

RAJKOT MUNICIPAL CORPORATION

TENDER No.: RMC/SMART CITY/01/2017-18



RFP for engagement of Consultant for Preparation of Master Plan, DPR and PMC for Green Field Area Rajkot Smart City

VOLUME-II, Part I SCOPE OF WORK

Revised Milestone Dates	
Tender Uploading	07-10-2017 : 17:00 hrs
Last date for downloading of online document:	17-10-2017 up to 17:00 hrs
Pre-bid meeting/conference	13-10-2017:12:00 hrs at RMC, CZ conference hall
Last date for the online submission of bid	17-10-2017 up to 18:00 hrs
Last date for the physical submission of Bid security / tender fee etc.	18-10-2017 up to 18:00 hrs
Verification of bid documents	23-10-2017 up to 18:00 hrs
Opening of technical bid	23-10-2017 at 12:00 hrs onwards
Presentation to the technical committee	25-10-2017 : 12:00 hrs at RMC, WZ conference hall
Tentative Dates of Declaring Qualified Bids.	27-10-2017 at 12:00 hrs onwards
Opening of financial bids: (For technically qualified bidder only)	28-10-2017 at 12:00 hrs onwards
Bid Validity	180 Days
For further particulars, visit us on www.rmc.nprocure.com	

Office of General Manager - RSCDL
Room No. 10, Floor-01, HarisinhjiGohilBhawan,
RMC West Zone Office,
Behind Big Bazar, 150 feet Ring Road, Rajkot – 360005
Gujarat, INDIA

Content

I. Introduction

1. Introduction
2. Project Status
3. Broad Implementation Framework of Capital City

II. Detailed Infrastructure Masterplan

4. Structure of Detailed Masterplan
5. Detailed Master-Plans
 - 5.1. Concept plan
 - 5.2. Transport plan
 - 5.3. Water management plan
 - 5.4. Waste water and Storm water management plan
 - 5.5. Power plan
 - 5.6. Solid waste management plan
 - 5.7. Gas Masterplan
 - 5.8. Smart city integrated infrastructure plan
 - 5.9. District cooling plan
 - 5.10. Safety and security plan
 - 5.11. Disaster management plan
 - 5.12. Parks, Gardens and Green Spaces, Recreation plan
 - 5.13. Rejuvenation of Water bodies plan

III. Detailed Project Reports and Detailed Designs

6. List of projects
7. General Scope of services
8. Specific Scope of services
 - 8.1 Development of arterial and sub-arterial integrated road infrastructure (@ 30, 40, 45,60mRoW) including inter-changes / grade separators, BRT and NMT
 - 8.2. Development of smart power generation Transmission and distribution Systems
 - 8.3 Development of Water supply plan including source water treatment plant(s), storage reservoirs, trunk distribution network, automated control and command center
 - 8.4 Development of Waste water management system including trunk network, sewerage treatment plants, pumping stations, disposal, reuse network, automated control and command center and so on for Green field area – Rajkot smart city.
 - 8.5 Development of Solid Waste Management Infrastructure including collection, treatment, disposal, automated control and command centre, required for Green field area – Rajkot smart city.

- 8.6 Development of Storm Water Disposal system for Green field Area – Rajkot Smart City
- 8.7 Development of IT infrastructure and Central Command and Control Centers, Surveillance systems, Intelligent Traffic and Transport System, Fiber Optic Network for all infrastructure and services for Green field Area – Rajkot Smart City
- 8.8 Development of infrastructure in approx. 930 acres like Management Convention centre/ Indoor / Outdoor Exhibition centre / Sports Complex / Government Complex / Building / Shopping Centre / Affordable Housing.
- 8.9 Development of Infrastructure in part of approx. 930 acres Returnable land under various schemes for Green field Area – Rajkot Smart City
- 8.10 Development of Parks & Gardens with Landscaping and Rejuvenation of existing 3 water bodies(lakes) forming Recreational Spaces for Green Field Area – Rajkot Smart City.

