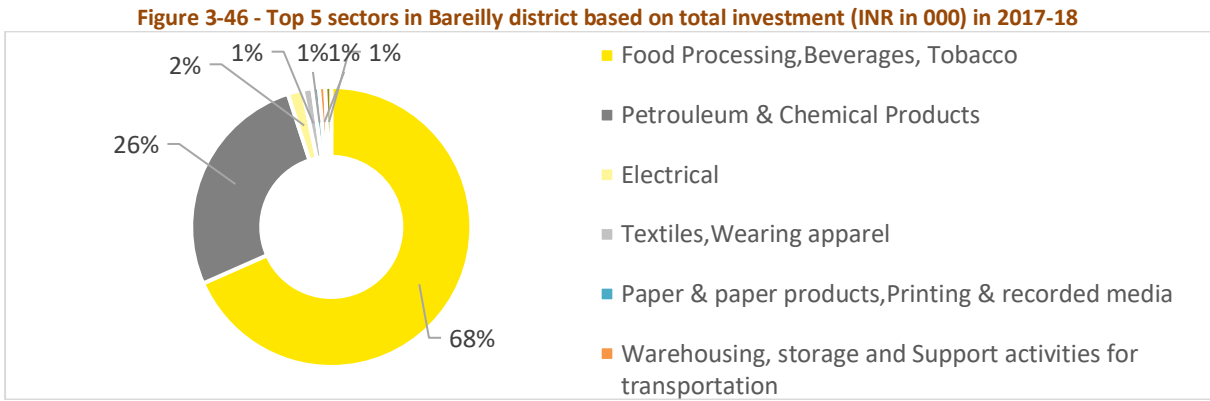
Source – ASI Report 2017-18

Table 3-60 Top 5 sectors in Bareilly district based on total investment (INR in 000) in 2017-18

Industry name	2017 – 18	% of the total investment across the district
Food Processing, Beverages, Tobacco	58,57,461	67.15%
Petroleum & Chemical Products	22,77,197	26.11%
Electrical	1,47,913	1.70%
Textiles, Wearing apparel	97,081	1.11%
Paper & paper products, Printing & recorded media	64,464	0.74%

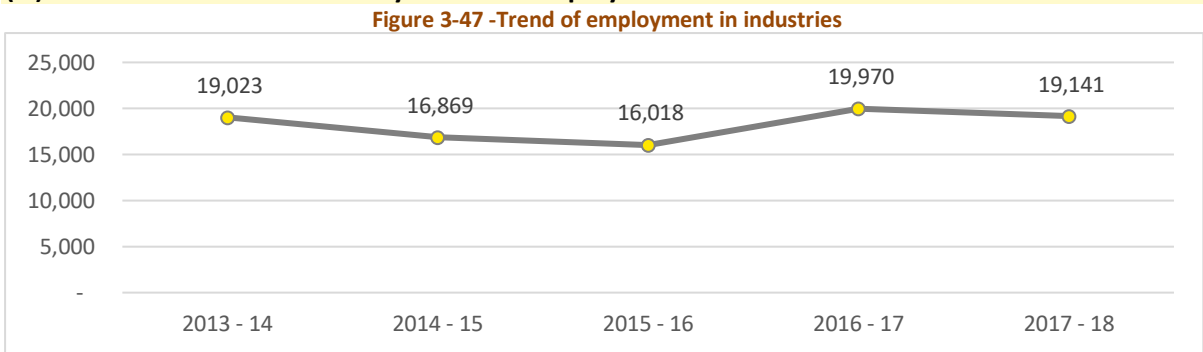
Source – ASI Report 2017-18

Two sectors namely (i) Food Processing, Beverages, Tobacco, (ii) Petroleum & Chemical Products hold for more than 94% of the total investment across the district.



Source – ASI Report 2017-18

(iii) Industrial scenario of Bareilly based on Employment

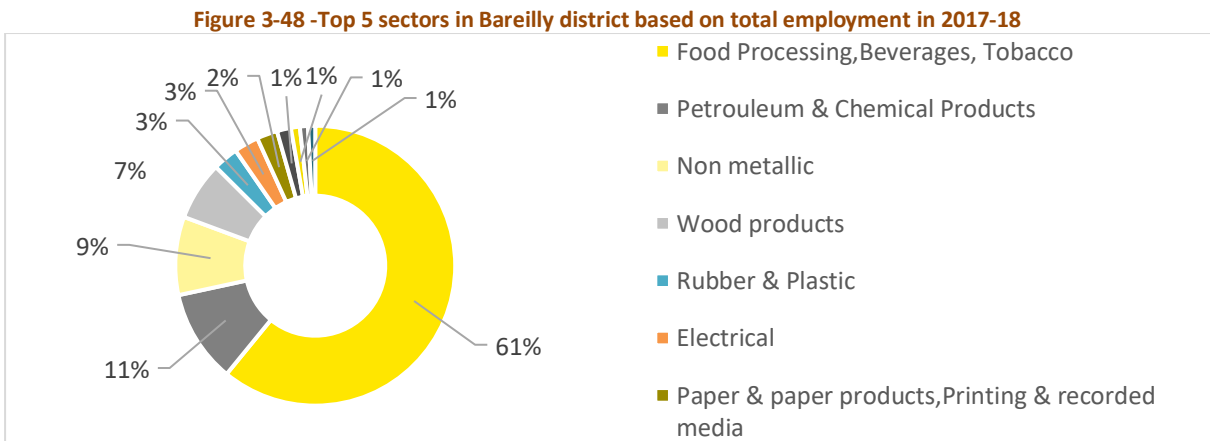


Source – ASI Report 2017-18

Table 3-61 Top 5 sectors in Bareilly district based on total employment in 2017-18

Industry name	2017 - 18	% of the total employment across the district
Food Processing, Beverages, Tobacco	11,711	60.61%
Petroleum & Chemical Products	2,059	10.66%
Non metallic	1,738	9.00%
Wood products	1,305	6.75%
Rubber & Plastic	561	2.90%

Two sectors namely (i) Food Processing, Beverages, Tobacco, (ii) Petroleum & Chemical Products hold for more than 72% of the total employment across the district.



Source – ASI Report 2017-18

Categories of major industries within city limits

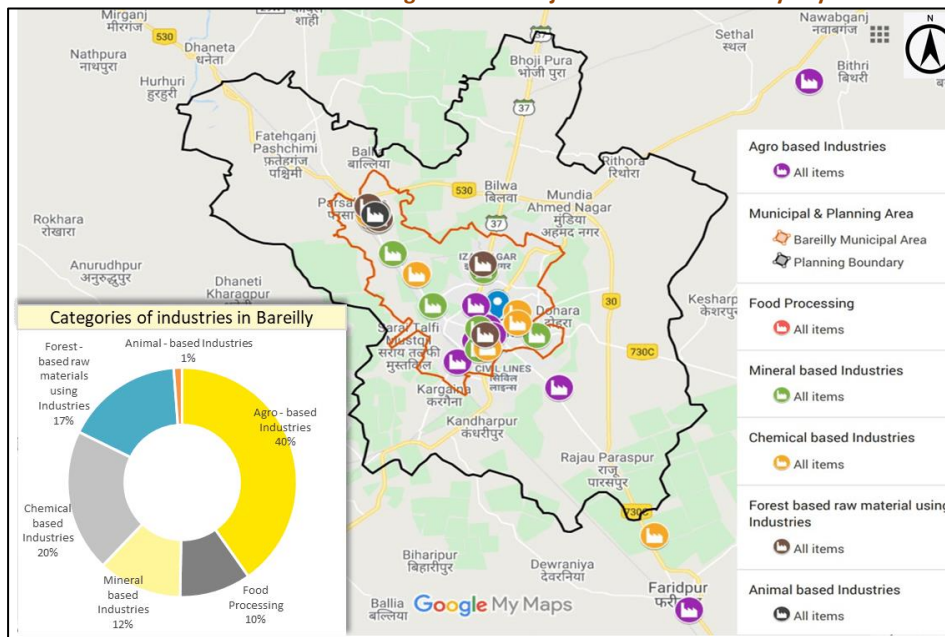
Majorly, Agro - based, Food Processing, Mineral based, Chemical based, Forest - based raw material industries are prominent within city limits.

Table 3-62 Categories of major industries within city limits

S. N	Type of major industries	No	Major produced products
1	Agro - based Industries	68	Sugar, Flour, Rice
2	Food Processing	17	Cold storage, Sweets
3	Mineral based Industries	20	Steel & Steel Wooden Furnitures
4	Chemical based Industries	34	Fertilizers, Rubberised core foam cushion, Plastic Products
5	Forest - based raw materials using Industries	28	Plywood, Wooden Furnitures, Plyboard
6	Animal - based Industries	2	Dairy Products

Source: Consultant analysis on data received from DIC on 23/12/2021 for major industries in Bareilly

Figure 3-49 - Major industries in Bareilly city



INDUSTRIAL ENTREPRENEUR’S MEMORANDUM (IEM)

The primary objective of comprehending the **Industrial Entrepreneurs’ Memorandum** is firstly, to capture interest shown by industrial entrepreneurs at the district level. Secondly, it shall help understand **industry sector focus of these industry entrepreneurs**, imparting in totality a broad overview on preference and inclination sector wise for our study as well.

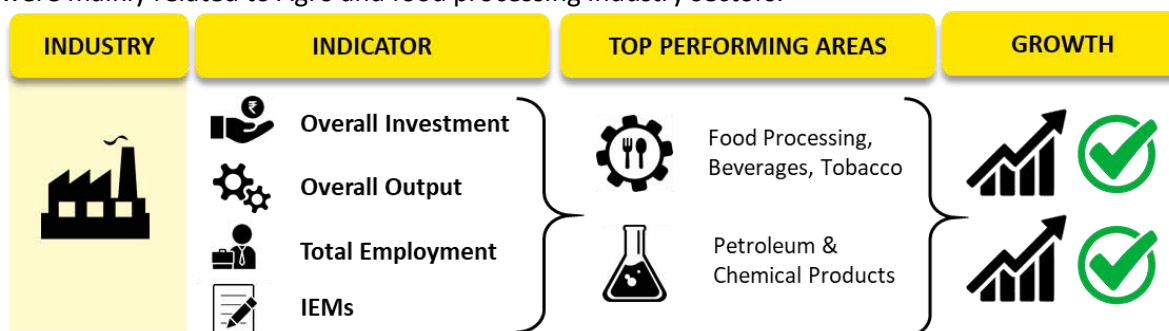
Table 3-63 - EMs filed in Bareilly district from 2014-17

IEM’s FILED FROM 01.04.2014 TO 31.03.2015				
Name	Location	Investment (INR Cr.)	Item	Sector
M k overseas Pvt. Ltd.	Bareilly	55	Buffaloes Slaughtering	Food
IEM’s FILED FROM 01.04.2015 TO 31.03.2016				

Name	Location	Investment (INR Cr.)	Item	Sector
Bareilly Dugdh Utpadak Sahkari	Bareilly	110	Milk	Food
National collateral Management	Bareilly	28	Ware housing non Refrigerated	Misc.
B.I. Agro oils ltd.	Bareilly	35	Mfg of vegetable oils	Vegetable
IEM's FILED FROM 01.04.2016 TO 31.03.2017				
Name	Location	Investment (INR Cr.)	Item	Sector
BRINDAVAN BEVERAGES PVT.LTD.	Bareilly	23	PET PREFORM	Chemical
SUPERIOR INDUSTRIES LTD.	Bareilly	106	RECTIFYING SPIRIT (UN DENATURED ETHYL	Chemical

Source – www.udyogbandhu.com

Approximately 357 Cr. INR IEMs were filed in Bareilly district during 2014-16 (latest data) and these were mainly related to Agro and food processing industry sectors.



There are two major industries present in Bareilly. One is Food Processing Unit & other is Petro chemical & Chemical Industries. The agro & food processing industries in Bareilly are mainly involved in the packaging and processing of the products. And the products are imported locally and regionally. The chemical-based industries equally hold an important role by contributing to Bareilly's economy.

Table 3-64 - Following table broadly lists a few major chemical industries present in Bareilly.

S. N.	Factory Name	Products
1	Superior Industries Ltd	Alcohol
2	Indian Farmer Fertilizer Company Pvt. Ltd.	Ammonia Urea
3	Kansar Enterprises	Ethal Alcohol, Detergent powder
4	N.P.Ago Indian Industries Ltd	Terpelyne, Fabric, Master batch, BOP Lamination film
5	Camphor & allied Private Ltd	Camphor & other chemicals
6	Ashoka Foam Multiplast Ltd	All Plastic Products
7	Amar alum & allied chemicals pvt. Ltd,	Ferric alum & salt lividd
8	M R Industries	Battery production
9	Lasol fragrance	Scent Soap
10	Ashoka pyu Foam Ltd	Polymers flexible rigid core foam
11	Amar Narayan Industries Ltd	Alum & mineral salt
12	Tarun Alum pvt. Ltd.	Ferric Alum, Non – ferric Alum, Amoria Alum
13	Super Batteries	Battery production
14	Jai Chemicals	Magnesium Sulphate

S. N.	Factory Name	Products
15	Shri Natakal Plastics	Plastics products
16	Modern Poly pack Industries	Packaging materials
17	Mahalakshmi Chemicals	Sulphur
18	Valumat Pack & print	Packaging material
19	Vinod soap factory	Soap soda
20	Shakuntala Industries	Packaging material

Source – Consultant analysis

On further analyses, it is found that in Petrochemical & Chemical industries, a few chemical industries are involved in menthol products. The reason for same is the availability of raw material i.e., Mentha which is being grown locally. Another reason is the increase in the farming of Mentha as this crop takes lesser time for cultivation as well as a subsidy of 25% of total investment for this cultivation is also being provided by the State Government.



Below is the list of the major Menthol Industries present in Bareilly:

S.N.	Factory Name	Products	Establishment Year	Location
1	MRM Menthol Associates	Dementholised Peppermint Oil, Mentha Oil, Natural Menthol Crystal & Natural Menthol Powder	2019	Pacca Katra Aonla Inside Suraj Cold Storage, Bisauli Road, Bareilly
2	Essence India	Anethole Oil, Basil Oil, Citronella Oil, Lemongrass Oil, Pine Oil, Mint Oil (Menthol Oil, Peppermint Oil, Spearmint Oil) & Menthol Crystal	2003	Pilibhit Bypass, Pilibhit Bypass Road, Bareilly
3	Kelvin Natural Mint Pvt. Ltd	Menthol Crystals, Menthol Powder, Spearmint Oil & Essential Oils	1994	Kelvin Natural Mint Pvt. Lt d Khasra No. 225-226, Village Andharpura, Bukhara Faridpur Road, Bareilly
4	Mane Kancor Ingredients Pvt Ltd	Mint, Menthol & Isolates	1971	Industrial Estate, C B Ganj, Bareilly District.
5	PAVITRAMENTHE FAIR ORGANIC PRIVATE LIMITED	Essential Oils, Refined Oils, Crystal/ Flakes & Herbs	2015	Ganga Nagar Colony, Behind Swasti Hospital, Badaun Road, Bareilly

Source - Article from Business Standard News

In India, Uttar Pradesh accounts for around 90% of Indian mint production, with the remaining 10% coming from smaller areas in the Punjab, Rajasthan etc. UP farmers have undertaken mentha farming as one acre of mentha can give a return of up to Rs 30,000 in three months, which is quite high for any cash crop. Besides, the demand for mentha products is also rising in the international market, notably China and menthol industry is said to be growing at almost 15 %.

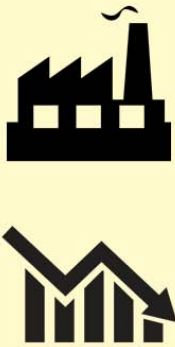
Rising demand in the export market and remunerative prices have boosted mentha farming in the state. Mint cultivation, according to the state's Department of Horticulture and Food Processing, is spread across 88,000 hectares of land. While Budaun alone contributes to around 30% of the total production, Barabanki's share stands between 25-33%. The cash crop is cultivated in districts such as Moradabad, Rampur, **Bareilly**, Pilibhit, Lakhimpur Kheri, Budaun, Sitapur, Barabanki, Shahjahanpur, Bahraich, Ambedkar Nagar, Chandauli and Varanasi. In Bareilly, the Mentha is produced mainly in Aonla Town.

Based on the secondary data analysis of a few major Mentha Industries in Bareilly, turnover turns out to be more than 1100 Crores annually in Bareilly. Additionally, it is observed that, the waste¹⁵ generation (i.e., Bottom pitch & High boiling hydrosol) in Mentha industries are being used by perfume & medical industries. Before utilisation it goes through treatment of hydro distillation process.

Incidents of closures of Industries in Bareilly

Several factories, including the National Brewery Company, a match factory, an ice factory & a steam – powered flour mill was established in the early 20th century after the construction of Railway line in the city. Two industries, i.e., the Indian Turpentine & Rosin & The Western Indian Match Company (WIMCO) were also established at C.B. Ganj, located at a distance 8 km from the city centre. This establishment was followed by the establishment of HR Sugar Factory in Nekpur. A Rubber factory was also established in Fatehganj West town. As a result, Bareilly emerged as a major industrial & commercial area of the region by 1940s.

But by the end of the 1990s, many industries in the city were shut down. Following are the list of major industries which has been shut down in the past.

INDUSTRY CLOSED PREVIOUSLY	Industry	Products	Closing Year	Reason of closing
	The Rubber Factory	Synthetic rubber, lattices of the butadiene – styrene type	1999	<ul style="list-style-type: none"> • Non – availability of molasses at reasonable prices • Decline in demand of the natural rubber products due to the availability of substitute synthetic rubber. • Products price becomes high due to imposed vendee fee.
	HR Sugar Factory	Sugar	1988	<ul style="list-style-type: none"> • Financial & Capital Loss
	India Turpine Tyne and Rozin	Turpentine oil, biroja, etc.	1988	<ul style="list-style-type: none"> • Not available
	The Western Indian Match Company (WIMCO)	Matchstick & Matchboxes	2014	<ul style="list-style-type: none"> • Industrial legal issues • Non-availability of materials, • High cost of operations and the prevailing market price for consumers

Source – Multiple news articles:

¹⁵ Source for Waste generated type, Waste treatment procedure & Waste dumping location -Research Paper on Analysis of Mentha Waste Products, url - file:///C:/Users/TA273WY/Downloads/4-Vol-1-Issue-4-Paper-1.pdf



- 1) Synthetic Rubber by Chandra Prabhu International Limited. Supplier from India. Product Id 215863. ([go4worldbusiness.com](https://www.go4worldbusiness.com));
<https://www.go4worldbusiness.com/product/view/215863/synthetic-rubber.html>
- 2) ITC decides to shut matchbox unit in Bareilly - The Financial Express;
<https://www.financialexpress.com/industry/itc-decides-to-shut-matchbox-unit-in-bareilly/33321/>

3.5.7.4 Status of industrial sector - warehousing, storage, and support activities for transportation in Bareilly district

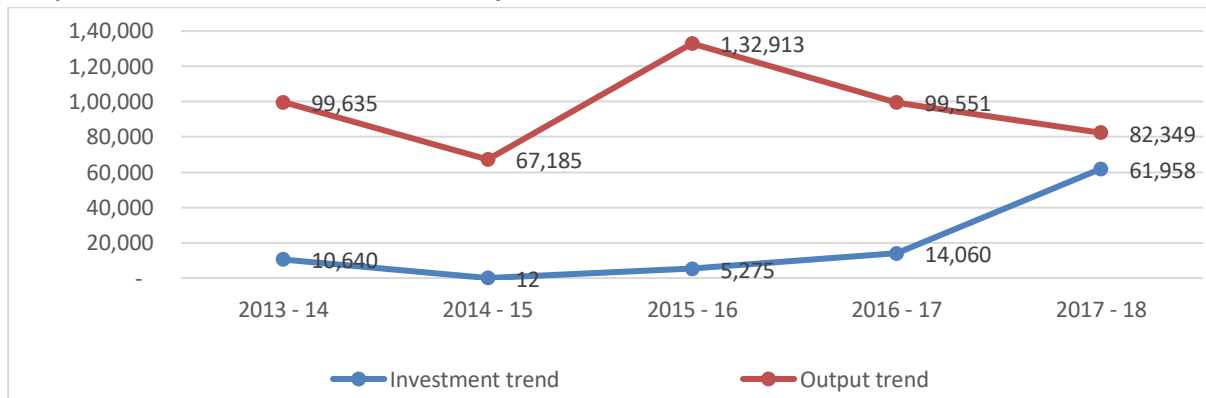
Warehousing and support activities for transportation is an important industrial support sector which includes warehousing and support activities for transportation, such as operating of transport infrastructure (e.g., airports, harbors, tunnels, bridges, etc.), the activities of transport agencies and cargo handling.

As far as Transport/ logistics hub considered, currently there are more than 28 cold storages/ warehouses present in Bareilly District with the storage capacity lying in the range of 400 – 13000 Mt. Majority of these warehouses are located in Faridpur, Baheri, Nawabganj, Fatehganj, Meerganj & Village Umerica.



A brief analysis of this sector is presented below.

Output and Investment trend for Bareilly



Overall investment in the warehousing, storage, and support activities for transportation in Bareilly district is increasing in a span of five years from 2013-18.



3.5.7.5 Overview of the key high growth sectors of Bareilly District

Based on the analysis of NSDC and discussions with the key stakeholders in the district, the team has identified sectors which will be the development and employment growth engines in the State in the next ten years (2013-2023) and will have skill training requirements. The training requirements could be for the new manpower entering these sectors or up-skilling of the existing manpower in the sectors. The sectors which have been identified for the districts are presented in the table below. The following section gives the brief overview of the some of the key high growth sectors of Bareilly.

<ul style="list-style-type: none"> • Transportation, Logistics, Warehousing and Packaging • Unorganised sector, • BFSI, • Construction industry 	<ul style="list-style-type: none"> • Health Care Services, • Education and Skill Development 	<ul style="list-style-type: none"> • Other Manufacturing, • Food Processing 	<ul style="list-style-type: none"> • Agriculture and allied, • Chemicals & Pharmaceuticals 	<ul style="list-style-type: none"> • Electronics and IT hardware, • IT & ITES, • Organised Retail, Textile And Clothing, • Tourism, Travel, Hospitality & Trade, • Auto and Auto component

Note: Shades from red to green indicate low growth to high growth (red = lowest growth; green = highest growth, colours in between = medium growth).

District wise skill gap study for the State of Uttar Pradesh by National Skill Development Corporation (NSDC) in 2013, reflected that **(i) Transportation, Logistics, Warehousing and Packaging, (ii) Health Care Services, (iii) BFSI, (iv) Construction Industry and (v) Unorganised sector shows the highest growth in Bareilly district.**

Source - <https://nsdcindia.org/sites/default/files/files/up-sg-report.pdf>

Stakeholder Consultation

Date – 25.01.2022

Sector - Industries

Central U.P. Chamber of Commerce & Industry
Mr. Abhinav Agarwal, President of Central U.P. CCI

Challenges

- There is a requirement of an Eco – textile park based on existing business and skilled manpower
- Existing developed areas with Industrial units are not included in draft Master Plan
- Mandi tax is creating difficulty in setting up food processing units
- Existing sugarcane production is being utilised by sugar mills established in nearby areas such as Lakhimpur and Muzaffarnagar
- Closure of industries in previous years due to lack of manpower and skilled resources.

- Eco – textile park at Fatehpurganj road
- Preferable locations for setting up new Industries is road connecting to Bareilly – Lucknow and Bareilly – Delhi
- Industries having potential in Bareilly which can be set up are:
 - Wood based Industries
 - Food processing units
 - EMU manufacturing units

Potential & solutions

3.5.7.6 Government interventions

3.5.7.6.1 Provisions of Bareilly Master Plan 2021

As per existing landuse distribution in 2001 the Industrial use was proposed to be 19%, however, 2.80 % were developed as per proposal, 0.49% were developed unauthorized. Subsequently, a total of 3.3% industrial landuse were developed.

Table 3-65 - Landuse distribution 2001 – 2005



S N	Landuse	Proposed area 2001	%	Development as per proposal	%	Unauthorized Development	%	Total Development	%
1	Residential (developed area)	3390	33%	2330	22.82 %	610.56	5.98 %	2940.56	28.80 %
2	Commercial	308	3%	33.44	0.33%	56.38	0.55 %	89.92	0.88%
3	Industrial	1919	19%	286.4	2.80%	50.44	0.49 %	336.84	3.30%
4	Office	252	2%	153.28	1.50%	27.04	0.26 %	180.32	1.77%
5	Public utilities	1344	13%	452.24	4.43%	118.24	1.16 %	570.48	5.59%
6	Transportation	1009	10%	468	4.58%	-	-	468	4.58%
7	Recreational area	1769	17%	11.5	0.11%	-	-	11.5	0.11%
8	Railway	220	2%	220	2.15%	-	-	220	2.15%
	Total	10211	100 %	3954.86	38.73 %	862.66	8.45 %	4817.52	47.18 %

Source - Bareilly Master Plan 2021

Figure 3-50 - Bareilly proposed landuse map 2021



Proposed projects as per master plan: Following broad proposals were indicated in the master plan 2021 along with area demarcation and landuse.

<p>Proposed Medicity – Medicity of an approximate area 86.40 hectares is proposed in between Pilibhit Bypass road to Kathgodam Road.</p>	
<p>Proposed Knowledge Park – Knowledge Park of an approximate area 369.70 hectares is proposed in between Kathgodam Road to Moradabad Road.</p>	

Proposals in master plan for industrial landuse

To develop Bareilly as “Counter Magnet”, approximate area of 1919 Hectares was proposed in Master plan 2021.

S.N.	Location	Industry	Area
1	Badaun road	Lot manufacturing and service industry	102 Hectares
2	Rampur road	Small and Service industry	8 Hectares
3	NH 24 bypass road	Industrial area in village Tiuliya, Titiyapur, and Khataula Ganpat Ray	716 Hectares
4	Moradabad road	Industrial area for expansion of rubber factory	206 Hectares

Figure 3-51 -Industrial areas proposed in Master Plan 2021



3.5.7.6.2 Provisions of Bareilly Master Plan 2031 (Draft)

Bareilly Master Pan 2031 is being prepared. It consists of planning for development of one housing scheme each on Badaun, Rampur and Shahjahanpur road on the lines of Ramganga Housing Scheme.

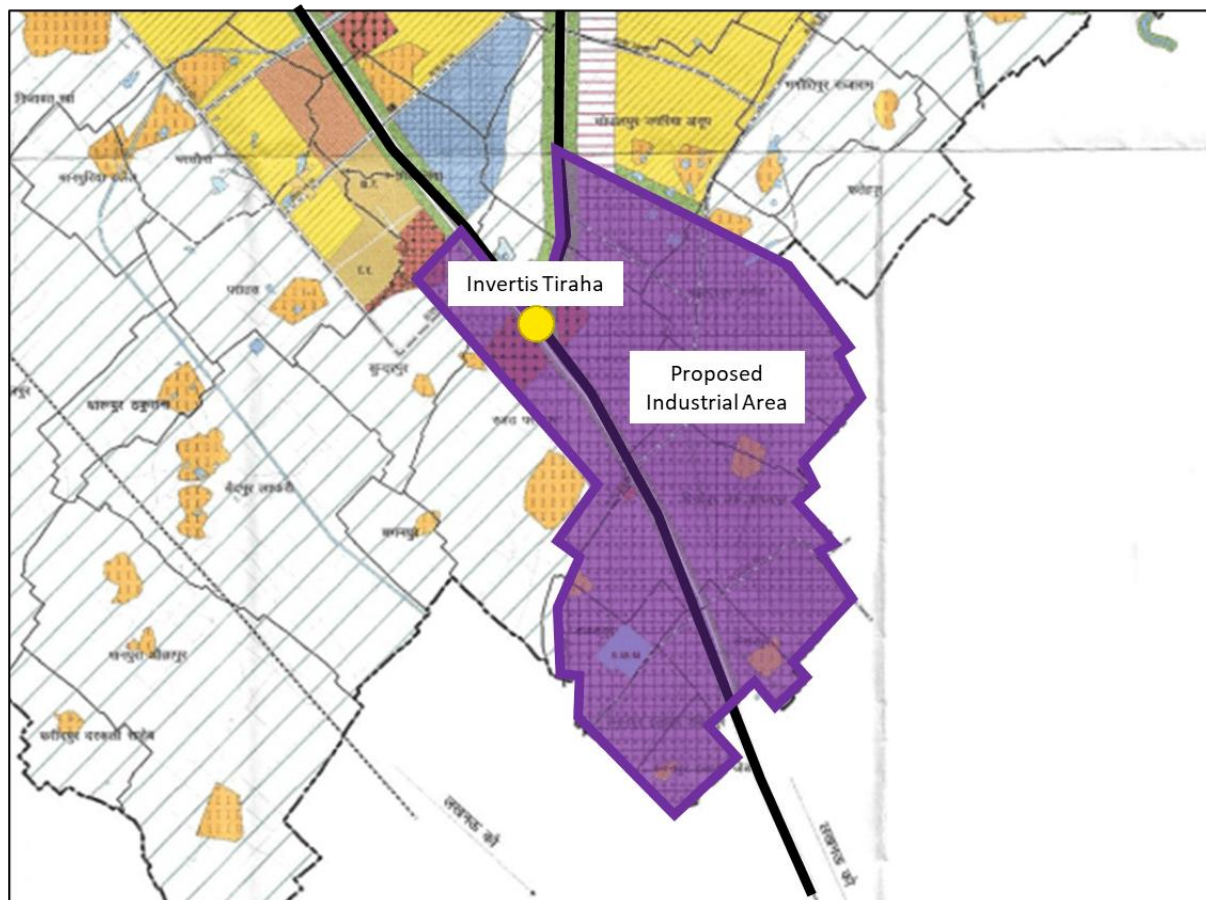
Table 3-66 - Proposed Landuse distribution 2031 (area in hectare)

SN	Landuse	Proposed area 2021	Proposed area 2021 (%)	Proposed area 2031	Total area	%
1	Residential	8129.88	39.53%	450.49	8580.37	37.61%
2	Commercial	905.97	4.41%	39.71	945.68	4.14%
3	Industrial	1170.86	5.69%	837.9	2008.76	8.80%
4	Office	360	1.75%	0	360	1.58%
5	Public utilities	1358.96	6.61%	47.86	1406.82	6.17%
6	Recreational area	4979.14	24.21%	726.6	5705.74	25.01%
7	transportation	1885.35	9.17%	149.37	2034.72	8.92%
8	Others	1773.66	8.63%	0	1773.66	7.77%
	Total	20563.82	100.00%	2251.93	22815.75	100.00%

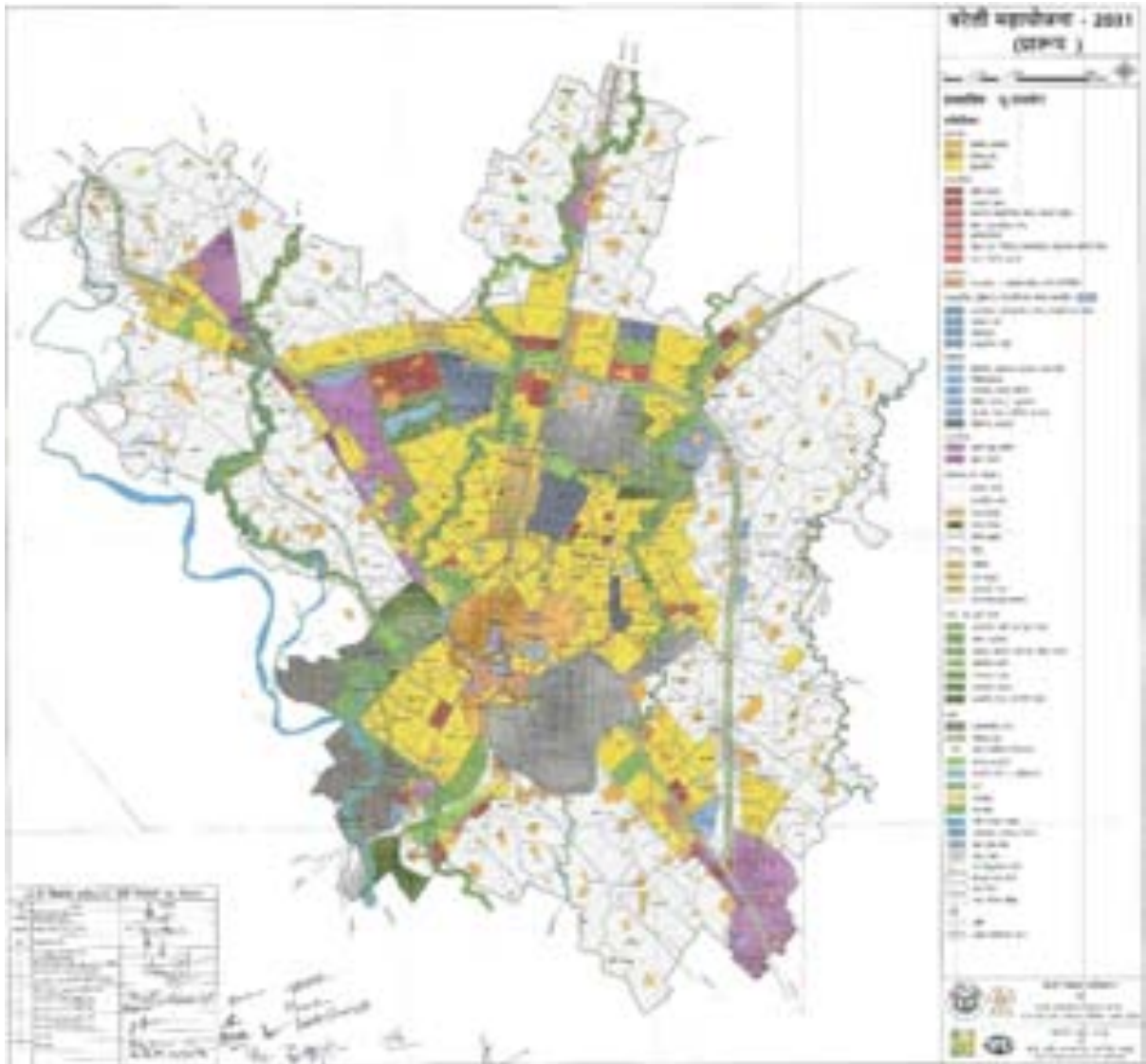
Source - Bareilly Draft Master Plan 2031

Approximately 837.9 hectares of land has been proposed as industrial landuse towards Lucknow Road which accounts for 8.8% of the total landuse distribution.

Draft landuse plan of the Master Plan is ready and at present, suggestions are being taken from the stakeholders.



In comparison to Master Plan 2021, Industrial areas are being proposed near Invertis Chauraha towards Faridpur and Shahjahanpur. And Highway facility zones are proposed on the bypass road.



Source: Bareilly Development Authority

3.5.7.6.3 Industrial corridor impacting the State Economy

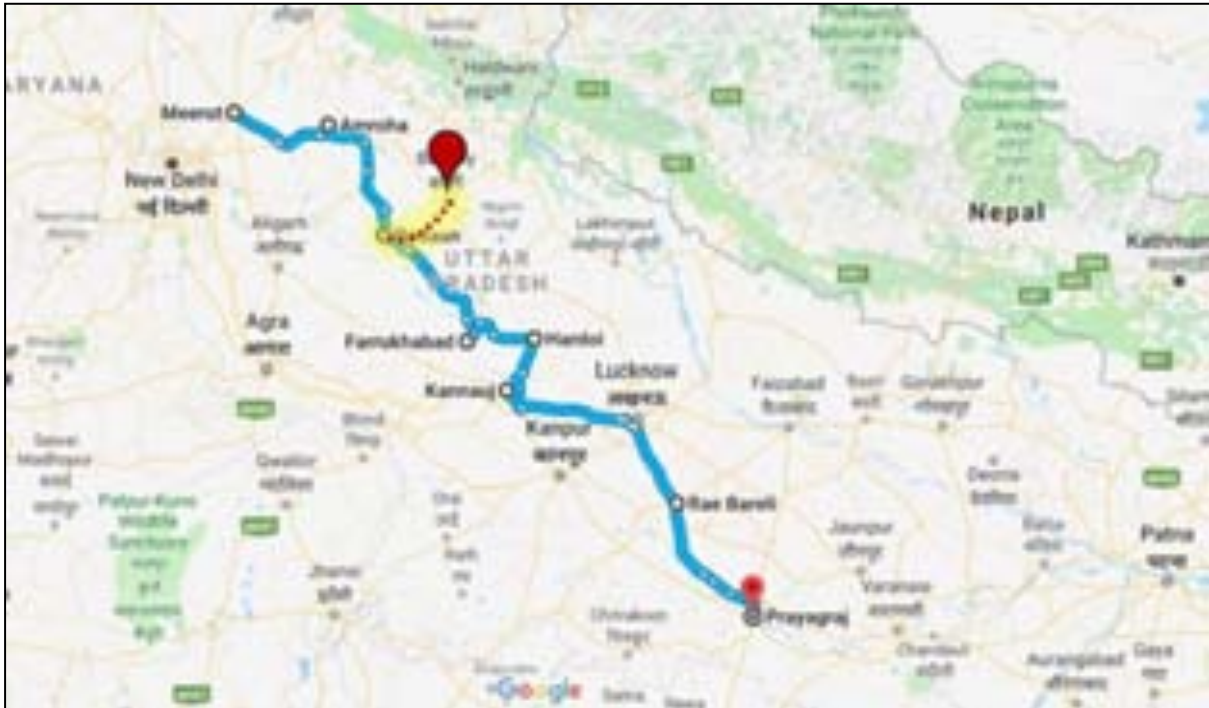
Ganga Expressway – 594 km Ganga Expressway project by UPEIDA is an approved 6 lane greenfield access-controlled highway with a route alignment connecting NH-334 in Meerut District with NH-2 at Prayagraj (Allahabad) Bypass in Prayagraj District. Ganga Expressway’s foundation stone was laid on December 18, 2021. This greenfield project was first announced in 2008 connect Noida with Ballia. Since then, the project in Phase 1 has been revised to connect Meerut with Prayagraj. In Phase 2,



the expressway will be extended by 110 km to Tigri on the Uttar Pradesh / Uttarakhand Border and by 314 km to Ballia near Varanasi.

- **Total Estimated Cost:** Rs. 40,000 Crores
- **Project's Total Length:** 594 Kms
- **Lanes:** 6 (expandable to 8)
- **Status:** Land acquisition (82.04% complete as of July 11, 2021) and RFQ-RFP bidding underway
- **Owner:** Uttar Pradesh Expressways Industrial Development Authority (UPEIDA)
- **Project Model:** DBFOT under PPP

Map – Ganga Expressway indicative alignment



The completion of Ganga Expressway will also benefit all the people of the Bareilly district. The distance from the city to Binawar is only about 36 kilometres. From here, Ganga Expressway will be reached in a very short time (approximately 50 minutes). The expressway will make it easier for people to reach Meerut and Prayagraj. It will improve the connectivity of the division and people from Bareilly as well as several districts of Pilibhit and Uttarakhand will be able to avail this expressway.

3.5.7.7 Handicraft sector

Bareilly is known for its handicraft such as zari zardozi (gold embroidery), surma (kohl), manjha (abrasive kite string), striking cane furniture. These handicrafts are mostly performed at household level or as a group with specific expertise.

Zari-Zardozi -

Zari work is made from three types of threads-gold, silk and silver. Presently, thousands of micro and small units are involved in the work of Zari-Zardozi in the district. People are engaged in this work, directly or indirectly. Several items with zari-zardozi work can be found in the market like dresses, scarves, handbags, jackets, sarees, lehngas etc.



Cane & Bamboo Products -

Bareilly is also known as Baans Bareilly, though it doesn't correlate with the bamboo trees found here. Yet, large numbers of products manufactured from Bamboo are produced here. These products can be categorized as decorative items. Bamboo furniture is also a dominating product available here. This industry is developed in Bareilly as Cottage Industry and providing employment to a big portion of rural population of this district.



Surma –

The USP of Bareilly's surma is that it is finely grinded and instantly provides cool comfort to the eyes. Though surma prepared in Bareilly is available in more than 80 varieties, a majority of Haj pilgrims from all over the world opt for surma gulab prepared in Bareilly as per the discussions.

Manjha –

Manjha manufacturers date back to over two centuries. People are involved in the manufacture and trade of manjha in the city at individual or small group level. Bareilly's manjha is crafted through a relatively natural process.



Zari, Cane & Bamboo is one of the clusters in Bareilly district. The cluster has been identified under MSE-CDP scheme¹⁶.

¹⁶ **Micro & Small Enterprises - Cluster Development Programme (MSE-CDP)** - The Ministry of Micro, Small and Medium Enterprises (MSME), Government of India (GoI) has adopted the Cluster Development approach as a key strategy for enhancing the productivity and competitiveness as well as capacity building of Micro and Small Enterprises (MSEs) and their collectives in the country. A cluster is a group of enterprises located within an identifiable and as far as practicable, contiguous area or a value chain that goes beyond a geographical area and producing same/ similar products/ complementary products/ services, which can be linked together by common physical infrastructure facilities that help address their common challenges. The essential characteristics of enterprises in a cluster are (a) Similarity or complementarity in the methods of production, quality control & testing, energy consumption, pollution control, etc., (b) Similar level of technology & marketing strategies/practices, (c) Similar channels for communication among the members of the cluster, (d) Common market & skill needs and/ or (e) Common challenges & opportunities that the cluster faces.

3.5.7.8 Zari Zardozi



Zari Zardozi

Zari-Zardozi	Zari-Zardozi is a type of hand embroidery and usually done on apparels for embellishment with the help of needle, threads and metal wires. This handicraft work has been taken as patrimonial art in the artisan family.
Principal Manufactured Products	Sari, Salwar Suit
Hub for Zari-Zardozi work	Bareilly
National Export	In 3 prominent areas Bareilly, Delhi, and Jaipur and bulk of orders came from these cities.
International Export from India)	India exports zari embroidery to the United States, the United Kingdom, the United Arab Emirates, Japan and Saudi Arabia. Overseas exporters also get their consignment manufactured in India and export it to other countries.
Raw Material	Silk, kardana pearl, kora kasab, fish wire, nakshi, nos, pearls, tubes, chanla, jarkan nori, leaves, mirrors, golden chain etc.
Types of workers involved in this sector	<ul style="list-style-type: none"> Those who are doing this work as their main occupation and engaged in that throughout the year temporary workers whose main occupation is some other but to earn sufficient or to use their holidays, they work for some hours or few days in a month or year. The nature of employment may affect the labour productivity.
Income per day	Rs 400-500/day earlier Now it has been reduced to Rs 250-200/day.
Reason for such sharp decline in wages	<ul style="list-style-type: none"> 18% of GST on the raw material and Subsequently another 18% on the finished product It has led to drastic decrease in the number of orders of Zari-Zardozi products and consequently also eroded livelihood base of hundreds of artisan families.
Reasons for decline in this industry	<ul style="list-style-type: none"> GST (Goods and Services Tax) policy Skyrocketing prices of raw materials Almost static price of the final products Invasion of international products Tough competition from cheaper domestic products Low wages paid to workers has played a major role in the "ongoing extinction" of the industry. The existing wages are too low (.200-250 Rs per day)
Government initiatives	The government issued Zari card to workers engaged in this economic activity in 2009, under the 'Zari Card Health Benefit Scheme' having an upper limit up to Rs. 30,000. This was primarily a smart card linked with the card-holder's bank account number, however after some time the smart cards failed to work



3.5.7.8.1 Cane & Bamboo craft



Cane & Bamboo

Products	Cane furniture — intricately woven sofa sets, diwan, stools, tables, trays, side racks and swings, Lawn Furniture, Gift Item, Lamp Shed, etc.
Raw material	Cane and Bamboo
Raw material source	Assam, Meghalaya, Tripura and few nearby districts of Uttar Pradesh
Number of artisans and traders	Only 1,100 artisans and 50 traders are associated with this industry
Existing Cluster	(i) Cane & Bamboo Adhunik Vikas Audyogik Sehkari Samiti Ltd. Mathurapur, C B Ganj, Bareilly, No. of functional units in the clusters is 172 and Employment in Cluster Approximately 1200. (ii) The Fatehganj cluster is able to form 500 plus Artisans & 40 SHGs supporting the strong work force. The mobilisation gains momentum day by day.
Types of workers involved in this sector	Majorly artisan households, which have been performing this handicraft form for a long time. Following are the categories - <ul style="list-style-type: none"> • Those who are doing this work as their main occupation and engaged in that throughout the year • Temporary workers whose main occupation is some other but to earn sufficient or to use their holidays, they work for some hours or few days in a month or year.
Income per day	400-700 Rs per day
Reason for low wages	Lack of skilled manpower, training, and knowledge of tools & machinery
Reasons for decline in the industry	Labour cost and the prices of raw materials have gone up. As a result, cost of a cane sofa is between Rs 8,000 to Rs 25,000 based on its quality and design. Therefore, customers prefer to go for wooden furniture, which is considered more durable. Cheaper and durable furniture is available in plastic variants.
Thrust Area	Technology/ Product/ Market/ Export/ quality etc.
National Export	All over India
International Export from India)	Europe (for eco-friendly furniture and artifacts)
Challenges in this industry	<ul style="list-style-type: none"> • Availability of cheap raw material • Absence of GI tag and certification of the handicraft • Tough competition from plastic and other substitute material products which are cheaper and comparatively more durable • Low wages paid to workers has played a major role in the "ongoing extinction" of the industry.
Government initiatives	Formulation of Clusters and common facility centres along with common tools and machinery.



3.5.7.8.2 Manjha



Products	Strings for Kites
Kite artisans in Bareilly	200-250 with artisans cards
Number of artisans involved	Approx. 30,000
Raw material	Manjha is made through strings prepared through natural process. Raw material used for making string is Coarse rice which is being grown locally
Wages of artisans	Rs 100/day
Import Areas	Only Nylon Kite stings are being imported from China. No Cotton kite strings are being imported.
Export Areas	PAN India.
Initiatives by Government to boost this industry	<ul style="list-style-type: none"> • Government had imposed ban on the business of Nylon & Chinese manjhas which were giving tough competition to this industry. • Proposal have been made in mast for an Industrial cluster in Rohilkhand for this Industry. • Comprehensive Handicrafts Cluster Development Scheme (CHCDS)
Training for kite making	30 artisans programs have been held for Kite and Manjha artisans
Reason for low wages	Lack of skilled manpower, training, and knowledge of tools & machinery
Challenges in this industry	<ul style="list-style-type: none"> • Tough competition from synthetic and other substitute material products which are cheaper and comparatively more durable • Low wages paid to workers has played a major role in the "ongoing extinction" of the industry.



3.5.7.8.3 Soorma product



Soorma / Kohl

Products	Surma (Kohls), Kajal
Number of artisans and traders	Approx. 200+
Reasons for decline in the industry	Preference of people over other cosmetic beauty products
National Export	Mumbai & Delhi
International Export	Arab countries
Existing Cluster	Approx. 06 units
Raw Material Source	Bangladesh

3.5.7.8.4 Plywood and wooden products



Plywood / Wood

Products	<ul style="list-style-type: none"> • Plating Materials • Cork; Straw And Plaiting Materials • Veneer Sheets, Plywood; Laminboard; Particle Board And Other Panels And Boards
Numbers of industries	<ul style="list-style-type: none"> • There are about 300 plywood industries in Uttar Pradesh. there are 40 industries in Bareilly alone. • After Yamunanagar in Haryana, the plywood industry of Bareilly is considered to be the best in the country.
Number of units	578 (Source – DIC Bareilly)
Number of employees	3800 (Source – DIC Bareilly)
Location of units	Parsakhera, Bhojipura and Faridpur area.
Export areas	<ul style="list-style-type: none"> • According to the entrepreneurs of the district, the maximum consignment from Bareilly goes to Maharashtra and Telangana. All industries in the district together account for 50 to 60 % of the total production are supplied to these two states. • Apart from this, there is a good demand for Bareilly's ply in Goa, Rajasthan, Chhattisgarh.
Linkages in plywood manufacturing	<ul style="list-style-type: none"> • Peeling industry • Plywood industry • Saw mill

Initiatives for handicraft industries

(i) Bareilly Haat at Bareilly and Construction of Handicraft Promotion Centre

This Project “Bareilly Haat cum Handicraft Centre” under Bareilly Smart City Project will have following features.

This Project aims to provide year-round marketing opportunities to the Handicrafts Artisans, handloom weavers to showcase and sell their products to the consumers and facilitate them with all the associated Infrastructure in the Haat to lure the public of the city to come and visit the place.

- To provide training for the artisan and the students interested in handicrafts.
- To provide Exposure of Local Handicrafts to state and national market and provide them linkages
- To create recreational and enjoyable space with sources of revenue generation for Authority while keeping it close to the local handicrafts.
- To provide an Interpretation Centre in the Campus to glorify the Past of the City

Project Components:

- **Shopping** - Shops for various handicraft products, Furniture store, Food courts, Food Street, Souvenir shops, Shopping area
- **Recreation** - Light and sound show, Ferris wheel, Live music, Cafeteria, Restaurants, Kala Sanskriti Kendra, Entertainment zone, Movie theatre

(ii) Ambedkar Hastshilp Vikas Yojana

The Central Government has launched a scheme entitled “Ambedkar Hastshilp Vikas Yojana” to facilitate credit access for handicraft artisans by providing interest subvention. The scheme is operated as a Cluster Specific Scheme and headed by the Development Commissioner (Handicrafts). This scheme aims at promoting Indian handicrafts by developing artisans’ clusters in the country.

Objective






- The objective of the Ambedkar Hastshilp Vikas Yojana (AHVY) are as follows:
- Promoting premium handicrafts stocks for the niche market.
- Expansion of production base for utility-based, lifestyle and mass production handicrafts products.
- Preservation and protection of heritage/ languishing crafts.

Features of the Scheme

- Mobilisation of artisan’s groups/ SHGs formation with the office-bearers.
- The survey will be Conducted for each artisan in the prescribed format
- Holding awareness camps for the cluster artisans, discussion, and formation of the Annual action Plan of the activities
- Opening of Bank accounts of SHGs.
- Facilitating the opening of Bank accounts of the Individual artisans under Jan Dhan Yojna
- Processing of the scanned data in MS Excel Sheet format containing artisans’ details such as identity card number, Photographs, Aadhar number, EPIC number, bank account number with bank name.
- Including each artisan under RSBY and AABY Scheme.
- The Issuance of Artisans’ Identity Cards (AIC) to all the cluster artisans
- The appointment of cluster Manager will be decided as per the qualification and experience, registration and formation of Producer Company/ Federation/ Institutions with at least 50% of the Cluster artisans as members/ shareholders.
- Artisans’ Credit Card (ACC): The ACC scheme has been formulated to provide adequate and timely assistance by the banking institutions to the artisans to satisfy their credit requirements of both investment needs as well as working capital need in a flexible and cost-effective manner. The scheme is being implemented through Scheduled Banks both in rural and urban areas.

Support under the Scheme

The package of support under AHVY can be clubbed under the following components:

Components		Support and Services provided under AHVY
	Social interventions	<ul style="list-style-type: none"> • Diagnostic survey and formulation of the project plan • Mobilization of artisans
	Technological interventions	<ul style="list-style-type: none"> • Assistance for training the trainers • Assistance for design and technological upgradation • Financial assistance for development and supply/dissemination of modern improved tools, equipment etc • Documentation, preservation, and revival of languishing crafts etc
	Marketing interventions	<ul style="list-style-type: none"> • Marketing events • Marketing infrastructure • Publicity • Marketing Services
	Financial interventions	<ul style="list-style-type: none"> • Margin money
	Cluster specific infrastructure-related interventions	<ul style="list-style-type: none"> • Establishment of Resource Centre for major crafts • Establishment of E-kiosks • Creation of Raw Material Banks • Setting up of Common Facility Centre. • Technological assistance by setting up of Facility Centres by Exporters/ Entrepreneurs, etc.

(iii) ODOP scheme 2018

The One District One Product (ODOP) Programme aims to encourage more visibility and sale of indigenous and specialized products/crafts of Uttar Pradesh, generating employment at district level. In this project, one product is selected from every district of Uttar Pradesh. The selected product under ODOP is traditionally famous for their production and manufacturing from that district. Many of these products are GI tagged, which means they are certified as being specific to that region in Uttar Pradesh. The manufacturing process of a lot of these products are also dying community traditions that are being revived through modernization and publicization.



Many district-specific industries are more commonplace, but their products are still unique to those regions. Asafoetida, Desi ghee, Fancy glassware, Bedsheets, Jaggery, Leather Goods – the districts that specialize in these crafts are in UP. These are also small and medium industries that need modernization, machinery, and productivity enhancement.


Under the ODOP project, artisans, production units and associations which are related to the selected products are promoted by lending loan, establishing Common Facility Centres, providing marketing assistance so these products can be popularized, and employment can be generated at district level.

ODOP Schemes:			
I	II	III	IV
Common Facility Centre Scheme	Marketing Development Assistance Scheme	Finance Assistance Scheme (Margin Money Scheme)	Skill Development Scheme

Key Policy Objectives

- Secure preservation and development of local crafts / skills and promotion of the art
- Provide employment to youth and promote the competitive ecosystem in the state
- Capacity building and promotion of local skills
- Preventing migration by improving income and local employment in the state
- Improvement in product quality and skill development
- Increase overall exports of the selected products
- products to global level with the structured approach

Key Policy Highlights

 Support	<ul style="list-style-type: none"> • Prepare database regarding circulation, stakeholders, total production, export, availability of raw material and to arrange training. • Research of possibilities regarding production, development, marketing of the product. • Prepare a micro plan for product development, marketing promotion and to provide additional opportunities of employment and wage increment of the concerned artisans and workers. • Provide advertising, publicity and marketing opportunities at district, state, national and international level. • Necessary coordination with MUDRA, PMEGP, Stand Up Schemes of Government of India as well as Mukhya Mantri Yuva Swarojgar Yojna and Vishwakarma Shram Samman Yojna of Government of UP for providing required finance to new and existing units. To start new schemes for the purpose as needed. • Setup Co-operatives and Self-Help Groups. Hosts general and technical training of the craft and technology development.
---	---

(a) Marketing Development Assistance (MDA) scheme

The MDA scheme is aimed at achieving fair pricing for the artisans, weavers, entrepreneurs, and exporters of the ODOP products through better marketing. This scheme provides financial assistance to participants of national and international fairs/exhibitions for display and sale of their products selected under ODOP project.

(b) Margin Money / Financial Assistance Scheme

Under the Financial Assistance Scheme, all nationalized banks, regional rural banks and other scheduled banks will finance the scheme and the Department of Micro, Small and Medium Enterprises and Department of Export Promotion shall release the ODOP margin money subsidy against all applications submitted under the scheme. For:

- Enterprises with project cost upto INR 25 lakhs, 25% of the entire project cost subject to a maximum of INR 6.25 lakhs, whichever is less, shall be payable under the margin money scheme.
- Enterprises with project cost between INR 25 lakhs to 50 lakhs, INR 6.25 lakhs or 20% of the project cost whichever is more, shall be payable under the margin money scheme.



- Enterprises with project cost between INR 50 lakhs to 150 lakhs, INR 10 lakhs or 10% of the project cost, whichever is more, shall be payable under the margin money scheme.
- Enterprises with project costs exceeding INR 150 lakhs, 10% of the entire amount subject to maximum of INR 20 lakhs, whichever is less, shall be payable under the margin money scheme. The margin money shall be merged with the subsidy after the enterprise has successfully completed 2 years of operation.

(c) Skill Development scheme under ODOP

The ODOP Skill Development and Tool Kit Distribution Scheme is aimed at fulfilling current and future requirements of skilled work force in the entire value chain of ODOP products, across the state of Uttar Pradesh. Additionally, the scheme intends to equip the artisans / workers through distribution of relevant advanced tool kits.



Incentives – (i) Artisan who are already skilled shall be imparted required training through RPL (Recognition of Prior Learning) and shall be certified through relevant Sector Skill Councils (SSCs), (ii) Unskilled artisans shall be provided a 10-day training. Post completion of training, these artisans shall also be certified under RPL, (iii) All the trainees shall receive an honorarium of Rs. 200 per day during the training period, (iv) An advanced toolkit, free of cost, shall be provided by the department to the trained artisans

(d) Common Facility Centre (CFC) scheme

Objective of the CFC scheme is to establish a CFC which would encompass following activities: Testing Lab, Design Development and Training Centre, Technical research and Development Centre, Product exhibition cum Selling Centre, Raw Material Bank / Common Resource Centre, Common Production / Processing Centre, Common Logistics Centre, Information, Communication and Broadcasting Centre, Packaging, Labelling and Barcoding facilities, Other such facilities related to missing link of value chain.

Incentives – (i) For CFCs of project cost up to Rs. 15 crores, the State government shall provide a financial assistance up to 90% of the project cost, while a minimum of 10% would be borne by the SPV, (ii) Financial assistance would also be given for CFCs of project cost more than Rs 15 crores, provided the State’s share would be calculated on Rs 15 crores only, (iii) The State government can also sanction capital for the projects of similar nature, previously approved by the Central & the State governments, which are incomplete due to the lack of funds. For supporting such incomplete projects, proper justification would be provided.

Stakeholder Consultation	
Date – 07.02.2022 Sector - Handicraft	Office of Development Commissioner (Handicraft) Bareilly Mr. Pulkit Jain, Development Commissioner (Handicraft) Bareilly
 Challenges	<ul style="list-style-type: none"> • Promotion of Kite making Terracotta sculptures along with the Zari and Bamboo artworks • Limited number of exporters from Bareilly resulting into exports from cities like Delhi, Jaipur and Bangalore. • Lack of common facilities for artisans which can be utilised based on requirement • Presence of large number of middlemen in the development process of the handicraft
 Potential & solutions	<ul style="list-style-type: none"> • Interlinking of tourism with handicraft such as Zari Zardosi and Bamboo products making tours • Obtaining GI Tags for the handicraft artwork of Bareilly

Stakeholder Consultation	
Date – 07.02.2022 Sector - Handicraft	Dastkar Bunkar Welfare Association Bareilly, Govt. CFC, Bamboo and Cane - Nadeem Hussain (General Secretary)
 <p style="writing-mode: vertical-rl; transform: rotate(180deg);">Challenges</p>	<ul style="list-style-type: none"> Lack of common tool room / shared technology Lack of material bank in the city Challenges and high cost of import of raw material from North Eastern States Absence of GT Tag for the handicraft from the city
 <p style="writing-mode: vertical-rl; transform: rotate(180deg);">Potential & solutions</p>	<ul style="list-style-type: none"> Need of material bank for storage of raw materials Need of dedicated clusters and common facility centres for shared technology and resources Requirement of obtaining GI Tag for the handicrafts of Bareilly Support required in procurement through auctioning and import of raw material from Forest Department of nearby areas and North Eastern States Requirement of permanent stalls to showcase and sell the handicraft within city Certification of Beint & Bamboo artisans Removal of mediators from the processes for better income of the artisans





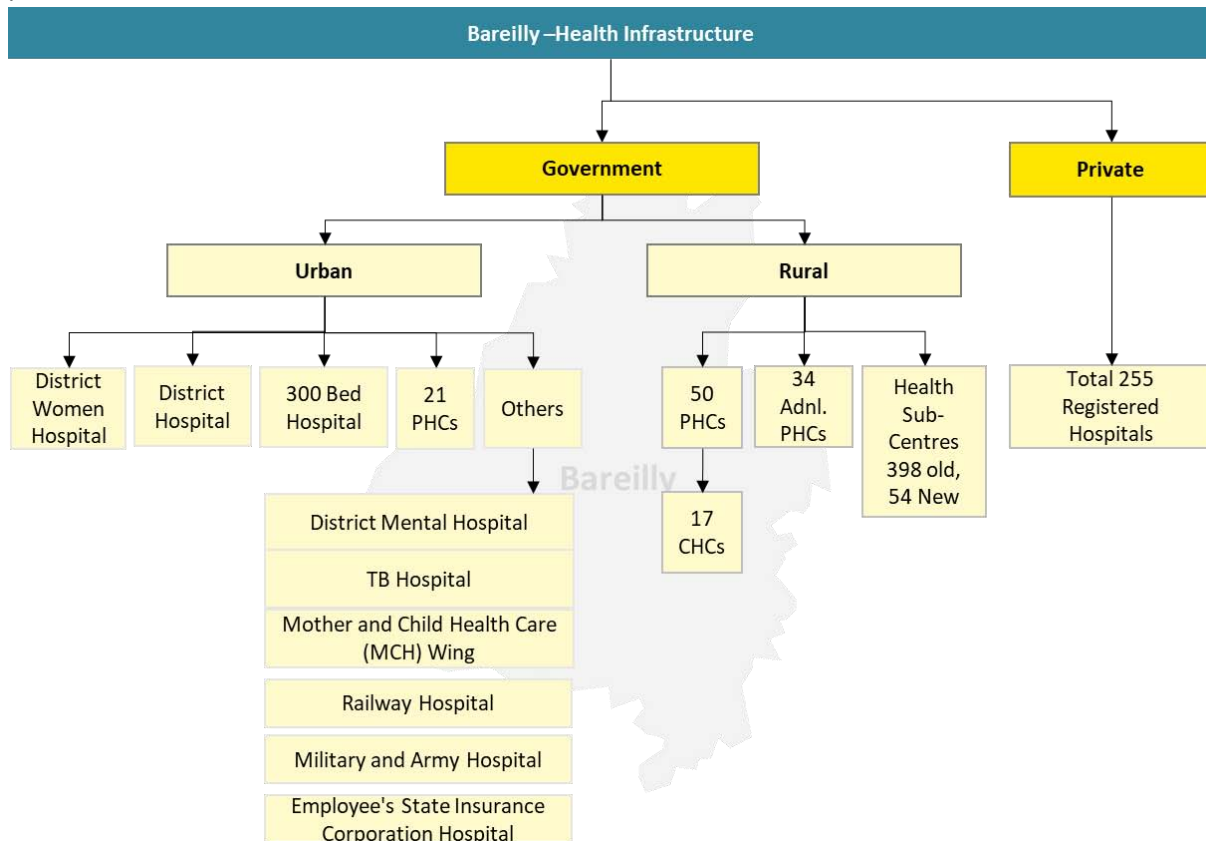
3.5.8 Health and Education sector

3.5.8.1 Health sector

Bareilly is among one of the leading cities of Uttar Pradesh in terms of medical facilities, the city serves as a gateway to the patients of the nearby areas as well as Kumaun, Rohilkhand, and West Nepal region. As per data provided by CMO Bareilly, at present, there are various government & private healthcare facilities as below:

- Under Urban area, there are District Women Hospital, District Hospital, 300 Bed Hospital, PHC’s & Others including District Mental Hospital, TB Hospital, Mother and Childcare (MCH) Wing, Railway Hospital, Military and Army Hospital, Employee’s State Insurance Corporation Hospital.
- Under Rural areas, there are government facilities PHC’s, Health Sub – Centers & CHC’s.
- Private Health Centre also available in this region due to high demand of health services. Most of private health center situated in the urban regions Bareilly as a head quarter has high density of medical facilities. Clinical Health Centers and Nursing Homes are well dense in Bareilly city.

There is a total pf 104 PHC’s. Currently, a total 255 Private Hospitals with 10957 number of beds are present.



In the following section, team has analyzed the facilities available at district level vis a vis region and state in terms of numbers, capacity. As Bareilly is part of western region¹⁷ the analysis is done for District, Western region of Uttar Pradesh and then the State i.e., Uttar Pradesh. This analysis is based on the data from “District wise Development Indicators 2020¹⁸” which provides the data at various level for development indicators such as education, health, economy, etc.

Table 3-67 - Allopathic hospitals/dispensaries

District / Region /State	No. of Allopathic hospitals/dispensaries per lakh of population (including C.H.Cs /P.H.Cs.)		No. of beds in Allopathic hospitals/dispensaries per lakh of population (including C.H.Cs / P.H.Cs.)	
	2011-12	2019-20	2011-12	2019-20
Bareilly	1.92	3.22	37.44	46.55
Western Region	2.2	3.75	37.47	50.14
Uttar Pradesh	2.42	4.13	41.53	55.7

Source – District wise Development Indicators 2020 Economics and Statistics Division State Planning Institute Planning Department, Uttar Pradesh, URL - <http://updes.up.nic.in/esd/reports/district%20indicators%202020.pdf>

The number of Allopathic hospitals/ dispensaries per lakh of population (including C.H.Cs/P.H.Cs) & the number of beds in Allopathic hospitals/ dispensaries per lakh of population (including C.H.Cs/P.H.Cs) in the Bareilly district has increased to 67.7% & 24.33% respectively

Whereas in comparison to Western Region & State, the number of Allopathic Hospitals/ Dispensaries per lakh of population are 16.46 % & 28.26% less respectively as well as the number of beds in Allopathic Hospitals/ Dispensaries per lakh of population are also 7.71% & 11.09% less respectively.

Table 3-68 - Ayurvedic / Homeopathic / Unani hospitals / dispensaries

District / Region /State	No. of Ayurvedic / Homeopathic / Unani hospitals / dispensaries per lakh of population		No. of beds in Ayurvedic / Homeopathic / Unani hospitals /dispensaries per lakh of population	
	2011-12	2019-20	2011-12	2019-20
Bareilly	1.99	1.69	7.83	5.76
Western Region	1.53	1.35	4.55	3.79
Uttar Pradesh	1.94	1.73	5.56	4.6

Source – District wise Development Indicators 2020 Economics and Statistics Division State Planning Institute Planning Department, Uttar Pradesh, URL - <http://updes.up.nic.in/esd/reports/district%20indicators%202020.pdf>

The number of Ayurvedic/ Homeopathic/ Unani hospitals/ dispensaries per lakh of population & the number of beds in Ayurvedic/ Homeopathic/ Unani hospitals/ dispensaries per lakh of population in the Bareilly district has decreased to 15.08% & 26.44% respectively

¹⁷ Western Region consists of 30 districts namely - Saharanpur, Muzaffarnagar Shamli, Bijnor, Moradabad, Sambhal, Rampur, Amroha, Meerut, Baghpat, Ghaziabad, Hapur, G.B.Nagar, Bulandshahr, Aligarh, Hathras, Mathura, Agra, Firozabad, Etah, Kasganj, Mainpuri, Badaun, Bareilly, Pilibhit, Shahjahanpur, Farrukhabad, Kannauj, Etawah & Auraiya.

¹⁸ District Wise Development Indicators Uttar Pradesh 2020 (url - <http://updes.up.nic.in/esd/reports/district%20indicators%202020.pdf>)

Whereas in comparison to Western Region & State, the number of Ayurvedic/ Homeopathic/ Unani Hospitals/ Dispensaries per lakh of population are 20.12 % more & 2.37% less respectively as well as the number of beds in Ayurvedic/ Homeopathic/ Unani Hospitals/ Dispensaries per lakh of population are also 34.20% more & 21.37% less respectively.

Table 3-69 - C.H.C s /P.H.C.s

District / Region /State	No. of C.H.C s /P.H.Cs. per lakh of population		No. family welfare clinics / centres per lakh of population	
	2011-12	2019-20	2011-12	2019-20
Bareilly	1.76	1.57	9.32	10.19
Western Region	2.03	1.79	9.51	10.72
Uttar Pradesh	2.22	1.97	10.12	11.44

Source – District wise Development Indicators 2020 Economics and Statistics Division State Planning Institute Planning Department, Uttar Pradesh, URL - <http://updes.up.nic.in/esd/reports/district%20indicators%202020.pdf>

The number of C.H.C s / P.H.Cs per lakh of population in the Bareilly district has decreased to 10.80% but the number family welfare clinics/ centres per lakh of population has increased to 9.33% respectively. However, in comparison to Western Region & State, the number of C.H.C s / P.H.Cs per lakh of population are 14.01% & 25.48% less respectively as well as the number of family welfare clinics/ centres per lakh of population are also 5.20% & 12% less respectively.

Bed occupancy rate

In Bareilly city there are 3 major hospital falling under CMO and following are the details of the Bed Occupancy Rate in 2021 and 2022. As per data received from Chief Medical Officer, there are approximately 759 patients are being admitted in IPD & approximately 1,27,442 patients are being admitted in OPD. Also details of Bed occupancy rate is also listed below:

S. No	Name of hospital	Bed Occupancy Rate 2021	Bed Occupancy Rate 2022
1	Under CMO	98.27	77.65
2	CMS district male	49.51	58.31
3	CMS district female	70.5	67.5

List of medical colleges with number of beds in Bareilly

Table 3-70 - List of Medical Colleges

S. No	Name of college	Admission intake	No of beds in attached Hospital
1	Rajshree Medical Research Institute	150	690
2	Rohilkhand Medical College & Hospital	150	720
3	Shri Ram Murti Smarak Institute of Medical Sciences	100	700

Source - National Health Profile 2020; url - <https://www.cbhidghs.nic.in/showfile.php?lid=1155>

URDPFI guidelines for health facilities

The size of a hospital depends upon the hospital bed requirement, which in turn is a function of the size of the population it serves. As per the Indian Public Health Standards (IPHS), 2012, the calculation of number of beds is based on-

- annual rate of admission as 1 per 50 population
- average length of stay in a hospital as 5 days

For example: In Bareilly the population size of the city is - 9,04,797

Based on the assumptions the number of beds required for 9,04,797 population is:

- No. of bed days per year: $(9,04,797 \times 1/50) \times 5 = 1,80,95$

- No. of beds required with 100% occupancy: $9,04,797 / 365 = 2478$
- No. of beds required with 80% occupancy: $(9,04,797 / 365) \times 80\% = 1983$

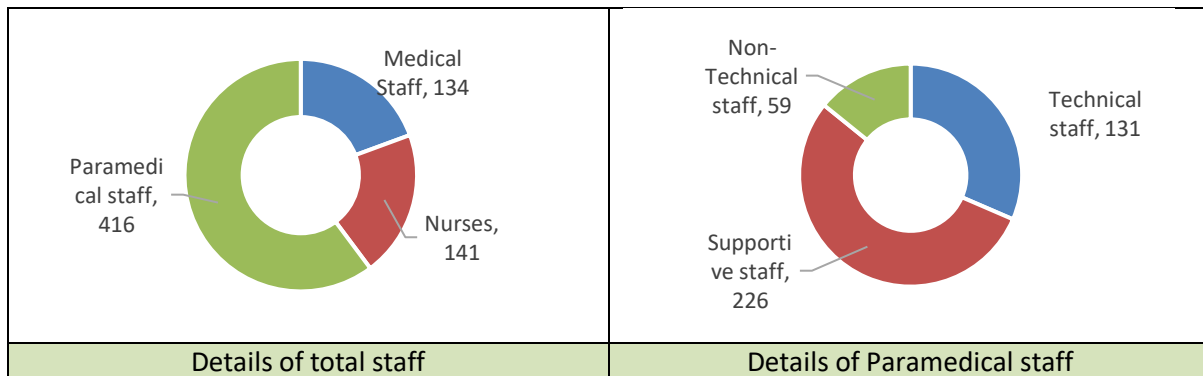
The classification of health care facilities is given in table below

S.N.	Category	Population served per unit	Area requirement
1	Dispensary	15000	0.12 Ha
2	Nursing home, child welfare and maternity centre	45000 to 1 lakh	0.20 to 0.30 Ha
3	Polyclinic	1 lakh	0.20 to 0.30 Ha
4	Intermediate Hospital (Category A)	1 lakh	1.00 Ha
5	Intermediate Hospital (Category B)	1 lakh	3.70 Ha
6	Multi-Speciality Hospital	1 lakh	9.00 Ha
7	Speciality Hospital	1 lakh	3.70 Ha
8	General Hospital	2.5 lakh	6.00 Ha
9	Family Welfare Centre	50,000	500 sqm 800 sqm
10	Diagnostic centre	50,000	500 sqm 800 sqm
11	Veterinary Hospital for pets and animals	5 lakh	2000 sqm
12	Dispensary for pet animals and birds	1 lakh	300 sqm

The Department of Health and Family welfare suggests incorporation of Trauma Centres in the high ways cutting across urban local authority jurisdiction.

Medical & Para-medical staff:

The staff in a Hospital can be classified broadly into three categories as Medical staff, Nurses & Paramedical staff. The Paramedical staff is further classified into Technical staff, administrative staff & supportive staff. Here is the list of existing number of Hospital staff with their further sub classification.



Details of existing health workers

A) Medical Staff

S. No	Classification	Existing Numbers
1	Chief Medical Officer	1
2	Deputy Chief Medical Officer	3
3	Medical Officer	129
4	Deputy Medical Officer	1

B) Nurses

S. No	Classification	Existing Numbers
-------	----------------	------------------

1	Auxiliary Nursing Midwifery	116
2	Staff Nurse	24
3	Nurse	1

C) Paramedical staff

a. Technical staff

S. No	Classification	Existing Numbers
1	Health Education Officer	5
2	Stenographer	1
3	Dental Hygienist	11
4	Pharmacist	88
5	Chief Pharmacist	2
6	Dental Surgeon	5
7	Medical Intern	8
8	Optometrist	4
9	X – Ray Technician	4
10	Health Intern	1
11	District Leprosy Officer	2

b. Supportive staff

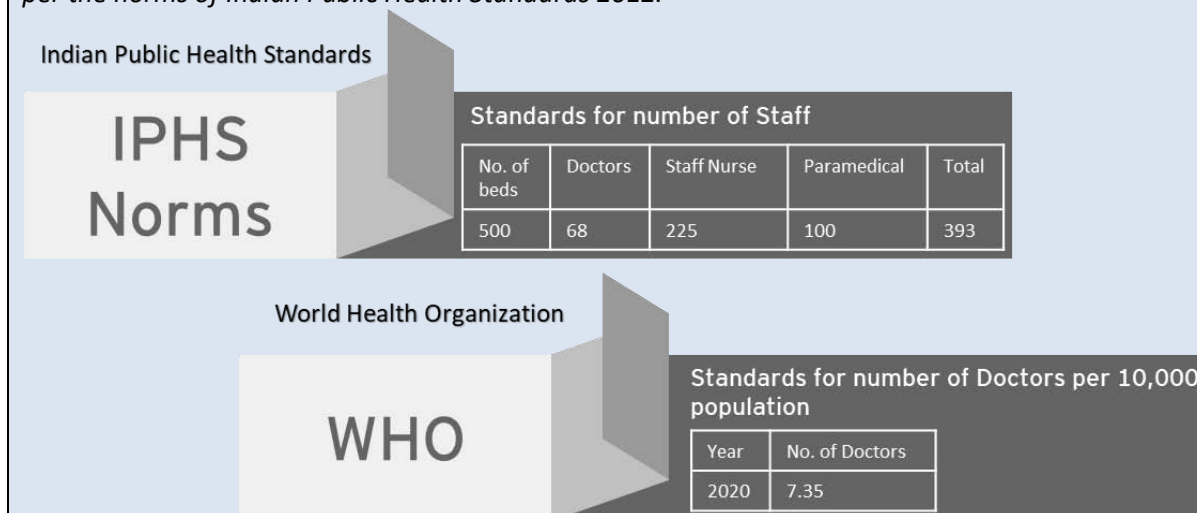
S. No	Classification	Existing Numbers
1	District Administrative Officer	2
2	Accountant	1
3	Primer Assistant	12
4	Assistant Recruiting Officer (A.R.O)	3
5	Chair Weaver	1
6	Ward Clerks	79
7	Medical Superintendent	4
8	Lab Assistant	31
9	Health Workers	69
10	Eye care assistant	2
11	Staff Clerks	5
12	Health Supervisor	7
13	Darkroom assistant	1
14	NMA/NMS	7
15	Dental Technical Officer	2

c. Non-Technical staff

S. No	Classification	Existing Numbers
1	Plumber	1
2	Sweeper cum Guard	17
3	Driver	13
4	Sweeper	18
5	Peon	6
6	Electrician	2
7	Cook	1
8	Washerman	1

Norms and guidelines for Medical & Para-medical staff

Further, below are the details of the required number of Doctors & Paramedical staff required as per the norms of Indian Public Health Standards 2012.



Broad gaps in existing health workers

As per the data provided by CMO Bareilly, there are 161 doctors and approximately 557 paramedical staff in Bareilly for the government facilities. However, for doctors, out of 237 post only 161 posts are filled or recruited currently. There are approximately 3200 Aasha workers. Based on the data analysis for health facilities under CMO (including CHCs, PHCs and additional PHCs) following are the observation regarding the existing gap in the health workers -

- **Approximate 32% shortage of doctors**
- **Approximate 52% shortage of paramedical staff**

Category		Sanctioned~	Working~	Vacant~	Vacant (%)~	
For hospital Under CMO Bareilly	(i) Doctors and MOCH Doctors	Doctors	237	161	76	32%
	(ii) Garde III and IV health workers	Paramedical	244	147	97	40%
		Nursing	949	399	550	58%
		Clerk	55	20	35	64%
		District administrative officer	1	1	0	0%
		Research officer	19	3	16	84%
		Health education officer	18	7	11	61%
	IV Grade employees	281	178	103	37%	

Source – CMO office Bareilly (Note – figures are approximate in number)

Health indicators:

As per AHS¹⁹ 2012 – 13, Bareilly has good Total Fertility Rate of 3.6 depicting an increase in the use of any method of family planning. While the district has lowest Maternal Mortality Rate (196) & Neo –

¹⁹ The Annual Health Survey (AHS) brings out the information on key maternal health & health care indicators such as ante – natal care, delivery care, post – natal care & maternal mortality rates & ratios. The surveys also bring out information on other indicators such as fertility & family planning behaviour, child health & healthcare services, child mortality levels, the dimensions of childhood diseases, instances of acute

natal Mortality Rates (52 deaths per 1,000 live births) & highest Infant Mortality Rate (78 deaths per 1,000 live births) & Under – five Mortality Rates (103 deaths per 1,000 live births).



The high values of Infant Mortality Rate & Under – five Mortality Rates depicts the wide gaps in basic infrastructure services such as access to electricity, safe sanitation, etc. Improvement in these basic infrastructure services can bring down the Infant Mortality Rates & Under – five Mortality Rates.

Wide disparities have been observed in the source of treatment with the percentage of acutely ill people availing treatment from a government source & with the percentage of chronically ill people availing treatment from a government source being 1.4 & 10.5 respectively representing very lower number of people have received medical aid for acute illnesses & chronic illnesses from Government source which reveals the deplorable situation of health care centres in the District. Government has launched the Janani Suraksha Yojna (JSY) through which the Government is encouraging institutional deliveries in the districts/ States having high percentage of Home – based birth deliveries.

Figure 3-52 - Existing situation of Health Facilities at City Level



illness & chronic illness including indicators such as Total fertility rate, levels of immunization, neo – natal, infant mortality rate, under – five mortality rates, etc.

Stakeholder Consultation	
Date – 09.02.2022 Sector - Health	
Office of Chief Medical Officer Mr. Harpal Singh, Additional Chief Medical Officer	
 <p>Challenges</p>	<ul style="list-style-type: none"> • Gap in recruitment of medical and paramedical staff against sanctioned posts • State of the art infrastructure and medical facilities – such as CT Scan, Teleradiology, Telemedicine, etc.
 <p>Potential & solutions</p>	<ul style="list-style-type: none"> • Need of upgraded health facilities with supporting technological development • Development of parking in the commercial areas

3.5.8.2 Education Sector

The city is developing as a major education centre. There are universities, a no. of Medical, Architecture, Business management and Engineering Colleges are located in the city. Infrastructure development is expected to further the economic development prospects of the city.

Higher education in Bareilly

With a large number of professional institutes Bareilly is an education hub. Bareilly has a number of universities and research institutes, including M. J. P. Rohilkhand University, the Indian Veterinary Research Institute (IVRI) and the Central Avian Research Institute (CARI)—the latter two in Izzatnagar. The city also has Management institutes like Lal Bahadur Shastri Institute of Management and Technology sister branch of (LBSIM, Delhi), law, medical and other colleges.

Bareilly has many medical private and government colleges having undergraduate and P.G. courses. Bareilly College, in the heart of the city, was built in 1837 and is among the oldest educational institutions in India.

The M. J. P. Rohilkhand University (1975), Bareilly College (1837) and private colleges and universities comprise Bareilly's higher-education system. Established in 1889, the Indian Veterinary Research Institute is dedicated to livestock research. With a faculty of 275, in addition to research, the institute offers instruction, consultation and technology transfer at the post-graduate level to students from India and abroad.

As per National Institutional Ranking Framework, Ministry of Education, Government of India, there are only 7 institute from Uttar Pradesh in the top 100 list, and there are no institutes in this list from Bareilly. This framework outlines a methodology to rank institutions across the country. The methodology draws from the overall recommendations broad understanding arrived at by a Core Committee set up by MHRD, to identify the broad parameters for ranking various universities and institutions. The parameters broadly cover "Teaching, Learning and Resources," "Research and Professional Practices," "Graduation Outcomes," "Outreach and Inclusivity," and "Perception".

Literacy rate

Over the time, the Literacy rate of the Bareilly district has improved from 47.84 to 58.49 showing an increment of 22.26%. Whereas in comparison to Western Region & State, the Literacy rate of the district are 13.31 % & 13.58% less respectively.

Table 3-71 - Literacy rate

District/ Region	2001	2011
Bareilly	47.84	58.49
Western Region	57.36	67.47
Uttar Pradesh	56.27	67.68

Source – District wise Development Indicators 2020 Economics and Statistics Division State Planning Institute Planning Department, Uttar Pradesh, URL - <http://updes.up.nic.in/esd/reports/district%20indicators%202020.pdf>

Existing educational facilities

S.N.	Category	Population served per unit	Area requirement
1	Pre Primary, Nursery School	2500	0.08 ha
2	Primary School (class I to V)	5000	0.40 Ha
3	Senior Secondary School (VI to XII)	7500	1.80 Ha
4	Integrated School without hostel facility (Class I- XII)	90,000 – 1 lakh	3.50 Ha
5	Integrated School with hostel facility (Class I-XII)	90,000 – 1 lakh	3.90 Ha
6	School for Physically Challenged	45,000	0.70 Ha
7	School for Mentally Challenged	10 lakh	0.20 Ha
8	College	1.25 lakh	5.00 Ha
9	University Campus		10-60 Ha
10	Technical Education Centre (A) – To include 1 Industrial Training Institute (ITI) and 1 Polytechnic	10 lakh	4.00 Ha
11	Technical Education Centre (B) – To include 1 ITI, 1 Technical Centre and 1 Coaching Centre	10 lakh	4.00 Ha
12	Engineering College	10 lakh	6.00 Ha
13	Other Professional Colleges	10 Lakh	2.00 Ha
14	Nursing and Paramedical Institute	10 lakh	2000 sqm

Pre-primary & Primary Schools

The number of Pre-primary Schools & the number of Primary Schools in the Bareilly district has decreased to 17.61% & 19.39% respectively. However, in comparison to Western Region & State, the number of Pre-primary Schools are 10.97% & 14.49% less respectively as well as the number of Primary Schools are also 16.32% & 16.26% less respectively.

Table 3-73 - Pre Primary & Primary Schools

District/ Region	Pre-primary school		Primary School	
	2011 – 12	2019 – 20	2011 – 12	2019 - 20
Bareilly	62.99	51.9	31.46	30.85
Western Region	74.67	58.3	38.08	36.87
Uttar Pradesh	76.72	60.7	37.67	36.84

Source – District wise Development Indicators 2020 Economics and Statistics Division State Planning Institute Planning Department, Uttar Pradesh, URL - <http://updes.up.nic.in/esd/reports/district%20indicators%202020.pdf>

Secondary Schools

The number of Secondary Schools in the Bareilly district has increased to 9.10% respectively. Whereas, in comparison to Western Region & State, the number of Secondary Schools in the district are 35.35% & 34.61% less respectively.

Table 3-74 - Secondary Schools

District/ Region	2011 – 12	2019 – 20
Bareilly	7.36	8.03
Western Region	10.49	12.42
Uttar Pradesh	9.58	12.28

Source – District wise Development Indicators 2020 Economics and Statistics Division State Planning Institute Planning Department, Uttar Pradesh, URL - <http://updes.up.nic.in/esd/reports/district%20indicators%202020.pdf>

Table 3-75 - I.T.Is & Polytechnic College

District/ Region	I.T.Is		Polytechnic College	
	2011 – 12	2019 – 20	2011 – 12	2019 – 20
Bareilly	0.16	0.14	0.05	0.06
Western Region	0.14	0.14	0.05	0.08
Uttar Pradesh	0.13	0.13	0.05	0.07

Source – District wise Development Indicators 2020 Economics and Statistics Division State Planning Institute Planning Department, Uttar Pradesh, URL - <http://updes.up.nic.in/esd/reports/district%20indicators%202020.pdf>

The number of I.T.Is in the district has decreased to 12.5% & the number of Polytechnic Colleges in the Bareilly district has increased to 20.0% respectively. However, in comparison to Western Region the number of I.T.Is remains equal & in comparison to State, the number of Polytechnic Colleges are 7.69% less.

Table 3-76 - Educational facilities gaps as per Master Plan 2031

S.N.	Category	Population served per unit	Existing	Gap as per master plan 2031
1	Pre Primary, Nursery School	2500	422	77
2	Primary School (class I to V)	5000	175	0
3	Senior Secondary School (VI to XII)	7500	82	107
6	School for Physically Challenged	45,000	1	0
8	College	1.25 lakh	18	0
10	Technical Education Centre (A) – To	10 lakh	3	0
11	Technical Education Centre (B) – To	10 lakh	18	0
12	Medical college	10 lakh	3	0
13	Engineering College	10 lakh	11	0
14	Other Professional Colleges	10 Lakh	21	0
15	Nursing and Paramedical Institute	10 lakh	1	0

Pupil Teacher Ratio

Pupil Teacher Ratio / Student–teacher ratio / student–faculty ratio is the number of students who attend the school divided by the number of teachers in the institution.

Norm for Pupil Teacher Ratio

According to the Right to Education Act, the norm for pupil-teacher ratio (PTR) is:

- 30:1 for grade 1 to grade 5 (primary) and
- 35:1 for grade 6 to grade 8 (middle school/upper primary).
- 43:1 for secondary school
- 47:1 for senior secondary schools

As per Unified District Information System for Education (UDISE) the PTR at national level is:

- 24:1 for elementary schools and
- 27:1 for secondary schools

As per AICTE guidelines desirable PTR used for NIRF (institute level) is:

- 1:10 and minimum is 1:15

As per UGC, the faculty student ratio for institutions and university should not be less than

- 1:10

The Pupil Teacher Ratio at Pre-primary School level of the district has decreased to 57.72%. Whereas in comparison to Western Region & State, it is 3% & 1.21% more respectively.

Table 3-77 -Pupil Teacher Ratio at Pre – Primary School Level

District/ Region	Pupil Teacher Ratio at Pre-primary School level	
	2011 – 12	2019 – 20
Bareilly	67.23	28.43
Western Region	69.99	27.6
Uttar Pradesh	72.72	28.09

Source – District wise Development Indicators 2020 Economics and Statistics Division State Planning Institute Planning Department, Uttar Pradesh, URL - <http://updes.up.nic.in/esd/reports/district%20indicators%202020.pdf>

The Pupil Teacher Ratio at Primary School level of the district has decreased to 31.84%. However, in comparison to Western Region & State, it is 7.21% & 3.57% more respectively.

Table 3-78 -Pupil Teacher Ratio at Primary School Level

District/ Region	Pupil Teacher Ratio at Primary School level	
	2011 – 12	2019 – 20
Bareilly	43.82	29.87
Western Region	40.68	27.86
Uttar Pradesh	42.82	28.84

Source – District wise Development Indicators 2020 Economics and Statistics Division State Planning Institute Planning Department, Uttar Pradesh, URL - <http://updes.up.nic.in/esd/reports/district%20indicators%202020.pdf>

The Pupil Teacher Ratio at Secondary School level of the district has increased to 45.19% Whereas in comparison to Western Region, it is 3% more & State, it is 45.88% & 44.85% more respectively.

Table 3-79 -Pupil Teacher Ratio at Secondary Level

District/ Region	Pupil Teacher Ratio at Secondary School level	
	2011 – 12	2019 – 20
Bareilly	42.15	61.2
Western Region	48.48	41.95
Uttar Pradesh	50.87	42.25

Source – District wise Development Indicators 2020 Economics and Statistics Division State Planning Institute Planning Department, Uttar Pradesh, URL - <http://updes.up.nic.in/esd/reports/district%20indicators%202020.pdf>

Student Enrolment Ratio

Student Enrolment Ratio is statistical measure for determining number of students enrolled in studies within a specific area and expressed as a percentage of population.

Over the time, the Student Enrolment Ratio at Pre-primary School level of the district has decreased to 19.42%.

Whereas in comparison to Western Region & State, it is 5.65% & 4.93% less respectively.

Table – Student Enrolment Ratio at Pre – primary School Level

District/ Region	Student Enrolment Ratio at Pre-primary School level	
	2011 – 12	2019 – 20
Bareilly	67.45	54.35
Western Region	72.2	57.61
Uttar Pradesh	75.01	57.17

Source – District wise Development Indicators 2020 Economics and Statistics Division State Planning Institute Planning Department, Uttar Pradesh, URL - <http://updes.up.nic.in/esd/reports/district%20indicators%202020.pdf>

The Student Enrolment Ratio at Primary School level of the district has increased to 46.89%. However, in comparison to Western Region & State, it is 7.62 % & 12.86% less respectively.

Table 3-80 - Student Enrolment Ratio at Primary School Level

District/ Region	Student Enrolment Ratio at Primary School level	
	2011 – 12	2019 – 20
Bareilly	45.85	67.35
Western Region	49.78	72.91
Uttar Pradesh	57.17	77.29

Source – District wise Development Indicators 2020 Economics and Statistics Division State Planning Institute Planning Department, Uttar Pradesh, URL - <http://updes.up.nic.in/esd/reports/district%20indicators%202020.pdf>

Drop Out Rates

The Drop Out Rate at Pre-primary School level of the district has decreased by 84.74%. Whereas in comparison to Western Region & State, it is 10.81% & 3.79% more respectively.

Table 3-81 - Drop Out Rates at Pre – Primary School Level

District/ Region	2011 – 12	2019 – 20
Bareilly	21.5	3.28
Western Region	18.86	2.96
Uttar Pradesh	16.74	3.16

Source – District wise Development Indicators 2020 Economics and Statistics Division State Planning Institute Planning Department, Uttar Pradesh, URL - <http://updes.up.nic.in/esd/reports/district%20indicators%202020.pdf>

The Drop Out Rate at Primary School level of the district has decreased to almost 100% However, in comparison to Western Region & State, it is almost 3% & 4.11% less respectively.

Table 3-82 - Drop Out Rates at Primary School Level

District/ Region	2011 – 12	2019 – 20
Bareilly	59.28	0
Western Region	50.23	3.00
Uttar Pradesh	49.04	4.11

Source – District wise Development Indicators 2020 Economics and Statistics Division State Planning Institute Planning Department, Uttar Pradesh, URL - <http://updes.up.nic.in/esd/reports/district%20indicators%202020.pdf>

Level of Education (based on completion status)

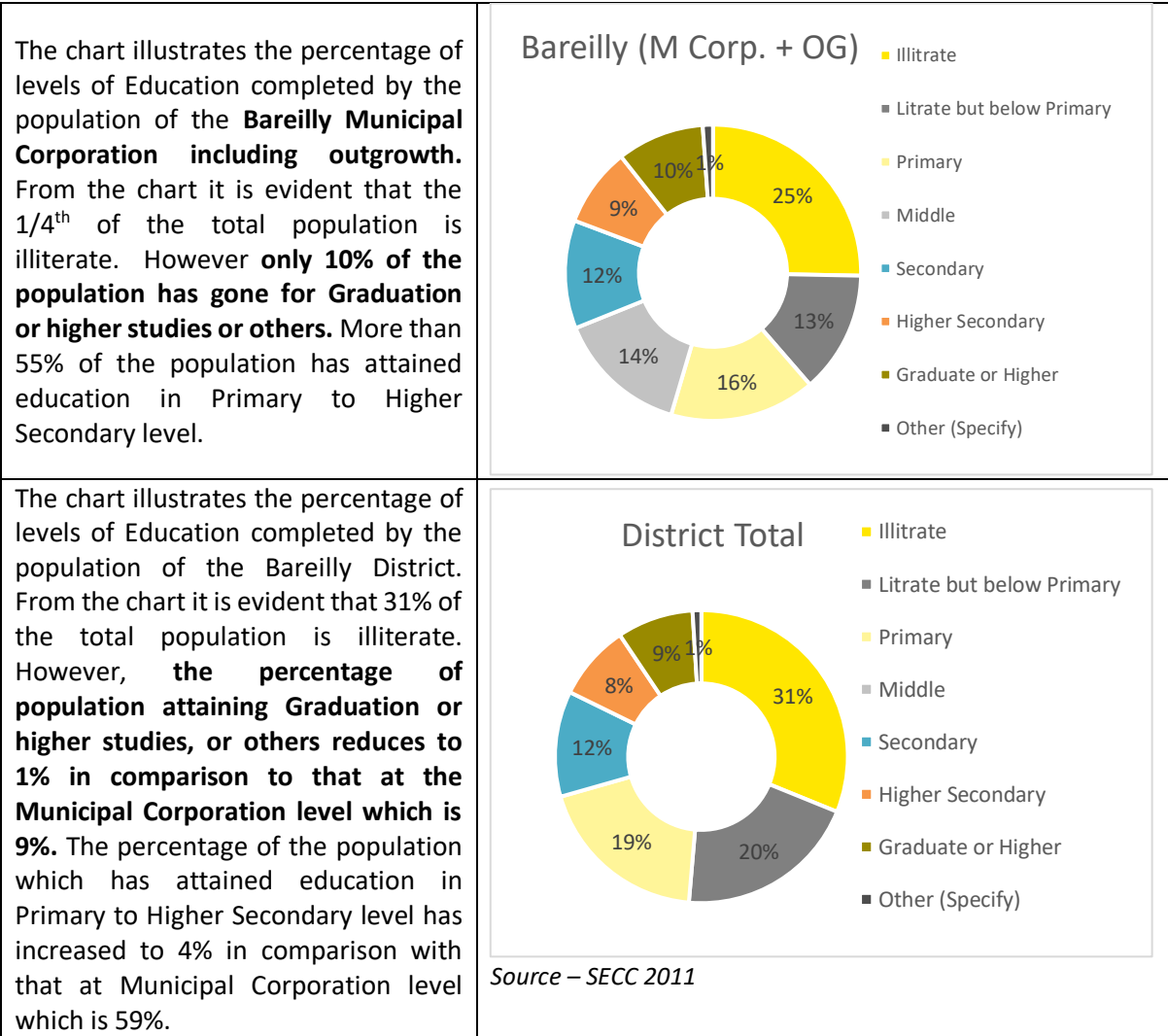


Figure 3-53 - Existing situation of Education Facilities at City Level



Challenges identified

- Challenges of physical facilities in government schools
- Limited access to digital education in schools
- Population with Graduation / higher studies / others are low in number (approximately 10%)
- Lack of synergy between skill requirement in industries and courses offered by ITIs.

3.5.9 Real estate and allied sector

3.5.9.1 Background

According to 2011 census, the total households (HHs) in the city were 1,66,447 and 8,98,167 population. The average Household size was 5.3. The HHs in 2001 were 1,19,767 with a population of 7,20,315 and household size of 6. The increase in number of HHs is directly causative of reduction in household size.

Areas adjacent to the Market centre and old settlements exhibit dense habitation. This is because of availability of all services, cultural attractions and workplaces concentrated around the core city. This area is under development pressure due to lack of planned and organized growth. The peripheral areas are becoming more popular among the people as they provide more organized development pattern with infrastructure being relatively in better conditions.

While there is a real estate boom on the one hand, there has been a growth in slums on the other. The city continues to attract new migrants, many of whom end up in informal settlements, which is generally adding surge in slums build-up. These areas are spread across the city, therefore the actions to deal with this challenge will have to be planned and addressed from the holistic view.

The city-setting, if being balanced with planned cluster approach with the development of mirror arterial road towards other side of the city may help each of the industries presently operating in and

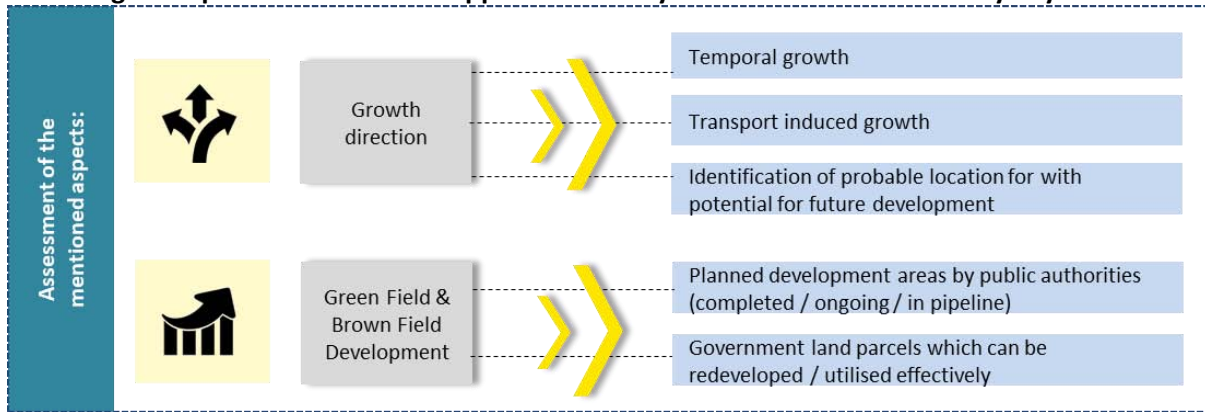
around the city, and it will help them to have a unique identity and a structured marketplace which may further be supported with the development of multimodal logistic hub which may further have potential get connected with the Railway line from Bareilly to Mathura via Budaun as well as the proposed Ganga expressway alignment. This may have cooling-off effect on land and real estate costs.

3.5.9.2 Methodology for assessment of real estate scenario in Bareilly

Real estate scenario is analysed with respect to the following aspects, namely –

- i. **Growth direction based on habitation pattern** – analysis of temporal growth, and understanding of growth induced due to connectivity, identification of probable location for with potential for future development
- ii. **Existing i.e., brown field development and scope for new i.e., green field development**
 - **Green field development** - planned development areas by public authorities (completed / ongoing / in pipeline)
 - **Brown field development** – government land parcels which can be redeveloped / utilised effectively

Following chart presents the overall approach to analyse the real estate in Bareilly city:



3.5.9.3 Growth direction

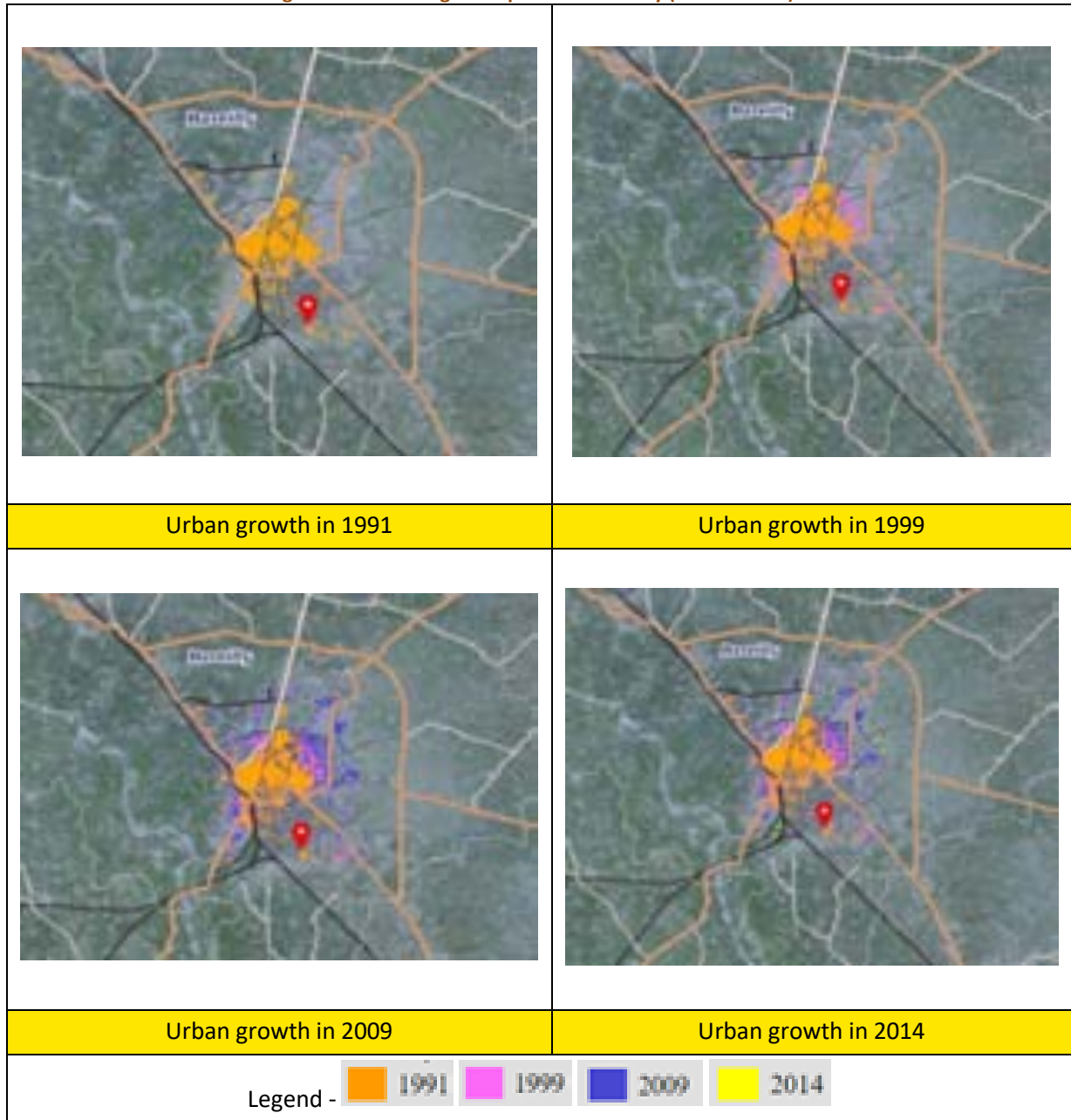
The core of the city is largely the old city area with dense settlement pattern. The city is expanding towards North-West, South-East & North East sides due to natural magnet of national Capital region, state capital and towards Pilibhit respectively, while the expansion towards the southern side seems limited by the northern bank of Ramganga river on the Budaun Road. The arterial road, i.e., the Bareilly bypass road sections of -

- (i) NH730C at the Rajau Paraspur junction,
- (ii) NH30 from Navadia Jhada Bada Bye Bass junction till Junction of NH30 and NH530 at Mundia Ahmed Nagar; and
- (iii) Junction of NH30 and NH530 at Mundia Ahmed Nagar till Jhumka Chauraha on NH530

is also helping the unidirectional growth of the city.

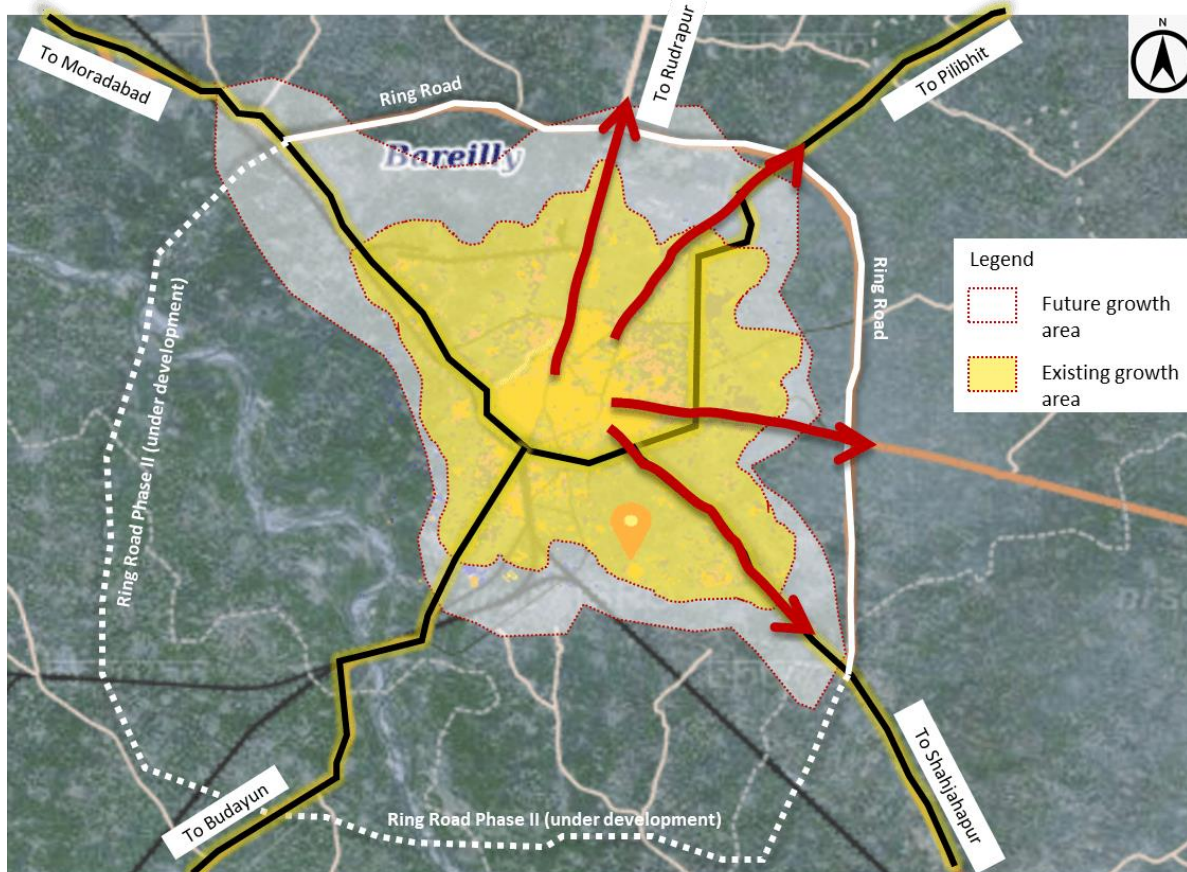
A possibility of completing the above arterial road connecting from southern side intersecting Ramganga river, making it a “Bareilly Ring Road” may be explored to take-off the pressure from the core city area while this may also help to get chunk of economic impetus from the upcoming Ganga Expressway on the north of Badaun.

Figure 3-54 - Urban growth pattern in Bareilly (1991 to 2014)



Source - Urban Growth Monitoring, Bhuvan, NRSC, ISRO

Figure 3-55 - Schematic growth direction map of Bareilly



The city-setting, if being balanced with planned cluster approach with the development of mirror arterial road towards other side of the city may help each of the industries presently operating in and around the city, and it will help them to have a unique identity and a structured marketplace which may further be supported with the development of multimodal logistic hub which may further have potential get connected with the Railway line from Bareilly to Mathura via Budaun as well as the proposed Ganga expressway alignment. This may have cooling-off effect on land and real estate costs.

3.5.9.4 Green field development

The team has identified a few land parcels within the city limit which can be utilized for upliftment of the area and its surroundings through developing infrastructure within city. These land parcels are majorly government owned / department land / vacant land / un-utilized land in a planned project. Following section gives the broad detail of the above-mentioned land parcel in terms of the exiting use, earlier use, area, ownership, surrounding, connectivity, etc.

3.5.9.4.1 Ramganga Nagar Project

Ramganga Nagar Project also known as Ramganga Nagar Awas Yojana is an ambitious residential Project of Bareilly Development Authority (BDA). The project has started in 2004. The project is being spread over 269 hectares. The whole project is divided into two categories & 12 sectors. The two categories are Housing scheme & Residential Flats scheme. Under Housing scheme, approx. 200 duplex houses are being developed by BDA & 50,000 flats are being developed under Residential Flat scheme category. Out of 50,000 flats, approx.2000 flats have already been constructed. Here is the list of various townships sector wise in this project are as follows:

- i) Sabarmati Enclave – Sector 1
- ii) Brahmaputra Enclave – Sector 1
- iii) Ganga Enclave – Sector 2

- iv) Narmada Enclave - Sector 2
- v) Kaveri Enclave – Sector 2
- vi) Alakhnanda Enclave – Sector 4
- vii) Shivam Enclave – Sector 9
- viii) Satyam Enclave – Sector 9
- ix) The Breezy Village Apartments - Sector 12
- x) Upcoming Saryu Enclave – Sector 10
- xi) Upcoming Shipra Enclave – Sector 8

The Authority is developing **four gated colonies** in Ramganga Ganga Nagar Awas Yojna. These are namely **Ganga Enclave township, Narmada Enclave Township, Kaveri Enclave Township & Alakhnanda Enclave Township.**

Ganga Enclave & Narmada Enclave township is being developed in first phase. There are approximately 500 plots of size 80 meter to 250 meter which will be developed. Each plot will be having an approximate estimated cost of Rs 23,000 square meter. At present, all the plots have been allotted in these four gated colonies.

After the successful launch of the above four gated colonies, the authority has developed the **Bhramputra Enclave Township.** In this colony, there would be plots of three different categories. The largest one will be one 1000 square metres, the second will be 200 square metres & the third one will be of 162 square metres.

Apart from the above stated residential projects, a **Science Park²⁰** is also being proposed in between Sector 12 & Sector - 11 which including a dinosaur park, foods & kids' zone, community setter & swimming pool. The park will be developed in an area of 18.30 thousand square metres. Along with this park, a **shopping mall** also be established in an area of 12.30 thousand square metres.

Figure 3-56 - Sector Map of Ramganga Nagar Awas Yojna



Source 1 Ramganga Nagar Bareilly; <https://ramganganagarbareilly.com/ramganga-nagar-bareilly-bda-approved-plots/>

3.5.9.4.2 Bareilly District Jail

The old Bareilly District Jail was earlier Bareilly's Central Jail which was established in 1848 under the British Raj. The whole complex of this jail is being built over 84 acres land. Over the time, due to the increment in the number of prisoners, this jail had been shifted to new place in the city, thus making the land of old jail vacant. As a result, the buildings of the old jail have started deteriorating.

²⁰ Source: 1) <https://www.masterplansindia.com/bda-build-200-flats-ramganga-nagar-awasiya-yojana-bareilly/>; 2) Ramganga Nagar Awas Yojna Bareilly, url: <https://ramganganagarbareilly.com/ramganga-nagar-bareilly-bda-approved-plots/>

Figure 3-57 - Bareilly Jail campus area map



In order to restore the buildings of old jail premises & to utilize the vacant land of the premises in an effective manner, the Bareilly Development Authority has proposed²¹ number of projects. The proposed projects include the following aspects - Heritage Green Park, IT Park, Auditorium & Dance Academy, Commercial Complex, High street shops, Tourist Hotel & tourism information centre, Advance skill development centre, Government Medical College & Offices, Multi – level parking. The overall estimated project cost for the projects stated above given by the authority was approximately INR 171 Crores. **The Authority had also estimated the land required for establishing a Medical College which was around 25 acres of land.**

An additional proposal was added in the Smart city plan for the land of Old Jail is of the **Heritage Light & Sound Snow in the premises of this jail**. The cost of land can be estimated based on circle rate of the city which is Rs 4,606 / sq. ft. Based on circle rate, the cost of land of old jail comes out to be Rs 168.53 Crores.

3.5.9.4.3 Transport Nagar

Latitude: 79.481460 Longitude: 28.295746

To reduce the jams caused by the movement of heavy vehicle through NH - 2 & due to their unorganized parking of heavy vehicles within the city, the government had established a commercial area called as Transport Nagar. It was established in year 2000. It spreads over 25 hectares of land. But it was unsuccessful due to many possible identified reasons which are as follows:

- i) The Transport Nagar was established outside of the city limits, i.e., at another end of the city due to which heavy vehicles needs to travel extra distance which increases their expenditure. As a result, the transporters were not willing to shift to the Transport Nagar.

²¹ Sources:

1) Old jail to be house, various projects in pipeline in Bareilly News - Times of India (indiatimes.com);url - <https://timesofindia.indiatimes.com/city/bareilly/old-jail-to-be-house-various-projects-in-pipeline/articleshow/58839639.cms>

2) Smart City Proposal; url - https://smartnet.niua.org/sites/default/files/resources/bareilly_scp_round_iv.pdf

- ii) Instead of awarding plots to transporters, the plots were given to the property dealers. They tried to sell the plots to the other consumers instead of transporters which becomes another reason of failure of the Transport Nagar.
- iii) Even after the construction of Bada Bypass & other facilitations being provided by the government, transporters still have a fear of security of their vehicles. Due to which, the Transport Nagar still is not able to succeed in terms of occupancy of plots by transporters.

Due to the failure of the project, the authority is now planning to utilize the space of the Transport Nagar through **the development of a Fire Station in the Transport Nagar.**

Figure 3-58 -Transport Nagar in Bareilly



Source – Google map

3.5.10 Brown field development

As per National Building Organization (NBO) survey carried out in 2013, total number of slums present in a city are 47. The total population of the slum area of the city is 2,14,184 which constitute about 24% of the total population of the city. Out of 47 slums present in the city, 43 slums are built on the land belonging to private ownership, 2 are built on the lands belonging to Urban Local Bodies & remaining 2 on other lands. The total number of slum household in the city is 40,150.

Following are the two slum which are present on ULB land -

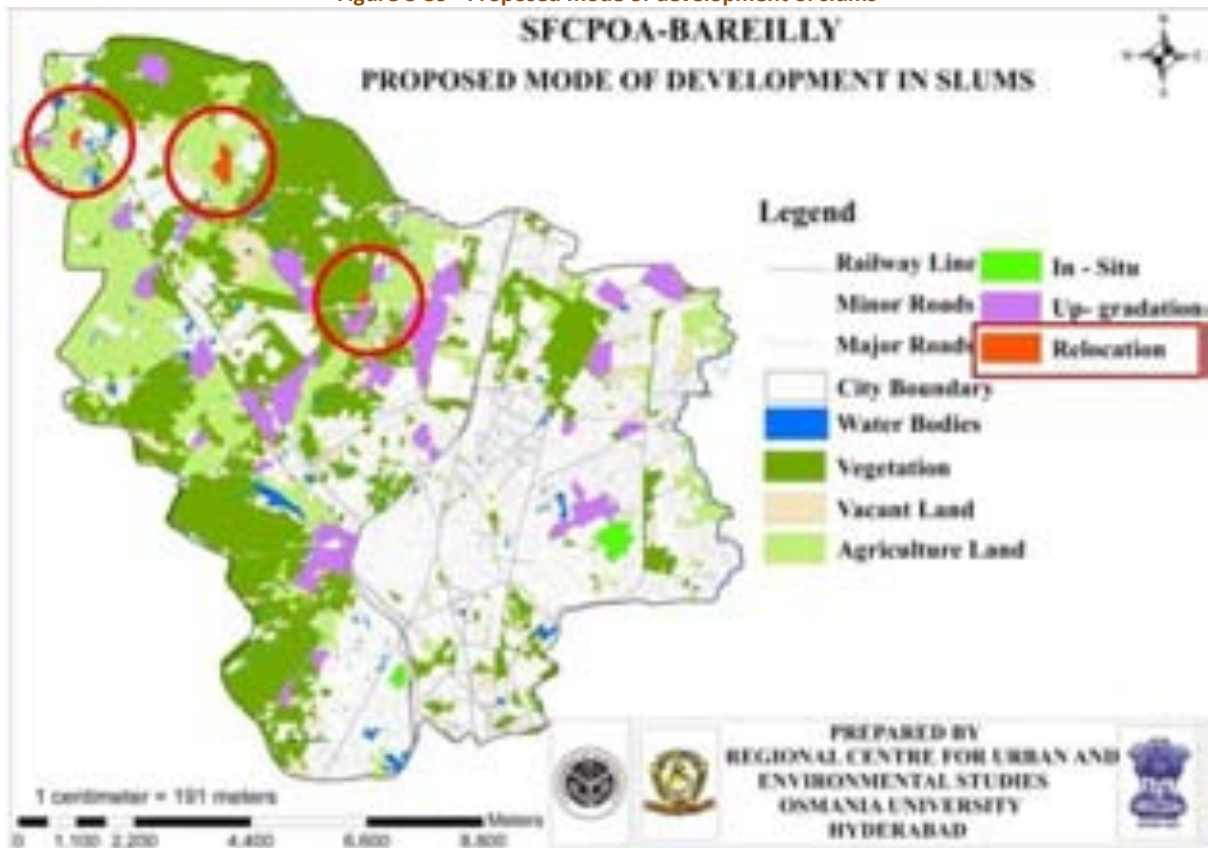
(i) Bihaar Kala Slum area:

Bihaar Kala Slum area is located in the core of the city. It has a total population of 8,552 with 1,425 households. The slum has an area of 2,28,071.26 Sq.m. This slum area is being located on the land owned by Urban Local Bodies (ULBs).

(ii) Bakargunj Slum area:

Bakargunj Slum area is located in the core of the city. It has a total population of 17,415 with 2902 households. The slum has an area of 4,41,248.17 Sq.m. This slum area is being located on the land owned by Urban Local Bodies (ULBs).

Figure 3-59 - Proposed mode of development of slums



Source: Rajiv Awas Yojana (Slum free city plan of Action, Bareilly); url - https://mohua.gov.in/upload/uploadfiles/files/25UP_bareilly_sfcpc-min.pdf

Out of 47 slums, there are 3 slum areas which were considered for the relocation in order to accommodate the future requirements which the current infrastructure facilities will not be able to accommodate. Here are the details of those three slum areas which are considered for redevelopment.

I) Parithapur Jivansay Slum area:

Parithapur Jivansay Slum area is located in the Fringe area of the city. It has a total population of 2,756 with 378 households. The slum has an area of 1,77,196.50 Sq.m. This slum area is being located on a privately owned land.

II) Nadhousi Slum area:

Nadhousi Slum area is also located in the Fringe area of the city surrounded by an Industrial area. It has a total population of 3,676 with 555 households. The slum has an area of 1,01,047.48 sq.m. This slum area is also being located on a privately owned land.

III) Pirbahooda Slum Area:

Pirbahooda Slum area is located in the Fringe area of the city surrounded by the Residential area. It has a total population of 9,422 with 1,346 households. The slum has an area of 3,56,196.74 sq.m. This slum area is also being located on a privately owned land.

The existing land parcel of the above land parcel may be utilized for infrastructure development in the city based on best use analysis, if provided with details of the land parcels.

3.5.10.1 Existing real estate development

3.5.10.1.1 Development by Uttar Pradesh Avas Vikas Parishad (UPAVP):

To cater the rising housing needs of the city and to ensure the availability of house at an affordable price to all sections of the society, UPAVP had developed a various projects/ schemes in the past. Following are the list of the projects/ schemes which had been taken up in the past by the UPAVP:



- i) Izzatnagar Yojna
- ii) Izzatnagar Yojna – 2
- iii) Izzatnagar Yojna – 3
- iv) Izzatnagar Yojna – 7
- v) Janakpuri Yojna - 7
- vi) Civil Lines scheme– 4
- vii) Bareilly Pillibhit Bypass Yojna - 7
- viii) Yojna – 3
- ix) Gandhinagar Yojna No - 1
- x) Gandhinagar Yojna No - 2
- xi) Rajendra Nagar Yojna No – 2
- xii) Rajendra Nagar Yojna No – 7
- xiii) Vambey Scheme, C B Ganj

3.5.10.2 Development by Bareilly Development Authority (BDA)

BDA has developed over 700 properties in various planned housing colonies among other, along with the allied facilities in the city:

- Tibri Nath Yojna
- Deen Dayal Puram
- Ekta Nagar
- Priyadarshini Nagar Yojna
- Kargaina Aawasiya Yojna
- Lohia Vihar Avasiya Yojna
- Ramganga Nagar Avasiya Yojna
- Rampur Road Aawasiya Yojna

The developer / builders led private developments are mostly spread on the fringes of the city. Some of the prominent developers are developing integrated housing colonies with all sorts of option to lure the buyers of all segments. Bareilly CREDAI chapter has around 11 developers listed, which indicates substantial interest in investments and potential for real estate developments in and around the city.

Stakeholder Consultation	
Date – 27.01.2022	CREDAI chapter of Bareilly
Sector – Real Estate	Mr. Ramandeep, President
 <p>Challenges</p>	<ul style="list-style-type: none"> • Lack of development near the existing Airport • Lack of designated commercial & retail spaces • Mostly row housing is preferred over flat/apartments
 <p>Potential & solutions</p>	<ul style="list-style-type: none"> • Upcoming multi-storied residential apartments in the western outer limit of the city will influence the residential development • Pillibhit Tiger reserve can be developed as a tourist place along with Draupadi's birthplace as it is connected to major cities through airways. • Enhancement of existing Airport in terms of services



3.5.10.3 Tourism and Hospitality Sector

The city is housing many historical monuments as well which defines the heritage character of the city. There are periodic cultural events organized every year which accelerates the city economy due to high footfalls from around the adjoining region. The characteristic of most of these events are religious and cross-cultural performances which acts as a road show and selling platform for the producer of the local businesses.

In Bareilly City, many major fairs are also being held. The major fairs being held are the Chaubari fair, Nariyawal fair, Uttarayani fair & Dussehra fair.

Chaubari Fair - The Chaubari Fair is held annually on the banks of Ramganga near Chaubari village. The fair takes place annually on the occasion of Kartik Purnima. The main attractions of the fair is the horse market where the dealers comes from the neighbouring district also along with the local buyers. Most of the white horses are being bought to be used in wedding functions.

Nariyawal fair - Second largest fair of the city is The Nariyawal fair which lasts for about 15 days. It takes place on the occasion of Gupt Navratri in the temple complex of Goddess Sheetla. It is a religious fair.

Uttrayani fair - Another fair which is being organized annually in the city is The Uttrayani fair where the colours of Uttarakhand are being seen in the form of various exhibitions. This fair is held from 13th January to 15th January on the occasion of Makar Sankranti. It consists of folk singing performances & exclusive handicraft & handloom items of Uttar Pradesh & Uttarakhand.





Urs – e – Razvi - The death anniversary of Imam Ahmad Raza Khan is already celebrated on the big scale in the city in the form of festival Urs – e – Razvi. It is celebrated every year in the month of November. Devotees from other countries also come to attend this event.

Following map presents the spread of the places of tourism interest in Bareilly.

Figure 3-60 - Location of tourist places in Bareilly



Source: Consultant analysis

Event	Duration	Month	Schedule	Number of Tourists
 <p>The Chaubari Fair</p>	3 – 4 days	November - December	On the occasion of Kartik Purnima	Approx. 6.0 lakh/ year
 <p>The Nariyawal Fair</p>	15 days	February	On the occasion of Gupt Navratri	Not available
 <p>The Uttarayani Fair</p>	2 days	13 th – 15 th January	On the occasion of Makar Sankranti	Not available
 <p>Urs – e – Razvi</p>	3 days	3 rd - 5 th November	On the death anniversary of Imam Ahmad Raza Khan	Approx. 04 lakh

Source: Multiple consultations

Table 3-83 - No of Tourists visited in Bareilly region from 2015 - 19

Name	2015	2016	2017	2018	2019
Bareilly	20,17,789	20,33,445	24,84,951	25,96,545	26,56,918
Uttar Pradesh	2,41,48,777	2,40,88,539	2,84,14,053	2,90,82,492	2,83,54,747
Share of Bareilly District in State	8.36%	8.44%	8.75%	8.93%	9.37%

Source: <http://www.uptourism.gov.in/pages/top/about-up-tourism/year-wise-tourist-statistics>

Table 3-84 - Tourist footfall trend in Bareilly region

Item	2015	2016	2017	2018	2019
Domestic Tourists	20,17,247	20,32,753	24,84,153	25,95,588	26,55,792
Foreign Tourists	542	692	798	957	1126

Source: <http://www.uptourism.gov.in/pages/top/about-up-tourism/year-wise-tourist-statistics>

Bareilly regional tourism statistics comprises of the following tourism places -

1. Ramnagar Ahichhatra Jain Temple, Bareilly
2. Archeological remains of Ahichhatra Fort
3. Badi Ziyarat, Badaun
4. Patthargarh (Fort of Najib-ud-doula) Najibabad, Bijnor
5. Raza Library (Fort of Rampur), Rampur
6. Vidur Kuti

Ahichhatra Fort and Ahichhatra Jain Temples are approximately 54 km far from Bareilly.

Bareilly is also known as Nath Nagri (seven Shiva temples located in the Bareilly region are, Dhopeswar Nath, Madhi Nath, Alakha Nath, Tapeswar Nath, Bankhandi Nath, Pashupati Nath and Trivati Nath) and historically as Sanjashya (where the Buddha descended from Tushita to earth) thereby showcasing its potential as a prominent pilgrimage destination of the state.

Some of the proposed river front development in the city may also act as an impetus to various facade of the economy including tourism and recreational space.

Hospitality sector - Being a regional hub for so many trade and industries, Bareilly enjoys substantial floating footfalls from various parts of the country in general and specifically from the 'Kumaun' region of the hilly state of Uttarakhand in addition to adjoining districts around Bareilly. With the commercially operational airport and proposed adjacent expressway, Bareilly is expected to have more number and frequency of leisure and business travellers. In addition to city destination travellers, the city also hosts transit travellers to tourist of Nainital, Pilibhit Tiger reserve, Jim Corbett National Park, etc. Therefore, acting as gateways to so many tourist destinations may have a potential to hold on to these transit travellers if an enabler ecosystem are improved.

As per an estimate, there are over 150 hotels of different categories spread in and around the city catering to the tourists and business travellers.

3.5.11 Two-days multi-stakeholder consultation

Date: 14th March 2022

Venue: BDA office complex

Attendees:

- Representatives from Chamber of Commerce
- Mr. Dinesh Goel, National Secretary; Mr. Tanuj Bhasin, Secretary, Indian Industry Association (IIA)
- Mr. S. K. Singh, Laghu Udyog Bharti

Broad discussion points

1) Chamber of Commerce:

- Requirement of road signages for the whole city

- Tourism Infrastructure could be developed around the Jain Temple & Hanuman Temple situated on the Aonla Road including Lake development project near Jain Mandir.
- 2) Mr. Dinesh Goel, National Secretary; Mr. Tanuj Bhasin, Secretary, Indian Industry Association (IIA)
- Absence of ancillary units for the siklapur furniture market
 - Basic Infrastructure mainly sewerage system is required in the Faridpur Industrial area
 - Since many educational colleges are present in the city, an IT hub can be proposed here based on available skills for the utilization of skilled man power
 - Integration of the various department is required.
 - Textile park may also be proposed in the city.
- 3) Mr. S. K. Singh, Laghu Udyog Bharti
- Railway siding can be proposed in the Paraskhera Industrial area due to the presence of warehouses
 - Need of regularization of industrial development on Lucknow road.
 - A new Industrial area can be established toward the Delhi – Lucknow Road
 - Expansion of Parasakhera Industrial area
 - IT & Logistics hub are the rising sector from the point of Infrastructure development of the city.



Date: 15th March 2022

Venue: BDA office complex

Attendees:

- Mr Rajeev Kumar Agarwal, President, UP Nursing Home Council
- Mr. Durgesh Kumar, Senior Vice President, Udhog Mandal

Broad discussion points

- 1) Mr Rajeev Kumar Agarwal, President, UP Nursing Home Council:
- Health facilities are concentrated in the core city/ centre of city as well as there is lack of health facility on the periphery of the city, showing unequal distribution. There should be Health facilities on the periphery of the city also.
 - An area after every 2 km may be earmarked for Health Infrastructure in the land use
 - Challenges faced by the Health Sector:

- Need of regularization policy of Land use for this sector
- Impact fee is 50% at present for this sector which is considered on a higher side.
- Existing FAR for Social Infrastructure (Health) is on lower side in comparison to that of Delhi, whereas Cost of land is high in comparison to a few locations in Delhi
- Components suggested by the Council to be incorporated in Medicity Proposal:
 - Nursing Homes
 - Trauma Centres
 - Cancer Hospital
 - Accommodation for Doctors & Paramedical staffs
 - Paramedical College
 - Government Medical College

2) Mr. Durgesh Kumar, Senior Vice President, Udhyog Mandal:

- As per Udhyog Mandal a new Transport Nagar may not be required
- Need of parking area in multiple locations the city
- Additional Residential Projects may be proposed on the following probable locations which are Sahajanpur Road, Badaun Road and nearby Jhumka Chourah
- Handicraft sector issues:
 - i. The sector is unorganised & performed on the individual household levels
 - ii. Low wage rate of the artisans involved in the Handicraft sector due to the presence of middleman
 - iii. Due to the availability of cheap & alternative products, customers are less interested to buy the products of these sectors.
 - iv. More government initiatives may be required.



3.5.12 Broad summary

3.5.12.1 Inferences

GDP, Workforce, and per capita income



- Overall share of Districts contribution to state GDP in last 9 years have **remained constant** with minor changes
- **Majority of the main workers are indulged in secondary and tertiary sector**, and approximately 6% of the main workers are involved in primary sector.
- Bareilly district's average per capita income considered for evaluation for 2019-20 is estimated at INR 76,848 which is **higher than the state's average per capita income** of INR 65,704 for the same year.
- In case of Ease of Living Index, Bareilly city stood at **47th Rank among 49 cities** with population more than 1 million. Bareilly city has shown **poor performance in the case of two pillars**, i.e., Quality of Life and Sustainability whereas has shown worst performance in the case of Economic ability and satisfactory performance in case of Citizen perception.

Primary, secondary, and tertiary sector of economy

- The contribution of **tertiary sector to the district's GDP is approximately 52%** followed by secondary sector (28%) and primary sector (20%).
 - Contribution of the primary sector has decreased from 35.5% in 2011-12 to 20.1% in 2019-20. Under primary sector, namely (i) Agriculture and (ii) Animal Husbandry are the major contributors.
 - Contribution of the **secondary sector has increased** from 24% in 2011-12 to 28.1% in 2019-20. Under secondary sector, namely construction field is the major contributor.
 - Contribution of the **tertiary sector has increased** from 52.3% in 2011-12 to 69.1% in 2019-20. Under tertiary sector, namely - (i) Real estate, business services, (ii) Trade hotels & restaurants and other classified services are the major contributors.
- Based on the 2018-19 data from the Crop Production Statistics for Bareilly, the crops such as **Sugarcane, Wheat, Banana, rice, and Potato are the major crops**. Based on the production, yield and area utilized for production in Bareilly District.
- At present there are **only two active mines** which are being mined for **Sand** from Tiyyula and Mohammadpur.

Industries

- Bareilly emerged as a major industrial & commercial area of the region by 1940s. But by the end of the 1990s, many **industries in the city were shut down due to issues such as unavailability of raw material, availability of substitutes of lower price range, financial & capital loss, legal issues, high cost of operation, etc.**
- The **warehousing, storage, and support activities** for transportation in Bareilly is performing well and has shown growth.
- Two sectors namely **(i) Food Processing, Beverages, (ii) Petro & Chemical Products are the major contributing sectors** across the district. Sectors namely **(i) Wood products, (ii) Pharmaceuticals and (iii) Electrical sectors**, have additionally shown growth in Bareilly due to the investment in particular years.
- **Majority of the IEMs** were filed in Bareilly district in last decade were mainly related to **Agro and food processing industry sectors**.
- On further analyses, it is found that in Petrochemical & Chemical industries, the major chemical industries come out to be **Menthol industries**. The reason for the presence of more Menthol Industries is the availability of raw material, i.e., Mentha which is being grown locally.
- At present there are **two UPSIDA industrial areas** in Bareilly district. Paraskhera industrial area is situated inside the Bareilly Municipal Area limit and is exhausted in terms of availability of land. Whereas Baheri is situated at approximately 60 km away from Bareilly city center.



- District wise skill gap study for the State of Uttar Pradesh by NSDC in 2013, reflected that **(i) Transportation, Logistics, Warehousing and Packaging, (ii) Health Care Services, (iii) BFSI, (iv) Construction Industry** shows the highest growth in Bareilly district.
- The completion of Ganga Expressway will also benefit all the people of the Bareilly district. The distance from the city to Binawar is only about 36 kilometers. From here, Ganga Expressway will be reached in a very short time (approximately 50 minutes).

Handicraft

- Bareilly is known for its **zari zaradozi (gold embroidery), surma (kohl), manjha (abrasive kite string), striking cane furniture**. These handicraft forms are struggling to attain its status in the present market.
- There are **various initiatives by the Central and State level government bodies** to upgrade the handicraft ecosystem in Bareilly.
- Lack of raw material bank and retail outlets for handicraft products

Health sector

- Bareilly is among **one of the leading cities of Uttar Pradesh in terms of medical facilities**, the city serves as a gateway to the patients of the nearby areas as well as Kumaun, Rohilkhand, and West Nepal region.
- Approximate **32% shortage of doctors and 52% shortage of paramedical staff**.
- **The high values of Infant Mortality Rate & (Under age 5) Mortality Rates** depicts the wide gaps in basic infrastructure services such as access to electricity, safe sanitation, etc. in surrounding rural areas.
- There is a total of 104 PHC's. Currently, a total 255 registered Private Hospitals with 10,957 number of beds are present. (Bed occupancy rate varies from 65-75%)
- **As per master plan projection, 66 dispensary, 13 nursing homes, 12 general hospitals will be required by 2031.**
- **Bareilly has strong health infrastructure base to be envisioned as Medicity.**

Education sector

- The city is **developing as a major education centre**. There are universities, a no. of Medical, Architecture, Business management and Engineering Colleges are located in the city.
- The Literacy rate of the Bareilly district has improved from 47.84 to 58.49 showing an increment of 22.26%.
- There are gaps in Pre Primary, Nursery Schools, Senior Secondary Schools (VI to XII)
- As per National Institutional Ranking Framework, Ministry of Education, Government of India, there are only 7 institute from Uttar Pradesh in the top 100 list, and there are **no institutes in this list from Bareilly**.
- **The Pupil Teacher Ratio has decreased** for various category of educational units.
- **The Drop Out Rate at different level of the educational units in the district has decreased**
- Limited access to digital education in schools
- Population with Graduation / higher studies / others are low in number (approximately 10%)
- Lack of synergy between skill requirement in industries and courses offered by ITIs.

3.6 URBAN REGENERATION & HERITAGE OF THE CITY

3.6.1 Vision: Developing Nath Temple Circuit

3.6.1.1 PROJECT- DEVELOPMENT OF SPIRITUAL TOURISM BY CREATING RELIGIOUS CIRCUIT OF ALL SEVEN NATH TEMPLES

3.6.1.1.1 BACKGROUND

The city has a strong religious essence and is called the Nath Nagri owing to the seven Nath temples located at seven entry gates to the city via different cities. The city inherits a very rich spiritual significance that brings pilgrims from many other cities to visit the Nath temples. These Nath temples witness their highest influx of visitors during the Sawan month and Maha Shivratri. Thousands of pilgrims also visit the city for Seven Nath temple parikrama which adds to the religious uniqueness of the city.

3.6.1.1.2 PROBLEM STATEMENT

Since the construction of Nath temples at the city periphery as its gateways, the city has expanded drastically on all sides and the expansion of the city fabric has enveloped all seven nath temples, making their identity disappear as city gateways. The expansion of city has also resulted in loss of imageability of all nath temple precincts over a period of time, which has further led to disappearing of the overall circuit that connects all Nath temples. There are no proper legible gateways or routes that celebrate their essence and establish their strong image in the context of the city.

3.6.1.1.3 KEY INTERVENTION

- Identification of roads to develop the Nath temples circuit.
- Integrating IPT, NMT and other public transit nodes to enhance connectivity and accessibility along the circuit
- Development of Tourism infrastructure and public conveniences along the circuit.
- Redesigning Streetscape leading to temple precinct along with organized spaces for parking, pedestrians, hawkers etc.
- Integrating Math Tulsi Sthal in the Nath temples circuit.
- Streetscape for urban streets along the Nath circuit & restructuring its mobility network.
- Reclaiming the spaces for people under flyovers along the Nath circuit to create opportunities for public activity and enhance walkability.
- Strengthening the legibility and identity of the city chowks, chaurahas and market streets through signage's and visual landmarks.
- Creating public activity and vendor zones around the chowks along the circuit.

3.6.1.1.4 SITE DELINIATION

Since the seven Nath temples are situated on different routes which are entrance gateways to the city from other cities, they can be accessed from any of these routes. These seven routes formed the base of city's connectivity to major cities like Nainital (Trivatinath temple), Delhi (Alakhnath Temple), Chandausi (Madinath temple), Badaun (Tapeswar Nath temple), Lucknow (Dopeshwar Nath temple), Bilaspur (Pashupatinath Temple) and Pilibhit (Vankhandinath temple).

Though the city is known for being the **Nath Nagri**, this essence is not reflected in the precincts of the Nath temples and not even along the routes leading to the city. The temples are strategically

located at entry gateways of the city but there is no expression and legibility to their approach. The streets leading to the temples lack the visual character which they should strongly portray.



Map 1: Nath Temple Complex

(Source: Consultant Analysis)

3.6.1.1.5 PROJECT IMPACTS AND ITS BENEFITS

Considering the spiritual significance of the Nath temple in the city, the development of a dedicated Nath Temple circuit becomes essential to restore city's cultural value. Developing corridor leading to the religious places will enhance the urban character of their precincts. Establishing the Significance of Bareilly as Nath Nagri would enhance the Tourism Potential of the City. Provision of public amenities like parking space, washrooms, etc. along the circuit will offer convenience to the visitors.

3.6.1.1.6 STAKEHOLDERS

NODAL AGENCY

Nath Temple Association, Bareilly
Bareilly Development Authority

3.6.1.1.7 HELPING AGENCIES

Bareilly Smart City Limited (BSCL)
Bareilly Nagar Nigam
U.P Tourism

3.6.1.2 PROJECT- URBAN RENEWAL OF ALL NATH TEMPLE PRECINCTS BY DEFINING ENTRANCE GATEWAYS, CORRIDORS AND ENHANCING THE PUBLIC INFRASTRUCTURE

3.6.1.2.1 BACKGROUND

Being recognized as Nath Nagri of India, Bareilly portrays a very strong image of the seven Nath temples situated on the seven routes of the city. The city inherits a very rich spiritual significance that brings pilgrims from many other cities to visit the Nath temples. These Nath temples witness their highest influx of visitors during the Sawan month and Maha Shivratri. Thousands of pilgrims also visit the city for Seven Nath temple parikrama which adds to the religious uniqueness of the city.

3.6.1.3 PROBLEM STATEMENT

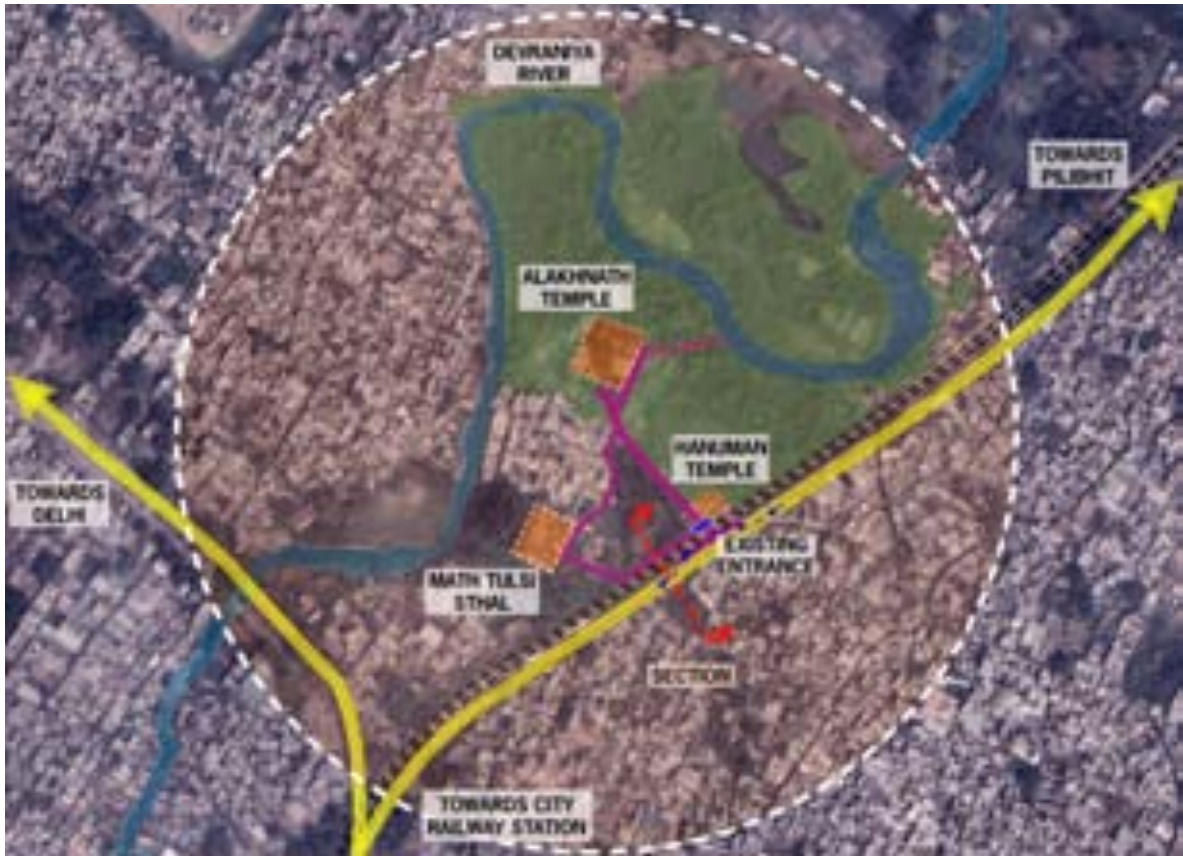
Since the construction of Nath temples at the city periphery as its gateways, the city has expanded drastically on all sides and the expansion has enveloped all seven nath temples. These religious precincts have lost their imageability and presence over a period of time. Absence of identity markers, gateways, designated corridors, signage, façade lighting has led to degradation of the overall urban character of the precincts.

3.6.1.4 KEY INTERVENTION

- Development of symbolic identity/ entrance gateways of all seven Nath Temples.
- Establishing a corridor leading to the temple precincts along with façade treatment guidelines.
- Place making of their precinct with respect to the surrounding neighborhood.
- Enhancing the spiritual character along the street/ corridor.
- Restructuring the temple precinct while adding public infrastructure like designated parking space, washrooms, etc.

3.6.1.5 SITE DELINIATION – ALAKH NATH TEMPLE PRECINCT AND MATH TULSI STHAL

Situated on the Delhi route is the Alakh nath Temple, that portrays its strong presence on the road. As the site is situated across the railway tracks, the approach to the temple complex from the by-lane is not feasible and becomes a challenge for the visitors. Enveloped with greens all around and Dev Raniya River passing by, the temple precinct holds a great potential to be developed as a prominent public node. The site also lacks parking infrastructure to accommodate the high influx during fairs and festivals. Abutting to the Alakh nath temple entrance is the approach road that leads to the Math Tulsi Sthal, a place that holds a very important historic and spiritual significance.



Map 2: Alakh Nath Temple Precinct

(Source: Consultant Analysis)

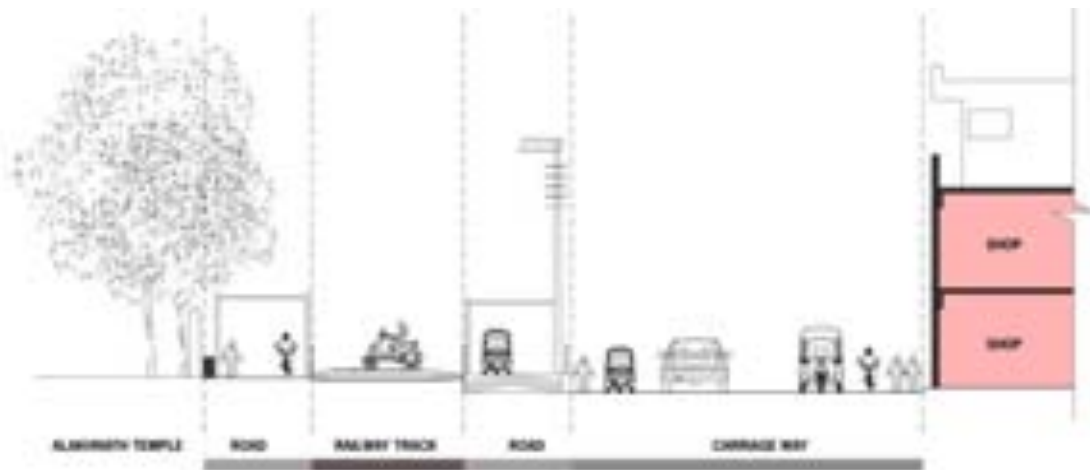


Image 1: Alakh Nath Temple Section

(Source: Consultant Analysis)



Image 2: Road to Alakh Nath Temple



Image 3: Alakh Nath Temple Connecting Bylane



Image 4: Alakh Nath Temple Entrance



Image 5: Alakh Nath Temple Complex



Image 6: Pathway to Devraniya River



Image 7: Devraniya River



Image 8: Bylane to Math Tulsi Sthal



Image 9: Math Tulsi Sthal Entrance Gate



Image 10: Math Tulsi Sthal Complex

3.6.1.5.1 SITE DELINEATION – MADINATH TEMPLE PRECINCT

Situated on the south-west corner of the city, across the City Railway station is the Madinath temple. Despite of being one of the seven nath temples, the temple fails to mark its presence in the precinct due to its location and having a dense settlement all around. The inappropriate access to the temple from the city station road also becomes another challenge to the visitors, with lack

of signage, identity markers and designated approach road. The narrow streets leading to the temple showcase the lack of organization and urban character. Open sewerage/ drains, uneven width on the road can also be seen, that showcase a dire need of infrastructural development.



Map 3: Madinath Temple Precinct

(Source: Consultant Analysis)



Image 11: Madinath Temple Approach Road



Image 12: Madinath Temple Precinct



Image 13: Madinath Temple Entrance Gateway

3.6.1.5.2 SITE DELINEATION – TAPESHWARNATH TEMPLE PRECINCT

The Tapeshwar nath temple is situated in the southern part of the city opposite to the Bareilly Junction Railway station. Surrounded by a dense residential fabric, the temple lacks its connectivity to any of the city’s main arterials. Due to undefined corridor/pathway leading to the temple complex, the narrow street network showcases a lack of imageability and way-finding in the overall precinct. Absence of signage, identity markers and designated approach road possesses a challenge for the visitors/ pilgrims to reach the temple complex.



Map 4: Tapeshwar Nath Temple Precinct

(Source: Consultant Analysis)



Image 14: Tapeshwar Nath Temple Approach Road



Image 15: Tapeshwar Nath Temple Approach Road



Image 16: Tapeshwar Nath Temple

3.6.1.5.3 SITE DELINEATION – DHOPESHWAR TEMPLE PRECINCT

Dhopeswar temple, also known as the birth place of Draupadi (Mahabharata) is situated in the southern part of the city near Sadar bazaar of cantonment area. The temple is one amongst the

seven nath temples present in the city and was initially a gateway to the city from Lucknow route. The temple inherits a historic and spiritual value of very high significance. Due to the development of neighborhood over the years, the temple has eventually lost its presence in the precinct. The precinct portrays no sense of place, identity markers and lack of imageability.



Map 5: Dhopeswar Nath Temple Precinct

(Source: Consultant Analysis)



Image 17: Dhopeshwar Nath Temple Approach Road



Image 18: Dhopeshwar Nath Temple Entrance



Image 19: Dhopeshwar Nath Temple Kund

3.6.1.5.4 SITE DELINEATION – PASHUPATI NATH TEMPLE

Situated just two hundred meters away from the Pilibhit Bypass road is the Pashupati nath temple. Despite of being connected to such a major city bypass, absence of signage, identity markers and possesses a challenge for the visitors/ pilgrims to reach the temple complex. The two-hundred-

meter approach road tends to be an advantage to the site and holds tremendous potential for establishing a Gateway and reviving the overall street character. The site not only lacks public conveniences but also has no open space to cater high influx of people or organize any fair. With the temple in the middle of the site and kund (water body) on all four sides, the architecture of Pashupati Nath temple provides it with a distinct identity from all other Nath temples.



Map 6: Pashupati Nath Temple Precinct

(Source: Consultant Analysis)



Image 20: Pashupati Nath Temple Entrance



Image 21: Pashupati Nath Temple



Image 22: Pashupati Nath Temple Precinct

3.6.1.5.5 SITE DELINEATION – VANKHANDINATH TEMPLE PRECINCT

Located just one kilometer away from the Pilibhit bypass is the Vankhandinath temple, connected through Joginawada road. This one kilometer long stretch of Joginawada road is a designated corridor that not only forges a strong connectivity to the temple complex but also caters to all the informal vendor activity. Despite of having such a prominent connectivity, absence of signage, identity markers and designated approach road possesses a challenge for the visitors/ pilgrims to reach the temple complex. The temple complex is equipped with a multi – purpose hall that is used to cater pilgrims during special occasions. Availability of vacant land parcels also help in organizing fairs and accommodate the high influx. Lack of public conveniences is also one of the major issues that the visitors face while visiting the temple.



Map 7: Vankhandi Nath Temple Precinct

(Source: Consultant Analysis)



Image 23: Vankhandi Nath Temple Approach Road



Image 24: Vankhandi Nath Temple Approach Road



Image 25: Vankhandi Nath Temple Fairground



Image 26: Vankhandi Nath Temple

3.6.1.5.6 SITE DELINEATION – TRIVATI NATH TEMPLE PRECINCT

Situated in the Northern part of the city towards the Nainital route is the Trivati nath Temple, which holds a strong presence on the road. Though, the Macnair road becomes a designated corridor to the temple complex forging its connection to the Nainital road and Pilibhit road, it still lacks the urban character and organization. Though the existing temple complex is very well developed in terms of infrastructure which easily caters to the high influx of visitors, the approach to the temple seeks intervention to define the spiritual character of the corridor and provisioning of signage/identity markers.



Map 8: Trivati Nath Temple Precinct

(Source: Consultant Analysis)



Image 27: Trivati Nath Temple Entrance



Image 28: Trivati Nath Temple

3.6.1.5.7 PROJECT IMPACT AND ITS BENEFITS

Considering the spiritual significance of the city, the revival of these religious precincts becomes essential to restore city's cultural value. Establishing identity markers/ entrance gateways and development of corridor leading to the religious places will enhance the urban character of their precincts. Provisions of public amenities like parking space, washrooms, etc. will not only offer convenience to the visitors but will also create a better user experience. Development of temple precincts will help in reclaiming the lost identity of all Nath temples and conserving the city's cultural value. The intervention envisions initiating more tourism influx to the city, which will further contribute to the city's economy.

3.6.1.5.8 STAKEHOLDERS

3.6.1.6 NODAL AGENCY

Bareilly Market Association
Nath Temple Association, Bareilly

3.6.1.6.1 HELPING AGENCIES

Bareilly Development Authority
Bareilly Smart City Limited (BSCL)
Bareilly Nagar Nigam
U.P Tourism

3.6.1.6.2 DATA REQUIRED FOR THE PROJECT

- Demarcation of seven Temple areas
- Vacant Government land parcels in all Temple precincts

3.6.2 Vision: Streetscape of City Core and Development of Dargah Precinct

3.6.3 PROJECT – STREETScape OF MARKET STREET FROM QILA TO SHYAM GANJ ALONG WITH URBAN RENEWAL OF DARGAH PRECINCT BY DEFINING ENTRANCE GATEWAYS, CORRIDORS AND ENHANCING THE PUBLIC INFRASTRUCTURE

3.6.3.1 BACKGROUND

The city of Bareilly is a predominant trade city where different market typologies co-exist and form the base of the city economy and business culture. The market streets have a clear hierarchy based on the predominance of the functional activity and products sold as we move along the streets connecting Delhi to Lucknow. Upon arrival from Delhi, the Bada bazaar market street stretches from Qila to Darzi chowk which caters to multiple segments of retail and wholesale markets and from Darzi chowk to Shyam Ganj flyover is the Shyam Ganj market where Zari zardosi works and karkhanas used to flourish a few years back.

Situated in the dense fabric of Bada bazaar is the world famous - Dargah-e-Ala-Hazrat which invites lakhs of pilgrims from all over the country. It holds a historic and spiritual value of very high significance in the city. The dargah is also known for its annual Urs which takes place in the grounds of Islamia College of Bareilly, which invites over five lakh people to the city. Thus, the precinct of Dargah-e-Ala-Hazrat becomes a very important public node. Situated in its close proximity is the Khanqah e Niazia, which is also a significant spiritual landmark of the city.

3.6.3.2 PROBLEM STATEMENT

The narrow street of Bada bazaar and Shyam ganj market is the harbour for all kinds of activity and with extended retail activities, IPT and light freight vehicles obstruct smooth pedestrian flow leading to congestion and noise pollution. Often the IPT is seen hitting the pedestrians, hence making the streets very uncomfortable to walk upon. Though a clear distinction can be observed in terms of function and products, the market streets lack imageability and a distinct character that can aid visitors in orienting themselves within the bazaars.

Situated in the close proximity of Bada bazaar and clock tower, Dargah e aala hazrat and Khanqah e Niazia have witnessed the effects of increasing density in the core. These religious precincts have lost their imageability and presence over a period of time. Absence of identity markers, gateways, designated corridors, signage, façade lighting has led to degradation of the overall urban character of the precincts.

3.6.3.3 KEY INTERVENTION

- Restructuring mobility networks to facilitate walkability and Para transit within the Bada bazaar and Shyam ganj market street
- Prioritize the use of public transport.
- Provision of signage design scheme for Bada Bazaar and Shyam Ganj market by standardizing the size & its location on the façade to create uniformity in streetscape.
- Development of symbolic identity/ entrance gateways for both, Dargah and Khanqah.
- Establishing a corridor leading to the religious precincts along with façade treatment guidelines.
- Place making of their precinct with respect to the surrounding neighborhood.
- Enhancing the spiritual character along the street.

- Restructuring the Dargah precinct while adding public infrastructure like designated parking space, washrooms, etc.

3.6.3.4 SITE DELINEATION – BADA BAZAAR, SHYAM GANJ MARKET, DARGAH E AALHAZRAT AND KHANGAH E NIAZIA

Upon arrival from Delhi, the market streets start from Qila with the grain market and move in a straight line to Bada Bazaar featuring Sarafa Bazaar (gold and silver jewellery), Surma market, Cloth and cosmetic market respectively. Following the Bada Bazaar which terminates at the Darzi Chowk and further leads to Shiva ji marg road (featuring Sarafa bazaar) and Shyam ganj market (featuring utensils, Zari Zardosi and furniture markets respectively).

Situated in the dense fabric of city core is the Dargah e aalahazrat, which is one of the important pilgrim destinations in the city. With no defined access point/ entrance gateway, the dargah is approached from various routes from Bada bazaar road and Kutub khana road. This results in an unfeasible approach for the pilgrims who are new to the city. Lack of identity markers and a designated corridor fails to establish imageability and legibility of the precinct. Due to the existing situation in the current scenario, the working of bazaar streets also get hampered, eventually affecting the business.



Map 9: Qila to Shyan ganj Road, Dargah e Aalahazrat and Khanqah e Niazia Precinct

(Source: Consultant Analysis)



Image 29: Bada Bazaar Street (Section - 1)



Image 30: Shyam Ganj Market Street (Section - 2)

(Source: Consultant Analysis)



Image 31: Bada Bazaar Street



Image 32: Shyam Ganj Market Street



Image 33: Street leading to Dargah-e -Aalahazrat



Image 34: Dargah e Aalahazrat



Image 35: Street leading to Khanqah E Niazia



Image 36: Khanqah E Niazia

3.6.3.5 PROJECT IMPACT AND ITS BENEFITS

The project aims to define the character of the city market streets. The core city roads shall be defined as internal streets that will be prioritized on cycle and pedestrian infrastructure. These streets shall be designed to reduce the carriageway for low vehicular speed. The peripheral city streets will be developed as the outer loop where provisions for cycling, IPT, parking near intersections, cycle stands at regular intervals shall be given.

Taking the spiritual significance of the Dargah and Khanqah into consideration, the revival of these religious precincts becomes essential to restore city's cultural value. Designating corridor leading to these religious places and defining its street character will elevate the essence of the precinct. Establishing identity markers/ entrance gateways and development of public amenities like parking space, washrooms, etc. will offer convenience to visitors in terms of approach and user experience.

3.6.3.6 STAKEHOLDERS

3.6.3.6.1 NODAL AGENCY

Bareilly Market Association
Dagrah Association

3.6.3.7 HELPING AGENCIES

Bareilly Development Authority
Bareilly Smart City Limited (BSCL)
Bareilly Nagar Nigam
U.P Tourism

3.6.3.8 DATA REQUIRED FOR THE PROJECT

- Demarcation of Dargah area

3.6.4 Vision: Development of Areas near Transit Points as New Gateways to the City

3.6.4.1 PROJECT – DEVELOPING TRADE CUM BUSINESS EXPO CENTERS NEAR TRANSIT NODES

3.6.4.1.1 BACKGROUND

Well known for its Nath temples, Dargah e aala hazrat and its craft of Zari – Zardozi, Bareilly; the Nath nagri of U.P happens to be a tourist destination for people of many culture across the nation. The city also inherits a very strong craft culture which has made Bareilly renowned for its Zari – Zardozi art all over the world. This brings thousands of businessmen/ traders/ retailers to the city in search of the finest products of their native craft. The craft of Zari – Zardozi becomes a catalyst for the city tourist infrastructure and holds a potential to scale up the tourism influx, contributing to the city's economy.

3.6.4.1.2 PROBLEM STATEMENT

Considering the craft value of such prestige, the city still does not offers any platform to showcase the craft. In the old city core of Bareilly, **Sailani road** and **Jagatpur** are the two hubs dedicated for its retail, wholesale and manufacturing units, which are amongst the oldest and densest areas in the city. Despite of two dedicated retail areas for Zari – Zardozi, the placement of these markets in the dense city core makes it unfeasible for any visitors to reach.

3.6.4.1.3 KEY ACTIVITIES, TASK & INTERVENTION

The proposed project focuses on providing the artisans a platform on major transit hubs for showcasing the native craft. Bareilly Jn. Railway station and Izzatnagar Railway station are the two main entrance gateways to the city. In close proximity to these two gateways are the two existing structure

1. Manoranjan Sadan – Opp. Bareilly Jn. Railway station
2. Manoranjan Sansthan – Opp. Izzatnagar Railway station

Thus, the proposal aims the urban renewal of these two existing structures into an Integrated Tourist complex along with parking facility and multimodal integration. These will be developed as major trade centres that will facilitate adequate infrastructure for the display of the craft and will also be venue for holding large exhibitions and conventions.

3.6.4.1.4 SITE DELINEATION – MANORANJAN SADAN

The existing building of **Manoranjan Sadan** situated opposite to the **Bareilly Jn. Railway station** is the primary selected location for this intervention. The site shares its side edge with forecourt of the railway station which further has a great potential to be developed as a public plaza. Well-connected by 2 major roads, the site also has many hotels in its close proximity appropriate to support the tourism influx. The site holds a great potential to be developed as an anchor point, featuring infrastructure to support the craft sector of the city.



Map 10: Manoranjan Sadan at Bareilly Junction Railway Station

(Source: Consultant Analysis)



Image 37: Manoranjan Sadan Entry Gate
(Source: Author)



Image 38: Manoranjan Sadan

3.6.4.1.5 SITE DELINEATION – MANORANJAN SANSTHAN

The existing building of **Manoranjan Sansthan** situated opposite to the **Izzatnagar Railway station** is another selected location for this intervention. The site is situated on Nainital road, which is an important gateway to the city from the Northern side. Its connectivity to the Izzatnagar railway station further makes it an appropriate location for establishing as a showcase platform for Zari – Zardozi. Being an entry point to the city from north, the site holds potential to be developed as a trade hub for exhibiting city’s native craft of Zari – Zardozi.



Map 11: Manoranjan Sadan at Bareilly Junction Railway Station

(Source: Consultant Analysis)



Image 39: Izzatnagar Railway Station – Bareilly- Nainital Road



Image 40: Izzatnagar Railway Station

3.6.4.2 PROJECT IMPACT AND ITS BENEFITS

Introduction of Integrated Tourist complex along with parking facility and multimodal integration in the craft city of Bareilly is one of the most essential developments needed in the city. The project

will help in providing a platform to the artisans for showcasing their craft at major transit hubs of the city. This will bring the art of Zari – Zardozi in the forefront & eventually become a revenue generating model for the whole city. The infrastructure will be beneficial specifically for the artisans of Zari – Zardozi to conserve the native art.

3.6.4.3 STAKEHOLDERS

3.6.4.3.1 NODAL AGENCY

Zari – Zardozi Association, Bareilly

3.6.4.4 HELPING AGENCIES

Bareilly Development Authority

Bareilly Smart City Limited (BSCL)

Bareilly Nagar Nigam

Bareilly Market Associations

U.P Tourism

Northern Railways

3.6.4.5 DATA REQUIRED FOR THE PROJECT

- Ownership of Manoranjan Sadan & Manoranjan Sansthan

3.6.5 PROJECT – REDEVELOPMENT OF PILIBHIT SATELLITE BUS STAND

3.6.5.1 BACKGROUND

Situated in the middle of the national capital and the state capital Lucknow, the city's strategic location makes the mobility infrastructure very crucial for its growth. Along with its Railway network, city's road transportation also becomes an integral part that contributes to its development. Major transit hubs like city bus stand tend to be the backbone of public transport, forging its connectivity to its neighboring cities. Since the city is expanding throughout from all directions, the Satellite bus stand was developed at the junction of NH 24 and Pilibhit bypass road in order to cater to the high influx of buses from Lucknow.

3.6.5.2 PROBLEM STATEMENT

Similar to Railway station, Bus stands are also the city gateway that casts an image of the city for the visitors. Despite of its strategic location, the existing Satellite bus stand precinct and road are thoroughly lacking in legibility, identity and organization. Due to unorganized street space and mobility infrastructure, the bus stand tends to be a prominent cause of congestion on the road.

3.6.5.3 KEY INTERVENTION

- Reviving the identity of the Bus stand and uplifting its visual character as a prominent city gateway.
- Redevelopment of its precinct and introduction of a prominent public plaza space at bus stand.
- Redesigning Streetscape of the junction along with organized spaces for parking, pedestrians, hawkers etc.

3.6.5.4 SITE DELINEATION

The strategic location of Satellite bus stand at the intersection of NH - 24 & Pilibhit Bypass establishes it as a gateway to the city while approaching from Lucknow. Thus the bus stand becomes an important transit junction where city level and regional level mobility network intersect. Since the regional level transport is not allowed to enter the city interiors, Para transit network becomes very crucial for such space. Also, the existing bus stand portrays a much unorganized image of the precinct.



Map 12: Pilibhit Satellite Bus Stand

(Source: Consultant Analysis)



Image 41: Pilibhit Satellite Bus Stand Section

(Source: Consultant Analysis)



Image 42: Satellite Bus Stand Entry



Image 43: Satellite Bus Stand Exit



Image 44: Pilibhit Satellite Bus Stand



Image 45: Pilibhit Satellite Bus Stand

(Source: Author)

3.6.5.5 PROJECT IMPACT AND ITS BENEFITS

The development of Satellite Bus stand as a gateway will revive the overall urban character of the precinct and define city's imageability. Streetscape of this major transit hub will help in organizing the mobility infrastructure along with creating integrated zone for NMVs, IPTs, and other transport modes. This will also form a welcoming approach for the visitors/ tourists and will be beneficial for the city people as well. The project will initiate infrastructure development, boosting more people to visit the city contributing to the city's economy.

3.6.5.6 STAKEHOLDERS

3.6.5.7 NODAL AGENCY

R.T.O, Bareilly

3.6.5.8 HELPING AGENCIES

Bareilly Development Authority
Bareilly Smart City Limited (BSCL)
Bareilly Nagar Nigam

3.6.5.9 DATA REQUIRED FOR THE PROJECT

- Data of existing/ proposed bus routes in the city
- Total influx of buses at the bus stand

3.6.6 Vision: Promotion & Innovation of Craft Products – Kala Sanskriti

3.6.6.1 PROJECT – REJUVINATION OF ZARI – ZARDOZI (SHYAM GANJ MARKET) – ONE DISTRICT ONE PRODUCT

3.6.6.1.1 BACKGROUND

Renowned all over the world, Bareilly is a city very well known for its craft of Zari and Zardozi. The native craft has established Bareilly's identity in the national as well as international market. The skill has been eventually been carried on by generations of artisans over past many decades. Many artisans have adopted this as their main occupation or profession. It has provided employment opportunities to thousands of artisans spread over the city as most of the artisans have inherited art to be converted into an occupation.

3.6.6.1.1.1 PROBLEM STATEMENT

Situated in one of the dense fabric of the city is the **Sailani market road** dedicated for retail of Zari Zardozi. Before the construction of Shyam gunj flyover, its prime location on Stadium road made the market easily accessible from all parts of the city. The flyover passing over the market entrance has not only disrupted its linkage from the city's main arteries but has drastically changed the approach to the market underneath.

3.6.6.2 KEY INTERVENTION

- Designing the streetscape for pedestrians and NMT system
- Façade Development to establish the identity of the market
- Traffic decongestion of Market Street and parking proposals

3.6.6.3 SITE DELINEATION

Despite of being covered by the Shyam ganj flyover, the strategic location of Sailani market road still holds a potential for an urban renewal for its transformation. The road from Patel chowk to Satellite bus stand passes under the flyover gives the site an advantage for a fair mobility. The space available underneath the flyover can be better utilized for place-making of the market's entrance.



Map 13: Sailani Market Road

(Source: Consultant Analysis)

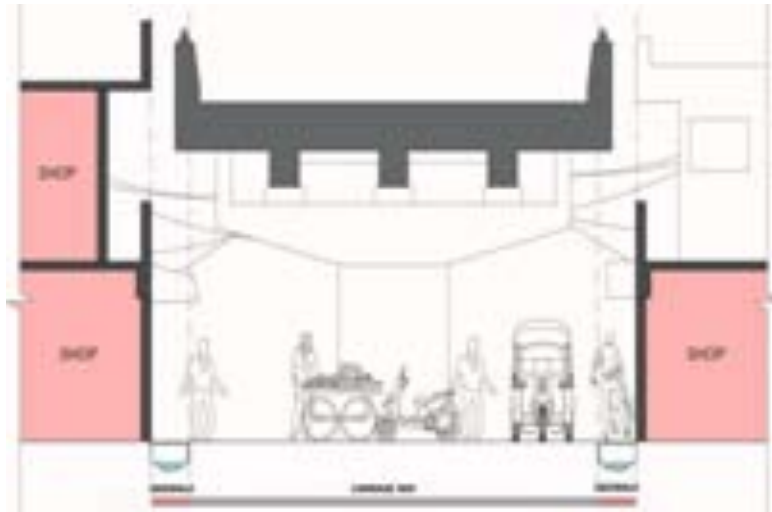


Image 46: Shyam Ganj Flyover Road Section

(Source: Consultant Analysis)



Image 47: Shyam Ganj Flyover Road



Image 48: Sailani Market Road

3.6.6.3.1 PROJECT IMPACT AND ITS BENEFITS

Redevelopment of Sailani Market road is one of the most significant developments needed for the revival of Bareilly's native craft. The urban renewal of the road underneath the flyover will not only

enhance the approach to the Sailani market street but will also address a prominent access point for the visitors/tourists. The intervention will redefine the urban character of the whole market street and will also emphasize on the underlying market of Zari - Zardozi. This will initiate more influx to the market street and help in restoring the city's native craft.

3.6.6.3.2 STAKEHOLDERS

Bareilly Development Authority
 Bareilly Smart City Limited (BSCL)
 Bareilly Nagar Nigam
 Bareilly Market Associations
 Sailani Market Association
 Bareilly Zari – Zardozi Association
 U.P Tourism

3.6.6.4 DATA REQUIRED FOR THE PROJECT

- *Location of addas near the market street*

3.6.7 Vision: A Place for Spiritual Tourism and Nature Retreat

3.6.7.1 PROJECT - RAMGANGA RIVERFRONT DEVELOPMENT

3.6.7.1.1 BACKGROUND

The Ramganga River is the largest river passing through the city and the river ghat is one of the well-known religious places in the city. The place inherits a rich historic as well as spiritual value that brings lakhs of pilgrims annually to the ghat. A fair after every 14 days is also organized on the river banks attracting tourists and pilgrims from all over the city. The river banks are flooded with people taking baths, performing religious activities and celebrating the festival.

Since the river crosses in close proximity to Chaubari village, a major fair is organized annually at the banks of the river known as Chaubari fair. The fair takes place on the occasion of Kartik purnima. One of the biggest attractions of this fair is the horse market, where people from far off areas visit the city to buy or sell horses. The fair is attended by lacks of pilgrims, which initiates tourism for the city on a large scale.

3.6.7.1.2 PROBLEM STATEMENT

Despite of having a spiritual value of such prestige, the river ghat and the fairground still remains redundant. Due to lack of identity markers, entrance gateway and way-finding, the approach to the ghat area is not feasible for the visitors. The Ramganga fairground is not only an ecological asset but also holds a significant value in the social infrastructure of Bareilly.

3.6.7.1.3 KEY ACTIVITIES, TASK & INTERVENTION

- Crafting Ramganga river ghat into a multi-functional public space that caters to all pilgrimage activity, fairs and festivals.
- Development of symbolic identity/ entrance gateway to the riverfront.
- Place making of their precinct with respect to the surrounding neighborhood.
- Revival of the existing precinct while adding public infrastructure like designated parking space, washrooms, etc.

- Up gradation of Ramganga Jn. Railway station and improving its connectivity with the riverfront

3.6.7.1.4 SITE DELINEATION

The current scenario of riverfront displays a very abrupt image of city’s natural features. Despite of being well connected to the city through state highway & railway line, the site completely lacks a prominent connectivity and a symbolic identity. The existing ghat and fairground does not contain any public infrastructure to support the monthly holy bath and Chaubari fair. This has led to the depletion of the condition of the riverine, eventually affecting the overall ecology.



Map 14: Ramganga Ghat and Fair Ground

(Source: Consultant Analysis)



Image 49: Dilapidated Ghat along river edge and connecting bridge

(Source: Author)



Image 50: Vacant land parcels near connecting bridge

(Source: Author)



Image 51: Provision of boating to cross the River



Image 52: Provision of boating to cross the River

3.6.7.1.5 PROJECT IMPACT AND ITS BENEFITS

Development of the riverfront will help in revival of the overall river edge and restoring its ecology as well. Integration of the riverfront along with the fairground will result in rejuvenation of the overall precinct benefiting the pilgrims and city residents. Also, provision of public amenities will add to the overall development and initiate more pilgrims to visit. The urban renewal of the existing ghat will eventually result in upliftment of the city social infrastructure.

3.6.7.1.6 STAKEHOLDERS FOR THE PROJECT

3.6.7.1.6.1 NODAL AGENCY

Bareilly Development Authority

3.6.7.1.6.2 HELPING AGENCIES

Bareilly Smart City Limited (BSCL)

Bareilly Nagar Nigam

U.P Tourism

3.6.7.1.7 DATA REQUIRED FOR THE PROJECT

- Hydrology and topography map for the city
- Ownership of the Ramganga fairground
- River revival projects in the city - existing/ proposed
- LFL & HFL of the existing rivers
- Areas along the river that need to be conserved

3.6.8 PROJECT – DEVELOPING MEDICAL INFRASTRUCTURE FOR NATUROPATHY AND ECO-TOURISM

3.6.8.1.1 BACKGROUND

Naturopathy is a field of science that specifically focuses on healing from Nature. It also involves other segments of treatment like Yoga, Meditation etc. that add more value to the system. A well-developed Naturopathy center includes space for multiple such facilities along with complementary techniques such as massage, acupuncture, or aromatherapy.

3.6.8.1.2 PROBLEM STATEMENT

Due to lack of medical infrastructure specifically for Naturopathy in the city, Bareilly fails to cater to the growing demand.

3.6.8.1.3 KEY ACTIVITIES, TASK & INTERVENTION

- Development of Naturopathy and Nature retreat Centre along with promoting Eco Tourism.
- Development of space that offers Yoga, Sound meditation and Ayurveda treatments.
- Development of symbolic identity/ entrance gateway to the city.
- Place making of their precinct with respect to the surrounding neighborhood.
- Revival of the existing precinct while adding required public amenities.

3.6.8.1.4 SITE DELINEATION

Located at the intersection of the Bareilly bypass and Pilibhit road, the proposed site is a strategically selected location for the development of medical infrastructure for naturopathy and eco-tourism. Considering the context of the proposed site, the Radisson hotel and Airport in its close proximity can be foreseen as a supportive infrastructure for medical tourism. The existing Iskcon temple also adds a spiritual dimension to the overall precinct. Along with the existing mobility infrastructure and the available assets around the site, an integrated precinct for development of Naturopathy center can be envisioned.



Map 15: Proposed site for Naturopathy & Eco-tourism

(Source: Consultant Analysis)

3.6.8.1.5 PROJECT IMPACT AND ITS BENEFITS

Development of the Naturopathy Center will not only provide medical facilities to the city residents but will also escalate the level of Medical infrastructure in the city, providing people with therapeutic treatments, Ayurveda training, various medical programs, recreational activities with the Indian tradition of hospitality. The Center is envisioned to cater the growing demand of the city residents, specifically in the Naturopathy sector. The proposal will also initiate Medical tourism to the city, which can further contribute to the city's economic growth.

3.6.8.1.6 STAKEHOLDERS FOR THE PROJECT

3.6.8.1.7 NODAL AGENCY

Bareilly Development Authority

3.6.8.1.8 HELPING AGENCIES

Bareilly Smart City Limited (BSCL)
Bareilly Nagar Nigam
Indian Medical Association, Bareilly
U.P Tourism

3.6.8.1.9 DATA NEEDS FOR THE PROJECT

- Ownership of the Proposed site

3.6.9 Vision: Tourism Infrastructure upgradation of ASI sites

3.6.9.1 PROJECT: AHICHCHHATRA – TOURISM INFRASTRUCTURE UPGRADATION OF A.S.I SITE IN CONSULTATION WITH A.S.I AND U.P TOURISM REGIONAL MANAGERS

3.6.9.1.1 BACKGROUND

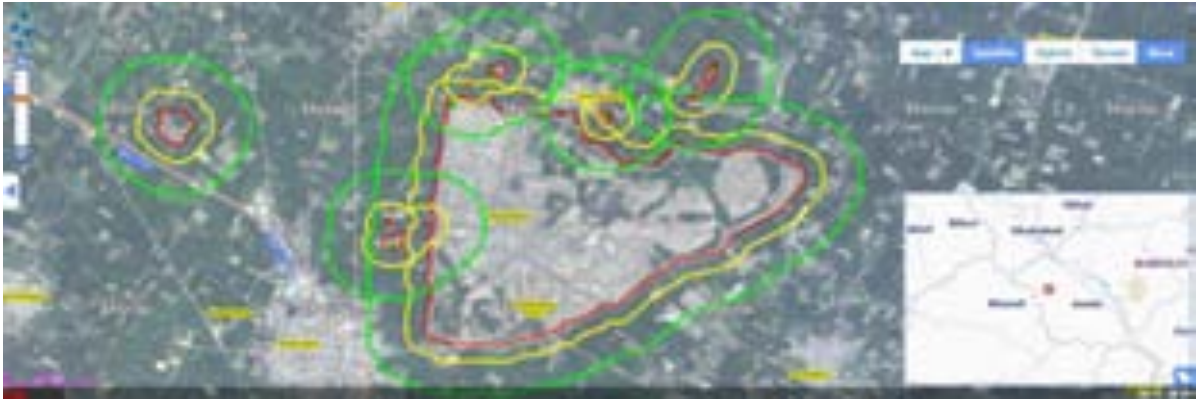
From archaeological point of view the district of Bareilly is very rich. The extensive remains of Ahichchhatra, the Capital town of Northern Panchala have been discovered near Ramnagar village of Aonla Tehsil in the district. The site of Ahichchhatra was briefly explored by Sir Alexander Cunningham in 1871, and then excavated by the ASI from 1940 for “about five years”. The excavations found brick fortifications and continuity of occupation from a period before 600 BCE to 1100 BCE. It was during the first excavations at Ahichchhatra (1940-44) that the painted gray ware, associated with the advent of the Aryans in the Ganges-Yamuna valley, was recognised for the first time in the earliest levels of the site. Nearly five thousand coins belonging to periods earlier than that of the Guptas have been yielded from Ahichchhatra. It has also been one of the richest sites in India from the point of view of the total yield of terracotta. On the basis of the existing material, the archaeology of the region helps us to get an idea of the cultural sequence from the beginning of the 2nd millennium BC up to the 11th century AD.

Near Ahichchhatra, 2 km to its West there is a big pond which is said to trace its ancestry to the time of Mahabharata. The pond, located in the village of Jagannathpur is said to have been made by the Pandavas at the time of their forest dwelling.

Table 3-85: List of ASI sites in Bareilly district (3 sites in Bareilly, 7 sites in Ramnagar, 2 in Aonla and 1 site in Pachomi)

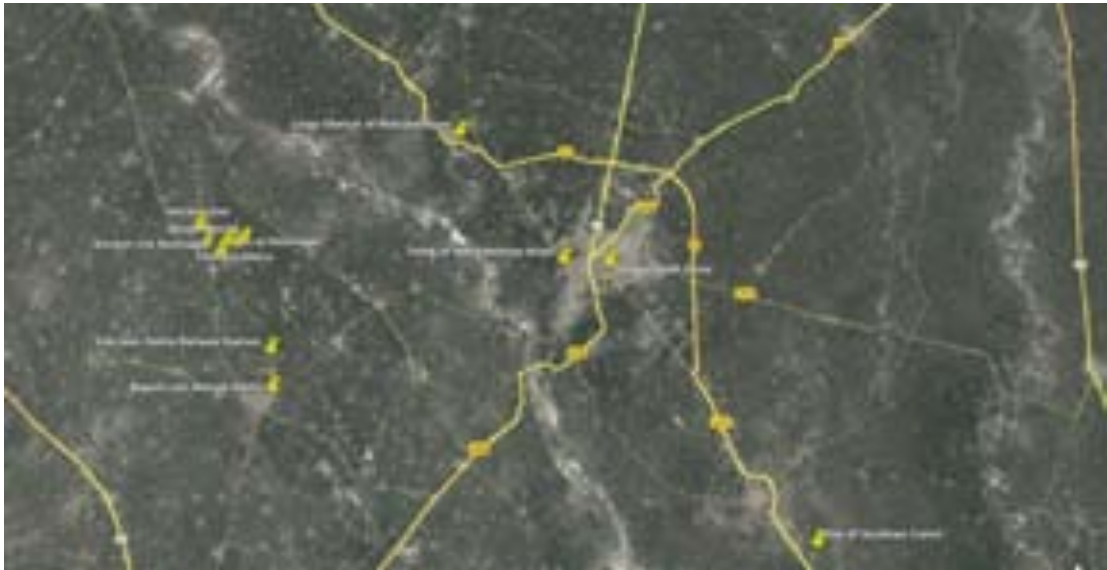
S.NO.	NAME	LOCATION	DISTRICT
1.	Tomb of Hafiz-ul-Mulk Rahmet Khan, the Rohila Chief	Bareilly, Bakar Ganj	Bareilly
2.	Tomb of Hermit Shah Dana	Bareilly, Bakar Ganj	Bareilly
3.	Large obelisk of red sandstone	Fateh Ganj	Bareilly
4.	Several ancients ruined mounds in which Indo-Scythian coins are found.	Pachomi or Wahidpur Pachaumi	Bareilly
5.	Ancient Site	Ramnagar, Alampur Kot	Bareilly
6.	Fort	Ramnagar	Bareilly
7.	Mound called Chikatia Khera	Ramnagar	Bareilly
8.	Mound to the south of the tans known as of the Gandhan Sagar and Adisagar	Ramnagar	Bareilly
9.	Small hillock called Katari Khera or Kottari Khera	Ramnagar	Bareilly
10.	Stupa mound	Ramnagar	Bareilly
11.	Two Buddhist mounds close to the Konwaru Tal	Ramnagar	Bareilly
12.	Begum's Masjid with three lofty domes	Aonla	Bareilly
13.	Site near Aonla railway station	Rehtoa	Bareilly

(Source: Consultant Analysis)



Map 3-1 : ASI sites with buffer demarcation

(Source: Bhuvan Portal)



Map 3-2: Location of ASI Protected Structures in District of Bareilly



Figure 3-61: Archival image of the site excavation activities (1940-1945)



Figure 3-62: Archival image of Excavated Site (1940-1945)

(Source: Alexander Cunningham)



Figure 3-63: Archival image of Excavated Site (1940-1945)

(Source: Alexander Cunningham)



Figure 3-64: Archival image of Excavated Site (1940-1945)



Figure 3-65: Archival image of Excavated Site (1940-1945)

(Source: Alexander Cunningham)

3.6.9.1.2 PROBLEM STATEMENT

The site is located at a distance of 55.4 km from Bareilly with poor tourism infrastructure and site interpretation facilities. It is also located in close proximity of a Jain Teetha which is highly visited by the pilgrims as well as the visitors. There are 7 ASI protected sites in Ramnagar and other unprotected sites including Jain Temples Shri Ahichchhatra Parshvanath Atishya Teerth Kshetra Digambar Jain Mandir, Ramnagar, Lakes and temples in Aonla, etc. which are not explored to its full potential due to lack of awareness, poor infrastructure facilities, lack of connectivity and improper visitor infrastructure facilities.

3.6.9.1.3 VALUE ADDITION OF THIS PROJECT TO THE TENTATIVE VISION

The provision of proper visitor amenities, support infrastructure facilities and improved last mile connectivity will enhance the tourist footfall to these sites. The site interpretation would help to generate interest of different categories of tourists.

3.6.9.1.4 OBJECTIVES

- To improve last mile connectivity from the nearby towns/cities such as Bareilly, Badaun and other nearby towns.
- Development of Site Interpretative Museum for creating awareness about site, and to develop outreach programmes.
- Site development and landscape improvement to provide visitor amenities such as food and beverage, toilet facilities, tourist information centre.

3.6.9.1.5 KEY ACTIVITIES, TASKS, INTERVENTIONS INVOLVED

- Identification of area for development of Museum
- Connectivity enhancement to the identified sites located in close proximity
- Site Development & Landscape Improvement
- Providing wayfinding and interpretative signage in and around the sites

3.6.9.1.6 STAKEHOLDERS LISTING

- Department of Tourism, Government of Uttar Pradesh
- Archaeological Survey of India
- Bareilly District Administration
- Gram Panchayat/Tehsil

3.6.9.1.7 NODAL AGENCIES

1. Archaeological Survey of India	For site development
2. Department of Tourism	For developing Tourism Infrastructure facilities

3.6.9.1.8 DATA NEEDS FOR THE PROJECTS

S.No.	Data	Status
1.	Visitors footfall in Ahichachhatra , Aonla, Bareilly	500 – 700 Daily (Average)
2.	Tourist Profile	No Records
3.	Average stay of Tourist	No Records

3.6.9.1.9 SWOT ANALYSIS

3.6.9.1.9.1 STRENGTH

- Close proximity with Bareilly makes it an apt site to be developed as a destination for one/two day excursion
- Eight ASI protected sites are located in close proximity along with the Jain Temples which can be explored and be used for creating tourist interest
- Regional connectivity with Badaun
- The fort has potential to be designated as World Heritage Site, therefore site development with proper infrastructure facilities, site Museum with Interpretation

Center, last mile connectivity would enhance the future tourism prospects of the district

3.6.9.1.9.2 *WEAKNESS*

- Last mile connectivity
- Lack of awareness of other tourism attractions both built and natural heritage
- Lack of infrastructure facilities

3.6.9.1.9.3 *OPPORTUNITY*

- Ahichchhatra/ Ramnagar Fort is the most visited site in Bareilly
- Improved infrastructure facilities will help to increase the footfall
- Regional connectivity of Bareilly – Ramnagar and Badaun can be explored to develop a tourist circuit
- Site sensitive interventions would help to enhance the importance of the site

3.6.9.1.9.4 *THREAT*

- Any insensitive interventions in and around the site would be detrimental to the significance of the site.
- Any development around the archaeological areas is to be protected and conserved.



3.7 ENVIRONMENT

3.7.1 Solar Energy

3.7.1.1 Project Background

As the electricity power tariff is very high (Rs. 8 – 17 per Unit) as compared to other states of India. It is very essential specially for the high-power consumers to install their own power plant. Solar energy is readily available that to free of cost. We Suggest & proposed use of Solar power. Through our vision we can suggest & focused on the particular segments & sector where we can use solar power thereby cost cutting in government revenue. One can generate required power for 25 years free of cost & will become self-sufficient.

3.7.1.2 Objectives

To make clean, green & pollution free environment. Use of solar power at different potentials such as rooftop & ground mounted solar power plants, Agriculture solar pumps, Solar Street lights, Solar high mast & flood lights, solar water heaters, solar traffic signals & blinkers.

3.7.1.3 Scope of Work

Identifying the projects & making pre-feasibility reports. Electrical load calculation, Availability of land & roof, mapping, designing with techno commercial advantages.

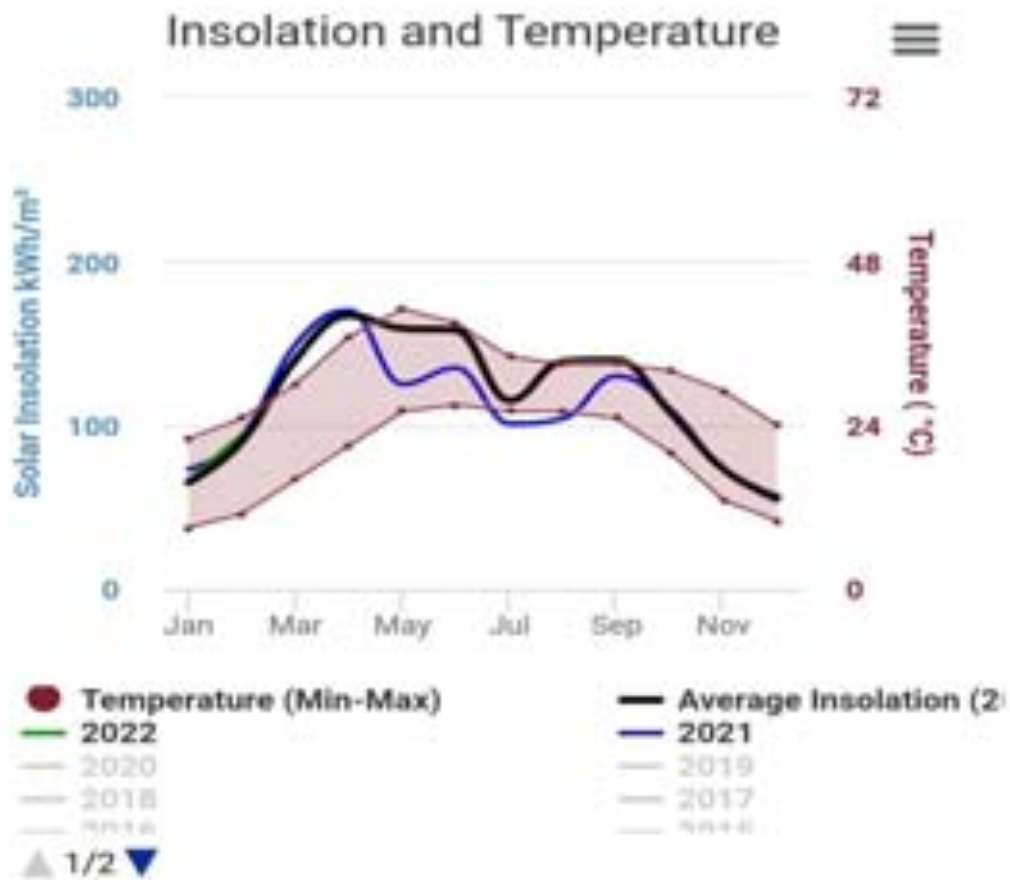
3.7.1.4 Approach & Methodology

- Existing power consuming analysis, Electrical bill analysis.
- Daily / Monthly / Yearly Units consumed.
- Energy Forecast.
- Solar Plant size.

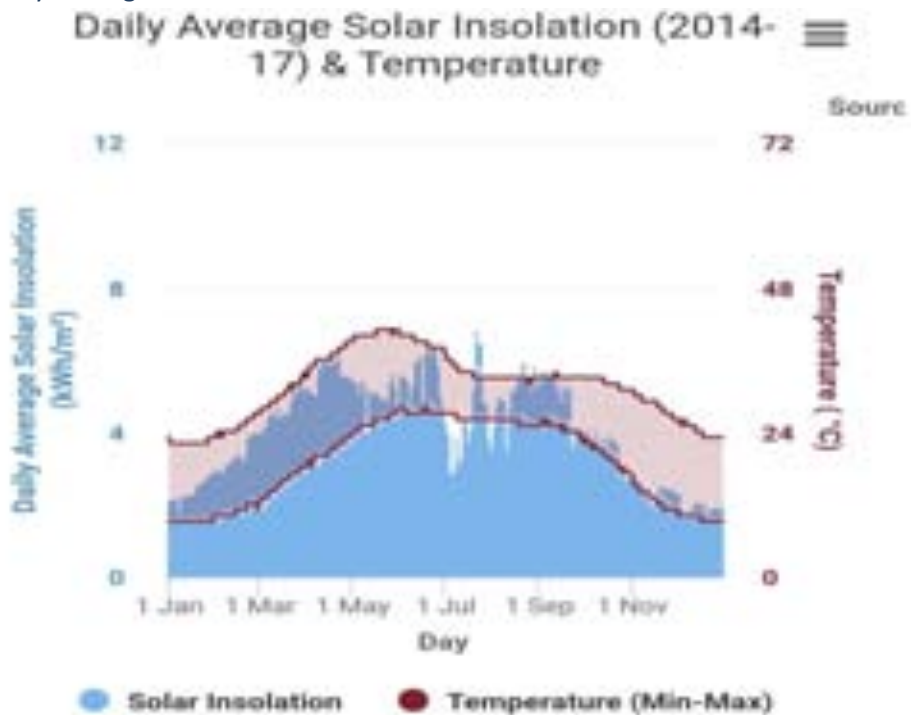
3.7.2 City Climate Analysis

Longitude / Latitude :	79.427345 / 28.379725
DayLength (Min / Max):	10.19 / 13.81 hours
Avg Temp. (Min / Max):	19.0 °C / 32.0 °C
Tilt Angle for Solar PV:	25° [Summer : 5°, Winter : 44°]
Annual Global Insolation:	1410 (kWh/m ² /year)
Power Production of PV:	282.0 kWh/m ² /year considering 20% efficiency and energy loss.
	10 m ² of PV will generate 2820.0 units per year.
	or
	7.7 units per day.

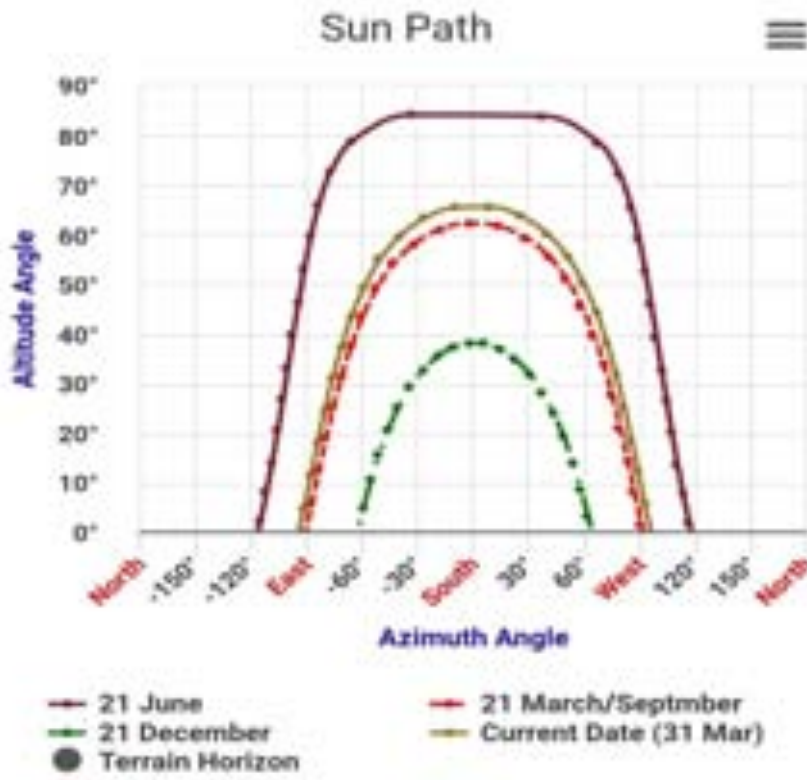
3.7.2.1 Isolation & Temperature



3.7.2.1.1 Daily Average Solar Isolation



3.7.2.1.2 Sun Path & Day length.



3.7.3 Environment

3.7.3.1 Pollution.

As solar is a clean energy, it emits zero emission hence zero pollution in atmosphere.

3.7.3.2 Energy generation.

Ample amount of sun light is available throughout the year, solar energy generation is about 4.6 KW / meter square (i.e. average 4.2 units per KW) energy can be generated.

3.7.3.3 Aesthetic View

As single cable runs from panel string (Array) to inverter that to in PVC conduct. Doesn't affect Aesthetic view. Unwired Solar Street lights, High Mast & Traffic signals improves beauty of city.

3.7.3.4 Observation on Past Installation.

Visits, Study, survey, technical inspection reveals that the existing solar plants, solar trees at various places are not functioning / performing as per specification, some plants are almost in dead condition.

This is due to zero maintenance of solar plants.

Madhyanchal Vidhyut Vitran is divided in 4 divisions.

THESE KHAND SUPPLY TOTAL POWER OF 4834 KW TO GOVERNMENT

TOTAL CONSUMPTION OF HYDEL IS 155750 KW.

POWER SUPPLY TO GOVERNMENT BODIES:

Division	Power Consumption
Urban Vidhyut Nagari Vitran Khand Pratham.	765 KW (TOTAL LOAD 155750 KW)

Khand No.2	1389 KW
Khand No. 3	1344 KW
Khand No. 4	1336 KW
TOTAL POWER CONSUMPTION	4834 KW

SECTOR WISE POWER CONSUMPTION

DEPARTMENT	KW
Jalkal	12068
Police Stations & Colonies	14091
Swastha Vibhag (Public Health & Hospitals)	916
Zilla Prashashan	400
PWD	134
Irrigation	100
Sales Tax Office	460
Schools & Collages	845
Total Consumption	29014

NAGAR NIGAM POWER CONSUMPTION

Division 1	900 KW
Division 2	296 KW
Division 3	308 KW
Division 4	360 KW
Gramin	33 KW
Total Consumption	1897 KW

LOAD DISTRIBUTION: NAGAR NIGAM.

Items	Nos	Bill / KW
Street Lights	45000	Rs. 4200 / KW + 20% Electric Charges of Tariff
High Mast	19	5 KW Each
Buildings & Gardens	7	344 KW

DEMAND ASSESSMENT OF PROJECTS & UPGRADATION OF EXISTING SOLAR PLANTS

SITE	PLANT SIZE IN KW	STATUS	UPDATION
Sales Tax Office	18	Need Maintenance	10 KW
SSP Office	25	Need Maintenance	NIL
Commissioner Office	23	Need Maintenance	10 KW
Irrigation	5		10 KW
Hydel Chief Engineer	12		10 KW
Commissioner Advocate Office	12	System Not Working	Need Maintenance
Employment Exchange	9	Need Maintenance	NIL
Irrigation Flood Dept	5		10 KW
PWD CE Office	20	Maintenance & Cleaning of Panels	NIL
PWD Guest House	5		
Guard Quartet & Admin Building	18		25
Sabhagaar & Control Room	19		25
Police Modern School	20		25
TB Hospital	9		10
Nagar Nigam	25	Need Maintenance	10
District Hospital	28		100
Mental Hospital	18		40

SSP Office	25		20
Nagar Nigam	25		100
New Sola Trees		Existing Plants are not working	10

NEW PROPOSED SOLAR PLANTS

Street Light	Ward / Zone Wise	3 Megawatt
High Mast	Solar System on Poles	100 KW
Post Office Building	Solar Roof Tops	150 KW
Police Stations	Solar Roof Tops	200 KW
Government Schools	Solar Roof Tops & Solar Tree	800 KW
Government Collages	Solar Roof Tops & Solar Tree	1 MW
Hospitals	Solar Roof Top & Solar Tree	1 MW
Solar Street Lights	Gardens, Government Premises, Schools Collages, City Streets, Bus Stops, Public Utilities,	5000 Nos
Solar High Mast	Streets of City, Railway Station, Gardens	15 Nos
Hotels	City	3 Mw
Industries		10 MW
Ram Ganga River Front, Canals & Nullhas	Floating Solar Plant / Banks	5 MW
District Education Inspector	Solar Plant & Tree	50 KW
Traffic Signals	Automizes Smart Solar Traffic Signals	25 Nos
BSNL	Solar Roof Top	70 KW
Banks	Solar Roof Tops	2 MW
Private Hospitals	Solar Roof Tops	3 – 5 MW
Urban Cooperative Bank	Solar Rooftop	50 KW
Officers Bungalows	Solar Rooftops	500 KW
Jalkal	Solar Agriculture Pumps	55 Nos
Irrigation	Solar Agriculture Pumps	15 Nos
Public Gardens	Solar Street Lights, Solar Tree & Solar Garden Light	150
Solar EV Charging Stations	3 & 5 KW For Two & Four Wheeler EV Charging	10

3.7.3.5 SWOT ANALYSIS

STRENGTH:

The Climatic conditions are very much favorable to generate electricity from solar.

WEAKNESS:

Solar Panels need to be cleaned / wash regularly for 100% power generation, but all the plants in city have dust on panels the reason why these plants are not working.

OPPORTUNITY

This is one time investment the ROI calculated is 3-4 years. 25 Years of free & clean energy.

THREATS

Almost nil.