IV. Assistance during execution

9. Assistance during execution

V. Deliverables and Key Personnel

10. Deliverables for Masterplan
11. Deliverables for DPR and RFP
12. Deliverables for Assistance during execution
13. Key Personnel

VI. Others

14. Glossary
15. Appendix – 1
 - 15.1. Concept plan:
 - 15.2. Transport plan:
 - 15.3. Water plan:
 - 15.4. Power plan:
 - 15.5. Solid waste management plan:
 - 15.6. Gas Masterplan:
 - 15.7. Smart city integrated infrastructure plan:
 - 15.8. District cooling plan:
 - 15.9. Safety and security plan:
 - 15.10. Disaster management plan
 - 15.11. Green Spaces, Recreation, Rejuvenation of Water Bodies Plan
 - 15.12. Miscellaneous Plan

Part - I

Introduction

1. Introduction

Smart Cities Mission is an urban renewal and retrofitting program by the Government of India with a mission to develop 98 cities (revised) all over the country making them citizen friendly and sustainable. The Union Ministry of Urban Development is responsible for implementing the mission in collaboration with the state governments of the respective cities. The Government of India under the Hon'ble Prime Minister Shri Narendra Modi has a vision of developing 98 smart cities as satellite towns of larger cities by modernizing the existing cities

Rajkot City is selected under Smart City Mission of GoI on 23rd June 2017. To implement Smart City Project as per the guide line of MoUD, GoI, A special purpose vehicle – Rajkot Smart City Development Limited (RSCDL) – A subsidiary company of Rajkot Municipal Corporation is created under Company Act – 2013. Under Smart city project, RSCDL intends to develop the Green Field Area in Approx 930 acres of land in line of Gujarat town planning and Urban development act – 1976, its Amendment and Rules. Rajkot Smart City, is an Area based proposal in a comprehensive manner and address some of the issues and turn it into an asset for the city.

The Green Field Area covers approx. 930 acres of land outside the Rajkot BRTS corridor/Ring road-1, Area is located towards west in the direction of city growth with 3 existing water bodies, Connected by raiya road towards south periphery and 45m ring road-2 towards west periphery of area. the area is having good connectivity to Jamnagar Road and Kalawad Road, both state highway and the green field development to be a model area development forming asset & landmark as well.

The aspiration is to create a peoples capital that is vibrant, diverse, inclusive, and modern which is not only a glowing pride for all the people of Rajkot but also a magnet for skilled migrants, industries, business, professionals from across the state. It would synthesize the best features of urban planning, sustainability, active governance to create an inclusive, highly livable, and world-class urban eco-system.

The Green field area must have world class, Modern and Smart physical infrastructure that is of global standards with most efficient utilities – environmentally friendly, sustainable, functionally smart and technology driven. It will also amalgamate the local cultures, historical roots; involve peoples' aspirations and a robust socio economic plan to enhance rapid and sustainable economic growth that is inclusive. This mix of modernity with continuity will develop Rajkot as a city with higher degree of livability quotient and create deep sense of attachment and ownership among its stakeholders. It is aspired that the city will become an ultimate destination for the investors, businesses, education, tourism, research and development. In nutshell,

“To develop Rajkot as smart, livable and iconic city of Gujarat with inclusive growth and sustainable development, by leveraging its historical strengths and providing state of the art infrastructure, delivery of services and empowering ecosystem

by enabling citizens to realize their dreams.”

2. Project Status

The current project status is summarized below for better understanding of the assignment:

Rajkot Smart City Development Limited (RSCDL) is a subsidiary company of Rajkot Municipal Corporation registered under company act – 2013. Rajkot Municipal Corporation is an Urban Local Body has under took following actions on as accordance with smart city guidelines includes a brief on Goals & Vision

1. **Land Procurement:**Approx. 930acres of land has been selectedwith the intention of preparation of Town planning scheme is declared.
2. **Proposal Planning:**
 - (a) A Consultant has been engaged for preparation of ABD & PAN City Proposal planning, Implementation Plan, Financial Plan to enable Rajkot for Rajkot Smart City Proposal achieve best Score and finally got selected by round-III.
3. **Infrastructure Planning and Development:** A brief planning and components were identified in Smart City project for Rajkot city.
4. **Engagement of various agencies/firms Multiple firms are tobe engaged to lead the development of the Green Field Areal forming Rajkot as a Smart City such as:**
 - (a) Programme management consultants forProposal planning and revision.
 - (b) Committee has been formed on behalf of smart city mission by Rajkot Municipal Corporation includes Engineering, Political & Administrative expert heads.
5. **Financial Status:** As per SCM guidelines RSCDL will Rs. 1000crore as grant including Rs. 500 crore from GoI, Rs. 250 crore from GoG and Rs. 250 crore from RMC .apart from that RSCDL will received Rs. 587.47 Cr. from different government scheme as convergence and Rs. 300 crore from Infrastructure development like FSI premium and land monetization. It is also envisaged that total Rs. 735.54 crore will be available through projects under PPP (Public private partnership)