Chapter 4. Sector wise Demand Assessment

4.1 Urban Planning

4.1.1 Approach and Methodology

To achieve successful demand assessment for vision planning and development, these components will be studied in detail and form a part of our approach:

- Population Projections until 2071
- Land Requirements for various uses guided by the vision until 2071 in decadal phases
- Landuse implications of Industrial and Economic Base
- Recommendations on Draft Master Plan 2031 and see how it integrates to the 2071 Vision
- Proposed shelf of Projects
- Convergence of proposed Urban Sector projects with existing programs/schemes and strategies:

4.1.2 Proposed Growth of the City

4.1.2.1 Determinants of Urban growth

It is also one of the major service providers in the region. With proposals of various scales and sectors, this city is envisioned as the key economic growth center in the area. Major determinants of the growth in Bareilly will be:

1. Bareilly is identified as one of the nine magnets to the National Capital Region.
2. Existing Industrial base potential can be developed as Agro-based industries because of the availability of raw materials. The projected industrial growth hubs are intended to create employment opportunities and attract investment to the city because industries are the engine of economic progress.
3. The inhabitants of the surrounding area will be drawn to proposed residential zones, which are meant to be planned neighborhood zones since they would offer better living conditions and amenities.
4. Connectivity via road and rail to the state capital of Lucknow, the national capital New Delhi, and the popular tourist resort Nainital.

4.1.2.2 The extent of Spatial growth

Bareilly serves as the area's educational center, numerous prestigious educational institutions, as well as auxiliary buildings like apartments and hostels, can be found throughout the town's outlying areas, which is crucial for the growth of the metropolitan area. Locals from the villages nearby also move and reside in Bareilly to take advantage of the city's improved employment prospects, healthcare services, and educational resources. The geographic scope of a city expands as a result of inward migration, population growth, significant infrastructure development, and significant initiatives that have an impact on economic growth.

The city is anticipated to grow with the existing vision and proposed developments as mentioned in the Table below:

Figure 4-1: Urban Extent 2051 and 2071

Road Name	Urban Extent 2051 (Village Name)	As per Draft Master Plan 2031 Boundary	Urban Extent 2071 (Village Name)	As per Draft Master Plan 2031 Boundary
Nainital Road	Bhojipura	(Inside the Boundary)	Semi Khera	(Outside the Boundary)
Pilibhit Road	Labhera	(Outside the Boundary)	Khai Khera	(Outside the Boundary)
Lucknow Road	Jerh	(Outside the Boundary)	Naugawan	(Outside the Boundary)
Badaun Road	Anguri	(Inside the Boundary)	Sardarnagar	(Outside the Boundary)
Delhi Road	Dhaneta	(Outside the Boundary)	Mirganj	(Outside the Boundary)

These locations of urban growth are based upon the past growth trends, proposed projects, and analysis of existing conditions.

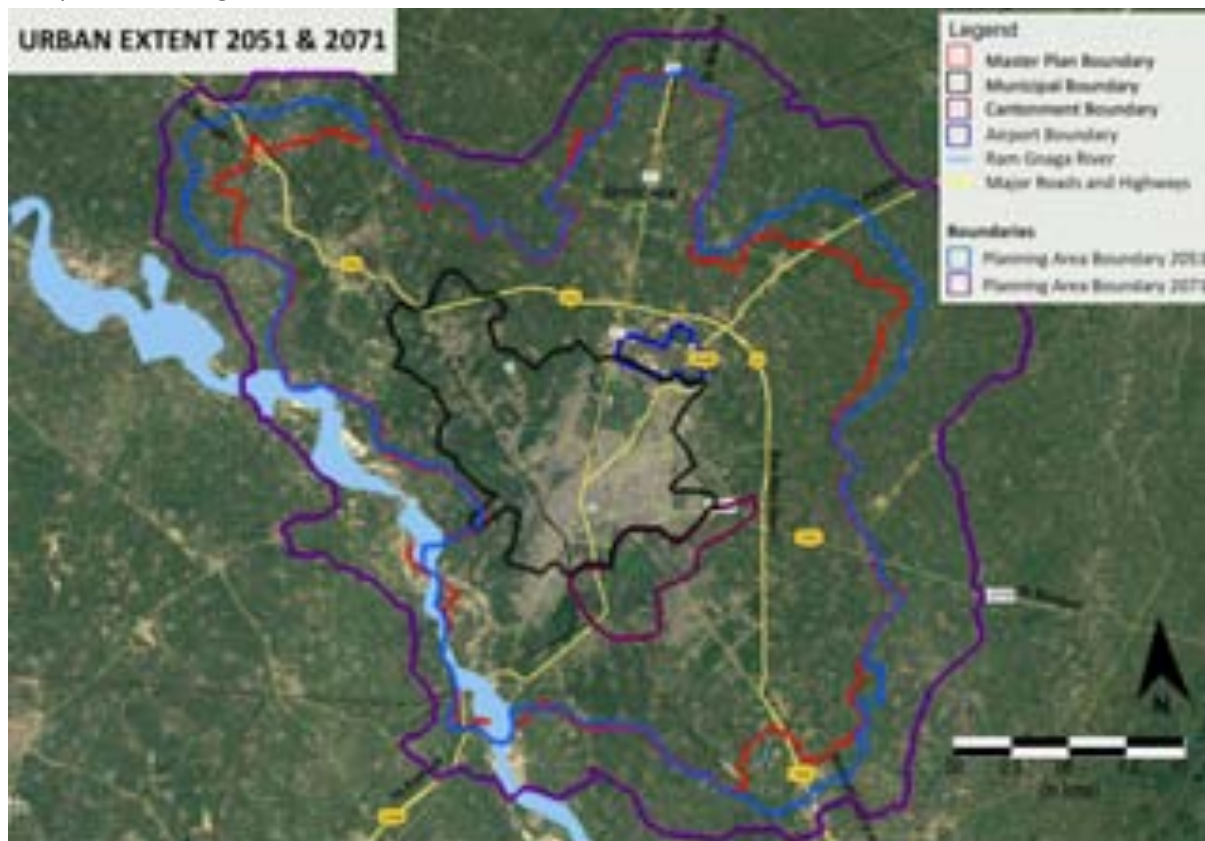


Figure 4-2: Urban Extent 2051 and 2071

4.1.3 Demographic Profile

4.1.3.1 Population Projections

For population projection of the horizon year, five projection methods are taken into account. The Arithmetical projection method shows the lowest population and predicts the population to be 22,50,731 to be in 2051 and 31,25,421 to be in the horizon year 2071. Similarly, the Incremental Increase method projects the population to be 28,49,757 to be in the horizon year. The geometrical

increase method estimates the population to be 45,86,064. Apart from these methods such as the graphical method of population projection is also used to project the population by 4 different methods namely Linear Method, 2nd Order Polynomial Method, 3rd Order Polynomial Method, and Exponential Method. 3rd Order Polynomial Method projects the highest i.e., 47,58,683 population for Bareilly city. Based on the growth trajectory 2nd Order Polynomial Method which estimates the population to be 31,25,421 in 2071 is considered for the Municipal area.

Table 4-1: Population Projection for Municipal Corporation Area

Sl. No	Population Projection Method					
		2031	2041	2051	2061	2071
1	Arithmetic Progression Method	1439947	1593930	1747913	1901896	2055879
2	Geometrical Progression Method	1658330	2138520	2757754	3556296	4586064
3	Incremental Increase Method	1492872	1752706	2065464	2431148	2849757
4	Growth Method	1668765	2165517	2810141	3646654	4732177
5	Graphical Method					
	a) Linear Method	1238736	1381870	1525004	1668138	1811272
	b) 2nd Order Polynomial Method	1532953	1872228	2250731	2668462	3125421
	c) 3rd Order Polynomial Method	1683919	2224493	2904945	3743575	4758683
	d) Exponential Method	1582382	2041186	2633019	3396451	4381237

Master Plan boundary is a consortium of cantonment board area, villages within planning boundary, census towns within planning area boundary in addition to the municipal area. Bareilly city population including all these for the year is projected to be 19,49,012 as per the consultant analysis against the population of 18,94,211 of Master Plan consultant for 2031. For the year 2051 and for the horizon year 2071 population is projected to be 28,94,499 and 37,02,015 respectively.

Table 4-2: Summary of Population Projection

	2021	2031	2041	2051	2061	2071
Municipal Area	1140717	1431466	1698116	1991891	2668462	3125421
Cantonment Board	37388	46591	65206	81256	174853	279265
Total Villages within Planning Boundary	279655	348492	487722	607775	106911	170753
Total Census Towns within Planning Boundary	98273	122463	171389	213577	79252	126577
Total Planning Boundary Population	1556033	1949012	2422433	2894499	3029478	3702015
Master Plan 2031 estimation of Total area		1894211				

Year	Population (M.C.)	Working Population	Growth Rate	WPR (Work Participation Rate)	Arithmetic	Growth Rate	Geometric	Growth Rate	Incremental	Growth Rate
1991		165827		27.30%						
2001		206247	19.60%	27.60%						
2011	903668	303392	32.02%	33.60%						
2021	1140717	330474	8.19%	33.60%						
2031	1431466				385356	16.61	416166	25.93	390176	18.07
2041	1698116				440238	14.24	524078	25.93	454698	16.54
2051	1991891				495120	12.47	660081	25.94	469158	3.18
2061	2575326				550002	11.08	831286	25.94	488438	4.11
2071	3338685				604884	9.98	1046897	25.94	512538	4.93

4.1.3.2 Estimated Household Size

The household size of Bareilly city has dropped in the past 3 decades. It was 6.43 in the year 1991 which in the last census of 2011 declined to 5.42. The decline in household size can be attributed to the nuclear family being more in existence now as compared to the joint family. Household size of 5.0 is proposed for Bareilly city which is also the national average.

4.1.3.3 Proposed Density

Decongestion of the core area is necessary to provide infrastructural equity and address traffic issues. This is also to admit that low dense low rise infrastructure development demands large investment. So, to reduce costs and provide long-lasting suitable infrastructure, medium-density compact development with a density of 250pph is proposed.

4.1.4 Workforce Characteristics

4.1.4.1 Proposed Occupational Structure

Bareilly is a service sector dominant city because it acts as the major educational and healthcare in the region. It also has a strong industrial base producing goods of a varied range. Considering all these into account Bareilly city is expected/proposed to employ 5 percent of its population in the primary sector, 35 percent in the secondary sector, and 60 percent in the tertiary sector.

4.1.4.2 Estimated Workforce participation rate

Note: Data used for WFPR calculation is of Municipal Area only

Working population for the subsequent years as well as horizon year till 2071 is projected based upon three methods which show variable results. Projections are done based upon the given assumptions that future growth rate will follow a similar trend to previous records and similar situations as existed till now will prevail. For these three projection methods namely: Arithmetic, Exponential, and Incremental method are used. The arithmetic method depicts linear and slow growth. The Geometric Method showed exponential growth. The incremental method demonstrates an increase in the increment utilized for forecasts, as well as a high rate of growth.

Bareilly being identified as one of the counter magnets of the National Capital Region which is a major economy will attract economic development. This will bring various enabling infrastructures for the increasing economy and have a positive impact on WFPR. For Bareilly, the geometric method is

considered which forecasts the no. of workers to be 10,46,897 for the population of 33,38,685 which is found to be 31.35 percent.

Master Plan 2021 projects different sectors of workers for 2011 and 2021. On similar assumptions and patterns based upon the ratio method, projections for the future year till 2071 is been done. For the year 2071, it is projected that primary services will employ 60,552 people and 1,57,522 will work in the manufacturing sector. As per the projection, the retail sector will be the highest engaging sector with around 1,71,420 people working in this. Transport and communication will provide work to 1,02,267 and the remaining working population of 3,18,668 will be employed in other service-providing sectors.

Table 4-3: Decadal employment in various sector

Economic Activity	2001	2011	2021	2031	2041	2051	2061	2071
	As per Census	Projected with average growth rate and share in the total working population						
	No. of Workers	No. of Workers	No. of Workers	No. of Workers	No. of Workers	No. of Workers	No. of Workers	No. of Workers
Primary Services	16500	21237	25411	30146	37760	46932	51699	60552
Manufacturing	30937	48543	66105	78424	98231	122091	134491	157522
Construction	10312	15170	17138	20332	25467	31653	34868	40839
Retail	41249	60678	71937	85343	106897	132863	146357	171420
Transport and Communication	24750	36407	43072	51099	64004	79551	87630	102637
Others	82498	121357	133729	158652	198719	246991	272076	318668
Total	206246	303392	357392	423997	531078	660081	727121	851636
Population	748353	903668	1311599	1556033	1949012	2422433	2668462	3125421

Note: Data used for calculation is of Municipal Area only.

4.1.5 Planning Boundary and Area of Future growth

4.1.5.1 Bareilly Development Authority

Existing landuse of Bareilly city covers only 7421.66 hectares of area in 2021 against 20,563.82 hectares. There is only 36.09 percent of the total allocated area in Master Plan 2021. As per the Draft Master Plan 2031, 2,251.94 hectares of additional area are added to the Master Plan boundary making it a total of 22815.76 hectares. For 2051 and 2071, an additional area of 7,652.65 hectares 2051 and 16,152.82 in 2071 hectares needs to be added to regulate and develop the area in 2071. The total estimated area required will be 30468.41 hectares for the year 2051 and 38968.58 hectares for the year 2071 which will be within the current BDA Boundary of 36,558.70 hectares till 2051 but might be necessary to extend the Pilibhit, Delhi, and Hardoi Road boundaries based on the development that is already apparent and. For the year 2071, the total landuse area required will exceed the boundary on all roads and will require a total of 38968.58 hectares of land.

Table 4-4: Landuse Requirement till 2071

S	Landuse	Norms %	Percent	Proposed Landuse 2031	Area Required as per URDPFI Standards Landuse 2031	Total Area Required for 2041	Total Area Required for 2051	Total Area Required for 2061	Total Area Required for 2071
1	Residential	30-35	38	8580.37	8669.99	9589.57	11578.00	12117.91	14808.06
2	Commercial	4-6	4	945.65	912.63	1056.88	1218.74	1275.57	1558.743
3	Industrial	8-10	10	2008.76	2281.58	2245.03	3046.84	3188.924	3896.858
4	Public and Semi Public	10-12	10	1406.82	2281.58	1572.29	3046.84	3188.924	3896.858
5	Official		2	360	456.32	402.34	609.37	637.7848	779.3716
6	Parks and Open Spaces	15-20	16	5705.74	3650.52	2274.04	4874.95	5102.279	6234.973
7	Traffic and Transportation	18-20	18	2034.72	4106.84	6376.84	5484.31	5740.064	7014.345
8	Others	Balance	2	1773.66	456.32	1982.27	609.37	637.7848	779.3716
	Total		100	22815.76	22815.76	25499.25	30468.41	31889.24	38968.58

These calculations are as per norms and standards in line with the Draft Master Plan, Industrial landuse requirement as per the city development plan vision is detailed in the section titled “Projected Industrial Land Demand.”

4.1.5.2 Dedicated Freight Corridor

Khurja Node of Eastern Dedicated Freight Corridor which is an 1800 km length corridor lies 200 km from Bareilly City via Badaun. To enable the movement of goods and provide better transport services for industrial goods and market a multimodal logistics hub is proposed at Kurtara near Paraskhera Industrial Area and an Integrated Freight Centre at Faridpur. Both of these Logistics facilities are expected to cover a land parcel of 35 hectares each. It is also proposed to connect these dedicated facilities to the Khurja Node of EDFC.

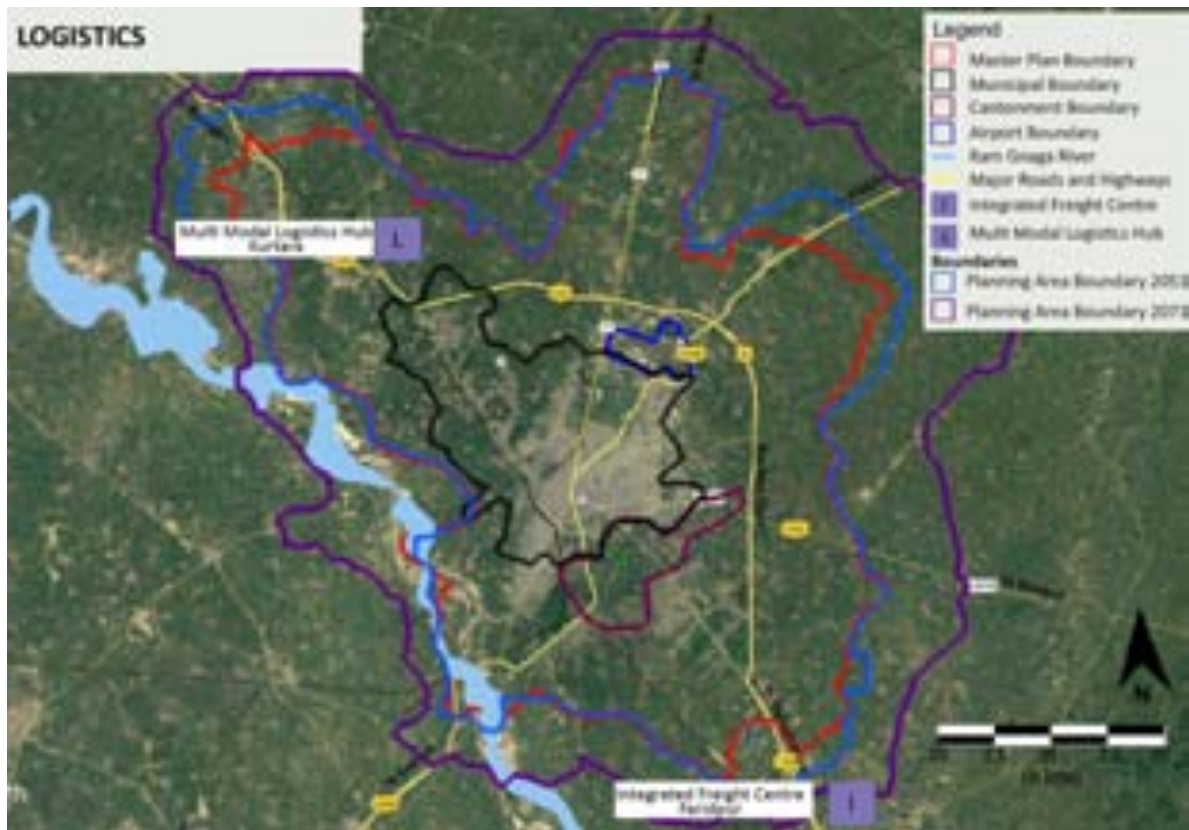


Figure 4-3: Logistic Hub

4.1.6 City Level Landuse Demand

4.1.6.1 Draft Master Plan 2031

Table 4-5: Draft Master Plan 2031 comparison with URDPFI Guidelines

S	Landuse	MP 2021 Area as per GIS	Existing Area as per GIS 2020	Master Plan Percent	Proposed 2031 as per Master Plan 2031	Norms	Cons. Percent	Area as per URDPFI Guidelines	Deviation
1	Residential	6900.15	3986.51	38	8580.37	30-35	40	8669.99	89.62
2	Commercial	911.20	245.75	4	945.65	4-6	4	912.63	-33.02
3	Industrial	1057.42	541.62	9	2008.76	8-10	10	2281.58	272.82
4	Official	279.39	184.77	2	1406.82	2	2	2281.58	874.76
4	Public and Semi Public	1257.20	531.1	6	360	10-12	10	456.32	96.32
5	Parks and Open Spaces	1782.65	357.92	25	5705.74	15-20	16	3650.52	-2055.22
5	Traffic and Transportation	3675.37	1105.49	9	2034.72	18-20	18	4106.84	2072.12
8	Others		468.5	Balance	1773.66	Balance	2	456.32	-1317.34
	Total	16721.83	7421.66	100	22815.76		100	22815.76	

Master Plan 2021 allocated a total land parcel of 7,173.39 hectares against which 3379.26 hectare was developed and 3,794.12 hectare of land was available as the vacant area within MP 2021. As per the norms, an additional area of 4634.67 hectares is allocated in Draft Master Plan 2031.

4.1.6.2 Implications on the Proposed Vision

4.1.6.3 Residential Landuse

Draft Master Plan 2031 allocates a total of 8580.37 hectares of land under residential landuse. Due to external growth drivers, a rising residential tendency in the city improved regional connectivity, and planned developments, the percentage of residential area is projected to be on the higher side i.e., 40 percent. Thus, a total of 14808.06 hectares of the land area needs to be under the umbrella of residential landuse for 2071.

4.1.6.4 Industrial Landuse

Bareilly has a strong industrial base because of varied types of industries ranging from agro-based to chemicals etc. It is also evident in the Draft Master Plan 2031 that the highest land increment is done in industrial landuse only. Industrial production is the major contributor to developing the city as well generates an economy. To enforce the same industrial development as in major industrial cities such as Ludhiana which has industrial landuse up to 18 percent. Industrial landuse in the vision is kept at 12 percent for the year 2041 and 15 percent for the year 2051 and subsequent years. This makes the total industrial land required to be 2561.50 and 3,836.53 for the year 2051 and 2071 respectively.

4.1.6.5 Proposed Residential Density

Draft Master Plan 2031 proposes the residential density to be 150 which is low density and low-rise development. According to the vision, a 250pph residential density is envisioned for the city's growth. It will make it possible to enjoy the compact development and decongest the central area, minimizing the cost of physical infrastructure.

4.1.7 Residential Landuse Demand

4.1.7.1 Master Plan 2031

4.1.7.1.1 Proposed Residential Zones

The core area is the high-density residential area neighboring cantonment area. As per the Draft Master Plan 2031 major residential area is proposed in the north of the city starting from the Moradabad Road which has a small patch of residential landuse at the Master Plan Boundary. There is ribbon residential landuse along the Bye pass road till Pilibhit road covering Nainital road. Residential landuse is also allocated on Lucknow Road. There is also a major patch of residential landuse adjacent to Aligarh Road.

4.1.7.1.2 Zoning Regulations

Permissible Categories of Different Activities / Uses: The various activities/uses under the major land use zones proposed in the master plan will have the following permission categories:

Permissible Use: The activities/uses which will be ancillary to the major land-uses concerned and would normally be allowed.

Conditionally Permissible Uses: Those actions/uses which will be permissible based on work fulfillment in the respective major land-uses with mandatory means and restrictions are provided in section 6.4 of the Master Plan Document.

Permissible use with special permission of the Competent Authority: The activities/uses which are reckoned permissible during the approval process from the competent authority, based on the type of construction, infrastructure, and the environmental impact on the surrounding area, shall be permissible with special conditions. These are listed in section 6.3.3 of the Master Plan Document.

Prohibited use: All activities/uses that are not permissible in the master plan's major landuse, those listed as prohibited activities; and all such activities that are not ancillary to the main landuse or in the above three categories, or not included in the category's list of permissible actions, will be prohibited.

Floating Use: The proposal intends to improve the master plan's zoning system's flexibility. Certain activities/uses are proposed in response to a city's changing social, physical, and political context, but are not mentioned in zoning restrictions. For example; Bus/Rail/Air terminal Wholesale market, etc.

Rainwater harvesting: The existing actual use of natural reservoirs, ponds and lakes, etc. of one acre and above area under any land-use zone proposed in the master plans / zonal development plans of metropolitan areas, for the conservation and recharging of groundwater, will stay the same or supplementary thereto. The principal land use of the properties should have been shown differently in the same master plan. After listing all such reservoirs, ponds, lakes, and other bodies of water, it will be necessary to establish appropriate measures for their protection in the master plan / zonal plan layout plan.

Impact Fee: Applications for permission of certain other activities/uses in plans approved by the Competent Authority in planned developed areas where provision has been made for ancillary activities according to the standards will be received, as per the master plan. The regulations of the Zoning Regulations will apply to such applications. If permission for high use is given in the low land use zone, it will result in an impact on the traffic-transportation infrastructure and environment in the area concerned. The impact fee options were outlined in-depth in the master plan.

Exempted Landuse Conversions:

1. For commonly permitted activities/uses in a built-up area.
2. Activities to be allowed temporarily (maximum time limit one week) in various major land use zones for public and semi-public facilities.
3. Activities to be developed by government and semi-government agencies in residential land use zones / for uses.
4. There will be no impact fee charged under various policies declared by the state government, such as tourist policy, information technology policy, film policy, and others, for which activities/uses have been approved in specified land-use zones as per government directives. Hotels with a star rating and information technology units/parks with a capacity of up to 5 KVA.

Procedure for Permission:

1. In any of the major land use zones under the development area, before special permission is given for other activities by the competent authority, a committee will examine each such case and the committee's recommendation will be presented to the authority board.
2. The said committee will have the following members:
 - a. Chief Town and Country Planner, Uttar Pradesh or his representative.
 - b. Vice-Chairman of the Development Authority or the officer nominated by him.

- c. A non-official member of the Authority Board nominated by the Chairman Development Authority.
3. The applicant shall not be entitled to any action or use under the zoning regulations. permission

Other Requirements:

1. Development/construction on a site proposed for any action or specific use under the master plan's major land use zones will be permitted only if that action or specific use is relevant to the master plan's major land use zones.
2. Existing forest areas or sites associated with public services and utilities, such as parks, playgrounds, and roads, will remain the same, regardless of where in the proposed master plan they are located.
3. If the zonal development plan or layout plan of a site/ plot has been approved by the competent authority, then in such a case the permissible land use of the said site/plot would be as specified in the zonal development plan or layout plan.
4. All development/construction works in all land use categories must comply with relevant building bye-laws under the proposed zoning regulations.

4.1.7.2 Proposed Residential Zones

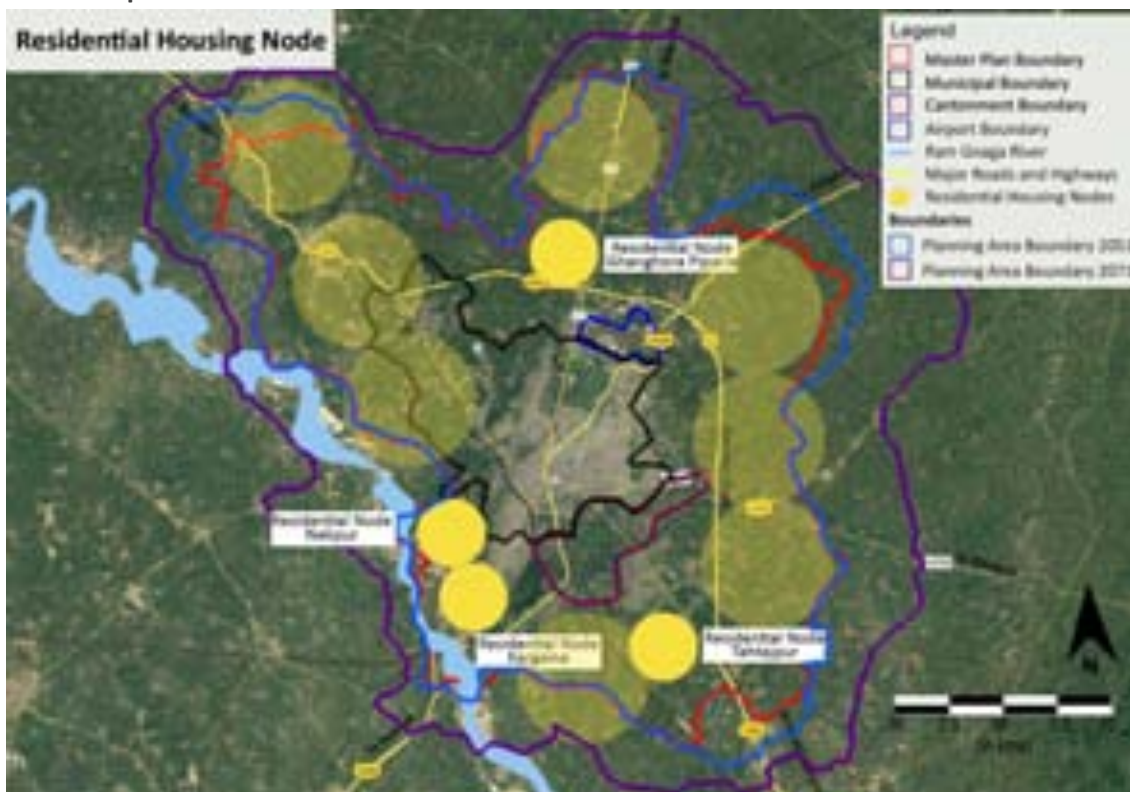


Figure 4-4: Residential Housing Nodes and Probable Residential Areas of Future

The population is projected to increase more than twofold and reach 28 lakhs within the horizon year. The growing population will need land for a habitat, but if these new regions are not built-in accordance with the laws and standards, it will exacerbate the already chaotic conditions in some sectors. New residential zones are suggested to handle the population growth and improve living conditions. Four residential zones or nodes are proposed to be developed following the study and demand evaluation. Out of these 2 residential zones are proposed on Aligarh Road near village Nekpur and Kargana. Other residential zones are proposed on Lucknow Road near Tehtajpur and near Village

Ghaghoria Piparia on Nainital Road. Each residential node is expected to be developed on 100 hectares each.

Additionally, it is anticipated that by 2051, the population will have spread out past the boundary of the Draft Master Plan 2031 and settled in various areas throughout the city.

4.1.7.3 Projected Housing Demand

Bareilly city is projected to accommodate 5,78,900 households by 2051 and 7,43,403 households by the horizon year 2071. It is as per the national average of 5.0 person per household. EWS Category which is considered to be 15 percent will have 86,835 units and 1,11060 units by 2051 and 2061 respectively. LIG category and MIG category both will constitute 35 percent each of the total share of housing demand with 2,02,615 units in 2051 and 2,59,141 units by 2071. HIG category will constitute 15 percent and will require housing units similar to EWS category but 4 times the size of each unit. Below is a breakdown of demand by category according to the Draft Master Plan 2031:

Table 4-6: Housing Demand till 2071

Type of residential category as per economic status	Type of residential category as per economic status	No. of houses For 2031	No. of houses For 2041	No. of houses For 2051	No. of houses For 2061	No. of houses For 2071
EWS	15	58470	72673	86835	90884	111060
LIG	35	136431	169570	202615	212063	259141
MIG	35	136431	169570	202615	212063	259141
HIG	15	58470	72673	86835	90884	111060
Total	100	389802	484487	578900	605896	740403

Unit area for various groups is taken into consideration under socioeconomic requirements. Area for EWS category per unit is 50 sq.m., 80 sq.m. for LIG, 120 sq.m. for MIG and 200 sq.m. for HIG class. The total built-up area for 2031, 2041, and 2051 is computed based on these standards, as indicated in the table below:

Table 4-7: Built Up Area w.r.t. housing need till 2071

Type of residential category as per economic status	Unit Area Considered	Built-up area by 2031 (in sq.m.)	Built-up area by 2041 (in sq.m.)	Built-up area by 2051 (in sq.m.)	Built-up area by 2061 (in sq.m.)	Built-up area by 2071 (in sq.m.)
EWS	50	2923515	3633652.5	4341750	4544217	5553023
LIG	80	10914456	13565636	16209200	16965077	20731285
MIG	120	16371684	20348454	24313800	25447616	31096928
HIG	200	11694060	14534610	17367000	18176869	22212092
Total		41903715	52082352.5	62231750	65133779	79593328

No. of units for EWS and HIG is the same but due to the difference in unit size built-up area in the year, 2071 for EWS is 55,53,023 sq.m. and 2,22,12,092 sq.m. Similarly, HIG and MIG categories have similar

no. of units in their share but a total built area of MIG will be 3,10,96,928 sq.m. and 2,07,31,285 sq.m. for LIG. Total built-up area required by 2051 will be 7,95,93,328 sq.m.

4.1.8 Industrial Landuse analysis

4.1.8.1 Proposed Industrial products as per the vision

Industries in Bareilly produce products of a varied range. While other industries are involved in generating items linked to chemicals, plastic, etc., major industries like Coco-Cola, Vadilal, and BL Agro produce agro-based products. Bareilly is an area that can procure raw material for agro-based industry from the surrounding region. As per the vision, Agro-based products which also include food processing and packaging are focused. In addition to this, Zari Zardozi is selected under the One District One Product Scheme so it is also focused under the vision and is proposed to provide enabling infrastructure for this.

4.1.8.2 Proposed Industrial Zones

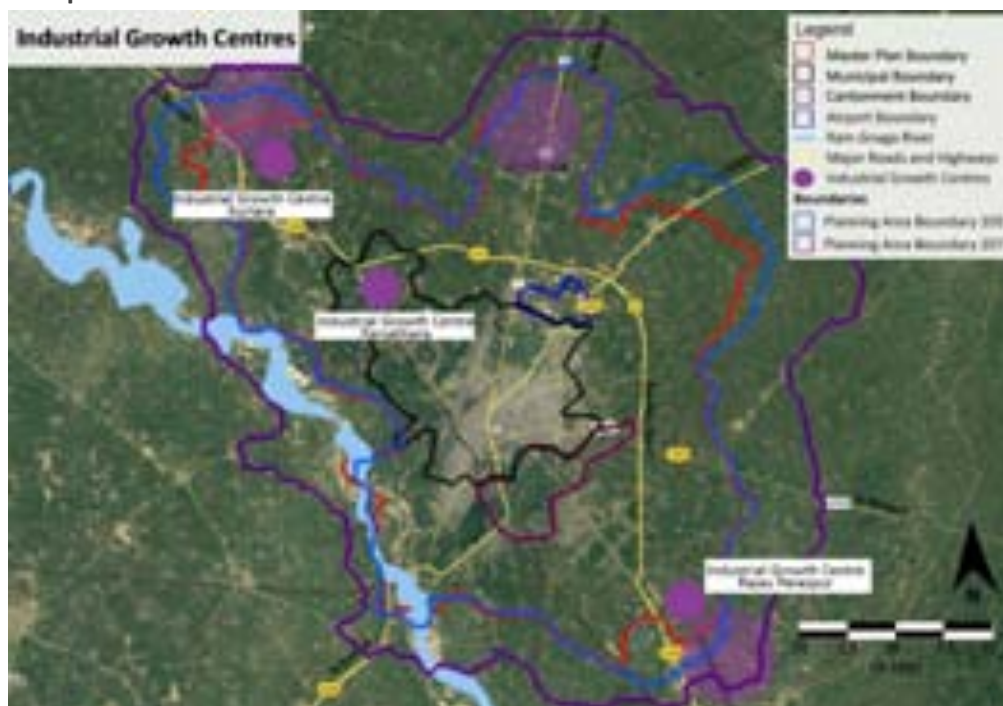


Figure 4-5: Proposed Industrial Growth Centers and Probable Industrial Areas of Future

Bareilly city has three UPSIDA industrial areas and one private industrial area which is near Invertis University on Lucknow Road. As per the demand assessment, three industrial areas are proposed. The first industrial area is proposed of area 50 hectares as an extension of the already existing Paraskhera Industrial area which is currently the major industrial area of Bareilly city. The second industrial area is also on Rampur/Delhi Road and lies near village Kurtara. It is proposed to cover 100 hectares of area. The third industrial area is proposed as an up-gradation and extension of the already existing private industrial area on Lucknow Road on an area of 100 hectares. Paraskhera industrial growth center is proposed in short term, Rajau Paraspur in the medium-term, and Kurtara in the long-term time frame.

In addition to these industrial zones, potential sites for industrial growth are also analyzed and displayed on the map above. It is anticipated that these areas would expand as an addition to the current or prospective industrial areas.

4.1.8.3 Proposed Industrial Typology

The city's identity originally rested on its small-scale industries of bamboo craft and zari zardozi, but these are now fast disappearing. Therefore, it is suggested that MSME households be increased. In Bareilly, small and medium-sized businesses that produce goods based on agriculture, chemicals, plastics, and other materials predominate. The main drivers of the economy in Bareilly are small and medium-sized businesses. Therefore, it is suggested to support small and medium-sized companies, for which space is designated under the Draft Master Plan 2031 and the necessary infrastructure is anticipated to be put in place during the project's medium-term time frame. According to the current situational study and demand assessment, there is no significant demand for large-scale industries.

4.1.8.4 Master Plan 2031

4.1.8.4.1 Proposed Industrial Zone

In Draft Master Plan 2031, major industrial land use is proposed on Rampur/Delhi Road along the main highway near or as an extension to Paraskhera Industrial area. Another industrial area is Bhojipura industrial area on Nanital road which is an already existing industrial area, one major industrial land use is on Lucknow Road adjacent to Bye pass road and Lucknow Road junction.

4.1.8.5 Projected Industrial Land Demand

Table 4-8: Projected Industrial Landuse Demand

Year	Projected Population	Total Master Plan Area (Ha)	Proposed Percentage (Ha)	Required Commercial Area (Ha)	Additional Area Required additional to Master Plan 2031 (Ha)
2031	1949012	22815.76	8.8 (in Draft Master Plan 2031)	2008.76	0
2041	2422433	25499.25	12	3059.91	1051.15
2051	2894499	30468.41	15	4570.26	2561.50
2061	30,29,478	31889.24	15	4,783.39	2,774.63
2071	37,02,015	38968.58	15	5,845.29	3,836.53

8.8% of the overall Master Plan area, or 2008.76 hectares, has been allotted in the Draft Master Plan 2031. The city will need more land by 2041 for propelling industrial landuse at 12 percent, which will require an additional area of 1051.15 hectares. More industries will be needed to boost the economy and provide more employment opportunities, therefore from the year 2051, a 15% industrial landuse is recommended, requiring 2561.50 hectares of additional land. For the horizon year 2071, an area of 3836.53 hectares will be required in addition to the allocation in the Draft Master Plan for 2031, for a total of 5845.29 hectares.

4.1.8.6 Enabling Industrial Infrastructure

4.1.8.6.1 Raw Material Availability

Bareilly's industries produce a wide variety of commodities. For agro-based products, some industries obtain their raw materials from local agricultural products, while other large-scale industries, such as BL Agro, etc., import them from different regions of the nation. Raw materials for the bamboo and cotton industries are sourced locally or imported from other regions of the state or India. Similar to this, different industries in Bareilly obtain raw materials from various sources according to availability

and demand. The proposed agro-based food processing and packaging industry is anticipated to obtain the necessary raw materials from the surrounding region and other parts of the nation following to their respective needs.

4.1.8.6.2 Waste Disposal

Proposed industrial areas will include a standard effluent treatment facility to dispose of the hazardous industrial waste in a suitable way. Currently, there is a problem of untapped drains flowing without bar mesh and discharging waste directly. So, it is also suggested to tap these drains in compliance with the environmental norms to avoid environmental degradation. Some private businesses in Bareilly are also working towards rubbish collection and recycling, and Bareilly Municipal Corporation is in charge of providing waste management services inside the municipal boundaries.

4.1.8.6.3 Logistics and Transportation

Industries require logistics support to facilitate the transfer of finished goods and raw materials. Currently, Transport Nagar on Lucknow Road is the major facility for logistics support which lies opposite the Paraskhera industrial area. An Integrated Freight Center in Faridpur for the Lucknow Road Industrial area and a Multi-Modal Logistics Hub close to Kurtara are proposed in order to assist the currently existing and newly projected industrial areas on Delhi Road and ensure efficient movement of goods and products. The area of the proposed Multi-Modal Logistics Hub and proposed Integrated Freight Centre will be approximately 35 ha each.

4.1.8.6.4 Common Facility Centers

A common facility center for Bamboo products and one for readymade garments is been set up in Bareilly recently to provide skill development and required infrastructure. As per the policy, CFC should provide the following facilities:

- Testing Lab
- Design Development and Training Center
- Technology Research and Development Center
- Product Demonstration cum Sale Center
- Raw-Material Banks/Common Resources Center
- Common Production/Processing Center
- Common Logistics Center
- Information collection, analysis, and broadcasting Center
- Packaging, Labelling, and Barcoding Facilities

4.1.8.6.5 Other Infrastructure

There is a lack of physical and road infrastructure in all the existing industrial areas, especially the privately set-up Lucknow road industrial area. Providing enabling infrastructure will motivate the investors to set up new industries and will also positively affect the existing industries.

4.1.9 Commercial Zone analysis

4.1.9.1 Proposed Main Commercial Areas

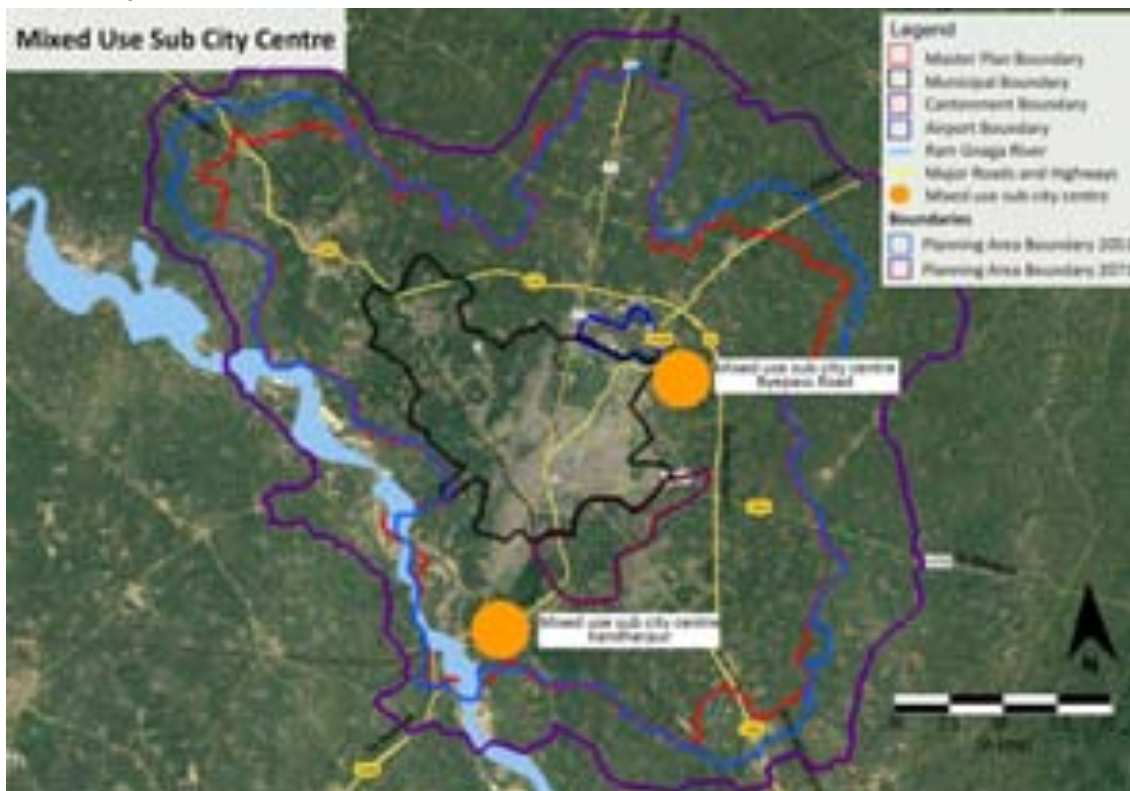


Figure 4-6: Proposed Mixed Landuse Sub-City

Existing commercial landuse of Bareilly city is 3.3 percent of the existing landuse in the year 2020. The core area which has major traffic and congestion problems and is densely populated currently serves as the major commercial area.

To curb these issues city needs commercial counter magnets to decongest the core area and reduce city's commercial dependency on the area. Bareilly city needs intervention in form of major commercial areas. To cater to this need of Bareilly city two mixed land sub-city one on Bye Pass near Airport and other near Kandharpur on Badaun road are proposed.

Additionally, physical and social infrastructure is the backbone of any residential area along with commercial areas which cater to the daily needs of the residents. Commercial pockets are suggested in the designated residential zones to meet the needs.

Major commercial areas proposed in residential nodes are:

1. Ghanghoria Piparia on Nanital Road
2. Nekpur Commercial area
3. Kargaina Commercial area on Aligarh Road
4. Tehtajpur Commercial area on Lucknow Road

In addition to these commercial areas, it is anticipated that commercial areas will expand near or around potential residential areas to accommodate the anticipated population growth.

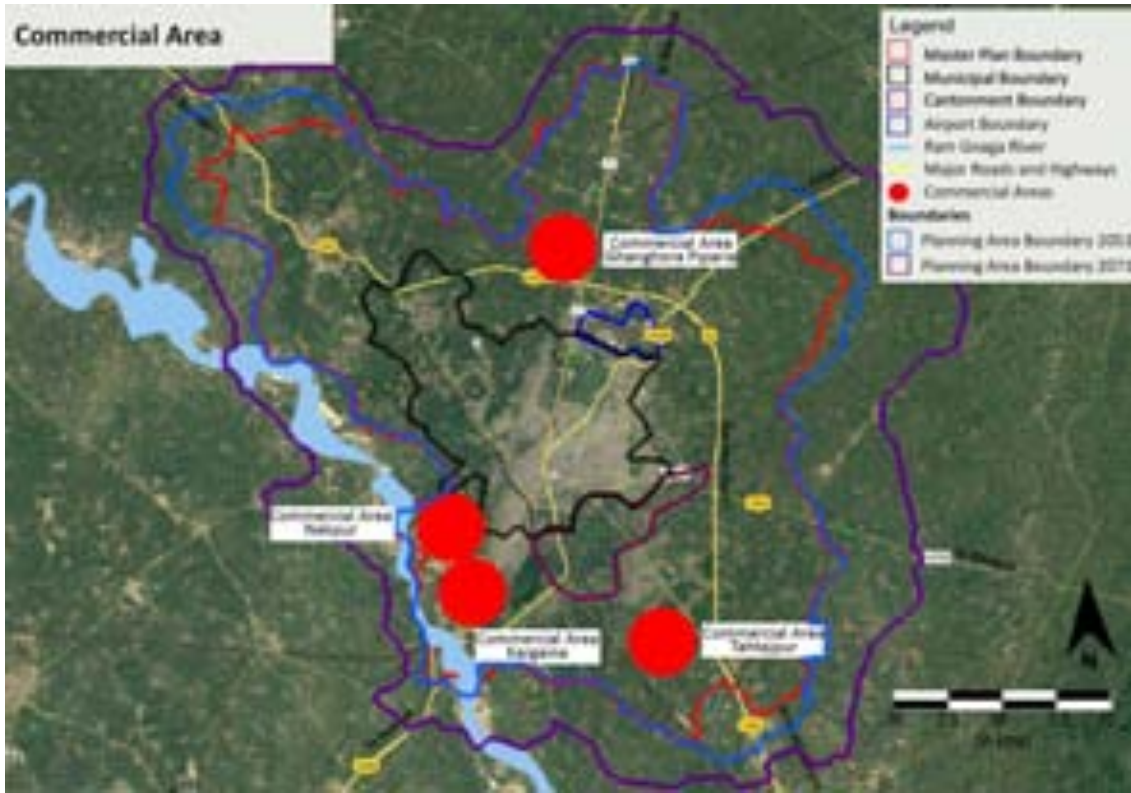


Figure 4-7: Proposed Commercial Areas within Residential Housing Nodes

4.1.9.2 Proposed Commercial Zone Typology

Commercial areas in mixed-use sub-city will be developed as retail markets but will a part of these sub-cities will be kept reserved for wholesale markets which will be developed in a phased manner starting from acting as a counter magnet to the wholesale markets in the core area. The proposed commercial spaces in the residential housing nodes/zones will mostly consist of planned commercial pockets which will offer retail spaces including complexes, showrooms, and offices.

4.1.9.3 Projected Commercial Land Demand

Table 4-9: Projected Commercial Landuse Demand

Year	Projected Population	Total Master Plan Area (Ha)	Proposed Percentage (Ha)	Commercial Area (Ha)	Additional Area additional to Master Plan 2031 (Ha)
2031	1949012	22815.76	4	912.63	0
2041	2422433	25499.25	4	1019.97	107.33
2051	2894499	30468.41	4	1218.73	306.10
2061	30,29,478	31889.24	4	1275.56	362.93
2071	37,02,015	38968.58	4	1558.74	646.11

In addition to the area currently designated for commercial land use in the Draft Master Plan 2031, the additional land requirement for commercial space is 306.10 ha for the year 2051 and 646.11 collectively for the year 2071. The required land for commercial landuse for 2071 is 1558.74 ha.

4.1.10 Social Infrastructure

4.1.10.1 Projected Land Demand for Public and Semi-Public Area

Table 4-10: Projected Public and Semi-Public Landuse Demand

Year	Projected Population	Total Master Plan Area (Ha)	Proposed Percentage (Ha)	Required Public and Semi-Public Area (Ha)	Additional Area Required apart from Master Plan 2031 (Ha)
2031	1949012	22815.76	10	2281.57	0
2041	2422433	25499.25	10	2549.92	268.34
2051	2894499	30468.41	10	3046.84	765.26
2061	30,29,478	31889.24	10	3188.92	907.34
2071	37,02,015	38968.58	10	3896.85	1615.28

In addition to the area currently designated for public and semi-public landuse in the Draft Master Plan 2031, the projected land demand for public and semi-public landuse is 3046.84 hectares for the year 2051 and 3896.85 hectares for the year horizon year 2071. This will require additional 765.26 hectares of land in 2051 and 1615.28 hectares of land in 2071.

4.1.10.2 Education sector

4.1.10.2.1 Demand assessment of education facilities

URDPFI 2014 guideline is used for the demand assessment of the education sector as following.

Table 4-11: URDPFI 2014 guidelines for educational facilities

S.N.	Category	Population served per unit	Area requirement
1	Pre-Primary, Nursery School	2500	0.08 ha
2	Primary School (class I to V)	5000	0.40 Ha
3	Senior Secondary School (VI to XII)	7500	1.80 Ha
4	Integrated School without hostel facility (Class I- XII)	90,000 – 1 lakh	3.50 Ha
5	Integrated School with hostel facility (Class I-XII)	90,000 – 1 lakh	3.90 Ha
6	School for Physically Challenged	45,000	0.70 Ha
7	School for Mentally Challenged	10 lakhs	0.20 Ha
8	College	1.25 lakh	5.00 Ha
9	University Campus		10-60 Ha
10	Technical Education Centre (A) – To include 1 Industrial Training Institute (ITI) and 1 Polytechnic	10 lakhs	4.00 Ha
11	Technical Education Centre (B) – To include 1 ITI, 1 Technical Centre and 1 Coaching Centre	10 lakhs	4.00 Ha
12	Engineering College	10 lakhs	6.00 Ha
13	Other Professional Colleges	10 Lakh	2.00 Ha
14	Nursing and Paramedical Institute	10 lakhs	2000 sqm

As per URDPFI Guidelines, the present gap and requirement in upcoming years for educational facilities in the Bareilly District is as follows:

Table 4-12: Demand Assessment of Education Facilities

SN	Education facility Category	Norm	Existing gap			Projected Demand					
		URDPFI	Existing	Demand	Gap	Required in 2031	2031	2041	2051	2061	2071
	Population	-	-	1556033	-	-	1894211	2623989	3451401	4586103	6188168
1	Pre-Primary, Nursing School	2,500	467	622	155	758	291	403	530	704	950
2	Primary School (I to V)	5,000	278	311	33	379	101	140	184	244	329
3	Senior Secondary School (VI to XII)	7,500	72	207	135	253	181	250	329	437	590
4	Integrated School without Hostel	90,000 - 01 lakh	0	17	17	21	21	29	38	51	69
5	Integrated School with Hostel	90,000 - 01 lakh	0	17	17	21	21	29	38	51	69
6	School for Physically Challenged	45,000	0	35	35	42	42	58	77	102	138
7	College	1,25,000	0	12	12	15	15	21	28	37	50
8	Technical Education Centre (A)	10,00,000	1	2	1	2	1	1	2	2	3
9	Technical Education Centre (B)	10,00,000	1	2	1	2	1	1	2	2	3
10	Medical College	10,00,000	3	2	-	2	-1		0	0	0
11	Engineering College	10,00,000	11	2	-	2	-9		0	0	0
12	Other Professional Colleges	10,00,000	21	2	-	2	-19		0	0	0
13	Nursing and Paramedical Institute	10,00,000	1	2	1	2	1	1	2	2	3

Current Demand:

As per URDPFI guideline 2014, the number of pre-primary schools required in the Bareilly District is 362. Similarly, there are requirement of educational facilities like 181 primary school, 121 secondary school, 1 medical college, 1 Engineering College, 1 other Professional Colleges, I.T.Is & polytechnic colleges. There are requirements of more secondary/ senior secondary school as indicated in the table above.

As per master plan 2031, till 2031, there will be a requirement of 77 schools, 107enter colleges.

In similar manner, the demand for the subsequent years, i.e. 2041, 2051, 2061 and 2071 is projected and presented in the above table.

4.1.10.3 Demand assessment of teachers / faculties in educational facilities

Pupil Teacher Ratio

The Pupil Teacher Ratio is the number of teachers relative to the number of pupils in a particular school. In other words, it is the number of students who attend a school or university divided by the number of teachers in the institution.

Norm for Pupil Teacher Ratio

According to the Right to Education Act, the norm for pupil-teacher ratio (PTR) is:

- 30:1 for grade 1 to grade 5 (primary) and
- 35:1 for grade 6 to grade 8 (middle school/upper primary).
- 43:1 for secondary school
- 47:1 for senior secondary schools

As per Unified District Information System for Education (UDISE) the PTR at national level is:

- 24:1 for elementary schools and
- 27:1 for secondary schools

As per AICTE guidelines desirable PTR used for NIRF (institute level) is:

- 1:10 and minimum is 1:15

As per UGC, the faculty student ratio for institutions and university should not be less than

- 1:10

Exiting situation Bareilly:

Table 4-13: Demand Assessment of teachers/ faculties in education facilities

Pupil Teacher Ratio (2019 – 20)	Norm	Existing	Remarks on demand
At Pre – Primary Level	30	28.43	Coherent to the norm
At Primary Level	35	29.87	Coherent to the norm
At Secondary Level	47	61.2	Ratio of 47 is required at secondary level for projected demands/ population of 2031, 2041, 2051, 2061 & 2071.

Source – District wise Development Indicators 2020 Economics and Statistics Division State Planning Institute Planning Department, Uttar Pradesh,

URL - <http://updes.up.nic.in/esd/reports/district%20indicators%202020.pdf>

As per Right to Education Act, the PTR required at Primary Level education is 30. However, Bareilly district has good PTR, signifying that there are sufficient faculties at Primary Level Education, upper primary level.

At the secondary education level, the PTR should be 43 but the district has PTR 61.2 which is quite high, and this high ratio signifies that there are a smaller number of teachers at the Secondary Level of Education indicating the requirement of more teachers at this level of education.

4.1.10.4 Health sector

4.1.10.4.1 Demand assessment of health facilities

URDPFI guidelines for health facilities

The size of a hospital depends upon the hospital bed requirement, which in turn is a function of the size of the population it serves. As per the Indian Public Health Standards (IPHS), 2012, the calculation of number of beds is based on-

- annual rate of admission as 1 per 50 population
- average length of stay in a hospital as 5 days

Table 4-14: Classification of health facilities

S.N.	Category	Population served per unit	Area requirement
1	Dispensary	15000	0.12 Ha
2	Nursing home, child welfare and maternity center	45000 to 1 lakh	0.20 to 0.30 Ha
3	Polyclinic	1 lakh	0.20 to 0.30 Ha
4	Intermediate Hospital (Category A)	1 lakh	1.00 Ha
5	Intermediate Hospital (Category B)	1 lakh	3.70 Ha
6	Multi-Specialty Hospital	1 lakh	9.00 Ha
7	Specialty Hospital	1 lakh	3.70 Ha
8	General Hospital	2.5 lakh	6.00 Ha
9	Family Welfare Centre	50,000	500 sqm-800 sqm
10	Diagnostic center	50,000	500 sqm-800 sqm
11	Veterinary Hospital for pets and animals	5 lakhs	2000 sqm
12	Dispensary for pet animals and birds	1 lakh	300 sqm

The Department of Health and Family welfare suggests incorporation of Trauma Centers in the highways cutting across urban local authority jurisdiction. As per URDPFI Guidelines, the number of Health facilities required in the Bareilly District is as follows:

Table 4-15: Demand Assessment of health facilities

S. No	Health Facilities Category	Norm	Current Demand (2021)			Projected Demand					
		URDPFI	Existing	Demand	Gap	Required 2031	2031	2041	2051	2061	2071
	Population	-	-	1556 033	-	-	18 94 21 1	2623 989	3451 401	4586 103	6188 168
1	Dispensary	15000	44	104	60	126	82	114	150	199	269
2	Nursing Home	45000 to 01 lakh	29	35	6	42	13	18	24	32	43
3	child welfare and maternity center	45000 to 01 lakh	15	35	20	42	27	38	49	66	89
4	Polyclinic	100000	-	16	-	42	42	58	77	102	137
5	Intermediate Hospital (Category A)	100000	14	16	2	19	5	7	9	12	16
6	Multi - Specialty Hospital	100000	9	16	7	19	10	14	18	24	32
7	Specialty Hospital	100000	-			19	19	26	35	46	62
8	General Hospital	250000	7	6	-	8	1	1	1	1	2
9	Family Welfare Centre	50,000	29	31	2	38	9	12	16	22	29
10	Diagnostic Center	50,000	-	31		38	38	53	69	92	124

11	Veterinary Hospital for pets and animals	500000	13	3	-	4	4	6	7	10	13
12	Dispensary for pets and animals	100000	-	16	-	19	19	26	35	46	62

Source –

- 1) Consultant analysis
- 2) District wise Development Indicators 2020 Economics and Statistics Division State Planning Institute Planning Department, Uttar Pradesh,
URL - <http://updes.up.nic.in/esd/reports/district%20indicators%202020.pdf>

At present, Bareilly city has 7 general hospital, 9 multi – specialty hospital, 14 intermediate hospitals and 13 veterinary Hospital for pet and animals whereas as per URDPFI norms up to 2031, there will be requirements of additional 5 multi – specialty hospitals, 14 specialty hospitals. On similar lines, the demand for the subsequent years, i.e., 2041, 2051, 2061 and 2071 is projected and presented in the above table.

4.2 Urban Regeneration

4.2.1 Vision – Developing Nath Temple Circuit

4.2.1.1 Project – Development of Spiritual Tourism by Creating Religious Circuit of All Seven Nath Temples



Figure 4-8: Nath Temple Complex

(Source: Consultant Analysis)

4.2.1.2 Project Significance:

A dedicated Nath Temple circuit becomes essential due to following factors:

- To restore city’s cultural value and enhance the urban character of their precincts.
- To enhance the Tourism Potential of the City.

- To provide public amenities like parking space, washrooms, etc. along the circuit will offer convenience to the visitors.

4.2.1.3 Area of Intervention:

Identified pilgrimage route as marked in the map showcases formation of a circuit connecting all the Nath temples.

Alakhnath Temple to Madinath Temple - 4.2 Km

Madinath Temple to Tapeswarnath Temple - 2.8 Km

Tapeswarnath Temple to Dhopeswarnath Temple - 5.4 Km

Dhopeswarnath Temple to Pashupatinath Temple - 6.6 Km

Pashupatinath Temple to Vankhandinath Temple - 2.7 Km

Vankhandinath Temple to Trivatinath Temple - 5.3 Km

Trivatinath Temple to Alakhnath Temple - 3.2 km

Total Length of Nath Nagri Circuit to be developed - 30.2 Km

4.2.1.4 Project Demand:

In order to revive the city's identity as Nath Nagri, it is essential to define a road network that seamlessly connects the Nath temple circuit by means of public and private transport. The loss of imageability of all Nath temples due to the expansion of city fabric has also led to the demand for restructuring the road network in order to establish better connectivity. Thus, the project aims to create a designated circuit/corridor that will not only offer the visitors ease of access to the temple complexes but will also establish the required urban character and spiritual identity in all the precincts. Another significant spiritual place in the city is the Math Tulsi Sthal near Alakhnath temple which has also lost its presence and identity over a period of time due to inappropriate accessibility and lack of identity markers. In the Stakeholder meeting, the city officials also suggested integrating the Math Tulsi Sthal to the Nath corridor due to its historic and spiritual significance. The development of Nath temple circuit is an essential development which intends to initiate more tourist influx from within the city and the region.

4.2.1.5 Key Interventions & Design Components:

Error! Not a valid link.

4.2.1.6 Key Interventions & Design Components:

4.2.1.7 Project – Urban Renewal of All Nath Temple Precincts by Defining Entrance Gateways, Corridors and Enhancing the Public Infrastructure



Figure 4-10: Alakhnath Temple Precinct
(Source: Consultant Analysis)



Figure 4-11: Madinath Temple Precinct
(Source: Consultant Analysis)



Figure 4-9: Tapeswar Nath Temple Precinct
(Source: Consultant Analysis)



Figure 4-12: Dhopeswar Nath Temple Precinct
(Source: Consultant Analysis)





Figure 4-15: Trivati Nath Temple Precinct
(Source: Consultant Analysis)

4.2.1.8 Project Significance:

1. The revival of these religious precincts becomes essential to restore city’s cultural value.
2. Establishing identity markers/ entrance gateways and development of corridor leading to the religious places will enhance the urban character of their precincts.
3. Provisions of public amenities like parking space, washrooms, etc. will not only offer convenience to the visitors but will also create a better user experience.
4. Development of temple precincts will help in reclaiming the lost identity of all Nath temples and conserving the city’s cultural value.
5. The intervention envisions initiating more tourism influx to the city, which will further contribute to the city’s economy.

4.2.1.9 Area of Intervention:

For all Nath Temples, the area of intervention will be the approach road to the temple & the temple precinct itself.

Approach road size for all temples:

- Alakhnath Temple - 100m
- Madinath Temple - 750m
- Tapeshwarnath Temple - 400m
- Dhopeswarnath Temple - 250m
- Pashupatinath Temple - 250m
- Vankhandinath Temple - 1000m
- Trivatinath Temple - 450m

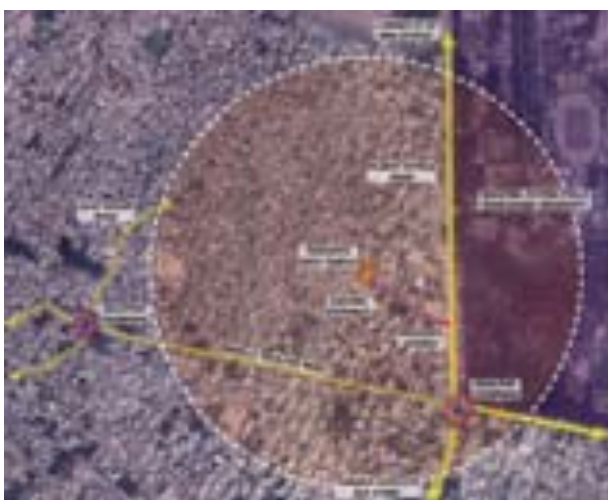


Figure 4-14: Pashupati Nath Temple Precinct
(Source: Consultant Analysis)

4.2.1.10 Project Demand:

Considering the historical and spiritual value of the seven Nath temples and their precinct, they

Figure 4-13: Vankhandi Nath Temple Precinct
(Source: Consultant Analysis)

hold a great potential for urban regeneration. As per the data collected during stakeholder consultations, it is noted that each temple witnesses the footfall of 2500 to 10,000 people per day during the Sawan month. The highest visitor influx of people that varies from 50,000 to 1,00,000 is observed at each temple on Mondays of Sawan month & on the day of Maha Shivratri as well. The lack of infrastructure at the temple complexes seeks urban renewal of their precincts in order to cater the high tourist influx. Development of symbolic identity markers is required to define approach and establish their presence in the context. Identifying a corridor that leads to the temple is crucial to revive its connectivity, exhibit urban character and redefine sense of place. The need for public amenities/ convenience along the corridor has also emerged in the precinct to support the high pilgrim footfall, which is found to be missing at most of the sites. The urban renewal of all the Nath temple precincts will be a significant value addition to the city’s social infrastructure & will enhance the economic potential of Bareilly.

4.2.1.11 Key Interventions & Design Components:

Error! Not a valid link.

4.2.2 Vision – Streetscape of City Core and Development of Dargah Precinct

4.2.2.1 Project – Streetscape of Market Street from Qila to Shyam Ganj Along with Urban Renewal of Dargah Precinct by Defining Entrance Gateways, Corridors and Enhancing the Public Infrastructure



Figure 4-16: Qila to Shyam ganj Road, Dargah e Aalahazrat and Khanqah e Niazia Precinct
 (Source: Consultant Analysis)

4.2.2.2 Project Significance:

1. The project aims to define the character of the city market streets.
2. The core city roads shall be defined as internal streets that will be prioritized on cycle and pedestrian infrastructure.
3. The peripheral city streets will be developed as the outer loop where provisions for cycling, IPT, parking near intersections, cycle stands at regular intervals shall be given.
4. The revival of Dargah and Khanqah precincts becomes essential to restore city's cultural value.
5. Designating corridor leading to these religious places and defining its street character will elevate the essence of the precinct.
6. Establishing identity markers/ entrance gateways and development of public amenities like parking space, washrooms, etc. will offer convenience to visitors in terms of approach and user experience.

4.2.2.3 Area of Intervention:

Qila to Shyam Ganj Market Road:

Total Road Stretch of the Market – 3 Km

Width of road – Varies from 5 - 7 meters (ROW based on existing situation)

Biharipur Dhal Road to Dargah & Khanqah:

Total Road Stretch for redevelopment – 700 meters

Width of road – 3 meters (ROW based on existing situation)

4.2.2.4 Project Demand:

Situated in the dense city core, the Bada bazaar and Shyam Ganj market are the two major wholesale and retail hubs of the city which not only cater to the residents of Bareilly but also to the buyers/retailers/wholesalers from other cities as well. These streets act as an extended place for celebrating religious activities, fairs and Urs. Streets and shops are decorated, religious processions are carried and the markets become a hub of activity, celebration and festivity. Due to lack of organization in the street, segregated infrastructure for pedestrians/ Para transit and defined informal vending zones, this major commercial hub has lost its urban character. The street offers very less space for the pedestrians who are seen struggling with the IPT and market activities. Unorganized two and three-wheeler parking and loading unloading in the market street also hampers the pedestrian movement therein. The current scenario showcases a very mismanaged and disruptive image of the market street that is in a dire need of urban renewal.

Considering a spiritual value of such prestige, the Dargah-e-Ala-Hazrat and Khanqah e Niazia are two major public nodes in the dense fabric of the city. As per the data collected during stakeholder consultations, it is noted that Dargah witnesses the footfall of lakhs of people in the week of Urs, in which pilgrims from all over the country visit Bareilly. The highest visitor influx of around 5 lakh people is observed on the day of Urs.

The lack of infrastructure in the two spiritual places seeks urban renewal of their precincts in order to cater the high influx. Development of symbolic identity markers is required to define approach and establish their presence in the context. Identifying a corridor that leads to the Dargah/ Khanqah is crucial to exhibit its urban character and redefine the sense of place. The need for public amenities/ convenience along the corridor has also emerged in the precinct to support the high pilgrim influx.

The urban renewal of the Dargah precinct will not only offer convenience to the high influx of pilgrims but will also ease out the movement through a systematic and organized approach.

4.2.2.5 Key Interventions & Design Components:

Title of the Project: Streetscape development of Qila to Shyam ganj along with Facility improvement & beautification of Dargah - e - aala hazrat				
S.No.	Components	Items	Description	Estimated Quantity*
Stretch 1 - Qila to Shyam Ganj				
A	Pedestrian/ cycle pathway			
A.1	Pedestrian path	Red and beige sandstone, concrete, tactile pavers, curbstone, bollards, etc	One-way pedestrian path 1.2m each (150mm high)	Length of footpath 3 x 2= 6km Area of footpath: 6000m x 1.2m= 7200 sq.m
B	Lighting			
B.1	Single arm Pedestrian Street lights	Light Post, Light	One light post @9m c/c	660 Street lights
B.2	Ornamental lights		Ornamental/ theme-based lights of varying heights and designs and to be used in the plazas, intersections and public nodes	As per the design scheme
C	Street Furniture			
C.1	Seating	Stone/ concrete seating	600x1800mm stone/ concrete seating to be placed along the MUZ proposed under the flyover	Quantity to be calculated as per the MUZ and plaza design.
C.2	Dustbins		Dry and wet waste segregation bins to be used on both sides of the street every 200m along the street.	Along the street- 3000m x 2= 6000m Dustbins required 6000/200= 30
D	Public Amenities			

D.1	Drinking water	Water ATMs/ fountains	One water ATM at every 500 m (preferably under the flyover) with barrier free connectivity across the street.	12 Drinking water facilities
D.3	IPT/ NMV stands		To be paced at major intersections	Quantity to be devised as per design
E	Signage			
E.1	Signage on road	For vehicular legibility (metal signage) For pedestrian way finding (metal/ stone signage)	Signage to be placed at parking bays, intersections, public nodes, plazas, public toilets, bus stops and other IPT/public transit stops, heritage precincts, critical street geometries, curves etc if any.	Quantity to be finalized as per detail design program.
Stretch 2 - Biharipur Dhal Road to Dargah & Khanqah				
A	Pedestrian/ cycle pathway			
A.1	Pedestrian path	Red and beige sandstone, concrete, tactile pavers, curbstone, bollards, etc	Developing the route as a Pedestrian pathway	Length of footpath 700 m Area of footpath: 700m x 3m= 2100 sq.m
B	Lighting			
B.1	Single arm Pedestrian Street lights	Light Post, Light	One light post @9m c/c	75 Street lights
B.2	Ornamental lights		Ornamental/ theme based lights of varying heights and designs and to be used in the plazas, intersections and public nodes	As per the design scheme
C	Street Furniture			

C.1	Seating	Stone/ concrete seating	600x1800mm stone/ concrete seating to be placed along the road at defined places	Quantity to be calculated as per the design.
C.2	Dustbins		Dry and wet waste segregation bins to be used on both sides of the street every 200m along the street.	Along the street - 700m Dustbins required $700/200= 4$
D	Public Amenities			
D.1	Drinking water	Water ATMs/ fountains	One water ATM at every 500 m (preferably under the flyover) with barrier free connectivity across the street.	2 Drinking water facilities
D.3	IPT/ NMV stands		To be paced at the gateways	At 2 proposed Gateways
E	Signage			

4.2.3 Vision – Promotion & Innovation of Craft Products – Kala Sanskriti

4.2.3.1 Project – Rejuvenation of Zari – Zardozi (Shyam Ganj Market) – One District One Product



Figure 4-17: Sailani Market Road

(Source: Consultant Analysis)

4.2.3.2 Project Significance:

1. The urban renewal of the road underneath the flyover will not only enhance the approach to the Sailani market street but will also address a prominent access point for the visitors/tourists.
2. The intervention will redefine the urban character of the whole market street and will also emphasize on the underlying market of Zari - Zardozi.
3. The project will initiate more influx to the market street and help in restoring the city's native craft.

4.2.3.3 Area of Intervention:

Shyam Ganj Flyover:

Total Road Stretch underneath Flyover for redevelopment – 100 meters

Width of road – 9 meters (ROW based on existing situation)

Sailani Road:

Total Road Stretch for redevelopment – 600 meters

Width of road – 7 meters (ROW based on existing situation)

4.2.3.4 Project Demand:

Being one of the oldest marketplaces for retail and wholesale of Zari – Zardozi, the Sailani market road inherits a very rich historic and craft value that marks its significance in the city. The dedicated market place of the city's native craft holds a great potential to cater the tourist/ visitor influx, thus raising the demand for its revival. The construction of Shyam ganj flyover has led to creation of dead spaces underneath the flyover, which portrays a dire need of streetscape intervention along with organized mobility infrastructure. This mobility infrastructure shall be further integrated with the city level Para-transit network, which will make the approach to the market convenient for the visitors and initiate more influx to the Sailani road. Considering the rich craft value of the street, Façade development guidelines are also required in order to establish its identity in the city.

4.2.3.5 Key Interventions & Design Components:

Title of the Project: Zari Zardozi Shyam Ganj and Sailani market façade development and streetscape				
S.No.	Components	Items	Description	Estimated Quantity*
Stretch 1 - Road underneath Shyam Ganj Flyover				
A	Pedestrian/ cycle pathway			
A.1	Pedestrian path	Red and beige sandstone, concrete, tactile pavers, curbstone, bollards, etc.	Two-way pedestrian path 1.2m each (150mm high)	Length of footpath 1 x 2= 2km Area of footpath: 2000m x 1.2m= 2400 sq.m

A.2	Cycle Track	Rubberized track, concrete, curbstone	One-way cycle track 1.5 m wide each, (100mm high)	Length of track 1 x 2= 2km Area of track: 2000m x 1.5m= 3000sq.m
A.3	Multi-utility zone	Vegetation strips, parking bays (using pavers/ rubberized paint), curbstone, concrete	MUZ underneath Flyover, 150mm high. To be facilitated with parallel parking bays, vegetation strips, signage, canopies, vending zones, IPT and cycle stands.	Length of flyover 1km Area under flyover: 1000m x 7m= 7000sq.m
B	Lighting			
B.1	Single arm Pedestrian Street lights	Light Post, Light	One light post @9m c/c	220 Street lights
B.2	Ornamental lights		Ornamental/ theme-based lights of varying heights and designs and to be used in the plazas, intersections and public nodes	As per the design scheme
C	Street Furniture			
C.1	Seating	Stone/ concrete seating	600x1800mm stone/ concrete seating to be placed along the MUZ proposed under the flyover	Quantity to be calculated as per the MUZ and plaza design.
C.2	Dustbins		Dry and wet waste segregation bins to be used on both sides of the street every 200m along the street.	Along the street- 1000m x 2= 2000m Dustbins required 2000/200= 10
D	Public Amenities			
D.1	Drinking water	Water ATMs/ fountains	One water ATM at every 500 m (preferably under the flyover) with barrier free connectivity across the street.	2 Drinking water facilities

D.2	Bus stops		Existing ones to be renovated/ replaced and new ones to be planted along the MUZ as per the bus transit program	Quantity to be devised as per design
D.3	IPT/ NMV stands		To be paced along the MUZ or plazas & at major intersections	Quantity to be devised as per design
E	Signage			
E.1	Signage on road	For vehicular legibility (metal signage) For pedestrian way finding (metal/ stone signage)	Signage to be placed at parking bays, intersections, public nodes, plazas, public toilets, bus stops and other IPT/public transit stops, heritage precincts, critical street geometries, curves etc. if any.	Quantity to be finalized as per detail design program.
Stretch 2 - Sailani Road				
A	Pedestrian pathway			
A.1	Pedestrian path	Red and beige sandstone, concrete, tactile pavers, curbstone, bollards, etc.	Two-way pedestrian path 1.2m each (150mm high)	Length of footpath .6 x 2 = 1.2 km Area of footpath: 1200m x 1.2m= 1440 sq.m
B	Lighting			
B.1	Single arm Pedestrian Street lights	Light Post, Light	One light post @9m c/c	130 Street lights
B.2	Ornamental lights		Ornamental/ theme-based lights of varying heights and designs and to be used in the plazas, intersections and public nodes	As per the design scheme
C	Street Furniture			

C.1	Seating	Stone/ concrete seating	600x1800mm stone/ concrete seating to be placed along the MUZ proposed under the flyover	Quantity to be devised as per design
C.2	Dustbins		Dry and wet waste segregation bins to be used on both sides of the street every 200m along the street.	Along the street- 600m x 2= 1200m Dustbins required 1200/200= 6
E	Facade Development			
E.1	Façade Development with defined signage (unified color and size of lettering)		Facade development of all the shops of Sailani market stretch along with defined signage on the shop fronts	Along the complete street length - 600m x 2= 1200m
F	Signage			
F.1	Signage on road	For vehicular legibility (metal signage) For pedestrian way finding (metal/ stone signage)	Signage to be placed at parking bays, intersections, public nodes, plazas, public toilets, bus stops and other IPT/public transit stops, heritage precincts, critical street geometries, curves etc. if any.	Quantity to be finalized as per detail design program.

4.2.4 Vision – A Place for Spiritual Tourism and Nature Retreat

4.2.4.1 Project – Ramganga Riverfront Development



Figure 4-18: Ramganga Ghat and Fair Ground

(Source: Consultant Analysis)

4.2.4.2 Project Significance:

1. Development of the riverfront will help in revival of the overall river edge and restoring its ecology as well.
2. Integration of the riverfront along with the fairground will result in rejuvenation of the overall precinct benefiting the pilgrims and city residents.
3. The provision of public amenities will add to the overall development and public convenience resulting in more pilgrim footfall.
4. The urban renewal of the existing ghat will eventually result in upliftment of the city social infrastructure.
5. Development of the Naturopathy Center will not only provide medical facilities to the city residents but will also escalate the level of medical infrastructure in the city.
6. The project is being proposed with an objective of providing people with therapeutic treatments, Ayurveda training, various medical programs, recreational activities with the Indian tradition of hospitality.

4.2.4.3 Project Demand:

Since the Ramganga River crosses in close proximity to Chaubari village, a major fair is organized annually at the banks of the river known as Chaubari fair. The fair takes place on the occasion of Kartik purnima. As per the data collected during stakeholder consultations, this is one of the most significant fairs of the city that witnesses a visitor influx of more than 1,00,000 people. One of the biggest attractions of this fair is the horse market, where people from far off areas visit the city to buy or sell horses.

A fair after every 14 days is also organized on the river banks attracting tourists and pilgrims from all over the city. The river banks are flooded with people taking baths, performing religious activities and celebrating the festival.

The regular usage of ghat area by the pilgrims has resulted in its degradation over a period of time due to lack of public infrastructure and supporting facilities. Considering the present condition of the city's natural assets, the site seeks development of the riverfront along with provision of necessary public amenities to accommodate the visitor influx. Development of symbolic identity markers is required to define the approach and establish the presence of such an important natural asset in the city. Identification of a corridor that leads to the fairground is crucial to exhibit its urban character and redefine sense of place. The development of public amenities/ convenience along the ghat area is deemed essential to support the high pilgrim influx and use of all areas in a controlled manner.

4.2.4.4 Key Interventions & Design Components:

Title of the Project: Ramganga river front development at Chaubari fairground				
S.No.	Components	Items	Description	Estimated Quantity*
A	Pedestrian/ cycle pathway			
A.1	Pedestrian path	Red and beige sandstone, concrete, tactile pavers, curbstone, bollards, etc	Two-way pedestrian path of width 3m on the external periphery (150mm high)	Total Length of chaubari fairground periphery = 1200m Area of footpath: 1200m x 3m= 3600 sq.m
B	Ghat Development			
	Ghat Development at 450 m stretch of fairground	Dholpur stone flooring 5m x 5m Viewing decks placed at different levels and distributed over the entire ghat length RCC river embankment Lifeguard and first aid	The ghat will be designed in small unit prototype that can be replicated over the whole stretch Each unit size: 25m (L) x 12m (W)	Length of Ghat = 450m Area of Ghat = 450 x 12 = 5400 sq.m Total numbers of unite replicated = 450/25 i.e., 18
C	Boating Deck			

	Boating Deck on river edge	☑Boats and jetties ☑Ticket counter ☑Lifeguard and first aid		As per the design scheme
D	Shading Canopies			
	Shading Canopies			As per the design scheme
E	Horse Stable			
E.1	Permanent Horse Stable structure	A semi - open permanent metal frame horse stable structure		As per the design scheme
E.1	Space for additional Horse Stable	Demarking space/ field for setting up temporary horse stables during the Chaubari fair.		As per the design scheme
F	Lighting			
F.1	Single arm Pedestrian Street lights	Light Post, Light	One light post @9m c/c along periphery	130 Street lights
F.2	Ornamental lights		Ornamental/ theme-based lights of varying heights and designs and to be used in the plazas, intersections and public nodes	As per the design scheme
G	Street Furniture			
G.1	Seating	Stone/ concrete seating	600x1800mm stone/ concrete seating to be placed along the road at defined places	Quantity to be calculated as per the design.
G.2	Dustbins		Dry and wet waste segregation bins to be used on both sides of the street every 200m along the street.	Quantity to be calculated as per the design.
H	Public Amenities			

H.1	Drinking water	Water ATMs/ fountains	One water ATM at every 500 m (preferably under the flyover) with barrier free connectivity across the street.	5 Drinking water facilities
H.2	Public conveniences (Toilets)		One toilet block (comprising of male, female, physically challenged toilet and changing rooms) at every 500m of the streets (preferably along the nodes and plazas) with barrier free connectivity across the street.	5 toilet blocks
H.3	IPT/ NMV stands		To be paced at the entrance gateways	At proposed Gateway
I	Signage			
I.1	Signage on road	For vehicular legibility (metal signage) For pedestrian way finding (metal/ stone signage)	Signage to be placed at parking bays, intersections, public nodes, plazas, public toilets, bus stops and other IPT/public transit stops, heritage precincts, critical street geometries, curves etc if any.	Quantity to be finalized as per detail design program.
I.2	Entrance Gateway		Entrance Gateway to be placed at the starting of every temple stretch as a market	1 proposed Gateway
J	Naturopathy Centre			
	Naturopathy Centre	Integrating Naturopathy Centre with City's Natural asset		As per the design scheme

4.2.4.5 Project – Nakatiya river front development into city level greens



Figure 4-19: Nakatiya River, Cantonment Area

(Source: Consultant Analysis)

4.2.4.6 Project Significance:

1. Development of the riverfront will help in revival of the overall river edge and restoring its ecology as well.
2. Integration of the river edge along with the available land parcel will result in rejuvenation of the overall precinct, creating an active green asset for the city residents.
3. The provision of public amenities will add to the overall development and public convenience.

4.2.4.7 Project Demand:

The leisure space infrastructure in Bareilly is a mix of heritage & modern buildings (malls, funcity) which tend to provide recreational activities to the city residents. The city lacks smaller scale open public spaces in the residential precinct that are accessible to people on a daily basis.

One of the two main rivers passing across the city, the edge condition of Nakatiya River remains redundant over the years. With no defined river edge, wetlands or Ghats, the condition of riverine ecology has consequently depleted over the period of time, becoming a place for cattle herding.

In order to revive the whole riverine edge, a riverfront rejuvenation project will be needed that will include reclaiming the existing open green spaces along the river edge & developing them as active public greens thus establishing environmental resilience and improving the social infrastructure of the city.

4.2.4.8 Key Interventions & Design Components:

Title of the Project: Nakatiya river front development				
S.No.	Components	Items	Description	Estimated Quantity*
A	Pedestrian/ cycle pathway			
A.1	Pedestrian path	Red and beige sandstone, concrete, tactile pavers, curbstone, bollards, etc	Two-way pedestrian path of width 2m on the external periphery (150mm high)	Total periphery of both land parcels = 900m Area of footpath: 900m x 2m = 1800 sq.m
D	Shading Canopies			
	Shading Canopies			As per the design scheme
F	Lighting			
F.1	Single arm Pedestrian Street lights	Light Post, Light	One light post @9m c/c along periphery	100 Street lights
F.2	Ornamental lights		Ornamental/ theme-based lights of varying heights and designs and to be used in the plazas, intersections and public nodes	As per the design scheme
G	Street Furniture			
G.1	Seating	Stone/ concrete seating	600x1800mm stone/ concrete seating to be placed along the road at defined places	Quantity to be calculated as per the design.
G.2	Dustbins		Dry and wet waste segregation bins to be used on both sides of the street every 200m along the street.	Quantity to be calculated as per the design.
H	Public Amenities			
H.1	Drinking water	Water ATMs/ fountains	One water ATM at every 500 m (preferably under the flyover) with barrier free connectivity across the street.	2 Drinking water facilities (1 at each ground)
H.2	Public conveniences (Toilets)		One toilet block (comprising of male, female and physically	2 toilet blocks (1 at each ground)

			challenged toilet) at every 500m of the streets (preferably along the nodes and plazas) with barrier free connectivity across the street.	
H.3	IPT/ NMV stands		To be paced at the entrance gateways	At proposed Gateway
I	Signage			
I.1	Signage on road	For vehicular legibility (metal signage) For pedestrian way finding (metal/ stone signage)	Signage to be placed at parking bays, intersections, public nodes, plazas, public toilets, bus stops and other IPT/public transit stops, heritage precincts, critical street geometries, curves etc. if any.	Quantity to be finalized as per detail design program.
I.2	Entrance Gateway		Entrance Gateway to be placed at the starting of every temple stretch as a market	2 proposed Gateway (1 at each ground)

4.2.5 Vision – City level infrastructure Development

4.2.5.1 Project – Aero-city integrated office complex near Airport development



Figure 4-20: Ramganga Ghat and Fair Ground

(Source: Consultant Analysis)

4.2.5.2 Project Significance:

1. Development of Aero-city by allocating a land parcel near the city airport for mixed use development to foster new growth opportunities for Bareilly.
2. Development of the allocated land parcel featuring state-of-the-art Retail centers, Offices, Hotels and convention centers will result in city's economic growth and generate new employment for the city residents.
3. The proposal will also act as a gateway to the city.

4.2.5.3 Project Demand

Bareilly is listed as one of the nine counter magnets of the National Capital region which can be developed as the economic growth centre. Trade and commerce are one of the important sectors which can amplify the economy of the city. As per draft master plan 2031, the existing landuse of the commercial area is found to be 3.31 percent against the URDPFI guidelines of 4-6 percent. Lack of commercial space is also outlined by stakeholders such as Bareilly Vyapar Manadal, etc. Bareilly city needs commercial area as given below:

Year	Projected Population	Total Master Plan Area (Ha)	Proposed Percentage (Ha)	Commercial Area (Ha)	Additional Area additional to Master Plan 2031 (Ha)
2031	1949012	22815.76	4	912.63	0
2041	2422433	25499.25	4	1019.97	107.33
2051	2894499	30468.41	4	1218.73	306.10
2061	30,29,478	31889.24	4	1275.56	362.93
2071	37,02,015	38968.58	4	1558.74	646.11

4.3 Heritage and Tourism

4.3.1 Vision – Developing Nath Temple Circuit

4.3.1.1 Vision Planning

At present the city of Bareilly is recognized as gateway to Kumaon Hills, but unfortunately has not been part of any tourist circuits of State. The Vision is to develop Bareilly as tourism destination by identification of the cultural and natural heritage, conservation and heritage sensitive development of the diverse Cultural Heritage Resource of the city and its nearby areas, developing infrastructure facilities for the tourists and local community aligning with the vision of Sustainable Development Goals 2030 adapted by the state of Uttar Pradesh.

4.3.2 Bouquet of Projects

4.3.3 Project 1: Ahichchhatra – Tourism Infrastructure Upgradation of ASI Site in consultation with ASI and UP Tourism Regional Managers

Background:

From archaeological point of view the district of Bareilly is very rich. The extensive remains of Ahichchhatra, the Capital town of Northern Panchala have been discovered near Ramnagar village of Aonla Tehsil in the district. The site of Ahichchatragarh was briefly explored by Sir Alexander Cunningham in 1871, and then excavated by the ASI from 1940 for "about five years". The excavations found brick fortifications and continuity of occupation from a period before 600 BCE to 1100 CE. It was during the first excavations at Ahichchhatra (1940–44) that the painted grey ware, associated with the advent of the Aryans in the Ganges–Yamuna Valley, was recognised for the first time in the earliest levels of the site. Nearly five thousand coins belonging to periods earlier than that of Guptas have been yielded from Ahichchhatra. It has also been one of the richest sites in India from the point of view of the total yield of terracotta. On the basis of the existing material, the archaeology of the region helps us to get an idea of the cultural sequence from the beginning of the 2nd millennium BC up to the 11th century AD.

Near Ahichchhatra, 2 km to its west there is a big pond which is said to trace its ancestry to the time of Mahabharata. The pond, located in the village of Jagannathpur is said to have been made by the pandavas at the time of their forest dwelling.

Table 4-16 List of ASI Sites in Bareilly District (3 sites in Bareilly, 7 sites in Ramnagar, 2 in Aonla and 1 site in Pachomi)

S.NO.	NAME	LOCATION	DISTRICT
1.	Tomb of Hafiz-ul-Mulk Rahmet Khan, the Rohila Chief	Bareilly, Bakar Ganj	Bareilly
2.	Tomb of Hermit Shah Dana	Bareilly, BakarGanj	Bareilly
3.	Large obelisk of red sandstone	Fateh Ganj	Bareilly
4.	Several ancients ruined mounds in which Indo-Scythian coins are found.	Pachomi or Wahidpur Pachaumi	Bareilly
5.	Ancient Site	Ramnagar, Alampur Kot	Bareilly
6.	Fort	Ramnagar	Bareilly

7.	Mound called Chikatia Khera	Ramnagar	Bareilly
8.	Mound to the south of the tans known as of the Gandhan Sagar and Adisagar	Ramnagar	Bareilly
9.	Small hillock called Katari Khera or Kottari Khera	Ramnagar	Bareilly
10.	Stupa mound	Ramnagar	Bareilly
11.	Two Buddhist mounds close to the Konwaru Tal	Ramnagar	Bareilly
12.	Begum's Masjid with three lofty domes	Aonla	Bareilly
13.	Site near Aonla railway station	Rehtoa	Bareilly



Map 3: ASI sites with buffer demarcation Source: Bhuvan Portal



Map 4: Location of ASI Protected Structures in District of Bareilly Source: Project Team



Figure 4-21 Archival image of the site excavation activities (1940 – 1945) Alexander Cunningham



Figure 4-22 Archival image of Excavated Site (1940 – 1945) Alexander Cunningham



Figure 4-23 Archival image of Excavated Site (1940 – 1945) Alexander Cunningham



Figure 4-24 Archival image of Excavated Site (1940 – 1945) Alexander Cunningham



Figure 4-25 Archival image of Excavated Site (1940 – 1945) Alexander Cunningham

Problem statement:

The site is located at a distance of 55.4 kms from Bareilly with poor tourism infrastructure and site interpretation facilities. It is also located in close proximity of a Jain Teetha which is highly visited by the pilgrims as well as the visitors. There are 7 ASI protected sites in Ramnagar and other unprotected sites including Jain Temples Shri Ahichchhatra Parshvanath Atishaya Teerth Kshetra Digambar Jain Mandir, Ramnagar, Lakes and temples in Aonla etc. which are not explored to its full potential dues to lack of awareness, poor infrastructure facilities, lack of connectivity and improper visitor infrastructure facilities.

Value addition of this project to the tentative vision:

The provision of proper visitor amenities, support infrastructure facilities and improved last mile connectivity will enhance the tourist footfall to these sites. The site interpretation would help to generate interest of different categories of tourists.

Key activities, tasks, interventions involved:

1. Identification of area for development of Museum.
2. Connectivity enhancement to the identified sites located in close proximity.
3. Site Development & Landscape Improvement.
4. Providing wayfinding and interpretative signages in and around the sites.

Site Delineation: The buffer area of the Ahhichatra Fort identified in consultation with ASI.

Strategies for Precinct Level Development:

1. To improve last mile connectivity from towns / cities such as Bareilly, Badaun and other nearby towns.
2. Development of Site Interpretative Museum for creating awareness about site, and to develop outreach programmes.
3. Site development and landscape improvement to provide visitor amenities such as food and beverage, toilet facilities, tourist information centre.

Project Impact & Benefit:

- World Heritage Site Nomination
- Increase in tourist footfall both domestic and foreigner resulting in creation of more jobs and economic benefit of the district.

SWOT Analysis**Strength:**

1. Close proximity with Bareilly makes it an apt site to be developed as a destination for one/ two-day excursion.
2. Eight ASI protected sites are located in close proximity along with the Jain Temples which can be explored and be used for creating tourist interest.
3. Regional connectivity with Badaun.
4. The fort has potential to be designated as World Heritage Site, therefor site development with proper infrastructure facilities, site Museum with Interpretation centre, last mile connectivity would enhance the future tourism prospects of the district.

Weakness:

1. Last mile connectivity.
2. Lack of awareness of other tourism attractions both built and natural heritage.
3. Lack of Infrastructure Facilities.

Opportunity:

1. Ahichchatra/ Ramnagar Fort is the most visited site in Bareilly.
2. Improved infrastructure facilities will help to increase the footfall.
3. Regional connectivity of Bareilly –Ramnagar and Badaun can be explored to develop a tourist circuit.
4. Site sensitive interventions would help to enhance the importance of the site.

Threat:

1. Any insensitive interventions in and around the site would be detrimental to the significance of the site.
2. Any development around the archaeological areas is to be protected and conserved.

Stakeholders:

1. Department of Tourism, Government of Uttar Pradesh.
2. Archaeological Survey of India.
3. Bareilly District Administration.
4. Gram Panchayat / Tehsil.

Nodal Agency:

1. Archaeological Survey of India	For site development
2. Department of Tourism	For developing Tourism Infrastructure facilities

Data needs for the projects/ Obtained Data:

S.No.	Data	Status
1.	Visitors' footfall in Ahichachhatra , Aonla, Bareilly	500 – 700 Daily (Average)
2.	Tourist Profile	No Records
3.	Average stay of Tourist	No Records

4.3.4 Project 2: Developing a Theme based Museum on First War of Independence 1857

Project Background:

During 1857, Bareilly became a major center of revolt under the leadership of Khan Bahadur Khan while maintaining the communal harmony despite the efforts by Company officers to create trouble by inciting Rajput's against Khan Bahadur Khan. Bareilly was the last to fall (May 1858). British order was restored on 13 May 1858 by an expeditionary force lent by Commander Colin Campbell of 9th Regiment of Foot with the help of Captain William George Drummond Stewart of 93rd Regiment of Foot, after winning the Bareilly battle. Some of the mutineers were captured and sentenced to death. When the Indian Rebellion of 1857 failed Bareilly, too, was subjugated. Khan Bahadur Khan was sentenced to death and hanged in the Kotwali on 24 February 1860.



Figure 4-26 The Indian Mutiny: 6th Dragoon Guards (Carabiniers) at Bareilly, May 1858 by Orlando Norie. Source: Royal Collection Trust

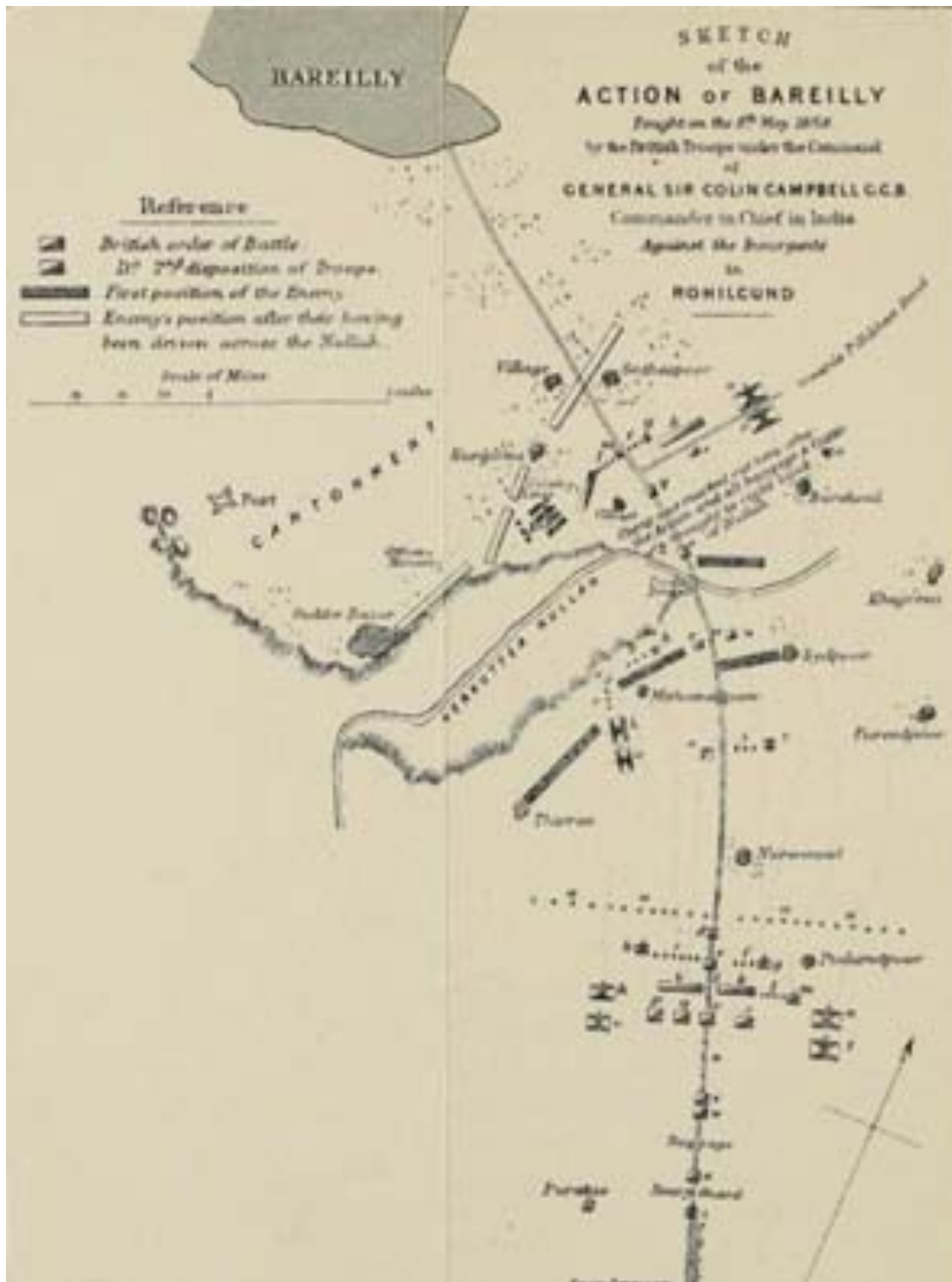


Figure 4-27 Sketch of Battle of Bareilly, 1858. (Source: A history of the Indian mutiny by G.W Forrest)

Case studies:

1. Town Hall of Amritsar which is developed and Adaptive Reuse as Partition Museum.
2. Dara Shikoh Library in Delhi which is converted under Adaptive Reuse mission as Partition Museum.



Figure 4-28 Town Hall, Partition Museum of Amritsar – Punjab



Figure 4-29 Town Hall, Partition Museum of Amritsar, Galleries – Punjab



Figure 4-30 Dara Shikoh Library and 1947 Partition Museum – Mori Gate, Delhi

Problem statement:

There is lack of awareness about the city as a major centre of the first war of independence. A theme based interpretative Museum development would address this and also enhance the future tourism prospects. Bareilly has potential to develop a museum based on the theme of First War of Independence by Adaptive Reuse of a historic building.

Value addition of this project to the tentative vision:

Potential for Tourism Development, Creating awareness and recreational facility at city level.

Objectives:

1. Develop Bareilly as Tourist destination and Enhance the Tourism potential of the city.
2. Reviving the memory of the First War of Independence.

Key activities, tasks, interventions involved:

1. Development of Theme based Museum.
2. Interpretative displays of the history of the region and associated personalities, role of Bareilly.
3. Visitor Management Plan.
4. Development of visitor amenities.
5. Site improvement.
6. Building Conservation for Adaptive Reuse.
7. Signages and way finding.

Site Delineation:

Based on stakeholder consultation, the possibility of developing the theme-based museum in some parts of the Bareilly College is being explored. The college is a historic building which is in use currently.



Figure 4-31 Bareilly College – Gangapur, Bareilly Source: Project Team



Figure 4-32 Bareilly College – Gangapur, Bareilly Source: Project Team

Strategies for Precinct Level Development:

1. NOC and approval from the college for the Adaptive Reuse and Development of Museum
2. Museum Design and Planning
3. Visitor Information
4. Visitor Amenities

Project Impact & Benefit:

The Project would help to create a tourist site by development of the Museum. It would also help to create awareness about the rich cultural past of the city at the local as well as at the State level. It will also be one of the contributing factors in celebrating “Azadi ka Amrit Mahotsav” celebrating 75 years of India’s Independence. It will also help to increase tourist footfall in the city by making it as a one/ two day stay destination to visit the local sites of freedom movement as well as the regional sites.

SWOT Analysis

Strength:

1. Representative of an important period in the growth and evolution of Bareilly City.
2. One of the oldest heritage site and 1st Colonial schools in India.

Weakness:

1. The connectivity of site is ideal but lack in proper tourism infrastructure and issues of heavy traffic on vehicular road.

2. Planning museum in institution building sometimes fails to magnetize larger crowd as compared to sites dedicated to only museum and gallery planning.

Opportunity:

1. Development of first theme-based Museum on First War of Independence.
2. Site sensitive interventions would help to enhance the significance of the site.

Threat: The structural study must be done before Adaptive Reuse of structure.

Nodal Agency:

Bareilly Municipal Corporation	Site Development
UP Tourism	Funding and Tourism Infrastructure
Education	Institutional Services and Guidelines for Visitor Management

Stakeholders: Bareilly Municipal Corporation, UP Tourism, Education Department

4.3.5 Project 3: Colonial Heritage Trail in Bareilly

Background:

Since the city was a cantonment under British rule, there are a range of colonial heritage in the city located largely in the civil lines area. The cantonment area of the city displays some historically and architecturally significant buildings which are unprotected. These structures are a reminder of the colonial past in the state of Uttar Pradesh. There are many states such as Maharashtra, Punjab etc. where these building are revered as architectural marvels and are being reused as a museum based on themes.

The city approximately has 26 Churches which are both architecturally and historically significant such as St. Stephan Church, Free Will Baptist Church, Christ Methodist Church etc.

St. Stephan's Church: It was built in Victorian architectural era in 1861, it is the most magnificent Church among the 26 churches in Bareilly. A red brick church with exquisite interiors ornamented with ebony wood panels and marble pulpit. It also houses 20-foot-high pipe organ imported from England.

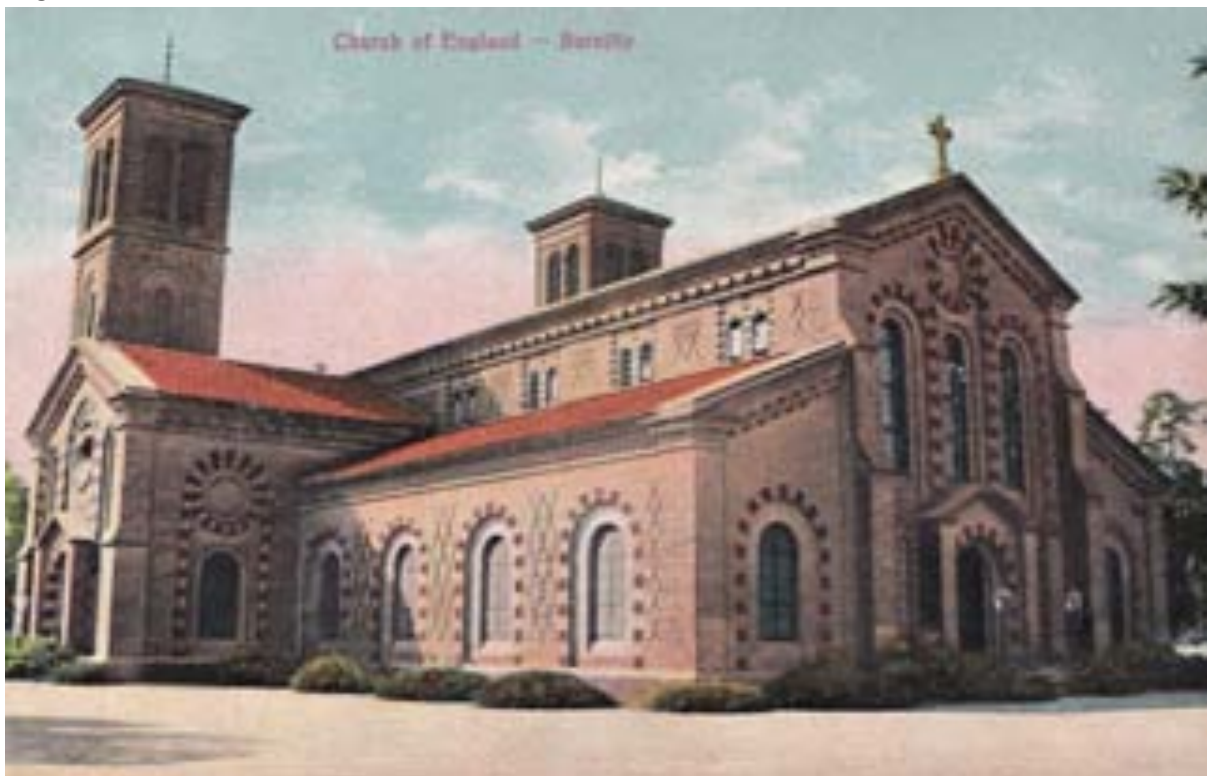


Figure 4-33 St. Stephan's Church – Civil Lines, Bareilly

Free Will Baptist Church: One of the oldest churches of Bareilly on Helen Road. It was constructed by East India Company in 1838 under the supervision of British Bishop Daniel Wilson. During the first war of Independence, the church was set on fire as the armed soldiers hid inside claiming lives of 40 British subjects, majority of soldiers. The church was repaired in 1858. The graves of the pastor, his wife and minor son who lost their lives in this incident are in the backyard.



Figure 4-34 The Freewill Baptist Church – Civil Lines, Bareilly



Figure 4-35 Bishop Cantonment Church - Bareilly



Figure 4-36 Christ Methodist Church – Civil Lines, Bareilly

Bareilly College: It was constructed on the land donated by the Nawab of Rampur, Hamid Ali Khan and inaugurated by Sir James La Tpuche in 1906, the then governor of North Western Provinces. It was started as a school in 1837 and attained the status of college in 1850. It was later affiliated to Calcutta University in 1862 and to Allahabad University in 1888. At present, it is part of Rohaikhand University.



Figure 4-37 Bareilly College – Gangapur, Bareilly



Figure 4-38 Dharamshala – Bareilly



Figure 4-39 North Indian Theological Seminary - Bareilly

The city also has Dharmshalas which were constructed in the city during colonial period using elements of colonial architecture. The Indian Theological Seminary was one of the important sites associated with the First war of Independence in the city.

Cemetery: It is burial place where Britishers were buried during 1857 who were killed in the war of Independence. The burial place of Christians or cemetery can be developed for tourism.



Figure 4-40 British Cemetery - Bareilly



Figure 4-41: *British Cemetery - Bareilly*

Problem statement:

Colonial heritage is one of the typologies of Heritage of the city which is unprotected as well as unrecognized. These sites are associated with the first war of independence in the city in one way or another. Very few people are aware that Bareilly was the last town which fell after a year of struggle under the leadership of an 82-year-old man Khan Bahadur Khan. It is required to reverse these sites as part of the heritage of Bareilly by creating awareness through outreach activities, by improving interpretative signages and other infrastructural amenities.

Value addition of this project to the tentative vision:

Creating awareness about the Cultural Heritage of the City as well as the district and increasing the Tourism Potential.

Objectives:

1. Create awareness for the Regional Colonial Heritage of the city.
2. Conservation, Protection, Maintenance and Management of the Cultural Heritage of the city.
3. Develop Bareilly as Tourist destination and Enhance the Tourism potential of the city.

Key activities, tasks, interventions involved:

1. Developing the Colonial Trail by identification and mapping of Colonial Heritage of Bareilly.
2. Streetscape Development in identified stretches.
3. Connectivity enhancement to the identified sites located in close proximity.
4. Provision of Visitor Amenities.
5. Providing wayfinding and interpretative signages in and around the sites.
6. Application based audio tours

Site Delineation:

Identification & Mapping of the historically & architecturally significant Colonial Sites - St. Stephan Church, Free Will Baptist Church, Bishop Cantonment Church, Christ Methodist Church, Bareilly College, Dharmshalas, Northern Indian Theological Seminary, Cemetery etc. for creation of Trail. The buildings added can be expanded/ added in a phased manner based on the archival research.

Strategies for Precinct Level Development

- Mapping of Colonial Sites
- Conservation & Protection of these heritage sites by the State / Municipal Corporation.
- Heritage Conservation & Development guidelines for the identified sites
- Creation of Visitor amenities & Interpretatory signages

Project Impact & Benefits

The project aims to create awareness about the colonial sites in the area and ensuring harmonious development around these sites. It also aims to attract more visitors and tourists at these sites through placemaking activities and sensitive design & planning.

SWOT Analysis**Strength:**

1. Representative of an important period in the growth and evolution of Bareilly City.
2. These buildings have historic, architectural, artistic, social and educational values.
3. An important repository of regional colonial heritage of the city.

Weakness:

1. Lack of awareness of Colonial Heritage of the city as tourist attractions.
2. Lack of guidelines for the conservation, protection and maintenance of these sites including guidelines for addition and alteration.
3. Lack of Signages both descriptive and informative.

Opportunity:

1. Conservation of the Buildings in poor condition.
2. Site development and landscape improvement.
3. Adaptive Reuse of abandoned colonial buildings for creating Interpretative Museum on the theme of First War of Independence.
4. Site sensitive interventions would help to enhance the significance of the site.

Threat:

1. Unrecognized as heritage by the City Administration as well as the Masterplan.
2. Disappearance of important sites dues to Urban Development activities for example road widening activities lead to demolition of Heritage.
3. Any insensitive interventions in and around the site would be detrimental to the significance of the site.

Nodal Agency:

Bareilly Municipal Corporation	Site Development
UP Tourism	Signages and Visitor Amenities
Bareilly Development Authority	Integration & Mapping of Cultural Heritage of Bareilly in the masterplan with demarcation of the buffer of 100 and 200m of the ASI protected sites

Stakeholders listing:

1. Department of Tourism, Government of Uttar Pradesh.
2. Archaeological Survey of India.
3. Bareilly District Administration.
4. Bareilly Development Authority.
5. State Department of Archaeology.

4.3.6 Bouquet of Projects - Previously Shared

4.3.7 Project 4: Upgradation of Temple Precinct of Nath

Nodal Agency:

Bareilly Municipal Corporation	Site Development
UP Tourism	Signages and Visitor Amenities
Bareilly Development Authority	Integration & Mapping of Cultural Heritage of Bareilly in the masterplan with demarcation of the buffer of 100 and 200m of the ASI protected sites
Temple Trusts	Need for the coordination of visitors plan and management

Background:

There are four Nath temples in Bareilly which has historical and associational significance. Some of them also have connect with nature and therefore had landscape value. They are **Alakh Nath Temple**, **Bankhandi Nath**, Dhopeswar Nath, Madhi Nath and Pashupati Nath.

S.No.	Name ²²	Location	Description
1.	Alakh Nath	Nainital Road near Qila Bareilly.	The temple has a history of over 930 years. According to a local legend, the Qila region was home to dense forests in ancient times. Saint Alakhiya used to penance below a Banyan Tree . It was after him that the temple was named Alakhnath Temple. During late 17th century under Mughal rule, several temples were demolished in the region, and many saints took refuge in the temple complex. It is believed that the Mughals could not enter the complex.
2.	Bankhandi Nath	Jogi Navada	The Bankhandinath Temple, dedicated to Lord Shivanand is administered by the members of Dashnam Juna Akhada. This temple is said to have been built in the <i>Dvapara Yuga</i> era. It is believed that a large number of sages and saints used to gather in the temple and do rigorous penance. Many of them also took <i>samadhi</i> in the temple. The <i>samadhis</i> are present in the temple complex even today.
3.	Dhopeswar Nath	Sadar Bazaar Cantonment area	The historical and ancient temple of Dhopeswar deity. In the month of Sawan and Bhadon a big fair is organized. In the campus of the temple a huge tank is located. The site is the birth site of Draupadi and Dhrishtadyumna in the Mahābhārata era. Both Draupadi and Dhrishtadyumna were considered to be born by the grace of Lord Shiva.
4.	Madhi Nath		It is believed that this temple is more than 5000 years old and shivling of this temple was established by pandavas during their exile.

²² Identified from the secondary sources

5.	Tapeshwar Nath	BSA Office Subhash Nagar	This is the oldest temple of the city
6.	Trivati Nath	MacNair Road	According to myth Lord Shiva - Trivati Nath foretold his first appearance under the three Banyan trees in dense panchal area in the dream of a shepherd. On awakening shepherd found a beautiful Shiv Lingam near the roots of three Banyan trees.
7.	Pashupati Nath	Pilibhit bypass road	The Pashupatinath Temple, also known as the Jagmohaneshwarnath Temple, is the newest amongst the seven Nath Temples.



Map 3: Location of Nath Temples – Bareilly



Map 4: Location of Nath Temples - Bareilly





Figure 4-42 Alakh Nath Temple – Qila Bareilly



Figure 4-43: Bankhandi Nath Temple – Jogi Navada



Figure 4-44 Dhopeswar Nath Temple – Sadar Bazaar (Bareilly Cantonment)



Figure 4-45 Trivati Nath Temple – Macnair Road



Figure 4-46 Pashupati Nath Temple – Pilibhit Bypass Road

Problem statement:

All the temples are located at specific corners of the city defining its limit. With urban development this connect is being lost.

Value addition of this project to the tentative vision:

Establishing the significance of Bareilly as Nath Nagri would enhance the tourism potential of the city.

Objectives:

1. Development of Spiritual Tourism by enhancing the tourism infrastructure, public conveniences, and site branding.
2. Creation of religious network between different nodes and their associated fairs and festivals.

Key activities, tasks, interventions involved:

1. Site Development of Temple Precinct.
2. Rejuvenation of the temple pond/ waterbodies.
3. Restoration of the Temple by enhancing material integrity and authenticity.
4. Provision of descriptive and informative signages.
5. Provision for visitor amenities such as toilets, drinking water facilities, resting area, street furniture and lighting.

Stakeholders:

1. Temple Trusts Bareilly.
2. Bareilly Nagar Nigam.
3. PWD.

SWOT Analysis

Strength:

1. Religious significance at city level.

Weakness:

1. Lack of Visitor amenities.
2. Improper road conditions.
3. Lack of interpretative signages.

Opportunity:

1. Urban Regeneration of the area with Site Improvement and Precinct Development for each temple.
2. Development of Nath circuit.
3. Rejuvenation of the Temple Pond.

Threat:

1. Uncontrolled urban development.
2. Lack of development guidelines around these sites.
3. Lack of visitor amenities.

4.3.8 Project 5: Precinct Development of Tomb of Hafiz- ul-Mulk Rahmet Khan and Tomb of Shah Dana

Background:

The city of Bareilly has numerous spiritual sites that have potential for developing a spiritual circuit in the city. The city is the center of Sufism with the shrine of Ala Hazrat located in the heart of the city. This Dargah was once the main site Site of Urs-e-Razvi, also known as Urs-e-Ala Hazrat which is 3 day long annual event commemorating the death anniversary of Imam Ahmad Raza Khan organized at the Dargah Ala Hazarat. This festival attracted many Sufi followers. Some of the important sites are:

Tomb of Hafiz Rahmat Khan: Hafiz Rahmat Khan was an Afghan Rohilla chief, in Rohilkhand in the late 18th century and is known for his involvement in the Battle of Panipat in 1757 where with the assistance of Nawab Shuja ud-Daula (r.1753-1775) of Awadh, they defeated the Maratha army. Hafiz Rahmat Khan was killed in battle in 1774 at Miranpur Katra, the battle of St. George, fighting against Colonel Champion. Bareilly was one of the main cities in Rohilkhand and the location of several tombs of the Rohilla chiefs.

Tomb of Shah Dana:

Table 4-17 List of ASI Sites in Bareilly

S.NO.	NAME	LOCATION	DISTRICT
1.	Tomb of Hafiz-ul-Mulk Rahmet Khan, the Rohila Chief	Bareilly, Bakar Ganj	Bareilly
2.	Tomb of Hermit Shah Dana	Bareilly, BakarGanj	Bareilly



Figure 4-47 Mausoleum of Hafiz Rahmat Khan

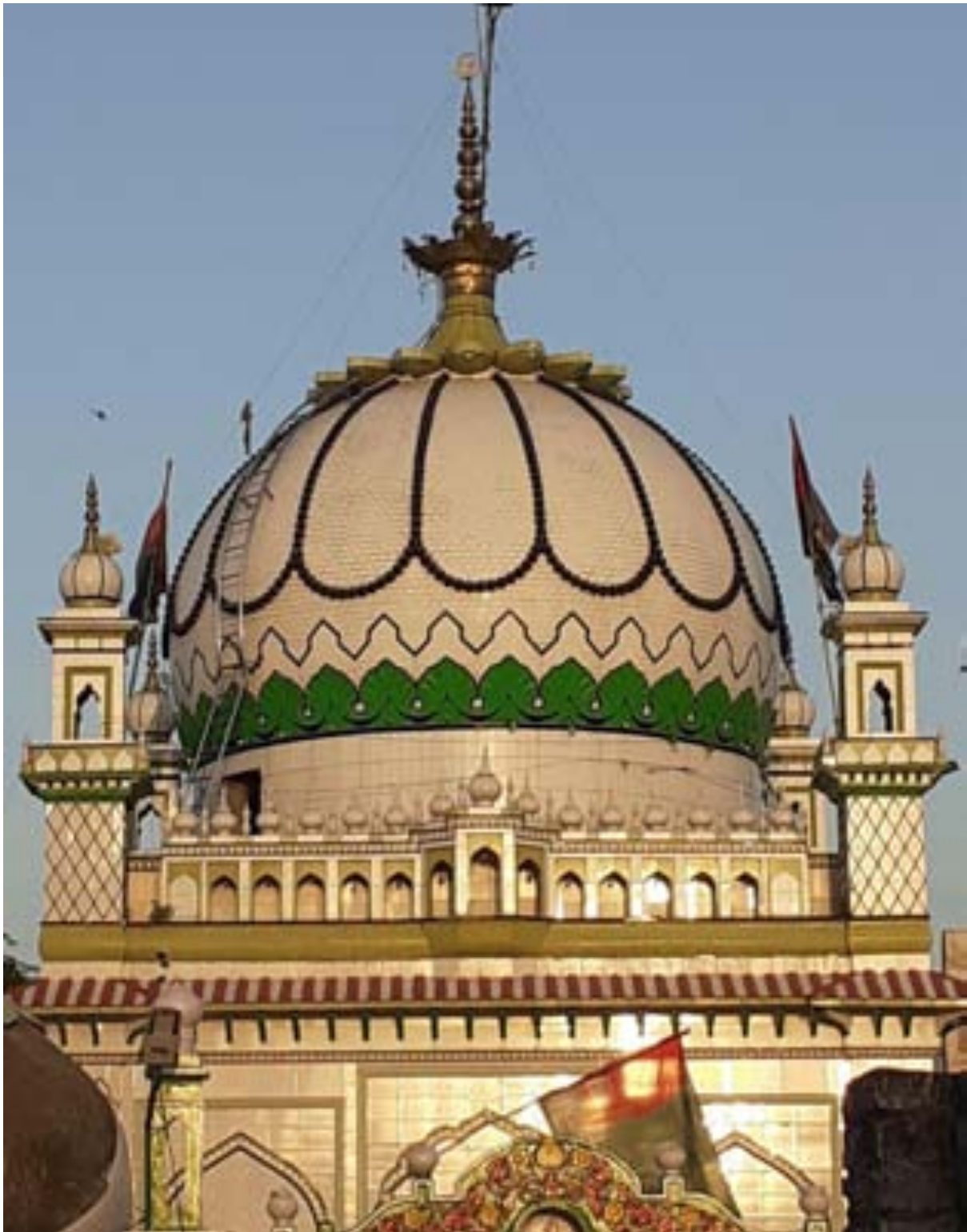


Figure 4-48 Dargah-e-ShahDana Wali

Other Important Sites are:

Khanqah e Aliya Niyazia: Located at Kwaja Qutub, this shrine is a spiritual centre affiliated to both the Chisti and Qadri orders of Sufism and visited by people of diverse faiths. It was founded by Shah Niyaz, who was born in 1742 at Sirhind into a Sayyad family from Bukhara in Central Asia. The center has also influenced Hindustani Classical music and notable singers Sahmbhu Maharaj and Birju Maharaj were

affiliated to Niyazia Khanqah. The present structure was built by Nawab Rampur in early 20th century. Other singers such as Begum Akhtar, Hariharan, Shubha Mudgal. Ustad Rashid Khan are also associated with the khaqah.



Figure 4-49 Khanqah-e-Aliya Niyazia

Qila Jama Masjid: This is a remnant of the days of Raja Makrand Rai, the governor during Aurangzeb's Reign. It is located in the center of a densely populated locality.



Figure 4-50 Jama Masjid – Qila Mohallah

Bibi ji ki Masjid: It is located in Beharipur and is the only surviving monument from the Rohilla era. It was built in the mid-18th Century by Hafiz Rahmat Khan’s sister, which was popular among locals as BibBi ji. It has a compact ablution pool, tall minarates, and three bulbous domes.



Figure 4-51 Bibi Ji ki Masjid – Beharipur

Asifi Masjid: It is located at 300metres distance from Qila Masjid and is a late 18th century Mosque in the Zakhira locality. It was constructed by Mirza hasan Raza Khan, an official of Asaf-ud-Daula and later renovated by the Nawab of Rampur. The mosque has three domes flanked by two lofty minarets.



Figure 4-52 Asifi Masjid - Zakhira

Problem statement:

Both the sites are located in a congested area. Being ASI protected sites, both the sites have designated protected buffer of 100m and 200 m. However, the buffer demarcation does not exist. There is lack of awareness for the spiritual sites of the city which are famous locally and also have association with notable personalities.

Value addition of this project to the tentative vision:

Comprehensive development of the city along with the Conservation and Protection of the Cultural Resources.

Objectives:

1. Enhance the tourist engagement at city level.
2. Improved amenities and infrastructure condition providing better environment.

Key activities, tasks, interventions involved:

1. Site Development.
2. Provision of informational and interpretative signages.
3. Provision of visitor amenities.
4. Integration and development of other Spiritual sites of the city.
5. Improvement of the peripheral landscape of the shrine.
6. Visitor Management Plan for the shrine.

Nodal Agency:

Bareilly Municipal Corporation	Site Development and Infrastructure upgradation
UP Tourism	Signages and Visitor Amenities

Bareilly Development Authority	Integration & Mapping of Cultural Heritage of Bareilly in the masterplan with demarcation of the buffer of 100 and 200m of the ASI protected sites
Waqf Board	Approval for development of visitor amenities

Stakeholders listing:

1. Committee Members of Shah Dana Dargah.
2. Waqf Board.
3. ASI.
4. UP Tourism.
5. Bareilly Nagar Nigam.
6. PWD.

SWOT Analysis**Strength:**

1. ASI Protected Spiritual Site.
2. Celebration of Urs at Shahdana Dargah.

Weakness:

1. Located in a congested area.
2. Lack of Visitor amenities.
3. Improper road conditions.
4. Lack of interpretative signages.

Opportunity:

1. Urban Regeneration of the area with Site Improvement and Precinct Development.
2. Develop it as a spiritual circuit by connecting with other lesser-known sites of the city such as Bibi ki Masjid, Khanqah-e- Aliya Niyazia, Asifi Masjid, Jama Masjid etc.

Threat:

1. Uncontrolled urban development.
2. Lack of development guidelines in the designated buffer of 100m and 200m as per AMASAR Act.
3. Lack of awareness about these sites.

4.4 Economy

4.4.1 Demand assessment methodology

To assess the demand, the team has formulated a methodology which consists of three major components namely – (i) Secondary data analysis, (ii) Stakeholder consultations with various associations, federations, private entities, and representatives from various bodies, (iii) multi-stakeholder workshop held in BDA in the presence of various government and private bodies.

Figure 4-53: Demand assessment methodology



Multiple discussions with stakeholders e.g., representatives of various bodies like Central U.P. Chamber of Commerce, Office of Development Commissioner (Handicrafts), Dastkaar Bunkar Welfare Association, Office of medical officer and CREDAI Chapter of Bareilly; has been conducted at in order to analyze the qualitative and quantitative demand. The Multi – stakeholder workshop conducted had the representatives from Chamber of Commerce, Indian Industry Associations (IIA), Laghu Udyog Bharti, UP Nursing Home Council and Udhyog Mandal, etc.

For quantitative assessment, the team has utilized secondary data available in public domain including statistical data from district development indicators 2020, district industrial profile 2020, etc.

Based on the above defined framework, next sections describe the demand assessment of various sectors.

4.4.2 Economic sectors

Based on the CAGR from 2011-12 to 2019-20, the projections have been done for the sectoral contribution of the primary secondary and tertiary sector to GDDP and per capita income in Bareilly District as following:

Table 4-18: Sectoral Contribution to GDDP in Bareilly District

Sectors of Economic Activity	Existing GDDP Contribution		CAGR	Projected GDDP contribution						
	2011 - 12	2019 - 20		2021	2031	2041	2051	2061	2071	

Total Primary Sector	7046.1 1	8171.52	1.66 %	8,30 7	9,79 4	11,54 7	13,61 3	16,050	18,922
Total Secondary Sector	4765.7 9	11458.2	10.2 4%	12,6 31	33,4 78	88,73 1	2,35,1 72	6,23,30 2	16,52,0 06
Total Tertiary Sector	8059.7 6	21112.44	11.2 9%	23,4 97	68,5 00	1,99,6 99	5,82,1 86	16,97,2 52	49,48,0 17

Per capita income

District Name	2011 - 12	2019 -20	CA GR	2021	2031	2041	2051	2061	2071
Bareilly	41,96 4	76,8 48	6.9 5%	82,191 .64	1,60,98 2.41	3,15,30 3.78	6,17,56 1.12	12,09,56 9.19	23,69,08 9.59

4.4.3 Industrial sector

As per norms of the URDPFI, the Industrial area required in the large cities is 7 – 8%. The industrial area of the Bareilly city as per Master plan 2021 is 5.69% which is very less as per URDPFI norms. Although it has been increased to 8.80% as per Master plan 2031 but still more industrial areas in the city may be required for future.

Table 4-19: URDPFI Norms for Industrial Parks

Land use Category	Guideline percentage of developed area			
	Small	Medium	Large Cities	Metropolitan Cities & Megapolis
Industrial	8 – 10	7 – 9	7 – 8	7 – 8

Source: URDPFI guidelines

Table 4-20: Details of existing industrial area in Bareilly city

Landuse	Proposed area 2021	Proposed area 2021 (%)	Proposed area 2031	Total area	%
Industrial	1170.86	5.69%	837.9	2008.76	8.80%

Source - Bareilly Draft Master Plan 2031

Over the years, the number of Industrial areas in the district has become almost doubled & the number of small-scale industries has also increased along with the increment in the number of employees in the registered working factories which signifies that there is a requirement of new industrial areas. The demand of a new industrial areas can also be felt through the increment in the number of registered working factories per lakh population.

Requirements for any proposed industrial areas:

An industrial area should consist of:

- Roads capable to accommodate the foreseeable development of traffic as well as bicycle and pedestrian infrastructure
- Access points & parking areas to manage the stationary traffic
- The entire logistics of the goods entering or leaving the area including management of entry points like harbors, train terminals, warehouses or other types of logistics hub.
- Transport facilities like pipelines for gases & liquids, conveyor belts for bulk material & respective storage, loading & pumping facilities.

- Telephone & internet connections
- Green spaces provision for recreational areas for employees
- A common sewerage system & effluent treatment plants as well as systems.

Infrastructure requirement norms for industrial areas:

1) Land Use:

Table 4-21: Distance of different areas from Industrial site

Areas	Distance
Ecologically &/or otherwise sensitive areas	At least 25 km or more, if required
Coastal areas	At least ½ km from high tide line
Flood plain of the Riverine systems	At least ½ km from flood plain
Transport/ communication	At least ½ km away from highway & railway
Major settlements (3,00,000 population)	At the time of siting of the industry, if any settlement's notified lie within 50 km, the spatial direction of growth of the settlement for at least a decade must be assessed & the industry shall be side at least 25 km from the projected growth boundary of the settlement.

Source: Report on Guidelines for Physical Infrastructure in Industrial area planning, url: https://www.researchgate.net/publication/322083115_Guidelines_for_Physical_Infrastructure_in_Industrial_Area_Planning_A_Review_of_the_Indian_Context

2) Solid Waste Management (SWM) norms

Table 4-22: Solid Waste Management Norms

S.N.	Guidelines
1	The developers of Special Economic Zone, Industrial estate. Industrial Park to earmark at least 5% of the total area of the plot or minimum 5 plots/ sheds for recovery & recycling facility
2	High calorific wastes shall be used for co-processing in cement or thermal power plants
3	All industrial units using fuel & located within 100 km from a solid waste-based Refuse-derived fuel (RDF) plant shall make arrangements within 06 months from the date of notification of these rules to replace at least 5% of their fuel requirement by RDF so produced.
4	Non-recycle waste having calorific value of 1500 K/cal/kg or more shall not be disposed of on landfills & shall only be utilized for generating energy either or through refuse derived fuel or by giving away as feed stock for preparing refuse derived fuel.

Source: Report on Guidelines for Physical Infrastructure in Industrial area planning, url: https://www.researchgate.net/publication/322083115_Guidelines_for_Physical_Infrastructure_in_Industrial_Area_Planning_A_Review_of_the_Indian_Context

3) Water supply

Table 4-23: CPCB standards for water supply

Industry	KL/unit production
Low water intensive	0 – 100
Medium water intensive	100 – 250
High water intensive	250 & above

Source: Report on Guidelines for Physical Infrastructure in Industrial area planning, url: https://www.researchgate.net/publication/322083115_Guidelines_for_Physical_Infrastructure_in_Industrial_Area_Planning_A_Review_of_the_Indian_Context

4) Wastewater Management

Table 4-24: General standards for wastewater generation

Industry	Quantum	
Integrated iron & steel	16 m ³ / tone of finished goods	
Sugar	0.4m ³ /tone of cane crushed	
Pulp & Paper	Pulp & Paper	175m ³ /tone of paper produced
	Rayon grade pulp	150m ³ / tone of paper produced
	Agro – residue based	150m ³ / tone of paper produced
	Waste paper based	50m ³ / tone of paper produced
Fermentation industries	Maltry	3.5m ³ / tone of grain produced
	Brewer	0.25m ³ / KL of beer produced
	Distillery	12 m ³ / KL of alcohol produced
Caustic soda	Membrane cell process	1 m ³ / tone of CS produces excluding cooling tower blown down
	Mercury cell process	4 m ³ / tone of CS produced. 10% below down permitted for cooling tower.
Textile industries	Nylon & Polyesters	120 m ³ / tone of fibre produced
	Viscose staple fibre	150 m ³ / tone of product
	Viscose filament yarn	500 m ³ / tone of product
Tanneries	-	28m ³ /tone of raw hide
Starch Glucose and related products	-	8 m ³ / tone of maize crushed
Dairy	-	3 m ³ / Kl of milk
Natural rubber processing industry fertilizer	-	4 m ³ / tonne of rubber

Source: Report on Guidelines for Physical Infrastructure in Industrial area planning, url: https://www.researchgate.net/publication/322083115_Guidelines_for_Physical_Infrastructure_in_Industrial_Area_Planning_A_Review_of_the_Indian_Context

Table 4-25: NMWC standards for wastewater

Industry	Total wastewater flow (m ³ /day)
Textile	6,450
Distillery	1,725
Food processing	1,460
Chemical	4,500

Source: Report on Guidelines for Physical Infrastructure in Industrial area planning, url: https://www.researchgate.net/publication/322083115_Guidelines_for_Physical_Infrastructure_in_Industrial_Area_Planning_A_Review_of_the_Indian_Context

5) Power supply

URDPFI guidelines & National Electricity Policy for Industrial parks

- The recommended consumption is 2.74 kWh per capita per day demand.

Planning strategies for industrial areas

Site location of the industrial city is the prime aspect of its planning. The siting criteria shall satisfy the environmental requirements mentioned by Ministry of Environment and Forest, which is with sufficient buffers, distance from a large size town and agricultural land (refer Chapter 6 for specifics). Land suitability analysis to be done for identifying zones for placing hazardous industrial (uses including air polluting units and wind directions), other manufacturing industrial, compatible uses along surface water bodies, hamlets and settlements and placing of non - processing areas.

For locating industrial zone, preference to areas with easy connectivity, provision for logistics and areas with existing industries to be given, also wind directions to be considered.

Zoning for processing and nonprocessing areas is recommended in the ratio of 40:60 (especially in SEZ). The land use regulations have to keep in view the requirements of both these areas according to the activities envisaged. Due to the health concerns and safeguards, provision of green buffers of minimum of 500 meters between compatible and non-compatible shall be well defined while zoning.

Processing area: may be comprise of the following activities:

- Industries / manufacturing.
- Ancillary & MSMEs.
- Retail Trade and commerce.
- Go-downs and warehousing.
- Utility corridor.
- Port and port related activities.
- Airport and related uses, rail, road and inland waterway and spaces for parking etc.
- Public utilities and any other essential services.
- Incidental and other activities for safety and security; and essential residential for the same.
- Governmental use / activities to manage the proper functioning of such processing areas.
- Information Technology and Enabled Services.

Within the processing areas, space for informal commercial, service industries and parking as per industrial requirement to be paid attention. For development of various types of parks – like IT parks, Plastic parks, Biotechnology parks, Food parks, Agro park, etc. the policy and norms issued by respective departments and guidelines available to be considered for planning. In absence of such handholding provisions, case studies of the specific industrial sector to be referred.

Cluster development: A cluster approach may be taken to optimize use of resources and minimize cost of production. For example, all work related to computers, IT, Communication can be housed in a cluster at the outskirts of processing area to minimize heavy transportation within the city. Small clusters related to IT and communication can also be accommodated within the non-processing area at uniform distance for easy reach of availability of all services in time.

Non - processing areas: Areas other than processing area are to be planned for various uses and activities, mainly as an industrial township including residential, commercial, recreational and activities related to social infrastructure like education, health care, and socio-cultural facilities.

Social infrastructure: The overall quantum of social infrastructure to be provided in the industrial township may be divided into two levels of facilities, including - Industrial city level Facilities and Local Level Facilities.

Table 4-26: Norms for parking facilities

Industry	
Industrial Plot up to 50 sqm area	2 ECS/ 100 sqm of floor area
Industrial Plot 51 sqm – 400 sqm area	2 ECS/ 100 sqm of floor area
Industrial Plot 401 sqm and above	2 ECS/ 100 sqm of floor area
Flatted group Industry (Min Plot size 400 sqm)	2 ECS/ 100 sqm of floor area

Source – URDPFI Guidelines 2014

URL - <https://mohua.gov.in/upload/uploadfiles/files/URDPFI%20Guidelines%20Vol%20I.pdf>

Table 4-27: Norms for water requirements for industrial areas

Industry	Unit of Production	Water requirements in Kilolitres per unit
Automobile	Vehicle	40
Distillery	Kilolitre (proof alcohol)	122 -170
Fertilisers	Tonne	80 – 200
Leather	100 kg (tanned)	4
Paper	Tonne	200 – 400
Special Quality paper	Tonne	400 – 1000
Straw board	Tonne	75 – 100
Petroleum refinery	Tonne (crude)	1 – 2
Steel	Tonne	200 – 250
Sugar	Tonne	1 -2
Textile	100 kg (goods)	8 – 14

Source – URDPFI Guidelines 2014

URL - <https://mohua.gov.in/upload/uploadfiles/files/URDPFI%20Guidelines%20Vol%20I.pdf>

The Industrial Use Zone may be subdivided into

1. Service and Light Industry
2. Extensive and Heavy Industry
3. Special Industrial Zone – Hazardous, Noxious and Chemical

The activities Permitted, Restricted and Prohibited in Industrial land use zone shall be as given below:

Permitted Use/Activity - Residential building for essential staff and for watch and ward personnel, all kind of industries, public utilities, parking, loading, unloading spaces, warehousing, storage and depot of non-perishable and non-inflammable commodities and incidental use, cold storage and ice factory, gas godowns, cinema, bus terminal, bus depot and workshop, wholesale business establishments, petrol filling stations with garage and service stations, parks and playgrounds, medical centers, restaurants.

Restricted Uses/Activities - Noxious, obnoxious and hazardous industries except storage of perishable and inflammable goods, junkyards, sports/stadium/playgrounds, sewage disposal works, electric power plants, service stations, cemeteries, government/semi-government / private business offices, bank and financial institutions, helipads, hospitals/medical centers, religious buildings, taxi stands, gas installations and gas works, animal racing or riding stables, workshops/garages, dairy and farming, quarrying of gravel, sand, clay or stone.

Prohibited Uses/Activities - Residential dwellings other than those essential operational, service and watch and ward staff, schools and colleges, hotels, motels and caravan parks, recreational sports or centers, other non-industrial related activities, religious buildings, irrigated and sewage farms, major oil depot and LPG refilling plants, commercial office, educational institutions, social buildings.

4.4.3.1 Demand of probable industries for crop produced in Bareilly

Based on the assessment of the existing agriculture production in Bareilly, probable industries categories have been identified as follow:

Table 4-28: Probable industries for crop wise products & by-products

S.N.	Top five agriculture produce	Direct products	By-products
1	Sugarcane	Food: sucrose, jaggery & syrups Fibre: Cellulose Fodder: green leaves, top portions Fuel: residue/ waste materials Chemicals: alcohol, bagasse & molasses	Bagasse, molasses & pressmud
2	Wheat	Food: Flour, Bakery products, Maida, Biscuits, meat analogs. Fibre – Paper, cardboard Fodder: wheat gluten Chemical – Alcohol	Distilled dried grains with soluble & wheat midds
3	Rice	Food: Rice, poha, Fibre – Paper, cardboard, cellulose Fodder: Waste material Chemical: ethylene, 2G – Ethanol, rice beer	Broken Rice, Broken Mace Bran, rice polish, straw.
4	Potato	Food: pancakes, dumplings, soup, chips and sliced or shredded potatoes Fodder: fresh potatoes Chemical: Glue and ethanol	Peels, pulp & rejects
5	Banana	Food: fruit, Fibre: Commercial pectin, Cellulose, Clothing Fodder: Banana peels Chemicals: ethanol	Leaves for packaging, cooking & food serving; pseudostems, stalk & inflorescence

Source – Consultant's analysis

Table 4-29: Probable industries (as per NIC code classification) as per availability of crops

Crop	NIC code	Industry classification
Sugarcane	10721	Manufacture or refining of sugar(sucrose) from sugarcane
	10722	Manufacture of 'gur' from sugarcane

	10723	Manufacture of 'gur' from other than sugarcane
	10724	Manufacture of 'Khandasari' from sugarcane
	10725	Manufacture of 'Khandasari' other than from sugarcane
	10726	Manufacture of 'boora' & candy from sugarcane
	10727	Manufacture of 'boora' & candy othaer than from sugarcane
	10728	Manufacture of molasses
	10729	Manufacture of sugar from other sources (juices of palm, sugar beet, etc)
Wheat	10611	Flour milling
	10711	Manufacture of bread
	10712	Manufacture of biscuits, cakes, pastries, rusks, etc
	10617	Manufacture of flour mixes and prepared blended flour and dough for bread, cakes, biscuits.
Rice	10612	Rice milling
	10621	Manufacture of starches from rice, potatoes, maize, etc
	10624	Manufacture of Gluten
Potatoes	10308	Manufacture of potato flour & meals and prepared meals of vegetables
	10621	Manufacture of starches from rice, potatoes, maize etc
Banana	None	None

Source – National Industrial Classification 2008' url - NIC_Sector.p
https://www.ncs.gov.in/Documents/NIC_Sector.pdf df (ncs.gov.in)

4.4.4 Assessment of existing Handicraft policies in the state

4.4.4.1 National Handicrafts Development Programme

The schemes implemented by Office of the Development Commissioner (Handicrafts) are composite in nature and not specific to area, caste, or gender. The artisans belonging to all communities including women artisans draw benefits from the schemes. Office of Development Commissioner (Handicrafts) is implementing following generic schemes.

4.4.4.1.1 National Handicrafts Development Programme (NHDP)

The Government of India implements various schemes for upliftment and development of handicrafts artisans through National Handicraft Development Programme (NHDP).

Objective:

The objective of the programme is to increase the knowledge of the entire handicrafts sector about the new design trends & color forecasts so as to increase the exports from the country by increasing the new design led product.

Implementation:

At present, the office of Development Commissioner (Handicraft) is implementing these seven schemes for promotion and development of handicraft sector.

A. National Handicrafts Development Programme incorporates:

- i. Marketing Support & Services
- ii. Skill Development in Handicraft Sector
- iii. Ambedkar Hastshilp Vikas Yojana [AHVY]
- iv. Direct Benefit to Artisans (Welfare)

v. Infrastructure and Technology Support

vi. Research & Development

4.4.4.1.2 Skill development in handicraft sector

Handicrafts are known for their aesthetics, associated traditional values, uniqueness, quality and craftsmanship. The traditional knowledge and craft practices are commonly passed down from one generation to another through natural learning. However, with the advent of new tools & technology, the process of craft learning has changed dramatically. Standardized production processes, skilled manpower, design database for handicraft products, quick & efficient prototyping, communication skills and other soft skills have become indispensable requirements for the ever-changing handicraft sector.

The sub-scheme “Skill Development in Handicraft Sector” has been conceptualized to fulfil these requirements and has the following four components:

- (1) Design and Technology Development Workshop
- (2) Guru Shishya Hastshilp Prashikshan Program
- (3) Comprehensive Skill Upgradation Program
- (4) Improved Toolkit Distribution Program

4.4.4.1.3 Ambedkar Hastshilp Vikas Yojana (AHVY)

Ambedkar Hastshilp Vikas Yojana (AHVY) is a cluster specific scheme. The scheme envisages need based cluster specific approach for sustainable development of the artisans in the defined clusters. The geographical identity of handicrafts clusters contains few villages or municipal areas within a span or diameter of three kilometers.

Artisans in the crafts clusters may be manufacturing products of single crafts or of multiple craft. The identified cluster will be extended support in terms of financial, technological, and social interventions for a period of five years. Presently, handicrafts sector is contributing substantially towards employment generation and export, but this sector has suffered due to its unorganized nature along with additional constraints like lack of education, capital, and poor exposure to new technologies absence of market intelligence and poor institutional framework.

In order to overcome these constrains, Ambedkar Hastashilp Vikas Yojana (AHVY) as a Centre Plan Scheme was launched in 2001-02 wherein the main thrust was on the adapting project wise, need based approach for integrated development of potential handicrafts clusters with participation of the craft persons at all stages of implementation of the scheme.

The scheme envisages a package of support to the cluster of handicrafts artisans, which inter-alia includes basic inputs and infrastructure support in addition to capacity enhancement to cater to target markets.

4.4.4.1.4 Comprehensive Handicrafts Cluster Development Scheme (CHCDS)

The objective is to develop these clusters with world-class infrastructure. The guiding principle behind the design of clusters would be to create world-class infrastructure that caters to the business needs of the local artisans & SMEs to boost production and export. In brief, the main objective of setting up these clusters is to assist the artisans & entrepreneurs to set up world-class units with modern infrastructure, latest technology, and adequate training and human resource development inputs,

coupled with market linkages and production diversification. SPV is designed in such a way, which will have Standard Models of units of SSI and SME with infrastructure that is customized to give a competitive edge and these centers have greater potential to become globally competitive.

The broad objectives of the proposed program are as follows:

- i. To enhance the competitiveness of selected clusters in terms of increased market share and ensuring increased productivity by higher unit value realization of the products.
- ii. To ensure effective integration of scattered artisans, building their grass roots enterprises and linking them to SMEs in the sector to build critical mass for customized interventions and ensure economies of scale in operations. This will build a supply system that is geared to responding to large-scale orders, adhering to quality and product standardization, which are pre-requisites of global markets.
- iii. To generate additional livelihood opportunities to the people through specific intervention in segmental sub sector industry and increase the incomes to the artisans/craftsmen already engaged in this sector.
- iv. To provide requisite support/ linkages in terms of adequate infrastructure, technology, product diversification, design development, raw material banks, marketing & promotion, social security, and other components that are vital for sustainability of artisans/craftsmen engaged in the Handicrafts sector.
- v. The core elements of the strategy for the proposed program are given below:
- vi. Proactive and strong technical and program management assistance for capacity building, designing of the interventions and their implementation, through a competent professional agency.

Funding pattern

Funds to the tune of 2% (max.) of project cost up to a maximum of Rs. 5.00 Lakhs (whichever is less) per project shall be earmarked for establishing baseline data / DPR against which performance can be compared at the end of the project. The total fund requirement will be as per the Detailed project Report (DPR). 3% of Total project cost shall be provided for setting up of Project Monitoring Unit (PMU).

- 50% of the approved project cost will be released as advance/1 instalment.
- 2 instalment @ 40% of cost the approved project cost will be released on utilization of 70% of 1 instalment.
- The last 10% amount will be released as reimbursement on completion of project and submission of utilization report etc.

Deliverables/Advantages of the proposed Clusters

Social:

- i. Employment Generation.
- ii. Better living standards for the existing artisans.

Economic:

- i. Foreign Exchange earnings by export
- ii. Substantial Increase in quality and value-added Production
- iii. Increase in the business of small entrepreneurs
- iv. Savings in cost by manufacturers in the cluster due to better infrastructure and Government

induced benefits

- v. Revenue generation to local bodies and State & Central Governments
- vi. Growth of industry in an organized form

Source - <http://www.handicrafts.nic.in/pdf/Scheme.pdf#page=91>

4.4.4.2 Uttar Pradesh ODOP Scheme 2018

The export of handicrafts from Uttar Pradesh contributes 44% to total exports of handicrafts from the country. Similarly, this contribution stands at a significant 39% in carpets and 26% in leather and leather products. The share of Uttar Pradesh in total exports from the country is 4.73%. Almost each district in the state has one or more unique products- be it in the handicrafts, handlooms or agriculture/horticulture produce or small enterprises, with distinct identity at national and international levels. For example, the silk sarees of Varanasi, the handicraft items of brass from Moradabad, the flute of Pilibhit, the artifacts of Shajar stone from Banda and Kala Namak rice from Siddhartha Nagar need no introduction. There is immense possibility to promote the marketing efforts to create more opportunity of employment and to add to the existing income levels of artisans/workers engaged in these sectors.

Keeping above in view, it has been decided to launch the scheme in the name of '**One District — One Product**' in the State. Regarding execution of the scheme, following actions are to be taken for products from each district:

- To prepare database regarding circulation, stakeholders, total production, export, availability of raw material and to arrange training.
- Research of possibilities regarding production, development, marketing of the product.
- To prepare a micro plan for product development, marketing promotion and to provide additional opportunities of employment and wage increment of the concerned artisans and workers.
- To provide advertising, publicity, and marketing promotion at district, state national and international level.
- Necessary coordination with MUDRA, PMEGP, Stand UP Schemes of GOI as well as Mukhy Mantri Yuva Swarajgar Yojna and Vishwakarma Shram Samman Yojna of GoUP for providing required finance to new and existing units. To start new schemes for the purpose as needed.
- To setup Co-operatives and Self-Help Groups.
- General and technical training of the craft and technology development.

Key Policy Objectives

- Preservation and development of local crafts / skills and promotion of the art.
- Increase in the incomes & local employment
- Promote product quality and skill development

Key Policy Highlights

Table 4-30: Uttar Pradesh ODOP policy highlights

Support	<ul style="list-style-type: none"> • Prepare database regarding circulation, stakeholders, total production, export, availability of raw material and to arrange training. • Research of possibilities regarding production, development, marketing of the product.
---------	---

	<ul style="list-style-type: none"> • Prepare a micro plan for product development, marketing promotion and to provide additional opportunities of employment and wage increment of the concerned artisans and workers. • Provide advertising, publicity and marketing opportunities at district, state, national and international level. • Necessary coordination with MUDRA, PMEGP, Stand Up Schemes of Government of India as well as Mukhya Mantri Yuva Swarojgar Yojna and Vishwakarma Shram Samman Yojna of Government of UP for providing required finance to new and existing units. To start new schemes for the purpose as needed. • Setup Co-operatives and Self-Help Groups. Hosts general and technical training of the craft and technology development.
--	--

4.4.5 Assessment of existing industrial policies in the state

The team has studied and analyzed the existing industrial policies to understand the Key objectives, policy initiatives, incentives for the upliftment of the MSME sector in Bareilly:

1. Uttar Pradesh Industrial Investments Employment Promotion Policy 2017
2. Uttar Pradesh Private Industrial Park Scheme 2017
3. Uttar Pradesh Food Processing Industry Policy 2017
4. Uttar Pradesh Handloom Power-looms Silk Textile and Garmenting Policy 2017
5. Uttar Pradesh MSME Policy 2017
6. Uttar Pradesh Civil Aviation Promotion Policy 2017
7. Uttar Pradesh Information Technology Policy 2017
8. Uttar Pradesh Electronics Manufacturing Policy 2017
9. Uttar Pradesh Solar Power Policy 2017
10. Uttar Pradesh Biofuel Policy 2018
11. Uttar Pradesh Tourism Policy 2018
12. Uttar Pradesh Pharma Industry Policy 2018
13. Uttar Pradesh Warehousing Logistics Policy 2018
14. Uttar Pradesh Film Policy 2018
15. Uttar Pradesh Defense Aerospace Units Employment Promotion Policy 2018
16. Uttar Pradesh Milk Policy 2018
17. Uttar Pradesh Electric Vehicle Mftg Mobility Policy 2019
18. Uttar Pradesh Electronics Manufacturing Policy 2020
19. Uttar Pradesh Startup Policy 2020
20. Post Covid19 Accelerated Investment Promotion Policy 2020
21. Uttar Pradesh Data Centre Policy 2021

4.4.5.1 Uttar Pradesh Industrial Investments Employment Promotion Policy 2017

The Industrial Investment & Employment Promotion Policy of Uttar Pradesh 2017 will strive to leverage the inherent strengths of the state while developing new ones and tackling its underlying weaknesses considering the economic dynamics at play at the Indian, Asian and the Global level. The policy will aim to create a framework to stabilize and make existing industries more competitive as well as attract and realize new international and national investments in the industrial sector.

Key Policy Objectives

- Attract investment in UP for job creation
- Mobilize the key strengths of the State for maximizing manufacturing output
- Promote innovations, entrepreneurship, and Make in India
- Ensure balanced regional and sustainable development through rapid industrialization

Vision of the policy and implementation

The vision of the Industrial Investment & Employment Promotion Policy of Uttar Pradesh 2017 is to establish Uttar Pradesh as a nationally and internationally competitive investment destination thereby generating employment and igniting sustainable, inclusive, and balanced economic growth of the state.

Mission

- Increase capital investments in the state
- Provide quality infrastructure for industries to flourish
- Promote ease of doing business to create business friendly environment
- Generate maximum direct and indirect employment and self-employment opportunities for both skilled and unskilled workforce
- Skill the workforce of the state to ensure employability and empowerment
- Provide pro-active support to micro, small and medium enterprises
- Promote the spirit of innovation and incentivize entrepreneurship among youth
- Ensure balanced, sustainable, and inclusive economic development
- Ensure effective implementation of the policy

Strategies to achieve the vision

The GoUP will strive to achieve the vision through the following strategies

- Enabling infrastructure – Developing new infrastructure and upgrading existing ones
- Employment generation – Creating opportunities
- Fiscal incentives – Attracting investments
- Ease of doing business - Creating a conducive industrial environment
- Make in UP – Leveraging the success of Make in India
- Skilled Manpower – Reaping the benefits of demographic dividend
- Innovation – Promoting Start-Ups
- Micro, Small & Medium Enterprises – Ensuring all round industrial growth
- Sectoral approach – Benefitting from sectors of strength
- Sustainable & Inclusive growth – Ensuring clean & balanced distribution of economic growth
- Investment Promotion and marketing ‘Brand Uttar Pradesh’.
- Domestic & Global Environment – Gaining from external factors and being responsive to them

Table 4-31: Uttar Pradesh Industrial Investments Employment Promotion Policy 2017 highlights

Exemption	<ul style="list-style-type: none"> • Stamp Duty :100% in Bundelkhand & Poorvanchal, 75% in Madhyanchal & Paschimanchal (except GBNagar & Ghaziabad districts) and 50% in GBNagar & Ghaziabad districts. • Electricity Duty: 100% exemption to all new industrial units set up in the state for 10 years. Also, 100% exemption to all new industrial units producing electricity from captive power plants for self-use for 10 years
-----------	--

	<ul style="list-style-type: none"> • Mandi Fee: 100% exemption to all new food processing units on purchase of raw material for 5 years.
Reimbursement	<ul style="list-style-type: none"> • EPF Reimbursement: Facility to the extent of 50% of employer's contribution to the units providing direct employment to 100 or more unskilled workers • SGST Reimbursement: Net SGST reimbursement @90% for Small Industries for 5 years, @60% for Medium Industries for 5 years, @60% for Large Industries other than Mega Industries for 5 years, and @70% for Mega category Industries for 10 years.
Subsidy	<ul style="list-style-type: none"> • Capital Interest Subsidy: 5% per annum for 5 years • Infrastructure Interest Subsidy: 5% per annum for 5 years • Industrial Quality Development: 5% per annum for 5 years
Incentivising employment generation	<ul style="list-style-type: none"> • Units generating minimum employment of 200 direct workers including skilled and unskilled will be provided 10% additional EPF reimbursement facility on employer's contribution.

4.4.5.2 Uttar Pradesh Private Industrial Park Scheme 2017

Private Industrial Park means an industrial estate/ park of more than 20 acres in Bundelkhand & Poorvanchal; 30 acres in Madhyanchal and Pashchimanchal¹; and more than 50 acres in case of Agro Parks in Bundelkhand, Poorvanchal and Madhyanchal which is developed according to the criteria stipulated by U.P. State Industrial Development Authority (UPSIDA).

Key Policy Objectives

- Promote new and upgrading existing Industrial Parks/ Estates
- Promote integrated manufacturing clusters/ zones/ SEZs
- Ensure world class infrastructure for these industrial hotspots

Key Policy Highlights

Table 4-32: Uttar Pradesh Private Industrial Park Scheme 2017 highlights

Subsidy reimbursement	<p>The State Government will provide following incentives to industrial parks/estates of more than 20 acres in Bundelkhand & Poorvanchal; 30 acres in Madhyanchal & Paschimanchal and more than 50 acres in case of Agro Parks developed by private sector</p> <ul style="list-style-type: none"> • Interest subsidy reimbursement for industrial parks/estates and Agro Parks developed by private sector <ul style="list-style-type: none"> ○ 50% of annual interest on the loan taken to buy land for 7 years ○ 60% of annual interest on the loan taken for building infrastructure for 7 years ○ 60% of annual interest on the loan taken for building hostel/dormitory housing for workers for 7 years • 100% exemption/reimbursement to developer and 50% exemption to individual buyers (first) on stamp duty
Incentive specific procedures	<ul style="list-style-type: none"> • In principle approval/ Letter of Comfort • Interest Subsidy • Stamp duty Exemption/ reimbursement

4.4.5.3 Uttar Pradesh Food Processing Industry Policy 2017

Vision

To ensure balanced economic development of the state and provide maximum benefit to all stake holders by establishing Uttar Pradesh as a leading state in food processing sector.

Objective

The main objective of the Uttar Pradesh Food Processing Industry Policy 2017 is to ensure fair and remunerative price of the produce to the growers, value addition to the price of raw produce, promote setting up of food processing industries, easy availability of processed food products to consumers at competitive prices, generation of new employment opportunities to build capacities and increase the skill level of the manpower in this sector and also make available additionally required manpower

Key Policy Objectives

- Affirm fair & remunerative price of the produce to the growers
- Ensure Value addition to the price of raw produce
- Promote setting up of food processing industries
- Easy availability of processed food products to consumers at competitive prices
- Generation of new employment opportunities in the sector

Priority Sector

- Development of Infrastructure Facilities
- Identification of Food Processing Zones
- Development of Food Processing Park, Mega Food Park & Cold Chain Facility
- Providing conducive atmosphere for setting-up Food Processing Industry
- Simplification of Procedures

Key Policy Highlights

Table 4-33: Uttar Pradesh Food Processing Industry Policy 2017 highlights

Subsidy	<ul style="list-style-type: none"> • Capital Investment Subsidy @25% up to Rs 50 lakhs • Interest Subsidy@100% for 5 years to micro and small food processing industries, and @7% for 5 years for establishments other than micro and small food processing industries. • Interest Subsidy for purchase of reefer vehicle/ mobile cooling van @7% for 5 years
Additional Grants-in-aid	<ul style="list-style-type: none"> • Additional Grants-in-aid to Mega Food Parks up to Rs 50 Cr under SAMPADA scheme • Additional Grants-in-aid @10% under SAMPADA scheme for fruits and vegetables processing industries
incentive	<ul style="list-style-type: none"> • Export promotion incentive @50% reimbursement of expenses incurred on exporting processed food samples for test marketing; and reimbursement of 25% of transportation cost up to INR 10 lakhs p.a. for 3 years. Also 20% reimbursement of Free On-Board value up to Rs 20 lakhs per beneficiary p.a. for 3 years.
Reimbursement	<ul style="list-style-type: none"> • Patent registration fee reimbursement @75% and Quality certification fee reimbursement @50% for internationally accepted quality certification

4.4.5.4 Uttar Pradesh Handloom Power-looms Silk Textile and Garmenting Policy 2017

Vision

To generate maximum employment in the textile sector in Uttar Pradesh by attracting new investment and up-gradation of technology to improve the standard of living of the poor.

Objectives

Following are the objectives of the New Textile and Garmenting Policy:

- To foster investment and generation of employment in the textile industry so that the per capita income of State comes at par with the per capita income of the nation.
- To provide employment to as many people as possible in the textile sector.
- To attract investment in the textile sector.
- To fulfill the demand of the textiles in India and outside, with products of Uttar Pradesh and to minimize the import of textile products and raw material from other States.
- To develop the textile industry in backward areas of the State- Poorvanchal, Bundelkhand and Madhyanchal on priority and offer employment at local level and stop the relocation of talent and caliber.
- To organize training and skill development programmes as per the needs of the textile sector in order to ensure easy availability of skilled labor.
- To avail maximum benefits of schemes run by the Government of India in order to boost the textile sector in the State.

Strategy

The Policy aims to promote all sub-branches of the textile manufacturing value chain viz. sericulture (including chaaki and koya production), reeling, handloom, spinning, weaving, knitting, texturizing, dyeing, processing, garmenting (i.e., garment manufacturing, embroidery, embroidered fabrics, made-ups, home textiles, fashion accessories, leather garments and accessories), and all types of technical textiles and jute products. However, special thrust will be provided to:

- a. Garment & made-ups manufacturing as they generate high direct employment and also act as an engine of growth for upstream manufacturing activities; and
- b. Segments where the State has an established strength such as embroidered fabrics, ethnic wear, leather garments and leather accessories

Key Policy Objectives

- Attract investment for creating new job opportunities
- Promote Make in India and meet domestic demand for textiles
- Promote development of textile industry in backward areas
- Ensure rapid availability of skilled labor in Textile industry

Key policy highlights

Table 4-34:Uttar Pradesh Handloom Power-looms Silk Textile and Garmenting Policy 2017 highlights

Subsidy	<ul style="list-style-type: none"> • Land Subsidy @50% of land cost (30% in GB Nagar district) on land purchase from State Agencies • Interest Subsidy @7% up to Rs 1.5 cr (up to Rs 75 lacs for GB Nagar) for 7 years for procurement under TUFs • Infrastructure Interest Subsidy@5% up to Rs 1 cr for 5 years per unit for developing infrastructural amenities • Quality Development Subsidy@ 5% up to Rs 1 cr for 5 years per lab for research and quality improvement
---------	---

	<ul style="list-style-type: none"> • Interest Subsidy @50% on purchase of land for 7 years up to Rs 50 Cr; and @60% for 7 years for construction of staff-quarters, hostel/dormitory.
Exemption	<ul style="list-style-type: none"> • Stamp Duty exemption @100% (75% in GB Nagar district) • Electricity Duty exemption @100% to new units for 10 years • Stamp duty exemption @100% to developer (except in GB Nagar district), and @50% to first buyer of plot/unit • Capital Investment Subsidy @25% for plant and machinery based on investment
Reimbursement	<ul style="list-style-type: none"> • SGST refund for 10years @90% to MSME units, @80% to Mega units • EPF reimbursement for 5 years to new unit @50% with min 100 workers & @60% with min 200 workers Special Incentives for Textile Parks

4.4.5.5 Uttar Pradesh MSME Policy 2017

Vision

- To attain 15% annual growth rate by establishing Uttar Pradesh as an attractive investment destination for setting up of large number of new micro, small and medium enterprises.
- To attain 15% annual growth rate in employment by creating maximum employment in new units and expansion and upgradation of existing units.
- Endeavour to reduce the regional inequalities on the parameters of entrepreneurship, employment, and per capita income and to decrease disparities amongst different classes of society.
- Evolving high-end modern technology driven sensitive administrative system for upgrading existing units and resolution of issues of entrepreneurs.

Strategy

To realize the above vision, the state government will formulate an action plan according to the following strategy:

Target

- 15% annual growth rate of MSMEs
- 15% annual growth rate of employment creation in this sector

Following directives have been identified to achieve aforementioned targets:

- To make available resources, strengthening of infrastructure facilities and assistance in marketing of manufactured products for facilitating expansion and technical upgradation of existing enterprises.
- To ensure easy availability of land for new enterprises, to develop new infrastructure facilities and upgradation of existing facilities.
- To create conducive environment for ease of doing business.
- Sustainable and inclusive development with environmental balance.
- Special encouragement to establishment and upgradation of enterprises in Bundelkhand, Poorvanchal and Madhyanchal towards resolution of regional imbalance.
- Keeping in view the imbalance between various sections of the society, special incentives to increase the participation of women, scheduled castes, scheduled tribes and other backward classes.
- Financial incentive for investment attraction.
- Schemes for technical upgradation for the development of quality of products and services of micro and small enterprises.
- Development of One District One Product concept, branding of state specific products at national and international level.
- Preparation of schemes of the State Government in consonance with Mudra, Startup India, Stand Up India, Make in India and other mission mode programs and schemes of the Government of India.

Key Policy Objectives

- Target to achieve an annual growth rate of 15% in development of MSME industries
- Target to generate employment with annual growth rate of 15%
- Expansion and technical upgradation of the existing MSME industries
- Providing support to the new MSME for setting up the industries
- Create a favorable business environment for the MSME

Key policy highlights

Table 4-35:Uttar Pradesh MSME Policy 2017 highlights

Subsidy	<ul style="list-style-type: none"> • Capital Interest Subsidy @5% per annum for 5 years • Infrastructure Interest Subsidy @5% per annum for 5 years. • Industrial Quality Development subsidy @ 5% per annum for 5 years
Exemption	<ul style="list-style-type: none"> • Land Use conversion@ 100 % exemption for converting agricultural land to Industrial land of agriculture land development authorities • Stamp Duty: Exemption in accordance with the CLAUSE 5.1 of UPIIEPP 2017 • Energy@100% Electricity duty exemption to new units for 10 years
Reimbursement	<ul style="list-style-type: none"> • EPF Reimbursement@100% reimbursement for 5 years from the date of commencement of the unit for MSMEs. • Electricity Charges Reimbursement @one rupee per unit for 5 years from the date of production for MSMEs
Grant	<ul style="list-style-type: none"> • SPV Formation: The Government will provide grant of equal proportion of contribution by the allottees

4.4.5.6 Uttar Pradesh Civil Aviation Promotion Policy 2017

Key Policy Objectives

- Create a conducive business environment and provide adequate incentives for the development of robust civil aviation infrastructure.
- Improve the air connectivity through development of new routes under RCS by providing incentives and to facilitate inter-connectivity of non-RCS airports of the State.
- Facilitate trade and generate employment opportunities.
- Provide support for development of air cargo hubs and fulfilment centers in the State
- Facilitate the growth of Maintenance, Repair and Overhaul (MRO) facilities in the state.

Key policy highlights

Table 4-36: Uttar Pradesh Civil Aviation Promotion Policy 2017 highlights

Reimbursement	<ul style="list-style-type: none"> • Reimbursement of S-GST on sale of air tickets @ 100% reimbursement for 3 years for RCS flights <ul style="list-style-type: none"> ○ @ 100% reimbursement for 1 year for new flights in connecting non-RCS airports within U.P. ○ @ 100% reimbursement for 1 year for new flights in connecting non-RCS airports within U.P.
Miscellaneous	<ul style="list-style-type: none"> • VAT on ATF @ Zero for 10 years for RCS airports <ul style="list-style-type: none"> ○ @Zero for 01 year for connecting non-RCS airports in UP with non-RCS airports outside U.P.



	<ul style="list-style-type: none"> ○ @Zero for 01 year for connecting non-RCS airports within U.P. ● Viability Gap Funding (for 50% of total seat) @20% State Share as per RCS ● Electricity @ Rs. 4/unit upto 30000 units ● Airport parking/night halt at RCS airports @ Zero charges (for 3 years) at GoUP Airports ● Office space (100 sqm) for airlines at GoUP RCS airports @ Zero Rental (for 3 years) at GoUP Airports ● Route Navigation & Facilitation Charges (RNFC) @ 50% of RNFC (upto Rs. 2000) will be reimbursed on RCS airports or flights connecting Divisional HQ (for 3 years)
--	---

4.4.5.7 Uttar Pradesh Information Technology Policy 2017

Vision

“To develop IT as a vehicle for holistic socioeconomic development of Uttar Pradesh with a focus on creating employment, promoting entrepreneurship, innovation and enhanced quality of life”

Mission

- To develop Uttar Pradesh as a leading IT/ITeS investment destination
- To create a conducive environment for the growth of investors, entrepreneurs, and start-ups
- To generate employment opportunities and nurture entrepreneurship among the youths in Uttar Pradesh
- To create equitable and balanced growth across the state by enabling effective use of technology

Key Policy Objectives

- Develop and promote attractive business ecosystem in the State
- Promote human development and infrastructure development by means of IT Cities, IT Parks, IT-BPM units
- Instill and nourish entrepreneurship and innovation by providing impetus to Start-ups, Incubators, Centers of Excellence
- Lead digital empowerment through creation of citizen centric services, whereby welfare is generated across all sections of the society

Key policy highlights

Table 4-37: Uttar Pradesh Information Technology Policy 2017 highlights

Subsidy	<ul style="list-style-type: none"> ● Interest subsidy @5% per annum for a period of 7 years ● Patent Filing Subsidy @up to 100% of actual filing costs on awarded patents
Reimbursement	<ul style="list-style-type: none"> ● Electricity Duty@100% reimbursement for new IT/ITeS units for a period of 10 years post commencement of commercial operations ● Grant on EPF@100% reimbursement of the total EPF amount paid for IT/ITeS Professionals of Uttar Pradesh domicile with employment for continuous 1 year, after start of commercial operation ● Incentive for Certification: Maximum reimbursement of 3 certifications with total limit of INR 25 lakhs per unit. ● Provision for land: Reimbursement up to 25% of the cost of purchase of land from State Agencies subjected to certain conditions

Exemption	<ul style="list-style-type: none"> • Stamp Duty@100% exemption on purchase/lease of land/office space/buildings for IT/ITeS use with condition of commencing operations within 3 years
Others	<ul style="list-style-type: none"> • Recruitment Assistance: INR20,000 per employee located in Tier-II and Tier-III cities subject to continuous employment of minimum 6 months and annual recruitment of at least 50 students in the field of IT-BPM, recruited from UP based colleges.

4.4.5.8 Uttar Pradesh Electronics Manufacturing Policy 2017

Vision

“To cultivate Electronics Manufacturing Industry as an important growth driver for Uttar Pradesh through effective use of skilled force, adapting innovation and emerging technologies and building excellent infrastructure leading to all-round sustainable ecosystem thereby contributing towards the overall economy of the state & nation”

Mission

- To promote the growth of Electronics Manufacturing Industry in the state by providing conducive environment and position Uttar Pradesh as the most preferred Investment destination
- To provide Single window assistance for successful establishment of ESDM units in the state of Uttar Pradesh
- To build a world class ecosystem of R&D, Product design, Assembly & Testing, Engineering & Production for electronics in the state
- To promote skill development for the workforce in the electronics sector which can boost employment opportunities within the state

Policy Target

With this Electronics Manufacturing Policy, the state government targets to make Uttar Pradesh an Electronics Manufacturing Hub and targets to establish a conducive ecosystem for Electronics System Design and Manufacturing (ESDM) sector, where Anchor Units and Components Manufacturers shall work together.

The Policy targets the declaration of entire notified area of Noida Industrial Development Authority (NOIDA), Greater Noida Industrial Development Authority (GNIDA) and Yamuna Expressway Industrial Development Authority (YEIDA) as “Electronics Manufacturing Zone” (EMZ), whereby, at most ESDM units shall establish their manufacturing units.

The policy targets to attract investment of INR 20,000 Crores in ESDM sector and generate employment for 3,00,000 manpower by the year 2022.

Key Policy Objectives

- Develop and promote attractive business ecosystem in the State
- Attract investment in Electronics Manufacturing sector in the state
- Promote establishment of ESDM parks for Domestic / Foreign investors in the state
- Promote and develop employment opportunities within the state

Key policy highlights

Table 4-38: Uttar Pradesh Electronics Manufacturing Policy 2017 highlights

Subsidy	<ul style="list-style-type: none"> • Capital subsidy @15% on fixed capital other than land subject to max. of Rs. 5 Cr
---------	--

	<ul style="list-style-type: none"> • Interest subsidy @ 5% per annum for 7 years subject to a max. of Rs. 1 Cr. per annum per unit • Land Rebate @ 25% on prevailing sector rates shall be provided either to EMC SPV / ESDM Parks and individual ESDM units establishing inside EMZ on purchase of Land from State Agencies
Reimbursement	<ul style="list-style-type: none"> • Incentives for filing patents@ up to 100% reimbursement of actual filing costs on awarded patents subject to a maximum of Rs. 5,00,000 for domestic and Rs. 10,00,000 for international patents • State GST Reimbursement @ 100% reimbursement subject to a maximum of 100% of fixed capital investment other than land for 10 years
Exemption	<ul style="list-style-type: none"> • Stamp Duty @100% exemption of stamp duty on purchase/lease of land

4.4.5.9 Uttar Pradesh Solar Power Policy 2017

The State Government targets to meet the supply and demand of energy and to provide 24 hours electricity supply to rural and urban households by year 2018-19. A complete transformation of power sector scenario in Uttar Pradesh including tapping huge solar energy potential is required for attaining such an ambitious target. Additionally, solar energy deployment in the state will also attract investments creating many jobs in the state. The solar industry provides both one-time jobs during pre-commissioning/ construction phase and regular operations and maintenance positions over the life of the project. Investments in the solar industry as well as domestic manufacturing of solar panels will help create direct and indirect employment opportunities in both skilled and unskilled sector. Thus, keeping in view vast potential of solar power in the state and to improve the power availability, the Government is keen in establishing solar energy-based power plants in the state.

Policy Targets

The State Government will endeavor to achieve 8% of total electricity consumption from solar energy (as defined in the Tariff Policy). For attaining this, installation of 10700-megawatt capacity of solar power is targeted till 2022 of which 4300megawatt capacity will be achieved through installation of Rooftop Solar Power Plant.

Key Policy Objectives

- Encourage participation of Private Sector and provide investment opportunities to set up solar power projects in the state
- Support in providing environment friendly and affordable Power for All
- Promote Research & Development, innovations, and skill development in the State
- Achieve target of 8% Solar Renewable Purchase Obligation (Solar RPO) by 2022

Key policy highlights

Table 4-39: Uttar Pradesh Solar Power Policy 2017 highlights

Exemption	<ul style="list-style-type: none"> • Electricity Duty@100% exemption from electricity duty for 10 years • Stamp Duty@100% exemption on chargeable stamp duty • Exemptions for Large Scale Stand – alone solar projects: <ul style="list-style-type: none"> ○ @ 50% exemption on wheeling charges/transmission charges on intrastate sale of power to third party or in case of captive use ○ @ 100% exemption from cross subsidy surcharge and wheeling charges /transmission charges on interstate sale of solar power
-----------	---

Subsidy	<ul style="list-style-type: none"> • Subsidy for Grid Connected Rooftop Solar PV Plants@ Rs. 15000/KW to the maximum limit of subsidy or Rs. 30000/KW per consumer on first come first serve basis for the first 100 MW applications submitted online to UPNEDA • Subsidy for Mini Grid@ 30% subsidy for the project to be installed in villages/Majras identified by UPNEDA/State Government by the state government
Purchase offer	<ul style="list-style-type: none"> • Solar Park: State offer to purchase 100% power generated from solar park

4.4.5.10 Uttar Pradesh Biofuel Policy 2018

"Bio-energy Enterprises Incentive Program" is being executed for effective implementation of various projects run by the U.P. State Bio-Energy Development Board from time to time. Facilitating financial incentives to such projects, the detail guidelines are as under: -

Mission:

- Bio-energy based environment-friendly sustainable development.
- Contribution in creating sustainable employment/ self-employment opportunities
- Ensure the effective execution of the Policy
- Establishing 03 Mega units

Strategy:

The strategy for effective implementation of the project will be based on "Entrepreneurship Mode" under "Value-chain-Mechanism". The following steps will be taken in its implementation process:

- For this purpose, U.P. State Bio-Energy Development Board will invite investment proposals for establishing bio-energy projects (biodiesel, bio ethanol, methanol, biogas/ bio-CNG, producer gas- Pellets and briquettes) through prestigious newspapers and also publish other promotional activities.
- Related facilities shall be made available after appraising the proposals on the basis of first come first serve, the technology adopted by the entrepreneur, the continuity of the adopted technology and per unit production cost first technical inputs and the cost of production, cost per unit cost and the financial resources available in the respective financial year the appraisal will be done in accordance with the descriptions given at point no.2.3 (financial incentive). The appraisal of the proposals received will be done by U.P. State Bioenergy

Development Board in accordance with State Bio Energy Policy. If required necessary, Board may ask the investor for producing additional records / information in favour of investment proposal. After the assessment, the Board will submit its recommendation to the Approval Committee / Empowered Committee for the decision as per the total cost of industrial units.

Key Policy Objectives

- Establish eco-friendly economic development based on biofuel in the State
- Establish three Mega investment unit in the State
- Attract investment in the sector
- Creation of new job opportunities in the State

Key policy highlights

Table 4-40:Uttar Pradesh Biofuel Policy 2018 highlights

Subsidy	<ul style="list-style-type: none"> • Capital Subsidy@ 25% for units investing up to INR 10 Cr @20% for units investing more than INR 10 Cr and up to 100 Cr • SGST Subsidy@100% SGST reimbursement for 10 years
Exemption	<ul style="list-style-type: none"> • Stamp Duty@100% exemption from Stamp Duty

Reimbursement	<ul style="list-style-type: none"> • Case to Case Incentives @ for units investing more than INR 100 Cr reimbursement of 15% for project cost or INR 150 Cr whichever is lesser
---------------	--

4.4.5.11 Uttar Pradesh Tourism Policy 2018

Vision

To establish Uttar Pradesh as a preferred tourism destination in India, and achieve country's highest tourist arrival and tourism receipts, driving employment generation and ensuring best visitor experience.

Mission

To drive a sense of inclusive tourism development in the local community of Uttar Pradesh, and make optimum use of the tourism experiences across vibrant cities, attractions, nature, wildlife, adventure, food, handicraft (including the promotion of 'One District One Product Scheme'), heritage, religion and culture of Uttar Pradesh.

Targets

The Department of Tourism, through implementation of this tourism policy, aims to achieve the following targets:

- To become the most preferred tourist destination in the country by 2023.
- To achieve an annual increase of 15% domestic tourist arrival and 10% foreign tourist arrival, consistently over the next five years.
- To attract investments with a target of INR 5,000 Crore per year.
- To provide employment to approximately people per year.
- To impart training to 10,000 tourism service providers, over the next five years.
- To convert 10 heritage buildings (Buildings with heritage value) to heritage hotels per year.
- To attract 1 tourist to national parks and wildlife sanctuaries in Uttar Pradesh per year.
- To improve regional connectivity of all religious and cultural attractions within the state, through road, rail and air.
- To promote the state as a leading MICE destination in the country.
- To elevate the standards of public service facilities across the state and provide high quality visitor experience.
- To improve local entrepreneurship avenues, through execution of tourism events and festivals like Deepotsav, International Literature Festival, International Ramayana Conclave, Geeta Mahotsav, Ganga Mahotsav, Gorakhpur Mahotsav, Lucknow Mahotsav, Rangotsav Barsana, Taj Mahotsav, Shipotsav Noida, UP Divas and other city based mahotsavs.
- To promote city-wise events and festivals with a predefined calendar, and promoting the same nationally and internationally

Key Policy Objectives

- Become most preferred tourist destination in India by 2023
- Attract investments with a target of INR 5,000 Crore per year
- Target to provide employment to approximately 5,00,000 people per year
- Target to impart training to 10,000 tourism service providers, over the next five years
- Elevate the standards of public service facilities across the state and provide high quality visitor experience

Key policy highlights

Table 4-41: Uttar Pradesh Tourism Policy 2018 highlights

Subsidy	<ul style="list-style-type: none"> • Capital Investment Subsidy <ul style="list-style-type: none"> ○ @15% to New Hotels/Resorts upto Rs 10 Cr
---------	--

	<ul style="list-style-type: none"> ○ @15% to Wellness Centres upto Rs 10 Cr ○ @10% to New Sports resort upto Rs 1 Cr ○ @15% to New Budget Hotels upto Rs 1.5 Cr ○ @20% to New Tented accommodation upto Rs 50 lacs ○ @25% to new heritage properties upto Rs 1.5 Cr (To know about more categories refer to full policy) ● Interest Subsidy @5% for 5 years upto Rs 25 lacs per annum to all new units ● Skill Development Subsidy @100% reimbursement of hospitality related course fees for upto Rs 10000 per person and subsidy of INR
Exemption	<ul style="list-style-type: none"> ● Stamp Duty exemption @100% on sale/lease/transfer for the first transaction ● Conversion and Development charges waiver @ 100% to all tourism units ● Excise License Fee exemption @100% exemption to Heritage hotels set up in rural areas
Others	<ul style="list-style-type: none"> ● 5 lakh individual/group in reviving the indigenous and scarce art, music, folk dance, craft and cuisine

4.4.5.12 Uttar Pradesh Pharma Industry Policy 2018

The State is emerging as a top industrial destination with investment friendly reformative policy approach. This policy takes ahead the vision and objectives of State's Industrial Investment and Employment Promotion Policy 2017 and provides attractive incentives to develop supporting ecosystem for a competitive Pharma industry in Uttar Pradesh.

The policy aims at building up competencies of research, development, and commercialization in pharmaceutical sector, capable of harnessing the true potential of the sector in a sustainable way by utilizing the knowledge and manpower from premier institutions to provide quality and affordable healthcare services.

Key Policy Objectives

- To promote establishment of specialized Pharmaceutical Parks with best-in-class infrastructure and technology.
- To encourage cutting-edge pharmaceutical research, build world-class infrastructure and attract world's best talent to contribute to the State's development.
- To promote creation of Intellectual Property (IP) in the pharmaceutical sector by facilitating R&D institutions and contributing more funds to R&D in the pharmaceutical sector
- To promote AYUSH healthcare through promotion of R&D and manufacturing of AYUSH healthcare products

Key policy highlights

Table 4-42: Uttar Pradesh Pharma Industry Policy 2018 highlights

Subsidy	<ul style="list-style-type: none"> ● Patent Filing Subsidy@ 100% of actual filing costs on domestic patents ○ @50% of actual filing costs on international patents ● Quality Certification Subsidy @75% of cost incurred for ISO certification and 50% of cost incurred for BIS certification ● SGST Reimbursement, Stamp duty exemption, Capital Interest Subsidy, Infrastructure Interest Subsidy, Industrial Research Subsidy, Electricity Duty & Mandi Fee exemption as per Incentives under UP IIEPP 2017
Support	<ul style="list-style-type: none"> ● Support for setting up R&D institutes @60% of annual interest on loan taken reimbursement

	<ul style="list-style-type: none"> Support for Clinical Trials @ 75% of total expenditure reimbursement Support for Contract / sponsored research @ 50% subsidy on eligible project cost to institutes situated within UP
Others	<ul style="list-style-type: none"> Pharma Park: Horizontal Pharma Park developed over min 10 acres of land and Vertical Pharma Park developed over min 3 acres of land will be provided same incentives as provided to Private Industrial Parks under IIEPP 2017

4.4.5.13 Uttar Pradesh Warehousing Logistics Policy 2018

The Govt of Uttar Pradesh realizes that to achieve the vision of sustainable industrialization in the state, the development of warehousing and logistics infrastructure will be a critical factor. A vibrant warehousing and logistics sector would increase the competitiveness of goods produced in the state, both in the domestic as well as export market. The sector has high potential to boost manufacturing and job creation in the state and can therefore be instrumental in improving the State's GDP. With this view, the Govt of UP envisions this "Warehousing and Logistics Policy" to maximize the benefit of the strategic geographical location of the state, and spur far reaching economic benefit.

The rapid industrialization in Uttar Pradesh is also creating higher demand for more sophisticated logistics infrastructure in the State. With GST, India has become a unified market, and UP has immense potential to emerge as a manufacturing and warehousing hub of the nation. The state has huge storage capacity with large number of warehouses under State Warehouse Corporation, cold storages including those under National Horticulture Mission, and Grameen Bhandarans (Rural Godowns) under National Agriculture Bank for Rural Development (NABARD). There are approximately 174 warehouses in UP with 71.84 lakh MT capacity. The current capacity is not enough to suffice the rising storage needs. Therefore, expanding the storage capacity in the state is being emphasized in state.

Through this policy, Govt of Uttar Pradesh envisages to attract investments in the following categories but not limited to -

- Warehousing, Silos, Cold Storages and associated infrastructure
- E-Commerce hubs
- Technological solutions in Real time logistics, supply chain management and process improvement.
- Robotics & Automation technologies in warehousing and logistics sector.
- Skill Development and Training

This policy takes ahead the vision and objectives of State's Industrial Investment and Employment Promotion Policy 2017 (IIEPP 2017) and further provides strategic direction for development of the warehousing and logistics sector in the state over the next 5 years.

Key Policy Objectives

- Promote private investments in setting up logistics facilities in the state with forward and backward linkages.
- Upgrading and improving the existing warehousing and logistics infrastructure to boost economic activities.
- Create more employment opportunities in the sector
- Enhance the warehousing capacity to promote the interests of both primary and secondary sectors
- Promote green and innovative practices to develop a competitive logistics infrastructure in the State.

Key policy highlights

Table 4-43: Uttar Pradesh Warehousing Logistics Policy 2018 highlights

Subsidy	<ul style="list-style-type: none"> • Capital Interest Subsidy@5% for 5 years upto INR 50 lacs for logistics unit <ul style="list-style-type: none"> ○ @5% for 5 years subject to overall ceiling of INR 10Cr for Private logistics Par • Infrastructure Interest subsidy@5% for 5 years upto INR 5 Cr for logistics unit <ul style="list-style-type: none"> ○ @5% for 5 years upto INR 10 Cr for Private logistics Park
Reimbursement	<ul style="list-style-type: none"> • EPF reimbursement facility@50% reimbursement on providing direct employment to 100 or more employees
Exemption	<ul style="list-style-type: none"> • Energy@ 100% exemption on electricity duty for 10 years • Development Charges @75% exemption. • Land-use conversion Charge@ 50% concession on land use conversion charges
Others	<ul style="list-style-type: none"> • Quality certification of Warehouses@50% of cost of quality certification upto INR 1.5 lacs reimbursement

4.4.5.14 Uttar Pradesh Film Policy 2018

Objectives

- To develop the state of Uttar Pradesh as an important center for the production of films.
- To provide information about the most amazing, incredible, and delightful places in Uttar Pradesh and the means to attract tourists.
- To promote and publicize the cultural, mythological, and historical heritage and the rich traditions of the state, in the country as well as in other parts of the world.
- To provide opportunities for development of acting and film making talent in the state.
- To provide opportunities for job creation in the state.
- To provide means for attracting additional investment in the state through film industry.
- To provide healthy and relatively economic entertainment to the people of the state as well as the country.

Strategy

The state government is trying to make the best possible efforts to cater to the objectives and for this purpose, it has constituted 'UP Film Bandhu'. Following efforts will be made to create a suitable environment for film production in the state:

- To provide assistance in the development of the best and a very competitive infrastructure at the national level.
- To Renovate the existing infrastructure.
- To provide means for renovation and upgradation.
- To provide required facilities.
- To provide administrative support.
- To attractive packages of financial incentives.
- To provide attractive schemes/ systems of financial support required in the appropriate cases.
- To promote non-government organizations engaged in the publicity of cinema.

Key Policy Objectives

- Establish Uttar Pradesh as the preferred destination for film industry
- Showcase the heritage, culture, and tourist destinations of the State to attract more tourist
- Attract more investment in the state
- Create more employment opportunities in the state

Key policy highlights

Table 4-44:Uttar Pradesh Film Policy 2018 highlights

Subsidy	<ul style="list-style-type: none"> • Subsidy for films @INR 1 Cr for films which have been shot for at least a half of its total shooting days in Uttar Pradesh @upto INR 2 Cr for the film with two-third of its total shooting days are in Uttar Pradesh • Additional Subsidy @ upto INR 25,00,000 will be provided to cast at least 5 artists from UP @ upto INR 50,00,000 will be provided in case all the artists hail from UP • Processing Subsidy @ 50% of the processing cost or INR 50, 00, 000, whichever is less is granted if any film producer, shoots and processes the film in the state • Subsidy for setting up Film institute @50% of its cost or a maximum of INR 50 lakh, whichever is less, will be provided (excluding Noida/ Greater Noida)
Reimbursement	<ul style="list-style-type: none"> • SGST reimbursement@100% to multiplex/Cinema Hall owner

4.4.5.15 Uttar Pradesh Defense Aerospace Units Employment Promotion Policy 2018

Aim

This policy aims to attract private investment in the defense manufacturing sector in the state in the context of the announcement of the establishment of Defense Industrial Corridor in Uttar Pradesh by Hon'ble Prime Minister, Shri Narendra Modi. This policy complements the State's Civil Aviation Policy - 2017 and UP Micro, Small and Medium Enterprises Policy 2017, taking forward the vision and objectives of the State's Industrial Investment and Employment Promotion Policy 2017. Equipped with attractive incentives, this policy provides a strategic direction for the development of defense and aerospace sector in the state in the next 05 years.

Targets

- To attract an investment of Rs. 50,000 Crores in the next 5 years
- Generating 2.5 lakh jobs in the defense and aerospace manufacturing sector

Key Policy Objectives

- Establish the State as D&A manufacturing hub in the country
- Promote establishment of private D&A park in the State
- Provide support to the units which wants to establish themselves in the defense corridor

Key policy highlights

Table 4-45: Uttar Pradesh Defense Aerospace Units Employment Promotion Policy 2018 highlights

Subsidy	<ul style="list-style-type: none"> • Capital Subsidy @10% of FCI (except land cost) upto Rs. 10 Cr and @15% upto max Rs. 15 Cr in Bundelkhand Region for Mega Anchor & Anchor D&A Unit @5% of FCI (except land cost) upto max Rs. 5 Cr and @7.5% upto max Rs. 7.5 Cr in Bundelkhand Region for MSME & Vendor Unit @10% of FCI up to Rs. 10
---------	--

	<p>Cr and @15% of FCI up to a limit of INR 15 Cr in Bundelkhand region for Private Defence & Aerospace Parks @20% up to Rs. 1 Cr for setting up ETP (Mega Anchor & Anchor units)</p> <ul style="list-style-type: none"> • Transport subsidy (Mega Anchor & Anchor units) @50% subsidy upto consolidated maximum Rs. 2 Cr for transporting imported plant and machinery from logistic park/ transport hub/ port/ harbour to the production unit @30% subsidy up to Rs. 1 Cr (per annum for 5 years) for transporting finished goods to logistic park/ transport hub/ port/ harbour from the production unit
Exemption	<ul style="list-style-type: none"> • Stamp Duty@100% exemption
Grant	<ul style="list-style-type: none"> • Grant for setting up of Common Facility Centres @ 25% wherein 75% grant has been provided by Gol
Technology transfer	<ul style="list-style-type: none"> • Technology transfer (Mega Anchor & Anchor units) @75% for the first 5 units and @50% towards the next 5 units up to Rs. 50 lakhs per unit

4.4.5.16 Uttar Pradesh Milk Policy 2018

Vision

To establish Uttar Pradesh as the leading milk producing state along with keeping the state as a frontrunner in the field of milk production, to ensure balanced economic development of the state and provide maximum benefit to all the stakeholders.

Targets

- To encourage setting up of milk industry in the state.
- To promote capital investment in the state.
- To ensure that milk producers in rural areas get optimal cost and benefit of their produce.
- To reduce loss of milk of milk producers and to protect their economic interests.
- To increase per capita daily availability of milk in the state from 335 gm to 600 gm.
- To increase milk processing in the state from 12% to 30% through organized sector.
- To increase share of organized sector from current 25% to 60%.
- To enable value-addition of milk and to make available nutritive and high quality hygienic processed milk products to the public.
- To ensure easy availability of processed milk products at affordable rates.
- To encourage export of milk and milk products outside the state and country.

Strategy

- Development of infrastructure facilities
- To provide conducive environment for establishment of milk industry
- Investment promotion
- Technological upgradation promotion
- To provide fiscal incentives and concessions
- Market development and export promotion
- Human resources development
- Other promotional facilitation
- In view of the enormous milk production sector, establishment of 'Project facilitation and monitoring center' (PFMC) at headquarter for providing necessary management and technological efficiency to new entrepreneurs and for facilitating projects and their monitoring.

Key Policy Objectives

- Promote Dairy units and attract investments in UP
- Diversify rural livelihood and ensure fair prices to farmers
- Increase milk production in UP at affordable rates
- Promote innovations, R&D and Tech advancement

Key Policy Highlights

Table 4-46:Uttar Pradesh Milk Policy 2018 highlights

Subsidy	<ul style="list-style-type: none"> • Capital Subsidy @ 25% on cost of creating infrastructure/ expansion/ diversification • 100% interest subsidy for 5years to MSME Milk processing units • 7% interest subsidy for 5years to non MSME Milk processing units • 50% subsidy on cost of preparing Detailed Project Report • Promoting Exports <ul style="list-style-type: none"> ○ 50% subsidy on cost of sending sample for test abroad ○ Freight subsidy @25% to transport processed product from plant to airport/port for 3years ○ 20% subsidy on product Freight on Board cost for 3years
Reimbursement	<ul style="list-style-type: none"> • 50% reimbursement of quality certification fees and testing charges • 75% reimbursement of patent filing fees (one time)

4.4.5.17 Uttar Pradesh Electric Vehicle Mftg Mobility Policy 2019

Towards this, the Uttar Pradesh Electric Vehicles Manufacturing and Mobility Policy 2018 provides attractive fiscal and non-fiscal to attract investments to promote Electric mobility in the state. The policy also promotes early adoption of EVs in the state as well as create demand in the sector. Therefore, the policy contains 3-components: -

- (1) Manufacturing
- (2) Charging infrastructure
- (3) Demand Creation.

This policy complements the UP Industrial Investment and Employment Promotion Policy (UP IIEP), 2017. Besides the department of infrastructure & industrial development, department of transport, department of power and department of urban development play pivotal role in the implementation of this policy.

Policy Targets

- To attract investments of over INR 40,000 crore in the next 5 years across the electric mobility ecosystem with an employment potential for 50,000 people
- To launch 1000 electric buses (BEVs/FCEVs) and achieve 70% EV public transportation on identified green routes in identified 10 EV cities by 2030.
- To phase out all conventional commercial fleets and logistics vehicles and achieve 50% EV mobility in Goods Transportation in identified 10 EV cities by 2024 and all cities by 2030.
- To roll out nearly 10 lakh EVs, combined across all segment of vehicles, by 2024.
- To bring in manufacturing units of high-density power storage of at least 5GWh capacity in the next 5 years for smooth electric mobility
- To set up nearly 2 lakh slow and fast charging, swapping stations by 2024

Key Policy Objectives

- Promote adoption of in the state EVs in state to create greener environment
- Create employment opportunities both from supply side and demand side of Electric Vehicles
- Create a conducive environment for shift from Internal Combustion (IC) engines to Electric Vehicles (EVs)
- Develop a strong and sustainable ecosystem for battery management, right from production stage to disposal stage
- Develop a strong and sustainable ecosystem for battery management, right from production stage to disposal stage

Key policy highlights

Table 4-47:Uttar Pradesh Electric Vehicle Mftg Mobility Policy 2019 highlights

Subsidy	<ul style="list-style-type: none"> • Land Subsidy@25% of actual cost or prevalent circle rate of land whichever is less • Capital Interest Subsidy@5% p.a. for 5 years upto Rs 50 lakh p.a., to Large, Anchor EVMU/EBUs & MSME • Infrastructure Interest subsidy@ 5% p.a. for 5 years upto Rs 1 Cr, to Large, Anchor EVMU/ EBU & MSME • Capital Subsidy for Charging Facility@25% on FCI (excluding land cost) to first 1000 charging stations upto Rs 6 lakh per charging station • Capital Interest Subsidy for Charging Station@50% reimbursement on FCI (excluding land cost) for setting up hydrogen generation and fuelling plants to first 10 units, subject to max INR 50 lakh per unit.
Exemption	<ul style="list-style-type: none"> • Energy@100% exemption to Large, Anchor EVMU/EBUs and MSME units for 10 years • Vehicle Registration Fee@ 100% exemption from Vehicle registration fees (Only First 1 lakh buyers, and Vehicle manufactures in UP)
Reimbursement	<ul style="list-style-type: none"> • Patent and Certification@75% reimbursement of patent registration cost and 50% reimbursement of quality certification charges for MSME only

4.4.5.18 Uttar Pradesh Electronics Manufacturing Policy 2020

Vision

To establish Uttar Pradesh as the preferred destination for electronics industry by offering globally competitive infrastructure and favorable policy environment for cultivating Electronics Manufacturing Industry as an important growth driver for Uttar Pradesh through effective use of skilled force, adapting innovation and emerging technologies leading to all-round sustainable ecosystem thereby contributing towards the overall growth of economy of the state & nation.

Mission

- To establish Uttar Pradesh as the preferred destination for electronics industry
- To build a world class ESDM ecosystem in the state
- To nurture MSME enterprises as the growth engine of the economy
- To foster a culture of research, innovation and entrepreneurship
- To create sector-specific high-quality talent pool for the benefit of the industry

Target

- To attract investment worth INR 40,000 Cr
- To establish three (3) Electronics Manufacturing Clusters (EMC) in the state

- To establish three (3) Center of Excellence (CoE) in the state
- To establish ESDM parks for Domestic/Foreign investors in the state
- To attract investment in semiconductor manufacturing through FAB units
- To provide approx. 4 Lakh (0.4 million) employment opportunities within the state

Key Policy Objectives

- Establish Uttar Pradesh as the preferred destination for electronics industry
- Establish three (3) Electronics Manufacturing Clusters (EMC) in the state
- Provide approx. 4 Lakh (0.4 million) employment opportunities within the state
- Foster a culture of research, innovation, and entrepreneurship

Key policy highlights

Table 4-48:Uttar Pradesh Electronics Manufacturing Policy 2020 highlights

Subsidy	<ul style="list-style-type: none"> • Interest Subsidy @5% per annum on the rate of interest (investment up to INR 200 Cr on the loan) is reimbursed up to maximum of INR 1 Cr per annum per unit for 5 years (Maximum INR 5 Cr per unit) to the ESDM Units @up to 60% of annual interest for 7 years subject to INR 10 Cr per year with an overall ceiling of INR 50 Cr per private ESDM park. • Land Subsidy @25% on prevailing sector rates on purchase of land from state agencies in Madhyanchal and Paschimanchal regions. @50% on prevailing sector rates on purchase of land from state Agencies in Bundelkhand and Purvanchal regions
Exemption	<ul style="list-style-type: none"> • Stamp Duty@100% exemption of stamp duty on purchase/lease of land shall be available for the establishment of individual ESDM units @100% exemption of stamp duty on first transaction (Owner to Developer/SPV) and 50% exemption on second transaction (Developer/SPV to ESDM Units) shall be available for purchase/lease of land for EMCs/ESDM parks. • Energy@50% exemption of Electricity Duty shall be provided for a maximum period of 10 years to all ESDM units
Reimbursement	<ul style="list-style-type: none"> • Patent Filing @up to INR 5 Lakhs for domestic and INR 10 Lakhs for international patents, on actual basis reimbursement

4.4.5.19 Uttar Pradesh Startup Policy 2020

Vision

To establish a world class startup ecosystem in the state by developing a robust infrastructure and providing conducive policy environment.

Mission

Promote the culture of innovation and entrepreneurship at the grassroot level leading to employment generation and introduction of emerging technologies in niche sectors thereby contributing to state economy and empowerment of youth.

Goals

- To be among top 3 states in the “States’ Startup Ranking” conducted by, GoI
- Establish/support 100 incubators, minimum one in each district of the State
- Develop minimum one million square feet of incubation/acceleration space for startups
- Create the ecosystem for at least 10,000 startups in the state
- Establish 3 state of the art Center of Excellence (CoEs)
- Establish India’s largest incubator in Lucknow

Key Policy Objectives

- Secure a position in top 3 states in the “States’ Start-up Ranking” conducted by, Gol
- Establish/support 100 incubators, minimum one in each district of the State
- Develop minimum one million square feet of incubation/acceleration space for start-ups
- Establish 3 state of the art Centre of Excellence (CoEs)

Key policy highlights

Table 4-49:Uttar Pradesh Startup Policy 2020 highlights

Reimbursement	<ul style="list-style-type: none"> • Capital grant @upto 50 percent reimbursement of the eligible amount subject to maximum limit of INR One (1) Crore for incubators • Patent Filing reimbursement @INR 2 Lakhs for Indian patents and INR 10 Lakhs for International Patent
Incentives	<ul style="list-style-type: none"> • Incentives for Start-Ups: <ul style="list-style-type: none"> ○ Sustenance allowance @ INR 15,000 per month per start-up for a period of one-year upto 10 start-ups per incubator per year at the idea stage. ○ Seed capital @ upto INR 5 Lakhs per start-up as marketing assistance upto 10 start-ups per incubator per year to launch the Minimum Viable Product (MVP) in the market
Support	<ul style="list-style-type: none"> • Financial support to cover operational expenditure @ upto INR 30 Lakhs per year for 5 years or until self-sustainable whichever is earlier for the incubators • State level annual incubator rankings shall be introduced as per the KPI framework approved by the PMIC. Top3 performers in the ranking will be awarded amount of INR 3 Lakhs, 2 Lakhs and 1 Lakh per year to the winner, first runner up and the second runner up respectively • Grant-in-aid (covering capital and operational expenditure) @ upto INR 10 crores to CoE during span of 5 years from the date of establishment.

4.4.5.20 Post Covid19 Accelerated Investment Promotion Policy 2020

COVID-19 pandemic has caused extensive economic loss at state and national level. Besides loss of revenue, employment resources have been impacted adversely because of decline in industrial output and economic activities. The reverse migration of more than 35 lakh migrant workers from various states has presented the State with challenge as well as opportunity. With an aim to create employment for such migrant laborers locally and to achieve the objective of building ‘Atmanirbhar Bharat’ (Self-reliant India), the State Government is looking forward to rigorously promote investments to boost industrial activity in the State.

Therefore, as part of several steps taken to mitigate the demographic risks posed to labour class, the State government has promulgated ‘Post-COVID-19 Accelerated Investment Promotion Policy for Economically Backward Regions’ to promote fast paced implementation of industrial investments in the economically backward regions of the state to address the COVID-19 distress.

Vision

“To promote fast-paced investments in the economically backward regions of state, thereby creating large scale employment opportunities”.

Key Policy Objectives

- Promotes quick investment implementation for job creation
- Provide cushion against Covid 19 distress in the backward regions
- Mitigate the incidence of reverse migration through rapid investments

Key Policy Highlights

Following incentives to mega and mega plus category of industrial undertakings will have to initiate commercial production within 30 months and super mega categories within 42 months from the notification date of this policy: -

Table 4-50: Post Covid19 Accelerated Investment Promotion Policy 2020 highlights

Subsidy	<ul style="list-style-type: none"> • Capital interest subsidy @5% pa. for 5years upto Rs 1 Cr
Reimbursement	<ul style="list-style-type: none"> • 70% reimbursement of net SGST for 12 years in Madhyanchal subject to 200% of eligible capital investment (made during the policy period) and 15 years in Poorvanchal and Bundelkhand subject to 300% of eligible capital investment (made during the policy period).
Exemption	<ul style="list-style-type: none"> • Electricity duty exemption @50% for 10years. Same subsidy will apply for electricity captive power plant for self-use.

4.4.5.21 Uttar Pradesh Data Centre Policy 2021

Vision

To establish Uttar Pradesh as the preferred investment destination for Data Center Industry

Mission

To build a world class Data Center ecosystem in the state by attracting investments from global as well as Indian players and nurture MSMEs/ start-ups to support the localization Of the Data Center industry

Target

- To develop 250 MW Data Centre industry in the state
- To attract investment worth INR 20,000 Crores in the state
- Establish at least 3 State of the art Private Data Centre parks

Key Policy Objectives

- Establish UP as preferred investment destination for Data Centre industry
- Develop 250 MW Data Centre Industry in UP
- Attract investments worth Rs 20,000 Crores
- Establishing at least 3 State of art Private Data Centre Parks in UP

Key Policy Highlights

Table 4-51:Uttar Pradesh Data Centre Policy 2021 highlights

Subsidy	<ul style="list-style-type: none"> • Capital Subsidy to units @7% upto maximum Rs 10 Crores on FCI (exclude land & building) to be paid in 10years • Interest Subsidy to parks @60% on annual interest for 7years subject to maximum Rs 50 Crores per park • Land Subsidy 25% on prevailing sector rates in Madhyanchal & Paschimanchal; and @50% on prevailing sector rates in Bundelkhand & Poorvanchal upto maximum Rs 75 Crores to parks & units
Exemption	<ul style="list-style-type: none"> • Stamp duty exemption @100% on first transaction and @50% on second transaction to both parks & units • Electricity duty exemption @100% for 10years to units

	<ul style="list-style-type: none"> • Transmission & Wheeling charges exemption for 25years @50% on intrastate sale of power; @100% for intrastate transmission system & for 5years import of energy from outside UP to both parks & units
Others	<ul style="list-style-type: none"> • Dual power grid power supply to first 3 DC parks established in the State. Energy Department to bear the cost of second grid. For units it is available on demand at applicable charges

4.4.6 Medi – city

Medicity is concept which aims to functionally integrate within one campus and one management of the facilities related to medical care, teaching, research, and development. It also offers to explore the possibility of integrating knowledge of traditional and alternative medicine with modern medicine, through means of scientific research.

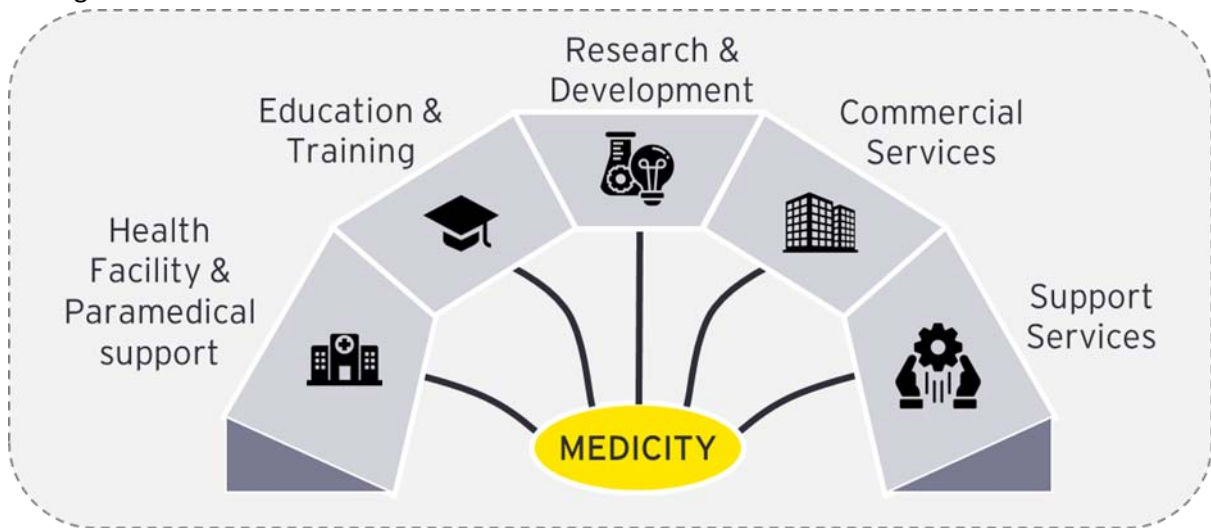
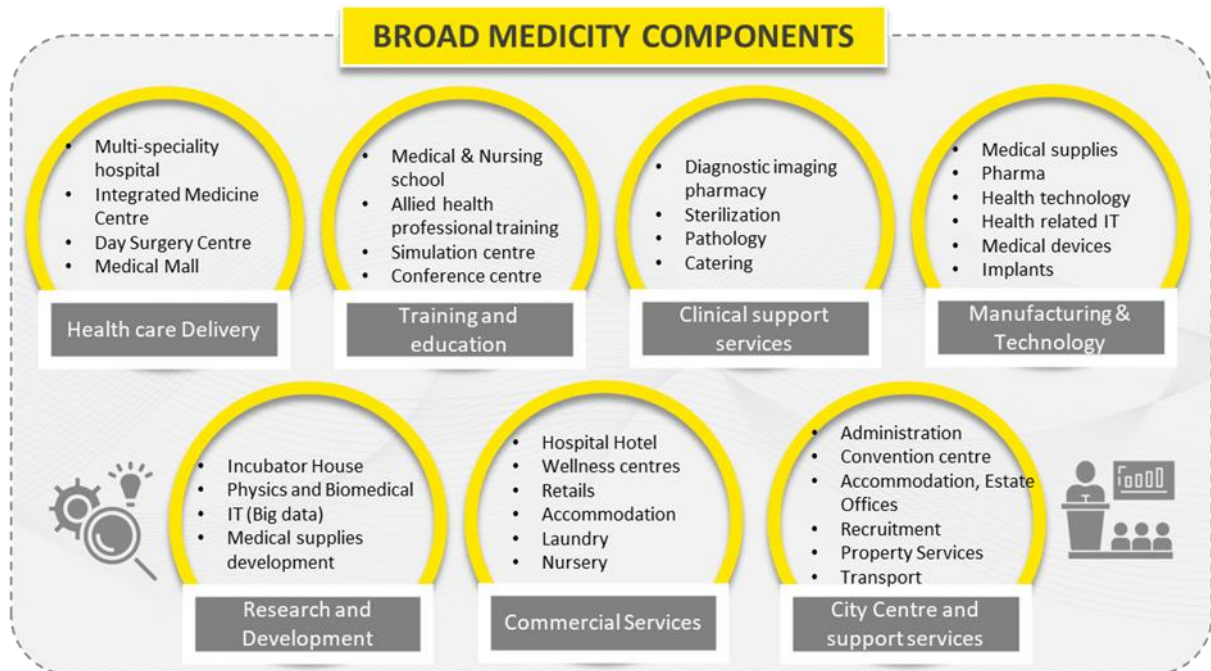


Figure 4-54: Broad components of Medi – City



Bareilly being one of the leading cities of Uttar Pradesh in terms of medical facilities, has a strong health infrastructure base which can be utilized in a better way by providing a much better



infrastructure in the form of a Medi – city encompassing a Multi – specialty Hospital, academic medical institutions, etc.

Second factor which contributes to the requirement of a Medi – City as per our understanding is that with the increase in population of the Bareilly District, there will be a requirement/ demand of more health facilities in the district in order to cater the population of District along with the population of nearby areas.

Figure 4-55: Factors governing the requirement of a Medi - City



Discussions with Health Associations and sector bodies, it has come up that there is a need of an organized Healthcare facilities in the district because of the presence of existing healthcare facilities in unorganized/ cluster pattern due to which the local people as well as people from nearby areas face difficulties. Additionally, the existing health facilities needs to be upgraded as these have been deteriorated with time.

Additionally, there is already a proposal being put up by the Government for the high-end health facility in the district with some specifications which may be incorporated with the provision of Medi – City in Bareilly. Following section highlights a few Medicity project in India.

4.4.6.1 National case study - “Medicity” Concept

4.4.6.1.1 Health hubs / Medico cities in West Bengal, Andhra Pradesh on PPP mode:

Case study	Bardhaman Health City, Bardhaman, West Bengal	Health hubs in 13 districts of Andhra Pradesh
Components	<ul style="list-style-type: none"> • 500 bedded hospitals • Centers of excellence (super-specialty treatment) • Pharmacy • Telehealth institute • Rehabilitation center • Medical college, nursing college, advanced dental college • Centre for medical research and development work • Mother & child health center 	<ul style="list-style-type: none"> • Medical colleges • Nursing colleges • Teaching hospitals • Super-specialty/multi-specialty hospitals <p>[Objective to scale up tertiary healthcare facilities]</p>

	<ul style="list-style-type: none"> • Hostels for staff & students • Convenience stores, recreational facilities & other civic amenities 	
Project Cost	INR 1000 Cr (expected)	Min. 100 Cr
Site area	60 acres	30-50 acres (5 acres free of cost)
Type of PPP	DBFOT	Not yet decided
SPV	Bengal Faith Health Care Pvt Limited (Bardhaman Development Authority & Bengal CES Infratech Private Ltd in association with FAITH Healthcare Private Ltd	--
Status	No updates since 2013 (Phase 1 commenced; 100 bedded Bengal Faith Hospital – functional)	Announcement in May 2021

4.4.6.1.2 Fortis Medicity, Gurgaon and Lucknow

At an investment of over Rs 1,200 crore, the project in Gurgaon will have two campuses. The hospital campus will have a high-end, multi-speciality hospital and research center. The college campus will boast of a medical college for undergraduate and postgraduate education, a dental college, nursing college and facility for primary and applied research in medicine along with a 600-800-bed hospital.

Figure 4-56: Fortis Medi-City



Spread over 52 acres, the project in Lucknow will see an investment between Rs 500 and Rs 800 crore. It will have an 800-bed hospital, a medical college offering undergraduate, postgraduate and post-doctoral courses, a dental college, nursing college, college of physical medicine and rehabilitation, college of rehabilitative medicine and a college of allied medical science.

4.4.6.1.3 Apollo Health City, Hyderabad

At an investment of Rs 1,000 crore, this 33-acre project in Hyderabad will not impart undergraduate education. However, it has a postgraduate college for doctors, a nursing school and college, college of physiotherapy, institute of hospital administration, institute of medical informatics, institute for emergency medicine and an institute for paramedics. The



hospital has 500 beds and almost 200 more will be added over the next six months.

Figure 4-57: Apollo Health City,
Hyderabad

4.4.6.1.4 Aster Medcity Kochi

Aster Medcity is a quaternary care healthcare centre in the city of Kochi and one of the largest in South India. It is the flagship hospital of Aster DM Healthcare, a healthcare conglomerate founded by Azad Moopen. This was the third venture of the group in Kerala, after the Malabar Institute of Medical Sciences (MIMS) and DM Wayanad Institute of Medical Sciences (DMWIMS).



Figure 4-58: Aster Medi-City, Kochi

Aster Medcity is a ₹ 5.5 billion waterfront facility located along Kutti Sahib Road in Cheranallur, a suburb of Kochi and its 40-acre campus is situated on the banks of the backwaters of Kochi. The hospital complex, designed by HKS Architects, has a built-up space measuring a total of 62,710 square meters. The hospital is 7 km from the city center and is accessible through the National Highway 66. Edappally railway station is 7.3 km away and the nearest airport is Kochi International Airport, 24.7 km from the hospital by road. The distance to the National Highway 544 is 7.9 km at Edappally bypass junction where Lulu Mall, the largest shopping mall in the country, is located.

The hospital has an in-patient capacity of 670 beds and has 24-hour emergency and accident trauma care facilities. The hospital has been functioning since September 2014 after a soft launch, but the official dedication ceremony was on 6 May 2015, when the institution was inaugurated by the former president of India, A. P. J. Abdul Kalam. The hospital plans to add 500 more beds in its second phase of expansion.

Facilities

The hospital has a general clinical division which includes Internal medicine, General surgery, Clinical imaging, Anesthesia and critical care, Emergency, Pulmonology, otorhinolaryngology, Dermatology, Craniomaxillofacial surgery, Dental sciences, Infectious diseases and infection control, Psychiatry and Nuclear medicine. It also has eight centers of excellence such as Cardiac Sciences, Orthopedics, Neurosciences, Nephrology and Urology, Oncology, Gastroenterology and Hepatology, Women's Health and Child and Adolescent Health, each manned by independent medical teams composed of specialists, nursing and ancillary staff and technicians.

Figure 4-59: Lay out plan of Aster Medi-City



Aster Medcity has facility for Minimal Access Robotic Surgery (MARS) using da Vinci Surgical System and is reported to be the first hospital in Kerala to provide the service. The system employs tele surgical master-slave robotic system and the surgery is carried out using robotic arms instead of human hands. The Diagnostics division is equipped with 3 Tesla Digital MRI Scanner, 256 slice CT Scanner, Digital Mammography system, The Dexa, Digital X-Ray, Time of Flight PET CT, Cath Lab Allura Clarity system, Flat panel Bi-plane Hybrid Cath Lab, Color Doppler Systems electronic 4D Imaging and Ultrasound Machines with multi modal image fusion. The clinical laboratory which conducts Biochemistry, Hematology, Bacteriology, Mycology, BS Level 3 Tuberculosis, Serology, Immunology, Histopathology, Neuropathology, Renal pathology, Pulmonary pathology, Hematopathology, Bone Pathology and Onco pathology tests, is integrated with the hospital information system. The hospital has an ambulance service, a pharmacy and a rehabilitation center. A blood bank is also operational round the clock in the hospital.

Other services

Aster Medicity is linked to Aster Foundation, an independent charitable non-governmental organization, engaged in providing free medical assistance to financially compromised patients. The hospital serves as a referral healthcare center for patients from the Persian Gulf region. The group has opened help desks in Qatar and Oman for this purpose.

4.5 Transport & Mobility Infrastructure

4.5.1 Introduction to Bareilly

Bareilly is the fast-growing city and commercial center in the northern part of Uttar Pradesh. It is the present headquarter of Bareilly District and gateway to enter Uttarakhand State. The city is well known as Bans-Bareilly, due to bamboo trade & markets. Bareilly acts as counter-magnet city between New Delhi and Lucknow.

Bareilly is surrounded by districts sharing boarder are Pilibhit, Shahjahanpur and Rampur on the western side, Udham Singh Nagar District (Uttarakhand state) in North and Badaun district in South. The Bareilly city is about 252 km distance from Lucknow, 250 km from New Delhi with total population of 898,167 in 2011.

The Bareilly city plays an important role in contribution towards overall economic development of the northern region of UP. There are several industries located in Bareilly, which includes National Brewery Company, Ice Factory, Flour mill, Wood products, Turpentine & Rosin, Sugar Factory and educational Institutions. Bareilly city is well connected by road/rail/air to major cities like New Delhi, Lucknow, Agra and other cities.



Figure 4-60- Location & Connectivity map of Bareilly

4.5.2 Proposed Developments around Bareilly city

4.5.2.1 Ganga Expressway

The proposed Ganga Expressway is a greenfield project with 6 lane connecting western part of the UP with eastern part with total length of 594 km. The expressway will cover Meerut, Bulandshahr, Hapur, Amroha, Sambhal, Badaun, Shahjahanpur, Hardoi, Unnao, Rae Bareli, Pratapgarh and Prayagraj. The Ganga Expressway will link-up with other expressways in the state like Lucknow-Agar Expressway, Purvanchal Expressway, Ballia Link Expressway.

4.5.2.2 Rail Land Development Authority (RLDA)

The Indian railways has a proposal for residential development of 62780 sqm of land at Chaupla Railway colony, Izzat Nagar. The land area is divided into two parts, 1966 sqm to be redevelopment of railway assets and 62780 sqm is to be developed for residential area. The land parcel is a residential cum commercial neighborhood located beside the police line and Ayub khan market.

4.5.2.3 Ramganga Housing Scheme

Bareilly Development Authority has proposed expansion of Ramganga Nagar Housing scheme on 745 hectares of land. BDA has acquired the land of 12 villages in 2004. BDA has given two options to the farmers, first according to the guidelines of the government, they can take four time the circle rate of the land. Secondly, und the land pooling scheme, he can partner with the BDA of his own free will. BDA will develop their land and will give about 25 percent of the land to the farmers.

4.5.2.4 Parsakhera Industrial Area

UPSIDC has developed Parsakhera industrial estate near Bareilly. UPSIDC has 367 acres of acquired land out of which 273 acres area allotted plots. The parasakhera industrial estate is 98% allocated to the industries of various small and medium scale.

4.5.3 Vehicle Growth in Bareilly

In Bareilly, the registered vehicles have been increased moderately over the past decade. It is significant to note that about 14 to 19% of the vehicle's growth in the past decade. The increase of two-wheelers could be attributed to the comparatively better economic status of people and lack of city-wide good PT system. The increase of private modes demands more road space and has resulted in dense concentration of traffic on roads with limited right of ways.

Table 4-52 Vehicle registration data for Bareilly

Vehicle Registration Data for Bareilly							
Year	Two-Wheeler	Car	Bus	Truck	Others	Total	Growth
2014-2015	47932	5329	72	981	1203	55,517	
2015-2016	47440	6155	79	998	1135	55,807	1%
2016-2017	54016	7146	144	1235	1210	63,751	14%
2017-2018	62757	8592	323	1773	2727	76,172	19%

Source: Bareilly RTO

4.5.4 Transport system & connectivity

The existing transport system of Bareilly city, comprises of road, rail and air transport services. For the purposes of existing situation analysis of the prevailing transport infrastructure, the transport infrastructure can be broadly subdivided into the following components.

4.5.4.1 Air Connectivity

At present, the Bareilly airport is a civil terminal located in Izzat Nager, which is located 6 km from north of Bareilly city. The terminal building is 2500 sqm, and can handle 150 passengers during the peak hours. In future, a new apron 9500 m provides parking space and 150 cars parking is expanded. A new terminal building was inaugurated in 2021 as a part of airport expansion. The building is spread over 3020 sqm and has a capacity to accommodate over 300 passengers. At present, Bareilly is connected with Delhi, Bangalore, Mumbai.

4.5.4.2 Rail Connectivity

Bareilly Junction railway station is the major railway station serving city. Bareilly railway station connects the Lucknow-Moradabad line and Lucknow-Sitapur-Lakhimpur-Pilibhit-Bareilly-Kasganj Line. The Bareilly Railway station is well connected to Lucknow, New Delhi, Amritsar, Ambala, Jalandhar, Pathankot, Gorakhpur, Howrah and other major destinations. Other railways station like Bareilly Cantt, Bareilly City, Bhojipura Junction, CB Ganj, Bohna, Izzatnagar, Parsakhara, Ramganga Bridge secondary railways stations in Bareilly area.

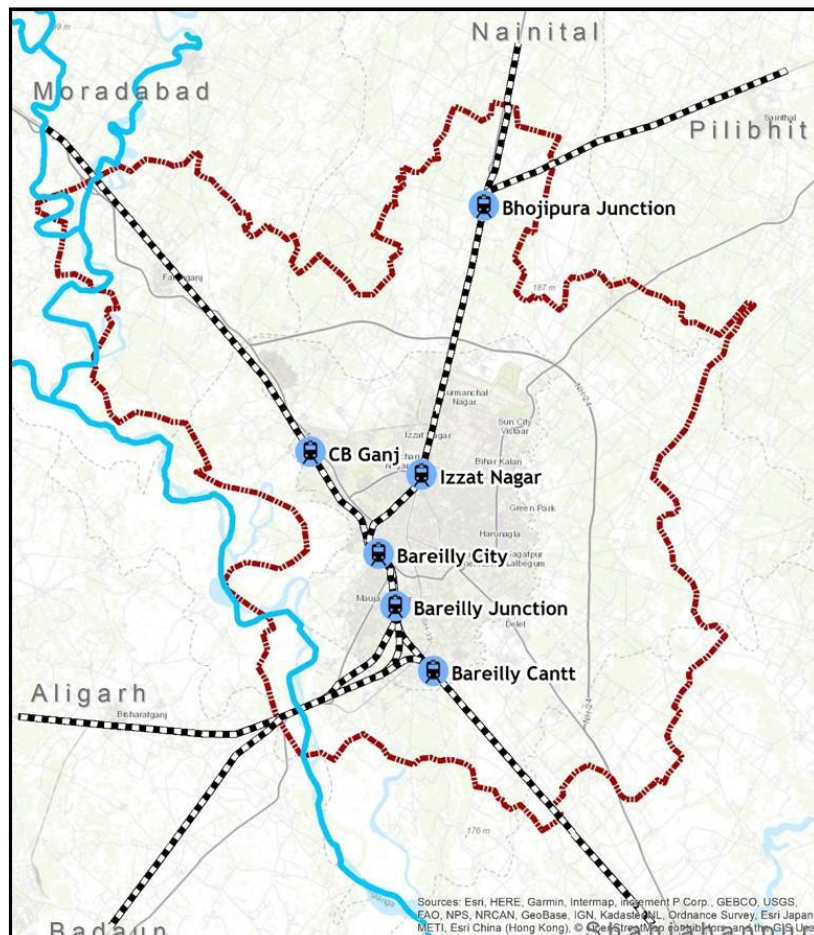


Figure 4-61: Railway line connecting with Bareilly

4.5.4.3 Road Connectivity

Bareilly has a radial pattern of road network. National Highways in Bareilly is well connected with its surrounding urban agglomeration, 4 major NH sections pass through Bareilly city are NH-30, NH 530, NH 530-B, NH 730-B and SH 37. The NH 30 is part of Bareilly Bypass section connects Sitarganj on the north and Lucknow, Allahabad on the south. NH 530 connect Bareilly to Rampur Road, NH 530-B connecting Bareilly to Mathura highway, NH 730-B connects (Bareilly to Bisalpur highway. UP state highway no 37 starts from Bareilly to Nainital Road. Bareilly Bypass section starts at Dhantiya village to Rajau Paraspur with total length of 30.1 km.



Figure 4-62: Major Road Network in Bareilly City

4.5.4.4 Major road corridor within Bareilly City

Some of the major roads within the Bareilly city is bearing the impact of traffic are

- a. Stadium Road: Connecting Philibhit Road to Shyam Ganj
- b. Macnair Road connecting Naintal Road to Stadium Road
- c. Pilibhit Bypass Road connecting Pilibhit road to Lucknow Road
- d. Sh-33 connecting Bareilly to Mathura
- e. Mini-bypass connecting Delhi Road to Nainital Road
- f. Shyam ganj to Patel Chowk to CB Ganj
- g. Shyam Ganj to Chaupla Road
- h. Civil Lines Road

4.5.4.5 Parking System in Bareilly



At present situation in Bareilly city, on-street parking has been observed along the major connecting roads/market areas. which reduces the efficiency of road carriageway and leading to the road congestion. In the site reconnaissance survey, major locations like Kutub Khana Road, Choupla Road, Bareilly Railway Station Road, Mini-bypass Road, Satellite Bus Stand area, Ganta Ghar, Gandhi Udhyan and other areas.




Table 4-53: On-street parking in Bareilly

	
<p>Figure 1: On-street parking at Mandi Area</p>	<p>Figure 2: On-Street parking near Choupla Chauraha</p>

4.5.4.6 Major Junctions within Bareilly City

Some of the Junctions within the Bareilly




 <p>Junction at 100 Futa tiraha (delapeer)</p>	<ul style="list-style-type: none"> • Name of the Junction: 100 Futa Tiraha (Delapeer) • Type of Junction: 3 arm • Directions of the road <ul style="list-style-type: none"> - Eastern side: Towards Pilibhit Bypass - Northern side: Towards Airport - Southern side: Towards Delapeer • Traffic Signal: Yes; recently installed • Condition of the road: Fair (Construction Work for road widening) • Lane Marking: No; Marking is faded. • Availability of Footpath: No; • Street Lighting: Yes; • On-street Parking: No; No spaces provided for parking • Encroachment: Yes; Temporary Fruits sellers' encroachment
 <p>Junction at Bisalpur Chouraha</p>	<ul style="list-style-type: none"> • Name of the Junction: Bisalpur Chouraha • Type of Junction: 4 arm • Directions of the road <ul style="list-style-type: none"> - Eastern side: Towards Bisalpur - Western side: Towards Jagatpur - Northern side: Towards Pilibhit - Southern side: Towards Satellite • Traffic Signal: Yes; recently installed • Condition of the road: Fair • Lane Marking: No; Marking is faded. • Availability of Footpath: No • Street Lighting: Yes; • On-street Parking: Informal Parking in the side of the road • Encroachment: No.




	<ul style="list-style-type: none"> • Name of the Junction: Patel Chowk • Type of Junction: 5 arm • Directions of the road <ul style="list-style-type: none"> - Eastern side: Towards Nagar Nigam - Western side: Towards Choupla Chowk - Northern side: Towards Civil Lines Market - Southern side 1: Towards Chowki Chouraha - Southern side 2: Towards Car Bazar • Traffic Signal: Yes; But Not working. • Condition of the road: Bad (Under Construction) • Lane Marking: No; Marking is faded. • Availability of Footpath: only on one road • Street Lighting: Yes • On-street Parking: Informal Parking in the side of the roads • Encroachment: No.
	<ul style="list-style-type: none"> • Name of the Junction: Chowki Chowraha • Type of Junction: 5 arm • Directions of the road <ul style="list-style-type: none"> - Eastern side: Towards Gandhi Udhyan Chowk - Western side: Towards Railway Junction - Northern side 1: Towards Patel Chowk - Northern side 2: Towards Bareilly College - Southern side: Towards Cantt • Traffic Signal: Yes; • Condition of the road: Fair • Lane Marking: No; Marking is faded. • Availability of Footpath: Available but do not have proper movement. • Street Lighting: Yes • On-street Parking: Informal Parking in the side of the roads • Encroachment: No.
	<ul style="list-style-type: none"> • Name of the Junction: Delapeer Tiraha • Type of Junction: 3 arm • Directions of the road <ul style="list-style-type: none"> - Eastern side: Towards Airport - Western side: Towards IVRI Road - Southern side: Towards Stadium Road • Traffic Signal: Yes; Recently Installed • Condition of the road: Fair • Lane Marking: No; Marking is faded. • Availability of Footpath: Available but only on one side • Street Lighting: Yes • On-street Parking: Informal Parking in the side of the roads • Encroachment: Yes; Temporary Fruits sellers' encroachment • Issue: Traffic Junction


Junction at Patel Chowk

Chowki Chowraha

Delapeer Tiraha

	<ul style="list-style-type: none"> • Name of the Junction: Selection Point Chowk • Type of Junction: 4 arm • Directions of the road <ul style="list-style-type: none"> - Eastern side: Towards Stadium Road - Western side: Towards Sheel Chowraha - Northern side: Towards Delapeer - Southern side: Towards Koharapeer • Traffic Signal: Yes; Recently Installed • Condition of the road: Fair • Lane Marking: Yes; • Availability of Footpath: Not Available; • Street Lighting: Yes; • On-street Parking: Informal Parking in the side of the roads. • Encroachment: No. • Issue: Improper Circulation of Traffic.
	<ul style="list-style-type: none"> • Name of the Junction: Sheel Chouraha • Type of Junction: 4 arm • Directions of the road <ul style="list-style-type: none"> - Eastern side: Towards Selection Point Chowk - Western side: Towards Janakpuri - Northern side: Towards Rajendra Nagar - Southern side: Towards Ram Janki Mandir • Traffic Signal: Yes; Recently Installed • Condition of the road: Fair • Lane Marking: Yes; Marking is faded. • Availability of Footpath: Available on one road. • Street Lighting: Yes; • On-street Parking: Informal Parking in the side of the roads. • Encroachment: No. • Issue: Improper movement for pedestrians
	<ul style="list-style-type: none"> • Name of the Junction: Circuit House Chouraha • Type of Junction: 4 arm • Directions of the road <ul style="list-style-type: none"> - Eastern side: Towards Circuit House - Western side: Towards SSP office - Northern side: Towards Chowki Chowraha - Southern side: Towards Post office • Traffic Signal: Yes; Recently Installed • Condition of the road: Fair • Lane Marking: Yes; • Availability of Footpath: Available on 2 roads. • Street Lighting: Yes; • On-street Parking: Informal Parking in the side of the roads. • Encroachment: No. • Issue: Improper vehicular movement

	<ul style="list-style-type: none"> • Name of the Junction: Gandhi Udyan Chouraha • Type of Junction: 4 arm • Directions of the road <ul style="list-style-type: none"> - Eastern side: Towards Satellite - Western side: Towards Chowki Chowraha - Northern side: Towards Shyamganj - Southern side: Towards Cantt • Traffic Signal: Yes; Recently Installed • Condition of the road: Fair • Lane Marking: Yes; Marking is faded. • Availability of Footpath: Available on 1 road. • Street Lighting: Yes; • On-street Parking: Informal Parking in the side of the roads. • Encroachment: No. • Issue: Improper vehicular movement
	<ul style="list-style-type: none"> • Name of the Junction: Choupla Chouraha • Type of Junction: 5 arm • Directions of the road <ul style="list-style-type: none"> - Eastern side: Towards Chowki Chowraha - Western side: Towards Qila - Northern side 1: Towards Ghantaghar - Northern side 2: Towards Patel Chowk - Southern side: Towards Railway Station • Traffic Signal: No • Condition of the road: Bad; Under Construction • Lane Marking: Not Available • Availability of Footpath: Not Available • Street Lighting: Yes; • On-street Parking: Informal Parking in the side of the roads. • Encroachment: No. • Issue: Improper vehicular movement
	<ul style="list-style-type: none"> • Name of the Junction: Satellite Chowraha • Type of Junction: 3 arm • Directions of the road <ul style="list-style-type: none"> - Eastern side: Towards Shyamganj - Northern side: Towards Pilibhit Bypass - Southern side: Towards Lucknow Road • Traffic Signal: Yes; Recently Installed • Condition of the road: Poor • Lane Marking: Yes; Marking is faded. • Availability of Footpath: Available on 1 road. • Street Lighting: Yes; • On-street Parking: Informal Parking in the side of the roads. • Issue: Improper vehicular movement Congestion

	<ul style="list-style-type: none"> • Name of the Junction: Jhumka Chowk • Type of Junction: 3 arm • Directions of the road <ul style="list-style-type: none"> - Eastern side: Towards Lucknow - Western side: Towards Delhi - Southern side: Towards Bareilly • Traffic Signal: No • Condition of the road: Bad; Under Construction • Lane Marking: Not Available • Availability of Footpath: Not Available • Street Lighting: Yes; • On-street Parking: Informal Parking in the side of the roads. • Encroachment: No. • Issue: Entry Point of Bareilly
---	---

Jhumka Chowk

4.5.5 Public Transport System in Bareilly

At present in Bareilly city, 2 no of bus stands (Old bus stand and Satellite Bus Stand). Both the Bus Stand are in functional, as most of the Bus frequency is from Satellite Bus Stand. The old Bus stand is located in civil lines cater bus plying on routes towards Moradabad, Haldwani, Delhi, Naintal, Dehradun, Agra, Jaipur areas. Satellite bus station caters the bus services towards long distance to Kanpur, Lucknow, Prayagraj, and others.

Table 4-54: Satellite Bus Stand in Bareilly



Figure 4-63: Existing condition of Satellite Bus Stand

UP State Transport Department has commissioned project for provisioning of electric buses in Bareilly city under FAME 2 Scheme, which will be taken up in two phases where phase 1 will house 23 locations for bus shelters and phase 2 will house 30 locations for bus Shelters. The Intra city bus route has been identified and passes throughout the Bareilly area.

Table 4-55: Proposed City Bus routes in Bareilly

City Transports Services Ltd						
Route Name	Route Descriptions	Distance (KM)	Running Time (Min)	Layoff Time	Frequency Headway (Min)	Number of Buses required
Bareilly Junction to Phoenix Mall	Bareilly Junction to Air Force Station via Chowki Chauraha, Gandhi Udhyan, Satellite Bus Stand, Bisalpur Chauraha, Ruhelkhand University, Phoenix Mall	11.9	60	320	20	5

Bareilly Junction to Central Jail Colony via Swale Nagar	Bareilly Junction to Nagarya Prikshit via Chopla Chauraha, Dulha Miyan Mazar, Qila Pul, Swale Nagar Mini Bypass, Izzat Nagar Railway Station, Central Jail Colony	12.5	65	320	20	4
Bareilly Junction to Persakhada via Qila Pul	Bareilly Junction to Parsakhada via Chopla Chauraha, Dulha Miyan Mazar, Qila Pul, Satya Prakesh Park, CB Gunj Police Station	13.6	70	280	20	5
Bareilly Junction to Fruit Mandi via Delapir Chauraha	Bareilly Junction to peerbhora Air Force Station via Chowki Chauraha, Gandhi Udhyan, Vikas Bhavan, Shyam Ganj Flyover Bridge, Eit Pajaya Chauraha, Bareilly Stadium, Delapir Chauraha, Fruit Mundi	10.8	55	280	20	6
Bareilly Junction to Badaun Road Patel Vihar	Bareilly Junction to Badaun road Hindustan Petrol Pump via City Mall Godown, Chopla Chauraha, Chaurasi Ganta Mandir	5.1	25	320	20	5

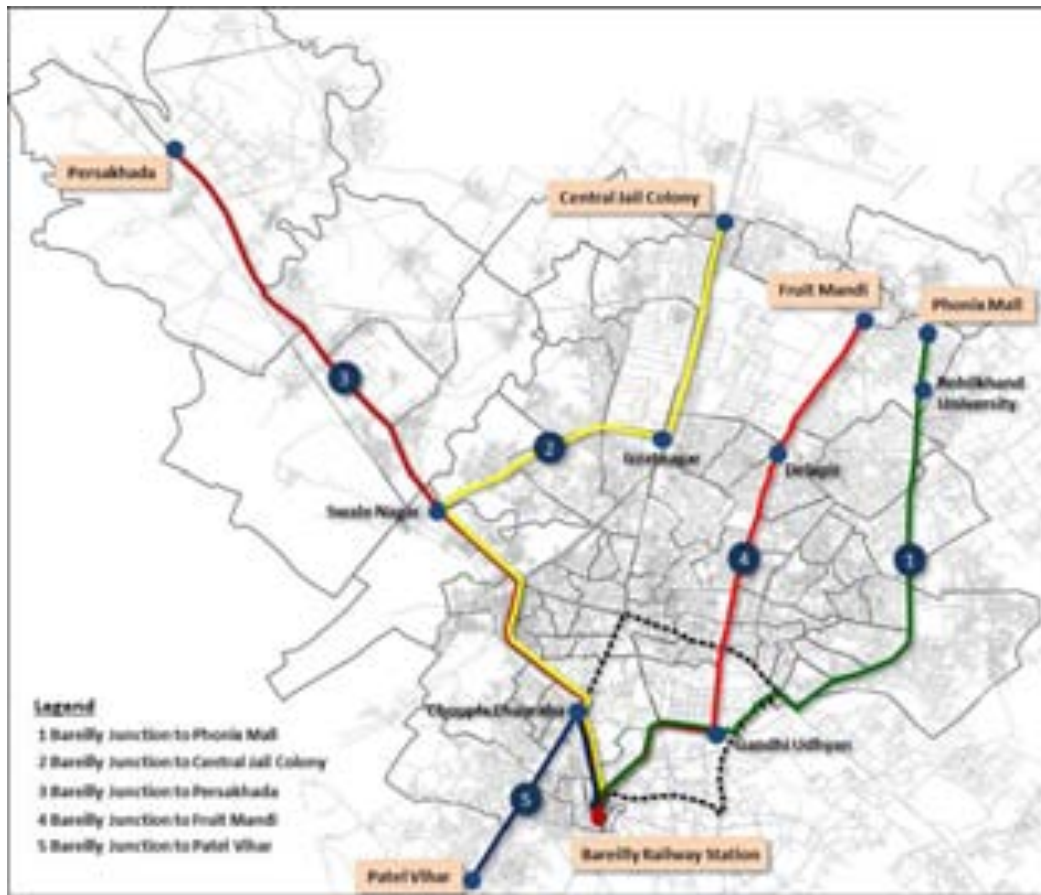


Figure 4-64: Location map of Proposed Bus route in Bareilly

4.5.6 Demand & Analysis

4.5.6.1 Parking Policy and Construction of Off-street parking lots in major market and commercial areas to accommodate the parking demand.

Background: The main objective of the Parking policy is to provide relief of congestion, to reduce parking demand through increased parking cost, to promote public transport for comprehensive mobility. The vision of this project focuses on setting up an off-street parking infrastructure in high traffic congestion zones for the citizens of Bareilly city. The intention is to create modern, space and cost-efficient multi-level parking structures which will ease the load on the roads. They shall have the following features:

- Automated operation
- Puzzle-type electro mechanical parking
- Space efficient design
- Reasonable pricing

Multi-level Puzzle type parking system can be said to be a combination of pallet and stack systems with minimum space utilization adjacent to the road.

- Revolutionary Parking System with maximum floor space utilization
- Vertical Allocation of the parking rooms
- System virtually eliminates Driveways, Ramps, Passenger Lifts etc.
- Three side open cantilever lift for direct drive in and drive out operations
- Possible to integrate various safety and security features
- Can be installed in independent steel tower as well as built in type in RCC structures
- Model Type: 9 Bay x 4 levels
- Area of unit: 2.5 x 5.6 m
- Height: 1.6 m
- Load Bearing: 1600 kg

Proposed Locations:

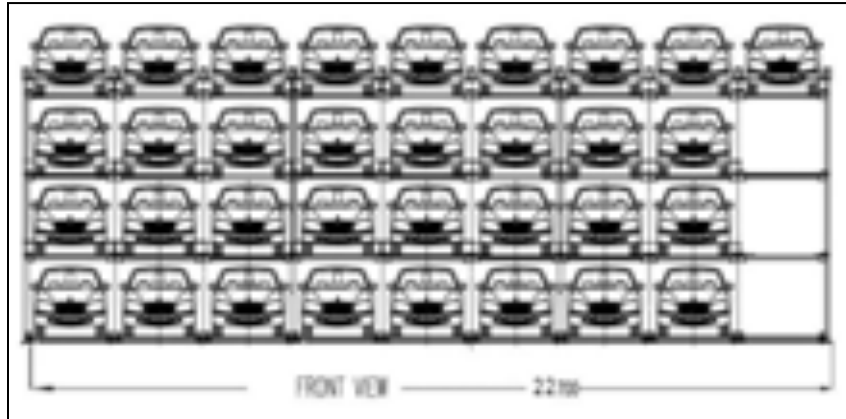
- Bareilly Railway Station
- Court Compound
- Ayub Khan Chauraha
- Satellite Bus Stand
- Sabji Mandi

Construction Cost: Rs 4.0 lakhs/unit

Installation Time: 6 Months

Mode of Selection: PPP Mode

Concerned Department: BDA/Smart City/BMC



Typical Layout of Multi-level Puzzle Car parking

4.5.7 Strengthening of Radial Road connecting to Ganga Expressway

The proposed Ganga Expressway is a greenfield project with 6 lane connecting western part of the UP with eastern part with total length of 594 km. The expressway will cover Meerut, Bulandshahr, Hapur, Amroha, Sambhal, Badaun, Shahjahanpur, Hardoi, Unnao, Rae Bareli, Pratapgarh and Prayagraj. The Ganga Expressway will link-up with other expressways in the state like Lucknow-Agar Expressway, Purvanchal Expressway, Ballia Link Expressway.

NH 530B is a secondary route, connects Bareilly-Budaun-Kasganj-Hathras and Mathura in the state of UP with total length of 265 km. The distance between Bareilly to Badaun is only 50.0 km and as per news article the connectivity to Bareilly city is 36 km (Approx.) from proposed ganga expressway.

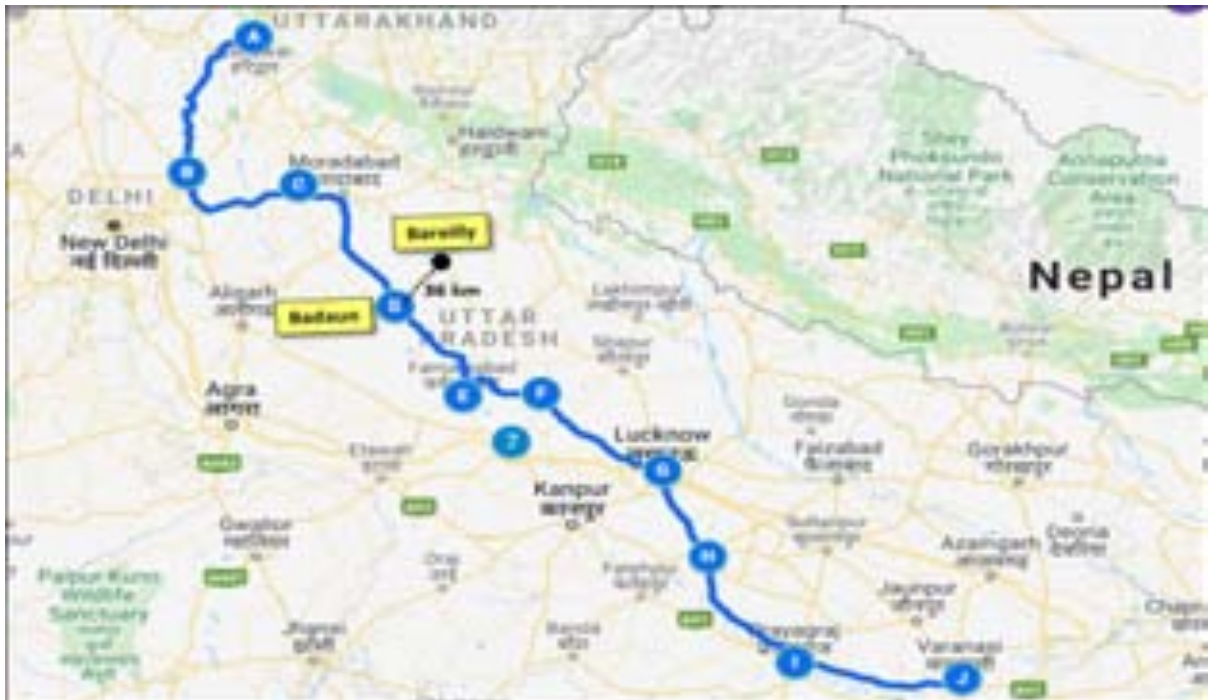


Figure 4-65: Ganga Expressway alignment

Upgradation of Road: Lalfatak Road to Proposed Expressway near Badaun

Total Length: 36 km

Upgradation: 4/6 lane road

Construction Cost: Rs 8 to 12 Cr/km

Construction time: 3 to 5 years

Concerned Department: BDA/Smart City/BMC

The vision of this project is to connect the Bareilly city with proposed Ganga Expressway with seamless and uninterrupted traffic movement by strengthening the NH 350B. At present, this section is 4 lane divided carriageway and at some locations construction of flyover is taking place. An alternative connection from Parsakhera Industrial area of Bareilly can be linked to the NH 350B.

4.5.8 Interactive Bus Stop at various locations

To bridge the gap and provide a society in line with the vision of inclusive growth, the purpose of the project is to drive economic growth and improve the quality of life of people by enabling local area development. The objective is to promote cities to provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment. Redevelopment of Integrated bus stops/shed with the facility of charging point, CC Camera, Location Map, Lighting, seating facilities and Information display Boards.

The system must meet the essential criteria such as Availability, Accessibility, Assessment and Acceptance. Amongst the citizens, special provisions must be made for the physically challenged, senior persons, women and children who may have difficulties in accessing the services of mini bus easily. The range of interventions to meet the stakeholders' expectations could cover:

- Redesigning bus stops on-line display of bus arrivals
- Creation of suitable infrastructure at bus stops and bus stations for on-line real-time passenger information system.
- Special seat allocation for old-aged, physically challenged, women and children
- Prioritizing their entry into and Exit from the buses before others.
- Status of the bus schedules.
- Electronic ticket sale machine and fare collection system.
- Real time communication with the drivers for incident / emergency management.
- Schedule and bus stop announcements through visual displays and voice based.
- Dust-bins, bollards and other facilities

Proposed Locations: Proposed 30 no of location in Bareilly city

Area Required: 60 sq m/location

Construction Cost: Rs 15 to 20 lakhs/location

Construction time: 3 to 5 years

Concerned Department: BDA/Smart City/BMC



Figure 4-66: Concept design of the mini bus stand

4.5.9 Development of Cycle Track Corridor

Objective of this project is to provide safe and congestion free movement of vehicles and provide preference to NMT vehicle for future sustainability. Non-motorized mode is sustainable, environment friendly mode of transport and docking stations are proposed at close proximity to bus stand/railway station/major junction.

In 2015, a cycle track from satellite flyover was constructed with length of 850 m with 2.75 m wide from Satellite junction to isanyion-ki-puliya. Features of Non-motorized transport system is

- To provide convenience to the passengers by way of last mile connection with availability of eco-friendly transportation services at convenient locations in the city.
- To ensure affordable, flexible, safe & secure and comfortable mobility services for short trips as may be utilized by the citizens and general public.
- To provide an active transport choice that offers physical health benefits to the residents of Bareilly.
- Thermoplastic paint with reflective glass beds with 2.5 mm thickness, 150 mm white solid lane marking and cycle symbol with different color on the path.
- Lane width: 1.5 to 2.5 m
- Signages of cycle tracks along the route.

Proposed Locations:

- a. Satellite Bus Stand to Fun City mall, Length: 7.5 km
- b. Mini Bypass (Rampur Road to Izzat Nagar Railway Station), Length: 3.5 km
- c. 100 futa road (IVRI Building to Delaphir junction), Length: 1.7 km

Area Required: 1.5 to 2.5 m on both side of the road

Facilities: Signages, Street Infrastructure and post-top lights

Marking: Retro-reflective Thermoplastic Glass Beads

Docking Areas: Cycle Parking stands

Construction Cost: Rs 1.5 to 2.5 Cr/km

Construction time: 3 to 5 years

Concerned Department: BDA/Smart City/BMC



Figure 4-67: Cycle track in Lucknow

4.5.10 Establishment of Freight Logistic Hub for efficient distribution of inter & intra urban freight movement in Bareilly

Freight Logistic hub plays a vital role in promoting storage and distribution of Agricultural and industrial produce. In case of Agricultural produce, it enables the markets to ease the pressure of safe storage during harvest season and thus maintain uninterrupted supply of agricultural commodities during off season.

City logistics is the process for totally optimizing the logistics and transport activities by private companies in urban areas while considering the traffic environment, the traffic congestion and energy consumption within the framework of a market economy.

Bareilly is very well connected with Delhi & Lucknow with road and railway line and is an important hub for all the trains passing through this city.

Proposed Location: Near Parsakhera Industrial Area

Advantage: Connectivity with Railway line and NH 30

Area required: 30 to 40 acres

Mode of Selection/setup: PPP basis

Estimated Cost: 250 to 300 Cr (Approx.)

Construction Time: 3 to 5 years

Concerned Authority: UP Warehouse Corporation, BDA

Provision of Parking space: 500 to 1000 Trucks parking space
(Additional 50 – Car & 100 two-wheeler parking)

Warehouse & Cold Storage: 5000 MT

Other Infrastructure: Warehouse for Storing goods, Loading and unloading, weighbridges (50 T & 100 T Capacity), rest rooms and Petrol Pumps.



Figure 4-68: Typical Logistic hub

4.5.11 Electric Vehicle Charging Station along the National Highway for Cars

Installing EV charging stations along the NH will immensely help electric vehicles for long distance travels. Currently there are only limited EV charging stations along the highways to cater to the needs for EV owners.

Setting up EV charging station along NH is also help boosting EV sector around the country. The government's focus on providing world class infrastructure and related services for the highway network is expected to get good returns. Besides EV charging station can also plan restaurants, food courts along the national highways to boost infrastructure.

Proposed Location: Along NH 30

Area Required: 13.5 m x 5.5 m (as per MoP guidelines)

Additional Facilities: Restaurants, Petrol Pump, Amenities, ATM and Refreshment

Estimated Cost: 40 lakhs/unit

Installation time: 6 to 8 months

Concerned Authority: NHAI, BDA, BMC



Figure 4-69: Typical charging type

4.5.12 Lite Metro facility for Bareilly city

A medium capacity system or also known as light rapid transit or light metro, is a rail transport system. Ridership determines the scale of a rapid transit system; size of the rail system needs for the proposed location. Most light rail system are fully grade separated and the distance between the stations is not much longer and constant speed of the rail.

The main reason to build the light metro instead of regular metro is to reduce costs, and shorter stations. Light metro may operations faster than heavy rail transit system. In metro light system, ticket counters, platform are on the same floor. Approximately, 300 to 400 passengers/trip can travel in the metro light.

Route Length: 117 km

Estimated Cost: 140 to 160 Cr/km

Construction Time: 5 to 8 years

Concerned Dept: SPV, BDA, BMC



Figure 4-70: Metro light system

4.5.13 SWOT Analysis of Bareilly Transport situation

Table 4-56 SWOT analysis of the Bareilly Transport situation

Strengths	a. Most of the road stretches in the Bareilly city are between 12 to 24 m RoW and thus there is a lot of scope of Development.
------------------	--

	<ul style="list-style-type: none"> b. It has been observed that several streets are vibrant in terms of informal sectors and there is a scope to facilitate such activities in efficiently planned manner without disturbing their order. c. Carriageway is in good condition at most of the road stretches and thus do not require intervention until it is necessary. d. A Holistic development of the roads along with the junction development project which will create a consolidated and uniform urban infrastructure system.
<p style="text-align: center;">Weakness</p>	<ul style="list-style-type: none"> a. Encroachment of footpath area in present state by vendors and shop owners may put the proposal at risk if enforcement is not done properly b. Irregular Parking Patterns: Common pattern noticed in Bareilly is, the citizens prefer on-street parking over off-street parking primarily because the former is cheaper than the latter. This leads to irregular parking all over the road width especially during the peak hours. In addition to this there is lack of parking bays due to which the commuter parks the car on road. c. Lack of Segregation of Traffic Modes: It has been observed in the Bareilly city that a large no. of citizens commute via two-wheelers and auto rickshaws though detailed survey of all the roads have not been done. These rickshaws tend to create a havoc on the road sides and regulate the fares according to their conveniences. Also, the citizens commuting by cars are not able to move freely due to hindrance caused by the e-rickshaws. d. Congestion during Peak Hours: The citizens generally park their vehicles on the roadsides. So, during peak hours, i.e., the morning and evening there is congestion on the roads creating unmanaged situation if not under policing. e. Lack of Pedestrian Clarity due to hawking areas: Footpaths do not exist, as they are either too narrow for people to walk on, or have been encroached by hawkers, forcing pedestrians onto the roads. f. Parking availability and the parking needs have huge gap and thus most of the roads are occupied by vehicles blocking the carriageway
<p style="text-align: center;">Opportunities</p>	<ul style="list-style-type: none"> a. Spaces along the Road carriageway could be made into public realm which will not force the pedestrian to use the roads and hence provide safety. b. There is a chance for provision for several activity zones respecting the local nature of the city and providing to all irrespective of class. c. There is an opportunity to provide designated spaces for public amenities like toilets, benches, water ATMs etc. d. With this proposals road can be envisioned more than just infrastructure for movement and can become one of the public spaces for the people of Bareilly e. Intelligent traffic management, clear crossings, foot over bridges, signage displays at every interval, street furniture such as dustbins bollards.
<p style="text-align: center;">Threats</p>	<ul style="list-style-type: none"> a. As it is clear the sewer trunk line shall be made before the roads proposals and the carriage way shall be disturbed. b. Encroachment on the roads needs to be controlled through effective policing. Unavailability of which may lead to design failure c. Illegal parking may continue, if parking spaces provided are not enough to cater to the demand

4.6 PHYSICAL INFRASTRUCTURE

4.6.1 Vision Plan

This consultancy project is supported by the Government of Uttar Pradesh which envisions for betterment of the city of Bareilly by enhancing its comprehensive development of physical, institutional, social and economic infrastructure in accordance with modern and innovative urban planning principles.

The project envisages to prepare the Vision, Implementation Strategy and integrated infrastructure plan to support objectives of holistic, sustainable and planned development of Bareilly city. It requires to take a much broader view of planning to allow for more integrated land use and infrastructure development schemes. The project is expected to drive economic growth, improve the quality of life of people by strengthening city's inherent potentials and augmenting its existing infrastructure. It should also contribute to enhancing the resilience of the city by incorporating policies to enable the city in coping with urban risks and climate change mitigation and adaptation. The Vision, Implementation Strategy and integrated infrastructure plan for Bareilly in Uttar Pradesh will further pave the way for project development, management and project implementation support.

Vision Plan- "Clean Green City"

4.6.2 Vision Plan for Water Supply:

Bareilly city is provided with water supply from ground water sources such as bore wells fitted with hand pumps or power pumps. Existing installed capacity of water supply to the city is about 143 MLD, where the volume capacity is 138 MLD and overall demand for city is 154 MLD in year 2021. There is no Water Treatment Plant. Water is only supplied with just 51 percentage coverage in the entire planning area. Total billable volume of water supply connection is 109 MLD.

DESIGN PERIOD:

This vision Plan has been prepared for a design period of 30 years with the initial stage taken as the year 2021, mid stage as the year 2036 and ultimate stage as the year 2051. Intermittent five years duration projection have been also assessed as under. Further 2071 Demand will be freezed for visionary outline development planning purpose

POPULATION FORECAST FOR SPATIAL EXPANSION:

There are totally 19 census towns except M.C and Cantonment board in Project area i.e. Planning Boundary as per Enclosed list in Master Plan 2031. There are 149 villages within the Project area among which 54 villages are already engulfed with the 2031 Master plan boundary. To account the population growth as per master plan, the general growth method has been adopted and the population estimation for Project area is as under:

Table 1.21: Population Forecast for spatial extent and entire project area

Year	Municipal Area Population (Nos.)	Cantonment Board	Total Villages within Planning Boundary	Total Census Towns within Planning Boundary	Total Planning Boundary Population	Master Plan 2031 estimation of Total area
2021	11,40,717	37,388	279,655	98,273	1556033	
2026	12,46,391	41,990	314,074	110,368	1712822	
2031	14,31,466	46,591	348,492	122,463	1949012	1894211

Year	Municipal Area Population (Nos.)	Cantonment Board	Total Villages within Planning Boundary	Total Census Towns within Planning Boundary	Total Planning Boundary Population	Master Plan 2031 estimation of Total area
2036	15,61,400	52,326	391,383	137,535	2142644	
2041	16,98,116	65,206	487,722	171,389	2422433	
2046	18,41,613	73,231	547,749	192,483	2655075	
2051	19,91,891	81,256	607,775	213,577	2894499	
2071	3125421	279265	20,59,691	723,792	61,88,168	

Source: Analysis

Based on the development plan proposals and by taking into consideration the present trends and absorption capacity, the pattern of population distribution over space has been identified. There is no major change in the total requirement of area and hence in this aspect, the master plan boundary will be useful for spatial extent for 2031 Infrastructure Plan and for the remaining years. Visionary estimation for requirement of physical Infrastructure will be attempted.

The physical extent of the city is also expected to also be incorporated as master plan suggested with the availability of physical infrastructure. As per UDPFI Guidelines Medium town density: 100-115 pph. As per trend developed area density assumed 125-135 pph (following other town with same class of population & growth pattern) New area density assumed for planning is 75-100 pph for 2036 & 2051 respectively.

Local Ground Water Sources:

Borewells. In addition to the three-surface water i.e. Ramganga, two water channels within the City and more than 150 bore wells supply water to small-localized pockets. Service reservoirs in different colonies receive water from the bore wells and distribute this water through their distribution network. While many bore wells are fitted with submersible pumps, remaining bore wells are fitted with hand pumps. Ground water is available at a depth of 10.98 m in post monsoon to 9.80 m in pre monsoon in year 2021 (Source: <https://jjmup.org/wq/gwd.php>)

Total supply from the bore wells is estimated to be about 143 MLD as per Nagar Nigam provided data. Due to scanty rainfall in last few years and excessive drawl to arise the water shortage, the ground water table is lowering rapidly, resulting in the failure of many bore wells with hand pumps. The ground water is also reported to contain slightly high fluoride contents. The transmission mains are pre-stressed concrete pipelines. There are four zones in water supply as under:

Water Availability in Project Area in year 2021

Water Supply: -

Coverage = 51%

Domestic Connection (Unmetered) = 95370

Installed Capacity for Ground Water Supply = 143 MLD

Volume of water produced through Ground Water (Power Pump) = 138 MLD

Volume of water billed from Domestic Connection = 109 MLD

Volume of water billed from Non-Domestic Connection = 1 MLD

Total Volume of water unbilled (free supplies to Public Taps) = 0.8 MLD

Water Supply frequency = 30 days (8 hours per day)

*(Source SLB 2019-20)

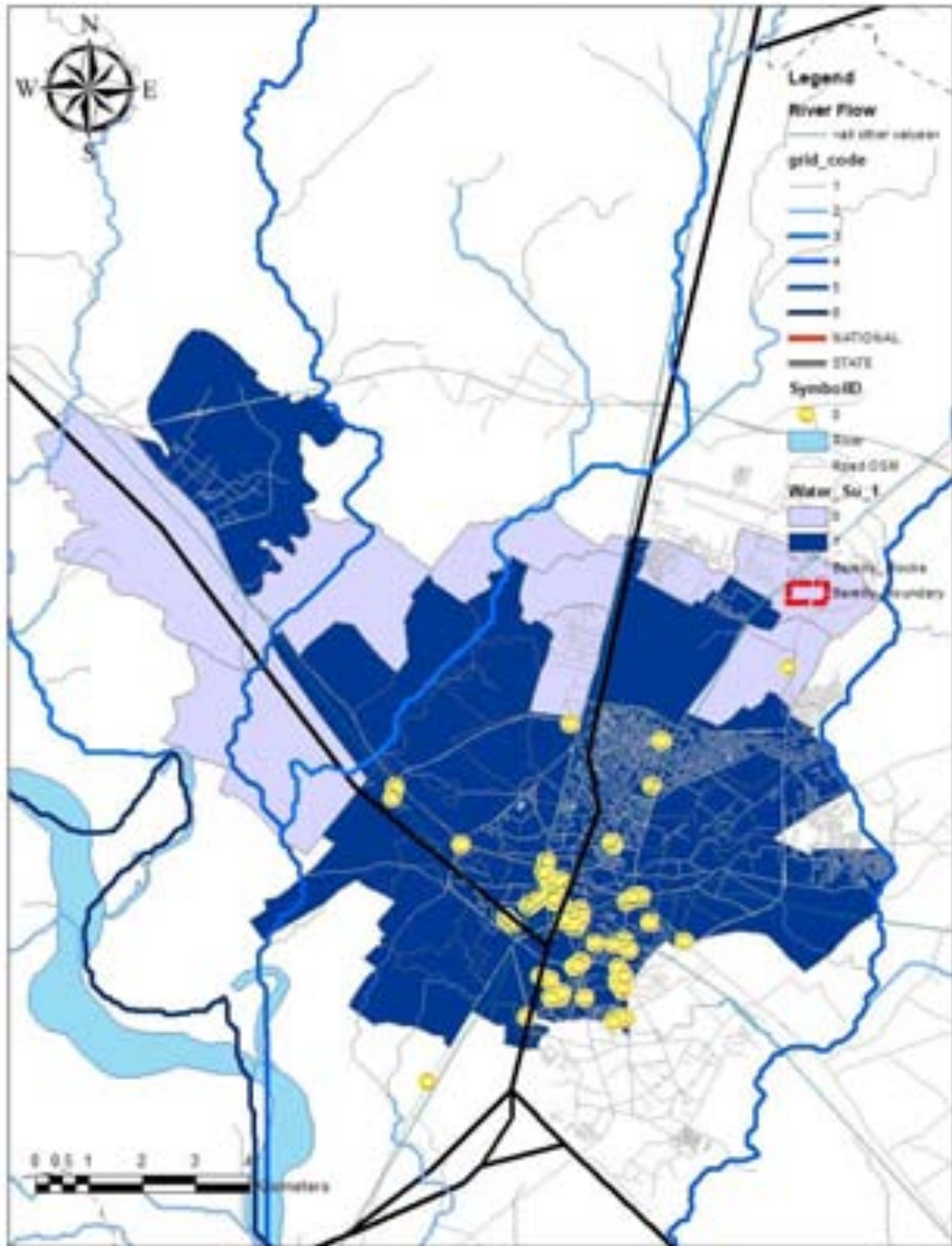


Figure 4-71: Water supply coverage in Nagar Nigam area within Planning Boundary

HHs Water Demand: -

Year 2021 by considering @150LPCD= 165 MLD
 Year 2051 = 301 MLD

Industrial Use:

Not available

Estimated: 30 MLD by PCB
Need Augmentation and DPR Preparation

Connection

Length of distribution network = 578.20 km

Basis of above analysis the availability of water supply is only 51%, and even per capita water availability is only 121 LPCD. Gap in water supply collection charges as per SLIP report 55%. Gap in NRW is almost 20% which includes leakage, free water supply to society on festivals, supply through stand post.

Water availability within municipal area is also different. On account there are more than 200 water bore wells serves city through network system. But total 25 elevated storage serve city as under.

The Green area is having full supply. Yellow area is under smart city area having full supply, blue and red area is having partial supply need augmentation of work. The details of water supply hand pumps are as shown in Fig 72.

Total Water reservoir is 42

Total Hand Pump- 84

Total Water pump is 68

Total supply water bore wells are 17

Total mini bore wells are 8

4.6.2.1 AREA WISE WATER AVAILABILITY ANALYSIS

Bareilly city has 80 wards. Out of total wards 38 wards are having full connection through water supply network. Addition to that in Smart city area ABD area few wards area having all 100% water supply connection. But total 7 Wards are connected partial areas and two areas still do not have any connection under Amrut 1.0. As per Nagar Nigam Water Balance report total water supply is on today is 76.29 MLD. After total Water source enhancement from 60 to 84 tubewells now per capita availability has increased.

Hydrogeological characteristics of the area shows as under:

Rainfall- The summer monsoon is the major source of rainfall, which generally lasts from mid-October. July and August months are the wettest months.

(b) Temperature: The maximum mean monthly atmospheric temperature has been recorded during the month of May and minimum

(c) Humidity: During the peak monsoon period (i.e. August and September) and in mid (during December) the relative humidity is at highest level ranging between 79% and 84%. While it is lowest around 38% during peak summer month April and May.

(d) Geomorphology (a) In general, the area shows the following distinctive geomorphic units: 1. Lower piedmont plain of Tarai 2. Older alluvial plain or upland 3. Younger alluvial plain or low land 4. Meander flood plain (b) Soils: The soil of the district, can be classified into three major groups, based on its texture and characteristics. Bareilly Type Type-2 (Khadar or low (Upland or Bangar soils) The maximum mean monthly atmospheric temperature has been recorded during the month of May and minimum during January. During the peak monsoon period (i.e. August and September) and in mid winter season

(during December) the relative humidity is at highest level ranging between 79% and 84%. While it is lowest around 38% during peak summer months. In general, the area shows the following distinctive

1. Lower piedmont plain of Tarai
2. Older alluvial plain or upland
3. Younger alluvial plain of the district,

can be classified into three major groups, based on its texture and composition characteristics. Bareilly Type-1 (Tarai soils) Bareilly -land soils) Bareilly Type-3

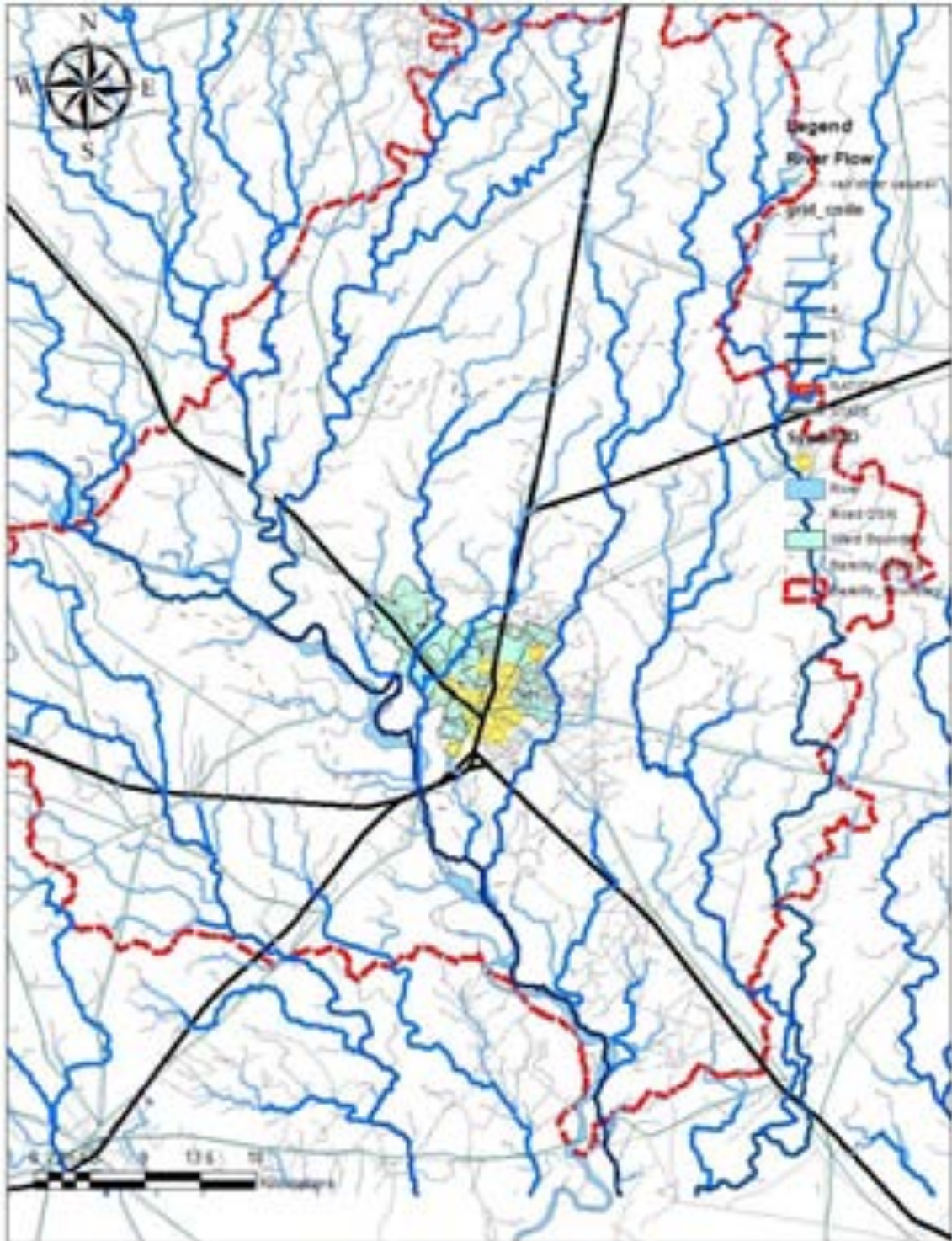


Figure 4-72: Drainage Pattern of Bareilly City

The major three water body's water quality in city is not good. There are several drains intercepts river. These drains are major causes carrying sewerage and Industrial load to water body.

Details of Water Bodies

Sl. No.	Data Point	Value
1	Total No of water bodies	3
2	No of water bodies with open dumpsites near them	3
3	Number of water bodies with anti-littering messages displayed	3
4	Number of water bodies with sweeping & cleanliness arrangements in place	3
5	Number of Water bodies with twin-litterbins placed in every 50 m of water bodies	3
6	Number of Water bodies with Trash Cleaners are available to trap the solid waste floating on the water bodies	3

Source: Reccy Survey

List of Water Bodies

S.No.	Ward Number	Name of Water Body	Address	Type of Water Bodies	Landmark
1	10	Delapeer Pond	Delapeer Chauraha	Pond	Delapeer Chauraha
2	32	Akshar Vihar	Akshar Vihar Park	Pond	Akshar Vihar Park
3	35	Sanjay Community Hall Pond	Near Elan Club	Pond	Jain Mandir

Source: Nagar Nigam, Bareilly

Demand Assessment:

To assess the future demand for all parts of Bareilly within Municipal area Water demand has been assessed by taking 150 LPCD i.e.. 135 LPCD with 15% unaccounted water demand of the area.

Water requirement	2021	2026	2031	2036	2041	2046	2051	2071
A Municipal Area	154	168	193	211	229	249	269	422
B Cantonment Board	5	6	6	7	9	10	11	38
C Total Villages within Planning Boundary	38	42	47	53	66	74	82	23
D Total Census Towns within Planning Boundary	13	15	17	19	23	26	29	17
E Total Planning Boundary Population	210	231	263	289	327	358	391	500

Source: Analysis

Under Amrut 2.0 all are to be covered within municipal area to address 155 LPCD which is far higher side than the requirement of MoUD i.e. 135 LPCD. So, there is not to presume additional water augmentation to feed futuristic demand for ultimate project population for 2051. But there are 11 Urban agglomeration, and all villages are within planning Boundary which over the year will be amalgamated as a part of city. To estimate the population enhancement by accounting Rural to urban transformation and Urban agglomerated towns in city limit referring Master Plan 2031 document total water demand is estimated as under:

4.6.2.2 WASTAGE AND DISTRIBUTION LOSSES:

It has been observed that wastage of water at consumer's end in the City is substantial. Almost 30-40% of water supplied is lost in transmission and distribution.

4.6.2.3 SERVICE CONNECTIONS:

All property connections are unmetered. In addition, there are reported to be about 20, 540 public stand posts, supplying water to economically backward households and slum areas.

4.6.2.4 ISSUES:

- **Scarcity in Source:** Presently only 75% of the population is covered by municipal water supply. Raw water scarcity is experienced in summer, due to lack of flow of present source, Agra Canal water supply network needs to be implemented. Though, under Amrut 2.0 requirement are fulfilling total municipal area.
- **Exploitation of Ground Water Source:** In the absence of a perennial water source, dependence on ground water continues to be high in the periphery. Apart from the municipal bores, a large number of private bores have been installed in various parts of the city. This has seriously affected the ground water level, which is depleting at the rate of 2 to 3m annually. Thus, the reliability and sustainability of the ground water source is questionable.
- **Operation of Water Treatment Plants:** The present operation, including chemical dosing and back washing of filters, Chlorine dosing is arbitrary. All the equipment meant for these functions needs to be repaired, if required and a formal system of testing the raw water turbidity, administering the doses based on jar test and back washing of filters, when it is due, needs to be introduced. Additional gas cylinders have to be procured.
- **System Losses:** Around 30%-40% of the water supplied gets lost during transmission and distribution. Scada system is only commissioning in Smart City ABD area.
- **Limited Duration of Supply:** At present, the water is supplied only for one hour on fifth day. It is proposed to supply water for 24 hours and hence necessary modification including construction of ESR at each distribution station will be carried out.
- **Contamination of water due to old service connections:** The consumer connections are of Galvanised iron, which has a life of 7-8 years. These connections are often not replaced on time and leads to the problems of leakage, low pressure and contamination.

Vision Plan

So basis of above requisite the water supply vision for 24X7 potable water supply to all area could cover by de centralize use of water and recycle of water as under:

Year	2026	2036	2051	2071
Action Plan	Short Term	Mid Term	Long Term	Outline Plan
Connection				
Water Augmentation from Canal				
enhancement of WTP & Reuse of Water				

4.6.3 SEWERAGE & SANITATION SYSTEM:

4.6.3.1 OVERVIEW OF EXISTING SEWERAGE & SANITATION SYSTEM:

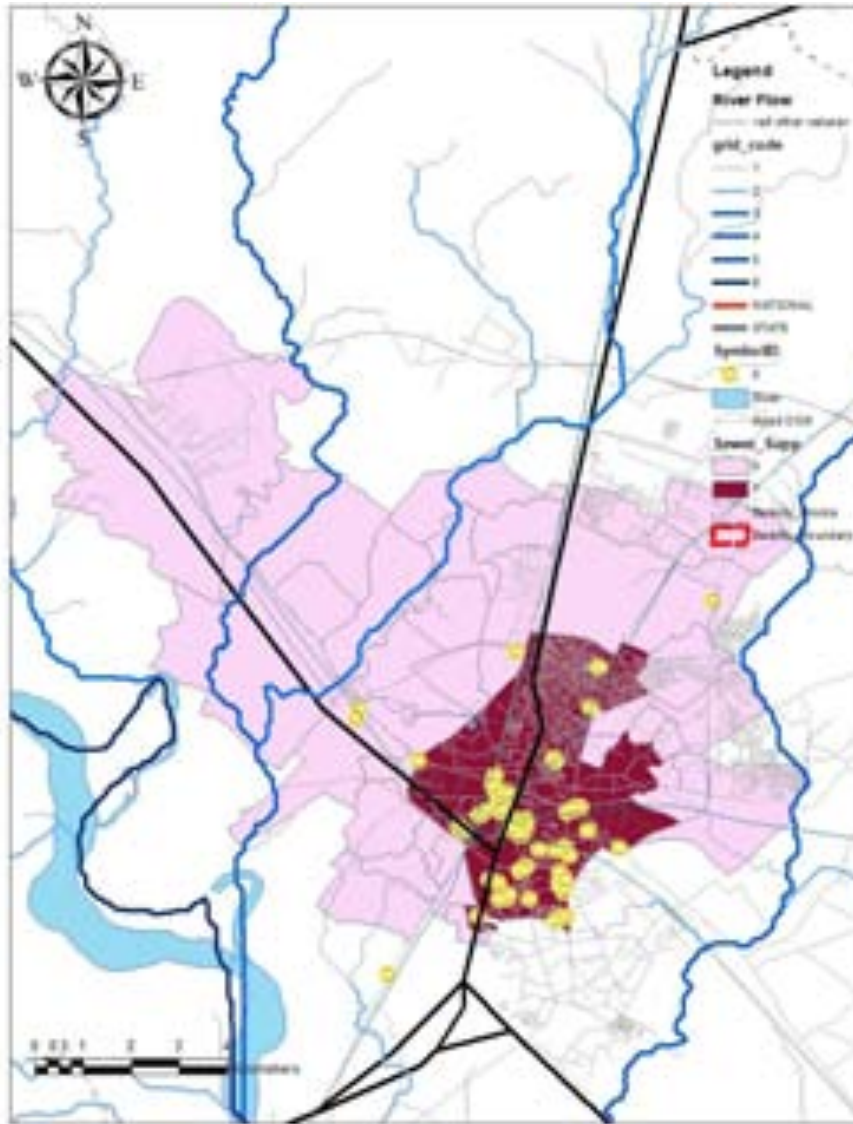


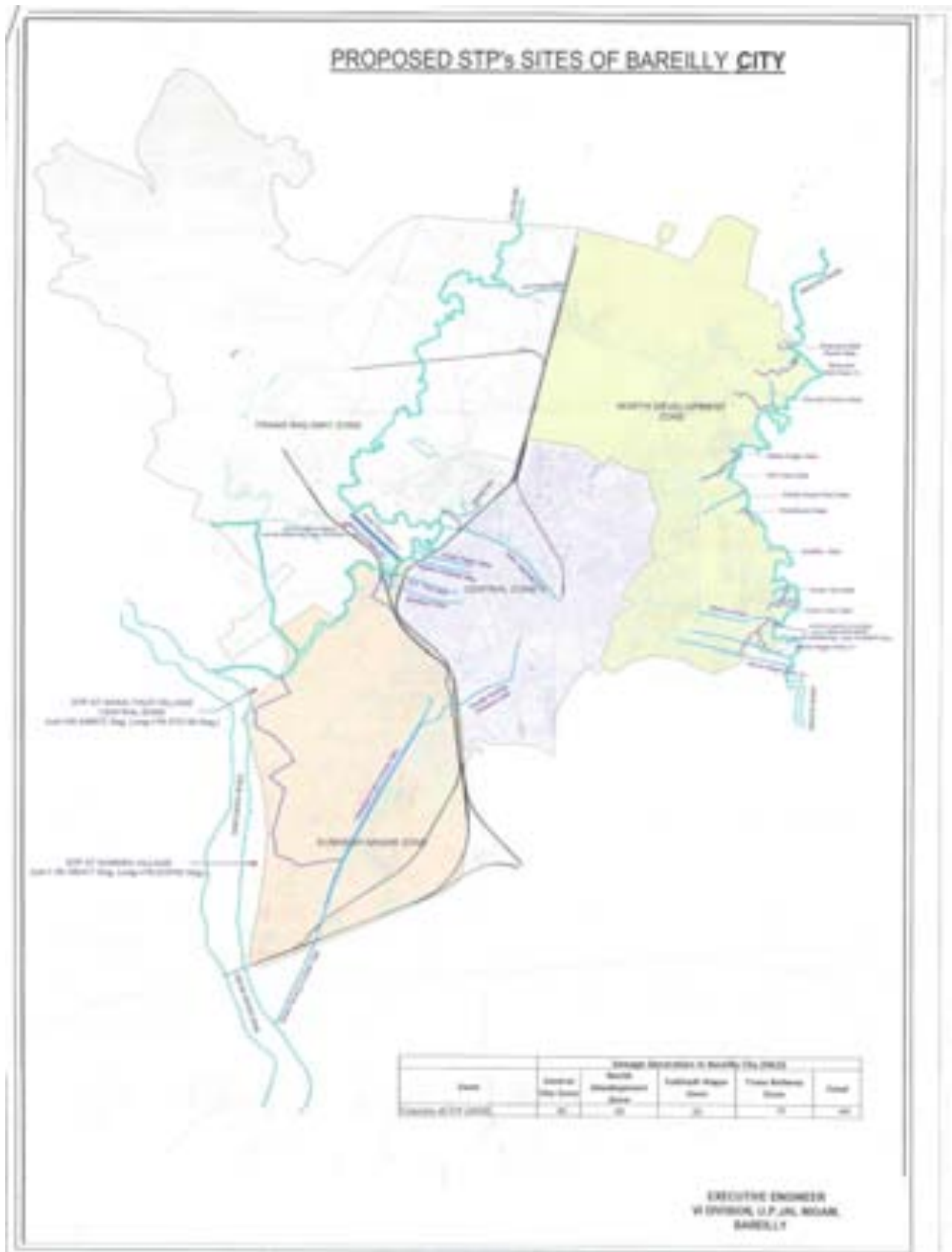
Uttar Pradesh Jal Nigam has designed and constructed sewerage scheme under Amrut 1.0 1.0 in Bareilly city and implemented by Nagar Nigam. The proposals under this Detailed Project Report have been framed on the basis of Latest Norms / Standards / Design Criteria contained in the U.P. Jal Nigam No. under the guidelines under Atal Mission for Rejuvenation and Urban Transformation as well as contained in the Manual of Sewerage and Sewage. Treatment, 4th Edition-2012, CPHEEO, Ministry of Urban Development, Government of India, New Delhi, Main and Prominent norms are summarized below.

The estimation have been worked out adopting the base year 2021, Middle Stage Year 2036 and Ultimate Stage Year 2051.

There are properties with Sewer Connection 65201 and Properties with onsite sanitary disposal are 136275. Total water consumption (billed and unbilled) from ULB and Non ULB sources are accounted 110.8 MLD and volume of waste water generated from Domestic water consumption is around 88.64 MLD (Source SLB 2019-20)

There are no sewer Treatment plant. Although STP will be set up soon in two sites as shown in following figure.





Total Length of sewerage network = 206.2 km

Total Waste water produced = 99.2 MLD

Zone	Sever Lines	
	Length	Area covered
	(km)	(sq. km)
Zone- 1	43	9
Zone -2	71	8.46
Zone -3	59	3.97
Zone -4	33	4.33
Total	206	25.76

*Source: SLB 2012, NNB

INTERMEDIATE PUMPING STATION AND STP

ZONE-2 : In zone-2 is 71 Km sewer length with MLD stp based on mid year 2033 . there is MPS provided in the stp campus.

Zone 3: IPS-2 of I & D work. in zone-3 is proposed under I & D work of Bareilly city of 59 Km length

ZONE-4 : IPS-2 of I & D work. in zone-4 is proposed under I & D work of Bareilly city of 33 km length.

Works incorporated under this Detailed Project Report have been proposed for year of 2033.

Bareilly Smart City "ABD" Area is proposed to be covered with sewer system under Smart City Programme. Sewage Treatment Plants will also be provide for Treatment of sewage and discharge of effluent to the effluent management works for irrigation of cultivable land effluent will however by conveyed to the Natural Drainage when not required for Irrigation purposes.

Taking into consideration Topography/Gradient/Slope of Ground/Location of Railway Tracks i.e. from major drains under the Nagar Nigam area Total Smart City ABD area is proposed to be divided into 4 Zones, Zone-1 includes wards/area .

In the proposed sewer system AC Pressure Pipes Manufactured by MAZZA Processing sizes 150/200mm and in higher sizes RCC Non-Pressure Pipes Class NP3 and NP4 have been proposed in accordance with provisions under the Guidelines issued under Atal Mission for Rejuvenation and Urban Transformation (AMRUT) Programme "Manual of Sewerage and Sewage Treatment CPHEEO" Ministry of Urban Development Government of India New Delhi and Relevant code of Bureau of Indian Standards New Delhi.

From the Sewage Treatment Plant effluent will be conveyed to effluent management works i.e. applied for Irrigation iWan agriculture fields during the period effluent is not required for irrigation purposes, it will be discharged into river.

Land requirement for Sewage Treatment Plant: Total Land Requirement for 7 MLD plant on SBR based technology is = 7 x 0.08 hect = 0.56 hectare land is required

Further, drains will be tapped under Namami Gange program

4.6.3.2 ISSUES :

Over the year Sewerage Generation will be

Sewerage Generation		2021	2026	2031	2036	2041	2046	2051	2071
A	Municipal Area	123	135	155	169	183	199	215	338
B	Cantonment Board	4	5	5	6	7	8	9	30
C	Total Villages within Planning Boundary	30	34	38	42	53	59	66	18

Sewerage Generation		2021	2026	2031	2036	2041	2046	2051	2071
D	Total Census Towns within Planning Boundary	11	12	13	15	19	21	23	14
E	Total Planning Boundary Population	168	185	210	231	262	287	313	400

Source: Analysis

i) Coverage:

The present population of Bareilly is approximately 1554063, as against the combined design population of 1140717 for stage I and stage II sewerage schemes. Thus even after the Stage II scheme, designed to cover 165 MLD for 2033 where as by 2036 the discharge within Municipal area will be 169 MLD, the entire present population of the city will not be covered.

ii) Sewer Connections:

Out of total households, only 50 properties have been connected to the sewers. Even allowing for some unauthorized connections, the utilization of the sewer network appears to be extremely poor. The number of properties connected to the sewer network is abysmally small. An urgent and concerted drive to increase the number of sewer connections is called for.

(iii) Need of Updated Map of Sewer Network:

Unless an updated map showing all the sewers laid so far is prepared, an action plan to improve the coverage and utilization of the sewerage system will not be accurate or fruitful.

(iv) Unauthorized Lifting of Sewage:

Very little quantity of sewage appears to be reaching the treatment plant. Farmers lift the raw sewage from the manholes of out fall sewers and use it for agricultural purpose.

v) Performance of Sewage Treatment Plant

Measurement of sewage flow entering the sewage treatment plant and the characteristics of the influent and effluent needs to be done on a regular basis to know the effectiveness and efficiency of the sewer network and STP.

Vision for Sewerage Plan

Sewerage Vision Plan is to connect each household with sewer line for clean green city plan. Core area is very congested where existing STP could serve city but remaining all part of city should have sewer line. STP should be upgraded. As per requirement of improvement of STP MPS, IPS should be constructed and trunk line should be enhanced.

Overall city's vision plan for STP area as under:

Year	2026	2036	2051	2071
Action Plan	Short Term	Mid Term	Long Term	
Connection				
STP & ETP				
Reuse				
Decentralized System				

4.6.4 Vision Plan for stormwater drain

4.6.4.1 Vision Plan for stormwater drain

The total length of roads in the City of Bareilly is 832 km out of which only 105 km stretch has closed stormwater drains translating to 12.62%. There are three natural drains in the city namely the Deveraniya drain, Chaubari drain and Nakatiya river/drain. Table 1-1 depicts the characteristic features of the Deveraniya drain while Table 1-2 and Table 1-3 depict the characteristic features of the Chaubari drain & Nakatiya drain respectively

4.6.4.2 Deveraniya drain

Table 1-1 Deveraniya drain – characteristic features

Sr. No	Description	Remarks
1	Point of origin	Sarai Talfi
2	Point of discharge	River Ramganga
3	Distance of discharge point from city limits	24 km
4	Quantity of sewage let into this drain	102.80 MLD
5	Water quality in drain (pH)	7.20
6	BOD value	39.8
7	COD value	80
8	TSS value	89

(Source: CSP Bareilly)

4.6.4.3 Chaubari drain

Table 1-2 Chaubari drain – characteristic features

Sr. No	Description	Remarks
1	Point of origin	Subash Nagar
2	Point of discharge	River Ramganga
3	Distance of discharge point from city limits	11 km
4	Quantity of sewage let into this drain	51 MLD
5	Water quality in drain (pH)	7.1
6	BOD value (mg/L)	33.2
7	COD value (mg/L)	200
8	TSS value (mg/L)	70

(Source: CSP Bareilly)

4.6.4.4 Nakatiya drain

Table 1-3 Nakatiya drain – characteristic features

Sr. No	Description	Remarks
1	Point of origin	Deen Nagar
2	Point of discharge	River Ramganga
3	Distance of discharge point from city limits	100 km
4	Quantity of sewage let into this drain	24 MLD
5	Water quality in drain (pH)	7.30
6	BOD value	44.8
7	COD value	120
8	TSS value	114

Source: CSP Bareilly)

4.6.4.5 Stormwater drain - constraints

- Silting of the drain
- Unlined drains
- Dumping of debris and garbage into the open drains & nallah
- The roads being below the drains top level which cause the overflow from drains to fill the roads and the low-lying areas
- The increased impervious areas also add to the worsening of the situation

4.6.4.6 Stormwater drain – Interventions required

- Govt should impose fine to those industries discharging wastewater into the storm water drain
- All the house service connections shall be properly connected through sewer network and shall be treated in the STPs to maintain storm water drain as a dedicated facility.
- All the untapped drains should be tapped and diverted to STP
- Ensure sufficient right of way provision for constructing drains in the future proposals.
- Cost and O&M framework

4.6.4.7 Stormwater drain – Suggestions for DPR

- Assessment of existing storm water drain condition ward wise
- Based on the assessment, provide recommendations for reconstruction of the structure wherever possible
- Analyze the surface runoff and increase the width of the drain wherever required
- Based on the assessment, identify the financial stability of the developer and workout the phase wise implementation strategy
- Achieve 100% coverage through effective planning

Note: *Development of SWD shall be taken care in the city development plan. Hence it is not considered as a separate project in the vision plan proposed list of projects. However, the following suggestions may be considered by the city development authority during the preparation of DPR*

In addition, there is no dedicated provision for storm water drain in many locations and hence, both sewage and storm water drain are mixed together in the nallas. In future, all the house service connections shall be properly connected through sewer network and shall be treated in the STPs to maintain storm water drain as a dedicated facility.

4.6.5 Vision Plan for solid waste management

4.6.5.1 Existing situation

The total solid waste generated in Bareilly is 447.18 Tonnes Per Day (TPD). However, at present, the amount of solid waste collected is only 430 TPD. Of the collected solid waste (Nearly) 140 TPD is processed while the remaining 290 TPD is disposed off in the dump yard. At present, there is no household source segregation. Two solid waste management plants exist (i) At Rajau Paraspur and (ii) At Bakarganj, out of which the SWM plant in Rajau Paraspur is non-operational. Table 1-4 represents the background & status of the Rajau Paraspur SWM plant:

Table 1-4 SWM Plant in Rajau Paraspur

Sr. No	Description	Remarks
1	Land Extent	21.20 Acres
2	Status	Commissioned in 2013 and is abandoned for the past five years
3	Reason For Non-Existence In Operation	Owing to local agitation from citizens as it is located near forest land. Subsequently the National Green Tribunal (NGT), on the grounds of unsafe waste disposal practices, has suspended the functioning of the treatment plant.
4	Facilities Covered	Organic Waste Conversion (OWC) and sanitary landfill
5	Recommendation	Suitably can be relocated to another location which is free from any ecologically-sensitive hindrances. The plant thus relocated will be able to reduce the treatment burden of the existing plant at Bakarganj



Figure 4-73: Rajau Paraspur SWM Plant



Figure 4-74: Abandoned approach in Rajau Paraspur SWM Plant

Table 4-57: Represents the background & status of the Bakarganj SWM Plant:

Sr. No	Description	Remarks
1	Land Extent	17 Acres
2	Status	In operation since December 2021
3	Facilities Covered	Bioremediation I.E., conversion of waste to Refuse Derived Fuel (RDF)
4	Salient Features	<ul style="list-style-type: none"> • Dumping area: 6 acres • Operational hours: 20 • Operating capacity: 600 TPD • Incoming waste at present: 350 TPD
5	Operating Mode	Public-Private Partnership (PPP) under the “Construct Operate and Maintain” model through 10 years of concession

4.6.5.2 Projected solid waste generation

The solid waste generation, though measured at the city level, should also be measured and calculated for the entire planning area considered in the ambit of the Vision Plan for Bareilly City. Hence, it is imperative to include those additional areas such as the Cantonment Board Area, Town Villages within the planning boundary and census towns in the planning boundary in addition to the existing Municipal Corporation Area. As a result, the total population for the Year 2021 (Base Year), the year 2036 (Intermediate Year) and the year 2041 (Ultimate Year) are considered for the projection of the solid waste generation as well. The ensuing sections discuss the solid waste generation projection for different scenarios. Table 59 represents the solid waste generation projection for the Municipal Corporation area of Bareilly

Table 4-58: Solid waste generation projection – Municipal Area

S. No	Population projected year	Population	Solid waste generation (TPD)	Organic waste (TPD)	Existing SWM plant capacity (TPD)	Proposed plant in Sathrapur & Rajau Paraspur (TPD)	Total plant capacity (TPD)	Sufficiency	Gap (TPD)	Inorganic waste (TPD)
1	2021	1,311,599	564	338	600	0	600	No gap	0	226
2	2026	1,556,033	669	401	600	0	600	No gap	0	268
3	2031	1,712,822	737	442	600	0	600	No gap	0	295
4	2036	1,949,012	838	503	600	0	600	No gap	0	335
5	2041	2,142,644	921	553	600	0	600	No gap	0	369

6	2046	2,422,433	1042	625	600	850	1450	No gap	0	417
7	2051	2,655,075	1142	685	600	850	1450	No gap	0	457
8	2056	2,894,499	1245	747	600	850	1450	No gap	0	498
9	2061	3,972,077	1708	1025	600	850	1450	No gap	0	683
10	2066	4,586,104	1972	1183	600	850	1450	No gap	0	789
11	2071	5,315,516	2286	1371	600	850	1450	No gap	0	914

Source: Bareilly Nagar Nigam & Consultant’s analysis

Note: If the projected organic waste is found to be higher than the existing SWM plant capacity, then a gap is observed. Inorganic waste is not considered to be treated and handled within the premises of the SWM plant at present.

Inference:

- The proposed plant in Sathrapur is planned over 10 acres of land with 500 TPD capacity.
- The proposed plant in Rajau Paraspur (disputed land) is planned with a treatment capacity of 500 TPD.
- The proposed plant in Rajau Paraspur (disputed land) will require an area of 20 acres for the proposed installed capacity of 350 TPD in an alternate land parcel since the existing plant is non-operational due to NGT litigations.
- For the purpose of solid waste projection over the planning horizon (2071), it is assumed that the above-mentioned two proposed SWM plants with a combined capacity of 850 TPD shall be developed before the year 2046.
- After the year 2046, the total treatment capacity of all the plants shall be 1450 TPD whereas the required excess capacity of treatment capacity due to population growth for 50-year period (i.e., 2071) is just 850 TPD.
- Hence, the proposed treatment plants namely the alternate plant in Rajau Paraspur and proposed Sathrapur plant will be sufficient enough to handle the increase in solid waste generation for the entire planning horizon of the Vision Plan thereby eliminating the need for any new solid waste management plant in addition
- Thus, a need for the development of a new facility doesn’t arise if only the municipal area solid waste generation is projected over the project horizon



Figure 4-75: Dumping yard in Bakarganj SWM plant



Figure 4-76: Treatment facility in Bakarganj SWM plant

Leveraging success stories of other Cities

The best practices leading to successful management of collection, handling, conveyance and treatment of solid waste in various Indian cities are analysed and a few inferences are attempted in this section.

Table 4-59: Case study of successful SWM practice – Alappuzha

Case Study Location	Alappuzha
State	Kerala
Major Success Factors	Source-level segregation and decentralised solid waste management Marginalised community involvement in rag picking
The economic impact on corporation	<ul style="list-style-type: none"> • Employment opportunities for more than 90 Self-Help Group (SHG) members • Average daily earnings of Rs. 400 per member of SHG through this initiative • Waste dumped into water bodies is minimised thereby improving the ecological health of the City
Relevance to Bareilly Municipal Corporation (BMC)	Engaging source-level segregation through the marginalised community will be a Win-Win situation wherein the BMC shall minimise the amount of waste being processed and also it shall employ marginalised communities thereby improving their livelihoods

Source: Atin Biswas, Subhasish Parida et al. 2021, *Waste-Wise Cities: Best practices in municipal solid waste management*, Centre for Science and Environment and NITI Aayog, New Delhi.

Table 1-8 represents the outcome of the case study of successful SWM practice in Bhopal in Madhya Pradesh

Table 4-60: Case study of successful SWM practice – Bhopal

Case study location	Bhopal
State	Madhya Pradesh
Major success factors	<ul style="list-style-type: none"> • Source-level segregation • Decentralised solid waste management • Formalising awareness campaigns for citizen participation • Leveraging the informal sector into the channel of formal solid waste management • Marginalised community involvement in rag picking
The Economic Impact On Corporation	<ul style="list-style-type: none"> • Reduced capital cost for SWM • Decrease in operational expenses by maximising the efficiency • Achieving 100 % source segregation has led to an increase in the efficiency of SWM • Reduced infrastructure costs and augmented the operational revenue by achieving a high rate of material processing
Relevance To BMC	<ul style="list-style-type: none"> • Engaging citizen awareness programme such as “Carry Your Own Bag” and “Community Composting” are some of the initiatives which can be replicated to attain sustainable sanitation in BMC • Over the long run, the operational efficiency of waste handling can be increased thereby resulting in decreased operational expenditure for BMC

Source:

Atin Biswas, Subhasish Parida et al. 2021, *Waste-Wise Cities: Best practices in municipal solid waste management*, Centre for Science and Environment and NITI Aayog, New Delhi.



4.6.5.3 Conclusion

To minimize the environmental impact from waste management and to establish the sustainable sound material-cycle society, reduction of waste that goes into the final disposal by controlling the generation of waste and promotion of recycling are the most important issues. This leads to reduction of the cost required for development and maintenance of facility of waste management as well as to the prolonged life of the final landfill site. Therefore, the priority should be given for

- Reduction of waste at the source of generation; and
- Reduction of waste through reuse and recycling of the waste generated.

4.7 SOLAR SURVEY ANALYSIS

It should be mentioned that we are proposing today's solar projects that will cover vision for year 2030 & 2050. (As solar plants has life of 25 years)

4.7.1 SURVEY ANALYSIS

The total power (Electrical) consumed by city of Bareilly is about 15.8 Megawatt per day.

Solar power plant at Bareilly.				
Sr.No	Capacity in Mw	Commissioned By	Vision 2030	Vision 2050
1	Nil	Under VGF Scheme	25	35
2.	Nil	UPNEDA Owned plants	5	10
3	2	Under JNSM	5	10

Solar installed is very less as compared to demand, this might be due to harsh regulation & policies laid down by UPNEDA & UPPCL.

4.7.1.1 Sector wise analysis & Demand for 2030 & 2050.

The facts & figure are on the basis of growth of population, increase in infrastructure, city index limits, thereby increase in demand of power.

4.7.1.2 Benchmarking & Cost Analysis

Knowing to the regulations & policies of UPNEDA & UPPCL, one should install in own solar plant for self-consumptions & utilization. As no NET metering is allowed beyond 10 KW, we suggest to install solar plant with **Zero Export device** (XPD) this will not allow to export generated solar power to grid, hence 100% generated power can be use for self-utilization.

This will cut 100 % electricity bills, saves money & self-asset for 25 years.

It will also minimize pollution level of city & zero carbon emission. This will lead our vision of **Clean & Green Environment**.

4.7.1.3 Cost Analysis

Solar Plant Rates 2022 (Rs / KW)	2030	2050
60,000	73,000	91,000



4.7.1.4 Case Study

Client Name : Sahayog Hospital, Gondia (Maharashtra)

Solar Plant Size : 100 KW On Grid.

Actual Consumption : 320 KW

Date of Plant Installed : Feb 2022

Maharashtra State Electricity Distribution Company Limited

Web Self Service

View HT Consumer Information

Consumer Number: 4000200440

Consumer Name: SRI SAHAYOG HOSPITAL

Address: SRI SAHAYOG HOSPITAL, GONDIA

Pin Code: 441002

Circle: GONDIA CIRCLE

Division: GONDIA DIVISION

Substation: GONDIA (U) SUB STATION

Meter Number: 000-2000000

Date of Commission: 28-OCT-2021

Supply Method: Small Scale (Private Sector)

Maharashtra State Electricity Distribution Company Limited

Web Self Service

View History

Consumer Information

Consumer Number: 4000200440

Name: SRI SAHAYOG HOSPITAL, GONDIA

Circle Code: GNDIA CIRCLE

Connection Type: HT

Connection Status: LIVE

Billing	Payment History	View Details	View Details	View Details
Jun 2022	17,044	724,840.00	21 Jun 2022	29 Jun 2022
May 2022	86,136	684,290.00	08 Jun 2022	04 Jun 2022
Apr 2022	81,768	609,175.00	01 May 2022	09 May 2022
Mar 2022	83,768	522,960.00	13 Apr 2022	21 Apr 2022
Feb 2022	46,295	397,220.00	11 Mar 2022	29 Mar 2022
Jan 2022	83,768	476,820.00	08 Feb 2022	18 Feb 2022
Dec 2021	49,716	416,290.00	11 Jan 2022	07 Jan 2022
Nov 2021	81,239	436,480.00	09 Dec 2021	17 Dec 2021
Oct 2021	87,891	661,460.00	20 Nov 2021	08 Nov 2021
Sep 2021	88,299	653,620.00	12 Oct 2021	01 Oct 2021
Aug 2021	75,536	686,620.00	08 Sep 2021	04 Sep 2021
Jul 2021	81,046	641,290.00	11 Aug 2021	06 Aug 2021



4.7.2 Electrical Consumption: Government Load

Division	Power Consumption in KW (2022)	Demand (Vision) in 2030	Demand (Vision) in 2050
Urban Vidhyut Nagari Vitran Khand Pratham.	765	1050	1540
Khand No.2	1389	1845	2175
Khand No. 3	1344	1815	2025
Khand No. 4	1336	1800	2010

4.7.3 PROJECTIONS

Division	Solar 2022	Projected 2030	Proposed 2050
Jalkal	12068	15650	18545
Police Stations & Colonies	14091	14450	15550
Swastha Vibhag (Public Health & Hospitals)	916	1220	1545
Zilla Prashashan	400	480	695
PWD	134	160	285
Irrigation	100	125	175
Schools & Collages	845	1050	1560
Sales Tax Office	460	510	550
Nagar Nigam			
Division 1	900	1120	1580
Division 2	296	365	980
Division 3	308	512	1050
Division 4	360	545	895
Gramin	33	54	89

Chapter 5. Sector wise Vision Planning

5.1 VISION FOR THE CITY

5.1.1 Vision Framework

Government of Uttar Pradesh envisions to promote “Bareilly” of the state by enhancing city’s comprehensive development of physical, institutional, social and economic infrastructure in accordance with modern and innovative Urban Planning principles. Since every city beholds unique characteristics and challenges, the Vision plans will provide the development direction by understanding these characteristics of the city.

The purpose of Vision Plan is to drive economic growth, improve the quality of life of people by strengthening city's inherent potentials. augmenting existing infrastructure and plan its growth which is sustainable and resilient in nature.

Key objectives of the Vision Plan are:

- Preparation of Vision plan to promote long term growth & development of the city.
- Adopting comprehensive development approach for the city to Improve quality of life, creation of employment, boost regional development. improved socio-economic and financial planning to guide city's planned expansion in the future.
- Preparation of City's Business Plan and identification of projects of importance that can be developed through private sector participation.
- Identification of programmes, stakeholders, institutional arrangements and resource requirements adopting project structuring mechanism.

In order to undertake such envisaged development of the city and create a blueprint to meet the objectives of holistic, sustainable and planned development, Government of Uttar Pradesh envisages to prepare the Vision, Implementation strategy and integrated infrastructure plan for “Bareilly” in Uttar Pradesh which will pave the way in further for Project Development, Management & Project implementation support.

5.1.1.1 Vision Statement

“Drive economic Growth, Improve Quality of life by Strengthening city’s inherent potentials, augmenting existing infrastructure and plan its growth which is sustainable and resilient in future.”

Bareilly's Vision

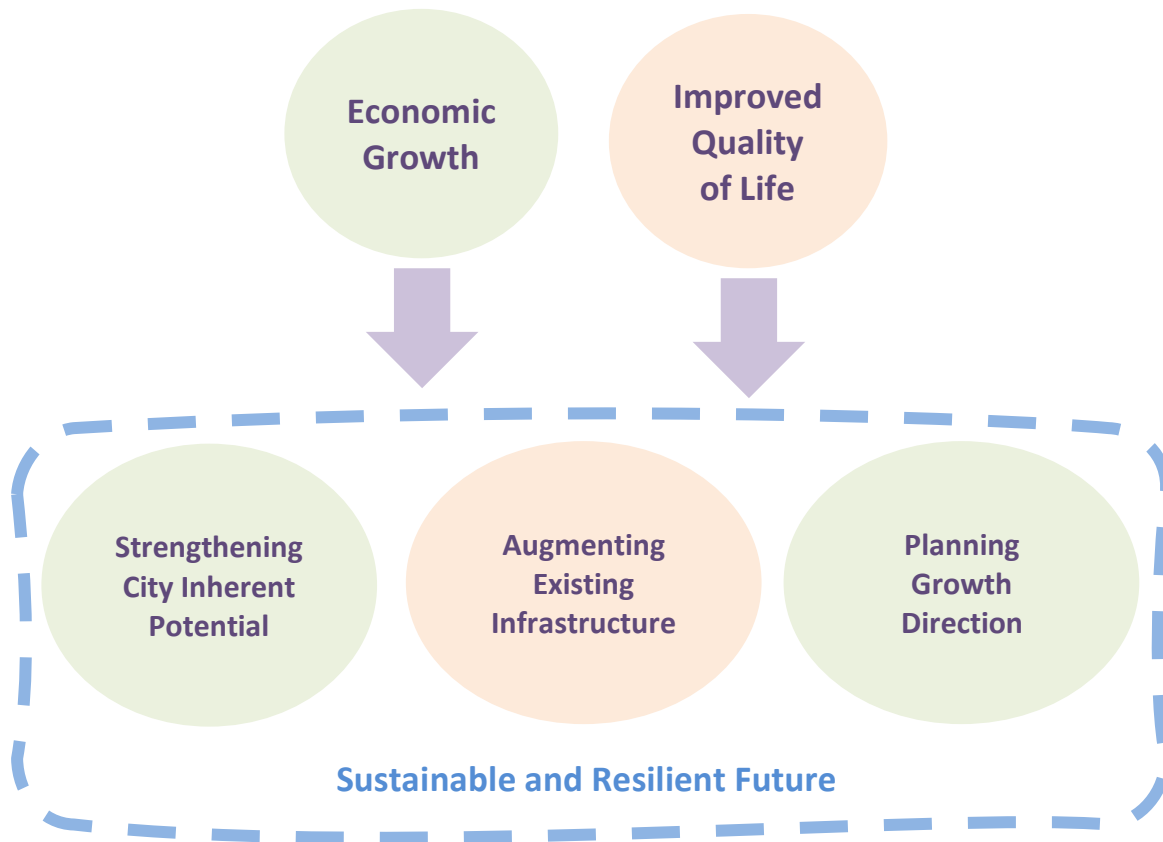


Figure 5-1: Bareilly's Vision

5.1.1.2 Proposals focusing Bareilly's Vision Statement:

Economic Growth	Quality of Life
<ul style="list-style-type: none"> • Industrial Growth Centers • Development of Global Zari and Zardozi Design and Development Center • Development/ extension of industrial area in Bareilly City – multi – product 	<ul style="list-style-type: none"> • Residential Housing Node • “Medicity” – designated area with multiple health business and activities • Ramganga riverfront development • Development of National Level Naturopathy Center



Strengthening City Inherent Potential	Augmenting Existing Infrastructure	Planning Growth Direction
<ul style="list-style-type: none"> • Ahichchhatra - Tourism infrastructure upgradation of A.S.I site • Development of Handicraft Cluster/ Common Facility Centre (CFC) – Zari & Bamboo • Bareilly District Jail land parcel monetization through redevelopment. • Developing trade cum business expo centers near transit nodes • Rejuvenation of Zari - Zardozi (Shyam Ganj market) - One district one product 	<ul style="list-style-type: none"> • parking policy and construction of off-street parking lots • Strengthening of Radial Road connecting to Ganga Expressway • Development of new solid waste treatment plant • Development of new Tertiary Sewage Treatment Plant (STP) • Riverfront and ghat development for Ramganga and Chowbari • Urban Renewal of all Seven Nath Temples 	<ul style="list-style-type: none"> • Industrial Growth Centers • Development medical infrastructure for naturopathy and eco-tourism • Development of Lite Metro Rail network for Bareilly

5.1.1.3 Bareilly’s Vision Aim:

- ➔ Evaluating the state of the city's development and the current situation of Bareilly.
- ➔ Directing towards the solution to the identified issues, focusing on reaching goals for the optimum development of Bareilly.

To achieve above-mentioned Vision Statement, the Vision was defined for all the following domains of the city defined in the RFP.

- Urban Planning
- Economic Development
- Urban Design
- Infrastructure Development
- Heritage and Tourism
- Renewable / Solar Energy.

For the domain wise vision statements refer the upcoming chapters of this report.

5.1.2 URBAN PLANNING VISION

5.1.2.1 Vision Statement for Urban Planning

“Inclusive city that is driver of economic growth with enhanced quality of life for citizen through large scale planned land development.”

5.1.2.2 Approach and Methodology

To achieve successful demand assessment for vision planning and development, these components will be studied in detail and form a part of our approach:

- Population Projections until 2051
- Land Requirements for various uses
- Land use implications of Industrial and Economic Base
- Tourism sector infrastructure proposals
- Recommendations on Draft Master Plans
- Proposed shelf of Projects
- Convergence of proposed Urban Sector projects with existing programs/schemes and strategies:

5.1.2.3 SWOC of Urban Planning

It is crucial to carefully study all aspects of the city and evaluate them from the standpoint of urban design in order to move on with the creation of the Vision plan and the shortlisting of projects for Bareilly. The analysis of the city from the perspective of urban land use planning is provided below, taking into account stakeholder consultations and data from the city survey:

STRENGTHS

- **Location of Bareilly and its identification as Counter Magnet of National Capital Region**

Bareilly city is well connected to the region and prominent locations with road and rail networks. It is located on the National Highway 30, which connects Uttarakhand's Sitarganj with Andhra Pradesh's Vijaywada. The 2040-kilometer (1267.5-mile) highway begins at the NH 9 junction at Sitarganj and runs through Bareilly. Bareilly is connected to Pilibhit by National Highway NH30 and Shahjahanpur by NH730C on the east. National Highway 530B passes to the west of the city and connects the Badaun district. It is connected to the national capital New Delhi with NH530 till Rampur and with NH9 from Rampur to New Delhi passing through Moradabad. In the north lies Nainital which is connected with State Highway 39 till Kichha and with National Highway 109 hereafter.

- **Bareilly is an economic center and employment generator for people due to wood carving, hosiery, foundry and other industries.**

Bareilly is an important economy and employment generator in the Bareilly district due to the presence of industries delivering various services and products both nationally and worldwide. Due to the paucity of mineral resources in the region unlike other districts in Uttar Pradesh, the district developed agro-based industries. The agro based industries plays a significant role in not generating revenue and employment but also establishing a unique identity of the city in the international

market. A variety of industrial enterprises are located here including chemicals, food manufacturing, beverages etc.

- **Only Municipal Corporation in the district**

Bareilly city has grown to be a major city in the Region. The city expansion has taken place along the major roads and led to urban sprawl and the presence of many vacant pockets closer to the cohesive developed area. Hence the availability of opportunities in the city, have pulled in the population influx from the neighboring villages as well. Other than the burgeoning population, the major reasons for the urban expansion and increasing migration in the city.

WEAKNESS

- **Lack of planned residential spaces**

Urban sprawl is a common issue in most of the urban developments and similar situation is being seen in Bareilly also, city requires planned residential areas for the influx and future population.

- **Lack of planned industrial areas**

As per the stakeholder consultation there are many privately developed industrial areas in Bareilly but it lacks facilities and amenities which can throttle the growth of the industries in the city. Even areas which are setup by UPSIDA such as Parsakhera also don't score very well in the infrastructure availability matrix that is why city needs planned industrial areas.

- **Lack of supporting infrastructure for cane and bamboo industry**

Any industry or skill requires upgradation, exposure with time which lacks in the case of cane and bamboo industry of Bareilly. A common facility centre is been set-up under ODOP scheme but it requires exposure by making people aware of the historic craft.

OPPORTUNITIES

- **To develop Bareilly as the major industrial city in the state**

Bareilly has a strong historical industrial background and has a strong base of cane and bamboo furniture which with the help of enabling infrastructure and exposure can be developed as a major economic driver of the city. Zari and Dardozi industry is also flourishing on a wide scale in the city so its potential can also be harnessed.

- **To develop Bareilly as a major educational and medical hub**

Major opportunity for Bareilly is that it lies on the base of Kumayun region (Hilly area) and serves as a major healthcare and educational service provider in the region. Its potential can be harnessed and can be developed as a major service provider in the city.

- **To provide residents of Bareilly a better quality of life**

By providing planned residential zones and decongested core area there is an opportunity to provide better lifestyle to the residents of the city.

CHALLENGES

- **Lack of industrial growth impacting economic growth**

The existing industrial land use of 2021 has been estimated at 336.84 which is 3.30 % of the total existing land use. Although, 1057.42 ha (6.32%) was proposed in the Bareilly Masterplan 2021, only



31.85 % have been achieved till now. In the same line, the distinctive cane and bamboo of the city may deteriorate as a result of improper native art exhibition and craftsman facilitation. Additionally, the youth will get disengaged from this cultural treasure, which could lead to the eventual loss of the skilled workmanship.

- **Congested core areas**

Core area is congested because of dense commercial set-up. Existing situation of the core poses threats to lives as there is little scope of fire vehicle movement.

- **Lack of transport infrastructure**

The city's growth has not been able to accommodate the increasing needs of transport infrastructure thus creating congestion and parking issues at various places through out the city.

5.1.3 URBAN DESIGN VISION

In order to formulate the Vision, Implementation Strategy and Infrastructure plan for Bareilly, detailed city study and survey has been carried out by the Urban Design team. The study consisted of data collection and documentation of **Socio-cultural profiling, regional connectivity, mobility network, existing condition of the civic, tourism and transport infrastructure** from primary sources and secondary sources. It also included collation of maps and information including existing and proposed Master plans/development plans/ district level plans, satellite imageries, Socio-economic characteristics of city and surrounding region along with analysis and understanding of existing, on-going or proposed city infrastructure development initiatives/projects undertaken by BDA, Smart city or any other city authority. Furthermore, all urban design aspects of the city such as **History, Ecology, Morphology, Open space network, Activity pattern, Social and physical infrastructure and Tourism** have been thoroughly studied and documented.

To understand and analyze the existing situation of the city, a detailed city survey has been done by employing various **urban design tools**, both quantitative as well as qualitative to understand the city's design aspects as well as its **perceptual, morphological, temporal, behavioral and functional dimension**.

The extensive city survey comprised of character mapping and documentation of the following areas:

- **Ecological systems of the city such as Rivers, forests and open spaces** - Rivers present and edge conditions for Devraniya, Nakatiya & Ram Ganga were studied and analyzed.
- **Transportation hubs** - Bareilly city railway station, Bareilly Junction railway station, Izzatnagar railway station, Satellite bus stand, Old city bus stand and Bareilly airport.
- **Markets** - Bada Bazaar, Kutubkhana market, Kohrapeer market, Shyam market, Bareilly sabzi mandi
- **Chowks and Chaurahas** - Jhumka Tiraha, Chaupla chauraha, Ghantaghar, Darzi Chowk, Novelty Chowk, Patel Chowk, Chowki Chauraha, Chaupla Chauraha, Virangana Chowk.
- **City built-use districts and major arterial streets** - City core area, Industrial area, Cantonment area, Institutional areas, Pilibhit Bypass and Stadium Road.
- **Religious and cultural precincts** - Nath temples, Dargah e Ala Hazrat, Colonial churches, Ramganga River and their associated fairs and festivals.
- **Public places (old & new)** - Bareilly Fort, Akshar Vihar Lake, Gandhi Udhyan, Phoenix mall, Urban haat, Fun city, Manoranjan sadan, Sanjay Gandhi Pond and Phool Bagh.

In order to gain an insight of the existing scenario of the city's economic, social and physical infrastructure, multiple **Stakeholder meetings** have been conducted with the city residents, business owners, Zari craftsmen, market retailers and wholesalers, wood craftsmen and development authority personnel. The discussion with the stakeholders has provided the team an edge to understand the on-ground situation of the city from various aspects and a direction to formulate the Vision for the city.

5.1.3.1 Urban Design Intent

“Envisioning Bareilly as a trade & craft destination, a place for spiritual tourism and an environment resilient city, to enhance the overall city identity, encourage growth & embrace the city’s culture”.

The vision aims to develop Bareilly with a holistic approach by integrating the ecological, economic, cultural & social aspect of the city. Considering the city data, it is witnessed that the city of Bareilly has a strong infrastructure in terms of trade and industry along with a strong religious identity owing to the seven Nath temples, the Not only that, but the city is also rich in terms of medical and educational infrastructure as well. The city is also enriched with many natural assets which completely go unnoticed due to lack of legibility.

In order to develop the Vision plan and shortlisting appropriate projects for Bareilly, the way forward is to conclude the data and SWOT analysis and picking specific sectors/ dimensions that possess a higher potential for City’s future growth. Thus, the vision focuses development of all the dimensions that the city of Bareilly possesses through the following objectives:

- Strengthening the religious identity of ‘Nath Nagri’, the Dargah & associated public events for better tourism.
- Revival of City’s essence along its trade & commerce infrastructure
- Establishing environmental resilience by integrating the blue-green assets with the city fabric
- Proposals that foster Socio-economic development for city residents.

5.1.3.2 SWOC of Urban Regeneration - Urban Design

To proceed further with the development of Vision plan and shortlisting of the projects for Bareilly, it is essential to observe all the aspects of the city precisely and examine them with respect to urban design perspective. Taking the **city survey data** and **stakeholder consultations** into consideration, following is the analysis of city from urban design perspective:

STRENGTH

- **NATH NAGRI** - Presence of Seven Nath temples envelope the seven major routes of the city, giving it the identity of Nath Nagri
- **TRADE AND BUSINESS** - With massive market infrastructure, the city is also well known for its trade to all its neighboring cities.
- **RELIGION AND CULTURE** - The city of Bareilly portrays a very strong religious & cultural identity.
- **ZARI ZARDOZI**- Bareilly is very well renowned for its native craft of Zari-Zardozi all over the country which initiates commerce & trade to the city.

WEAKNESS

- **LACK OF IDENTITY** - The city lacks the identity in terms of entrance gateways.
- **NO IMAGEABILITY** - Loss of Imageability of the city is seen beyond the old city core.

- **RELIGION AND CULTURE-** Despite of having a very rich cultural background; the religious precincts still lack the sense of Identity
- **ZARI ZARDOZI** - The traditional craft work trade is declining due to lack of display infrastructure and tax systems.

OPPORTUNITY

- **NATH NAGRI** - Development of Nath temple circuit & reviving religious precincts as the symbolic identity of Bareilly.
- **NATIVE CRAFT-** Creating a platform to preserve & elevate the city's local manufacturing industries.
- **WORK OPPORTUNITIES** – Development of infrastructure that provides work opportunities & initiates startups for city's economic growth.

CHALLENGES

- **EXISTING MARKET INFRASTRUCTURE** - The mobility infrastructure in main markets like Bada bazaar, Kutubkhana & Shyam ganj relentlessly lacks management.
- **SAFETY ASPECT OF THE CITY** - The current street scenario lacks the safety & security aspect of the residents which further affects nightlife for women & children.
- **THREAT TO THE NATIVE CRAFT** - The local Zari-Zardozi art could vanish with time if there's no infrastructure proposed to revive it.

5.1.4 HERITAGE AND TOURISM VISION

5.1.4.1 Vision Statement

At present the city of Bareilly is recognized as gateway to Kumaon Hills, but unfortunately has not been part of any tourist circuits of State. The Vision is to develop Bareilly as tourism destination by identification of the cultural and natural heritage, conservation and heritage sensitive development of the diverse Cultural Heritage Resource of the city and its nearby areas, developing infrastructure facilities for the tourists and local community aligning with the vision of Sustainable Development Goals 2030 adapted by the state of Uttar Pradesh.

5.1.4.2 SWOC of Heritage and Tourism

STRENGTH

- Bareilly is famous for Nath Temples and Dargah Ala Hazrat. Many people from the whole country to visit these religious sites and temples.
- The Heritage is a major attraction of Bareilly. Bareilly is an entry point for visiting Kumoun Region.

WEAKNESS

- Highly traffic congested urban area and lack of public and tourist facilities.
- Unmanaged public transport for visiting Heritage sites.
- Unauthorized development and Encroachment.
- Narrow connectivity to the Heritage site.
- Location is located in the dense city areas.

OPPORTUNITY

- Bareilly is located between national capital and state capital, also one of the counter magnets of NCR.

CHALLENGES

- Lack of celebrated public life and underutilized public assets.

5.1.5 ECONOMY VISION

To assess the demand, the team has formulated a methodology which consists of three major components namely – (i) Secondary data analysis, (ii) Stakeholder consultations with various associations, federations, private entities, and representatives from various bodies, (iii) multi-stakeholder workshop held in BDA in the presence of various government and private bodies.



Figure 5-2: Demand assessment methodology

Multiple discussions with stakeholders e.g., representatives of various bodies like Central U.P. Chamber of Commerce, Office of Development Commissioner (Handicrafts), Dastkaar Bunkar Welfare Association, Office of medical officer and CREDAI Chapter of Bareilly; has been conducted at in order to analyze the qualitative and quantitative demand. The Multi – stakeholder workshop conducted had the representatives from Chamber of Commerce, Indian Industry Associations (IIA), Laghu Udyog Bharti, UP Nursing Home Council and Udhyog Mandal, etc.

For quantitative assessment, the team has utilized secondary data available in public domain including statistical data from district development indicators 2020, district industrial profile 2020, etc.





Figure 5-3: Stakeholder Meeting at BDA

In order to formulate the Vision, Implementation Strategy and Infrastructure plan for Bareilly, detailed city study and survey has been carried out by the team. The study consisted of data collection and documentation of sectors of economy from mainly secondary sources and stakeholder consultations. It also included analysis and understanding of existing, on-going or proposed city infrastructure development initiatives/projects undertaken by BDA, Smart city or any other city authority.

Based on assessment of handicraft, health, education as key sectors of economy, the team has identified a few projects for overall improvement and development of the Bareilly city in a wholistic manner in synchronization with exiting activities vis a vis potential of the city. These projects were agreed to take further in reference to meeting held on 13th July 2022.

This chapter elaborates the handicraft, health, and education sector in terms of interventions in Bareilly as presented in following sections.

5.1.5.1 SWOC of Economy

STRENGTHS

- Presence of well-known handicraft sector and artisans in Bareilly. There are approximately 1.7 lakh Zari Zardozi artisans in Bareilly
- Existing Medical infrastructure base and Medical Staff. Bareilly is among one of the leading cities of Uttar Pradesh in terms of medical facilities, the city serves as a gateway to the patients of the nearby areas as well as Kumaon, Rohilkhand, and West Nepal region.
- Two sectors namely Food Processing & packaging, Beverages, and Petroleum & Chemical Products are the major contributing sectors across the district.
- Presence of agricultural products for the raw material
- Proximity to upcoming Ganga Expressway

WEAKNESSES

- Lack of work sheds in hygienic condition with supporting infrastructure such as sanitation, lighting and appropriate place for their tools, equipment, raw and processed material as well as finished products etc.



- Discussions with Health Associations and health sector bodies, it has come up that there is a need of an organized healthcare facility in the Bareilly. As currently, the existing healthcare facilities are present in various parts of the city which are facing issues such as parking, traffic and proper access.

OPPORTUNITIES

- Potential for revival of existing handcraft ecosystem through cluster development
- Development of working shed for Zari Handicraft artisans along with supporting infrastructure.
- As per norms, there will be requirements of additional multi-specialty hospitals and specialty hospitals in Bareilly. The existing health facilities needs to be upgraded in terms of technologies, resources, and facility. Development of “Medi City” designated area with multiple health business and activities.
- Potential for Food Processing, Beverages, and packaging sector based on industrial output trend.
- Development of ring road for improved connectivity and development of southern area.

CHALLENGES

- Physical constraints of the city in southern direction with respect to presence of river Ram Ganga for physical growth of the city
- Unavailability of large vacant land parcels for development of infrastructure



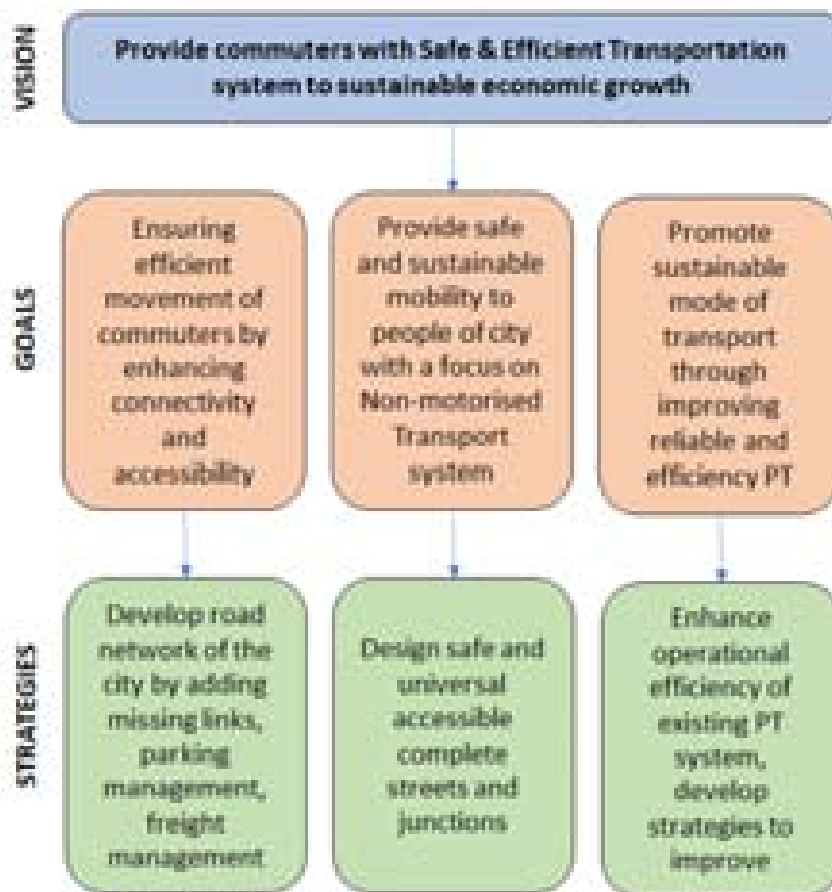
5.1.6 TRANSPORTATION VISION

5.1.6.1 Vision Planning in Transport Sector

Bareilly (UP) envisions the comprehensive features to the user for provision of Intelligent Transport System, Sustainability and Safety features. The commuters/road users will have urban amenities as per norms/guidelines for transport facilities, road markings, street lighting, public transport, parking, street infrastructure, charging stations, bollards, vehicle registration system, junction improvement plan, comprehensive mobility plan, smart components on roads, Integrated Command and Control Centre, non-motorized vehicles stand, pods and signages. Towards a sustainable urban environment, the local development authority is committed to creating better transport infrastructure and connectivity to the city needs.

5.1.6.2 Approach

A system that informs every commuter with accurate information, when they need it, where they need it, and how they need it and contributes to a safe, seamless, secure and equitable transportation network.



Most of the cities in UP are being facing public transport problems for many years, affecting the mobility of people and economic growth of the area. These problems are due to inadequate transport infrastructure and its sub-optimal use, lack of integration between land use and transport planning, lack of mass transport system and little improvement in city bus services, which encourage a shift to personalized modes.

5.1.6.3 Critical Gaps and Issues in Transport Sector

The urban transport & infrastructure related departments face several challenges, such as lack of infrastructure in the department, paucity of funds, etc. Similarly, issues related to lack of adequate data, clarity in rules and procedures, implementation difficulties are being reported by the departments in terms of meeting the programme objectives.

To improve urban mobility certain measures would be taken, such as convert all buses into clean fuel and hybrid technology driven so as to reduce the pollution level. GPS and GPRS systems would be made mandatory in all buses. New routes will also be required to be formulated for better transportation in urban areas along with traffic regulation/management in the existing routes. Separate city bus track/multi-level parking/inter-state bus terminals (ISBT) and intrastate bus terminals will be developed by PWD/Development Authority and Nagar Nigam.

All encroachments on roads will be removed by coordinating with all departments concerned. Few other interventions required to provide sustainable urban transport services in the cities are:

- Providing radio taxis in every tourist city.
- Providing separate city bus track in all big cities and double decker buses on these routes.
- Urban transport services will be made disability and gender friendly.
- GPS/GPRS system, Wi-Fi facility, air conditioning and bio-toilets will soon be installed in public buses.
- Development of multi-level parking is going on in all big cities. ISBT and intrastate bus terminals are in the process of modernisation.
- Disaster management system proposed to be developed at all public transport facilities such as bus stations, petrol pumps and parking places.
- Conversion of all buses into clean fuel, ethanol and hybrid technology driven to reduce pollution levels.
- Solar panel enabled buses in big cities.
- Under the Smart City Mission, special transport system will be developed for promoting intracity tourism in heritage cities.
- State Road Transport Corporation (UPSRTC) will be developing special transport package to connect heritage cities.

5.1.6.4 SWOC of Transport of Bareilly

STRENGTHS

- **RoW details:** Most of the road stretches in the Bareilly city are between 12 to 24 m RoW and thus there is a lot of scope of Development.
- **Informal Sector:** It has been observed that several streets are vibrant in terms of informal sectors and there is a scope to facilitate such activities in efficiently planned manner without disturbing their order.
- **Condition of Carriageway:** Carriageway is in good condition at most of the road stretches and thus do not require intervention until it is necessary.
- **Junction Developments:** A Holistic development of the roads along with the junction development project which will create a consolidated and uniform urban infrastructure system.

WEAKNESS

- Encroachment of footpath area in present state by vendors and shop owners may put the proposal at risk if enforcement is not done properly
- **Irregular Parking Patterns:** Common pattern noticed in Bareilly is, the citizens prefer on-street parking over off-street parking primarily because the former is cheaper than the latter. This leads to irregular parking all over the road width especially during the peak hours. In addition to this there is lack of parking bays due to which the commuter parks the car on road.
- **Lack of Segregation of Traffic Modes:** It has been observed in the Bareilly city that a large no. of citizens commutes via two-wheelers and auto rickshaws though detailed survey of all the roads have not been done. These rickshaws tend to create a havoc on the road sides and regulate the fares according to their conveniences. Also, the citizens commuting by cars are not able to move freely due to hindrance caused by the e- rickshaws.
- **Congestion during Peak Hours:** The citizens generally park their vehicles on the roadsides. So, during peak hours, i.e., the morning and evening there is congestion on the roads creating unmanaged situation if not under policing.
- **Lack of Pedestrian Clarity due to hawking areas:** Footpaths do not exist, as they are either too narrow for people to walk on, or have been encroached by hawkers, forcing pedestrians onto the roads.
- Parking availability and the parking needs have huge gap and thus most of the roads are occupied by vehicles blocking the carriageway

OPPORTUNITIES

- Spaces along the Road carriageway could be made into public realm which will not force the pedestrian to use the roads and hence provide safety.
- There is a chance for provision for several activity zones respecting the local nature of the city and providing to all irrespective of class.
- With this proposals road can be envisioned more than just infrastructure for movement and can become one of the public spaces for the people of Bareilly
- Intelligent traffic management, clear crossings, foot over bridges, signage displays at every interval, street furniture such as dustbins bollards.

CHALLENGES

- As it is clear the sewer trunk line shall be made before the roads proposals and the carriage way shall be disturbed.
- Encroachment on the roads needs to be controlled through effective policing. Unavailability of which may lead to design failure
- Illegal parking may continue, if parking spaces provided are not enough to cater to the demand.

5.1.7 INFRASTRUCTURE VISION

5.1.7.1 VISION FOR PHYSICAL INFRASTRUCTURE

This consultancy project is supported by the Government of Uttar Pradesh which envisions for betterment of the city of Bareilly by enhancing its comprehensive development of physical, institutional, social and economic infrastructure in accordance with modern and innovative urban planning principles.

The project envisages to prepare the Vision, Implementation Strategy and integrated infrastructure plan to support objectives of holistic, sustainable and planned development of Bareilly city. It requires to take a much broader view of planning to allow for more integrated land use and infrastructure development schemes. The project is expected to drive economic growth, improve the quality of life of people by strengthening city's inherent potentials and augmenting its existing infrastructure. It should also contribute to enhancing the resilience of the city by incorporating policies to enable the city in coping with urban risks and climate change mitigation and adaptation. The Vision, Implementation Strategy and integrated infrastructure plan for Bareilly in Uttar Pradesh will further pave the way for project development, management and project implementation support.

Vision Plan- "Clean Green City"

5.1.7.2 SWOC of Infrastructure

The geographical scope of the environmental improvement of the Bareilly city study shall be based access of basic Needs to all citizen in equal quantity, clean and green environment for sustainable development. Basic needs for all include:

- Water Supply
- Wastewater
- Storm Water Drainage
- Solid Waste management
- Power
- Environmental quality assessment

STRENGTH

- Bareilly City falls under semi-arid region where ground water is not sufficient, city seeks surface water facility to substantiate demand. Nearby reservoirs, Ramganga River are major surface source to substantiate demand with needful action.



- Subsequently waste management can be managed with technological intervention to wards 3R principle- Reduce, recycle and reuse.

WEAKNESS

- The growth pattern of city is not planned, so laid of new network in old area places are troublesome.

OPPORTUNITY

- Govt policy and Citizen charter makes city clean green city to sustain resilient city.

CHALLENGES

- New land acquisition policy restricts spatial growth of city to laid new world class infrastructure for new city. So, retrofitting in places will only make city clean city in core area and new parts may be substantiate requirement to achieve future goal.

Part - 2

Bouquet of Projects



5.2 BOUQUET OF PROJECTS

After analyzing the existing situation, assessing demand and goals of the city's development and discussions held with higher government authorities, architects, planners, experts and consultants, several projects were identified focusing on each domain for the development of the city.

5.2.1 Identified Project List

Sr. No.	Domain	Vision Proposed	What is Proposed	Location	Area
URBAN PLANNING					
1	Urban Planning	Development of Regional Trade and Commerce Hub	Development of Mixed-use Sub-City Center	1. Kandharpur 2. Bye Pass Road to be developed in Phases	100 hectares each
2	Urban Planning	Planned Expansion of City	Residential Housing Node	1. Greater Bareilly 2. Sri Jankipuram 3. Ghanghora Piparia 4. Nekpur 5. Kargaina 6. Tahtajpur to be developed in Phases	More than 100 hectares each
3	Urban Planning	Development of Agro-Processing and Food Packing Hub	Industrial Growth Centers	1. Kurtara 2. Paraskhera 3. Rajau Paras to be developed in Phases	More than 100 hectares each
4	Urban Planning	Integration to Regional Logistics Infrastructure	1. Integrated Freight Center 2. Multi-Modal Logistics Hub	1. IFC- Faridpur 2. MMLH- Kurtara	35 hectares each
5	Urban Planning	Leverage Historic Craft	Development of Global Zari and Zardozi Design and Development Center	Pardholi	10 hectares
6	Urban Planning	Leverage Strategic Regional Location	Development of National Level Naturopathy Center	Mohrania Bye Pass	10 hectares
TRANSPORTATION					
7	Transportation	Provision of Parking facilities.	A parking policy and construction of off-street parking lots in major market and commercial areas to accommodate the parking demand for nearly 12000 E.C.S.	Multiple locations like Civil Lines, Rajendra Nagar Market etc.	As per footfall.



Sr. No.	Domain	Vision Proposed	What is Proposed	Location	Area
8	Transportation	Radial Road Improvements	Strengthening of Radial Road connecting to Ganga Expressway	Bareilly-Badaun Road	Survey is required
9	Transportation	Smart Bus Shelters	Interactive Bus Stop at various locations	Major location of the Bareilly city	
10	Transportation	Cycle Track	Development of Cycle Track Corridor	Pan city to be identified after detailed survey	NA
11	Transportation	Freight Logistic Hub	Establishment of Freight Logistic Hub for efficient distribution of inter & intra urban freight movement in Bareilly	Freight Logistic Hub at Screen-line points of Bareilly	4 Hectares
12	Transportation	Charging Station along the Highway for Cars	Electric Vehicle Charging Station along the National Highway for Cars	Along the National Highway locations	5.5 m x 13.5 m = 75 sq m
13	Transportation	Connection with nearby area and within the city	Lite Metro facility	Pan City	Survey is required
ECONOMY					
14	Economy	Industrial Development	Development/ extension of industrial area in Bareilly City – multi – product	Probable nearby Paraskhera, Along bypass and on Shahjahanpur road	To be decided in consultation with BDA
15	Health	Integrated Health Facility - Medicity	“Medicity” – designated area with multiple health business and activities	Location as demarcated in Master Plan 2021 and 2031	To be decided in consultation with BDA
16	Handicraft	Handicraft Cluster	Development of Handicraft Cluster/ Common Facility Centre (CFC) – Zari & Bamboo	Near Paraskhera/ Near Invertis Chauraha	To be decided in consultation with BDA
17	Real Estate	Redevelopment	Bareilly District Jail land parcel monetization through redevelopment.	Old jail complex.	To be decided in consultation with BDA



Sr. No.	Domain	Vision Proposed	What is Proposed	Location	Area
Land Development					
18	City level Infrastructure development	Development of areas near transit points as new gateways to the city	Development of logistic hub and mixed-use commercial district near the new Airport for future growth <ul style="list-style-type: none"> • Destination based mixed use development • Development of Offices, Hotels and convention centers • Designed as gateways to the city 	Available land parcel abutting to Pilibhit Bypass	
19	City level Infrastructure development		Developing trade cum business expo centers near transit nodes <ul style="list-style-type: none"> • Providing a platform and infrastructure to traders and local craftsmen • Development of Exhibition areas 	1. Manoranjan Sadan at Bareilly Jn. Railway station 2. Manoranjan Sansthan Purvottar railways, Opp. Izzat Nagar Railway station	Existing Manoranjan Sadan & Manoranjan Sansthan site
20	Redevelopment of City Gateway and experience on arrival to the city		Redevelopment of Pilibhit Bus stand • Redevelopment of bus stand area with multi modal integration. • Uplifting its visual character as a prominent city gateway. • Introduction of a prominent public plaza space at the bus stand. • Redesigning Streetscape of the junction along with organized spaces for parking, pedestrians, hawkers etc.	NH 24 & Pilibhit Bypass junction	Pilibhit bus stand precinct
21	City level Infrastructure development		Promotion & Innovation of craft products - Kala Sanskriti	Rejuvenation of Zari - Zardozi (Shyam Ganj market) - One district one product	Shyam ganj flyover Sailani Market Road
Tourism Development					
22	Development of Spiritual Tourism	Developing Nath Temple Circuit	Development of Spiritual tourism by creating religious circuit of all seven Nath temples. <ul style="list-style-type: none"> • Tourists and Pilgrims Circulation: Movement Patterns Study based on Existing PanchKosi Parikrama and to Design Cultural Trail based on Inferences and Demand Assessment • Tourism Infrastructure and Public Conveniences • Integrating Math Tulsi Sthal in the Nath Temple circuit 	Nath Temple Precincts: <ol style="list-style-type: none"> Alakh Nath (Qila Bareilly) Bankhandi Nath (Jogi Navada) Dhopeswar Nath (Sadar Bazaar) Madhi Nath (Madhinath) Tapeshwar Nath (Subhash Nagar) Trivathi Nath (Macnair Road) Pashupati Nath (Pilibhit Bypass) 	Nath Temple Circuit



Sr. No.	Domain	Vision Proposed	What is Proposed	Location	Area
				Math Tulsi Sthal	
23	Development of Spiritual Tourism		<p>Urban Renewal of all Seven Nath Temples by defining entrance gateways, corridors and enhancing the public infrastructure</p> <ul style="list-style-type: none"> • Development of symbolic identity/ entrance gateways of all Nath Temples. • Theme based Design of Streets Connecting the Temples Precincts from Major Artillery Roads and Junction along with their Branding: <ol style="list-style-type: none"> Street Furniture Light Poles Green/Buffer Areas Pedestrian Oriented Designs Signages and Panels Design Façade treatment guidelines. • Sensible Lighting and Illumination to Highlight Historical, Artistic and Architectural Significance of Temples • Restructuring the temple precinct while adding public infrastructure like designated parking space, washrooms, etc. • Site Management, Conservation of Temples and Revival of Ponds and Ablution Water Bodies based on Historical Evidence and Significance • Disaster Management, Risk Mitigation and Carrying Capacity Study of Temple Complex based on Survey of data on Tourism/Pilgrim Footfall 	<p>All Seven Nath Temples:</p> <ol style="list-style-type: none"> Alakh Nath (Qila Bareilly) Bankhandi Nath (Jogi Navada) Dhopeswar Nath (Sadar Bazaar) Madhi Nath (Madhinath) Tapeshwar Nath (Subhash Nagar) Trivathi Nath (Macnair Road) Pashupati Nath (Pilibhit Bypass) 	<ol style="list-style-type: none"> Alakh Nath - 10.10 Hectares Bankhandi Nath - 1 Hectares Dhopeswar Nath - 1.5 Hectares Madhi Nath - 0.3 Hectares Tapeshwar Nath - 0.5 Hectares Trivathi Nath - 1.3 Hectares Pashupati Nath - 0.3 Hectares
24	Development of Spiritual Tourism	Place for spiritual tourism and nature retreat.	<p>Ramganga riverfront development</p> <ul style="list-style-type: none"> • Creating Ramganga river ghat into a multi-functional public space that caters to all pilgrimage activity, fairs and festivals. • Redevelopment of the existing ghat and fairground while 	Existing Chaubari Fairground	17.5 Hectares



Sr. No.	Domain	Vision Proposed	What is Proposed	Location	Area
			adding public infrastructure like designated parking space, washrooms, etc.		
25	Development of Medical Tourism		<p>Development medical infrastructure for naturopathy and eco-tourism</p> <ul style="list-style-type: none"> • Naturopathy • Nature retreat center • Promoting Ecotourism • Yoga, Sound meditation and Ayurveda treatments. 	At the intersection of Pilibhit bypass & Bareilly bypass	<p>Land parcel A - 39.65 Hectares</p> <p>Land parcel B - 25.15 Hectares</p>
26	Cultural Heritage Tourism	Tourism Infrastructure upgradation of A.S.I sites	<p>Ahichchhatra - Tourism infrastructure upgradation of A.S.I site in consultation with A.S.I and U.P regional managers</p> <p>Site Identity Design with Legal Protection of Surrounding Natural Landscape: Ahichchhatra Site - Ramnagar Village</p> <p>Site Development, Tourism Infrastructure and Facilities Upgradation as per Archaeological Survey of India (ASI) Norms:</p> <ol style="list-style-type: none"> Cultural Theme based Landscaping Site Museum (Collection Based) Interpretation and Convention Centre Light and Sound Show Public Conveniences Monument Illumination, Signages, Guide Maps and Information Plaques Inclusive of Green Energy Use - Solar Power Plant 	Ahichchhatra Cultural Site	<p>Ahichchhatra 90 Acres</p> <p>36 Hectares</p>
26	Streetscape of major roads and creation of landmarks	Streetscape of city core & development of Dargah precinct	Streetscape of market street from Qila to Shyam Ganj along with urban renewal of Dargah precinct by defining entrance gateways, corridors and enhancing the public infrastructure Urban Renewal of Dargah precincts by defining entrance gateways, corridors and enhancing the public infrastructure • Development of symbolic identity/ entrance gateways of the Dargah. • Establishing a corridor leading to Dargah and Khanqah along with façade	Dargah E Aalahazrat, Khanqah E Niazia Qila flyover to Shyam Ganj flyover	



Sr. No.	Domain	Vision Proposed	What is Proposed	Location	Area
			treatment guidelines. • Restructuring the dargah precinct while adding public infrastructure like designated parking space, washrooms, etc. • Restructuring mobility networks to facilitate walkability within the core city and prioritize the use of public transport. • Suggesting sensitive vehicular movement routes and integrating it with IPT, NMT and other public transit nodes to enhance connectivity and accessibility with the old city.		
SOLAR					
27	Semi / Fully Integrated Solar Street Lights	Upto 10 KW Plant can be set up between maidan gaps /road divider at main street else standalone solar streetlights can be installed.	Centralized Solar Power Plant Solar Street Lights	Main streets of city and Gardens	100 Sq. Feet / KW, for streetlight just a foot space to dig hole
	Solar Street Lights	Can Be Install at remote places.	Solar Street Lights	Premises of Hospitals, Government offices, Playing grounds etc.	same
28	Solar High Mast			At Main Square / Chowk	8 Sq. Foot
29	Solar Flood Lights	Solar Flood Lights		At Main Square / Chowk, Focusing on statue, landscapes, fountain, monuments	Can Be installed anywhere, being a standalone system
30	Solar Agriculture Pumps	On Tube Wells		Depends upon size of motor / Pump	100 Sq. Feet / KW
31	Solar Rooftop Plants	Solar Rooftop Plants	Solar Plants	Hospital, Government Offices Schools & Collages Vikas Bhawan Nagar Nigam Building Police Stations Post Offices	100 Sq. Feet / KW
		same	Solar Parks of Megawatts capacity	Non-Agriculture Land	3.5 Acre / Megawatt
32	Solar Tree	Designed Solar Power plant	Solar Trees of 5 KW	Public Gardens, Office Premises	25 Sq. Foot at ground
SOLID WASTE MANAGEMENT					



Sr. No.	Domain	Vision Proposed	What is Proposed	Location	Area
33	Solid Waste Management	Development of new solid waste treatment plant replacing the non-operational Paraspur plant	Organic waste convertor and landfill facility.	To be decided	20 acres

5.2.2 Proposed List of Projects

After the discussion with Divisional Commissioner and various stakeholders on the total identified projects the following projects were discussed for the further working:

Table 5-1 Project list finalized and endorsed by Mandal Commissioner on 13th July 2022

Sr. No.	Project List under Bareilly City Vision Plan 2051	Domain	Nodal Department
1	Residential Housing Node, a) Greater Bareilly b) Sri Jankipuram C) Nekpur (Phase 1 - 2022-23) d) Gangora Pikariyam e) Kargaina f) Tehtajpur (Area - 100 Ha each)	Urban Planning	BDA / Awas vikas / Private Builders
2	Industrial Growth Centers, a) Rajau Paraspur Phase 1 (2022-23) b) Parsakheda (2025-30) c) Kurtara (2030-35) (Area - 100 Ha each)		BDA / UPSIDC / Private Builders
3	Integrated Freight Center, Faridpur 45 Ha		BDA / Private Builders
4	Multi-Modal Logistics Hub, Kurtara 45 Ha		BDA / Private Builders
5	City Level Plan for Vehicle Parking adequacy for Bareilly	Transportation	SP Traffic
6	Access to Ganga Expressway through Radial Road and Outer Ring Road		NHAI / PWD
7	Bareilly Lite Metro facility		BDA
8	Ahichchhatra Tourism Infrastructure upgradation	Heritage and Tourism	Tourism Department
9	Fist War of Independence (1857) museum: a) Bareilly College Campus / b) Cantonment Area		Tourism Department
10	Nath Temples facility improvement and beautification	Urban Design	Tourism Department
11	Ramganga River front development at Chowbari fairground (Area 14 Acres + 500 Meter Ghats) (Nakatiya)		PWD / Irrigation Department / BDA
12	Aero city integrated office complex near Airport development: Area - 30 Ha		BDA / Private Builders
13	Zari - Zardozi Shyam Ganj and Sailani market Façade Development and streetscape		BDA / Nagar Nigam
14	Demonstration of Solar Energy for streets and Gov. buildings.	Solar	UPNEDA
15	Development of new solid waste treatment plant for 2041, (Area -15 Ha)	Infrastructure	Nagar Nigam
16	City Plan for Water Logging / stagnant spots and flood prone areas		Jal Nigam / Nagar Nigam
17	Development of new Tertiary Sewage Treatment Plant (STP): Near Industrial Area.		Jal Nigam / Nagar Nigam

Sr. No.	Project List under Bareilly City Vision Plan 2051	Domain	Nodal Department
Project in waitlist			
a	“Medicity” – designated area with multiple health business and activities	Economy	
b	Development of Handicraft Cluster/ Common Facility Centre (CFC) – Zari & Bamboo		
c	Bareilly District Jail land parcel monetization through redevelopment.		
d	Developing trade cum business expo centers near transit nodes		
e	Streetscape from Qila to Shyamganj along with development of Dargah precinct	Urban Design	

5.2.3 URBAN PLANNING PROJECTS

5.2.3.1 Demographic Profile

5.2.3.1.1 Population Projections

For population projection of the horizon year, five projection methods are taken into account. The Arithmetical projection method shows the lowest population and predicts the population to be 22,50,731 to be in 2051 and 31,25,421 to be in the horizon year 2071. Similarly, the Incremental Increase method projects the population to be 28,49,757 to be in the horizon year. The geometrical increase method estimates the population to be 45,86,064. Apart from these methods such as the graphical method of population projection is also used to project the population by 4 different methods namely Linear Method, 2nd Order Polynomial Method, 3rd Order Polynomial Method, and Exponential Method. 3rd Order Polynomial Method projects the highest i.e., 47,58,683 population for Bareilly city. Based on the growth trajectory 2nd Order Polynomial Method which estimates the population to be 31,25,421 in 2071 is considered for the Municipal area.

Table 5-2: Population Projection for Municipal Corporation Area

Sl. No	Population Method	Projection	2031	2041	2051	2061	2071
1	Arithmetic Method	Progression	14,39,947	15,93,930	17,47,913	19,01,896	20,55,879
2	Geometrical Method	Progression	16,58,330	21,38,520	27,57,754	35,56,296	45,86,064
3	Incremental Method	Increase	14,92,872	17,52,706	20,65,464	24,31,148	28,49,757
4	Growth Method		16,68,765	21,65,517	28,10,141	36,46,654	47,32,177
5	Graphical Method						
	a) Linear Method		12,38,736	13,81,870	15,25,004	16,68,138	18,11,272
	b) 2nd Order Polynomial Method		15,32,953	18,72,228	22,50,731	26,68,462	31,25,421
	c) 3rd Order Polynomial Method		16,83,919	22,24,493	29,04,945	37,43,575	47,58,683
	d) Exponential Method		15,82,382	20,41,186	26,33,019	33,96,451	43,81,237

Master Plan boundary is a consortium of cantonment board area, villages within planning boundary, census towns within planning area boundary in addition to the municipal area. Bareilly city population including all these for the year is projected to be 19,49,012 as per the consultant analysis against the population of 18,94,211 of Master Plan consultant for 2031. For the year 2051 and for the horizon year 2071 population is projected to be 28,94,499 and 37,02,015 respectively.

Table 5-3: Summary of Population Projection

	2021	2031	2041	2051	2061	2071
Municipal Area	1140717	1431466	1698116	1991891	2668462	3125421
Cantonment Board	37388	46591	65206	81256	174853	279265
Total Villages within Planning Boundary	279655	348492	487722	607775	106911	170753

Total Census Towns within Planning Boundary	98273	122463	171389	213577	79252	126577
Total Planning Boundary Population	1556033	1949012	2422433	2894499	3029478	3702015
Master Plan 2031 estimation of Total area		1894211				

5.2.3.1.2 Estimated Household Size

The household size of Bareilly city has dropped in the past 3 decades. It was 6.43 in the year 1991 which in the last census of 2011 declined to 5.42. The decline in household size can be attributed to the nuclear family being more in existence now as compared to the joint family. Household size of 5.0 is proposed for Bareilly city which is also the national average.

5.2.3.1.3 Proposed Density

Decongestion of the core area is necessary to provide infrastructural equity and address traffic issues. This is also to admit that low dense low rise infrastructure development demands large investment. So, to reduce costs and provide long-lasting suitable infrastructure, medium-density compact development with a density of 250pph is proposed.

5.2.3.2 City Level Landuse Demand

Existing landuse of Bareilly city covers only 7421.66 hectares of area in 2021 against 20,563.82 hectares. There is only 36.09 percent of the total allocated area in Master Plan 2021. As per the Draft Master Plan 2031, 2,251.94 hectares of additional area are added to the Master Plan boundary making it a total of 22815.76 hectares. For 2051 and 2071, an additional area of 7,652.65 hectares 2051 and 16,152.82 in 2071 hectares needs to be added to regulate and develop the area in 2071. The total estimated area required will be 30468.41 hectares for the year 2051 and 38968.58 hectares for the year 2071 which will be within the current BDA Boundary of 36,558.70 hectares till 2051 but might be necessary to extend the Pilibhit, Delhi, and Hardoi Road boundaries based on the development that is already apparent and. For the year 2071, the total landuse area required will exceed the boundary on all roads and will require a total of 38968.58 hectares of land.

Table 5-4: Land use Requirement till 2071

S	Land use	Norms	Per cent	Proposed Land use 2031	Area Required as per URDPFI Standards Land use 2031	Total Area Required for 2041	Total Area Required for 2051	Total Area Required for 2061	Total Area Required for 2071
1	Residential	30-35	38	8580.37	8669.99	9589.57	11578.00	12117.91	14808.06
2	Commercial	4-6	4	945.65	912.63	1056.88	1218.74	1275.57	1558.743
3	Industrial	8-10	10	2008.76	2281.58	2245.03	3046.84	3188.924	3896.858
4	Public and Semi Public	10-12	10	1406.82	2281.58	1572.29	3046.84	3188.924	3896.858

5	Official		2	360	456.32	402.34	609.37	637.7848	779.3716
6	Parks and Open Spaces	15-20	16	5705.74	3650.52	2274.04	4874.95	5102.279	6234.973
7	Traffic and Transportation	18-20	18	2034.72	4106.84	6376.84	5484.31	5740.064	7014.345
8	Others	Balance	2	1773.66	456.32	1982.27	609.37	637.7848	779.3716
	Total		100	22815.76	22815.76	25499.25	30468.41	31889.24	38968.58

These calculations are as per norms and standards in line with the Draft Master Plan, Industrial land use requirement as per the city development plan vision is detailed in the section titled “Projected Industrial Land Demand.”

5.2.3.3 Project : Residential Housing Nodes

5.2.3.3.1 Residential Land use Demand

Draft Master Plan 2031 allocates a total of 8580.37 hectares of land under residential land use. Due to external growth drivers, a rising residential tendency in the city improved regional connectivity, and planned developments, the percentage of residential area is projected to be on the higher side i.e., 40 percent. Thus, a total of 14808.06 hectares of the land area needs to be under the umbrella of residential land use for 2071.

5.2.3.3.2 Zoning Regulations

Permissible Categories of Different Activities / Uses: The various activities/uses under the major land use zones proposed in the master plan will have the following permission categories:

Permissible Use: The activities/uses which will be ancillary to the major land-uses concerned and would normally be allowed.

Conditionally Permissible Uses: Those actions/uses which will be permissible based on work fulfillment in the respective major land-uses with mandatory means and restrictions are provided in section 6.4 of the Master Plan Document.

Permissible use with special permission of the Competent Authority: The activities/uses which are reckoned permissible during the approval process from the competent authority, based on the type of construction, infrastructure, and the environmental impact on the surrounding area, shall be permissible with special conditions. These are listed in section 6.3.3 of the Master Plan Document.

Prohibited use: All activities/uses that are not permissible in the master plan’s major land-uses, those listed as prohibited activities; and all such activities that are not ancillary to the main land use or in the above three categories, or not included in the category’s list of permissible actions, will be prohibited.

Floating Use: The proposal intends to improve the master plan’s zoning system’s flexibility. Certain activities/uses are proposed in response to a city’s changing social, physical, and political context, but are not mentioned in zoning restrictions. For example, Bus/Rail/Air terminal Wholesale market, etc.

Rainwater harvesting: The existing actual use of natural reservoirs, ponds and lakes, etc. of one acre and above area under any land-use zone proposed in the master plans / zonal development plans of metropolitan areas, for the conservation and recharging of groundwater, will stay the same or supplementary thereto. The principal land use of the properties should have been shown differently in the same master plan. After listing all such reservoirs, ponds, lakes, and other bodies of water, it

will be necessary to establish appropriate measures for their protection in the master plan / zonal plan layout plan.

Impact Fee: Applications for permission of certain other activities/uses in plans approved by the Competent Authority in planned developed areas where provision has been made for ancillary activities according to the standards will be received, as per the master plan. The regulations of the Zoning Regulations will apply to such applications. If permission for high use is given in the low land use zone, it will result in an impact on the traffic-transportation infrastructure and environment in the area concerned. The impact fee options were outlined in-depth in the master plan.

Exempted Land use Conversions:

5. For commonly permitted activities/uses in a built-up area.
6. Activities to be allowed temporarily (maximum time limit one week) in various major land use zones for public and semi-public facilities.
7. Activities to be developed by government and semi-government agencies in residential land use zones / for uses.
8. There will be no impact fee charged under various policies declared by the state government, such as tourist policy, information technology policy, film policy, and others, for which activities/uses have been approved in specified land-use zones as per government directives. Hotels with a star rating and information technology units/parks with a capacity of up to 5 KVA.

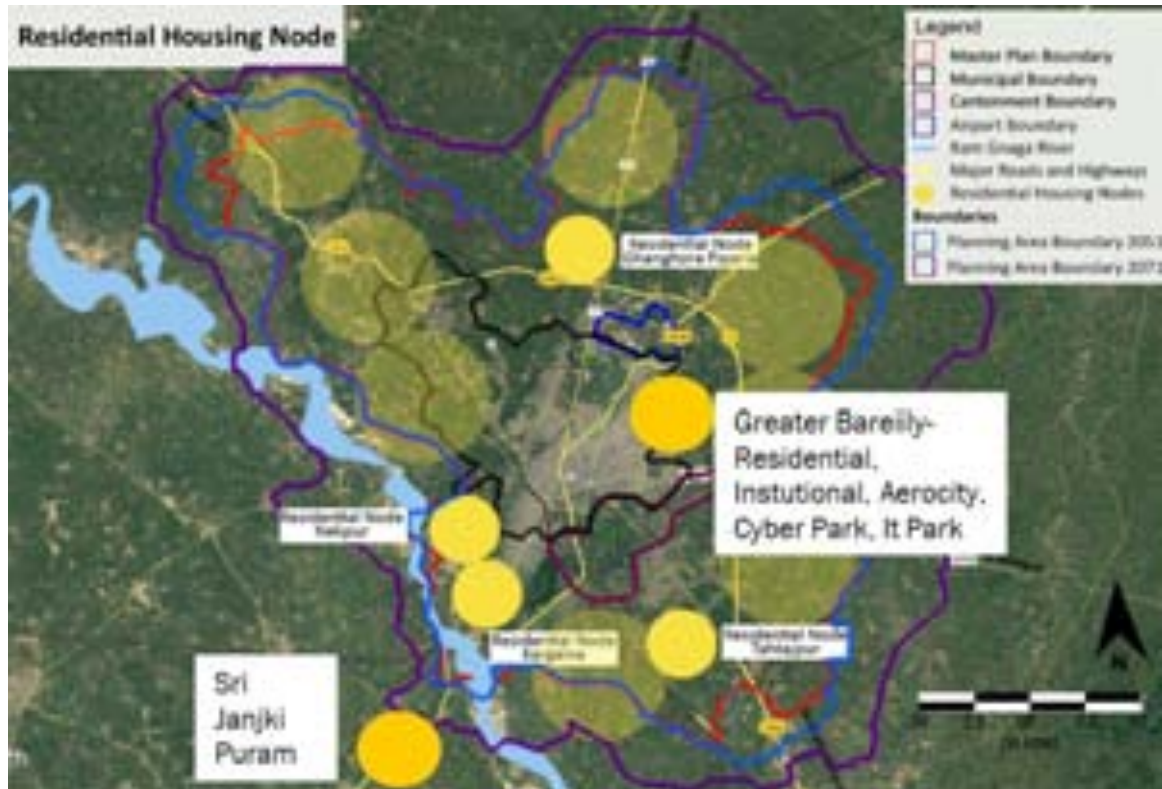
Procedure for Permission:

4. In any of the major land use zones under the development area, before special permission is given for other activities by the competent authority, a committee will examine each such case and the committee's recommendation will be presented to the authority board.
5. The said committee will have the following members:
 - d. Chief Town and Country Planner, Uttar Pradesh or his representative.
 - e. Vice-Chairman of the Development Authority or the officer nominated by him.
 - f. A non-official member of the Authority Board nominated by the Chairman Development Authority.
6. The applicant shall not be entitled to any action or use under the zoning regulations. permission

Other Requirements:

5. Development/construction on a site proposed for any action or specific use under the master plan's major land use zones will be permitted only if that action or specific use is relevant to the master plan's major land use zones.
6. Existing forest areas or sites associated with public services and utilities, such as parks, playgrounds, and roads, will remain the same, regardless of where in the proposed master plan they are located.
7. If the zonal development plan or layout plan of a site/ plot has been approved by the competent authority, then in such a case the permissible land use of the said site/plot would be as specified in the zonal development plan or layout plan.
8. All development/construction works in all land use categories must comply with relevant building byelaws under the proposed zoning regulations.

5.2.3.3.3 Proposed Residential Housing Zones



Map 5-1: Residential Housing Nodes and Probable Residential Areas of Future

The population is projected to increase more than threefold and reach 38 lakhs within the horizon year. The growing population will need land for a habitat, but if these new regions are not built-in accordance with the laws and standards, it will exacerbate the already chaotic conditions in some sectors. New residential zones are suggested to handle the population growth and improve living conditions. Four residential zones or nodes are proposed to be developed following the study and demand evaluation. Out of these 2 residential zones are proposed on Aligarh Road near village Nekpur and Kargaina. Other residential zones are proposed on Lucknow Road near Tehtajpur and near Village Ghaghoria Piparia on Nainital Road. Each residential node is expected to be developed on 100 hectares each.

Additionally, it is anticipated that by 2051, the population will have spread out past the boundary of the Draft Master Plan 2031 and settled in various areas throughout the city.

5.2.3.3.4 Projected Housing Demand

Bareilly city is projected to accommodate 5,78,900 households by 2051 and 7,43,403 households by the horizon year 2071. It is as per the national average of 5.0 person per household. EWS Category which is considered to be 15 percent will have 86,835 units and 1,11,060 units by 2051 and 2061 respectively. LIG category and MIG category both will constitute 35 percent each of the total share of housing demand with 2,02,615 units in 2051 and 2,59,141 units by 2071. HIG category will constitute 15 percent and will require housing units similar to EWS category but 4 times the size of each unit.

Below is a breakdown of demand by category according to the Draft Master Plan 2031:

Table 5-5: Housing Demand till 2071

Type of residential category as per economic status	Type of residential category as per economic status	No. of houses For 2031	No. of houses For 2041	No. of houses For 2051	No. of houses For 2061	No. of houses For 2071
EWS	15	58470	72673	86835	90884	111060
LIG	35	136431	169570	202615	212063	259141
MIG	35	136431	169570	202615	212063	259141
HIG	15	58470	72673	86835	90884	111060
Total	100	389802	484487	578900	605896	740403

Unit area for various groups is taken into consideration under socioeconomic requirements. Area for EWS category per unit is 50 sq.m., 80 sq.m. for LIG, 120 sq.m. for MIG and 200 sq.m. for HIG class. The total built-up area for 2031, 2041, and 2051 is computed based on these standards, as indicated in the table below:

Table 5-6: Built Up Area w.r.t. housing need till 2071

Type of residential category as per economic status	Unit Area Considered	Built-up area by 2031 (in sq.m.)	Built-up area by 2041 (in sq.m.)	Built-up area by 2051 (in sq.m.)	Built-up area by 2061 (in sq.m.)	Built-up area by 2071 (in sq.m.)
EWS	50	2923515	3633652.5	4341750	4544217	5553023
LIG	80	10914456	13565636	16209200	16965077	20731285
MIG	120	16371684	20348454	24313800	25447616	31096928
HIG	200	11694060	14534610	17367000	18176869	22212092
Total		41903715	52082352.5	62231750	65133779	79593328

No. of units for EWS and HIG is the same but due to the difference in unit size built-up area in the year, 2071 for EWS is 55,53,023 sq.m. and 2,22,12,092 sq.m. Similarly, HIG and MIG categories have similar no. of units in their share but a total built area of MIG will be 3,10,96,928 sq.m. and 2,07,31,285 sq.m. for LIG. Total built-up area required by 2051 will be 7,95,93,328 sq.m.

5.2.4 Project Timeline & Broad Project Cost

The project can be developed as short-term intervention within five-year project horizon. For the broad cost estimation of the residential housing nodes the land rate is assumed to be four times the actual rate of the land. The broad project cost for the proposed residential housing node is given below:

Table 5-7 Nekpur Residential Housing Node Broad costing

S.no	Components	%	Development Cost (in INR)
1	Plumbing sewerage STP and all	30	7,413,150
2	Electricity ESS and all	30	7,413,150
3	Roads and landscaping	40	9,884,200

S.no	Components	%	Development Cost (in INR)
	Sub Total	100	24,710,500
4	Land Cost	100 Ha	8,000,000,000
	Total		8,024,710,500

Table 5-8 Kargaina Residential Housing Node Broad costing

S.no	Components	%	Development Cost (in INR)
1	Plumbing sewerage STP and all	30	7,413,150
2	Electricity ESS and all	30	7,413,150
3	Roads and landscaping	40	9,884,200
	Sub Total	100	24,710,500
4	Land Cost	100 Ha	8,000,000,000
	Total		8,024,710,500

Table 5-9 Tehtajpur Residential Housing Node Broad costing

S.no	Components	%	Development Cost (in INR)
1	Plumbing sewerage STP and all	30	7,413,150
2	Electricity ESS and all	30	7,413,150
3	Roads and landscaping	40	9,884,200
	Sub Total	100	24,710,500
4	Land Cost	100 Ha	4,800,000,000
	Total		4,824,710,500

Table 5-10 Ghaghoria Residential Housing Node Broad costing

S.no	Components	%	Development Cost (in INR)
1	Plumbing sewerage STP and all	30	7,413,150
2	Electricity ESS and all	30	7,413,150
3	Roads and landscaping	40	9,884,200
	Sub Total	100	24,710,500
4	Land Cost	100 Ha	8,800,000,000
	Total		8,824,710,500

5.2.5 Requisite Approval

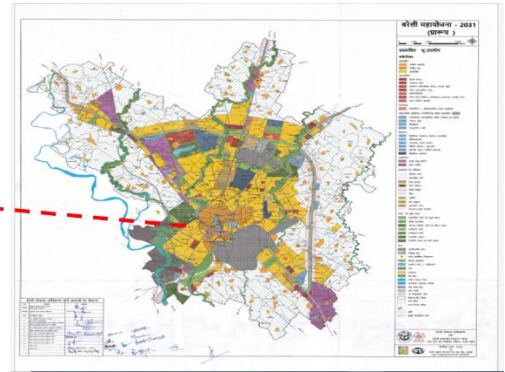
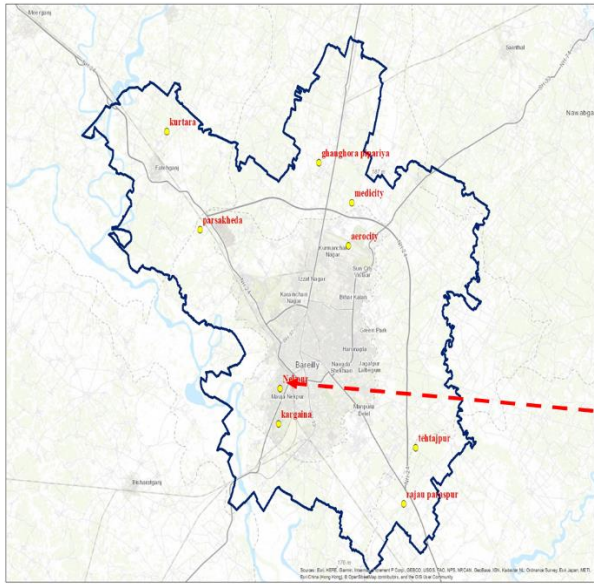
For the development of these residential housing nodes involvement of multi-disciplinary agencies will be required and no objection certificates will be required for free flow and unerupted development. The following approval is necessary:

1. Land Revenue Department for change of land use. If required.
2. Bareilly Development Authority for land use change from agriculture to residential.
3. There is no Environmental sensitive location around the periphery, so no clearance is required, and no environmental screening is requisite for the development.

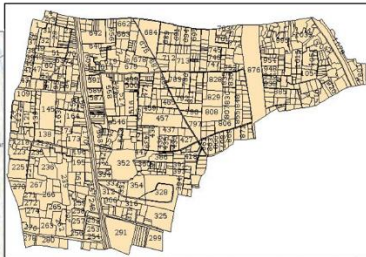
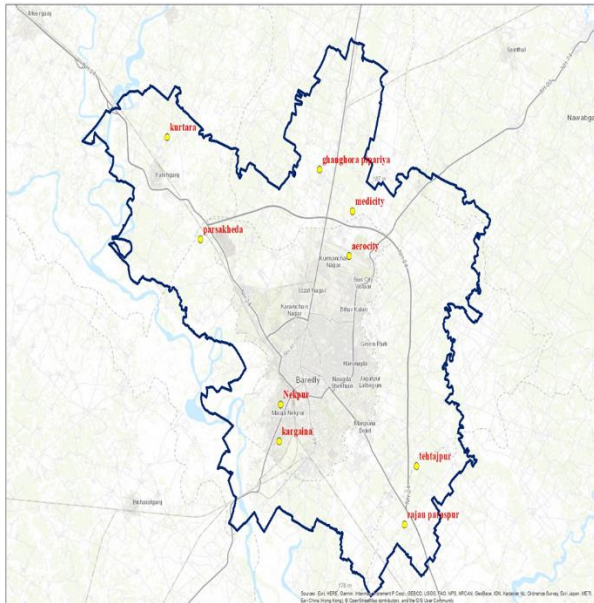
Local people from Nekpur, Kargana, Tehtajpur and Ghaghoria Piparia as No objection certificate.



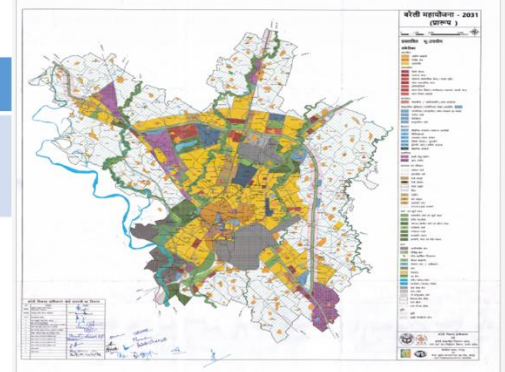
Nekpur



Kargaina

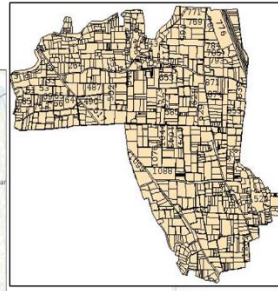
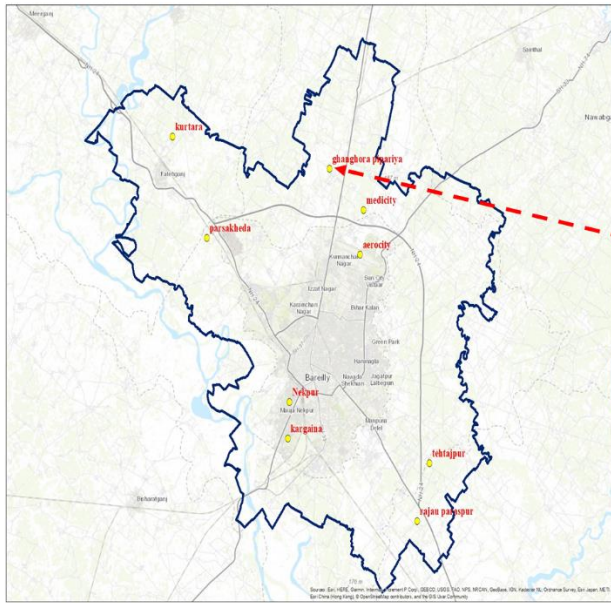


Village Name	Khasra No.
Kargaina	70

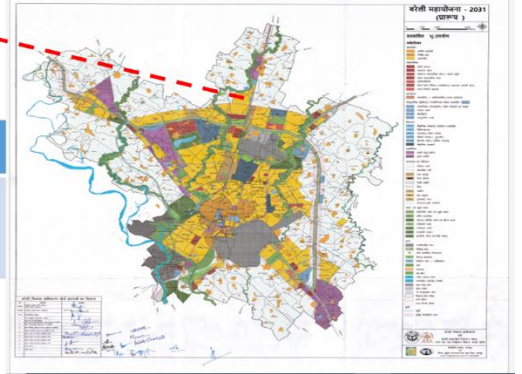




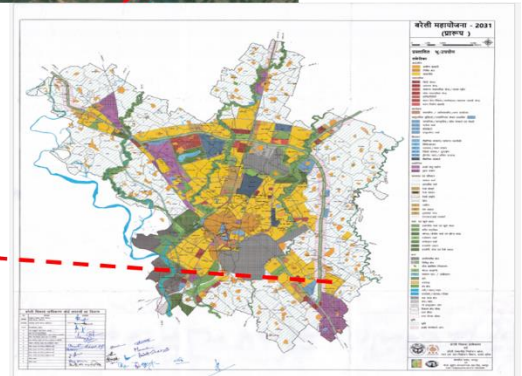
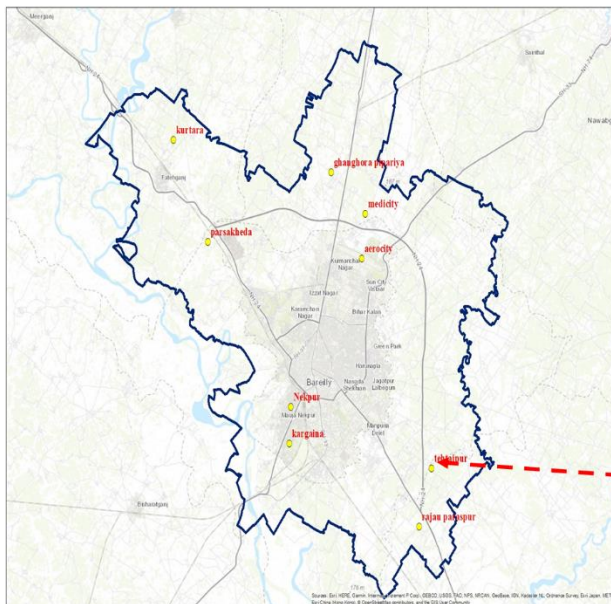
Ghanghora Pipariya



Village Name	Khasra No.
Ghanghora Pipariya	30



Tehtajpur

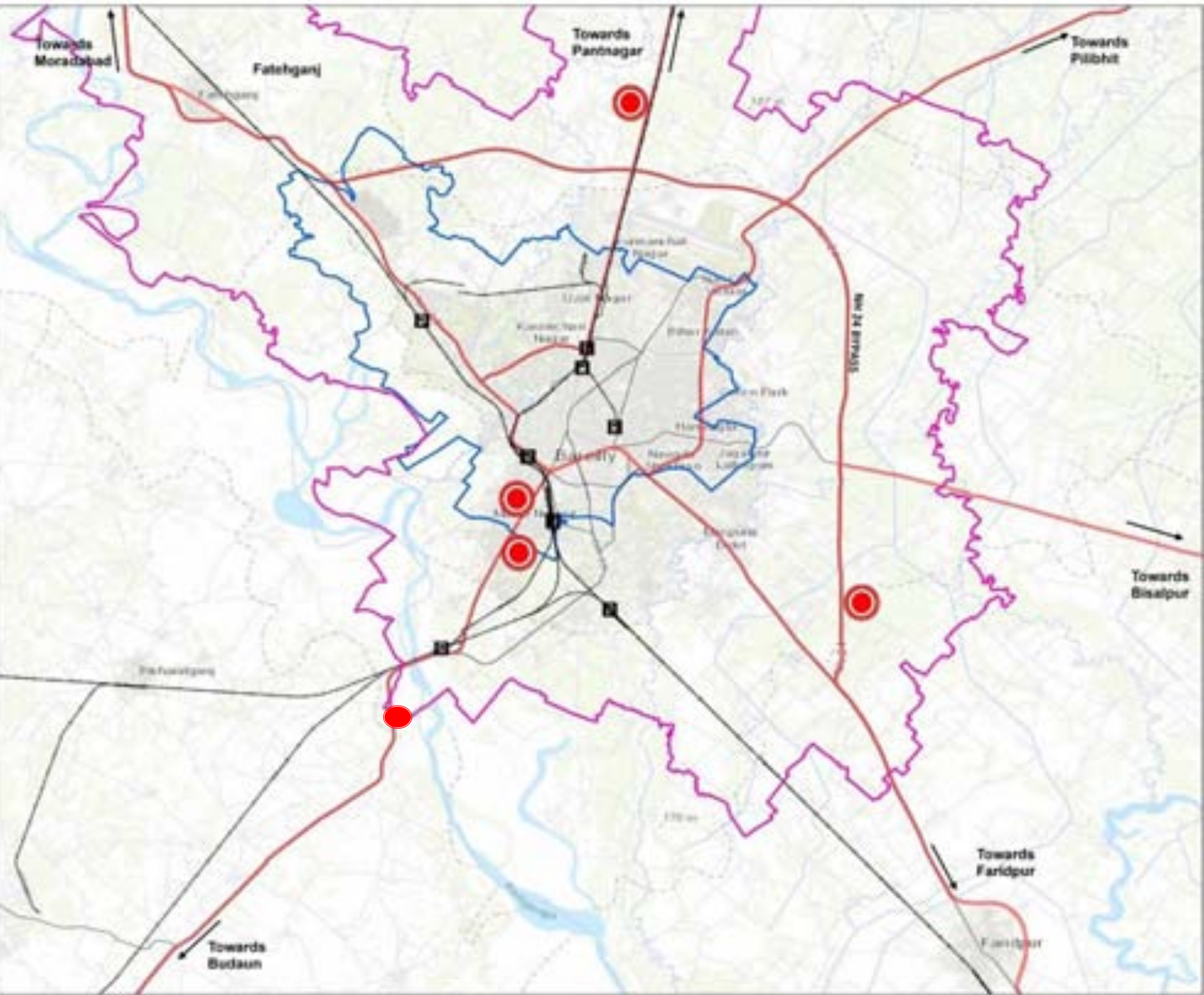


Vision Plan, Implementation Strategy & Integrated Infrastructure Plan for Bawal, 2071



Legend

- Railway_station
- Proposed Residential nodes
- railways
- primary
- secondary
- Master plan boundary 2031
- Munciple_boudary



Title: Proposed Residential nodes
 Scale: 1:25,000

 Client: Haryana Development & Cultural Revival Department
 Consultants: AECOM in association with Haryana Development & Cultural Revival Department



Vision Plan, Implementation Strategy & Integrated Infrastructure Plan for Bareilly, 2071

Legend

- National Highway
- State Highway
- MDR
- Other Roads
- Railway Line
- Municipal Boundary
- Planning Area Boundary (DDA)
- Water Bodies

Map Title:
Proposed Residential Area

Scale: 1:25,000

Client:
Bareilly Development Authority
Government of Uttar Pradesh

Consultants:
Muzumdar Shrivastava Pte. Ltd.
In Association with
E.Y. Sharma Consulting Engineers Ltd. &
Urban Development Services Pte. Ltd.

AGENCIOS

Vision Plan, Implementation Strategy & Integrated Infrastructure Plan for Bantilly, 2071



Legend

- National Highway
- State Highway
- MCH
- Other Roads
- Railway Line
- Municipal Boundary
- Planning Area Boundary (SCA)
- Water Bodies

Map Title

Proposed Residential Area

Scale : 1:10,000



Client

Urban Development Authority
Government of Sri Lanka

Consultants

Worleypar Singapore Pte. Ltd.
in association with
ETI
Technics Consulting Engineers Ltd. &
Urban Development Services Pte. Ltd.

Vision Plan, Implementation Strategy & Integrated Infrastructure Plan for Bareilly, 2071



Legend

- National Highway
- State Highway
- MCN
- Other Roads
- Railway Line
- Municipal Boundary
- Planning Area Boundary (ICD)
- Water Bodies

Map Title

Proposed Residential Area

Scale : 1:50,000



Client

Bareilly Development Authority,
Department of Urban Planning

Consultant

Metcon Engineers Pvt. Ltd.
in association with

ET
Mehra Consulting Engineers Ltd. &
Urban Development Services Pvt. Ltd.

AGS 2018

Vision Plan, Implementation Strategy & Integrated Infrastructure Plan for Baniilly, 2071



Legend

- National Highway
- State Highway
- MCH
- Other Roads
- Railway Line
- Municipal Boundary
- Planning Area Boundary (SCA)
- Water Bodies

Map Title:

Proposed Residential Area

Scale: 1:10,000



Client:

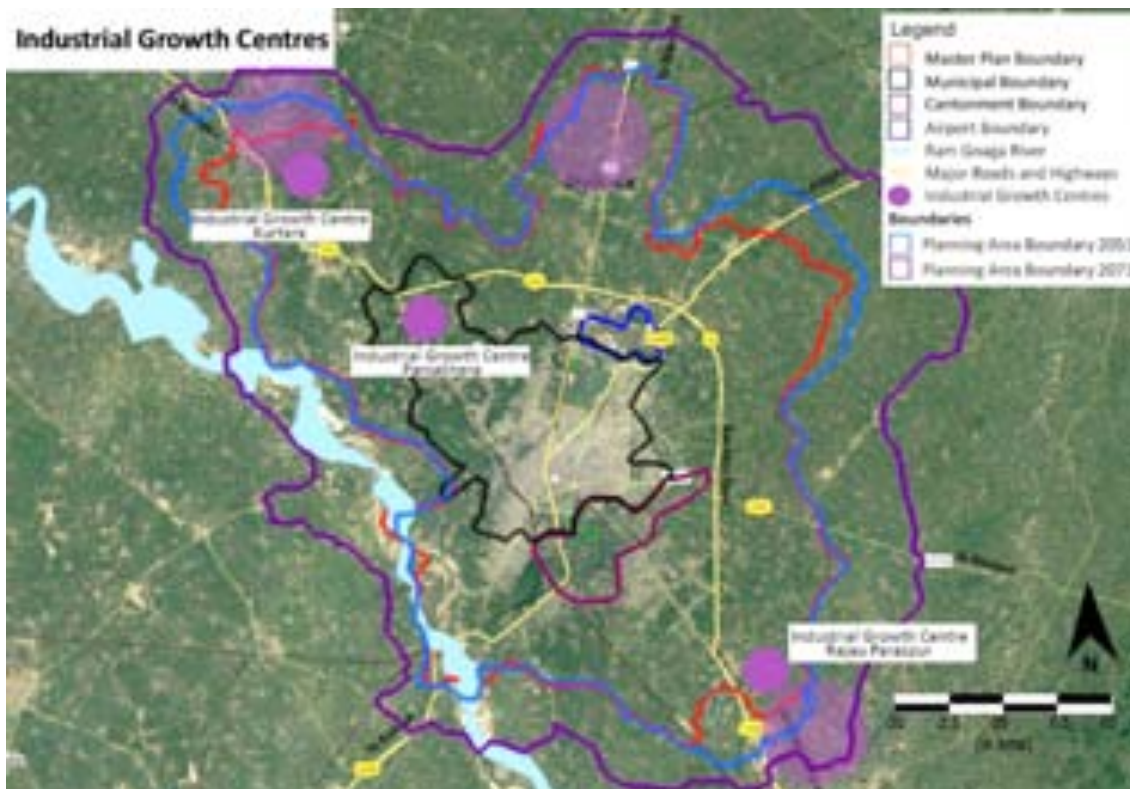
Baniilly Development Authority,
Department of Urban Planning

Consultants:
Woodward Clyde Pvt Ltd
in association with
ET
Urban Consulting Engineers Ltd &
Urban Development Services Pvt Ltd

5.2.5.1 Project : Industrial Growth Centers

5.2.5.1.1 Proposed Industrial products as per the vision

Industries in Bareilly produce products of a varied range. While other industries are involved in generating items linked to chemicals, plastic, etc., major industries like Coco-Cola, Vadilal, and BL Agro produce agro-based products. Bareilly is an area that can procure raw material for agro-based industry from the surrounding region. As per the vision, Agro-based products which also include food processing and packaging are focused. In addition to this, Zari Zardozi is selected under the One District One Product Scheme so it is also focused under the vision and is proposed to provide enabling infrastructure for this.



Map 5-2: Proposed Industrial Growth Centers and Probable Industrial Areas of Future

5.2.5.1.2 Proposed Industrial Centers

Bareilly city has three UPSIDA industrial areas and one private industrial area which is near Invertis University on Lucknow Road. As per the demand assessment, three industrial areas are proposed. The first industrial area is proposed of area 50 hectares as an extension of the already existing Paraskhera Industrial area which is currently the major industrial area of Bareilly city. The second industrial area is also on Rampur/Delhi Road and lies near village Kurtara. It is proposed to cover 100 hectares of area. The third industrial area is proposed as an up-gradation and extension of the already existing private industrial area on Lucknow Road on an area of 100 hectares. Paraskhera industrial growth center is proposed in short term, Rajau Paraspur in the medium-term, and Kurtara in the long-term time frame.

In addition to these industrial zones, potential sites for industrial growth are also analyzed and displayed on the map above. It is anticipated that these areas would expand as an addition to the current or prospective industrial areas.

5.2.5.1.3 Proposed Industrial Typology

The city's identity originally rested on its small-scale industries of bamboo craft and zari zardozi, but these are now fast disappearing. Therefore, it is suggested that MSME households be increased. In Bareilly, small and medium-sized businesses that produce goods based on agriculture, chemicals, plastics, and other materials predominate. The main drivers of the economy in Bareilly are small and medium-sized businesses. Therefore, it is suggested to support small and medium-sized companies, for which space is designated under the Draft Master Plan 2031 and the necessary infrastructure is anticipated to be put in place during the project's medium-term time frame. According to the current situational study and demand assessment, there is no significant demand for large-scale industries.

5.2.5.1.4 Projected Industrial Land Demand

Table 5-11: Projected Industrial Land Use Demand

Year	Projected Population	Total Master Plan Area (Ha)	Proposed Percentage (Ha)	Required Commercial Area (Ha)	Additional Area Required additional to Master Plan 2031 (Ha)
2031	1949012	22815.76	8.8 (in Draft Master Plan 2031)	2008.76	0
2041	2422433	25499.25	12	3059.91	1051.15
2051	2894499	30468.41	15	4570.26	2561.50
2061	30,29,478	31889.24	15	4,783.39	2,774.63
2071	37,02,015	38968.58	15	5,845.29	3,836.53

8.8% of the overall Master Plan area, or 2008.76 hectares, has been allotted in the Draft Master Plan 2031. The city will need more land by 2041 for propelling industrial landuse at 12 percent, which will require an additional area of 1051.15 hectares. More industries will be needed to boost the economy and provide more employment opportunities, therefore from the year 2051, a 15% industrial landuse is recommended, requiring 2561.50 hectares of additional land. For the horizon year 2071, an area of 3836.53 hectares will be required in addition to the allocation in the Draft Master Plan for 2031, for a total of 5845.29 hectares.

5.2.5.1.5 Enabling Industrial Infrastructure

5.2.5.1.5.1 Raw Material Availability

Bareilly's industries produce a wide variety of commodities. For agro-based products, some industries obtain their raw materials from local agricultural products, while other large-scale industries, such as BL Agro, etc., import them from different regions of the nation. Raw materials for the bamboo and cotton industries are sourced locally or imported from other regions of the state or India. Similar to this, different industries in Bareilly obtain raw materials from various sources according to availability and demand. The proposed agro-based food processing and packaging industry is anticipated to obtain the necessary raw materials from the surrounding region and other parts of the nation following to their respective needs.

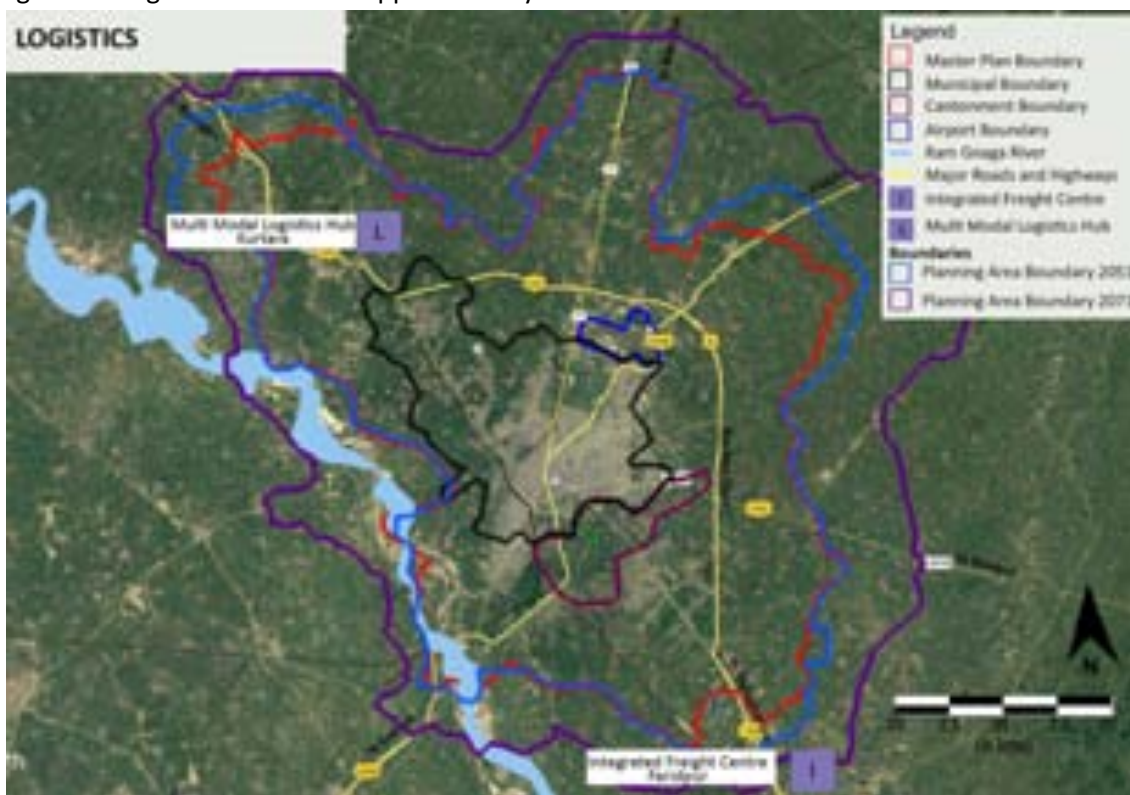
5.2.5.1.5.2 Waste Disposal

Proposed industrial areas will include a standard effluent treatment facility to dispose of the hazardous industrial waste in a suitable way. Currently, there is a problem of untapped drains flowing

without bar mesh and discharging waste directly. So, it is also suggested to tap these drains in compliance with the environmental norms to avoid environmental degradation. Some private businesses in Bareilly are also working towards rubbish collection and recycling, and Bareilly Municipal Corporation is in charge of providing waste management services inside the municipal boundaries.

5.2.5.1.5.3 Logistics and Transportation

Industries require logistics support to facilitate the transfer of finished goods and raw materials. Currently, Transport Nagar on Lucknow Road is the major facility for logistics support which lies opposite the Paraskhera industrial area. An Integrated Freight Center in Faridpur for the Lucknow Road Industrial area and a Multi-Modal Logistics Hub close to Kurtara are proposed in order to assist the currently existing and newly projected industrial areas on Delhi Road and ensure efficient movement of goods and products. The area of the proposed Multi-Modal Logistics Hub and proposed Integrated Freight Centre will be approximately 35 hectares each.



Map 5-3: Proposed Logistics Hub

5.2.5.1.5.4 Common Facility Centers

A common facility center for Bamboo products and one for readymade garments has been set up in Bareilly recently to provide skill development and required infrastructure. As per the policy, CFC should provide the following facilities:

- Testing Lab
- Design Development and Training Center
- Technology Research and Development Center
- Product Demonstration cum Sale Center
- Raw-Material Banks/Common Resources Center
- Common Production/Processing Center
- Common Logistics Center

- Information collection, analysis, and broadcasting Center
- Packaging, Labelling, and Barcoding Facilities

5.2.5.1.5.5 Other Infrastructure

There is a lack of physical and road infrastructure in all the existing industrial areas, especially the privately set-up Lucknow rod industrial area. Providing enabling infrastructure will motivate the investors to set up new industries and will also positively affect the existing industries.

5.2.6 Project Timeline & Broad Project Cost

Paraskhera industrial growth center is proposed in short term, Rajau Paraspur in the medium-term, and Kurtara in the long term time frame. For the broad cost estimation of the proposed industrial growth centre's the land rate is assumed to be four times the actual rate of the land. The broad project cost for the development of proposed industrial growth centre's are given below.

Table 5-12 Broad costing of Kurtara Industrial Growth Centre

S.no	Components	%	Development Cost (in INR)
1	Plumbing sewerage STP and all	30	7,410,000
2	Electricity ESS and all	30	7,410,000
3	Roads and landscaping	40	9,880,000
	Sub Total	100	24,700,000
4	Land Cost	100 Ha	9,600,000,000
	Total		9,624,700,000

Table 5-13 Broad costing of Rajau Paraspur Industrial Growth Centre

S.no	Components	%	Development Cost (in INR)
1	Plumbing sewerage STP and all	30	7,410,000
2	Electricity ESS and all	30	7,410,000
3	Roads and landscaping	40	9,880,000
	Sub Total	100	24,700,000
4	Land Cost	100 Ha	4,800,000,000
	Total		4,824,700,000

Table 5-14 Broad Costing Paraskhera Industrial Growth Centre

S.no	Components	%	Development Cost (in INR)
1	Plumbing sewerage STP and all	30	7,410,000
2	Electricity ESS and all	30	7,410,000
3	Roads and landscaping	40	9,880,000
	Sub Total	100	24,700,000
4	Land Cost	100 Ha	12,000,000,000
	Total		12,024,700,000

5.2.7 Benefits of Industrial Growth Centres

- Increasing collaboration and commercialization
- Improving international opportunities and market access
- Enhancing management and workforce skills
- Identifying opportunities for regulatory reform.



- Enabling them to engage in product-specific value chains, upscale their products, and improve productivity.