3. Broad Implementation Framework of Green Field Area-Rajkot Smart City

1. The Green Field Area-Rajkot Smart City would primarily function as the Commercial hub of the City. It is being developed as a business hub that provides services to cultivate the economic and social harmony of the region. This would imply development of zones which would facilitate the built environment to meet i) various institutional requirements for administration and governance, ii) central business districts to create vitality, economy & employment and iii) mixed use zones to serve the city for creating residential and social infrastructure. Being Green field development, the new area's endeavor is to provide state of the art infrastructure that would typically include its core infrastructure, utilities, governance system, and social infrastructure and development nodes to be developed by various stakeholders.
2. The key entities for the development of Green-Field-Area-Rajkot Smart City are:
 - (a) Government of India (GoI)
 - (b) Government of Gujarat (GoG)
 - (c) Rajkot Municipal Corporation (RMC)
 - (d) Special Purpose Vehicles of RSCDL for the development and maintenance of utilities and infrastructure like water, power etc. within Rajkot.
 - (e) Partners/Stakeholders for carrying out development of various nodes in Rajkot, Green Field Area-Rajkot Smart City.
3. GoI shall provide policy support and regional infrastructure development support for the development of Green Field Area-Rajkot Smart City. An initial corpus of fund has already been sanctioned by GoI for the development. The regional infrastructure shall be developed with the help of GoI/GoG.
4. RSCDL will play the key role in development of Green Field Area-Rajkot Smart City
 - (a) As a planning, development and regulating authority for the Green Field Area – Rajkot Smart City on behalf of GoG & GoI Smart City Mission.
 - (b) It shall develop regional growth centers
 - (c) It shall be responsible for regional infrastructure and coherent growth among various nodes

- (d) It shall regulate the development in Green Field Area-Rajkot Smart City.
- (e) It shall collect the impact fees, cess, charges as per the resolution.
- (f) The entire land in Green Field Area-Rajkot Smart City shall be continued to be owned by RMC/RSCDL.
- (g) It shall raise resources through GoI, GoG and Multilateral Agencies for regional infrastructure.
 - i. It shall facilitate infrastructure development (Support, Trunk and Utilities) Preparation of Detailed Project Development Plan and Structuring for Green Field Area-Rajkot Smart City.
 - ii. Preparation of Detailed Infrastructure Plan, Detailed Design and Tendering for infrastructure development
 - iii. Preparation and implementation of sustainable and workable business plan, raising financial resources for the Company.
 - iv. Preparation of plan and provision of social infrastructure, city services, operation and management
 - v. Partnerships and Agreements for association with various agencies to design, develop, operate and maintain the components of Green Field Area-Rajkot Smart City
 - vi. Investment Promotion and attracting business in Green Field Area-Rajkot Smart City to create jobs and habitation in the city with the help of Department of Industries, GoG& GoI.
 - vii. Skill Development for construction workforce and skilled resources to make talent readily available for the Industry
 - viii. Engagement of professionals and capacity building of the organization
- b) Various institutional partners could be associated in the long term to contribute financial and technical resources for carrying out development of physical and social infrastructure of Green Field Area-Rajkot Smart City.
- c) The broad development components comprise of the following:
 - i. **Regional Infrastructure:** The regional infrastructure like Ring Road, expressways, High Speed Rail, Metro Rail, Riverfront development. The other city level regional infrastructure like Mass Transit Systems, Regional Railway Networks, Bus Transport Nodes and Airport could be developed on Public Private Partnership (PPP) basis with support of Central Government and Multilateral Funding Agencies

ii. **Trunk Infrastructure:** The city level core / trunk infrastructure that would typically include site development, major roads, utility corridors/ducts, regional storm water networks, parks / gardens, other public spaces and social infrastructure can be directly developed by Government for city to quick start, stabilize and attract international investment.

iii. **Utilities:** Various utilities briefly 1) Urban Infrastructure and 2) Information and Communication Technology (ICT) for the city; to be planned & designed as a self-sustainable model. Companies as specific SPV's may be formed wherein private sector participation may be invited for special areas.

iv. **Sub-cities development:** Basically two themes

i) **Area Based Development**

ii) **PAN City**

Followed by sub themes like:

- 1) Economic diversification of plug and play infrastructure
- 2) Inclusive and Environmentally sustainable residential neighborhood
- 3) Regional level recreation & Tourism gateway
- 4) Rejuvenation of central city area by provision of spaces to decongest core city
- 5) Replicable model for Water security & Urban LED's

Are proposed in Green Field Area-Rajkot Smart City at Rajkot as an Area based Proposal
(List not exhaustive)

v. **Land:** Approx. 930 Acres of land at Raiya area in the western part of the city has planned to be developed under "Green Field Area".

vi. **Strengthening of existing settlements around Green Field Area:** The Rajkot city spread over 129.30 sq. km enclosing various towns and villages including Raiya, Kothariya, Vavdi etc. The RMC plans to align the infrastructure of these existing agglomerates.