Legend

-  Railway_station
-  Proposed Industrial Area
-  railways
-  primary
-  secondary
-  Master plan boundary 2031
-  Municipal boundary

Map Title: Proposed Industrial Area

Scale: 1:21,000



Prepared by: Bareilly Development Authority
Government of Uttar Pradesh

Approved by: Government of Uttar Pradesh
Ministry of Urban Development & Public Works
Department of Urban Planning & Design
Bareilly Development Authority

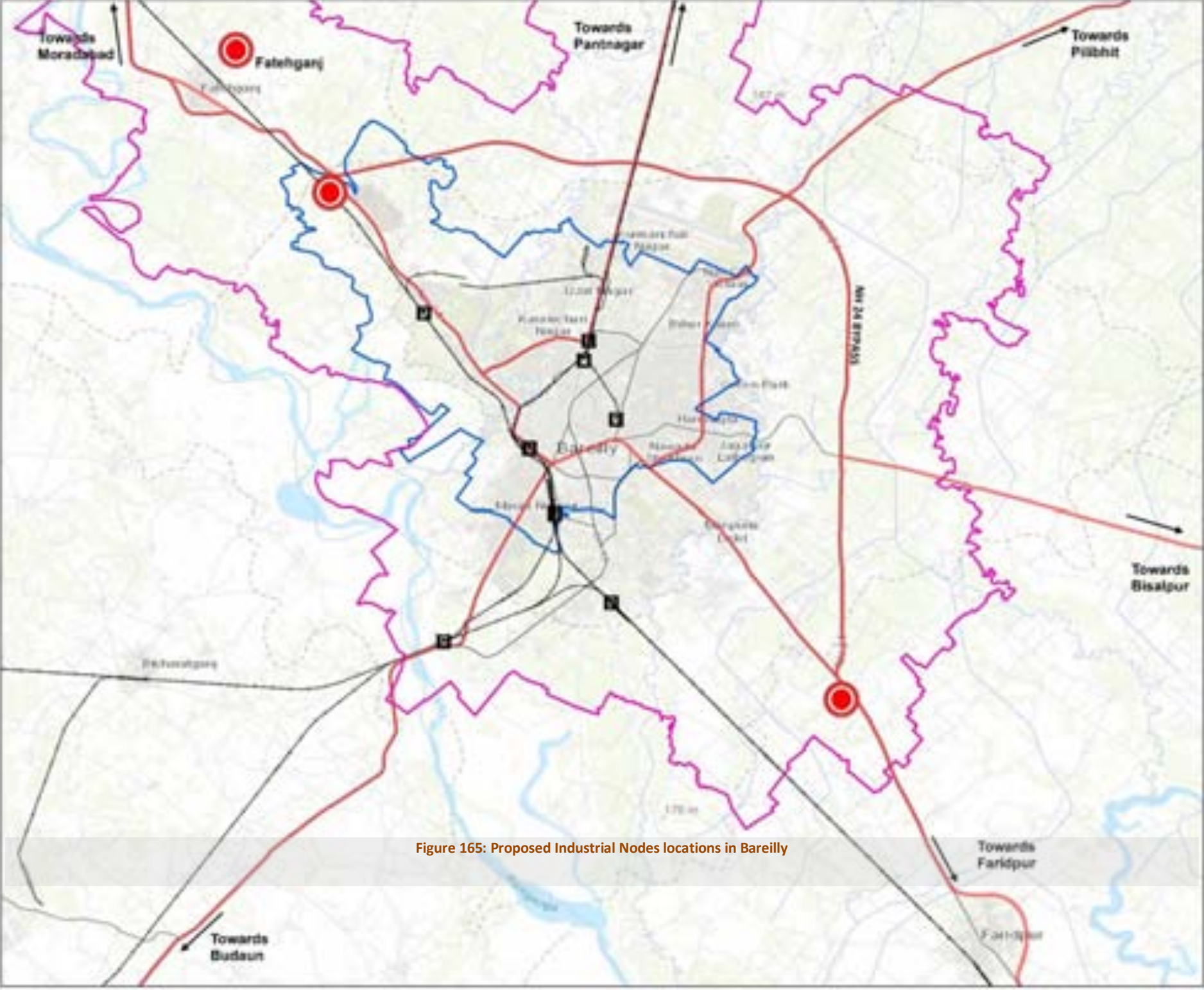


Figure 165: Proposed Industrial Nodes locations in Bareilly



Map 8 Broad Conceptual proposed Paraspur Industrial growth centre Layout

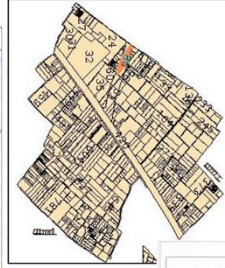
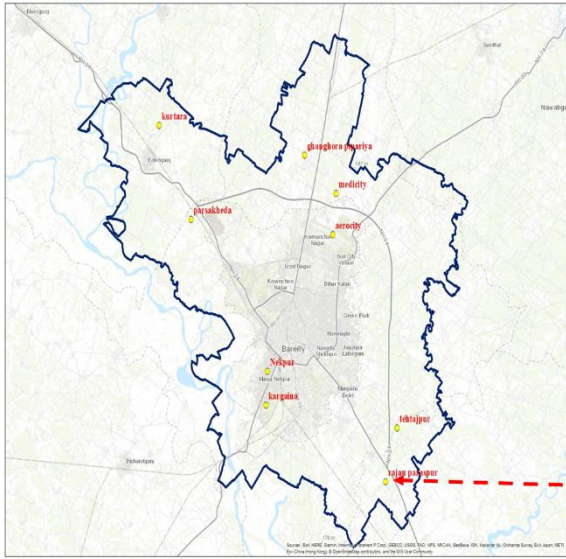


Map 9 Broad Conceptual proposed Kurtara Industrial growth centre Layout

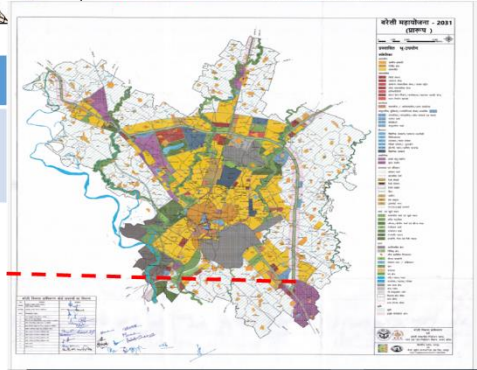


Map 10 Broad Conceptual proposed Parsakheda Industrial growth centre Layout

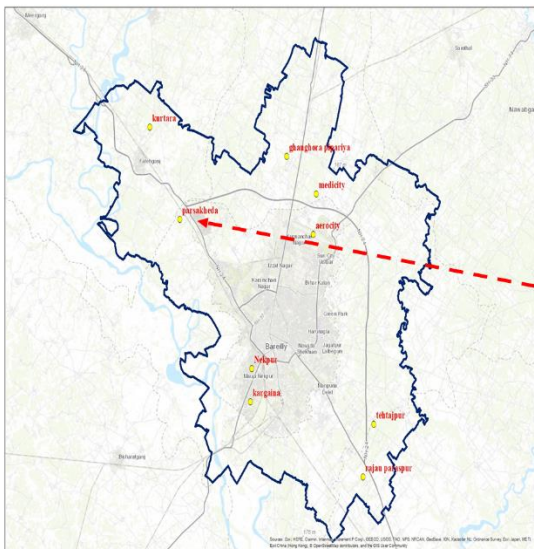
Rajau Paraspur



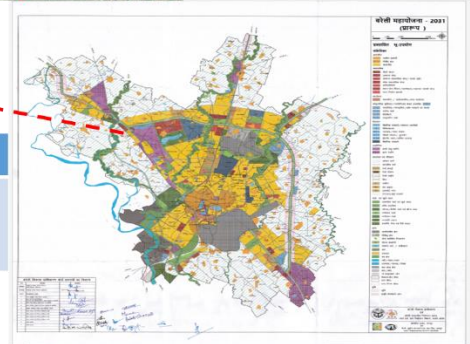
Village Name	Khasra No.
Rajau Paraspur	11



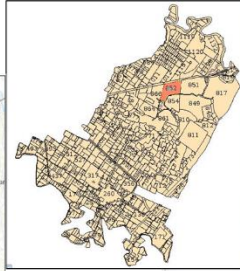
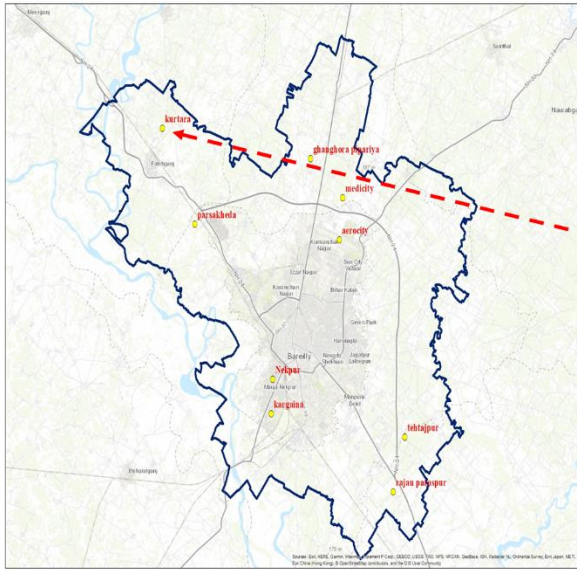
Parsakheda



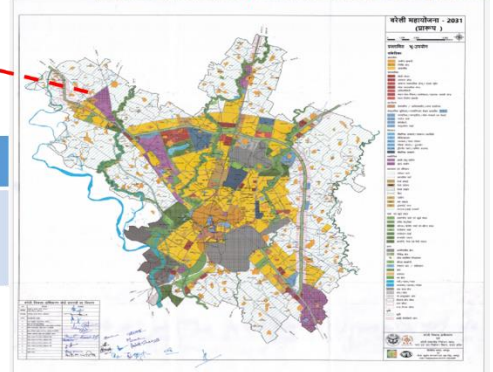
Village Name	Khasra No.
Parsakheda	63



Kurtara

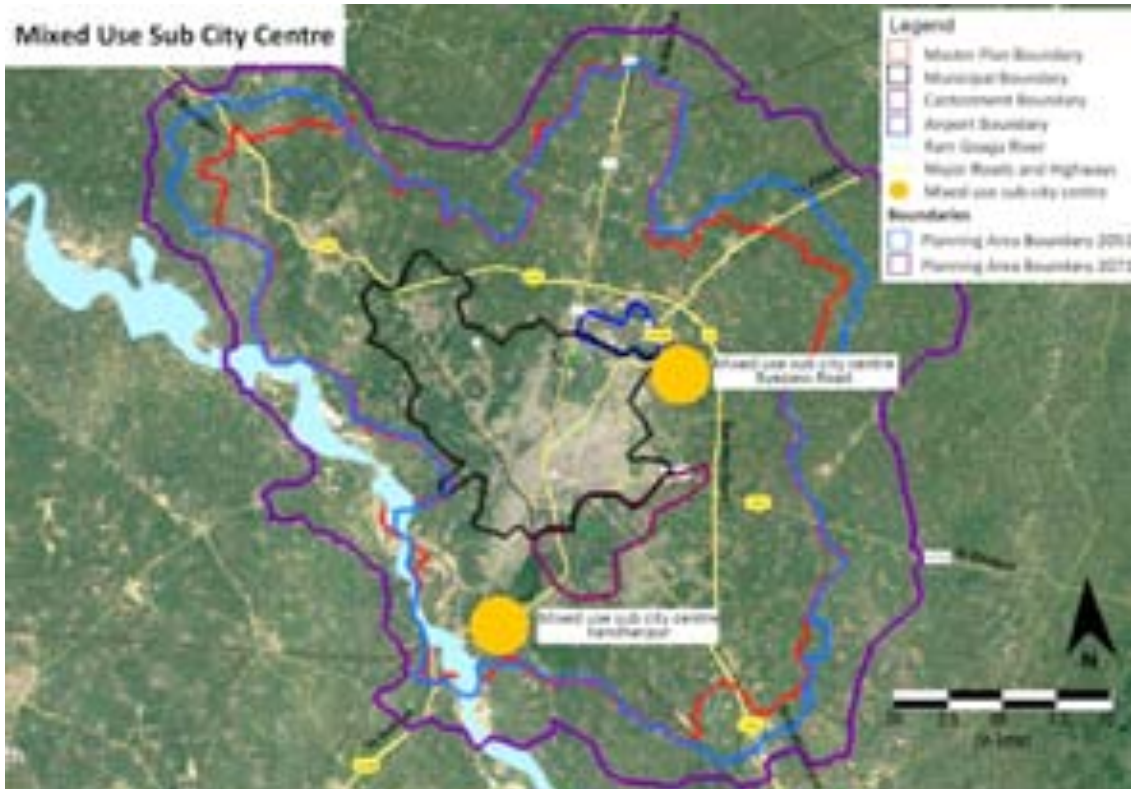


Village Name	Khasra No.
Kurtara	33



5.2.7.1 Project : Mixed Use Sub City Center

5.2.7.1.1 Proposed Main Commercial Areas



Map 5-7: Proposed Mixed Landuse Sub-City

Existing commercial landuse of Bareilly city is 3.3 percent of the existing landuse in the year 2020. The core area which has major traffic and congestion problems and is densely populated currently serves as the major commercial area.

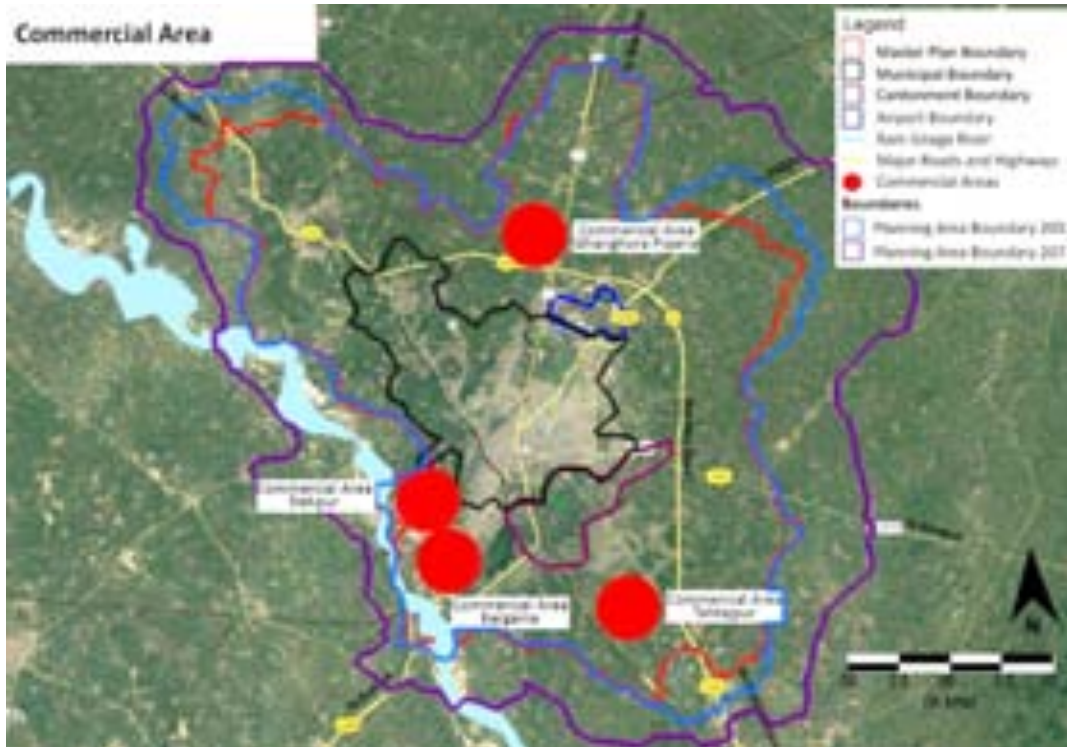
To curb these issues city needs commercial counter magnets to decongest the core area and reduce city's commercial dependency on the area. Bareilly city needs intervention in form of major

commercial areas. To cater to this need of Bareilly city two mixed land sub-city one on Bye Pass near Airport and other near Kandharpur on Badaun road are proposed.

Additionally, physical and social infrastructure is the backbone of any residential area along with commercial areas which cater to the daily needs of the residents. Commercial pockets are suggested in the designated residential zones to meet the needs.

Major commercial areas proposed in residential nodes are:

5. Ghanghoria Piparia on Nanital Road
6. Nekpur Commercial area
7. Kargaina Commercial area on Aligarh Road
8. Tehtajpur Commercial area on Lucknow Road



Map 5-8: Proposed Commercial Areas within Residential Housing Nodes

In addition to these commercial areas, it is anticipated that commercial areas will expand near or around potential residential areas to accommodate the anticipated population growth.

5.2.7.1.2 Proposed Commercial Zone Typology

Commercial areas in mixed-use sub-city will be developed as retail markets but will a part of these sub-cities will be kept reserved for wholesale markets which will be developed in a phased manner starting from acting as a counter magnet to the wholesale markets in the core area. The proposed commercial spaces in the residential housing nodes/zones will mostly consist of planned commercial pockets which will offer retail spaces including complexes, showrooms, and offices.

5.2.7.1.3 Projected Commercial Land Demand

Table 5-15: Projected Commercial Landuse Demand

Year	Projected Population	Total Master Plan Area (Ha)	Proposed Percentage (Ha)	Commercial Area (Ha)	Additional additional to Master Plan 2031 (Ha)	Area
2031	1949012	22815.76	4	912.63	0	

2041	2422433	25499.25	4	1019.97	107.33
2051	2894499	30468.41	4	1218.73	306.10
2061	30,29,478	31889.24	4	1275.56	362.93
2071	37,02,015	38968.58	4	1558.74	646.11

In addition to the area currently designated for commercial land use in the Draft Master Plan 2031, the additional land requirement for commercial space is 306.10 hectares for the year 2051 and 646.11 collectively for the year 2071. The required land for commercial land use for 2071 is 1558.74 hectares.

5.2.7.2 Public and Semi Public Landuse Demand

5.2.7.2.1 Projected Land Demand for Public and Semi-Public Area

Table 5-16: Projected Public and Semi-Public Landuse Demand

Year	Projected Population	Total Master Plan Area (Ha)	Proposed Percentage (Ha)	Required Public and Semi-Public Area (Ha)	Additional Area Required apart from Master Plan 2031 (Ha)
2031	1949012	22815.76	10	2281.57	0
2041	2422433	25499.25	10	2549.92	268.34
2051	2894499	30468.41	10	3046.84	765.26
2061	30,29,478	31889.24	10	3188.92	907.34
2071	37,02,015	38968.58	10	3896.85	1615.28

In addition to the area currently designated for public and semi-public landuse in the Draft Master Plan 2031, the projected land demand for public and semi-public landuse is 3046.84 hectares for the year 2051 and 3896.85 hectares for the year horizon year 2071. This will require additional 765.26 hectares of land in 2051 and 1615.28 hectares of land in 2071.

5.2.8 URBAN DESIGN PROJECTS

5.2.8.1 Developing Nath Temple Circuit

5.2.8.1.1 Project – Development of Spiritual Tourism by Creating Religious Circuit of All Seven Nath Temples

5.3 Vision – Developing Nath Temple Circuit

Project – Urban Renewal of Nath Temple circuit & Infrastructure improvement of all Seven Nath Temples

5.4 Introduction

The Bareilly city, which is known as the Nath Nagri because of the seven Nath temples that are situated at its seven access points via various cities, has a strong religious identity. The city has a very deep spiritual heritage, which draws tourists to the Nath temples from many other towns. The Saavan month and Maha Shivratri see the largest influx of people to these Nath temples. Numerous thousands of pilgrims also travel to the city for the parikrama of the Seven Nath temple, which contributes to the city's religious uniqueness.

- A - Tapeswar Nath
- B - Madi Nath
- C - Alakh Nath
- D - Trivati Nath
- E - Bankhandi Nath
- F - Pashupati Nath
- G - Dhopeswar Nath

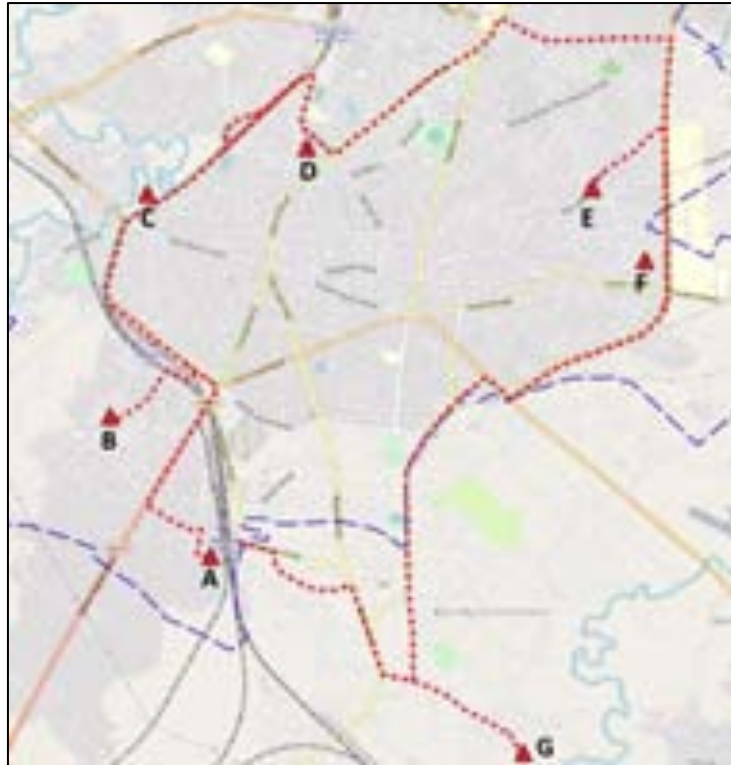


Figure 6: Nath Nagri Circuit and Temples Location

5.5 Condition Assessment

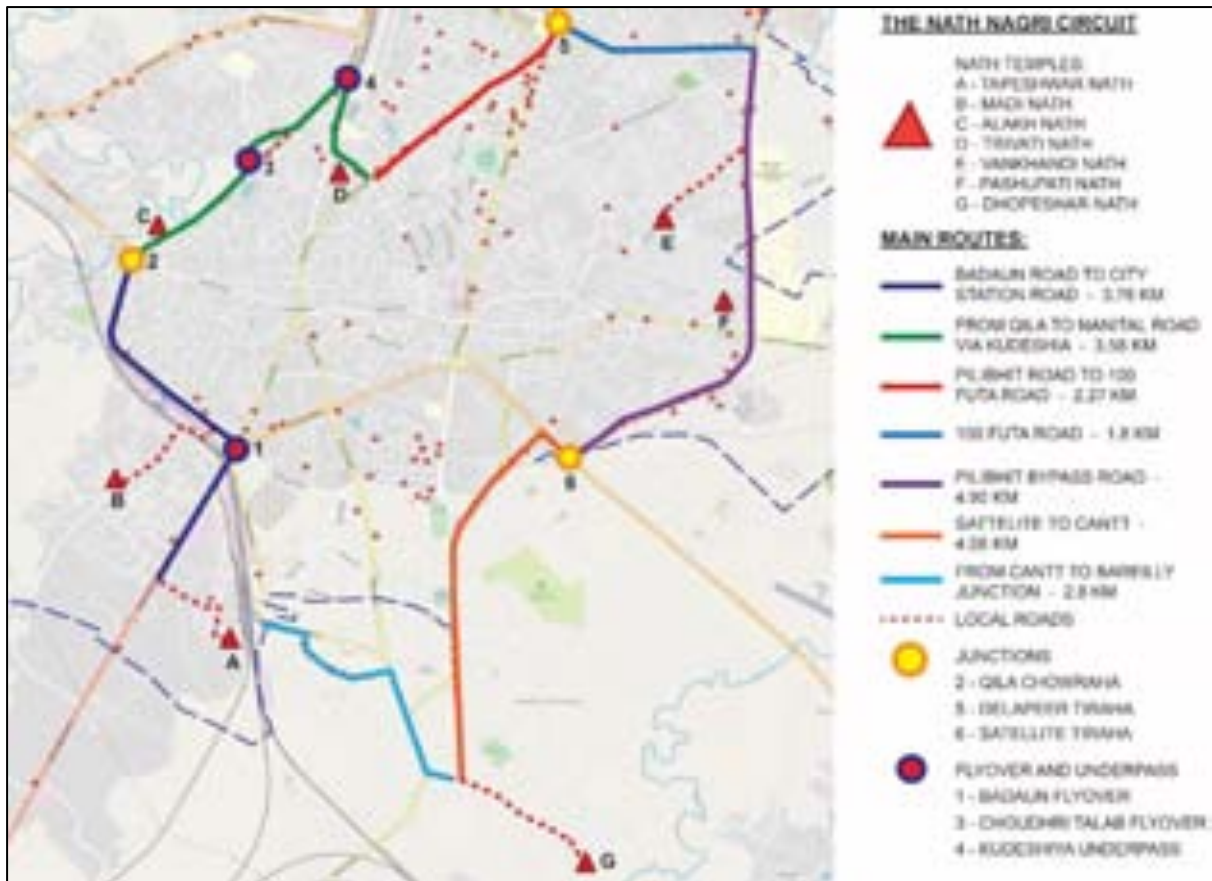
Since the seven Nath temples are situated on different routes which are entrance gateways to the city from other cities, they can be accessed from any of these routes. These seven routes formed the base of city's connectivity to major cities like Nainital (Trivatinath Temple), Delhi (Alakhnath Temple), Chandausi (Madinath Temple), Badaun (Tapeswar Nath Temple), Lucknow (Dopeswar Nath Temple), Bilaspur (Pashupatinath Temple) and Pilibhit (Vankhandinath temple).



Figure 7: Nath Temple Complex

(Source: Urban Design Team)

Since the establishment of Nath temples at the city's outskirts to serve as its entrances, the city has grown significantly on all sides, enveloping all seven Nath temples and erasing their distinction as city gateways. The overall circuit that connects all Nath temples has disappeared as a result of the city's growth as well as the precincts of all Nath temples losing its imageability over time. There are no formal, legible entrances or paths that highlight their uniqueness and reinforce their presence in the city.

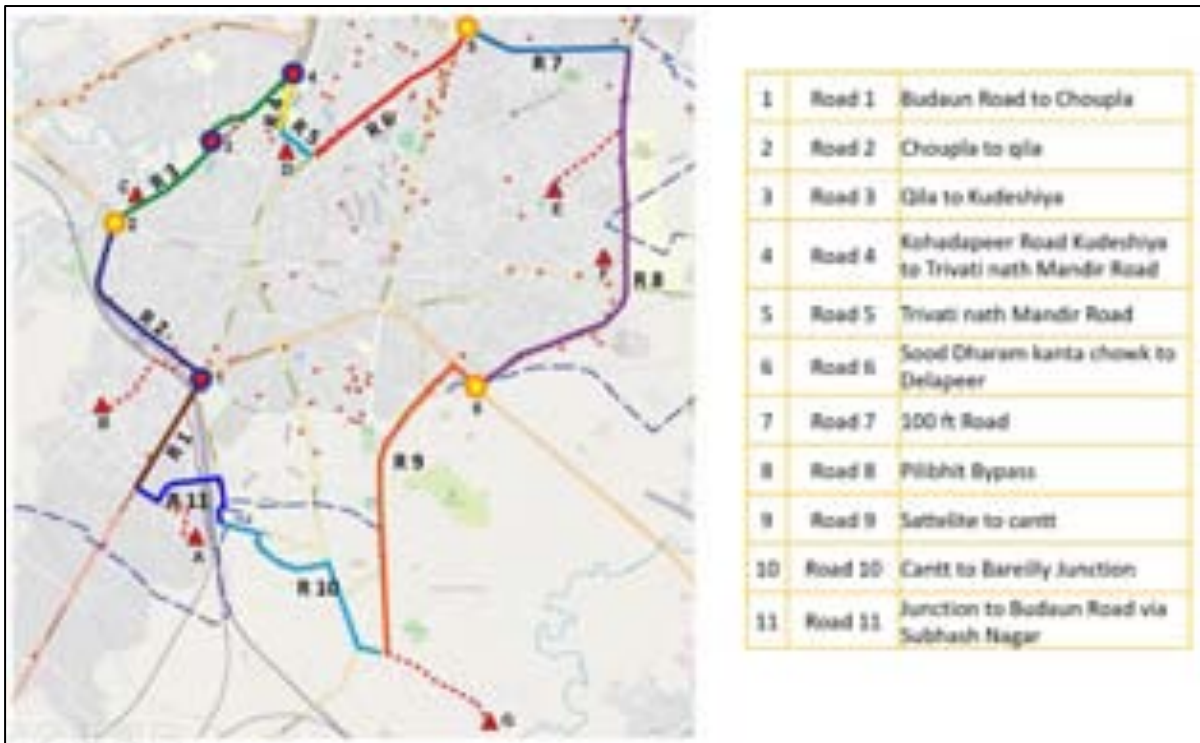


Distances of Temples

- Tapeswar Nath Temple to Madi Nath Temple : 2.5 Km
- Madi Nath Temple to Alakh Nath Temple : 3.5 Km
- Alakh Nath Temple to Trivati Nath Temple : 3.2 Km
- Trivati Nath Temple to Bankhandi Nath Temple : 6.3 Km
- Bankhandi Nath Temple to Pashupati Nath Temple : 3.0 Km
- Pashupati Nath Temple to Dhopeswar Nath Temple : 8.2 Km
- Dhopeswar Nath Temple to Tapeswar Nath Temple : 5.8 Km

Total Length of the Circuit: 32.5 Km

5.6 Route details



NATH NAGRI CIRCUIT - Bareilly								
S. No	Temple	Name of road section	Road ownership	Length (km)	Starting point	End point	Existing ROW	Proposal for new infrastructure
1	Alakh Nath Temple to Trivati Nath Temple	Road 3 : Qila to Kudeshiya	Nagar Nigam	2.56 km	Alakhnath Temple	Kudeshiya Underpass	11 - 15 m	
		Road 4 : Kohadapeer Road Kudeshiya to Trivati nath Mandir Road	Nagar Nigam	0.6 km	Kudeshiya Underpass	Tibrinath Mandir Road	22 - 24 m	
		Road 5 : Trivati Nath Mandir Road	Nagar Nigam	0.5 km	Tibrinath Mandir Road	Sood dharamkanta chowk	15 - 18 m	
2	Trivati Nath Temple to Vankhandi Nath Temple	Road 5 : Trivati Nath Mandir Road	Nagar Nigam	0.5 km	Tibrinath Mandir Road	Sood dharamkanta chowk	15 - 18 m	
		Road 6 : Sood Dharam kanta chowk to Delapeer	Nagar Nigam	2.25 km	Sood dharamkanta chowk	Delapeer	26 - 28 m	
		Road 7 : 100 ft Road	Nagar Nigam	1.76 km	Delapeer	Pilibhit Bypass T point	16 - 20 m	
		Road 8 : Pilibhit Bypass Road	Nagar Nigam	5 km	100 futa T point	Jogi Nawada	42 - 45 m	Near Bankhandi Nath Temple

NATH NAGRI CIRCUIT - Bareilly								
S. No	Temple	Name of road section	Road ownership	Length (km)	Starting point	End point	Existing ROW	Proposal for new infrastructure
		Jogi Nawada Internal Road	Nagar Nigam	1 km	Road 8	Vankhandi Nath Temple	9 - 12 m	
3	Bankhandi Nath Temple to Pashupati Nath Temple	Road 8 : Pilibhit Bypass Road	Nagar Nigam	5 km	Jogi Nawada	Pashupati Nath Temple	42 - 45 m	Near Bankhandi Nath Temple Near Pashupati Nath Temple
4	Pashupati Nath Temple to Dhopeswar Nath Temple	Road 8 : Pilibhit Bypass Road	Nagar Nigam	5 km	Jogi Nawada	Satellite chowraha	42 - 45 m	Near Pashupati Nath Temple
		Road 9 : Satellite to Cantt	Nagar Nigam	4 km	Satellite chowraha	St Stephen Church	9 - 12 m	
		Cantt Internal Road	Cantt	1.5 km	St Stephen Church	Dhopeswar Nath Temple	9 - 12 m	
5	Dhopeswar Nath Temple to Tapeswar Nath Temple	Road 10 : Cantt to Bareilly Junction	Cantt	2.8 km	St Stephen Church	Bareilly Junction Station	14 - 20 m	
		Road 11 : Junction to Budaun Road via Subhash Nagar	Nagar Nigam	1.6 km	Bareilly Junction Station	Tapeswar Nath Temple	9 - 12 m	
6	Tapeswar Nath Temple to Madi Nath Temple	Shubash nagar Internal Road	Nagar Nigam	1 km	Tapeswar Nath Temple	Chungi Road	9 m	
		Road 1 : Badaun road to Choupla	Nagar Nigam	1.6 km	Chungi Road	Choupla	24 - 28 m	
		Road 2 : Coupla to Qila	Nagar Nigam	2.5 km	Choupla	Qila	20 - 22 m	
		Madinath Internal Road	Nagar Nigam	1.5 km	Road 2	Madinath Temple	9 m	
7	Madi Nath Temple to Alakh Nath Temple	Road 2 : Coupla to Qila	Nagar Nigam	2.5 km	Choupla	Qila	20 - 22 m	
		Road 3 : Qila to Kudeshiya	Nagar Nigam	2.56 km	Road 2	Alakhnath Temple	11 - 15 m	

Based on the discussion with Temple priest and other stakeholders, the Nath Nagri circuit starts from Alakh Nath Temple as first temple of the route to Trivati Nath Temple than Bankhandi Nath Temple than Pashupati Nath Temple than Dhopeswar Nath Temple than Tapeswar Nath Temple than Madi Nath Temple and ends back to Alakh Nath Temple.

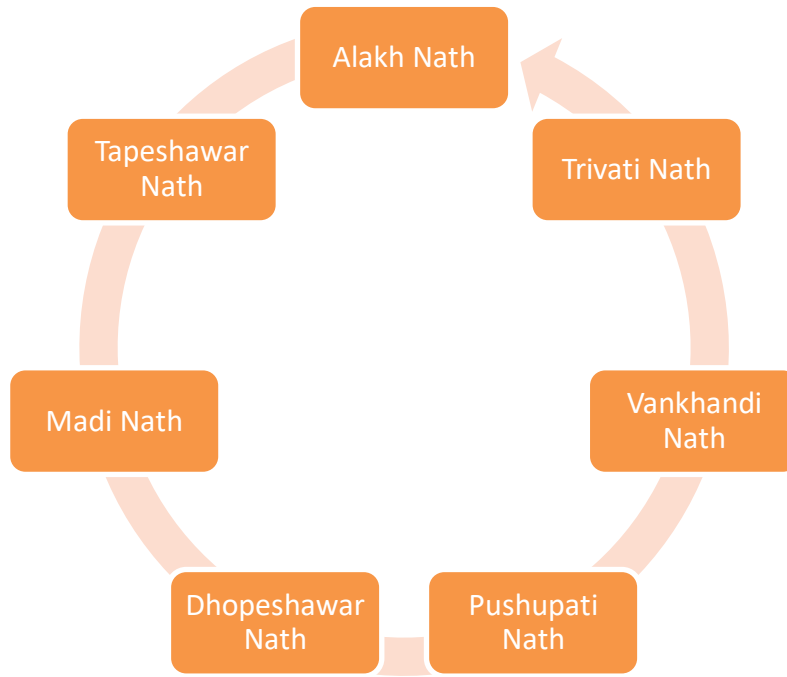
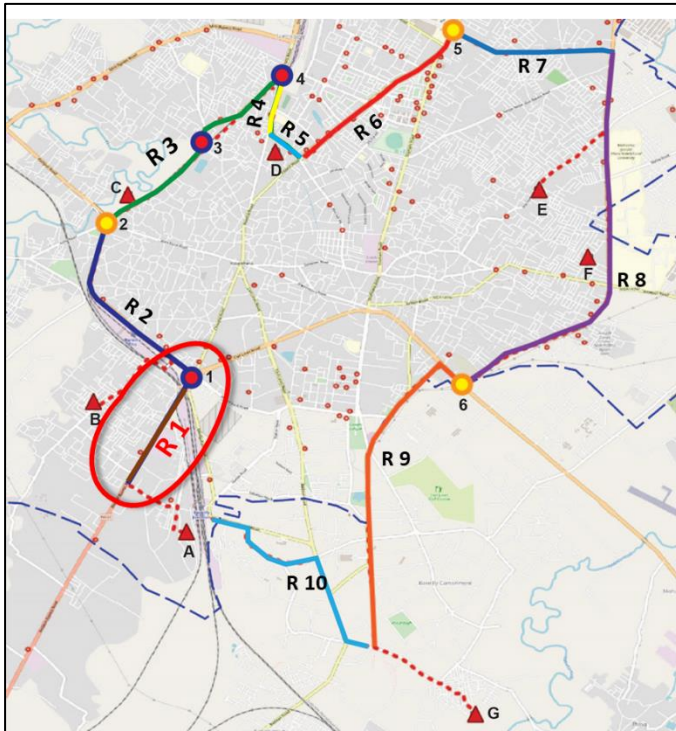


Figure 8: Nath Circuit Cycle

5.7 Road wise details

5.7.1 Road 1: Budaun Road to Choupla



Road 1 : Budaun Road to Choupla

Length : 1.6 km

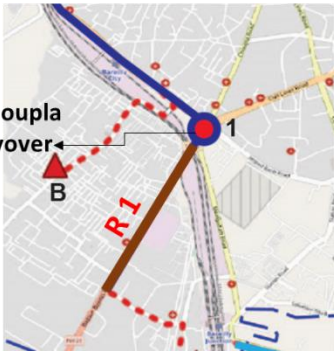
Road Width : 24 – 28 m wide

Type of Road : 4 Lane (Divider)

Pedestrian Facility: No Footpath

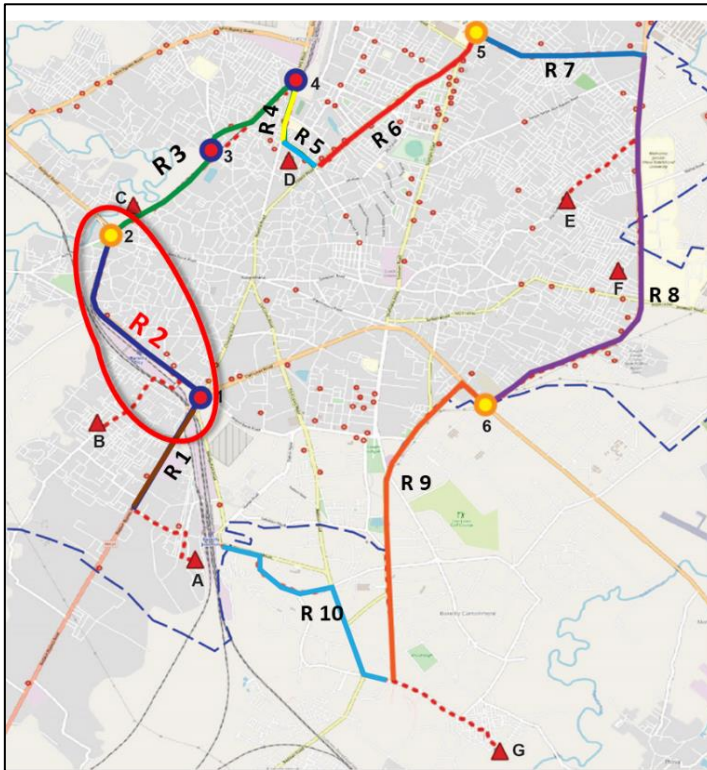
Public Transport : Autorickshaw
E-Rickshaw
City Bus

NMV Lane : Not available



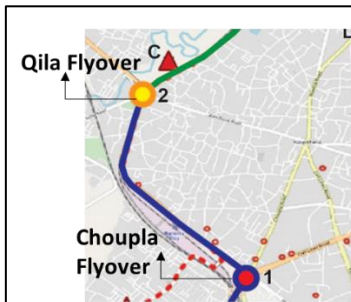
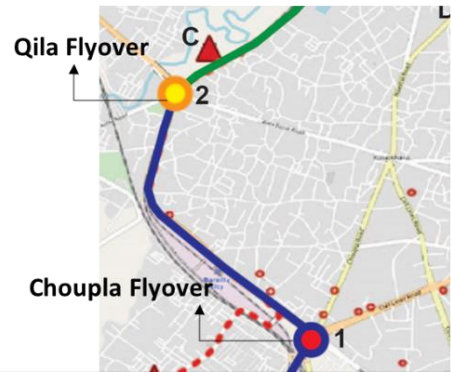


5.7.2 Road 2 : Choupla to Qila Flyover



Road 2 : Choupla to Qila Flyover

- Length :** 2.5 km
- Road Width :** 20 – 22 m wide
- Type of Road :** 4 Lane (Divider)
- Pedestrian Facility:** No Footpath
- Public Transport :** Autorickshaw
E-Rickshaw
City Bus
- NMV Lane :** Not available



Road 2 Condition

Road Condition

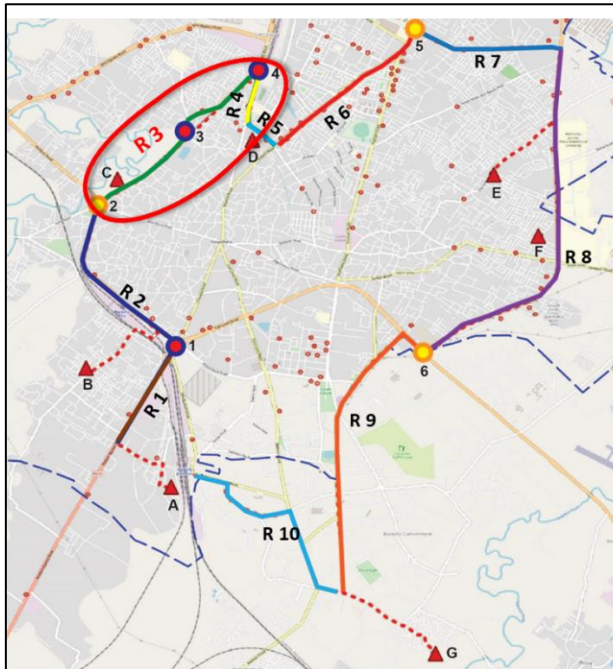


Road Condition

Qila Flyover

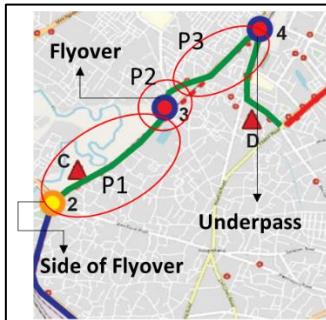
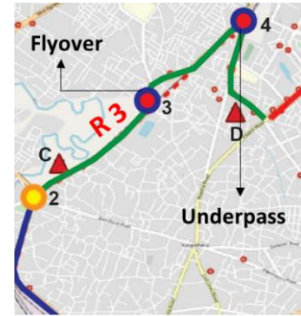
Road Condition

5.7.3 Road 3 : Qila to Kudeshiya Under Pass



Road 3 : Qila to Kudeshiya Under Pass

Road Length :	2.56 km
Road Width :	11 – 15 m wide
Type of Road :	2 Lane (No Divider)
Pedestrian Facility:	No Footpath
Public Transport :	Autorickshaw E-Rickshaw
NMV Lane :	Not available



P1 Road Condition

P1 Road Condition

P1 – Qila Flyover to Chowdhri Talab Flyover – 11 to 15 m wide

P2 – Chowdhri Talab Flyover – 8.5 m wide

P3 – Chowdhri Talab Fly over to Qudeshiya Under pass – 15 m wide



P1 Road Condition

P1 Flyover Entry



P2 Fly over

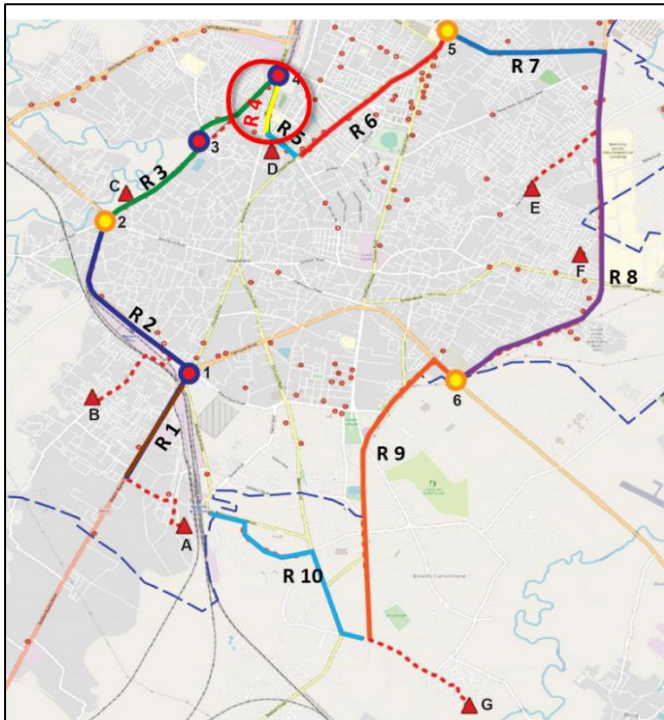


P3 Road



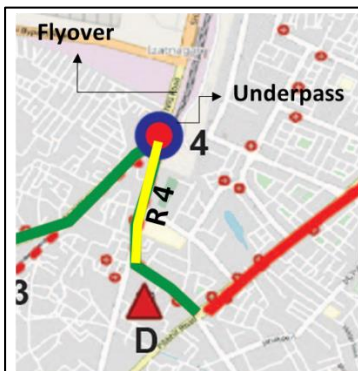
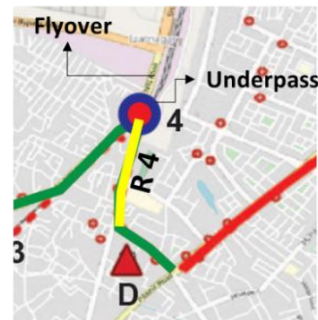
P3 Road

5.7.4 Road 4 : Kudeshiya to Trivati Nath Mandir Road



Road 4 : Kudeshiya to Trivati nath Mandir Road

- Road Length :** 600 m
- Road Width :** 22 – 24 m wide
- Type of Road :** 2 Lane (No Divider)
- Pedestrian Facility:** No Footpath
- Public Transport :** Autorickshaw
E-Rickshaw
- NMV Lane :** Not available



Road Condition



Road Condition



Road Condition

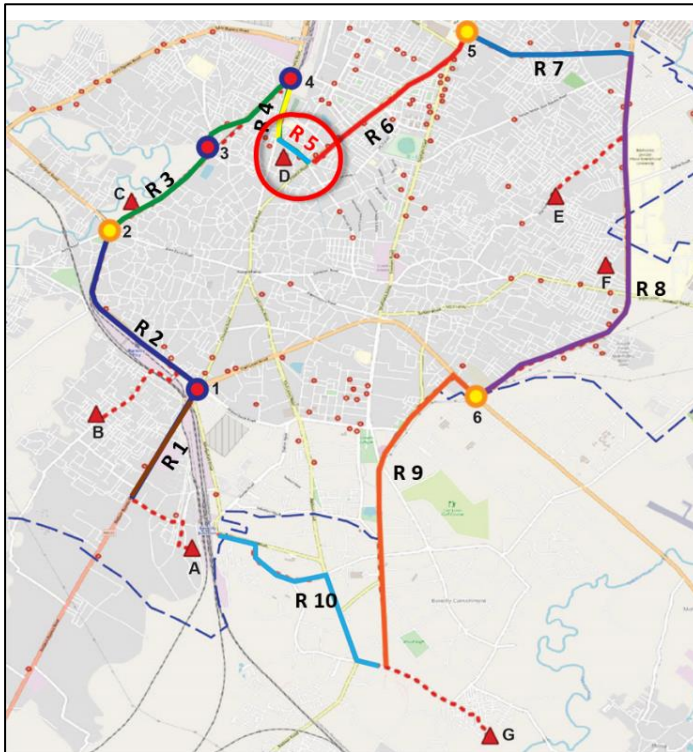


Road below Flyover



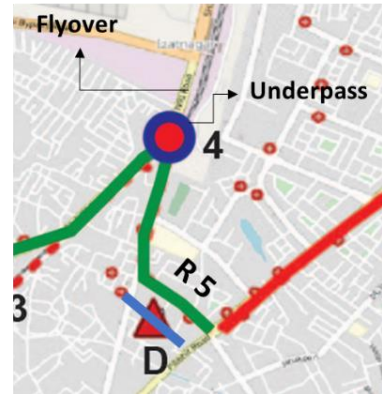
Underpass Entrance

5.7.5 Road 5 : Trivati Nath Mandir Road

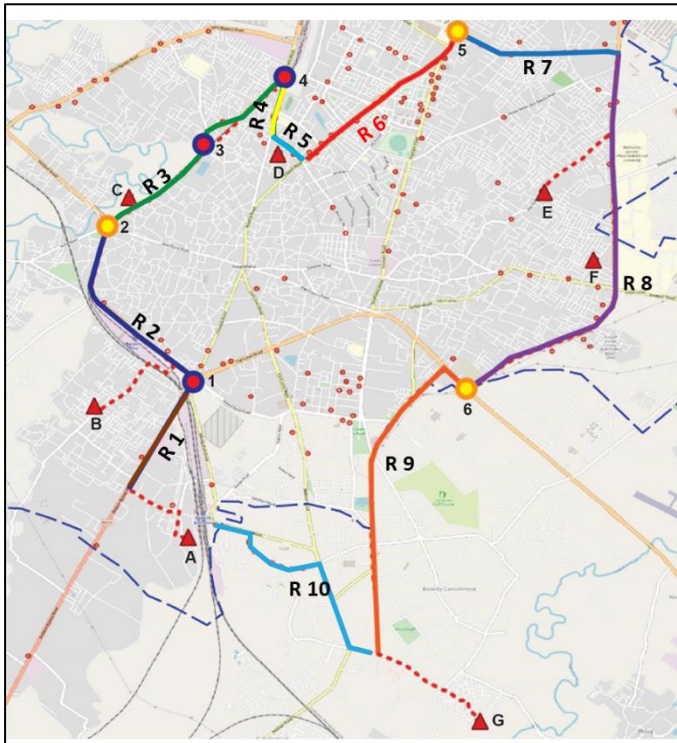


Road 5 : Trivati Nath Mandir Road

- Road Length :** 500 m
- Road Width :** 15 – 18 m wide
- Type of Road :** 2 Lane (No Divider)
- Pedestrian Facility:** No Footpath
- Public Transport :** Autorickshaw
E-Rickshaw
- NMV Lane :** Not available

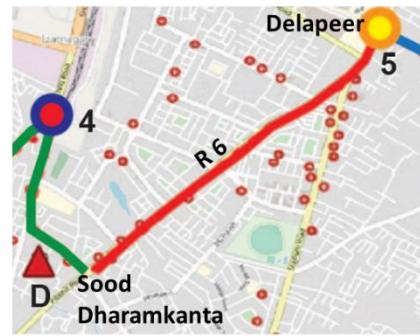


5.7.6 Road 6 : Trivati Nath Mandir Road



Road 6 : Sood Dharam kanta chowk to Delapeer

- Road Length : 2.25 km
- Road Width : 26 – 28 m wide
- Type of Road : 4 Lane (Divider)
- Pedestrian Facility: No Footpath
- Public Transport : Autorickshaw
E-Rickshaw
- NMV Lane : Not available



Road Condition

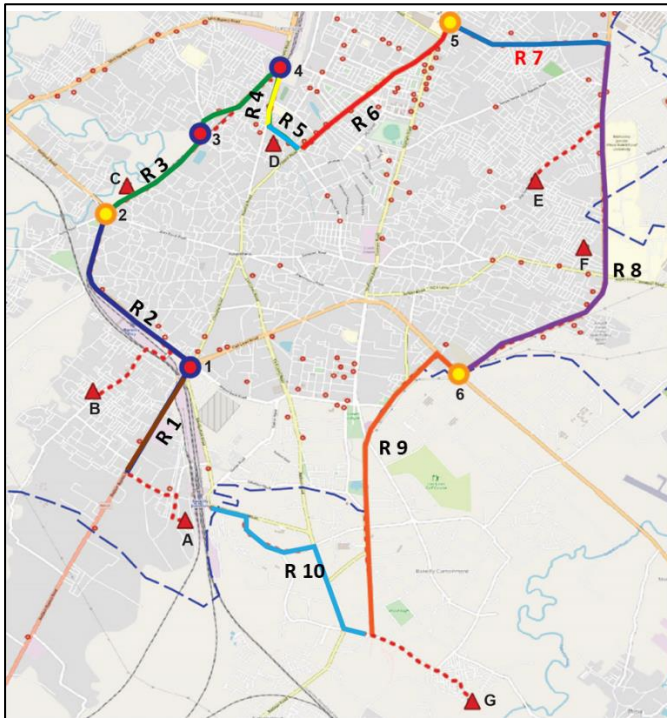
Road Condition

Road Condition

Road Condition

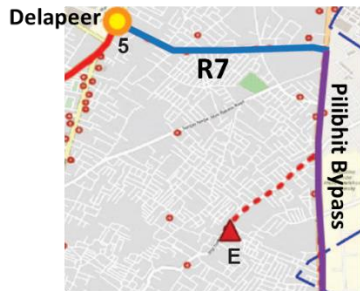
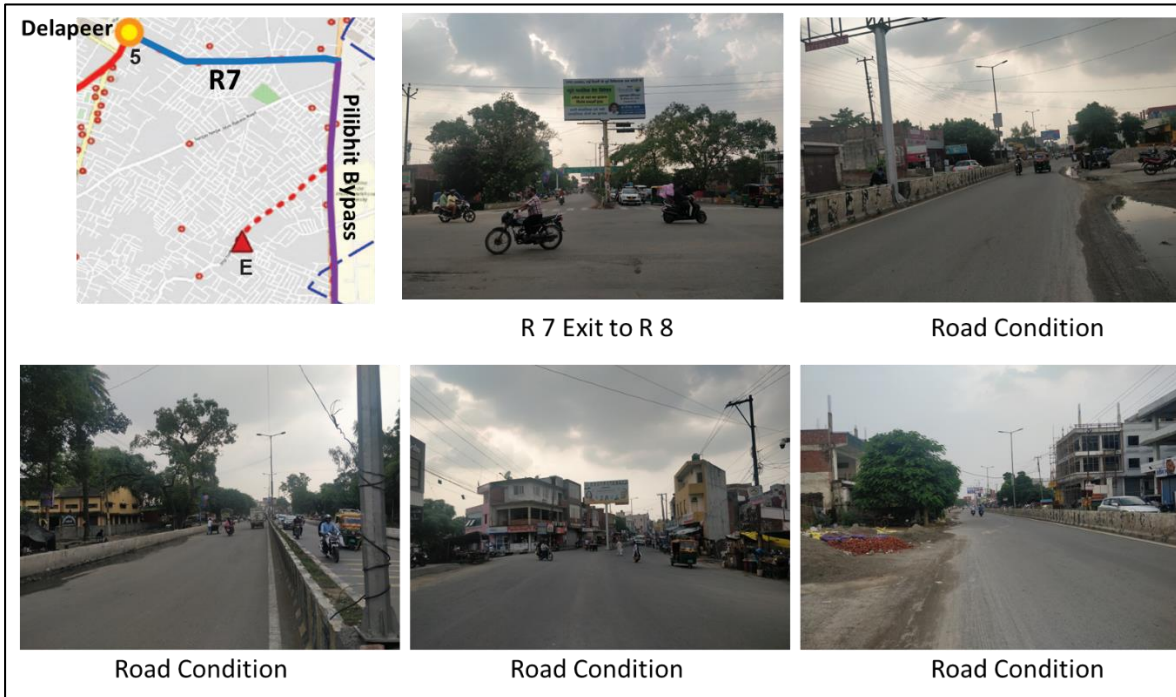
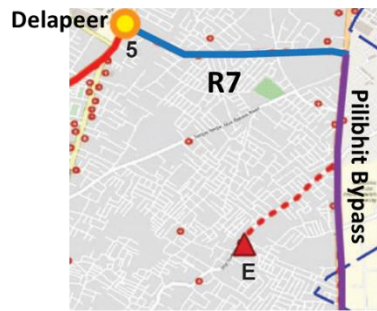
Road Condition

5.7.7 Road 7 : Pilibhit Bypass Road



Road 7 : 100 ft Road

Road Length :	1.76 km
Road Width :	16 – 20 m wide
Type of Road :	4 Lane (Divider)
Pedestrian Facility:	No Footpath
Public Transport :	Autorickshaw E-Rickshaw
NMV Lane :	Not available



R 7 Exit to R 8



Road Condition



Road Condition

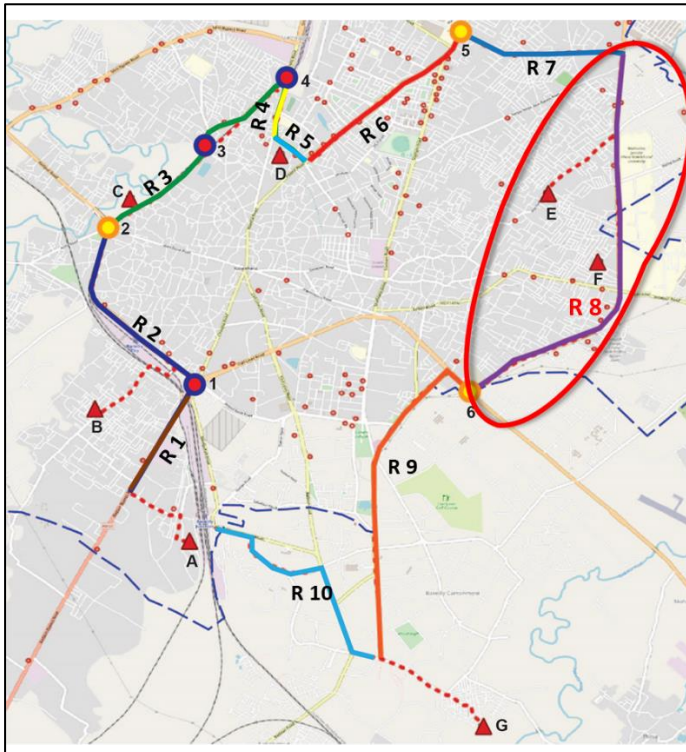


Road Condition

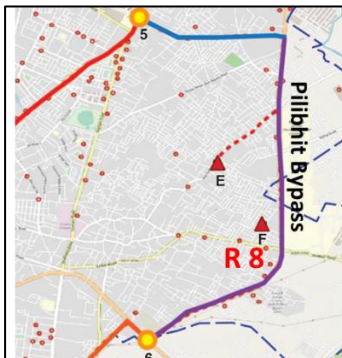
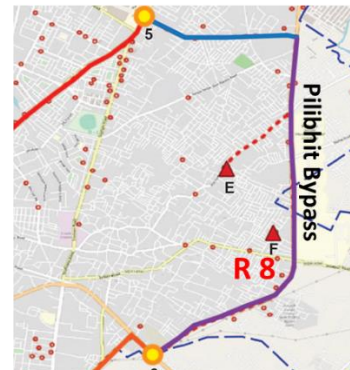


Road Condition

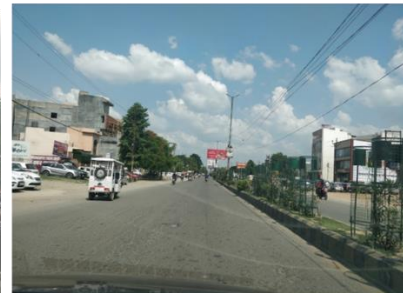
5.7.8 Road 8 : Pilibhit Bypass Road



Road 8 : Pilibhit Bypass Road
Road Length : 5 km
Road Width : 42 – 45 m wide
Type of Road : 4 Lane (Divider)
Pedestrian Facility: No Footpath
Public Transport : Autorickshaw
 E-Rickshaw
 City Bus
NMV Lane : Not available



R 7 Exit to R 8



Road Condition



Road Condition

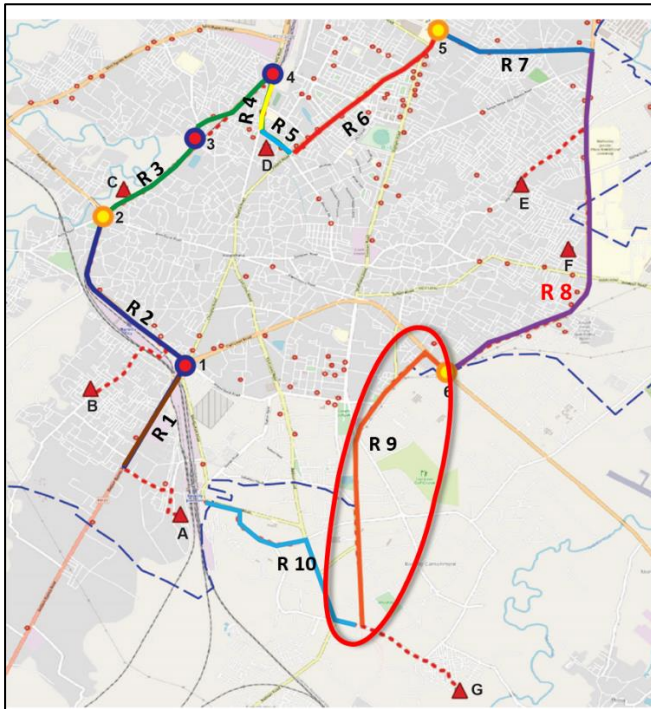


Road Condition



Road Condition

5.7.9 Road 9 : Satellite to Cantt

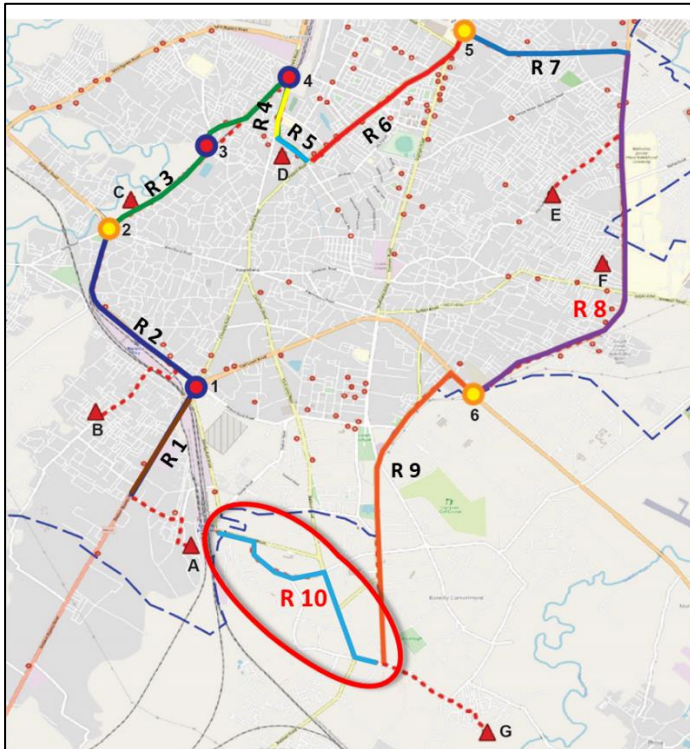


Road 9 : Satellite to Cantt

- Road Length :** 4 km
- Road Width :** 8 – 12 m wide
- Type of Road :** 2 Lane (No Divider)
4 Lane (Divider)
- Pedestrian Facility:** No Footpath
- Public Transport :** Autorickshaw
E-Rickshaw
- NMV Lane :** Not available

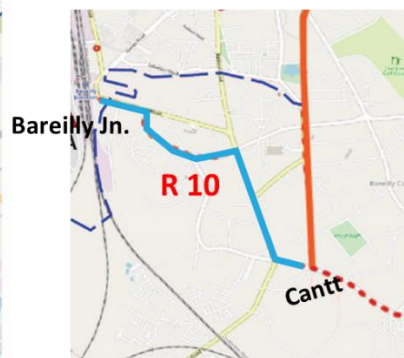


5.7.10 Road 10 : Cantt to Bareilly Junction



Road 10 : Cantt to Bareilly Junction

- Road Length :** 2.8 km
- Road Width :** 13 - 20 m wide
- Type of Road :** 4 Lane (Divider)
- Pedestrian Facility:** No Footpath
- Public Transport :** Autorickshaw
E-Rickshaw
- NMV Lane :** Not available



The Nath Temples are visited by the people throughout the year but majorly crowded in the month of Saavan and Maha Shivratri. The popularity of the temples is very much among the people of city and the state. The Nath Nagari Circuit has the potential of attracting the new visitors and enhances the tourism in the city. The roads identified for the circuit needs to be improvise for better connectivity and facilities of visitors.

5.8 Nath Temple Precinct Development

Being recognized as Nath Nagri of India, Bareilly portrays a very strong image of the seven Nath temples situated on the seven routes of the city. The city inherits a very rich spiritual significance that brings pilgrims from many other cities to visit the Nath temples. These Nath temples witness their highest influx of visitors during the Sawan month and Maha Shivratri. Thousands of pilgrims also visit the city for Seven Nath temple parikrama which adds to the religious uniqueness of the city.

5.8.1 Condition Assessment of all Nath Temple Precincts

Since the construction of Nath temples at the city periphery as its gateways, the city has expanded drastically on all sides and the expansion has enveloped all seven Nath temples. These religious precincts have lost their imageability and presence over a period of time. Absence of identity markers, gateways, designated corridors, signage, façade lighting has led to degradation of the overall urban character of the precincts.



Existing Scenario of Nath Temple Complexes								
S.No.	Facilities and infrastructure	Alakh Nath Temple	Madi Nath Temple	Tapeshwar Nath Temple	Dhopeswar Nath Temple	Pashupati Nath Temple	Vankhandi Nath Temple	Trivati Nath Temple
1	Entrance Marker/ Gateway	Yes	Not in a good condition	Not in a good condition	Yes	Yes	Yes	Yes
2	Washrooms	Yes	Not available	Not available	Yes	Not available	Not available	Yes
3	Drinking Water	Yes	Not available	Not available	Yes	Yes	Yes	Yes
4	Availability and condition of Prasad/worship material Shops	Yes Shop within the temple premise	No shop within the temple premise. Prasad/ worship material is provided by privately owned shops outside the temple	No shop within the temple premise. Prasad/ worship material is provided by privately owned shops outside the temple	Yes Shop within the temple premise	No shop within the temple premise. Prasad/ worship material is provided by privately owned shops outside the temple	No shop within the temple premise. Prasad/ worship material is provided by privately owned shops outside the temple	No shop within the temple premise. Prasad/ worship material is provided by privately owned shops outside the temple
5	Dustbins	Yes	Not available	Not available	Yes	Yes	Yes	Yes
6	Seating	Yes	Not available	Not available	Yes	Yes	Yes	Yes
7	Police Booth/ Surveillance Room	Not available	Not available	Not available	Not available	Not available	Not available	Not available
8	Lost and Found facility	No proper infrastructure available. Temple authority operate the facility informally	No proper infrastructure available	No proper infrastructure available	No proper infrastructure available	No proper infrastructure available	No proper infrastructure available	No proper infrastructure available. Temple authority operate the facility informally
9	First Aid medical facilities	No proper infrastructure available. Temple authority operate the facility informally	Not available	Not available	No proper infrastructure available. Temple authority operate the facility informally	No proper infrastructure available. Temple authority operate the facility informally	No proper infrastructure available. Temple authority operate the facility informally	No proper infrastructure available. Temple authority operate the facility informally
10	Information Kiosks	Yes, available inside the temple	Not available	Not available	Not available	Not available	Not available	Not available
11	Segregated Pedestrian Pathway along the approach road	Not segregated pathway available	Not segregated pathway available	Not segregated pathway available	Not segregated pathway available	Not segregated pathway available	Not segregated pathway available	Not segregated pathway available
12	Lighting	Yes, available in the temple precinct	Improper lighting facility	Improper lighting facility	Yes, available in the temple precinct	Yes, available in the temple precinct	Yes, available in the temple precinct	Yes, available in the temple precinct
13	Signages	Signage present at the entrance but requires redevelopment	Yes	Yes	Yes	Yes	Yes	Yes
14	Trees for Shade along the road	Yes	Yes	Yes	No	No	Yes	No
15	Parking (condition if its there)	Parking space available in the temple precinct but lacks management	No parking available	No parking available	Parking space available but lacks management	Parking space available along the road	Parking space available but lacks management	Parking space available in the temple precinct
16	IPT Stand	Not available	Not available	Not available	Not available	Not available	Not available	Not available
Colour coding depicting the present condition			Available		Available, Not in a good condition		Not available	

5.9 Pilot Temple Precinct Development Project – Vankhandinath Temple

5.9.1 Condition Assessment

Located just one kilometer away from the Pilibhit bypass is the Vankhandinath temple, connected through Joginawada road. This one kilometer long stretch of Joginawada road is a designated corridor that not only forges a strong connectivity to the temple complex but also caters to all the informal vendor activity. Despite of having such a prominent connectivity, absence of signage, identity markers and designated approach road possesses a challenge for the visitors/ pilgrims to reach the temple complex. The temple complex is equipped with a multi – purpose hall that is used to cater pilgrims during special occasions. Availability of vacant land parcels also help in organizing fairs and accommodate the high influx. Lack of public conveniences is also one of the major issues that the visitors face while visiting the temple.



Figure 169: Vankhandi Nath Temple Precinct

(Source: Urban Design Team)



Figure 171: Vankhandi Nath Temple Approach Road
(Source: Author)



Figure 170: Vankhandi Nath Temple Approach Road
(Source: Author)



Figure 173: Vankhandi Nath Temple Fairground
(Source: Author)



Figure 172: Vankhandi Nath Temple
(Source: Author)

5.9.2 Main Entrance Gateway Design Proposal – Applicable to all Nath Temples



5.9.3 Broad Layout Plan for Development – Vankhandinath Temple Precinct



Figure 174: Precinct Development of Vankhandinath Temple

(Source: Urban Design Team)



5.9.4 Vankhandinath Temple Precinct – Streetscape Proposal (Before & After)



5.9.5 Key Intervention

- Establishing identity markers/ entrance gateways and development of corridor leading to the religious places will enhance the urban character of their precincts.
- Provisions of public amenities like parking space, washrooms, etc. will not only offer convenience to the visitors but will also create a better user experience.
- Development of temple precincts will help in reclaiming the lost identity of all Nath temples and conserving the city's cultural value.
- The intervention envisions initiating more tourism influx to the city, which will further contribute to the city's economy.

5.10 Case Example - Brahma Temple, Pushkar

Restructured and pedestrianized temple precinct with added public functions like bazaars, eating points, utilities.





5.10.1 Design Component

Title of the Project: Urban Renewal of Nath Temple circuit & Infrastructure improvement of all Seven Nath Temples					
Vankhandi Nath Temple Precinct Development					
S.No.	Components	Description	Cost per unit	Quantity	Total cost
A	Entrance Gateway	Development of Entrance Gateway at the main road to mark the temple entry	Rs.20,00,000	1	Total Cost = 20,00,000/-
B	Pathway Development	One Km. long paved pathway with 1.5 m wide raised stretch for Kiosks	Kerbstone – Rs.5000 per cu. M Precast interlocking	Volume of kerbstone = 1000 x 0.15 x 0.15= 22.5 cu. M Total volume on both sides =	Cost of Kerbstone = 45 x 5000 = Rs. 2,25,000/-

			pavers for Entrance Drop-off plaza – Rs 570 per sq m	22.5 x 2=45 cu. M Area of footpath on each side of the road: 1000 m x 1.5 m = 1500 sq. m Total area of paved footpath: 1500 x 2 = 3000 sq. m Area of Paved Road: 1000 X 6.6m = 6600 sq. m Total pavement area: 3000 + 6600 = 9600 sq. m	Cost of concrete pavement = 9600 X 570 = Rs.54,72,000/- Total cost = Rs.56,97,000/-
C	Fair Ground Entrance Gateways	Development of Entrance Gateway for fairground area	Rs.8,00,000	2	Cost of Entrance Gateways – 800000 X 2 = Rs.16,00,000/-
D	Services & Amenities Block	Development of Service block for public promenade	Rs.27000 per sq. m	40 sq. m	Service block cost – 27,000 X 40 = Rs. 10,80,000/-
E	Fair Ground development	Fair Ground	Site development of 2 Fairgrounds = Rs.11030 per sq. m	Area of Fairgrounds = 7100 sq. m	Cost of developing open greens 11030 X 7100 = Rs.7,12,13,000/-
F	Promenade Space	Development of promenade for Kiosks	Cost of red sandstone for promenade = Rs. 1800 per sq m	Area of promenade: 3375 sq. m	Cost of sandstone promenade - 1800 X 3375 = Rs. 60,75,000/-

G	Visitor Parking	Visitor Parking	Cost of PCC flooring in parking = Rs.735 per sq. m	Area of Visitor Parking - 850 sq. m	Cost of Visitor Parking – 735 X 850 = Rs.6,24,750/-
H	Kiosks				
H.1	Food/ refreshment kiosks	To be placed along MUZ and within public nodes and plazas	Rs.8,00,000	Five kiosks per 100 m Kiosks on each side of the road 1000/100=10 10 x 5=50 kiosks No of Kiosk in Fairground = 70 Total kiosks=120	Cost of Kiosks 800000 x 120 = Rs.9,60,00,000/-
H.2	Information kiosks	To be placed at the intersections and public plazas	Rs.35000	2	35000 x 2= Rs.70,000
I	Signage and way finding	Signage's to be placed at entry plaza, sports grounds (4), food court, horse training zone and Mela ground.	Rs. 76,000	4	Total Signage Cost – 76,000 X 4 = Rs. 3,04,000/-
J	Lighting				
J1	Single arm pedestrian light pole	7000 mm high light poles @9 m c/c all along the edges of the boardwalk for safety, security and river edge illumination, in entry plaza , sports grounds, food court and play area	Rs. 25000	Lights along Internal road and parking zone = 1000 x 2 /9 x= 222 lights Lights in entry plaza= 2 Lights in Fair ground= 24 lights Total lights= 248 lights	Total cost of Lighting – 25,000 X 248 = Rs. 62,00, 000/-
K	Street furniture				

K1	Seating	Two 600 mm x 1800 mm stone/concrete/ wooden benches at every 250 m on the boardwalk	Rs. 18000	Total benches= 30	Total cost of seating – 18,000 X 30 = Rs. 5,40,000/-
K2	Dustbins	Dry and wet waste Segregation bins to be used on both sides of the boardwalk every 200 m and in entry plaza, fair ground and play area	Rs.15000	Dustbins in entry plaza = 2 Dustbins in fair ground=12 Dustbins on road =12 Total dustbins=26	Total cost of Dustbins – 15,000 X 26 = Rs. 3,90,000/-
				Total Project cost	Rs. 19,17,93,750/-

5.10.1.1 Streetscape of City Core and Development of Dargah Precinct

5.10.1.1.1 Project – Streetscape of Market Street from Qila to Shyam Ganj Along with Urban Renewal of Dargah Precinct by Defining Entrance Gateways, Corridors and Enhancing the Public Infrastructure

5.10.1.1.1.1 Background

The city of Bareilly is a predominant trade city where different market typologies co-exist and form the base of the city economy and business culture. The market streets have a clear hierarchy based on the predominance of the functional activity and products sold as we move along the streets connecting Delhi to Lucknow. Upon arrival from Delhi, the Bada Bazaar market street stretches from Qila to Darzi chowk which caters to multiple segments of retail and wholesale markets, and from Darzi chowk to Shyam Ganj flyover is the Shyam Ganj market where Zari zardozi works and karkhanas used to flourish a few years back.

Situated in the dense fabric of Bada bazaar is the world famous - Dargah-e-Ala-Hazrat which invites lakhs of pilgrims from all over the country. It holds a historic and spiritual value of very high significance in the city. The dargah is also known for its annual Urs which takes place in the grounds of Islamia College of Bareilly, which invites over five lakh people to the city. Thus, the precinct of Dargah-e-Ala-Hazrat becomes a very important public node. Situated in its proximity is the Khanqah e Niazia, which is also a significant spiritual landmark of the city.

5.10.1.1.1.2 Problem Statement

The narrow street of Bada bazaar and Shyam ganj market is the harbor for all kinds of activity and with extended retail activities, IPT and light freight vehicles obstruct smooth pedestrian flow leading to congestion and noise pollution. Often the IPT is seen hitting the pedestrians, hence making the streets very uncomfortable to walk upon. Though a clear distinction can be observed in terms of function and products, the market streets lack imageability and a distinct character that can aid visitors in orienting themselves within the bazaars.

Situated in the close proximity of Bada bazaar and clock tower, Dargah e ala hazrat and Khanqah e Niazia have witnessed the effects of increasing density in the core. These religious precincts have lost their imageability and presence over a period of time. Absence of identity markers, gateways, designated corridors, signage, façade lighting has led to degradation of the overall urban character of the precincts.

5.10.1.1.1.3 Key Intervention

- Restructuring mobility networks to facilitate walkability and Para transit within the Bada bazaar and Shyam ganj market street
- Prioritize the use of public transport.
- Provision of signage design scheme for Bada Bazaar and Shyam Ganj market by standardizing the size & its location on the façade to create uniformity in streetscape.
- Development of symbolic identity/ entrance gateways for both, Dargah and Khanqah.

- Establishing a corridor leading to the religious precincts along with façade treatment guidelines.
- Place making of their precinct with respect to the surrounding neighborhood.
- Enhancing the spiritual character along the street.
- Restructuring the Dargah precinct while adding public infrastructure like designated parking space, washrooms, etc.

5.10.1.1.1.4 Site Delineation

Upon arrival from Delhi, the market streets start from Qila with the grain market and move in a straight line to Bada Bazaar featuring Sarafa Bazaar (gold and silver jewelry), Surma market, Cloth and cosmetic market respectively. Following the Bada Bazaar which terminates at the Darzi Chowk and further leads to Shiva ji marg road (featuring Sarafa bazaar) and Shyam ganj market (featuring utensils, Zari Zardosi and furniture markets respectively).

Situated in the dense fabric of city core is the Dargah e Ala hazrat, which is one of the important pilgrim destinations in the city. With no defined access point/ entrance gateway, the dargah is approached from various routes from Bada bazaar road and Kutub khana road. This results in an unfeasible approach for the pilgrims who are new to the city. Lack of identity markers and a designated corridor fails to establish imageability and legibility of the precinct. Due to the existing situation in the current scenario, the working of bazaar streets also get hampered, eventually affecting the business.

5.10.1.1.2 Area of Intervention:

Qila to Shyam Ganj Market Road:

Total Road Stretch of the Market – 3 Km

Width of road – Varies from 5 - 7 meters (ROW based on existing situation)

Biharipur Dhal Road to Dargah & Khanqah:

Total Road Stretch for redevelopment – 700 meters

Width of road – 3 meters (ROW based on existing situation)



Map 5-9: Qila to Shyam ganj Road, Dargah e Aalahazrat and Khanqah e Niazia Precinct



Figure 5-15: Bada Bazaar Street (Section - 1) (left) Shyamganj Market Street (section 2) (right)



Figure 5-16: Bada Bazaar Street (left), Shyam Ganj Market Street (right)



Figure 5-17: Street leading to Dargah-e -Aalahazrat (left), Dargah-e -Aalahazrat (right)



Figure 5-18: Street leading to Khanqah E Niazia (left), Khanqah E Niazia (right)

5.10.1.1.2.1 Project Impact and its Benefits

The project aims to define the character of the city market streets. The core city roads shall be defined as internal streets that will be prioritized on cycle and pedestrian infrastructure. These streets shall be designed to reduce the carriageway for low vehicular speed. The peripheral city streets will be developed as the outer loop where provisions for cycling, IPT, parking near intersections, cycle stands at regular intervals shall be given.

Taking the spiritual significance of the Dargah and Khanqah into the revival of these religious precincts becomes essential to restore city's cultural value. Designating corridor leading to these religious places and defining its street character will elevate the essence of the precinct. Establishing identity markers/ entrance gateways and development of public amenities like parking space, washrooms, etc. will offer convenience to visitors in terms of approach and user experience.

5.10.1.1.2.2 Stakeholders

Nodal Agency

Bareilly Market Associations
Dargah Association

Helping Agencies

Bareilly Development Authority
Bareilly Smart City Limited (BSCL)
Bareilly Nagar Nigam
U.P Tourism

5.10.1.2 Promotion & Innovation of Craft Products – Kala Sanskriti

5.10.1.2.1 Project – Rejuvenation of Zari – Zardozi (Shyam Ganj Market) – One District One Product

5.10.1.2.1.1 Background

Renowned all over the world, Bareilly is a city very well known for its craft of Zari and Zardozi. The native craft has established Bareilly's identity in the national as well as international market. The skill has eventually been carried on by generations of artisans over past many decades. Many artisans have adopted this as their main occupation or profession. It has provided employment opportunities to thousands of artisans spread over the city as most of the artisans have inherited art to be converted into an occupation.

5.10.1.2.1.2 Problem Statement

Situated in one of the dense fabrics of the city is the **Sailani market road** dedicated for retail of Zari Zardozi. Before the construction of Shyam ganj flyover, its prime location on Stadium Road made the market easily accessible from all parts of the city. The flyover passing over the market entrance has not only disrupted its linkage from the city's main arteries but has drastically changed the approach to the market underneath.

5.10.1.2.1.3 Key Intervention

- Designing the streetscape for pedestrians and NMT system
- Façade Development to establish the identity of the market
- Traffic decongestion of Market Street and parking proposals

5.10.1.2.1.4 Site Delineation

Despite of being covered by the Shyam ganj flyover, the strategic location of Sailani market road still holds a potential for an urban renewal for its transformation. The road from Patel chowk to Satellite bus stand passes under the flyover gives the site an advantage for a fair mobility. The space available underneath the flyover can be better utilized for place-making of the market's entrance.

5.10.1.2.2 Area of Intervention:

Shyam Ganj Flyover:

Total Road Stretch Underneath Flyover for redevelopment – 100 meters

Width of road – 9 meters (ROW based on existing situation)

Sailani Road:

Total Road Stretch for redevelopment – 600 meters

Width of road – 7 meters (ROW based on existing situation)



Map 5-10: Sailani Market Road

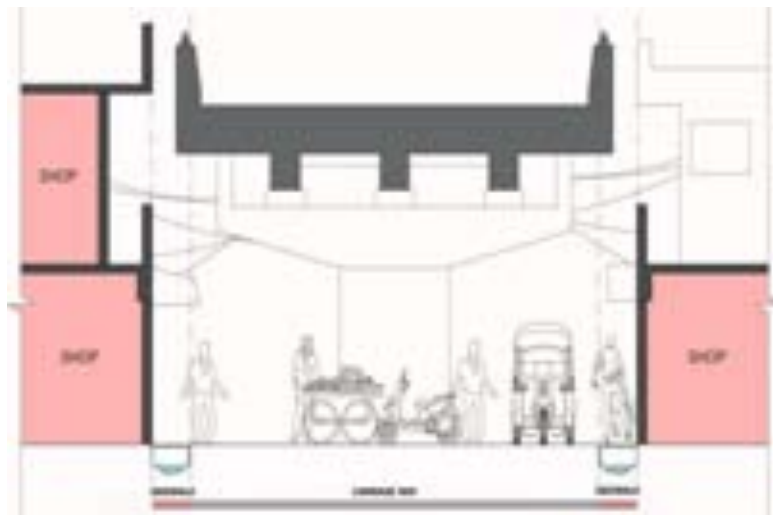


Figure 5-19: Shyam Ganj Flyover Road Section



Figure 5-20: Shyam Ganj Flyover Road



Figure 5-21: Sailani Market Road

5.10.1.2.2.1 Project Impact and its Benefits

Redevelopment of Sailani Market Road is one of the most significant developments needed for the revival of Bareilly's native craft. The urban renewal of the road underneath the flyover will not only enhance the approach to the Sailani market street but will also address a prominent access point for the visitors/tourists. The intervention will redefine the urban character of the whole market street and will also emphasize on the underlying market of Zari - Zardozi. This will initiate more influx to the market street and help in restoring the city's native craft.

5.10.1.2.2.2 Stakeholders

Nodal Agency

Bareilly Development Authority

Helping Agencies

Bareilly Smart City Limited (BSCL)

Bareilly Nagar Nigam

Bareilly Market Associations
 Sailani Market Association
 Bareilly Zari–Zardozi Association
 U.P Tourism

5.10.1.3 A Place for Spiritual Tourism and Nature Retreat

5.10.1.3.1 Project – Ramganga Riverfront Development

5.10.1.3.1.1 Background

The Ramganga River is the largest river passing through the city and the river ghat is one of the well-known religious places in the city. The place inherits a rich historic as well as spiritual value that brings lakhs of pilgrims annually to the ghat. A fair after every 14 days is also organized on the riverbanks attracting tourists and pilgrims from all over the city. The riverbanks are flooded with people taking baths, performing religious activities and celebrating the festival.

Since the river crosses in close proximity to Chaubari village, a major fair is organized annually at the banks of the river known as Chaubari fair. The fair takes place on the occasion of Kartik purnima. One of the biggest attractions of this fair is the horse market, where people from far off areas visit the city to buy or sell horses. The fair is attended by lacks pilgrims, which initiates tourism for the city on a large scale.

5.10.1.3.1.2 Problem Statement

Despite of having a spiritual value of such prestige, the river ghat and the fairground still remains redundant. Due to lack of identity markers, entrance gateway and wayfinding, the approach to the ghat area is not feasible for the visitors. The Ramganga fairground is not only an ecological asset but also holds a significant value in the social infrastructure of Bareilly.

5.10.1.3.1.3 Key Activities, Task & Intervention

- Crafting Ramganga river ghat into a multi-functional public space that caters to all pilgrimage activity, fairs and festivals.
- Development of symbolic identity/ entrance gateway to the riverfront.
- Place making of their precinct with respect to the surrounding neighborhood.
- Revival of the existing precinct while adding public infrastructure like designated parking space, washrooms, etc.
- Up gradation of Ramganga Jn. Railway station and improving its connectivity with the riverfront

5.10.1.3.1.4 Site Delineation

The current scenario of riverfront displays a very abrupt image of city's natural features. Despite of being well connected to the city through state highway & railway line, the site completely lacks a prominent connectivity and a symbolic identity. The existing ghat and fairground does not contain any

public infrastructure to support the monthly holy bath and Chaubari fair. This has led to the depletion of the condition of the riverine, eventually affecting the overall ecology.



Map 5-11: Ramganga Ghat and Fair Ground



Figure 5-22: Dilapidated Ghat along river edge and connecting bridge (left), Vacant Land Parcel near bridge (right)



Figure 5-23: Provision of boating to cross the river

5.10.1.3.1.5 *Project Impact and its Benefits*

Development of the riverfront will help in revival of the overall river edge and restoring its ecology as well. Integration of the riverfront along with the fairground will result in rejuvenation of the overall precinct benefiting the pilgrims and city residents. Also, provision of public amenities will add to the overall development and initiate more pilgrims to visit. The urban renewal of the existing ghat will eventually result in upliftment of the city social infrastructure.

5.10.1.3.1.6 *Stakeholders*

Nodal Agency

Bareilly Development Authority

Helping Agencies

Bareilly Smart City Limited (BSCL)

Bareilly Nagar Nigam

U.P Tourism

5.10.1.3.2 Project – Nakatiya river front development into city level greens

5.10.1.3.2.1 Background

Devraniya and Nakatiya are the two main rivers of Bareilly. Both the rivers pass through the dense fabric of the city, thus becoming an integral part of the neighborhood. The organic growth of settlement along both the rivers has led to major encroachments and loss of green buffers. Over the years, the ecological condition of both the rivers has consequently depleted due to lack of infrastructure development and maintenance. Opening up of Sewage drains directly into the river has degraded the water quality, which has severely affected the overall riverine along with its flora and fauna.

5.10.1.3.2.2 Problem Statement

Due to lack of infrastructure development, Nakatiya River portrays a very dilapidated image with many ghats along the edge lie redundant over a period of time. With no preservation of the river edge, wetlands or development of public spaces, the condition of riverine ecology has consequently depleted over the period of time. Thus, the land parcels along the river have become dump yard for the neighbors and cattle herding/bathing area for some.

5.10.1.3.2.3 Key Intervention

- Development of the riverfront will help in revival of the overall river edge and restoring its ecology as well.
- Integration of the river edge along with the available land parcel will result in rejuvenation of the overall precinct, creating an active green asset for the city residents.
- The provision of public amenities will add to the overall development and public convenience.
- Development of available land parcels to facilitate a better open public green with a mix of 50% active and 50% passive recreational space.
- Development of plaza space along with provision of street furniture – benches, dustbins, lighting

5.10.1.3.2.4 Site Delineation

The land parcel identified for development lies on the banks of Nakatiya River on the way to Lucknow from Bareilly. Situated in the middle of cantonment area and a residential cluster, the strategic location of the site possesses a high potential for its revival. The existing Shiva temple and Nakatiya Masjid also adds spiritual dimension to the precinct. The two land parcels of size 1.4 hectares and 1.15 hectares share one edge with the river and a direct connection to the road, making it feasible for proposing active public zone.



Map 5-12: Nakatiya River, Cantonment Area



Figure 5-24: Approach Road to the land parcel (left), Existing Condition of Nakatiya (right)



Figure 5-25: Abandoned land parcel on Nakatiya River



Figure 5-26: Nakatiya River, Cantonment Area

5.10.1.3.2.5 *Project Impact and its Benefits*

Development of abandoned land parcels along the river will help in revival of the river edge. Integration of these land parcels along with the abutting public spaces, open greens and spiritual places will result in rejuvenation of the overall precinct benefitting the visitors and city residents. The project will eventually result in upliftment of the city's social infrastructure. The development of this project will not only restore the overall ecology of this abandoned natural asset but will also help in revival of the overall precinct.

5.10.1.3.2.6 *Stakeholders for the Project*

5.10.1.3.3 Nodal Agency

Bareilly Development Authority

5.10.1.3.4 Helping Agency

Bareilly Smart City Limited (BSCL)

Bareilly Nagar Nigam

5.10.1.4 City level infrastructure Development

5.10.1.4.1 Project – Aero city integrated office complex near Airport development

5.10.1.4.1.1 Background:

Bareilly is listed as one of the nine counter magnets of the National Capital region which can be developed as the economic growth centre. Trade and commerce are one of the important sectors which can amplify the economy of the city. As per draft master plan 2031, the existing landuse of the commercial area is found to be 3.31 percent against the URDPFI guidelines of 4-6 percent. Lack of commercial space is also outlined by stakeholders such as Bareilly Vyapar Manadal, etc. Bareilly city needs commercial area as given below:

Year	Projected Population	Total Master Plan Area (Ha)	Proposed Percentage (Ha)	Commercial Area (Ha)	Additional Area additional to Master Plan 2031 (Ha)
2031	1949012	22815.76	4	912.63	0
2041	2422433	25499.25	4	1019.97	107.33
2051	2894499	30468.41	4	1218.73	306.10
2061	30,29,478	31889.24	4	1275.56	362.93
2071	37,02,015	38968.58	4	1558.74	646.11

5.10.1.4.1.2 Problem Statement:

Lack of planned commercial spaces hinders the flourishing of economic trade and commerce activities in the city.

5.10.1.4.1.3 Key Interventions:

4. Development of Aero city by allocating a land parcel near the city airport for mixed use development to foster new growth opportunities for Bareilly.
5. Development of the allocated land parcel featuring state-of-the-art Retail centers, Offices, Hotels and convention centers will result in city's economic growth and generate new employment for the city residents.
6. The proposal will also act as a gateway to the city.

5.10.1.4.1.4 Site Delineation

Located at the intersection of the Bareilly bypass and Pilibhit road, the proposed site of size 30 hectare is a strategically selected location for the development of mixed-use development. Considering the context of the proposed site, the Radisson hotel and Airport in its close proximity can be foreseen as a supportive infrastructure for further development. Along with the existing mobility infrastructure and the available assets around the site, an integrated precinct for mixed-use development can be envisioned.

5.10.2 HERITAGE AND TOURISM PROJECTS

5.10.2.1 Project 1: Ahichchhatra – Tourism Infrastructure Upgradation of ASI Site in consultation with ASI and UP Tourism Regional Managers

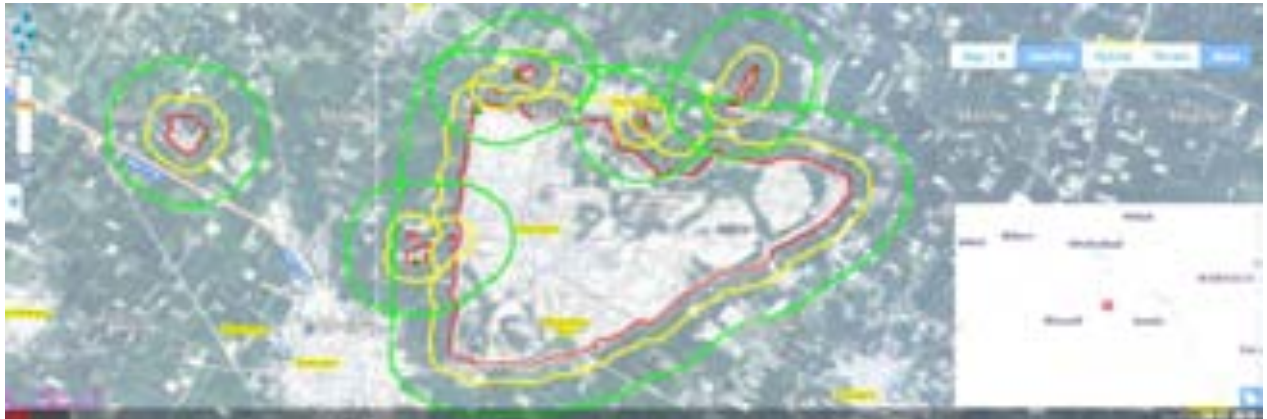
Background:

From archaeological point of view the district of Bareilly is very rich. The extensive remains of Ahichchhatra, the Capital town of Northern Panchala have been discovered near Ramnagar village of Aonla Tehsil in the district. The site of Ahichchhatra garh was briefly explored by Sir Alexander Cunningham in 1871, and then excavated by the ASI from 1940 for "about five years". The excavations found brick fortifications and continuity of occupation from a period before 600 BCE to 1100 CE. It was during the first excavations at Ahichchhatra (1940–44) that the painted grey ware, associated with the advent of the Aryans in the Ganges–Yamuna Valley, was recognised for the first time in the earliest levels of the site. Nearly five thousand coins belonging to periods earlier than that of Guptas have been yielded from Ahichchhatra. It has also been one of the richest sites in India from the point of view of the total yield of terracotta. Based on the existing material, the archaeology of the region helps us to get an idea of the cultural sequence from the beginning of the 2nd millennium BC up to the 11th century AD.

Near Ahichchhatra, 2 km to its west there is a big pond which is said to trace its ancestry to the time of Mahabharata. The pond, located in the village of Jagannathpur is said to have been made by the pandavas at the time of their forest dwelling.

Table 5-17 List of ASI Sites in Bareilly District (3 sites in Bareilly, 7 sites in Ramnagar, 2 in Aonla and 1 site in Pachomi)

S.NO.	NAME	LOCATION	DISTRICT
14.	Tomb of Hafiz-ul-Mulk Rahmet Khan, the Rohila Chief	Bareilly, Bakar Ganj	Bareilly
15.	Tomb of Hermit Shah Dana	Bareilly, Bakar Ganj	Bareilly
16.	Large obelisk of red sandstone	Fateh Ganj	Bareilly
17.	Several ancient ruined mounds in which Indo-Scythian coins are found.	Pachomi or Wahidpur Pachaumi	Bareilly
18.	Ancient Site	Ramnagar, Alampur Kot	Bareilly
19.	Fort	Ramnagar	Bareilly
20.	Mound called Chikatia Khera	Ramnagar	Bareilly
21.	Mound to the south of the tanks known as of the Gandhan Sagar and Adisagar	Ramnagar	Bareilly
22.	Small hillock called Katari Khera or Kottari Khera	Ramnagar	Bareilly
23.	Stupa mound	Ramnagar	Bareilly
24.	Two Buddhist mounds close to the Konwaru Tal	Ramnagar	Bareilly
25.	Begum's Masjid with three lofty domes	Aonla	Bareilly
26.	Site near Aonla railway station	Rehtoia	Bareilly



Map 5-14: ASI sites with buffer demarcation Source: Bhuvan Portal



Map 5-15: Location of ASI Protected Structures in District of Bareilly



Figure 5-27 Archival image of the site excavation activities (1940 – 1945) Alexander Cunningham



Figure 5-28 Archival image of Excavated Site (1940 – 1945) Alexander Cunningham



Figure 5-29 Archival image of Excavated Site (1940 – 1945) Alexander Cunningham



Figure 5-30 Archival image of Excavated Site (1940 – 1945) Alexander Cunningham



Figure 5-31 Archival image of Excavated Site (1940 – 1945) Alexander Cunningham

Problem statement:

The site is located at a distance of 55.4 kms from Bareilly with poor tourism infrastructure and site interpretation facilities. It is also located in close proximity of a Jain Teerth which is highly visited by the pilgrims as well as the visitors. There are 7 ASI protected sites in Ramnagar and other unprotected sites including Jain Temples Shri Ahichchhatra Parshvanath Atishaya Teerth Kshetra Digambar Jain Mandir, Ramnagar, Lakes and temples in Aonla etc. which are not explored to its full potential dues to lack of awareness, poor infrastructure facilities, lack of connectivity and improper visitor infrastructure facilities.

Value addition of this project to the tentative vision:

The provision of proper visitor amenities, support infrastructure facilities and improved last mile connectivity will enhance the tourist footfall to these sites. The site interpretation would help to generate interest of different categories of tourists.

Key activities, tasks, interventions involved:

5. Identification of area for development of Museum.
6. Connectivity enhancement to the identified sites located in close proximity.
7. Site Development & Landscape Improvement.
8. Providing wayfinding and interpretative signages in and around the sites.

Site Delineation: The buffer area of the Ahichchhatra Fort identified in consultation with ASI.

Strategies for Precinct Level Development:

4. To improve last mile connectivity from towns / cities such as Bareilly, Badaun and other nearby towns.
5. Development of Site Interpretative Museum for creating awareness about site, and to develop outreach programmes.
6. Site development and landscape improvement to provide visitor amenities such as food and beverage, toilet facilities, tourist information centre.

Project Impact & Benefit:

- World Heritage Site Nomination
- Increase in tourist footfall both domestic and foreigner resulting in creation of more jobs and economic benefit of the district.

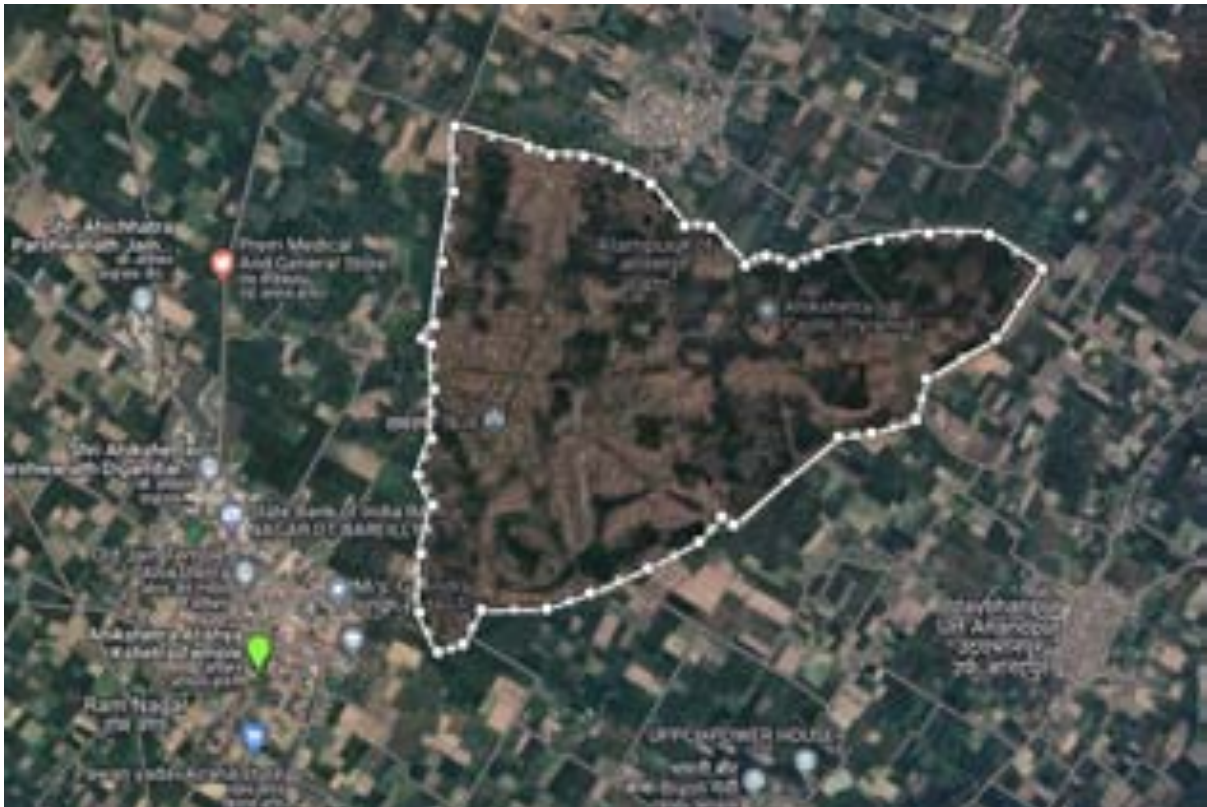


Figure 32: Site of Ahichhatra.



Figure 33: Ahichhatra from Ramnagar which is the closest settlement and access to the site



Figure 34: Samarth Chandragupta fort and ahichchhetra fort within the complex of Ahichchhetra



Figure 35: Current condition of the site

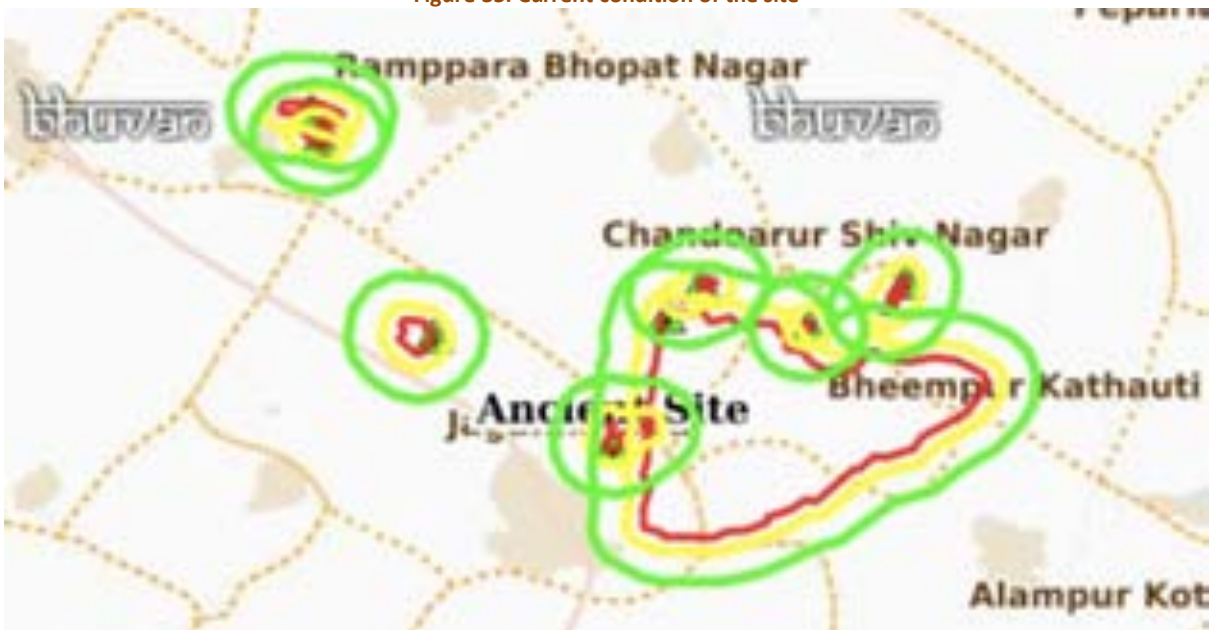


Figure 36: Map showing protected, regulated and restricted areas of the site of Ahichchhatra

5.10.3 Objective:

- To make the site accessible at regional and local level by providing access as well as outreach for the significance of the site of Ahichchhatra.
- Improved visitor experience of the site by provision of amenities for tourist and visitors in order to create a comfortable experience on site.

5.10.4 Brief Description of the project

As mentioned in the objectives, the project undertaken to make the monument accessible and to increase the outreach of the site. These are to be undertaken by making the monument site visitor friendly. The provision of proper visitor amenities, support infrastructure facilities and improved last mile connectivity will enhance the tourist footfall to the site is proposed to be undertaken. The site interpretation would help to generate interest of different categories of tourists. Hence the outreach would enhance. This is proposed to be done by undertaking the interpretation and audio-video centres. To make the monument accessible to differently-abled people and by providing a museum for the visitors.

5.10.5 Key issues

- The site is not well connected with the major towns. It is 53 kms from Bareilly and road connectivity is poor.
- There is lack of information and outreach of the site. Site has signage boards of protection and beyond that there is no informational, directional and instructional signage on site. There is no outreach on major tourist spots around the site in cities in proximity.
- There is lack of visitor facility Within the site.



Figure 37: Signage on site



Figure 38: Signage on site



Figure 39: Location identified for amenities on site (left) Condition of dirt track with in the site (right)

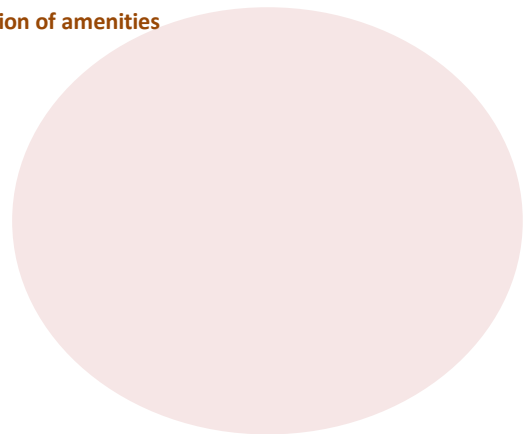
5.10.6 Key activities, tasks, interventions involved:

1. Provision of visitor parking, toilets and drinking water
2. Provision of permeable boundary wall
3. Provision of monument lighting
4. Research for Interpretative material and Signages

- 5. Identification of area for development of Museum.
- 6. Connectivity enhancement to the identified sites located in close proximity.
- 7. Site Development & Landscape Improvement.
- 8. Providing wayfinding and interpretative signages in and around the sites.



Figure 40: Proposed plan for the provision of amenities



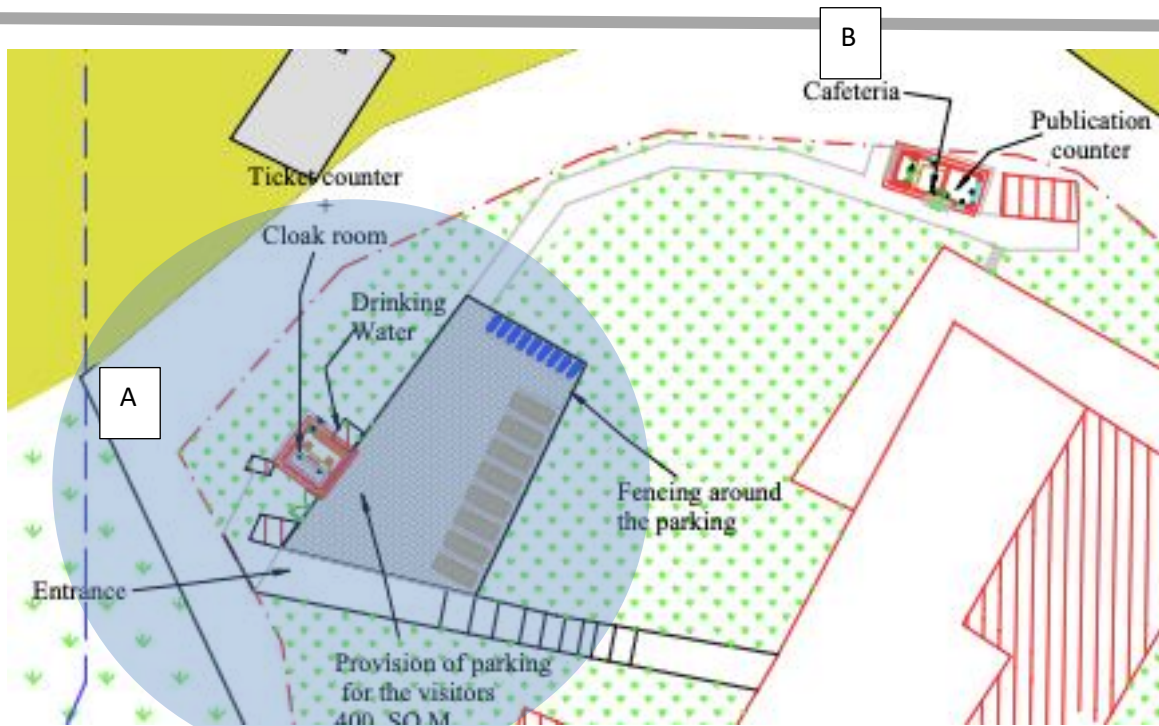


Figure 41: Concept plan for parking drinking water cloak room at the entrance of the site from Ramnagar Gate on west

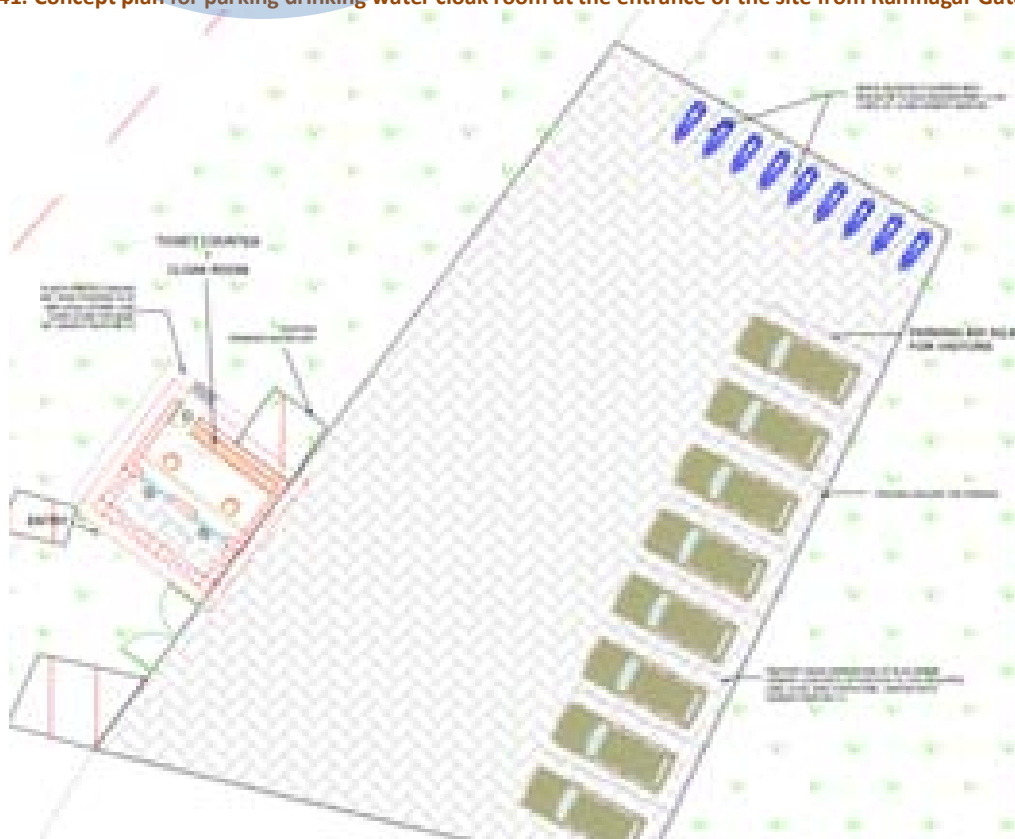


Figure 42: Concept of parking and ticket counter at A on the above plan

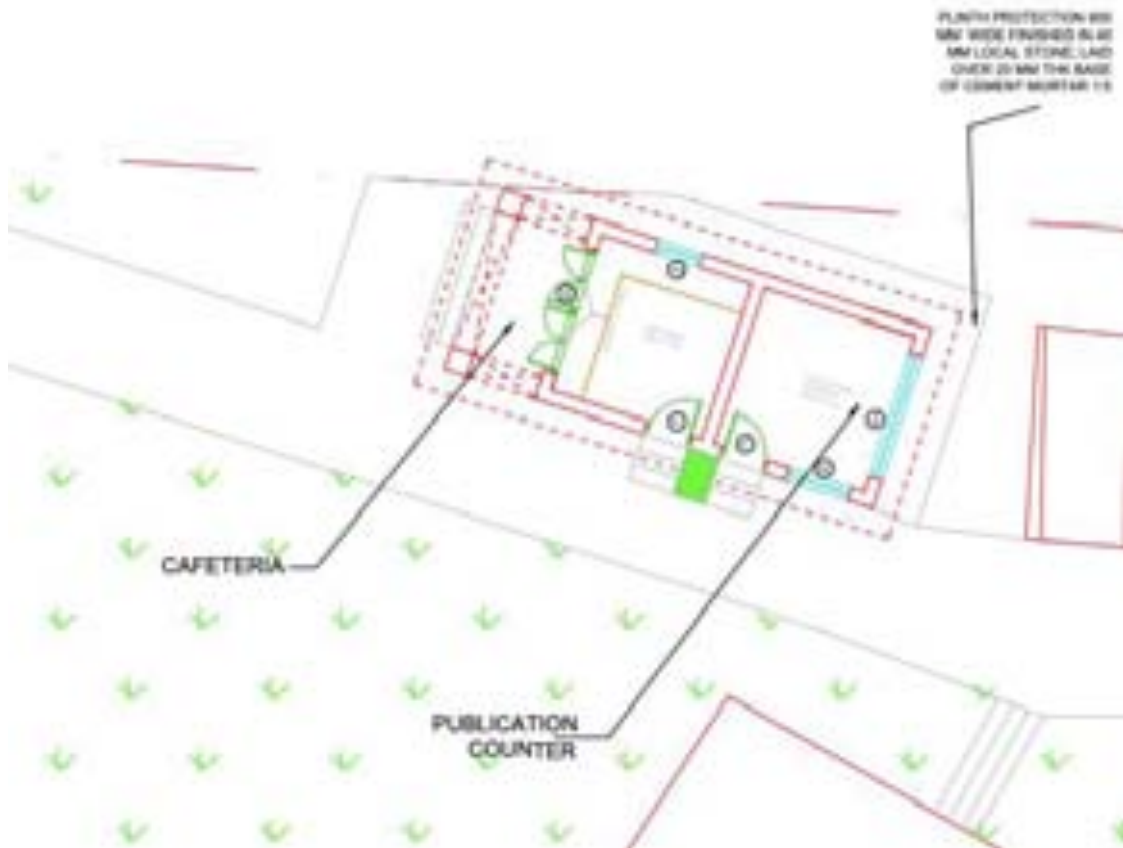


Figure 43: concept plan for the cafeteria and publication counter: as on location B of above map



Figure 44: Concept for the entrance gate and boundary wall for protected site



Figure 45: provision of brick on edge flooring to access the monuments.

1.	Provision of visitor parking, pathways toilets and drinking water	Site survey and identification of number of visitors and requirements
		Identification of location of provision for toilets and drinking water
		Preparation of DPR for the toilet block and drinking water facility. (brick and lime structure)
2.	Provision of permeable boundary wall , security room, ticket counter and pathways	Brick boundary wall to be provided : 3’ toe wall and metal grills upto 8’
		Identification of entrances for provision of gated entrances
		Provision of metal entrance gates with security guard room
3.	Provision of monument lighting	Provision of monument lighting ensuring there is no surface getting intruded damaged or impacted on the site which has high historic and archaeological value.
		Provision of site lighting along approach roads and boundary wall and entrance gates
4.	Research for Interpretative material and Signages including Providing wayfinding and interpretative signages in and around the sites.	Research on history and significance of site to create story board and interpretative materials and interpretation techniques
		Preparation of design of signages and DPR for execution of signages
		Preparation of Digital Media platforms : QR codes, Websites , App , Audio content and graphics for the information on site

		Preparation of signages and material for outreach at regional level :
5.	Identification of area for development of Museum.	Identification of location for the museum and interpretation center
		Preparation of design and DPR for the museum
		Preparation of Working drawings and Estimates
6.	Connectivity enhancement to the identified sites located in close proximity.	Road improvements on patches as mentioned below:
7.	Site Development & Landscape Improvement.	Parking and street lights and pavement including the landscaping along the boundary wall and around the site.

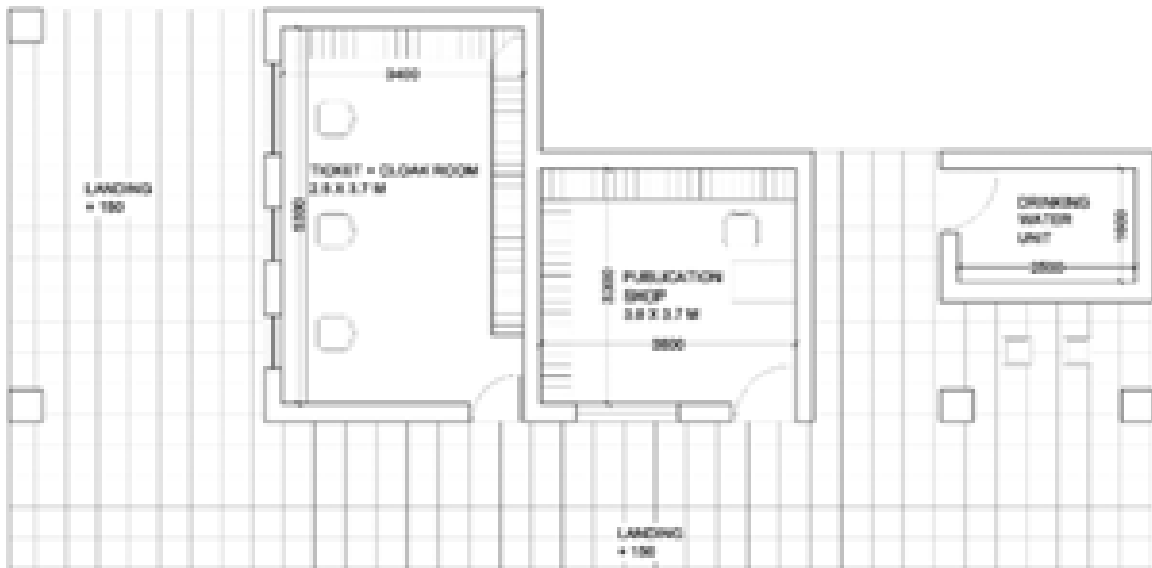


Figure 46: Concept layout for ticket room, cloak room , publication shop and drinking water.



Figure 47: Concept for drinking facility, Publication shop and Cafeteria

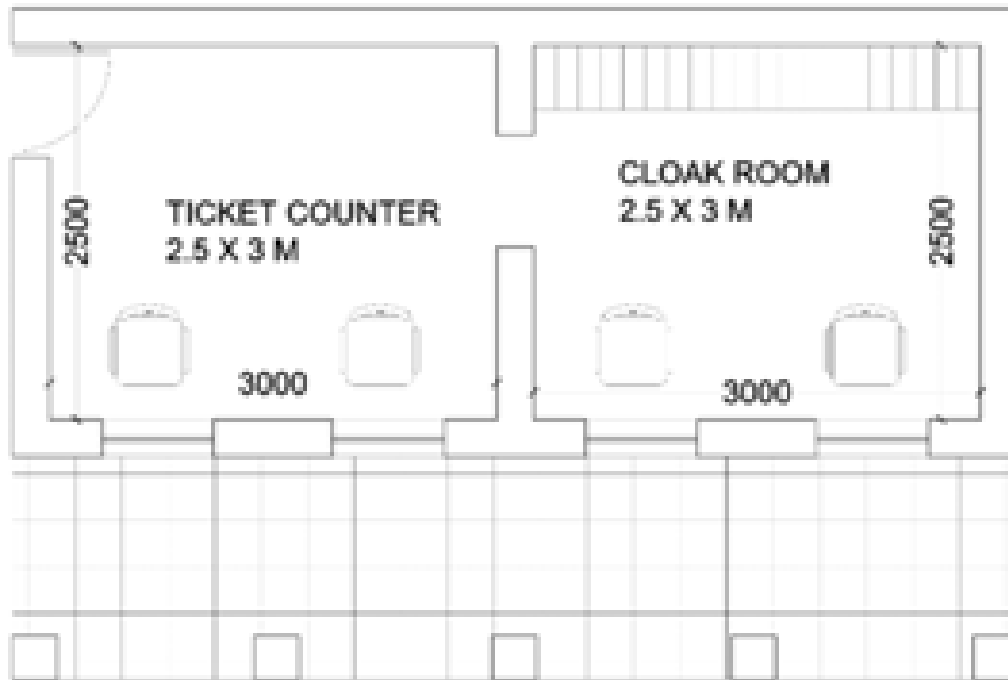


Figure 48: Concept for ticket counter and cloak room

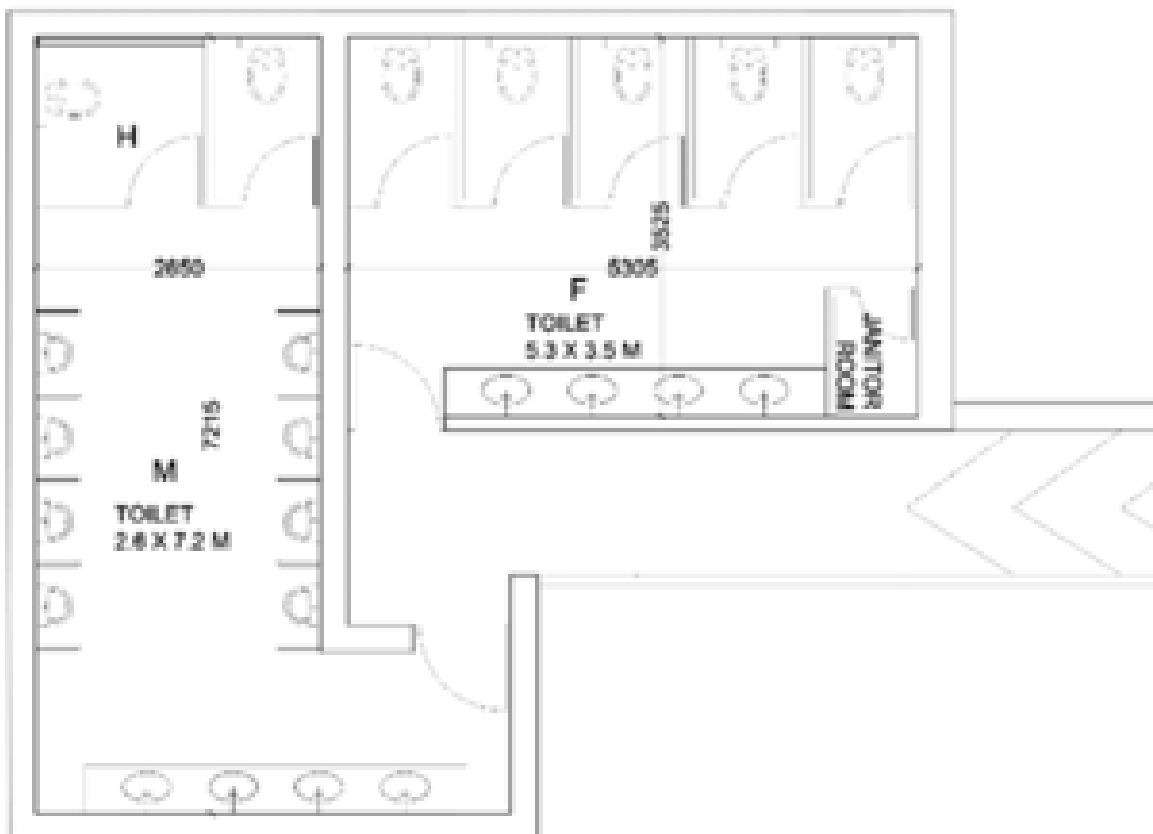


Figure 49: Proposed toilet layout for the toilet block



Figure 50: proposed option for toilet block



Figure 51: conceptual view of the toilet block



Figure 52: conceptual view of the toilet block



Figure 53: proposed view for toilet block



Figure 54: conceptual view for ticket counter cloak room and drinking unit



Figure 55: concept view for ticket counters

5.11 Financial Estimates for the works to be undertaken

a.	Amenities (toilet, ticket counters, security guard room, cloak room, publication shop and cafeteria) and site development works including parking and monument lighting	Toilet blocks 3 in nos.	55 Sq Mts	300 Lakhs
		Publication shop and cafeteria 1 in nos.	70 Sq mt	
		Ticket counter and cloak room - 2 in nos	75 Sq Mt	
		Drinking water – 5 in nos	20 Sq Mt	
b.	Signages (consultancy and execution) – on site and Providing wayfinding and interpretative signages in and around the sites.			1000 lakhs
c.	World Heritage nomination Dossier			200 Lakhs
d.	Museum and office building on site			500 lakhs
e.	Construction of roads to the fort structures within the site. The road needs not to be a metal road and tar concrete road. This is to be done for vehicular movement of BOVs with in the complex			1000 Lakhs
				3000 Lakhs

SWOT Analysis

Strength:

5. Close proximity with Bareilly makes it an apt site to be developed as a destination for one/ two-day excursion.
6. Eight ASI protected sites are located in close proximity along with the Jain Temples which can be explored and be used for creating tourist interest.
7. Regional connectivity with Badaun.
8. The fort has potential to be designated as World Heritage Site, therefor site development with proper infrastructure facilities, site Museum with Interpretation centre, last mile connectivity would enhance the future tourism prospects of the district.

Weakness:

4. Last mile connectivity.
5. Lack of awareness of other tourism attractions both built and natural heritage.
6. Lack of Infrastructure Facilities.

Opportunity:

5. Ahichchitra/ Ramnagar Fort is the most visited site in Bareilly.
6. Improved infrastructure facilities will help to increase the footfall.
7. Regional connectivity of Bareilly –Ramnagar and Badaun can be explored to develop a tourist circuit.

8. Site sensitive interventions would help to enhance the importance of the site.

Threat:

3. Any insensitive interventions in and around the site would be detrimental to the significance of the site.
4. Any development around the archaeological areas are to be protected and conserved.

Stakeholders:

5. Department of Tourism, Government of Uttar Pradesh.
6. Archaeological Survey of India.
7. Bareilly District Administration.
8. Gram Panchayat / Tehsil.

Nodal Agency:

1. Archaeological Survey of India	For site development
2. Department of Tourism	For developing Tourism Infrastructure facilities

Data needs for the projects/ Obtained Data:

S.No.	Data	Status
1.	Visitors' footfall in Ahichachhatra, Aonla, Bareilly	500 – 700 Daily (Average)
2.	Tourist Profile	No Records
3.	Average stay of Tourist	No Records

5.11.1.1 Project 2: Developing a Theme based Museum on War of Independence 1857

Project Background:

During 1857, Bareilly became a major centre of revolt under the leadership of Khan Bahadur Khan while maintaining the communal harmony despite the efforts by Company officers to create trouble by inciting Rajputs against Khan Bahadur Khan. Bareilly was the last to fall (May 1858). British order was restored on 13 May 1858 by an expeditionary force lent by Commander Colin Campbell of 9th Regiment of Foot with the help of Captain William George Drummond Stewart of 93rd Regiment of Foot, after winning the Bareilly battle. Some of the mutineers were captured and sentenced to death. When the Indian Rebellion of 1857 failed Bareilly, too, was subjugated. Khan Bahadur Khan was sentenced to death and hanged in the Kotwali on 24 February 1860.



Figure 5-56 The Indian Mutiny: 6th Dragoon Guards (Carabiniers) at Bareilly, May 1858 by Orlando Norie. Source: Royal Collection Trust

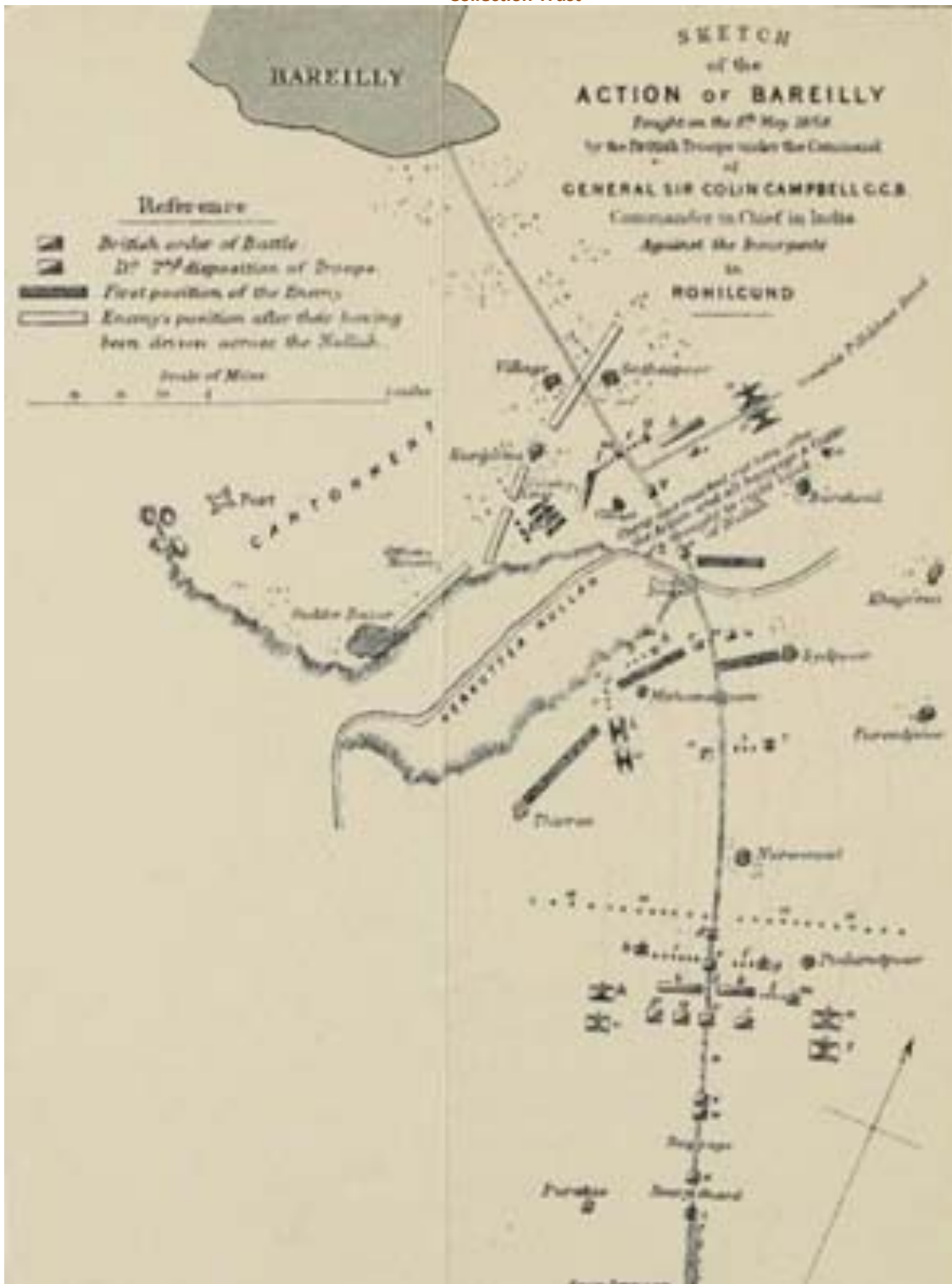


Figure 5-57 Sketch of Battle of Bareilly, 1858. (Source: A history of the Indian mutiny by G.W Forrest)

Case studies:

1. Town Hall of Amritsar which is developed and Adaptive Reuse as Partition Museum.
2. Dara Shikoh Library in Delhi which is converted under Adaptive Reuse mission as Partition Museum.



Figure 5-58 Town Hall, Partition Museum of Amritsar – Punjab



Figure 5-59 Town Hall, Partition Museum of Amritsar, Galleries – Punjab



Figure 5-60 Dara Shikoh Library and 1947 Partition Museum – Mori Gate, Delhi

Problem statement:

There is lack of awareness about the city as a major centre of the first war of independence. A theme based interpretative Museum development would address this and also enhance the future tourism prospects. Bareilly has potential to develop a museum based on the theme of First War of Independence by Adaptive Reuse of a historic building.

Value addition of this project to the tentative vision:

Potential for Tourism Development, Creating awareness and recreational facility at city level.

Objectives:

3. Develop Bareilly as Tourist destination and Enhance the Tourism potential of the city.
4. Reviving the memory of the First War of Independence.

Key activities, tasks, interventions involved:

8. Development of Theme based Museum.
9. Interpretative displays of the history of the region and associated personalities, role of Bareilly.
10. Visitor Management Plan.
11. Development of visitor amenities.
12. Site improvement.
13. Building Conservation for Adaptive Reuse.
14. Signages and way finding.

Site Delineation:

Based on stakeholder consultation, the possibility of developing the theme-based museum in some parts of the Bareilly College is being explored. The college is a historic building which is in use currently.



Figure 5-61 Bareilly College – Gangapur, Bareilly Source: Project Team



Figure 5-62 Bareilly College – Gangapur, Bareilly Source: Project Team

Strategies for Precinct Level Development:

5. NOC and approval from the college for the Adaptive Reuse and Development of Museum
6. Museum Design and Planning
7. Visitor Information
8. Visitor Amenities

Project Impact & Benefit:

The Project would help to create a tourist site by development of the Museum. It would also help to create awareness about the rich cultural past of the city at the local as well as at the State level. It will also be one of the contributing factors in celebrating “Azaadi ka Amrit Mahotsav” celebrating 75 years of India’s Independence. It will also help to increase tourist footfall in the city by making it as a one/ two day stay destination to visit the local sites of freedom movement as well as the regional sites.

SWOT Analysis

Strength:

3. Representative of an important period in the growth and evolution of Bareilly City.
4. One of the oldest heritage site and 1st Colonial schools in India.

Weakness:

3. The connectivity of site is ideal but lack in proper tourism infrastructure and issues of heavy traffic on vehicular road.
4. Planning museum in institution building sometimes fails to magnetize larger crowd as compared to sites dedicated to only museum and gallery planning.

Opportunity:

3. Development of first theme-based Museum on First War of Independence.
4. Site sensitive interventions would help to enhance the significance of the site.

Threat: The structural study must be done before Adaptive Reuse of structure.

Nodal Agency:

Bareilly Municipal Corporation	Site Development
UP Tourism	Funding and Tourism Infrastructure
Education	Institutional Services and Guidelines for Visitor Management

Stakeholders: Bareilly Municipal Corporation, UP Tourism, Education Department

During 1857, Bareilly became a major centre of revolt under the leadership of Khan Bahadur Khan while maintaining the communal harmony despite the efforts by Company officers to create trouble by inciting Rajputs against Khan Bahadur Khan. Bareilly was the last to fall (May 1858). British order was restored on 13 May 1858 by an expeditionary force lent by Commander Colin Campbell of 9th Regiment of Foot with the help of Captain William George Drummond Stewart of 93rd Regiment of Foot, after winning the Bareilly battle. Some of the mutineers were captured and sentenced to death.

When the Indian Rebellion of 1857 failed Bareilly, too, was subjugated. Khan Bahadur Khan was sentenced to death and hanged in the Kotwali on 24 February 1860.



Figure 63: Image of site within the college premises of pathways, boundary railings, softscape enclosures



Figure 64: Image of magnificent colonial structure run as college within the city

5.11.2 Objective:

- To infuse sense of pride among community and Reviving the memory of the War of Independence.

5.11.3 Brief Description of the project

Based on stakeholder consultation, the possibility of developing the theme-based museum in some parts of the Bareilly College is being explored. The college is a historic building which is in use currently. Representative of an important period in the growth and evolution of Bareilly City. It is proposed as one of the oldest heritage site and 1st Colonial schools in India.



5.11.4 Key issues

Upkeep and maintenance of the structures, lack of site upkeep, irregular parking, potential of utilizing college as potential site for public inclusion.

5.11.5 Key activities, tasks, interventions involved:

- Development of Theme based Museum.
- Interpretative displays of the history of the region and associated personalities, role of Bareilly.
- Research and content development on the narratives and local stories of
- Visitor Management Plan.
- Development of visitor amenities.
- Site improvement.
- Building Conservation for Adaptive Reuse.
- Signages and way finding.



Figure 65: Map showing the college complex and land proposed for new museum block



Figure 66: Map showing the components with in the college complex

5.12 Proposal 1: Conservation of Historic structures with in the complex

There are historic structures within the complex which require conservation and upgradation. These structures include all the academic blocks such as botany department, chemistry department, physics department , zoology department. Other than academic blocks there are structures such as history museum, auditorium, library which need conservation and upgradation. The issues such as water rise, loss of masonry, repair of roof works if not addressed and maintained shall lead to being not fit for use further.

1	Phase one : site analysis and priority identification and conservation	Total Station Surveys	100 lakhs
		Site analysis and identification of structural distress and structural analysis	

	preliminary reports for each structure.	Identification of phasing and priority works	
2	Identification and structural stability of emergency works for the buildings with in the complex	Propping strutting of structures	2000 Lakhs
		Water management and consolidation of roofs	
		Addressing major structural issues for stabilization of buildings	
3	Phase I : Identification and upgradation of structures for improvement and upgradation works	There are approximately 27 structures with in the complex. Conservation DPR preparation for structures in phase 1 (approximately 13 structures) : including upgradation, repairs, electrical, plumbing, finishes, interiors etc (1500 Per SQM)	5000 Lakhs
4	Phase II : Facade upgradation and Consolidation and conservation works for priority 2 sites	Preparation of DPR for the conservation upgradation and façade improvement of sites in better condition. Re-establishing the circulation, spatial planning , area diagrams if required for each structures with in the current use. (1250 Per SQM)	3000 Lakhs
			10,100 Lakhs



Figure 67: Image showing current condition of the library building



Figure 68: proposed image of Library structure post conservation



Figure 69: Current condition of chemistry department block



Figure 70: Chemistry department block conserved and upgradated

5.13 Proposal 2: Site development and Upgradation: including pathways and road upgradation , entrance gate upgradation and provision of adequate parking

	Upgradation of boundary walls and entrance gates	Documentation of existing boundary wall and entrances	The proposed boundary wall is brick toe wall of height 3-3.5' with stone coping and metal grills upto height of 5' above the toe wall. Total length of proposed boundary wall is approximately 1.9 Kms	300 Lakhs
		Design development for the interventions in boundary wall and upgradation of the gates		
		Design consultancy for the new design of the gateways and conservation - Repair and consolidation works for the boundary walls		
	Road improvement Provision of parking and upgradation of existing parkings	The road upgradation of the site is to be undertaken by providing adequate drains , slopes		500 Lakhs
	Upgradation of sports areas : hockey ground, tennis court			500 Lakhs
	Upgradation and upkeep of green areas			200 Lakhs
				1500 Lakhs

5.14 Proposal 3: Proposal for new structure of 1857 museum within the complex

Site identified for 1857 museum is towards the west gate of the college which has view from main district road. Bareilly has been an important site for 1857 mutiny and the freedom fighters an narratives of local community of the mutiny are not documented and not available as a resource to generate pride within people of Bareilly. this has been lost over time. The College complex is an educational institute and has footfall of youth. This site is identified for the museum as the site is located in center of the city, the land parcel and ownership is feasible for the construction of government owned structure, its well-connected and site identified also looks over a main road of city and more over the land use is institutional and therefore completely in sync with the proposed museum,



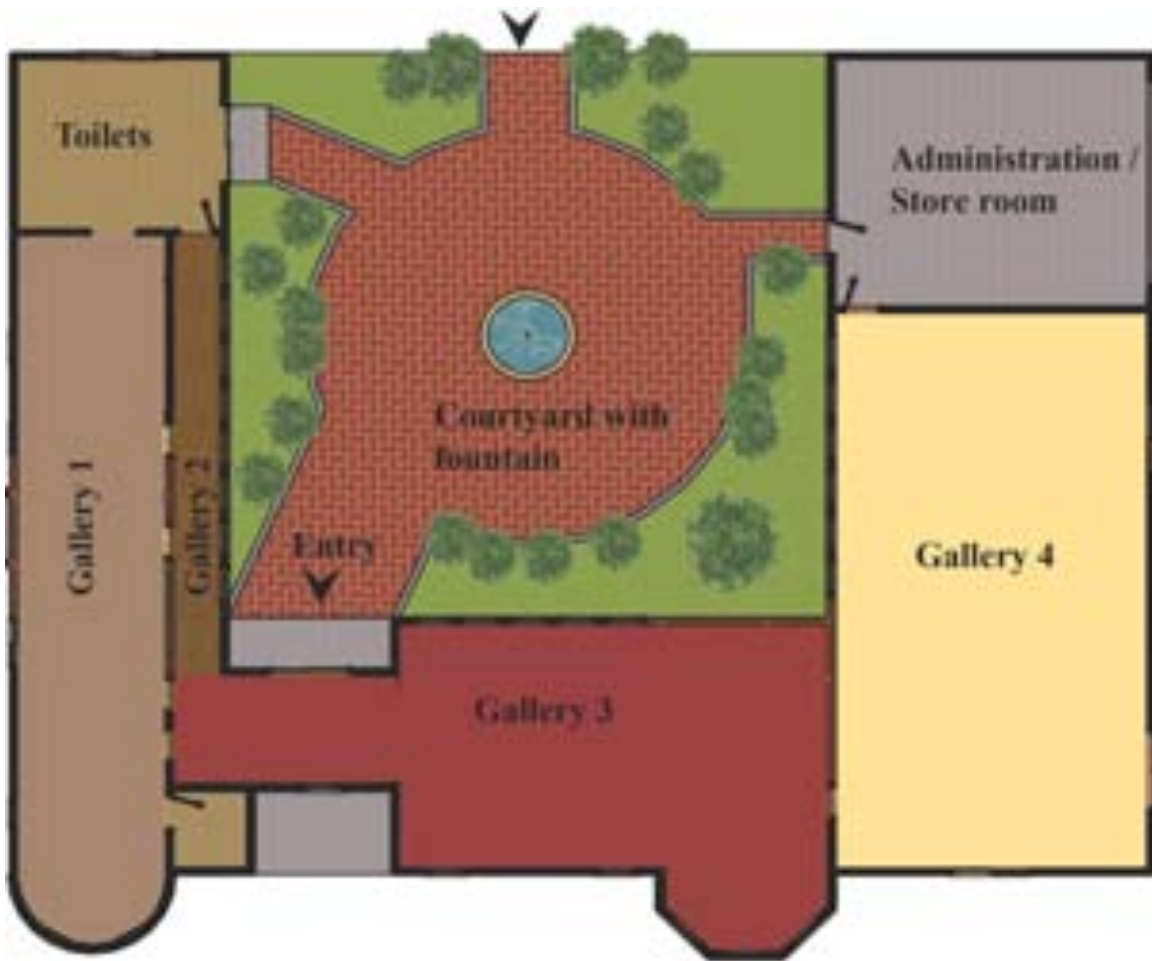


Figure 71: Concept for planning within in the museum block



Figure 72: Concept for view of museum block



Figure 73: Concept for view of museum block



Figure 74: Concept view of courtyard building in exposed brick work for the museum



Development of Theme based Museum.	Identification and demarcation of site boundaries
	Design Development of Museum
	Construction of museum building
	Operation and maintenance of the building
Interpretative displays of the history of the region and associated personalities, role of Bareilly.	Consultancy works for the research and content development of 1857 narratives and local stories
	Interpretative methods and installation designs

5.15 Financial Estimates for the works to be undertaken

Item	Qty	Rate	Amount
RCC frame structure	7200	9150	6,58,80,000/-
Water Proofing works	3000	225	6,75,000/-
Finishing works	7200	1750	1,26,00,000/-
Landscaping courtyard and surrounding	6500	915	59,47,500/-
Interior Furniture, installations and museum furniture	7200	1800 /-	1,29,60,000/-
			9,80,62,000/-
Electrical works		12.5%	1,17,67,440/-
Plumbing		7.5%	73,54,650/-
HVAC		2.5%	24,51,550/-
Signages		2.0%	19,61,240/-
Contingencies		3%	3,88,800/-
			12,19,85,680/-

	Conservation and upgradation works	100,10,00,000/-
	Site development and upgradation	15,00,00,000/-
	Provision of New museum	12,19,85,680/-

5.16 List of Stakeholders

- Bareilly Municipal Corporation
- UP Tourism
- Education Department

5.17 Project Time-line

- The Development of theme-based museum including the preparation of interpretative material – 2-3 years
- Site upgradation and visitor amenities – 2-3 years

5.17.1.1 Project 3: Colonial Heritage Trail in Bareilly

Background:

Since the city was a cantonment under British rule, there are a range of colonial heritage in the city located largely in the civil lines area. The cantonment area of the city displays some historically and architecturally significant buildings which are unprotected. These structures are a reminder of the colonial past in the state of Uttar Pradesh. There are many states such as Maharashtra, Punjab etc. where these building are revered as architectural marvels and are being reused as a museum based on themes.

The city approximately has 26 Churches which are both architecturally and historically significant such as St. Stephan Church, Free Will Baptist Church, Christ Methodist Church etc.

St. Stephan's Church: It was built in Victorian architectural era in 1861, it is the most magnificent Church among the 26 churches in Bareilly. A red brick church with exquisite interiors ornamented with ebony wood panels and marble pulpit. It also houses 20-foot-high pipe organ imported from England.

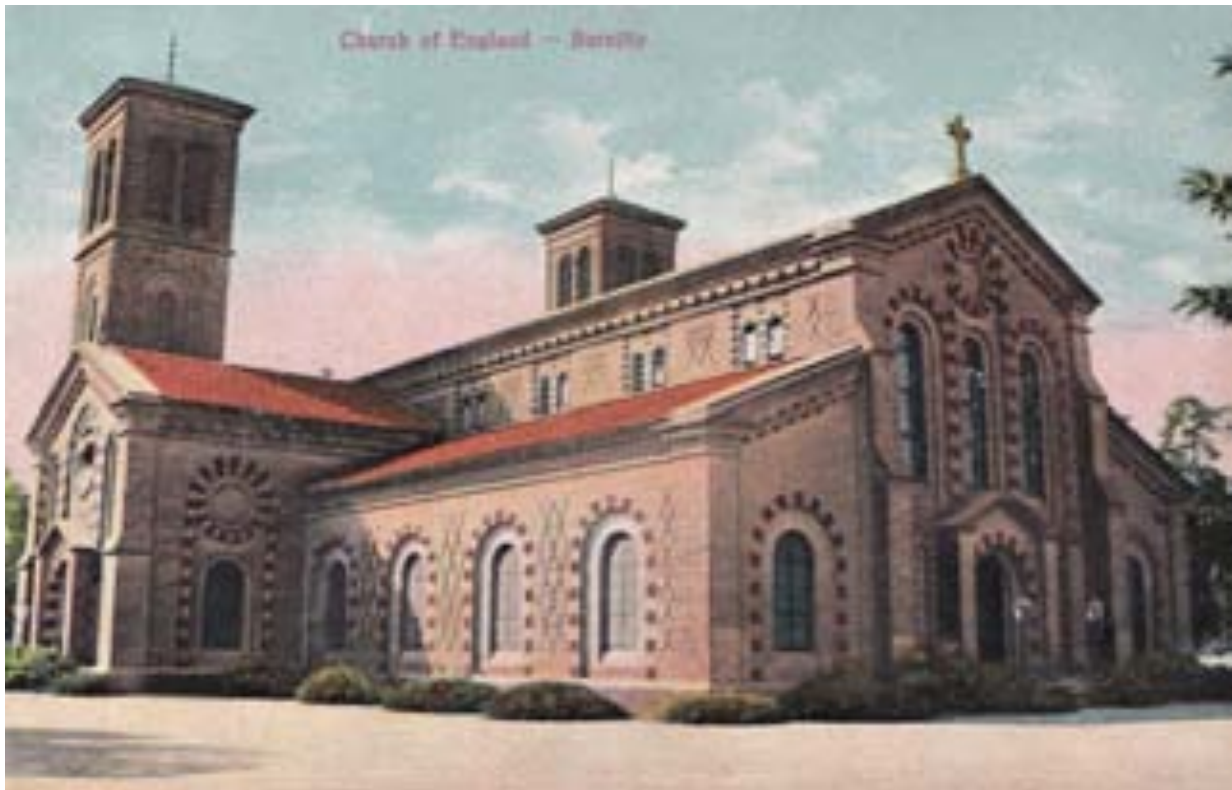


Figure 5-75 St. Stephan's Church – Civil Lines, Bareilly

Free Will Baptist Church: One of the oldest churches of Bareilly on Helen Road. It was constructed by East India Company in 1838 under the supervision of British Bishop Daniel Wilson. During the first war of Independence, the church was set on fire as the armed soldiers hid inside claiming lives of 40 British subjects, majority of soldiers. The church was repaired in 1858. The graves of the pastor, his wife and minor son who lost their lives in this incident are in the backyard.



Figure 5-76 The Freewill Baptist Church – Civil Lines, Bareilly



Figure 5-77 Bishop Cantonment Church - Bareilly



Figure 5-78 Christ Methodist Church – Civil Lines, Bareilly

Bareilly College: It was constructed on the land donated by the Nawab of Rampur, Hamid Ali Khan and inaugurated by Sir James La Tpuce in 1906, the then governor of Northwestern Provinces. It was started as a school in 1837 and attained the status of college in 1850. It was later affiliated to Calcutta University in 1862 and to Allahabad University in 1888. At present, it is part of Rohilkhand University.



Figure 5-79 Bareilly College – Gangapur, Bareilly



Figure 5-80 Dharamshala - Bareilly



Figure 5-81 North Indian Theological Seminary - Bareilly

The city also has Dharmshalas which were constructed in the city during colonial period using elements of colonial architecture. The Indian Theological Seminary was one of the important sites associated with the First war of Independence in the city.

Cemetery: It is burial place where Britishers were buried during 1857 who were killed in the war of Independence. The burial place of Christians or cemetery can be developed for tourism.

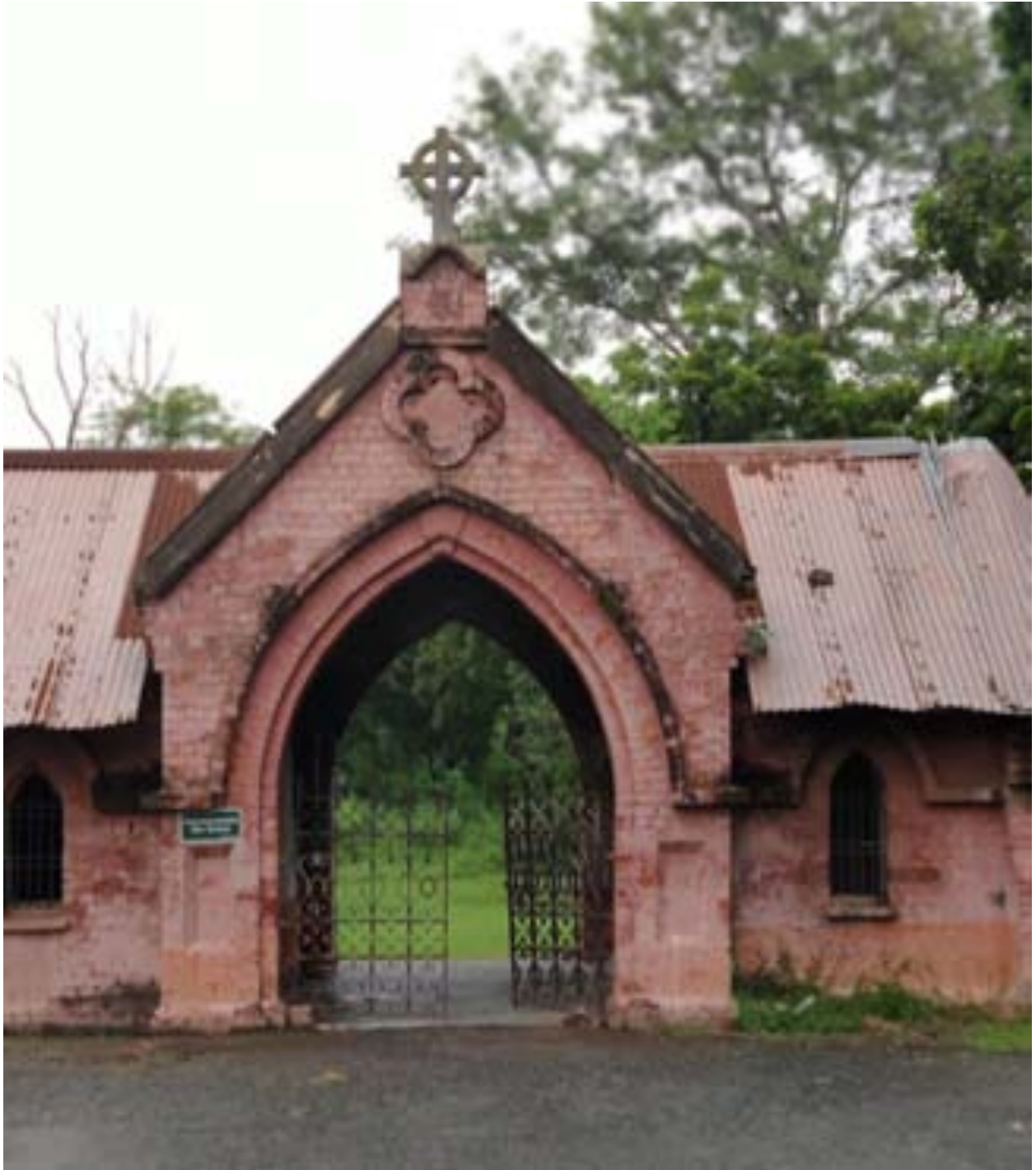


Figure 5-82 British Cemetery - Bareilly



Figure 5-83 British Cemetery - Bareilly

Problem statement:

Colonial heritage is one of the typologies of Heritage of the city which is unprotected as well as unrecognized. These sites are associated with the first war of independence in the city in one way or another. Very few people are aware that Bareilly was the last town which fell after a year of struggle under the leadership of an 82-year-old man Khan Bahadur Khan. It is required to revere these sites as

part of the heritage of Bareilly by creating awareness through outreach activities, by improving interpretative signages and other infrastructural amenities.

Value addition of this project to the tentative vision:

Creating awareness about the Cultural Heritage of the City as well as the district and increasing the Tourism Potential.

Objectives:

4. Create awareness for the Regional Colonial Heritage of the city.
5. Conservation, Protection, Maintenance and Management of the Cultural Heritage of the city.
6. Develop Bareilly as Tourist destination and Enhance the Tourism potential of the city.

Key activities, tasks, interventions involved:

7. Developing the Colonial Trail by identification and mapping of Colonial Heritage of Bareilly.
8. Streetscape Development in identified stretches.
9. Connectivity enhancement to the identified sites located in close proximity.
10. Provision of Visitor Amenities.
11. Providing wayfinding and interpretative signages in and around the sites.
12. Application based audio tours

Site Delineation:

Identification & Mapping of the historically & architecturally significant Colonial Sites - St. Stephan Church, Free Will Baptist Church, Bishop Cantonment Church, Christ Methodist Church, Bareilly College, Dharmshalas, Northern Indian Theological Seminary, Cemetery etc. for creation of Trail. The buildings added can be expanded/ added in a phased manner based on the archival research.

Strategies for Precinct Level Development

- Mapping of Colonial Sites
- Conservation & Protection of these heritage sites by the State / Municipal Corporation.
- Heritage Conservation & Development guidelines for the identified sites
- Creation of Visitor amenities & Interpretatory signages

Project Impact & Benefits

The project aims to create awareness about the colonial sites in the area and ensuring harmonious development around these sites. It also aims to attract more visitors and tourists at these sites through placemaking activities and sensitive design & planning.

SWOT Analysis

Strength:

4. Representative of an important period in the growth and evolution of Bareilly City.
5. These buildings have historic, architectural, artistic, social and educational values.
6. An important repository of regional colonial heritage of the city.

Weakness:

4. Lack of awareness of Colonial Heritage of the city as tourist attractions.
5. Lack of guidelines for the conservation, protection and maintenance of these sites including guidelines for addition and alteration.
6. Lack of Signages both descriptive and informative.

Opportunity:

5. Conservation of the Buildings in poor condition.
6. Site development and landscape improvement.
7. Adaptive Reuse of abandoned colonial buildings for creating Interpretative Museum on the theme of First War of Independence.
8. Site sensitive interventions would help to enhance the significance of the site.

Threat:

4. Unrecognized as heritage by the City Administration as well as the Masterplan.
5. Disappearance of important sites dues to Urban Development activities for example road widening activities lead to demolition of Heritage.
6. Any insensitive interventions in and around the site would be detrimental to the significance of the site.

Nodal Agency:

Bareilly Municipal Corporation	Site Development
UP Tourism	Signages and Visitor Amenities
Bareilly Development Authority	Integration & Mapping of Cultural Heritage of Bareilly in the masterplan with demarcation of the buffer of 100 and 200m of the ASI protected sites

Stakeholders listing:

6. Department of Tourism, Government of Uttar Pradesh.
7. Archaeological Survey of India.
8. Bareilly District Administration.
9. Bareilly Development Authority.
10. State Department of Archaeology.

5.17.2 ECONOMY PROJECTS

5.17.2.1 Handicraft sector in Bareilly

5.17.2.1.1 Background

Zari-Zardozi is a type of hand embroidery and usually done on apparels for embellishment with the help of needle, threads and metal wires. This handicraft work has been taken as patrimonial art in the artisan family. There are two types of artisans / workers in this craft, mainly those who are doing this work as their main occupation and engaged in that throughout the year and temporary workers whose main occupation is some other but to earn sufficient or to use their holidays, they work for some hours or few days in a month or year. The nature of employment may affect the labor productivity. The income of these artisans used to be Rs 400-500/day earlier, which has now been reduced to Rs 250-200/day due to various reasons.



Figure 5-84: Photograph of the Zari Artisan in Bareilly

At present, limited number of functional clusters for handicraft in Bareilly (one for each Zari and Cane Bamboo) and two cluster are in the development stage. There are approximately 1.7 lakh Zari Zardozi artisans (1.4 lakh directly involved and 30,000 are involved in other allied activities) in Bareilly. The Zari artisans / workers are mostly working at household level in various parts of the city. The working conditions of these artisans are not up to the mark and requires upliftment for enhanced productivity.

5.17.2.1.2 Problem statement

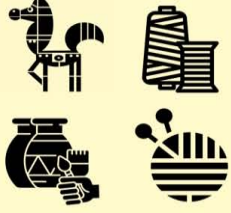
Following challenges were identified:

- Lack of work sheds in the area, left the workers with no option but to work from their homes in unhygienic conditions without proper facilities for sanitation, lighting and appropriate place for their tools, equipment, raw and processed material as well as finished products etc.
- Given the decentralized and rural & household nature of artisan production, initiatives to provide solar power facilities to alleviate hardship resulting from lack of electricity is essential.
- As women constitute a large portion of handicraft sector employment, the issue of toilet facilities for women in the cluster/ working shed needs to be taken up.
- Need of propound merging of work environment improvement for artisans under various schemes of other departments such as Departments of Ministry of Rural Development, etc.

A growing need has been felt to facilitate and empower artisans to chart out a sustainable path for growth, income generation and better work environment so that they are able to have a right working atmosphere and better ambience to enable them to carry out their work efficiently.

5.17.2.1.3 Vision – Handicraft

Vision Statement - Handicraft

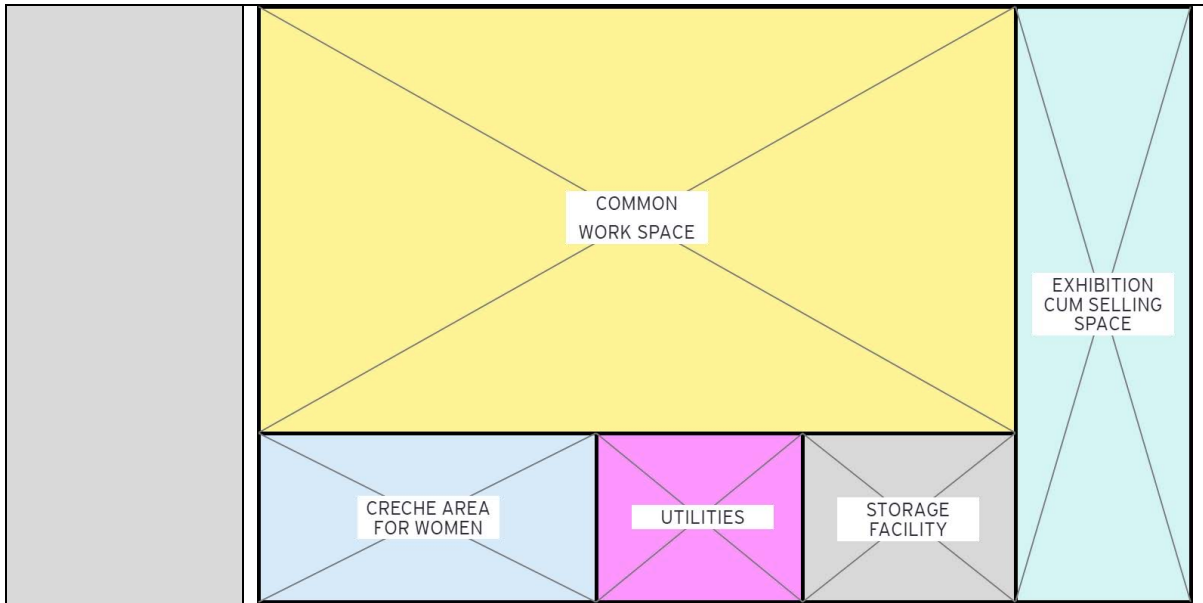


- Upliftment of working conditions of the handicraft artisans
- Support in technological know-how
- Revival and upliftment of the existing artisan communities in Bareilly

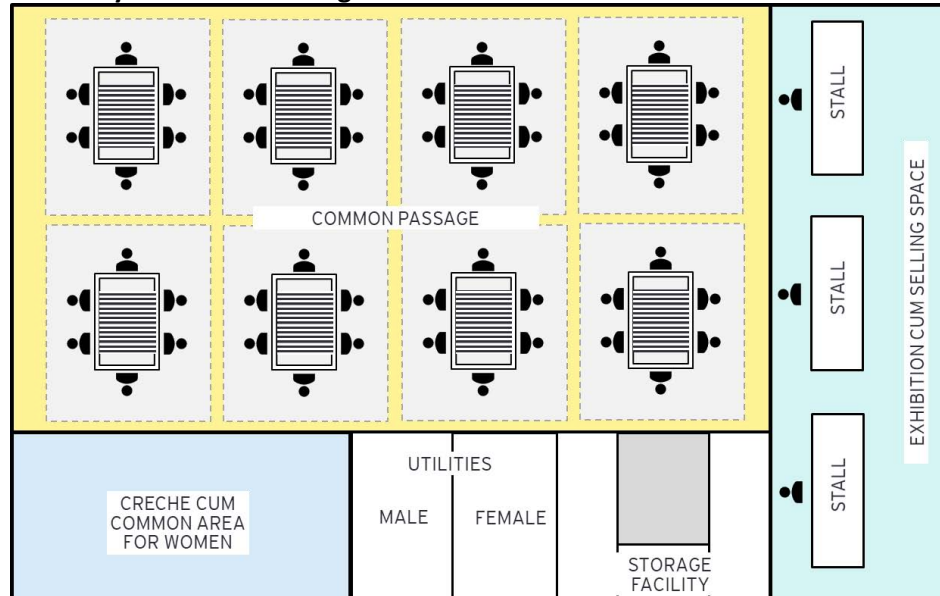
5.17.2.1.4 Key intervention - Development of working shed for Zari Handicraft artisans

The Work shed project for Handicraft Artisans is an attempt to facilitate the development of artisans and their families by way of providing them financial assistance for construction of work sheds.

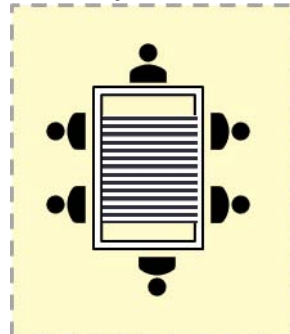
Proposal	Development of working shed for Zari Handicraft artisans
Probable Locations	Approximately 6-8 locations namely: <ul style="list-style-type: none"> (i) Near Paraskhera, (ii) Near Invertis Chauraha, (iii) Biharipur, (iv) Kasgaran, (v) Puranashahar, (vi) Katrachand Khan, (vii) Chhipitola, (viii) Partapur
Components proposed	<ul style="list-style-type: none"> Working shed (temporary / permanent) with specific number of “Adda (wooden frame)” and circulation space (maximum 40 – 50 artisans per shed) Paved area to place “Adda or Wooden frame” Exhibition / selling area – to showcase the final product Toilet and rest room Creche area for children
Concept	Schematic zoning of the working shed



Broad layout of the working shed area



Broad layout of a frame and sitting arrangements of artisans



Broad assumptions-based area calculation:

Items	Remarks	Units
-------	---------	-------

	Number of artisans per frame	5	number
	Number of frames proposed	8	number
	Total number of artisans per shed	40	number
	Area of 1 unit frame (5 x 10 ft.)	50	Sq. Ft.
	Area for 1 frame with circulation (15 x 20 ft.)	300	Sq. Ft.
	Area requirement for frames	2,400	Sq. Ft.
	Area calculation	Area (ft)	Units
	Working shed area	2,400	Sq. Ft.
	Utility space (2 toilets)	60	Sq. Ft.
	CRECHE (10-12 Sq. ft per child)	140	Sq. Ft.
	Storage area	100	Sq. Ft.
	Exhibition cum selling area (3 stalls)	450	Sq. Ft.
	Total area requirement	3,150	Sq. Ft.
	<ul style="list-style-type: none"> • The working shed area requirement will vary from 3000-4000 Sq. ft. for minimum sitting capacity of 40-50 artisans at a stretch. • Based on the interviews and qualitative survey during assessment studies, it was observed that approximately an artisan takes approximately 10 days for completion of a product. • A single working shed can facilitate approximately 2500 workers in a year. • 8-10 such working shed can provide a healthy and efficient working environment to approximately 10% of the total workers in Bareilly. 		
Model	<ul style="list-style-type: none"> • Land: To be identified and provided by Bareilly Development Authority based upon availability in a particular location • Phasing: Pilot shed for 6-8 location and then based on success of these, implementation on multiple locations (phase wise) for multiple locations with availability of artisans. • O&M - District Handicraft Department in coherence with District Industries Centre (DIC). The operation responsibility may be leased out on turn basis to the Self-Help Groups (SHGs) / community associations / similar bodies. • Financial assistance - The financial assistance will be in the form of 80% assistance from Office of DC (H) subject to the ceiling and 20% will be 		

	contributed by the implementing agency under the “COMPERHENSIVE HANDICRAFTS CLUSTER DEVELOPMENT SCHEME (CHCDS)”.
Stakeholders listing (both Government and Private)	<ul style="list-style-type: none"> • District Handicraft Department • Bareilly development authority • District Industries Centre (DIC) • Existing CFCs • Artisans (registered and non-registered) • Skill development institutions • NGOs working for artisans

The small handicrafts units and poor artisans are inadequate to undertake the initiatives on their own due to non-availability of proper infrastructure and common facilities such as trade and marketing facilities, Computer-Aided Design center, Communication network, etc. In order to overcome the above challenges, it is necessary to form a Public-Private Partnership (PPP) model to create clusters with infrastructure facilities required to meet the industry needs.

The Ministry of Textiles has launched the [Comprehensive Handicrafts Cluster Development Scheme \(CHCDS\)](#) under the guidance of Mega cluster scheme. This scheme was initiated with the object of setting up of new cluster to assist artisans and entrepreneurs in setting up world-class units with modern infrastructure, latest technology, and adequate training.

The objectives of the Comprehensive Handicrafts Cluster Development Scheme (CHCDS) are:

- (i) To provide requisite support in terms of infrastructure, technology, product diversification, design development, marketing and promotion, social security and other components that are necessary for the sustainability of craftsmen/artisans engaged in the Handicrafts sector,
- (ii) To create additional livelihood opportunities to the people through specific intervention in the industry and to increase the income of the craftsmen/artisans engaged in this sector.

Incentives and guidelines under the scheme are as follow:

Technology Upgradation:

- Upgradation/modernization of machinery, processing and other methods of manufacturing.
- To support entrepreneurs in setting up world-class units with the latest technology by obtaining one-time assistance in the ratio of 30:70 from the government.

Margin Money for Working Capital:

Under Margin Money for Working Capital, the artisans will be provided with margin money of Rs.4000 per artisan to complete one cycle of production-cum-marketing within three months.

Export & Marketing:

Provision of Trade Center, Exhibition Hall, Customs office and Clearing facility, etc. will be provided.

Product Diversification:

Diversifying and upgrading the product range to meet the needs of contemporary market requirements through quality improvement, design development, etc.

Raw Material Bank:

The proposal for the establishment of a raw material bank for the continuous availability of quality and the graded raw material is performed.

Common Facility Centre (CFC):

Common Facility Centre (CFC) comprises of the state of art machines in which the individual is unable to afford for this facility. Under this incentive, the individual can access the high-tech facility at a reasonable price as the beneficiary has to afford only for operating expenses.

Resource Centre:

The proposal for the establishment of resource center as one point information center which acts as an arsenal in the hands of artisans is performed.

Market Development:

To improve the share of the cluster products in domestic as well as export markets through exhibitions, brand promotion, buyer-seller meets, retail space, warehouses, e-commerce etc.

Forward & Backward Linkages:

Provision of need-based infrastructure in the form of common facility centers, handicrafts parks, testing labs, design studios, TQM, Research and Development, etc. will be provided.

Skill Development:

To improve productivity and quality, the **training will be provided on technical skills** apart from coverage under soft skills and other entrepreneurship development programs.

Social Security:

The artisans in the cluster will be covered under social security schemes, which includes small savings, group insurance, financial institutions, etc.

Physical Infrastructure:

Proposal for land development, water treatment and supply, roads connectivity, power supply, telecommunication network, housing-cum-work sheds and other common buildings, sewerage, solid waste management and effluent treatment plant will be performed.

Funding Pattern:

The assistance to the extent of 3% of the total project cost would be provided for establishing baseline data against which performance can be compared at the end of the project.

The funds would be released in three instalments as given below:

- **1st Instalment:** The 1st Instalment of 40% as an advance on Special Purpose Vehicle (SPV) acquiring land.
- **2nd Instalment:** The 2nd Instalment of another 40% on the utilisation of the first instalment will be provided on submitting utilisation certificate.
- **3rd Instalment:** The 3rd Instalment of balance amount will be reimbursed on completion of the project.

S. N.	Activity	Government Contribution	Financial Limit of Government (in Rs)	Share of SPV
1.	Soft skills such as Product Development workshop, skill development training, etc.	First Year – 100% Second Year – 90% Third year – 75% Final year – 75%	Rs.10 crores per project	Nil 10% 25% 25%
2.	Common production-related Infrastructure, which is artisan centric such as Work shed, CFC , etc	100%	Rs.20 crores per project	Land and recurring expenditure
3.	Other commercial infrastructure such as Gas pipeline, etc	75%	Rs.20 crores per project	25% and recurring expenditure
4.	Facility Centres for entrepreneurs / Exporters	30%	Rs.20 crores per entrepreneur	70%





Project Management Cost


The Project Management Cost will be reimbursed to the Cluster Management & Technical Agency (CMTA) for managing the activities of the cluster. CMTA will be selected for the clusters through a competitive bidding process.

Eligible Agencies

The Special Purpose Vehicle (SPV) will act as the implementing agency with the participation of stakeholders, leading manufacturers, suppliers, buyers and Self-Help Groups (SHGs). The SPV would be selected through the open competitive bidding process. However, the selection of SPV would depend upon the profile of the project, activities related implementation. Therefore, the selection of eligible SPV will be performed after the approval of the Project Approval Monitoring Committee (PAMC).

Our proposal is adhering to the existing scheme as per following matrix:

S.N.	Scheme component	Adherence in the proposal
1	Export & Marketing: Provision of Trade Centre, Exhibition Hall, Customs office and Clearing facility, etc. will be provided.	
2	Common Facility Centre (CFC): Common Facility Centre (CFC) comprises of the state of art machines in which the individual is unable to afford for this facility. Under this incentive, the individual can access the high-tech facility at a reasonable price as the beneficiary has to afford only for operating expenses.	
3	Market Development: To improve the share of the cluster products in domestic as well as export markets through exhibitions, brand promotion, buyer-seller meets, retail space, warehouses, e-commerce etc.	
4	Physical Infrastructure: Proposal for land development, water treatment and supply, roads connectivity, power supply, telecommunication network, housing-cum-work sheds and other common buildings, sewerage, solid waste management and effluent treatment plant will be performed.	

S.N.	Scheme component	Adherence in the proposal
5	Common production-related Infrastructure, which is artisan centric such as Work shed, CFC, etc. (Government Contribution upto Rs.20 crores per project)	

Additionally, the proposal may be converged with the incentives provided in the **ODOP scheme 2018**.

Under the ODOP project, artisans, production units and associations which are related to the selected products are promoted by lending loan, establishing Common Facility Centres, providing marketing assistance so these products can be popularized, and employment can be generated at district level.



ODOP Schemes:			
I	II	III	IV
Common Facility Centre Scheme	Marketing Development Assistance Scheme	Finance Assistance Scheme (Margin Money Scheme)	Skill Development Scheme

(a) Marketing Development Assistance (MDA) scheme

The MDA scheme is aimed at achieving fair pricing for the artisans, weavers, entrepreneurs and exporters of the ODOP products through better marketing. This scheme provides financial assistance to participants of national and international fairs/exhibitions for display and sale of their products selected under ODOP project.

(b) Margin Money / Financial Assistance Scheme

Under the Financial Assistance Scheme, all nationalized banks, regional rural banks and other scheduled banks will finance the scheme and the Department of Micro, Small and Medium Enterprises and Department of Export Promotion shall release the ODOP margin money subsidy against all applications submitted under the scheme. For:

- Enterprises with project cost upto INR 25 lakhs, 25% of the entire project cost subject to a maximum of INR 6.25 lakhs, whichever is less, shall be payable under the margin money scheme.
- Enterprises with project cost between INR 25 lakhs to 50 lakhs, INR 6.25 lakhs or 20% of the project cost whichever is more, shall be payable under the margin money scheme.
- Enterprises with project cost between INR 50 lakhs to 150 lakhs, INR 10 lakhs or 10% of the project cost, whichever is more, shall be payable under the margin money scheme.
- Enterprises with project costs exceeding INR 150 lakhs, 10% of the entire amount subject to maximum of INR 20 lakhs, whichever is less, shall be payable under the margin money scheme. The margin money shall be merged with the subsidy after the enterprise has successfully completed 2 years of operation.

(c) Skill Development scheme under ODOP

The ODOP Skill Development and Tool Kit Distribution Scheme is aimed at fulfilling current and future requirements of skilled work force in the entire value chain of ODOP products, across the state of Uttar Pradesh. Additionally, the scheme intends to equip the artisans / workers through distribution of relevant advanced tool kits.

Incentives – (i) Artisan who are already skilled shall be imparted required training through RPL (Recognition of Prior Learning) and shall be certified through relevant Sector Skill Councils (SSCs), (ii) Unskilled artisans shall be provided a 10-day training. Post completion of training, these artisans shall also be certified under RPL, (iii) All the trainees shall receive an honorarium of Rs. 200 per day during the training period, (iv) An advanced toolkit, free of cost, shall be provided by the department to the trained artisans

(d) Common Facility Centre (CFC) scheme

Objective of the CFC scheme is to establish a CFC which would encompass following activities: Testing Lab, **Design Development and Training Centre**, Technical research and Development Centre, **Product exhibition cum Selling Centre**, Raw Material Bank / Common Resource Centre, **Common Production / Processing Centre**, **Common Logistics Centre**, Information, Communication and Broadcasting Centre, Packaging, Labelling and Barcoding facilities, Other such facilities related to missing link of value chain.

Proposed working shed for artisan may get advantages from the CFC scheme under ODOP for the activities such as - Design Development and Training Centre, Product exhibition cum Selling Centre, Common Production / Processing Centre, Common Logistics Centre

Incentives – (i) For CFCs of project cost up to Rs. 15 crores, the State government shall provide a financial assistance up to 90% of the project cost, while a minimum of 10% would be borne by the SPV, (ii) Financial assistance would also be given for CFCs of project cost more than Rs 15 crores, provided the State's share would be calculated on Rs 15 crores only, (iii) The State government can also sanction capital for the projects of similar nature, previously approved by the Central & the State governments, which are incomplete due to the lack of funds. For supporting such incomplete projects, proper justification would be provided.

A few relevant case studies for the handicraft upliftment projects are detailed put in **next section**.

5.17.2.1.5 Case study - Handicraft sector

5.17.2.1.5.1 Case study – Banarasi Silk Saree work

Case study of Banaras Saree Industries

Varanasi or Banaras is also been the famous for its production of silks & brocades with gold & silver thread work.

Banarasi silk has, for generations attracted the fashion world & has been a great source of inspiration to the costume experts all over the globe.



Challenges

- With the growing popularity of power looms in the mid – 1980, the Banarasi Silk Industry started facing a stiff competition from Power loom Industries. Due to the reduced timing of weaving through power looms, the weavers were choosing the power looms over the traditional handlooms, although the quality produced was not that of being produced by a Handlooms.
- The low sales of the Banarasi Silk Sarees due to lack of orders because of availability of cheaper, brighter machine made sarees which are made from synthetic & polyester yarns.
- Most of the local artisans involved in the industry did not have the knowledge of Marketing strategy, fashion trends & organizational skills due to which they are being exploited by the middle men. As a result of which, they were not able to expand their market which threatens their existence in the market.
- Electricity crises & storage space crises was the fourth challenge being faced by the industry due to which they were unable to produce their daily minimum products.



Measures taken to revive the industry

- In 2009, Geographical Indication (GI) rights were issued to ‘Banaras Brocades & Sarees’ covering silk brocades, textile goods, silk sarees, dress materials & silk embroideries.
- A 200 crore Trade Facilitation Centre was set up by the Government in 2017 in order to provide a platform to the local artisans for showcasing their products produced by handlooms as well as a skill development centre was also set up in order to encourage the next generation to carry forth the legacy.
- Presently, many Top designers are closely working with the weaving clusters to showcase the handlooms products in their fashion shows. Apart from this, they are also trying to modernize the Banarasi Silk sarees by introducing new patterns & weaves.





5.17.2.1.5.2 *Case study - Tripura Cane & Bamboo craft*

Case study of Tripura cane & bamboo craft Handicraft Industries

- Tripura is primarily an agrarian economy wherein Agriculture and allied activities are predominant but apart from being an agrarian economy, The State's economy is also being supplemented by art & craft industries involving manufacture and production of handicrafts and handlooms products.
- The main forms of art & craft industries in the State are Intricately designed handloom and silk, cane & bamboo works along with other various products being produced which are Interior decorative products, furniture, various gift items, etc. which are also being exported to many countries.
- However, the art & craft industry of the state still remained one of the unorganized sector of the state's industrial sector till 2007 & was not able to expand at greater level with the course of time due to various challenges being faced by local artisans.

Challenges

- Due to the **transportation bottlenecks & remote location of the state**, the artisans do not have direct access or connectivity to the markets. As a result of which they were not able to sell their products at national & international levels.
- The second challenge faced by the industry was that even if they got order from the whole seller, they were not able to deliver that orders on time , due to transport bottlenecks.
- Another challenge faced by these industries was the **absence of Market Infrastructures in the state.**



Measures taken to revive the industry

- In order to boost the development of the Handicraft & Handloom industry, **government has launched Tripura Bamboo Mission in PPP mode in 2007.** The main objective of this mission is to increase the turnover of the industry through introduction of new design products & organised marketing of the products.
- Apart from Tripura Bamboo Mission, State Government has also **launched other following programmes** to give a boost to the industry which are as follows:
 - **Skill Up – gradation training programme**
 - **Assistance of working capital**
 - **Setting up of a Bamboo park in Agartala**
 - **Organization of Industries & Commerce Fair annually**
- Apart from the above government initiative, **youths have started handicraft workshops & a Community Facility Centres (CFC) at their own level** which have helped the industry to grow.



5.17.2.1.5.3 Case study – Bhadohi Carpet craft

Case study of Bhadohi Carpet Industries

- Bhadohi Carpet is famous for its various knots & counts design which are being exported to many countries. The specialization of this belt lies in Wollen, Tufted, Tibetan Carpet & Durries. The production of carpet industry in Bhadohi district is being spreaded over 1000 square kilometres & the livelihood of many villagers is being dependent on the Bhadohi carpet industry employing approx. 22 lakh rural artisans.
- Carpet weaving by hand has got rich history as long as back in 13th Century. As per evidence available, this craft had started in 1300 BC at individual level in India. However, carpet weaving in Bhadohi was started by a small number of carpet wavers on a very small scale after 1875 A.D war of freedom which was proliferated to industrial level in late 19th century through the establishments of some industries/ factories in the small village of Khamaria by some industrialists such as Mr. A. Tellery & his son Mr. Otto Tellery and a group of three European industrialists (Messrs, Oklay and Tallor).

Challenges

- **Due to the 2007 – 2009 recession, there was decrease in the exports of Carpets** which had forced many carpet weavers & business community to shut down their factories. This was the first challenge being faced by the carpet industry after having establishment of around 400 years.
- **Due to the low wages, many skilled artisans have been shifted to NREGA scheme** which is providing a standard wages. This resulted in the shortage of skilled weavers in the industry.
- The third challenge faced by the industry was that **weavers involved in the industry did not have the knowledge of Marketing strategy & organizational skills** due to which they were being not able to expand their market which threatens their existence in the market & were highly dependent on Middleman.
- The **infrastructure facilities required to support the Hand woven carpet industry like electricity, water supply was poor** which was reducing the working hours of the weavers, thus, impacting their productivity.

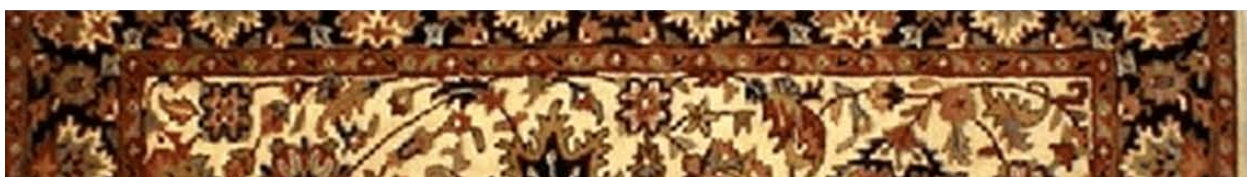


Map source – www.Mapsofindia.com



Measures taken to revive the industry

- In September 2010, the Bhadohi Carpet Industry has granted the Geographical Identification (GI) number, so that, the exploitation of weavers by middle – man can be minimized.
- Carpet Export Promotion Council India (CPEC), a non – profit organization was set up by Ministry of Textiles in 1982 in order to promote all types of Handmade carpets overseas through fairs being organized by them.
- In addition to this, to address the above stated challenge, the UP Government has set up the different government agencies. For example – Uttar Pradesh Small Industries & Export Cooperation (UPSIEC) in order to provide land & industrial shed; Small Industries Development Bank of India (SIDBI) in order to provide financial assistance, etc.



5.17.2.1.5.4 Case study – Raw material bank

In order to improve access to raw materials, the component under AHVY- ‘Setting up of Raw Material Banks’ was envisaged under a PPP mechanism to ensure availability of good quality, certified and graded raw material to artisans/ entrepreneurs at a reasonable rate. So far, 16 Raw Material Banks have been set up under this component, however, there have been several challenges faced due to which the coverage has not been as wide as envisaged. To address these, a new approach is needed, with the inclusion of the Raw Material Banks component under the Infrastructure Scheme with the provision of greater financial assistance. At the same time smaller Raw Material Banks can be set up within the cluster, improving the access for artisans and attaining greater coverage. The details of the component for setting up of ‘Raw material banks’ under the AHVY scheme and its performance are as follows:

Components repositioned from the AHVY scheme are:

- Establishment of craft-based resource center
- Setting Up of E-Kiosks
- Setting up common facility center
- Setting up raw material bank
- Setting up of facility centers by exporters/ entrepreneurs

The Aim of this component is to make easy availability of quality, certified and graded raw material to artisan/ entrepreneur at a reasonable rate.

Status of implementation of component for setting up Raw Material Banks

A total of 16 Raw Material banks have been sanctioned so far, in the following States and Craft Categories:

Table 5-18: Number of raw materials under AHVY

State	No. of Raw Material Banks Sanctioned	Craft
Karnataka	1	Wood & Lacquer craft
J&K	1	Khatumband
Andhra Pradesh	1	Red Sander Wood
Nagaland	1	Cane & Bamboo, Wood & Artistic Textiles
Mizoram	1	Cane & Bamboo, Wood
Uttar Pradesh	1	Jute craft
Tamil Nadu	1	Metal Craft
Kerala	1	Wood Craft
Assam	3	Bell Metal, Cane
Madhya Pradesh	1	Leather Craft
Manipur	2	Artistic Textiles
Orissa	2	Brass & Bell Metal, Applique

Source - Working group report on Handicrafts for the 12th Five Year Plan

https://niti.gov.in/planningcommission.gov.in/docs/aboutus/committee/wrkgrp12/wg_handi1101.pdf



5.17.2.2 Health and education sector

5.17.2.2.1 Background

Bareilly is among one of the leading cities of Uttar Pradesh in terms of medical facilities, the city serves as a gateway to the patients of the nearby areas as well as Kumaun, Rohilkhand, and West Nepal region.

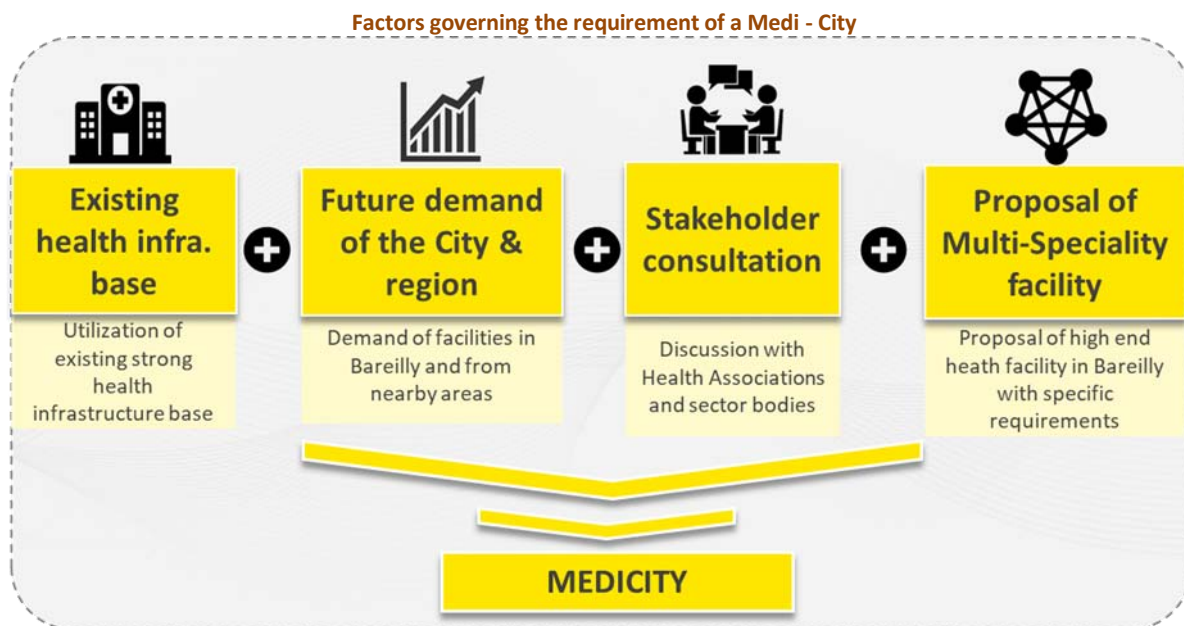
As per data provided by CMO Bareilly, at present, there are various government & private healthcare facilities as below:

- Under Urban area, there are District Women Hospital, District Hospital, 300 Bed Hospital, PHC’s & Others including District Mental Hospital, TB Hospital, Mother and Childcare (MCH) Wing, Railway Hospital, Military and Army Hospital, Employee’s State Insurance Corporation Hospital.
- Under Rural areas, there are government facilities PHC’s, Health Sub – Centers & CHC’s.
- Private Health Centre also available in this region due to high demand of health services. Most of private health center situated in the urban regions Bareilly as a head quarter has high density of medical facilities. Clinical Health Centers and Nursing Homes are well dense in Bareilly city.

There is a total of 104 PHC’s. Currently, a total 255 Private Hospitals with 10957 number of beds are present. As per URDPFI norms up to 2031, there will be requirements of additional 5 multi-speciality hospitals, 14 speciality hospitals.

5.17.2.2.2 Problem statement

Bareilly being one of the leading cities of Uttar Pradesh in terms of medical facilities, has a strong health infrastructure base which can be utilised in an improved planned manner by in the form of a Medi – city encompassing a Multi – speciality Hospital, academic medical institutions, and allied activities in an integrated matter. With the increase in population of the Bareilly, there will be a requirement / demand of more health facilities in order to cater the health requirement of Bareilly as well as nearby regions.



Additionally, discussions with Health Associations and health sector bodies, it has come up that there is a need of an organized healthcare facility in the Bareilly. As at present, the existing healthcare facilities are present in various parts of the city irrespective of parking, ROW and proper access due to



which the local people as well as people from nearby areas face difficulties in accessing these facilities. The existing health facilities needs to be upgraded in terms of technologies, resources, and facility, as well due to deterioration of these facilities over the time. To address these, a proposal is already being put up by the government for the high-end health facility in the district in the master plan which may be incorporated with the provision of Medi – City in Bareilly.

5.17.2.2.3 Vision – Health & education center

Vision Statement - Health & Education

- Comprehensive planned development of an integrated health facility
- Amalgamation of conformative land uses and activities at a single space
- Live & work space concept

5.17.2.2.4 Key intervention - Development of “Medicity” designated area with multiple health business and activities

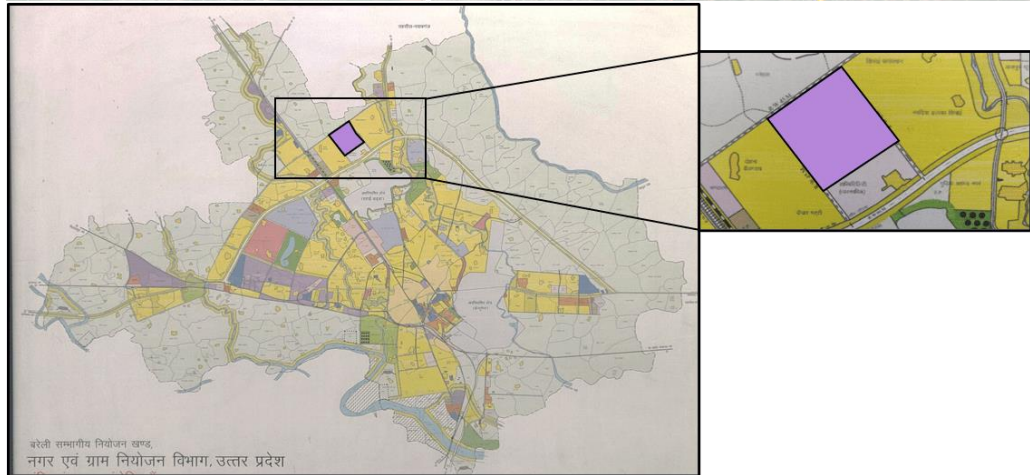
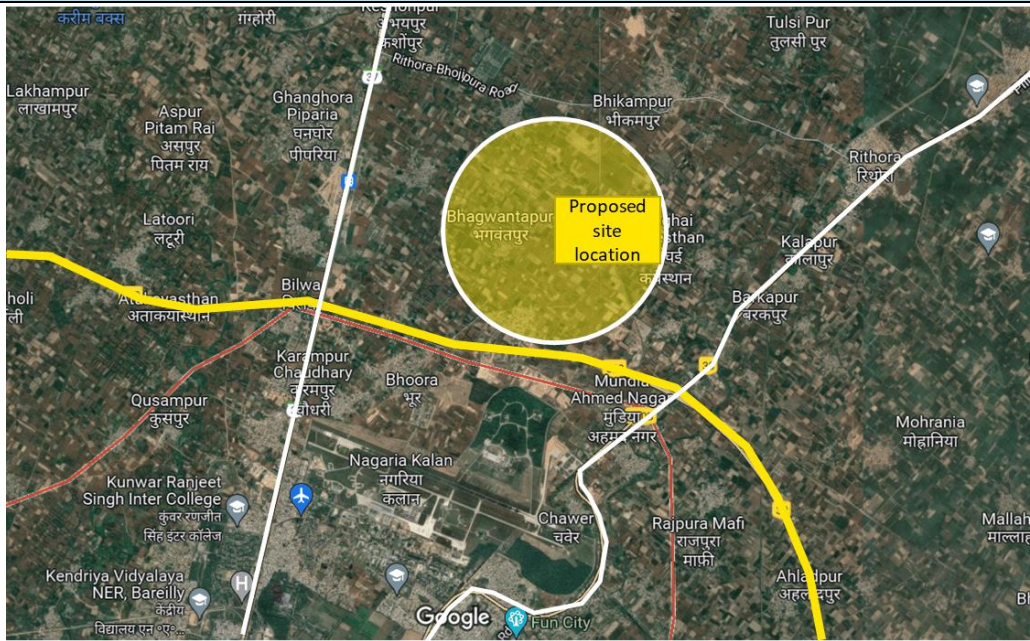
The concept of modern medical cities or special health care facilities has been in place for some time, but has gained renewed interest, particularly in rapidly developing economies. The concept of a Medi City or health city defines a cluster of hospitals, a holistic healthcare center; a large hospital sprawled across acres of land. Medi-city can be a new township or a zone of a city, where medical facilities are provided releasing pressure from the main city or to promote medical tourism attracting new sources of economic growth.

Medi-cities have been designed to be comprehensive in scope and incorporate advanced technologies and medical practices. The scale and scope of medical cities usually demands an advanced level of care, both in technology and approaches to create an attractive destination for care to ensure the high level of patient volumes required to support such a large setup.

Planning strategy - Medi cities have the ability to support services that are highly specialized, services that often struggle to see sufficient volume to support a business case. Medi-cities need to have a strong higher and medical educational system and complete and stable infrastructure to become an ideal location for specialization. Due to the interplay of economies of scale, the Medi-city creates an interesting and opportunistic intersection with medical tourism as mentioned earlier. For those organizations providing medical tourism services, this integration extends beyond the immediate community into the global healthcare delivery system.

Proposal	Development of “Medicity” – designated area with multiple health business and activities
Location	Proposed Medi City land in Master plan 2021 may be utilised for this proposal

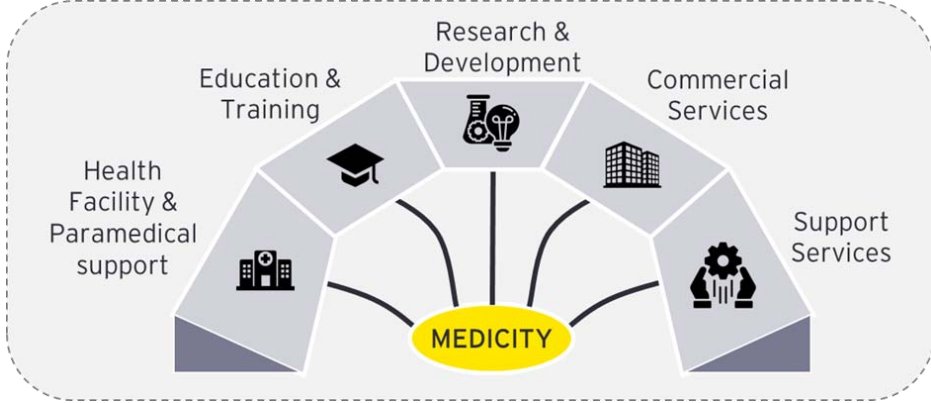
Proposal Development of “Medicity” – designated area with multiple health business and activities



Proposed site for Medi City as per master Plan

Components proposed

Medi City aims to functionally integrate within one campus and one management of the facilities related to medical care, teaching, research, and development. It also offers to explore the possibility of integrating knowledge of traditional and alternative medicine with modern medicine, through means of scientific research.









- Medical College & Hospital

Proposal	Development of “Medicity” – designated area with multiple health business and activities				
	<ul style="list-style-type: none"> • Super speciality Centre of Excellence • Paramedical education hub • Medical Research Centre • Traditional Medical Practices • Manufacturing and technology • Convention centre and hotel accommodation 				
Concept	Broad identified components under Medi city for Bareilly:				
	Category	Components	Guideline	Assumption	Sq.Ft.
	Residential	Hostels for staff & students	Residential Hostel Area = 0.40 Ha for 1500 persons		43,056
	Commercial	Convenience stores	Local shopping including service centre for 15,000 pop, area 4,600 sqm		49,514
		Hotels / accommodation facilities	-	13455 sq.ft.area for 50 rooms	13,455
	Recreational	Recreational buildings	10000 sq.mt for 1 lakh	5000	53,820
		Meditation centre	5000 sq.mt for 1 lakh		53,820
		Garden / parks	Neighbourhood Park for 15000 pop, area 1.00 ha		1,07,639
	Health	Paramedical cum Nursing college	For 10 lakh population - Institute Plot area = 2000 sqm (subject to Nursing Council of India/ Ministry of Health Norms)		21,528
		Multi-Speciality Hospital (including Area for hospital and Area for residential accommodation)	200 beds (Initially the provision may be for 100 beds 1 Lakh) (Total Area = 9.00 Ha a) Area for hospital = 6.00 Ha b) Area for residential accommodation = 3.00 Ha)		9,68,752
		Centre for medical research and development work	-	1500 sq. ft	1,500
		Pharmacy	min 15 sq.mt.	more than 150 sq. mt.	1,615
		Rehabilitation centre	-	1 hectare	1,07,639
		Wellness Centres	-	1 hectare	1,07,639
		Total			

Proposal	Development of “Medicity” – designated area with multiple health business and activities	
	in Hectares	14
	in Acres	35
	<p>Broad assumptions for concept: Minimum area requirement: 30 – 50 acres based upon case studies. However, the area is a limiting factor pertaining to the components proposed. It will also impact the overall project cost.</p>	
Stakeholders listing (both Government and Private)	<ul style="list-style-type: none"> Bareilly development authority Indian Medical Association Chief Medical Officer Office Bareilly UP nurses and midwife Council Bareilly 	
Benefits	<ul style="list-style-type: none"> Development of a comprehensive facility integrating health facilities, institutions, research labs etc. 	

Our proposal is adhering to the existing URDPFI guideline as per following matrix:

S.N.	URDPFI Prerequisites for Medi City	Adherence in the proposal													
1	Volume and demand: Medi-cities will always require a significant amount of patient volume from the local population in addition to the human resources and community infrastructure that a city setting provides.	The city serves as a gateway to the patients of the nearby areas as well as Kumaun, Rohilkhand, and West Nepal region.													
2	Special infrastructure: Medical care and associated infrastructure is to be provided in a planned manner. Medi-cities require highly specialized provisions for medical waste handling especially hazardous bio-waste, accessibility, special care systems, area reservations and infrastructure.	At present, Bareilly city has 7 general hospital, 9 multi – speciality hospital, 14 intermediate hospitals and 13 veterinary Hospital for pet and animals whereas as per URDPFI norms up to 2031, there will be requirements of additional 5 multi – speciality hospitals, 14 specialty hospitals.													
3	Accessibility: Well-connected site is required for Medi-city development to provide ease in accessibility. Parking provisions in a Medi city is need based demand, focusing on institutional set-ups. Accessibility into and around the Medi city should be highly focused on the accessibility of differently abled / physically challenged / disabled.	<p>The site is strategic and well located, which good connectivity to nearby urban centres as following:</p> <table border="1"> <thead> <tr> <th>State / UT</th> <th>Urban centres</th> </tr> </thead> <tbody> <tr> <td rowspan="5">Uttar Pradesh</td> <td>Pilibhit – 1 hr</td> </tr> <tr> <td>Shahjahanpur – 1.5 hrs</td> </tr> <tr> <td>Budayun – 1.5 hrs</td> </tr> <tr> <td>Moradabad – 2 hrs</td> </tr> <tr> <td>Aligarh – 4 hrs</td> </tr> <tr> <td>Lucknow – 5 hrs</td> </tr> <tr> <td rowspan="2">Uttarakhand</td> <td>Haldwani – 2 hrs</td> </tr> <tr> <td>Nainital – 3 hrs</td> </tr> </tbody> </table>	State / UT	Urban centres	Uttar Pradesh	Pilibhit – 1 hr	Shahjahanpur – 1.5 hrs	Budayun – 1.5 hrs	Moradabad – 2 hrs	Aligarh – 4 hrs	Lucknow – 5 hrs	Uttarakhand	Haldwani – 2 hrs	Nainital – 3 hrs	
State / UT	Urban centres														
Uttar Pradesh	Pilibhit – 1 hr														
	Shahjahanpur – 1.5 hrs														
	Budayun – 1.5 hrs														
	Moradabad – 2 hrs														
	Aligarh – 4 hrs														
Lucknow – 5 hrs															
Uttarakhand	Haldwani – 2 hrs														
	Nainital – 3 hrs														

S.N.	URDPFI Prerequisites for Medi City	Adherence in the proposal	
		Delhi	Delhi – 5 hrs
4	Attractiveness: Medical cities need to offer several attractive attributes to attract foreign or 'non-local' patients to overcome the competition, having special care, area reservation, and infrastructure facilities. Hotels, beautiful landscaping, and country club, in order to attract and promote medical tourism, should complement the Medi city.	The proposed Medi City comprises of recreational, commercial infrastructure as well to complement the development.	
5	Multiple functions: Medi-cities developing in isolation do not reach the maturity stage. Medical cities should also incorporate substantial non-medical services to support the staff, patients, and visitors. Clear approach and effective forecasting may not be easy in such a case.	Medi city shall comprise of medical and non-medical services to support the existing working population of the city in the capacity of the staff, patients from city and nearby areas and visitors.	
6	Poor management of health care waste potentially exposes health care workers, waste handlers, patients and the community at large to infection, toxic effects and injuries, and risks polluting the environment. It is essential that all medical waste materials generated from medical city are segregated at the point of generation, appropriately treated, and disposed of safely. Bio- Medical Waste (Management and Handling) Rules, 2011 MoEF or latest such guidelines, must be followed in Medi-cities (to be monitored by CPCB/SPCB as per their regulations).	Bio-Medical Waste (Management and Handling) Rules, 2011 MoEF or latest such guidelines, shall be followed in Medi-city.	

Aspects of Planning:

One of the most critical issues in Medi-city can be handling of hazardous medical waste, essential facilities for the maintenance of Medi-city have been prescribed by WHO, these are:

- Effective waste reduction and waste segregation, ensuring that only appropriate wastes are incinerated.
- Siting incinerators away from populated areas or areas where food is grown, thus minimizing exposures and thereby risks.
- A properly engineered design, ensuring that combustion conditions are appropriate, e.g., sufficient residence time and temperatures to minimize products of incomplete combustion.
- Construction following detailed dimensional plans, thus avoiding flaws that can lead to incomplete destruction of waste, higher emissions, and premature failure of the incinerator.

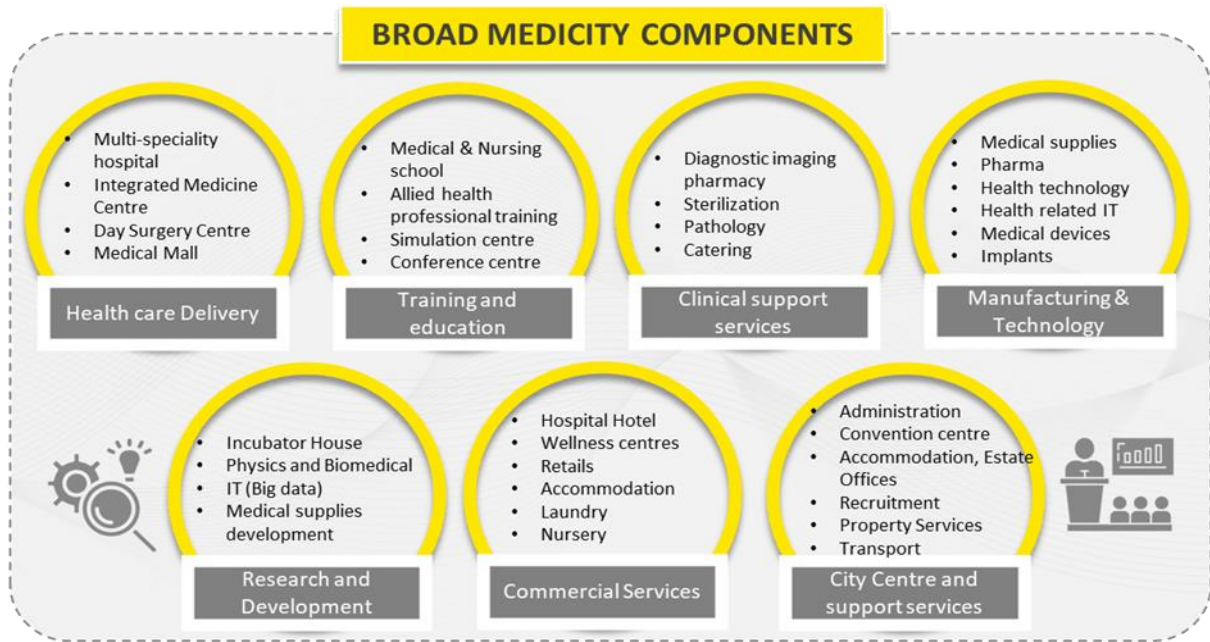
Apart from the waste handling of the Medi-city, the key aspects of planning are:

- **Access:** One of the primary success factors for proper healthcare design is convenient and easy access to and from the facility. This includes simple way finding, safe and weather-protected vehicular drop-offs, and convenient access to parking. Such access is often at odds

with urban planning trends, which attempt to minimize the impact of vehicular transportation in favor of more pedestrian-oriented buildings.

- **Transportation facilities** like bus routes, metro rail, bicycling, and heliports are substantial non- medical services to support the staff, patients and visitors.
- **Parking Demands:** Access to public transportation and housing within walking distance creates opportunities for staff and certain patients and visitors to avoid vehicular commuting altogether. This reduces the polluting impact of automobiles and can minimize the size of required parking facilities. It should be noted, however, that even with these reductions, hospitals would still generally create a much higher parking demand per square foot than a typical urban office building.
- **Natural Environment:** Environment Studies have concluded that a natural environment is essential to create a genuine state-of-the-art healing environment and reducing stress. Key sustainable design elements such as roof-gardens, courtyard spaces can minimize the buildings heat-island effect, reduces demand on storm water systems, improves surrounding air quality, and reduces noise pollution.
- **Institutional:** Integration of Medi-city with research and development centres for bio-medical research, medical colleges, training centres are necessary. Also, financial support units should be created such as banks, ATM facilities, information centres, money transfers and exchange and insurance company outlets.
- **Commercial Space:** A mixed use community is desirable in this area because of its proximity to the emerging Medical City. Therefore, Planned Development shall be encouraged, including a mixture of residential use types, hotel, retail/commercial, office and airport support, commerce, conservation, and recreational uses.

Medical city should encompass the concept of self-sustainable cities/townships, in a way as an eco-city is designed with consideration of environmental impact. They should have clean disposal of waste, waste-to-energy, renewable energy, sustainable transportation and drainage system, zero-energy building, green roof, etc.



A few relevant case studies for the Medi-city concept projects are detailed put in **next section**.

5.17.2.2.5 Case study - “Medicity”

5.17.2.2.5.1 Health hubs / Medico cities in West Bengal, Andhra Pradesh on PPP mode:

Case study	Bardhaman Health City, Bardhaman, West Bengal	Health hubs in 13 districts of Andhra Pradesh
Components	<ul style="list-style-type: none"> • 500 bedded hospitals • Centres of excellence (super-speciality treatment) • Pharmacy • Telehealth institute • Rehabilitation centre • Medical college, nursing college, advanced dental college • Centre for medical research and development work • Mother & child health centre • Hostels for staff & students • Convenience stores, recreational facilities & other civic amenities 	<ul style="list-style-type: none"> • Medical colleges • Nursing colleges • Teaching hospitals • Super-specialty/multi-specialty hospitals <p>[Objective to scale up tertiary healthcare facilities]</p>
Project Cost	INR 1000 Cr (expected)	Min. 100 Cr
Site area	60 acres	30-50 acres (5 acres free of cost)
Type of PPP	DBFOT	Not yet decided
SPV	Bengal Faith Health Care Pvt Limited (Bardhaman Development Authority & Bengal CES Infratech Private Ltd in association with FAITH Healthcare Private Ltd	--
Status	No updates since 2013 (Phase 1 commenced; 100 bedded Bengal Faith Hospital – functional)	Announcement in May 2021

5.17.2.2.5.2 Fortis Medicity, Gurgaon and Lucknow

At an investment of over Rs 1,200 crore, the project in Gurgaon will have two campuses. The hospital campus will have a high-end, multi-super-speciality hospital and research centre. The college campus will boast of a medical college for undergraduate and postgraduate education, a dental college, nursing college and facility for primary and applied research in medicine along with a 600-800-bed hospital.

Figure: Fortis Medi-City



Spread over 52 acres, the project in Lucknow will see an investment between Rs 500 and Rs 800 crore. It will have an 800-bed hospital, a medical college offering undergraduate, postgraduate and post-doctoral courses, a dental college, nursing college, college of physical medicine and rehabilitation, college of rehabilitative medicine and a college of allied medical science.

5.17.2.2.5.3 Apollo Health City, Hyderabad

At an investment of Rs 1,000 crore, this 33-acre project in Hyderabad will not impart undergraduate education. However, it has a postgraduate college for doctors, a nursing school and college, college of physiotherapy, institute of hospital administration, institute of medical informatics, institute for emergency medicine and an institute for paramedics. The hospital has 500 beds and almost 200 more will be added over the next six months.



Figure: Apollo Health City, Hyderabad

5.17.2.2.5.4 Aster Medcity Kochi

Aster Medcity is a quaternary care healthcare centre in the city of Kochi and one of the largest in South India. It is the flagship hospital of Aster DM Healthcare, a healthcare conglomerate founded by Azad Moopen. This was the third venture of the group in Kerala, after the Malabar Institute of Medical Sciences (MIMS) and DM Wayanad Institute of Medical Sciences (DMWIMS).



Figure: Aster Medi-City, Kochi

Aster Medcity is a ₹ 5.5 billion waterfront facility located along Kutti Sahib Road in Cheranallur, a suburb of Kochi and its 40-acre campus is situated on the banks of the backwaters of Kochi. The hospital complex, designed by HKS Architects, has a built-up space measuring a total of 62,710 square metres. The hospital is 7 km from the city center and is accessible through the National Highway 66. Edappally railway station is 7.3 km away and the nearest airport is Kochi International Airport, 24.7 km from the hospital by road. The distance to the National Highway 544 is 7.9 km at Edappally bypass junction where Lulu Mall, the largest shopping mall in the country, is located.

The hospital has an in-patient capacity of 670 beds and has 24-hour emergency and accident trauma care facilities. The hospital has been functioning since September 2014 after a soft launch, but the official dedication ceremony was on 6 May 2015, when the institution was inaugurated by the former president of India, A. P. J. Abdul Kalam. The hospital plans to add 500 more beds in its second phase of expansion.

Facilities

The hospital has a general clinical division which includes Internal medicine, General surgery, Clinical imaging, Anaesthesia and critical care, Emergency, Pulmonology, otorhinolaryngology, Dermatology,

Craniomaxillofacial surgery, Dental sciences, Infectious diseases and infection control, Psychiatry and Nuclear medicine. It also has eight centres of excellence such as Cardiac Sciences, Orthopaedics, Neurosciences, Nephrology and Urology, Oncology, Gastroenterology and Hepatology, Women's Health and Child and Adolescent Health, each manned by independent medical teams composed of specialists, nursing and ancillary staff and technicians.



Figure 5-85: Lay out plan of Aster Medi-City

Aster Medicity has facility for Minimal Access Robotic Surgery (MARS) using da Vinci Surgical System and is reported to be the first hospital in Kerala to provide the service. The system employs tele surgical master-slave robotic system and the surgery is carried out using robotic arms instead of human hands. The Diagnostics division is equipped with 3 Tesla Digital MRI Scanner, 256 slice CT Scanner, Digital Mammography system, The Dexa, Digital X-Ray, Time of Flight PET CT, Cath Lab Allura Clarity system, Flat panel Bi-plane Hybrid Cath Lab, Colour Doppler Systems electronic 4D Imaging and Ultrasound Machines with multi modal image fusion. The clinical laboratory which conducts Biochemistry, Hematology, Bacteriology, Mycology, BS Level 3 Tuberculosis, Serology, Immunology, Histopathology, Neuropathology, Renal pathology, Pulmonary pathology, Hematopathology, Bone Pathology and Onco pathology tests, is integrated with the hospital information system. The hospital has an ambulance service, a pharmacy and a rehabilitation centre. A blood bank is also operational round the clock in the hospital.

Other services

Aster Medicity is linked to Aster Foundation, an independent charitable non-governmental organization, engaged in providing free medical assistance to financially compromised patients. The hospital serves as a referral healthcare centre for patients from the Persian Gulf region. The group has opened help desks in Qatar and Oman for this purpose.



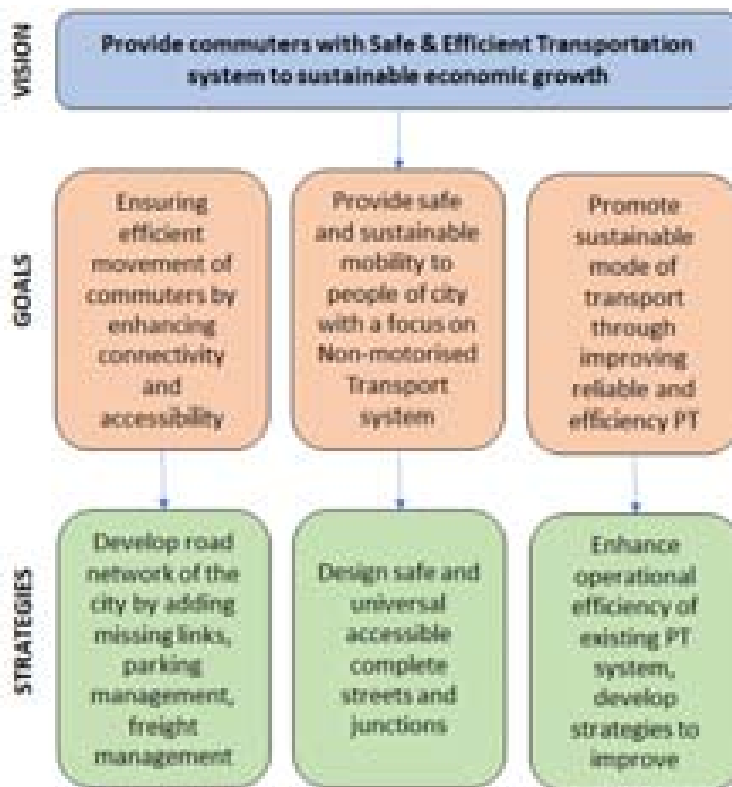
5.17.3 TRANSPORTATION PROJECTS

5.17.3.1 Vision Planning in Transport Sector

Bareilly (UP) envisions the comprehensive features to the user for provision of Intelligent Transport System, Sustainability and Safety features. The commuters/road users will have urban amenities as per norms/guidelines for transport facilities, road markings, street lighting, public transport, parking, street infrastructure, charging stations, bollards, vehicle registration system, junction improvement plan, comprehensive mobility plan, smart components on roads, Integrated Command and Control Centre, non-motorized vehicles stand, pods and signages. Towards a sustainable urban environment, the local development authority is committed to creating better transport infrastructure and connectivity to the city needs.

5.17.3.2 Approach

A system that informs every commuter with accurate information, when they need it, where they need it, and how they need it and contributes to a safe, seamless, secure and equitable transportation network.



Most of the cities in UP are being facing public transport problems for many years, affecting the mobility of people and economic growth of the area. These problems are due to inadequate transport infrastructure and its sub-optimal use, lack of integration between land use and transport planning, lack of mass transport system and little improvement in city bus services, which encourage a shift to personalized modes.

5.17.3.3 Critical Gaps and Issues in Transport Sector

The urban transport & infrastructure related departments face several challenges, such as lack of infrastructure in the department, paucity of funds, etc. Similarly, issues related to lack of adequate data, clarity in rules and procedures, implementation difficulties are being reported by the departments in terms of meeting the programme objectives.

To improve urban mobility certain measures would be taken, such as convert all buses into clean fuel and hybrid technology driven so as to reduce the pollution level. GPS and GPRS systems would be made mandatory in all buses. New routes will also be required to be formulated for better transportation in urban areas along with traffic regulation/management in the existing routes. Separate city bus track/multi-level parking/inter-state bus terminals (ISBT) and intrastate bus terminals will be developed by PWD/Development Authority and Nagar Nigam.

All encroachments on roads will be removed by coordinating with all departments concerned. Few other interventions required to provide sustainable urban transport services in the cities are:

- Providing radio taxis in every tourist city.
- Providing separate city bus track in all big cities and double decker buses on these routes.
- Urban transport services will be made disability and gender friendly.
- GPS/GPRS system, Wi-Fi facility, air conditioning and bio-toilets will soon be installed in public buses.
- Development of multi-level parking is going on in all big cities. ISBT and intrastate bus terminals are in the process of modernisation.
- Disaster management system proposed to be developed at all public transport facilities such as bus stations, petrol pumps and parking places.
- Conversion of all buses into clean fuel, ethanol and hybrid technology driven to reduce pollution levels.
- Solar panel enabled buses in big cities.
- Under the Smart City Mission, special transport system will be developed for promoting intracity tourism in heritage cities.
- State Road Transport Corporation (UPSRTC) will be developing special transport package to connect heritage cities.

5.17.3.4 Vision and Project Components

5.17.3.4.1 Parking Policy and Construction of Off-street parking lots in major market and commercial areas to accommodate the parking demand.

The main objective of the Parking policy to provide relief of congestion, to reduce parking demand through increased parking cost, to promote public transport for comprehensive mobility.

The vision of this project focuses on setting up an off-street parking infrastructure in high traffic congestion zones for the citizens of Bareilly city. The intention is to create modern, space and cost-efficient multi-level parking structures which will ease the load on the roads. They shall have the following features:

- Automated operation
- Puzzle-type electromechanical parking
- Space efficient design
- Reasonable pricing

Multi-level puzzle Type Parking best practices

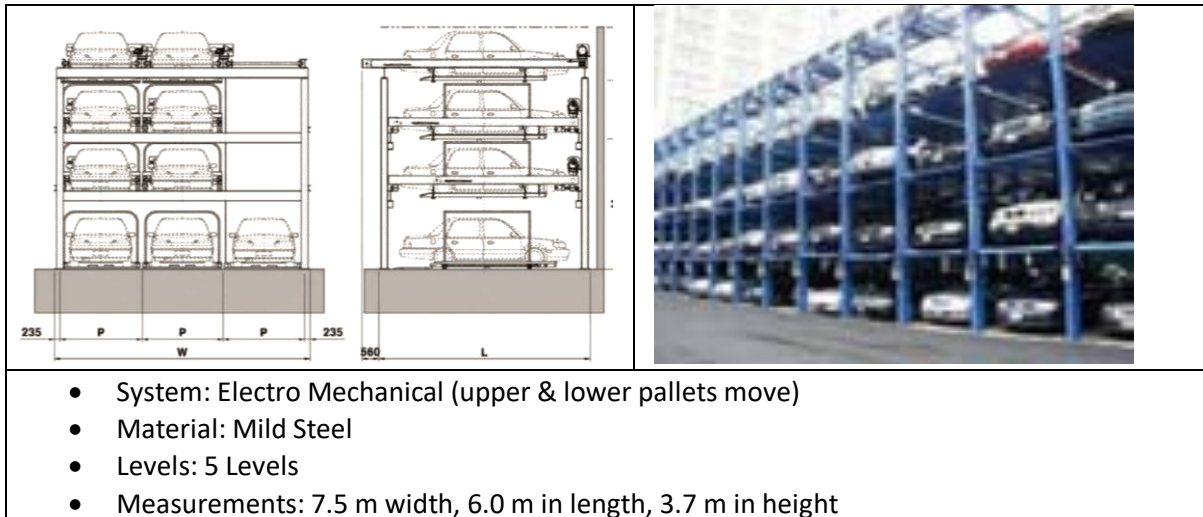


Figure 5-86: Multi-level Puzzle type parking at Kolkata

Multi-level Puzzle type parking system can be said to be a combination of pallet and stack systems with minimum space utilisation adjacent to the road.

- Revolutionary Parking System with maximum floor space utilization
- Vertical Allocation of the parking rooms
- System virtually eliminates Driveways, Ramps, Passenger Lifts etc.
- Three side open cantilever lift for direct drive in and drive out operations
- Possible to integrate various safety and security features
- Can be installed in independent steel tower as well as built in type in RCC structures
- Model Type: 9 Bay x 4 levels
- Area of unit: 2.5 x 5.6 m
- Height: 1.6 m
- Load Bearing: 1600 kg

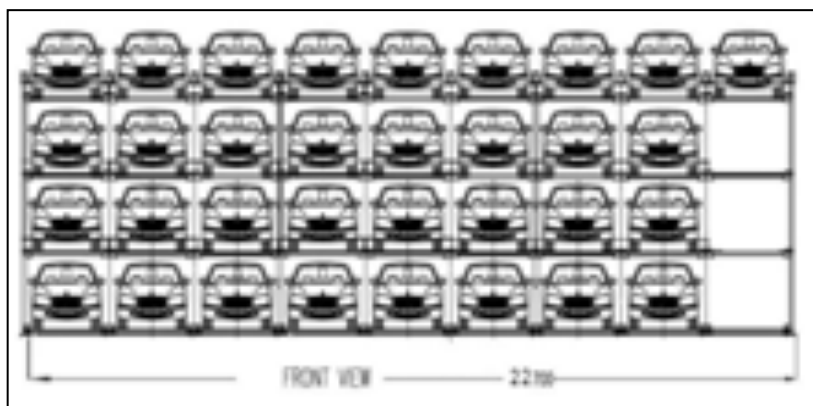


Figure 5-87: Typical Layout of Multi-level Puzzle Car parking

5.17.3.4.2 Strengthening of Radial Road connecting to Ganga Expressway

The proposed Ganga Expressway is a greenfield project with 6 lane connecting western part of the UP with eastern part with total length of 594 km. The expressway will cover Meerut, Bulandshahr, Hapur, Amroha, Sambhal, Badaun, Shahjahanpur, Hardoi, Unnao, Rae Bareilly, Pratapgarh and Prayagraj. The Ganga Expressway will link-up with other expressways in the state like Lucknow-Agar Expressway, Purvanchal Expressway, Ballia Link Expressway.

NH 530B is a secondary route, connects Bareilly-Budaun-Kasganj-Hathras and Mathura in the state of UP with total length of 265 km. The distance between Bareilly to Badaun is only 50.0 km and as per news article the connectivity to Bareilly city is 36 km (Approx.) from proposed Ganga expressway.

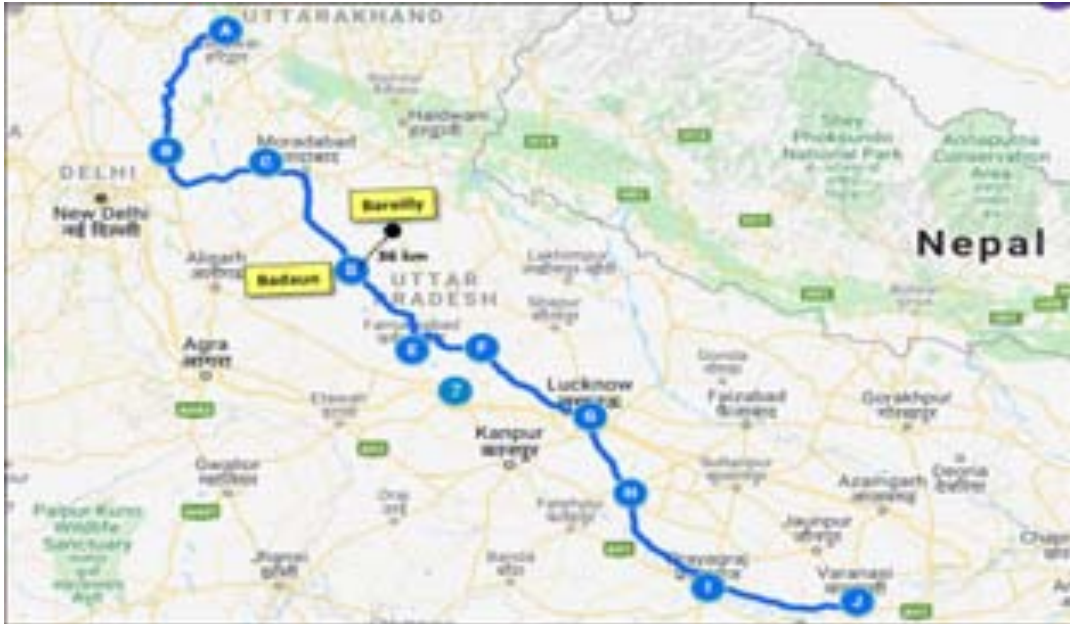


Figure 5-88 Ganga Expressway alignment



Figure 5-89 Strengthening of the NH 530B road

The vision of this project is to connect the Bareilly city with proposed Ganga Expressway with seamless and uninterrupted traffic movement by strengthening the NH 350B. At present, this section is 4 lane divided carriageway and at some locations construction of flyover is taking place. An alternative connection from Parsakhera Industrial area of Bareilly can be linked to the NH 350B.

5.17.3.4.3 Interactive Bus Stop at various locations

To bridge the gap and provide a society in line with the vision of inclusive growth, the purpose of the project is to drive economic growth and improve the quality of life of people by enabling local area development. The objective is to promote cities to provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment. Redevelopment of Integrated bus stops/shed with the facility of charging point, CC Camera, Location Map, Lighting, seating facilities and Information display Boards.

The system must meet the essential criteria such as Availability, Accessibility, Assessment and Acceptance. Amongst the citizens, special provisions must be made for the physically challenged,

senior persons, women and children who may have difficulties in accessing the services of minibus easily. The range of interventions to meet the stakeholders' expectations could cover:

- Redesigning bus stops on-line display of bus arrivals
- Creation of suitable infrastructure at bus stops and bus stations for on-line real-time
- passenger information system.
- Special seat allocation for old-aged, physically challenged, women and children
- Prioritizing their entry into and Exit from the buses before others.
- Status of the bus schedules.
- Electronic ticket sale machine and fare collection system.
- Real time communication with the drivers for incident / emergency management.
- Schedule and bus stop announcements through visual displays and voice based.
- Dustbins, bollards and other facilities



Figure 5-90 Concept design of the MINIBUS stand

5.17.3.4.4 Development of Cycle Track Corridor

Objective of this project is to provide safe and congestion free movement of vehicles and provide preference to NMT vehicle for future sustainability. Non-motorized mode is sustainable, environment friendly mode of transport and docking stations are proposed at close proximity to bus stand/railway station/major junction.

In 2015, a cycle track from satellite flyover was constructed with length of 850 m with 2.75 m wide from Satellite junction to isanyion-ki-puliya. Features of Non-motorized transport system is

- To provide convenience to the passengers by way of last mile connection with availability of eco-friendly transportation services at convenient locations in the city.
- To ensure affordable, flexible, safe & secure and comfortable mobility services for short trips as may be utilized by the citizens and general public.
- To provide an active transport choice that offers physical health benefits to the residents of Bareilly.

- Thermoplastic paint with reflective glass beads with 2.5 mm thickness, 150 mm white solid lane marking and cycle symbol with different colour on the path.
- Lane width: 1.5 to 2.5 m
- Signages of cycle tracks along the route.



Figure 5-91 Cycle track in Lucknow

5.17.3.4.5 Establishment of Freight Logistic Hub for efficient distribution of inter & intra urban freight movement in Bareilly

Freight Logistic hub plays a vital role in promoting storage and distribution of Agricultural and industrial produce. In case of Agricultural produce, it enables the markets to ease the pressure of safe storage during harvest season and thus maintain uninterrupted supply of agricultural commodities during off season. It solves the problems of excess and scarcity, which are the usual problems in marketing of agricultural produce. Industrial produce could be seasonal processing factories, which can be operational for only 3-4 months in a year.

Freight Logistics is that part of the supply chain process that plans, implements and controls the efficient, effective flow and storage of goods, services and related information from the point of origin to the point of consumption in order to meet customers' requirements."

- Logistics plays a very prominent role in providing the backbone for the economy
- Logistics is one of the key elements in the production process.
- It involves the integration of information, transportation, inventory, warehousing.

City logistics is the process for totally optimizing the logistics and transport activities by private companies in urban areas while considering the traffic environment, the traffic congestion and energy consumption within the framework of a market economy.

Bareilly is very well connected with Delhi & Lucknow with road and railway line and is an important hub for all the trains passing through this city.



Figure 5-92 Typical Logistic hub

5.17.3.4.6 Electric Vehicle Charging Station along the National Highway for Cars

Installing EV charging stations along the NH will immensely help electric vehicles for long distance travels. Currently there are only limited EV charging stations along the highways to cater to the needs for EV owners.

Setting up EV charging station along NH is also help boosting EV sector around the country. The government’s focus on providing world class infrastructure and related services for the highway network is expected to get good returns. Besides EV charging station can also plan restaurants, food courts along the national highways to boost infrastructure.

Area requirement for setting up charging station along highway

SI No	Category & Type of Facility	Area Requirement	Other Controls
1	National and State Highways: Public Charging Station (PCS) minimum requirement as per MoP Guidelines	Minimum Area 13.5 m x 5.5 m	Charging Station and all equipment layouts with respect to nearest Dispensing Unit (DU), Fuel tank to be as per PESO rules.



Figure 5-93 Typical charging type

5.17.3.4.7 Lite Metro facility for Bareilly city

A medium capacity system or also known as light rapid transit or light metro, is a rail transport system. Ridership determines the scale of a rapid transit system; size of the rail system needs for the proposed location. Most light rail system are fully grade separated and the distance between the stations is not much longer and constant speed of the rail.

The main reason to build the light metro instead of regular metro is to reduce costs, and shorter stations. Light metro may operations faster than heavy rail transit system. In metro light system, ticket counters, platform are on the same floor. Approximately, 300 to 400 passengers/trip can travel in the metro light.



Figure 5-94 Metro light system

5.17.4 INFRASTRUCTURE PROJECTS

5.17.4.1 VISION FOR PHYSICAL INFRASTRUCTURE

This consultancy project is supported by the Government of Uttar Pradesh which envisions for betterment of the city of Bareilly by enhancing its comprehensive development of physical, institutional, social and economic infrastructure in accordance with modern and innovative urban planning principles.

The project envisages to prepare the Vision, Implementation Strategy and integrated infrastructure plan to support objectives of holistic, sustainable and planned development of Bareilly city. It requires to take a much broader view of planning to allow for more integrated land use and infrastructure development schemes. The project is expected to drive economic growth, improve the quality of life of people by strengthening city's inherent potentials and augmenting its existing infrastructure. It should also contribute to enhancing the resilience of the city by incorporating policies to enable the city in coping with urban risks and climate change mitigation and adaptation. The Vision, Implementation Strategy and integrated infrastructure plan for Bareilly in Uttar Pradesh will further pave the way for project development, management and project implementation support.

Vision Plan- "Clean Green City"

5.17.4.2 VISION PLAN FOR WATER SUPPLY:

Bareilly city is provided with water supply from ground water sources such as bore wells fitted with hand pumps or power pumps. Existing installed capacity of water supply to the city is about 143 MLD, where the volume capacity is 138 MLD and overall demand for city is 154 MLD in year 2021. There is no Water Treatment Plant. Water is only supplied with just 51 percentage coverage in the entire planning area. Total billable volume of water supply connection is 109 MLD.

5.17.4.2.1 DESIGN PERIOD:

This vision Plan has been prepared for a design period of 30 years with the initial stage taken as the year 2021, mid stage as the year 2036 and ultimate stage as the year 2051. Intermittent five years duration projection have been also assessed as under. Further 2071 Demand will be freezed for visionary outline development planning purpose

5.17.4.2.2 POPULATION FORECAST FOR SPATIAL EXPANSION:

There are totally 19 census towns except M.C and Cantonment board in Project area i.e. Planning Boundary as per Enclosed list in Master Plan 2031. There are 149 villages within the Project area among which 54 villages are already engulfed with the 2031 Master plan boundary. To account the population growth as per master plan, the general growth method has been adopted and the population estimation for Project area is as under:

Table 5-19: Population Forecast for spatial extent and entire project area

Year	Municipal Area Population (Nos.)	Cantonment Board	Total Villages within Planning Boundary	Total Census Towns within Planning Boundary	Total Planning Boundary Population	Master Plan 2031 estimation of Total area
2021	11,40,717	37,388	279,655	98,273	1556033	
2026	12,46,391	41,990	314,074	110,368	1712822	
2031	14,31,466	46,591	348,492	122,463	1949012	1894211
2036	15,61,400	52,326	391,383	137,535	2142644	
2041	16,98,116	65,206	487,722	171,389	2422433	
2046	18,41,613	73,231	547,749	192,483	2655075	
2051	19,91,891	81,256	607,775	213,577	2894499	
2071	3125421	279265	20,59,691	723,792	61,88,168	

Source: Analysis

Based on the development plan proposals and by taking into consideration the present trends and absorption capacity, the pattern of population distribution over space has been identified. There is no major change in the total requirement of area and hence in this aspect, the master plan boundary will be useful for spatial extent for 2031 Infrastructure Plan and for the remaining years. Visionary estimation for requirement of physical Infrastructure will be attempted.

The physical extent of the city is also expected to also be incorporated as Master Plan suggested with the availability of physical infrastructure. As per UDPFI Guidelines Medium town density: 100-115 pph. As per trend developed area density assumed 125-135 pph (following other town with same class of population & growth pattern) New area density assumed for planning is 75-100 pph for 2036 & 2051, respectively.

5.17.4.2.3 Local Ground Water Sources:

Borewells. In addition to the three-surface water i.e. Ramganga, two water channels within the City and more than 150 bore wells supply water to small-localized pockets. Service reservoirs in different colonies receive water from the bore wells and distribute this water through their distribution network. While many bore wells are fitted with submersible pumps, remaining bore wells are fitted with hand pumps. Ground water is available at a depth of 10.98 m in post monsoon to 9.80 m in pre monsoon in year 2021 (Source: <https://jjmup.org/wq/gwd.php>)

Total supply from the bore wells is estimated to be about 143 MLD as per Nagar Nigam provided data . Due to scanty rainfall in last few years and excessive drawl to arise the water shortage, the ground water table is lowering rapidly, resulting in the failure of many bore wells with hand pumps. The ground water is also reported to contain slightly high fluoride contents. The transmission mains are pre-stressed concrete pipelines. There are four zones in water supply as under:

Water Availability in Project Area in year 2021Water Supply: -

Coverage = 51%

Domestic Connection (Unmetered) = 95370

Installed Capacity for Ground Water Supply = 143 MLD

Volume of water produced through Ground Water (Power Pump) = 138 MLD

Volume of water billed from Domestic Connection = 109 MLD
 Volume of water billed from Non-Domestic Connection = 1 MLD
 Total Volume of water unbilled (free supplies to Public Taps) = 0.8 MLD
 Water Supply frequency = 30 days (8 hours per day)
 *(Source SLB 2019-20)

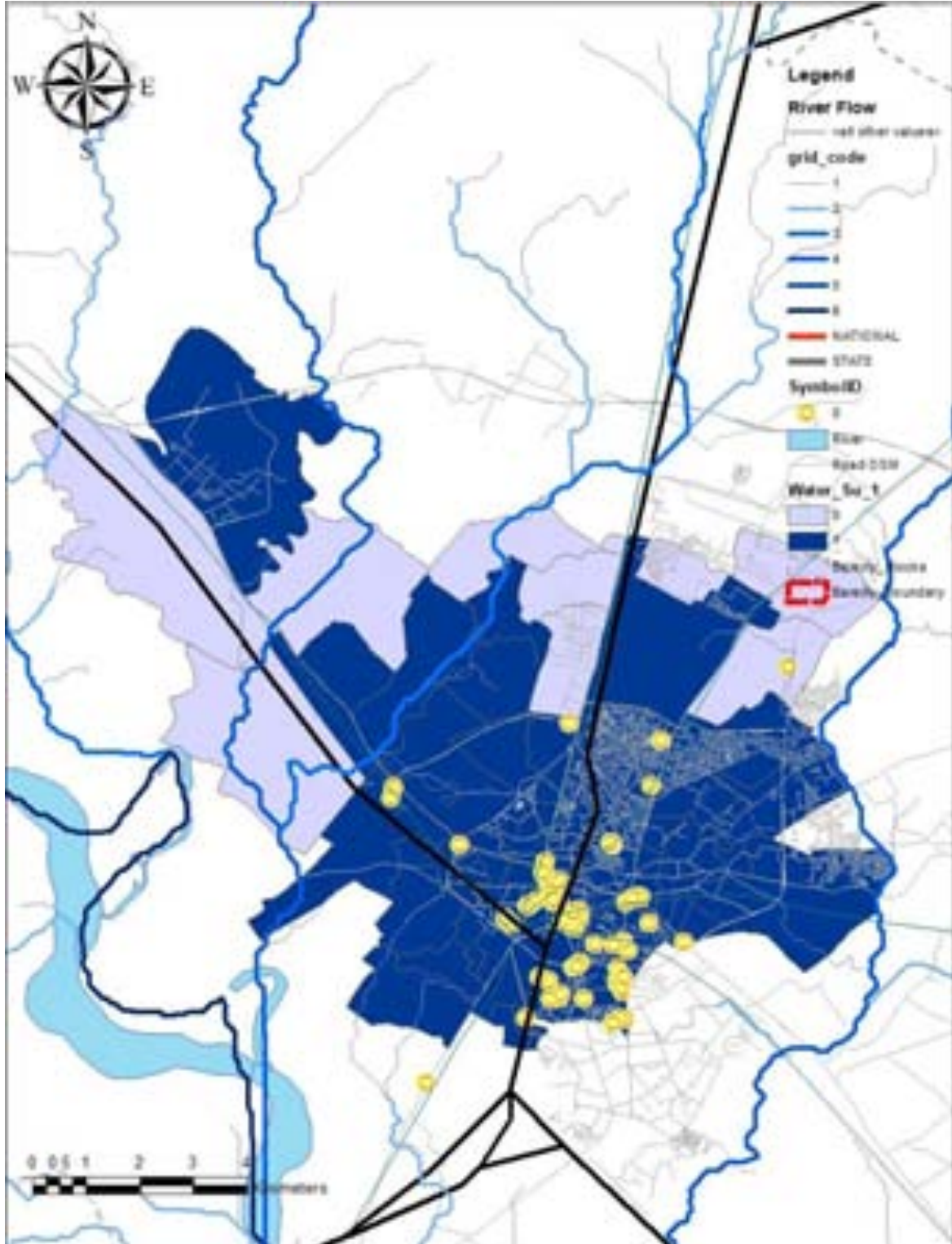


Figure 5-95: Water supply coverage in Nagar Nigam area within Planning Boundary

HHs Water Demand: -

Year 2021 by considering @150LPCD= 165 MLD

Year 2051 = 301 MLD

Industrial Use:

Not available

Estimated: 30 MLD by PCB

Need Augmentation and DPR Preparation

Connection

Length of distribution network = 578.20 km

Basis of above analysis the availability of water supply is only 51% , and even per capita water availability is only 121 LPCD. Gap in water supply collection charges as per SLIP report 55%. Gap in NRW is almost 20% which includes leakage, free water supply to society on festivals, supply through stand post.

Water availability within municipal area is also different. On account there are more than 200 water bore wells serves city through network system . But total 25 elevated storage serve city as under.

The Green area is having full supply. Yellow area is under smart city area having full supply, blue and red area is having partial supply need augmentation of work. The details of water supply hand pumps are as shown in Fig 1.1 .

Total Water reservoir is 42

Total Hand Pump- 84

Total Water pump is 68

Total supply water bore wells are 17

Total mini bore wells are 8

5.17.4.2.4 AREA WISE WATER AVAILABILITY ANALYSIS

Bareilly city has 80 wards. Out of total wards 38 wards are having full connection through water supply network. Addition to that in Smart city area ABD area few wards area having all 100% water supply connection. But total 7 Wards are connected partial areas and two areas still do not have any connection under Amrut 1.0. As per Nagar Nigam Water Balance report total water supply is on today is 76.29 MLD. After total Water source enhancement from 60 to 84 tube wells now per capita availability has increased.

Hydrogeological characteristics of the area shows as under:

Rainfall- The summer monsoon is the major source of rainfall, which generally lasts from mid-October. July and August months are the wettest months.

(b) Temperature: The maximum mean monthly atmospheric temperature has been recorded during the month of May and minimum

(c) Humidity: During the peak monsoon period (i.e. August and September) and in mid (during December) the relative humidity is at highest level ranging between 79% and 84%. While it is lowest around 38% during peak summer month April and May.

(d)Geomorphology (a) In general, the area shows the following distinctive geomorphic units: 1. Lower piedmont plain of Tarai 2. Older alluvial plain or upland 3. Younger alluvial plain or low land 4. Meander

flood plain (b) Soils: The soil of the district, can be classified into three major groups, based on its texture and characteristics. Bareilly Type Type-2 (Khadar or low (Upland or Bangar soils) The maximum mean monthly atmospheric temperature has been recorded during the month of May and minimum during January. During the peak monsoon period (i.e. August and September) and in mid-winter season (during December) the relative humidity is at highest level ranging between 79% and 84%. While it is lowest around 38% during peak summer months. In general, the area shows the following distinctive 1. Lower piedmont plain of Tarai 2. Older alluvial plain or upland 3. Younger alluvial plain of the district, can be classified into three major groups, based on its texture and composition characteristics. Bareilly Type-1 (Tarai soils) Bareilly -land soils) Bareilly Type-3

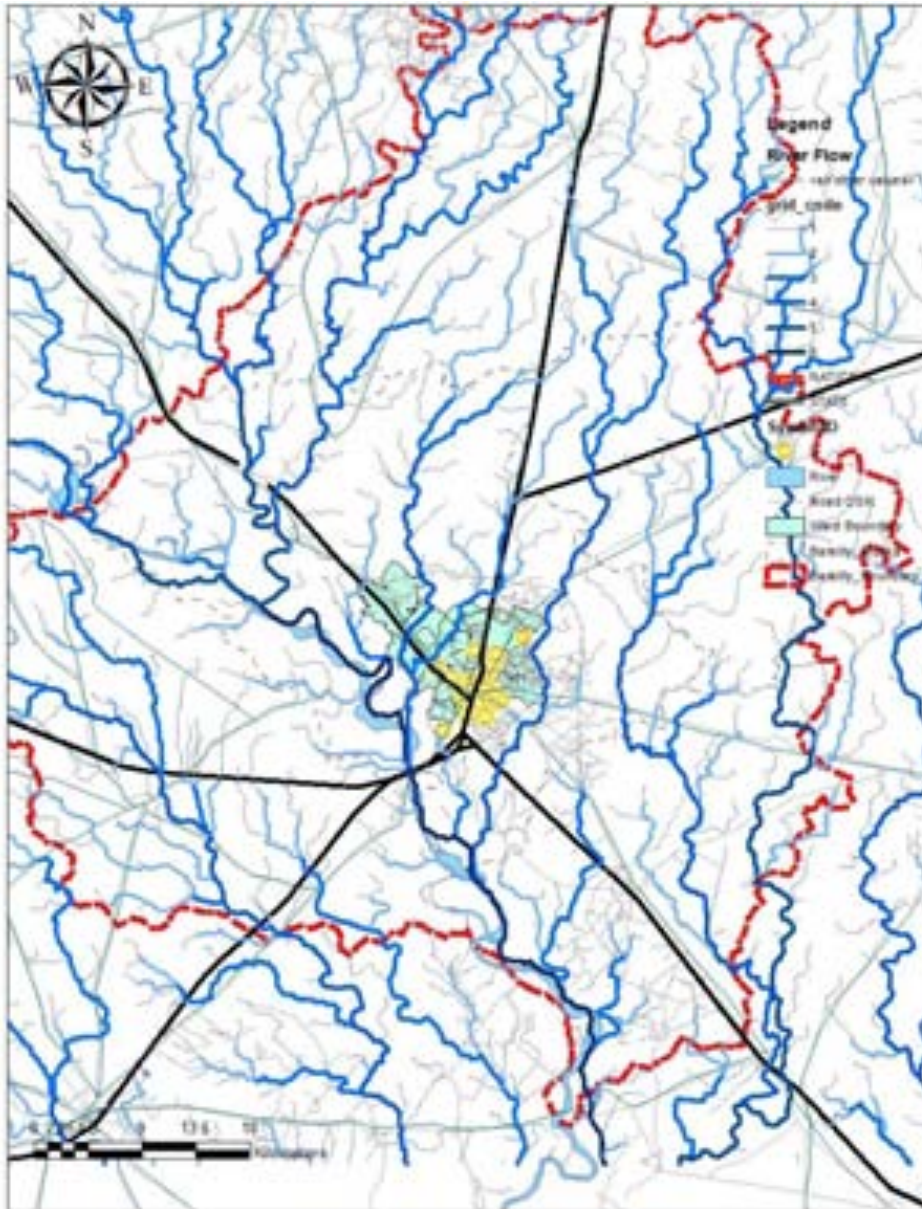


Figure 5-96: Drainage Pattern of Bareilly City

The major three water body's water quality in city is not good. There are several drains intercepts river. These drains are major causes carrying sewerage and Industrial load to water body.

Table 5-20: Details of Water Bodies

Sl. No.	Data Point	Value
1	Total No of water bodies	3
2	No of water bodies with open dumpsites near them	3
3	Number of water bodies with anti-littering messages displayed	3
4	Number of water bodies with sweeping & cleanliness arrangements in place	3
5	Number of Water bodies with twin-litterbins placed in every 50 m of water bodies	3
6	Number of Water bodies with Trash Cleaners are available to trap the solid waste floating on the water bodies	3

Source: Reccy Survey

Table 5-21: List of Water Bodies

S.No.	Ward Number	Name of Water Body	Address	Type of Water Bodies	Landmark
1	10	Delapeer Pond	Delapeer Chauraha	Pond	Delapeer Chauraha
2	32	Akshar Vihar	Akshar Vihar Park	Pond	Akshar Vihar Park
3	35	Sanjay Community Hall Pond	Near Elan Club	Pond	Jain Mandir

Source: Nagar Nigam, Bareilly

5.17.4.2.5 Demand Assessment:

To assess the future demand for all parts of Bareilly within Municipal area Water demand has been assessed by taking 150 LPCD i.e. 135 LPCD with 15% unaccounted water demand of the area.

Table 5-22: water requirements

Water requirement	2021	2026	2031	2036	2041	2046	2051	2071
A Municipal Area	154	168	193	211	229	249	269	422
B Cantonment Board	5	6	6	7	9	10	11	38
C Total Villages within Planning Boundary	38	42	47	53	66	74	82	23
D Total Census Towns within Planning Boundary	13	15	17	19	23	26	29	17
E Total Planning Boundary Population	210	231	263	289	327	358	391	500

Source: Analysis

Under Amrut 2.0 all are to be covered within municipal area to address 155 LPCD which is far higher side than the requirement of MoUD i.e. 135 LPCD. So, there is not to presume additional water augmentation to feed futuristic demand for ultimate project population for 2051. But there are 11 Urban agglomeration, and all villages are within planning Boundary which over the year will be amalgamated as a part of city. To estimate the population enhancement by accounting Rural to urban transformation and Urban agglomerated towns in city limit referring Master Plan 2031 document total water demand is estimated as under:

a. WASTAGE AND DISTRIBUTION LOSSES:

It has been observed that wastage of water at consumer's end in the City is substantial. Almost 30-40% of water supplied is lost in transmission and distribution.

b. SERVICE CONNECTIONS:

All property connections are unmetered. In addition, there are reported to be about 20, 540 public stand posts, supplying water to economically backward households and slum areas.

c. ISSUES :

1. **Scarcity in Source:** Presently only 75% of the population is covered by municipal water supply. Raw water scarcity is experienced in summer, due to lack of flow of present source, Agra Canal water supply network needs to be implemented. Though, under Amrut 2.0 requirement are fulfilling total municipal area.
2. **Exploitation of Ground Water Source:** In the absence of a perennial water source, dependence on ground water continues to be high in the periphery. Apart from the municipal bores, a large number of private bores have been installed in various parts of the city. This has seriously affected the ground water level, which is depleting at the rate of 2 to 3m annually. Thus, the reliability and sustainability of the ground water source is questionable.
3. **Operation of Water Treatment Plants:** The present operation, including chemical dosing and back washing of filters, Chlorine dosing is arbitrary. All the equipment meant for these functions needs to be repaired, if required and a formal system of testing the raw water turbidity, administering the doses based on jar test and back washing of filters, when it is due, needs to be introduced. Additional gas cylinders have to be procured.
4. **System Losses:** Around 30%-40% of the water supplied gets lost during transmission and distribution. Scada system is only commissioning in Smart City ABD area.
5. **Limited Duration of Supply:** At present, the water is supplied only for one hour on fifth day. It is proposed to supply water for 24 hours and hence necessary modification including construction of ESR at each distribution station will be carried out.
6. **Contamination of water due to old service connections:** The consumer connections are of Galvanized iron, which has a life of 7-8 years. These connections are often not replaced on time and leads to the problems of leakage, low pressure and contamination.

5.17.4.2.6 Vision Plan for Water Supply

So basis of above requisite the water supply vision for 24X7 potable water supply to all area could cover by de centralize use of water and recycle of water as under:

Year	2026	2036	2051	2071
Action Plan	Short Term	Mid Term	Long Term	Outline Plan
Connection				
Water Augmentation from Canal				
enhancement of WTP & Reuse of Water				

5.17.4.3 SEWERAGE & SANITATION SYSTEM:

5.17.4.3.1 OVERVIEW OF EXISTING SEWERAGE & SANITATION SYSTEM:

Uttar Pradesh Jal Nigam has designed and constructed sewerage scheme under Amrut 1.0 1.0 in Bareilly city and implemented by Nagar Nigam. The proposals under this Detailed Project Report have been framed on the basis of Latest Norms / Standards / Design Criteria contained in the U.P. Jal Nigam No. under the guidelines under Atal Mission for Rejuvenation and Urban Transformation as well as contained in the Manual of Sewerage and Sewage. Treatment, 4th Edition-2012, CPHEEO, Ministry of Urban Development, Government of India, New Delhi, Main and Prominent norms are summarized below.

The estimation has been worked out adopting the base year 2021, Middle Stage Year 2036 and Ultimate Stage Year 2051.

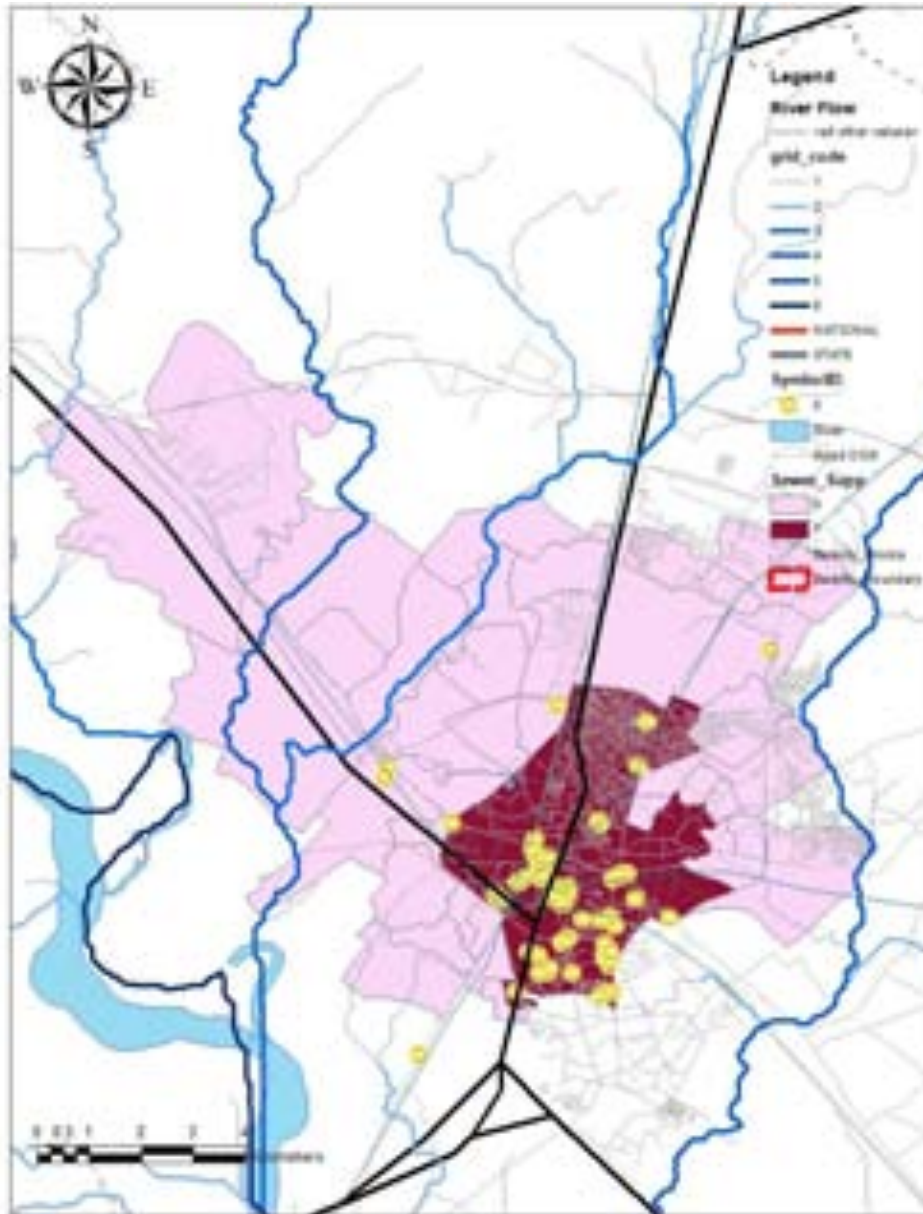


Figure 5-97: Rivers of Bareilly

There are properties with Sewer Connection 65201 and Properties with onsite sanitary disposal are 136275. Total water consumption (billed and unbilled) from ULB and Non ULB sources are accounted 110.8 MLD and volume of wastewater generated from Domestic water consumption is around 88.64 MLD (Source SLB 2019-20)

There is no sewer Treatment plant. Although STP will be set up soon in two sites as shown in following figure.



Figure 5-98: Proposed STPs

Total Length of sewerage network = 206.2 km

Total Wastewater produced = 99.2 MLD

Zone	Sewer Lines Length	Area covered
-------------	---------------------------	---------------------

	(km)	(sq. km)
Zone- 1	43	9
Zone -2	71	8.46
Zone -3	59	3.97
Zone -4	33	4.33
Total	206	25.76

*Source: SLB 2012, NNB

INTERMEDIATE PUMPING STATION AND STP

ZONE-2 : In zone-2 is 71 Km sewer length with MLD stp based on mid-year 2033 . there is MPS provided in the stp campus.

Zone 3: IPS-2 of I & D work. in zone-3 is proposed under I & D work of Bareilly city of 59 Km length

ZONE-4 : IPS-2 of I & D work. in zone-4 is proposed under I & D work of Bareilly city of 33 km length.

Works incorporated under this Detailed Project Report have been proposed for year of 2033.

Bareilly Smart City "ABD" Area is proposed to be covered with sewer system under Smart City Programme. Sewage Treatment Plants will also be provided for Treatment of sewage and discharge of effluent to the effluent management works for irrigation of cultivable land effluent will however be conveyed to the Natural Drainage when not required for Irrigation purposes.

Taking into consideration Topography/Gradient/Slope of Ground/Location of Railway Tracks i.e. from major drains under the Nagar Nigam area Total Smart City ABD area is proposed to be divided into 4 Zones, Zone-1 includes wards/area .

In the proposed sewer system AC Pressure Pipes Manufactured by MAZZA Processing sizes 150/200mm and in higher sizes RCC Non-Pressure Pipes Class NP3 and NP4 have been proposed in accordance with provisions under the Guidelines issued under Atal Mission for Rejuvenation and Urban Transformation (AMRUT) Programme "Manual of Sewerage and Sewage Treatment CPHEEO" Ministry of Urban Development Government of India New Delhi and Relevant code of Bureau of Indian Standards New Delhi.

From the Sewage Treatment Plant effluent will be conveyed to effluent management works i.e. applied for Irrigation in agriculture fields during the period effluent is not required for irrigation purposes, it will be discharged into river.

Land requirement for Sewage Treatment Plant: Total Land Requirement for 7 MLD plant on SBR based technology is = 7 x 0.08 hect = 0.56-hectare land is required

Further, drains will be tapped under Namami Gange program

5.17.4.3.2 ISSUES:

Over the year Sewerage Generation will be

Table 5-23: Sewerage Generation

Sewerage Generation	2021	2026	2031	2036	2041	2046	2051	2071
A Municipal Area	123	135	155	169	183	199	215	338
B Cantonment Board	4	5	5	6	7	8	9	30
C Total Villages within Planning Boundary	30	34	38	42	53	59	66	18
D Total Census Towns within Planning Boundary	11	12	13	15	19	21	23	14
E Total Planning Boundary Population	168	185	210	231	262	287	313	400

Source: Analysis

i) Coverage:

The present population of Bareilly is approximately 1554063, as against the combined design population of 1140717 for stage I and stage II sewerage schemes. Thus, even after the Stage II scheme,

designed to cover 165 MLD for 2033 whereas by 2036 the discharge within Municipal area will be 169 MLD, the entire present population of the city will not be covered.

ii) Sewer Connections:

Out of total households, only 50 properties have been connected to the sewers. Even allowing for some unauthorized connections, the utilization of the sewer network appears to be extremely poor. The number of properties connected to the sewer network is abysmally small. An urgent and concerted drive to increase the number of sewer connections is called for.

iii) Need of Updated Map of Sewer Network:

Unless an updated map showing all the sewers laid so far is prepared, an action plan to improve the coverage and utilization of the sewerage system will not be accurate or fruitful.

iv) Unauthorized Lifting of Sewage:

Very little quantity of sewage appears to be reaching the treatment plant. Farmers lift the raw sewage from the manholes of out fall sewers and use it for agricultural purpose.

v) Performance of Sewage Treatment Plant

Measurement of sewage flow entering the sewage treatment plant and the characteristics of the influent and effluent needs to be done on a regular basis to know the effectiveness and efficiency of the sewer network and STP.

5.17.4.3.3 Vision for Sewerage Plan

Sewerage Vision Plan is to connect each household with sewer line for clean green city plan. Core area is very congested where existing STP could serve city but remaining all part of city should have sewer line. STP should be upgraded. As per requirement of improvement of STP MPS , IPS should be constructed, and trunk line should be enhanced.

Overall city's vision plan for STP area as under:

Year	2026	2036	2051	2071
Action Plan	Short Term	Mid Term	Long Term	
Connection				
STP & ETP				
Reuse				
Decentralized System				

5.17.4.4 VISION PLAN FOR STORMWATER DRAIN

5.17.4.4.1 Vision Plan for stormwater drain

The total length of roads in the City of Bareilly is 832 km out of which only 105 km stretch has closed stormwater drains translating to 12.62%. There are three natural drains in the city namely the Deveraniya drain, Chaubari drain and Nakatiya river/drain. Table 1-1 depicts the characteristic features of the Deveraniya drain while Table 1-2 and Table 1-3 depict the characteristic features of the Chaubari drain & Nakatiya drain respectively

5.17.4.4.2 Deveraniya drain

Table 5-24: Deveraniya drain – characteristic features

Sr. No	Description	Remarks
1	Point of origin	Sarai Talfi
2	Co-ordinate	28°20'33.23" N 79°23'02.87" E
3	Point of discharge	River Ramganga
4	Quantity of sewage let into this drain	102.80 MLD
	Water quality in drain	
	Ph	7.20
	BOD (mg/L)	39.8
	COD (mg/L)	80
	TSS (mg/L)	89

(Source: CSP Bareilly)



Figure 5-99: Deveraniya Drain

5.17.4.4.3 Chaubari drain

Table 5-25: Chaubari drain – characteristic features

Sr. No	Description	Remarks
1	Point of origin	Subash Nagar
2	Co-ordinate	28°17'42.85"N 79°23'32.95"E
3	Point of discharge	River Ramganga
4	Quantity of sewage let into this drain	51 MLD
5	Water quality in drain	
	pH	7.1
	BOD (mg/L)	33.2
	COD (mg/L)	200
	TSS (mg/L)	70

(Source: CSP Bareilly)



Figure 5-100: Chaubari drain

5.17.4.4.4 Nakatiya drain

Table 5-26: Nakatiya drain – characteristic features

Sr. No	Description	Remarks
1	Point of origin	Deen Nagar
2	Co-ordinate	28°21'34.88"N 79°28'12.04"E
3	Point of discharge	River Ramganga
4	Distance of discharge point from city limits	100 km
5	Quantity of sewage let into this drain	24 MLD
6	Water quality in drain	
	Ph	7.30
	BOD (mg/L)	44.8
	COD (mg/L)	120
	TSS (mg/L)	114

(Source: CSP Bareilly)



Figure 5-101: Nakatiya drain

5.17.4.4.5 Stormwater drain - constraints

- Silting of the drain
- Unlined drains
- Dumping of debris and garbage into the open drains & nallah
- The roads being below the drains top level which cause the overflow from drains to fill the roads and the low-lying areas
- The increased impervious areas also add to the worsening of the situation

5.17.4.4.6 Stormwater drain – Interventions required

- Govt should impose fine to those industries discharging wastewater into the storm water drain
- All the house service connections shall be properly connected through sewer network and shall be treated in the STPs to maintain storm water drain as a dedicated facility.
- All the untapped drains should be tapped and diverted to STP on an immediate effect to protect the environment degradation
- Ensure sufficient right of way provision for constructing drains in the future proposals.
- Allocate Cost and O&M framework

5.17.4.4.7 Stormwater drain – Suggestions for DPR

- Assessment of ward wise existing storm water drain condition
- Based on the assessment, provide recommendations for reconstruction of the structure wherever possible
- Analyze the surface runoff and increase the width of the drain wherever required



- Based on the assessment, identify the financial stability of the developer and workout the phase wise implementation strategy
- Achieve 100% coverage through effective planning

Note: *Development of SWD shall be taken care in the city development plan. Hence it is not considered as a separate project in the vision plan proposed list of projects. However, the above suggestions may be considered by the city development authority during the preparation of DPR*

In addition, there is no dedicated provision for storm water drain in many locations and hence, both sewage and storm water drain are mixed together in the nallas. In future, all the house service connections shall be properly connected through sewer network and shall be treated in the STPs to maintain storm water drain as a dedicated facility.

5.17.4.5 VISION PLAN FOR SOLID WASTE MANAGEMENT

5.17.4.5.1 Existing situation

The total solid waste generated in Bareilly is 447.18 Tonnes Per Day (TPD). However, at present, the amount of solid waste collected is only 430 TPD. Of the collected solid waste (Nearly) 140 TPD is processed while the remaining 290 TPD is disposed of in the dump yard. At present, there is no household source segregation in place. At present two solid waste management plants exist (i) At Rajau Paraspur (non-operational) and (ii) At Bakarganj, out of which the SWM plant in Rajau Paraspur is non-operational. Table 1-4 represents the background & status of the Rajau Paraspur SWM plant:

Table 5-27: SWM Plant in Rajau Paraspur

Sr. No	Description	Remarks
1	Land Extent	21.20 Acres
2	Capacity	300 TPD
3	Status	Commissioned in 2013 and is abandoned for the past five years
4	Reason For Non-Existence In Operation	Owing to local agitation from citizens as it is located near forest land. Subsequently the National Green Tribunal (NGT), on the grounds of unsafe waste disposal practices, has suspended the functioning of the treatment plant.
5	Facilities Covered	Organic Waste Conversion (OWC) and sanitary landfill
6	Recommendation	Suitably can be relocated to another location which is free from any ecologically sensitive hindrances. The plant thus relocated will be able to reduce the treatment burden of the existing plant at Bakarganj



Figure 5-102: Abandoned approach in Rajau Paraspur SWM Plant

Table 5-28: Represents the background & status of the Bakarganj SWM Plant:

Sr. No	Description	Remarks
1	Land Extent	17 Acres
2	Status	In operation since December 2021
3	Facilities Covered	Bioremediation I.E., conversion of waste to Refuse Derived Fuel (RDF)
4	Salient Features	<ul style="list-style-type: none"> • Dumping area: 6 acres • Operational hours: 20 • Operating capacity: 600 TPD • Incoming waste at present: 350 TPD

5	Operating Mode	Operated by Executing authority through O&M Contractor (10 years contract)
---	----------------	--

5.17.4.5.2 Projected solid waste generation

The solid waste generation, though measured at the city level, should also be measured and calculated for the entire planning area considered in the ambit of the Vision Plan for Bareilly City. Hence, it is imperative to include those additional areas such as the Cantonment Board Area, Town Villages within the planning boundary and census towns in the planning boundary in addition to the existing Municipal Corporation Area. As a result, the total population for the Year 2021 (Base Year), the year 2036 (Intermediate Year) and the year 2051 (Ultimate Year) are considered for the projection of the solid waste generation as well. The ensuing sections discuss the solid waste generation projection for different scenarios. Table below represents the solid waste generation projection for the Municipal Corporation area of Bareilly. Further 2071 Demand will be freezed for visionary outline development planning purpose

Table 5-29: Solid waste generation projection – Municipal Area

S. No	Population projected year	Population	Solid waste generation (TPD)	Organic waste (TPD)	Existing SWM plant capacity (TPD)	Proposed plant in Sathrapur & Rajau	Total plant capacity (TPD)	Gap (TPD)	Inorganic waste (TPD)	MRF	MRF Existing	MRF Proposed	Gap (TPD)	Dumping / Landfill	Existing Landfill	Landfilling Proposed	Gap (TPD)
1	2021	13,11,599	564	338	600	0	600	0	226	56	0	120	56	169	0	280	169
2	2026	15,56,033	669	401	600	0	600	0	268	67	120		-53	201	280		-79
3	2031	17,12,822	737	442	600	0	600	0	295	74	120		-46	221	280		-59
4	2036	19,49,012	838	503	600	0	600	0	335	84	120		-36	251	280		-29
5	2041	21,42,644	921	553	600	0	600	0	369	92	120		-28	276	280		-4
6	2046	24,22,433	1042	625	600	850	1450	0	417	104	120	120	-16	312	280	690	32
7	2051	26,55,075	1142	685	600	850	1450	0	457	114	240		-126	343	690		-347
8	2056	28,94,499	1245	747	600	850	1450	0	498	124	240		-116	373	690		-317
9	2061	39,72,077	1708	1025	600	850	1450	0	683	171	240		-69	512	690		-178
10	2066	45,86,104	1972	1183	600	850	1450	0	789	197	240		-43	592	690		-98
11	2071	53,15,516	2286	1371	600	850	1450	0	914	229	240		-11	686	690		-4

Source: Bareilly Nagar Nigam & Consultant's analysis

Inference:

- The proposed plant in Sathrapur is planned over 10 acres of land with 500 TPD capacity.
- The proposed plant in Rajau Paraspur (disputed land) is planned with a treatment capacity of 300 TPD.
- The proposed plant in Rajau Paraspur (disputed land) will require an area of 20 acres for the proposed installed capacity of 300 TPD in an alternate land parcel since the existing plant is non-operational due to NGT litigations.

- For the purpose of solid waste projection over the planning horizon (2071), it is assumed that the above-mentioned two proposed SWM plants with a combined capacity of 850 TPD shall be developed before the year 2046.
- After the year 2046, the total treatment capacity of all the plants shall be 1450 TPD whereas the required excess capacity of treatment capacity due to population growth for 50-year period (i.e., 2071) is just 850 TPD.
- Hence, the proposed treatment plants namely the alternate plant in Rajau Paraspur and proposed Sathrapur plant will be sufficient to handle the increase in solid waste generation for the entire planning horizon of the Vision Plan thereby eliminating the need for any new solid waste management plant in addition
- Thus, a need for the development of a new facility doesn't arise if only the municipal area solid waste generation is projected over the project horizon
- 100% Source segregation to be ensured
- For, MRF centres and Landfill can be planned for new SWM plant (Inorganic waste) in year of 2023 and 2046 to monetise from the waste and to prevent environmental degradation to the ground.



Figure 5-103: Dumping yard in Bakarganj SWM plant (left) Treatment facility in Bakarganj SWM plant (right)

5.17.4.5.3 Proposed project & Area requirement

Table 5-30: Area requirement

Sl.No	Proposed SWM Plant	TPD	Area requirement (in Ha)
1	MRF (20 TPD x 6 Nos)	120	6
2	Landfill (Up to 2046)	280	28
3	MRF (20 TPD x 6 Nos)	120	6
4	Landfill	690	55

For developing a new SWM plant is considering the higher area required when compared to Windrow composting, Refuse Derived Fuel (RDF), Bio methanation, and Landfill technology as per Municipal Solid waste management manual – CPHEEO – MoUD (2016). The implementing agency may look for available new more sustainable technologies during implementation period

5.17.4.6 ESTIMATED PROJECT COST & IMPLEMENTATION STRATEGY.

Table 5-31: Estimated project cost & Implementation strategy.

Sl.No	Proposed SWM Plant	TPD	Area requirement (in Ha)	SWM Plant in lakhs	Land Cost (in Lakhs)	Total Amount (in Lakhs)	Implementation year
1	MRF (20 TPD x 6 Nos)	120	6.0	1800	480	2280	For 2023
2	Landfill (Up to 2046)	280	28.0	1484	11200	12684	
Sub Total (A)				3284	11680	14964	
5	MRF (20 TPD x 6 Nos)	120	6.0	1800	480	2280	For 2046
6	Landfill	690	55	7217	21920	29137	
Sub Total (B)				9017	22400	31417	
Total Amount (A+B) = C				12301	34080	46381	

Note:

- Cost for developing facility is considered in estimate. It is assumed that land will be provided by Nagar Nigam / BDA.
- MRF cost has been considered based on lumpsum cost as per Advisory on Material Recovery Facility (MRF).
- This estimate is lumpsum and approximate. The values are indicative. However, actual costs will vary from site to site and should not be restricted by the range indicated in the table.
- Land requirement arrived based on the SWM CPHEEO (Central Public Health & Environmental Engineering Organisation) manual.

5.17.4.6.1 Identified Location for Proposed SWM Plant

Sl.no	Implementation Year - 2023		Implementation Year - 2046		Area In Ha	Co-ordinates	Remarks
	MRF	Landfill	MRF	Landfill			
1	20 TPD	280 TPD	20 TPD		30	28°26'28.98"N 79°22'22.12"E	Location 1: Proposed Landfill 280 TPD (upto 2046) + MRF 20 TPD (2023)+20 TPD (2046) - Near Khan Gauntiya
2	20 TPD		20 TPD	690 TPD	60	28°26'29.48"N 79°18'1.29"E	Location 2: Proposed Landfill area 690 TPD + MRF 20 TPD (2023)+20 TPD (2046) - Near Chitauli

Sl.no	Implementation Year - 2023		Implementation Year - 2046		Area In Ha	Co-ordinates	Remarks
	MRF	Landfill	MRF	Landfill			
3	20 TPD		20 TPD		2	28°18'21.62"N 79°28'42.62"E	Location 3 : Proposed MRF 20 TPD (2023)+20 TPD (2046) - Rajau Paraspur
4	20 TPD		20 TPD		2	28°21'34.01"N 79°23'41.76"E	Location 4 : Proposed MRF 20 TPD (2023)+20 TPD (2046) - Near Bakarganj
5	20 TPD		20 TPD		2	28°17'45.12"N 79°24'57.03"E	Location 5 : Proposed MRF 20 TPD (2023)+20 TPD (2046) - Near Umarsia
6	20 TPD		20 TPD		2	28°24'18.19"N 79°28'20.55"E	Location 6 : Proposed MRF 20 TPD (2023)+20 TPD (2046) - Near Abdullapur Mafi

Proposed SWM Plant Location





5.17.4.6.2 Waste segregation, collection & transportation

Waste segregation shall be practiced at source. At a minimum level, waste should be segregated into two fractions: wet (green container) and dry (blue container). This system is referred to as the 2-bin system. It is proposed to treat the wet fraction using appropriate treatment technology and as many fractions as possible from the dry waste such as paper and plastic should be sent for recycling. The inert material and rejects shall be sent to landfill facility located in the vicinity of the site.

5.17.4.6.2.1 Source segregation and storage

Source segregation is the setting aside of inorganic and organic waste at their point of generation by the generator. Separating waste at source ensures that organic and inorganic waste is less contaminated and can be collected and transported for further treatment. Segregation of waste also optimizes waste processing and treatment technologies. The generation of awareness among the producers and creation of an enabling environment is the key to success towards proper segregation and storage at source. Source segregation will not only provide an efficient way for resource recovery but will also substantially reduce the pressure and pollution at treatment/ landfill sites. Hence, It is suggested to carryout source segregation to reduce the burden of the waste handling agency.

Exhibit N# 1: Inorganic and organic waste



Food wastes of all kinds, cooked and uncooked, including eggshells and bones, flower and fruit wastes including juice peels and house-plant wastes, soiled tissues, food wrappers, paper towels

Paper, cardboard and cartons; Containers & packaging of all kinds excluding those containing hazardous materials; Compound packaging (tetra pack, blisters etc.) and plastics; Rags, rubber, wood, discarded clothing and furniture; Metals, Glass (all kinds), House sweepings and inert (not garden, yard or street sweepings)



5.17.4.6.2.2 Segregated collection

Primary collection is collecting waste from industries, households, markets, institutions, and other commercial establishments and taking the waste to a storage depot/ transfer station or directly to the treatment & disposal site is envisaged. Primary collection system is necessary to ensure that waste stored at source is collected regularly and it is not disposed of on the streets, drains, water bodies, etc.

- a) Door to door collection through tricycles/ push carts using segregated bins
- b) Containers placed on streets and will be collected through suitable method

Depending upon the system of primary collection (collection from the source of garbage), the solid waste intermediate storage facilities shall be envisaged. This is required to:

- (1) Optimise the use of transport devices.
- (2) Optimise the use of manpower
- (3) Timely collection from source and onward treatment/ disposal of solid waste.

5.17.4.6.2.3 Transportation

Transportation of the waste at regular intervals is essential to ensure that garbage bins/ containers are not overflowing, and waste is not seen littered on streets. Hygienic conditions

can be maintained if regular clearance of waste from temporary waste storage depots (bins) is ensured.

The routing and number of trips of the secondary transportation vehicle shall be worked out depending on the number of containers and the quantum of garbage and the frequency of clearance of the bins contemplated at the waste storage facility. The timings should be fixed in such a way that the container is nearly filled when it is planned for clearance by the transportation vehicle.

Technology options for treatment of MSW

The available technology options for processing the Municipal Solid Waste (MSW) are depicted below.

Exhibit N# 2: Technology options for treatment of MSW

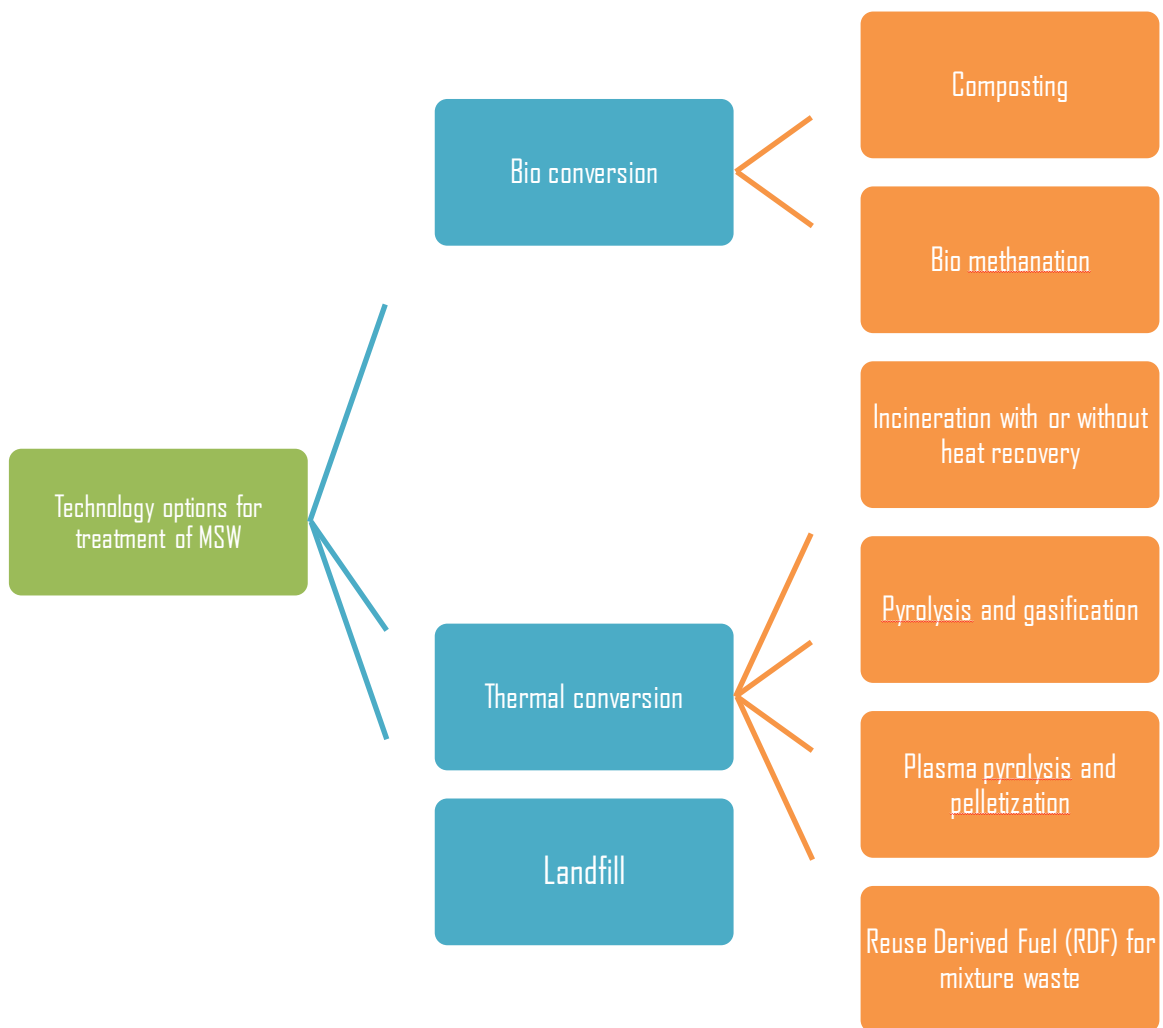


Table 5-32: Comparison of composting, Bio methanation and RDF technology

Parameters	Windrow	Bio methanation	RDF	Landfill
Applicable with population size	Population above 1 lakh to 10 lakhs	Small scale – between 5,000 to 25,000	Small scale – between 5,000 to 25,000	
Facility location	Plant should be located at least one km away from habitation, if it is open windrow composting. The distance could be 500m in case of covered plants.	Plant should be located at least 500 m away from residential areas, for plant sizes up to 500 TPD.	To be located as per the buffer zone criteria mentioned below.	Landfill sites must be located at least 500 m away from residential areas and should abide by the criteria mentioned in MSW Rules and state level guidelines.
Buffer zone (no development zone)	500 m for facilities dealing with 100 TPD or more of MSW; 400 m for facilities for dealing with more than 75 or less than 100 TPD; 300 m for facilities dealing with 50-75TPD of MSW; 200 m for facilities dealing with less than 50 TPD MSW. For Decentralized plants handling less than 1 TPD MSW no buffer zone is required; however adequate environmental controls are required			
Natural environment	Composting in coastal/ high rainfall areas should have a shed to prevent waste from becoming excessively wet and thereby to control leachate generation			Should be avoided in marshy land and in conditions where the ground water table is 2 m from the base of the liner. In marshy land, apart from ground and surface water contamination potential, there could be huge risks due to structural safety of the landfill (slippage and complete breakdown).
Land requirement	High (For 500TPD of MSW: 6 ha of land is required)	Low to moderate for small units: 500 sq. M for 5MT unit For large scale: 300 TPD of MSW: 2 ha of land is required)	For 300 TPD of segregated/ pre-sorted MSW: 2 ha of land is required.	For 300 TPD of MSW: 30 ha of land is required for 20 years.



Parameters	Windrow	Bio methanation	RDF	Landfill
Waste quantity which can be managed by a single facility	25 TPD and above	1-5 TPD at small scale	100 TPD of segregated waste and above	100 TPD inert and above. Smaller landfills are not techno economically viable
Requirement for segregation prior to technology	High	Very high	High	Only inert waste may be placed in landfills as per SWM Rules
Rejects	About 30% including inert if only composting is done	About 30% from mixed waste	Around 30% from mixed waste (For incoming mixed waste for RDF & Incineration Non-combustible material is taken out during the sorting stage)	No rejects
Potential for direct energy recovery	No	Yes	No (feed stock for energy recovery)	Not as per SWM Rules
Technology maturity	Windrow composting technique is well established	Feasibility for segregated biodegradable waste is proven. Not suitable for mixed waste	Quality of RDF should be based on end use, no clear consensus on quality requirements. Burning of RDF below 850°C for less than 2 seconds residence time can pose serious problems of health and environment. Rules regulating characteristics of RDF and guidelines for appropriate use not prescribed by concerned authority.	Sanitary landfill is a proven method for safe disposal of waste, practiced world over. However, it has environmental implications and efforts have to be made to minimize waste going to landfills. MSW Rules only permit inert wastes to be landfilled.



Parameters	Windrow	Bio methanation	RDF	Landfill
Market for by-product/product	Quality compost compliant with FCO 2009 has a good market. IPNM Task Force (vetted by Supreme Court, 1 Sep 2006) has recommended co-marketing of 2-3 bags of compost with 7-8 bags of inorganic fertilizer.	The technology is not fully explored, though it has a potential to generate energy as well as digested sludge manure	Good market potential for RDF. In small cities, RDF plants only become feeders of RDF based power plants and cement plants.	No potential, since it is stipulated by the SWM Rules that only inert wastes are to be disposed in landfills
Labour requirement	Labour intensive	Less Labour intensive	Labour intensive (based on current practice).	Only inert wastes are to be deposited in sanitary landfills. Labour intensive but requires considerable technical expertise as well.
Predominant skills for operation and management	Skilled & semiskilled labour	Skilled labour	Technically qualified and experienced staff.	Technically qualified and experienced, and semiskilled staff.
Concerns for toxicity of product	The final product is generally applied to soil and used as manure. Can contaminate the food chain if compost is not meeting FCO norms.			-
Leachate pollution	High if not treated appropriately	High if not treated appropriately	Low	Polluted surface runoff during wet weather, groundwater contamination due to leachate infiltration Moderate to high depending upon the leachate recycling and control systems.

Parameters	Windrow	Bio methanation	RDF	Landfill
				Leachate management during monsoons requires special attention
Atmospheric pollution	Low (Dust, aerosol, etc.). Odour issues	Low Leakage of biogas. Odour issues	Low to moderate (dust, aerosols). Very high if RDF is not burnt at required temperature. Odour issues.	Air pollution and problems of odour and methane emissions if not managed properly.
Other	Fire and safety issues to be taken care of	Fire and safety issues to be taken care of	Presence of inappropriate material in the RDF (chlorinated plastics). Fire and safety issues to be taken care of.	Spontaneous ignition due to possible methane concentration. Fire and safety issues to be taken care of.

Considering the above technology options and comparisons, Bio methanation & Composting is suggested since the quantum of waste to be handled is on a higher scale and considering the implementation of waste to energy concept for SWM plants. Details of Bio methanation technology is provided below.

5.17.4.6.3 Bio Methanation Technology

Bio methanation involves controlled biological degradation of organic wastes by microbial activity in the absence of oxygen. The process involves the anaerobic (without air) decomposition of wet organic wastes to produce a methane-rich biogas fuel and a small amount of residual sludge that can be used for making compost. It takes place in digester tanks or reactors, which enable control of temperature and pH levels for optimizing process control. Methane-rich gas produced is suitable as fuel for energy generation. The residual sludge is also produced, which is suitable for enriching compost materials. Input preparation or source separation is required to ensure that waste is free of non-organic contamination.

Anaerobic digestion is best suited to the treatment of wet organic feed stocks such as high moisture agricultural biomass, food waste, and animal wastes including manure and domestic sewage. A prepared feedstock stream with less than 15 percent Total Solid (TS) is considered wet and feed stocks with TS greater than 15-20 percent are considered dry. Feedstock is typically diluted with process water to achieve the desirable solids content during the preparation stages.

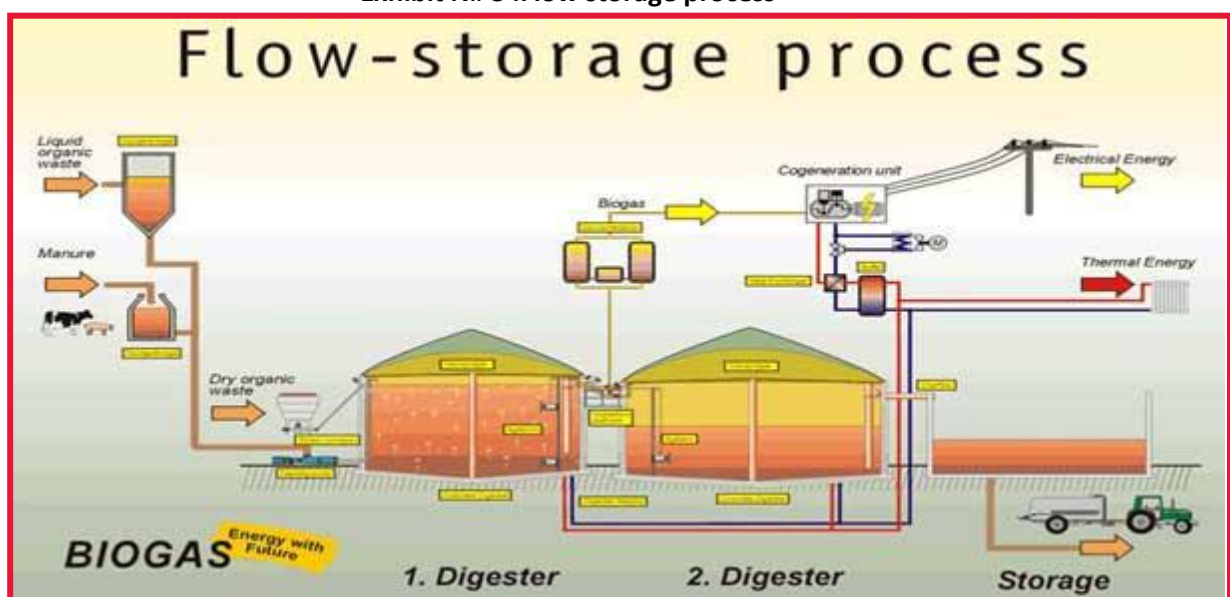
The homogeneity of the feed material is an important parameter from the efficiency point of view. The waste must be sorted so that all inorganic products are removed from the refuse prior to entry into the digester.

Single-stage digesters are simple to design, build, and operate and are generally less expensive. The organic loading rate of single-stage digesters is limited by the ability of methanogenic organisms to tolerate the sudden decline in pH that results from rapid acid production during hydrolysis.

Two-stage digesters separate the initial hydrolysis and acid producing fermentation from methanogenesis, which allows for higher loading rates but requires additional reactors and handling systems.

The solid waste management system needs to be modified and improved to make it compatible with the requirements of bio methanation technology covering source separation collection of solid waste. Otherwise, the applicability will be limited to highly organic and homogenous waste streams such as slaughterhouse waste, market wastes.

Exhibit N# 3 :Flow storage process



The yield of biogas depends on the composition of the waste feedstock and the conditions within the reactor. The modern anaerobic digestion treatment processes are engineered to control the reaction conditions to optimize digestion rate and fuel production. Typically, 100-200m³ of gas is produced per ton of organic MSW that is digested. Important Operating parameters controlling bio methanation are:

- **Temperature:** Treatment of waste in anaerobic reactors is normally carried out within two ranges: around 25-40°C known as mesophilic range and higher than 45°C known as thermophilic range.
- **pH:** The anaerobic digestion process is limited to a relatively narrow pH interval from approximately 6.0 to 8.5 pH
- **Moisture:** The moisture content of waste should not be less than 15% as it can prevent decomposition of waste
- **Toxicity:** A number of compounds are toxic to anaerobic microorganisms. Methanogens are commonly considered to be the most sensitive to toxicity
- **C/N Ratio:** Optimum C/N ratio in anaerobic digesters is between 20-30. A high C/N ratio is an indication of rapid consumption of nitrogen by methanogens and results in lower gas production. On the other hand, a lower C/N ratio causes ammonia accumulation and pH values exceeding 8.5, which is toxic to methanogenic bacteria
- **Organic Loading Rate:** Organic loading rate is the frequency and speed at which the substrate is added to the digester. For each plant of a particular size, there is an optimal rate at which the substrate should be loaded. Beyond this optimal rate, further increases in the feeding rate will not lead to a higher rate of gas production. Agitation or consistent stirring of the contents in the digester also plays an important role in determining the amount of biogas produced
- **Retention Period:** The required retention time for completion of the reactions varies with differing technologies, process temperature, and waste composition. The retention time for wastes treated in a mesophilic digester range from 10 to 40 days. Lower retention times are required in digesters operated in the thermophilic range. A high solids reactor operating in the thermophilic range has a retention time of 14 days.

a. Composting

After waste minimisation and recycling systems, the ISWM hierarchy indicates adoption of resource recovery strategies and composting as the third preferred waste management practise, ensuring that waste is processed appropriately to facilitate further use of the material.

Composting is a controlled aerobic process of biologically “digesting” the MSW, so it may be recycled for other purposes—plant nutrient, stabilization of soil in remediation process, or soil amendment for recovery of poor soils. Compost production can be carried out at the decentralized level (home composting, bin composting, box composting, vermicomposting, in-vessel composting) or at a centralised level (windrow composting, in-vessel composting, aerated static pile), depending on the feasibility of implementation. Both processes require significant pre-processing, and only segregated organic matter can be composted. Compost produced should meet with quality criteria specified by the Fertilizer Control Order (FCO), 2009 and 2013.

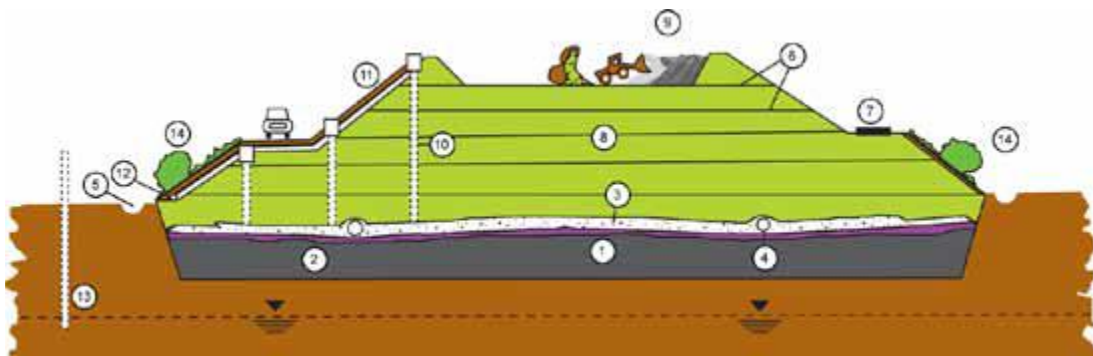
b. Refuse Derived Fuel

Refuse-derived fuel (RDF) refers to the high calorific non-recyclable combustible fraction of processed MSW, which is used either as a fuel for steam and electricity generation or as alternate fuel in industrial furnaces and boilers. The composition of RDF is a mixture that has higher concentrations of combustible materials than those present in the parent mixed MSW. RDF should preferably be co-processed in cement plants. Co-processing of RDF in steel industry and for power generation is also indicated. Internationally, the co-processing of RDF for power generation is technically proven and widely practiced as a part of their waste management strategy.

c. Technical Aspects : Solid Waste Disposal in Municipal Sanitary Landfills

Sanitary landfills are facilities for final disposal of MSW on land, designed and constructed with the objective of minimising impacts to the environment. The SWM Rules, 2016 provides comprehensive regulations on the siting, design, and operation of sanitary landfills.

A modern landfill complying with these requirements is a complex facility with various equipment to minimize environmental impacts. An overview on its basic components provides below



1. Geological barrier	8. Landfill body
2. Impermeable base liner	9. Filling and compacting in layers
3. Drainage layer	10. Gas venting system
4. Leachate collection system	11. Protective cover system
5. Storm - water drain ditch	12. Gas collectors
6. Bordering dams	13. Groundwater control
7. Circulation roads	14. Re-planting

❖ Waste suitable for landfilling

Condition and composition of waste suitable for disposal in a municipal sanitary landfill are regulated by the SWM Rules, 2016. Sanitary landfilling is necessary for the following types of waste:

- i. Non-biodegradable and inert waste (by its nature or through pre-treatment).
- ii. Commingled waste (mixed waste) not found suitable for waste processing.
- iii. Pre-processing and post-processing rejects from waste processing plants; and

- iv. Non-hazardous waste not being processed or recycled.

Sanitary landfilling is not allowed for the following waste streams in the MSW:

- i. Biodegradable waste or garden waste (composted preferably).
- ii. Dry recyclables (recycled preferably); and
- iii. Hazardous waste (needs hazardous waste sites with special containment).

❖ Site selection for a landfill

The selection of a suitable site for sanitary landfill is governed by the strategy identified in the state SWM strategy or policy and the MSWM plan of the ULB. The SWM Rules, 2016 provides criteria for the location of the sanitary landfill. CPCB's guidelines for the selection of site for landfilling should be used as a guiding document.

d. Material Recovery Facility

A material recovery facility (MRF) is a place where non-biodegradable or recyclable solid waste collected from the doorstep is segregated, sorted and various components of recyclable waste recovered from it for resale. The MRF accepts mixtures of waste fractions (non-biodegradable or recyclable), and its configuration depends on the several factors like the type, quantity, and quality of incoming waste materials. Here the material is basically segregated into different streams of waste fractions (paper, plastic, packaging paper, bottles etc) which is further sold to intermediaries who supply bulk material to the recycling industries. MRFs also require large storage spaces to temporary store sorted recyclables which can be made available to recyclers in bulk for improved resale value. Depending on the scale of operations and the level of mechanization in the facility, MRFs may be classified as manual or mechanized. Small scale units employ manual MRFs wherein manual sorting process is being carried and it's typically owned, operated, and managed by the informal sector. Large scale units have mechanized MRFs with sophisticated systems and equipment that enable efficient separation of large quantity of material into different fractions.

e. Importance of Operation & Maintenance for Ensured Service Delivery

Irrespective of whether the provision of services is by private contractor or ULB, operation and maintenance (O&M) plan has to be adhered to. The O&M plan to be adopted by the authority either the ULB or the private operator responsible for procurement and management of equipment and facilities. O&M plans developed by private operators should be ratified by ULB. The O&M plan should include preventive maintenance schedules and responsibilities and guidance for breakdown maintenance. It should be the responsibility of the supervisor and operator to regularly maintain and update the O&M plan. It should also indicate procedures for recording, reporting, analysis, and further action.

f. SWM interventions

It is recommended to implement Door to door collection system by engaging private sector participation. Recommended plan for collection and transportation is to move towards bin less system in time bound manner. Although 100 % people's participation for door-to-door collection cannot be ensured right from beginning of project and mixed approach Door to door collection and community bin shall be adopted.

g. Suggestion for effective SWM

Based on the quantum of waste to be handled by Allahabad as mentioned in the above chapters, Windrow composting, RDF and plastic recycling are the technology that can be adopted for processing of municipal solid waste. But it is recommended to use combination of technology rather than adopting any single waste processing technology to increase efficiency of waste treatment. It is proposed to develop Refused Derived fuel facility integrated with Compost plant.

h. Waste to energy and solid waste management solutions

The enormous increase in the quantum and diversity of waste materials generated by human activity and their potentially harmful effects on the general environment and public health, have led to an increasing awareness about an urgent need to adapt scientific methods for safe disposal of wastes, while there is an obvious need to minimize the generation of wastes and to reuse and recycle them. The technologies for recovery of energy from wastes can play a vital role in mitigating the problems.

Besides recovery of substantial energy, these technologies can lead to a reduction in the overall waste quantities requiring final disposal, which can be better managed for safe disposal in a controlled manner while meet the pollution control standards.

5.17.4.6.4 Leveraging Success Stories Of Other Cities

The best practices leading to successful management of collection, handling, conveyance, and treatment of solid waste in various Indian cities are analysed and a few inferences are attempted in this section.

Table 5-33: Case study of successful SWM practice – Alappuzha

Case Study Location	Alappuzha
State	Kerala
Major Success Factors	Source-level segregation and decentralised solid waste management Marginalised community involvement in rag picking
The economic impact on corporation	<ul style="list-style-type: none"> • Employment opportunities for more than 90 Self-Help Group (SHG) members • Average daily earnings of Rs. 400 per member of SHG through this initiative

	<ul style="list-style-type: none"> Waste dumped into water bodies is minimised thereby improving the ecological health of the city
Relevance to Bareilly Municipal Corporation (BMC)	Engaging source-level segregation through the marginalised community will be a Win-Win situation wherein the BMC shall minimise the amount of waste being processed, and it shall employ marginalised communities thereby improving their livelihoods

Source: Atin Biswas, Subhasish Parida et al. 2021, *Waste-Wise Cities: Best practices in municipal solid waste management*, Centre for Science and Environment and NITI Aayog, New Delhi.

Table 1-8 represents the outcome of the case study of successful SWM practice in Bhopal in Madhya Pradesh

Table 5-34: Case study of successful SWM practice – Bhopal

Case study location	Bhopal
State	Madhya Pradesh
Major success factors	<ul style="list-style-type: none"> Source-level segregation Decentralised solid waste management Formalising awareness campaigns for citizen participation Leveraging the informal sector into the channel of formal solid waste management Marginalised community involvement in rag picking
The Economic Impact On Corporation	<ul style="list-style-type: none"> Reduced capital cost for SWM Decrease in operational expenses by maximising the efficiency Achieving 100 % source segregation has led to an increase in the efficiency of SWM Reduced infrastructure costs and augmented the operational revenue by achieving a high rate of material processing
Relevance To BMC	<ul style="list-style-type: none"> Engaging citizen awareness programme such as “Carry Your Own Bag” and “Community Composting” are some of the initiatives which can be replicated to attain sustainable sanitation in BMC Over the long run, the operational efficiency of waste handling can be increased thereby resulting in decreased operational expenditure for BMC

Source:

Atin Biswas, Subhasish Parida et al. 2021, *Waste-Wise Cities: Best practices in municipal solid waste management*, Centre for Science and Environment and NITI Aayog, New Delhi.

Conclusion

To minimize the environmental impact from waste management and to establish the sustainable sound material-cycle society, reduction of waste that goes into the final disposal by controlling the generation of waste and promotion of recycling are the most important issues. This leads to reduction of the cost required for development and maintenance of facility of waste management as well as to the prolonged life of the final landfill site. Therefore, the priority should be given for

- Reduction of waste at the source of generation; and
- Reduction of waste through reuse and recycling of the waste generated.

Infrastructure design requirement for Proposed projects

A. Surface drainage – general considerations

- Deciding the drainage pattern based on the topography of the site.
- An internal drain to be planned along the peripheral site boundary. Which will take care internal and outside catchment area (if required) and transfer it to sub surface drains for conveyance to the ultimate receiving body; and
- Strengthening and widening of the approach culverts to the site is considered to facilitate stormwater drainage.

B. Surface drainage – peak runoff

- The peak runoff and discharge capacities are computed based on the following design parameters.
 - The peak runoff is planned to be computed based on the rational formula: -

$$Q = C * I * A / 360$$
 Where, Q = Quantity of runoff, m³/s
 C = Coefficient of Runoff
 I = Intensity of rainfall, mm/hr.
 A = Catchment area, ha
 - Given below the coefficient of runoff adopted in the drainage computation:
 - 0.9 - for built-up area
 - 0.5 - for road and other paved areas
 - 0.2 - for greenery and open areas
 - The condition includes maximum annual rainfall intensity of the region for storm drain design (1200 mm -2100 mm annual rainfall as per data from National expert (Environmental)).

C. Surface drainage – sizing

- The sizing of the drains is designed based on the discharge capacity of Q_c to cater to the estimated peak runoff using Manning's formula: -

$$Q_c \text{ (m}^3\text{/sec)} = [(1/n) * R^{2/3} * S^{1/2}] * A$$

Where

- n = Roughness coefficient (s/m^{1/3})
- R = Hydraulic mean radius (m)
- S = Hydraulic gradient (m/m)
- A = Area of a cross-section of the drain (m²)

D. Surface drainage – design and scheme

- The drainage system is planned to cater for the entire development through gravity flow;
- Providing drains on both sides of the roads or internal drain.
- The proposal includes an open trapezoidal drain with stone pitching for the sidewalls and Plain Cement Concrete (PCC) for the base for surface runoff collection, providing easy maintenance of the primary road.
- The proposal includes a rectangular brick masonry drain for the remaining areas for optimisation of the area under drainage
- The considerations include RCC box/pipe culverts of suitable sizes for road crossings.

- Enhancing the groundwater table and reducing water demand through effective rainwater management; and
- Rainwater harvesting through recharging structures is envisaged all along the drain at regular intervals, apart from individual rainwater harvesting through recharging structures at strategic locations.

E. Storm water Open Channel

Storm water drains are surface drains which are constructed as open or covered drains with a suitable gradient to carry the storm water flows from the catchment to the safe disposal point. Drainage in the urban context is classified as given below:

- **Tertiary drains:** In urban catchments, tertiary drains collect storm water from sub-zones and convey to the secondary drains.
- **Secondary drains:** These drains collect storm water from tertiary drains and zones. They discharge the storm water into the primary drains.
- **Primary Drains:** In urban catchments, primary drains are main drains that collect storm water from secondary drains and discharge to the safe disposal point.

F. Construction of Storm Water Drains

This section discusses the construction of surface drains such as tertiary, secondary, and primary drains. The tertiary drains are generally small drains that are constructed in rectangular section whereas; secondary and primary drains are larger drains that are normally constructed in the trapezoidal section.

❖ RCC drains

Tertiary drains are usually constructed in rectangular section either of masonry or reinforced cement concrete. Where it is proposed to construct precast RCC drain, the same should not be less than 50mm thick and should be reinforced with 3 longitudinal bars of 6mm diameter and 2 crossbars of same size in 0.6 m length and mould should be removed after 48 hours then they shall be kept well-watered for a fortnight and after this watering shall be discontinued and the drain should be left to cure for another fortnight before laying. The ground should be kept to the exact shape and slope at which drains are to be laid and the trench will be watered and rammed.

❖ Brick Drains

Brick drains can also be constructed of bricks. The brickwork shall be in cement mortar 1:3 and plastered smooth with cement plaster of 1:2, 20 mm thick. A change in the alignment of the brick drain shall be on a suitable curve conforming to the surface alignment of the road.

❖ Rectangular Section

In congested urban areas, small or medium drains are constructed in a rectangular section covered with suitable RCC slabs to protect against dumping of solid waste from the local residents. Rectangular drains are normally constructed in hilly regions due to space crunch.

❖ Trapezoidal section

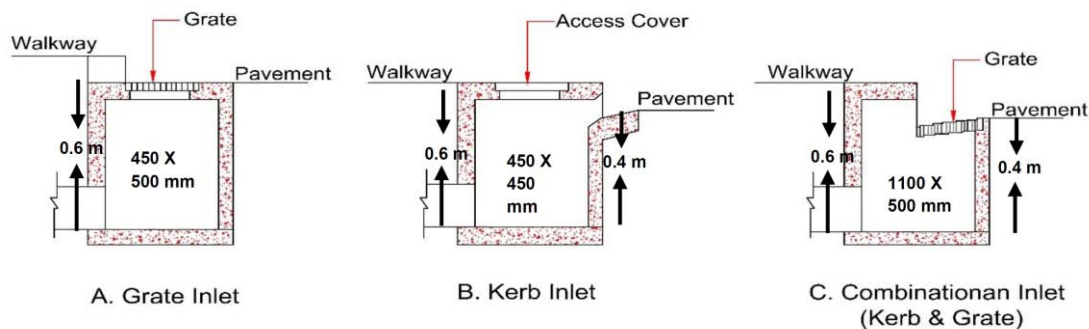
Primary and secondary drains that normally carry a considerable quantity of storm flows are constructed in trapezoidal section. Especially outfall channels that sometimes carry

entire storm flows from the catchment are designed in larger sections that often resemble irrigation channels. In such cases it is preferable to economize the cost by constructing earthen channels with cement concrete lining.

Source: Manual on storm water drainage system, CPHEEO

G. Storm water inlets

- Storm water inlets are devices used to collect runoff and discharge it to an underground storm drainage system. Inlets are suitably located on pavements, in gutter sections, paved medians, roadside and at locations of specific requirement.
- ❖ **Kerb inlet** : Kerb inlets are vertical openings in the road kerb when they are equipped with the diagonal notches cast into the gutter along the kerb opening to form a series of ridges or deflectors. Such inlets are suitable where heavy traffic is expected.
- ❖ **Gutter inlets**: Gutter inlets are horizontal openings covered with one or more suitable gratings through which the flow passes.
- ❖ **Combination inlets**: Combined grate and curb inlets are more efficient. These are compound of a curb and gutter inlet acting as a single inlet. Following figures give the details of different types of inlets as shown below

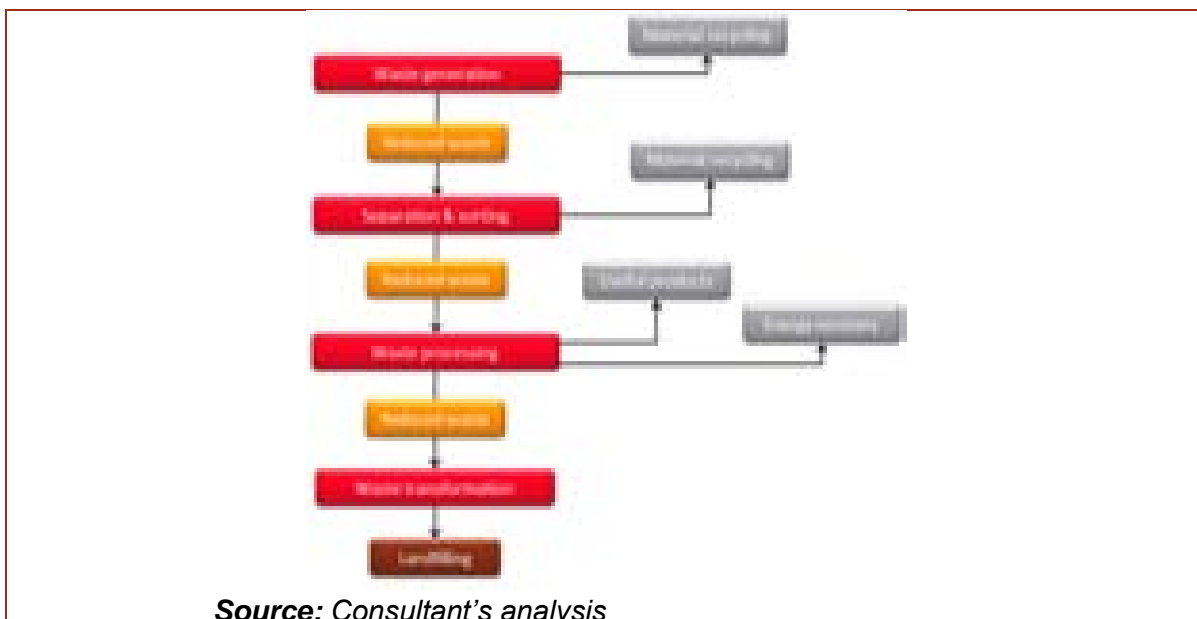


Source: Manual on storm water drainage system, CPHEEO

Solid waste Management

- SWM is one of the essential services for maintaining the quality of life and for ensuring better standards of health and sanitation.
- If properly collected at the source, SWM would reduce the number of downstream problems related to transportation and disposal of the same. The solid waste generated in proposed development can be broadly categorised as under:
 - Domestic wastes: kitchen and wood waste, plastic, paper, floor sweepings, etc.
 - Road sweeping and sanitary waste: human waste.
 - Garden and agriculture waste: leaves, branches, plants
 - Roads/building construction waste: earth, asphalt, concrete, brick, plaster, wood, glass, stones.
- **Exhibit No. 1** depicts the role of integrated SWM, to reduce the quantity of solid waste disposed of to land by recovering materials and energy from solid waste.

Exhibit No. 1: Waste reduction by integrated SWM



Source: Consultant's analysis

- The project shall reduce landfills caused by waste so that it is minimal. Source segregation of solid waste generated is a prerequisite for recycling. The gardening in the project can effectively utilise composted organic waste. Also, considerations include energy creation through waste.
- The generation rates of residential, commercial areas vary to such an extent that exact quantification of waste generation. However, an attempt has been made to quantify the solid waste generated from various proposed development.
 - Residential refuse : 0.3 to 0.6 kg/capita/day
 - Commercial refuse : 0.1 to 0.2 kg/capita/day
 - Street sweepings : 0.05 to 0.2 kg/capita/day
 - Institutional refuse : 0.05 to 0.2 kg/capita/day
- *Source: National Building Code*
- Out of the total solid waste generated, 40 percent may be taken as organic waste and 60 percent as inorganic waste. The knowledge of chemical characteristics of waste is important for selecting and designing the waste processing and disposal facilities.
- It is mandatory to implement source, and the activity includes adequate considerations for the planning of collection, transportation of waste within the site area. Users will be required to segregate their waste into the following categories and put it in colour-coded bins.
 - Industrial non-hazardous waste.
 - Bio-degradable waste.
 - Non-biodegradable waste.
 - e-waste like parts of computer, floppies, monitor, cartridges, ribbons.
 - Construction debris, street sweepings.
- From the above, the solid waste treatment facility contemplates treating only organic waste and inorganic segregated wastes to authorized waste processing or disposal facilities or deposition centers either on its own or through the authorized waste collection agency.
- The entire solid waste is planned to be collected and treated in the municipal solid waste treatment plant, Earmarking suitable area for waste storage area within Proposed development.

5.17.5 SOLAR PROJECTS

5.17.5.1 Vision for Solar Projects

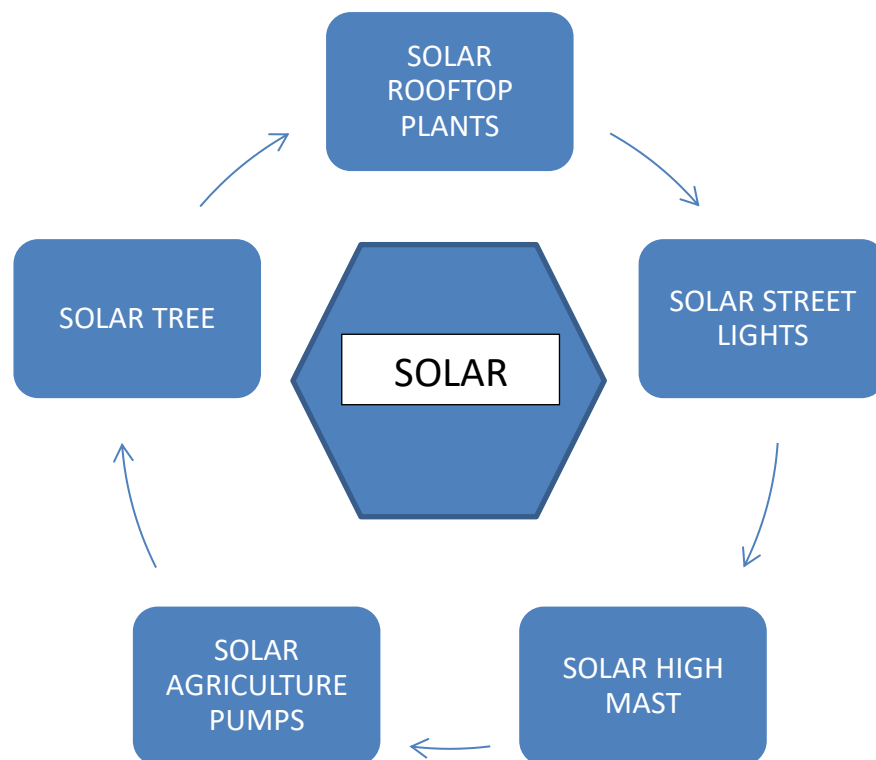


Figure 5-104: Solar Projects Vision

The vision to develop Bareilly a clean, green, pollution free city & self-dependable in power generation.

As the city enjoys ample sunlight to generate solar power from sun, it is advisable to install solar product for daily utilization. Solar power is free of cost & the system life is 25 years with almost zero maintenance cost.

5.17.5.1.1 AWARENESS

People from all sectors should be made aware to use solar power & encourage them with the benefits of renewable power. Rooftops for residential should be brought up under subsidized schemes. Solar power for HT consumers should be made compulsory beyond certain limits.

5.17.5.1.2 ENCOURAGEMENT

UPNEDA & UPPCL should be flexible in their regulations & policies to encourage people to use solar power, government should float schemes for subsidy for all solar products, should run a campaign through camps.

5.17.5.2 REGULATIONS & POLICIES

UPNEDA & UPPCL have very harsh solar regulations & policies. The power tariff is very much high as compared to other states, certain mandate has to be implemented through state government to ease the use of solar power

As state of Maharashtra have police for 500 KW for NET Metering under the nodal agency & DISCOM. Where residential as well as commercial meter holders enjoy full export of extra power generated. They get the rebate in terms of units they exported to grid. Hence making the electricity bills zero.

5.17.5.2.1 MNRE SCHEMES

The central government have many schemes that also been carried out along with state agencies. State government should encourage people for such schemes
Many states giving agriculture solar pumps on subsidies rate to farmers

5.17.5.2.2 KUSUM

This is specially for farmers, where farmer lends his land for 30 years to the government or to the solar developer. He directly owns the plan with the developer & generate electricity in his farm.

The generated electricity is sold to the government on some fixed rate per unit.

5.17.5.2.3 ATAL JYOTI GRAM YOJNA

This is for smart village scheme where whole village runs on solar power.

Sarpanch of selected village is allotted with some funds for which he puts solar plant for panchayat office, solar streetlights, solar pumps, high mast etc.

Government of Uttar Pradesh also should highlight such schemes to reach to the common people.

5.17.5.3 SCOPE

As natural coal fields, gas & petroleum have limited stock, the scope of using renewable power which is readily & freely available. One should take this opportunity to bring back India on self-reliable in power sector.

As India is inching towards number one position in renewable sector.

5.17.5.3.1 ONLINE OPEN PLANT

One should install a demo solar park to give real time generation, its utility & advantages over grid power. Solar power for farmers, hotel industries, private hospitals & commercial establishments etc. should be made compulsory.

Also, to identify the HT consumers for installation of solar power plants.

5.17.5.3.2 FINANCE

Finance through banks / financial institute can be made easily available to the customers wants to install solar products.

5.17.5.3.3 ONLINE APPLICATION

A separate portal for online application for NET Metering on UPPCL webpage.

5.17.5.3.4 EPC PLAYERS

They will play an important role to gain momentum to this industry, many skilled workers & engineers should be encouraged to build their carrier in solar.

5.17.5.3.5 TECHNOLOGY

Separate subject can be added to study renewable energy into technical board & universities, where practical & research development syllabus can be incorporated along with theory. To attain these following systems is suggested & proposed.

5.17.5.4 VISION & PROJECT COMPONENTS

5.17.5.4.1 SOLAR ROOFTOP PLANTS

This system has most advantages amongst all systems. It is self-power generation unit for self-use. It can be installed on rooftops & on ground. This system has capacity of 1 KW to Megawatts depending on requirement & demand.

As UPNEDA & UPPCL regulations & policies do not entertain NET Metering above 10 KW, however it is advisable to incorporate zero export device in system to restrict export of solar generated energy in to the grid.

As Uttar Pradesh (UPPCL) have highest electricity tariff in India (Rs.8.5 / Unit) it is always advisable to install solar power plants.

The initial cost to install solar plant is on higher side but the return of investment is about 3-4 years. Such plant can be on grid or off grid.

Battery backup can be an added feature for plants where no grid is available,

This system can also be compatible with DG set

During the period of 25 years the user gets free of cost power. No Co2 is emitted in atmosphere in the process. The capacity of plant can be calculated by electrical bill analysis & plant size is determined. After mapping, civil layout, checking electrical parameters final design is done.

5.17.5.4.2 SOLAR STREET LIGHTS

Semi or fully integrated solar streetlights can be installed on main streets, lanes of city. This unwired system will increase aesthetic view of city. The atomized Standalone plant can also be installed at the maiden of lane or small solar parks can be set up at free unused land.

These solar lights are self-operated, automatically gets ON / OFF works dusk to dawn & have the operation capacity for 4 days without charge.

The battery & LED Light fixture in same housing whereas the panel is mounted on same pole. Such lights can also be used at gardens, public places, hospitals etc. And where there is no grid available.

It comes in LED wattage of 9 to 100 Watts.



5.17.5.4.3 SOLAR TREES

This is again very useful system which requires less space to install, very attractive solar power plant in shape of tree.



It can be installed anywhere in office premises, hospitals, schools & collages & gardens. This comes in capacity of 1 KW to 5 KW with sitting arrangement equipped with CCTV & mobile charging station.

5.17.5.4.4 SOLAR FLOATING PLANT

Such plant can be installed at river banks the capacity ranges from 5 KW to 500 KW depending on the length of river bank.



5.17.5.4.5 SOLAR HIGH MAST

Such lights are designed for city squares / chowks, bus stands, parks, railway station & hospitals.

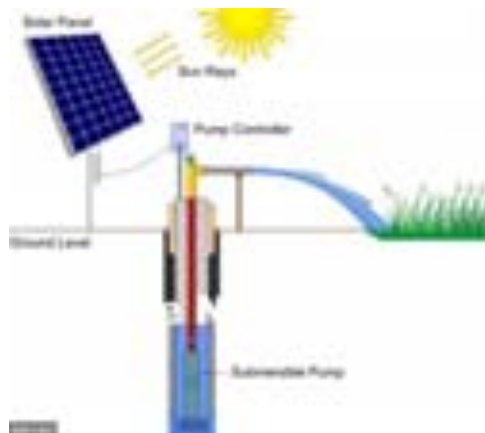
LED Lights fixture, Solar panel & Battery is mounted on top of hexagonal pole. This is also atomized system equipped with CCTV surveillance.

5.17.5.4.6 SOLAR AGRICULTURE PUMPS

Such solar installation can be used for pumping station, filtration plants, tube wells, overhead tanks, irrigating agriculture land & on wells.

The system is combination of solar panels with controller, AC/DC pumps (Mono block or submersible) This works in day time uses solar power to pump water.

It comes in ranges of 1 HP to 50 HP.



5.17.5.4.7 SOLAR EV CHARGING STATIONS

As increase in use of Electrical vehicles (2-3 & 4 wheelers) solar EV charging stations need to be installed at main terminals of city, it requires very less space comes in range of 3 & 5 KW.

5.17.5.4.8 SOLAR WATER HEATER

As many consumers uses electrical geysers for hot water, heavy power is use in such equipment's, to avoid heavy energy & bills one should install solar water heater.

Specially hotel & hospital need 24 hours hot water. Such SWH comes in capacity of 100 – 10000 LPD. The SWH are of two types: Flat platted & Glass tubes. The average storage of hot water is about 48 hours.

Solar boiler plant can be used for industrial purpose.

The average calculation / thumb rule is 25 Liters / person.

Chapter 6. Pre-Feasibility of Selected Projects

6.1 Selected Project List for Pre-Feasibility Report

This Pre-feasibility report has details of the selected projects from Bouquet of projects under Civic Infrastructure Projects and Transport Infrastructure Projects. The projects were selected in coordination with Vice Chairman, Bareilly Development Authority, considering the holistic development of all the sectors of the city and as mentioned in RFP. Total 14 priority projects are selected as follow:

Selected Project List for PFR Bareilly Vision Plan		
Sr. No.	Project Name	Domain
Civic Infrastructure Development Projects		
1	Residential Housing Node, a) Nekpur, b) Gangora Pikariyam, c) Kargaina, d) Tehtajpur	Urban Planning
2	Industrial Growth Centers, a) Rajau Paraspur Phase 1, b) Parsakheda (2025-30), c) Kurtara (2030-35)	Urban Planning
3	Ahichchhatra Tourism Infrastructure upgradation.	Heritage and Tourism
4	First War of Independence (1857) museum	Heritage and Tourism
5	Urban Renewal of Nath Temple Circuit & infrastructure improvement of all Nath Temples precincts	Urban Design
6	River front development. a) Chowbari fairground (Ramganga River), b) Nakatiya River	Urban Design
7	Development of Aero city integrated complex near Airport	Urban Design
8	City Plan for Water Logging / stagnant spots and flood prone areas	Infrastructure
9	Development Of Working Shed for Zari Handicraft Artisans	Economy
10	"Medicity" – designated area with multiple health business and activities	Economy
11	Demonstration of Solar Energy for streets and Gov. buildings.	Solar
Transport Infrastructure Development Projects		
12	Development of Integrated Freight Center / Logistics Hub a) Kurtara, b) Faridpur	Urban Planning
13	Access to Ganga Expressway through Radial Road and Outer Ring Road	Transport
14	Bareilly Lite Metro Project	Transport

6.2 CIVIC INFRASTRUCTURE DEVELOPMENT PROJECTS

6.2.1 Project 1: Residential Housing Node

6.2.1.1 PROJECT 01: RESIDENTIAL HOUSING NODES

6.2.1.1.1 Introduction

Bareilly is one of largest metropolises in western Uttar Pradesh. Bareilly City is the administrative Centre of Bareilly division and district. It also serves as a hub to produce cane furniture and trading in grains, sugar, pulses, and newly cultivated rice.

According to National Capital Region Planning Board (NCRPB) 2041 plan Bareilly has been identified as Counter Magnet Area (CMA) for future development. It is equidistant from New Delhi with 250 kilometers and Lucknow with 252 kilometers. It is located as Eastern Dedicated Freight Corridor Node. It is famously known as the Zari Nagar for Zari zardozi handicrafts works on dress materials of Uttar Pradesh.

6.2.1.1.2 Spatial Growth of the City

Bareilly serves as the area's educational center, numerous prestigious educational institutions, as well as auxiliary buildings like apartments and hostels, can be found throughout the town's outlying areas, which is crucial for the growth of the metropolitan area. Locals from the villages nearby also move and reside in Bareilly to take advantage of the city's improved employment prospects, healthcare services, and educational resources. The geographic scope of a city expands as a result of inward migration, population growth, significant infrastructure development, and significant initiatives that have an impact on economic growth.

The city is anticipated to grow with the existing vision and proposed developments as mentioned in the Table below:

These locations of urban growth are based upon the past growth trends, proposed projects, and analysis of existing conditions.

Table 6-1: Urban Extent 2051 and 2071

Road Name	Urban Extent 2051 (Village Name)	As per Draft Master Plan 2031 Boundary	Urban Extent 2071 (Village Name)	As per Draft Master Plan 2031 Boundary
Nainital Road	Bhojipura	(Inside the Boundary)	Semi Khera	(Outside the Boundary)
Pilibhit Road	Labhera	(Outside the Boundary)	Khai Khera	(Outside the Boundary)
Lucknow Road	Jerh	(Outside the Boundary)	Naugawan	(Outside the Boundary)
Badaun Road	Anguri	(Inside the Boundary)	Sardarnagar	(Outside the Boundary)
Delhi Road	Dhaneta	(Outside the Boundary)	Mirganj	(Outside the Boundary)

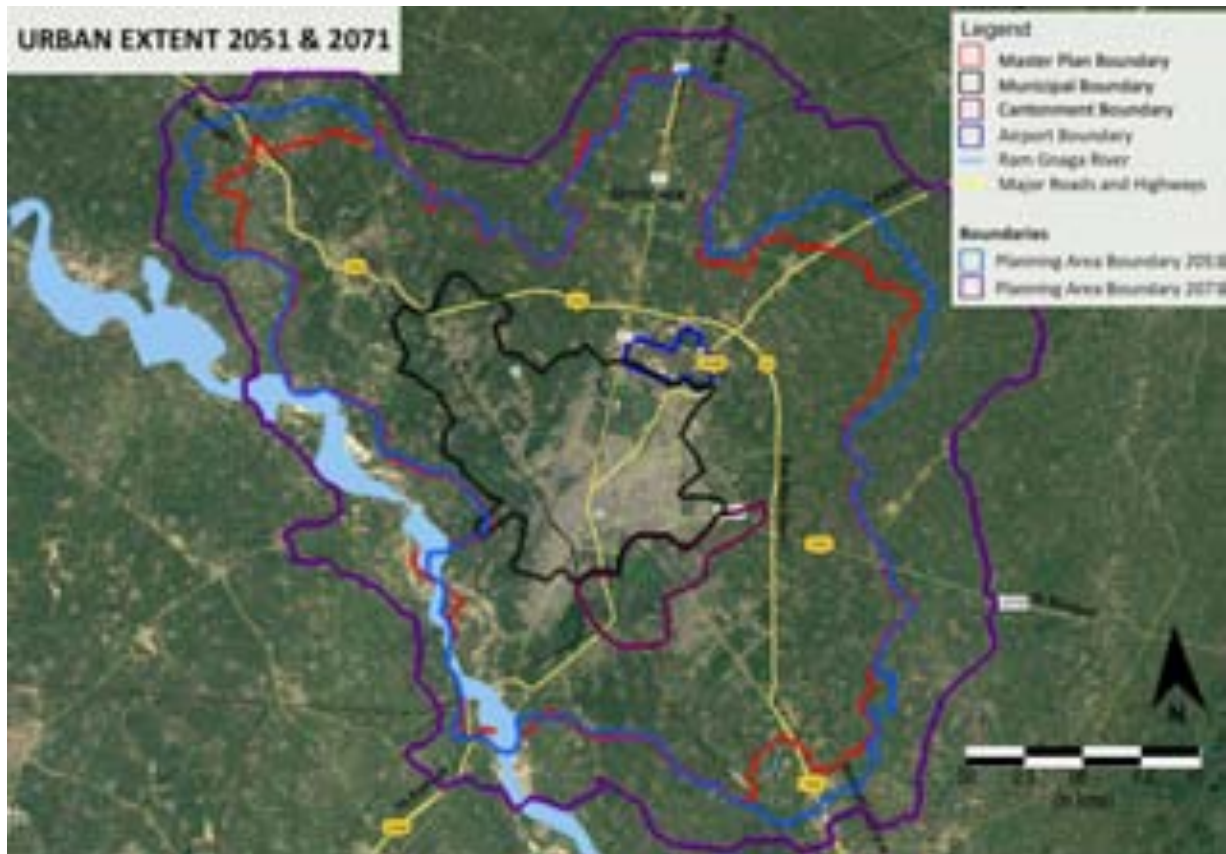


Figure 6-1: Urban Extent 2051 and 2071

6.2.1.1.3 Estimated Household Size

The household size of Bareilly city has dropped in the past 3 decades. It was 6.43 in the year 1991 which in the last census of 2011 declined to 5.42. The decline in household size can be attributed to the nuclear family being more in existence now as compared to the joint family. Household size of 5.0 is proposed for Bareilly city which is also the national average.

6.2.1.1.4 Proposed Density

Decongestion of the core area is necessary to provide infrastructural equity and address traffic issues. This is also to admit that low dense low rise infrastructure development demands large investment. So, to reduce costs and provide long-lasting suitable infrastructure, medium-density compact development with a density of 250pph is proposed.

6.2.1.1.5 Need to residential Housing Nodes

Bareilly is a rapidly urbanizing largest metropolis in the western Uttar Pradesh. Strategic geographic location and connectivity within the region, career possibilities, higher education prospects, and a safer living environment are among the many things that draw people to the city.

It is also one of the major service providers in the region. Major determinants of the growth in Bareilly will be:

- Bareilly is identified as one of the nine magnets to the National Capital Region.
- Existing Industrial base potential can be developed as Agro-based industries because of the availability of raw materials. The projected industrial growth hubs are intended to create

employment opportunities and attract investment to the city because industries are the engine of economic progress.

- The inhabitants of the surrounding area will be drawn to proposed residential zones, which are meant to be planned neighbourhood zones since they would offer better living conditions and amenities.
- Connectivity via road and rail to the state capital of Lucknow, the national capital New Delhi, and the popular tourist resort Nainital.

Bareilly is facing the stress of urbanization on account of high concentration of economic activities within city limits and a physical limitation to its expansion. A rise in population, both permanent and floating that is well above its natural capacity to support and nurture has put further strain on its infrastructure, resources, and places.

As per the estimated population projection the additional requirement for housing alone in 2071 will be approximately 7,43,403 households. At present the population of Bareilly Planning area is around 15.56 lakhs and as per the estimated population of 2071 the population of Bareilly Planning area will be increased up to 37.02 Lakhs. Therefore, an urgent need for decentralization of activities within the city and for the creation of new residential housing nodes so that organic future development of the city can take place.

6.2.1.1.6 Site Selection

Total 12 different pockets are identified in the preliminary stage and out of them 04 pockets are finalized. The locations are based on their connectivity, proximity to the existing development, continuity, close to bus terminal and railway stations and far from industrial developments

New residential housing nodes are suggested to handle the population growth and improve living conditions. The proposed residential nodes will be an integrated neighbourhood with convenient access to social services and facilities like healthcare, education, retail, leisure, entertainment and sports.

Four residential zones or nodes are proposed to be developed following the study and demand evaluation. Out of these 2 residential zones are proposed on Aligarh Road near village Nekpur and Kargana. Other residential zones are proposed on Lucknow Road near Tehtajpur and near Village Ghaghoria Piparia on Nainital Road.

Residential Housing nodes at Nekpur & Kargana villages

The residential Housing nodes Nekpur and Kargana are the extension of the existing residential development of the Bareilly City. These nodes are well connected with Bareilly Badaun Road and internal roads. The Kargana residential housing node is laying between the railway line passing close to the site and Aligarh Road.

Residential Housing nodes at Tehtajpur and Ghaghoria villages

This residential Housing node is proposed along the Nainital road strategically so that it will cater the future spatial growth of the city towards the Nainital road. It will help to growth of the city in this direction in a planed manner. These types of planned townships and residential developments will motivate the developers to think beyond the city limits.

Similarly, due to bypass road and NH 24 the development possibilities in and around the bypass is growing tremendously in past few years. In view of this a residential housing node at Ghaghoria village is proposed to restrict the haphazard and unplanned residential growth.

6.2.1.1.7 Area requirements

Each residential node is expected to be developed on 100 hectares each. The household size of 5 is assumed for the proposed residential housing nodes. With a density of 175 PPH approx. 3500 Households will be accommodated in the housing nodes. Additionally, it is anticipated that by 2051, the population will have spread out past the boundary of the Draft Master Plan 2031 and settled in various areas throughout the city.

6.2.1.1.8 Product Mix

Type of residential category as per economic status	Type of residential category as per economic status
EWS	15
LIG	35
MIG	35
HIG	15
Total	100

The composition of residential housing node will be around 60:40 ratio. The Housing units will be divided into 04 different categories i.e EWS, LIG, MIG & HIG and distributed as per the government guidelines. To self-sustained and planned development including neighborhood concept dedicated support physical and social infrastructure is also provided like Retail shops, Social infrastructure (education, health and other community facilities), Basic Utilities/ Services, Park & Playground and Transportation facilities.

6.2.1.1.9 Benefits of Proposed Residential Housing Nodes

- The residential housing nodes will be created using advanced planned urbanization principles.
- These cities offer independent healthcare, offices, and educational facilities, so residents are not dependent on the congested core part of the Bareilly city for these services.
- The citizens and businesses functioning within these cities are completely safe.
- The residential housing nodes will have their own self-sufficient transportation systems and are situated close to the typical residential and businesses.
- Compact and robust
- Low power consumption

The scientific balance between the population and the resources needed to support them are one of a major component of the proposed residential housing nodes. This enables the developers to offer the residents a responsive and sustainable environment along with higher air quality, lesser environmental effect and improves the use of resources like water and power.

6.2.1.1.10 Project Timeline & Broad Project Cost

The project can be developed as short-term intervention within five-year project horizon. For the broad cost estimation of the residential housing nodes the land rate is assumed to be four times the actual rate of the land. The broad project cost for the proposed residential housing node is given below:

Table 6-2 Nekpur Residential Housing Node Broad costing

S.no	Components	%	Development Cost (in INR)
1	Plumbing sewerage STP and all	30	7,413,150
2	Electricity ESS and all	30	7,413,150

S.no	Components	%	Development Cost (in INR)
3	Roads and landscaping	40	9,884,200
	Sub Total	100	24,710,500
4	Land Cost	100 Ha	8,000,000,000
	Total		8,024,710,500

Table 6-3 Kargaina Residential Housing Node Broad costing

S.no	Components	%	Development Cost (in INR)
1	Plumbing sewerage STP and all	30	7,413,150
2	Electricity ESS and all	30	7,413,150
3	Roads and landscaping	40	9,884,200
	Sub Total	100	24,710,500
4	Land Cost	100 Ha	8,000,000,000
	Total		8,024,710,500

Table 6-4 Tehtajpur Residential Housing Node Broad costing

S.no	Components	%	Development Cost (in INR)
1	Plumbing sewerage STP and all	30	7,413,150
2	Electricity ESS and all	30	7,413,150
3	Roads and landscaping	40	9,884,200
	Sub Total	100	24,710,500
4	Land Cost	100 Ha	4,800,000,000
	Total		4,824,710,500

Table 6-5 Ghaghoria Residential Housing Node Broad costing

S.no	Components	%	Development Cost (in INR)
1	Plumbing sewerage STP and all	30	7,413,150
2	Electricity ESS and all	30	7,413,150
3	Roads and landscaping	40	9,884,200
	Sub Total	100	24,710,500
4	Land Cost	100 Ha	8,800,000,000
	Total		8,824,710,500

6.2.1.1.11 Requisite Approval

For the development of these residential housing nodes involvement of multi-disciplinary agencies will be required and no objection certificates will be required for free flow and unerupted development. The following approval is necessary:

4. Land Revenue Department for change of land use. If required.
5. Bareilly Development Authority for land use change from agriculture to residential.
6. There is no Environmental sensitive location around the periphery, so no clearance is required, and no environmental screening is requisite for the development.
7. Local people from Nekpur, Kargana, Tehtajpur and Ghaghoria Piparia as No objection certificate.

Vision Plan, Implementation Strategy & Integrated Infrastructure Plan for Bawal, 2071



Legend

- Railway_station
- Proposed Residential nodes
- railways
- primary
- secondary
- Master plan boundary 2031
- Munciple_boudary

Map: Proposed Residential nodes

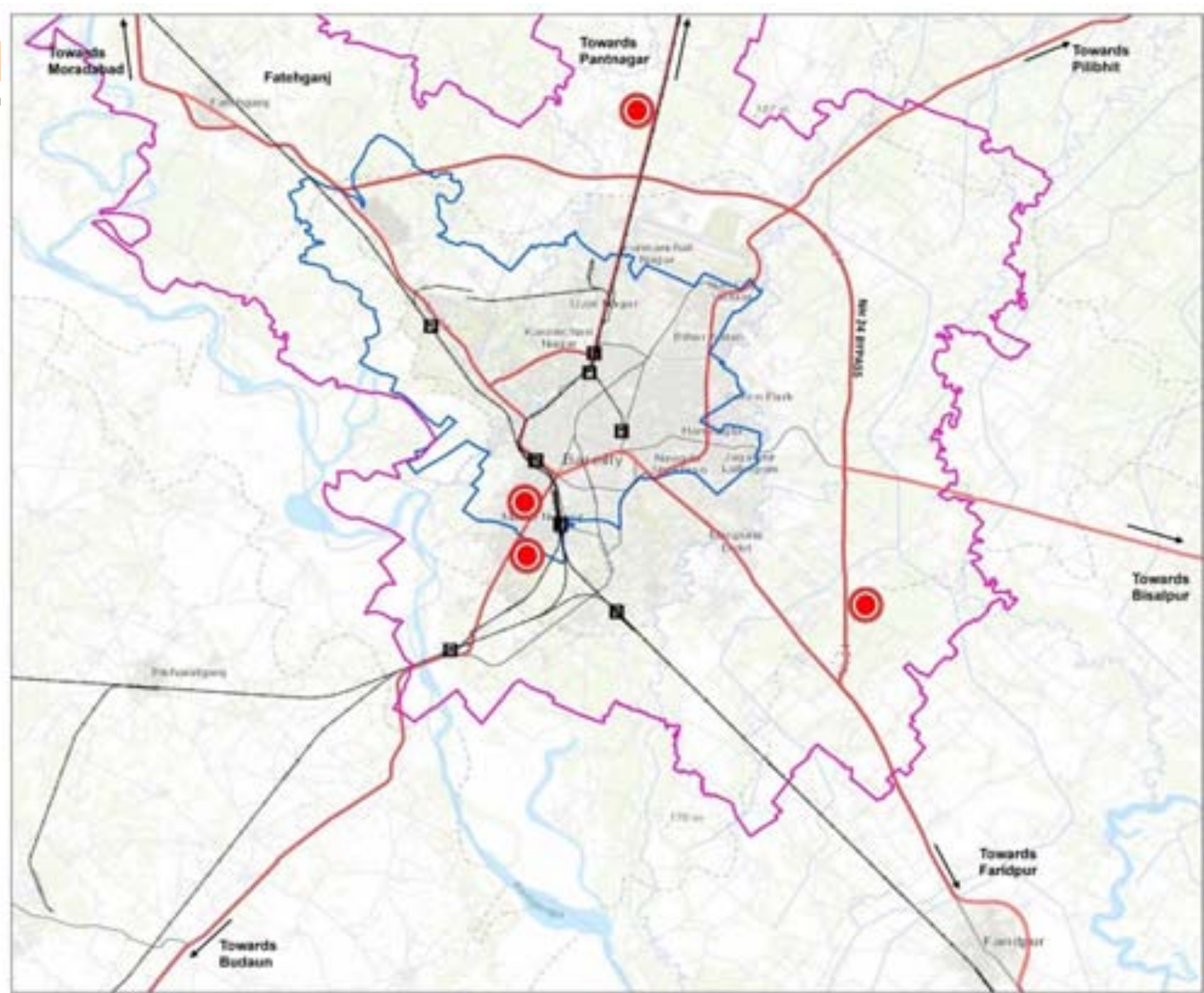
Scale: 1:21,000



Client: Bawal Development Authority
Government of the Punjab

Consultants: AECOM in association with
Mansoor Consulting Engineers Ltd. &
Urban Development Services Pvt. Ltd.

AECOM





Vision Plan, Implementation Strategy & Integrated Infrastructure Plan for Bareilly, 2071

Legend

- National Highway
- State Highway
- MGN
- Other Roads
- Railway Line
- Municipal Boundary
- Planning Area Boundary (ICDA)
- Water Bodies

Map Title:
Proposed Residential Area

Scale: 1:10,000

Client:
Bareilly Development Authority
Government of Uttar Pradesh

Consultants:
Muzumdar Engineers Pvt. Ltd.
In Association with
S.T. Sharma Consulting Engineers Ltd. &
Urban Development Services Pvt. Ltd.

AGENCIOS

Vision Plan, Implementation Strategy & Integrated Infrastructure Plan for Bantilly, 2071



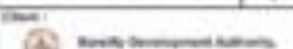
Legend

-  National Highway
-  State Highway
-  NCT
-  Other Roads
-  Railway Line
-  Municipal Boundary
-  Planning Area Boundary (SCA)
-  Water Bodies

Map Title:

Proposed Residential Area

Scale: 1:10,000



Client:

 **Urban Development Authority**
Government of Ghana

Consultants:

Woodward Clyde Pte. Ltd.
in association with

ETI
Technics Consulting Engineers Ltd. &
Urban Development Services Pte. Ltd.

Vision Plan, Implementation Strategy & Integrated Infrastructure Plan for Baniilly, 2071



- Legend
- National Highway
 - State Highway
 - MCH
 - Other Roads
 - Railway Line
 - Municipal Boundary
 - Planning Area Boundary (SCA)
 - Water Bodies

Map Title: Proposed Residential Area



Client: Baniilly Development Authority, Government of Uttar Pradesh

Consultants: Weiskopf + Gerspacher Pty Ltd in association with
 ST
 Soteria Consulting Engineers Ltd & Urban Development Services Pvt Ltd



6.2.2 Project 2: Industrial Growth Centers,

6.2.2.1 INDUSTRIAL GROWTH CENTRE

6.2.2.1.1 Introduction

Originally the city's identity was based on its small-scale bamboo craft and zari zardozi industries, but these are now quickly fading. Small and medium-sized firms that manufacture products using materials like plastics, chemicals, and other materials are the most prevalent in Bareilly. The small and medium-sized enterprises of Bareilly are the key economic forces. It is therefore recommended to support small and medium-sized businesses, for which space is set aside in the Draft Master Plan 2031 and the required infrastructure is anticipated to be installed throughout the project's medium-term time frame.

6.2.2.1.2 Existing Industrial Areas

Paraskhera Industrial Area

Paraskhera Industrial area which is a major industrial area in Bareilly was established by Uttar Pradesh State Industrial Development Authority (UPSIDA) in 1980. The industrial area covers an area of 367.00 acres with 286 plots. No. of Industrial plots which are occupied and are producing goods or products are 286. Major Industries such as Coco Cola, Bharat Petroleum LPG Bottling Plant, Vadilal Ice Creams have their large scale industries in this area only.



Figure 6-3: Industrial Area in Bareilly

Table 6-6 Main Industrial Zones

S. No.	Name of Industrial Area	Land acquired (In Acre)	Land developed (In Acre)	No. of Plots	No. of Vacant Plots	No. of Units in Production
1	Paraskhera	367.00	367.00	286	00	286
2	CB Ganj	16.9	16.9	73	00	37
3	Bhojpura	38.3	38.3	89	00	28

CB Ganj Industrial Area

Starting in 1920's, a number of industries were established here, including the Indian Turpentine & Rosin Company (established in 1926) and the Western Indian Match Company (WIMCO; established in 1937), resulting in C.B. Ganj being a key industrial centre of the city. Following India's independence in 1947, the UP State Industrial Development Corporation (UPSIDC) constructed an industrial estate in CB Ganj in 1958. The Indian Turpentine & Rosin Facility, on the other hand, stopped producing in April 1998, while the WIMCO factory, which used to provide matches across the country, closed in 2014. Area covered by CB Ganj Industrial area is 16.9 Acres with 37 units in production as per MSME Report. BL Agro is one of the major agro based industry in this area.

Bhojpura Industrial Area

Bahojpura Industrial Area is one of the important industrial areas in Bareilly with 89 plots flourishing in an area of 38.3 acres. This area has industrial mix which produce a wide range of products such as Agro based spice industries to stone cutting and furnishing industries.

Lucknow Road Industrial Area

This is an industrial area which is not covered under any government scheme but is thriving on its own because of the private players. This area has industries which produce chemicals, construction bricks and agro based products.

6.2.2.1.3 Relevant Industrial Development Schemes

6.2.2.1.3.1 *One District One Product (ODOP)*

The Ministry of Food Processing Industries launched the 'One District, One Product' (ODOP) programme to assist districts in reaching their full potential, fostering economic and socio-cultural progress, and creating employment possibilities.

The Government of India defined various objectives of the One District One Product Programme of Uttar Pradesh that are given below:

- Preservation and development of local crafts/skills and promotion of the art.
- Increase in the incomes and local employment (resulting in a decline in migration for employment).
- Improvement in product quality and skill development.
- Transforming the products in an artistic way (through packaging, branding).
- To connect the production with tourism (Live demo and sales outlet – gifts and souvenir).
- To resolve the issues of economic difference and regional imbalance.
- To take the concept of ODOP to the national and international level after successful implementation at the State level.

From Bareilly Zari-Zardozi and Bamboo Craft was selected under this scheme.

6.2.2.1.3.2 *Prime Minister's Employment Generation Programme (PMGEP)*

The Indian government has launched the Prime Minister's Employment Generation Programme (PMEGP), a new credit-linked subsidy programme aimed at creating jobs through the formation of micro firms in both rural and urban areas.

The different objectives to develop the industrial sector of India are as follows:

- To generate employment opportunities in rural as well as urban areas of the country through setting up of new self-employment ventures/projects/micro enterprises
- To bring together widely dispersed traditional artisans/ rural and urban unemployed youth and give them self-employment opportunities to the extent possible, at their place



- Legend**
- Railway_station
 - Existing industrial area
 - railways
 - primary
 - secondary
 - Munciple_boudary
 - Master plan boundary 2071

Scale: 1:21,000

Client: Bareilly Development Authority, Government of Uttar Pradesh

Prepared by: JSPM&T, Lucknow in association with
 M/s. JSPM&T Engineering Pvt. Ltd. &
 M/s. Urban Development Services Pvt. Ltd.

JSPM&T **UrbanDev** **Services**

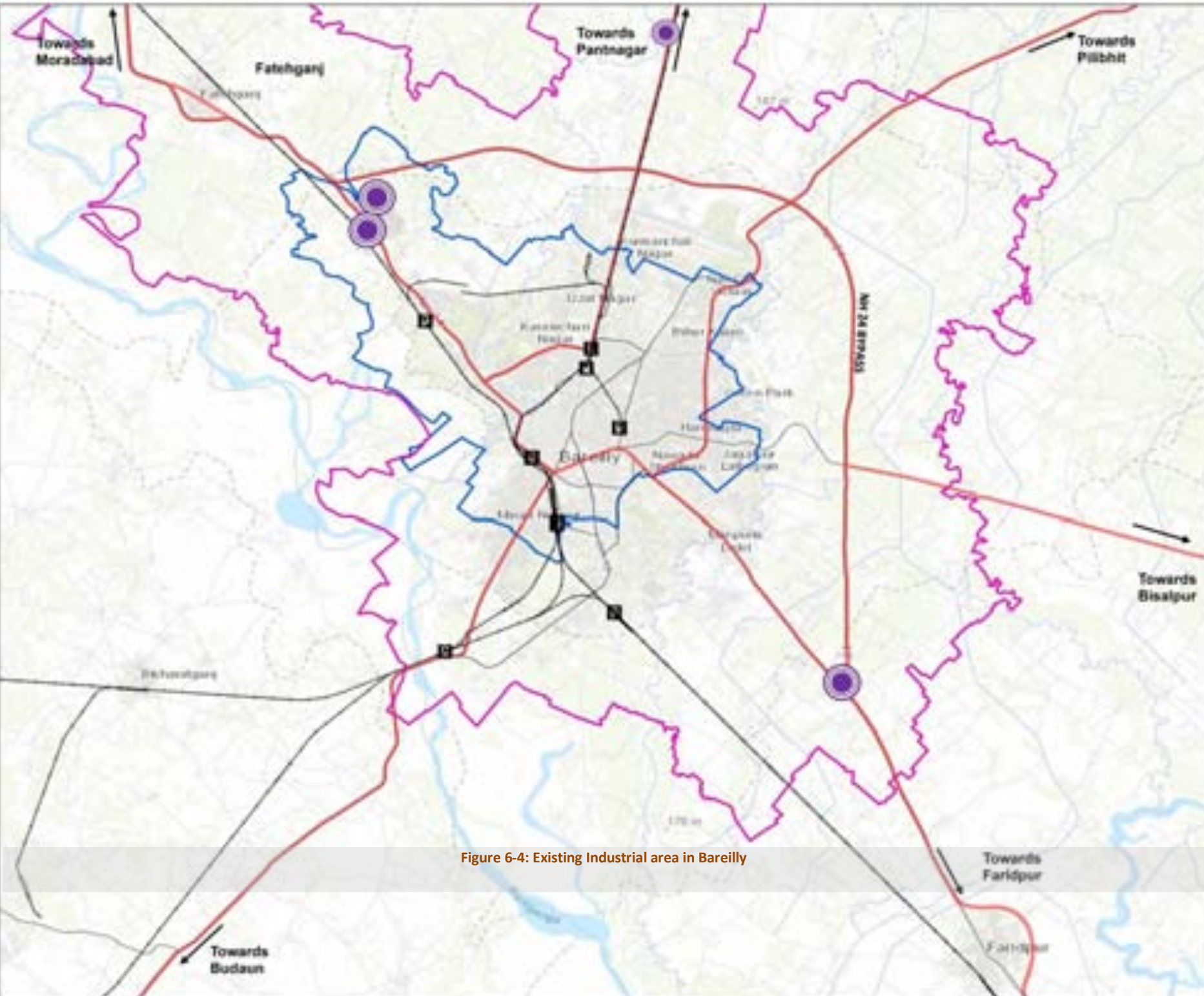


Figure 6-4: Existing Industrial area in Bareilly

- To provide continuous and sustainable employment to a large segment of traditional and prospective artisans and rural and urban unemployed youth in the country, to help arrest migration of rural youth to urban areas
- To increase the wage-earning capacity of artisans and contribute to an increase in the growth rate of rural and urban employment

6.2.2.1.3.3 *Mukhyamantri Yuva Swarojgar Yojana, U.P*

This scheme focuses on self-employment to the youth, by providing a loan of amount up to 25 lakhs per case. Young people native of the state will be able to take loans at low interest and start their own employment.

6.2.2.1.3.4 *District Skill Development Plan for Bareilly*

A plan for skill gap assessment & action plan for Bareilly was prepared by Industrial training institute in partnership with Uttar Pradesh Government which mapped existing infrastructure and analyzed aggregate demand in employment sector.

6.2.2.1.4 *Main Industrial products*

8. Agro Based Products
9. Chemicals
10. Cotton Textile (Zari Zardozi)
11. Rice
12. Mentha
13. Manjha
14. Surma

6.2.2.1.5 *Need for Industrial Growth Centres*

- Bareilly is the seventh-largest metropolitan area in Uttar Pradesh and the 50th largest metropolitan area nationwide.
- Due to its large bamboo market and also known as Bans-Bareilly.
- Already established bamboo, zari and agro based industries.
- Close proximity to EDFC corridor. Potential to develop as industrial and logistic centres.
- Bareilly is also referred to as the "counter-magnet city" because it is situated halfway between New Delhi and Lucknow has a lot of potential for developing industries that will draw people to stay there.
- Well connected with major cities of Uttar Pradesh through rail and road networks.
- Gate to Kumaon region.

6.2.2.1.6 *Proposed Industrial Typology*

The city's identity originally rested on its small-scale industries of bamboo craft and zari zardozi, but these are now fast disappearing. Therefore, it is suggested that MSME households be increased. In Bareilly, small and medium-sized businesses that produce goods based on agriculture, chemicals, plastics, and other materials predominate. The main drivers of the economy in Bareilly are small and medium-sized businesses. Therefore, it is suggested to support small and medium-sized companies, for which space is designated under the Draft Master Plan 2031 and the necessary infrastructure is anticipated to be put in place during the project's medium-term time frame.



6.2.2.1.7 Industrial Growth Centers

The proposed growth centres will help in flourishing economic activities of Bareilly and also assist local products & services in reaching the domestic and global markets. This will support in creating income-producing opportunities and lowering youth out-migration, which is now a significant problem for the state. The Growth Center Scheme will concentrate on identifying top goods & services, promoting local goods, closing crucial infrastructural gaps, and expanding certain locations through the implementation of economic activities.

The Ministry of Micro and Small Enterprises (MSMEs), Government of India, which aims to connect common physical infrastructure facilities for businesses manufacturing the complementary products & services to enable them handle their shared difficulties. The establishment of export-oriented units for the large-scale production of a number of agri-products, fruits, vegetables, bamboo, textile and food processing facilities will be supported by the surrounding communities. Such clusters will have enormous economic potential because they will capitalize on the comparative advantages of the state, such as its natural resources, its ingrained talents, and its inherent spirit of entrepreneurship.

The growth centres aim to provide access to new designs, technology and knowledge that will enable entrepreneurs, farmers, and craftsmen/artisans to successfully run micro and small businesses. This will enable them to engage in product-specific value chains, upscale their products, and improve productivity. Strengthened connections between rural and urban areas will also allow growth centres in and around the most affected and vulnerable districts act as accelerators for rural employment and public-private partnerships.

6.2.2.1.8 Common Facility Centers

The industrial growth centres will also have the dedicated common facility center for Bamboo products and one for readymade garments has been set up in Bareilly recently to provide skill development and required infrastructure. As per the policy, CFC should provide the following facilities:

- Testing Lab
- Design Development and Training Center
- Technology Research and Development Center
- Product Demonstration cum Sale Center
- Raw-Material Banks/Common Resources Center
- Common Production/Processing Center
- Common Logistics Center
- Information collection, analysis, and broadcasting Center
- Packaging, Labelling, and Barcoding Facilities

6.2.2.1.9 Area Requirements for Proposed Industrial Growth Centers

Bareilly city has three UPSIDA industrial areas and one private industrial area which is near Invertis University on Lucknow road. As per the demand assessment, three industrial areas are proposed. The industrial area proposed of area 50 hectares as an extension of the already existing Paraskhera Industrial area which is currently the major industrial area of Bareilly city.

The industrial area on Rampur/Delhi road and lies near village Kurtara is proposed to cover 100 hectares of area.

The industrial area proposed as an up-gradation and extension of the already existing private industrial area on Lucknow road on an area of 100 hectares.

In addition to these industrial zones, potential sites for industrial growth are also analyzed. It is anticipated that these areas would expand as an addition to the current or prospective industrial areas.

6.2.2.1.10 Project Timeline & Broad Project Cost

Paraskhera industrial growth center is proposed in short term, Rajau Paraspur in the medium-term, and Kurtara in the long term time frame. For the broad cost estimation of the proposed industrial growth centre's the land rate is assumed to be four times the actual rate of the land. The broad project cost for the development of proposed industrial growth centre's are given below.

Table 6-7 Broad costing of Kurtara Industrial Growth Centre

S.no	Components	%	Development Cost (in INR)
1	Plumbing sewerage STP and all	30	7,410,000
2	Electricity ESS and all	30	7,410,000
3	Roads and landscaping	40	9,880,000
	Sub Total	100	24,700,000
4	Land Cost	100 Ha	9,600,000,000
	Total		9,624,700,000

Table 6-8 Broad costing of Rajau Paraspur Industrial Growth Centre

S.no	Components	%	Development Cost (in INR)
1	Plumbing sewerage STP and all	30	7,410,000
2	Electricity ESS and all	30	7,410,000
3	Roads and landscaping	40	9,880,000
	Sub Total	100	24,700,000
4	Land Cost	100 Ha	4,800,000,000
	Total		4,824,700,000

Table 6-9 Broad Costing Paraskhera Industrial Growth Centre

S.no	Components	%	Development Cost (in INR)
1	Plumbing sewerage STP and all	30	7,410,000
2	Electricity ESS and all	30	7,410,000
3	Roads and landscaping	40	9,880,000
	Sub Total	100	24,700,000
4	Land Cost	100 Ha	12,000,000,000
	Total		12,024,700,000

6.2.2.1.11 Benefits of Industrial Growth Centres

- Increasing collaboration and commercialization
- Improving international opportunities and market access
- Enhancing management and workforce skills
- Identifying opportunities for regulatory reform.
- Enabling them to engage in product-specific value chains, upscale their products, and improve productivity.



Legend

-  Railway_station
-  Proposed Industrial Area
-  railways
-  primary
-  secondary
-  Master plan boundary 2031
-  Municipal boundary

Map Title: Proposed Industrial Area

Scale: 1:21,000



Client: Bareilly Development Authority
Government of Uttar Pradesh

Consultants:  A.S.I. & Associates
Integrated Strategic Plan, IIR & Infrastructure with
Detailed Feasibility Studies (IIR &
Infrastructure Development) for IIR
ADYNAT 

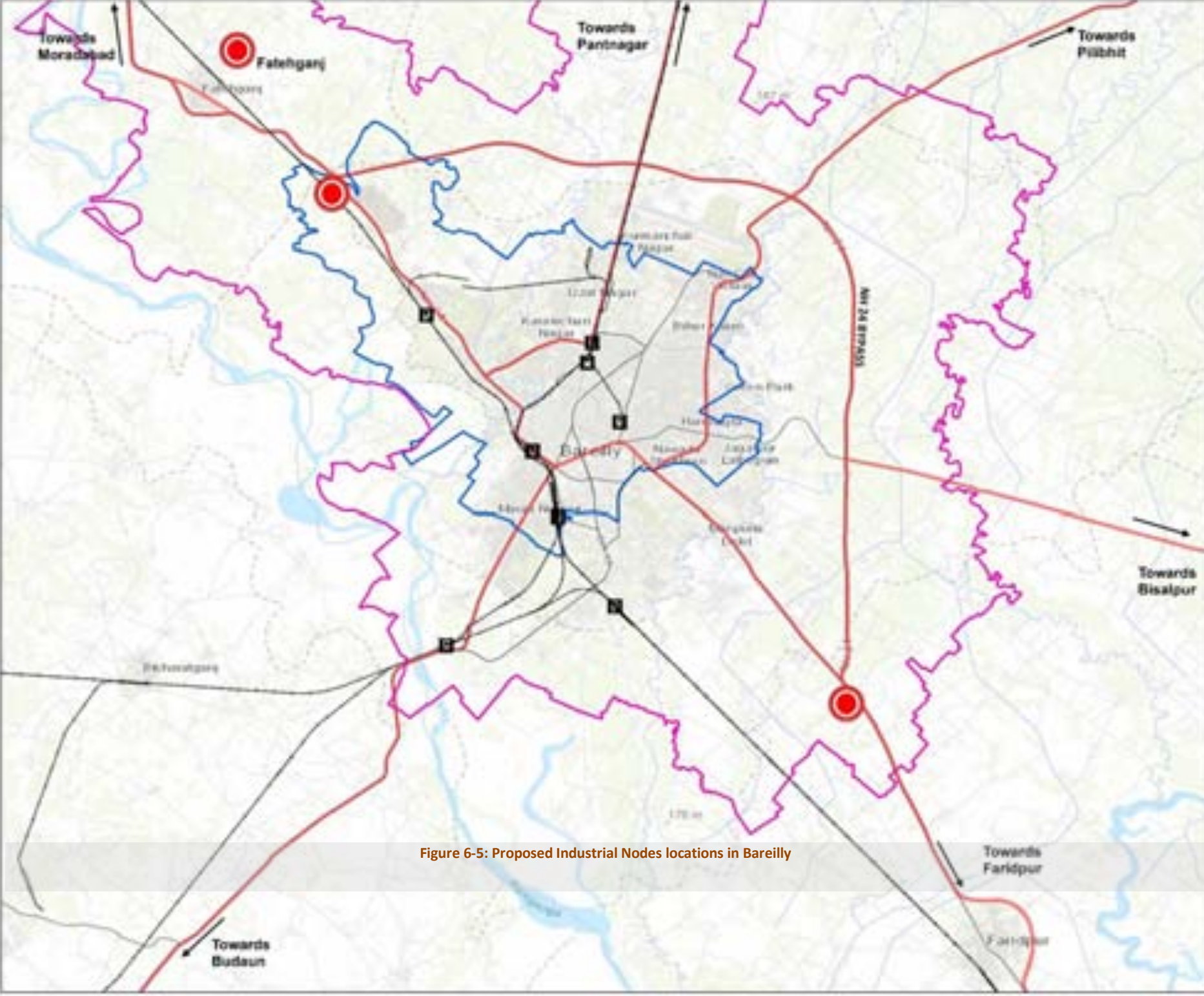


Figure 6-5: Proposed Industrial Nodes locations in Bareilly

Vision Plan, Implementation Strategy & Integrated Infrastructure Plan for Baniyly, 2071



- Legend**
- National Highway
 - State Highway
 - SCR
 - Other Roads
 - Railway Line
 - Municipal Boundary
 - Planning Area Boundary (IDA)
 - Water Bodies

Map Title:
Proposed Industrial Area

Scale: 1:10,000

Client:
Baniyly Development Authority
Government of Old Port

Consultant:
Markham Engineers Pte. Ltd.
in association with
EY
Mehanna Consulting Engineers Ltd. &
Urban Development Services Pte. Ltd.



Map 20 Broad Conceptual proposed Paraspur Industrial growth centre Layout



Vision Plan, Implementation Strategy & Integrated Infrastructure Plan for Bareilly, 2071

Legend

- National Highway
- State Highway
- MCN
- Other Roads
- Railway Line
- Municipal Boundary
- Planning Area Boundary (SDA)
- Water Bodies

Map Title:
Proposed Industrial Area

Scale: 1:10,000

Scale: 0 100 200 300 400

Logo: Bareilly Development Authority, Government of Uttar Pradesh

Consultants:
WorlePar Singapore Pte Ltd
in association with
S2
Indefinis Consulting Engineers Ltd &
Sonus Development Services Pvt. Ltd.



Map 21 Broad Conceptual proposed Kurtara Industrial growth centre Layout



Map 22 Broad Conceptual proposed Parsakheda Industrial growth centre Layout

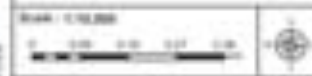


Vision Plan, Implementation Strategy & Integrated Infrastructure Plan for Bareilly, 2071



- Legend
- National Highway
 - State Highways
 - SDR
 - Other Roads
 - Railway Line
 - Municipal Boundary
 - Planning Area Boundary (SDA)
 - Water Bodies

Map Title: Proposed Industrial Area



Bareilly Development Authority
Government of Uttar Pradesh

Consultants
Mott MacDonald Singapore Pte. Ltd.
No. 11, Robinson Road

6.2.3 Project 3: Ahichchhatra Tourism Infrastructure upgradation

6.2.3.1 Background of the study:

From archaeological point of view the district of Bareilly is very rich. The extensive remains of Ahichchhatra, the Capital town of Northern Panchala have been discovered near Ramnagar village of Aonla Tehsil in the district. The site of Ahichchhatra Garh was briefly explored by Sir Alexander Cunningham in 1871, and then excavated by the ASI from 1940 for "about five years". The excavations found brick fortifications and continuity of occupation from a period before 600 BCE to 1100 CE. It was during the first excavations at Ahichchhatra (1940–44) that the painted grey ware, associated with the advent of the Aryans in the Ganges–Yamuna Valley, was recognised for the first time in the earliest levels of the site. Nearly five thousand coins belonging to periods earlier than that of Guptas have been yielded from Ahichchhatra. It has also been one of the richest sites in India from the point of view of the total yield of terracotta. Based on the existing material, the archaeology of the region helps us to get an idea of the cultural sequence from the beginning of the 2nd millennium BC up to the 11th century AD. Near Ahichchhatra, 2 km to its west there is a big pond which is said to trace its ancestry to the time of Mahabharata. The pond, located in the village of Jagannathpur is said to have been made by the pandavas at the time of their forest dwell.

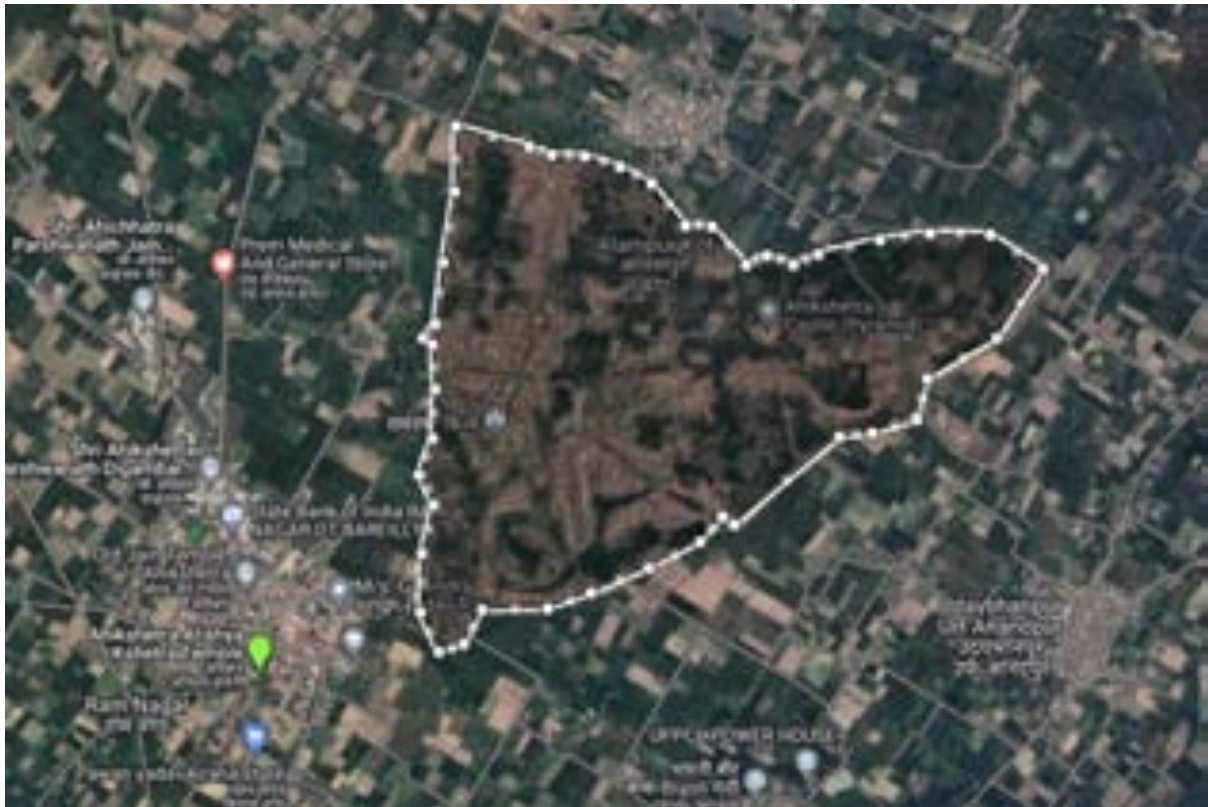


Figure 6-6: Site of Ahichhatra.



Figure 6-7: Ahichhatra from Ramnagar which is the closest settlement and access to the site



Figure 6-8: Samarth Chandragupta fort and ahichchhetra fort within the complex of Ahichchhetra



Figure 6-9: Current condition of the site

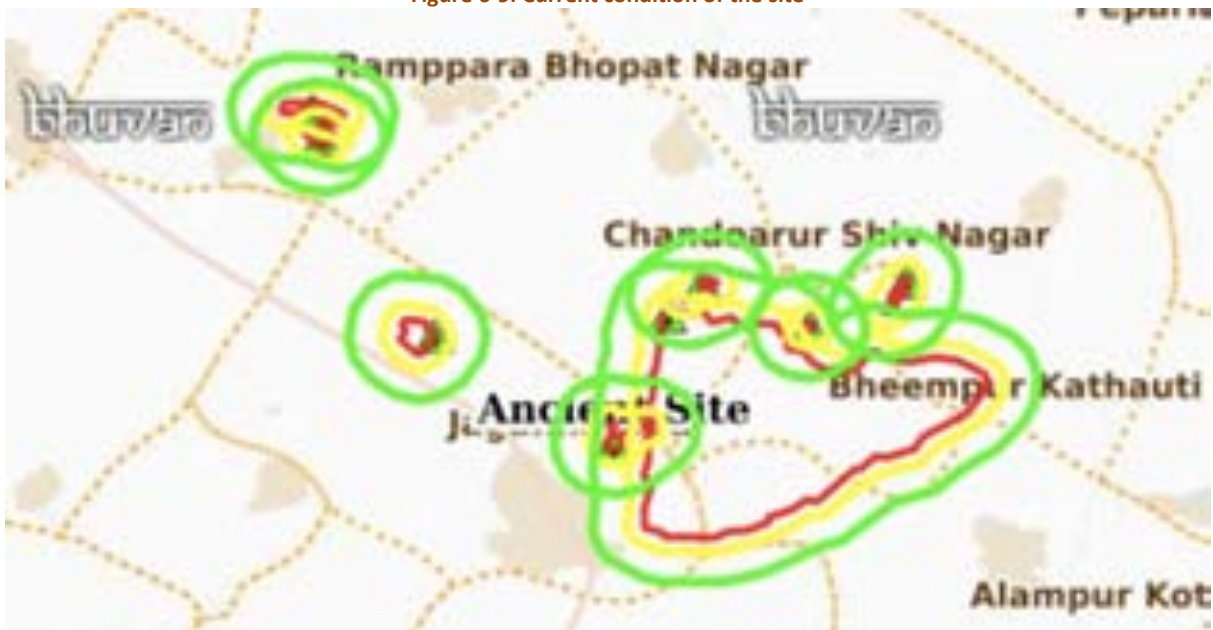


Figure 6-10: Map showing protected, regulated and restricted areas of the site of Ahichchhatra

6.2.3.1.1 Objective:

- To make the site accessible at regional and local level by providing access as well as outreach for the significance of the site of Ahichchhatra.

- Improved visitor experience of the site by provision of amenities for tourist and visitors in order to create a comfortable experience on site.

6.2.3.1.2 Brief Description of the project

As mentioned in the objectives, the project undertaken to make the monument accessible and to increase the outreach of the site. These are to be undertaken by making the monument site visitor friendly. The provision of proper visitor amenities, support infrastructure facilities and improved last mile connectivity will enhance the tourist footfall to the site is proposed to be undertaken. The site interpretation would help to generate interest of different categories of tourists. Hence the outreach would enhance. This is proposed to be done by undertaking the interpretation and audio-video centres. To make the monument accessible to differently-abled people and by providing a museum for the visitors.

6.2.3.1.3 Key issues

- The site is not well connected with the major towns. It is 53 kms from Bareilly and road connectivity is poor.
- There is lack of information and outreach of the site. Site has signage boards of protection and beyond that there is no informational, directional and instructional signage on site. There is no outreach on major tourist spots around the site in cities in proximity.
- There is lack of visitor facility Within the site.



Figure 6-11: Signage on site



Figure 6-12: Signage on site



Figure 6-13: Location identified for amenities on site (left) Condition of dirt track with in the site (right)

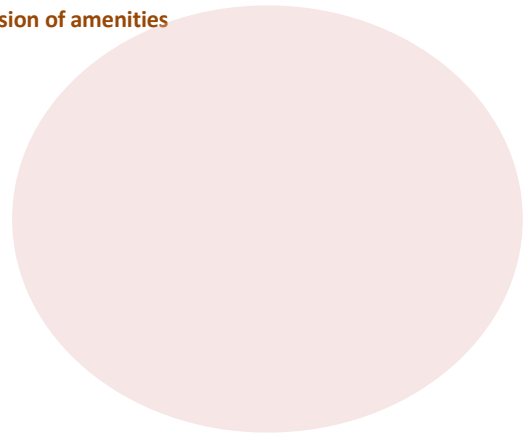
6.2.3.1.4 Key activities, tasks, interventions involved:

9. Provision of visitor parking, toilets and drinking water
10. Provision of permeable boundary wall
11. Provision of monument lighting
12. Research for Interpretative material and Signages
13. Identification of area for development of Museum.

- 14. Connectivity enhancement to the identified sites located in close proximity.
- 15. Site Development & Landscape Improvement.
- 16. Providing wayfinding and interpretative signages in and around the sites.



Figure 6-14: Proposed plan for the provision of amenities



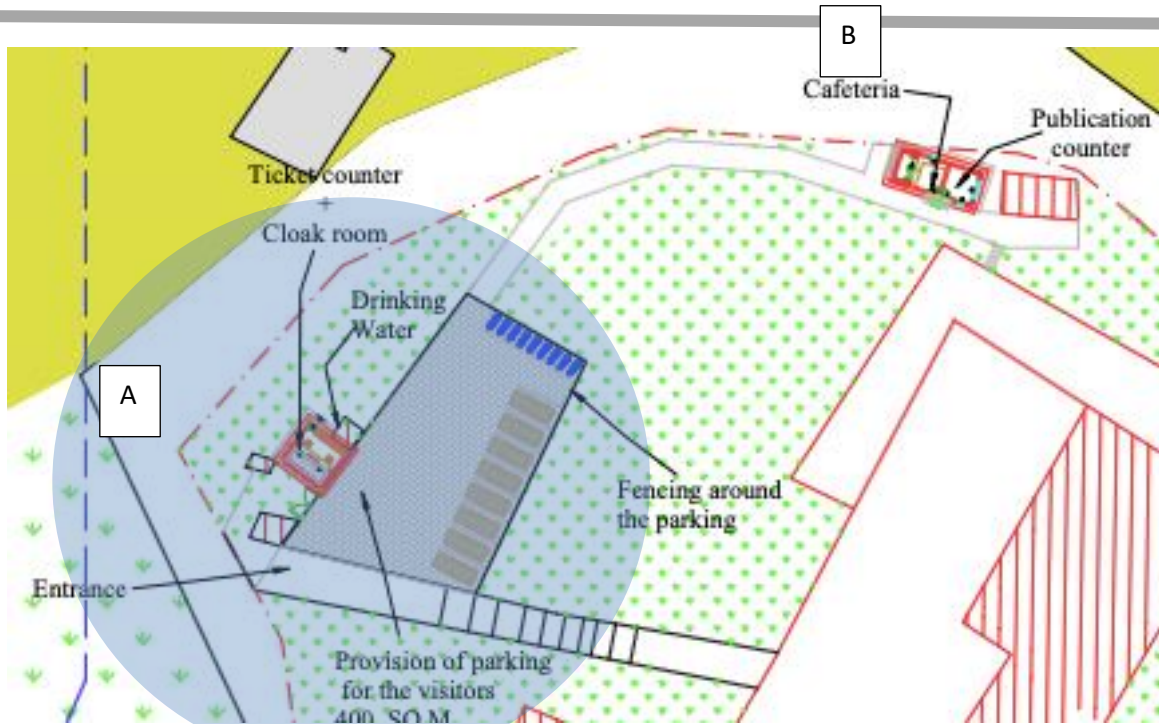


Figure 6-15: Concept plan for parking drinking water cloak room at the entrance of the site from Ramnagar Gate on west

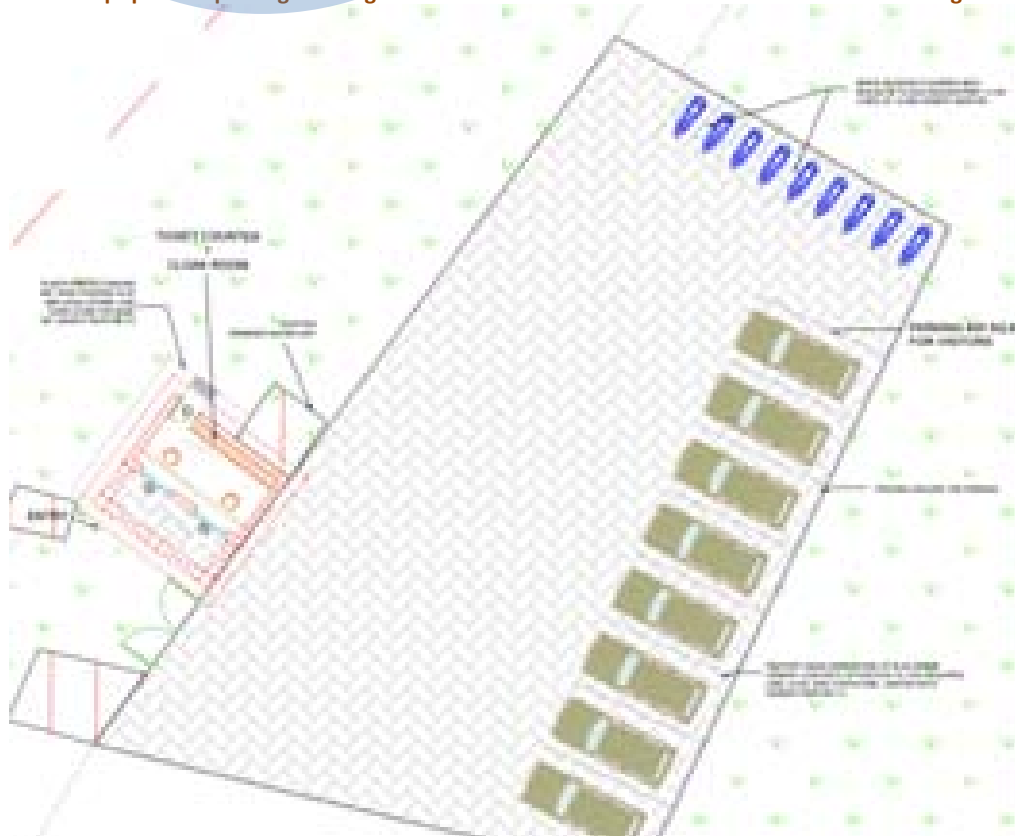


Figure 6-16: Concept of parking and ticket counter at A on the above plan



Figure 6-17: concept plan for the cafeteria and publication counter: as on location B of above map



Figure 6-18: Concept for the entrance gate and boundary wall for protected site



Figure 6-19: provision of brick on edge flooring to access the monuments.

1.	Provision of visitor parking, pathways toilets and drinking water	Site survey and identification of number of visitors and requirements
		Identification of location of provision for toilets and drinking water
		Preparation of DPR for the toilet block and drinking water facility. (brick and lime structure)
2.	Provision of permeable boundary wall , security room, ticket counter and pathways	Brick boundary wall to be provided : 3’ toe wall and metal grills upto 8’
		Identification of entrances for provision of gated entrances
		Provision of metal entrance gates with security guard room
3.	Provision of monument lighting	Provision of monument lighting ensuring there is no surface getting intruded damaged or impacted on the site which has high historic and archaeological value.
		Provision of site lighting along approach roads and boundary wall and entrance gates
4.	Research for Interpretative material and Signages including Providing wayfinding and interpretative signages in and around the sites.	Research on history and significance of site to create story board and interpretative materials and interpretation techniques
		Preparation of design of signages and DPR for execution of signages
		Preparation of Digital Media platforms : QR codes, Websites , App , Audio content and graphics for the information on site

		Preparation of signages and material for outreach at regional level :
5.	Identification of area for development of Museum.	Identification of location for the museum and interpretation center
		Preparation of design and DPR for the museum
		Preparation of Working drawings and Estimates
6.	Connectivity enhancement to the identified sites located in close proximity.	Road improvements on patches as mentioned below:
7.	Site Development & Landscape Improvement.	Parking and street lights and pavement including the landscaping along the boundary wall and around the site.

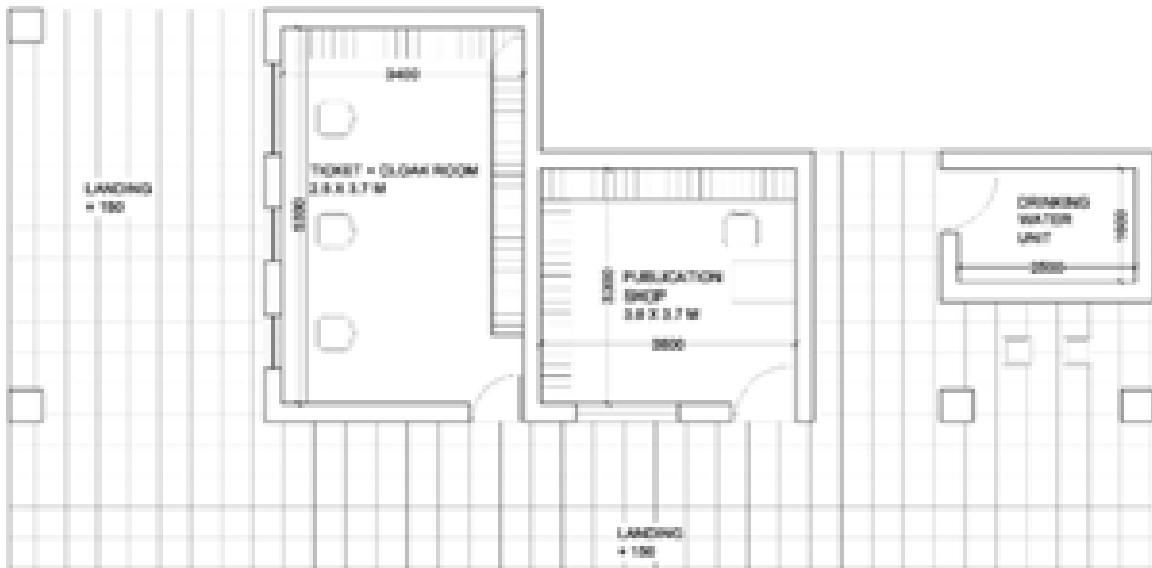


Figure 6-20: Concept layout for ticket room, cloak room , publication shop and drinking water.



Figure 6-21: Concept for drinking facility, Publication shop and Cafeteria

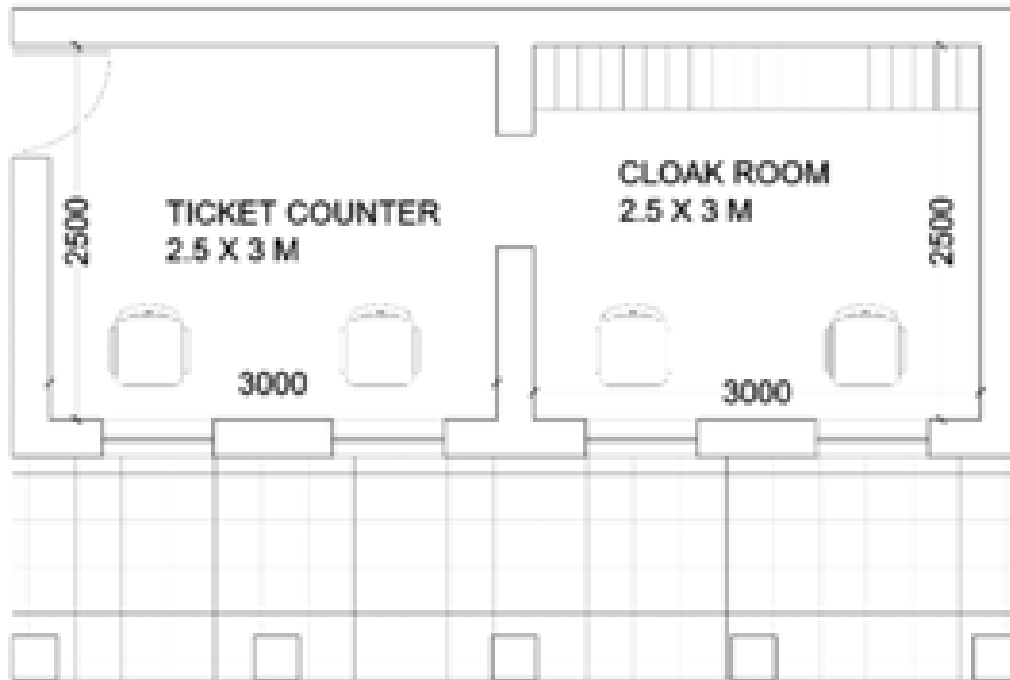


Figure 6-22: Concept for ticket counter and cloak room

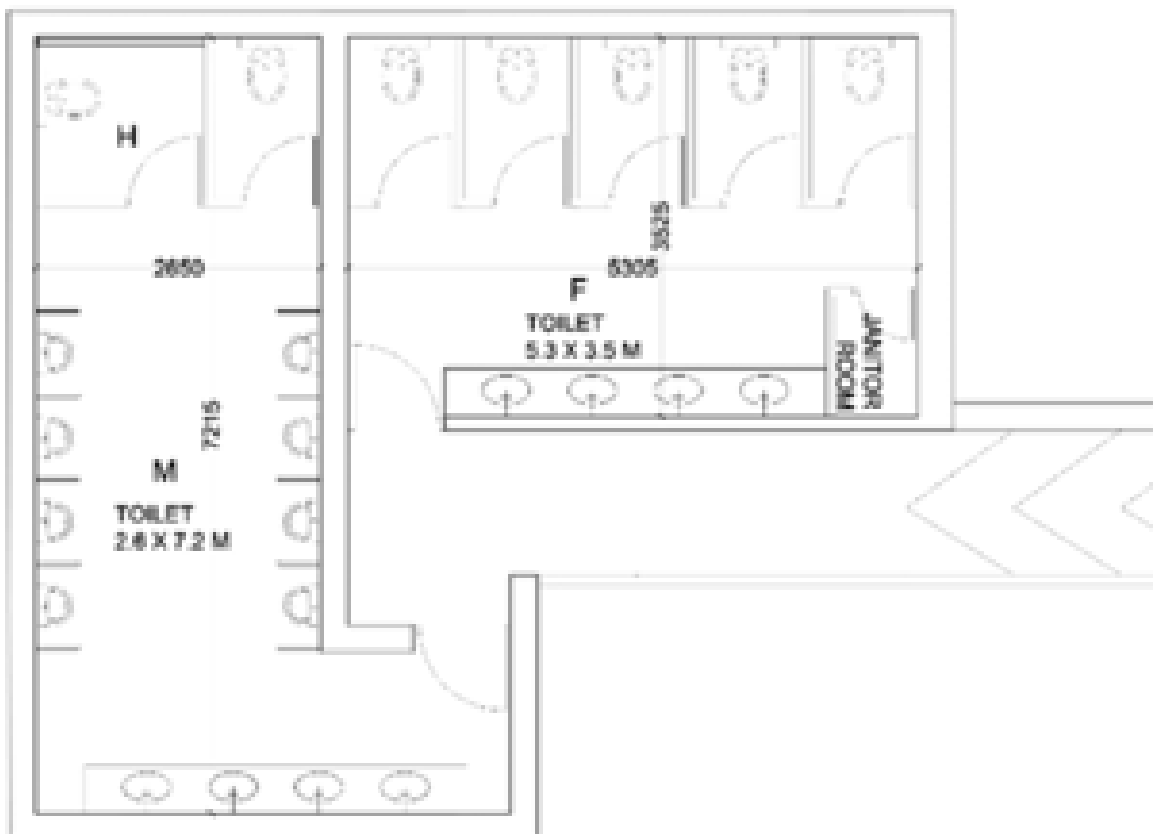


Figure 6-23: Proposed toilet layout for the toilet block



Figure 6-24: proposed option for toilet block



Figure 6-25: conceptual view of the toilet block



Figure 6-26: conceptual view of the toilet block



Figure 6-27: proposed view for toilet block



Figure 6-28: conceptual view for ticket counter cloak room and drinking unit



Figure 6-29: concept view for ticket counters

6.2.3.2 Financial Estimates for the works to be undertaken

f.	Amenities (toilet, ticket counters, security guard room, cloak room, publication shop and cafeteria) and site development works including parking and monument lighting	Toilet blocks 3 in nos.	55 Sq Mts	300 Lakhs
		Publication shop and cafeteria 1 in nos.	70 Sq mt	
		Ticket counter and cloak room - 2 in nos	75 Sq Mt	
		Drinking water – 5 in nos	20 Sq Mt	
g.	Signages (consultancy and execution) – on site and Providing wayfinding and interpretative signages in and around the sites.			1000 lakhs
h.	World Heritage nomination Dossier			200 Lakhs
i.	Museum and office building on site			500 lakhs
j.	Construction of roads to the fort structures within the site. The road needs not to be a metal road and tar concrete road. This is to be done for vehicular movement of BOVs with in the complex			1000 Lakhs
				3000 Lakhs

6.2.3.3 List of Stakeholders

1. Archaeological Survey of India – Ministry of Culture. (Active)
2. Department of Tourism (Potential)
3. Bareilly District Administration.
4. Gram Panchayat / Tehsil.

6.2.3.4 Project Time-line

1. The Development of amenities and infrastructure facilities – 1-2 years
2. Provision of museum and interpretative material – 2-3 years
3. Preparation of world heritage site nomination dossier – 3-4 years

6.2.4 Project 4: First War of Independence (1857) museum

6.2.4.1 Upgradation of college complex and provision of First War of Independence (1857) museum : a) Bareilly College Campus

6.2.4.1.1 Background of the study:

During 1857, Bareilly became a major centre of revolt under the leadership of Khan Bahadur Khan while maintaining the communal harmony despite the efforts by Company officers to create trouble by inciting Rajputs against Khan Bahadur Khan. Bareilly was the last to fall (May 1858). British order was restored on 13 May 1858 by an expeditionary force lent by Commander Colin Campbell of 9th Regiment of Foot with the help of Captain William George Drummond Stewart of 93rd Regiment of Foot, after winning the Bareilly battle. Some of the mutineers were captured and sentenced to death. When the Indian Rebellion of 1857 failed Bareilly, too, was subjugated. Khan Bahadur Khan was sentenced to death and hanged in the Kotwali on 24 February 1860.



Figure 6-30: Image of site within the college premises of pathways, boundary railings, softscape enclosures



Figure 6-31: Image of magnificent colonial structure run as college within the city

6.2.4.1.2 Objective:

- To infuse sense of pride among community and Reviving the memory of the First War of Independence.

6.2.4.1.3 Brief Description of the project

Based on stakeholder consultation, the possibility of developing the theme-based museum in some parts of the Bareilly College is being explored. The college is a historic building which is in use currently. Representative of an important period in the growth and evolution of Bareilly City. It is proposed as one of the oldest heritage site and 1st Colonial schools in India.





6.2.4.1.4 Key issues

Upkeep and maintenance of the structures, lack of site upkeep, irregular parking, potential of utilizing college as potential site for public inclusion.

6.2.4.1.5 Key activities, tasks, interventions involved:

- Development of Theme based Museum.
- Interpretative displays of the history of the region and associated personalities, role of Bareilly.
- Research and content development on the narratives and local stories of
- Visitor Management Plan.
- Development of visitor amenities.
- Site improvement.
- Building Conservation for Adaptive Reuse.
- Signages and way finding.



Figure 6-32: Map showing the college complex and land proposed for new museum block



Figure 6-33: Map showing the components with in the college complex

6.2.4.2 Proposal 1: Conservation of Historic structures with in the complex

There are historic structures within the complex which require conservation and upgradation. These structures include all the academic blocks such as botany department, chemistry department, physics department , zoology department. Other than academic blocks there are structures such as history museum, auditorium, library which need conservation and upgradation. The issues such as water rise, loss of masonry, repair of roof works if not addressed and maintained shall lead to being not fit for use further.

1	Phase one : site analysis and priority identification and conservation preliminary reports for each structure.	Total Station Surveys	100 lakhs
		Site analysis and identification of structural distress and structural analysis	
		Identification of phasing and priority works	

2	Identification and structural stability of emergency works for the buildings with in the complex	Propping strutting of structures	2000 Lakhs
		Water management and consolidation of roofs	
		Addressing major structural issues for stabilization of buildings	
3	Phase I : Identification and upgradation of structures for improvement and upgradation works	There are approximately 27 structures with in the complex. Conservation DPR preparation for structures in phase 1 (approximately 13 structures) : including upgradation, repairs, electrical, plumbing, finishes, interiors etc (1500 Per SQM)	5000 Lakhs
4	Phase II : Facade upgradation and Consolidation and conservation works for priority 2 sites	Preparation of DPR for the conservation upgradation and façade improvement of sites in better condition. Re-establishing the circulation, spatial planning , area diagrams if required for each structures with in the current use. (1250 Per SQM)	3000 Lakhs
			10,100 Lakhs



Figure 6-34: Image showing current condition of the library building



Figure 6-35: proposed image of Library structure post conservation



Figure 6-36: Current condition of chemistry department block



Figure 6-37: Chemistry department block conserved and upgraded

6.2.4.3 Proposal 2: Site development and Upgradation: including pathways and road upgradation , entrance gate upgradation and provision of adequate parking

6.2.4.4	Upgradation of boundary walls and entrance gates	Documentation of existing boundary wall and entrances Design development for the interventions in boundary wall and upgradation of the gates Design consultancy for the new design of the gateways and conservation - Repair and consolidation works for the boundary walls	The proposed boundary wall is brick toe wall of height 3-3.5' with stone coping and metal grills upto height of 5' above the toe wall. Total length of proposed boundary wall is approximately 1.9 Kms	300 Lakhs
6.2.4.5	Road improvement Provision of parking and upgradation of existing parkings	The road upgradation of the site is to be undertaken by providing adequate drains , slopes		500 Lakhs
6.2.4.6	Upgradation of sports areas : hockey ground, tennis court			500 Lakhs
6.2.4.7	Upgradation and upkeep of green areas			200 Lakhs
				1500 Lakhs

6.2.4.8 Proposal 3: Proposal for new structure of 1857 museum within the complex

Site identified for 1857 museum is towards the west gate of the college which has view from main district road. Bareilly has been an important site for 1857 mutiny and the freedom fighters narratives of local community of the mutiny are not documented and not available as a resource to generate pride within people of Bareilly. This has been lost over time. The College complex is an educational institute and has footfall of youth. This site is identified for the museum as the site is located in center of the city, the land parcel and ownership is feasible for the construction of government owned structure, its well-connected and site identified also looks over a main road of city and more over the land use is institutional and therefore completely in sync with the proposed museum,



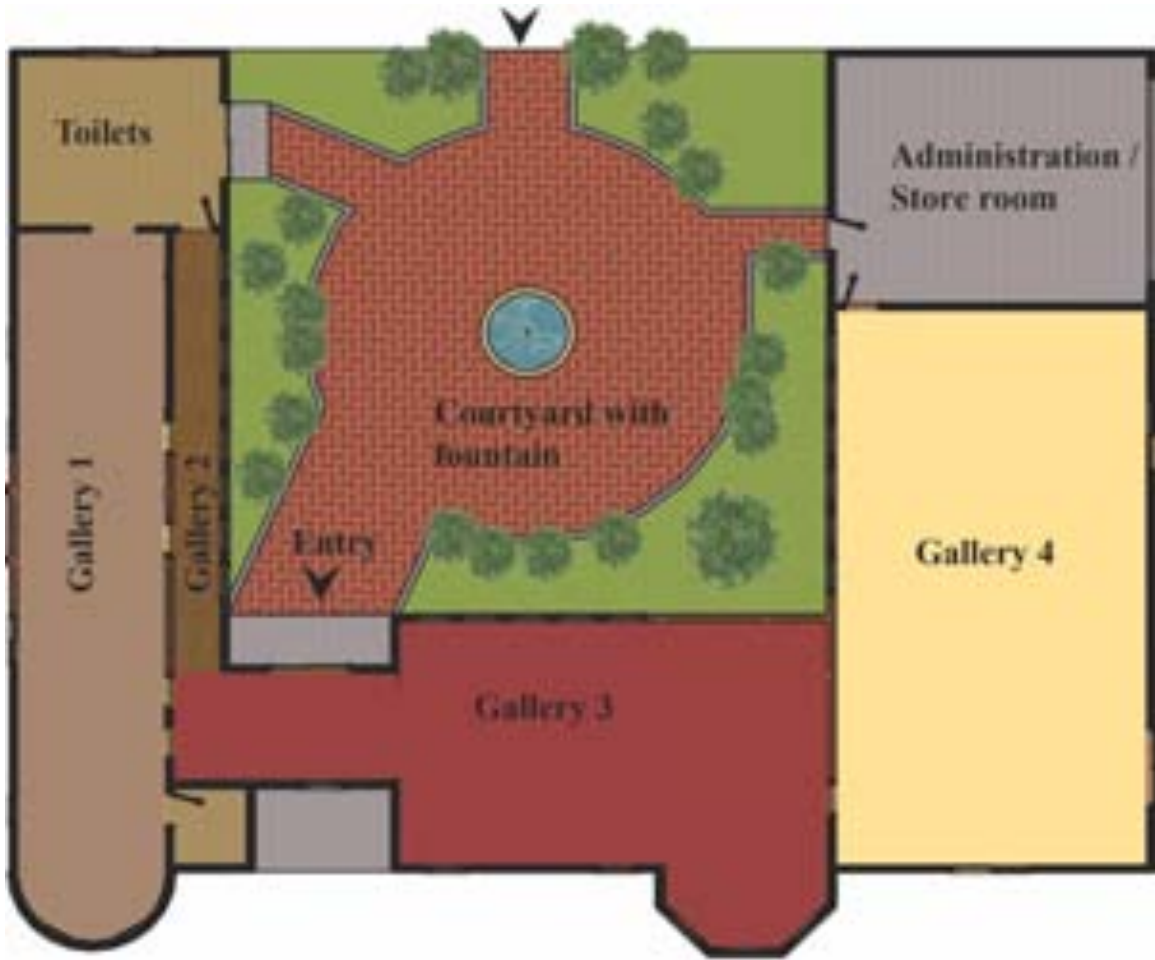


Figure 6-38: Concept for planning within in the museum block



Figure 6-39: Concept for view of museum block



Figure 6-40: Concept for view of museum block



Figure 6-41: Concept view of courtyard building in exposed brick work for the museum



Development of Theme based Museum.	Identification and demarcation of site boundaries
	Design Development of Museum
	Construction of museum building
	Operation and maintenance of the building
Interpretative displays of the history of the region and associated personalities, role of Bareilly.	Consultancy works for the research and content development of 1857 narratives and local stories
	Interpretative methods and installation designs

6.2.4.9 Financial Estimates for the works to be undertaken

Item	Qty	Rate	Amount
RCC frame structure	7200	9150	6,58,80,000/-
Water Proofing works	3000	225	6,75,000/-
Finishing works	7200	1750	1,26,00,000/-
Landscaping courtyard and surrounding	6500	915	59,47,500/-
Interior Furniture, installations and museum furniture	7200	1800 /-	1,29,60,000/-
			9,80,62,000/-
Electrical works		12.5%	1,17,67,440/-
Plumbing		7.5%	73,54,650/-
HVAC		2.5%	24,51,550/-
Signages		2.0%	19,61,240/-
Contingencies		3%	3,88,800/-
			12,19,85,680/-

	Conservation and upgradation works	100,10,00,000/-
	Site development and upgradation	15,00,00,000/-
	Provision of New museum	12,19,85,680/-

6.2.4.10 List of Stakeholders

- Bareilly Municipal Corporation
- UP Tourism
- Education Department

6.2.4.11 Project Time-line

- The Development of theme-based museum including the preparation of interpretative material – 2-3 years
- Site upgradation and visitor amenities – 2-3 years

6.2.5 Project 5: Urban Renewal of Nath Temple Circuit & infrastructure improvement of all Nath Temples precincts

6.2.5.1 Vision – Developing Nath Temple Circuit

6.2.5.1.1 Project – Urban Renewal of Nath Temple circuit & Infrastructure improvement of all Seven Nath Temples

6.2.5.2 Introduction

The Bareilly city, which is known as the Nath Nagri because of the seven Nath temples that are situated at its seven access points via various cities, has a strong religious identity. The city has a very deep spiritual heritage, which draws tourists to the Nath temples from many other towns. The Saavan month and Maha Shivratri see the largest influx of people to these Nath temples. Numerous thousands of pilgrims also travel to the city for the parikrama of the Seven Nath temple, which contributes to the city's religious uniqueness.

- A - Tapeswar Nath
- B - Madi Nath
- C - Alakh Nath
- D - Trivati Nath
- E - Bankhandi Nath
- F - Pashupati Nath
- G - Dhopeswar Nath

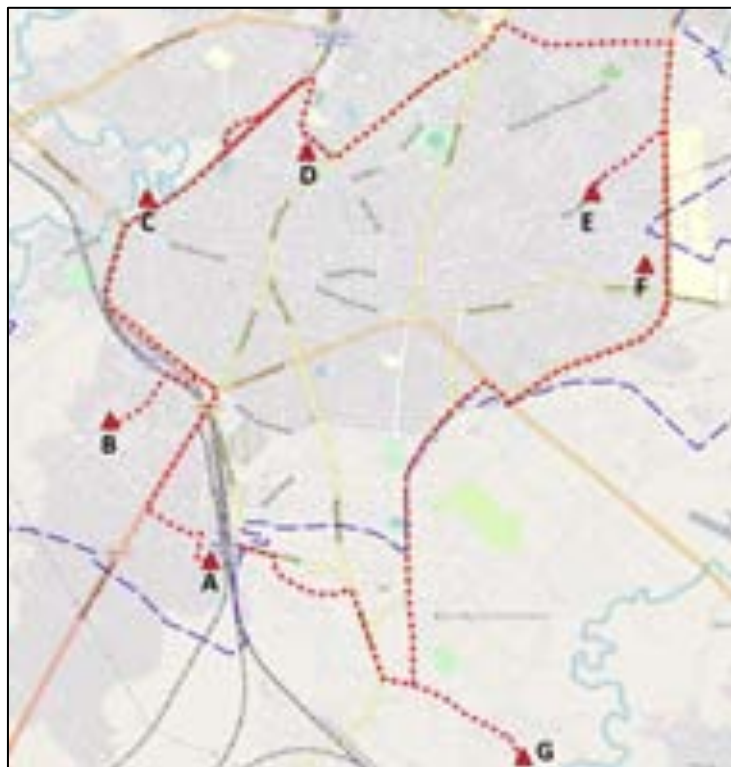


Figure 6-42: Nath Nagri Circuit and Temples Location

6.2.5.3 Condition Assessment

Since the seven Nath temples are situated on different routes which are entrance gateways to the city from other cities, they can be accessed from any of these routes. These seven routes formed the base

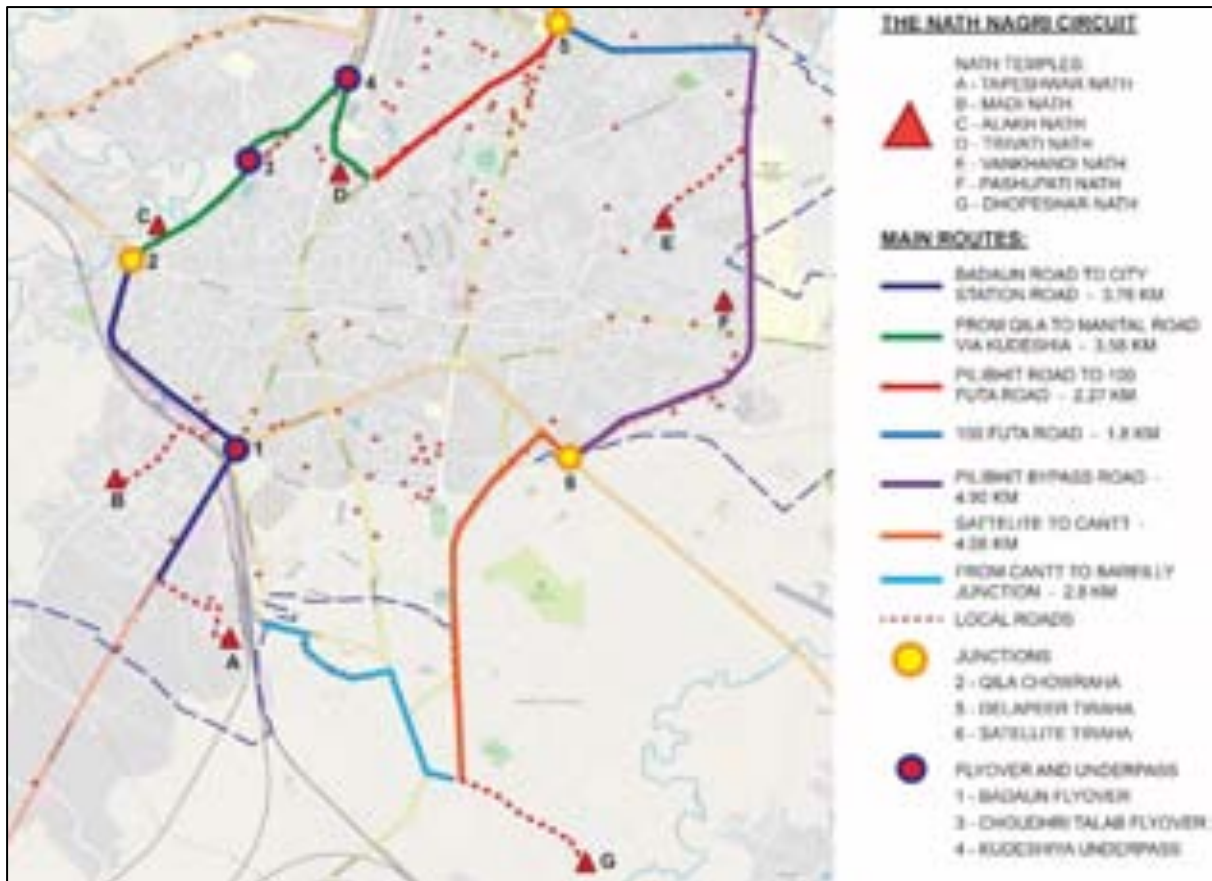
of city's connectivity to major cities like Nainital (Trivatinath Temple), Delhi (Alakhnath Temple), Chandausi (Madinath Temple), Badaun (Tapeswar Nath Temple), Lucknow (Dopeshwar Nath Temple), Bilaspur (Pashupatinath Temple) and Pilibhit (Vankhandinath temple).



Figure 6-43: Nath Temple Complex

(Source: Urban Design Team)

Since the establishment of Nath temples at the city's outskirts to serve as its entrances, the city has grown significantly on all sides, enveloping all seven Nath temples and erasing their distinction as city gateways. The overall circuit that connects all Nath temples has disappeared as a result of the city's growth as well as the precincts of all Nath temples losing its imageability over time. There are no formal, legible entrances or paths that highlight their uniqueness and reinforce their presence in the city.

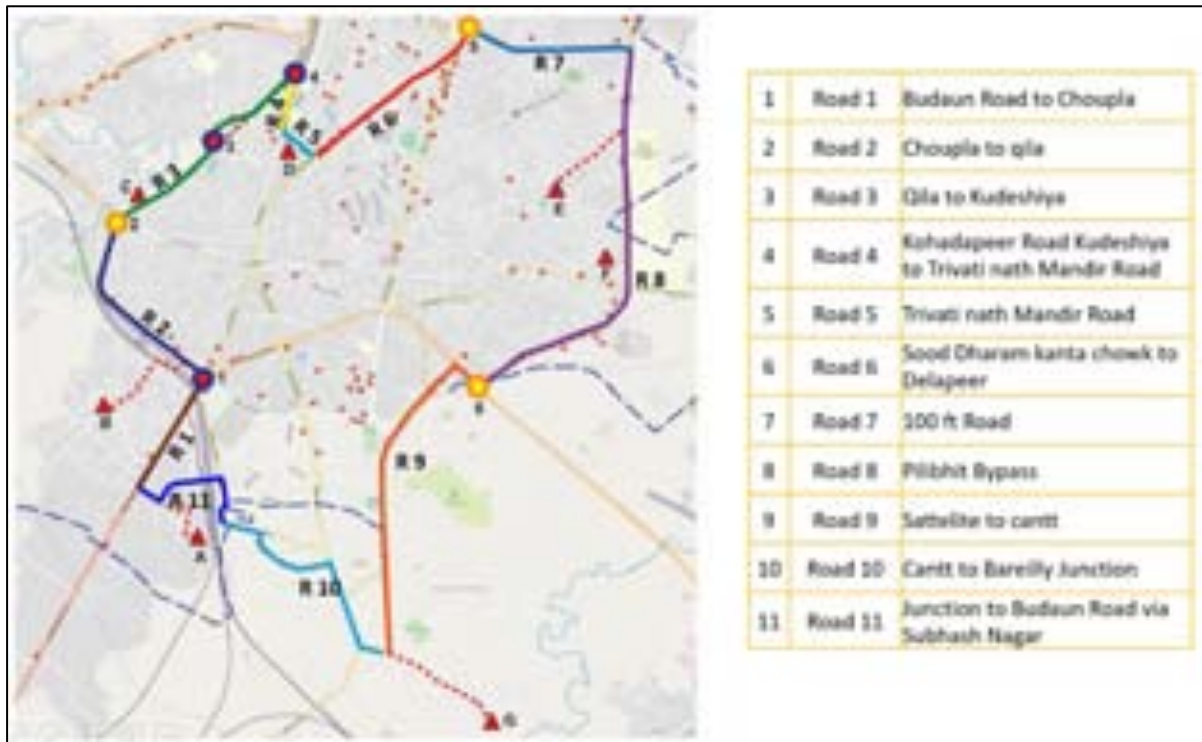


6.2.5.3.1 Distances of Temples

- Alakh Nath Temple to Trivati Nath Temple : 3.2 Km
- Trivati Nath Temple to Bankhandi Nath Temple : 6.3 Km
- Bankhandi Nath Temple to Pashupati Nath Temple : 3.0 Km
- Pashupati Nath Temple to Dhopeswar Nath Temple : 8.2 Km
- Dhopeswar Nath Temple to Tapeswar Nath Temple : 5.8 Km
- Tapeswar Nath Temple to Madi Nath Temple : 2.5 Km
- Madi Nath Temple to Alakh Nath Temple : 3.5 Km

Total Length of the Circuit: 32.5 Km

6.2.5.4 Route details



NATH NAGRI CIRCUIT - Bareilly								
S. No	Temple	Name of road section	Road ownership	Length (km)	Starting point	End point	Existing ROW	Proposal for new infrastructure
1	Alakh Nath Temple to Trivati Nath Temple	Road 3 : Qila to Kudeshiya	Nagar Nigam	2.56 km	Alakhnath Temple	Kudeshiya Underpass	11 - 15 m	
		Road 4 : Kohadapeer Road Kudeshiya to Trivati nath Mandir Road	Nagar Nigam	0.6 km	Kudeshiya Underpass	Tibrinath Mandir Road	22 - 24 m	
		Road 5 : Trivati Nath Mandir Road	Nagar Nigam	0.5 km	Tibrinath Mandir Road	Sood dharamkanta chowk	15 - 18 m	
2	Trivati Nath Temple to Vankhandi Nath Temple	Road 5 : Trivati Nath Mandir Road	Nagar Nigam	0.5 km	Tibrinath Mandir Road	Sood dharamkanta chowk	15 - 18 m	
		Road 6 : Sood Dharam kanta chowk to Delapeer	Nagar Nigam	2.25 km	Sood dharamkanta chowk	Delapeer	26 - 28 m	
		Road 7 : 100 ft Road	Nagar Nigam	1.76 km	Delapeer	Pilibhit Bypass T point	16 - 20 m	
		Road 8 : Pilibhit Bypass Road	Nagar Nigam	5 km	100 futa T point	Jogi Nawada	42 - 45 m	Near Bankhandi Nath Temple
		Jogi Nawada Internal Road	Nagar Nigam	1 km	Road 8	Vankhandi Nath Temple	9 - 12 m	

NATH NAGRI CIRCUIT - Bareilly								
S. No	Temple	Name of road section	Road ownership	Length (km)	Starting point	End point	Existing ROW	Proposal for new infrastructure
3	Bankhandi Nath Temple to Pashupati Nath Temple	Road 8 : Pilibhit Bypass Road	Nagar Nigam	5 km	Jogi Nawada	Pashupati Nath Temple	42 - 45 m	Near Bankhandi Nath Temple Near Pashupati Nath Temple
4	Pashupati Nath Temple to Dhopeswar Nath Temple	Road 8 : Pilibhit Bypass Road	Nagar Nigam	5 km	Jogi Nawada	Satellite chowraha	42 - 45 m	Near Pashupati Nath Temple
		Road 9 : Satellite to Cantt	Nagar Nigam	4 km	Satellite chowraha	St Stephen Church	9 - 12 m	
		Cantt Internal Road	Cantt	1.5 km	St Stephen Church	Dhopeswar Nath Temple	9 - 12 m	
5	Dhopeswar Nath Temple to Tapeswar Nath Temple	Road 10 : Cantt to Bareilly Junction	Cantt	2.8 km	St Stephen Church	Bareilly Junction Station	14 - 20 m	
		Road 11 : Junction to Budaun Road via Subhash Nagar	Nagar Nigam	1.6 km	Bareilly Junction Station	Tapeswar Nath Temple	9 - 12 m	
6	Tapeswar Nath Temple to Madi Nath Temple	Shubash nagar Internal Road	Nagar Nigam	1 km	Tapeswar Nath Temple	Chungi Road	9 m	
		Road 1 : Badaun road to Choupla	Nagar Nigam	1.6 km	Chungi Road	Choupla	24 - 28 m	
		Road 2 : Coupla to Qila	Nagar Nigam	2.5 km	Choupla	Qila	20 - 22 m	
		Madinath Internal Road	Nagar Nigam	1.5 km	Road 2	Madinath Temple	9 m	
7	Madi Nath Temple to Alakh Nath Temple	Road 2 : Coupla to Qila	Nagar Nigam	2.5 km	Choupla	Qila	20 - 22 m	
		Road 3 : Qila to Kudeshiya	Nagar Nigam	2.56 km	Road 2	Alakhnath Temple	11 - 15 m	

Based on the discussion with Temple priest and other stakeholders, the Nath Nagri circuit starts from Alakh Nath Temple as first temple of the route to Trivati Nath Temple than Bankhandi Nath Temple than Pashupati Nath Temple than Dhopeswar Nath Temple than Tapeswar Nath Temple than Madi Nath Temple and ends back to Alakh Nath Temple.

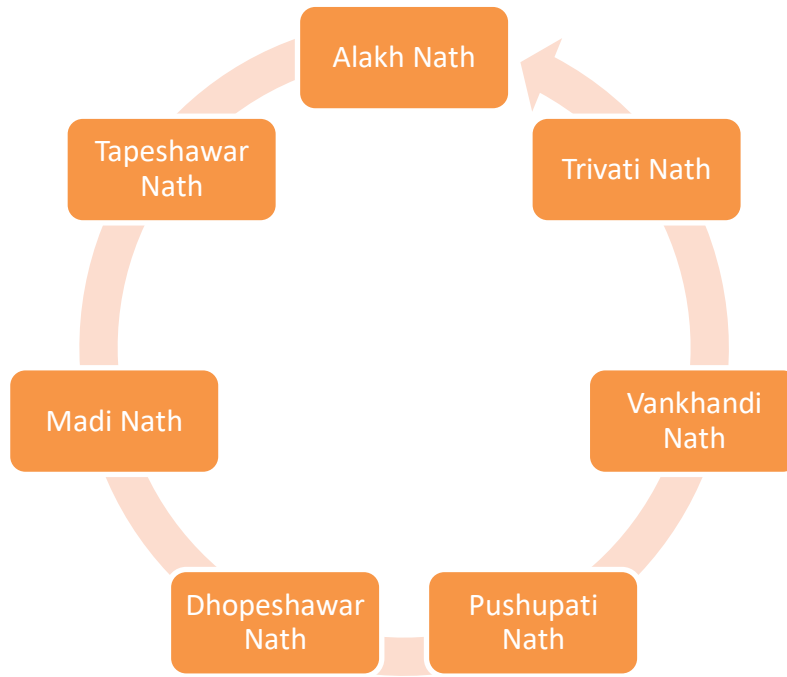
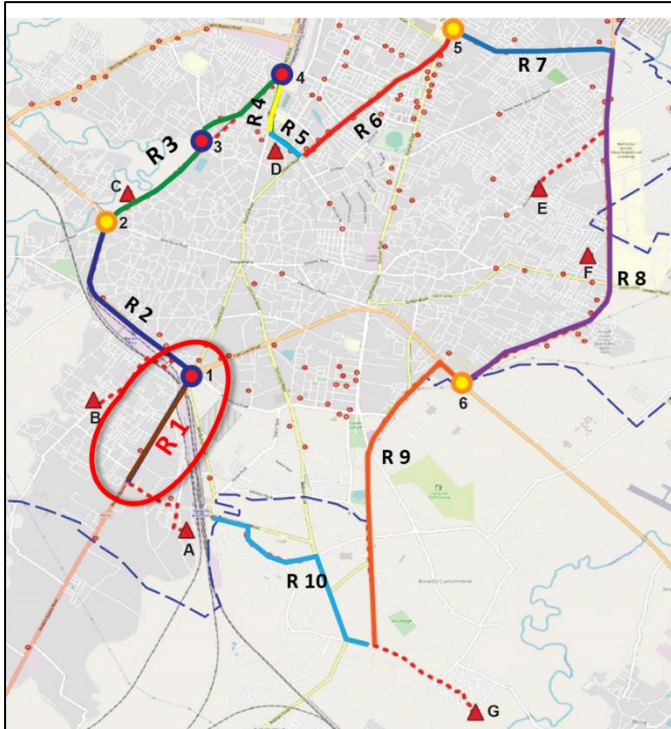


Figure 6-44: Nath Circuit Cycle

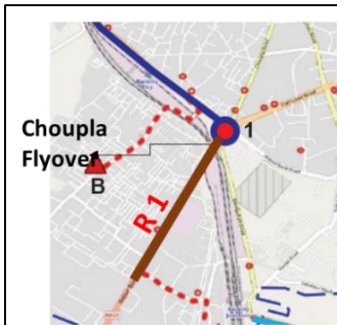
6.2.5.5 Road wise details

6.2.5.5.1 Road 1: Budaun Road to Choupla



Road 1 : Budaun Road to Choupla

Length :	1.6 km
Road Width :	24 – 28 m wide
Type of Road :	4 Lane (Divider)
Pedestrian Facility:	No Footpath
Public Transport :	Autorickshaw E-Rickshaw City Bus
NMV Lane :	Not available



Road 1 Choupla Flyover Entry



Road Condition



Road Condition

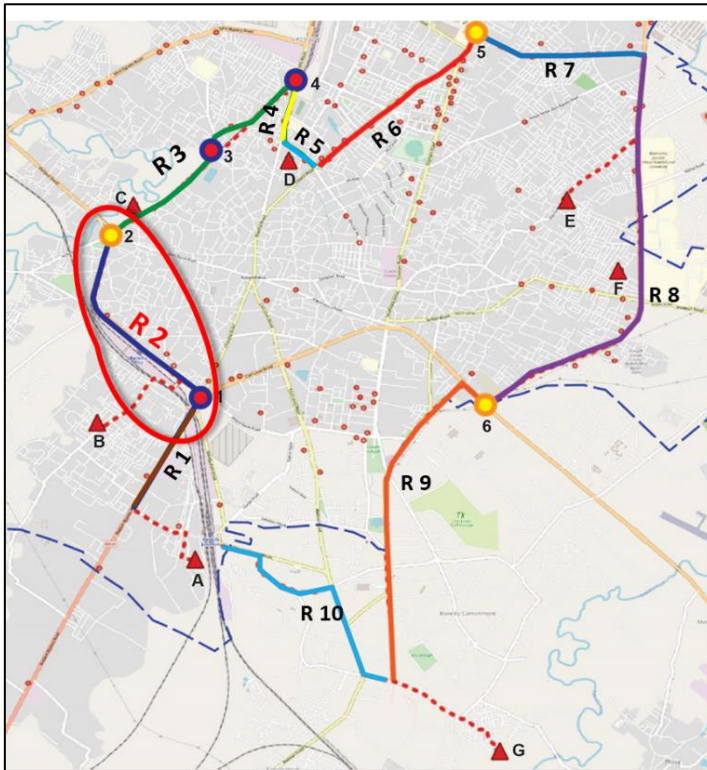


Road Condition



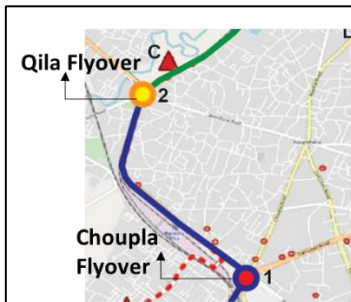
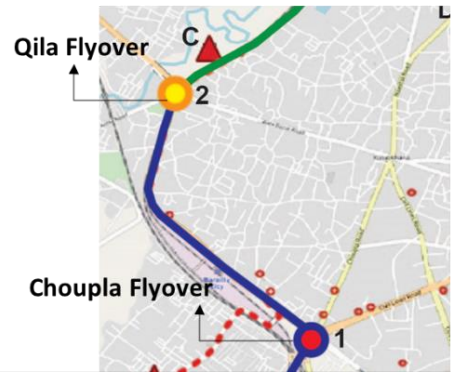
Road Condition

6.2.5.5.2 Road 2 : Choupla to Qila Flyover



Road 2 : Choupla to Qila Flyover

- Length :** 2.5 km
- Road Width :** 20 – 22 m wide
- Type of Road :** 4 Lane (Divider)
- Pedestrian Facility:** No Footpath
- Public Transport :** Autorickshaw
E-Rickshaw
City Bus
- NMV Lane :** Not available



Road 2 Condition



Road Condition



Road Condition

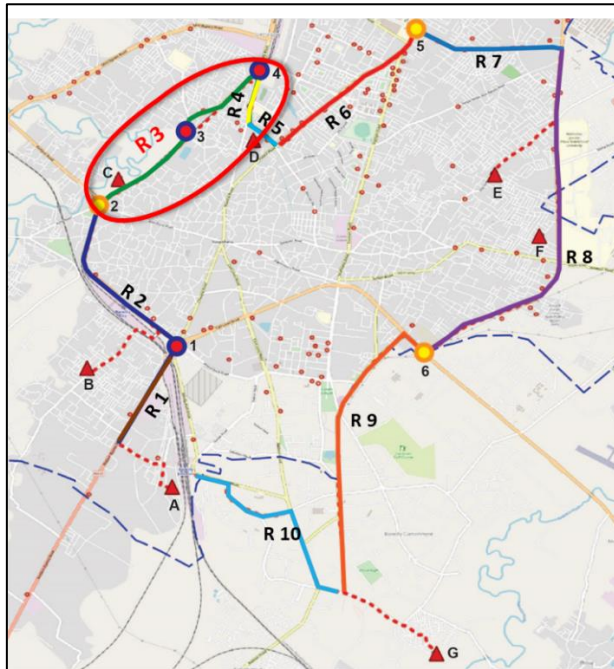


Qila Flyover



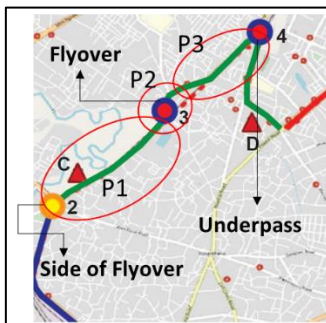
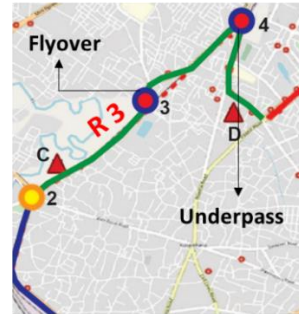
Road Condition

6.2.5.5.3 Road 3 : Qila to Kudeshiya Under Pass



Road 3 : Qila to Kudeshiya Under Pass

Road Length : 2.56 km
Road Width : 11 – 15 m wide
Type of Road : 2 Lane (No Divider)
Pedestrian Facility: No Footpath
Public Transport : Autorickshaw
 E-Rickshaw
NMV Lane : Not available



P1 Road Condition

P1 Road Condition

P1 – Qila Flyover to Chowdhri Talab Flyover – 11 to 15 m wide

P2 – Chowdhri Talab Flyover – 8.5 m wide

P3 – Chowdhri Talab Fly over to Qudeshiya Under pass – 15 m wide



P1 Road Condition

P1 Flyover Entry



P2 Fly over

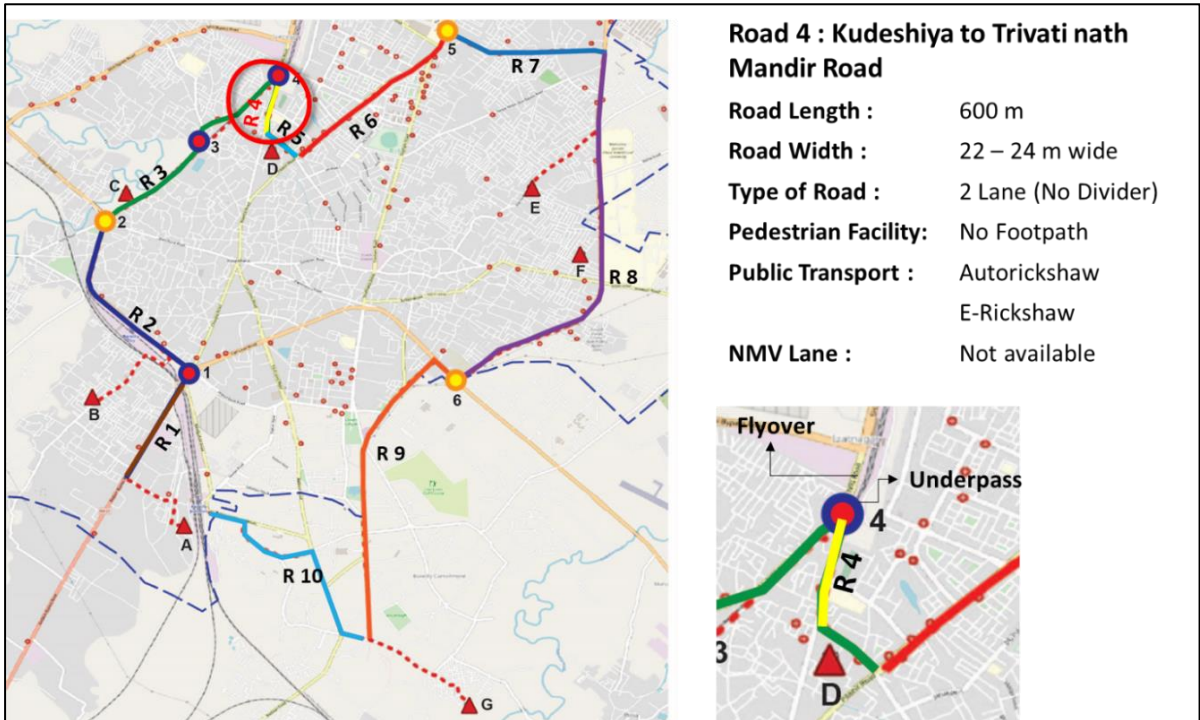


P3 Road

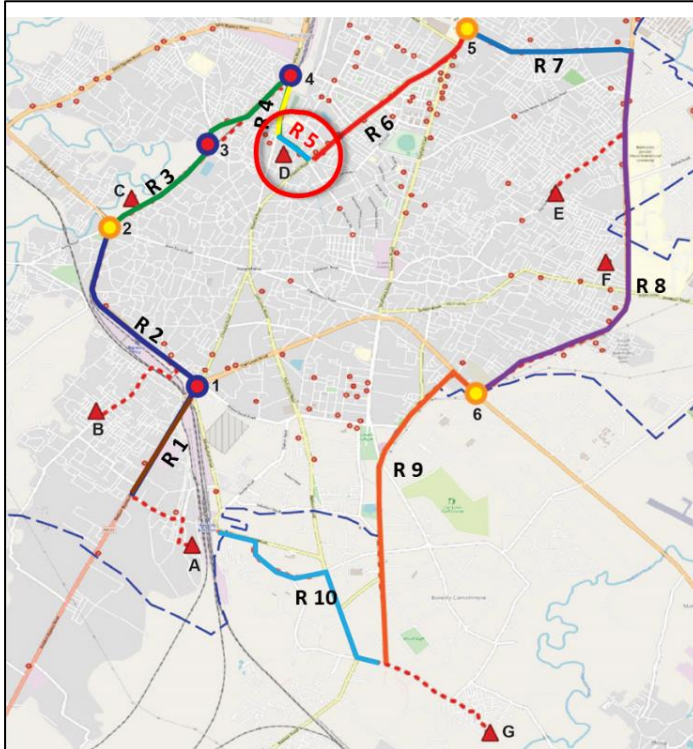


P3 Road

6.2.5.5.4 Road 4 : Kudeshiya to Trivati Nath Mandir Road

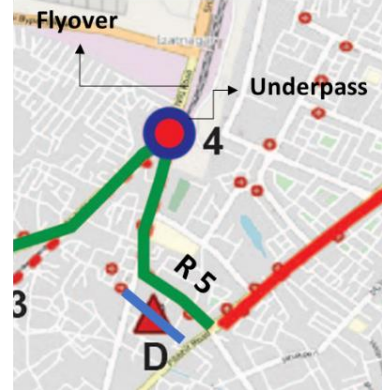


6.2.5.5.5 Road 5 : Trivati Nath Mandir Road

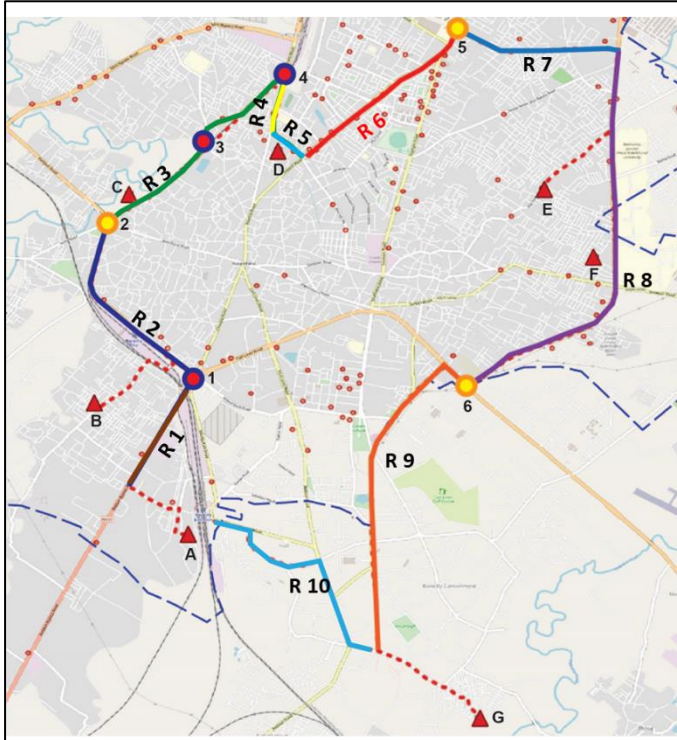


Road 5 : Trivati Nath Mandir Road

- Road Length :** 500 m
- Road Width :** 15 – 18 m wide
- Type of Road :** 2 Lane (No Divider)
- Pedestrian Facility:** No Footpath
- Public Transport :** Autorickshaw
E-Rickshaw
- NMV Lane :** Not available

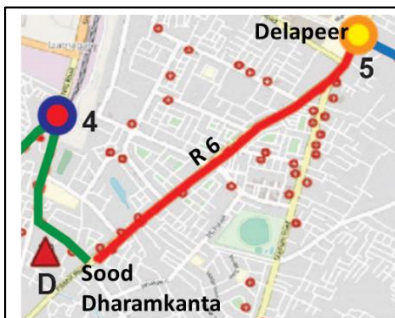
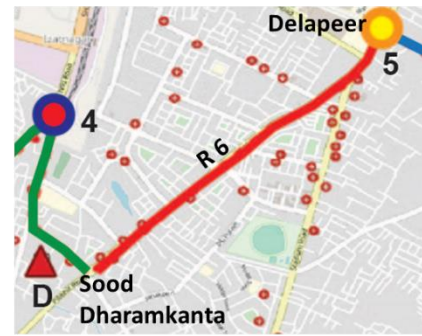


6.2.5.5.6 Road 6 : Trivati Nath Mandir Road



Road 6 : Sood Dharam kanta chowk to Delapeer

- Road Length :** 2.25 km
- Road Width :** 26 – 28 m wide
- Type of Road :** 4 Lane (Divider)
- Pedestrian Facility:** No Footpath
- Public Transport :** Autorickshaw
E-Rickshaw
- NMV Lane :** Not available



Road Condition



Road Condition



Road Condition

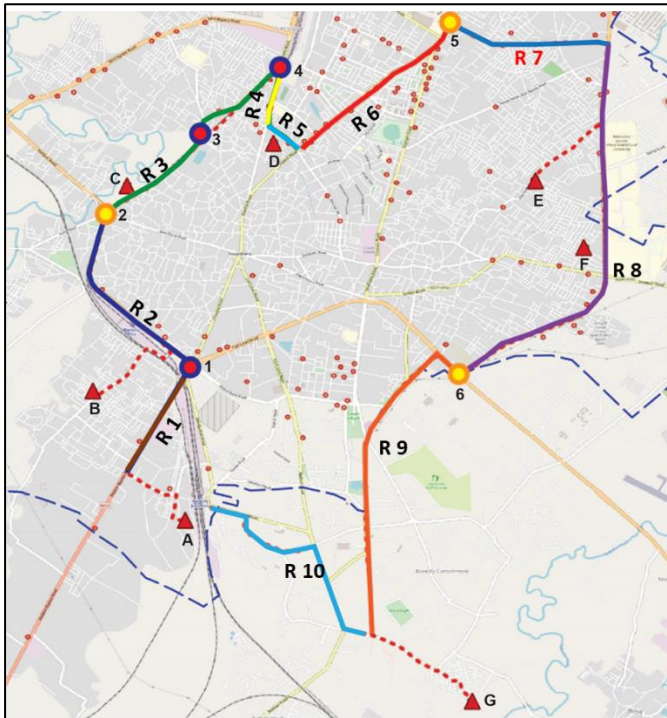


Road Condition



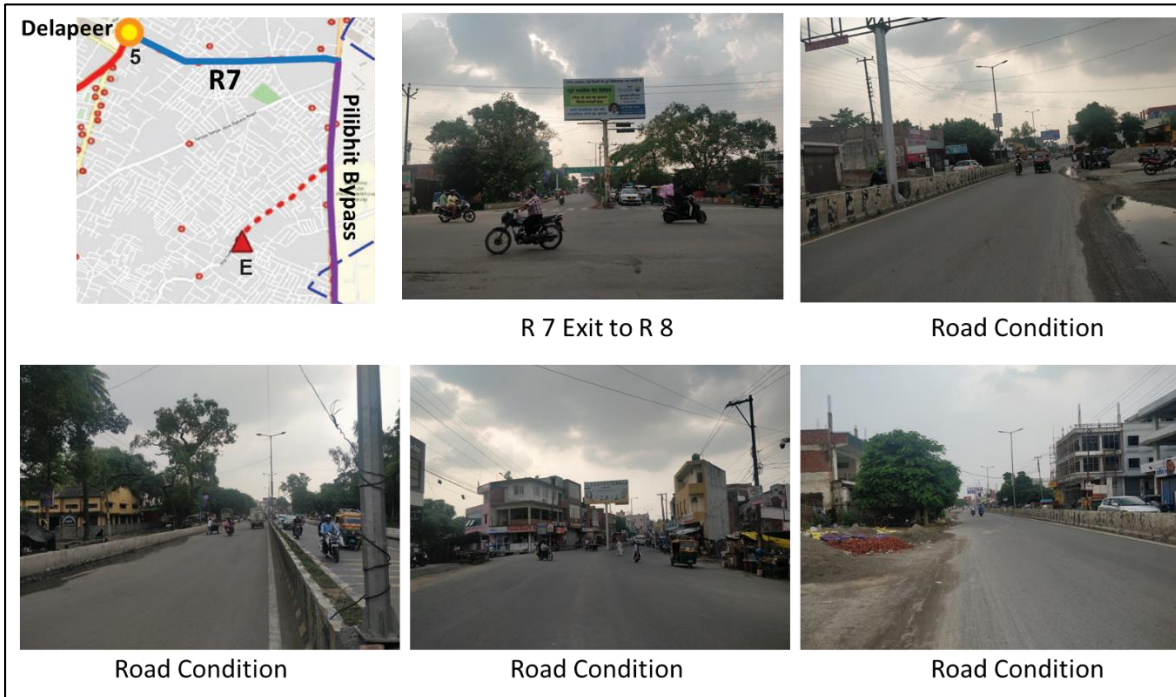
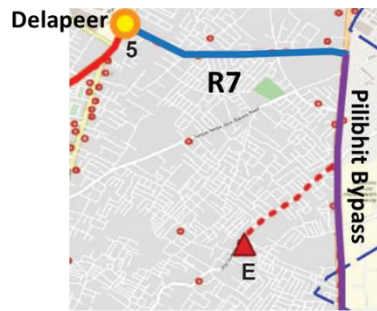
Road Condition

6.2.5.5.7 Road 7 : Pilibhit Bypass Road

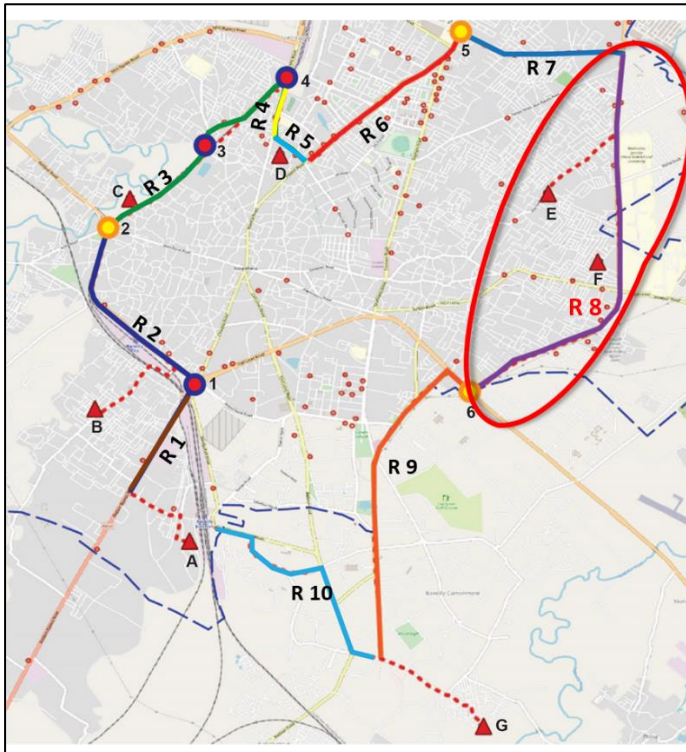


Road 7 : 100 ft Road

Road Length :	1.76 km
Road Width :	16 – 20 m wide
Type of Road :	4 Lane (Divider)
Pedestrian Facility:	No Footpath
Public Transport :	Autorickshaw E-Rickshaw
NMV Lane :	Not available

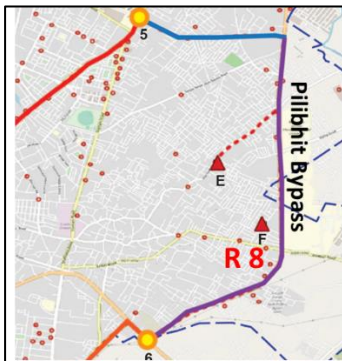
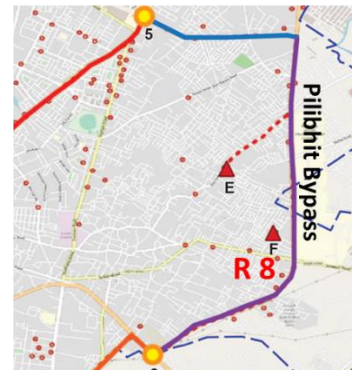


6.2.5.5.8 Road 8 : Pilibhit Bypass Road

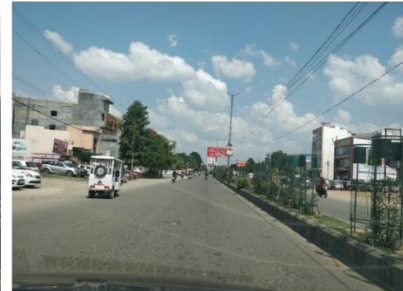


Road 8 : Pilibhit Bypass Road

- Road Length :** 5 km
- Road Width :** 42 – 45 m wide
- Type of Road :** 4 Lane (Divider)
- Pedestrian Facility:** No Footpath
- Public Transport :** Autorickshaw
E-Rickshaw
City Bus
- NMV Lane :** Not available



R 7 Exit to R 8



Road Condition



Road Condition

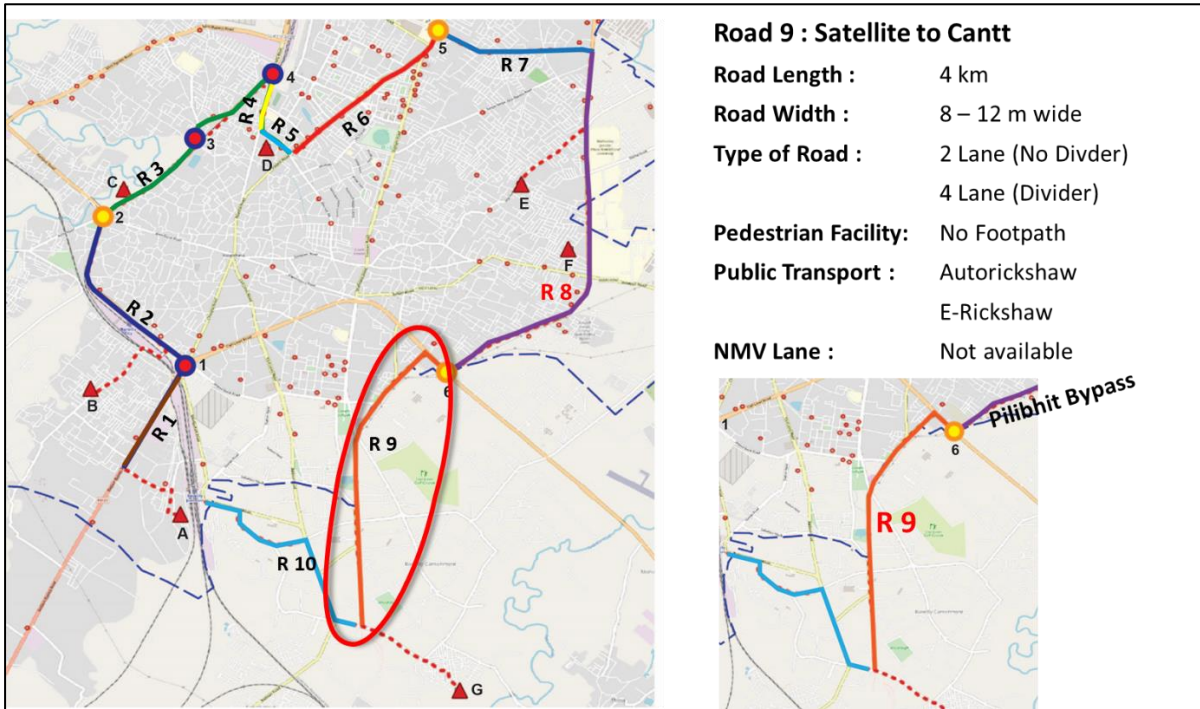


Road Condition

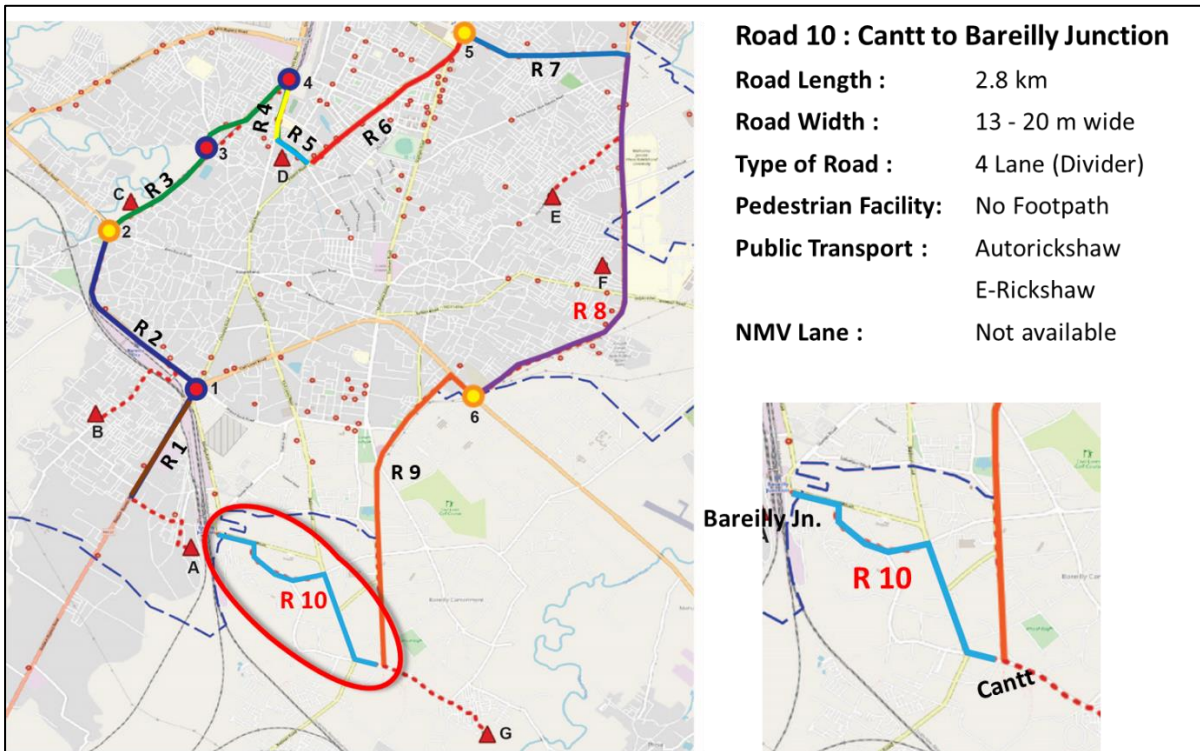


Road Condition

6.2.5.5.9 Road 9 : Satellite to Cantt



6.2.5.5.10 Road 10 : Cantt to Bareilly Junction



The Nath Temples are visited by the people throughout the year but majorly crowded in the month of Saavan and Maha Shivratri. The popularity of the temples is very much among the people of city and the state. The Nath Nagari Circuit has the potential of attracting the new visitors and enhances the tourism in the city. The roads identified for the circuit needs to be improvise for better connectivity and facilities of visitors.

6.2.5.6 Proposal

The enhance the feeling of the Nath Temple Circuit of Bareilly the proposal are to ease the travelling from one Nath temple to other and provide safe and proper facilities throughout the circuit. The main proposals are as follows

- Adding IPT, NMT, and other public transit nodes to the circuit to improve connectivity and accessibility
- Provision of Foot over Bridges on the roads with wide span to facilitate the pedestrian movement for the Temples.
- Provision of parking area for the visitors.
- Using signs and other visual markers to improve the city's chowks, chaurahas, and market streets' readability and identity.

6.2.5.7 Connectivity improvement

The circuit needs to have a proper connectivity to provide seamless movement among the Nath temples. As mentioned in the map below the roads with existing Bus service and IPT service in the circuit. The two main proposals are:

- Provision of IPT on the circuit
- Provision of Nath Circuit specific E-carts

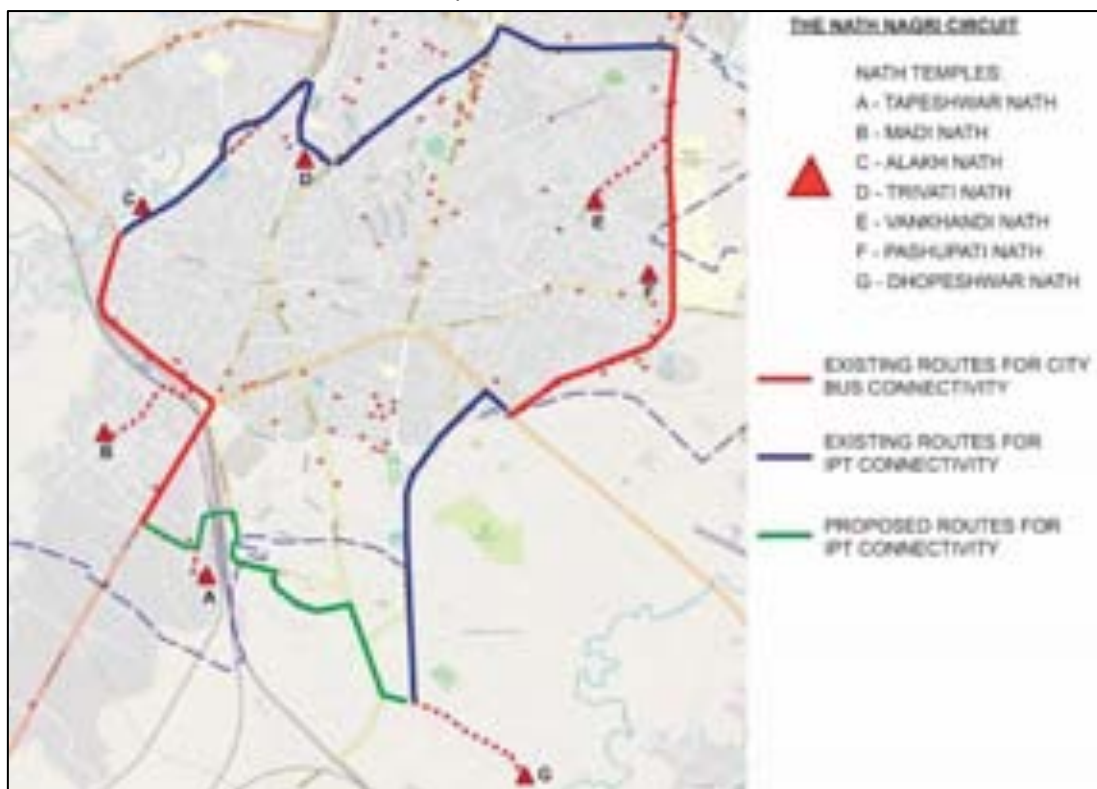


Figure 6-45: Existing and proposed Public Transport Routes

6.2.5.8 Nath Nagri E-Rickshaws:

The proposal is to provide continuous connectivity to the route by providing E-Rickshaws specifically for Nath Circuit movement. These E-Rickshaws will be managed by the Nagar Nigam and visitors can use this facility by buying ticket from any Nath temple.

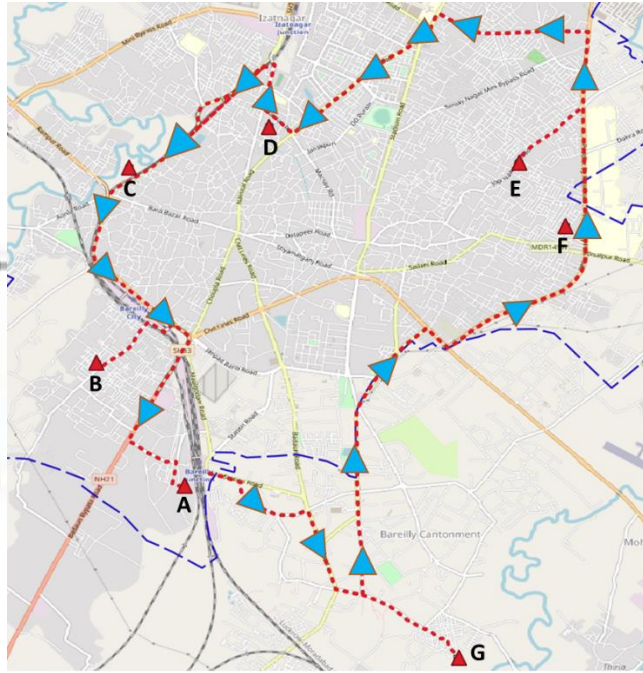


Figure 6-46: E-Rickshaw Routes

Features of Nath Nagri E-Rickshaws

- Availability on all 7 Nath temples
- No repetitive activity of finding transport after each temple.
- One ticket will work for whole route
- Employment generation for city people.
- Managed by Nagar Nigam

6.2.5.9 Foot Over Bridges

Foot-over Bridges are provided on the roads with wide span to facilitate the pedestrian movement for the Temples.

Location of Foot Over Bridges:

- Pilibhit Bypass Road
 - Near Bankhandi Nath Temple
 - Near Pashupati Nath Temple
- Bareilly Station to connect Tapeshtar Nath Temple



6.2.5.10 Existing MLCP in Bareilly

Location of MLCP:

1. DD Puram
2. Gandhi Udhyan
3. Ghanta Ghar



6.2.5.11 Design Component

NATH NAGRI CIRCUIT - Bareilly							
S.No	Temple	Name of road section	Length	Component	Description	Total Amount	Total Cost
			(km)				
1	Alakh Nath Temple to Trivati Nath Temple	Road 4 : Kohadapeer Road Kudeshiya to Trivati nath Mandir Road	0.6 km	Footpath	1 Side	11,41,200	15,57,700
				Signages	1 Side	8,000	
				Electrical Works	1 Side (LED)	30,000	
				Dustbins	SS Twin Bins	16,000	
				Bollard	900 mm Concrete bollard on 1 side	1,40,000	
				Vending Kiosk	Fixed Vending kiosk (2x3 m size)	2,00,000	
				Cat Eye	Solar LED Road Studs, 12 V	22,500	
		Road 5 : Trivati Nath Mandir Road	0.5 km	Footpath	1 Side	9,51,000	11,77,500
				Signages	1 Side	8,000	
				Electrical Works	1 Side (LED)	30,000	
				Dustbins	SS Twin Bins	16,000	
				Bollard	900 mm Concrete bollard on 1 side	1,40,000	
				Cat Eye	Solar LED Road Studs, 12 V	22,500	
				Variable Display Boards	Wall & Pole mounted (72 x 48 inch)	10,000	
	Road 6 : Sood Dharam kanta chowk to Delapeer	2.25 km	Dismantling portion		1,00,000	70,34,500	
			Civil Works	Not Required	0		
			Footpath	1 Side	42,79,500		
			Signages	1 Side	40,000		
			Electrical Works	1 Side (LED)	1,50,000		
			Dustbins	SS Twin Bins	1,20,000		
			Bollard	900 mm Concrete bollard on 1 side	7,00,000		
			Vending Kiosk	Fixed Vending kiosk (2x3 m size)	8,00,000		
			Cat Eye	Solar LED Road Studs, 12 V	3,15,000		
			Variable Display Boards	Wall & Pole mounted (72 x 48 inch)	30,000		
			Public conveniences	Male & Female toilet unit	5,00,000		
	Road 7 : 100 ft Road	1.76 km	Dismantling portion		1,00,000	57,82,520	
			Civil Works	Not Required	0		
			Footpath	1 Side	33,47,520		
			Signages	1 Side	20,000		
			Electrical Works	1 Side (LED)	1,00,000		
			Dustbins	SS Twin Bins	80,000		
			Bollard	900 mm Concrete bollard on 1 side	4,90,000		
			Vending Kiosk	Fixed Vending kiosk (2x3 m size)	4,00,000		
			Cat Eye	Solar LED Road Studs, 12 V	2,25,000		
			Variable Display Boards	Wall & Pole mounted (72 x 48 inch)	20,000		
			Public conveniences	Male & Female toilet unit	10,00,000		
3	Bankhandi Nath	Road 8 : Pilibhit	5 km	Dismantling portion		3,00,000	5,50,50,000

NATH NAGRI CIRCUIT - Bareilly								
S.No	Temple	Name of road section	Length	Component	Description	Total Amount	Total Cost	
			(km)					
	Temple to Pashupati Nath Temple	Bypass Road		Civil Works	Not Required	0		
				Footpath	1 Side	95,10,000		
				Signages	1 Side	80,000		
				Electrical Works	1 Side (LED)	2,50,000		
				Dustbins	SS Twin Bins	2,00,000		
				Bollard	900 mm Concrete bollard on 1 side	14,00,000		
				Vending Kiosk	Fixed Vending kiosk (2x3 m size)	8,00,000		
				Cat Eye	Solar LED Road Studs, 12 V	4,50,000		
				Variable Display Boards	Wall & Pole mounted (72 x 48 inch)	60,000		
				Foot-over-Bridge	Foot-over-Bridge	4,00,00,000		
				Public conveniences	Male & Female toilet unit	20,00,000		
4	Pashupati Nath Temple to Dhopeshwar Nath Temple	Road 9 : Satellite to Cantt	4 km	Dismantling portion		5,00,000	1,28,63,000	
				Civil Works	Not Required	0		
				Footpath	1 Side	76,08,000		
				Signages	1 Side	80,000		
				Electrical Works	1 Side (LED)	2,50,000		
				Dustbins	SS Twin Bins	2,00,000		
				Bollard	900 mm Concrete bollard on 1 side	10,50,000		
				Vending Kiosk	Fixed Vending kiosk (2x3 m size)	8,00,000		
				Cat Eye	Solar LED Road Studs, 12 V	3,15,000		
				Variable Display Boards	Wall & Pole mounted (72 x 48 inch)	60,000		
				Public conveniences	Male & Female toilet unit	20,00,000		
5	Dhopeshwar Nath Temple to Tapeswar Nath Temple	Road 10 : Cantt to Bareilly Junction	2.8 km	Dismantling portion		3,00,000	82,45,600	
				Civil Works	Not Required	0		
				Footpath	1 Side	53,25,600		
				Signages	1 Side	40,000		
				Electrical Works	1 Side (LED)	1,50,000		
				Dustbins	SS Twin Bins	1,20,000		
				Bollard	900 mm Concrete bollard on 1 side	7,00,000		
				Vending Kiosk	Fixed Vending kiosk (2x3 m size)	4,00,000		
				Cat Eye	Solar LED Road Studs, 12 V	1,80,000		
				Variable Display Boards	Wall & Pole mounted (72 x 48 inch)	30,000		
				Public conveniences	Male & Female toilet unit	10,00,000		
			Road 11 : Junction to Budaun Road via Subhash Nagar	1.6 km	Dismantling portion		1,00,000	2,44,84,700
					Civil Works	Not Required	0	
					Footpath	1 Side	30,43,200	
Signages					1 Side	32,000		
				Electrical Works	1 Side (LED)	1,00,000		

NATH NAGRI CIRCUIT - Bareilly								
S.No	Temple	Name of road section	Length	Component	Description	Total Amount	Total Cost	
			(km)					
				Dustbins	SS Twin Bins	56,000		
				Bollard	900 mm Concrete bollard on 1 side	4,20,000		
				Vending Kiosk	Fixed Vending kiosk (2x3 m size)	2,00,000		
				Cat Eye	Solar LED Road Studs, 12 V	13,500		
				Variable Display Boards	Wall & Pole mounted (72 x 48 inch)	20,000		
				Foot-over-Bridge	Foot-over-Bridge	2,00,00,000		
				Public conveniences	Male & Female toilet unit	5,00,000		
6	Tapeshwar Nath Temple to Madi Nath Temple	Road 1 : Badaun road to Choupla	1.6 km	Dismantling portion		2,00,000	83,34,700	
				Civil Works		37,50,000		
				Footpath	1 Side	30,43,200		
				Signages	1 Side	32,000		
				Electrical Works	1 Side (LED)	1,00,000		
				Dustbins	SS Twin Bins	56,000		
				Bollard	900 mm Concrete bollard on 1 side	4,20,000		
				Vending Kiosk	Fixed Vending kiosk (2x3 m size)	2,00,000		
				Cat Eye	Solar LED Road Studs, 12 V	13,500		
				Variable Display Boards	Wall & Pole mounted (72 x 48 inch)	20,000		
				Public conveniences	Male & Female toilet unit	5,00,000		
						Road 2 : Coupla to Qila		2.5 km
	Civil Works	Not Required	30,00,000					
	Footpath	1 Side	47,55,000					
	Signages	1 Side	40,000					
	Electrical Works	1 Side (LED)	1,50,000					
	Dustbins	SS Twin Bins	1,20,000					
	Bollard	900 mm Concrete bollard on 1 side	5,60,000					
	Vending Kiosk	Fixed Vending kiosk (2x3 m size)	4,00,000					
	Cat Eye	Solar LED Road Studs, 12 V	1,35,000					
Variable Display Boards	Wall & Pole mounted (72 x 48 inch)	30,000						
Public conveniences	Male & Female toilet unit	10,00,000						
7	Madi Nath Temple to Alakh Nath Temple	Road 3 : Qila to Kudeshiya	2.5 km	Dismantling portion		1,00,000	70,42,000	
				Civil Works	Not Required	0		
				Footpath	1 Side	47,55,000		
				Signages	1 Side	40,000		
				Electrical Works	1 Side (LED)	1,00,000		
				Dustbins	SS Twin Bins	80,000		
				Bollard	900 mm Concrete bollard on 1 side	7,00,000		

NATH NAGRI CIRCUIT - Bareilly							
S.No	Temple	Name of road section	Length	Component	Description	Total Amount	Total Cost
			(km)				
				Vending Kiosk	Fixed Vending kiosk (2x3 m size)	2,00,000	
				Cat Eye	Solar LED Road Studs, 12 V	27,000	
				Variable Display Boards	Wall & Pole mounted (72 x 48 inch)	40,000	
				Public conveniences	Male & Female toilet unit	10,00,000	
Total Project Cost							14,18,62,220

6.2.5.12 Nath Temple Precinct Development

Being recognized as Nath Nagri of India, Bareilly portrays a very strong image of the seven Nath temples situated on the seven routes of the city. The city inherits a very rich spiritual significance that brings pilgrims from many other cities to visit the Nath temples. These Nath temples witness their highest influx of visitors during the Sawan month and Maha Shivratri. Thousands of pilgrims also visit the city for Seven Nath temple parikrama which adds to the religious uniqueness of the city.

6.2.5.12.1 Condition Assessment of all Nath Temple Precincts

Since the construction of Nath temples at the city periphery as its gateways, the city has expanded drastically on all sides and the expansion has enveloped all seven Nath temples. These religious precincts have lost their imageability and presence over a period of time. Absence of identity markers, gateways, designated corridors, signage, façade lighting has led to degradation of the overall urban character of the precincts.

Existing Scenario of Nath Temple Complexes								
S.No.	Facilities and infrastructure	Alakh Nath Temple	Madi Nath Temple	Tapeswar Nath Temple	Dhopeswar Nath Temple	Pashupati Nath Temple	Vankhandi Nath Temple	Trivati Nath Temple
1	Entrance Marker/ Gateway	Yes	Not in a good condition	Not in a good condition	Yes	Yes	Yes	Yes
2	Washrooms	Yes	Not available	Not available	Yes	Not available	Not available	Yes
3	Drinking Water	Yes	Not available	Not available	Yes	Yes	Yes	Yes
4	Availability and condition of Prasad/worship material Shops	Yes Shop within the temple premise	No shop within the temple premise. Prasad/ worship material is provided by privately owned shops outside the temple	No shop within the temple premise. Prasad/ worship material is provided by privately owned shops outside the temple	Yes Shop within the temple premise	No shop within the temple premise. Prasad/ worship material is provided by privately owned shops outside the temple	No shop within the temple premise. Prasad/ worship material is provided by privately owned shops outside the temple	No shop within the temple premise. Prasad/ worship material is provided by privately owned shops outside the temple
5	Dustbins	Yes	Not available	Not available	Yes	Yes	Yes	Yes
6	Seating	Yes	Not available	Not available	Yes	Yes	Yes	Yes
7	Police Booth/ Surveillance Room	Not available	Not available	Not available	Not available	Not available	Not available	Not available
8	Lost and Found facility	No proper infrastructure available. Temple authority operate the facility informally	No proper infrastructure available	No proper infrastructure available	No proper infrastructure available	No proper infrastructure available	No proper infrastructure available	No proper infrastructure available. Temple authority operate the facility informally
9	First Aid medical facilities	No proper infrastructure available. Temple authority operate the facility informally	Not available	Not available	No proper infrastructure available. Temple authority operate the facility informally	No proper infrastructure available. Temple authority operate the facility informally	No proper infrastructure available. Temple authority operate the facility informally	No proper infrastructure available. Temple authority operate the facility informally
10	Information Kiosks	Yes, available inside the temple	Not available	Not available	Not available	Not available	Not available	Not available
11	Segregated Pedestrian Pathway along the approach road	Not segregated pathway available	Not segregated pathway available	Not segregated pathway available	Not segregated pathway available	Not segregated pathway available	Not segregated pathway available	Not segregated pathway available
12	Lighting	Yes, available in the temple precinct	Improper lighting facility	Improper lighting facility	Yes, available in the temple precinct	Yes, available in the temple precinct	Yes, available in the temple precinct	Yes, available in the temple precinct
13	Signages	Signage present at the entrance but requires redevelopment	Yes	Yes	Yes	Yes	Yes	Yes
14	Trees for Shade along the road	Yes	Yes	Yes	No	No	Yes	No
15	Parking (condition if its there)	Parking space available in the temple precinct but lacks management	No parking available	No parking available	Parking space available but lacks management	Parking space available along the road	Parking space available but lacks management	Parking space available in the temple precinct
16	IPT Stand	Not available	Not available	Not available	Not available	Not available	Not available	Not available
Colour coding depicting the present condition			Available		Available, Not in a good condition		Not available	

6.2.5.13 Pilot Temple Precinct Development Project – Vankhandinath Temple

6.2.5.13.1 Condition Assessment

Located just one kilometer away from the Pilibhit bypass is the Vankhandinath temple, connected through Joginawada road. This one kilometer long stretch of Joginawada road is a designated corridor that not only forges a strong connectivity to the temple complex but also caters to all the informal vendor activity. Despite of having such a prominent connectivity, absence of signage, identity markers and designated approach road possesses a challenge for the visitors/ pilgrims to reach the temple complex. The temple complex is equipped with a multi – purpose hall that is used to cater pilgrims during special occasions. Availability of vacant land parcels also help in organizing fairs and accommodate the high influx. Lack of public conveniences is also one of the major issues that the visitors face while visiting the temple.



Figure 6-47: Vankhandi Nath Temple Precinct

(Source: Urban Design Team)



Figure 6-49: Vankhandi Nath Temple Approach Road
(Source: Author)



Figure 6-48: Vankhandi Nath Temple Approach Road
(Source: Author)



Figure 6-51: Vankhandi Nath Temple Fairground
(Source: Author)



Figure 6-50: Vankhandi Nath Temple
(Source: Author)

6.2.5.13.2 Main Entrance Gateway Design Proposal – Applicable to all Nath Temples



6.2.5.13.3 Broad Layout Plan for Development – Vankhandinath Temple Precinct



Figure 6-52: Precinct Development of Vankhandinath Temple
(Source: Urban Design Team)



6.2.5.13.4 Vankhandinath Temple Precinct – Streetscape Proposal (Before & After)



6.2.5.13.5 Key Intervention

- Establishing identity markers/ entrance gateways and development of corridor leading to the religious places will enhance the urban character of their precincts.
- Provisions of public amenities like parking space, washrooms, etc. will not only offer convenience to the visitors but will also create a better user experience.
- Development of temple precincts will help in reclaiming the lost identity of all Nath temples and conserving the city's cultural value.
- The intervention envisions initiating more tourism influx to the city, which will further contribute to the city's economy.

6.2.5.14 Case Example - Brahma Temple, Pushkar

Restructured and pedestrianized temple precinct with added public functions like bazaars, eating points, utilities.





6.2.5.14.1 Design Component

Title of the Project: Urban Renewal of Nath Temple circuit & Infrastructure improvement of all Seven Nath Temples					
Vankhandi Nath Temple Precinct Development					
S.No.	Components	Description	Cost per unit	Quantity	Total cost
A	Entrance Gateway	Development of Entrance Gateway at the main road to mark the temple entry	Rs.20,00,000	1	Total Cost = 20,00,000/-
B	Pathway Development	One Km. long paved pathway with 1.5 m wide raised stretch for Kiosks	Kerbstone – Rs.5000 per cu. M Precast interlocking	Volume of kerbstone = 1000 x 0.15 x 0.15= 22.5 cu. M Total volume on both sides =	Cost of Kerbstone = 45 x 5000 = Rs. 2,25,000/-

			pavers for Entrance Drop-off plaza – Rs 570 per sq m	22.5 x 2=45 cu. M Area of footpath on each side of the road: 1000 m x 1.5 m= 1500 sq. m Total area of paved footpath: 1500 x2=3000 sq. m Area of Paved Road: 1000 X 6.6m = 6600 sq. m Total pavement area: 3000 + 6600 = 9600 sq. m	Cost of concrete pavement = 9600 X 570= Rs.54,72,000/- Total cost = Rs.56,97,000/-
C	Fair Ground Entrance Gateways	Development of Entrance Gateway for fairground area	Rs.8,00,000	2	Cost of Entrance Gateways – 800000 X 2 = Rs.16,00,000/-
D	Services & Amenities Block	Development of Service block for public promenade	Rs.27000 per sq. m	40 sq. m	Service block cost – 27,000 X 40 = Rs. 10,80,000/-
E	Fair Ground development	Fair Ground	Site developmen t of 2 Fairgrounds = Rs.11030 per sq. m	Area of Fairgrounds = 7100 sq. m	Cost of developing open greens 11030 X 7100 = Rs.7,12,13,000/-
F	Promenade Space	Development of promenade for Kiosks	Cost of red sandstone for promenade = Rs. 1800 per sq m	Area of promenade: 3375 sq. m	Cost of sandstone promenade - 1800 X 3375 = Rs. 60,75,000/-

G	Visitor Parking	Visitor Parking	Cost of PCC flooring in parking = Rs.735 per sq. m	Area of Visitor Parking - 850 sq. m	Cost of Visitor Parking – 735 X 850 = Rs.6,24,750/-
H	Kiosks				
H.1	Food/ refreshment kiosks	To be placed along MUZ and within public nodes and plazas	Rs.8,00,000	Five kiosks per 100 m Kiosks on each side of the road 1000/100=10 10 x 5=50 kiosks No of Kiosk in Fairground = 70 Total kiosks=120	Cost of Kiosks 800000 x 120 = Rs.9,60,00,000/-
H.2	Information kiosks	To be placed at the intersections and public plazas	Rs.35000	2	35000 x 2= Rs.70,000
I	Signage and way finding	Signage's to be placed at entry plaza, sports grounds (4), food court, horse training zone and Mela ground.	Rs. 76,000	4	Total Signage Cost – 76,000 X 4 = Rs. 3,04,000/-
J	Lighting				
J1	Single arm pedestrian light pole	7000 mm high light poles @9 m c/c all along the edges of the boardwalk for safety, security and river edge illumination, in entry plaza , sports grounds, food court and play area	Rs. 25000	Lights along Internal road and parking zone = 1000 x 2 /9 x= 222 lights Lights in entry plaza= 2 Lights in Fair ground= 24 lights Total lights= 248 lights	Total cost of Lighting – 25,000 X 248 = Rs. 62,00, 000/-
K	Street furniture				



K1	Seating	Two 600 mm x 1800 mm stone/concrete/ wooden benches at every 250 m on the boardwalk	Rs. 18000	Total benches= 30	Total cost of seating – 18,000 X 30 = Rs. 5,40,000/-
K2	Dustbins	Dry and wet waste Segregation bins to be used on both sides of the boardwalk every 200 m and in entry plaza, fair ground and play area	Rs.15000	Dustbins in entry plaza = 2 Dustbins in fair ground=12 Dustbins on road =12 Total dustbins=26	Total cost of Dustbins – 15,000 X 26 = Rs. 3,90,000/-
				Total Project cost	Rs. 19,17,93,750/-

6.2.6 Project 6: River front development

6.2.6.1 Vision – A Place for Spiritual Tourism and Nature Retreat

6.2.6.1.1 Site 1 - Ramganga Riverfront

The Ramganga River is the largest river passing through the city and the river ghat is one of the well-known religious places in the city. The place inherits a rich historic as well as spiritual value that brings lakhs of pilgrims annually to the ghat. A fair after every 14 days is also organized on the river banks attracting tourists and pilgrims from all over the city. The river banks are flooded with people taking baths, performing religious activities and celebrating the festival.

Since the river crosses in close proximity to Chaubari village, a major fair is organized annually at the banks of the river known as Chaubari fair. The fair takes place on the occasion of Kartik purnima. One of the biggest attractions of this fair is the horse market, where people from far off areas visit the city to buy or sell horses. The fair is attended by lacks of pilgrims, which initiates tourism for the city on a large scale.

6.2.6.1.2 Area of Intervention

Site Area – 20 Hectares (49.4 Acres)



Figure 6-53: Ramganga Fair Ground Site

(Source: Urban Design Team)

6.2.6.1.3 Condition Assessment

The current scenario of riverfront displays a very abrupt image of city's natural features. Despite of being well connected to the city through state highway & railway line, the site completely lacks a prominent connectivity and a symbolic identity. The existing ghat and fairground does not contain any

public infrastructure to support the monthly holy bath and Chaubari fair. This has led to the depletion of the condition of the riverine, eventually affecting the overall ecology.

Despite of having a spiritual value of such prestige, the river ghat and the fairground still remains redundant. Due to lack of identity markers, entrance gateway and way-finding, the approach to the ghat area is not feasible for the visitors. The Ramganga fairground is not only an ecological asset but also holds a significant value in the social infrastructure of Bareilly.



Figure 6-54: Dilapidated Ghat along river edge and connecting bridge (left) Vacant land parcels near connecting bridge (right)



Figure 6-55 Provision of boating to cross the River (up) Provision of boating to cross the River (down)

6.2.6.1.4 Broad Layout Plan for Development



Figure 6-56: Ramganga Fairground Proposal – Key Plan

(Source: Urban Design Team)



Figure 6-57: Ramganga Fairground Proposal Plan

(Source: Urban Design Team)

LEGEND

-  WALKER ROAD
-  RAILWAY LINE
-  PROPOSED VEHICULAR MOVEMENT
-  PEDESTRIAN PATHWAYS
-  AXIS OF MOVEMENT
-  PEDESTRIAN RAMP
-  ENTRANCE PLAZA SPACE
-  GREEN AREA
-  FUNCTIONAL BUILT ZONES
-  UPPER PROMENADE (GHAT)
-  LOWER PROMENADE (GHAT)
-  ZONAL MARKER

DESIGN PROGRAM

ZONE A: GHATS

1. BATHING GHAT - MALE
2. BATHING GHAT - FEMALE
3. BATHING POOL - CHILDREN
4. BOATING GHAT
5. BOATING CLUB
6. SERVICE BLOCK
7. CHANGING ROOMS
8. UPPER PROMENADE (GHAT)

ZONE B: NATUROPATHY CENTRE

9. NATUROPATHY CENTRE FRONT PLAZA
10. WELLNESS RETREAT COTTAGES
11. RIVER VIEWING DECK
12. GREEN BUFFER

ZONE C: HORSE TRAINING ZONE

13. HORSE MARKET PLAZA
14. HORSE STABLES
15. HORSE RING FIELD

ZONE D: COMMERCIALS

16. MARKET STALLS ROW
17. MARKET PLAZA
18. PAVED BUFFER

ZONE E: RECREATIONAL ZONE

19. FACILITY CENTRE + WASHROOMS
20. MULTI-PURPOSE PAULSAN
21. MELA GROUND

ZONE F: PARKING & DROP-OFF

22. SOLID WASTE MANAGEMENT ZONE
23. ENTRANCE DROP-OFF PLAZA
24. VISITOR PARKING

6.2.6.1.5 Project Impact and its Benefits

Development of the riverfront will help in revival of the overall river edge and restoring its ecology as well. Integration of the riverfront along with the fairground will result in rejuvenation of the overall precinct benefiting the pilgrims and city residents. Also, provision of public amenities will add to the overall development and initiate more pilgrims to visit. The urban renewal of the existing ghat will eventually result in upliftment of the city social infrastructure.

6.2.6.1.6 Key Intervention

- Crafting Ramganga river ghat into a multi-functional public space that caters to all pilgrimage activity, fairs and festivals.
- Development of symbolic identity/ entrance gateway to the riverfront.
- Integrating facilities such as Bathing ghats, Naturopathy centre, Horse market area, Commercial zone, recreational zone, Mela ground, recreational greens, visitor amenities etc. into the proposed site layout.
- Place making of their precinct with respect to the surrounding neighborhood.
- Revival of the existing precinct while adding public infrastructure like designated parking space, washrooms, etc.
- Up gradation of Ramganga Jn. Railway station and improving its connectivity with the riverfront.

6.2.6.2 Case Example - FESTIVAL GROUND, PROJECT W.I.L.D, MADHOPUR- JANA URBAN SPACE

Project W.I.L.D – the restoration and rejuvenation of 12 km of Lutiya Nallah as an important water body, green mobility corridor and public space was one of the plan projects in the master plan. As a part of the rejuvenation of the Lutiya Nallah , an event ground was also proposed to catalyze new growth and generate jobs.

It was envisioned as a waterfront space that could be used for melas, fairs, concerts etc as well as an everyday public space, along the edge of the nallah. The event ground was also sited adjacent to the market by the nallah to accommodate spill over activities and vending.



- 1 Access Lane connecting the Festival Ground to the (RCS) of Memorial Circle, with proposed broad lanes of uniform width (4M) and continuous footpaths on both sides (7M avg width) improving left side connectivity
- 2 A 7M wide lay by to provide a defined vehicular entry and drop off to the Festival Ground
- 3 Designated 4 wheeler and 2 wheeler parking for everyday visitors. During large events this area will function as VIP parking, additional external parking in the vicinity will have to be organised by the municipality
- 4 Pedestrian Entrances
- 5 Designated seating areas for pedestrians - platforms
- 6 Pedestrian Plaza
- 7 Open air Theatre (seating capacity 150-200 - standing capacity 40-75, area 2500 SQM)
- 8 Stage Area (200 SQM)
- 9 Toilets and drinking water points
- 10 Pedestrian Ramps (approx 1:10)
- 11 Nallah edge treatment with broad meadows top up
- 12 Regenerated Lujya Nallah, with water impounded with a thick dam West of the market
- 13 Chais providing access to the water
- 14 Deck overlooking the Nallah
- 15 Food court with designated areas for push carts and trolleys
- 16 Market by the nallah
- 17 Existing vehicular bridge, to be upgraded to allow for improved connectivity
- 18 Office building for the event ground (200 SQM)
- 19 2 NCM lanes area to be sorted out for festivals and events
- 20 Nallah edge treatment with grass walls
- 21 Pedestrian Path and Bicycle track connecting all the developments on the Nallah as part of the masterplan for project WLD



6.2.6.3 Project Component

Title of the Project: Riverfront Development					
RAMGANGA RIVERFRONT					
S.No	Compon ents	Description	Cost per unit	Quantity	Total cost
A	Ghat Development				
A1	Bathing Ghat for Male, Female & Children	<ul style="list-style-type: none"> Dholpur stone flooring 5m x 5m Viewing decks placed at different levels and distributed over the entire ghat length RCC river embankment Lifeguard and first aid Changing rooms, lockers and public amenities Lighting and signage 	Rs.50,000 per sq. m	5500 + 5500 + 3000 = 14000 sq. m	Cost of ghat development – 50,000 X 14000 = Rs. 70,00,00,000/-
A2	Boating Ghat	<ul style="list-style-type: none"> Dholpur stone flooring RCC river embankment Lifeguard and first aid Lighting and signage 	Rs.20,000 per sq. m	6500 sq. m	Cost of Boating ghat development – 20,000 X 6500 = Rs. 13,00,00,000/-
A3	Upper Promenade Ghat	<ul style="list-style-type: none"> Dholpur stone flooring RCC river embankment Lifeguard and first aid Lighting and signage 	Rs.20,000 per sq. m	12,500 sq. m	Cost of Upper Promenade development – 20,000 X 12500 = Rs. 25,00,00,000/-
					Total cost = Rs. 1,08,00,00,000/-
B	Public amenities				
B1	Boating Club	Development of a Boating Club	Rs.27000 per sq. m	400 sq. m	Boating Club cost – 27,000 X 400 = Rs. 1,08,00,000/-

B2	Service Block	Development of Service block for complete ghat area	Rs.27000 per sq. m	400 sq. m	Service block cost – 27,000 X 400 = Rs. 1,08,00,000/-
B3	Changing Rooms	Development of Changing rooms	Rs.27000 per sq. m	600 sq. m	Changing room cost – 27,000 X 600 = Rs. 1,62,00,000/-
					Total Cost – Rs. 3,78,00,000/-
C	Naturopathy Centre	Naturopathy Front Plaza Wellness Retreat Centre River Viewing Deck Green Buffer	Precast interlocking pavers for Naturopathy Front Plaza plaza – Rs 570 per sq m Cost of Wellness Retreat Centre - Rs.27000 per sq. m Cost of River Viewing Deck - Rs.20000 per sq. m Cost of Green Buffer = 550/- per sq. m	Area of Front plaza: 2500sq. m Area of Wellness Retreat Centre: 3000sq. m Area of Viewing Deck: 1500sq. m Area of Green Buffer: 10000sq. m	Cost of precast interlocking pavers = Rs. 14,25,000/- Wellness Retreat Centre cost – 27,000 X 3000 = Rs. 8,10,00,000/- River Viewing Deck Cost - Rs.20000 X 1500 = 3,00,00,000/- Green Buffer Cost - Rs.550 X 10000 = 55,00,000/- Total cost = Rs. 11,79,25,000/-
D	Horse Training Centre	Horse Market Plaza Horse Stables Horse Riding Field	Cost of Precast interlocking pavers for Horse Market Plaza plaza – Rs 570 per sq m Cost of Horse Stables – Rs 4500 per sq m	Area of Horse Market Plaza: 2000sq. m Area of Horse Stables: 4000sq. m	Cost of precast interlocking pavers - 570 X 2000 = Rs. 11,40,000/- Cost of Horse Stables - 4500 X 4000 = Rs. 1,80,00,000/- Total cost = Rs. 1,91,40,000/-

E	Commercial Area	Market Stall row in the commercial area Market Plaza Paved Buffer	Cost of each market stall - Rs. 8,00,000 Precast interlocking pavers for Market Plaza plaza – Rs 570 per sq m Core of Paved buffer – Rs 570 per sq m	Total Market Stalls = 90 Area of Market Plaza – 3000 Area of Paved buffer - 14000	Market Stalls cost – 8,00,000 X 90 = Rs. 7,20,00,000/- Cost of Plaza pavement – 570 X 3000 = 17,10,000/- Cost of Paved buffer– 570 X 14000 = 79,80,000/- Total cost = Rs. 8,16,90,000/-
F	Recreational Zone	Facility Centre + Washrooms Multi-Purpose Pavilion Mela Ground	Cost of Facility Centre - Rs.27000 per sq. m Cost of Multi-Purpose Pavilion - Rs.27000 per sq. m Site development per sq m = Rs.11030	Area of Facility Centre - 2000 sq. m Area of Multi-Purpose Pavilion - 2000 sq. m Area of Mela Ground – 60000 sq. m	Facility Centre – 27,000 X 2000 = Rs. 5,40,00,000/- Multi-Purpose Pavilion – 27,000 X 2000 = Rs. 5,40,00,000/- Site Development cost of Mela ground – 11030 X 60000 = Rs.66,18,00,000/- Total cost = Rs. 76,98,00,000/-
G	Parking & Drop-Off	Solid Waste management zone Entrance Drop-off plaza Visitor Parking	Cost of Solid Waste management zone - Rs.27000 per sq. m Precast interlocking pavers for Entrance Drop-off plaza – Rs 570 per sq m	Area of Solid Waste management zone – 1200 sq. m Area of Entrance Drop-off plaza - 3000 sq. m Area of Visitor Parking - 11000 sq. m	Cost of Solid Waste management zone - 27000X 1200 = Rs. 3,24,00,000/- Cost of Entrance Drop-off plaza – 570 X 3000 = Rs.17,10,000/- Cost of Visitor Parking – 735 X 11000 = Rs.80,85,000/-

			Cost of PCC flooring = Rs.735 per sq. m		Total cost = Rs. 4,21,95,000/-
H	Signage and way finding	Signage's to be placed at entry plaza, sports grounds (4), food court, horse training zone and Mela ground.	Rs. 76,000	8	Total Signage Cost – 76,000 X 8 = Rs. 6,08,000/-
I	Lighting				
I1	Double arm pedestrian light pole	9000 mm high light poles @9 m c/c all along the edges of the boardwalk for safety, security and river edge illumination, in entry plaza , sports grounds, food court and play area	Rs. 25000	Lights along Internal road and parking zone = 1175/9= 130 lights Lights in entry plaza= 10 Lights in mela ground = 120 lights Lights in Ghat area = 80 lights Lights in market area = 65 Lights in Horse training zone = 75 Total lights= 480 lights	Total cost of Lighting – 25,000 X 480 = Rs. 1,20,00, 000/-
J	Street furniture				
J1	Seating	Two 600 mm x 1800 mm stone/concrete/ wooden benches at every 250 m on the boardwalk	Rs. 18000	Total benches= 75	Total cost of seating – 18,000 X 75 = Rs. 13,50,000/-
J2	Dustbins	Dry and wet waste Segregation bins to be used on both sides of the boardwalk every 200 m and in entry plaza, food court, mela ground and play area	Rs.15000	Dustbins in entry plaza = 2 Dustbins in food court= 12 Dustbins in mela ground=12 Dustbins in ghat =10 Total dustbins=36	Total cost of Dustbins – 15,000 X 36 = Rs. 5,40,000/-
				Total Project cost	Rs. 216,30,48,000/-

6.2.7 Project 7: Development of Aero city integrated complex near Airport

6.2.7.1 Aerocity integrated office complex near Airport development

Bareilly is listed as one of the nine counter magnets of the National Capital region which can be developed as the economic growth center. Trade and commerce are one of the important sectors which can amplify the economy of the city. As per draft master plan 2031, the existing landuse of the commercial area is found to be 3.31 percent against the URDPFI guidelines of 4-6 percent. Lack of commercial space is also outlined by stakeholders such as Bareilly Vyapar Manadal, etc. Bareilly city needs commercial area as given below:

Year	Projected Population	Total Master Plan Area (Ha)	Proposed Percentage (Ha)	Commercial Area (Ha)	Additional Area additional to Master Plan 2031 (Ha)
2031	1949012	22815.76	4	912.63	0
2041	2422433	25499.25	4	1019.97	107.33
2051	2894499	30468.41	4	1218.73	306.10
2061	30,29,478	31889.24	4	1275.56	362.93
2071	37,02,015	38968.58	4	1558.74	646.11

6.2.7.2 Area of Intervention

Located at the intersection of the Bareilly bypass and Pilibhit road, the proposed site of size 30 hectare is a strategically selected location for the development of mixed-use development. Considering the context of the proposed site, the Radisson hotel and Airport in its close proximity can be foreseen as a supportive infrastructure for further development. Along with the existing mobility infrastructure and the available assets around the site, an integrated precinct for mixed-use development can be envisioned.



Figure 6-58: Proposed Site for Mixed Use Development

(Source: Consultant Analysis)

6.2.7.3 Broad Layout Plan for Development



Figure 6-59: Layout Development of 30 Hectare Site

(Source: Urban Design Team)

LEGEND	
	1 STAR HOTEL
	34 STAR HOTEL
	CLUB / RECREATIONAL CENTER
	OFFICE
	RETAIL/ ENTERTAINMENT
	GREENS



Bareilly- Mixed Use, Aerocity			
Site Area- 30Hectares/ 3,00,000sqm			
1	Permissible F.A.R- 2		
2	Permissible Ground Coverage (33%)-		99,000sqm
2.A	Block	Area in percentage	Area in sq.m
	i	Hotel	40%
	ii	Mixed Use	60%
			39600
			59400
3	Permissible Built up Area- (FAR x Site Area)		6,00,000sqm
3.A	Block	Area in percentage	Area in sq.m
	i	Hotel	40%
	ii	Retail	30%
	iii	Office	30%
			2,40,000
			1,80,000
			1,80,000
4	Permissible Height- 45m		
5	Site Setback - 9m		

6.2.7.4 Key Interventions

7. Development of Aerocity by allocating a land parcel near the city airport for mixed use development to foster new growth opportunities for Bareilly.
8. Development of the allocated land parcel featuring state-of-the-art Retail centers, Offices, Hotels and convention centers will result in city's economic growth and generate new employment for the city residents.
9. The proposal will also act as a gateway to the city.

6.2.7.5 Project Impact and its Benefits

The development of regional trade and commerce hub will expedite the speed of economic growth and will establish the city as a major economic generator and employment provider in the region. It will strengthen the economic base and to develop the city as prominent trade and commerce hub in the region.

6.2.7.6 Case Study - Cyber City, Gurgaon



6.2.7.7 Design Component

Title of the Project: Aerocity integrated office complex near Airport development					
AEROCITY DEVELOPMENT					
S.No.	Components	Description	Cost per unit	Quantity	Total cost
A	Built area development	<p>Site area X Permissible F.A.R = Total Built up area</p> <p>Site Area – 3,00,000 sq. m</p> <p>Permissible F.A.R – 2</p>	Structure & civil work cost – Rs 27,000 per sq m	<p>Hotel Built up Area (40%) – 2,40,000 sq. m</p> <p>Office Built up Area (30%) – 1,80,000 sq. m</p> <p>Retail Built up Area (30%) – 1,80,000 sq. m</p> <p>Total Built up Area – 6,00,000 sq. m</p>	<p>Cost of Built up Area – 27000 X 600000 = Rs. 1620,00,00,000</p> <p>/-</p>
B	Site Development	<p>Total Site area – permissible ground coverage = Built free area</p> <p>Site Area – 3,00,000 sq. m</p> <p>Permissible ground coverage – 33%</p>	Site development cost per sq m = Rs.7000	Area of site after permissible ground coverage – 2,01,000 sq. m	<p>Cost of site development – 7000 X 201000 = Rs. 140,70,00,000/-</p>
				Total Project cost	<p>Rs. 17,60,70,00,000</p> <p>/-</p>

6.2.8 Project 8: City Plan for Water Logging / stagnant spots and flood prone areas

6.2.8.1 Drainage Plan

A Drainage Infrastructure Plan has been prepared to elucidate drainage requirements for the current and upcoming predicted population of the city. The objectives of the Plan are to identify and analyse the existing drainage system of the city and propose a tapped drainage system in the city for the betterment of the health and environment of the city. The segment further enlists, based on assessment, the projects that can be developed. An implementation strategy has been devised prioritising the identified projects with short, medium, and long-term implementation plans along with cost estimates, supported by adequate rationale.

6.2.8.2 Methodology

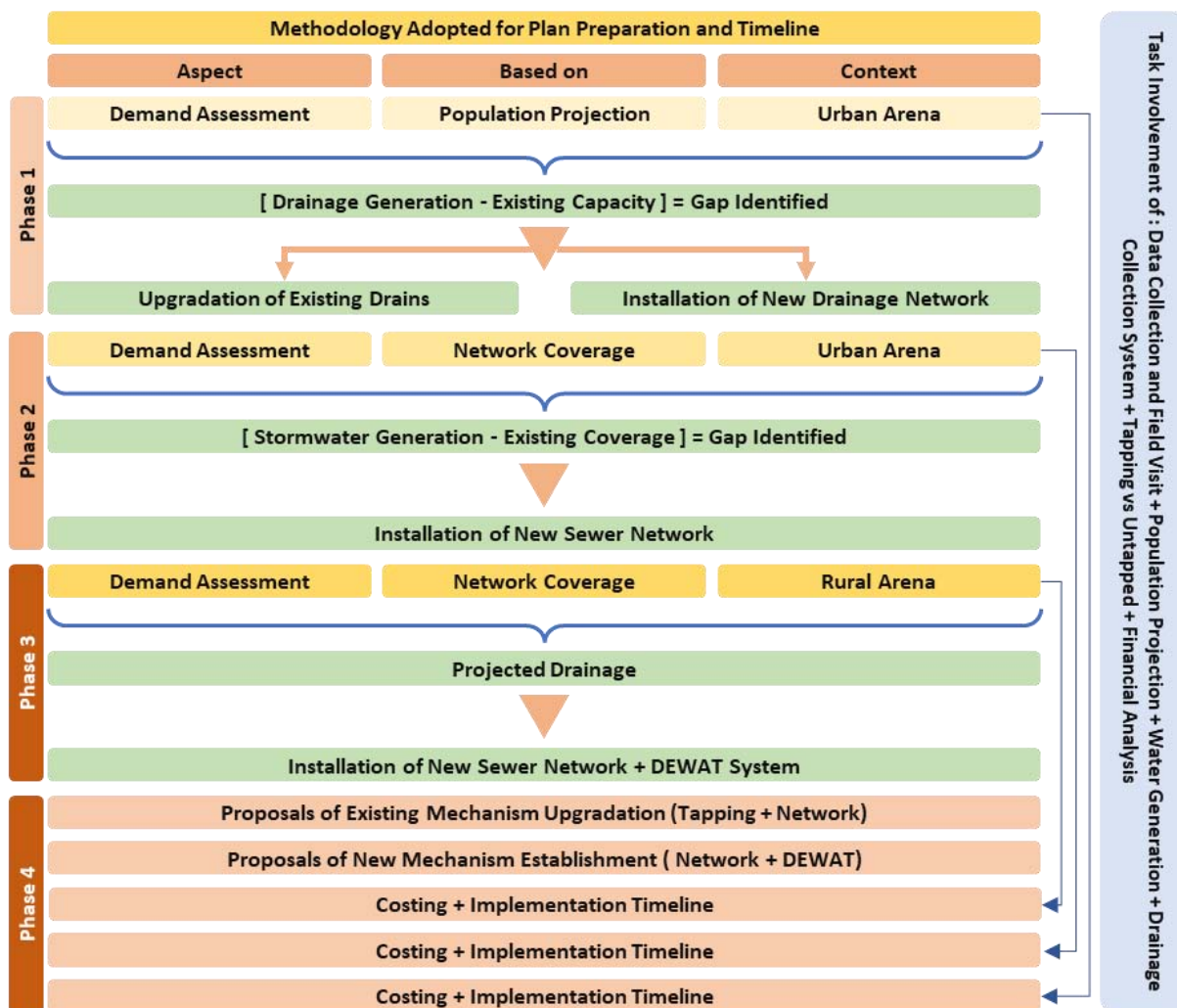


Figure 6-60: Methodology Adopted for Plan Preparation

6.2.8.3 Topography

Standing on the Ramganga River, Bareilly is located at 28°10'N, 78°23'E, and lies in northern India. It borders Pilibhit and Shahjahanpur on the East and Rampur on the west, Udham Singh Nagar(Uttarakhand) in the North and Badaun in the South. It is a level terrain, watered by many streams, the general slope being towards the south. In terms of geology, the district is alluvial. The district is separated into three sub-micro areas based on geology, soils, terrain, climate, and natural vegetation:

- I. Bareilly Tarai
- II. Bareilly Plain
- III. Ram Ganga



Figure 6-61: Base map of Bareilly

6.2.8.4 Land use Pattern

The existing land use of Bareilly city covers only 7421.66 hectares of area in 2021 against 20,563.82 hectares. There is only 36.09 per cent of the total allocated area in Master Plan 2021. As per the Draft Master Plan 2031, 2,251.94 hectares of additional area are added to the Master Plan boundary making it a total of 22815.76 hectares. For 2051 and 2071, an additional area of 7,652.65 hectares in 2051 and 16,152.82 in 2071 hectares need to be added to regulate and develop the area in 2071.

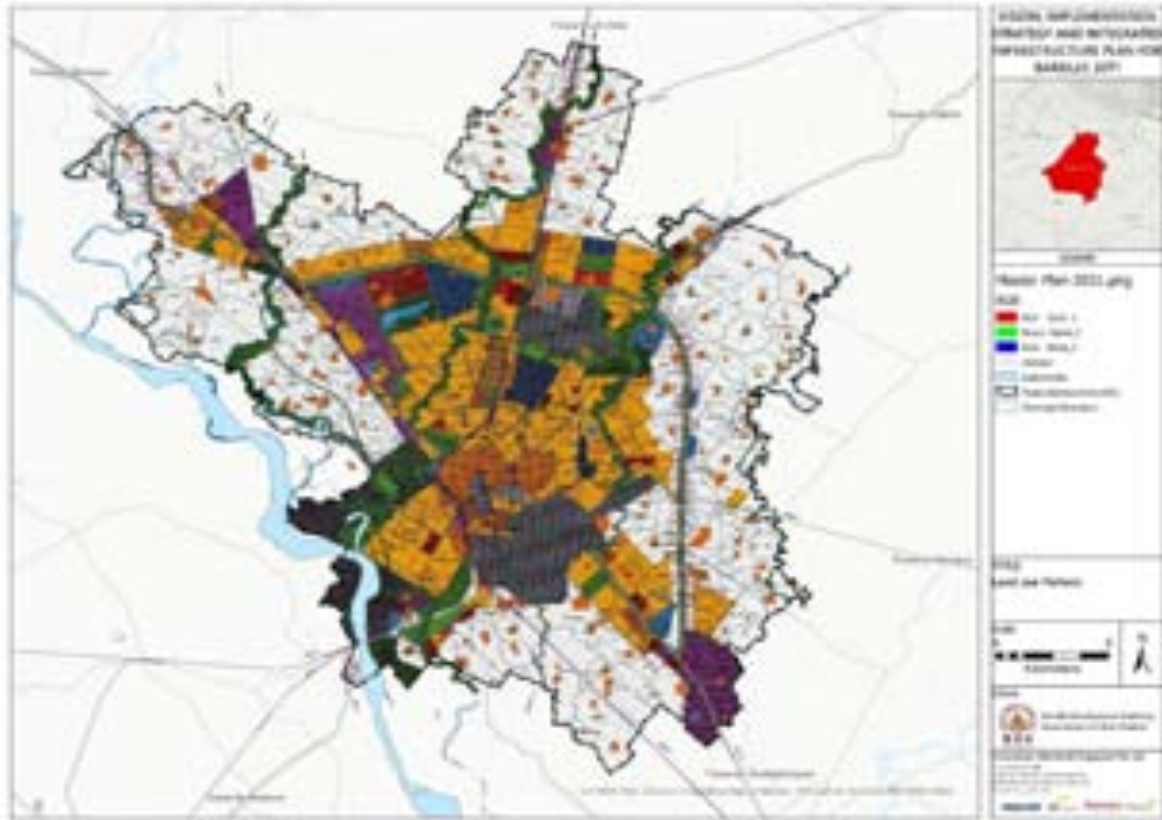


Figure 6-62: Land use map – BDA Masterplan 2031

6.2.8.5 Climate:

Bareilly has a humid subtropical climate with high variation between summer and winter temperatures. Summers are long, from early April to October, with the monsoon season in between. Winter starts in October and peaks in January and is notorious for its heavy fog. Extreme temperatures range from 4 °C to 44 °C. The annual mean temperature is 25 °C (77 °F), and monthly mean temperatures range from 14 °C to 33 °C (58 °F to 92 °F). The average annual rainfall is approximately 1714 mm (28.1 inches), most of which is during the monsoons in July and August.

6.2.8.6 Normalized Difference Vegetation Index (NDVI):

NDVI is a measure of surface reflectance and gives a quantitative estimation of vegetation growth and biomass. Plants and their roots affect the soil's physical properties, such as infiltration rate, aggregate stability, moisture content, and shear strength, which play a significant role in soil conservation). Plants and their roots decrease runoff and soil erosion in both dry and wet seasons. The root systems of plants play a critical role in stabilizing banks of gullies and streams by enhancing soil shear strength.

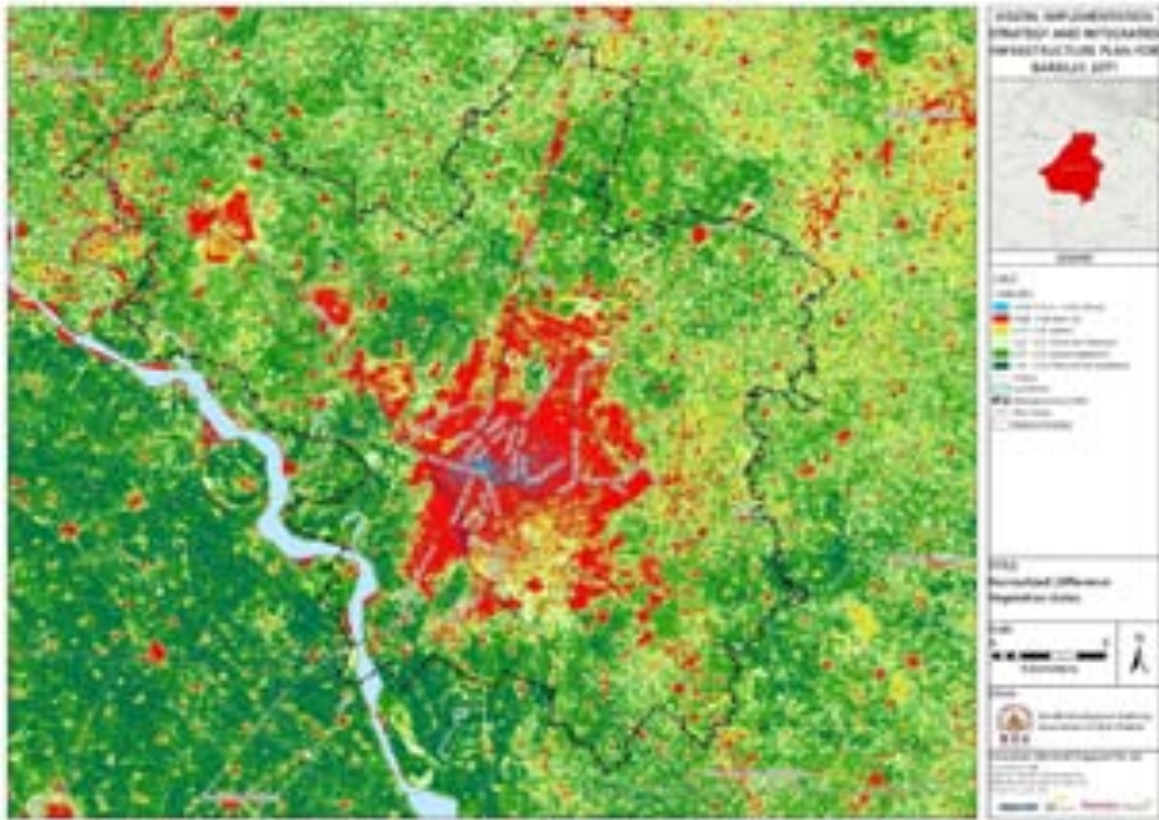


Figure 6-63: NDVI Map of Bareilly

6.2.8.7 Geology & Geography

The Ramganga is the district's primary river, which enters from the west and runs southeast. The Sidh Dejora, Bahgul, Sankha, Aril, Deoha, Deoanian, and Nakatia rivers, as well as their tributaries, all start in Tarai and flow across the district in southern and south-eastern directions before joining it. In terms of geology, the district is alluvial.



Figure 6-64: Contour Map of Bareilly

Only 105 km, or 12.62%, of the 832 km of roads in the City of Bareilly total length have closed stormwater drains. The Deveraniya drain, Chaubari drain, and Nakatiya river/drain are the three natural drains in the city.

In the planning area, surface water is a problem during the rainy season. Many urban areas with major streets lack an adequate drainage system. The Ramganga River is a catchment area for all of Bareilly's drains. The Bareilly metropolitan area's roads are currently flooded due to the city's growing population, and this could get dangerous. During the monsoon, Bareilly's low-lying areas are also inundated. A suitable stormwater drainage system is required for this.

6.2.8.8 Natural Drainage:

There are three major drains in the Bareilly planning area. The problems of waterlogging, overflowing and choked drains and a host of water-borne diseases can be seen here. The details of these drains are as follows: -

6.2.8.8.1 DEVERANIYA DRAIN:

Deveraniya Drain's originating point is Sarai Talfi. The drain starting point coordinates are Latitude: 28°24'31.60"N & longitude: 79°22'15.62"E. Deveraniya drain meeting to river Ramganga at village Virya Narainpur. Coordinate of the confluence point of the Deveraniya Drain is Latitude: 28°19'1.47"N & Longitude: 79°22'31.71"E. Covered Distance of Deveraniya drain from Bareilly town to its meeting point to river Ramganga in the village Virya Narainpur is approx.: 23.6 km. Detail of situated industry & discharge of their effluent to the drain Deveraniya drain carries domestic wastewater of Bareilly town as well as effluent from 02 Industrial units. Total Discharge from Deveraniya drain to Ramganga is 102.28 MLD, out of which 0.75 MLD is treated industrial effluent and the rest is untreated sewage of Bareilly Town. The Water Quality of Deveraniya Drain meeting in river Ramganaga having pH 7.2, BOD (mg/l) 39.8, COD (mg/l) 80, TSS (mg/l) 89.

6.2.8.8.2 CHAUBARI DRAIN

Chaubari Drain's originating point is Subhash Nagar. The drain starting point coordinates are Latitude: 28°22'4.95"N & longitude: 79°23'43.17" E. Chaubari Drain meets to the Ramganga River at Gomidpur. Coordinate of the confluence point of the Chaubari Drain is Latitude: 28°12'28.09"N & Longitude: 79°25'34.55"E. Covered Distance of Chaubari drain from Bareilly town to its meeting point to river Ramganga in Gomidpur is approx 10.7 km. Chaubari drain carries domestic wastewater of Bareilly. The total Discharge from Chaubari drain to Ramganga is Gomidpur, out of which 50.47MLD is untreated sewage of Bareilly city. The water quality of Chaubari Drain meeting in the river. Ramganaga having pH 7.1, BOD (mg/l) 33.2, COD (mg/l) 200, TSS (mg/l) 70.

6.2.8.8.3 Nakatiya River:

Nakatiya River/Drain's originating point is Deennagar. The drain starting point coordinates are Latitude: 28°36'16.14"N & longitude: 79°34'1.13"E. Nakatiya Drain meets to the Ramganga River at village Ahargauthiya. The Coordinate of the endpoint of the Nakatiya Drain is Latitude: 28° 8'9.06"N & Longitude: 79°29'4.08"E. Covered distance of the drain from Bareilly town to its meeting point into river Ramganga is approx.: 100 km. Detail of situated industry & discharge of their effluent to the drain Nakatiya Drain carries domestic wastewater of Bareilly, the town as well as effluent from 03 Industrial Units. Total Discharge from Nakatiya Drain to Ramganga is 24.13. The water quality of Nakatiya Drain meeting in river Ramganga having pH 7.3, BOD (mg/l)- 44.8, COD (mg/l)-120, TSS (mg/l)- 14.

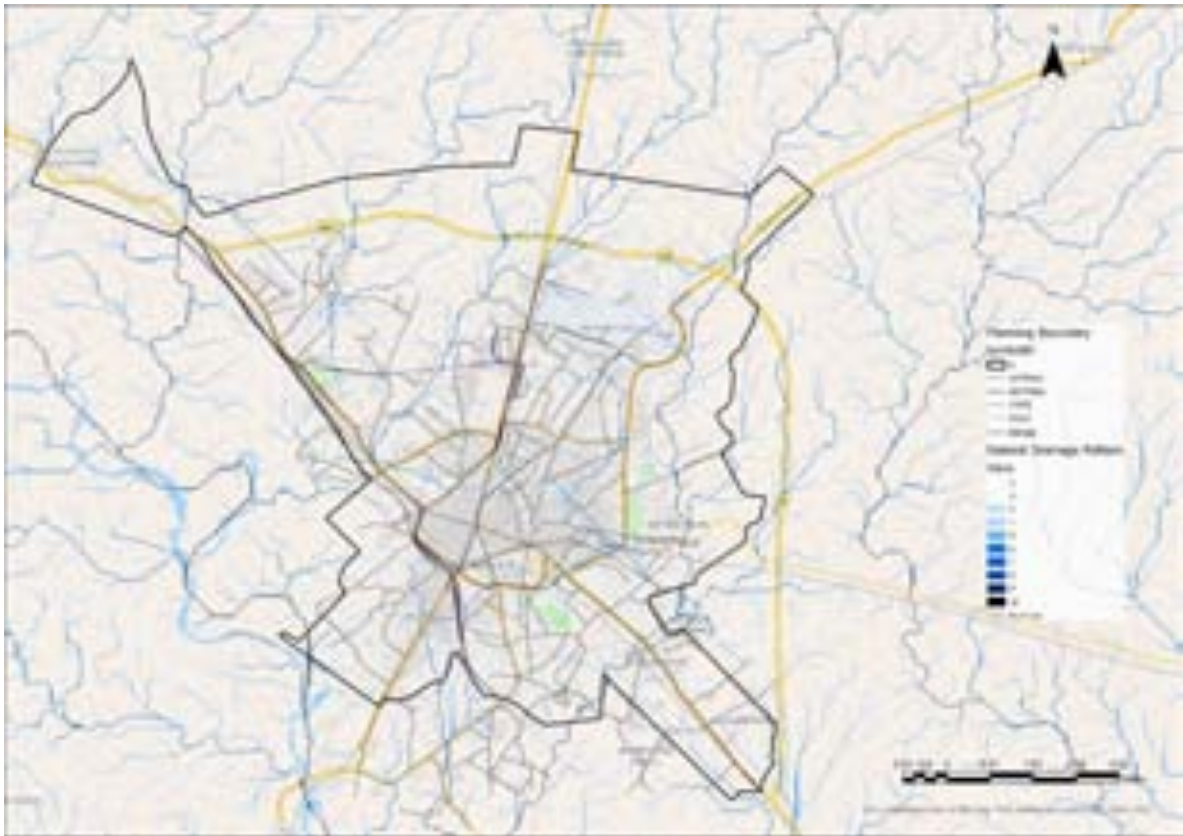


Figure 6-65: Natural Drainage Pattern

6.2.8.9 Approach to Storm Water Drainage Mapping:

An integrated stormwater network is required to be planned for the entire city based on the topographical features. Identification of existing drains followed by realignment and upgradation has to take place. Cleaning of drains should take place at regular intervals. Above figure red marked contours dissect flood-prone stretches of the Ramganga river. Therefore, these areas experience maximum runoff annually. The pour points shown in the map must be connected with secondary drains for a citywide stormwater drainage plan.



Figure 6-66: Flood-prone areas of Ramganga river

This catchment area is further divided through man-made roads and embankments. The catchment area with a natural drainage channel is shown in the figure below. The waterlogged low-lying areas of Bareilly are shown in the following map:

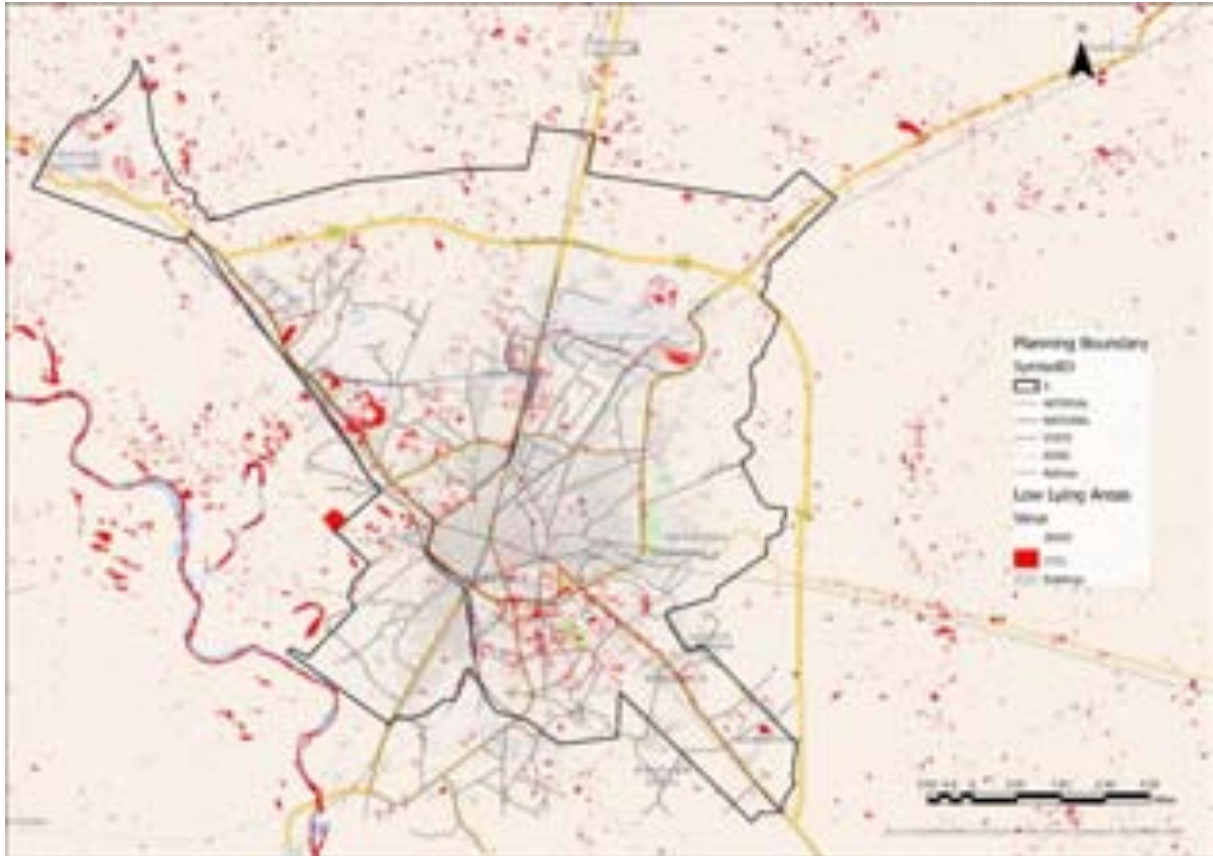


Figure 6-67: Low-lying Areas

The areas highlighted in red are the low-lying areas of Bareilly. If Ramganga, the nearby river tends to overflow or a lower portion of landfills up quickly in heavy rain, diversion of such volume of water is required. Existing drainage systems have minimal capacity to divert floodwaters to other bodies of water or pre-prepared spaces set aside for water retention but long-term planning solutions like full drain coverage along with a stormwater management system have been found to experience lesser challenges due to the construction of stormwater drain systems.



Figure 6-68: Low-lying area 1 – Near Gandhi Udhyan, Civil Lines, Bareilly

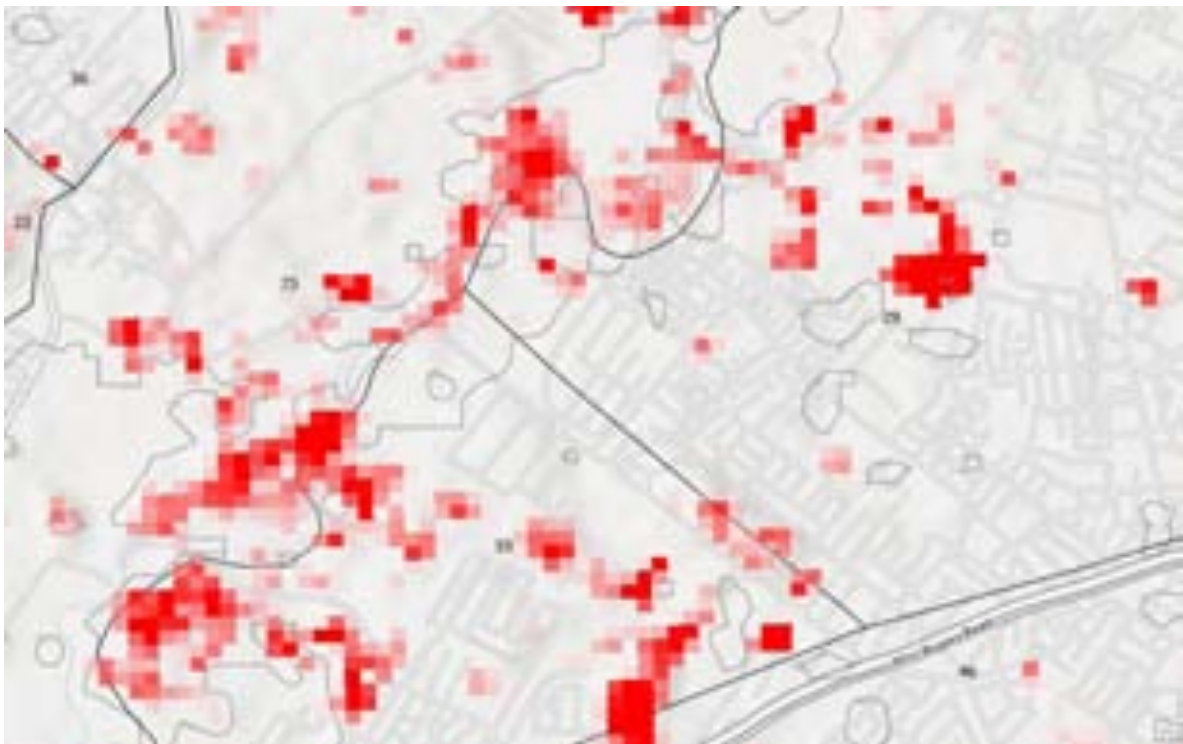


Figure 6-69: Low-lying area – Near Mini Bypass Road, Izzatnagar, Bareilly

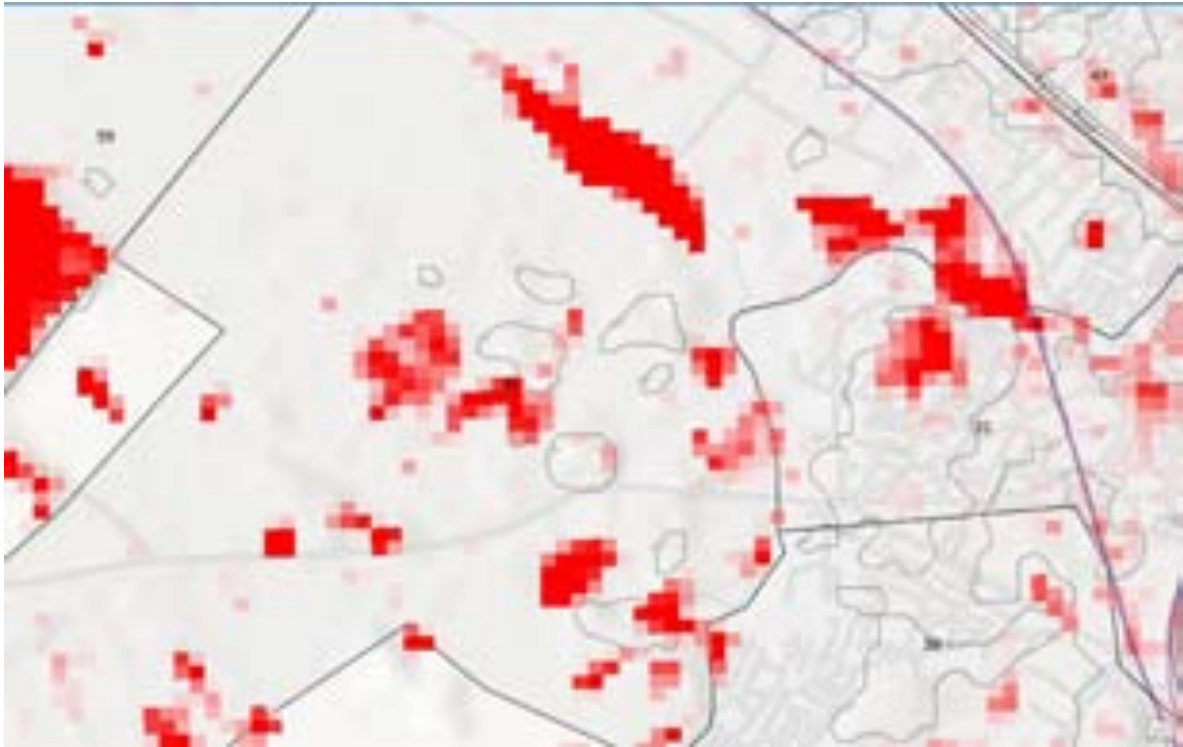


Figure 6-70: Low-lying area – Baqarganj, Bareilly



Figure 6-71: Low-Lying area - Hazipur Brij Lal, Bareilly

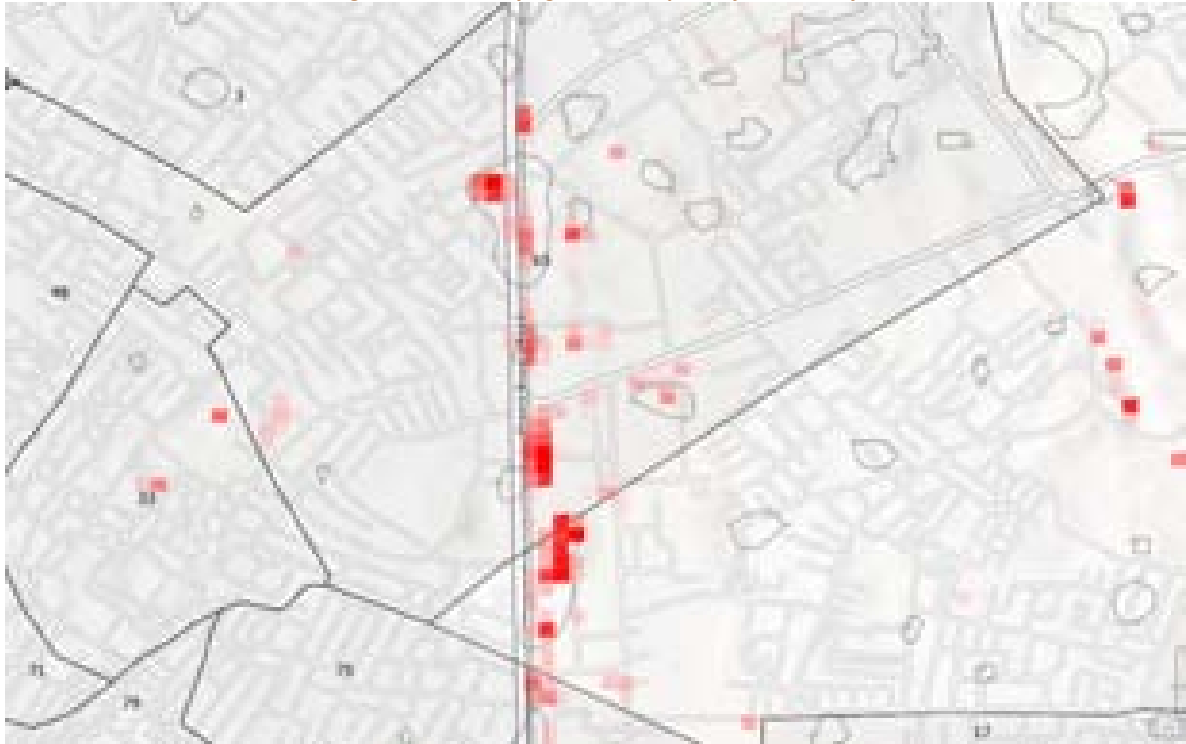


Figure 6-72: Low-lying area - Pilbhit Bypass Road, Dohra, Bareilly

Table 11.1: Ward-wise Vulnerability Analysis of flood-prone areas in Bareilly

Ward Number	Wards with waterlogged areas	Wards with natural drainage	Wards most susceptible to flash flooding
1			
2		Y	
3		Y	
4	Y		Y
5		Y	
6	Y	Y	
7	Y		Y
8		Y	
9	Y		Y
10		Y	
11			
12		Y	
13		Y	
14	Y	Y	
15		Y	
16		Y	
17		Y	
18	Y	Y	
19		Y	
20	Y		Y

Ward Number	Wards with waterlogged areas	Wards with natural drainage	Wards most susceptible to flash flooding
21		Y	
22	Y	Y	
23		Y	
24		Y	
25		Y	
26		Y	
27	Y	Y	
28	Y	Y	
29	Y	Y	
30	Y	Y	
31	Y		Y
32	Y		Y
33			
34		Y	
35	Y	Y	
36	Y	Y	
37		Y	
38		Y	
39			
40		Y	
41			
42		Y	
43		Y	
44			
45	Y	Y	
46		Y	
47	Y	Y	
48		Y	
49			
50		Y	
51	Y	Y	
52		Y	
53		Y	
54		Y	
55	Y	Y	
56			
57			
58		Y	
59	Y	Y	
60	Y		Y
61		Y	
62	Y	Y	
63	Y		Y

Ward Number	Wards with waterlogged areas	Wards with natural drainage	Wards most susceptible to flash flooding
64	Y		Y
65	Y	Y	
66			
67		Y	
68			
69			
70	Y	Y	
71		Y	
72	Y		Y
73	Y	Y	
74			
75		Y	
76	Y		Y
77			
78			
79		Y	
80	Y		Y
Total	31	53	12

Here flood vulnerability is used as a multi-dimensional measure of the potential damage the human settlement inhabiting the wards may encounter during a flood event, which is a totality of the topography i.e. settlement built in or around low-lying areas prone to having flash floods during heavy rains and physical-environmental condition of the area. Based on the above analysis there are twelve wards of waterlogged areas but with an absent natural drainage system.

Table 6-10: Main Components of Primary Drains

S. No.	Components	Year	
		2012-13	2015-16
1	Total Length of Roads (in km)	791	832
2	Total Length of Closed Pucca Drains (in km)	388	493
3	Percentage of Drainage Coverage	49.1	59.3
4	Water Clogging/Flooding Instances in Number	8	0
5	Water Clogging/Flooding Areas	8	8

The total road length in Bareilly is 832 kilometres out of which **493 kilometres** are serviceable by primary drains acting as stormwater drains during heavy rains. That translates to a drainage coverage of **59.3 per cent** in the city. All the primary drains have outfall in twelve major secondary drains listed in the table below:

Table 11.3: Location of Secondary Stormwater drains

S. No.	Name of Secondary Drains	Location	Ward Number
1	Bisalpur Road Nala	Haroongla	17
2	Rampur Road Nala	Swale Nagar	30

3	Peerbahoda Nala	Pirabahooda	70
4	Saufita Road Nala	Badi Bihar	10
5	Harunagla Nala	Haroongla	17
6	Badi Bihar Nala	Badi Bihar	10
7	Sufi Tola Nala	Sofi Tola	78
8	Tuliya Nala	Nandausi	37
9	Partappura Nala	Partapur Chaudhary	34
10	Sanjay Community Hall Nala	Elan Club	35
11	Akshar Vihar Nala	Bareilly Club	32
12	Delapeer Lake Nala	Near Satya Petrol Pump	10

6.2.8.10 Issues with the existing stormwater drainage system:

The sub-drain flows through the middle of the city starting near the BNN compound and empties out into river Nakatia. Several culverts are built up on it. Over the years, the lanes adjacent to the drain have risen because of repeated layering whereas all culverts have remained below the level of the lanes. When it rains, these culverts get flooded and underdrain the water. The filthy water enters the nearby houses and rises up to two feet. Before the monsoon commences, the BNN sanitation workers clean the drain, but heavy rainwater makes the area waterlogged. Following are some issues identified with the current system:

- Silting of the drain
- Unlined drains
- Dumping of debris and garbage into the open drains & nallah
- The roads are below the drains' top level which causes the overflow from drains to fill the roads and the low-lying areas
- The increased impervious areas also add to the worsening of the situation

Interventions required for stormwater drainage system:

- Govt should impose fines on those industries discharging wastewater into the stormwater drain
- All the house service connections shall be properly connected through the sewer network and shall be treated in the STPs to maintain the stormwater drain as a dedicated facility.
- All the untapped drains should be tapped and diverted to STP
- Ensure sufficient right-of-way provision for constructing drains in future proposals.
- Cost and O&M framework

6.2.8.11 Suggestions to be considered during the preparation of a detailed project report for the stormwater management plan:

- Assessment of existing stormwater drain condition ward wise
- Based on the assessment, provide recommendations for reconstruction of the structure wherever possible
- Analyze the surface runoff and increase the width of the drain wherever required
- Based on the assessment, identify the financial stability of the developer and workout the phase-wise implementation strategy
- Achieve 100% coverage through effective planning
- Remedial Measures for controlling water logging and ailing drains



An integrated stormwater network is required to be planned for the entire city based on contour maps. There should be realignment and upgradation of existing nallas. Cleaning of drains should take place at regular intervals. Finally, the separation of stormwater drains from the sewerage network should be executed on priority.

6.2.8.11.1 SILTING AND WEEDING OF DRAINS

- Almost all the length in the meter of the major drain is silted and weeded. The drain has to be de-silted and deseeded. Deweeding will be done on the bed, side slopes and 50 cm at the top on both sides of the drain.

6.2.8.11.2 INFLOW OF SEWAGE AND DUMPING OF SOLID WASTES INTO DRAINS

- With the implementation of sewerage and solid waste management sub-projects, it is expected that this problem would get solved. However, it has to be ensured by the implementing agencies that all residences are connected to branch sewers which in turn are connected to trunk sewers. A public awareness campaign by the city to educate people not to dump solid wastes into sewers/drains should be carried out.

6.2.8.11.3 SILTING, WEEDING AND BLOCKAGE OF TERTIARY DRAINS

- Regular cleaning and maintenance by Nagar Nigam coupled with deterrent punishment to persons who block the tertiary drains are to be carried out.

6.2.8.11.4 ENCROACHMENTS OF FLOW CHANNELS AND TANKS

- BNN and BDA must enforce measures to disallow any construction on drain/tank beds and periphery. The practice of drying tanks and reclaiming them for building must be stopped to preserve the depleting stormwater storage/buffer areas. Encroached drain sections are to be cleared and drains provided with an adequate cross-section to carry the flow.

From Urbanization to Riverization – A case study of Varanasi

Varanasi is situated between two water commons: Varuna River in the north and Assi Drain in the south. The current “Varanasi 2031” Master plan proposed by the authorities is based on ring roads; it does not consider the actual ground truths of the city’s rich landscape such as natural water bodies, whether in the form of flows or holdings.

There are some big nallas in the city, which are very dangerous to human and animal lives. The city is presently divided into four sewerage districts. Central City sewage district draining to Dinapur STP. This area includes the old city, about 1 km in breadth and 5km along the Ganga River from Assi to Raj Ghat. Zone 2A is the sub-central district on the CIS-Varuna side west of the city centre and zone 2B is a slice of the Trans-Varuna district along the Varuna River up to the ridge line defined by the Jaunpur road. Trans-Varuna district north of the Jaunpur road. Wastewater in this. BHU/Assi district south of the City. At present this area is mainly the Banares Hindu University campus, which has full sewer coverage. The area generally falls in the northeast direction.

6.2.8.12 Rejuvenation plan of Assi Nallah:

“If We Want a Clean Ganga, We Need to Start with the Nallahs”. The origin point of the Assi drain, should be decentralized, and made into a biotic sewage treatment system. Since the landscape filtration system cannot treat all the wastewater, sequential platforms will provide initial wastewater treatment by removing the solids and reducing the smell. After this step, bio-filtration takes place to further clean the water. Runoff water is also treated through these

folds in the landscape that acts as bioswales. This treats wastewater and runoff water is channelled through the site into a larger water body that is designed along the open (maidan) spaces. Water from this water body filters into the existing Kund (tank) and filters out to become the starting point of the Assi Nallah. These platforms of biotic sewage treatment infrastructure are expected to be owned and maintained by the public health engineering department. **At the confluence of the Assi and Ganga, this project celebrates this holy intersection by transforming an existing park into a delta of temporal productive landscape- for use by pilgrims and able to accommodate the flood waters of the monsoons.** Assi receives three billion litres of untreated waste every day via nallahs which makes enormous untreated sewage pollutants to river Ganga.

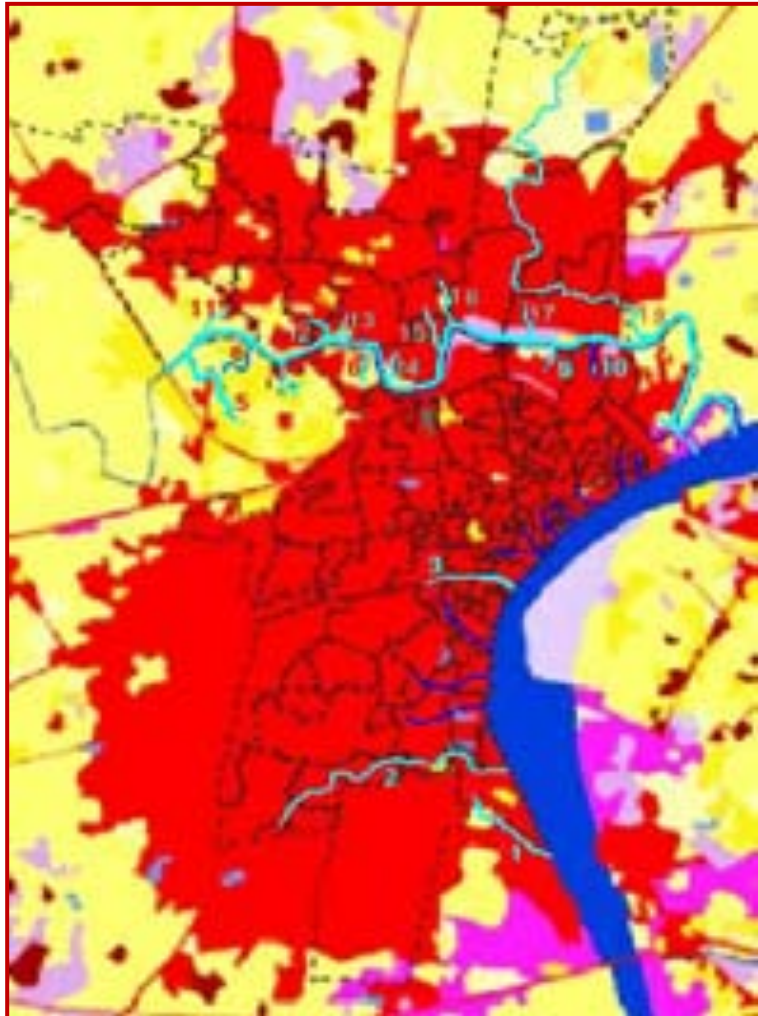


Figure 6-73: Natural Drainage Channel in Varanasi

6.2.8.13 Making room for river floods

The Varanasi Development Authority has prepared a 2031 Master Plan meant to expand the city to accommodate the growing population. But looking Varanasi is not meant as a fast-growing urban centre but tries to enhance its carrying capacity to adjust influx of seasonal nomadic. So, rather than static and linear growth entities, public spaces should be flexible, adaptable and resilient to accommodate the intensifying seasonal flux of people, flora and fauna.

Open space- maidan always welcomes the density of users and adaptability to different seasons. Talabs, parks and the edges of the Ganga River are common public spaces in Varanasi. They are



identified as potential maidans which can be transformed into seasonal, adaptable and resilient spaces to absorb the intensifying flux.

Chakra Tal as a Maidan: Chakra Tal is currently an abandoned natural pond that once was an important social space for communities and a flourishing habitat for wildlife. The revitalization of the talabs (ponds) by introducing dams at the entrance of waterways into the talabs to act as silt traps during the monsoon. The residents will be encouraged to harvest this silt during rituals and then use the silt in community gardens along the talab. Service hubs and market stalls are proposed at the periphery to integrate the talab with the community and to turn it into a front yard rather than a backyard, the way it once used to be. Sewage treatment tanks are proposed to purify the water from the residential developments into the talab and to sustain the talab ecosystem.

Beniya Park as a Maidan: Beniya Park is currently occupied as a temporary shelter, flute makers use it as a shelter and production space, and residents around it use it as a playground. The park is currently enclosed and fenced separating it from the surrounding urban fabric with an unfinished abandoned structure that was supposed to be a fish market and is currently used as a toilet. Beniya Park can be transformed into a productive maidan, with the fences removed to create direct and continuous access. Trees can define the park and prevent encroachment. This wetland can be used as a migratory bird hub and in the dry season for festive markets.

Dashashwamedh Ghat and the Sandbank as Maidans: Physical barriers along the Ghats prevent the continuity of public spaces and soiled water outflow is currently contributing to the pollution of the Ganga River. An extension to the edge of the Ganga River is introduced by adding floating docks and gathering points that will ease the intense crowds and provide a continuity of public spaces along the Ghats. During the monsoon season, Ghat activities can be temporarily shifted inland to seasonal markets and ponds. The kit of parts highlights the temporary elements that correspond to the needs in different seasons.

6.2.8.14 Ganga Floodplain Urbanism

In the floodplain site between the Ganges River, the Ring Road, and Banaras Hindu University, 'fingers of high ground' may use for a combination of soil from cut and fill operations and dredged river silt to build the fingers. This will be followed by an incremental building strategy on top of the fingers and the low-ground areas between the fingers will become capable of draining water to the river during monsoons while serving as a ground for urban agriculture during the rest of the year. Infrastructure and transportation are also proposed along the spine of the fingers, which will enable people formerly living on the low grounds to have better connections with the city and its infrastructure, and live with resilience, harmony and improved economic opportunity.

6.2.8.15 Varuna River as an Entrance

Varuna should once again become the front of the city. Starting from the railway tracks, situated on a higher level, down to the Varuna River with this goal, a series of holdings of water in the form of natural talabs (ponds), as well as kunds (tanks) where water flows through a filtration nallah (waterways), should reclaim. The idea is to be able to filter and store water at different locations. At the Varuna, we propose to soften the river's edge to create different ecological habitat areas as well as constructed wetlands that will help in bioremediation-wastewater treatment for the wastewater that is discharged by the buildings along the river. At the confluence point with Ganga Varuna should have a designated delta designed to create a set of floodable islands that serve as the last layer of water-bioremediation as Varuna enters the Ganges. During the dry season, these floodable islands

can become destination points for boats and tourist flows, hosting various types of public spaces as well as a farmer’s market.

6.2.8.16 Proposals and Recommendations:

Currently, stormwater and silt flow directly into the stormwater drains, carrying all pollutants with them. Additionally, the slope of the Storm Water Pipe prevents rain from being used to full capacity. Bioswales and planting strips provide a bio-filtration bed for streets Storm Water flows directly into a Bio-filtration or Bio retention Swale. Water is retained and infiltrated in the bio-swale.

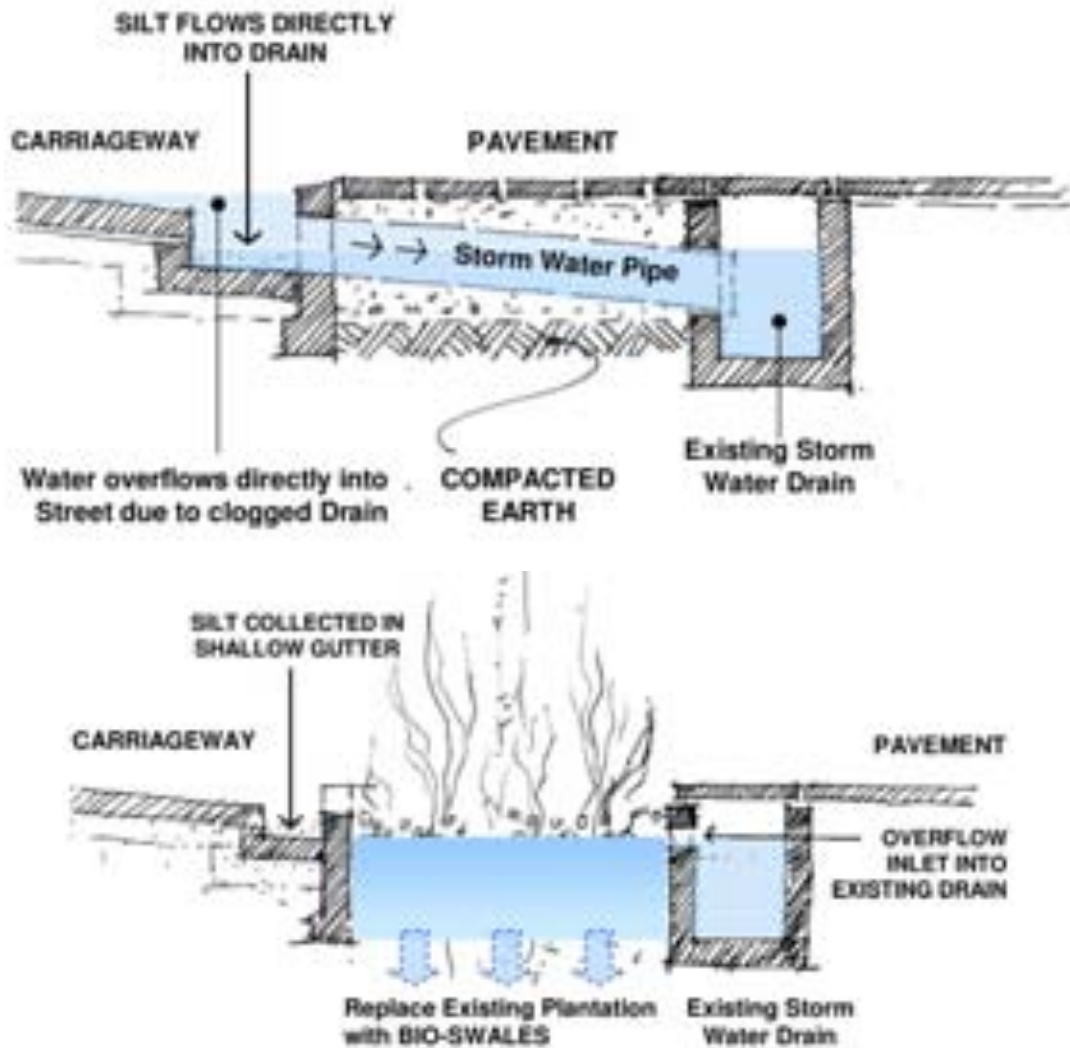




Figure 6-74: Representation of Bioswales and Plantation Strips

- Generally, stormwater is collected across the edges of the carriageway by an inlet placed at regular intervals and directed into the stormwater drainage system. The natural stormwater management system is to be preferred for ecological reasons.
- SW lines need to be along both sides of the street, ideally in the shoulder or the Multi-utility zone if provided. Care should be taken to follow the longitudinal slope of the street and water should not accumulate at the intersections.
- The street should have a gradient on both sides towards the edge. Also, the footpath has a gradient slope towards the shoulder so that water does not accumulate on footpaths or enter any property.
- Bio-swales are recommended along roadside planting strips, within MUZs, within wide central medians and in spaces created by grade separators.

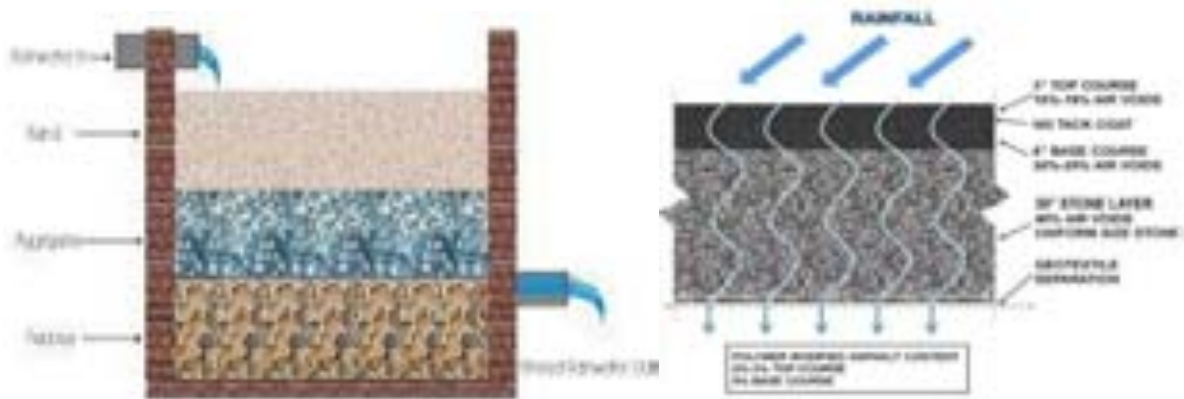


- The minimum width of swales should be 1m and ideally run continuously along a stretch of the road.
- Permeable pavers should be used for parking belts and sidewalks and any other non-vehicular roadway in parts or in totality.
- SWD pipes need to be cleaned and de-silted at regular intervals, especially before the onset of monsoons.

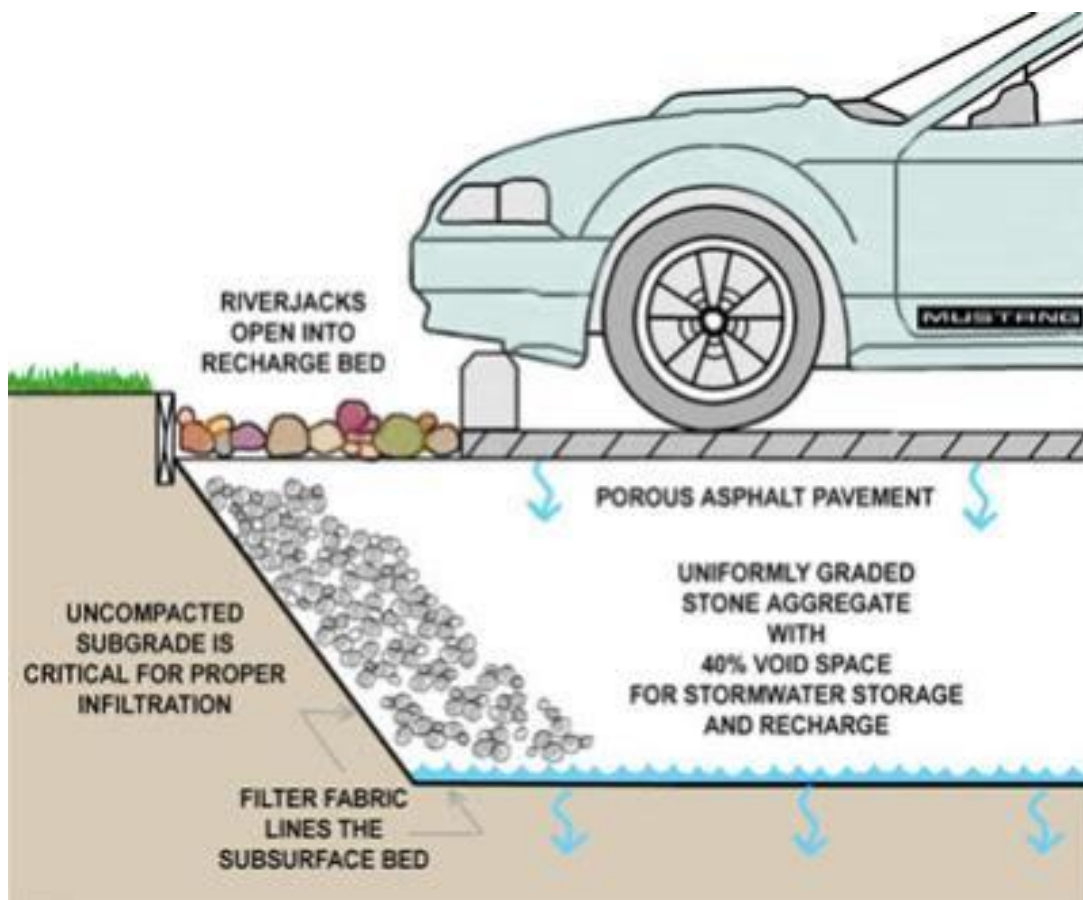


6.2.8.16.1 URBAN RAINWATER MANAGEMENT

- Urban runoff needs to be de-silted and accompanying debris and garbage removed
- Should be collected in a silt trap and frequently cleared
- Stormwater can be drained into a sub-surface drainage structure with brickbats, aggregate, and sand to work as a filtering agent
- The Recharge system needs to be designed in more detail to keep out oils and automotive pollutants
- Engineered Surfaces
- Pervious Paving for better stability and Percolation
- Reduces flooding problems considerably.
- Increase groundwater level



1. Green belt a Relief Zone
2. Open areas, Parks are for the rainwater holding area





Under Urban Master Plan Green belts have been proposed all along the city mainly along the riverbed, drainage channel, and small parks as under to hold for an influx of rainwater.

Even excess rainwater can be stored in the manmade reservoir along the river in the low-lying area through channelisation water can accumulate. For restoration purposes, Delapeer Lake would also become a water reservoir point. Several reservoirs may propose as water-holding areas during heavy rains.



6.2.9 Project 9: Development of Working Shed for Zari Handicraft Artisans

6.2.9.1 Background of the study:

Bareilly is one of the fastest growing cities of India and the reason behind its growth story is its rapidly booming economy through various sectors, however Bareilly is still an Agri based economy largely but there are a few traditional sectors as well like Zari Work, Bans Work, Kite making etc. The existing industrial set up of Bareilly is flourishing mostly with Agri based products.

Bareilly is an educational hub of Western Uttar Pradesh with multiple universities and research institutes. Bareilly College, located in the heart of city, is among the oldest educational institutions in India, built prior to the Revolt of 1857. Bareilly is a seat of M. J. P. Rohilkhand University, and it also hosts Indian Veterinary Research Institute and Central Avian Research Institute. The city holds numerous Engineering Colleges, Management Colleges, Law Colleges, Medical Colleges, and also there are colleges running general courses. The city is equidistant from New Delhi (public capital) and Lucknow, the capital of Uttar Pradesh. This makes Bareilly a nodal point between two significant urban communities of India.

Bareilly has a District Domestic Product of INR 44,467 Cr in 2019-20 contributing to 11.5% of the total GSDP for the state of Uttar Pradesh. The DDP has witnessed a stable and steady growth of 8.6% CAGR over the last decade as compared to the State CAGR of 8.72% during the same period.

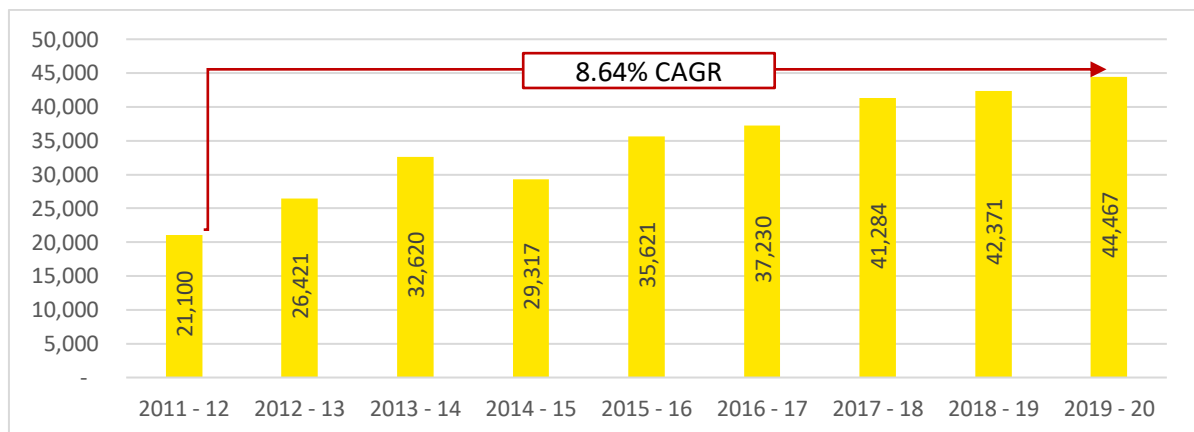


Figure 6-75: District Domestic Product y-o-y growth for Bareilly

Agriculture sector has been the mainstay for both employment as well as Agri-produce based food processing and manufacturing sector. Bareilly with a total of approx. 14 lakh main and marginal workers across the district, is highly dependent on agriculture and related village household industries for job opportunities. Household industries such as Zari workers account for over 8% of total workforce in Bareilly.

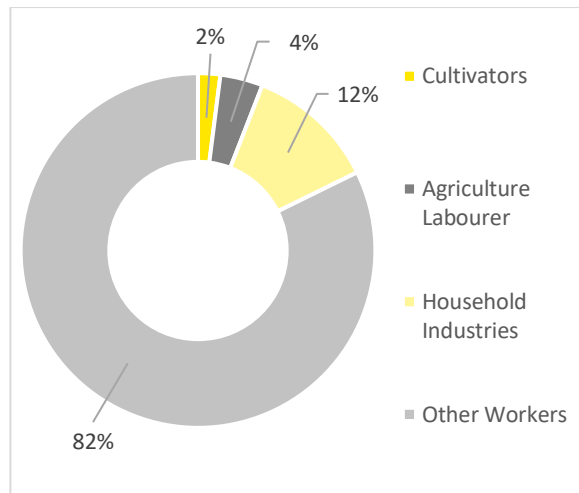


Figure 6-76: Distribution of workforce in Bareilly

Objective:

It is with this objective of facilitating and promoting the traditional crafts of Bareilly and enhancing the economic opportunities and livelihood for the weaker sections engaged in such traditional household industry like the Zari work those smaller facilities of worker sheds are being proposed across multiple clusters of Zari workers to facilitate the artisans in the area.

6.2.9.2 Current Scenario - Handicraft sector in Bareilly

Bareilly is known for its handicraft such as Zari zardozi (gold embroidery), Surma (kohl), manjha (abrasive kite string), striking cane furniture. These handicrafts are mostly performed at household level or as a group with specific expertise.

Zari-Zardozi -

Zari work is made from three types of threads-gold, silk and silver. Presently, thousands of micro and small units are involved in the work of Zari-Zardozi in the district. People are engaged in this work, directly or indirectly. Several items with Zari-zardozi work can be found in the market like dresses, scarves, handbags, jackets, sarees, lehngas etc.



Cane & Bamboo Products -

Bareilly is also known as Baans Bareilly, though it doesn't correlate with the bamboo trees found here. Yet, large numbers of products manufactured from Bamboo are produced here. These products can be categorized as decorative items. Bamboo furniture is also a dominating product available here. This industry is developed in Bareilly as Cottage Industry and providing employment to a big portion of rural population of this district.



Surma –

The USP of Bareilly's surma is that it is finely grinded and instantly provides cool comfort to the eyes. Though surma prepared in Bareilly is available in more than 80 varieties, a majority of Haj pilgrims from all over the world opt for surma gulab prepared in Bareilly as per the discussions.



Manjha –

Manjha manufacturers date back to over two centuries. People are involved in the manufacture and trade of manjha in the city at individual or small group level. Bareilly's manjha is crafted through a relatively natural process.



Zari, Cane & Bamboo is one of the clusters in Bareilly district.

The cluster has been identified under MSE-CDP scheme. Basis the review of the industry and its value chain the following challenges currently being faced by the industry were identified –

- Lack of work sheds in the area, left the workers with no option but to work from their homes in unhygienic conditions without proper facilities for sanitation, lighting and appropriate place for their tools, equipment, raw and processed material as well as finished products etc.
- Given the decentralized and rural & household nature of artisan production, initiatives to provide solar power facilities to alleviate hardship resulting from lack of electricity is essential.
- As women constitute a large portion of handicraft sector employment, the issue of toilet facilities for women in the cluster/ working shed needs to be taken up.
- Need of propound merging of work environment improvement for artisans under various schemes of other departments such as Departments of Ministry of Rural Development, etc.

Some of the snapshot of the challenges being faced by the industry is shown as follows –



The snapshot of key economics of these household industries have been further provided as follows -



Zari Zardosi

Zari-Zardozi	Zari-Zardozi is a type of hand embroidery and usually done on apparels for embellishment with the help of needle, threads and metal wires. This handicraft work has been taken as patrimonial art in the artisan family.
Principal Manufactured Products	Sari, Salwar Suit
Hub for Zari-Zardosi work	Bareilly
National Export	In 3 prominent areas Bareilly, Delhi, and Jaipur and bulk of orders came from these cities.
International Export from India)	India exports zari embroidery to the United States, the United Kingdom, the United Arab Emirates, Japan and Saudi Arabia. Overseas exporters also get their consignment manufactured in India and export it to other countries.
Raw Material	Silk, kardana pearl, kora kasab, fish wire, nakshi, nos, pearls, tubes, chanla, jarkan nori, leaves, mirrors, golden chain etc.
Types of workers involved in this sector	<ul style="list-style-type: none"> Those who are doing this work as their main occupation and engaged in that throughout the year temporary workers whose main occupation is some other but to earn sufficient or to use their holidays, they work for some hours or few days in a month or year. The nature of employment may affect the labour productivity.
Income per day	Rs 400-500/day earlier Now it has been reduced to Rs 250-200/day.
Reason for such sharp decline in wages	<ul style="list-style-type: none"> 18% of GST on the raw material and Subsequently another 18% on the finished product It has led to drastic decrease in the number of orders of Zari-Zardosi products and consequently also eroded livelihood base of hundreds of artisan families.
Reasons for decline in this industry	<ul style="list-style-type: none"> GST (Goods and Services Tax) policy Skyrocketing prices of raw materials Almost static price of the final products Invasion of international products Tough competition from cheaper domestic products Low wages paid to workers has played a major role in the "ongoing extinction" of the industry. The existing wages are too low (.200-250 Rs per day)
Government initiatives	The government issued Zari card to workers engaged in this economic activity in 2009, under the 'Zari Card Health Benefit Scheme' having an upper limit up to Rs. 30,000. This was primarily a smart card linked with the card-holder's bank account number, however after some time the smart cards failed to work





Cane & Bamboo

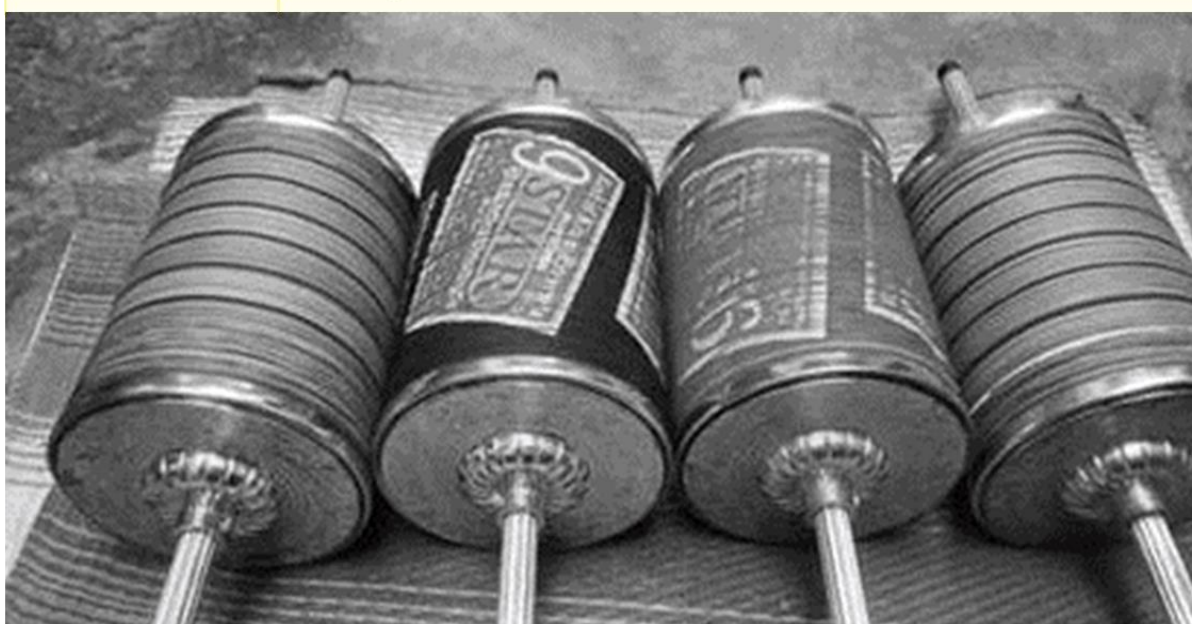
Products	Cane furniture — intricately woven sofa sets, diwan, stools, tables, trays, side racks and swings, Lawn Furniture, Gift Item, Lamp Shed, etc.
Raw material	Cane and Bamboo
Raw material source	Assam, Meghalaya, Tripura and few nearby districts of Uttar Pradesh
Number of artisans and traders	Only 1,100 artisans and 50 traders are associated with this industry
Existing Cluster	(i) Cane & Bamboo Adhunik Vikas Audyogik Sehkari Samiti Ltd. Mathurapur, C B Ganj, Bareilly, No. of functional units in the clusters is 172 and Employment in Cluster Approximately 1200. (ii) The Fatehganj cluster is able to form 500 plus Artisans & 40 SHGs supporting the strong work force. The mobilisation gains momentum day by day.
Types of workers involved in this sector	Majorly artisan households, which have been performing this handicraft form for a long time. Following are the categories - <ul style="list-style-type: none"> • Those who are doing this work as their main occupation and engaged in that throughout the year • Temporary workers whose main occupation is some other but to earn sufficient or to use their holidays, they work for some hours or few days in a month or year.
Income per day	400-700 Rs per day
Reason for low wages	Lack of skilled manpower, training, and knowledge of tools & machinery
Reasons for decline in the industry	Labour cost and the prices of raw materials have gone up. As a result, cost of a cane sofa is between Rs 8,000 to Rs 25,000 based on its quality and design. Therefore, customers prefer to go for wooden furniture, which is considered more durable. Cheaper and durable furniture is available in plastic variants.
Thrust Area	Technology/ Product/ Market/ Export/ quality etc.
National Export	All over India
International Export from India)	Europe (for eco-friendly furniture and artifacts)
Challenges in this industry	<ul style="list-style-type: none"> • Availability of cheap raw material • Absence of GI tag and certification of the handicraft • Tough competition from plastic and other substitute material products which are cheaper and comparatively more durable • Low wages paid to workers has played a major role in the "ongoing extinction" of the industry.
Government initiatives	Formulation of Clusters and common facility centres along with common tools and machinery.





Manjha Making


Products	Strings for Kites
Kite artisans in Bareilly	200-250 with artisans cards
Number of artisans involved	Approx. 30,000
Raw material	Manjha is made through strings prepared through natural process. Raw material used for making string is Coarse rice which is being grown locally
Wages of artisans	Rs 100/day
Import Areas	Only Nylon Kite stings are being imported from China. No Cotton kite strings are being imported.
Export Areas	PAN India.
Initiatives by Government to boost this industry	<ul style="list-style-type: none"> • Government had imposed ban on the business of Nylon & Chinese manjhas which were giving tough competition to this industry. • Proposal have been made in mast for an Industrial cluster in Rohilkhand for this Industry. • Comprehensive Handicrafts Cluster Development Scheme (CHCDS)
Training for kite making	30 artisans programs have been held for Kite and Manjha artisans
Reason for low wages	Lack of skilled manpower, training, and knowledge of tools & machinery
Challenges in this industry	<ul style="list-style-type: none"> • Tough competition from synthetic and other substitute material products which are cheaper and comparatively more durable • Low wages paid to workers has played a major role in the "ongoing extinction" of the industry.



6.2.9.3 Vision

It is envisioned to provide facilities for upliftment of the working conditions of the handicraft artisans through providing the necessary know how and technological advancement, infrastructure for using modern frames and technologies as well as overall revival and upliftment of the sector through softer measures.

Vision Statement - Handicraft



- Upliftment of working conditions of the handicraft artisans
- Support in technological know-how
- Revival and upliftment of the existing artisan communities in Bareilly

The Proposal - Development of working shed for Zari Handicraft artisan

The Work shed project for Handicraft Artisans is an attempt to facilitate the development of artisans and their families by way of providing them financial assistance for construction of work sheds. It would include the following –

- Working shed (temporary / permanent) with specific number of “Adda (wooden frame)” and circulation space (maximum 40 – 50 artisans per shed)
- Paved area to place “Adda or Wooden frame”
- Exhibition / selling area – to showcase the final product
- Toilet and rest room
- Creche area for children

Each of these worksheds are expected to be around 3,150 sft. A total of six such work sheds are proposed across the major artisan villages that are engaged in Zari work.

6.2.9.4 Site location & Broad Concept

Site location

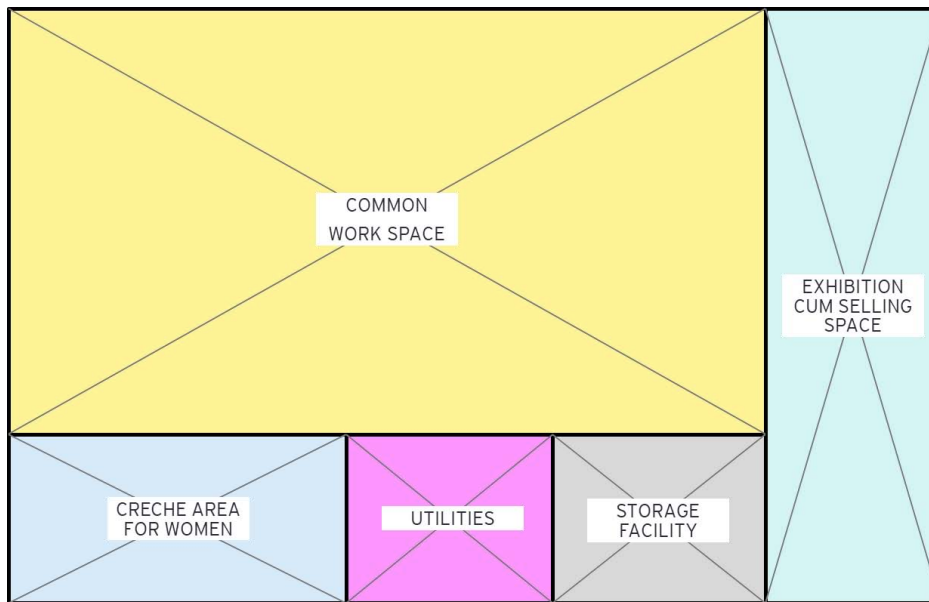
A total of six such work-sheds are proposed across the major artisan villages that are engaged in Zari work. The key villages with significant presence of artisans include Paraskhera, Invertis Chauraha, Biharipur, Kasgaran, Puranashahar, Chipitola, Partapur and Katrchand khan.

Broad Concept

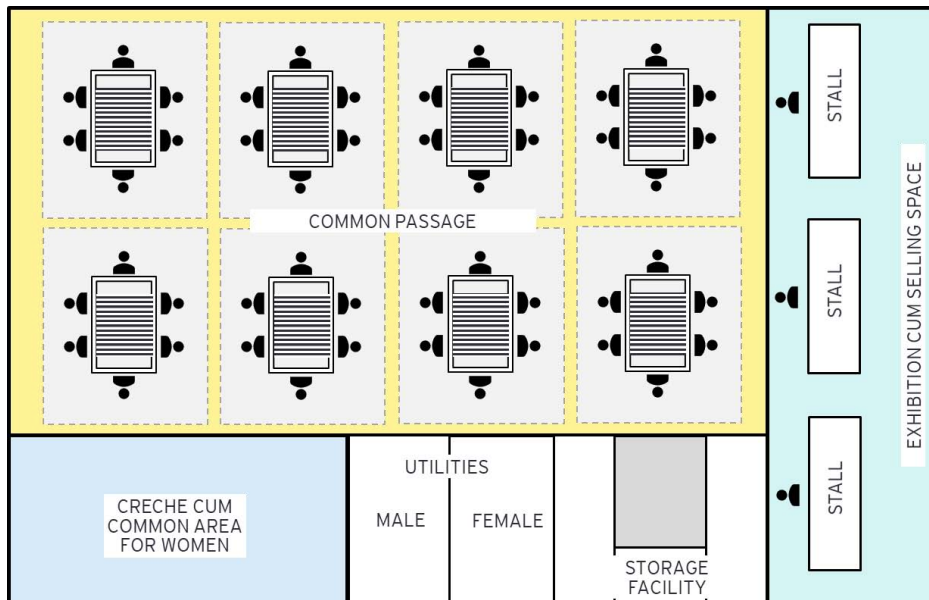
The Zari work-shed would be developed on village land provided by the local SHG/ Primary Artisan Cooperative Society or on land provided by Bareilly development authority. This would be the equity stake of the local artisans as part of the project component. They would also be required to ensure sustainable operations and maintenance of the proposed work-shed.

The working shed area requirement will vary from **3000-4000 Sq. ft. for minimum sitting capacity of 40-50 artisans at a stretch**. A single working shed would be able to facilitate approximately 2500 workers in a year considering a rotational use of the frame and work-shed.

- Schematic Diagram – The schematic of the proposed work-shed is as follows –



Detailed schematic-



- **Operation and Maintenance** – The operations and maintenance of the proposed work-shed would have to be taken up by the local SHG or Artisan Society. Assistance can also be provided by the District Handicraft Department in coherence with District Industries Centre (DIC). The operation responsibility may be leased out on turn basis to the Self-Help Groups (SHGs) / community associations / similar bodies.

6.2.9.5 Project costing & Financials –

The area statement for the proposed Zari work shed is as follows –

High level Area Statement		
Items	Remarks	Units
Number of artisans per frame	5	number
Number of frames proposed	8	number
Total number of artisans per shed	40	number

Area of 1 unit frame (5 x 10 ft.)	50	Sq. Ft.
Area for 1 frame with circulation(15 x 20 ft.)	300	Sq. Ft.
Area requirement for frames	2,400	Sq. Ft.
Area calculation	Area (ft)	Units
Working shed area	2,400	Sq. Ft.
Utility space (2 toilets)	60	Sq. Ft.
CRECHE (10-12 sft per child)	140	Sq. Ft.
Storage area	100	Sq. Ft.
Exhibition cum selling area (3 stalls)	450	Sq. Ft.
Total area requirement	3,150	Sq. Ft.

It is expected to incur a CAPEX of INR 75 lakh per work shed for development. The breakup of same is indicated as follows –

CAPEX ²³	INR lakh
Construction cost @ CPWD rates	60.6
Utilities Cost ~ @ 25% if Construction cost	15.1
Equipment & frame	0.20
Total cost (approx.):	75.9

6.2.9.6 Project Time-line

The Development of proposed work-sheds is estimated at 1 to 2 years from the sanction of the project.

²³ Note: This is a working draft and The Costs are indicative CAPEX only do not include the CAPEX towards site development as well as costing towards landscaping, gardens and infrastructure provisions for the proposed Medi-city.



6.2.10 Project 10: “Medicity” – designated area with multiple health business and activities

6.2.10.1 Background to the district:

Bareilly is one of the fastest growing cities of India and the reason behind its growth story is its rapidly booming economy through various sectors, however Bareilly is still an Agri based economy largely but there are a few traditional sectors as well like Zari Work, Bans Work, Kite making etc. The existing industrial set up of Bareilly is flourishing mostly with Agri based products.

Bareilly is an educational hub of Western Uttar Pradesh with multiple universities and research institutes. Bareilly College, located in the heart of city, is among the oldest educational institutions in India, built prior to the Revolt of 1857. Bareilly is a seat of M. J. P. Rohilkhand University, and it also hosts Indian Veterinary Research Institute and Central Avian Research Institute. The city holds numerous Engineering Colleges, Management Colleges, Law Colleges, Medical Colleges, and also there are colleges running general courses. The city is equidistant from New Delhi (public capital) and Lucknow, the capital of Uttar Pradesh. This makes Bareilly a nodal point between two significant urban communities of India.

Bareilly has a District Domestic Product of INR 44,467 Cr in 2019-20 contributing to 11.5% of the total GSDP for the state of Uttar Pradesh. The DDP has witnessed a stable and steady growth of 8.6% CAGR over the last decade as compared to the State CAGR of 8.72% during the same period.

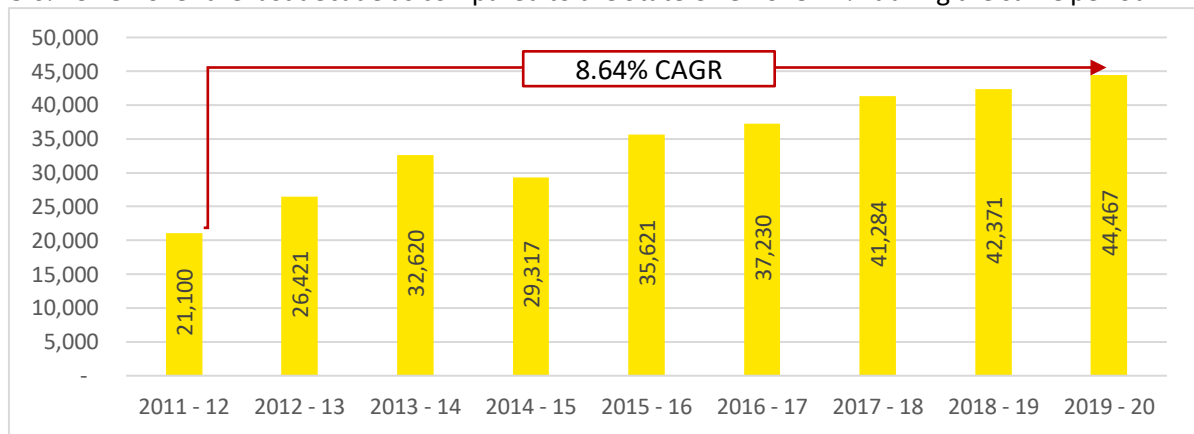


Figure 6-77: District Domestic Product y-o-y growth for Bareilly

Tertiary sector is the largest contributor to the economy of the city with Real estate and local businesses as well as construction activity being the largest driving sectors. The sectoral breakup of the DDP is indicated as follows –

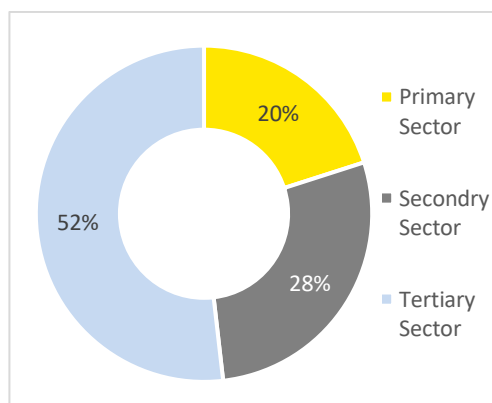


Figure 6-78: DDP spread across sectors

Amongst the tertiary sector, particularly medical and Health Care, Bareilly is among one of the leading cities of Uttar Pradesh. In terms of medical facilities, the city serves as a gateway to the patients of the Kumaun, Rohilkhand, and West Nepal region and has strong prospects of becoming a leading hub for medical tourism in the region.

6.2.10.2 Current Scenario

The existing infrastructure in Bareilly includes a total 255 Private Hospitals with 10957 number of beds are present. As per URDPFI norms up to 2031, there will be requirements of additional 5 multi-speciality hospitals, 14 speciality hospitals. The existing infrastructure includes

- In Urban area, there are District Women Hospital, District Hospital, 300 Bed Hospital, PHC's & Others including District Mental Hospital, TB Hospital, Mother and Childcare (MCH) Wing, Railway Hospital, Military and Army Hospital, Employee's State Insurance Corporation Hospital.
- In Rural areas, there are government facilities PHC's, Health Sub – Centres & CHC's.
- Private Health Centre also available in this region due to high demand of health services. Most of private health centre situated in the urban regions Bareilly as a head quarter has high density of medical facilities. Clinical Health Centres and Nursing Homes are well dense in Bareilly city.

Bareilly being one of the leading cities of Uttar Pradesh in terms of medical facilities, has a strong health infrastructure base which can be utilised in an improved planned manner by in the form of a Medi – city encompassing a Multi – speciality Hospital, academic medical institutions, and allied activities in an integrated matter. With the increase in population of the Bareilly, there will be a requirement / demand of more health facilities in order to cater the health requirement of Bareilly as well as nearby regions.




It is with that perspective that development of a Medi-city has been proposed as part of the vision for Bareilly.

6.2.10.3 Vision and Proposed Development

Vision

It is envisioned to develop Bareilly Medi-city as a hub of regional medical tourism by facilitating and attracting private sector hospitals to Bareilly thereby also ensuring provision of world class super speciality services to the local population of Bareilly.

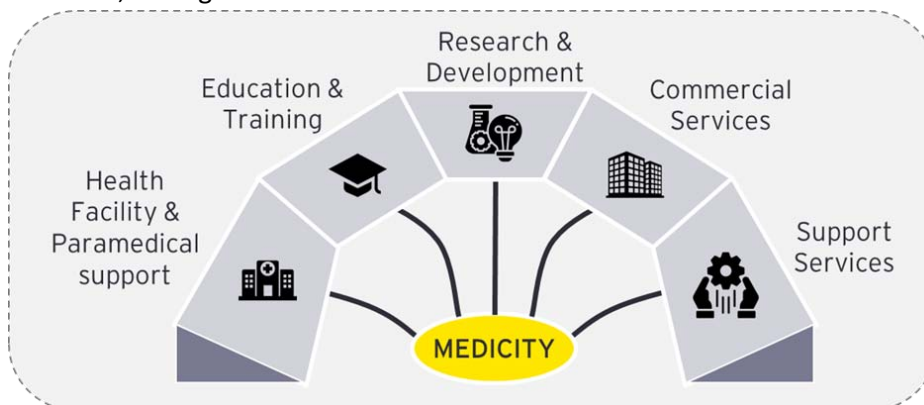
Vision Statement - Health & Education



- Comprehensive planned development of an integrated health facility
- Amalgamation of conformative land uses and activities at a single space
- Live & work space concept

6.2.10.4 The Medi-city Proposal

Medi City aims to functionally integrate within one campus and one management of the facilities related to medical care, teaching, research, and development. It also offers to explore the possibility of integrating knowledge of traditional and alternative medicine with modern medicine, through means of scientific research.



- Medical College & Hospital
- Super speciality Centre of Excellence
- Paramedical education hub
- Convention centres & Hotels and related facilities for patients in order to promote medical tourism
- Wellness & rehabilitation centres as allied services
- Other related medical support facilities

6.2.10.5 Site location & Broad Concept

6.2.10.5.1 Site location

The Medi-city is proposed to be developed at the site already identified by the state Govt. under the Bareilly Masterplan. As part of it, an area of 86.4 Ha is proposed in between Pilibhit Bypass

road to Kathgodam Road. As part of this proposal a total area of 30 Ha out of the proposed 86 Ha is to be earmarked for the proposed Medi-city. The site location is indicated in the following exhibit.

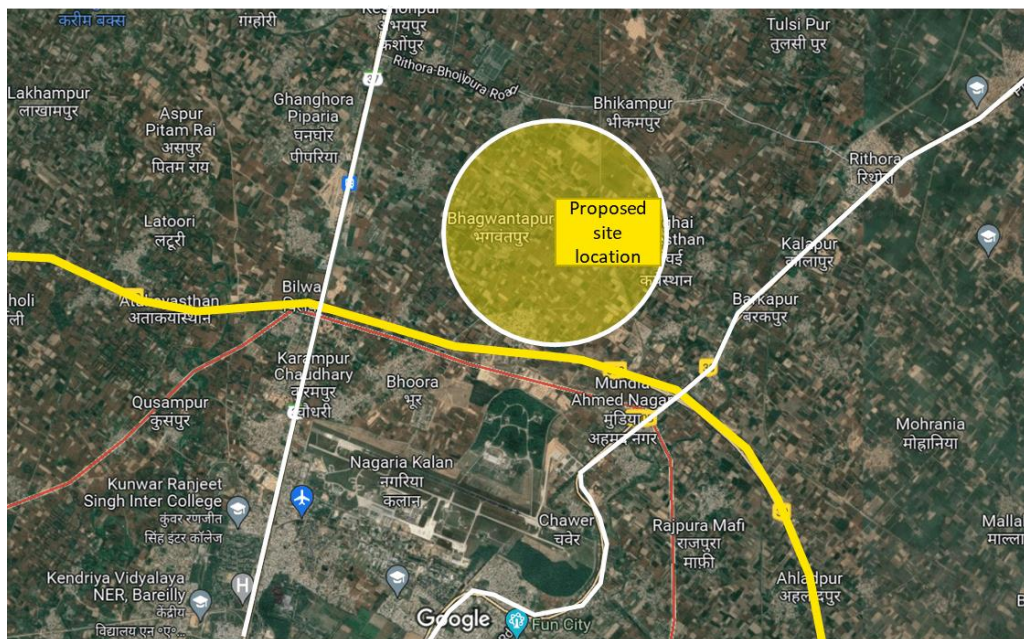


Figure 6-79: Proposed Site for Medi-city

6.2.10.5.2 Broad Concept.

The proposed Medi-city is proposed to be a 250 bedded multi-speciality hospital catering to the advanced medical needs of the people residing in Bareilly and adjoining areas as well as medical tourist arriving from nearby places including Nepal.

Along with the hospital, adequate facilities would be provided such as

- Residential housing for doctors and staff,
- Hostels for paramedic and related ancillary workers,
- Budget hotel to cater to the needs of the patients and their families
- Wellness centres and meditation centres
- Commercial complexes to provide facilities for additional diagnostic and other services
- Green spaces and medicinal gardens

It is proposed that a total of 12.5 Ha of land be developed at this stage and a land of 17.5 Ha of adjoining be earmarked for future expansion of the Medi-city for new hospitals, hotels and convention centres.

The Indicative area statement for the same is shown as follows -

Sl. No.	Components	Share (%)	Total land area (in sqm)	Proposed Built Up area (in sqm)
	MEDICITY			
1	Staff & Worker Hostel (50 keys)	2%	2,500	1,700
2	Budget Hotel (80 keys)	7%	8,500	5,000
3	Wellness Centre (50 keys)	12%	14,800	5,700
4	Multi-speciality Hospital (300 bedded)	37%	45,700	27,800

5	Convenience stores (incl. Pharmacy)	3%	4,100	2,400
6	Housing for Hospital staff	11%	14,200	13,000
7	Nursing & para-medic college	5%	6,200	2,200
8	Garden & Green area	8%	10,000	
9	Infrastructure , Services & roads, etc.	15%	19,200	
	Total		1,25,200	57,800
	Total Area in Ha.		12.52	

6.2.10.6 Project costing & Financials –

Cost Estimates for the proposed Medi-city is indicated as follows –

Sl. No.	Components	Share (%)	Total land area (in sqm)	Proposed Built Up area (in sqm)	Approx. Development cost (INR Cr.)
	MEDICITY				
1	Staff & Worker Hostel	2%	2,500	1,700	7.5
2	Budget Hotel	7%	8,500	5,000	24.0
3	Wellness & Rehab. Centre	12%	14,800	5,700	38.0
4	Multi-speciality Hospital	37%	45,700	27,800	216.0
5	Convenience stores (incl. Pharmacy)	3%	4,100	2,400	9.0
6	Housing for Hospital staff	11%	14,200	13,000	41.5
7	Nursing & para-medic college	5%	6,200	2,200	15.0
8	Garden & Green area	8%	10,000		
9	Infrastructure , Services & roads, etc.	15%	19,200		
	Total		1,25,200	57,800	351.0

Note: This is a working draft and The Costs are indicative CAPEX only do not include the CAPEX towards site development as well as costing towards landscaping, gardens and infrastructure provisions for the proposed Medi-city.

6.2.10.7 Project Time-line

- The Development of proposed Medi-city initial phase is estimated at 4 to 5 years from the sanction of the project.

6.2.11 Project 11: Demonstration of Solar Energy for streets and Gov. buildings

6.2.11.1 INTRODUCTION

The world is moving on renewable power, the easiest way to generate electricity through sun is solar power. Its cleanest, greenest & cheapest mode of power where power is generated through array of photo voltaic panels.

The solar power plant comes as :

6.2.11.1.1 ON GRID SYSTEM

The solar power is directly connected to the grid & the generated power is fed to the grid.

The system converts DC power from array to AC through solar inverter, incorporated with Net & Generation meter.

6.2.11.1.2 OFF GRID OF HYBRID SYSTEM

As the name suggest, the system generates & distributes self-generated power to the load, thereby storing power in the battery bank for night use.

6.2.11.2 PARAMETERS FOR SELECTION OF SOLAR POWER PLANT

A : Civil Set Up.

RCC Rooftops (tin / profile sheet) & Ground mounted structure

Open to Sky, shadow free & ample of sunlight from 8 AM to 4:45 PM.

B : **Atmospheric Condition** : Bareilly is normally having clear sky over the course of the year, the temperature typically varies from 47°F to 105°F and is rarely below 41°F or above 111°F.

C : **Weather Criteria**: Taken Average Solar radiation/kWh/m²/day.

D : **Solar Calculation** : Monocrystalline Technology (18% eff). Generation Capacity for 1kWp setup at 100% eff (5.85m² with 545 Wp modules). Thereby calculating Annual Average Units generation.

E : **Electrical Parameters** : Study of transformer capacity, LT panel, distribution of load, DG Change Over, distance from solar power plant to LT Panel, Scope of installation of Inverter, SPD & ACDB DCDB.

F : **Electricity bill analysis** : To analysis yearly, monthly & daily electrical units consumption for the exact capacity of solar plant.

6.2.11.3 Technical Requirements for Connecting Solar Power Plants to Electricity.

This chapter discusses basics of technical design specifications, criteria, technical terms and equipment parameters required to connect solar power plants to electricity networks. Depending on its capacity, a solar plant can be connected to LV, MV, or HV networks. Successful connection of a medium-scale solar plant should satisfy requirements of both the Solar Energy Grid Connection Code (SEGCC) and the appropriate code: the Electricity Distribution Code (EDC) or the Grid Code (GC) as the connection level apply. Connection of a large-scale solar plant to the transmission network should satisfy the requirements of both SEGCC and GC. For Small-Scale Photovoltaic (SSPV), the connection should satisfy both the SSPV Connection Code and the EDC. The objectives are to establish the obligations and responsibilities of each party; i.e. operators and all network users, thus leading to improved security, higher reliability and maintaining optimal operation. The technical specifications include permitted voltage and frequency variations in addition to power quality limits of harmonic distortion, phase unbalance, and flickers. Operational limits and capability requirements will be explained and discussed. Solar power grid connection codes of Indian Electrical standards.

The share of renewable resources for generating electric energy is increasing worldwide to cope with increasing demand. Current generation expansion plans of various countries expect increasing share of renewable energy resources in the electricity generation mix. By 2020, utilities set a target to reach a ratio of 20% renewable energy of the total energy required for electricity generation. Other utilities forecasted a higher share reaching about 50% by 2050. Wind energy and solar energy are the most promising resources and proven to be efficient in real applications with decreasing competitive costs of generated electric energy. The increasing share of renewable energies to be integrated to electric power systems has resulted in technical issues such as power quality requirements, capacity limits, safety measures, security, protection systems, synchronization process, lower system inertia, etc.

Solar energy is the radiant light and heat from the Sun that is harnessed using solar heating, photovoltaics (PV), concentrated solar power (CSP), solar architecture, and artificial photosynthesis. Solar power is the conversion of the energy from sunlight into electricity, either directly using PV, indirectly using CSP, or a combination. The Sun is 1.3914 million km in diameter, and the radiated electromagnetic energy rate is 3.8×10^{20} MW.

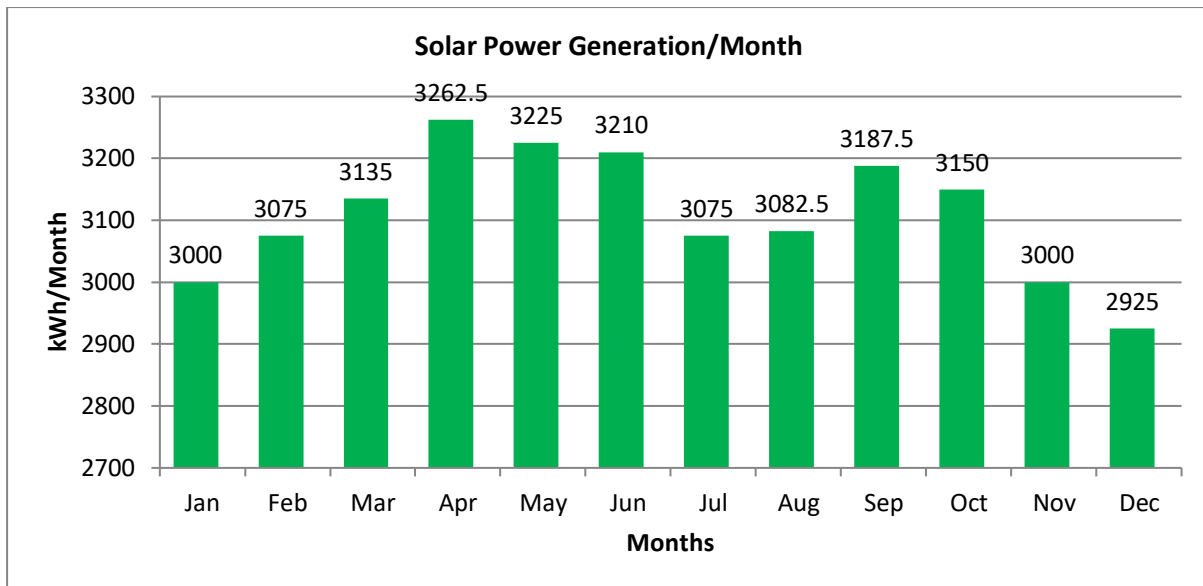
6.2.11.4 TECHNICAL OUTCOMES OF SOLAR ENERGY

Capacity	Solar Generation	Units	Area Required	Co2 emission Saved	Costing	Savings @Rs.10/Unit.
1 KW	4 Units		80 Sq.Foot	0.865 lbs	60,000=00	Rs.40/-

6.2.11.4.1 SOLAR POWER PLANT AT COMMISSIONER RESIDENCE

Plant Capacity	Area Required	Model	Costing.
25 KW	2000 Sq.Foot	CAPEX	15,00,000=00

25KW Power Generation					
Sr.No	Months	Bareilly Irradiance/Month	Average 4KW plat units/day	Units/months	Monthly units/ 8 Rupee (Savings / Month)
1	Jan	4.00	100	3000	24000
2	Feb	4.10	102.5	3075	24600
3	Mar	4.18	104.5	3135	25080
4	Apr	4.35	108.75	3262.5	26100
5	May	4.30	107.5	3225	25800
6	Jun	4.28	107	3210	25680
7	Jul	4.10	102.5	3075	24600
8	Aug	4.11	102.75	3082.5	24660
9	Sep	4.25	106.25	3187.5	25500
10	Oct	4.20	105	3150	25200
11	Nov	4.00	100	3000	24000
12	Dec	3.90	97.5	2925	23400
Total	Year	4.15	1244.25	37327.5	Rs 2,98,560=00

**BOOK OF MATERIAL. (25 KW)**

Sr.No.	Description	Quantity	1Make
1	Mono Crystalline 540 Watts Solar Panels MNRE Approved IEC Certified	46	Warree/ Renewsys/Panasonic
2	Fabricated Galvanized Steel Structure	AS per Design	ISO 9002
3	Solar Grid Inverter	25 KW, Three Phase Transformer less with Remote Monitoring.	Delta / ABB
4	Online Monitoring	LAN Cable WiFi Based 25 Mtrs.	ABB
5	Zero Export Device	25 KW	Intello / Solar Log
6	AC Solar Cable & Accessories	120 Meters (4 Core 120 Sq.mm Insulated)	Polycab/ KEI/Finolex
7	DC Solar Cable & Accessories	Single core 4 Sq mm. As per Design	Siechem
8	AC Side Breaker 3 Phase ACDB	Input Terminal 100 Amp, Encloser with IP65 Protection.	SPD - Phoenix Contract. MCB – ABB / Hager
9	DC Side Breaker with 3 phase DCDB	Positive terminal 10 with Amp, Encloser with IP65 Protection, 2 In 2 Out DCDB.	SPD - Phoenix Contract. Fuse – Ferraz

10	Junction Box, Lighting Arrestor, Earthing with Accessories, With rods, Chemical, Pipe etc	As Required	True Power etc
11	MC4 Connectors	As Required	Branded ISO Standards
12	Earthing & LA Cable	As Required	Polycab or Equivalent
13	Cable Tie, Clamps & Pole Box	As Required	Branded
14	Generation / Energy Meter	1 No	HPL / L&T UPPCL Approved.

6.2.11.4.2 COMMERCIALS:

SUPPLY INSTALLTION TESTING COMMISSIONG OF 25 KW SOLAR PLANT WITH ONE YEAR AMC.**Detailed Engineering, Designing, Procurement & Installation as per plant size & load. (EPC)**

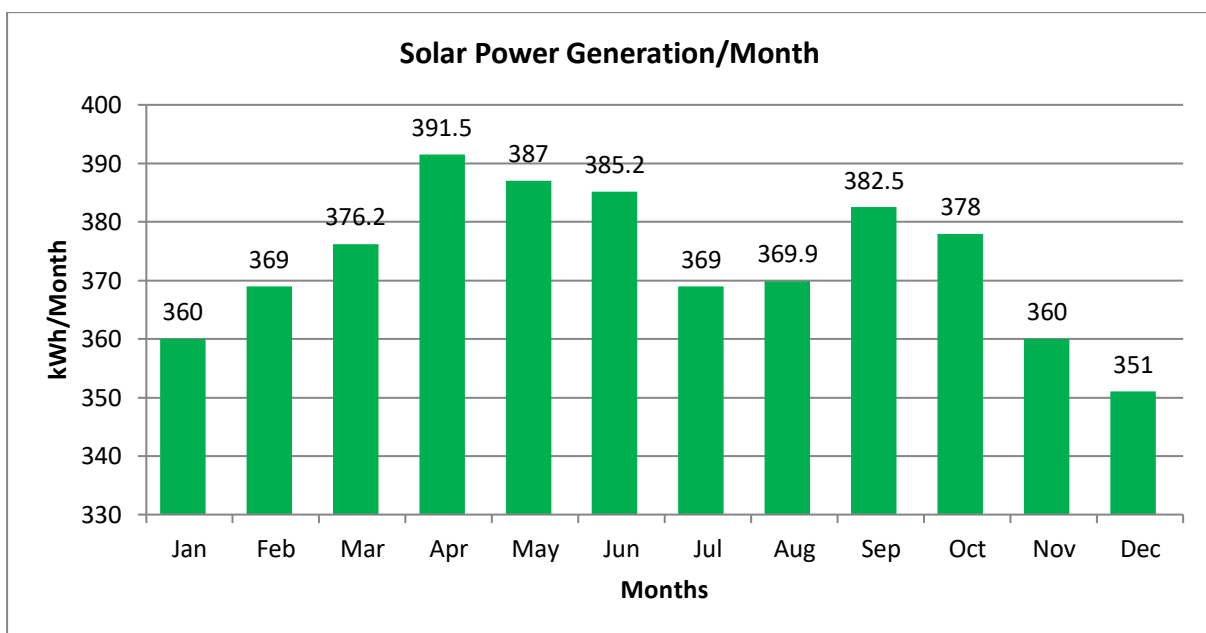
Sr.No	Description	Rate	Amount	Warranty
1	Supply & Installation of 25 KW Solar Plant	Rs. 60 PER WATT.	15,00,000 =00 (Rs. Fifteen lacs Only)	For Panels – Product Warrant 10 Years , Performance Warranty – 25 Years . Inverter – 5 Years. Others – 2 Years
2	SPD – Zero Export Device with Accessories.	40,000/-	40,000=00. (Rs. Forty Thousand Only)	5 Years
Total (1+2) Rs. Fifteen lacs forty thousand only.				Rs.15,40,000=00

6.2.11.4.3 RESIDENTIAL HOUSING

Plant Capacity	Area Required	Model	Costing.
3 KW	240 Sq.Foot	Net Metering & Subsidy	1,80,000=00

3KW Power Generation					
Sr.No	Months	Agra Irradiance/Month	Average 3KW plat units/day	units/months	Monthly units/ 10 Rupee Savings / Month
1	Jan	4.00	12	360	3600

2	Feb	4.10	12.3	369	3690
3	Mar	4.18	12.54	376.2	3762
4	Apr	4.35	13.05	391.5	3915
5	May	4.30	12.9	387	3870
6	Jun	4.28	12.84	385.2	3852
7	Jul	4.10	12.3	369	3690
8	Aug	4.11	12.33	369.9	3699
9	Sep	4.25	12.75	382.5	3825
10	Oct	4.20	12.6	378	3780
11	Nov	4.00	12	360	3600
12	Dec	3.90	11.7	351	3510
	Year	4.15	149.31	4479.3	Rs.44793

**BOOK OF MATERIAL. (3 KW)**

Sr.No.	Description	Quantity	1Make
1	Mono Crystalline 540 Watts Solar Panels MNRE Approved IEC Certified	6 Nos	Warree/ Renewsys/Panasonic
2	Fabricated Galvanized Steel Structure	AS per Design	ISO 9002
3	Solar Grid Inverter	3 KW, Three Phase Transformer less with Remote Monitoring.	Delta / ABB
4	Online Monitoring	LAN Cable WiFi Based 25 Mtrs.	ABB

5	Zero Export Device	Nil	
6	AC Solar Cable & Accessories	120 Meters (4 Core 120 Sq.mm Insulated)	Polycab/ KEI/Finolex
7	DC Solar Cable & Accessories	Single core 4 Sq mm. As per Design	Siechem
8	AC Side Breaker 3 Phase ACDB	Input Terminal 100 Amp, Encloser with IP65 Protection.	SPD - Phoenix Contract. MCB – ABB / Hager
9	DC Side Breaker with 3 phase DCDB	Positive terminal 10 with Amp, Encloser with IP65 Protection, 2 In 2 Out DCDB.	SPD - Phoenix Contract. Fuse – Ferraz
10	Junction Box, Lighting Arrestor, Earthing with Accessories, With rods, Chemical, Pipe etc	As Required	True Power etc
11	MC4 Connectors	As Required	Branded ISO Standards
12	Earthing & LA Cable	As Required	Polycab or Equivalent
13	Cable Tie, Clamps & Pole Box	As Required	Branded
14	Generation / Energy Meter	1 No	HPL / L&T UPPCL Approved.

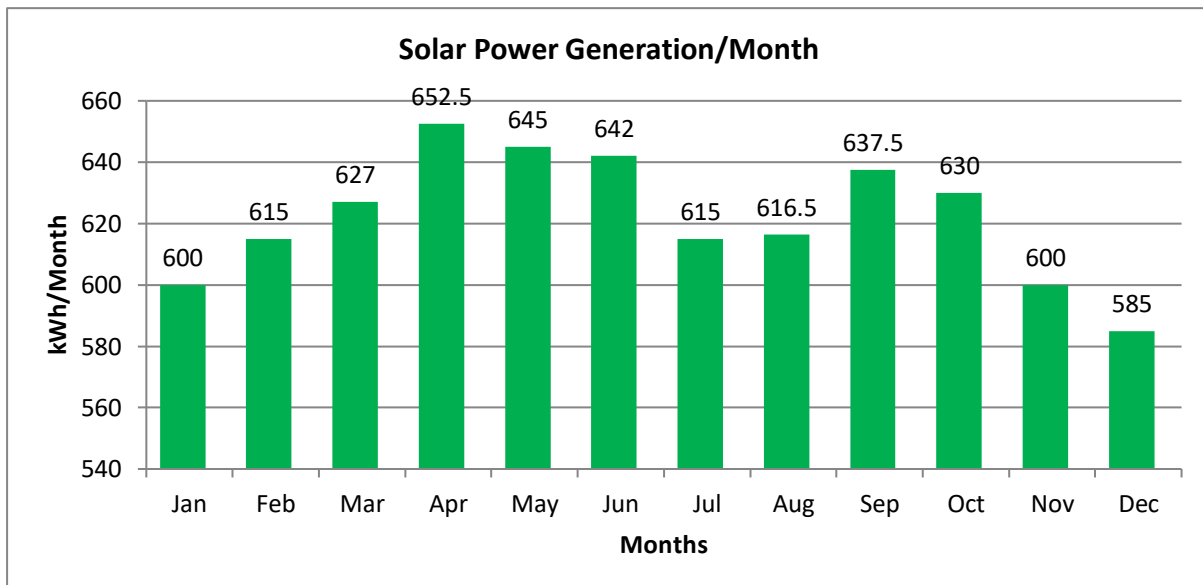
COMMERCIALS:**SUPPLY INSTALLTION TESTING COMMISSIONG OF 3 KW SOLAR PLANT WITH ONE YEAR AMC.****Detailed Engineering, Designing, Procurement & Installation as per plant size & load. (EPC)**

Sr.No	Description	Rate	Amount	Warranty
1	Supply & Installation of 3 KW Solar Plant	Rs. 60 PER WATT.	1,80,000 =00 (Rs. One lacs eighty thousandOnly)	For Panels – Product Warrant 10 Years , Performance Warranty – 25 Years . Inverter – 5 Years. Others – 2 Years

6.2.11.4.4 RESIDENTIAL HOUSING

Plant Capacity	Area Required	Model	Costing.
5 KW	400 Sq.Foot	Net Metering & Subsidy	3,00,000=00

5KW Power Generation					
Sr.No	Months	Agra Irradiance/Month	Average 4KW plat units/day	units/months	monthly units/ 10 Rupee
1	Jan	4.00	20	600	6000
2	Feb	4.10	20.5	615	6150
3	Mar	4.18	20.9	627	6270
4	Apr	4.35	21.75	652.5	6525
5	May	4.30	21.5	645	6450
6	Jun	4.28	21.4	642	6420
7	Jul	4.10	20.5	615	6150
8	Aug	4.11	20.55	616.5	6165
9	Sep	4.25	21.25	637.5	6375
10	Oct	4.20	21	630	6300
11	Nov	4.00	20	600	6000
12	Dec	3.90	19.5	585	5850
Total	Year	4.15	248.85	7465.5	74655=00

**BOOK OF MATERIAL. (5 KW)**

Sr.No.	Description	Quantity	1Make
1	Mono Crystalline 540 Watts Solar Panels MNRE Approved IEC Certified	10 Nos	Warree/ Renewsys/Panasonic
2	Fabricated Galvanized Steel Structure	AS per Design	ISO 9002

3	Solar Grid Inverter	5 KW, Three Phase Transformer less with Remote Monitoring.	Delta / ABB
4	Online Monitoring	LAN Cable WiFi Based 25 Mtrs.	ABB
5	Zero Export Device	Nil	
6	AC Solar Cable & Accessories	120 Meters (4 Core 120 Sq.mm Insulated)	Polycab/ KEI/Finolex
7	DC Solar Cable & Accessories	Single core 4 Sq mm. As per Design	Siechem
8	AC Side Breaker 3 Phase ACDB	Input Terminal 100 Amp, Encloser with IP65 Protection.	SPD - Phoenix Contract. MCB – ABB / Hager
9	DC Side Breaker with 3 phase DCDB	Positive terminal 10 with Amp, Encloser with IP65 Protection, 2 In 2 Out DCDB.	SPD - Phoenix Contract. Fuse – Ferraz
10	Junction Box, Lighting Arrestor, Earthing with Accessories, With rods, Chemical, Pipe etc	As Required	True Power etc
11	MC4 Connectors	As Required	Branded ISO Standards
12	Earthing & LA Cable	As Required	Polycab or Equivalent
13	Cable Tie, Clamps & Pole Box	As Required	Branded
14	Generation / Energy Meter	1 No	HPL / L&T UPPCL Approved.

COMMERCIALS:**SUPPLY INSTALLTION TESTING COMMISSIONG OF 3 KW SOLAR PLANT WITH ONE YEAR AMC.****Detailed Engineering, Designing, Procurement & Installation as per plant size & load. (EPC)**

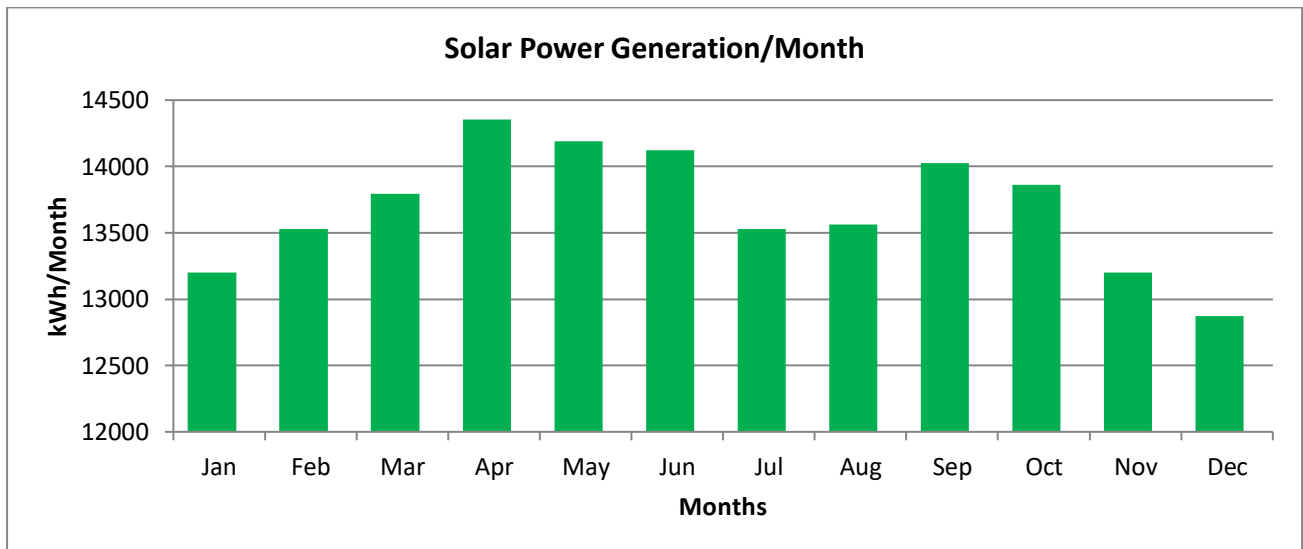
Sr.No	Description	Rate	Amount	Warranty
1	Supply & Installation of 5 KW Solar Plant	Rs. 60 PER WATT.	3,00,000 =00 (Rs. Three lacs Only)	For Panels – Product Warrant 10 Years , Performance Warranty – 25 Years . Inverter – 5 Years.

				Others – 2 Years
--	--	--	--	------------------

6.2.11.4.5 FLOATING POWER PLANT AT RAMGANGA RIVER FRONT

Plant Capacity	Area Required	Model	Costing.
100 KW	8000 Sq.Foot	CAPEX /PPA	6.000.000-00

Months	Irradiation	Units/day	Units/months	10.rs /unit
Jan	4.00	440	13200	132000
Feb	4.10	451	13530	135300
Mar	4.18	459.8	13794	137940
Apr	4.35	478.5	14355	143550
May	4.30	473	14190	141900
Jun	4.28	470.8	14124	141240
Jul	4.10	451	13530	108240
Aug	4.11	452.1	13563	135630
Sep	4.25	467.5	14025	140250
Oct	4.20	462	13860	138600
Nov	4.00	440	13200	132000
Dec	3.90	429	12870	128700
	4.15		164241	1642410=00
				Total amount Saved per year.

**BOOK OF MATERIAL. (100 KW)**

Sr.No.	Description	Quantity	1Make
1	Mono Crystalline 540 Watts Solar Panels MNRE Approved IEC Certified	185 Nos	Warree/ Renewsys/Panasonic
2	Fabricated Galvanized Steel Structure. (Normal Height)	AS per Design	ISO 9002

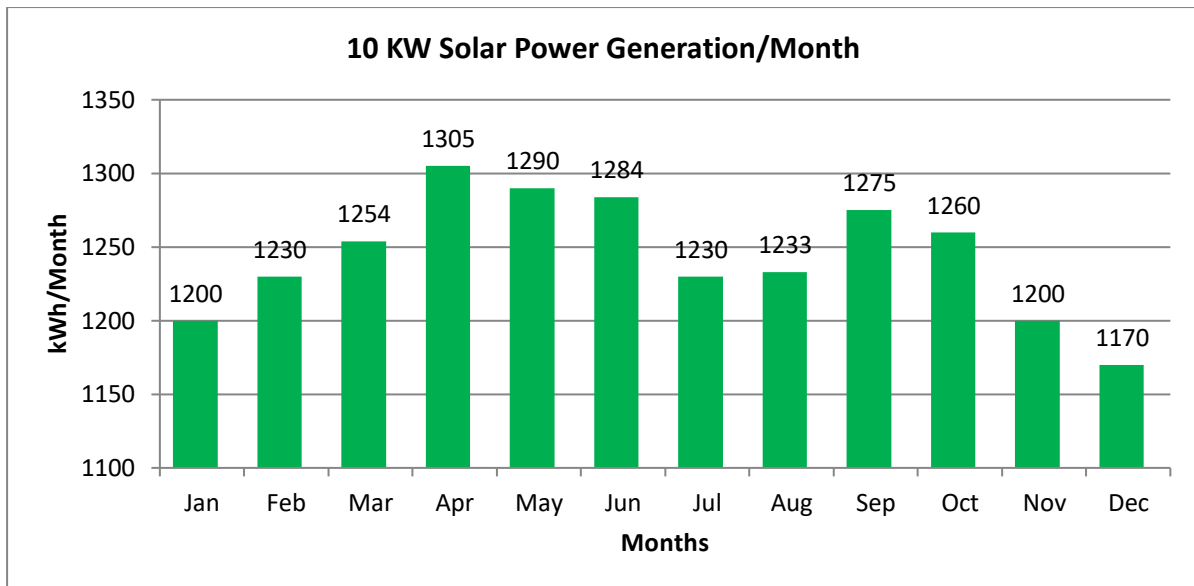
3	Solar Grid Inverter	100 KW, Three Phase Transformer less with Remote Monitoring.	Delta / ABB
4	Online Monitoring	LAN Cable WiFi Based 25 Mtrs.	ABB
5	Zero Export Device	100 KW	Intello / Solar Log
6	AC Solar Cable & Accessories	120 Meters (4 Core 120 Sq.mm Insulated)	Polycab/ KEI/Finolex
7	DC Solar Cable & Accessories	Single core 4 Sq mm. As per Design	Siechem
8	AC Side Breaker 3 Phase ACDB	Input Terminal 100 Amp, Encloser with IP65 Protection.	SPD - Phoenix Contract. MCB – ABB / Hager
9	DC Side Breaker with 3 phase DCDB	Positive terminal 10 with Amp, Encloser with IP65 Protection, 2 In 2 Out DCDB.	SPD - Phoenix Contract. Fuse – Ferraz
10	Junction Box, Lighting Arrestor, Earthing with Accessories, With rods, Chemical, Pipe etc	As Required	True Power etc
11	MC4 Connectors	As Required	Branded ISO Standards
12	Earthing & LA Cable	As Required	Polycab or Equivalent
13	Cable Tie, Clamps & Pole Box	As Required	Branded
14	Generation / Energy Meter	1 No	HPL / L&T UPPCL Approved.

COMMERCIALS:**SUPPLY INSTALLTION TESTING COMMISSIONG OF 100 KW SOLAR PLANT WITH ONE YEAR AMC.****Detailed Engineering, Designing, Procurement & Installation as per plant size & load. (EPC)**

Sr.No	Description	Rate	Amount	Warranty
1	Supply & Installation of 100 KW Solar Plant	Rs.60 PER WATT.	6,000,000 =00 (Rs. Fifty-Seven Lacs Only)	For Panels – Product Warrant 10 Years , Performance Warranty – 25 Years . Inverter – 5 Years . Others – 2 Years
2	SPD – Zero Export Device with Accessories.	82,000/-	82000=00. (Rs. Eighty-Two Thousand Only)	5 Years
Total Rs. Sixty lacs eighty two thousand only.				

6.2.11.4.6 SOLAR POWER PLANT AT GPO

Plant Capacity	Area Required	Model	Costing.
10 KW	800 Sq.Foot	Net Metering	6.00,000=00

**BOOK OF MATERIAL. (5 KW)**

Sr.No.	Description	Quantity	1Make
1	Mono Crystalline 540 Watts Solar Panels MNRE Approved IEC Certified	19 Nos	Warree/ Renewsys/Panasonic
2	Fabricated Galvanized Steel Structure	AS per Design	ISO 9002
3	Solar Grid Inverter	10 KW, Three Phase Transformer less with Remote Monitoring.	Delta / ABB
4	Online Monitoring	LAN Cable WiFi Based 25 Mtrs.	ABB
5	Zero Export Device	Nil	
6	AC Solar Cable & Accessories	120 Meters (4 Core 120 Sq.mm Insulated)	Polycab/ KEI/Finolex
7	DC Solar Cable & Accessories	Single core 4 Sq mm. As per Design	Siechem
8	AC Side Breaker 3 Phase ACDB	Input Terminal 100 Amp, Encloser with IP65 Protection.	SPD - Phoenix Contract. MCB – ABB / Hager
9	DC Side Breaker with 3 phase DCDB	Positive terminal 10 with Amp, Encloser with IP65 Protection, 2 In 2 Out DCDB.	SPD - Phoenix Contract. Fuse – Ferraz

10	Junction Box, Lighting Arrestor, Earthing with Accessories, With rods, Chemical, Pipe etc	As Required	True Power etc
11	MC4 Connectors	As Required	Branded ISO Standards
12	Earthing & LA Cable	As Required	Polycab or Equivalent
13	Cable Tie, Clamps & Pole Box	As Required	Branded
14	Generation / Energy Meter	1 No	HPL / L&T UPPCL Approved.

COMMERCIALS:**SUPPLY INSTALLTION TESTING COMMISSIONG OF 10 KW SOLAR PLANT WITH ONE YEAR AMC.****Detailed Engineering, Designing, Procurement & Installation as per plant size & load. (EPC)**

Sr.No	Description	Rate	Amount	Warranty
1	Supply & Installation of 10 KW Solar Plant	Rs. 60 PER WATT.	6,00,000 =00 (Rs. Three lacs Only)	For Panels – Product Warrant 10 Years , Performance Warranty – 25 Years . Inverter – 5 Years. Others – 2 Years

6.2.11.4.7 TERMS & CONDITIONS:

Taxes – 12% GST Extra.

Cost of AC Cable from Inverter to LT panel will be extra at actual.

AMC – Cleaning of panels is not in our scope.

SCHEDULE OF PAYMENTS:

25 % Advance with work order	Will give layout design & drawings for approval, Supply & Install Structure.
50 % 2nd Installment	Will Supply & Install Panels with AC,DC wiring, Inverter & BOM.
20 % 3rd Installment	Will Supply XPD & live the plant.
05% 4th Installment	Immediate after tests & trails.

6.2.11.5 SOLAR STREET LIGHTS & HIGH MASTS.

As Nagar Nigam & PWD spends huge amount on paying electricity bills on lights at main streets, chavurah, gardens & public utility places.

This can be minimized by replacing standalone atomized semi integrated or fully integrated LED solar street lights. Centralizes off grid solar plants or on grid solar plants can be good suggestion for dedicated power to such lights.

Same can be incorporated with high masts, hoardings & flood lights.

CALCULATIONS

Project	Latest Tariff	Total Consumption	Savings after solar
Street Lights	Rs.4200 / KW + 20 % demand value of bill.	3850 KW	16,170,000=00
High Mast	Rs.4200 / KW + 20 % demand value of bill.	105 KW	4,41,000=00
Flood Lights	Rs.4200 / KW + 20 % demand value of bill.	905 KW	3,801,000=00
Traffic Signals	Rs.4200 / KW + 20 % demand value of bill.	622 KW	21,62,400=00

PROJECTS PROJECTIONS

The suggested projects are categorized as below & the capacity is in megawatts.

Project A (Solar Power Plant)	Short Term (2022- 2028)	Medium Term (2028 - 2037)	Long Term (2037 - 2071)
Govt. Offices	1.5	2 - 10	10 - 25
Finance Required	90,000,000	600,000,000	1,500,000,000
Schools	0.5	1	1.5
Finance Required	30,000,000	60,000,000	90,000,000
Collages & University	0.8	1.2	5
Finance Required	48,000,000	72,000,000	300,000,000
Residentials (Subsidy)	2	8	15
Finance Required	120,000,000	480,000,000	900,000,000
Project B Street Lights	0.5	1.2	3.5
Finance Required	55,00,000	127,00,000	295,00,000
Project C : High Mast	0.2	0.8	2.8
Finance Required	42,00,000	108,00,000	210,00,000
Project D : Solar Tree	0.05	0.08	0.2
Finance Required	6,00,000	9,00,000	22,00,000
Project E : Solar EV Charging Station	0.03	0.08	0.2
Finance Required	9,000,000	13,000,000	21,000,000



6.3 TRANSPORT INFRASTRUCTURE DEVELOPMENT PROJECTS

6.3.1 Project 12: Development of Integrated Freight Center / Logistics Hub

6.3.1.1 Introduction

In terms of the service requirements it must fulfil, the area it serves, and the quantities to be handled, the City logistic hub is a highly specialised facility created for a specific function and operating plan. It serves as an interface between facilities for intercity and local transportation, which manage the collection and distribution of goods inside the city. The main goal is to build a logistics hub with modern amenities, including a modern warehouse for storing goods, loading, and unloading, weigh bridges (50 T and 100 T capacity), restrooms, gas stations, a firefighting system, a solid waste management system, power supply and electrification, a boundary wall, and a storm water system. The multimodal logistics centre will be a piece of infrastructure that improves supply chain effectiveness.

6.3.1.1.1 National Logistic Policy 2016

6.3.1.1.1.1 Vision

To drive economic growth and trade competitiveness of the country through a truly integrated, seamless, efficient, reliable and cost-effective logistics network, leveraging best in class technology, processes and skilled manpower.

6.3.1.1.1.2 Objectives of the Logistics Policy

- Creating a National Logistics e-marketplace as a one stop market place. It will involve simplification of documentation for exports/imports and drive transparency through digitization of processes involving Customs, PGAs etc in regulatory, certification and compliance services
- Creating a data and analytics centre to drive transparency and continuous monitoring of key logistics metrics.
- Encouraging industry, academia and government to come together to create a logistics Centre of Excellence, and drive innovation in the logistics sector
- Creating and managing on an ongoing basis, an Integrated National Logistics Action Plan which will serve as a master plan for all logistics related development.
- Providing an impetus to trade and hence economic growth by driving competitiveness in exports
- Doubling employment in the logistics sector by generating additional 10-15 million jobs and focus on enhancing skills in the sector and encouraging gender diversity
- Improve India's ranking in the Logistics Performance Index to between 25 to 30
- Strengthening the warehousing sector in India by improving the quality of storage infrastructure including specialized warehouses across the country Reducing losses due to agri-wastage to less than 5% through effective agri-logistics
- Providing impetus to MSME sector in the country through a cost-effective logistics network
- Promoting cross regional trade on e-commerce platforms by enabling a seamless flow of goods
- Encouraging adoption of green logistics in the country.

6.3.1.1.2 Existing Transport Nagar

The Bareilly city has only one dedicated existing transport nagar at Lucknow road. This transporter nagar was prepared 20 years ago by the Bareilly development Authority on 24.89 hectares of land to keep out the transporters and big vehicles of the city. It has 1074 transporters plots, 12 shops and 15 commercial plots in Transport Nagar. There was also a plan to shift government and private offices

including fire station, business service centre, dispensary, police station, community hall and RTO office to the transport nagar.

- **Existing Transport facility available at:** Transport Nagar, along NH 19
- **Located in an area:** 150 acres (approx.)
- **Connectivity:** NH 19
- **No of Plots:** 2414 plots
- **Truck Entry restriction in Agra city:** 5 AM to 11 PM
- **Existing Transport Terminals/Nagar:** 59.56 (Hectares)
- **Current handling capacity:** 200 ECS
- **Break-up of trucks by axle type entering Transport Nagar**

SI No	Type and Vehicles Common Names	Total Axels	GVW (kgs)	GVW (T)
1	6 Axel truck	2	19000	19
2	10 Axel Multi Axel truck	3	28500	28.5
3	12 Axel Single Chassis Rigid Truck	4	36000	36
4	14 Axel Single Chassis Rigid Truck	5	43500	43.5
5	14 Axel semi-trailer	4	40000	40
6	18 Axel semi-trailer	5	46000	46

- **Trucks unload cargo at these terminals:** Trucks unloading at transport Nagar are majorly agro based, food processing and household goods. (*Operators survey)
 - 2-axle: 20-25 tonnes
 - 3-axle: 25-30 tonnes
 - MAV: 35- 45 tonnes

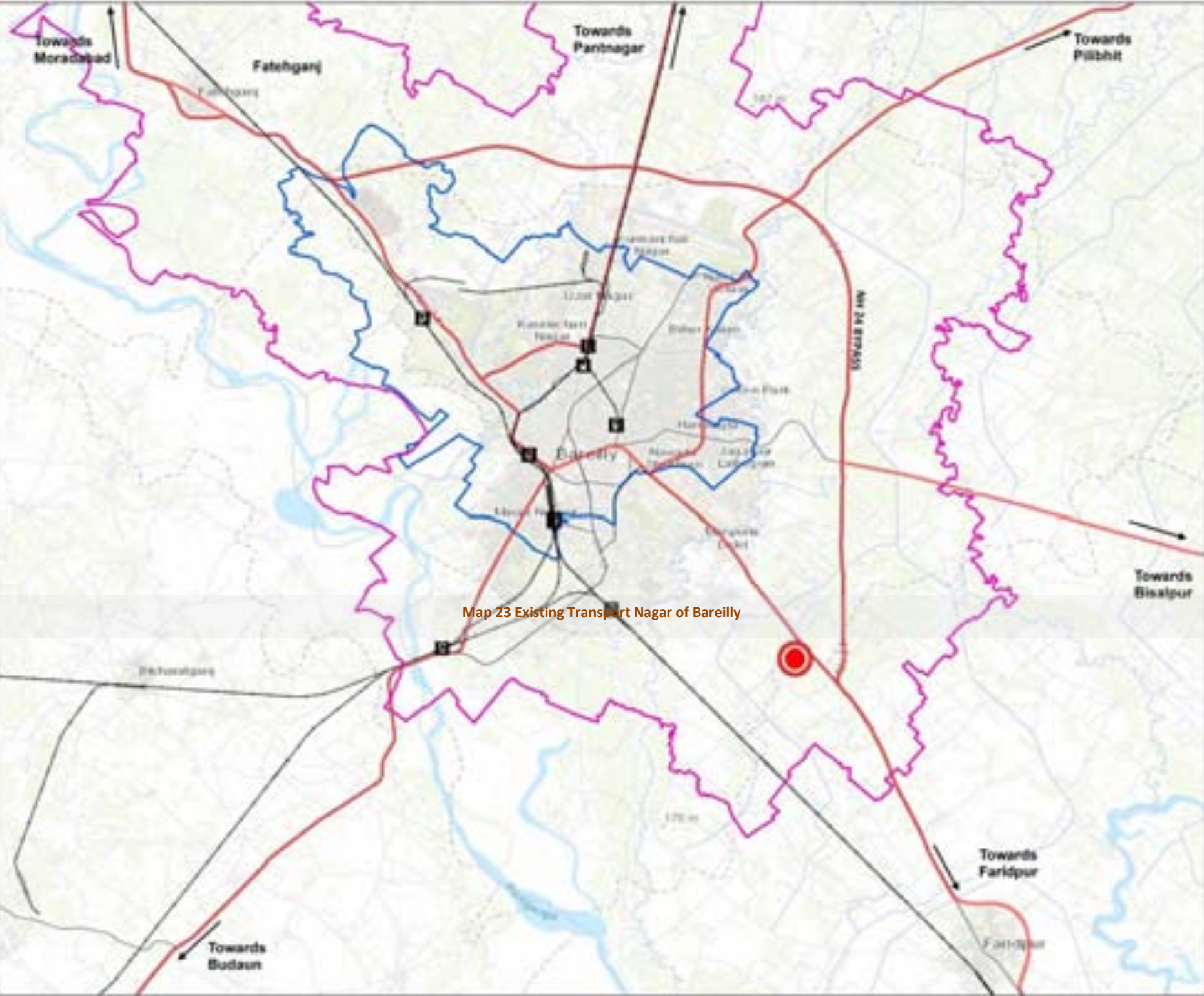
The unloaded Goods are Carried into the city with the help of small trucks like, LCVs, Tata Ace, E-rickshaws etc. as per the interview it is found that the most type of goods which are carried into the city are fruits, vegetables, sugar cane and Bamboo products.

- **Total tonnage of goods and commodities transferred by these trucks to the city:** With full capacity of trucks depending on their size, approximately 500-700 tonnes.
- **Break-up of the freight tonnage by type (grains, vegetables, fruits, etc.):**
 - **Vegetables:** 300-400 tonnes (including green vegetables)
 - **Fruits:** 200 tonnes
 - **Goods (Hardware, Sanitary, Leather, etc):** 300 tonnes approximately (Per day)
- **Existing parking demand versus current handling capacity (if there is a gap):**
At Transport Nagar there is no dedicated Parking Spaces but they parked on street in transport nagar mostly.
- **Unloaded goods carried into the city using smaller trucks:** Mini-LCV, tata magic will distribute within the Agra city (*Operator Survey)
- **Warehousing space in Agra:** At transport Nagar, truck terminal Does not have any integrated ware house facility but the individual traders built their own personal small warehouses with an area of 1000-1500 sq.ft.



Legend

- Railway_station
- Existing Transport Nagar
- railway
- primary
- secondary
- Master plan boundary 2031
- Munciple_boudary



Map 23 Existing Transport Nagar of Bareilly

Map: Existing Transport Nagar

Scale: 1:21,000

Client: Bareilly Development Authority, Government of Uttar Pradesh

Prepared by:

6.3.1.1.3 Existing Transportation issues at Bareilly

- On-street parking of the commercial vehicles
- Auto & 2-wheeler parking
- Night time safety issue between fast/slow moving vehicles
- Average journey speed in city: 21-30 km/hr
- Yearly 4% of Commercial vehicles registered in Bareilly

6.3.1.1.4 Approach and Methodology for Assessing Demand

Estimating Demand for the proposed Integrated Freight centre cum Logistic hub comprises assessing movement of trucks in the city.

- Studying the key industries and truck movement
- Assessment of similar and upcoming facilities
- Assessing truck movement routes and nearness of the proposed trucking hub
- SWOT Analysis of site-Assessing condition

6.3.1.1.5 Need of Integrated freight center cum logistic Hub

Bareilly is a well-known industrial hub and a centre for the trading of cotton, sugar, and cereal as well as furniture. The food processing, plastic products, plywood, paper and packaging materials are produced and supplied in the state and across the country. The city has also served as a hub for Manjha and Zari-Zardosi handicrafts. The well-known Bareilly Industries exports its goods to the UK, Malaysia, Singapore, the Gulf States and many Indian states. National brewery firm, match factory, ice factory and a sugar mill run by UP Sugar Corporation are just a few of the businesses in the city. Given the city's economic makeup and advantageous location numerous regional-level freight facilities are present. On the Bareilly-Lucknow National Highway in Bhindaulia, notable freight facilities include transport nagar and freight hubs like Parkhasera and CB Ganj Industrial area.

6.3.1.1.6 Area requirement for Integrated freight center cum logistic Hub

Industries require logistics support to facilitate the transfer of finished goods and raw materials. Currently, Transport Nagar on Lucknow road is the major facility for logistics support which lies opposite the Paraskhera industrial area.

Integrated Freight Center cum Logistic hub are proposed in two different locations one at Faridpur for the Lucknow Road Industrial area and another one at close proximity to Kurtara. These two locations are proposed in order to assist the currently existing and newly projected industrial areas on Delhi Road and ensure efficient movement of goods and products. The area of the proposed Integrated Freight Center cum Logistic hub will be approximately 35 hectares each.

Table 6-11: Broad Costing of Kurtara Integrated Freight Centre cum Logistic Hub

S.no	Components	%	Development Cost (in INR)
1	Plumbing sewerage STP and all	30	1,050,000
2	Electricity ESS and all	30	1,050,000
3	Roads and landscaping	40	1,400,000
	Sub Total	100	3,500,000
4	Land Cost	100 Ha	3,360,000,000
	Total		3,363,500,000

Table 6-12 Broad Cost of Faridpur proposed Integrated Freight Centre cum Logistic Hub

S.no	Components	%	Development Cost (in INR)
1	Plumbing sewerage STP and all	30	1,050,000
2	Electricity ESS and all	30	1,050,000
3	Roads and landscaping	40	1,400,000
	Sub Total	100	3,500,000
4	Land Cost	100 Ha	1,680,000,000
	Total		1,683,500,000

For the broad cost estimation of the proposed Integrated Freight Centre cum Logistic Hub the land rate is assumed to be four times the actual rate of the land. The broad project cost for the development of proposed Integrated Freight Centre cum Logistic Hub is mentioned above.

6.3.1.1.7 Truck Terminal Parking

- Parking Space requirement for Truck: 55-60 sqm.
- Truck parking Size: 7.1 m x 2.6 m
- Equivalent Car Space (Truck): 2.50

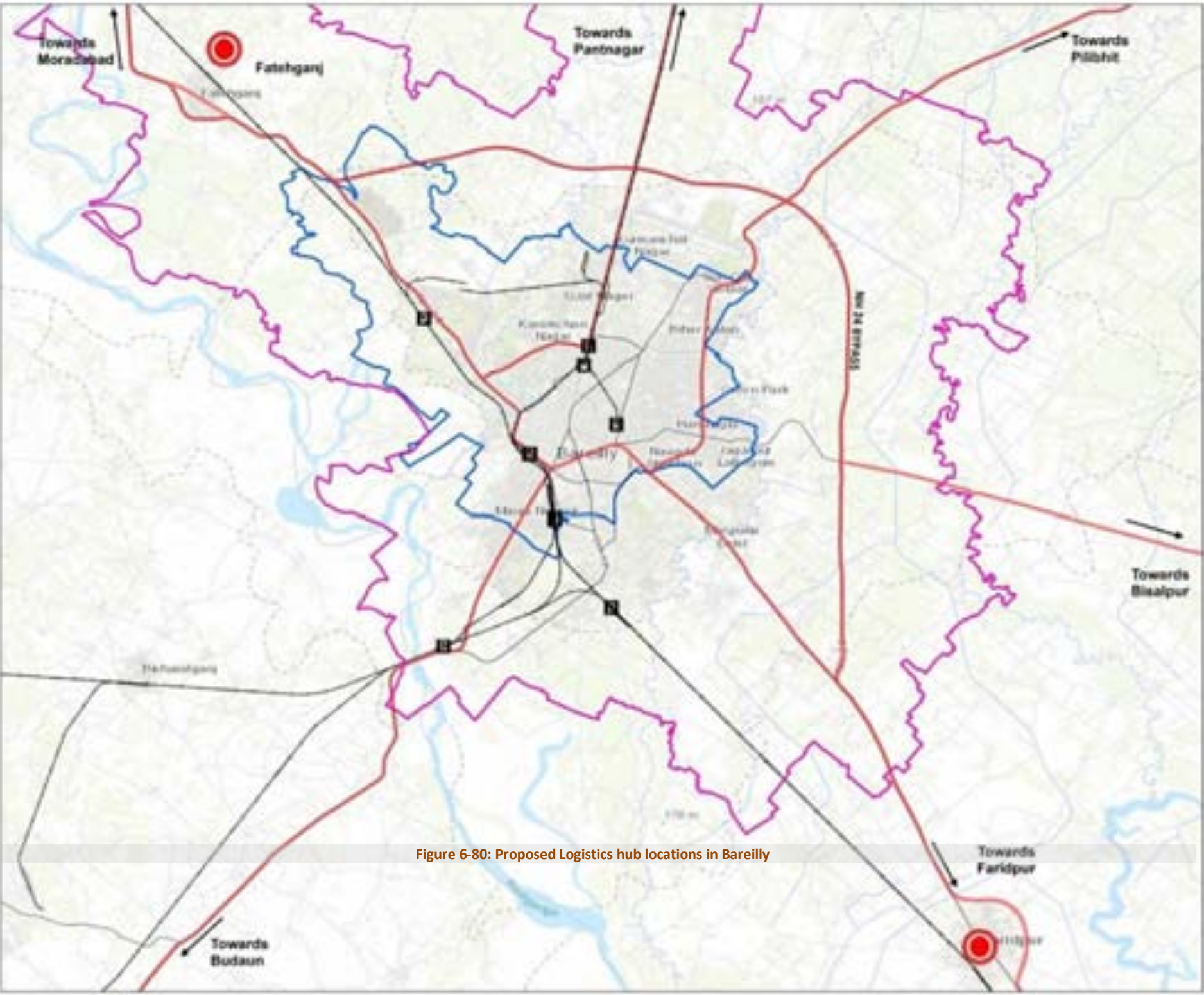
Table 6-13: Proposal locations for Integrated Freight Center cum Logistic Hub

Sl No	Proposed Location	National Highway Connectivity	Nearest Railway Station	Distance from Agar
1	Kurtara	6 kms from NH 530	Near Persakheda Railway Station	32 km
2	Faridpur	On NH 730C	Near Pitambarpur Railway Station	37 km



Legend

- Railway_station
- Proposed Logistics hub
- railways
- primary
- secondary
- Master plan boundary2031
- Munciple_boudary



Proposed Logistics hub

Scale: 1:25,000

Client: Bareilly Development Authority, Government of Uttar Pradesh

Consultants:

Figure 6-80: Proposed Logistics hub locations in Bareilly

6.3.1.1.8 Major Features at proposed Integrated Freight Centre cum Logistic Hub

- **Advantage:** Connectivity with nearest Railway station and NH 19
- **Area required:** 86.49 acres per location
- **Parking space:** 500-600 Trucks at given time
- **Additional parking space:** 50 - Car & 100 two-wheeler parking
- **Warehouse & Cold Storage:** 3000 MT
- **Other Infrastructure:** Warehouse for Storing goods, Loading and unloading, weighbridges (50 T & 100 T Capacity), rest rooms and Petrol Pumps.
- **Mode of Selection/setup:** PPP basis
- **Estimated Cost:** 150 to 200 Cr (Approx.)
- **Functioning of Truck Hub:** Parking lot, Warehousing and support facilities, Storage Location, commercial Complex, Boundary Wall, Road Network, Water Supply & Distribution system, Storm Water Drain system, Sewerage system, Power Supply & Electrification, Firefighting system, Solid Waste management system, Landscaping, Social Infrastructure (Restaurant, Public Convenience), Bank, Transport Agencies, Circulation, Toilets, Administrative Office, Fire Station, Dispensary, Electric Sub-station, Spare Parts shop.

6.3.1.1.9 Facilities within the Integrated Freight Centre cum Logistic hub

a. Truck Terminal

A Trucking Hub facilitates both domestic freight movement and also acts as Logistic Hub with facilities like warehouses, wholesale markets and mandis. Some of the basic facilities that form the skeleton structure of a Trucking Hub are as follows.

i. Transportation Facility

Based on the project location and its access to the different modes of transportation the following facilities can be proposed in a Trucking Hub.

ii. Truck Parking

Parking for multi axle trucks, two / three axle trucks and light commercial vehicles will be provided. To justify a parking facility's infrastructure costs, the lot size should be no smaller than three acres. Three acres will accommodate approximately 25 to 30 trucks with the necessary circulation lanes. A lot between 7 and 10 acres would be more suitable in high freight traffic areas.

iii. Warehousing Facility – Storage

Storage is an important function of a Trucking Hub and the warehousing component of the park takes care of the same. Based on the products to be stored, the following storage facilities are planned within the park.

- Customized Warehouse
- Cold Storage

iv. Support and Social Infrastructure facilities

The support and social infrastructure facilities include both essential infrastructure facilities for the effective functioning of the Trucking Hub and other facilities that address the environmental and land-use regulations within the park. The main facilities for which area allocation needs to be made in Trucking Hub are:

● Transport Agencies	● Circulation
● Parking	● Open Space
● Petrol Pump	● Service Centre
● Toilets	● Police Station
● Restaurant	● Shops
● Godowns	● Weigh Bridge
● Stalls / Dhabas	● Administrative Office
● Post Office, Dispensary	● Bank / ATM

• Cold Storage	• Spare Parts Shops
• Electric Sub station	

The facilities such as Power back-up, Power Transmission & Distribution network, Water Distribution Network, Telecom network, etc. are necessary for the effective functioning of the Trucking Hub are part of the Support Infrastructure facilities.

v. Common Facility

The common facilities in a trucking hub include the following:

• Terminal Buildings –Truck,	• Internal Roads
• Central Admin Facility	• Power Transmission & Distribution Network
• Telecom Network	• Water Distribution Network

b. Functioning of a Trucking Hub

The functioning of a Trucking Hub can be explained on the same lines on which the basic components of the park are formulated.

a. Parking Lot

The Truck Parking area is one of the important components in the Trucking hub, The entire truck parking area will be divided into several parts viz. (i) Parking Bay for Trucks (ii) Parking Bay for Trailers. There will be suitable wide driveway adjacent to above said each type of parking bay and all the concerned driveways will be connected by common driveway ultimately leading to arterial road / trunk road.

b. Warehousing and Support facilities

• Inbound / Outbound operations

The handling of goods at the warehousing facility is termed as the Inbound/ Outbound operations of the facility. The handling includes both loading and unloading of goods from/ to the warehouse.

• Storage Location

The storage locations are of two types. They are Climate Controlled Storage Spaces and Non-Climate Controlled Storage Spaces.

○ **Climate Controlled Storage space**

Warehouses offer climate controlled spaces for items that require storage in a climate controlled environment.

○ **Humidity Control**

Items that are sensitive to high humidity are generally stored in rooms with humidity at levels that are below 55 RH (Relative Humidity). Molds and mildew can grow on most surfaces and can spread easily as the spores can become air borne however mold and mildew growth is inhibited at 55 RH.

○ **Temperature Control**

Goods require storage in cold conditions and temperature controlled storage is the suitable option. Especially Food products need this kind of temperature controlled storage.

○ **Humidity and Temperature Control**

Certain kind of goods need both temperature and humidity control.

• **Traditional Storage – Non Climate Controlled Storage Space**

Traditional storage offers no control over humidity and temperature. The space is basically maintained at whatever temperature and humidity levels as the remainder of the warehouse. Warehouses are generally maintained at a temperature a few degrees above the outside temperature in the winter and a few degrees below the outside temperature in the summer and the humidity level is dependent on outside humidity levels.

- **Cold Storage**

Cold storages are generally centrally located warehouses built to cater to multiple production zones and pre-cooling centres. Here, depending on factors like how long the product needs to be stored and what use it is going to be put to, the product is stored at a sub-zero temperature using methods like chilled storage, deep freezer storage, controlled atmosphere storage, gas controlled cold storage, etc. A cold storage unit essentially incorporates a refrigeration system to maintain the desired room environment for the commodities to be stored. In a refrigeration system, refrigerants are used to pick up heat by evaporation at a lower temperature and pressure from the storage space and give up the heat by condensation at a higher temperature and pressure in a condenser. Freon used to be a common refrigerant but as it causes environmental degradation, its use is banned. Therefore, Ammonia is being increasingly used and preferred for horticultural and plantation produce cold storage units. All the sides of the cold storage room need to be insulated in order to maintain the required temperature inside. Refrigerated storage helps in eliminating sprouting, rot and tuber moth damage and in reducing weight loss of the agricultural produce. There is high demand of cold storage for perishable products. The edible products are generally not stored for more than one year.

- **Mandi – Agro-commodity Shops**

An efficient market place where sellers, buyers, and end customers converge, our state-of-the-art 'mandis' will provide a modern shopping-mall-like infrastructure that is not available in traditional markets. With clean, hygienic and green environments, modern 'mandis' will provide one-stop services with the quality and transparency of international standards. There will be agro-products shop, wholesale area and assortment shed etc.

- **Common Facilities**

The common facilities provided in the Trucking hub are those parts of a building providing shared facilities that typically do not change over time, including for example, circulation areas, stairs, escalators, lifts/elevators and motor rooms, toilets, cleaners' cupboards, plant rooms, fire refuge areas, maintenance rooms and unallocated parking spaces.

- **a. Gate Complex**

There will be two nos entry/exit gates for the entire Trucking hub, Each gate will have a vehicular entry and a pedestrian entry. The main entry gate will have signature architecture to reflect the unique identity of the Logistics Hub and will integrate local architectural elements. All the entry / exit gates will have provisions for security, CCTV, access control to monitor and control movement of vehicles through the Trucking hub.

- **b. Administrative Building**

There will be a three storied administrative office building inside the Trucking hub premises. In ground floor of the administrative building, there will be post office, bank / ATM counters, STD / ISD booth, Xerox shop, medicine shop etc. In first floor, there will be the administrative office and conference hall. Guest house will be there in the second floor.

- **c. Canteen Building**

There will be a canteen building with eating arrangement of 100 persons at a time. Inside the canteen building, there will be kitchen, pantry, dining hall and wash area.

- **d. Rest House**

For Truck driver's rest-house, there will be a double storied building with a number of rest-rooms with attached toilet facilities. These are the essential and important facility for transit movement.

- **Budget Hotels**

For all the truck drivers and cleaners, there will be a three storied budget hotel building of dormitory type with common toilet facilities and veranda.

- **Canteen**

In addition to the General Canteen building, there will be a separate canteen building exclusively for truck drivers and cleaners. In the said canteen building, there will be kitchen, pantry, dining hall and wash area.

- **Office Building for Clearing & Forwarding agents**

There will be a three storied office building inside the Trucking hub premises. In ground floor of the said building, there will be ATM counters, STD / ISD booth, Xerox shop etc. In first floor, there will be the office and conference hall. Guest house will be there in the second floor.

- **Commercial Complex**

Inside the Trucking hub, there will be a commercial complex comprising of a number of shops. Essential commodities, STD/ISD booth, Xerox, Medicines and office stationeries will be available in those shops.

- **Signage's**

Signage is integrated with road cross sections and landscaping features. A uniform system of colour, placing and text is proposed to avoid confusion in on-goers. Advertisement boards and hoardings should be located suitably, integrating with the landscaping.

- **Security**

A centralized security office is proposed at the main entrance of the Trucking hub. In addition, a security is to be provided at the entry and exit points. The logistics hub will have provisions for close circuit (CC) cameras placed at all strategic locations. All these CC cameras will be connected to the central security office.

a) Support Infrastructures

Support infrastructure will consist of (i) Boundary wall, (ii) Road Network (iii) Water Supply & Distribution system, (iv) Storm water drainage system, (v) Sewerage system, (vi) Power Supply & Electrification, (vii) Fire Fighting System, (viii) Solid waste management (S.W.M) system, (ix) Landscaping and (x) D.G set

- **Boundary Wall**

The Boundary wall will consist of RCC columns placed @ 2.5M c/c interval. The columns will have their respective individual foundations and those foundations will be connected with tie-beams. Brick work of height 1.8M will be constructed above the tie-beams in between the columns. R.B.T (Reinforced Barbed Tape) Concertina fencing will be provided throughout on the top of boundary wall.

- **Road Network**

There will be a trunk road and arterial roads in the Trucking hub. The trunk roads will be of 14.5M R.O.W. It will be (1 + 1) motorized undivided vehicle lanes, pedestrian pathway, green strips and utility corridors. The arterial and sub-arterial road will be 12.4m and 8.5m ROW respectively.

- **Water Supply & Distribution System**

Water will be sourced from the under-ground aquifer by sinking several bore-wells. There will be primary treatment and the treated water will be stored into RCC Over Head Reservoir. The treated water will then be supplied to the consumption points through the network of G.I pipelines of varying diameters along with valves, specials and accessories.

- **Storm Water Drainage system**

Brick-built covered surface drains (longitudinal) will be constructed parallel to both flanks of all types of roads which will carry the storm water of adjoining areas. Along the arterial roads, the drains will be of smaller sections and along the trunk road; it will be of larger sections. Covered cross-drains will be provided across the roads wherever necessary for changes in directions of flow. The drains will have a longitudinal bed slope leading to the ultimate outfall point. The covers of all types of drains will be made of either pre-cast or cast-in-situ concrete slabs.

- **Sewerage system**

The sewage will be generated mainly consists of household wastes and will be treated in the septic tank. Every building will have their own respective septic tanks and soak

pits to treat the domestic sewage.

- **Power Supply & Electrification**

There is a 220 KV Sub-Station of M.P. Power Transmission Co. Ltd near the site. So, availability of power will not be problem here. There will be proper street lighting and High Mast at strategic locations. Street lights will be placed @ 30M c/c on both sides of the road in a staggered way.

- **Fire Fighting system**

The fire-fighting system will consist of several semi under-ground fire-fighting reservoirs, fire-fighting pump houses, fire hydrants, network of G.I pipelines and network of electrical cables with valves and accessories etc. In the fire-fighting pump house, there will be a centrifugal pump, a diesel pump and a jockey pump.

- **Solid Waste Management (S.W.M) system**

For solid waste management system, litter bins will be placed at strategic locations inside the Trucking hub for primary collection. From the litter bins, the solid waste will then be segregated and collected into larger containers. In this trucking hub, a vermi-composting plant for recycling compostable organic wastes can be made which will help converting wastes to products. Solid waste, other than compostable organic wastes may be disposed of with the help of nearest municipality.

- **Landscaping**

A green buffer of trees has been proposed all along the periphery of the Trucking hub thus taking care of the environmental aspect. In addition, vertical and horizontal stretches of greens in the form of avenue plantations and greenways will be made along the road.

b) Social Infrastructure

- **Dhaba**

In the Trucking hub, there will be several Dhabas located in different zones. Food and beverages facilities along with eatery will be available there.

- **Public Convenience**

There will be several toilet blocks comprising of bathing and water-closet facilities along with change rooms located at some strategic locations for both males and females.

a. Area distribution and Landuse Breakup for Logistic Hub

Based on the site assessment, planning approach and facilities required in a Logistic Hub complex, the finalized Land use breakup and area distribution is summarized in below table;

Table 6-14 Land use Breakup for Logistic Hub

S. No	Particulars	Percentage (%)
1	Wholesale Market	35%
2	Warehousing	8%
3	Booking Agencies	2%
4	Commercial & Public /Semi-Public	5%
5	Utilities and services	3%
6	Services Industry	4%
7	Parking	12%
8	Circulation	25%
9	Others	6%
	Total	100%

Table 6-15 Area Breakup Required in Logistic Hub

S. No	Items	Capacity
1	STORAGE	

	Warehouse	5000 MT
	Cold Storage	5000 MT
2	MANDI	
	Platform	2 Nos
	Storage Rooms	4 Nos
3	PARKING	
	Cars	50 Nos
	Two-Wheeler	50 Nos
	Truck	500 Nos
	Trailer	20 Nos
4	COMMERCIAL	
	Transport Operator Office	10 Nos
	Retail cum Shopping Store	
	Medical Facility	
	Banking Facility (ATM)	2 Nos
	Public Telephone Booth	
	Fuel Pump Station	
	Post Boxes	2 Nos
5	BUILDING	
	Administrative Building	
	Dormitory with Sanitary Facility (Toilet, Bathroom, Washing & Drinking Area)	
	Truck Maintenance & Service Yard with Spare Shop	
6	ROADS	
	Administration	20%
	Truck Parking	20 %
7	OTHER FACILITIES	
	Weigh Bridge (50 Tonne)	1 Nos
	Weigh Bridge (100 Tonne)	1 Nos
	D.G. Set, Pump Room, Electrical Room	
8	OPEN/ GREEN AREA	
	Administrative Zone	
	Parking Zone	
9	SITE UTILITIES AREA	
	Ground Water Storage	
	Electric Substation	

c. List of Stakeholders

- Bareilly Development Authority
- Bareilly Nagar Nigam
- PWD, Bareilly
- NHAI,
- UPSWC

d. Financial Analysis

- Estimated Cost: 150 to 200 Cr/location
- Mode of Selection: PPP Basis

e. Project Time-line

The proposed city logistic hub at Bareilly city with construction time: 3-4 years



Figure 6-81: Broad Conceptual Layout of Integrated Freight Centre cum Logistics Hub at Faridpur

Vision Plan, Implementation Strategy & Integrated Infrastructure Plan for Bareilly, 2071

Legend

- National Highway
- State Highway
- MCR
- Other Roads
- Railway Line
- Municipal Boundary
- Planning Area Boundary (ZDA)
- Water Bodies

Map Title: Proposed Logistics Hub

Scale: 1:5,000

Client: Bareilly Development Authority, Government of Uttar Pradesh

Consultants: WSPAR| Engineers Pvt. Ltd. in association with
 ESI
 Saranya Consulting Engineers Ltd. & Urban Development Services Pvt. Ltd.



Figure 6-82: Broad Conceptual Layout of Integrated Freight center cum Logistics Hub at Kurtara

Vision Plan, Implementation Strategy & Integrated Infrastructure Plan for Bareilly, 2071

Legend

- National Highway
- State Highway
- NCR
- Other Roads
- Railway Line
- Municipal Boundary
- Planning Area Boundary (SCA)
- Water Bodies

Map Title: Proposed Logistics Hub

Scale: 1:5,000

Client: Bareilly Development Authority, Government of Uttar Pradesh

Consultants: WSP|Parsons|Singapore Pte. Ltd. in association with
 ECI, Mahindra Consulting Engineers Ltd. & Urban Development Services Pte. Ltd.

6.3.2 Project 13: Strengthening of Radial Road connectivity from Bareilly city to Ganga Expressway

6.3.2.1 Background of the study:

To provide better facilities in terms of road infrastructure and a faster connectivity from Bareilly city towards proposed Ganga Expressway.

6.3.2.2 Need of the Project:

- Smooth and uninterrupted traffic movement for all modes of transport moving along the NH 530B section from Bareilly city towards proposed Ganga Expressway.
- Consideration of present and future transportation proposals along and around the influence zone of the NH 530B till Ganga Expressway.
- To provide faster intra-state public transport system connectivity for the influence zones.
- Propose a comprehensive solution for truck parking lay-byes along the NH 530B road.
- Provision of street furniture like way-finding signboards, road signages, road markings, emergency services along road, public conveniences.

6.3.2.3 Road Connectivity to Bareilly

Bareilly has a radial pattern of road network. National Highways in Bareilly is well connected with its surrounding urban agglomeration, 4 major NH sections pass through Bareilly city are NH-30, NH 530, NH 530-B, NH 730-B and SH 37. The NH 30 is part of Bareilly Bypass section connects Sitarganj on the north and Lucknow, Allahabad on the south. NH 530 connect Bareilly to Rampur Road, NH 530-B connecting Bareilly to Mathura highway, NH 730-B connects (Bareilly to Bisalpur highway. UP state highway no 37 starts from Bareilly to Nainital Road. Bareilly Bypass section starts at Dhantiya village to Rajau Paraspur with total length of 30.1 km.



Figure 6-83: Major Connecting Roads in Bareilly city

6.3.2.4 Introduction to proposed Ganga Expressway

The proposed Ganga Expressway is a greenfield project with 6 lane connecting western part with eastern part of the UP with total length of 594 km. The Ganga Expressway will cover major destinations like Meerut, Bulandshahr, Hapur, Amroha, Sambhal, Badaun, Shahjahanpur, Hardoi, Unnao, Rae Bareli, Pratapgarh and Prayagraj. The Ganga Expressway will link-up with other expressways in the state like Lucknow-Agar Expressway, Purvanchal Expressway, Ballia Link Expressway.

The following are the features of the Ganga Expressway

- **Proposed Greenfield Project:** Ganga Expressway
- **RoW of Ganga Expressway Road:** 120 m
- **No of Lanes:** 6 Lanes
- **Length of the corridor:** 594 km
- **Terrain:** Plain & Flat
- **Air Strips provision:** No Air Strips provided
- **Abutting Landuse on both-sides of Ganga Expressway:** Agricultural
- **Major Connecting cities:** Meerut, Bulandshahr, Hapur, Amroha, Sambhal, Chandausi, Budaun, Tilhar, Bangarmau, Unnao, Raebareli, Pratapgarh and Prayagraj.
- **Implementation Authority:** Uttar Pradesh Expressways Industrial Development Authority (UPEIDA)
- **No of Packages:** 12 nos.

Table 6-16: Ganga Expressway Packages

SI No	Package	Length (km)
1	Bijauli (Meerut)–Chandner (Hapur)	48.9
2	Chandner (Hapur)–Mirzapur Dungal (Amroha)	30.0
3	Mirzapur Dungal (Amroha)–Nagla Baraha (Budaun)	50.7
4	Nagla Baraha (Budaun)–Binawar (Budaun)	52.1
5	Binawar (Budaun)–Dari Gulau (Shahjahanpur)	46.7
6	Dari Gulau (Shahjahanpur)–Ubariya Khurd (Hardoi)	52.9
7	Ubariya Khurd (Hardoi)–Iksai (Hardoi)	52.4
8	Iksai (Hardoi)–Raiya Mao (Unnao)	50.2
9	Raiya Mao (Unnao)–Sarson (Unnao)	53.1
10	Sarson (Unnao)–Terukha (Raebareli)	51.8
11	Terukha (Raebareli)–Naudhiya (Pratapgarh)	52.0
12	Naudhiya (Pratapgarh)–Judapur Dandu (Prayagraj)	53.0
Total Length		594



Figure 6-84: Ganga Expressway and other competing corridors in UP

6.3.2.5 List of nodes developed along Ganga Expressway

The Ganga Expressway is access controlled with only entry/exit at Nodes (intersecting points of National Highway or State Highways or Major District Roads – crossing with the proposed Expressway Alignment).

Table 6-17: Node Development along Ganga Expressway

Toll Nodes	Chainage	Details of the Intersecting Roads	Road Category	Type of Interchange
A	0+100	Delhi - Meerut Expressway	Expressway	Dummy Node
B	8+920	Meerut – Hapur	NH-334	Trumpet
C	35+270	Hapur - Garhmukteshwar	NH-24	Diamond
D	54+640	Bulandshahr - Garhmukteshwar	SH-65	Diamond
E	74+181	Hasanpur-Anupshahar	MDR-162W	Diamond
F	102+427	Anupshahr - Moradabad	ODR	Diamond
G	123+288	Babrala - Chandausi	NH-509	Double Trumpet
H	173+454	Chandausi - Budaun	SH-125	Diamond
I	189+394	Budaun - Bareilly	NH 530B	Double Trumpet
J	255+167	Farukhhabad - Shahjahanpur	SH-29	Double Trumpet
K	282+845	Farukhhabad - Shahbad	SH-138	Diamond
L	329+945	Kannauj– Hardoi	SH-21	Double Trumpet
M	378+136	Agra - Lucknow Expressway	Agra Lucknow Exp	Double Trumpet
N	420+932	Kanpur - Lucknow	NH-27	Diamond
O	487+285	Lalganj - Raebareli	NH-31	Double Trumpet
P	517+708	Raebareli–Unchahar	NH-30	Double Trumpet
Q	554+951	Manikpur - Bela Pratapgarh	MDR-102E	Diamond
R	600+457	Prayagraj Bypass	NH-19	Trumpet

6.3.2.6 NH 530B & Connectivity

NH in India are a network of trunk roads owned by the MoRTH. NH 530B, completely runs in the state of UP with total length of 265 km, starting from Bareilly and ends at Mathura and connecting to major settlements like Budaun, Kasganj, Hathras. The NH 530B is a part of State Highway 33 and notified as NH in March 2018.

6.3.2.7 Details of Radial Road connecting from Bareilly city to Ganga Expressway

The improvement section details of radial road connecting from Bareilly city to Ganga Expressway

Table 6-18: Identified Radial Roads from Bareilly City to Ganga Expressway

SI No	Road Section		Length
1	Bareilly - Badaun Road (NH 530B)	NH 530B: Ramganga Bridge to Binawar (Near Badaun)	26.0 km
2		Bareilly South Bypass: Parsakhera - Ramganga Bridge - Tilhar Mod	31.0 km



Figure 6-85: Ganga Expressway alignment and connectivity to Bareilly city

6.3.2.8 Existing Situation of Project specification

- a. **Ramganga Bridge to Binawar section (NH 530B):** The Ramganga Bridge to Binawar (near Budaun) is part of NH 530B and currently it is a 4-lane divided carriageway in good condition. Construction of flyover is in progress at Lal Phatak Railway Crossing, near Bareilly city. The total length between Ramganga Bridge to Binawar is about 26.0 km (Approx.), considered for the radial road connectivity between Bareilly city to Ganga Expressway link.
 - **Road Type:** NH 530B (Ramganga Bridge to Binawar (near Budaun))
 - **Existing Lanes:** 4 lane road
 - **Length from Ganga Expressway to Ramganga Bridge:** 26.0 km (Approx.)
 - **Major Bridge & River:** Ramganga Bridge
 - **Cantonment Area:** Near Circuit House Chauraha, Bareilly



Figure 6-86: NH 530B near Circuit House road



Figure 6-87: Flyover construction at Lal Phatak Railway Crossing



Figure 6-88: Major Bridge along Ramganga River (left) NH 530B near Binawar (right)

- b. **Bareilly South Bypass (Parsakhera-Ramganga Bridge-Tilhar Mod):** The proposed new greenfield alignment 'Bareilly South Bypass' section starting from Parsakhera Industrial Area to Ramganga Bridge to Tilhar Mod (near Rajau Paraspur) with total length of 31.0 km (Approx.)
- **Road Type:** Bareilly South Bypass (Greenfield Road as per Master Plan 2031*)
 - **Connectivity:** Parsakhera – Ramganga Bridge – Tilhar Mod (Near Rajau Paraspur)
 - **Proposed Length:** 31.0 km (Approx.)
 - **Section 1: NH 530B:** Parsakhera to Ramganga Bridge: 18 km
 - **Section 2: Bareilly South Bypass:** Ramganga Bridge to Tilhar Mod (Near Rajau Paraspur): 13.0 km



Figure 6-89: Jumkha Chauraha, near Parsakhera Industrial Area (left), Agricultural land, near Balla Kotha (near Clutterbuck Ganj Railway Station) (right)



Figure 6-90: Major Bridge near Ramganga River (left), Agricultural land, Bund Road near Jallapur Ram Dayal (right)

6.3.2.9 Vehicular Growth in Bareilly

In Bareilly, the registered vehicles have been increased moderately over the past decade. It is significant to note that about 14 to 19% of the vehicle’s growth in the past decade. The increase of two-wheelers could be attributed to the comparatively better economic status of people and lack of city-wide good PT system. The increase of private modes demands more road space and has resulted in dense concentration of traffic on roads with limited right of ways.



Figure 6-91: Vehicular Growth in Bareilly

Table 6-19 Vehicle registration data for Bareilly

Year	Two-Wheeler	Car	Bus	Truck	Others	Total
2014-2015	47932	5329	72	981	1203	55,517
2015-2016	47440	6155	79	998	1135	55,807
2016-2017	54016	7146	144	1235	1210	63,751
2017-2018	62757	8592	323	1773	2727	76,172
2018-2019	64439	7963	137	4054	2450	79,043
2019-2020	63195	7985	123	4034	2743	78,080
2020-2021	50203	7175	51	3318	1090	61,837

Source: Bareilly RTO

6.3.2.10 Base-year Traffic in Bareilly city

- i. **Average Daily Traffic at Major Junctions:** To capture traffic flow characteristics and travel pattern of users passing through the Bareilly city and network characteristics. The intensity of average daily traffic at major intersection in Bareilly city and it is observed that Sood Dharm Kanta handles the maximum daily traffic of 29,488 PCUs followed by Bisalpur Chauraha and Selection Point Chauraha with 27,190 PCUs and 25,951 PCUs respectively. The minimum traffic is observed at Sheel Chauraha with 13,977 PCUs.

Table 6-20 Average Daily Traffic in Bareilly City

Average Daily Traffic			
S. No.	Junction Name	Average Daily Traffic (Vehicles)	Average Daily Traffic (PCU)
1	100 Foota Tiraha	24640	21092
2	Circuit House Chauraha	26874	23004
3	Dohra Mod	27313	23380
4	Izzat Nagar Tiraha	23199	19858
5	Kargil Chowk	20751	17763
6	Maliyo Ki Puliya Tiraha	16033	13724
7	Mini Bypass	24031	20571
8	Satellite Tiraha	20447	17503
9	Selection Point Chauraha	30317	25951
10	Sheel Chauraha	16328	13977
11	Sood Dharam Kanta	34449	29488
12	Bisalpur Chauraha	31764	27190

- ii. **Peak hour Traffic at Major Junctions:** To capture traffic flow characteristics and travel pattern of users passing through the city road and network characteristics. The intensity of average daily traffic at major intersection in Bareilly city and it is observed that Sood Dharm Kanta handles the maximum daily traffic of 29,488 PCUs followed by Bisalpur Chauraha and Selection Point Chauraha with 27,190 PCUs and 25,951 PCUs respectively. The minimum traffic is observed at Sheel Chauraha with 13,977 PCUs.

Table 6-21 Peak Hour Traffic in Bareilly City

Peak Hour Traffic				
S.No.	Junction Name	Peak Hour Traffic (Vehicle)	Peak Hour Traffic (PCU)	Peak Hour Time
1	100 Foota Tiraha	1975	1691	10:00-11:00
2	Circuit House Chauraha	3500	2996	11:00-12:00
3	Dohra Mod	2758	2361	11:00-12:00
4	Izzat Nagar Tiraha	2396	2051	10:00-11:00
5	Kargil Chowk	2577	2206	10:00-11:00
6	Maliyo Ki Puliya Tiraha	1293	1107	09:00-10:00
7	Mini Bypass	2700	2311	09:00-10:00
8	Satellite Tiraha	2161	1850	16:00-17:00
9	Selection Point Chauraha	3113	2665	11:00-12:00
10	Sheel Chauraha	1505	1288	10:00-11:00
11	Sood Dharam Kanta	4531	3879	16:00-17:00
12	Bisalpur Chauraha	3823	3272	16:00-17:00

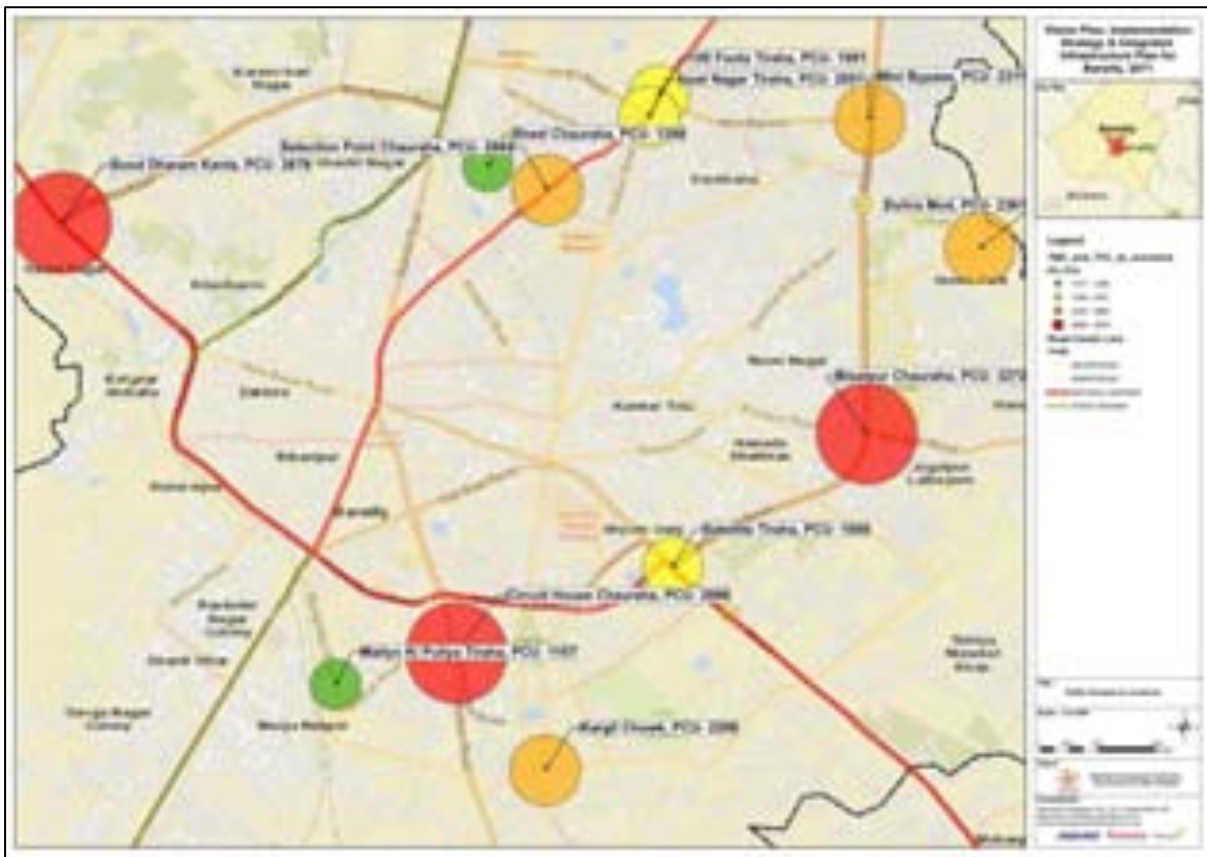


Figure 6-92: Peak Hour Traffic at Major Intersection in Bareilly City

6.3.2.11 Vehicular distribution at Junction

Vehicle wise distribution at 12 no of junctions, with an average share of 70-75% are 2-wheelars share and 20-25% LMV, 2% Autos and 1% MAV

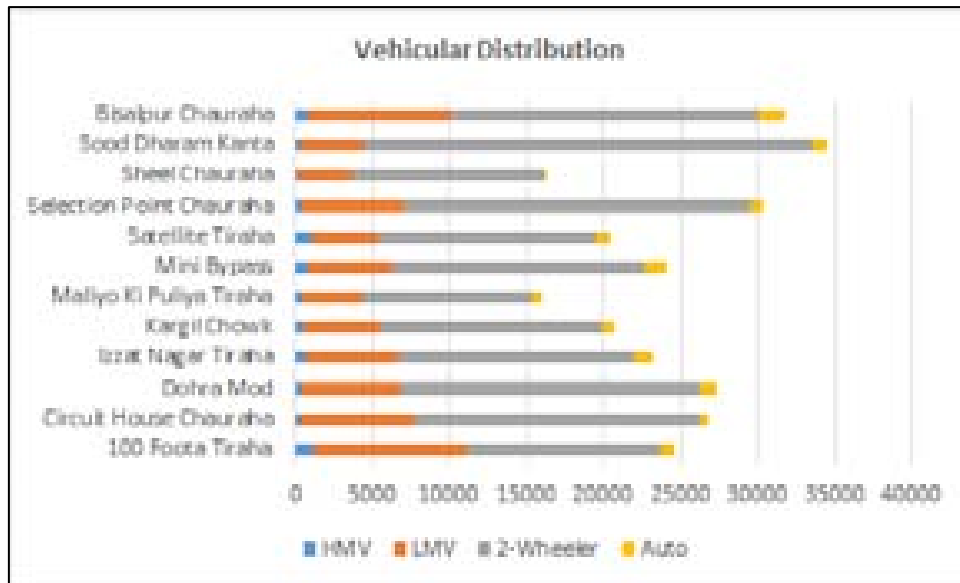


Figure 6-93: Vehicular distribution at 12 no of Junctions

Table 6-22 Vehicular distribution at junction

SI No	Location	Vehicle Type				Total
		2-Wheeler	Auto	LMV	HMV	
1	100 Foota Tiraha	12609	959	9806	1266	24,640
2	Circuit House Chauraha	18538	642	7366	328	26,874
3	Dohra Mod	19385	1082	6422	424	27,313
4	Izzat Nagar Tiraha	15271	1253	6014	661	23,199
5	Kargil Chowk	14390	835	5017	508	20,751
6	Maliyo Ki Puliya Tiraha	11118	645	3877	393	16,033
7	Mini Bypass	16349	1439	5430	813	24,031
8	Satellite Tiraha	14127	915	4286	1111	20,439
9	Selection Point Chauraha	22587	733	6603	400	30,323
10	Sheel Chauraha	12405	213	3583	127	16,328
11	Sood Dharam Kanta	29109	904	4070	366	34,449
12	Bisalpur Chauraha	20064	1689	9194	817	31,764

6.3.2.12 Growth Rate for External Trips

Based on the econometric model (elasticity value between NSDP and vehicle registration of past data), the following traffic growth rates have been estimated for the external trips.

Table 6-23 Vehicle registration data for Bareilly

Year	Two-wheelers	Cars	Trucks
FY 2021-25	7.8%	10.8%	10.4%
FY 2026-30	6.5%	9.3%	8.6%
FY 2031-35	5.3%	7.9%	6.9%
FY 2036-40	4.3%	6.6%	5.5%
FY 2041-45	3.4%	5.4%	4.2%



Figure 6-94: Peak Hour Traffic at the Outer Cordon

6.3.2.13 Capacity Analysis

Capacity analysis for the project corridor is carried out in order to assess the Level of Service (LOS) offered by NH 530B road sections under prevailing traffic conditions. Capacity and Design Service Volumes (DSV) specified in IRC-64-1990 & IRC-106-1990, the project corridor runs through Plain terrain only.

Table 6-24 Capacity and Design Service Volume

Type of Carriageway	Total Design Service Volume for Different categories of Urban Road		
	Arterial	Sub-arterial	Collector
2 Lane (one-way)	2400	1900	1400
4 Lane Undivided (Two-way)	3000	2400	1800
4 Lane Divided (Two-way)	3600	2900	
6 Lane Divide (Two-way)	5400	4300	

6.3.2.14 Traffic Projections on to NH 530B

Traffic on the 12 no of major junctions are comprise within the Bareilly city for the base-year. Normal traffic comprises traffic that is presently observed in the Bareilly city and will continue to use the junctions in the future.

Table 6-25 Projected Traffic at Major Junctions in Bareilly city

S. No.	Junction Name	2022	2032	2042	2052
1	100 Foota Tiraha	1,691	5,495	14,260	36,993
2	Circuit House Chauraha	2,996	9,738	25,265	65,540
3	Dohra Mod	2,361	7,672	19,907	51,639
4	Izzat Nagar Tiraha	2,051	6,669	17,302	44,886
5	Kargil Chowk	2,206	7,172	18,608	48,270
6	Maliyo Ki Puliya Tiraha	1,107	3,603	9,353	24,265
7	Mini Bypass	2,311	7,517	19,502	50,591
8	Satellite Tiraha	1,850	6,018	15,617	40,511
9	Selection Point Chauraha	2,665	8,661	22,473	58,297

S. No.	Junction Name	2022	2032	2042	2052
10	Sheel Chauraha	1,288	4,191	10,881	28,229
11	Sood Dharam Kanta	3,879	12,603	32,699	84,819
12	Bisalpur Chauraha	3,272	10,635	27,591	71,572

6.3.2.15 Strengthening of Radial Road to 6 lanes

Width of 6 lane National Highway as per IRC: As per the rules & guidelines of IRC code, total RoW of NH is about 60m (200 feet) wide for 6 Lane Road. This includes width of 33.0 m for roadways or built-up area those comprise of 6 lane carriage width of about 21.0 m wide, median of 5.0 m wide along with kerb shyness, paved shoulder width of 3.5 m wide and rest about 27.0 m will be used for future extension and development of Highway facilities.



Figure 6-95: Typical Cross-section of 6 lane road

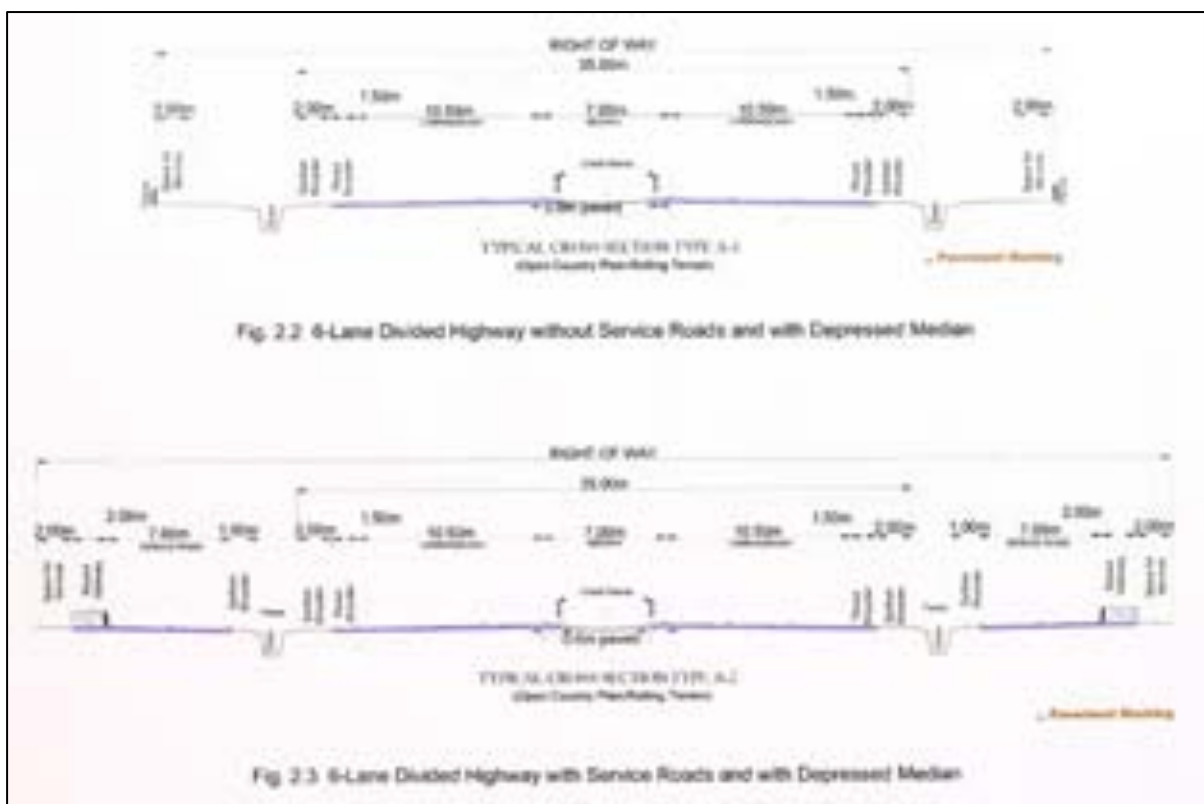


Figure 6-96: Typical Cross-section of 6 lane road with Depressed Median

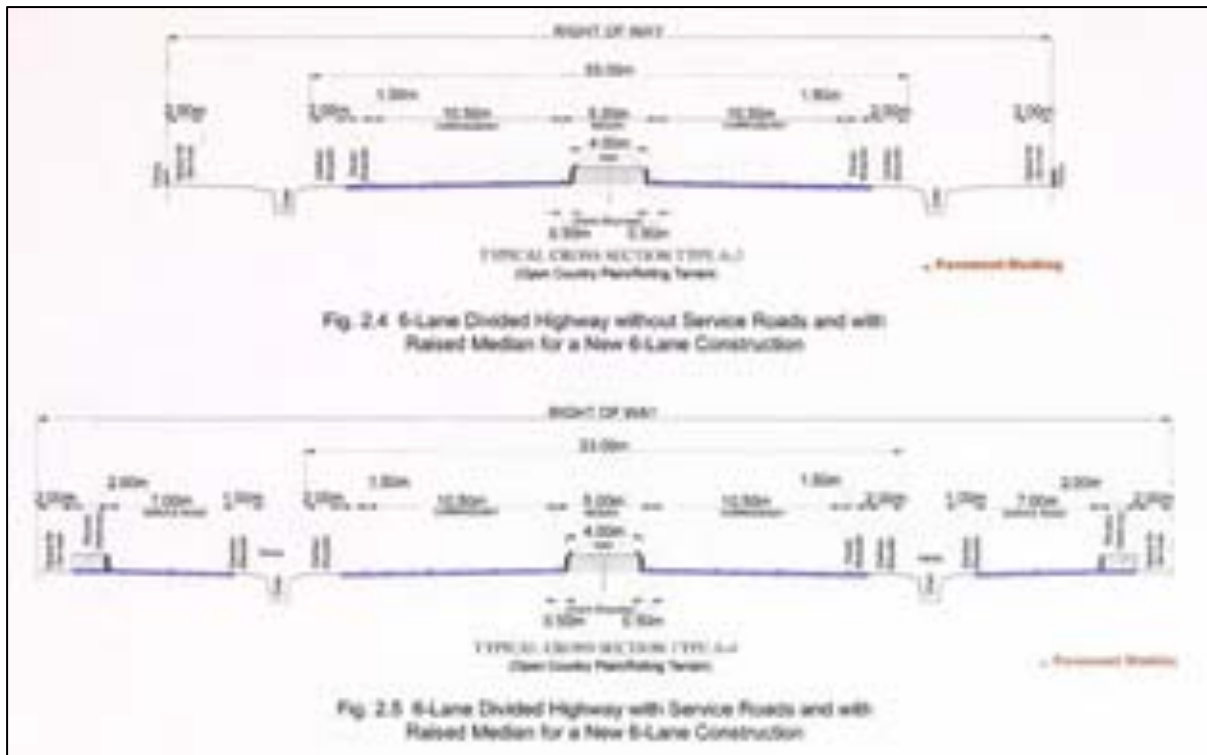


Figure 6-97: Typical Cross-section of 6 lane road with Raised Median

6.3.2.16 Black Spots along NH 530B

SL. NO.	Location 1	Location 2	Location 3
Name of District	Bareilly District		
National Highway Number	NH-530B		
Location of the Black Spot	Sindholi Chauraha	Avantika Petrol Pump Chauki Anuvis	Labhari Chauki
Location Jurisdiction al Police Station	Meerganj	Meerganj	Meerganj
Road Chainage /Km	27 KM	30 KM	29 KM
Latitude	28.54432	28.53851	28.56844
Longitude	79.21279	79.22247	79.18871
Number Of Accidents Fatal Accidents	9	8	2
Grievously Injured Accidents	10	4	3
Number Of Persons Injured	1	0	0
Minor Injured	9	4	3
No. of fatalities	9	8	2
Reasons for frequent accidents	over Speed	over Speed	over Speed

6.3.2.17 Improvement Proposals listed along the sections (a & b)

6.3.2.17.1 Ramganga Bridge to Binawar section (NH 530B)

Corridor improvement plan	Ramganga Bridge to Binawar Section
Total length	26.0 km
Road Category	NH 530B
No of Lanes (proposed)	6 Lane Road
Major Junctions	• Sardarnagar

	<ul style="list-style-type: none"> • Devchara • Bhamora • Binawar
Proposed Improvement	<ul style="list-style-type: none"> • Widening of the road from 4 lane to 6 lane • Improvement of Service Road at major Settlements with pedestrian grill • Junction Improvement Plan at <ul style="list-style-type: none"> ○ Sardarnagar ○ Chandpur ○ Makrandpur ○ Devchara ○ Kheda ○ Bhamora ○ Binawar • Road Marking & Signages • Proposed Foot-over-Bridge <ul style="list-style-type: none"> ○ Sardarnagar ○ Chandpur ○ Makrandpur ○ Kheda ○ Bhamora • Public Conveniences (Provision of Toilets)
Proposed Grade separated flyovers at	<ul style="list-style-type: none"> • Grade Separated Flyover at <ul style="list-style-type: none"> ○ Sardarnagar ○ Binawar



Figure 6-98: Proposed Grade Separators along NH 530B

6.3.2.17.2 Bareilly South Bypass (Parsakhera – Ramganga Bridge – Tilhar Mod (Near Rajau Paraspur))

Corridor improvement plan	Parsakhera – Ramganga Bridge – Tilhar Mod
Total length	Total Length: 31.0 km

	Section 1 = 18.0 km Section 2 = 13.0 km
Road Category	Bareilly South Bypass
No of Lanes (Proposed)	6 Lane Road
Major Junctions	<ul style="list-style-type: none"> • Parsakhera Industrial Area • Ramganga • Mirjapur • Tilhar Mod
Proposed Improvement	<ul style="list-style-type: none"> • New Greenfield alignment • Road Improvement to 6 lanes • Junction Improvement Plan at <ul style="list-style-type: none"> ○ Parsakhera Industrial Area ○ Ramganga ○ Tilhar Mod • Public Conveniences (Provision of Toilets)

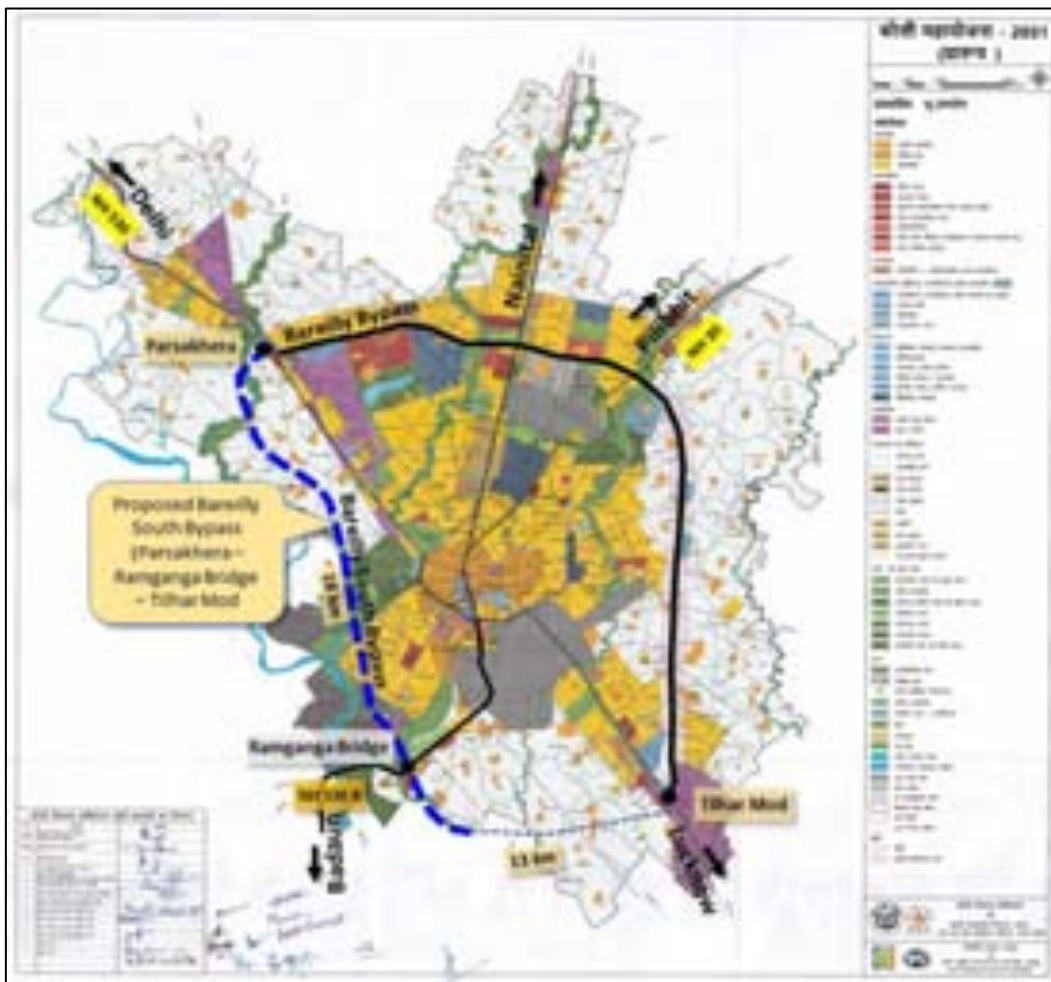


Figure 6-99: Proposed Bareilly South Bypass Road alignment mentioned in Master Plan-2031



Figure 6-100: Ganga Expressway alignment and Bareilly South Bypass Road

6.3.2.18 Double Trumpet Interchange

A Double-trumpet interchange version can be provided, where a toll road meets another toll road or a highway road. They are also useful when most traffic on the terminating highway is going the same direction. The turn that isn't used often would get the slower loop ramp. Area required for Trumpet interchange is about 44,000 sq. m (Approx.).



Figure 6-101: Typical layout design of Double Trumpet Interchange

6.3.2.19 Financial Analysis

6.3.2.19.1 Cost estimates for Ramganga Bridge to Binawar Section

S. No.	WORK	Amount
--------	------	--------

1	SITE CLEARANCE	₹ 28,15,80,000
2	EARTH WORK	₹ 8,07,60,069
3	SUB-BASE AND BASE COURSES	₹ 85,32,99,213
4	BITUMINOUS WORKS	₹ 94,09,58,655
5	PAVED SHOULDER	₹ 23,45,32,610
6	TRAFFIC SIGNAGES, ROAD MARKING AND OTHER APPURTENANCES	₹ 5,17,71,654
TOTAL AMOUNT – A		₹ 2,44,29,02,201

6.3.2.19.2 Cost estimates for Bareilly South Bypass (Parsakhera – Ramganga Bridge – Tilhar Mod)

S. No.	WORK	Amount
1	SITE CLEARANCE	₹ 33,57,30,000
2	EARTH WORK	₹ 9,62,90,852
3	SUB-BASE AND BASE COURSES	₹ 1,01,73,95,216
4	BITUMINOUS WORKS	₹ 1,12,19,12,243
5	PAVED SHOULDER	₹ 27,96,35,035
6	TRAFFIC SIGNAGES, ROAD MARKING AND OTHER APPURTENANCES	₹ 6,16,95,616
TOTAL AMOUNT - B		₹ 2,91,26,58,960

- **Total Cost (A+B):** ₹ 5,35,55,61,162.00 (Rs. 535.55 Crores)

6.3.2.20 List of Stakeholders

- Bareilly Development Authority
- Bareilly Nagar Nigam
- PWD-Bareilly
- State Highways-Bareilly
- NHAI-Bareilly

6.3.2.21 Project Time-line

- The strengthening of Radial Road connectivity from Bareilly city to Ganga Expressway with construction time: 5-6 years

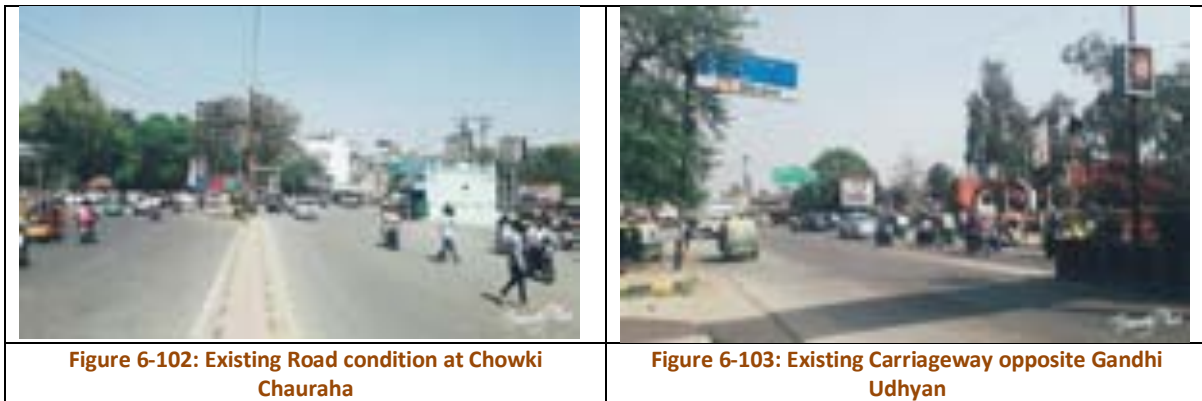
6.3.3 Project 14: Development of proposed metro-lite rail system connectivity in Bareilly city

6.3.3.1 Background of the study:

Bareilly is a fast-growing city with the population of more than 10 lakhs. The city is expending in terms of commercial, educational, medical, industrial and transit activities. Bareilly serves a major population of nearby areas like Kumaun region, Budaun, Shahjahanpur, Pilibhit etc. which results increasing movement of traffic of the city. The proposed Metro-lite rail system in Bareilly city will be sustainable public transport system to provide hassle-free journey between Bareilly Junction Railway Station, Chowki Chauraha, Parsakhera, Izzatnagar, Satellite Bus Stand, Gandhi Udhyan and Phoenix Mall in Bareilly. It is also important factor to consider such as, the mobility of passenger’s movement, available right-of-way in city, mobility system, environmental and social impact assessment.

6.3.3.2 Objective:

- a. To provide safe, fast and eco-friendly rail-based mass transit services to the public at affordable rates while simultaneously catalysing dense and orderly urban growth.



6.3.3.3 Air Connectivity

At present, the Bareilly airport is a civil terminal located in Izzat Nager, which is located 6 km from north of Bareilly city. The terminal building is 2500 sqm, and can handle 150 passengers during the peak hours. In future, a new apron 9500 m provides parking space and 150 cars parking is expanded. A new terminal building was inaugurated in 2021 as a part of airport expansion. The building is spread over 3020 sqm and has a capacity to accommodate over 300 passengers. At present, Bareilly is connected with Delhi, Bangalore, Mumbai.

Table 6-26 Passenger Traffic & Aircraft Movement

Year	Passenger Traffic	Aircraft Movement
2020-21	1,641	150
2021-22	1,03,667	1,086

Source: AAI annual report

6.3.3.4 Rail Transport system in Bareilly

Bareilly Junction railway station is the major railway station serving city. Bareilly railway station connects the Lucknow-Moradabad line and Lucknow-Sitapur-Lakhimpur-Pilibhit-Bareilly-Kasganj Line. The Bareilly Railway station is well connected to Lucknow, New Delhi, Amritsar, Ambala, Jalandhar, Pathankot, Gorakhpur, Howrah and other major destinations. Other railways station like Bareilly Cantt, Bareilly City, Bhojipura Junction, CB Ganj, Bohna, Izzatnagar, Parsakhara, Ramganga Bridge secondary railways stations in Bareilly area.

Table 6-27 Passenger movement at Bareilly Railway Station

Location	Daily Passengers			Peak Hour Passenger		
	In	Out	Total	In	Out	Total
Bareilly Junction	3460	4960	8420	145	175	320
Izzat Nagar Railway Station	3035	2580	5615	190	230	420

Passenger demand at the Bareilly Junction Railway Station and Izzat Nagar Railway Station, at current scenario is 8,500 and 5,500 passengers/day were observed, with about 300 and 400 passengers at the two junctions during the peak hour. Most of the passengers preferred to use auto-rickshaws as the access, with a very high share of 69% and 65%, as most of the trips are in the range of 5-10 km, mainly from residential areas in the vicinity, such as Karam Chari Nagar, Sahukara, Katghar, Qureshi Nagar, civil lines, Priyadarshini Nagar and Dwarika Puram Colony.

6.3.3.5 Vehicular Growth in Bareilly

In Bareilly, the registered vehicles have been increased moderately over the past decade. It is significant to note that about 14 to 19% of the vehicle's growth in the past decade. The increase of two-wheelers could be attributed to the comparatively better economic status of people and lack of city-wide good PT system. The increase of private modes demands more road space and has resulted in dense concentration of traffic on roads with limited right of ways.



Figure 6-104: Vehicular Growth in Bareilly
Table 6-28: Vehicle registration data for Bareilly

Year	Two-Wheeler	Car	Bus	Truck	Others	Total
2014-2015	47932	5329	72	981	1203	55,517
2015-2016	47440	6155	79	998	1135	55,807
2016-2017	54016	7146	144	1235	1210	63,751
2017-2018	62757	8592	323	1773	2727	76,172
2018-2019	64439	7963	137	4054	2450	79,043
2019-2020	63195	7985	123	4034	2743	78,080
2020-2021	50203	7175	51	3318	1090	61,837

Source: Bareilly RTO

6.3.3.6 Road Connectivity

Bareilly has a radial pattern of road network. National Highways in Bareilly is well connected with its surrounding urban agglomeration, 4 major NH sections pass through Bareilly city are NH-30, NH 530, NH 530-B, NH 730-B and SH 37. The NH 30 is part of Bareilly Bypass section connects Sitarganj on the north and Lucknow, Allahabad on the south. NH 530 connect Bareilly to Rampur

Road, NH 530-B connecting Bareilly to Mathura highway, NH 730-B connects (Bareilly to Bisalpur highway. UP state highway no 37 starts from Bareilly to Nainital Road. Bareilly Bypass section starts at Dhantiya village to Rajau Paraspur with total length of 30.1 km.



Figure 6-105: Major Connecting Roads in Bareilly city

6.3.3.7 Process of Network Development

- **Road Network Survey:** Total length of individual Roads, width, RoW
- **Documentation:**
 - Activity pattern of the road
 - Pedestrian Flow
 - Land-use pattern, Heritage, Public & Semi-public
 - Building Character
- **Identifying present issues:** Encroachments, Informal activities, hawkers, vehicular movements, Traffic Signals, footpath and parking locations
- **Involving the citizens:** Public participation through social media survey, campaigning
- **Traffic Management:** Involving the authorities and smart techniques, variable display sign boards
- **Designing the streets:** Incorporating pedestrian pathways, dedicated lane for cycle tracks, street furniture, bollards, smart LED street lights, Signages, Parking Spaces.

6.3.3.8 Existing RoW in Bareilly

The road stretch in Bareilly city has been surveyed and it has been found that the right-of-way varies from 12m to 40m at different sections, all the roads have been classified in the category of 12m, 15m, 18m, 24m, 30m and 40 m road stretches. Master plan 2021 of Bareilly, however states only three ROW i.e. 12m, 18m and 30m.

SI No	Road Section	Length (Km)	RoW
1	Gandhi Udyan to Shyamganj	1.20	30
2	Chowki Chauraha to Gandhi Udhyan	1.00	30

SI No	Road Section	Length (Km)	RoW
3	Choupla Chauraha to Chowki Chauraha	1.18	24
4	Choupla Chauraha to Bareilly junction	1.52	18
5	Chowki Chauraha to Bareilly Junction	1.53	18
6	Chowki Chauraha to Head Post Office	1.11	30
7	Head Post Office to BSNL Office Chowk	0.374	18
8	Hotel Bareilly Palace to Head Post Office	0.966	12
9	Chowki Chauraha to Bareilly College Chowk	0.951	18
10	Ghanta Ghar to Novelty Chowk	0.65	18
11	Novelty Chowk to Patel Chowk	0.33	40
12	Shyamganj to Bareilly College	0.736	18
13	Bareilly College to Patel Chowk	0.419	30
14	Shyamganj to Satellite Junction	1.065	30
15	Ghanta Ghar to Chaupla Chauraha	1.43	30
16	Novelty to Siklapur Chowk	0.51	12
17	Novelty Chowk to Khalil UPS Road	0.452	15
18	Patel Chowk to Siklapur Chowk	0.333	15
19	Baijal Hospital to Akshar Vihar	1.074	18
20	BSNL Office to Battalion Gate	1.347	24
21	Circuit House Chowk to Gandhi Udhyan (Gate 2)	0.49	15
22	Gandhi Udhyan to UPPCL Old Power House Road	0.416	15
23	Patel Chowk to Chowki Chauraha	0.75	30
24	Battalion Gate to Satellite Junction	0.9	18
25	Malio Ki Puliya to Biabani Kothi	0.674	12
26	Chowki Chauraha to Rampur Garden Chowk	0.41	15
27	Patel Chowk to Choupla Chauraha	0.86	40



Figure 6-106: Existing RoW in Bareilly City

6.3.3.9 Public Transport system in Bareilly

At present in Bareilly city has, 2 no of bus stands (Old bus stand and Satellite Bus Stand). Both the Bus Stand are in functional, as most of the Bus frequency is from Satellite Bus Stand. The old Bus stand is located in civil lines cater bus plying on routes towards Moradabad, Haldwani, Delhi, Naintal, Dehradun, Agra, Jaipur areas. Satellite bus station caters the bus services towards long distance to Kanpur, Lucknow, Prayagraj, and others.

Table 6-29 Satellite Bus Stand in Bareilly



Figure 6-107: Existing condition of Satellite Bus Stand

Table 6-30: Passenger movement at Bus Terminal

Location	Daily Passengers			Peak Hour Passenger		
	In	Out	Total	In	Out	Total
Old Bus Stand	3630	3870	7500	60	25	85
Satellite Bus Stand	5555	6040	11595	35	40	75

- The commuters boarding and alighting at the both bus terminals, 50% travel for work, while 23% of the boarding passengers and 25% of the alighting passengers travel for business-related activities.
- Auto-rickshaws is the preferred access mode at the both the terminals, with a very high share of 64% and 69%.

UP State Transport Department has commissioned project for provisioning of electric buses in Bareilly city under FAME 2 Scheme, which will be taken up in two phases where phase 1 will house 23 locations for bus shelters and phase 2 will house 30 locations for bus Shelters. The Intra city bus route have been identified and passes throughout the Bareilly area.

Table 6-31 Proposed City Bus routes in Bareilly

City Transports Services Ltd						
Route Name	Route Descriptions	Distance (KM)	Running Time (Min)	Layoff Time	Frequency Headway (Min)	Number of Buses required
Bareilly Junction to Phonix Mall	Bareilly Junction to Air Force Station via Chowki Chauraha, Gandhi Udhyan, Satalite Bus Stand, Bisalpur Chauraha, Ruhelkhand University, Phonix Mall	11.9	60	320	20	5
Bareilly Junction to Cental Jail Colony via Swale Nagar	Bareilly Junction to Nagarya Prikshit via Chopla Chauraha, Dulha Miyan Mazar, Qila Pul, Swale Nagar Mini Bypass, Izzat Nagar Railway Station, Central Jail Colony	12.5	65	320	20	4

City Transports Services Ltd						
Route Name	Route Descriptions	Distance (KM)	Running Time (Min)	Layoff Time	Frequency Headway (Min)	Number of Buses required
Bareilly Junction to Parsakhada via Qila Pul	Bareilly Junction to Parsakhada via Chopla Chauraha, Dulha Miyan Mazar, Qila Pul, Satya Prakesh Park, CB Gunj Police Station	13.6	70	280	20	5
Bareilly Junction to Fruit Mandi via Delapir Chauraha	Bareilly Junction to peerbhora Air Force Station via Chowki Chauraha, Gandhi Udhyan, Vikas Bhavan, Shyam Ganj Flyover Bridge, Eit Pajaya Chauraha, Bareilly Stadium, Delapir Chauraha, Fruit Mundi	10.8	55	280	20	6
Bareilly Junction to Badaun Road Patel Vihar	Bareilly Junction to Badaun road Hindustan Petrol Pump via City Mall Godown, Chopla Chauraha, Chaurasi Ganta Mandir	5.1	25	320	20	5

6.3.3.10 Base-year Traffic in Bareilly city

- i. **Average Daily Traffic at Major Junctions:** To capture traffic flow characteristics and travel pattern of users passing through the Bareilly city and network characteristics. The intensity of average daily traffic at major intersection in Bareilly city and it is observed that Sood Dharm Kanta handles the maximum daily traffic of 29,488 PCUs followed by Bisalpur Chauraha and Selection Point Chauraha with 27,190 PCUs and 25,951 PCUs respectively. The minimum traffic is observed at Sheel Chauraha with 13,977 PCUs.

Table 6-32 Average Daily Traffic in Bareilly City

Average Daily Traffic			
S. No.	Junction Name	Average Daily Traffic (Vehicles)	Average Daily Traffic (PCU)
1	100 Foota Tiraha	24640	21092
2	Circuit House Chauraha	26874	23004
3	Dohra Mod	27313	23380
4	Izzat Nagar Tiraha	23199	19858
5	Kargil Chowk	20751	17763
6	Maliyo Ki Puliya Tiraha	16033	13724
7	Mini Bypass	24031	20571
8	Satellite Tiraha	20447	17503
9	Selection Point Chauraha	30317	25951
10	Sheel Chauraha	16328	13977
11	Sood Dharam Kanta	34449	29488
12	Bisalpur Chauraha	31764	27190

- ii. **Peak hour Traffic at Major Junctions:** To capture traffic flow characteristics and travel pattern of users passing through the city road and network characteristics. The intensity of average daily traffic at major intersection in Bareilly city and it is observed that Sood Dharm Kanta handles the maximum daily traffic of 29,488 PCUs followed by Bisalpur Chauraha and Selection Point Chauraha with 27,190 PCUs and 25,951 PCUs respectively. The minimum traffic is observed at Sheel Chauraha with 13,977 PCUs.

Table 6-33 Peak Hour Traffic in Bareilly City

Peak Hour Traffic				
S.No.	Junction Name	Peak Hour Traffic (Vehicle)	Peak Hour Traffic (PCU)	Peak Hour Time
1	100 Foota Tiraha	1975	1691	10:00-11:00
2	Circuit House Chauraha	3500	2996	11:00-12:00
3	Dohra Mod	2758	2361	11:00-12:00
4	Izzat Nagar Tiraha	2396	2051	10:00-11:00
5	Kargil Chowk	2577	2206	10:00-11:00
6	Maliyo Ki Puliya Tiraha	1293	1107	09:00-10:00
7	Mini Bypass	2700	2311	09:00-10:00
8	Satellite Tiraha	2161	1850	16:00-17:00
9	Selection Point Chauraha	3113	2665	11:00-12:00
10	Sheel Chauraha	1505	1288	10:00-11:00
11	Sood Dharam Kanta	4531	3879	16:00-17:00
12	Bisalpur Chauraha	3823	3272	16:00-17:00



Figure 6-108: Peak Hour Traffic at Major Intersection in Bareilly City

6.3.3.11 Vehicular distribution at Junction

Vehicle wise distribution at 12 no of junctions, with an average share of 70-75% are 2-wheelars share and 20-25% LMV, 2% Autos and 1% MAV

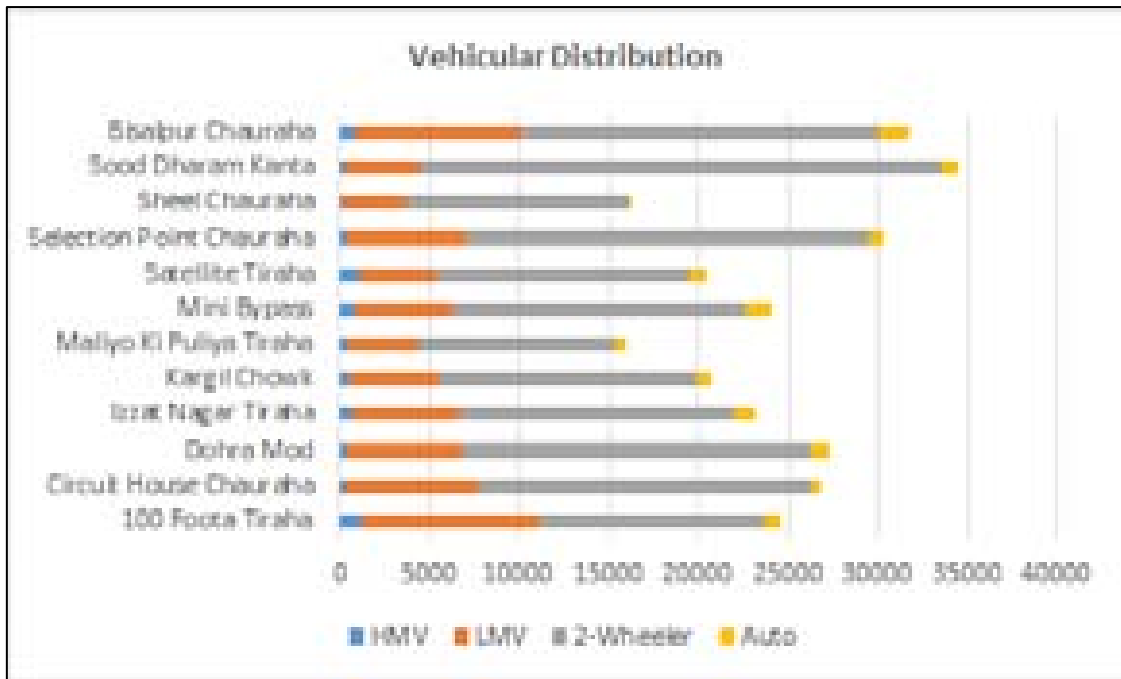


Figure 6-109: Vehicular distribution at 12 no of Junctions

Table 6-34 Vehicular distribution at junction

SI No	Location	Vehicle Type				Total
		2-Wheeler	Auto	LMV	HMV	
1	100 Foota Tiraha	12609	959	9806	1266	24,640
2	Circuit House Chauraha	18538	642	7366	328	26,874
3	Dohra Mod	19385	1082	6422	424	27,313
4	Izzat Nagar Tiraha	15271	1253	6014	661	23,199
5	Kargil Chowk	14390	835	5017	508	20,751
6	Maliyo Ki Puliya Tiraha	11118	645	3877	393	16,033
7	Mini Bypass	16349	1439	5430	813	24,031
8	Satellite Tiraha	14127	915	4286	1111	20,439
9	Selection Point Chauraha	22587	733	6603	400	30,323
10	Sheel Chauraha	12405	213	3583	127	16,328
11	Sood Dharam Kanta	29109	904	4070	366	34,449
12	Bisalpur Chauraha	20064	1689	9194	817	31,764

6.3.3.12 Guidelines for Choice of Different Modes

The working group of Urban Transport has set the guidelines for the choice of different modes as

System	PHPDT in 2022	Population in 2021	Average Trip Length
Metro Rail	$\geq 15,000$ for at least 5 km continuous length	More than 20 lakhs	More than 7 km
LRT System	≤ 10000	More than 10 lakhs	More than 7 km
Mono-Rail system	≤ 10000	More than 20 lakhs	About 5-6 km
BRTS	$\geq 4,000$ upto 20,000	More than 10 lakhs	> 5 km
City Bus Services		> 1 lakhs	$> 2-3$ km

6.3.3.13 Proposed Metro Routes in Bareilly

The proposed metro routes identified are

SI No	Route Name		Length (km)
1	Blue Line	Bareilly Jn. Railway Station to Airport & Pilibhit Bypass	15.0 km
2	Red Line	Bareilly Jn. Railway Station to Parsakhera & Jumkha Chowk	16.0 km
3	Green Line	Mini bypass to Izzat Nagar to Gandhi Udhyan Chauraha	10.0 km
4	Violet Line	Satellite Bus Stand to Bisalpur Chauraha to Pilibhit Bypass to Bilwa to Jumkha Chowk	30.0 km
Total Proposed Metro Length			71.0 km

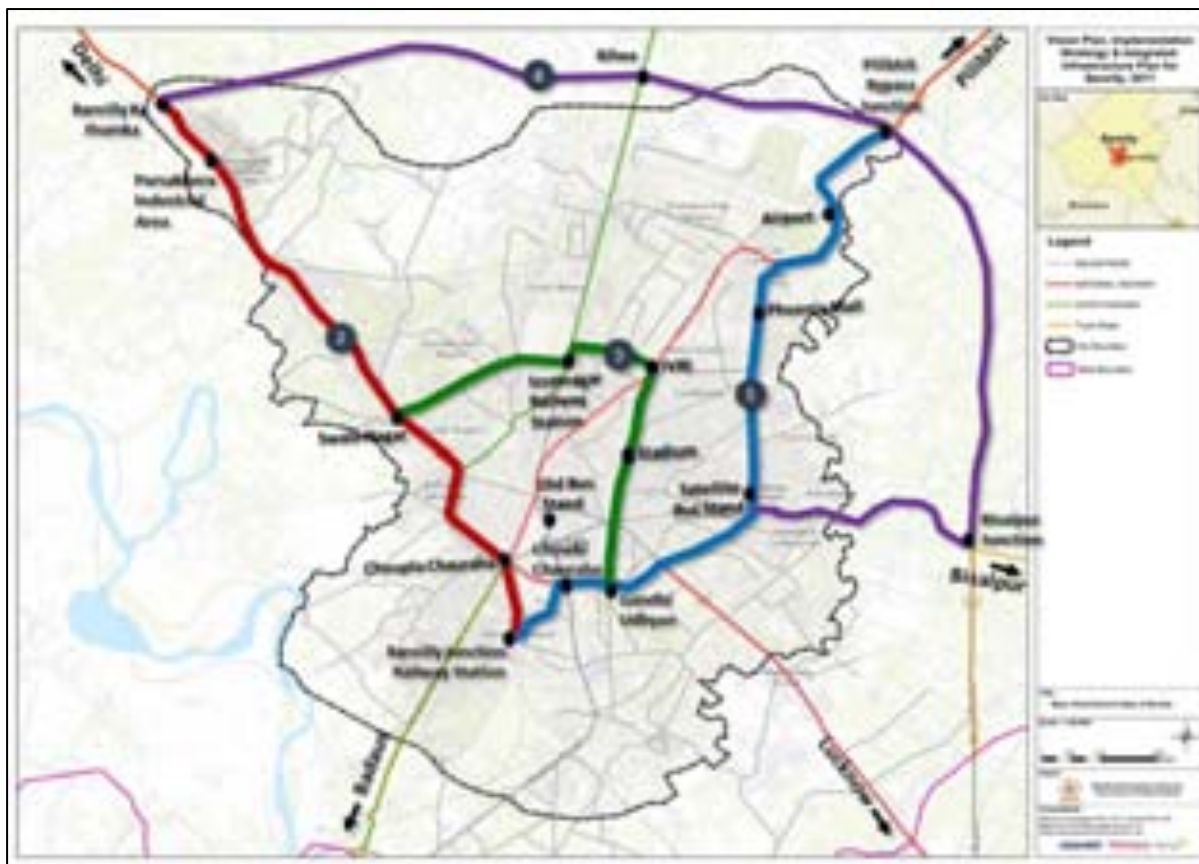


Figure 6-110: Proposed Metro Routes in Bareilly City



Figure 6-111: Typical view of the Bareilly Metro near Satellite Bus Stand & Gandhi Udhyan

6.3.3.14 Financial Analysis

Cost Estimates for Proposed Metro for 4 lanes

SI No	Particulars	Section 1 Cost (Rs in Cr.)	Section 2 Cost (Rs in Cr.)	Section 3 Cost (Rs in Cr.)	Section 4 Cost (Rs in Cr.)	Total Cost (Rs in Cr.)
		Blue Line	Red Line	Green Line	Violet Line	
1	Alignment and Formation	7,50,00,00,000	8,00,00,00,000	5,00,00,00,000	15,00,00,00,000	35,50,00,00,000
2	Station Building	6,00,00,00,000	6,40,00,00,000	4,00,00,00,000	12,00,00,00,000	28,40,00,00,000
3	Depot	3,90,00,00,000	4,16,00,00,000	2,60,00,00,000	7,80,00,00,000	18,46,00,00,000
4	Rolling Stock	3,00,00,00,000	3,20,00,00,000	2,00,00,00,000	6,00,00,00,000	14,20,00,00,000
5	Others	15,19,50,00,000	16,20,80,00,000	10,13,00,00,000	30,39,00,00,000	71,92,30,00,000
Total		35,59,50,00,000	37,96,80,00,000	23,73,00,00,000	71,19,00,00,000	1,68,48,30,00,000
Contingencies@3%		1,06,78,50,000	1,13,90,40,000	71,19,00,000	2,13,57,00,000	5,05,44,90,000
Gross Total		36,66,28,50,000	39,10,70,40,000	24,44,19,00,000	73,32,57,00,000	1,73,53,74,90,000

Total Cost of the project for each section

SI No	Route Name		Length (km)	Cost (Rs in Cr.)
1	Blue Line	Bareilly Jn. Railway Station to Airport & Pilibhit Bypass	15.0 km	3,666.28 Cr
2	Red Line	Bareilly Jn. Railway Station to Parsakhera & Jumkha Chowk	16.0 km	3,910.70 Cr
3	Green Line	Mini bypass to Izzat Nagar to Gandhi Udhyan Chauraha	10.0 km	2444.19 Cr
4	Violet Line	Satellite Bus Stand to Bisalpur Chauraha to Pilibhit Bypass to Bilwa to Jumkha Chowk	30.0 km	7332.57 Cr
Total Proposed Metro Length			71.0 km	17,353.74 Cr

6.3.3.15 List of Stakeholders

- Bareilly Development Authority
- Bareilly Nagar Nigam
- PWD-Bareilly



- d. State Highways-Bareilly
- e. NHAI-Bareilly
- f. UP Metro Rail Corporation
- g. UP State Road Transport Corporation
- h. UP Traffic Police

6.3.3.16 Project Time-line

- The Development of proposed metro-lite rail system connectivity in Bareilly city with construction time: 5-6 years

Chapter 7. Integrated Infrastructure Development Strategy and Action Plan

7.1 PRELUDE

7.1.1 Planning Strategy

Bareilly city is identified as the counter magnet of the National Capital Region along with nine other cities including Lucknow and Jaipur. The city has immense potential of growing as the major service urban center in the region. It is also known as the educational and healthcare service hub to the surrounding districts of Uttar Pradesh and neighboring state Uttarakhand. It has a rich cultural history dating back to Mahabharata which is well depicted by Nath Temples. Bareilly is also home to many industrial units producing goods of various types ranging from chemicals, plastic to Agro products.

Our strategy and planning will revolve around achieving envisioned outputs towards components of Vision Development. To achieve successful vision planning and development, these components will be studied in detail and form a part of our approach:

- Spatial Planning
- Tourism sector & visitor approach
- Industrial and Economic Base
- Heritage and cultural resource mapping
- Linkages of the proposed project

7.1.2 Population Estimation

The decadal rise of the population of Bareilly city has shown variable patterns, as indicated in table 1.1. During the decades 1931-41 and 1951-61, it increased by 33.78 percent and 31 percent, and during the decades 1971-81 and 1981-91, it increased by 37.82 percent and 36.07 percent, respectively. The town population of Bareilly M.C. was 903,668 as per census 2011. The town has experienced positive population growth in the last decade (42.30% from 2011 to 2021), compared to 26.4 % average decadal growth from 1951 to 2021. 2021 Population has been considered by referring Master Plan population, Master Plan Bareilly had estimated population 12,91,000 which is also close referred 2021 population. 11,40,717 and following Parabola Population Projection estimation for 2051 project horizon. There are total 19 census towns except M.C and Cantonment board in Project area i.e. Planning Boundary as per Enclosed list in Master Plan 2031. There are 149 villages within Project area and 54 villages are already engulfed within 2031 Master plan boundary. Based on the development plan proposals, taking into consideration the present trends and absorption capacity, above pattern of population distribution over space has been identified. Although there is no major change of total requirement of area so, Master plan boundary will be useful for spatial extent for 2031 Infrastructure Plan and rest years for Visionary estimation for requirement of physical Infrastructure will be attempted. The physical expanse of the city is expected to also incorporate as master plan suggested with the availability of physical infrastructure. As per URDPFI Guidelines Medium town density: 100-115 pph. As per trend developed area density assumed 125-135 pph (following other town with same class of population & growth pattern) New area density assumed for planning is 75-100 pph for 2036 & 2051 respectively.

So, spatial extent of the project Bareilly has three delineations:

2. **Bareilly Municipal Corporation**
3. **Bareilly Census Villages with Extension Areas**

4. Bareilly Census Towns

Table 7-1 Summary of Population Projections of Planning Boundary, 2051

	Details	2011	2021	2026	2031	2036	2041	2046	2051	2071
A	Municipal Area	903668	1140717	1246391	1431466	1561400	1698116	1841613	1991891	3125421
B	Cantonment Board	30003	37388	41990	46591	52326	65206	73231	81256	279265
C	Total Villages within Planning Boundary	279655	279655	314074	348492	391383	487722	547749	607775	2059691
D	Total Census Towns within Planning Boundary	98273	98273	110368	122463	137535	171389	192483	213577	723792
E	Total Planning Boundary Population	1311599	1556033	1712822	1949012	2142644	2422433	2655075	2894499	6188168
F	Master Plan 2031 estimation of Total area				1894211					

Based on the development plan proposals, taking into consideration the present trends and absorption capacity, following pattern of population distribution over space has been identified. Although there is no major changes of total requirement of area so, Master Plan boundary will be useful for spatial extent for 2031 Infrastructure Plan and followed by 2051 vision estimation has been considered.

7.1.3 Transport system & connectivity

The existing transport system of Bareilly city, comprises of road, rail and air transport services. For the purposes of existing situation analysis of the prevailing transport infrastructure, the transport infrastructure can be broadly subdivided into the following components.

7.1.3.1 Air Connectivity

At present, the Bareilly airport is a civil terminal located in Izzat Nager, which is located 6 km from north of Bareilly city. The terminal building is 2500 sqm, and can handle 150 passengers during the peak hours. In future, a new apron 9500 m provides parking space and 150 cars parking is expanded. A new terminal building was inaugurated in 2021 as a part of airport expansion. The building is spread over 3020 sqm and has a capacity to accommodate over 300 passengers. At present, Bareilly is connected with Delhi, Bangalore, Mumbai.

7.1.3.2 Rail Connectivity

Bareilly Junction railway station is the major railway station serving city. Bareilly railway station connects the Lucknow-Moradabad line and Lucknow-Sitapur-Lakhimpur-Pilibhit-Bareilly-Kasganj Line. The Bareilly Railway station is well connected to Lucknow, New Delhi, Amritsar, Ambala, Jalandhar, Pathankot, Gorakhpur, Howrah and other major destinations. Other railways station like Bareilly Cantt, Bareilly City, Bhojipura Junction, CB Ganj, Bohna, Izzatnagar, Parsakhara, Ramganga Bridge secondary railways stations in Bareilly area.

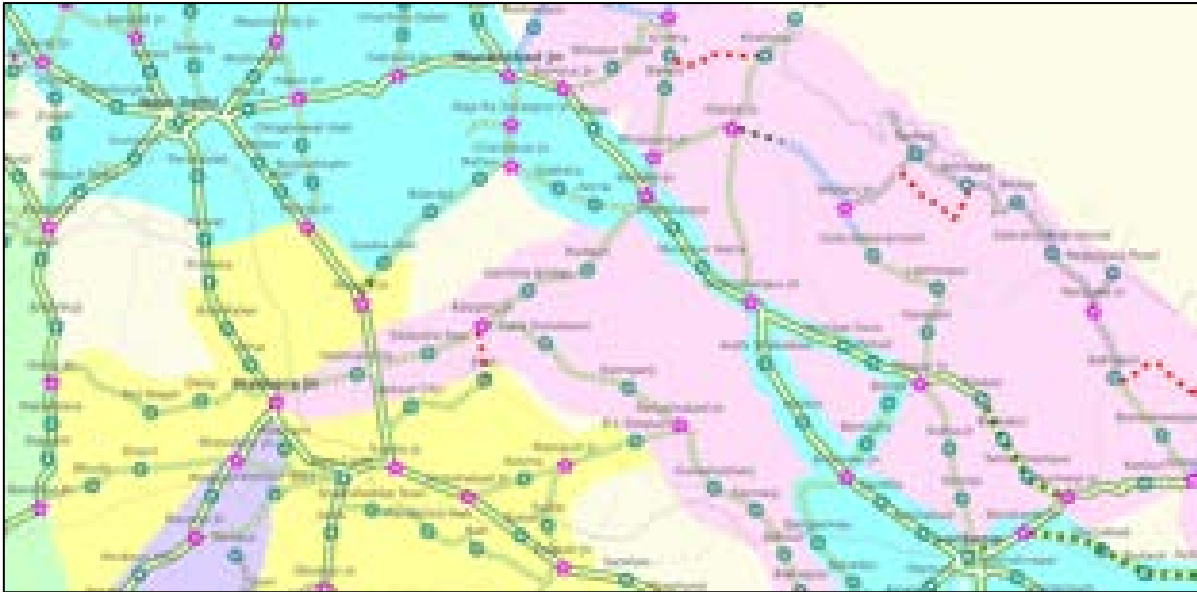


Figure 7-1 Railway Line Connecting With Bareilly

7.1.3.3 Road Connectivity

Bareilly has a radial pattern of road network. National Highways in Bareilly is well connected with its surrounding urban agglomeration, 4 major NH sections pass through Bareilly city are NH-30, NH 530,



Figure 7-2 Major Road Network In Bareilly City

NH 530-B, NH 730-B and SH 37. The NH 30 is part of Bareilly Bypass section connects Sitarganj on the north and Lucknow, Allahabad on the south. NH 530 connect Bareilly to Rampur Road, NH 530-B connecting Bareilly to Mathura highway, NH 730-B connects (Bareilly to Bisalpur highway. UP state

highway no 37 starts from Bareilly to Nainital Road. Bareilly Bypass section starts at Dhantiya village to Rajau Paraspur with total length of 30.1 km.

7.1.3.4 Major road corridor within Bareilly City

Some of the major roads within the Bareilly city is bearing the impact of traffic are

- i. Stadium Road: Connecting Philibhit Road to Shyam Ganj
- j. Macnair Road connecting Naintal Road to Stadium Road
- k. Pilibhit Bypass road connecting Pilibhit road to Lucknow road
- l. Sh-33 connecting Bareilly to Mathura
- m. Mini-bypass connecting Delhi road to Nainital Road
- n. Shyam ganj to Patel Chowk to CB Ganj
- o. Shyam Ganj to Chaupla Road
- p. Civil Lines Road



Figure 7-3 Major Road Network In Bareilly City

7.1.3.5 Major road corridor within Bareilly City

Some of the major roads within the Bareilly city is bearing the impact of traffic are

- q. Stadium Road: Connecting Philibhit Road to Shyam Ganj
- r. Macnair Road connecting Naintal Road to Stadium Road
- s. Pilibhit Bypass road connecting Pilibhit road to Lucknow road
- t. Sh-33 connecting Bareilly to Mathura
- u. Mini-bypass connecting Delhi road to Nainital Road
- v. Shyam ganj to Patel Chowk to CB Ganj

- w. Shyam Ganj to Chaupla Road
- x. Civil Lines Road

7.1.4 Public Transport System in Bareilly

At present in Bareilly city, 2 no of bus stands (Old bus stand and Satellite Bus Stand). Both the Bus Stand are in functional, as most of the Bus frequency is from Satellite Bus Stand. The old Bus stand is located in civil lines cater bus plying on routes towards Moradabad, Haldwani, Delhi, Naintal, Dehradun, Agra, Jaipur areas. Satellite bus station caters the bus services towards long distance to Kanpur, Lucknow, Prayagraj, and others.



Image 16 Existing condition of Satellite Bus Stand

UP State Transport Department has commissioned project for provisioning of electric buses in Bareilly city under FAME 2 Scheme, which will be taken up in two phases where phase 1 will house 23 locations for bus shelters and phase 2 will house 30 locations for bus Shelters. The Intra city bus route have been identified and passes throughout the Bareilly area.

Table 7-2 City Bus routes in Bareilly

City Transports Services Ltd						
Route Name	Route Descriptions	Distance (KM)	Running Time (Min)	Layoff Time	Frequency Headway (Min)	Number of Buses required
Bareilly Junction to Phonix Mall	Bareilly Junction to Air Force Station via Chowki Chauraha, Gandhi Udhyan, Satelite Bus Stand, Bisalpur Chauraha, Ruhelkhand University, Phonix Mall	11.9	60	320	20	5
Bareilly Junction to Cental Jail Colony via Swale Nagar	Bareilly Junction to Nagarya Prikshit via Chopla Chauraha, Dulha Miyan Mazar, Qila Pul, Swale Nagar Mini Bypass, Izzat Nagar Railway Station, Central Jail Colony	12.5	65	320	20	4
Bareilly Junction to Persakhada via Qila Pul	Bareilly Junction to Parsakhada via Chopla Chauraha, Dulha Miyan Mazar, Qila Pul, Satya Prakesh Park, CB Gunj Police Station	13.6	70	280	20	5
Bareilly Junction to Fruit Mandi via Delapir Chauraha	Bareilly Junction to peerbhora Air Force Station via Chowki Chauraha, Gandhi Udhyan, Vikas Bhavan, Shyam Ganj Flyover Bridge, Eit Pajaya Chauraha,	10.8	55	280	20	6

City Transports Services Ltd						
Route Name	Route Descriptions	Distance (KM)	Running Time (Min)	Layoff Time	Frequency Headway (Min)	Number of Buses required
	Bareilly Stadium, Delapir Chauraha, Fruit Mundi					
Bareilly Junction to Badaun Road Patel Vihar	Bareilly Junction to Badaun road Hindustan Petrol Pump via City Mall Godown, Chopla Chauraha, Chaurasi Ganta Mandir	5.1	25	320	20	5

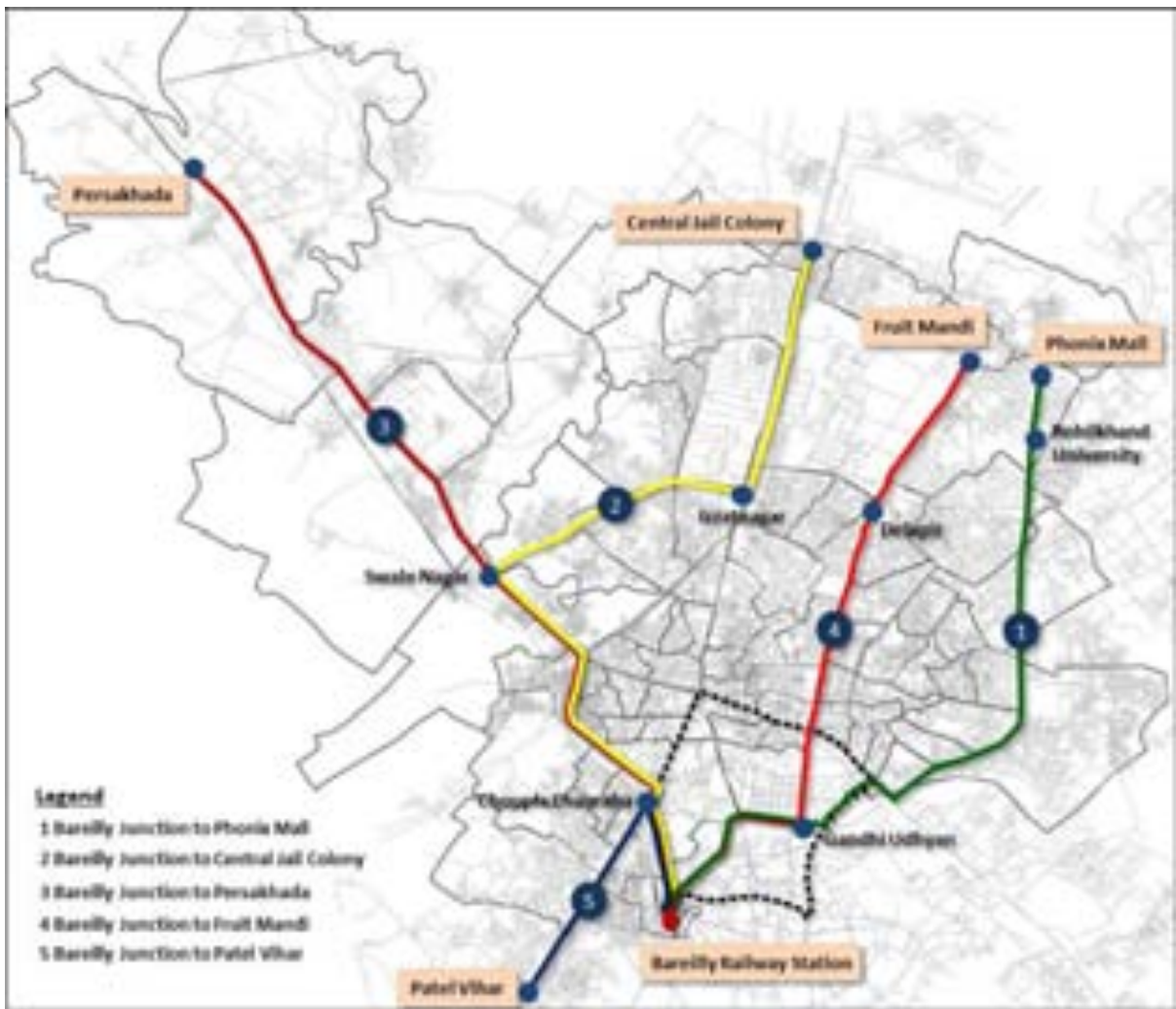


Figure 7-4 Location map of Bus route in Bareilly

7.1.5 Regional Ecological Features

The Ramganga is the district's primary river, which enters from the west and runs south-east. The Sidh Dejora, Bahgul, Sankha, Aril, Deoha, Deonian, and Nakatia rivers, as well as their tributaries, all start in tarai and flow across the district in southern and south-eastern directions before joining it. In terms

of geology, the district is alluvial. The district is separated into three sub-micro areas based on geology, soils, terrain, climate, and natural vegetation:

- IV. Bareilly Tarai
- V. Bareilly Plain
- VI. Ram Ganga

Bareilly Tarai: The region is located in the district's north-western corner, encompassing a small portion of *Baheri* tehsil. It is the Tarai tract, where various streams flow in a north-south direction. Due to tarai region water retention in soil is high. Lack of drainage channel and storm water drain water logging areas are common in city.

7.1.6 Physical Infrastructure

Bareilly city is provided with water supply from ground water sources such as bore wells fitted with hand pumps or power pumps. Existing installed capacity of water supply to the city is about 143 MLD, where the volume capacity is 138 MLD and overall demand for city is 154 MLD in year 2021. The water treatment plant is not in operation. Water is only supplied with all 51-percentage coverage. Total billable volume of water supply connection is 109 MLD. To assess the future demand for all parts of Bareilly within Municipal area Water demand has been assessed by taking 150 LPCD i.e.. 135 LPCD with 15% unaccounted water demand of the area. To account the problem infrastructure Strategy Plan has been framed to make bulk costing and phasing for development plan.

The present population of Bareilly is approximately 1554063, as against the combined design population of 1140717 for stage I and stage II sewerage schemes. Thus even after the Stage II scheme, designed to cover 165 MLD for 2033 whereas by 2036 the discharge within Municipal area will be 169 MLD, the entire present population of the city will not be covered. Out of total households, only 50 properties have been connected to the sewers. Even allowing for some unauthorized connections, the utilization of the sewer network appears to be extremely poor. The number of properties connected to the sewer network is abysmally small. An urgent and concerted drive to increase the number of sewer connections is called for.

The total length of roads in the City of Bareilly is 832 km out of which only 105 km stretch has closed stormwater drains translating to 12.62%. There are three natural drains in the city namely the Deveraniya drain, Chaubari drain and Nakatiya river/drain

The total solid waste generated in Bareilly is 447.18 Tonnes Per Day (TPD). However, at present, the amount of solid waste collected is only 430 TPD . Of the collected solid waste (Nearly) 140 TPD is processed while the remaining 290 TPD is disposed of in the dump yard. At present, there is no household source segregation. Two solid waste management plants exist (I) At Rajau Paraspur and (ii) At Bakarganj, out of which the SWM plant in Rajau Paraspur is non-operational. So, overall city's physical infrastructure is poor.

7.2 IDENTIFICATION OF SCHEMES, STAKEHOLDERS FOR INTEGRATED INFRASTRUCTURE STRATEGY PLANNING

7.2.1 Planning Boundary and Area

7.2.1.1 Bareilly Development Authority

To govern the development and expansion of the city under proper planning, on November 1, 1971, regulated area of Bareilly city was declared under the Uttar Pradesh (Regulation of Construction Works) Act, 1958. This was enacted to limit the unauthorized use and development of land, as well as the increasing tendency of unplanned construction of buildings and low-level colonies. Bareilly development area boundary included the area of municipality and 198 surrounding revenue villages outside the municipality. Aggregately, an area of 36,558.70 hectare was included in the limits of the development authority. In May 2008, the development area of Bareilly was expanded to include an additional 66 revenue communities. As a result, the Bareilly development area encompasses a total of 264 revenue villages.

7.2.1.2 Bareilly Nagar Nigam

In the year 1858, Bareilly Municipal Board was constituted with the purpose to provide basic services. Now, Bareilly Nagar Nigam (Municipal Corporation) is spread in an area of 106.41 sq.km. or 10641 hectares. For efficient performance and better administration, it is divided into 4 zones, these zones are sub divided into 80 wards.

7.2.1.3 Bareilly Smart City

Bareilly Smart City works under two heads, Area Based Development and Pan City Development. Bareilly Municipal Corporation in consultation with citizens identified an area of 50 acres for redevelopment. This redevelopment will result in the replacement of the present built-up environment, as well as the co-creation of a new layout with improved infrastructure through the use of mixed land use and higher density. Pan City Development which focuses to strengthen city wide infrastructure covers an area of 276 sq.km.

7.2.1.4 Bareilly Cantonment Board

Bareilly Cantonment Board is an organization under Ministry of Defense which was established in 1811 for administrative and civil representation purposes. It covers 4259.42 acres, with a notified civil area of 139.5026 acres included. The board has been divided into seven wards.

7.2.2 Past and Current Planning Initiatives

7.2.2.1 Statutory Master Plan

Master Plan which acts as the statutory document to guide the regulated development of area and to develop different sectors have been formulated and are listed as follows:

Bareilly Master Plan 2001

The first master plan of Bareilly was made in 1971 for the year 1999 which was later revised in the year 1986 and was proposed for year 2001. Before this, the development of the city took place in small

pockets all across the city. Development area for the proposed Master Plan 2001 was proposed for 10,500 Hectares to accommodate the projected population of 9.10 lakhs.

Bareilly Master Plan 2021

Master Plan 2021 which was enacted in 2008 was proposed for the year 2021. It aims to facilitate projected population of 14.21 lakhs and covers a total area of 16721.83 hectares (as per Master Plan 2021) and area of 20563.82 (as per the GIS Survey carried out for making Master Plan 2031). This Master Plan was prepared by Town and Country Planning Department and Bareilly Development Authority.

Bareilly Master Plan 2031 (Draft)

Master Plan 2031 for Bareilly development area is proposed for a population of 18,94,211. Proposed Master Plan covers an area of 22815.76 Hectares and is prepared by V.K. Supreme Consultants Pvt. Ltd.

7.2.2.2 Other Planning Initiatives

Apart from the Master Plan there are several other planning initiatives which focuses on different sectors.

City Development Plan (2003-2023)

City Development Plan with a horizon year 2023 was prepared by Wilbur Smith Associates in association with Bareilly Development Authority.

Slum Free City Plan of Action (Bareilly)

The Indian government launched the "Rajiv Awas Yojana" (RAY) to envision a slum-free India. Under this scheme Slum Free city plan of Bareilly city was prepared Regional Centre for Urban and Environmental Studies – OU, Hyderabad. The plan of action included line estimates for housing and infrastructure shortages, as well as civic amenities proposed in accordance with RAY principles. The report also requested approval and action to produce DPRs.

City Wide Sanitation Plan

The National Urban sanitation Policy launched during 2008 envisages "All Indian cities and towns become totally sanitized, healthy and livable and ensure and sustain good public health and environmental outcomes for all their citizens with a special focus on hygienic and affordable sanitation facilities for the urban poor and women." In the same line City wide sanitation plan have been prepared by Administrative Staff College of India in partnership of Uttar Pradesh Government and Nagar Nigam Bareilly.

7.2.2.3 Infrastructure Development Schemes

The following are the various infrastructure development schemes for various sectors:

Atal Mission for Rejuvenation and Urban Transformation (AMRUT):

AMRUT was established in June 2015 with the goal of establishing infrastructure that would allow for appropriate and reliable sewage networks and water supplies for urban transformation through the implementation of urban revival projects.

Smart Cities Mission: It was launched on June 25, 2015, with the goal of promoting cities that use 'smart solutions' to offer basic infrastructure, a clean and sustainable environment, and a reasonable quality of life for their residents.

Housing Schemes:

- Pradhan Mantri Aawas Yojna (Housing for All)

- Manyawar Shri Kanshiram Ji Shahri Garib Awas Yojna
- Asra Yojna
- Ramganga Nagar Awasiya Yojna
- Rajiv Awas Yojna (RAY)

Commercial Schemes:

- Transport Nagar, Bareilly
- Commercial area in Ramganga Nagar Scheme

7.2.2.4 Industrial Development Scheme

The different industrial development schemes are listed below:

- One District One Product (ODOP)
- Mukhyamantri Yuva Swarojgar Yojana, U.P
- Prime Minister's Employment Generation Programme (PMGEP)
- District Skill Development Plan for Bareilly

7.2.3 Stakeholder Mapping

7.2.3.1 Statutory Agencies

State Urban Development Agency (SUDA)

The State Urban Development Body (SUDA) has been established as the nodal agency in the Uttar Pradesh government under the Urban Employment and Poverty Alleviation Program Department. With effect from November 20, 1990, this agency is registered under the Societies Registration Act. At the district level, District Urban Development Agencies (DUDAs) have been established.

Various initiatives are being undertaken for the social and economic upliftment of the urban poor. The District Magistrate serves as the ex-officio chairman of the district's Urban Development Agency. Its members are the presidents of all of the district's municipal authorities.

Bareilly Development Authority

Bareilly Development Authority (BDA) Established in 19th April 1977 under the Uttar Pradesh Urban Planning & Development Act 1973. BDA is the principal agency of the Government of Uttar Pradesh responsible for taking ahead the tradition of planned and sustainable development of Bareilly.

Bareilly Development Authority is responsible for preparation and implementation of master plan for the development area. It takes up the infrastructural and basic amenity development for Bareilly besides environment conservation and development of rural areas around the mother city.

Bareilly Nagar Nigam

BNN (Bareilly Nagar Nigam) is a local government entity dedicated to delivering essential community services such as health care, sanitation, education, and housing. The city is organized into four zones and 80 wards, each of which has its own councilor.

Bareilly Cantonment Board

Under the provisions of the Cantonment Act, 2006, the Bareilly Cantonment Board is an autonomous organization under the Ministry of Defense of the Government of India that performs mandatory and discretionary functions such as education, water supply, birth and death registration, etc.

7.2.3.2 Urban Development and Infrastructure development agencies

National Highway Authority of India

The Ministry of Road Transport and Highways manages the National Highways Authority of India (NHAI), which was founded in 1988 by an Act of Parliament. The National Highways Authority of India

(NHAI) was founded by the Indian government as a central authority to build, maintain, and manage the National Highways entrusted to it. In February of 1995, the authority, on the other hand, commenced activities. Major highways passing from the Bareilly city are under the jurisdiction of NHAI.

Uttar Pradesh State Highway Authority (UPSHA)

U.P. State Highways Authority (UPSHA) works for the development, maintenance and management of state highways and related works. U.P. State Highways Authority is constituted by Uttar Pradesh under UP act no. 19 of 2004 dated Aug'13, 2004. All the state highways passing from Bareilly are under UPSHA.

Bareilly Smart City, Bareilly

Smart City, Bareilly is a Special purpose vehicle established as a company incorporated under the companies Act, 2013 and works under MoHUA. The SPV main function is to plan, appraise, approve, release funds, implement, manage, operate, monitor and evaluate the Smart City development projects. Smart City, Bareilly works as a SPV which is headed by a full time CEO and have nominees of Central Government, State Government and ULB on its Board.

UP Housing and Development Board

The UP Housing and Development Board is in charge of enacting and enforcing housing and some urban planning laws and policies. The board is also in charge of providing affordable housing to those in need through the Uttar Pradesh Housing and Development Board.

UPRERA (Uttar Pradesh Real Estate Regulatory Authority)

As a government agency, the State Real Estate Regulatory Authority aims to protect homebuyers while also assisting in the growth of the real estate business. It makes recommendations to the appropriate government on issues concerning the development and promotion of the real estate industry.

7.2.3.3 Industrial Development

District Industries Centre

The District Industries Centre (DIC) is a government relevant government aimed at fostering small village and cottage industries in a certain area. The DIC was founded in 1978. The District Industries Centers, which are located at the district level, provide all of the required services and support to help entrepreneurs develop MSMEs (Micro, Small and Medium enterprises).

Uttar Pradesh State Industrial Development Authority

The Uttar Pradesh State Industrial Development Authority (UPSIDA), originally the Uttar Pradesh State Industrial Development Company, is a government-owned corporation that supports industry and builds industrial infrastructure in Uttar Pradesh. The Uttar Pradesh State Industrial Development Authority is a Government of Uttar Pradesh Public Sector Undertaking. It fosters the development of industrial infrastructure in Uttar Pradesh, as well as assisting in the development of industrial zones and delivering iconic industrial locations. UPSIDA's mission is to enable entrepreneurs establishing enterprises and factories in Uttar Pradesh with modern infrastructure facilities and services.

7.2.3.4 Tourism Development Archaeological Survey of India

The Archaeological Survey of India (ASI), which is part of the Ministry of Culture, is the country's leading archaeological research and preservation body. The ASI's primary focus is the preservation of ancient monuments, archaeological sites, and national-historical relics. Furthermore, it governs all archaeological operations in the country in accordance with the rules of the Ancient Monuments and Archaeological Sites and Remains Act, 1958, as amicable under the AM & ASR (Amendment & Validation Act 2010). The Antiquities and Art Treasure Act of 1972 is also governed by it. ASI for its

effective work is branched into various circles. Bareilly city is currently part of newly formed Meerut ASI Circle.

Airport Authority of India

The Airports Authority of India (AAI) is a statutory agency that is controlled by the Directorate General of Civil Aviation of the Ministry of Civil Aviation of the Government of India. It is in charge of developing, improving, maintaining, and managing India's civil aviation infrastructure. Bareilly civil airport which is a wing of Trishul Air Base is governed by Airport Authority of India.

UP Tourism

Uttar Pradesh Tourism Department is a state government body in India that is responsible for tourism promotion in the state of Uttar Pradesh. The department is also in charge of designing and implementing Uttar Pradesh's tourism policies, which include heritage, air service, and eco-tourism regulations.

7.2.3.5 Private Sector Associations

Indian Industries Association

The Indian Industries Association (IIA) is a powerful representative organization for Micro, Small, and Medium Enterprises (MSME). It works with business, governmental, academic, and other thought leaders to influence global, regional, and industry agendas. In today's ever-changing and increasingly competitive industrial climate, IIAs focuses on creating an enabling environment for the development of MSMEs. In Bareilly, there IIA functions through its local chapter which has 360 registered units. Bareilly chapter actively participates in works related to industrial development. It also supports its member in getting finance, incentives through state and central policies, advocacy, etc.

Indian Medical Association

The Indian Medical Association is the only body in Bareilly which is a national level volunteer organization of doctors practicing the Modern Scientific System of Medicine. Its primary function is to promote and enhance medical and allied sciences in all of their forms, as well as to improve public health and medical education in India.

Confederation of Real Estate Developers' Associations of India (CREDAI)

The Confederation of Real Estate Developers' Associations of India (CREDAI) is India's top association of private real estate developers. This is an organization which is working in Bareilly to promote with the goal of changing the face of the real estate business with a mandate to promote housing and habitat.

To account the above stakeholders all will be involved to account the project planning and phasing of the development the following section has described the bouquets of project, phasing and bulk project costing for future growth in city.

7.3 BOUQUET OF PROJECTS

After analyzing the existing situation, assessing demand and goals of the city's development and discussions held with higher government authorities, architects, planners, experts and consultants, several projects were identified focusing on each domain for the development of the city.

After the discussion with Divisional Commissioner and various stakeholders on the total identified projects the following projects were discussed for the further working:

Table 7-3 Project list finalized and endorsed by Mandal Commissioner on 13th July 2022

Project list finalized by Mandal Commissioner on 13th July 2022			
Sr. No.	Project List under Bareilly City Vision Plan 2051	Domain	Nodal Department
1	Residential Housing Node, a) Nekpur (Phase 1 - 2022-23) b) Gangora Pikariyam c) Kargaina d) Tehtajpur (Area - 100 Ha each)	Urban Planning	BDA / Awas vikas / Private
2	Industrial Growth Center, a) Rajau Paraspur Phase 1 (2022-23) b) Parsakheda (2025-30) c) Kurtara (2030-35) (Area - 100 Ha each)		BDA / UPSIDC / Private
3	Integrated Freight Center cum Logistic Hub, Faridpur (35 Ha each)		BDA / Private
4	Access to Ganga Expressway through Radial Road and Outer Ring Road	Transportation	NHAI / PWD
5	Bareilly Lite Metro facility		BDA
6	Ahichchhatra Tourism Infrastructure upgradation	Heritage and Tourism	Tourism Department
7	Fist War of Independence (1857) museum: a) Bareilly College Campus		Tourism Department
8	Urban Renewal of Nath Temple circuit & Infrastructure improvement of all Seven Nath Temples	Urban Design	Tourism Department
9	River front development (Ramganga & Nakatiya)		PWD / Irrigation Department / BDA
10	Aero city integrated office complex near Airport development: Area - 30 Ha		BDA / Private
11	Zari - Zardozi Shyam Ganj and Sailani market Façade Development and streetscape		BDA / Nagar Nigam
12	Streetscape from Qila to Shyamganj along with development of Dargah precinct		BDA / Nagar Nigam
13	Development of new solid waste treatment plant for 2041, (Area -15 Ha)	Infrastructure	Nagar Nigam

14	City Plan for Water Logging / stagnant spots and flood prone areas		Jal Nigam / Nagar Nigam
15	Development of new Tertiary Sewage Treatment Plant (STP): Near Industrial Area.		Jal Nigam / Nagar Nigam
16	“Medicity” – designated area with multiple health business and activities	Economy	BDA / Nagar Nigam
17	Development of Handicraft Cluster/ Common Facility Centre (CFC) – Zari & Bamboo		BDA / Nagar Nigam
18	Demonstration of Solar Energy for streets and Gov. buildings.	Solar	UPNEDA

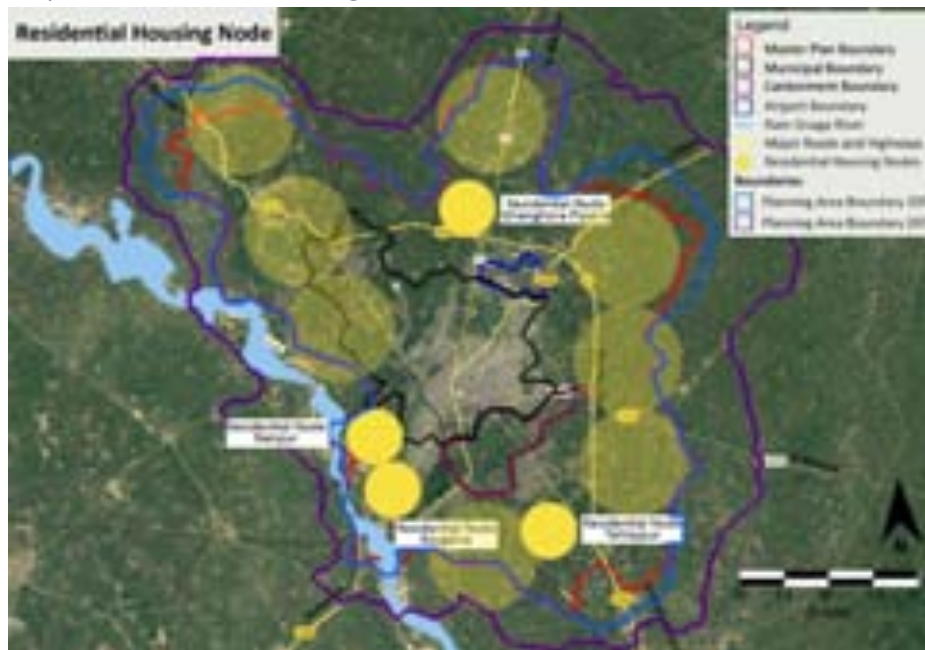
7.4 URBAN PLANNING

7.4.1.1 Project : Residential Housing Nodes

7.4.1.1.1 Residential Land use Demand

Draft Master Plan 2031 allocates a total of 8580.37 hectares of land under residential land use. Due to external growth drivers, a rising residential tendency in the city improved regional connectivity, and planned developments, the percentage of residential area is projected to be on the higher side i.e., 40 percent. Thus, a total of 14808.06 hectares of the land area needs to be under the umbrella of residential land use for 2071.

7.4.1.1.2 Proposed Residential Housing Zones



Map 7-1: Residential Housing Nodes and Probable Residential Areas of Future

The population is projected to increase more than threefold and reach 38 lakhs within the horizon year. The growing population will need land for a habitat, but if these new regions are not built-in accordance with the laws and standards, it will exacerbate the already chaotic conditions in some sectors. New residential zones are suggested to handle the population growth and improve living conditions. Four residential zones or nodes are proposed to be developed following the study and demand evaluation. Out of these 2 residential zones are proposed on Aligarh Road near village Nekpur and Kargaina. Other residential zones are proposed on Lucknow Road near Tehtajpur and near Village Ghaghoria Piparia on Nainital Road. Each residential node is expected to be developed on 100 hectares each.

Additionally, it is anticipated that by 2051, the population will have spread out past the boundary of the Draft Master Plan 2031 and settled in various areas throughout the city.

7.4.1.1.3 Projected Housing Demand

Bareilly city is projected to accommodate 5,78,900 households by 2051 and 7,43,403 households by the horizon year 2071. It is as per the national average of 5.0 person per household. EWS Category which is considered to be 15 percent will have 86,835 units and 1,11060 units by 2051 and 2061

respectively. LIG category and MIG category both will constitute 35 percent each of the total share of housing demand with 2,02,615 units in 2051 and 2,59,141 units by 2071. HIG category will constitute 15 percent and will require housing units similar to EWS category but 4 times the size of each unit. Below is a breakdown of demand by category according to the Draft Master Plan 2031:

Table 7-4: Housing Demand till 2071

Type of residential category as per economic status	Type of residential category as per economic status	No. of houses For 2031	No. of houses For 2041	No. of houses For 2051	No. of houses For 2061	No. of houses For 2071
EWS	15	58470	72673	86835	90884	111060
LIG	35	136431	169570	202615	212063	259141
MIG	35	136431	169570	202615	212063	259141
HIG	15	58470	72673	86835	90884	111060
Total	100	389802	484487	578900	605896	740403

Unit area for various groups is taken into consideration under socioeconomic requirements. Area for EWS category per unit is 50 sq.m., 80 sq.m. for LIG, 120 sq.m. for MIG and 200 sq.m. for HIG class. The total built-up area for 2031, 2041, and 2051 is computed based on these standards, as indicated in the table below:

Table 7-5: Built Up Area w.r.t. housing need till 2071

Type of residential category as per economic status	Unit Area Considered	Built-up area by 2031 (in sq.m.)	Built-up area by 2041 (in sq.m.)	Built-up area by 2051 (in sq.m.)	Built-up area by 2061 (in sq.m.)	Built-up area by 2071 (in sq.m.)
EWS	50	2923515	3633652.5	4341750	4544217	5553023
LIG	80	10914456	13565636	16209200	16965077	20731285
MIG	120	16371684	20348454	24313800	25447616	31096928
HIG	200	11694060	14534610	17367000	18176869	22212092
Total		41903715	52082352.5	62231750	65133779	79593328

No. of units for EWS and HIG is the same but due to the difference in unit size built-up area in the year, 2071 for EWS is 55,53,023 sq.m. and 2,22,12,092 sq.m. Similarly, HIG and MIG categories have similar no. of units in their share but a total built area of MIG will be 3,10,96,928 sq.m. and 2,07,31,285 sq.m. for LIG. Total built-up area required by 2051 will be 7,95,93,328 sq.m.



7.4.1.1.4 Infrastructure Requirements

Project - Residential Housing Nodes			
Facilities and Infrastructure	Available but Poor Condition	Not Available	To be Planned
Access to Water Supply			
Access to Sewerage & Drainage			
Access to Drinking Water			
Access of Dustbin or Water Collection System			
Access of road			
Access of parking			
Access to Bus Stop			
Access to Public Transport System			
Access to Police Station			
Access to Fire Fighting Station			
Access to Electricity			

7.4.1.1.5 Costing

Nekpur Residential Node costing - 100 Hectares		
S.no	Components	Development Cost (in INR)
1	Plumbing sewerage STP and all	74,13,150
2	Electricity ESS and all	74,13,150
3	Roads and landscaping	98,84,200
Infra Cost	Total	2,47,10,500

Kargaina Residential Node costing - 100 Hectares		
S.no	Components	Development Cost (in INR)
1	Plumbing sewerage STP and all	74,13,150
2	Electricity ESS and all	74,13,150
3	Roads and landscaping	98,84,200
Infra Cost	Total	2,47,10,500



Tehtajpur Residential Node costing - 100 Hectares		
S.no	Components	Development Cost (in INR)
1	Plumbing sewerage STP and all	74,13,150
2	Electricity ESS and all	74,13,150
3	Roads and landscaping	98,84,200
Infra Cost	Total	2,47,10,500

Ghaghoria Residential Node costing - 100 Hectares		
S.no	Components	Development Cost (in INR)
1	Plumbing sewerage STP and all	74,13,150
2	Electricity ESS and all	74,13,150
3	Roads and landscaping	98,84,200
Infra Cost	Total	2,47,10,500

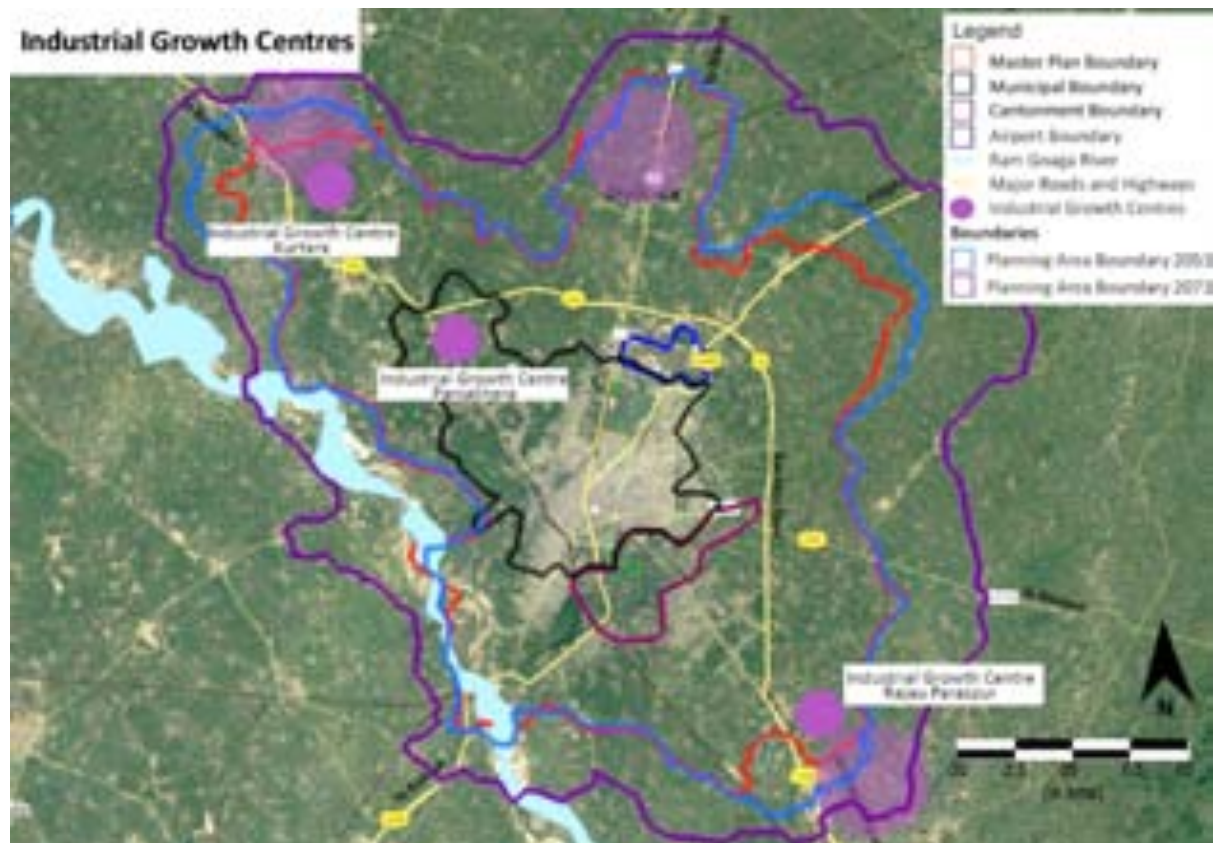
INTEGRATED INFRASTRUCTURE DEVELOPMENT STRATEGY AND ACTION PLAN under Urban Planning Sector Project 1

Components	Cost for Facilitation (INR)	Total (Rs Lakhs)	Total (Rs Lakhs)	Funding	Short Term (2022-28)			Medium Term (2028-37)			Long Term (2037-2071)		
					2022-24	2024-26	2026-28	2028-31	2031-34	2034-37	2037-42	2042-47	2047-71
Residential Housing Node													
a) Greater Bareilly			1,47,10,500	Hybrid Annuity Mode (HAM)			1,47,10,500						
b) Sri Jankipuram			1,47,10,500					1,47,10,500					
c) Nekpur			2,47,10,500								2,47,10,500		
d) Gangora Pikariyam			2,47,10,500									2,47,10,500	
e) Kargaina			2,47,10,500						2,47,10,500				
f) tahtajpur			1,47,10,500										
			9,88,42,000			-	-	494	494				

7.4.1.2 Project : Industrial Growth Centers

7.4.1.2.1 Proposed Industrial products as per the vision

Industries in Bareilly produce products of a varied range. While other industries are involved in generating items linked to chemicals, plastic, etc., major industries like Coco-Cola, Vadilal, and BL Agro produce agro-based products. Bareilly is an area that can procure raw material for agro-based industry from the surrounding region. As per the vision, Agro-based products which also include food processing and packaging are focused. In addition to this, Zari Zardozi is selected under the One District One Product Scheme so it is also focused under the vision and is proposed to provide enabling infrastructure for this.



Map 7-2: Proposed Industrial Growth Centers and Probable Industrial Areas of Future

7.4.1.2.2 Proposed Industrial Centers

Bareilly city has three UPSIDA industrial areas and one private industrial area which is near Invertis University on Lucknow Road. As per the demand assessment, three industrial areas are proposed. The first industrial area is proposed of area 50 hectares as an extension of the already existing Paraskhera Industrial area which is currently the major industrial area of Bareilly city. The second industrial area is also on Rampur/Delhi Road and lies near village Kurtara. It is proposed to cover 100 hectares of area. The third industrial area is proposed as an up-gradation and extension of the already existing private industrial area on Lucknow Road on an area of 100 hectares. Paraskhera industrial growth center is proposed in short term, Rajau Paraspur in the medium-term, and Kurtara in the long-term time frame.

In addition to these industrial zones, potential sites for industrial growth are also analyzed and displayed on the map above. It is anticipated that these areas would expand as an addition to the current or prospective industrial areas.

7.4.1.2.3 Proposed Industrial Typology

The city's identity originally rested on its small-scale industries of bamboo craft and zari zardozi, but these are now fast disappearing. Therefore, it is suggested that MSME households be increased. In Bareilly, small and medium-sized businesses that produce goods based on agriculture, chemicals, plastics, and other materials predominate. The main drivers of the economy in Bareilly are small and medium-sized businesses. Therefore, it is suggested to support small and medium-sized companies, for which space is designated under the Draft Master Plan 2031 and the necessary infrastructure is anticipated to be put in place during the project's medium-term time frame. According to the current situational study and demand assessment, there is no significant demand for large-scale industries.

7.4.1.2.4 Projected Industrial Land Demand

Table 7-6: Projected Industrial Land Use Demand

Year	Projected Population	Total Master Plan Area (Ha)	Proposed Percentage (Ha)	Required Commercial Area (Ha)	Additional Area Required additional to Master Plan 2031 (Ha)
2031	1949012	22815.76	8.8 (in Draft Master Plan 2031)	2008.76	0
2041	2422433	25499.25	12	3059.91	1051.15
2051	2894499	30468.41	15	4570.26	2561.50
2061	30,29,478	31889.24	15	4,783.39	2,774.63
2071	37,02,015	38968.58	15	5,845.29	3,836.53

8.8% of the overall Master Plan area, or 2008.76 hectares, has been allotted in the Draft Master Plan 2031. The city will need more land by 2041 for propelling industrial landuse at 12 percent, which will require an additional area of 1051.15 hectares. More industries will be needed to boost the economy and provide more employment opportunities, therefore from the year 2051, a 15% industrial landuse is recommended, requiring 2561.50 hectares of additional land. For the horizon year 2071, an area of 3836.53 hectares will be required in addition to the allocation in the Draft Master Plan for 2031, for a total of 5845.29 hectares.



7.4.1.2.5 Infrastructure Requirements

Project - Industrial Growth Centers			
Facilities and Infrastructure	Available but Poor Condition	Not Available	To be Planned
Access to Water Supply			
Access to Sewerage & Drainage			
Access to Drinking Water			
Access of Dustbin or Water Collection System			
Access of road			
Access of parking			
Access to Bus Stop			
Access to Public Transport System			
Access to Police Station			
Access to Fire Fighting Station			
Access to Electricity			

7.4.1.2.6 Costing

Kurtara Industrial Growth Centre		
S.no	Components	Development Cost (in INR)
1	Plumbing sewerage STP and all	74,13,150
2	Electricity ESS and all	74,13,150
3	Roads and landscaping	98,84,200
Infra Cost	Total	2,47,10,500

Rajau Paraspur Industrial Growth Centre		
S.no	Components	Development Cost (in INR)
1	Plumbing sewerage STP and all	74,13,150
2	Electricity ESS and all	74,13,150
3	Roads and landscaping	98,84,200
Infra Cost	Total	2,47,10,500



Paraskhera Industrial Growth Centre		
S.no	Components	Development Cost (in INR)
1	Plumbing sewerage STP and all	74,13,150
2	Electricity ESS and all	74,13,150
3	Roads and landscaping	98,84,200
Infra Cost	Total	2,47,10,500

INTEGRATED INFRASTRUCTURE DEVELOPMENT STRATEGY AND ACTION PLAN under Urban Planning Sector Project 2

Components	Cost for Facilitation (INR)	Total (Rs Lakhs)	Total (Rs Lakhs)	Funding	Short Term (2022-28)			Medium Term (2028-37)			Long Term (2037-2071)		
					2022-24	2024-26	2026-28	2028-31	2031-34	2034-37	2037-42	2042-47	2047-71
Residential Housing Node													
a) Rajau Paraspur	2,47,10,500		2,47,10,500	PPP									
b) Parsakheda	2,47,10,500					2,47,10,500							
c) Kurtara	2,47,10,500							2,47,10,500					
	7,41,31,500		247				247		247				

7.4.1.3 Project : Logistics Hub and Integrated Fright Corridor

7.4.1.3.1 Logistics and Transportation

Industries require logistics support to facilitate the transfer of finished goods and raw materials. Currently, Transport Nagar on Lucknow Road is the major facility for logistics support which lies opposite the Paraskhera industrial area. An Integrated Freight Center in Faridpur for the Lucknow Road Industrial area and a Multi-Modal Logistics Hub close to Kurtara are proposed in order to assist the currently existing and newly projected industrial areas on Delhi Road and ensure efficient movement of goods and products. The area of the proposed Multi-Modal Logistics Hub and proposed Integrated Freight Centre will be approximately 35 hectares each.



Map 7-3: Proposed Logistics Hub

7.4.1.3.2 Common Facility Centers

A common facility center for Bamboo products and one for readymade garments has been set up in Bareilly recently to provide skill development and required infrastructure. As per the policy, CFC should provide the following facilities:

- Testing Lab
- Design Development and Training Center
- Technology Research and Development Center
- Product Demonstration cum Sale Center
- Raw-Material Banks/Common Resources Center
- Common Production/Processing Center
- Common Logistics Center
- Information collection, analysis, and broadcasting Center
- Packaging, Labelling, and Barcoding Facilities

7.4.1.3.3 Other Infrastructure

There is a lack of physical and road infrastructure in all the existing industrial areas, especially the privately set-up Lucknow road industrial area. Providing enabling infrastructure will motivate the investors to set up new industries and will also positively affect the existing industries.



7.4.1.3.4 Infrastructure Requirements

Project - Integrated Freight Center cum Logistic Hub			
Facilities and Infrastructure	Available but Poor Condition	Not Available	To be Planned
Access to Water Supply			
Access to Sewerage & Drainage			
Access to Drinking Water			
Access of Dustbin or Water Collection System			
Access of road			
Access of parking			
Access to Bus Stop			
Access to Public Transport System			
Access to Police Station			
Access to Fire Fighting Station			
Access to Electricity			

7.4.1.3.5 Costing

Kurtara Integrated Freight Centre cum Logistic Hub		
S.no	Components	Development Cost (in INR)
1	Plumbing sewerage STP and all	25,94,607
2	Electricity ESS and all	25,94,607
3	Roads and landscaping	34,59,476
	Sub Total	86,48,690

Faridpur Integrated Freight Centre cum Logistic Hub		
S.no	Components	Development Cost (in INR)
1	Plumbing sewerage STP and all	25,94,607
2	Electricity ESS and all	25,94,607
3	Roads and landscaping	34,59,476
	Sub Total	86,48,690



INTEGRATED INFRASTRUCTURE DEVELOPMENT STRATEGY AND ACTION PLAN under Urban Planning Sector Project 3

Components	Cost for Facilitation (INR)	Total (Rs Lakhs)	Total (Rs Lakhs)	Funding	Short Term (2022-28)			Medium Term (2028-37)			Long Term (2037-2071)		
					2022-24	2024-26	2026-28	2028-31	2031-34	2034-37	2037-42	2042-47	2047-71
Logistics Hub Node				PPP									
Kurtara Integrated Freight Centre cum Logistic Hub		86,48,690				86,48,690							
Faridpur Integrated Freight Centre cum Logistic Hub		86,48,690				86,48,690							
Total Cost		1,72,97,380				173							

7.5 URBAN DESIGN

7.5.1.1 Project : Nath Temples facility improvement and beautification

7.5.1.1.1 Development of Spiritual Tourism by Creating Religious Circuit of All Seven Nath Temples

7.5.1.1.1.1 Background

The city has a strong religious essence and is called the Nath Nagri owing to the seven Nath temples located at seven entry gates to the city via different cities. The city inherits a very rich spiritual significance that brings pilgrims from many other cities to visit the Nath temples. These Nath temples witness their highest influx of visitors during the Saavan month and Maha Shivratri. Thousands of pilgrims also visit the city for Seven Nath temple parikrama which adds to the religious uniqueness of the city.

7.5.1.1.1.2 Problem Statement

Since the construction of Nath temples at the city periphery as its gateways, the city has expanded drastically on all sides and the expansion of the city fabric has enveloped all seven Nath temples, making their identity disappear as city gateways. The expansion of city has also resulted in loss of imageability of all Nath temple precincts over a period of time, which has further led to disappearing of the overall circuit that connects all Nath temples. There are no proper legible gateways or routes that celebrate their essence and establish their strong image in the context of the city.

7.5.1.1.1.3 Key Intervention

- Identification of roads to develop the Nath temples circuit.
- Integrating IPT, NMT and other public transit nodes to enhance connectivity and accessibility along the circuit
- Development of Tourism infrastructure and public conveniences along the circuit.
- Redesigning Streetscape leading to temple precinct along with organized spaces for parking, pedestrians, hawkers etc.
- Integrating Math Tulsi Sthal in the Nath temples circuit.
- Streetscape for urban streets along the Nath circuit & restructuring its mobility network.
- Reclaiming the spaces for people under flyovers along the Nath circuit to create opportunities for public activity and enhance walkability.
- Strengthening the legibility and identity of the city chowks, chaurahas and market streets through signage's and visual landmarks.
- Creating public activity and vendor zones around the chowks along the circuit.

7.5.1.1.1.4 Site Delineation

Since the seven Nath temples are situated on different routes which are entrance gateways to the city from other cities, they can be accessed from any of these routes. These seven routes formed the base of city's connectivity to major cities like Nainital (Trivatinath Temple), Delhi (Alakhnath Temple), Chandausi (Madinath Temple), Badaun (Tapeswar Nath Temple), Lucknow (Dopeshwar Nath Temple), Bilaspur (Pashupatinath Temple) and Pilibhit (Vankhandinath temple).

Though the city is known for being the **Nath Nagri**, this essence is not reflected in the precincts of the Nath temples and not even along the routes leading to the city. The temples are

strategically located at entry gateways of the city but there is no expression and legibility to their approach. The streets leading to the temples lack the visual character which they should strongly portray.

7.5.1.1.1.5 Area of Intervention:

Identified pilgrimage route as marked in the map showcases formation of a circuit connecting all the Nath temples.

- Alakhnath Temple to Madinath Temple - 4.2 Km
- Madinath Temple to Tapeswarnath Temple - 2.8 Km
- Tapeswarnath Temple to Dhopeswarnath Temple - 5.4 Km
- Dhopeswarnath Temple to Pashupatinath Temple - 6.6 Km
- Pashupatinath Temple to Vankhandinath Temple - 2.7 Km
- Vankhandinath Temple to Trivatinath Temple - 5.3 Km
- Trivatinath Temple to Alakhnath Temple - 3.2 km

Total Length of Nath Nagri Circuit to be developed - 30.2 Km



Map 7-4: Nath Temple Complex

7.5.1.1.1.6 Project Impact and its Benefits

Considering the spiritual significance of the Nath temple in the city, the development of a dedicated Nath Temple circuit becomes essential to restore city's cultural value. Developing corridor leading to the religious places will enhance the urban character of their precincts. Establishing the Significance of Bareilly as Nath Nagri would enhance the Tourism Potential of the City. Provision of

public amenities like parking space, washrooms, etc. along the circuit will offer convenience to the visitors.

7.5.1.1.1.7 *Stakeholders*

Nodal Agency

Nath Temple Association, Bareilly
Bareilly Development Authority

Helping Agencies

Bareilly Smart City Limited (BSCL)

7.5.1.1.1.8 *Bareilly Nagar Nigam*

U.P Tourism



7.5.1.1.1.9 Infrastructure Requirements

8.Urban Renewal of Nath Temple circuit & Infrastructure improvement of all Seven Nath Temples			
Facilities and Infrastructure	Available but Poor Condition	Not Available	To be Planned
Access to Water Supply			
Access to Sewerage & Drainage			
Access to Drinking Water			
Access of Dustbin or Waste Collection System			
Access of road			
Access of parking			
Access to Bus Stop			
Access to Public Transport System			
Access to Police Station			
Access to Fire Fighting Station			
Access to Electricity			

7.5.1.1.1.10 Costing and Integrated Infrastructure Development Plan and Phasing of Urban Design Project - Urban Renewal of Nath Temple circuit & Infrastructure improvement of all Seven Nath Temples

Components	Cost for Facilitation (INR)	Total (Rs Lakhs)	Funding	Short Term (2022-28)			Medium Term (2028-37)			Long Term (2037-2071)		
				2022-24	2024-26	2026-28	2028-31	2031-34	2034-37	2037-42	2042-47	2047-71
a) Nath Temple Circuit Development			Govt Fund									
b) Pilot Project - Vankhandinath Temple Precinct												
Entrance Gateway	20,00,000	20		20								
Pathway Development	56,97,000	57		57								
Fairground Entrance Gateways	16,00,000	16		16								
Services & Amenities Block	10,80,000	10		10								
Fair Ground development	7,12,13,000	712		712								



Promenade Space	60,75,000	61		61								
Visitor Parking	6,24,750	6		6								
Kiosks	9,60,70,000	961		961								
Signage and way finding	3,04,000	3		3								
Lighting	62,00,000	62		62								
Street furniture	9,30,000	9		9								
Total	19,17,93,750	1,917		1,917								

7.5.1.2 Project : River front development of Ramganga and Nakatiya

7.5.1.2.1 Ramganga Riverfront Development

7.5.1.2.1.1 Background

The Ramganga River is the largest river passing through the city and the river ghat is one of the well-known religious places in the city. The place inherits a rich historic as well as spiritual value that brings lakhs of pilgrims annually to the ghat. A fair after every 14 days is also organized on the riverbanks attracting tourists and pilgrims from all over the city. The riverbanks are flooded with people taking baths, performing religious activities and celebrating the festival.

Since the river crosses in close proximity to Chaubari village, a major fair is organized annually at the banks of the river known as Chaubari fair. The fair takes place on the occasion of Kartik purnima. One of the biggest attractions of this fair is the horse market, where people from far off areas visit the city to buy or sell horses. The fair is attended by lacks pilgrims, which initiates tourism for the city on a large scale.

7.5.1.2.1.2 Problem Statement

Despite of having a spiritual value of such prestige, the river ghat and the fairground still remains redundant. Due to lack of identity markers, entrance gateway and wayfinding, the approach to the ghat area is not feasible for the visitors. The Ramganga fairground is not only an ecological asset but also holds a significant value in the social infrastructure of Bareilly.

7.5.1.2.1.3 Key Activities, Task & Intervention

- Crafting Ramganga river ghat into a multi-functional public space that caters to all pilgrimage activity, fairs and festivals.
- Development of symbolic identity/ entrance gateway to the riverfront.
- Place making of their precinct with respect to the surrounding neighborhood.
- Revival of the existing precinct while adding public infrastructure like designated parking space, washrooms, etc.
- Up gradation of Ramganga Jn. Railway station and improving its connectivity with the riverfront

7.5.1.2.1.4 Site Delineation

The current scenario of riverfront displays a very abrupt image of city's natural features. Despite of being well connected to the city through state highway & railway line, the site completely lacks a prominent connectivity and a symbolic identity. The existing ghat and fairground does not contain any public infrastructure to support the monthly holy bath and Chaubari fair. This has led to the depletion of the condition of the riverine, eventually affecting the overall ecology.



Map 7-5: Ramganga Ghat and Fair Ground



Figure 7-5: Dilapidated Ghat along river edge and connecting bridge (left), Vacant Land Parcel near bridge (right)



Figure 7-6: Provision of boating to cross the river

7.5.1.2.1.5 Project Impact and its Benefits

Development of the riverfront will help in revival of the overall river edge and restoring its ecology as well. Integration of the riverfront along with the fairground will result in rejuvenation of the overall precinct benefiting the pilgrims and city residents. Also, provision of public amenities will add to the overall development and initiate more pilgrims to visit. The urban renewal of the existing ghat will eventually result in upliftment of the city social infrastructure.

7.5.1.2.1.6 Stakeholders

Nodal Agency

Bareilly Development Authority

Helping Agencies

Bareilly Smart City Limited (BSCL)

Bareilly Nagar Nigam
U.P Tourism

7.5.1.2.2 Nakatiya river front development into city level greens

7.5.1.2.2.1 *Background*

Devraniya and Nakatiya are the two main rivers of Bareilly. Both the rivers pass through the dense fabric of the city, thus becoming an integral part of the neighborhood. The organic growth of settlement along both the rivers has led to major encroachments and loss of green buffers. Over the years, the ecological condition of both the rivers has consequently depleted due to lack of infrastructure development and maintenance. Opening up of Sewage drains directly into the river has degraded the water quality, which has severely affected the overall riverine along with its flora and fauna.

7.5.1.2.2.2 *Problem Statement*

Due to lack of infrastructure development, Nakatiya River portrays a very dilapidated image with many ghats along the edge lie redundant over a period of time. With no preservation of the river edge, wetlands or development of public spaces, the condition of riverine ecology has consequently depleted over the period of time. Thus, the land parcels along the river have become dump yard for the neighbors and cattle herding/bathing area for some.

7.5.1.2.2.3 *Key Intervention*

- Development of the riverfront will help in revival of the overall river edge and restoring its ecology as well.
- Integration of the river edge along with the available land parcel will result in rejuvenation of the overall precinct, creating an active green asset for the city residents.
- The provision of public amenities will add to the overall development and public convenience.
- Development of available land parcels to facilitate a better open public green with a mix of 50% active and 50% passive recreational space.
- Development of plaza space along with provision of street furniture – benches, dustbins, lighting

7.5.1.2.2.4 *Site Delineation*

The land parcel identified for development lies on the banks of Nakatiya River on the way to Lucknow from Bareilly. Situated in the middle of cantonment area and a residential cluster, the strategic location of the site possesses a high potential for its revival. The existing Shiva temple and Nakatiya Masjid also adds spiritual dimension to the precinct. The two land parcels of size 1.4 hectares and 1.15 hectares share one edge with the river and a direct connection to the road, making it feasible for proposing active public zone.



Map 7-6: Nakatiya River, Cantonment Area



Figure 7-7: Approach Road to the land parcel (left), Existing Condition of Nakatiya (right)

7.5.1.2.2.5 Project Impact and its Benefits

Development of abandoned land parcels along the river will help in revival of the river edge. Integration of these land parcels along with the abutting public spaces, open greens and spiritual places will result in rejuvenation of the overall precinct benefitting the visitors and city residents. The project will eventually result in upliftment of the city's social infrastructure. The development of this project will not only restore the overall ecology of this abandoned natural asset but will also help in revival of the overall precinct.

7.5.1.2.2.6 Stakeholders for the Project

7.5.1.2.2.7 Nodal Agency

Bareilly Development Authority

7.5.1.2.2.8 Helping Agency

Bareilly Smart City Limited (BSCL)

Bareilly Nagar Nigam



7.5.1.2.3 Infrastructure Requirements

River front development (Ramganga & Nakatiya)			
Facilities and Infrastructure	Available but Poor Condition	Not Available	To be Planned
Access to Water Supply			
Access to Sewerage & Drainage			
Access to Drinking Water			
Access of Dustbin or Waste Collection System			
Access of Road			
Access of Parking			
Access to Bus Stop			
Access to Public Transport System			
Access to Police Station			
Access to Fire Fighting Station			
Access to Electricity			

7.5.1.2.4 Costing- INTEGRATED INFRASTRUCTURE DEVELOPMENT STRATEGY AND ACTION PLAN for River Front Development Project

Components	Cost for Facilitation (INR)	Total Cost in Lakhs	Total (Rs Lakhs)	Funding	Short Term (2022-28)				Medium Term (2028-2037)			Long Term (2037-2071)	
					2022-24	2024-26	2026-28	2028-31	2031-34	2034-37	2037-42	2042-47	2047-71
Components				Govt Fund									
a) Ramganga Riverfront: 20 Hectares (49.4 Acres)													
Ghat Development	1,08,00,00,000		10,800		10,800								
Public amenities	3,78,00,000		378		378								
Naturopathy Centre	11,79,25,000		1,179				1,179						
Horse Training Centre	1,91,40,000		191			191							
Commercial Area	8,16,90,000		817			817							
Recreational Zone	76,98,00,000		7,698			7,698							



Parking & Drop-Off	4,21,95,000		422				422						
Signage and way finding	6,08,000		6				6						
Lighting	1,20,00,000		120				120						
Street furniture	18,90,000		19				19						
Total	2,16,30,48,000					11,178	8,706	1,746					
b) Nakatiya Riverfront: 2.13 Hectares (5.32 Acres)					Govt Fund								
Entrance Plaza	6,27,000		6			6							
Shaded Trellis	50,00,000		50			50							
Services & Amenities Block	24,30,000		24			24							
Open Area development	10,86,88,750		1,087			1,087							
River Edge Promenade & Open Amphitheatre	1,33,65,000		134				134						
Pedestrian Underpass connection	43,20,000		43				43						
Gateway Design	16,00,000		16				16						
Visitor Parking	4,41,000		4				4						
Signage and way finding	1,52,000		2				2						
Lighting	42,00,000		42				42						
Street furniture	13,50,000		14				14						
Total	14,21,73,750					1,167	254	254					

7.5.1.3 Project : Aero city integrated office complex near Airport development

7.5.1.3.1 Background:

Bareilly is listed as one of the nine counter magnets of the National Capital region which can be developed as the economic growth centre. Trade and commerce are one of the important sectors which can amplify the economy of the city. As per draft master plan 2031, the existing landuse of the commercial area is found to be 3.31 percent against the URDPFI guidelines of 4-6 percent. Lack of commercial space is also outlined by stakeholders such as Bareilly Vyapar Manadal, etc. Bareilly city needs commercial area as given below:

Year	Projected Population	Total Master Plan Area (Ha)	Proposed Percentage (Ha)	Commercial Area (Ha)	Additional Area additional to Master Plan 2031 (Ha)
2031	1949012	22815.76	4	912.63	0
2041	2422433	25499.25	4	1019.97	107.33
2051	2894499	30468.41	4	1218.73	306.10
2061	30,29,478	31889.24	4	1275.56	362.93
2071	37,02,015	38968.58	4	1558.74	646.11

7.5.1.3.2 Problem Statement:

Lack of planned commercial spaces hinders the flourishing of economic trade and commerce activities in the city.

7.5.1.3.3 Key Interventions:

10. Development of Aero city by allocating a land parcel near the city airport for mixed use development to foster new growth opportunities for Bareilly.
11. Development of the allocated land parcel featuring state-of-the-art Retail centers, Offices, Hotels and convention centers will result in city's economic growth and generate new employment for the city residents.
12. The proposal will also act as a gateway to the city.

7.5.1.3.4 Site Delineation

Located at the intersection of the Bareilly bypass and Pilibhit road, the proposed site of size 30 hectare is a strategically selected location for the development of mixed-use development. Considering the context of the proposed site, the Radisson hotel and Airport in its close proximity can be foreseen as a supportive infrastructure for further development. Along with the existing mobility infrastructure and the available assets around the site, an integrated precinct for mixed-use development can be envisioned.



Map 7-7: Proposed Site for Mixed Use Development

7.5.1.3.5 Project Impact and its Benefits

The development of regional trade and commerce hub will expedite the speed of economic growth and will establish the city as a major economic generator and employment provider in the region. It will strengthen the economic base and to develop the city as prominent trade and commerce hub in the region.

7.5.1.3.6 Stakeholders for the Project

7.5.1.3.6.1 Nodal Agency

Bareilly Development Authority

7.5.1.3.6.2 Helping Agency

Bareilly Smart City Limited (BSCL)

Bareilly Nagar Nigam

Bareilly Airport Authority



7.5.1.3.7 Infrastructure Requirements

Facilities and Infrastructure	Available but Poor Condition	Not Available	To be Planned
Access to Water Supply			
Access to Sewerage & Drainage			
Access to Drinking Water			
Access of Dustbin or Water Collection System			
Access of road			
Access of parking			
Access to Bus Stop			
Access to Public Transport System			
Access to Police Station			
Access to Fire Fighting Station			
Access to Electricity			

7.5.1.3.8 Costing- Integrated Infrastructure Development and Strategy Plan- Aero city integrated office complex near Airport development

Components	Cost for Facilitation (INR)	Total Cost in Lakhs	Total (Rs Lakhs)	Funding	Short Term (2022-28)				Medium Term (2028-2037)			Long Term (2037-2071)	
					2022-24	2024-26	2026-28	2028-31	2031-34	2034-37	2037-42	2042-47	2047-71
Components				Govt Fund									
a) Ramganga Riverfront: 20 Hectares (49.4 Acres)													
Ghat Development	1,08,00,00,000		10,800		10,800								
Public amenities	3,78,00,000		378		378								
Naturopathy Centre	11,79,25,000		1,179				1,179						



Horse Training Centre	1,91,40,000	191		191									
Commercial Area	8,16,90,000	817		817									
Recreational Zone	76,98,00,000	7,698		7,698									
Parking & Drop-Off	4,21,95,000	422			422								
Signage and way finding	6,08,000	6			6								
Lighting	1,20,00,000	120			120								
Street furniture	18,90,000	19			19								
Total	2,16,30,48,000			11,178	8,706	1,746							
b) Nakatiya Riverfront: 2.13 Hectares (5.32 Acres)				Govt Fund									
Entrance Plaza	6,27,000	6		6									
Shaded Trellis	50,00,000	50		50									
Services & Amenities Block	24,30,000	24		24									
Open Area development	10,86,88,750	1,087		1,087									
River Edge Promenade & Open Amphitheatre	1,33,65,000	134			134								
Pedestrian Underpass connection	43,20,000	43			43								
Gateway Design	16,00,000	16			16								
Visitor Parking	4,41,000	4			4								
Signage and way finding	1,52,000	2			2								
Lighting	42,00,000	42			42								
Street furniture	13,50,000	14			14								
Total	14,21,73,750			1,167	254	254							

7.5.1.4 Project : Rejuvenation of Zari – Zardozi (Shyam Ganj Market)

7.5.1.4.1 Background

Renowned all over the world, Bareilly is a city very well known for its craft of Zari and Zardozi. The native craft has established Bareilly's identity in the national as well as international market. The skill has eventually been carried on by generations of artisans over past many decades. Many artisans have adopted this as their main occupation or profession. It has provided employment opportunities to thousands of artisans spread over the city as most of the artisans have inherited art to be converted into an occupation.

7.5.1.4.2 Problem Statement

Situated in one of the dense fabrics of the city is the **Sailani market road** dedicated for retail of Zari Zardozi. Before the construction of Shyam gunj flyover, its prime location on Stadium Road made the market easily accessible from all parts of the city. The flyover passing over the market entrance has not only disrupted its linkage from the city's main arteries but has drastically changed the approach to the market underneath.

7.5.1.4.3 Key Intervention

- Designing the streetscape for pedestrians and NMT system
- Façade Development to establish the identity of the market
- Traffic decongestion of Market Street and parking proposals

7.5.1.4.4 Site Delineation

Despite of being covered by the Shyam ganj flyover, the strategic location of Sailani market road still holds a potential for an urban renewal for its transformation. The road from Patel chowk to Satellite bus stand passes under the flyover gives the site an advantage for a fair mobility. The space available underneath the flyover can be better utilized for place-making of the market's entrance.

7.5.1.4.5 Area of Intervention:

Shyam Ganj Flyover:

Total Road Stretch Underneath Flyover for redevelopment – 100 meters

Width of road – 9 meters (ROW based on existing situation)

Sailani Road:

Total Road Stretch for redevelopment – 600 meters

Width of road – 7 meters (ROW based on existing situation)



Map 7-8: Sailani Market Road

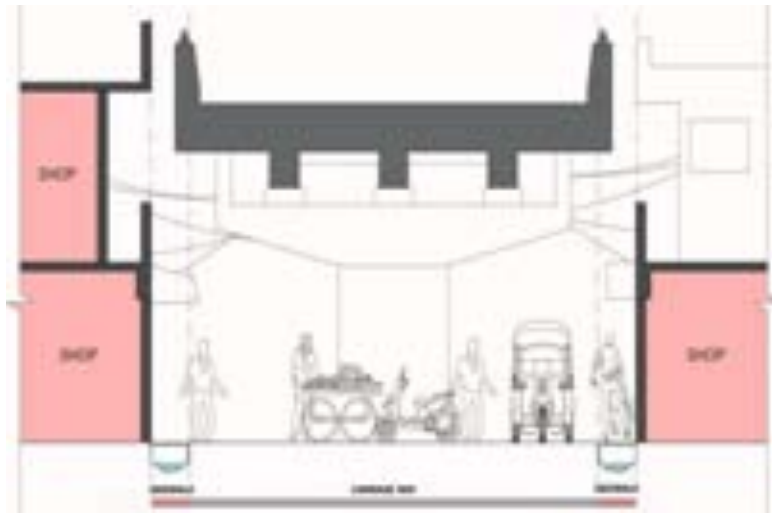


Figure 7-8: Shyam Ganj Flyover Road Section



Figure 7-9: Shyam Ganj Flyover Road



Figure 7-10: Sailani Market Road

7.5.1.4.6 Project Impact and its Benefits

Redevelopment of Sailani Market Road is one of the most significant developments needed for the revival of Bareilly's native craft. The urban renewal of the road underneath the flyover will not only

enhance the approach to the Sailani market street but will also address a prominent access point for the visitors/tourists. The intervention will redefine the urban character of the whole market street and will also emphasize on the underlying market of Zari - Zardozi. This will initiate more influx to the market street and help in restoring the city's native craft.

7.5.1.4.7 Stakeholders

Nodal Agency

Bareilly Development Authority

Helping Agencies

Bareilly Smart City Limited (BSCL)

Bareilly Nagar Nigam

Bareilly Market Associations

Sailani Market Association

Bareilly Zari-Zardozi Association

U.P Tourism



7.5.1.4.8 Infrastructure Requirements

7.5.1.5 Project : Rejuvenation of Zari – Zardozi (Shyam Ganj Market)			
Facilities and Infrastructure	Available but Poor Condition	Not Available	To be Planned
Access to Water Supply			
Access to Sewerage & Drainage			
Access to Drinking Water			
Access of Dustbin or Water Collection System			
Access of road			
Access of parking			
Access to Bus Stop			
Access to Public Transport System			
Access to Police Station			
Access to Fire Fighting Station			
Access to Electricity			

7.5.1.5.1 Costing- Integrated Infrastructure Strategy and Development plan for Rejuvenation of Zari – Zardozi (Shyam Ganj Market)

Components	Cost for Facilitation (INR)	Total Cost in Lakhs	Total (Rs Lakhs)	Funding	Short Term (2022-28)				Medium Term (2028-2037)		Long Term (2037-2071)		
					2022-24	2024-26	2026-28	2028-31	2031-34	2034-37	2037-42	2042-47	2047-71
Construction cost		125		Govt Fund	125								
Total		125			125								

7.5.1.6 Project : Streetscape of Market Street from Qila to Shyam Ganj Along with Urban Renewal of Dargah Precinct by Defining Entrance Gateways, Corridors and Enhancing the Public Infrastructure

7.5.1.6.1 Background

The city of Bareilly is a predominant trade city where different market typologies co-exist and form the base of the city economy and business culture. The market streets have a clear hierarchy based on the predominance of the functional activity and products sold as we move along the streets connecting Delhi to Lucknow. Upon arrival from Delhi, the Bada Bazaar market street stretches from Qila to Darzi chowk which caters to multiple segments of retail and wholesale markets, and from Darzi chowk to Shyam Ganj flyover is the Shyam Ganj market where Zari zardozi works and karkhanas used to flourish a few years back.

Situated in the dense fabric of Bada bazaar is the world famous - Dargah-e-Ala-Hazrat which invites lakhs of pilgrims from all over the country. It holds a historic and spiritual value of very high significance in the city. The dargah is also known for its annual Urs which takes place in the grounds of Islamia College of Bareilly, which invites over five lakh people to the city. Thus, the precinct of Dargah-e-Ala-Hazrat becomes a very important public node. Situated in its proximity is the Khanqah e Niazia, which is also a significant spiritual landmark of the city.

7.5.1.6.2 Problem Statement

The narrow street of Bada bazaar and Shyam ganj market is the harbor for all kinds of activity and with extended retail activities, IPT and light freight vehicles obstruct smooth pedestrian flow leading to congestion and noise pollution. Often the IPT is seen hitting the pedestrians, hence making the streets very uncomfortable to walk upon. Though a clear distinction can be observed in terms of function and products, the market streets lack imageability and a distinct character that can aid visitors in orienting themselves within the bazaars.

Situated in the close proximity of Bada bazaar and clock tower, Dargah e ala hazrat and Khanqah e Niazia have witnessed the effects of increasing density in the core. These religious precincts have lost their imageability and presence over a period of time. Absence of identity markers, gateways, designated corridors, signage, façade lighting has led to degradation of the overall urban character of the precincts.

7.5.1.6.3 Key Intervention

- Restructuring mobility networks to facilitate walkability and Para transit within the Bada bazaar and Shyam ganj market street
- Prioritize the use of public transport.
- Provision of signage design scheme for Bada Bazaar and Shyam Ganj market by standardizing the size & its location on the façade to create uniformity in streetscape.
- Development of symbolic identity/ entrance gateways for both, Dargah and Khanqah.
- Establishing a corridor leading to the religious precincts along with façade treatment guidelines.
- Place making of their precinct with respect to the surrounding neighborhood.

- Enhancing the spiritual character along the street.
- Restructuring the Dargah precinct while adding public infrastructure like designated parking space, washrooms, etc.

7.5.1.6.4 Site Delineation

Upon arrival from Delhi, the market streets start from Qila with the grain market and move in a straight line to Bada Bazaar featuring Sarafa Bazaar (gold and silver jewelry), Surma market, Cloth and cosmetic market respectively. Following the Bada Bazaar which terminates at the Darzi Chowk and further leads to Shiva ji marg road (featuring Sarafa bazaar) and Shyam ganj market (featuring utensils, Zari Zardosi and furniture markets respectively).

Situated in the dense fabric of city core is the Dargah e Ala hazrat, which is one of the important pilgrim destinations in the city. With no defined access point/ entrance gateway, the dargah is approached from various routes from Bada bazaar road and Kutub khana road. This results in an unfeasible approach for the pilgrims who are new to the city. Lack of identity markers and a designated corridor fails to establish imageability and legibility of the precinct. Due to the existing situation in the current scenario, the working of bazaar streets also get hampered, eventually affecting the business.

7.5.1.6.5 Area of Intervention:

Qila to Shyam Ganj Market Road:

Total Road Stretch of the Market – 3 Km

Width of road – Varies from 5 - 7 meters (ROW based on existing situation)

Biharipur Dhal Road to Dargah & Khanqah:

Total Road Stretch for redevelopment – 700 meters

Width of road – 3 meters (ROW based on existing situation)



Map 7-9: Qila to Shyam ganj Road, Dargah e Aalahazrat and Khanqah e Niazia Precinct



Figure 7-11: Bada Bazaar Street (Section - 1) (left) Shyamganj Market Street (section 2) (right)



Figure 7-12: Bada Bazaar Street (left), Shyam Ganj Market Street (right)



Figure 7-13: Street leading to Dargah-e-Aalahazrat (left), Dargah-e-Aalahazrat (right)

7.5.1.6.6 Project Impact and its Benefits

The project aims to define the character of the city market streets. The core city roads shall be defined as internal streets that will be prioritized on cycle and pedestrian infrastructure. These streets shall be designed to reduce the carriageway for low vehicular speed. The peripheral city streets will be developed as the outer loop where provisions for cycling, IPT, parking near intersections, cycle stands at regular intervals shall be given.

Taking the spiritual significance of the Dargah and Khanqah into the revival of these religious precincts becomes essential to restore city's cultural value. Designating corridor leading to these religious places and defining its street character will elevate the essence of the precinct. Establishing identity markers/ entrance gateways and development of public amenities like parking space, washrooms, etc. will offer convenience to visitors in terms of approach and user experience.

7.5.1.6.7 Stakeholders

Nodal Agency

Bareilly Market Associations
Dargah Association

Helping Agencies

Bareilly Development Authority
Bareilly Smart City Limited (BSCL)
Bareilly Nagar Nigam
U.P Tourism



7.5.1.6.8 Infrastructure Requirements

Facilities and Infrastructure	Available but Poor Condition	Not Available	To be Planned
Access to Water Supply			
Access to Sewerage & Drainage			
Access to Drinking Water			
Access of Dustbin or Water Collection System			
Access of road			
Access of parking			
Access to Bus Stop			
Access to Public Transport System			
Access to Police Station			
Access to Fire Fighting Station			
Access to Electricity			

7.5.1.7 Costing- INTEGRATED INFRASTRUCTURE DEVELOPMENT STRATEGY AND ACTION PLAN for Streetscape of Market Street from Qila to Shyam Ganj Along with Urban Renewal of Dargah Precinct by Defining Entrance Gateways, Corridors and Enhancing the Public Infrastructure

Components	Cost for Facilitation (INR)	Total Cost in Lakhs	Total (Rs Lakhs)	Funding	Short Term (2022-28)				Medium Term (2028-2037)		Long Term (2037-2071)		
					2022-24	2024-26	2026-28	2028-31	2031-34	2034-37	2037-42	2042-47	2047-71
Construction cost		402		Govt Fund	402								
Total		402			402								

7.6 TRANSPORT PLANNING

7.6.1 Integrated infrastructure development strategy and action plan for Bareilly

“By 2030, provide access to safe, accessible, and sustainable transport systems for all, improving road safety, notable by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons”.

7.6.1.1 Development Strategy for the Sustainable Urban Transportation:

To improve urban mobility certain measures would be taken, such as convert all buses into clean fuel, ethanol and hybrid technology driven to reduce the pollution level. GPS and GPRS systems would be made mandatory in all buses while vehicles fitted with solar panels would be plied in big cities. New routes will also be required to be formulated for better transportation in urban areas along with traffic regulation/management in the existing routes. Separate city bus track, multi-level parking, inter-state bus terminals (ISBT) and intrastate bus terminals will be developed by Bareilly Development Authority and Bareilly Nagar Nigam. All encroachments on roads will be removed by coordinating with all departments concerned.

- Providing dedicated city bus lane and double decker buses on demand routes.
- Urban transport services will be made disability and gender friendly.
- Utilisation of smart cards for ticketing services
- Providing double decker buses for attracting the tourist and joy-rides in the Bareilly city, connecting to the city with temple circuit.
- GPS/GPRS system, WIFI facility, bus stops/shelters and bio-toilets to be provided along the arterial roads and major connecting junctions of Bareilly.
- Modernisation and Redevelopment of the intrastate bus terminals with better facilities located at Satellite Bus Stand, Bareilly.
- Providing radio taxi services for faster access in Bareilly city.
- Conversion of all buses into clean fuel, ethanol and hybrid technology driven to reduce pollution levels.

7.6.1.2 Stakeholder Identification, Engagement and Empowerment

In the first stage all concerned authorities and stakeholders' access to infrastructure and its benefits, it is crucial to understand. Stakeholder identification and engagement should commence from a very early stage of planning the project when there is most scope for successfully influencing options and implementing change to respond to needs. It must also continue throughout the lifecycle of the project, offering opportunity to further strengthen benefits and feedback to future designs. There should be a documented process to collect feedback, to present it to technical teams for consideration, to evaluate proposed changes and to feed this back to stakeholders.

7.6.1.3 Process of Project Planning, Development, and Implementation stages

Project Planning, Development and Implementation stages applies to all the concerned stakeholder groups, and authorities that are in considering at all stages of the project cycle and Implementation. The beginning of the project planning process is the ideal time to assess and ensure that inclusivity of the project throughout the project lifecycle, including management, supervision, monitoring and evaluation stages. The practice should be integrated in the project planning phase, where it can affect the strategy and objectives of a project. This involves conducting demand studies and considering the needs of the project completion.



FIGURE 7-14 FLOW CHART OF PROCESS OF PROJECT PLANNING

a. Governance and Capacity Building

Leadership and governance systems are at the heart of decision-making that guides how resources are used and assets are developed to target inclusive outcomes. Leadership forms the foundation of how a vision on social inclusion is translated into reality. Important elements of good governance include transparency and accountability, which create trust between the government and society. Ease of access to information and modern communication tools can help to create an interactive and collaborative environment.

b. Private Sector Roles and Participation

The private sector can play a role in improving inclusivity in infrastructure projects, but careful planning is necessary to ensure these results. The appropriate application of incentives, such as the linking of government payments to inclusive outcomes, can help to align the private sector with government. The general principles and guidance under this Action Area are applicable to all stakeholders, but some of the recommended approaches to private sector participation in these Action Area are sector specific. All recommendations should, be adjusted, to consider the individual features of the infrastructure project under consideration, to optimise opportunities that will benefit targeted stakeholder groups.

c. Development Strategies adopted for Bareilly

The selected strategies to achieve the Goals are:

- i. Preparation of Traffic Management Plans, for critical locations, corridors, and areas with emphasis on priority of access and movement for Passenger and goods in Bareilly to cater the inter-city and intra-city connectivity and addition of new lengths into the existing road network. Connecting the missing links of road network in Bareilly. construction of new flyovers, Bridges, RoBs, Under-passes sections and Grade separated intersections followed by improvement of existing Bridges, Flyovers, RoBs and Road crossings. Adopt 'Zero Fatal Accident' policy and promote high degree of safety in the planning, design and construction of transport facilities and operation of transport service.
- ii. Providing Bareilly with intra & inter bus terminals, were passengers board and alight from personal and private vehicles. It also often provides a convenient point where services can be controlled from. Which will serve with all requisite facilities in the terminal area which helps to cater the needs of on-boarding and off-boarding passengers. Augment supply of mass transit systems like Metro-lite in future by 2031 which can Ensure adequate last mile connectivity mass transit stations and IPT and NMT locations to cater in horizon year 2031.



- iii. Developing, Preparation and Adoption, a comprehensive Parking Policy, Which Discourages use of private modes for 'Work' and 'Education' trips, conserve space and prohibits encroachment on road space and capacity. For the present demand of parking in the core area of Bareilly, an innovative solution like MLCP, Boom barrier and Dedicated parking lanes can be adopted.
- iv. Providing well designed pedestrian footpaths and cycle lanes along all arterial roads of Bareilly, with exclusive pedestrian phase at all inter-sections like grade separation facility. Improvement of existing junctions or intersections with pedestrian refuge islands of adequate size and street infrastructure facilities.
- v. Providing city bus service along the major routes of the Bareilly city by Introducing Electric Buses with the support of Government of India's Initiation towards sustainable urban mobility places electrification of public transportation as high. Switching from ICE-powered buses to pure electric ones will have several advantages, including quickening the country's progress toward its 2071 net-zero goal.
- vi. Development of integrated freight complex (IFC) or Integrated Logistic Hub (ILH) for facilitating urban freight movements and adopt city logistics facilities for sustainable urban freight deliveries
- vii. Strengthen the capacity of institutional set-up in the study area of mobility planning and traffic engineering. By conducting safety audit at all stages – planning, design, construction, post construction and operation – of transport facilities and services. Explore innovative mechanism to finance urban transport & arrangement resource generation capacity of BDA.

7.6.2 PROJECT : STRENGTHENING OF RADIAL ROAD CONNECTIVITY FROM BAREILLY CITY TO GANGA EXPRESSWAY.

a. Vision Plan and Back ground of the study

The improvement section details of radial road connecting from Bareilly city to Ganga Expressway

Sl. No	Road Section		Length
1	Bareilly - Badaun Road (NH 530B)	NH 530B: Ramganga Bridge to Binawar (Near Badaun)	26.0 km
2		Bareilly South Bypass: Parsakhera - Ramganga Bridge - Tilhar Mod	31.0 km

To provide better facilities in terms of road infrastructure and a faster connectivity from Bareilly city towards proposed Ganga Expressway.

- Smooth and uninterrupted traffic movement for all modes moving along the NH 530B section from Bareilly city towards proposed Ganga Expressway with total length of 26.0 km.
- Consideration of present and future transportation proposals along/around the influence zone of the NH 530B till Ganga Expressway (i.e., near Binawar).
- To provide faster connectivity of inter & intra-state public transport system for the influence zones through NH 530B.
- Propose a comprehensive solution for truck lay-byes & paved shoulder for parking along the NH 530B.
- Provision of street furniture like way-finding signboards, road signages, road markings, emergency services along road, public conveniences, etc.

b. Existing Situation Analysis of NH 530B (Bareilly to Budaun)

c. **Ramganga Bridge to Binawar section (NH 530B):** The Ramganga Bridge to Binawar (near Budaun) is part of NH 530B and currently it is a 4-lane divided carriageway in good condition. The total length between Ramganga Bridge to Binawar is about 26.0 km (Approx.), considered for the radial road connectivity between Bareilly city to Ganga Expressway link. At present, construction of flyover is in progress at Lal Phatak Railway Crossing, near Bareilly city.

- **Road Type:** NH 530B (Ramganga Bridge to Binawar (near Budaun))
- **Existing Lanes:** 4 lane road
- **Length from Ganga Expressway to Ramganga Bridge:** 26.0 km (Approx.)
- **Major Bridge & River:** Ramganga Bridge
- **Cantonment Area:** Civil Lines area, Near Circuit House, Bareilly



Figure 1: Existing situation of NH 530B, near Circuit House road



Figure 2: Flyover construction at Lal Phatak Railway Crossing



Figure 3: Major Bridge along Ramganga River

Figure 4: NH 530B near Binawar

d. **Bareilly South Bypass (Parsakhera-Ramganga Bridge-Tilhar Mod):** The proposed new greenfield alignment of ‘Bareilly South Bypass’ section starting from Parsakhera Industrial Area to Ramganga Bridge to Tilhar Mod (near Rajau Paraspur) with total length of 31.0 km (Approx.)

- **Road Type:** Bareilly South Bypass (Greenfield Road as per Master Plan 2031*)
- **Connectivity:** Parsakhera – Ramganga Bridge – Tilhar Mod (Near Rajau Paraspur)
- **Proposed Length:** 31.0 km (Approx.)
 - **Section 1:** Parsakhera Industrial Area to Ramganga Bridge: 18 km
 - **Section 2:** Ramganga Bridge to Tilhar Mod (Near Rajau Paraspur): 13.0 km
- **Major Bridge & River:** Ramganga Bridge



Figure 1: Jumkha Chauraha, near Parsakhera Industrial Area

Figure 2: Agricultural land, near Balla Kotha (near Clutterbuck Ganj Railway Station)



c. Strengthening of Radial Roads to 6 lanes as per IRC:

As per the IRC guidelines, the proposed RoW of NH 530B to be strengthening as Radial Road connecting from Badaun (i.e. Binawar) to Bareilly is about 60m (200 feet) wide. This includes width of 33.0 m for roadways or built-up area those comprise of 6 lane carriage width of about 21.0 m wide, median of 5.0 m wide along with kerb shyness, paved shoulder width of 3.5 m wide and rest about 27.0 m will be used for future extension and development of highway facilities.



Figure 7-15: Typical Cross-section of 6 lane road

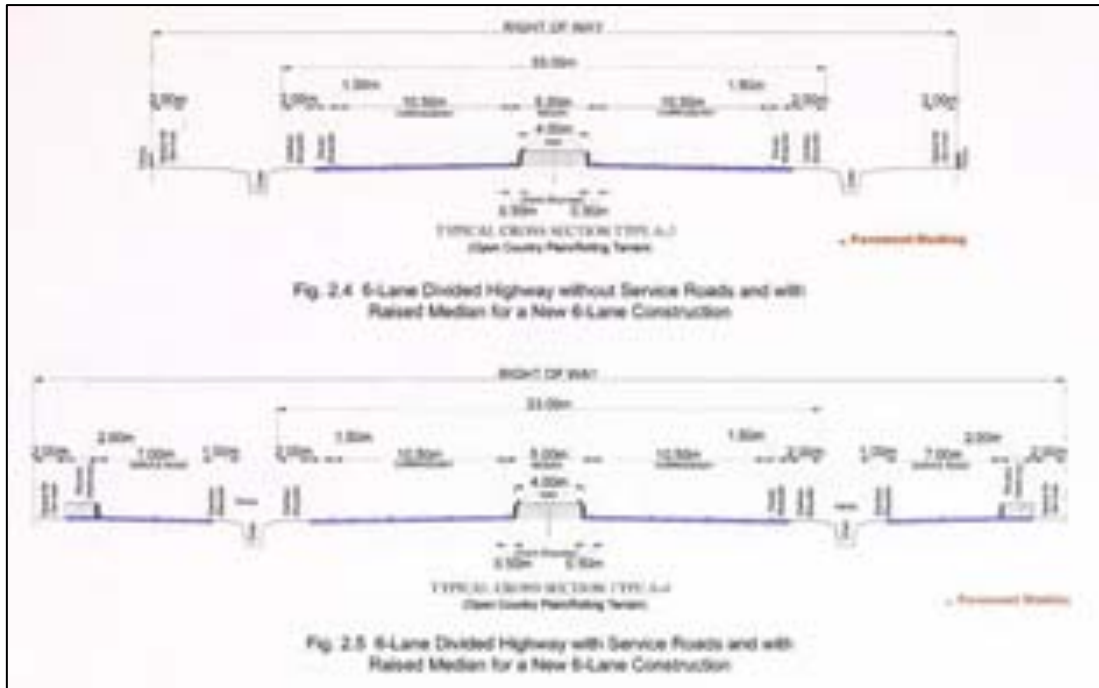


Figure 7-16: Typical Cross-section of 6 lane road with Raised Median

d. Improvement proposals listed along the road section (a & b)

a. Ramganga Bridge to Binawar section (NH 530B)

Corridor improvement plan	Ramganga Bridge to Binawar Section (near Badaun)
Total length	26.0 km
Road Category	NH 530B
Existing no. of Lanes	4 Lane Road
Major Bridge & River	Ramganga Bridge
Major Junctions along NH 530B	<ul style="list-style-type: none"> • Sardarnagar • Devchara • Bhamora • Binawar
Proposed Improvement along NH 530b	<ul style="list-style-type: none"> • Widening of the road from 4 lane to 6 lane • Improvement of Service Road at major Settlements with pedestrian grill • Junction Improvement Plan at <ul style="list-style-type: none"> ○ Sardarnagar ○ Chandpur ○ Makrandpur ○ Devchara ○ Kheda ○ Bhamora ○ Binawar • Road Marking & Signages • Proposed Foot-over-Bridge <ul style="list-style-type: none"> ○ Sardarnagar ○ Chandpur ○ Makrandpur ○ Kheda

	<ul style="list-style-type: none"> ○ Bhamora ● Public Convivences (Toilets on both sides)
Proposed Grade separated flyovers at	<ul style="list-style-type: none"> ● Grade Separated Flyover at <ul style="list-style-type: none"> ○ Sardarnagar ○ Binawar



Figure 7-17: Proposed Grade Separators along NH 530B

b. Bareilly South Bypass (Parsakhera – Ramganga Bridge – Tilhar Mod (Near Rajau Paraspur))

Corridor improvement plan	Parsakhera – Ramganga Bridge – Tilhar Mod
Total length	<p>Total Length: 31.0 km</p> <p>Section 1 = 18.0 km</p> <p>Section 2 = 13.0 km</p>
Road Category	Bareilly South Bypass (Greenfield Alignment)
Major Bridge & River	Ramganga Bridge
Major Junctions	<ul style="list-style-type: none"> ● Parsakhera Industrial Area ● Ramganga ● Mirjapur ● Tilhar Mod
Proposed Improvement	<ul style="list-style-type: none"> ● New Greenfield alignment ● Road Improvement to 6 lanes ● Junction Improvement Plan at <ul style="list-style-type: none"> ○ Parsakhera Industrial Area ○ Ramganga ○ Tilhar Mod ● Public Convivences (Provision of Toilets)

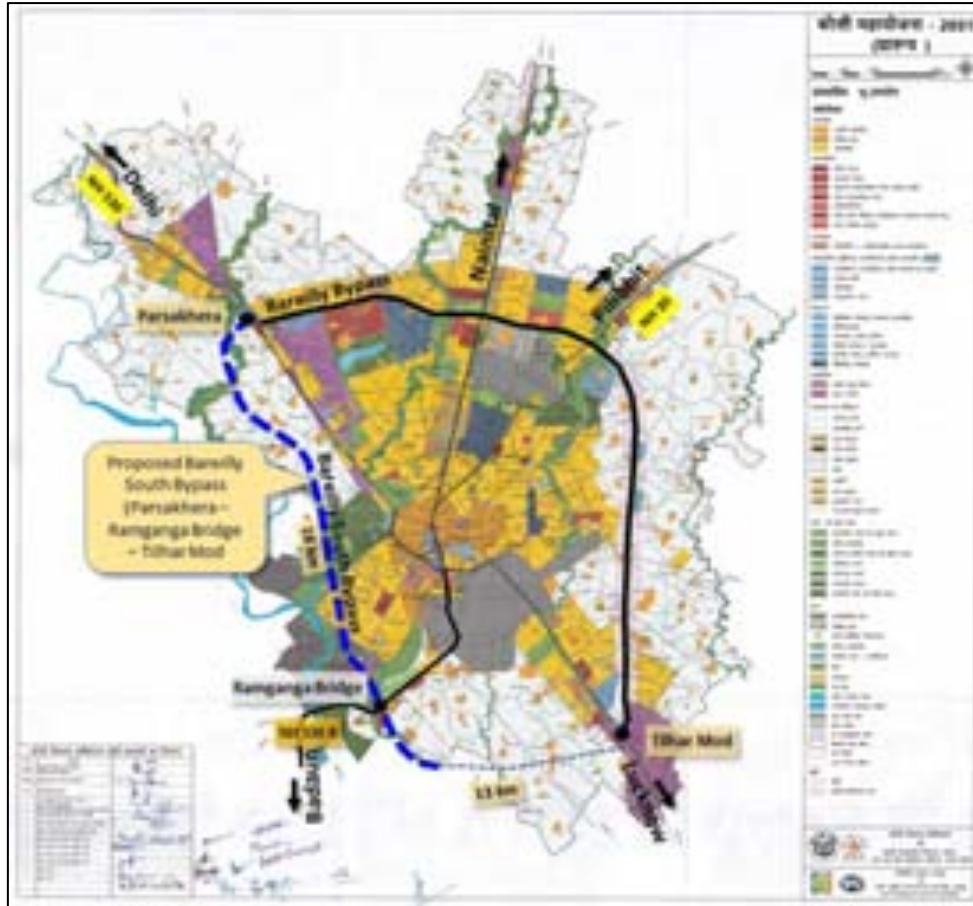


Figure 7-18: Proposed Bareilly South Bypass Road alignment mentioned in Master Plan-2031



Figure 7-19: Ganga Expressway alignment and Bareilly South Bypass Road

e. Total project cost & Phasing

i. Cost estimates for Ranganga Bridge to Binawar Section

S. No.	Particulars	Amount (Rs in Cr.)
--------	-------------	--------------------

1	SITE CLEARANCE	₹ 28,15,80,000
2	EARTH WORK	₹ 8,07,60,069
3	SUB-BASE AND BASE COURSES	₹ 85,32,99,213
4	BITUMINOUS WORKS	₹ 94,09,58,655
5	PAVED SHOULDER	₹ 23,45,32,610
6	TRAFFIC SIGNAGES, ROAD MARKING AND OTHER APPURTENANCES	₹ 5,17,71,654
TOTAL AMOUNT – A		₹ 2,44,29,02,201

ii. Cost estimates for Bareilly South Bypass (Parsakhera – Ramganga Bridge – Tilhar Mod)

S. No.	Particulars	Amount (Rs in Cr.)
1	SITE CLEARANCE	₹ 33,57,30,000
2	EARTH WORK	₹ 9,62,90,852
3	SUB-BASE AND BASE COURSES	₹ 1,01,73,95,216
4	BITUMINOUS WORKS	₹ 1,12,19,12,243
5	PAVED SHOULDER	₹ 27,96,35,035
6	TRAFFIC SIGNAGES, ROAD MARKING AND OTHER APPURTENANCES	₹ 6,16,95,616
TOTAL AMOUNT - B		₹ 2,91,26,58,960

iii. Total Cost (a+b): ₹ 5,35,55,61,162.00 (Rs. 535.55 Crores)

iv. Project Phasing

Projects Name	Mode of Development	Short Term (2022-28)	Medium Term (2028-37)	Long Term (2037-71)
Strengthening of Radial Road connectivity from Bareilly city to Ganga Expressway.	EPC-HAM	2,44,29,02,201	2,91,26,58,960	-

f. List of Stakeholders

- Bareilly Development Authority (BDA)
- Bareilly Nagar Nigam (BNN)
- PWD-Bareilly Dist.
- State Highways-Bareilly Dist.
- NHAI-Bareilly Dist.

g. Project Time-line

The strengthening of Radial Road connectivity from Bareilly city to Ganga Expressway (i.e. Binawar) with construction time: 5-6 years

7.6.3 PROJECT : DEVELOPMENT OF PROPOSED METRO-LITE RAIL SYSTEM CONNECTIVITY IN BAREILLY CITY

a. Vision Plan and Back ground of the study

- To provide a safe, faster, and eco-friendly rail-based mass transit services to the public at affordable rates while simultaneously catalysing dense and orderly urban growth.
- Bareilly is a fast-growing city with the population of more than 10 lakhs. The city is expending in terms of commercial, educational, medical, industrial and transit activities. Bareilly serves a major population of nearby areas like Kumaun region, Budaun, Shahjahanpur, Pilibhit etc. which results increasing movement of traffic of the city.
- The proposed Metro-lite rail system in Bareilly city will be sustainable public transport system to provide hassle-free journey connecting major land-mark areas like Bareilly Junction Railway Station, Chowki Chauraha, Parsakhera Industrial Area, Izzatnagar, Bareilly Airport, IVRI, Stadium Road, Satellite Bus Stand, Gandhi Udhyan and Phoenix Mall in Bareilly.
- It is also an important factor to consider such as, the mobility of passenger's movement, available right-of-way in city, mobility system, environmental and social impact assessment.

- b. Vehicular Growth in Bareilly:** In Bareilly, the registered vehicles have been increased moderately over the past decade. It is significant to note that about 14 to 19% of the vehicle's growth in the past decade. The increase of two-wheelers could be attributed to the comparatively better economic status of people and lack of city-wide good PT system. The increase of private modes demands more road space and has resulted in dense concentration of traffic on roads with limited right of ways.

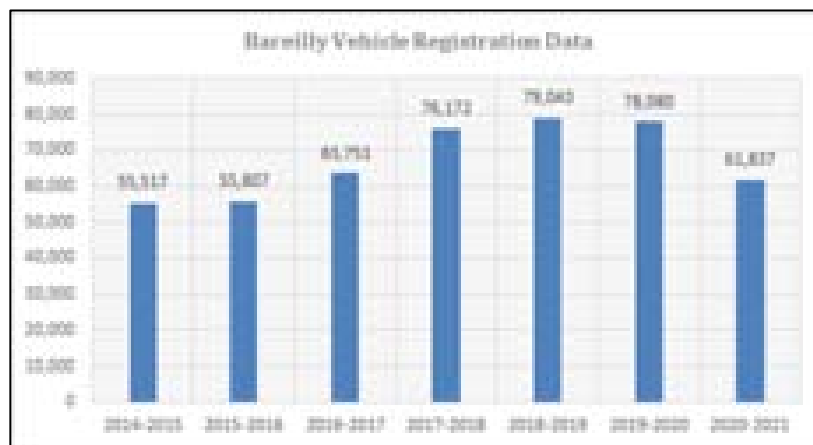


Figure 7-20: Vehicular Growth in Bareilly

c. Existing Situation of Transport in Bareilly

i. Public Transport system in Bareilly:

- At present Bareilly city, does not have intra-city public transport system. EV buses in Bareilly have just started their operations in fixed routes and their benefits are at a very nascent stage.
- For Inter-state transport at present in Bareilly, 2 no of bus stands (Old bus stand and Satellite Bus Stand). Both the Bus Stand are in functional, as most of the Bus frequency is from Satellite Bus Stand. The old Bus stand is located in civil lines cater bus plying on routes towards Moradabad, Haldwani, Delhi, Naintal, Dehradun, Agra, Jaipur areas. Satellite bus station caters the bus services towards long distance to Kanpur, Lucknow and others.

Table 7-7 Satellite Bus Stand in Bareilly



Figure 1: Existing condition of Satellite Bus Stand

Table 7-8 Passenger movement at Bus Terminal

Location	Daily Passengers (no.)			Peak Hour Passenger (no.)		
	In	Out	Total	In	Out	Total
Old Bus Stand	3630	3870	7500	60	25	85
Satellite Bus Stand	5555	6040	11595	35	40	75

- The commuters boarding and alighting at the both bus terminals (Satellite Bus Stand & Old Bus Stand), 50% travel for work, while 23% of the boarding passengers and 25% of the alighting passengers travel for business-related activities.
 - Auto-rickshaws is the preferred access mode at the both the terminals, with a very high share of 64% and 69%.
- ii. **Air Connectivity:** At present, the Bareilly airport is a civil terminal located in Izzat Nager, which is located 6 km from north of Bareilly city. The terminal building is 2500 sqm, and can handle 150 passengers during the peak hours. In future, a new apron 9500 m provides parking space and 150 cars parking is expanded. A new terminal building was inaugurated in 2021 as a part of airport expansion. The building is spread over 3020 sqm and has a capacity to accommodate over 300 passengers. At present, Bareilly has flight connectivity with Delhi, Bangalore, Mumbai.

Table 7-9 Passenger Traffic & Aircraft Movement

Year	Passenger Traffic	Aircraft Movement
2020-21	1,641	150
2021-22	1,03,667	1,086

Source: AAI annual report

- iii. **Rail Transport system in Bareilly:** Bareilly Junction railway station is the major railway station serving city. Bareilly railway station connects the Lucknow-Moradabad line and Lucknow-Sitapur-Lakhimpur-Pilibhit-Bareilly-Kasganj Line. The Bareilly Railway station is well connected to Lucknow, New Delhi, Amritsar, Ambala, Jalandhar, Pathankot, Gorakhpur, Howrah and other major destinations. Other railways station like Bareilly Cantt, Bareilly City, Bhojipura Junction, CB Ganj, Bohna, Izzatnagar, Parsakhara, Ramganga Bridge secondary railways stations in Bareilly area.

Table 7-10 Passenger movement at Bareilly Railway Station

Location	Daily Passengers			Peak Hour Passenger		
	In	Out	Total	In	Out	Total
Bareilly Junction	3460	4960	8420	145	175	320
Izzat Nagar Railway Station	3035	2580	5615	190	230	420

- Passenger demand at the Bareilly Junction Railway Station and Izzat Nagar Railway Station, at current scenario is 8,500 and 5,500 passengers/day were observed, with about 300 and 400 passengers at the two junctions during the peak hour.
- Most of the passengers preferred to use auto-rickshaws as the access, with a very high share of 69% and 65%, as most of the trips are in the range of 5-10 km, mainly from residential areas in the vicinity, such as Karam Chari Nagar, Sahukara, Katghar, Qureshi Nagar, civil lines, Priyadarshini Nagar and Dwarika Puram Colony.

d. Process of Network Development

- **Road Network Survey:** Total length of individual Roads, width, RoW
- **Documentation:**
 - Activity pattern of the road
 - Pedestrian Flow
 - Land-use pattern, Heritage, Public & Semi-public
 - Building Character
- **Identifying present issues:** Encroachments, Informal activities, hawkers, vehicular movements, Traffic Signals, footpath and parking locations
- **Involving the citizens:** Public participation through social media survey, campaigning
- **Traffic Management:** Involving the authorities and smart techniques, variable display sign boards
- **Designing the streets:** Incorporating pedestrian pathways, dedicated lane for cycle tracks, street furniture, bollards, smart LED street lights, Signages, Parking Spaces.

e. Guidelines for Choice of Different Modes: The working group of Urban Transport has set the guidelines for the choice of different modes as

System	PHPDT in 2022	Population in 2021	Average Trip Length
Metro Rail	>= 15,000 for at least 5 km continuous length	More than 20 lakhs	More than 7 km
LRT System	=<10000	More than 10 lakhs	More than 7 km
Mono-Rail system	=<10000	More than 20 lakhs	About 5-6 km
BRTS	>=4,000 upto 20,000	More than 10 lakhs	>5 km
City Bus Services		>1 lakhs	>2-3 km

f. Proposed Metro Routes in Bareilly: The proposed Bareilly metro routes identified are

SI No	Route Name		Length (km)
1	Blue Line	Bareilly Jn. Railway Station to Airport & Pilibhit Bypass	15.0 km
2	Red Line	Bareilly Jn. Railway Station to Parsakhera & Jumkha Chowk	16.0 km
3	Green Line	Mini bypass to Izzat Nagar to Gandhi Udhyan Chauraha	10.0 km
4	Violet Line	Satellite Bus Stand to Bisalpur Chauraha to Pilibhit Bypass to Bilwa to Jumkha Chowk	30.0 km
Total Proposed Metro Length			71.0 km

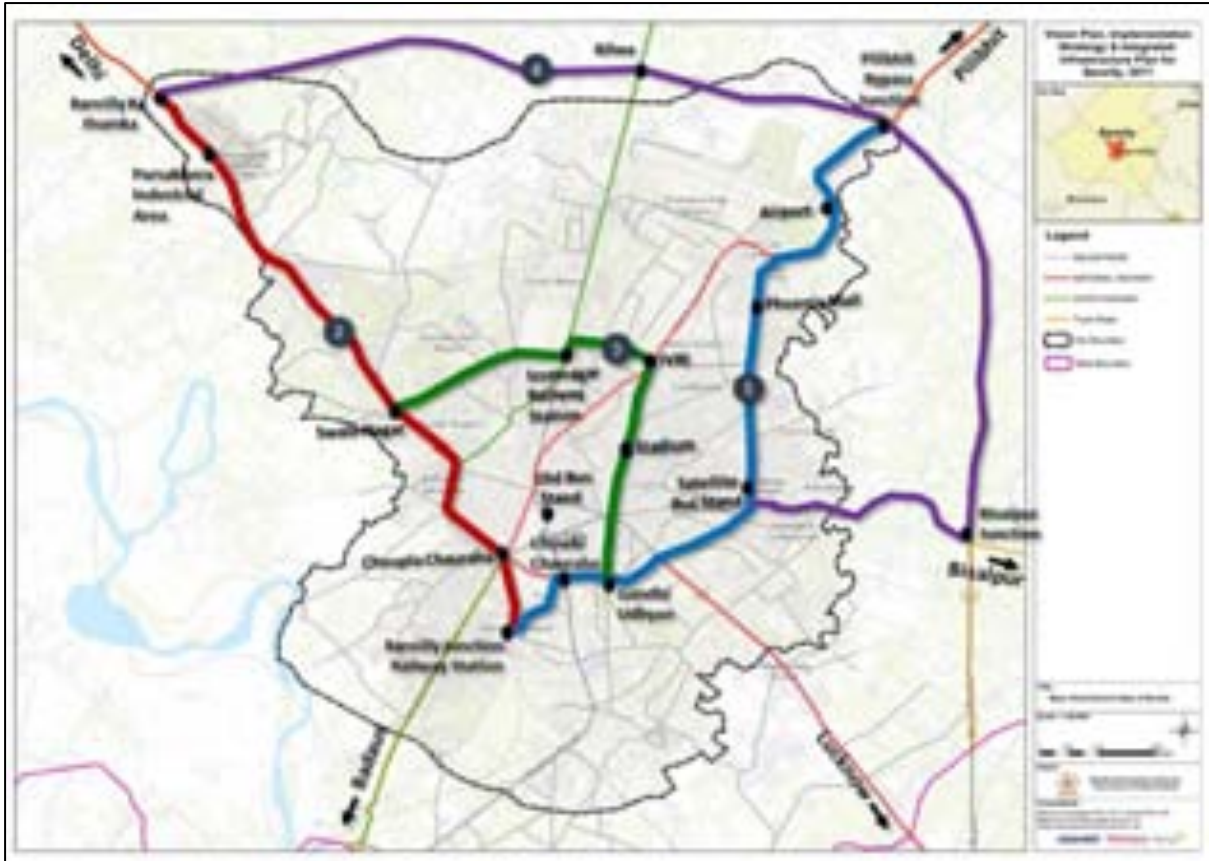


Figure 7-21: Proposed Metro Routes in Bareilly City



Figure 5: Typical view of the Bareilly Metro near Satellite Bus Stand & Gandhi Udhyan

g. Financial Analysis

Cost Estimates for Proposed Metro for 4 lanes

SI No	Particulars	Section 1 Cost (Rs in Cr.)	Section 2 Cost (Rs in Cr.)	Section 3 Cost (Rs in Cr.)	Section 4 Cost (Rs in Cr.)	Total Cost (Rs in Cr.)
		Blue Line	Red Line	Green Line	Violet Line	
1	Alignment and Formation	7,50,00,00,000	8,00,00,00,000	5,00,00,00,000	15,00,00,00,000	35,50,00,00,000
2	Station Building	6,00,00,00,000	6,40,00,00,000	4,00,00,00,000	12,00,00,00,000	28,40,00,00,000
3	Depot	3,90,00,00,000	4,16,00,00,000	2,60,00,00,000	7,80,00,00,000	18,46,00,00,000
4	Rolling Stock	3,00,00,00,000	3,20,00,00,000	2,00,00,00,000	6,00,00,00,000	14,20,00,00,000
5	Misc. and Others comp.	15,19,50,00,000	16,20,80,00,000	10,13,00,00,000	30,39,00,00,000	71,92,30,00,000
Total		35,59,50,00,000	37,96,80,00,000	23,73,00,00,000	71,19,00,00,000	1,68,48,30,00,000
Contingencies@3%		1,06,78,50,000	1,13,90,40,000	71,19,00,000	2,13,57,00,000	5,05,44,90,000
Gross Total		36,66,28,50,000	39,10,70,40,000	24,44,19,00,000	73,32,57,00,000	1,73,53,74,90,000

Total Cost of the project for each section

SI No	Route Name		Length (km)	Cost (Rs in Cr.)
1	Blue Line	Bareilly Jn. Railway Station to Airport & Pilibhit Bypass	15.0 km	3,666.28 Cr
2	Red Line	Bareilly Jn. Railway Station to Parsakhera & Jumkha Chowk	16.0 km	3,910.70 Cr
3	Green Line	Mini bypass to Izzat Nagar to Gandhi Udhyan Chauraha	10.0 km	2444.19 Cr
4	Violet Line	Satellite Bus Stand to Bisalpur Chauraha to Pilibhit Bypass to Bilwa to Jumkha Chowk	30.0 km	7332.57 Cr
Total Proposed Metro Length			71.0 km	17,353.74 Cr

h. Project Phasing

Projects Name	Mode of Development	Short Term (2022-28)	Medium Term (2028-37)	Long Term (2037-71)
Development of proposed Metro-Lite Rail System connectivity in Bareilly city	EPC-HAM	36,66,28,50,000	39,10,70,40,000	97,76,76,00,000

i. List of Stakeholders

- i. Bareilly Development Authority
- j. Bareilly Nagar Nigam
- k. PWD-Bareilly
- l. State Highways-Bareilly
- m. NHAI-Bareilly
- n. UP Metro Rail Corporation
- o. UP State Road Transport Corporation
- p. UP Traffic Police

j. Project Time-line

- The Development of proposed metro-lite rail system connectivity in Bareilly city with construction time: 5-7 years



7.6.4 PROJECT IMPLEMENTATION STRATEGY (RS IN CR.)

S. No.	Projects	Mode of Development	Short Term (2022-28)			Medium Term (2028-37)			Long Term (2037-51)		
			2022-24	2024-26	2026-28	2028-31	2031-34	2034-37	2044-53	2053-62	2062-71
1	A parking policy and construction of off-street parking lots in major market and commercial areas to accommodate the parking demand for nearly 12000 E.C.S.	EPC-HAM		10,50,00,000		10,50,00,000		10,50,00,000		10,50,00,000	
2	Strengthening of Radial Road connectivity from Bareilly city to Ganga Expressway.	EPC-HAM			2,44,29,02,201			2,91,26,58,960			
3	Interactive Bus Stop at various locations	PPP	5,00,00,000			5,00,00,000			5,00,00,000		
4	Development of Cycle Track Corridor	EPC-HAM	15,00,00,000			15,00,00,000			15,00,00,000		
5	Establishment of Freight Logistic Hub for efficient distribution of inter & intra urban freight movement in Bareilly	PPP	1,25,80,00,000								
6	Electric Vehicle Charging Station along the National Highway for Cars	PPP	5,00,00,000			5,00,00,000					
7	Development of proposed Metro-Lite Rail System connectivity in Bareilly city	EPC-HAM			36,66,28,50,000		39,10,70,40,000		24,44,19,00,000		73,32,57,00,000



7.6.4.1 Governance and Capacity Building

Leadership and governance systems are at the heart of decision-making that guides how resources are used and assets are developed to target inclusive outcomes. Leadership forms the foundation of how a vision on social inclusion is translated into reality. Important elements of good governance include transparency and accountability, which create trust between the government and society. Ease of access to information and modern communication tools can help to create an interactive and collaborative environment.

7.6.4.2 Private Sector Roles and Participation

The private sector can play a role in improving inclusivity in infrastructure projects, but careful planning is necessary to ensure these results. The appropriate application of incentives, such as the linking of government payments to inclusive outcomes, can help to align the private sector with government. The general principles and guidance under this Action Area are applicable to all stakeholders, but some of the recommended approaches to private sector participation in these Action Area are sector specific. All recommendations should, be adjusted, to consider the individual features of the infrastructure project under consideration, to optimise opportunities that will benefit targeted stakeholder groups.

7.6.4.3 Development Strategies adopted for Bareilly

The selected strategies to achieve the Goals are:

- viii. Preparation of Traffic Management Plans, for critical locations, corridors, and areas with emphasis on priority of access and movement for Passenger and goods in Bareilly to cater the inter-city and intra-city connectivity and addition of new lengths into the existing road network. Connecting the missing links of road network in Bareilly. construction of new flyovers, Bridges, RoBs, Under-passes sections and Grade separated intersections followed by improvement of existing Bridges, Flyovers, RoBs and Road crossings. Adopt 'Zero Fatal Accident' policy and promote high degree of safety in the planning, design and construction of transport facilities and operation of transport service.
- ix. Providing Bareilly with intra & inter bus terminals, were passengers board and alight from personal and private vehicles. It also often provides a convenient point where services can be controlled from. Which will serve with all requisite facilities in the terminal area which helps to cater the needs of on-boarding and off-boarding passengers. Augment supply of mass transit systems like Metro-lite in future by 2031 which can Ensure adequate last mile connectivity mass transit stations and IPT and NMT locations to cater in horizon year 2031.
- x. Developing, Preparation and Adoption, a comprehensive Parking Policy, Which Discourages use of private modes for 'Work' and 'Education' trips, conserve space and prohibits encroachment on road space and capacity. For the present demand of parking in the core area of Bareilly, an innovative solution like MLCP, Boom barrier and Dedicated parking lanes can be adopted.
- xi. Providing well designed pedestrian footpaths and cycle lanes along all arterial roads of Bareilly, with exclusive pedestrian phase at all inter-sections like grade separation facility. Improvement of existing junctions or intersections with pedestrian refuge islands of adequate size and street infrastructure facilities.
- xii. Providing city bus service along the major routes of the Bareilly city by Introducing Electric Buses with the support of Government of India's Initiation towards sustainable urban mobility places electrification of public transportation as high. Switching from ICE-powered buses to pure electric ones will have several advantages, including quickening the country's progress toward its 2071 net-zero goal.



- xiii. Development of integrated freight complex (IFC) or Integrated Logistic Hub (ILH) for facilitating urban freight movements and adopt city logistics facilities for sustainable urban freight deliveries
- xiv. Strengthen the capacity of institutional set-up in the study area of mobility planning and traffic engineering. By conducting safety audit at all stages – planning, design, construction, post construction and operation – of transport facilities and services. Explore innovative mechanism to finance urban transport & arrangement resource generation capacity of BDA.

7.7 INFRASTRUCTURE PLANNING

7.7.1 Water Supply

To assess the future demand for all parts of Bareilly within Municipal area Water demand has been assessed by taking 150 LPCD i.e. 135 LPCD with 15% unaccounted water demand of the area.

Table: water requirements

Water requirement	2021	2026	2031	2036	2041	2046	2051	2071
A Municipal Area	154	168	193	211	229	249	269	422
B Cantonment Board	5	6	6	7	9	10	11	38
C Total Villages within Planning Boundary	38	42	47	53	66	74	82	23
D Total Census Towns within Planning Boundary	13	15	17	19	23	26	29	17
E Total Planning Boundary Population	210	231	263	289	327	358	391	500

Source: Analysis

Under Amrut 2.0 all are to be covered within municipal area to address 155 LPCD which is far higher side than the requirement of MoUD i.e. 135 LPCD. So, there is not to presume additional water augmentation to feed futuristic demand for ultimate project population for 2051. But there are 11 Urban agglomeration, and all villages are within planning Boundary which over the year will be amalgamated as a part of city. To estimate the population enhancement by accounting Rural to urban transformation and Urban agglomerated towns in city limit referring Master Plan 2031 document total water demand is estimated as under:

a. **WASTAGE AND DISTRIBUTION LOSSES:**

It has been observed that wastage of water at consumer's end in the City is substantial. Almost 30-40% of water supplied is lost in transmission and distribution.

b. **SERVICE CONNECTIONS:**

All property connections are unmetered. In addition, there are reported to be about 20, 540 public stand posts, supplying water to economically backward households and slum areas.

c. **ISSUES :**

1. **Scarcity in Source:** Presently only 75% of the population is covered by municipal water supply. Raw water scarcity is experienced in summer, due to lack of flow of present source, Agra Canal water supply network needs to be implemented. Though, under Amrut 2.0 requirement are fulfilling total municipal area.

2. **Exploitation of Ground Water Source:** In the absence of a perennial water source, dependence on ground water continues to be high in the periphery. Apart from the municipal bores, a large number of private bores have been installed in various parts of the city. This has seriously affected the ground water level, which is depleting at the rate of 2 to 3m annually. Thus, the reliability and sustainability of the ground water source is questionable.

3. **Operation of Water Treatment Plants:** The present operation, including chemical dosing and back washing of filters, Chlorine dosing is arbitrary. All the equipment meant for these functions needs to be repaired, if required and a formal system of testing the raw water turbidity, administering the



doses based on jar test and back washing of filters, when it is due, needs to be introduced. Additional gas cylinders have to be procured.

4. System Losses: Around 30%-40% of the water supplied gets lost during transmission and distribution. Scada system is only commissioning in Smart City ABD area.

5. Limited Duration of Supply: At present, the water is supplied only for one hour on fifth day. It is proposed to supply water for 24 hours and hence necessary modification including construction of ESR at each distribution station will be carried out.

6. Contamination of water due to old service connections: The consumer connections are of Galvanized iron, which has a life of 7-8 years. These connections are often not replaced on time and leads to the problems of leakage, low pressure and contamination.

16.1.6 Vision Plan for Water Supply

So basis of above requisite the water supply vision for 24X7 potable water supply to all area could cover by de centralize use of water and recycle of water as under:

Year	2026	2036	2051	2071
Action Plan	Short Term	Mid Term	Long Term	Outline Plan
Connection				
Water Augmentation from Canal				
enhancement of WTP & Reuse of Water				

Connection

Water Augmentation from Canal

enhancement of WTP & Reuse of Water

Project Phasing and Costing For Integrated Infrastructure development Strategy and Action Plan for Water Supply Service has already been considered under Amrut 2.0 for entire city and rural area under Jal Shakti Mission. So separate costing has not been done

7.7.2 Wastewater

There are properties with Sewer Connection 65201 and Properties with onsite sanitary disposal are 136275. Total water consumption (billed and unbilled) from ULB and Non ULB sources are accounted 110.8 MLD and volume of wastewater generated from Domestic water consumption is around 88.64 MLD (Source SLB 2019-20). There is no sewer Treatment plant. Although STP will be set up soon in two sites.

Total Length of sewerage network = 206.2 km

Total Wastewater produced = 99.2 MLD

Zone	Sewer Lines	
	Length (km)	Area covered (sq. km)
Zone - 1	43	9
Zone - 2	71	8.46
Zone - 3	59	3.97
Zone - 4	33	4.33
Total	206	25.76

*Source: SLB 2012, NNB

INTERMEDIATE PUMPING STATION AND STP

ZONE-2 : In zone-2 is 71 Km sewer length with MLD stp based on mid-year 2033 . there is MPS provided in the stp campus.

Zone 3: IPS-2 of I & D work. in zone-3 is proposed under I & D work of Bareilly city of 59 Km length

ZONE-4 : IPS-2 of I & D work. in zone-4 is proposed under I & D work of Bareilly city of 33 km length. Works incorporated under this Detailed Project Report have been proposed for year of 2033.

Bareilly Smart City "ABD" Area is proposed to be covered with sewer system under Smart City Programme. Sewage Treatment Plants will also be provided for Treatment of sewage and discharge of effluent to the effluent management works for irrigation of cultivable land effluent will however be conveyed to the Natural Drainage when not required for Irrigation purposes.

Taking into consideration Topography/Gradient/Slope of Ground/Location of Railway Tracks i.e. from major drains under the Nagar Nigam area Total Smart City ABD area is proposed to be divided into 4 Zones, Zone-1 includes wards/area .

In the proposed sewer system AC Pressure Pipes Manufactured by MAZZA Processing sizes 150/200mm and in higher sizes RCC Non-Pressure Pipes Class NP3 and NP4 have been proposed in accordance with provisions under the Guidelines issued under Atal Mission for Rejuvenation and Urban Transformation (AMRUT) Programme "Manual of Sewerage and Sewage Treatment CPHEEO" Ministry of Urban Development Government of India New Delhi and Relevant code of Bureau of Indian Standards New Delhi.

From the Sewage Treatment Plant effluent will be conveyed to effluent management works i.e. applied for Irrigation in agriculture fields during the period effluent is not required for irrigation purposes, it will be discharged into river.

Land requirement for Sewage Treatment Plant: Total Land Requirement for 7 MLD plant on SBR based technology is = 7 x 0.08 hect = 0.56-hectare land is required

Further, drains will be tapped under Namami Gange program

7.7.2.1 ISSUES:

Over the year Sewerage Generation will be

Table: Sewerage Generation

Sewerage Generation	2021	2026	2031	2036	2041	2046	2051	2071
A Municipal Area	123	135	155	169	183	199	215	338
B Cantonment Board	4	5	5	6	7	8	9	30
C Total Villages within Planning Boundary	30	34	38	42	53	59	66	18
D Total Census Towns within Planning Boundary	11	12	13	15	19	21	23	14
E Total Planning Boundary Population	168	185	210	231	262	287	313	400

Source: Analysis

i) Coverage:

The present population of Bareilly is approximately 1554063, as against the combined design population of 1140717 for stage I and stage II sewerage schemes. Thus, even after the Stage II scheme, designed to cover 165 MLD for 2033 whereas by 2036 the discharge within Municipal area will be 169 MLD, the entire present population of the city will not be covered.

ii) Sewer Connections:

Out of total households, only 50 properties have been connected to the sewers. Even allowing for some unauthorized connections, the utilization of the sewer network appears to be extremely poor.

The number of properties connected to the sewer network is abysmally small. An urgent and concerted drive to increase the number of sewer connections is called for.

iii) Need of Updated Map of Sewer Network:

Unless an updated map showing all the sewers laid so far is prepared, an action plan to improve the coverage and utilization of the sewerage system will not be accurate or fruitful.

iv) Unauthorized Lifting of Sewage:

Very little quantity of sewage appears to be reaching the treatment plant. Farmers lift the raw sewage from the manholes of out fall sewers and use it for agricultural purpose.

v) Performance of Sewage Treatment Plant

Measurement of sewage flow entering the sewage treatment plant and the characteristics of the influent and effluent needs to be done on a regular basis to know the effectiveness and efficiency of the sewer network and STP.

7.7.2.2 Vision for Sewerage Plan

Sewerage Vision Plan is to connect each household with sewer line for clean green city plan. Core area is very congested where existing STP could serve city but remaining all part of city should have sewer line. STP should be upgraded. As per requirement of improvement of STP MPS, IPS should be constructed, and trunk line should be enhanced.

Overall city's vision plan for STP area as under:

Year	2026	2036	2051	2071
Action Plan	Short Term	Mid Term	Long Term	
Connection				
STP & ETP				
Reuse				
Decentralized System				

The new industrial area development plan has been considered in terms of waste water management plan for city. The following manners the costing will be done>

15. Development of new Tertiary Sewage Treatment Plant (STP): Near Industrial Area.					
Facilities and Infrastructure	Available but Poor Condition	Not Available	To be Planned	Cost for Facilitation	Total cost in Lakhs
Access to Water Supply	y				
Access to Sewerage & Drainage	y				
Access to Drinking Water					
Access of Dustbin or Water Collection System					
Access of road	y				
Access of parking					
Access to Bus Stop					

Access to Public Transport System					
Access to Police Station					
Access to Fire Fighting Station					
Access to Electricity	y				

Project Costing for Development of new Tertiary Sewage Treatment Plant (STP): Near Industrial Area.

Facilities and Infrastructure	Total cost in Lakhs	Funding	2022-24	2024-26	2026-28	2028-31	2031-34	2034-37	2037-42	2042-47	2047-71
Components											
Oxidation plant for tertiary Treatment for 338 MLD plant	1,20,000	PPP			24,000	24,000	24,000	24,000	24,000	24,000	24,000

7.7.3 Storm Water Drainage

There are three major drains in the Bareilly planning area. The problems of waterlogging, overflowing and choked drains and a host of water-borne diseases can be seen here. The details of these drains are as follows: -

Deveraniya Drain

Deveraniya Drain's originating point is Sarai Talfi. The drain starting point coordinates are Latitude: 28°24'31.60"N & longitude: 79°22'15.62"E. Deveraniya drain meeting to river Ramganga at village Virya Narainpur. Coordinate of the confluence point of the Deveraniya Drain is Latitude: 28°19'1.47"N & Longitude: 79°22'31.71"E. Covered Distance of Deveraniya drain from Bareilly town to its meeting point to river Ramganga in the village Virya Narainpur is approx.: 23.6 km. Detail of situated industry & discharge of their effluent to the drain Deveraniya drain carries domestic wastewater of Bareilly town as well as effluent from 02 Industrial units. Total Discharge from Deveraniya drain to Ramganga is 102.28 MLD, out of which 0.75 MLD is treated industrial effluent and the rest is untreated sewage of Bareilly Town. The Water Quality of Deveraniya Drain meeting in river Ramganaga having pH 7.2, BOD (mg/l) 39.8, COD (mg/l) 80, TSS (mg/l) 89.

7.7.3.1 Chaubari Drain

Chaubari Drain's originating point is Subhash Nagar. The drain starting point coordinates are Latitude: 28°22'4.95"N & longitude: 79°23'43.17" E. Chaubari Drain meets to the Ramganga River at Gomidpur. Coordinate of the confluence point of the Chaubari Drain is Latitude: 28°12'28.09"N & Longitude: 79°25'34.55"E. Covered Distance of Chaubari drain from Bareilly town to its meeting point to river Ramganga in Gomidpur is approx 10.7 km. Chaubari drain carries domestic wastewater of Bareilly. The total Discharge from Chaubari drain to Ramganga is Gomidpur, out of which 50.47MLD is untreated sewage of Bareilly city. The water quality of Chaubari Drain meeting in the river. Ramganaga having pH 7.1, BOD (mg/l) 33.2, COD (mg/l) 200, TSS (mg/l) 70.

7.7.3.2 Nakatiya River:

Nakatiya River/Drain's originating point is Deennagar. The drain starting point coordinates are Latitude: 28°36'16.14"N & longitude: 79°34'1.13"E. Nakatiya Drain meets to the Ramganga River at village Ahargauthiya. The Coordinate of the endpoint of the Nakatiya Drain is Latitude: 28° 8'9.06"N & Longitude: 79°29'4.08"E. Covered distance of the drain from Bareilly town to its meeting point into river Ramganga is approx.: 100 km. Detail of situated industry & discharge of their effluent to the drain Nakatiya Drain carries domestic wastewater of Bareilly, the town as well as effluent from 03 Industrial Units. Total Discharge from Nakatiya Drain to Ramganga is 24.13. The water quality of Nakatiya Drain meeting in river Ramganga having pH 7.3, BOD (mg/l)- 44.8, COD (mg/l)-120, TSS (mg/l)- 14.

The total road length is Bareilly is 832 kilometres out of which **493 kilometres** are serviceable by primary drains acting as stormwater drains during heavy rains. That translates to a drainage coverage of **59.3 per cent** in the city. All the primary drains have outfall in twelve major secondary drains listed in the table below:

Table 11.3: Location of Secondary Stormwater drains

S. No.	Name of Secondary Drains	Location	Ward Number
1	Bisalpur Road Nala	Haroongla	17
2	Rampur Road Nala	Swale Nagar	30
3	Peerbahoda Nala	Pirabahooda	70
4	Saufita Road Nala	Badi Bihar	10
5	Harunagla Nala	Haroongla	17
6	Badi Bihar Nala	Badi Bihar	10
7	Sufi Tola Nala	Sofi Tola	78
8	Tuliya Nala	Nandausi	37
9	Partappura Nala	Partapur Chaudhary	34
10	Sanjay Community Hall Nala	Elan Club	35
11	Akshar Vihar Nala	Bareilly Club	32
12	Delapeer Lake Nala	Near Satya Petrol Pump	10

7.7.3.3 Issues with the existing stormwater drainage system:

The sub-drain flows through the middle of the city starting near the BNN compound and empties out into river Nakatia. Several culverts are built up on it. Over the years, the lanes adjacent to the drain have risen because of repeated layering whereas all culverts have remained below the level of the lanes. When it rains, these culverts get flooded and underdrain the water. The filthy water enters the nearby houses and rises up to two feet. Before the monsoon commences, the BNN sanitation workers clean the drain, but heavy rainwater makes the area waterlogged. Following are some issues identified with the current system:

- Silting of the drain
- Unlined drains
- Dumping of debris and garbage into the open drains & nallah
- The roads are below the drains' top level which causes the overflow from drains to fill the roads and the low-lying areas
- The increased impervious areas also add to the worsening of the situation

Interventions required for stormwater drainage system:



- Govt should impose fines on those industries discharging wastewater into the stormwater drain
- All the house service connections shall be properly connected through the sewer network and shall be treated in the STPs to maintain the stormwater drain as a dedicated facility.
- All the untapped drains should be tapped and diverted to STP
- Ensure sufficient right-of-way provision for constructing drains in future proposals.
- Cost and O&M framework

7.7.3.4 Suggestions to be considered during the preparation of a detailed project report for the stormwater management plan:

- Assessment of existing stormwater drain condition ward wise
- Based on the assessment, provide recommendations for reconstruction of the structure wherever possible
- Analyze the surface runoff and increase the width of the drain wherever required
- Based on the assessment, identify the financial stability of the developer and workout the phase-wise implementation strategy
- Achieve 100% coverage through effective planning
- Remedial Measures for controlling water logging and ailing drains

An integrated stormwater network is required to be planned for the entire city based on contour maps. There should be realignment and upgradation of existing nallas. Cleaning of drains should take place at regular intervals. Finally, the separation of stormwater drains from the sewerage network should be executed on priority.

7.7.3.5 SILTING AND WEEDING OF DRAINS

- Almost all the length in the meter of the major drain is silted and weeded. The drain has to be de-silted and deseeded. Deweeding will be done on the bed, side slopes and 50 cm at the top on both sides of the drain.

7.7.3.6 INFLOW OF SEWAGE AND DUMPING OF SOLID WASTES INTO DRAINS

- With the implementation of sewerage and solid waste management sub-projects, it is expected that this problem would get solved. However, it has to be ensured by the implementing agencies that all residences are connected to branch sewers which in turn are connected to trunk sewers. A public awareness campaign by the city to educate people not to dump solid wastes into sewers/drains should be carried out.

7.7.3.7 SILTING, WEEDING AND BLOCKAGE OF TERTIARY DRAINS

- Regular cleaning and maintenance by Nagar Nigam coupled with deterrent punishment to persons who block the tertiary drains are to be carried out.

7.7.3.8 ENCROACHMENTS OF FLOW CHANNELS AND TANKS

- BNN and BDA must enforce measures to disallow any construction on drain/tank beds and periphery. The practice of drying tanks and reclaiming them for building must be stopped to preserve the depleting stormwater storage/buffer areas. Encroached drain sections are to be cleared and drains provided with an adequate cross-section to carry the flow.
- Within Municipal area road length is 634 Kilo Meter and total incurring cost would be INR 1985 Cr. The phasing of development would take place by following way.

#	Project Name	Location	Total Area / Length	Phasing Terms					
				Short		Mid		Long	
				Location / Part	Area / Length	Location / Part	Area / Length	Location / Part	Area / Length
16	City Plan for Water Logging / stagnant spots and flood prone areas	Entire City	634 km	Desilting and Dweeding of Existing Primary and Secondary Drains to Increase carrying capacity Procurement of Drain Cleaning Equipment	Improvement of Existing Major/ Primary Drains including Augmentation of Capacity of Pumping Stations	Improvement of Existing Secondary Drains including Augmentation of Capacity of Pumping Stations	New Primary Drains and Pumping Stations in Flood Affected/Water Logged Areas	New Secondary Drains and Pumping Stations in Flood Affected/Water Logged Areas	Cleaning of tertiary and deep drains

- Total project costing are as under:

City Plan for Water Logging / stagnant spots and flood prone areas	Cr Rs.	Short Term (2022-28)			Medium Term (2028-2037)			Long Term (2037-2071)		
		2022-24	2024-26	2026-28	2028-31	2031-34	2034-37	2037-42	2042-47	2047-71
Improvement of Existing Major/ Primary Drains including Augmentation of Capacity of Pumping Stations	199	-	49.63	49.63	49.63	49.63	-	-	-	
Improvement of Existing Secondary Drains including Augmentation of Capacity of Pumping Stations	99	99								
New Primary Drains and Pumping Stations in Flood Affected/Water Logged Areas	596		198.5	198.5	198.5					
New Secondary Drains and Pumping Stations in Flood Affected/Water Logged Areas	794				397	397				
Desilting and Dweeding of Existing Primary and Secondary Drains to Increase carrying capacity	99		33			33			33	
Cleaning of tertiary and deep drains	99	33			33			33		
Procurement of Drain Cleaning Equipment	99	99								
Total	1985									

7.7.4 Solid Waste management

The total solid waste generated in Bareilly is 447.18 Tonnes Per Day (TPD). However, at present, the amount of solid waste collected is only 430 TPD. Of the collected solid waste (Nearly) 140 TPD is processed while the remaining 290 TPD is disposed of in the dump yard. At present, there is no household source segregation in place. At present two solid waste management plants exist (i) At Rajau Paraspur (non-operational) and (ii) At Bakarganj, out of which the SWM plant in Rajau Paraspur is non-operational.

The solid waste generation, though measured at the city level, should also be measured and calculated for the entire planning area considered in the ambit of the Vision Plan for Bareilly City. Hence, it is imperative to include those additional areas such as the Cantonment Board Area, Town Villages within the planning boundary and census towns in the planning boundary in addition to the existing Municipal Corporation Area. As a result, the total population for the Year 2021 (Base Year), the year 2036 (Intermediate Year) and the year 2051 (Ultimate Year) are considered for the projection of the solid waste generation as well. The ensuing sections discuss the solid waste generation projection for different scenarios. Table below represents the solid waste generation projection for the Municipal Corporation area of Bareilly. Further 2071 Demand will be frozen for visionary outline development planning purpose

Table 7-11: Solid waste generation projection – Municipal Area

S. No	Population projected year	Population	Solid waste generation (TPD)	Organic waste (TPD)	Existing SWM plant capacity (TPD)	Proposed plant in Sathrapur & Raiau	Total plant capacity (TPD)	Gap (TPD)	Inorganic waste (TPD)	MRF	MRF Existing	MRF Proposed	Gap (TPD)	Dumping / Landfill	Existing Landfill	Landfilling Proposed	Gap (TPD)
1	2021	13,11,599	564	338	600	0	600	0	226	56	0	120	56	169	0	280	169
2	2026	15,56,033	669	401	600	0	600	0	268	67	120		-53	201	280		-79
3	2031	17,12,822	737	442	600	0	600	0	295	74	120		-46	221	280		-59
4	2036	19,49,012	838	503	600	0	600	0	335	84	120		-36	251	280		-29
5	2041	21,42,644	921	553	600	0	600	0	369	92	120		-28	276	280		-4
6	2046	24,22,433	1042	625	600	850	1450	0	417	104	120	120	-16	312	280	690	32
7	2051	26,55,075	1142	685	600	850	1450	0	457	114	240		-126	343	690		-347
8	2056	28,94,499	1245	747	600	850	1450	0	498	124	240		-116	373	690		-317
9	2061	39,72,077	1708	1025	600	850	1450	0	683	171	240		-69	512	690		-178
10	2066	45,86,104	1972	1183	600	850	1450	0	789	197	240		-43	592	690		-98
11	2071	53,15,516	2286	1371	600	850	1450	0	914	229	240		-11	686	690		-4

Source: Bareilly Nagar Nigam & Consultant's analysis

Inference:

- The proposed plant in Sathrapur is planned over 10 acres of land with 500 TPD capacity.
- The proposed plant in Rajau Paraspur (disputed land) is planned with a treatment capacity of 300 TPD.

- The proposed plant in Rajau Paraspur (disputed land) will require an area of 20 acres for the proposed installed capacity of 300 TPD in an alternate land parcel since the existing plant is non-operational due to NGT litigations.
- For the purpose of solid waste projection over the planning horizon (2071), it is assumed that the above-mentioned two proposed SWM plants with a combined capacity of 850 TPD shall be developed before the year 2046.
- After the year 2046, the total treatment capacity of all the plants shall be 1450 TPD whereas the required excess capacity of treatment capacity due to population growth for 50-year period (i.e., 2071) is just 850 TPD.
- Hence, the proposed treatment plants namely the alternate plant in Rajau Paraspur and proposed Sathrapur plant will be sufficient to handle the increase in solid waste generation for the entire planning horizon of the Vision Plan thereby eliminating the need for any new solid waste management plant in addition
- Thus, a need for the development of a new facility doesn't arise if only the municipal area solid waste generation is projected over the project horizon
- 100% Source segregation to be ensured
- For, MRF centres and Landfill can be planned for new SWM plant (Inorganic waste) in year of 2023 and 2046 to monetise from the waste and to prevent environmental degradation to the ground.

The solid waste generation, though measured at the city level, should also be measured and calculated for the entire planning area considered in the ambit of the Vision Plan for Bareilly City. Hence, it is imperative to include those additional areas such as the Cantonment Board Area, Town Villages within the planning boundary and census towns in the planning boundary in addition to the existing Municipal Corporation Area. As a result, the total population for the Year 2021 (Base Year), the year 2036 (Intermediate Year) and the year 2051 (Ultimate Year) are considered for the projection of the solid waste generation as well. The ensuing sections discuss the solid waste generation projection for different scenarios. Table below represents the solid waste generation projection for the Municipal Corporation area of Bareilly. Further 2071 Demand will be freezed for visionary outline development planning purpose

Table 7-12: Solid waste generation projection – Municipal Area

S. No	Population projected year	Population	Solid waste generation (TPD)	Organic waste (TPD)	Existing SWM plant capacity (TPD)	Proposed plant in Sathrapur & Raiau	Total plant capacity (TPD)	Gap (TPD)	Inorganic waste (TPD)	MRF	MRF Existing	MRF Proposed	Gap (TPD)	Dumping / Landfill	Existing Landfill	Landfilling Proposed	Gap (TPD)
1	2021	13,11,599	564	338	600	0	600	0	226	56	0	120	56	169	0	280	169
2	2026	15,56,033	669	401	600	0	600	0	268	67	120		-53	201	280		-79
3	2031	17,12,822	737	442	600	0	600	0	295	74	120		-46	221	280		-59
4	2036	19,49,012	838	503	600	0	600	0	335	84	120		-36	251	280		-29

5	2041	21,42,644	921	553	600	0	600	0	369	92	120		-28	276	280		-4
6	2046	24,22,433	1042	625	600	850	1450	0	417	104	120	120	-16	312	280	690	32
7	2051	26,55,075	1142	685	600	850	1450	0	457	114	240		-126	343	690		-347
8	2056	28,94,499	1245	747	600	850	1450	0	498	124	240		-116	373	690		-317
9	2061	39,72,077	1708	1025	600	850	1450	0	683	171	240		-69	512	690		-178
10	2066	45,86,104	1972	1183	600	850	1450	0	789	197	240		-43	592	690		-98
11	2071	53,15,516	2286	1371	600	850	1450	0	914	229	240		-11	686	690		-4

Source: Bareilly Nagar Nigam & Consultant's analysis

Inference:

- The proposed plant in Sathrapur is planned over 10 acres of land with 500 TPD capacity.
- The proposed plant in Rajau Paraspur (disputed land) is planned with a treatment capacity of 300 TPD.
- The proposed plant in Rajau Paraspur (disputed land) will require an area of 20 acres for the proposed installed capacity of 300 TPD in an alternate land parcel since the existing plant is non-operational due to NGT litigations.
- For the purpose of solid waste projection over the planning horizon (2071), it is assumed that the above-mentioned two proposed SWM plants with a combined capacity of 850 TPD shall be developed before the year 2046.
- After the year 2046, the total treatment capacity of all the plants shall be 1450 TPD whereas the required excess capacity of treatment capacity due to population growth for 50-year period (i.e., 2071) is just 850 TPD.
- Hence, the proposed treatment plants namely the alternate plant in Rajau Paraspur and proposed Sathrapur plant will be sufficient to handle the increase in solid waste generation for the entire planning horizon of the Vision Plan thereby eliminating the need for any new solid waste management plant in addition
- Thus, a need for the development of a new facility doesn't arise if only the municipal area solid waste generation is projected over the project horizon
- 100% Source segregation to be ensured
- For, MRF centres and Landfill can be planned for new SWM plant (Inorganic waste) in year of 2023 and 2046 to monetize from the waste and to prevent environmental degradation to the ground.

Project Phasing and Development Cost for Solid waste Management Plan

Facilities and Infrastructure	Total cost in Lakhs	Funding	2022-24	2024-26	2026-28	2028-31	2031-34	2034-37	2037-42	2042-47	2047-71
Components	7,500	PPP		1,500	1,500	1,500	1,500	1,500	1,500		

7.8 HARITAGE AND TOURISM

7.8.1 Project : Ahichchhatra – Tourism Infrastructure Upgradation of ASI Site in consultation with ASI and UP Tourism Regional Managers

7.8.1.1 Background:

From archaeological point of view the district of Bareilly is very rich. The extensive remains of Ahichchhatra, the Capital town of Northern Panchala have been discovered near Ramnagar village of Aonla Tehsil in the district. The site of Ahichchhatra garh was briefly explored by Sir Alexander Cunningham in 1871, and then excavated by the ASI from 1940 for "about five years". The excavations found brick fortifications and continuity of occupation from a period before 600 BCE to 1100 CE. It was during the first excavations at Ahichchhatra (1940–44) that the painted grey ware, associated with the advent of the Aryans in the Ganges–Yamuna Valley, was recognised for the first time in the earliest levels of the site. Nearly five thousand coins belonging to periods earlier than that of Guptas have been yielded from Ahichchhatra. It has also been one of the richest sites in India from the point of view of the total yield of terracotta. Based on the existing material, the archaeology of the region helps us to get an idea of the cultural sequence from the beginning of the 2nd millennium BC up to the 11th century AD.

This site is located outside the Planning boundary of the Bareilly. The site is under the Archaeological Survey of India and Tourism Department is taking care of it to improve tourism. This Vision plan report consists this project to improve the tourism potential of Bareilly.

Near Ahichchhatra, 2 km to its west there is a big pond which is said to trace its ancestry to the time of Mahabharata. The pond, located in the village of Jagannathpur is said to have been made by the Pandavas at the time of their forest dwelling.

Table 7-13 List of ASI Sites in Bareilly District (3 sites in Bareilly, 7 sites in Ramnagar, 2 in Aonla and 1 site in Pachomi)

S.NO.	NAME	LOCATION	DISTRICT
27.	Tomb of Hafiz-ul-Mulk Rahmet Khan, the Rohila Chief	Bareilly, Bakar Ganj	Bareilly
28.	Tomb of Hermit Shah Dana	Bareilly, BakarGanj	Bareilly
29.	Large obelisk of red sandstone	Fateh Ganj	Bareilly
30.	Several ancients ruined mounds in which Indo-Scythian coins are found.	Pachomi or Wahidpur Pachaumi	Bareilly
31.	Ancient Site	Ramnagar, Alampur Kot	Bareilly
32.	Fort	Ramnagar	Bareilly
33.	Mound called Chikatia Khera	Ramnagar	Bareilly
34.	Mound to the south of the tans known as of the Gandhan Sagar and Adisagar	Ramnagar	Bareilly
35.	Small hillock called Katari Khera or Kottari Khera	Ramnagar	Bareilly
36.	Stupa mound	Ramnagar	Bareilly
37.	Two Buddhist mounds close to the Konwaru Tal	Ramnagar	Bareilly
38.	Begum's Masjid with three lofty domes	Aonla	Bareilly
39.	Site near Aonla railway station	Rehtoia	Bareilly

7.8.1.2 Problem statement:

The site is located at a distance of 55.4 kms from Bareilly with poor tourism infrastructure and site interpretation facilities. It is also located in close proximity of a Jain Teerth which is highly visited by the pilgrims as well as the visitors. There are 7 ASI protected sites in Ramnagar and other unprotected sites including Jain Temples Shri Ahichchhatra Parshvanath Atishaya Teerth Kshetra Digambar Jain Mandir, Ramnagar, Lakes and temples in Aonla etc. which are not explored to its full potential dues to

lack of awareness, poor infrastructure facilities, lack of connectivity and improper visitor infrastructure facilities.

7.8.1.3 Value addition of this project to the tentative vision:

The provision of proper visitor amenities, support infrastructure facilities and improved last mile connectivity will enhance the tourist footfall to these sites. The site interpretation would help to generate interest of different categories of tourists.

7.8.1.4 Key activities, tasks, interventions involved:

9. Identification of area for development of Museum.
10. Connectivity enhancement to the identified sites located in close proximity.
11. Site Development & Landscape Improvement.
12. Providing wayfinding and interpretative signages in and around the sites.

Site Delineation: The buffer area of the Ahichchhatra Fort identified in consultation with ASI.

7.8.1.5 Strategies for Precinct Level Development:

7. To improve last mile connectivity from towns / cities such as Bareilly, Badaun and other nearby towns.
8. Development of Site Interpretative Museum for creating awareness about site, and to develop outreach programmes.
9. Site development and landscape improvement to provide visitor amenities such as food and beverage, toilet facilities, tourist information centre.

7.8.1.6 Project Impact & Benefit:

- World Heritage Site Nomination
- Increase in tourist footfall both domestic and foreigner resulting in creation of more jobs and economic benefit of the district.

7.8.1.7 Stakeholders:

9. Department of Tourism, Government of Uttar Pradesh.
10. Archaeological Survey of India.
11. Bareilly District Administration.
12. Gram Panchayat / Tehsil.

7.8.1.8 Nodal Agency:

1. Archaeological Survey of India	For site development
2. Department of Tourism	For developing Tourism Infrastructure facilities

Data needs for the projects/ Obtained Data:

S.No.	Data	Status
1.	Visitors' footfall in Ahichachhatra, Aonla, Bareilly	500 – 700 Daily (Average)
2.	Tourist Profile	No Records
3.	Average stay of Tourist	No Records



7.8.1.9 Infrastructure Requirements

Project : Ahichchhatra – Tourism Infrastructure Upgradation of ASI Site			
Facilities and Infrastructure	Available but Poor Condition	Not Available	To be Planned
Access to Water Supply			
Access to Sewerage & Drainage			
Access to Drinking Water			
Access of Dustbin or Water Collection System			
Access of road			
Access of parking			
Access to Bus Stop			
Access to Public Transport System			
Access to Police Station			
Access to Fire Fighting Station			
Access to Electricity			

7.8.1.10 Costing and Integrated Infrastructure Development strategy and Action Plan

Components	Cost for Facilitation (INR)	Total Cost in Lakhs	Total (Rs Lakhs)	Funding	Short Term (2022-28)			Medium Term (2028-2037)			Long Term (2037-2071)		
					2022-24	2024-26	2026-28	2028-31	2031-34	2034-37	2037-42	2042-47	2047-71
Provision of visitor parking, pathways toilets and drinking water Site survey and identification of number of visitors and requirements, Identification of location of provision for toilets and drinking water , Preparation of DPR for the toilet block and drinking water facility. Provision of site lighting along approach roads and boundary wall and entrance gates			300	Tourism Fund	300								



Components	Cost for Facilitation (INR)	Total Cost in Lakhs	Total (Rs Lakhs)	Funding	Short Term (2022-28)			Medium Term (2028-2037)			Long Term (2037-2071)		
					2022-24	2024-26	2026-28	2028-31	2031-34	2034-37	2037-42	2042-47	2047-71
Provision of permeable boundary wall , security room, ticket counter and pathways Brick boundary wall to be provided			1,000		200	500	300						
Research for Interpretative material and Signages including Providing wayfinding and interpretative signages in and around the sites. Research on history and significance of site to create story board and interpretative materials and interpretation techniques, Preparation of design of signages and DPR for execution of signages , Preparation of Digital Media platforms : QR codes, Websites , App , Audio content and graphics for the information on site Preparation of signages and material for outreach at regional level :			500				500						
Identification of area for development of Museum. Identification of location for the museum and interpretation center Preparation of design and DPR for the museum Preparation of Working drawings and Estimates			1,000		500	500							
Site Development & Landscape Improvement. Parking and street lights and pavement including the landscaping along the boundary wall and around the site.													
TOTAL			2,800		1,000	1,000	800						

7.8.2 Project : Developing a Theme based Museum on First War of Independence 1857

7.8.2.1 Project Background:

During 1857, Bareilly became a major centre of revolt under the leadership of Khan Bahadur Khan while maintaining the communal harmony despite the efforts by Company officers to create trouble by inciting Rajputs against Khan Bahadur Khan. Bareilly was the last to fall (May 1858). British order was restored on 13 May 1858 by an expeditionary force lent by Commander Colin Campbell of 9th Regiment of Foot with the help of Captain William George Drummond Stewart of 93rd Regiment of Foot, after winning the Bareilly battle. Some of the mutineers were captured and sentenced to death. When the Indian Rebellion of 1857 failed Bareilly, too, was subjugated. Khan Bahadur Khan was sentenced to death and hanged in the Kotwali on 24 February 1860.

7.8.2.2 Problem statement:

There is lack of awareness about the city as a major centre of the first war of independence. A theme based interpretative Museum development would address this and also enhance the future tourism prospects. Bareilly has potential to develop a museum based on the theme of First War of Independence by Adaptive Reuse of a historic building.

Value addition of this project to the tentative vision:

Potential for Tourism Development, Creating awareness and recreational facility at city level.

7.8.2.3 Objectives:

5. Develop Bareilly as Tourist destination and Enhance the Tourism potential of the city.
6. Reviving the memory of the First War of Independence.

7.8.2.4 Key activities, tasks, interventions involved:

- Development of Theme based Museum.
- Interpretative displays of the history of the region and associated personalities, role of Bareilly.
- Visitor Management Plan.
- Development of visitor amenities.
- Site improvement.
- Building Conservation for Adaptive Reuse.
- Signages and way finding.

7.8.2.5 Site Delineation:

Based on stakeholder consultation, the possibility of developing the theme-based museum in some parts of the Bareilly College is being explored. The college is a historic building which is in use currently.



Figure 7-22 Bareilly College – Gangapur, Bareilly Source: Project Team

7.8.2.6 Strategies for Precinct Level Development:

9. NOC and approval from the college for the Adaptive Reuse and Development of Museum
10. Museum Design and Planning
11. Visitor Information
12. Visitor Amenities

7.8.2.7 Project Impact & Benefit:

The Project would help to create a tourist site by development of the Museum. It would also help to create awareness about the rich cultural past of the city at the local as well as at the State level. It will also be one of the contributing factors in celebrating “Azaadi ka Amrit Mahotsav” celebrating 75 years of India’s Independence. It will also help to increase tourist footfall in the city by making it as a one/ two day stay destination to visit the local sites of freedom movement as well as the regional sites.

7.8.2.8 Nodal Agency:

Bareilly Municipal Corporation	Site Development
UP Tourism	Funding and Tourism Infrastructure
Education	Institutional Services and Guidelines for Visitor Management

7.8.2.9 Stakeholders:

Bareilly Municipal Corporation, UP Tourism, Education Department



7.8.2.10 Infrastructure Requirements

Project : Developing a Theme based Museum on First War of Independence 1857			
Facilities and Infrastructure	Available but Poor Condition	Not Available	To be Planned
Access to Water Supply			
Access to Sewerage & Drainage			
Access to Drinking Water			
Access of Dustbin or Water Collection System			
Access of road			
Access of parking			
Access to Bus Stop			
Access to Public Transport System			
Access to Police Station			
Access to Fire Fighting Station			
Access to Electricity			

7.8.2.11 Costing and Integrated Infrastructure Development and Strategy and Action Plan Developing a theme based Museum on First War of Independence 1857

Components	Cost for Facilitation (INR)	Total Cost in Lakhs	Total (Rs Lakhs)	Funding	Short Term (2022-28)			Medium Term (2028-2037)			Long Term (2037-2071)		
					2022-24	2024-26	2026-28	2028-31	2031-34	2034-37	2037-42	2042-47	2047-71
Phase one : site analysis and priority identification and conservation preliminary reports for each structure. Total Station Surveys, Site analysis and identification of structural distress and structural analysis and Identification of phasing and priority works			100	Tourism Fund	100								



Identification and structural stability of emergency works for the buildings with in the complex - Propping strutting of structures , Water management and consolidation of roofsand Addressing major structural issues for stabilization of buildings			2,000		2,000								
Phase I : Identification and upgradation of structures for improvement and upgradation works There are approximately 27 structures with in the complex. Conservation DPR preparation for structures in phase 1 (approximately 13 structures) : including upgradation, repairs, electrical, plumbing, finishes, interiors etc (1500 Per SQM)			5,000		5,000								
Phase II : Facade upgradation and Consolidation and conservation works for priority 2 sites Preparation of DPR for the conservation upgradation and façade improvement of sites in better condition. Re-establishing the circulation, spatial planning , area diagrams if required for each structures with in the current use. (1250 Per SQM)			3,000			3000							
Upgradation of boundary walls and entrance gates Documentation of existing boundary wall and entrances Design development for the interventions in boundary wall and upgradation of the gates Design consultancy for the new design f the gateways and conservation - Repair and consolidation works for the boundary walls			-										
Road improvement Provision of parking and upgradation of existing parking			500		500								
Upgradation of sports areas: hockey ground, tennis court			500				500						
Upgradation and upkeep of green areas			200		100		100						
Development of Theme based Museum.			221			100	121						
Interpretative displays of the history of the region and associated personalities, role of Bareilly.			100			25	75						
			11,621		7,700	3,125	796						

7.9 ECONOMY

7.9.1 Project : Development of “Medicity” designated area with multiple health business and activities

The concept of modern medical cities or special health care facilities has been in place for some time, but has gained renewed interest, particularly in rapidly developing economies. The concept of a Medi City or health city defines a cluster of hospitals, a holistic healthcare center; a large hospital sprawled across acres of land. Medi-city can be a new township or a zone of a city, where medical facilities are provided releasing pressure from the main city or to promote medical tourism attracting new sources of economic growth.

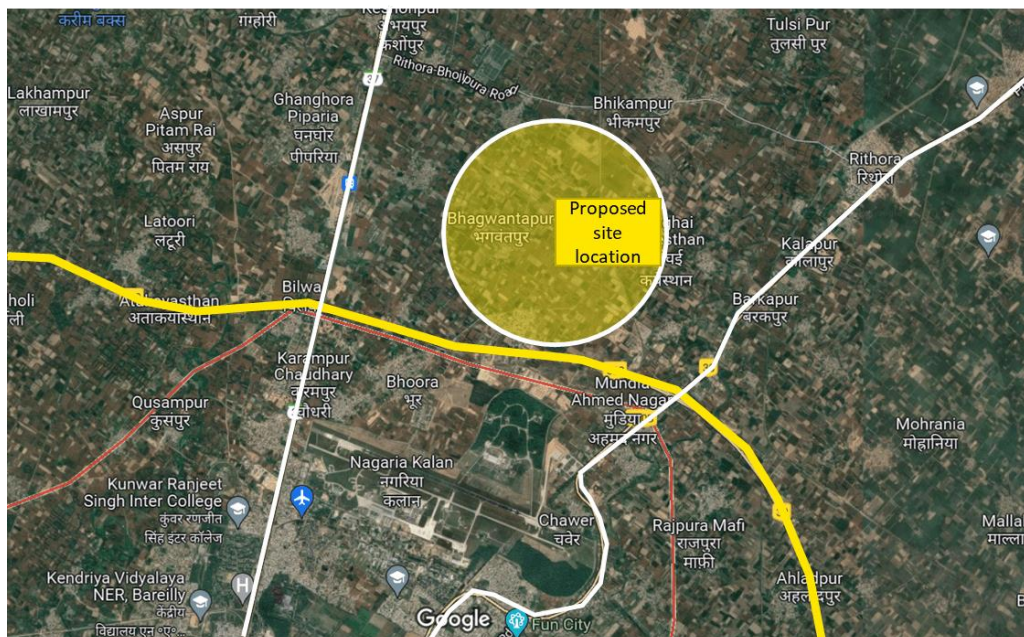
Medi-cities have been designed to be comprehensive in scope and incorporate advanced technologies and medical practices. The scale and scope of medical cities usually demands an advanced level of care, both in technology and approaches to create an attractive destination for care to ensure the high level of patient volumes required to support such a large setup.

7.9.1.1 Planning strategy

Medi cities have the ability to support services that are highly specialized, services that often struggle to see sufficient volume to support a business case. Medi-cities need to have a strong higher and medical educational system and complete and stable infrastructure to become an ideal location for specialization. Due to the interplay of economies of scale, the Medi-city creates an interesting and opportunistic intersection with medical tourism as mentioned earlier. For those organizations providing medical tourism services, this integration extends beyond the immediate community into the global healthcare delivery system.

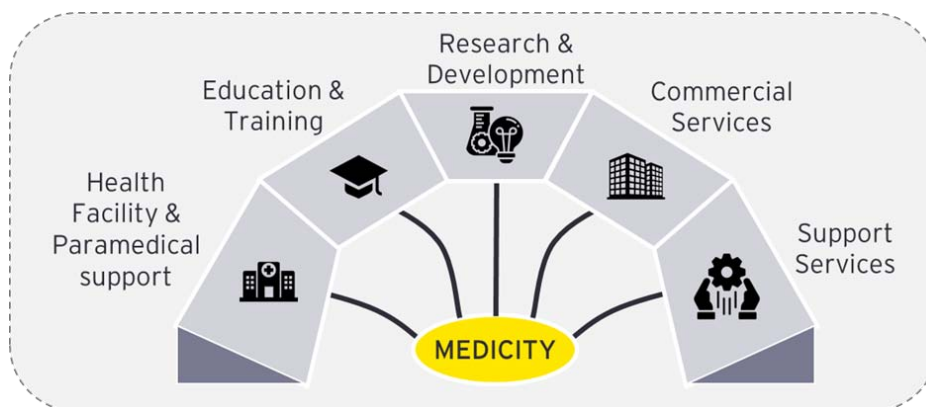
7.9.1.2 Location

Proposed Medi City land in Master plan 2021 may be utilised for this proposal



7.9.1.3 Components proposed

Medi City aims to functionally integrate within one campus and one management of the facilities related to medical care, teaching, research, and development. It also offers to explore the possibility of integrating knowledge of traditional and alternative medicine with modern medicine, through means of scientific research.



- Medical College & Hospital
- Super speciality Centre of Excellence
- Paramedical education hub
- Medical Research Centre
- Traditional Medical Practices
- Manufacturing and technology
- Convention Centre and hotel accommodation

7.9.1.4 Stakeholders

- Bareilly development authority
- Indian Medical Association
- Chief Medical Officer Office Bareilly
- UP nurses and midwife Council Bareilly

7.9.1.5 Benefits of the project

Development of a comprehensive facility integrating health facilities, institutions, research labs etc.

7.9.1.6 Infrastructure Requirements

Project : Development of “Medicity” designated area with multiple health business and activities			
Facilities and Infrastructure	Available but Poor Condition	Not Available	To be Planned
Access to Water Supply			
Access to Sewerage & Drainage			
Access to Drinking Water			
Access of Dustbin or Water Collection System			
Access of road			
Access of parking			
Access to Bus Stop			
Access to Public Transport System			
Access to Police Station			
Access to Fire Fighting Station			
Access to Electricity			



7.9.1.7 Costing

Components	Cost for Facilitation (INR)	Total Cost in Lakhs	Total (Rs Lakhs)	Funding	Short Term (2022-28)			Medium Term (2028-2037)			Long Term (2037-2071)		
					2022-24	2024-26	2026-28	2028-31	2031-34	2034-37	2037-42	2042-47	2047-71
Components				PPP									
Staff & Worker Hostel		737			737								
Budget Hotel		2,371			2,371								
Wellness & Rehabilitation Centre		3,831					3,831						
Multi-speciality Hospital		21,581			13,602	7,979							
Convenience stores (incl. Pharmacy)		886			886								
Housing for Hospital staff		4,166			2,607	1,599							
Nursing & para-medical college		1,520					1,520						
Garden & Green area													
Infrastructure, Services & roads, etc.													
Total		35,132.50	-	PPP	-	20,203	9,578	5,351					

7.9.2 Project : Development of working shed for Zari Handicraft artisans

The Work shed project for Handicraft Artisans is an attempt to facilitate the development of artisans and their families by way of providing them financial assistance for construction of work sheds.

7.9.2.1 Probable Locations

Approximately 6-8 locations namely:

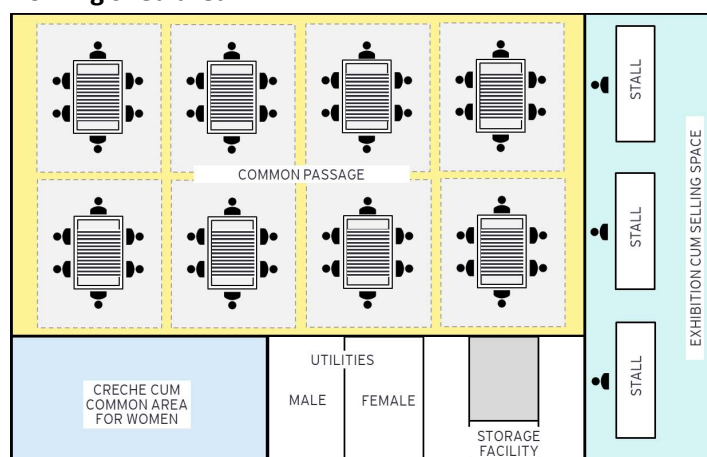
- | | |
|-----------------------------|------------------------|
| (ix) Near Paraskhera, | (xiv) Katrachand Khan, |
| (x) Near Invertis Chauraha, | (xv) Chhipitola, |
| (xi) Biharipur, | (xvi) Partapur |
| (xii) Kasgaran, | |
| (xiii) Puranashahar, | |

7.9.2.2 Components proposed

- Working shed (temporary / permanent) with specific number of “Adda (wooden frame)” and circulation space (maximum 40 – 50 artisans per shed)
- Paved area to place “Adda or Wooden frame”
- Exhibition / selling area – to showcase the final product
- Toilet and rest room
- Creche area for children

7.9.2.3 Concept

Broad layout of the working shed area



- The working shed area requirement will vary from **3000-4000 Sq. ft. for minimum sitting capacity of 40-50 artisans at a stretch.**
- Based on the interviews and qualitative survey during assessment studies, it was observed that approximately an artisan takes approximately 10 days for completion of a product.
- A single working shed can facilitate approximately 2500 workers in a year.
- 8-10 such working shed can provide a healthy and efficient working environment to **approximately 10% of the total workers** in Bareilly.

7.9.2.4 Model

- **Land:** To be identified and provided by Bareilly Development Authority based upon availability in a particular location
- **Phasing:** Pilot shed for 6-8 location and then based on success of these, implementation on multiple locations (phase wise) for multiple locations with availability of artisans.

- **O&M** - District Handicraft Department in coherence with District Industries Centre (DIC). The operation responsibility may be leased out on turn basis to the Self-Help Groups (SHGs) / community associations / similar bodies.
- **Financial assistance** - The financial assistance will be in the form of 80% assistance from Office of DC (H) subject to the ceiling and 20% will be contributed by the implementing agency under the "COMPERHENSIVE HANDICRAFTS CLUSTER DEVELOPMENT SCHEME (CHCDS)".

7.9.2.5 Stakeholders

- District Handicraft Department
- Bareilly development authority
- District Industries Centre (DIC)
- Existing CFCs
- Artisans (registered and non-registered)
- Skill development institutions
- NGOs working for artisans

7.9.2.6 Objectives of the Comprehensive Handicrafts Cluster Development Scheme (CHCDS)

- To provide requisite support in terms of infrastructure, technology, product diversification, design development, marketing and promotion, social security and other components that are necessary for the sustainability of craftsmen/artisans engaged in the Handicrafts sector,
- To create additional livelihood opportunities to the people through specific intervention in the industry and to increase the income of the craftsmen/artisans engaged in this sector.

7.9.2.7 Infrastructure Requirements

Project : Development of "CHCDS" designated area with multiple health business and activities			
Facilities and Infrastructure	Available but Poor Condition	Not Available	To be Planned
Access to Water Supply			
Access to Sewerage & Drainage			
Access to Drinking Water			
Access of Dustbin or Water Collection System			
Access of road			
Access of parking			
Access to Bus Stop			
Access to Public Transport System			
Access to Police Station			
Access to Fire Fighting Station			
Access to Electricity			

7.9.2.8 Costing

Components	Cost for Facilitation (INR)	Total Cost in Lakhs	Total (Rs Lakhs)	Funding	Short Term (2022-28)			Medium Term (2028-2037)			Long Term (2037-2071)		
					2022-24	2024-26	2026-28	2028-31	2031-34	2034-37	2037-42	2042-47	2047-71
Zari Work-shed cum CFC			7.59	Govt Fund		7.59							

7.10 SOLAR

7.10.1 Vision for Solar Projects

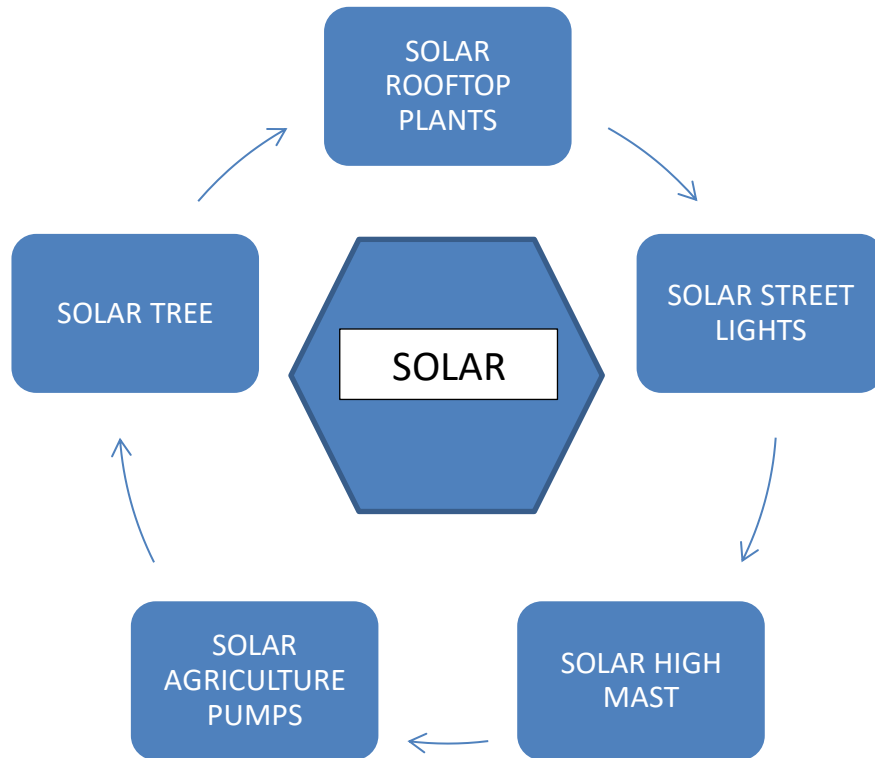


Figure 7-23: Solar Projects Vision

The vision to develop Bareilly a clean, green, pollution free city & self-dependable in power generation.

As the city enjoys ample sunlight to generate solar power from sun, it is advisable to install solar product for daily utilization. Solar power is free of cost & the system life is 25 years with almost zero maintenance cost.

AWARENESS

People from all sectors should be made aware to use solar power & encourage them with the benefits of renewable power. Rooftops for residential should be brought up under subsidized schemes. Solar power for HT consumers should be made compulsory beyond certain limits.

ENCOURAGEMENT

UPNEDA & UPPCL should be flexible in their regulations & policies to encourage people to use solar power, government should float schemes for subsidy for all solar products, should run a campaign through camps.



7.10.2 SOLAR PROJECTS

7.10.2.1 Project : Demonstration of Solar Energy for streets and Gov. buildings

7.10.2.1.1 INTRODUCTION

The world is moving on renewable power, the easiest way to generate electricity through sun is solar power. Its cleanest, greenest & cheapest mode of power where power is generated through array of photo voltaic panels.

The solar power plant comes as :

7.10.2.1.2 ON GRID SYSTEM

The solar power is directly connected to the grid & the generated power is fed to the grid.

The system converts DC power from array to AC through solar inverter, incorporated with Net & Generation meter.

7.10.2.1.3 OFF GRID OF HYBRID SYSTEM

As the name suggest, the system generates & distributes self-generated power to the load, thereby storing power in the battery bank for night use.

7.10.2.1.4 PARAMETERS FOR SELECTION OF SOLAR POWER PLANT

A : Civil Set Up.

RCC Rooftops (tin / profile sheet) & Ground mounted structure

Open to Sky, shadow free & ample of sunlight from 8 AM to 4:45 PM.

B : **Atmospheric Condition** : Bareilly is normally having clear sky over the course of the year, the temperature typically varies from 47°F to 105°F and is rarely below 41°F or above 111°F.

C : **Weather Criteria**: Taken Average Solar radiation/kWh/m²/day.

D : **Solar Calculation** : Monocrystalline Technology (18% eff). Generation Capacity for 1kWp setup at 100% eff (5.85m² with 545 Wp modules). Thereby calculating Annual Average Units generation.

E : **Electrical Parameters** : Study of transformer capacity, LT panel, distribution of load, DG Change Over, distance from solar power plant to LT Panel, Scope of installation of Inverter, SPD & ACDB DCDB.

F : **Electricity bill analysis** : To analysis yearly, monthly & daily electrical units consumption for the exact capacity of solar plant.

As Nagar Nigam & PWD spends huge amount on paying electricity bills on lights at main streets, chavurah, gardens & public utility places.

This can be minimized by replacing standalone atomized semi integrated or fully integrated LED solar street lights. Centralizes off grid solar plants or on grid solar plants can be good suggestion for dedicated power to such lights.

Same can be incorporated with high masts, hoardings & flood lights.

7.10.2.1.5 CALCULATIONS

Project	Latest Tariff	Total Consumption	Savings after solar
Street Lights	Rs.4200 / KW + 20 % demand value of bill.	3850 KW	16,170,000=00
High Mast	Rs.4200 / KW + 20 % demand value of bill.	105 KW	4,41,000=00
Flood Lights	Rs.4200 / KW + 20 % demand value of bill.	905 KW	3,801,000=00

Traffic Signals	Rs.4200 / KW + 20 % demand value of bill.	622 KW	21,62,400=00
-----------------	---	--------	--------------

7.10.2.1.6 PROJECTS PROJECTIONS

The suggested projects are categorized as below & the capacity is in megawatts.

Project A (Solar Power Plant)	Short Term (2022- 2028)	Medium Term (2028 - 2037)	Long Term (2037 - 2071)
Govt. Offices	1.5	2 - 10	10 - 25
Finance Required	90,000,000	600,000,000	1,500,000,000
Schools	0.5	1	1.5
Finance Required	30,000,000	60,000,000	90,000,000
Collages & University	0.8	1.2	5
Finance Required	48,000,000	72,000,000	300,000,000
Residentials (Subsidy)	2	8	15
Finance Required	120,000,000	480,000,000	900,000,000
Project B Street Lights	0.5	1.2	3.5
Finance Required	55,00,000	127,00,000	295,00,000
Project C: High Mast	0.2	0.8	2.8
Finance Required	42,00,000	108,00,00	210,00,000
Project D: Solar Tree	0.05	0.08	0.2
Finance Required	6,00,000	9,00,000	22,00,00
Project E: Solar EV Charging Station	0.03	0.08	0.2
Finance Required	9,000,000	13,000,000	21,000,000

7.10.3 Conclusion

According to National Capital Region Planning Board (NCRPB) 2041 plan Bareilly has been identified as Counter Magnet Area (CMA) for future development. It is equidistant from New Delhi with 250 kilometers and Lucknow with 252 kilometers. This equidistant makes Bareilly a nodal point between two significant urban communities of India. It is located as Eastern Dedicated Freight Corridor Node. It is famously known as the Zari Nagar for Zari zardozi handicrafts works on dress materials of Uttar Pradesh. These enormous potentialities of the town will make city self-sustainable economic cluster city for hinterlands. To make city 3 times population development by 2071 several work opportunities in terms of industrial cluster development, residential nodes as term of new Bareilly, Metro lite city makes city high speed transportation plan, several multi-level parking, radial road connectivity enhance quality of life. City has its own self-sustaining mechanism with historical foot prints of Nath temple. Rejuvenation plan of Nath temple to term as Nath temple, enhance river front development plan for city. Zari zardozi is one of the major iconic products in India map, has been portrayed as major highlighting part of city. Water logging removal and drainage plan will make city resilient city. Waste to energy plant and Solar makes city self sustainable 3Rs principle based city to achieve Vision Plan -

“Drive economic Growth, Improve Quality of life by Strengthening city’s inherent potentials, augmenting existing infrastructure and plan its growth which is sustainable and resilient in future.”



7.11 Costing of Projects

Bareilly Vision Plan 2071															
Bareilly Vision Plan 2071							Short Term (2022-28)			Medium Term (2028-2037)		Long Term (2037-2071)			
Project list finalized and endorsed by Mandal Commissioner on 13th July 2022				Total cost in INR Lakhs	Total (INR Lakhs)	Funding	2022-24	2024-26	2026-28	2028-31	2031-34	2034-37	2037-42	2042-47	2047-51
Sr. No.	Project List under Bareilly City Vision Plan 2051	Domain	Nodal Department												
1	Residential Housing Node, a) Nekpur (Phase 1 - 2022-23) b) Gangora Pikariyam c) Kargaina d) Tehtajpur (Area - 100 Ha each)	Urban Planning	BDA / Awasthis / Private Builders	988.42	-	Hybrid Annuity Mode (HAM)	-	494	-	494	-	-	-	-	-
2	Industrial Growth Centers, a) Rajau Paraspur Phase 1 (2022-23) b) Parsakheda (2025-30) c) Kurtara (2030-35) (Area - 100 Ha each)		BDA / UPSIDC / Private Builders	741.32	-	PPP	247	247	-	-	-	247	-	-	-
3	Integrated Freight Center cum Logistic Hub , Faridpur (35 Ha each)		BDA / Private Builders	172.97	-	PPP	-	-	173	-	-	-	-	-	-
4	Access to Ganga Expressway through Radial Road and Outer Ring Road	Transportation	NHAI / PWD	53,555.61	-	EPC-HAM	-	-	24,429	-	-	29,127	-	-	-



5	Bareilly Lite Metro facility		BDA	17,35,374.90	-	EPC-HAM	-	-	3,66,629	-	3,91,070	-	2,44,419	-	7,33,257
6	Ahichchhatra Tourism Infrastructure upgradation	Heritage and Tourism	Tourism Department	2,800.00	-	Tourism Fund	1,000	1,000	800	-	-	-	-	-	-
7	Fist War of Independence (1857) museum : a) Bareilly College Campus		Tourism Department	11,621.00	-	Tourism Fund	7,700	3,125	796	-	-	-	-	-	-
8	Urban Renewal of Nath Temple circuit & Infrastructure improvement of all Seven Nath Temples	Urban Design	Tourism Department	1,917.14	-	Govt Fund	1,917	-	-	-	-	-	-	-	-
9	River front development (Ramganga & Nakatiya)		PWD / Irrigation Department / BDA	1,421.74	-	Govt Fund	1,167	254	-	-	-	-	-	-	-
10	Aerocity integrated office complex near Airport development : Area - 30 Ha		BDA / Private Builder	1,76,070.00	-	PPP	29,345	29,345	29,345	29,345	29,345	29,345	-	-	-
11	Zari - Zardozi Shyam Ganj and Sailani market Façade Development and streetscape		BDA / Nagar Nigam	125.00	-	Govt Fund	125	-	-	-	-	-	-	-	-
12	Streetscape from Qila to Shyamganj along with development of Dargah precinct	BDA / Nagar Nigam	402	-	Govt Fund	402	-	-	-	-	-	-	-	-	
13	Development of new solid waste treatment plant for 2041, (Area -15 Ha)	Infrastructure	Nagar Nigam	9,000.00	-	PPP	-	1,500	1,500	1,500	1,500	1,500	1,500	-	-
14	City Plan for Water Logging / stagnant spots and flood prone areas		Jal Nigam / Nagar Nigam	7,500.00	-	Govt Fund	-	1,500	1,500	1,500	1,500	1,500	1,500	-	-



15	Development of new Tertiary Sewage Treatment Plant (STP): Near Industrial Area.		Jal Nigam / Nagar Nigam	1,68,000.00	-	Govt Fund	-	-	24,000	24,000	24,000	24,000	24,000	24,000	24,000
16	“Medicity” – designated area with multiple health business and activities	Economy	BDA / Nagar Nigam	35,132.50	-	PPP	-	20,203	9,578	5,351	-	-	-	-	-
17	Development of Handicraft Cluster/ Common Facility Centre (CFC) – Zari & Bamboo		BDA / Nagar Nigam	7.59	-	Govt Fund	7.59	-	-	-	-	-	-	-	-
18	Demonstration of Solar Energy for streets and Gov. buildings.	Solar	UPNEDA	15.40	-	Govt Fund	15.00	0.40	-	-	-	-	15.40	-	

9 BACKGROUND TO THE STUDY

This report is the 7th deliverable towards the study on “Preparation of Vision Plan, Implementation strategy and Integrated Infrastructure plan for Bareilly” to be developed as part of the Bareilly Vision Plan and in accordance with the Master Plan for Bareilly.

The report highlights the key projects identified in discussion with the Govt. for development within Bareilly over the next 10 to 15 years along with their CAPEX needs and the plan for achieving the funding needs under the project.

The approach undertaken to arrive at the plan for implementation for these projects have been highlighted as the Business Plan for Bareilly and includes assessment of the following three critical aspects –

1. Identification of Capital and Operating Expense Heads

- ▶ Identification of key projects and their CAPEX needs across the years for development to identify estimated development costs and its phasing
- ▶ Identification of operating expenses that are currently being borne by the authority as well as their projections for the next 10 years basis financial reports/ annual financial statements of the authority

1. Identification of Capital and Operating Expense Heads

- ▶ Identification of key projects and their CAPEX needs across the years for development to identify estimated development costs and its phasing
- ▶ Identification of operating expenses that are currently being borne by the authority as well as their projections for the next 10 years basis financial reports/ annual financial statements of the authority

2. Estimating the Revenue and Income sources for the Authority

- ▶ A review of the financial standings and annual statements for Bareilly Development Authority (BDA) was conducted to identify existing funding sources, revenue sources and available surplus funds that can be used for the funding of these projects.
- ▶ An assessment of possible income opportunities/ expected revenue from the identified projects through PPP developments/ outright sale of land parcels or leasing charges.
- ▶ Subsequently as assessment of available Govt. schemes for such development proposals have been reviewed to understand the possible funding grant that can be obtained under the different schemes for the proposed development.

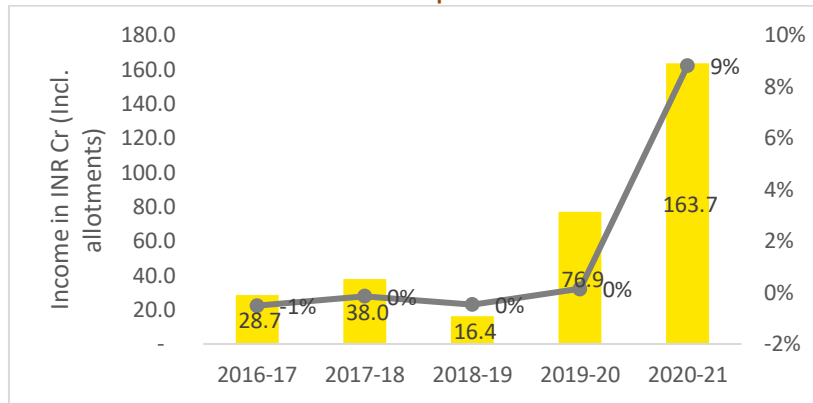
The detailing for each of these as part of the Business Plan has been provided in the subsequent chapters

10 Review of financial statements of Bareilly Development Authority

A high level review of the financial statements have been undertaken to under the income sources as well as the key expense heads for the authority. The same has been indicated as follows –

The total income for Bareilly Development Authority (BDA) for the year 2020-21 is estimated at INR 163 Cr owing to the influx of revenue from plot and housing sales recognized during the year. Housing and plot sales income contributed to over 70% income over the last 4 years. The total income along with the excess earnings over expenses have been represented as follow.

Exhibit 1: Income profile of BDA

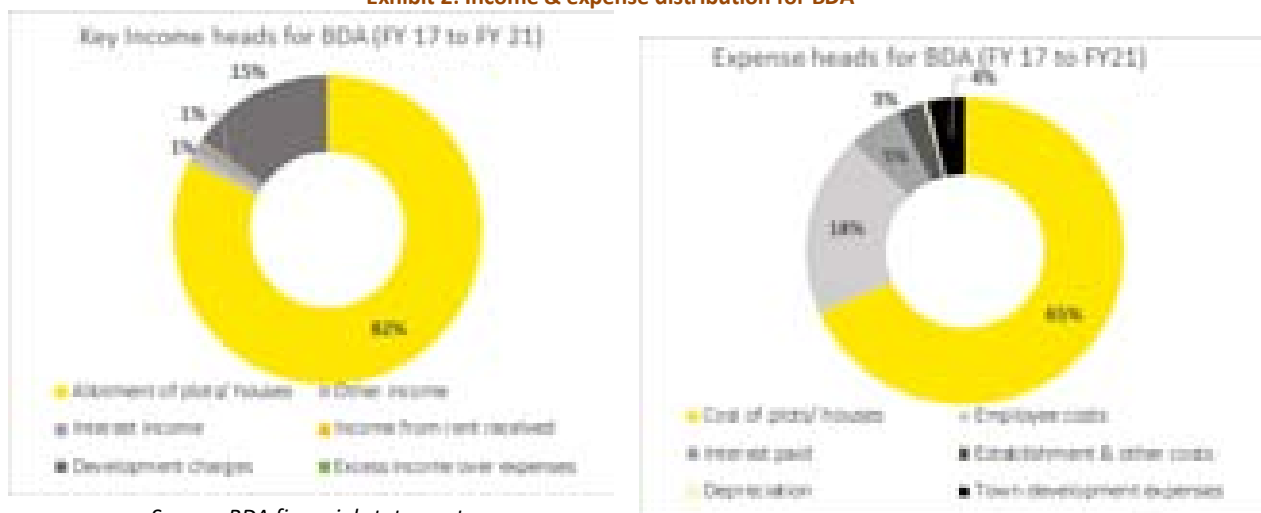


Source: BDA financial statements

Additionally to understand the key revenue contributors and expense heads, analysis of both income and expense drivers was conducted for the period of last 5 years from 2016-17 to 2020-21. The analysis indicated a reliance of 82% towards income from housing and plot sales, which has witnessed a 15% to 30% margin over the last 4 years. Income from development charges was the other major contributor towards income at 15% of total income during the last 5 years.

On the expense front, housing and plotted land expenses has been the largest contributor with 65% share in total expenses. Salary expense was other key expenses at 18% of total expenses followed by interest costs and town development expenses. The key contributors of income and expenses have been represented in the following exhibit.

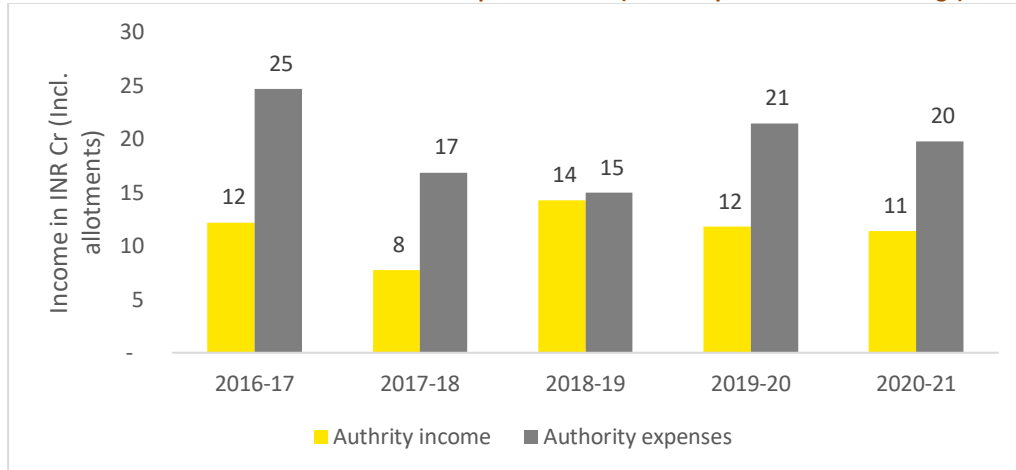
Exhibit 2: Income & expense distribution for BDA



Source: BDA financial statements

A review of the available financial statements, without the allotment income, the annual earnings for the authority indicates that the other income from development charges and interest components are sufficient to meet approximately 50% of the associated administrative and operating costs of the authority. The same has been represented as follows –

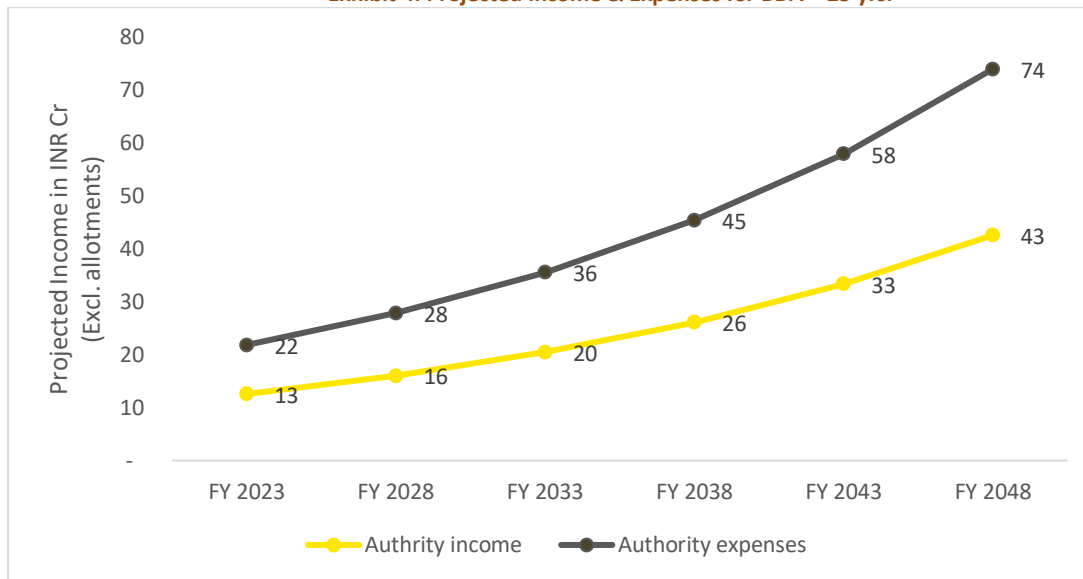
Exhibit 3: income & expenses – BDA (Without plot allotments earnings)



Source: BDA financial statements

A 25 years projection of the income and expenses for the authority adjusted for the plot and housing allotments is expected to generate ~ INR 653 Cr over the period from FY 2023 to FY 2048 considering a 5% y-o-y growth in earnings. The expenses are projected to grow to INR 1,115 Cr during the same period. The same has been represented as follows –

Exhibit 4: Projected Income & Expenses for BDA ~ 25 yrs.



Source: Projection of BDA combined audited financials

As observed in the exhibit the total cumulative earnings is lower than the expenses, creating a deficit of INR 473 Cr which would be met through earnings from new projects, residential and commercial allotments to be undertaken by the authority as well as the budgetary allocations received by the authority.

This deficit can be plugged through the following means ~

- ✓ **Budgetary allocations** - Through Budgetary allocations for BDA under different heads to meet its administrative and operational expenses.
- ✓ **Income from New Real estate and housing projects** - BDA can rope in additional income from the development and sale of housing as well as plotted developments. The earning from planned and ongoing projects may also be used to fund the operational gaps.

Accordingly various revenue generating and non -revenue generating projects as identified under the vision plan of Bareilly were reviewed to assess the expected income generation as well as the potential capital expenditure that authority is expected to make going forward. The same has been detailed in subsequent section.



11 Projects Under Vision Plan for Bareilly

3.1 Projects ~ Bareilly Vision Plan

As part of the Vision Plan for Bareilly, 18 different projects have been identified to be implemented in phased manner until 2051. The list of this projects along with the expected capital expenditure have been shown as follows –

Exhibit 5: Listing of projects under Bareilly Vision Plan 2051



As indicated above a total of 18 projects have been identified as part of the Bareilly Vision plan. These have been indicated as follows –

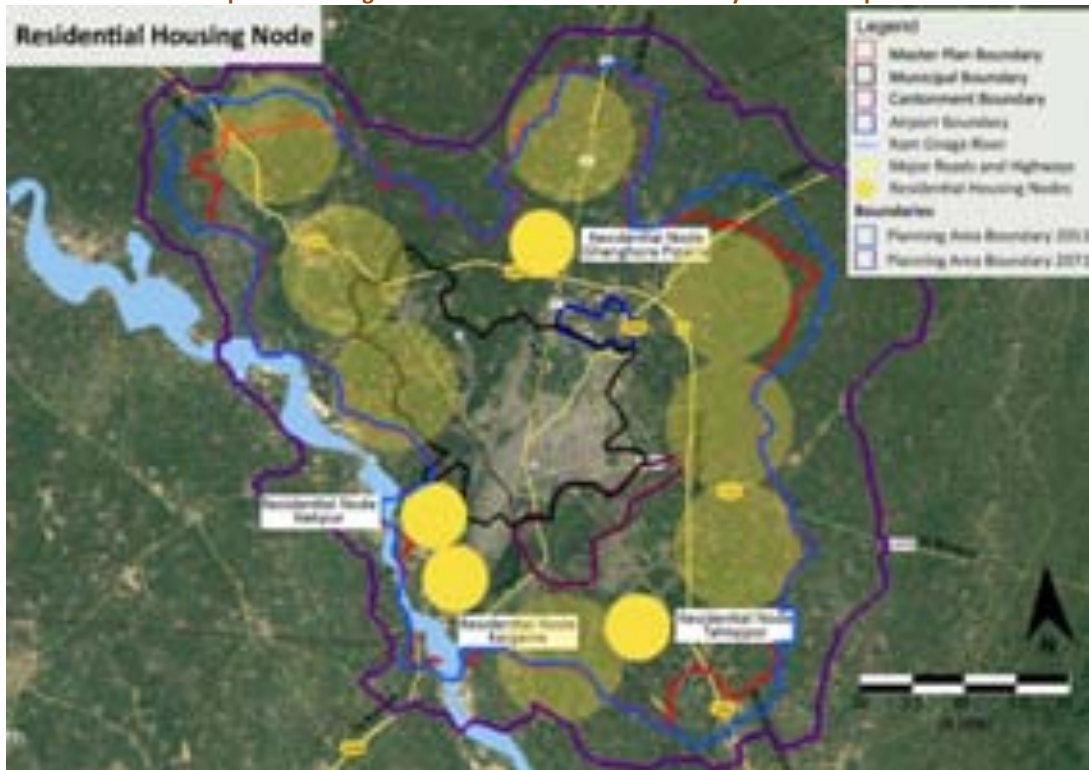
URBAN PLANNING PROJECTS

1. Residential Projects – Total 6 projects with an indicative area of 940 Ha

- ✓ **The Greater Bareilly Township ~ 240 Ha** - It is proposed at west of N.H. 30 and north of Bisalpur road, adjacent to Ramganga Nagar phase-I. The total landcover of the site is 240Ha. A total of 13 sectors are divided in Ramganga Nagar Phase II (Greater Bareilly Township) starting from sector-14 till sector-26. Putting commercial in front.
- ✓ **Shri Jankipuram Township – 300 Ha** - It is proposed on Budaun road crossing river Ramganga on both sides of National Highway with a landcover of approx. 300 Ha. It is also proposed to do riverfront development adjacent to scheme with provisions of boat club, ganga aarti canopies and a big statue of Shri ram and Janki Mata
- ✓ **Residential Township nodes of 100 ha each** - Additionally 4 different residential townships are proposed of 100 Ha each to be developed in peripheral areas of Bareilly. The proposed residential nodes will be an integrated neighborhood with convenient access to social services and facilities like healthcare, education, retail, leisure, entertainment and sports. Out of these 2 residential zones are proposed on Aligarh Road near village **Nekpur** and **Kargaina**. Other 2

residential zones are proposed on Lucknow Road near **Tehtajpur** and near Village **Ghaghoria Piparia** on Nainital Road.

Exhibit 6: Proposed Housing nodes in addition to Greater Bareilly & Shri Jankipuram



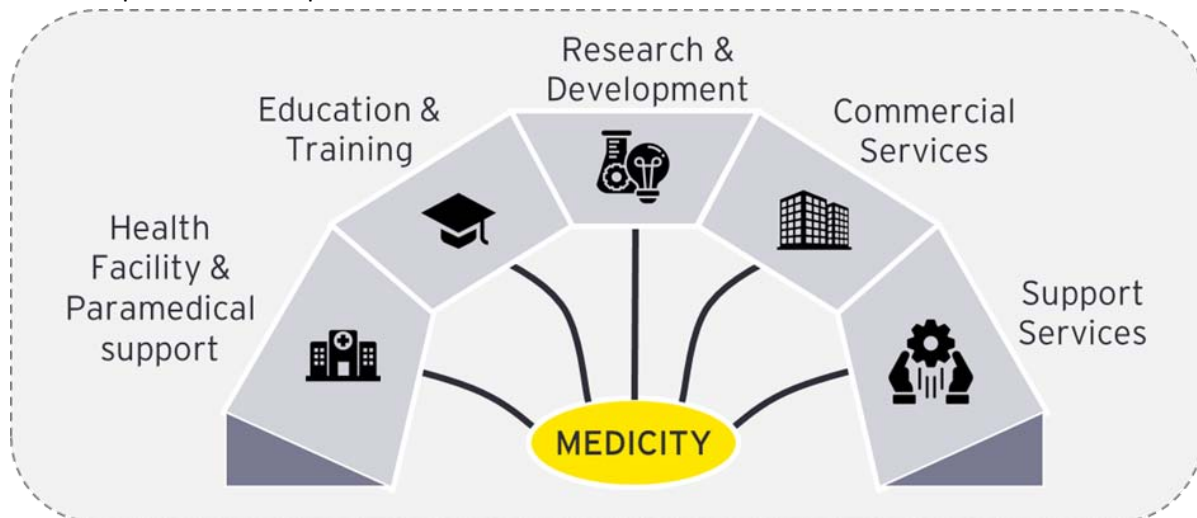
2. Aero-city across 30 Ha– A hospitality cum commercial office in proximity to the Airport is proposed to be developed across 30 Ha of land. The Aero-city is expected to have commercial office spaces along with hotels and convention centres. It is proposed to be part of the area identified along the Greater Bareilly Township.

Exhibit 7: Proposed Aero-city ~ Indicative components



3. Medi-city across 20 Ha – A Medi-city focussed on developing a super speciality hospital along with support commercial facilities such as ancillary diagnostic and medical support centres, hospitality and catering to meet the requirement of the patients and their support personnel, etc. The Medi-city

would also have a conference centre for conducting medical conferences. It is proposed within the Shri Jankipuram Township.



4. Industrial projects –Bareilly city has three UPSIDA industrial areas and one private industrial area which is near Invertis University on Lucknow road. Additionally 3 industrial nodes of 100 Ha are proposed on the peripheral areas of Bareilly. These are

- ✓ **Paraskhera ~ 100 Ha** - The industrial area proposed of area 100 hectares as an extension of the already existing Paraskhera Industrial area which is currently the major industrial area of Bareilly city.
- ✓ **Kurtara ~ 100 Ha** - The industrial area on Rampur/Delhi road and lies near village Kurtara is proposed to cover 100 hectares of area.
- ✓ **Rajau Paraspur ~ 100 Ha** - The industrial area proposed as an up-gradation and extension of the already existing private industrial area in Rajau Paraspur at Lucknow road on an area of 100 hectares.
- ✓ **Integrated Freight cum logistics centre** - Additionally integrated freight cum logistics centre of 35 Ha each at Kurtara is proposed.

TRANSPORT INFRASTRUCTURE PROJECTS

4. Strengthening of radial road connectivity as well as Access from Ganga Expressway to Bareilly – In order to provide streamline express connectivity from Bareilly to Ganga expressway at Budaun, a radial road is proposed to be developed. It would be developed across two sections – Ramganga Bridge to Binawar and the South Bareilly Bypass road spanning across 57 km in total. The project would be developed by NHAI as part of the National highway NH 530B.

Exhibit 8: Ganga Expressway radial road ~ indicative proposal



Source: Meinhardt & Consultant analysis

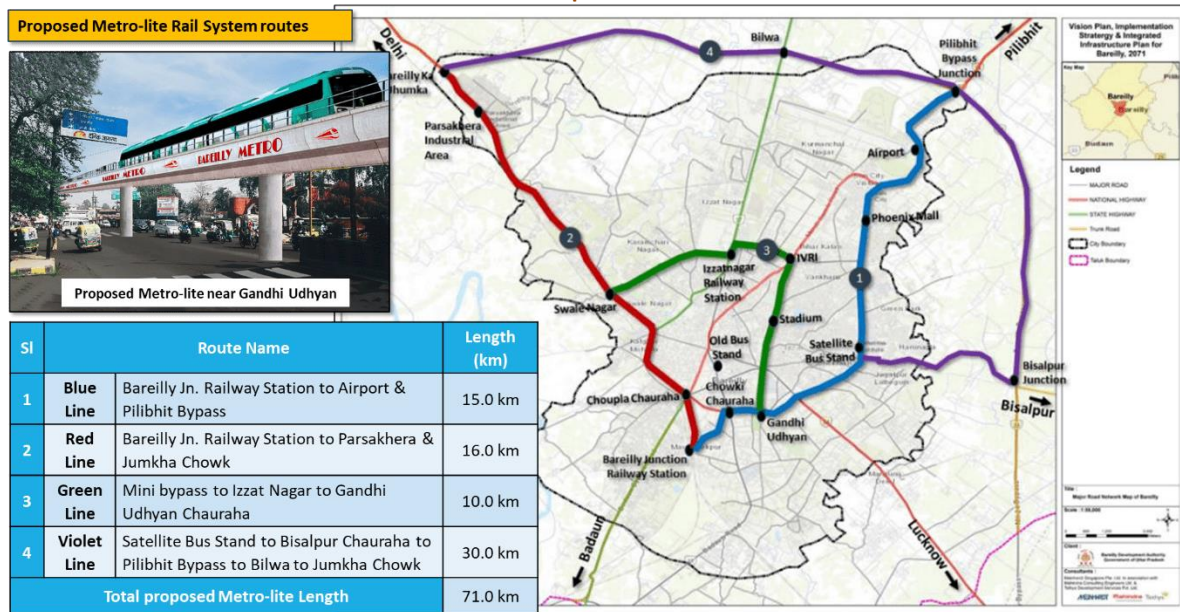
Exhibit 9: Bareilly South Bypass Indicative Proposal



Source: Meinhardt & Consultant analysis

5. Bareilly Metro Lite Project - Bareilly is a fast-growing city with the population of more than 10 lakh and is in need for a public transport system considering that it caters to population from adjoining areas as well. The proposed Metro-lite rail system in Bareilly city will be sustainable public transport system to provide hassle-free journey between Bareilly Junction Railway Station, Chowki Chauraha, Parsakhera, Izzatnagar, Satellite Bus Stand, Gandhi Udhyan and Phoenix Mall in Bareilly. The metro is proposed across 4 different lines spanning a total of 71 km. out of this 31 km of stretch is proposed across near and medium term till 2034. The project would be undertaken by Govt. led SPV having representation from both Central and State Govt.

Exhibit 10: Proposed Metro corridor



Source: Meinhardt & Consultant analysis

URBAN INFRASTRUCTURE PROJECTS

6. Solid Waste Treatment Plant ~ 15 Ha – Considering the demand for solid waste generation for a planning period of 50 years till 2071, multiple Solid Waste Treatment plants and landfills are proposed in a phased manner across different areas within Bareilly. The SWM plants are proposed at Sathrapur with a capacity of 500 TPD across a 10 acres land and at Rajau Paraspur with a capacity of 300 TPD across 20 acres of land

7. New Tertiary Sewage Treatment Plant (STP) near Industrial area – The present population of Bareilly is approximately 1554063, as against the combined design population of 1140717 for stage I and stage II sewerage schemes. Thus even after the Stage II scheme, designed to cover 165 MLD for 2033 whereas by 2036 the discharge within Municipal area will be 169 MLD, the entire present population of the city will not be covered. Accordingly a 7 MLD Sewage Treatment Plant is proposed across 0.56 Ha of land.

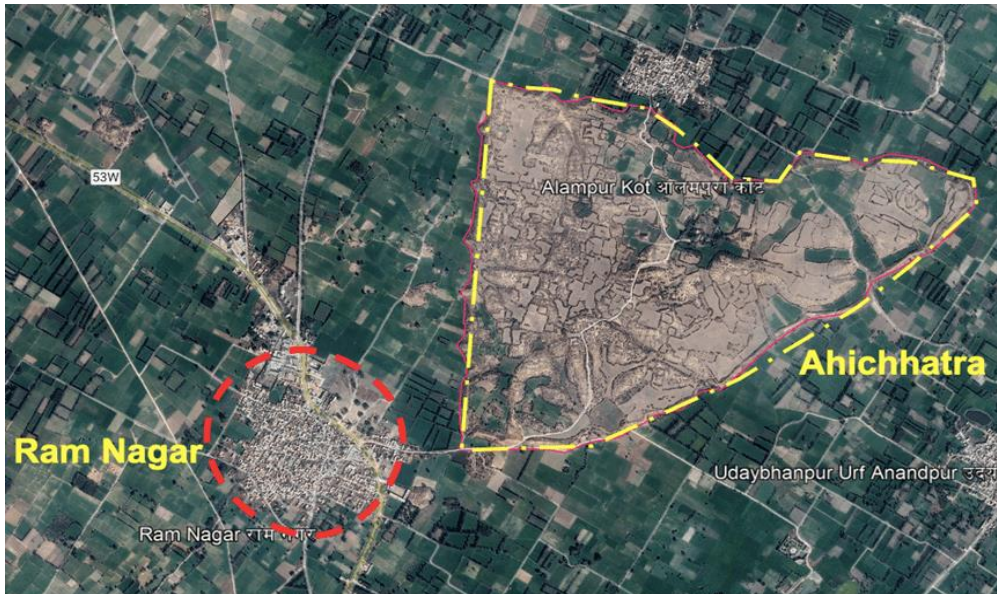
8. Upgradation work & City Plan for Water Logging / stagnant spots and flood prone areas - There are three major drains in the Bareilly planning area – (1) Deveraniya drain (2) Chaubari drain (3) Nakatiya drain. The problems of waterlogging, overflowing and choked drains and a host of water-borne diseases can be witnessed across these drains owing to discharge of industrial waste, discharge of household sewage directly into the drains and obstruction of pathways due to garbage and solid waste. It is therefore proposed to Desilt and dewed the drains along with augmenting capacities at pumping stations in short term. Further, improvement of existing secondary drains and development of new secondary drains and pumping stations in flood affected/water logged areas are proposed in medium and long term with a total investment of INR 90 Cr.

9. Upgradation of city roads & development of bridges & FOBs – As part of the vision plan upgradation of city road infrastructure through development of Foot over bridges, cycle tracks, pedestrian pathways and junction improvement infrastructure is proposed to be undertaken over the short and medium term. A total of INR 340 Cr has been earmarked for the same.

TOURISM PROJECTS

10. Ahichchhetra Tourism Infrastructure upgradation (Nath circuit) – The site of Ahichchhetra Garh was briefly explored by Sir Alexander Cunningham in 1871, and then excavated by the ASI from 1940 for "about five years". The excavations found brick fortifications and continuity of occupation from a period before 600 BCE to 1100 CE. The site is not well connected with the major towns. It is 53 kms from Bareilly and road connectivity is poor. Further, the site lacks visitor facilities and information signages. Accordingly in order to promote the destination as a preferred tourism spot within Bareilly, it is proposed to develop provisions for visitor parking, monument lighting, enhancing connectivity and visitor facilities, undertaking landscaping as well as installation of requisite signages.

Exhibit 11: Ahichchhetra Tourism Site and location



11. River Front Development at Ramganga ~ 20 Ha – The current scenario of riverfront displays a very abrupt image of city's natural features. Despite of being well connected to the city through state highway & railway line, the site completely lacks a prominent connectivity and a symbolic identity. The existing ghat and fairground does not contain any public infrastructure to support the monthly holy bath and Chaubari fair. This has led to the depletion of the condition of the riverine, eventually affecting the overall ecology. The Ramganga fairground is not only an ecological asset but also holds

a significant value in the social infrastructure of Bareilly. Accordingly it is proposed to develop Ramganga river ghat into a multi-functional public space that caters to all pilgrimage activity, fairs and festivals with integrated bathing facilities, Naturopathy center, Horse market and recreational greens. The total project is expected to cost INR 216.3 Cr.



12. River Front Development at Nakatiya ~ 2.13 Ha – The second river front development is proposed along Nakatiya river over an area of 2.13 Ha. The area is proposed to be developed into interactive green asset within the city along with development of public convenience to act as a recreational area. The project is expected to incur a cost of INR 14.2 Cr.

Exhibit 12: Indicative riverfront development - Nakatiya



HERITAGE PROJECTS

13. Development of Nath circuit – Bareilly inherits a very rich spiritual culture and is also recognized as The Nath Nagri of India. It portrays a very strong image of the seven Nath temples, located on routes linking Bareilly to seven of its surrounding cities. The seven temples act as gateways to the radially structured city of Bareilly forming important nodes of religious activity and pilgrimage. The expansion of city has also resulted in loss of imageability of all Nath temple precincts over a period of time, which has further led to disappearing of the overall circuit that connects all Nath temples. In order to revive the city's identity as Nath Nagri, it is essential to define a road network that seamlessly connects the Nath temple circuit by means of public and private transport. Accordingly, urban renewal of Nath temple circuit & infrastructure improvement of all seven Nath temples is proposed at a cost of INR 37 Cr.

14. Upgradation of Bareilly college campus and provision of first world war museum – During 1857, Bareilly became a major centre of revolt under the leadership of Khan Bahadur Khan while maintaining the communal harmony despite the efforts by Company officers to create trouble by inciting Rajputs against Khan Bahadur Khan. Bareilly was the last to fall (May 1858). To infuse sense of pride among community and Reviving the memory of the First War of Independence the museum is proposed at the site along with conservation of the historic structure of the Bareilly college. The total project is expected to cost INR 44 Cr.

Exhibit 13: Indicative development proposal for Bareilly college campus & Museum

Development of Theme based Museum.	Identification and demarcation of site boundaries
Interpretive displays of the history of the region and associated personalities, role of Bareilly.	Design Development of Museum
	Construction of museum building
	Operation and maintenance of the building
	Consultancy works for the research and content development of 1857 narratives and local stories
	Interpretative methods and installation designs

15. Development of Handicraft CFCs – A total of 6 CFCs with a cost of INR 75 lakh is proposed to be developed across key handicraft villages within Bareilly. The CFCs would be focused on the Zari craft and would provide provision of frame looms and ancillary services in order to promote and enable the artisans within the village. The project is expected to cost INR 4.5 Cr is total and may be developed within funding support under various handicraft schemes of the Office of the Development Commissioner (Handicrafts).

SOLAR PROJECTS

16. Solar rooftop / ground mounted power plant & Solar Street lighting – In order to promote use of renewable energy it is proposed to establish a 75 kw solar power plant at IT Park building along with individual captive use solar plants for the proposed Aero-city and select Government buildings and hospitals. Additionally Semi Integrated or All in one solar street lights can be installed to replace power from grid with a total cost of INR 15.4 lakh.

3.2 Estimated CAPEX - projects under Bareilly Vision Plan

The total estimated capital expenditure for the projects identified as part of the vision plan indicated as follows -

Exhibit 14: Identified Projects for Bareilly ~ estimated CAPEX

Project List under Bareilly City Vision Plan 2051				Total cost in INR Crore (excluding land)	Share in total project cost	Funding Mechanism	Short Term (2023-28)	Medium Term (2028-2037)	Long Term (2037-2051)
#	Name	Domain	Nodal Department						
	Urban Planning & Industrial Projects ²⁴								
1	Residential Housing Node, a) Nekpur (Phase 1 - 2022-23) b) Gangora Pikariyam c) Kargaina d) Tehtajpur (Area - 100 Ha each) e) Greater Bareilly ~ 240 Ha f) Shri Jankipuram – 300 Ha	Urban Planning	BDA / Awas vikas	790.7	3.4%	BDA to develop land and lease	395.4	395.4	
	Residential Housing Node, e) Greater Bareilly ~ 240 Ha f) Shri Jankipuram – 300 Ha		BDA / Awas Vikas	1,067.5	4.6%	BDA to develop land and lease	474.4	593.0	
2	Aero-city Project ~ 30 Ha		BDA	59.3	0.3%	BDA to develop land and lease	59.3		
3	Medi-city Project ~ 20 Ha		BDA	39.5	0.2%	BDA to develop land and lease	39.5		

²⁴ CAPEX estimated considering only development cost at INR 1,977 / sqm for residential, industrial & commercial projects

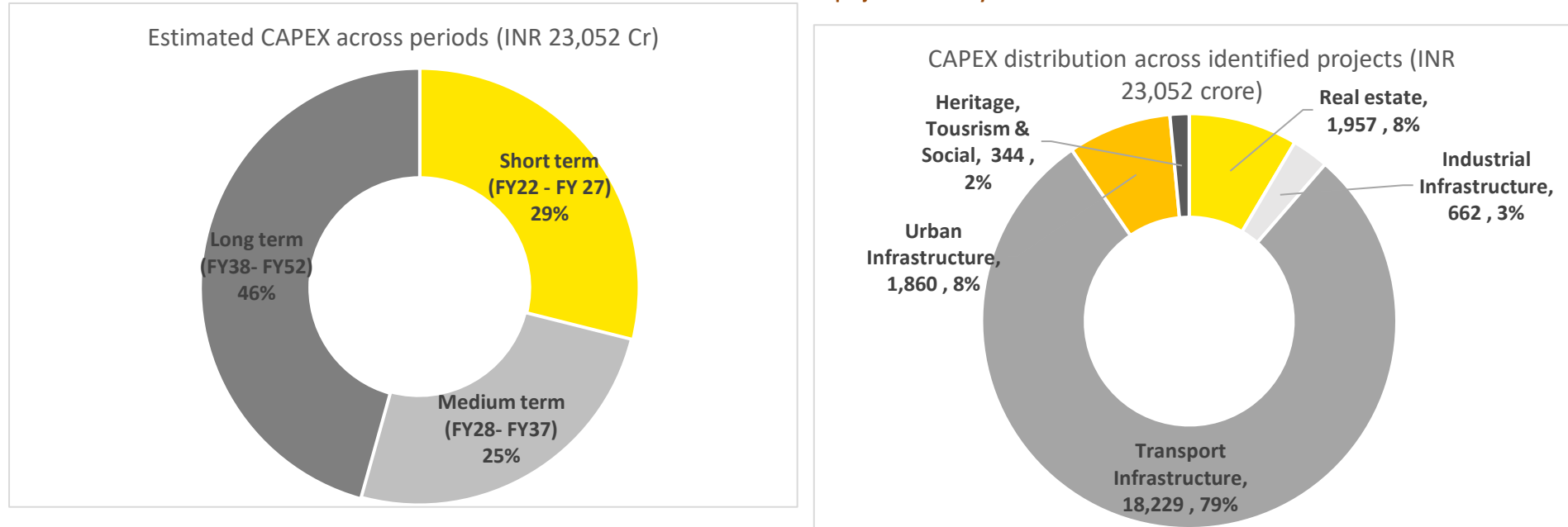
Project List under Bareilly City Vision Plan 2051				Total cost in INR Crore (excluding land)	Share in total project cost	Funding Mechanism	Short Term (2023-28)	Medium Term (2028-2037)	Long Term (2037-2051)	
#	Name	Domain	Nodal Department							
2	Industrial Growth Centres – 100 Ha each a) Rajau Paraspur b) Parakheda c) Kurtara		BDA / UPSIDC	592.8	2.6%	UPSIDC / USPIDA to develop land and lease	395.2	197.6		
3	Integrated Freight Centre cum Logistic Hub , Faridpur - 35 Ha		BDA / UPSIDC	69.2	0.3%	UPSIDC / USPIDA to develop land and lease	138.4			
Transport Infrastructure Projects										
4	Access to Ganga Expressway through Radial Road and Outer Ring Road	Transportation	NHAI / PWD	535	2.3%	NHAI via EPC-HAM	244.3	291.3		
5	Bareilly Lite Metro facility		SPV	17,353	75.3%	Joint SPV of Central & State Govt.	3,667	3,910	9,776	
6	Other road infrastructure		NHAI/ PWD	340	1.5%	PWD to implement	100	240		
Urban Infrastructure Projects										
	Development of new solid waste treatment plant for 2041, (Area -15 Ha)	Urban Infrastructure	Jal Nigam/ Municipal Corporation	90	0.4%	BDA/ Jal Nigam / Municipal Corporation through own fund & funding via AMRUT 2.0 scheme	300	450	150	
	City Plan for Water Logging / stagnant spots and flood prone areas		Jal Nigam/ Municipal Corporation	90	0.4%		300	450	150	
	Development of new Tertiary Sewage Treatment Plant (STP)		Jal Nigam/ Municipal Corporation	1,680	7.3%		240	720	720	
Tourism & Heritage Projects										

Project List under Bareilly City Vision Plan 2051				Total cost in INR Crore (excluding land)	Share in total project cost	Funding Mechanism	Short Term (2023-28)	Medium Term (2028-2037)	Long Term (2037-2051)
#	Name	Domain	Nodal Department						
6	Ahichchhatra Tourism Infrastructure upgradation	Tourism & Heritage	Tourism Dept.	28	0.1%	BDA with assistance from Central Govt. Schemes ~ PRASAD	28		
9	River front development (Ramganga & Nakatiya)		Tourism Dept.	230	1.0%	BDA	230		
8	Urban Renewal of Nath Temple circuit & Infrastructure improvement of all Seven Nath Temples		Tourism Dept.	36.7	0.1%	BDA with assistance from Central Govt. schemes ~ PRASAD	36.7		
7	Fist War of Independence (1857) museum : a) Bareilly College Campus		Tourism Dept.	44	0.5%	BDA	32	12	
8	Development of Handicraft CFCs for Zari weaves		Handloom & Handicraft Dept.	4.5	Less than 0.1%	BDA with assistance from SFURTI scheme	4.5		
Solar Projects									
	Demonstration of Solar Energy for streets and Gov. buildings.	Solar	UPNEDA	0.15	Less than 0.1%	Govt Fund via support from MNRE	0.15		
Total				23,052					

Source: Consultants in discussion with BDA

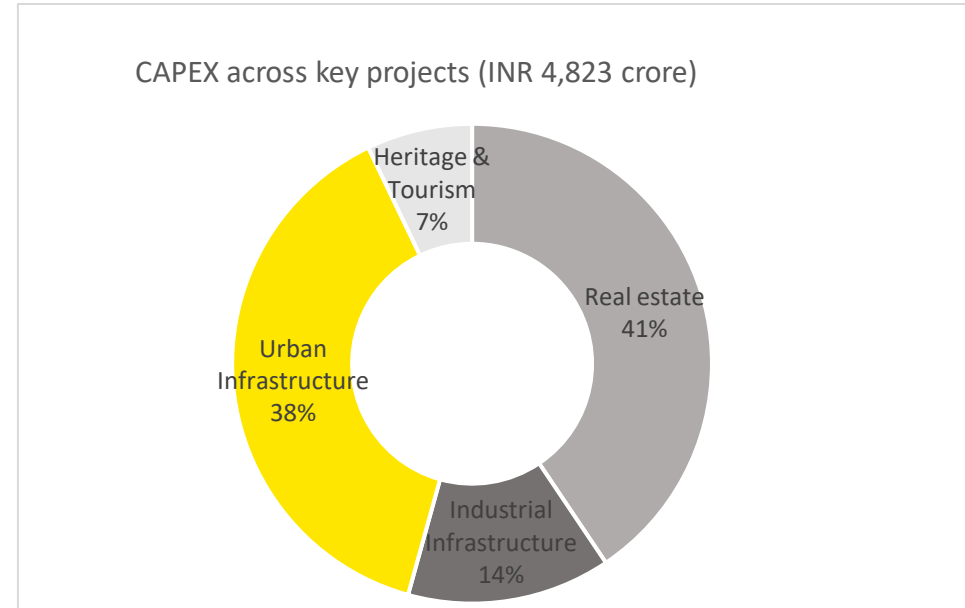
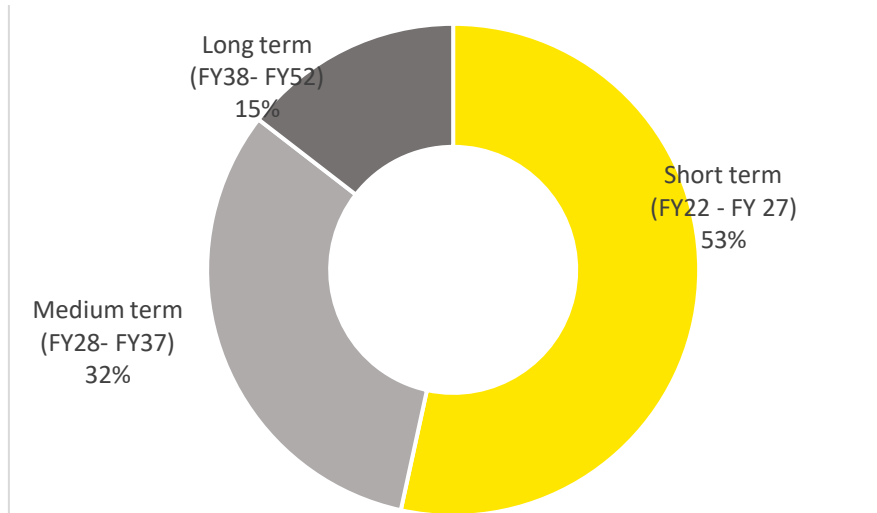
The total estimated costs towards the proposed development is estimated at INR 23,052 Cr spread over a period till 2051. The distribution of the same across short term, mid-term and long term is indicated as follows –

Exhibit 15: Estimated CAPEX for projects in Bareilly



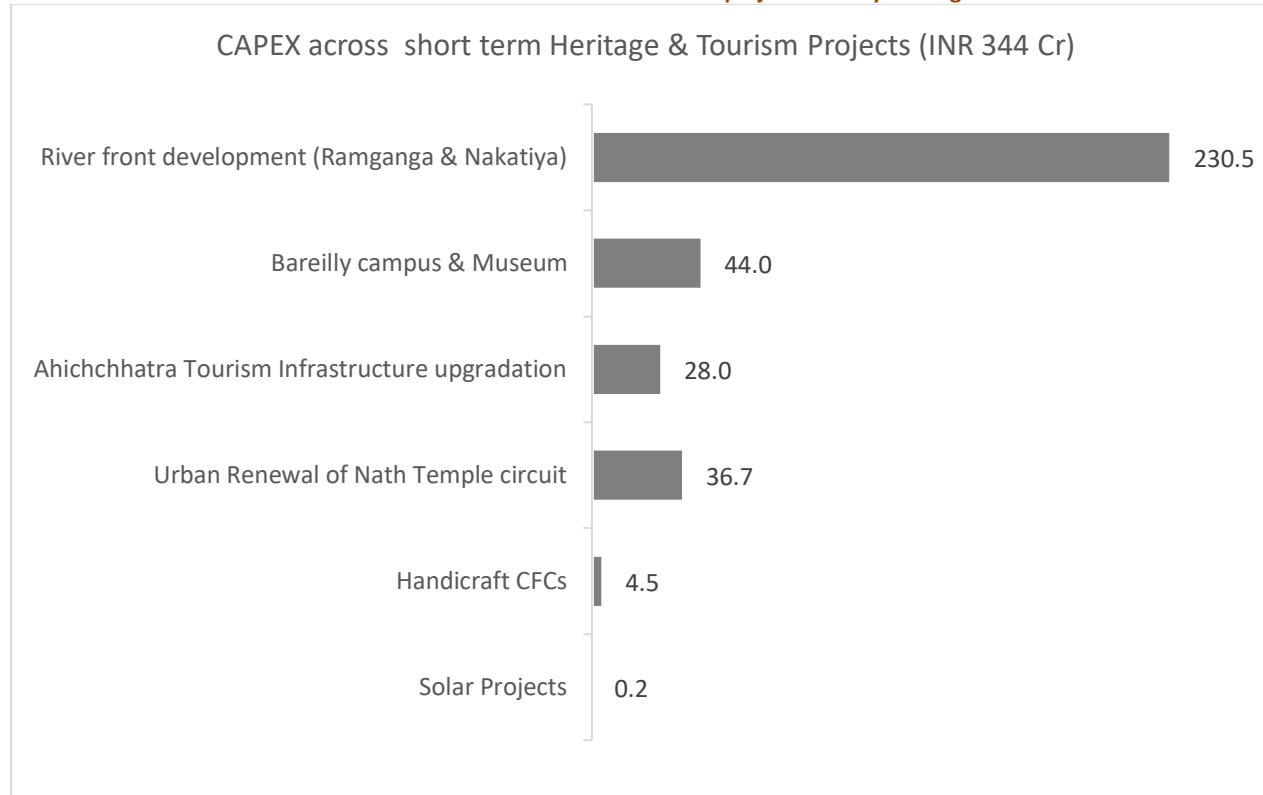
Further an assessment of the projected CAPEX across different type of projects was conducted to identify the share of different type of projects. From the analysis it was concluded that the two transport infrastructure projects of Bareilly Metro-lite and road projects accounts for ~79% of the total CAPEX. Considering that BDA or the City authority would not be incurring the capital expense towards these projects, an adjusted CAPEX requirement factoring in projects which need to be funded by BDA/ city authorities has also been identified at INR 4,823 Cr. The distribution that across different projects is as follows.

Exhibit 16: CAPEX across Projects (excluding Metro & Road projects)



Out of these projects worth INR 4,823 Cr the short term projects that can be taken up and implemented over a period of net 3 to 5 years are mostly related to heritage and tourism infrastructure projects and amount to ~ INR 344 Cr, excluding short term investment towards city roads and FOBs. These have been show cased as follows –

Exhibit 17: Short Term projects for City Heritage & Tourism Infrastructure – FY 23 to FY 28



12 Project Plan & Implementation strategy

This chapter provides the prospective strategy for implementation of the identified projects along with the funding possibilities. The expected modus operandi for different project as well as their implementation strategy has been indicated as follows –

4.1 Short term Heritage & Tourism Projects

A total of 6 Short term Heritage and tourism linked projects are proposed with an estimated CAPEX of INR 344 Cr. The operating modality and the funding strategy for the same is as indicated –

Project	Project Tenure	CAPEX	Operating modality	Funding strategy	Prospects for Bareilly Development authority
Short Term Projects					
Ahichchhatra Tourism Infrastructure upgradation	FY 23 to FY 28	INR 28 Cr	<ul style="list-style-type: none"> ✓ To be developed by BDA/ Municipal corporation ✓ Ticketing & maintenance may be leased 	<ul style="list-style-type: none"> ✓ To be funded by State Govt. & City Administration/ Tourism Dept. 	<ul style="list-style-type: none"> ✓ Development of commercial infrastructure in adjoining areas
River front development (Ramganga & Nakatiya)	FY 23 to FY 28	INR 230 Cr	<ul style="list-style-type: none"> ✓ To be developed by BDA/ Municipal corporation ✓ Ticketing & maintenance may be leased ✓ May be leased for festivals/ trade fairs & events 	<ul style="list-style-type: none"> ✓ To be funded by State Govt. & City Administration/ Tourism Dept. ✓ Central Govt. Schemes such as PRASAD may be utilized for funding 	<ul style="list-style-type: none"> ✓ Development of commercial infrastructure in adjoining areas

Project	Project Tenure	CAPEX	Operating modality	Funding strategy	Prospects for Bareilly Development authority
Urban Renewal of Nath Temple circuit	FY 23 to FY 24	INR 36.7 Cr	<ul style="list-style-type: none"> ✓ To be developed by BDA/ Municipal corporation ✓ Ticketing & maintenance may be leased ✓ May be leased for festivals/ trade fairs & events 	<ul style="list-style-type: none"> ✓ To be funded by State Govt. & City Administration/ Tourism Dept. ✓ Central Govt. Schemes such as PRASAD may be utilized ✓ Operation & Maintenance may be leased to private player 	<ul style="list-style-type: none"> ✓ Leasing revenue from fairs, festivals ✓ Ticketing charges for parks may be used for operational sustenance
Bareilly college Infrastructure Upgradation and Fist War of Independence (1857) museum	FY 23 to FY 26	INR 44 Cr	<ul style="list-style-type: none"> ✓ To be developed by BDA/ Municipal corporation ✓ Ticketing & maintenance may be leased 	<ul style="list-style-type: none"> ✓ To be funded by State Govt. & City Administration/ Tourism Dept. ✓ Private operator/ curator may be appointed for maintenance 	<ul style="list-style-type: none"> ✓ Ticketing charges for parks may be used for operational sustenance
Development of Handicraft CFCs for Zari weaves	FY 23 to FY 28	INR 4.5 Cr	<ul style="list-style-type: none"> ✓ To be developed by City Administration/ State MSME / handicraft Department with support from Development Commissioner (Handicraft) ✓ To be operated by SHGs within the village ✓ Operational sustenance to be ensured by SHG sales 	<ul style="list-style-type: none"> ✓ To be developed by City Administration/ State MSME / handicraft Department ✓ Central Govt. Schemes such as SFURTI may be utilized for funding 	<ul style="list-style-type: none"> ✓ Social upliftment and prospect of developing handicraft market in future

Project	Project Tenure	CAPEX	Operating modality	Funding strategy	Prospects for Bareilly Development authority
Demonstration of Solar Energy for streets and Gov. buildings.	FY 23 to FY 26	INR 0.15 Cr	<ul style="list-style-type: none"> ✓ To be installed by City Administration/ UPNEDA ✓ To be maintained via UPNEDA or respective Govt. agency where it is installed 	<ul style="list-style-type: none"> ✓ To be installed by City Administration/ UPNEDA ✓ Central Govt. Schemes under MNRE may be utilized for funding 	<ul style="list-style-type: none"> ✓ Lowering dependence on fossil fuels
Total		INR 344 Cr			

Majority of these projects would be funded via support from Central Govt. schemes.

4.2 Short & Medium Term Real Estate Projects

Six residential townships along with two commercial developments and five industrial parks have been proposed as real estate projects to be undertaken as part of the Bareilly Vision Plan. It is proposed that BDA would be developing the land and leasing plots for residential and commercial projects whereas UPSIDA/ UPSIDC would be undertaking the development of industrial projects. The indicative operating modality and funding strategy has been shown as follows –

Exhibit 18: Project Implementation Plan ~ Real estate & Industrial Projects

Project	Project Tenure	Cost to be borne by BDA	CAPEX	Operating modality	Funding strategy	Prospects for Bareilly Development authority
4 Residential Townships 400 Ha	Staggered development across FY 24 to FY 28	Yes Only basis infrastructure & utilities	Land - INR 2,960 Cr Site Development - INR 790 Cr	<ul style="list-style-type: none"> ✓ To be developed by BDA and leased to private players ✓ Private player/ BDA may develop the land plots 	<ul style="list-style-type: none"> ✓ Initial land cost to be incurred by BDA upfront ✓ Infrastructure Development cost to be borne by BDA 	<ul style="list-style-type: none"> ✓ Revenue as lease/ plot auctions ✓ Additional value added revenues from commercial

Project	Project Tenure	Cost to be borne by BDA	CAPEX	Operating modality	Funding strategy	Prospects for Bareilly Development authority
Greater Bareilly & Shri Jankipuram townships (540 Ha)	Stagged development across FY 24 to FY 32		Land - INR 4,320 Cr Site Development - INR 1,067 Cr	into group housing and plotted schemes ✓	<ul style="list-style-type: none"> ✓ Plot leasing revenue to be obtained by BDA ✓ Funding under PMAY scheme and other affordable housing schemes may be tapped ✓ schemes may be tapped 	<ul style="list-style-type: none"> ✓ developments within the scheme
Aero-city 30 Ha	Stagged development across FY 24 to FY 28	Yes Only basis infrastructure & utilities	Land - INR 420 Cr Site Development - INR 59 Cr	<ul style="list-style-type: none"> ✓ To be developed via PPP ✓ BDA to procure land and provide basic infrastructure and lease land to private developers for development charging a nominal premium 	<ul style="list-style-type: none"> ✓ Initial land cost to be incurred by BDA upfront ✓ Development to be financed by PPP player ✓ Lease premium to be paid by developers 	<ul style="list-style-type: none"> ✓ Revenue as lease premiums ✓ Development & approval charges on proposed developments
Medi-city	Stagged development across FY 24 to FY 28	Yes Only basis infrastructure & utilities	Land - INR 175 Cr Site development - INR 39 Cr	<ul style="list-style-type: none"> ✓ To be developed via PPP ✓ BDA to procure land and provide basic infrastructure and lease land to private developers for development charging a nominal premium 	<ul style="list-style-type: none"> ✓ Initial land cost to be incurred by BDA upfront ✓ Development to be financed by PPP player Lease premium to be paid by developers 	<ul style="list-style-type: none"> ✓ Taxes on Hospitality within the proposed Medi-city ✓ Additional development charges for units within Medi-city

Project	Project Tenure	Cost to be borne by BDA	CAPEX	Operating modality	Funding strategy	Prospects for Bareilly Development authority
Industrial Areas	3 IAs To be initiated in FY 24	Nil	Development - INR 592 Cr	<ul style="list-style-type: none"> ✓ BDA to assist in land procurement ✓ UPSIDA/ UPSIDC to develop industrial areas 	<ul style="list-style-type: none"> ✓ To be funded & developed by Industrial authority/ private player ✓ Central Govt. schemes for dedicated industrial parks may be utilized for Logistics, Specialized parks such as Medical devices, Food Parks, etc. 	<ul style="list-style-type: none"> ✓ Additional development opportunities adjoining the Industrial park
Integrated Freight corridor - Faridpur	To be initiated in FY 24	Nil	Development - INR 69 Cr			
Total for residential & commercial projects			Land – INR 7,280 Cr Site Development – INR 1,858 Cr			

It is proposed that the authority may procure the land and develop the initial site infrastructure and utilities and lease the land to private developers for residential and commercial projects, commanding a lease premium or through auction sales. The proceeds from these projects may be utilized to fund other urban infrastructure projects as well as tourism related projects.

4.3 Urban Infrastructure Projects

The Urban Infrastructure projects include the waste management and water logging plan projects. The operating modality and funding mechanism for these projects are listed as follows.

Project	Project Tenure	Cost to be borne by BDA	CAPEX	Operating modality	Funding strategy	Prospects for Bareilly Development authority
Infrastructure Projects						

Project	Project Tenure	Cost to be borne by BDA	CAPEX	Operating modality	Funding strategy	Prospects for Bareilly Development authority
Road upgradation projects	Across FY 26 to FY 37	No	INR 340 Cr	<ul style="list-style-type: none"> ✓ To be developed as EPC – HAM contract by PWD ✓ Land to be procured by PWD 	<ul style="list-style-type: none"> ✓ To be funded by PPP player / PWD 	<ul style="list-style-type: none"> ✓ Increase in land lease premiums along the proposed road
New STP project	Multiple phases between FY26 to FY 51	Yes	INR 1,680 Cr	<ul style="list-style-type: none"> ✓ To be developed by BDA/ Nagar Nigam / Jal Nigam through a mix of PPP and Govt. support ✓ Land to be procured by Jal Nigam/ Nagar Nigam ✓ PPP Operator/ lessee responsible for operations and maintenance in leu of tax collection 	<ul style="list-style-type: none"> ✓ Preferably through PPP development with support for viability gap funding from Central and State Govt. schemes ✓ To be funded using funds under the Central Govt. scheme - AMRUT 2.0 	<ul style="list-style-type: none"> ✓ Collection charges and revenue share from PPP operator
New Solid Waste Treatment plant	Multiple phases between FY24 to FY 42	Yes	INR 90 Cr			
City flood plan upgradation	Multiple phases between FY24 to FY 42	Yes	INR 90 Cr			
Total			INR 2,200 Cr			

4.4 Transport Infrastructure Projects

The Urban Infrastructure projects includes the proposal for Bareilly metro lite as well as Radial road connectivity from Ganga Expressway. The operating modality and funding mechanism for these projects are listed as follows

Exhibit 19: Project Implementation Plan ~ Infrastructure Projects

Project	Project Tenure	Cost to be borne by BDA	CAPEX	Operating modality	Funding strategy	Prospects for Bareilly Development authority
Infrastructure Projects						
Bareilly Metro-lite project	4 phases – 1 – FY 26 2 – FY 31 3- FY 37 4 – FY 47	No	INR 17,355 Cr	<ul style="list-style-type: none"> ✓ To be developed through SPV, with share of Central & State Govt. ✓ Land to be procured by SPV 	<ul style="list-style-type: none"> ✓ To be funded by Central & State Govt. 	<ul style="list-style-type: none"> ✓ Revenue generation through Parking operations ✓ Additional development charges for TOD lands
Access to Ganga Expressway	2 phase – 1 – FY 26 2 – FY 34	No	INR 535 Cr	<ul style="list-style-type: none"> ✓ To be developed as EPC – HAM contract by NHAI ✓ Land to be procured by NHAI 	<ul style="list-style-type: none"> ✓ To be funded by PPP player / NHAI 	<ul style="list-style-type: none"> ✓ Opportunities to develop and operate way-side amenities ✓ Increase in land lease premiums along the proposed road
Total			INR 17,889			

These projects would be implemented by the State appointed SPV for metro lite project funded by both State and Central Govt. and NHAI/PWD for the road project.

13 Projected Income from Identified Project Components

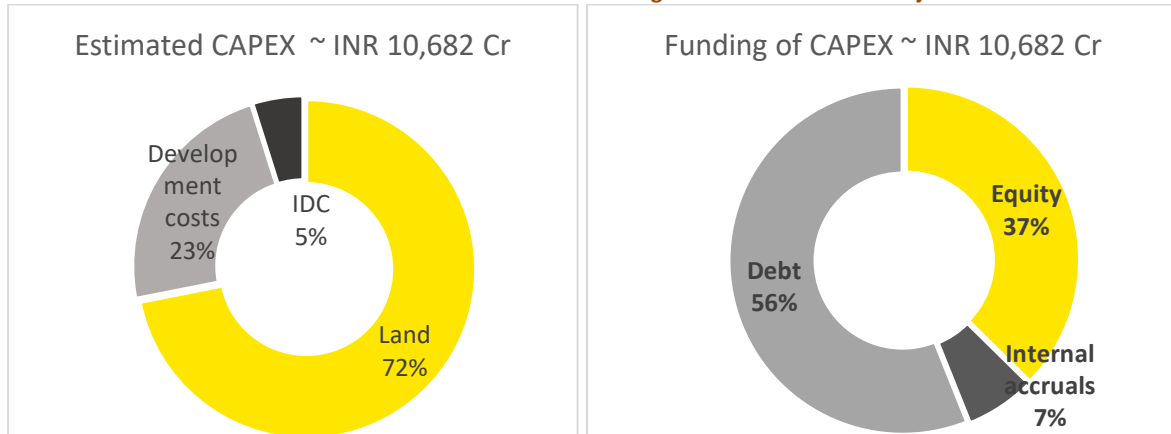
This chapter summarizes the project wise revenues and estimated costs including CAPEX that BDA is expected to incur to arrive at the possible earnings that BDA is expected to generate over the next 25 years including utilization of the cash flows towards various project components. The project income from only real estate residential and commercial projects have been considered, given that BDA would be implementing these projects. Further, for Tourism and heritage infrastructure projects it is presumed that the earning through commercial leasing, festival events, Semi Naming rights etc. would be utilized for meeting the operational sustainability of the asset.

The key assumption of the estimation of income from residential and commercial projects are –

- ✓ Residential Townships - The 4 residential townships are proposed to be developed across a period of 5 years while Greater Bareilly and Shir Jankipuram are expected to be developed over 8 years owing to large acreage. The project would subsequently be leased over a period of 8 and 12 years respectively. The leasing is expected to be during the period from year 4 to year 12.
- ✓ Aero-city & Medi-city - The commercial projects would be developed in 3 years and leased subsequently over a period of 7 years. The leasing is expected to be initiated from year 3 to year 7.
- ✓ The leasing / sale price for the land has been arrived on accost plus model factoring in land costs, development costs as well as interest costs. A 15% administrative margin has been considered on the loaded cost of development in accordance to the margins indicated for plotted and housing sales as per the last three financial statements on the authority. In doing so the rate has been fixed at INR 25,000/ sqm to INR 30,000 / sqm for residential assets and ~INR 58,000 / sqm for commercial plots factoring mark-up of 2.
- ✓ It is assumed that 54% of the total land would be saleable considering the similar saleable ratio for the currently ongoing scheme of Ramganga township development.
- ✓ The escalation rates are assumed at 5% p.a across both revenues and development costs.

It is proposed that these real estate assets would be funded through BDA using own equity, internal accruals from the project as well as debt maintaining a Debt: Equity ratio of 60: 40. The total funding requirement is estimated at INR 10,682 Cr. The distribution of the proposed funding across different funding mechanisms are indicated in the following exhibit.

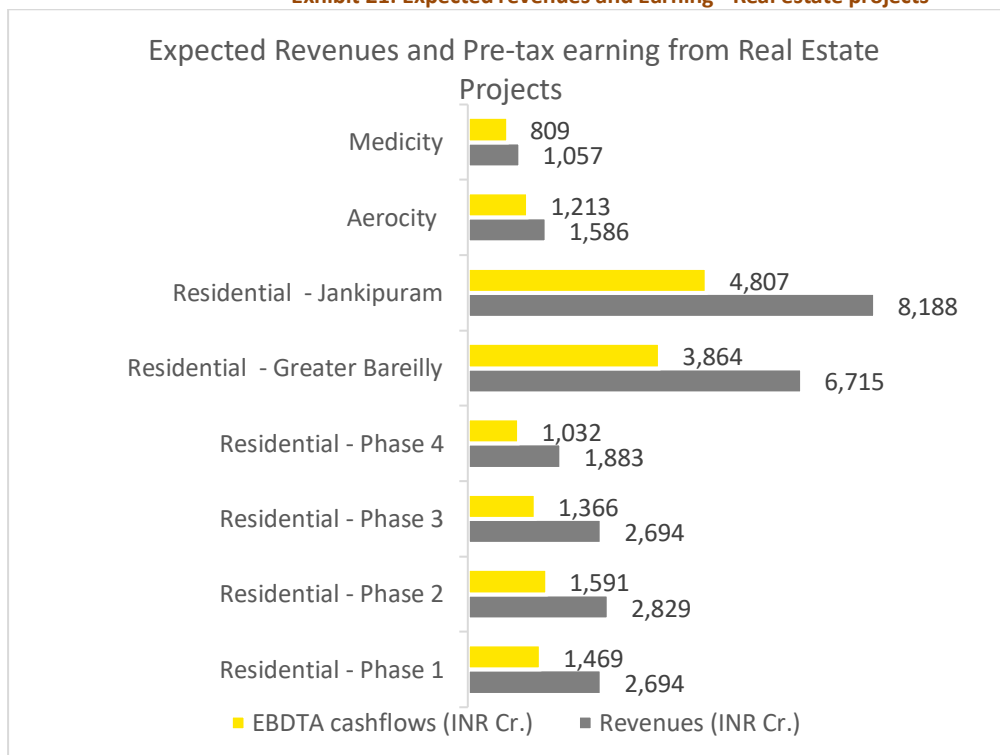
Exhibit 20: CAPEX distribution & Funding sources ~ Real estate Projects



The project is expected to generate INR 27,645 Cr towards project revenues spread over a period of 17 years with the total EBTTDA cash flows estimated at INR 16,151 Cr. Excluding the debt payment ~ INR 10,162 Cr can be utilized towards development of other tourism and infrastructure projects identified as part of the business plan.

The total earning from different projects is indicated as follows –

Exhibit 21: Expected revenues and Earning - Real estate projects

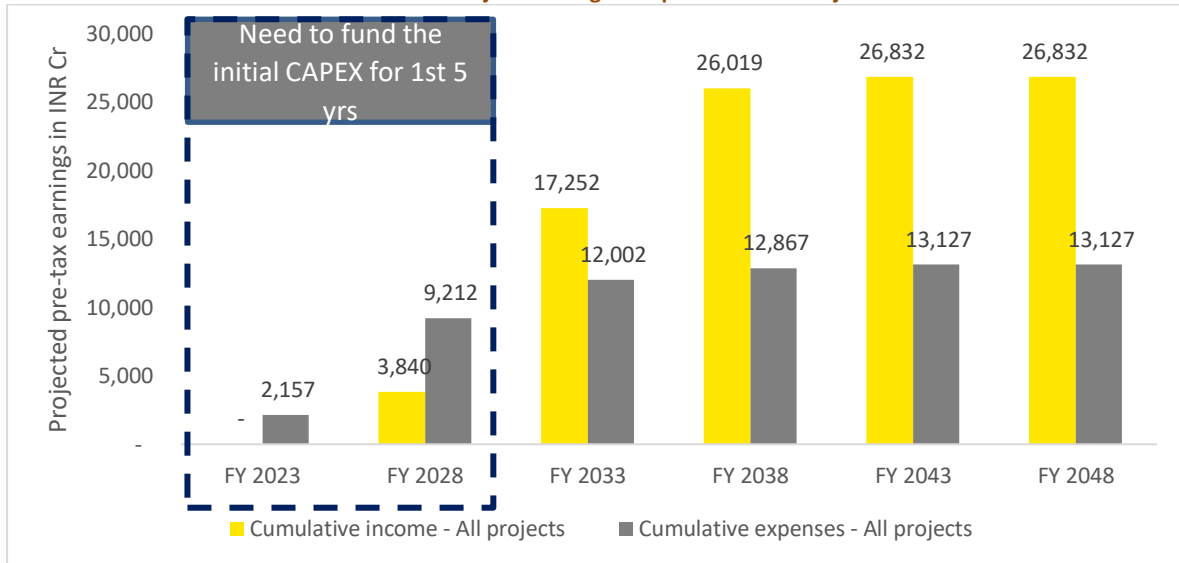


Earning from Real estate projects to be deployed elsewhere after factoring in the debt payment ~ INR 10,160 Cr

The total projected cashflows for the authority factoring in the non-revenue generating urban infrastructure projects as well as the tourism and heritage projects has been indicated in the following exhibit.



Exhibit 22: Project Earnings & expenses for all Projects

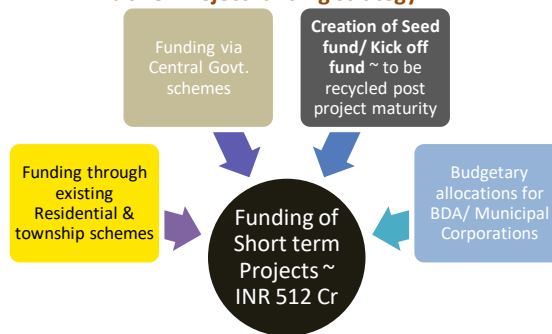


As indicated there is a need to fund the initial CAPEX towards the projects for the first 5 years, post which the earnings from Real estate projects may be encashed upon to fund the CAPEX. Excluding the equity investment proposed for the Real estate projects, **BDA needs to fund an additional CAPEX of INR 633 Cr towards Urban infrastructure and Tourism and heritage projects** identified as part of the Vision Plan and INR 72 Cr towards the operational and administrative activities of the authority (without factoring in the housing and plot allotment income)

14 Project Funding Strategy

There is a need for funding various non- real estate Urban infrastructure and Tourism and heritage projects along with the budgetary gap between the adjusted earning and revenue for the authority. This may be funded through the following mechanisms

Exhibit 23: Project funding strategy



FUNDING VIA EXISTING PROJECTS & TOWNSHIPS

Ongoing Housing & Plot allotments ~ Various ongoing schemes such as the Ramganga 1 scheme, Brahmaputra and Kaveri enclaves, etc. may be looked up for funding the additional infrastructure. The cost towards these Urban infrastructure may be loaded onto the sale prices for these projects in order to meet the CAPEX requirement.



FUNDING VIA CENTRAL GOVT. SCHEMES

Funding via Central Govt. schemes – Various Central Govt. schemes may be evaluated for provision of funds and grants for select infrastructure and tourism interventions. This could include –

- ✓ **URBAN & SANITATION PROJECTS** – The three Urban Development Projects may be funded partially through the Central Govt. schemes such as **Atal Mission for Rejuvenation and Urban Transformation (AMRUT)**. The scheme aims at providing drinking water connectivity and upgrading the water hygiene across districts. The proposed STP as well as the Solid waste Management Plant may be developed using budgetary allocations and funds available within the **AMRUT 2.0** scheme.
- ✓ **TOURISM INFRASTRUCTURE** –
 - ✓ **Nath Circuit, Ahichhatra Tourism Infrastructure & River front development** – Different schemes of the Ministry of Tourism such as the **Pilgrimage Rejuvenation and Spiritual Augmentation Drive (PRASAD) scheme and the Swadesh Darshan scheme** may be evaluated for funding provisions for development of the infrastructure such as last mile connectivity, upgradation of road and connectivity softer support, etc. Grants for operations and maintenance may also be availed under the Swadesh Darshan Scheme 2.0.
 - ✓ **Bareilly college & Museum** – The **Adopt a Heritage scheme** may be considering as a suitable option for promoting the CAPEX development within the campus along with the museum. The funding from PRASAD and Swadesh Darshan Schemes may also be evaluated for development of the proposed infrastructure.
- ✓ **HANDICRAFT CFC** - Utilization of Grants under **SFURTI and CHCDS schemes** of Development Commissioner (Handicrafts) for development of CFCs for Zari. Both these schemes are focussed on facilitating artisans through provision of looms, ancillary grants, credits as well as creation of weaving sheds and CFCs. The Proposed CFC may be undertaken under the SFURTI scheme.
- ✓ **SOLAR PROJECTS** - The demonstration of solar captive generation units and solar lighting may be funded via MNRE through the **Central Public Sector Undertaking Scheme (Phase II)** wherein support of up to INR 70 lakh/ MW is being provisioned till FY 2023 for development of captive solar units. Further scheme for **GRID connected Solar Rooftop programme** may also be evaluated for funding opportunities.

CREATION OF BUDGETARY ALLOCATION/ SEED FUND FOR INITIAL CAPEX

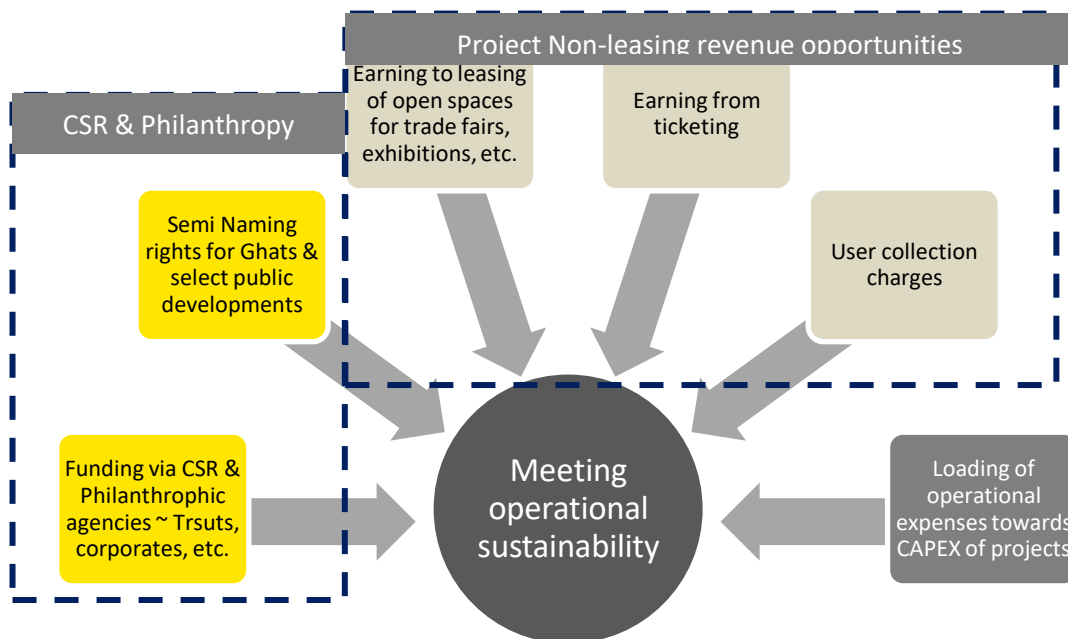
- ✓ **Creation of Kick-off seed fund/ Budgetary allocation of Initial CAPEX** - There is a need for an upfront investment of ~ INR 3,000 to 4,000 Cr for the initial 5 years factoring in the debt to be undertaken for real estate projects. This fund would be used for development of initial Urban infrastructure and tourism infrastructure to the tune of INR 600 Cr and for procuring land and incurring initial development cost towards real estate projects to the tune of ~ INR 3,400 Cr. Considering that the real estate projects would start generating revenues post this period, it is recommended that an initial kick off budgetary fund of INR 4,000 Cr be created to meet this gap. This fund can then be recovered from the project revenues and utilized for future development across Bareilly for different projects, as a cyclical fund to meet the Urban infrastructure requirements.

15 Operational Sustainability of Implemented Projects

While the indicated funding sources can be utilized for meeting the project CAPEX needs coupled with additional earnings from the Real estate projects, that the authority can undertake, there is a need to ascertain that these projects operate in a self sufficient manner.

In order to achieve the operational sustenance the following sources of income may be utilized. The same has been elaborated further.

Exhibit 24: Strategy for meeting operational sustainability for Urban & tourism projects



Project related earnings

- ✓ **Revenue from leasing of Ground/ open spaces** for Festivals, trade fairs & events – The open spaces across the Nath circuit and the tow river fronts may be utilized for leasing during the festive seasons as mela grounds, exhibitions and trade fairs. The earning from these activities can be then used to create a corpus to fund the operational expenses for the remaining part of the year
- ✓ **Nominal Ticketing fees** as well as daily collection charges may be setup for the museums and the recreational gardens as well as ghats to meet the basic maintenance expenses
- ✓ **User Collection charges** – Collection charges may be imposed by the Municipal corporation on waste collection. A part of this charge may be routed towards meeting the operational expenses of the proposed STP and the Solid Waste Management Plant.

CSR & Philanthropic opportunities

- ✓ **CSR via corporates** - Funding for maintenance of basic infrastructure at the public realms such as the riverfront may be funded through CSR of different PSUs and corporates. They may undertake funding of security and maintenance services or installation of benches and other facilities with their brand names on it
- ✓ **Semi Naming rights** – Semi naming rights may be evaluated for public greens across these riverfronts or for ghats. The license may be given for a period of 3 to 5 years basis fee that can be used for meeting the operational expenses
- ✓ **CSR through charitable trusts** – Various religious and social trusts may be approach for funding for meeting the operational expenses towards the proposed Nath circuits and Ahichchhatra Tourism Infrastructure which hold a cultural heritage value amongst the city.

16 ANNEXURES

1 Project Schedule - Real Estate Projects

Development Schedule	31.03.2027	31.03.2028	31.03.2029	31.03.2030	31.03.2031	31.03.2032	31.03.2033	31.03.2034	31.03.2035	31.03.2036	31.03.2037	31.03.2038	31.03.2039	31.03.2040
Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Land Procurement schedule														
Residential - Phase 1	50%	-	50%	-	-	-	-	-	-	-	-	-	-	-
Residential - Phase 2	-	50%	-	50%	-	-	-	-	-	-	-	-	-	-
Residential - Phase 3	50%	-	50%	-	-	-	-	-	-	-	-	-	-	-
Residential - Phase 4	-	50%	-	50%	-	-	-	-	-	-	-	-	-	-
Residential - Greater Density	50%	-	-	-	50%	-	-	-	-	-	-	-	-	-
Residential - Jankipuram	5%	0.50%	-	-	5%	0.50%	-	-	-	-	-	-	-	-
Academy	50%	50%	-	-	-	-	-	-	-	-	-	-	-	-
Mobility	50%	50%	-	-	-	-	-	-	-	-	-	-	-	-
Development schedule														
Residential - Phase 1	-	25%	25%	25%	25%	-	-	-	-	-	-	-	-	-
Residential - Phase 2	-	25%	25%	25%	25%	25%	-	-	-	-	-	-	-	-
Residential - Phase 3	-	25%	25%	25%	25%	25%	-	-	-	-	-	-	-	-
Residential - Phase 4	-	25%	25%	25%	25%	25%	-	-	-	-	-	-	-	-
Residential - Greater Density	15%	15%	15%	15%	15%	15%	15%	15%	15%	-	-	-	-	-
Residential - Jankipuram	15%	15%	15%	15%	15%	15%	15%	15%	15%	-	-	-	-	-
Academy	15%	15%	15%	15%	-	-	-	-	-	-	-	-	-	-
Mobility	15%	15%	15%	-	-	-	-	-	-	-	-	-	-	-
Absorption schedule														
Residential - Phase 1	-	-	10%	10%	10%	10%	10%	10%	10%	10%	-	-	-	-
Residential - Phase 2	-	-	0.10%	10%	10%	10%	10%	10%	10%	10%	10%	-	-	-
Residential - Phase 3	-	-	10%	10%	10%	10%	10%	10%	10%	10%	-	-	-	-
Residential - Phase 4	-	-	0.10%	10%	10%	10%	10%	10%	10%	10%	10%	-	-	-
Residential - Greater Density	-	-	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%
Residential - Jankipuram	-	-	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%
Academy	-	-	14%	14%	14%	14%	14%	14%	14%	-	-	-	-	-
Mobility	-	-	14%	14%	14%	14%	14%	14%	14%	-	-	-	-	-

2 Project Cash Flows – Real Estate Projects

Total Revenues	Total	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2040
<i>Residential - Phase 1</i>	2,694	-	-	144	193	249	311	327	343	361	379	185	-
<i>Residential - Phase 2</i>	2,829	-	-	-	151	203	262	327	343	361	379	397	-
<i>Residential - Phase 3</i>	2,694	-	-	144	193	249	311	327	343	361	379	185	-
<i>Residential - Phase 4</i>	1,883	-	-	-	100	135	174	218	229	240	252	265	-
<i>Residential - Greater Bareilly</i>	6,715	-	-	215	289	373	466	489	513	539	566	594	127
<i>Residential - Jankipuram</i>	8,188	-	-	262	353	454	568	596	626	657	690	725	155
<i>Aerocity</i>	1,586	-	-	99	134	172	215	226	237	249	122	87	-
<i>Medicity</i>	1,057	-	-	66	89	115	143	151	158	166	81	58	-
Total Revenues	27,645	-	-	929	1,502	1,951	2,451	2,660	2,793	2,933	2,847	2,496	282
Total CAPEX	Total	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2040
<i>Residential - Phase 1</i>	1,079	414	85	457	60	63	-	-	-	-	-	-	-
<i>Residential - Phase 2</i>	1,090	-	414	87	460	63	66	-	-	-	-	-	-
<i>Residential - Phase 3</i>	1,209	455	87	543	60	63	-	-	-	-	-	-	-
<i>Residential - Phase 4</i>	754	-	248	76	300	63	66	-	-	-	-	-	-
<i>Residential - Greater Bareilly</i>	2,710	993	135	131	72	1,036	79	83	88	92	-	-	-
<i>Residential - Jankipuram</i>	3,297	-	1,325	159	90	95	1,299	104	110	115	-	-	-
<i>Aerocity</i>	326	124	155	23	24	-	-	-	-	-	-	-	-
<i>Medicity</i>	217	83	103	15	16	-	-	-	-	-	-	-	-
Total CAPEX	10,682	2,068	2,553	1,492	1,083	1,383	1,511	188	197	207	-	-	-
Total Cash flows (Earnings)	Total	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2040
<i>Residential - Phase 1</i>	1,469	-414	-85	-355	89	153	290	320	343	361	379	185	-
<i>Residential - Phase 2</i>	1,591	-	-414	-87	-351	96	162	306	336	361	379	397	-
<i>Residential - Phase 3</i>	1,366	-455	-87	-399	84	148	288	319	343	361	379	185	-
<i>Residential - Phase 4</i>	1,032	-	-248	-76	-226	44	85	203	224	240	252	265	-
<i>Residential - Greater Bareilly</i>	3,864	-993	-135	83	180	-705	341	390	426	447	566	594	127
<i>Residential - Jankipuram</i>	4,807	-	-1,325	103	221	352	-746	473	517	542	690	725	155
<i>Aerocity</i>	1,213	-124	-155	59	96	163	209	224	237	249	122	87	-
<i>Medicity</i>	809	-83	-103	40	64	108	140	149	158	166	81	58	-
Total Cash flows - EBDTA	16,151	-2,068	-2,553	-632	157	358	768	2,384	2,584	2,726	2,847	2,496	282

3. Project CAPEX – Other Projects

Key Urban & Tourism Projects	Total with escalations (INR Cr)	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2038	2039	2040	2041	2051
Urban Infrastructure	-																
Sewage Treatment Plant (STP)	1,680				120	120	120	120	120	120	120	120	120	120	-	-	-
Solid Waste Plant (SWT)	90		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5	5	5	5	5	5	5	-
City Plan for Water Logging / stagnant spots and flood prone areas	104	9	10	10	11	11	12	13	9	9	9						
Road development project	340				100							240					
Heritage & Tourism Projects	-																
Ahichhatra Tourism Infrastructure upgradation	32	5	6	6	6	5	5										
Fist War of Independence (1857) museum : a) Bareilly College Campus	130	40	42	18	19	5	5										
Urban Renewal of Nath Temple circuit & Infrastructure improvement of all Seven Nath Temples	45	22	22														
River front development (Ramganga & Nakatiya)	19	9	10	-	-	-	-										
Development of Handicraft Cluster/ Common Facility Centre (CFC) – Zari & Bamboo	5	2	2														
Solar Projects	-																
Demonstration of Solar Energy for streets and Gov. buildings.	0	0	0														
Total CAPEX expenses (in INR Cr)	2,445	89	97	39	261	146	147	138	134	134	134	365	125	125	5	5	-

4. BDA Financial Statements

**BAREILLY DEVELOPMENT AUTHORITY
PRIYADARSHINI NAGAR, BAREILLY**

INCOME AND EXPENDITURE A/C AS ON 31.03.2017

PARTICULARS	SCHEDULE	CURRENT YR
HEADS OF INCOME		
-ALLOTMENT OF PLOT/HOUSES		154830643.00
-COMPOUNDING/ DEVELOPMENT MAP CHARGES		86687275.90
-OTHER INCOME/STAMP DUTY	4	10309748.10
-INTT. ON FOR'S		22714833.00
-INTEREST ON IT REFUND		130618.00
-RENT RECEIVED (OFFICE & SHOPS)		2094866.00
	TOTAL	288771585.00
HEADS OF EXPENDITURES		
-COST OF PLOT/HOUSE	7	41038200.00
-TOWN DEVELOPMENT EXPENSES	8	58685891.00
-EMPLOYEES COST	5	97248901.00
-INTT. PAID TO BANKS		62384583.00
-OTHER ESTABLISHMENT & OTHER EXPENSES	6	28278137.00
-DEPRECIATION ON ASSETS	1	2507830.00
EXCESS OF INCOME OVER EXPENDITURE OVER INCOME		626523.00
	TOTAL	288771585.00

SIGNED IN TERMS OF AGREEMENT
FOR & ON BEHALF OF BAREILLY DEVELOPMENT AUTHORITY

31/03/2017
 31/03/2017
 PLACE : BAREILLY

AS PER OUR AUDIT REPORT OF EVEN DATE
FOR MISHRA SHARAD ASSOCIATES
CHARTERED ACCOUNTANTS

(SHARAD K. MISHRA)
PARTNER

DATED :



**BAREILLY DEVELOPMENT AUTHORITY
PRIYADARSHINI NAGAR, BAREILLY**

INCOME AND EXPENDITURE A/C AS ON 31.03.2018

PARTICULARS	SCHEDULE	CURRENT YR.
HEADS OF INCOME		
-ALLOTMENT OF PLOT/HOUSES		302097243.00
-COMPOUNDING/ DEVELOPMENT /MAP CHARGES		88335248.30
-OTHER INCOME/STAMP DUTY	4	2552578.84
-INTT.ON FDR'S		8579497.80
-INTEREST ON IT REFUND		0.00
-RENT RECEIVED (OFFICE & SHOPS)		1462214.00
TOTAL		381028778.84
HEADS OF EXPENDITURES		
-COST OF PLOT/HOUSE	7	211468070.00
-TOWN DEVELOPMENT EXPENSES	8	24918392.12
-EMPLOYEES COST	5	113256827.95
-INTEREST PAID		17571787.00
-OTHER ESTABLISHMENT & OTHER EXPENSES	6	10617991.03
-DEPRECIATION ON ASSETS	1	3260141.00
EXCESS OF INCOME OVER EXPENDITURE OVER INCOME		930599.84
TOTAL		381028778.84

SIGNED IN TERMS OF AGREEMENT
FOR & ON BEHALF OF BAREILLY DEVELOPMENT AUTHORITY

[Signature]
Chief Accounts Officer

[Signature]
Secretary

Vice Chairman

PLACE : BAREILLY

DATED :

AS PER OUR AUDIT REPORT OF EVEN DATE:
FOR MISHRA SHARAD ASSOCIATES
CHARTERED ACCOUNTANTS

[Signature]
(SHARAD K. MISHRA)
PARTNER

**BAREILLY DEVELOPMENT AUTHORITY
PRIYADARSHINI NAGAR, BAREILLY**

INCOME AND EXPENDITURE A/C AS ON 31.03.2019

PARTICULARS	SCHEDULE	CURRENT YR.
HEADS OF INCOME		
-ALLOTMENT OF PLOT/HOUSES	11	20,893,354.44
-OTHER INCOME	4	3,504,688.93
-INTT.ON INVESTMENTS		96,088.00
-COMPOUNDING/ DEVELOPMENT /MAP CHARGES	9	139,058,326.68
TOTAL		163,552,458.05
HEADS OF EXPENDITURES		
-COST OF PLOT/HOUSE	7	14,623,348.44
-TOWN DEVELOPMENT EXPENSES	8	2,274,106.52
-EMPLOYEES COST	5	122,832,990.00
-INTEREST PAID	10	9,866,676.00
-OTHER ESTABLISHMENT & OTHER EXPENSES	6	13,392,639.46
-DEPRECIATION ON ASSETS	1	2,182,844.00
EXCESS OF INCOME OVER EXPENDITURE / EXCESS OF EXPENDITURE OVER INCOME		-762,137.37
TOTAL		163,552,458.05

SIGNED IN TERMS OF AGREEMENT
FOR & ON BEHALF OF BAREILLY DEVELOPMENT AUTHORITY




 Chairman, BDA
 Secretary
 Joint Chairperson

AS PER OUR AUDIT REPORT OF EVEN DATE:
FOR MISHRA SHARAD ASSOCIATES
CHARTERED ACCOUNTANTS

PLACE : BAREILLY

DATED:


 SHARAD K. MISHRA
 PARTNER



**BAREILLY DEVELOPMENT AUTHORITY
PRIYADARSHINI NAGAR, BAREILLY
INCOME AND EXPENDITURE A/C
FOR THE YEAR ENDING ON 31st MARCH 2020**

PARTICULARS	SCHEDULE NO.	CURRENT YR. AMOUNT
HEADS OF INCOME		
-ALLOTMENT OF PLOT/HOUSES	11	651,064,289.00
-OTHER INCOME	4	6,112,513.18
- INTEREST RECEIVED	6	6,146,391.00
- INCOME FROM RENT RECEIVED	11	428,250.00
-COMPOUNDING/ DEVELOPMENT /MAP CHARGES	9	104,983,371.40
TOTAL (Rs.)		769,734,814.58
HEADS OF EXPENDITURES		
-COST OF PLOT/HOUSE	8	553,353,848.00
-EMPLOYEES COST	3	126,763,475.00
-INTEREST PAID	13	39,306,340.00
-OTHER ESTABLISHMENT & OTHER EXPENSES	9	16,318,400.00
-DEPRECIATION ON ASSETS	1	2,029,256.00
TOWN DEVELOPMENT EXPENSES	12	30,093,880.00
EXCESS OF INCOME OVER EXPENDITURE / (EXCESS OF EXPENDITURE OVER INCOME)		1,043,583.95
TOTAL (Rs.)		768,691,230.58

SIGNED IN TERMS OF AGREEMENT
FOR & ON BEHALF OF BAREILLY DEVELOPMENT AUTHORITY

[Signature]
Chief Accounts Officer
मुख्य लेखा अधिकारी
बरेली विकास प्राधिकरण

PLACE: BAREILLY

DATED: _____

[Signature]
Vice Chairman
उपप्रधान
बरेली विकास प्राधिकरण
AS PER OUR AUDIT REPORT OF EVEN DATE:
FOR MISHRA SHARAD ASSOCIATES
CHARTERED ACCOUNTANTS
[Signature]
SHARAD K. MISHRA
CHARTERED ACCOUNTANT

BAREILLY DEVELOPMENT AUTHORITY PRIYADARSHI NAGAR, BAREILLY		
INCOME AND EXPENDITURE A/C FOR THE YEAR ENDING ON 31st MARCH 2021		
PARTICULARS	SCHEDULE NO.	CURRENT YR. AMOUNT
SOURCE OF INCOME		
ALLOTMENT OF PLOT/HOUSES	11	1,32,79,34,415.00
OTHER INCOME	4	1,32,72,890.00
INTEREST RECEIVED	6	64,42,018.00
INCOME FROM RENT RECEIVED	13	13,80,400.00
COMPOUNDING/ DEVELOPMENT MAP CHARGES	9	6,07,41,713.18
	TOTAL (Rs.)	1,63,87,81,440.18
SOURCE OF EXPENDITURES		
COST OF PLOT/HOUSE	8	1,29,44,94,287.00
EMPLOYEES COST	5	13,18,04,583.80
INTEREST PAID	10	4,30,74,714.00
OFFICE ESTABLISHMENT & OTHER EXPENSES	7	1,87,35,184.29
DEPRECIATION ON ASSETS	1	28,43,821.00
TOWN DEVELOPMENT EXPENSES	12	29,51,817.00
EXCESS OF INCOME OVER EXPENDITURE / EXCESS OF EXPENDITURE OVER INCOME		14,35,79,194.87
	TOTAL (Rs.)	1,63,87,81,440.18
SIGNED IN TERMS OF AGREEMENT FOR & ON BEHALF OF BAREILLY DEVELOPMENT AUTHORITY		
 Sarfaraz Ahmad Joint Secretary	 Sarfaraz Ahmad Joint Secretary	 Sarfaraz Ahmad Joint Secretary
PLACE: BAREILLY		DATE: 04-01-2021
		AS PER OUR AUDIT REPORT DATED: 04-01-2021 FOR MISHKA SHARMA & ASSOCIATES CHARTERED ACCOUNTANTS (MISHKA SHARMA) CHARTERED ACCOUNTANT

Bareilly Vision Plan 2071 in Lakhs												
Bareilly Vision Plan 2071								Short Term (2022-28)	Medium Term (2028-2037)		Long Term (2037-2051) & (51-71)	
Project list finalized by Mandal Commissioner on 13th July 2022				Total cost in INR Lakhs	Short Term Cost		Funding	2022-28	2028-31	2031-37	2037-42	2042-47
Sr. No.	Project List under Bareilly City Vision Plan 2051	Domain	Nodal Department			Mid & Long Term Cost						
1	Residential Housing Node, a) Greater Bareilly- 240 ha b) Sri Janki Puram- 300 ha c). Nekpur (Phase 1 - 2022-23) & Gangora Pikariyam , d) Kargaina , e) Tehtajpur (Area - 100 Ha each)	Urban Planning	BDA / Awas vikas / Private Builder	1,85,822.96	1,06,749.36	79,073.60	PPP	1,06,749.36	39,536.80	-	39,536.80	-
2	Industrial Growth CenteINR, a) Rajau Paraspur Phase 1 (2022-23) b) PalNRakheda (2025-30) c) Kurtara (2030-35) (Area - 100 Ha each)		BDA / UPSIDC / Private BuildeINR	1,18,560.00	39,520.00	79,040.00	PPP	39,520.00	-	19,760.00	-	-

Bareilly Vision Plan 2071 in Lakhs												
Bareilly Vision Plan 2071								Short Term (2022-28)	Medium Term (2028-2037)		Long Term (2037-2051) & (51-71)	
Project list finalized by Mandal Commissioner on 13th July 2022				Total cost in INR Lakhs	Short Term Cost		Funding	2022-28	2028-31	2031-37	2037-42	2042-47
Sr. No.	Project List under Bareilly City Vision Plan 2051	Domain	Nodal Department			Mid & Long Term Cost						
3	Integrated Freight Center cum Logistic Hub , Faridpur (35 Ha each)		BDA / Private BuildelNR	13,837.90	6,919	6,918.95	PPP	6,918.95	-	-	-	-
4	Access to Ganga Expressway through Radial Road and Outer Ring Road	Transportation	NHAI / PWD	1,07,111.22	24,429	82,682.20	EPC-HAM	24,429.02	-	29,126.59	-	-
5	Bareilly Lite Metro facility		BDA	24,93,073.80	24,429	24,68,644.78	EPC-HAM	3,66,628.50	-	3,91,070.40	2,44,419	7,33,257.00
6	Proposed Bridges, FoBs, Footpaths, Cycle Track		Nagar Nagam	18,000.00		18,000.00		-		-		-
7	Junction Improvement Plan		Nagar Nagam/ PWD/ BDA	4,000.00	4,000	-		4,000.00		10,000.00	8,000	-
8	Missing Links		PWD/BDA/ UP Bridge Corporation	12,000.00	6,000	6,000.00		6,000.00	6,000	-		-

Bareilly Vision Plan 2071 in Lakhs												
Bareilly Vision Plan 2071								Short Term (2022-28)	Medium Term (2028-2037)		Long Term (2037-2051) & (51-71)	
Project list finalized by Mandal Commissioner on 13th July 2022				Total cost in INR Lakhs	Short Term Cost		Funding	2022-28	2028-31	2031-37	2037-42	2042-47
Sr. No.	Project List under Bareilly City Vision Plan 2051	Domain	Nodal Department			Mid & Long Term Cost						
9	Ahichchhatra Tourism Infrastructure upgradation		Tourism Department	5,600.00	2,800	2,800.00	Tourism Fund	2,800.00	-	-	-	-
10	Fist War of Independence (1857) museum : a) Bareilly College Campus		Tourism Department	4,400.00	3,200	1,200.00	Tourism Fund	3,200.00	1,200	1,500.00	-	1,700.00
11	Urban Renewal of Nath Temple circuit & Infrastructure improvement of all Seven Nath Temples		Tourism Department	3,666.85	3,667	-	Govt Fund	3,666.85	-	-	-	-
12	River front development (Ramganga & Nakatiya)		PWD / Irrigation Department / BDA	2,843.48	1,422	1,421.74	Govt Fund	1,421.74	-	-	-	-
13	Aerocity integrated office complex near Airport development : Area - 30 Ha		BDA / Private Builder	3,22,795.00	88,035	2,34,760.00	PPP	88,035.00	29,345	58,690.00	-	-

Bareilly Vision Plan 2071 in Lakhs												
Bareilly Vision Plan 2071								Short Term (2022-28)	Medium Term (2028-2037)		Long Term (2037-2051) & (51-71)	
Project list finalized by Mandal Commissioner on 13th July 2022				Total cost in INR Lakhs	Short Term Cost		Funding	2022-28	2028-31	2031-37	2037-42	2042-47
Sr. No.	Project List under Bareilly City Vision Plan 2051	Domain	Nodal Department			Mid & Long Term Cost						
14	Development of new solid waste treatment plant for 2041, (Area - 15 Ha)	Infrastr ucture	Nagar Nigam	13,500.00	3,000	10,500.00	PPP	3,000.00	1,500	3,000.00	-	-
15	City Plan for Water Logging / stagnant spots and flood prone areas		Jal Nigam / Nagar Nigam	13,500.00	3,000	10,500.00	Govt Fund	3,000.00	1,500	3,000.00	-	-
16	Development of new Tertiary Sewage Treatment Plant (STP): Near Industrial Area.		Jal Nigam / Nagar Nigam	2,40,000.00	24,000	2,16,000.00	Govt Fund	24,000.00	24,000	48,000.00	24,000	48,000.00
17	"Medicity" – designated area with multiple health business and activities	Econom y	BDA / Nagar Nigam	64,913.80	29,781	35,132.50	PPP	29,781.30	5,351	-	-	-
18	Development of Handicraft Cluster/ Common Facility Centre (CFC) – Zari & Bamboo		BDA / Nagar Nigam	7.59	8	-	Govt Fund	7.59	-	-	-	-

Bareilly Vision Plan 2071 in Lakhs												
Bareilly Vision Plan 2071								Short Term (2022-28)	Medium Term (2028-2037)		Long Term (2037-2051) & (51-71)	
Project list finalized by Mandal Commissioner on 13th July 2022				Total cost in INR Lakhs	Short Term Cost		Funding	2022-28	2028-31	2031-37	2037-42	2042-47
Sr. No.	Project List under Bareilly City Vision Plan 2051	Domain	Nodal Department			Mid & Long Term Cost						
19	Demonstration of Solar Energy for streets and Gov. buildings.	Solar	UPNEDA	15.40	15	-	Govt Fund	15.40	-	-	15.40	-
	Total Project Cost in Lkhs			36,23,632.60	7,13,173.71	29,10,458.89		7,13,173.71	1,08,433.01	5,64,146.99	3,15,971.20	7,82,957.00
	Total Project Cost in Cr.			36,236.33	7,131.74	29,104.59	-	7,131.74	1,084.33	5,641.47	3,159.71	7,829.57

Bareilly Vision Plan 2071 in Lakhs

Bareilly Vision Plan 2071									Year Wise Project costing	
Project list finalized by Mandal Commissioner on 13th July 2022				Total cost in INR Lakhs	Short Term Cost		Funding	2031	2041	2051-2071
Sr. No.	Project List under Bareilly City Vision Plan 2051	Domain	Nodal Department			Mid & Long Term Cost				
1	Residential Housing Node, a) Greater Bareilly- 240 ha b) Sri Janki Puram- 300 ha c). Nekpur (Phase 1 - 2022-23) & Gangora Pikariyam , d) Kargaina , e) Tehtajpur (Area - 100 Ha each)	Urban Planning	BDA / Awastvikas / Private Builder	1,85,822.96	1,06,749.36	79,073.60	PPP	1,46,286.16	39,536.80	39,536.80
2	Industrial Growth CenteINR, a) Rajau Paraspur Phase 1 (2022-23) b) PaINRakheda (2025-30) c) Kurtara (2030-35) (Area - 100 Ha each)		BDA / UPSIDC / Private BuildeINR	1,18,560.00	39,520.00	79,040.00	PPP	39,520.00	19,760.00	
3	Integrated Freight Center cum Logistic Hub , Faridpur (35 Ha each)		BDA / Private BuildeINR	13,837.90	6,919	6,918.95	PPP	6,918.95	-	
4	Access to Ganga Expressway through Radial Road and Outer Ring Road	Transportation	NHAI / PWD	1,07,111.22	24,429	82,682.20	EPC-HAM	24,429.02	29,126.59	

5	Bareilly Lite Metro facility		BDA	24,93,073.80	24,429	24,68,644.78	EPC-HAM	3,66,628.50	3,91,070.40	9,77,676.00
6	Proposed Bridges, FoBs, Footpaths, Cycle Track		Nagar Nagam	18,000.00		18,000.00		-	-	
7	Junction Improvement Plan		Nagar Nagam/ PWD/ BDA	4,000.00	4,000	-		4,000.00	10,000.00	8,000.00
8	Missing Links		PWD/BDA/ UP Bridge Corporation	12,000.00	6,000	6,000.00		12,000.00	6,000.00	
9	Ahichchhatra Tourism Infrastructure upgradation		Tourism Department	5,600.00	2,800	2,800.00	Tourism Fund	2,800.00		
10	Fist War of Independence (1857) museum : a) Bareilly College Campus		Tourism Department	4,400.00	3,200	1,200.00	Tourism Fund	4,400.00	1,500.00	1,700.00
11	Urban Renewal of Nath Temple circuit & Infrastructure improvement of all Seven Nath Temples		Tourism Department	3,666.85	3,667	-	Govt Fund	3,666.85		
12	River front development (Ramganga & Nakatiya)		PWD / Irrigation Department / BDA	2,843.48	1,422	1,421.74	Govt Fund	1,421.74		
13	Aerocity integrated office complex near Airport development : Area - 30 Ha		BDA / Private Builder	3,22,795.00	88,035	2,34,760.00	PPP	1,17,380.00	88,035.00	
14	Development of new solid waste treatment plant for 2041, (Area -15 Ha)	Infrastructure	Nagar Nigam	13,500.00	3,000	10,500.00	PPP	4,500.00	3,000.00	

15	City Plan for Water Logging / stagnant spots and flood prone areas		Jal Nigam / Nagar Nigam	13,500.00	3,000	10,500.00	Govt Fund	4,500.00	3,000.00		
16	Development of new Tertiary Sewage Treatment Plant (STP): Near Industrial Area.		Jal Nigam / Nagar Nigam	2,40,000.00	24,000	2,16,000.00	Govt Fund	48,000.00	72,000.00	72,000.00	
17	“Medicity” – designated area with multiple health business and activities	Economy	BDA / Nagar Nigam	64,913.80	29,781	35,132.50	PPP	35,132.50	5,351.21		
18	Development of Handicraft Cluster/ Common Facility Centre (CFC) – Zari & Bamboo		BDA / Nagar Nigam	7.59	8	-	Govt Fund	7.59			
19	Demonstration of Solar Energy for streets and Gov. buildings.	Solar	UPNEDA	15.40	15	-	Govt Fund	15.40		15.40	
Total Project Cost in Lkajs					36,23,632.60	7,13,173.71	29,10,458.89		8,21,606.71	8,80,118.19	10,98,928.20
Total Project Cost in Cr.					36,236.33	7,131.74	29,104.59	-	8,216.07	8,801.18	10,989.28

Bareilly Vision Plan

क्र. सं.	प्राककलन	प्रशासनिक स्वीकृति	वित्तीय स्वीकृति	कार्य आरंभ	कार्य समाप्ति
1	Residential Housing Node, a) Greater Bareilly- 240 ha b) Sri Janki Puram- 300 ha c). Nekpur (Phase 1 - 2022-23) & Gangora Pikariyam , d) Kargaina , e) Tehtajpur (Area - 100 Ha each)	BDA / Awas vikas / Private Builder	PPP	2023	a). 2028 b). 2024 c). 2031 d). 2037 e). 2051 f). 2071
2	Industrial Growth Centers, a) Rajau Paraspur Phase 1 (2022-23) b) Parsakheda (2025-30) c) Kurtara (2030-35) (Area - 100 Ha each)	BDA / UPSIDC / Private Builder	PPP	2023	a). 2042 b). 2051 c). 2071
3	Integrated Freight Center cum Logistic Hub , Faridpur (35 Ha each)	BDA / Private Builder	PPP	2023	2042 2051 2071
4	Access to Ganga Expressway through Radial Road and Outer Ring Road	NHAI / PWD	EPC-HAM	2023	2028
5	Bareilly Lite Metro facility	BDA	EPC-HAM	2023	2037
9	Ahichchhatra Tourism Infrastructure upgradation	Nagar Nagam	Govt Fund	2023	2028
10	Fist War of Independence (1857) museum : a) Bareilly College Campus	Nagar Nagam/ PWD/ BDA	Tourism Fund	2023	2028
11	Urban Renewal of Nath Temple circuit & Infrastructure improvement of all Seven Nath Temples	PWD/BDA/ Railway/UP Bridge Corporation	BDA, Tourism	2023	2023 2028 2037

12	River front development (Ramganga & Nakatiya)	PWD / Irrigation Department / BDA	Govt Fund	2023	2037
13	Aerocity integrated office complex near Airport development : Area - 30 Ha	BDA	Govt- PPP	2023	2037
14	Development of new solid waste treatment plant for 2041, (Area -15 Ha)	Nagar Nigam	PPP	2023	2028
15	City Plan for Water Logging / stagnant spots and flood prone areas	Jal Nigam / Nagar Nigam	Govt Fund	2023	2028
16	Development of new Tertiary Sewage Treatment Plant (STP): Near Industrial Area.	Jal Nigam / Nagar Nigam	Govt Fund	2023	2028
17	“Medicity” – designated area with multiple health business and activities	BDA / Nagar Nigam	PPP	2023	2028
18	Development of Handicraft Cluster/ Common Facility Centre (CFC) – Zari & Bamboo	BDA / Nagar Nigam	Govt Fund	2023	2028
19	Demonstration of Solar Energy for streets and Gov. buildings.	UPNEDA	Govt Fund	2023	2037