Followed by The core infrastructure elements in a Smart City with Smart Solution Include:
[not exhaustive]

1. Adequate and 24 *7 water supply
2. Assured 24 *7 uninterrupted electricity supply
3. Sanitation, including solid waste management
4. Efficient urban mobility with Integrated public transport, para transport and NMT.
5. Affordable housing especially for the poor
6. Robust IT connectivity and digitization
7. E-Governance & Citizen Participation
8. Sustainable Environment
9. Safety & Security of citizens
10. Health and education

Part – II

Detailed Infrastructure

Master-Plan

4. Structure of Detailed Master Plan

Requirement: The bidder is required to prepare the detailed smart infrastructure master plan in line of Gujarat Town planning and Urban Development act – 1976, its amendment and rules. The master plan also consisting of individual detailed master plan elements for a project area encompassing the Green Field Area-Rajkot Smart City, is an area based proposed. The detailed smart infrastructure master plan is a collection of individual master plan element reports.

Process: The master plans are expected to be prepared after all the required data collection (primary and secondary), stake holder consultations, bench marking international best practices, detailed analysis and planning of the systems.

Structure: The broad structure of the different master plan elements expected from the successful bidder is given in **Appendix 1**. Please refer

Approval of the process and structure are also expected to be obtained by the bidder from the client after benchmarking the global best practices in master plan preparation. The Consultant would be expected to coordinate with the Programme Management Consultant/RMC for getting of submissions, feedback and overall coordination with stakeholders.

The Consultant is also required, in the process of performing the Master planning exercise, perform Capacity building exercises for RMC employees to ensure proficiency of the Authority to implement and enforce the Master-Plan. If Required.

5. Detailed Master-Plans

5.1. Concept plan

The concept plan would be a document that covers the vision, goals, issues, concepts, and objectives of all the individual infrastructure master plan elements, including the methodology followed for each of the sectors, considerations and best practices. The concept plan would indicate the positioning of the Infrastructure plan in relation with the other Master-Plans that RSCDL/RMC has undertaken or plans to undertake. The concept planning exercise should necessarily cover the following aspects:

1. Thorough study of existing studies undertaken by RSCDL/RMC for each sectors, and identify various sources of information and gaps in information available for the planning exercise
2. Identification of key stakeholders of the project and various guidelines set by relevant authorities for each sector
3. Study of best practices for planning in various sectors, and set target objectives to set Green Field Area-Rajkot Smart City as one of the best livable cities in the world
4. Subsequent to inputs from RSCDL/RMC and benchmarking against international best practices, detailed methodology of the planning process must be worked out
5. The various outputs of the planning process must be laid out, and must adhere to the conditions and requirements specified in various sector specifications.
6. The planning process must necessarily capture the goals and objectives for each sector masterplan as well the overall masterplan. A clear vision statement, background leading to the plan, goals and the various issues must be identified for each sector after consulting various stakeholders.
7. The implementation plan, including institutional framework and policy frame-work required for every sector; and best practices for city-wide governance of the utility systems to be provided.
8. The various inter-dependencies between the various sector plans must be identified and measures are to be suggested for coordination during construction as well as operation.
9. Detail Land/Space Use Plan at various level as in Accordance with prevailing Regional Rules and Regulation such as GTP/UDA:1976, Enforced TP schemes.

5.2. Transport plan

5.2.1. City Context:

Assessment of transportation network and system infrastructure demand at city level (conducting various required surveys and reviewing existing, ongoing Master Plans, projects, studies, etc. and consultations with various agencies/stakeholders) related to air, road, rail, water transport sectors. The assessment needs to address infrastructure requirements such as airport express connectivity, high speed rail connectivity, regional transit nodes, multi-modal logistics infrastructure, integrated transport infrastructure, etc., to meet the future demand and to provide connectivity for various corners of the state.

5.2.2. Road Network System with Geometric Design details:

1. Assess the Right of Way (RoW) covering number of lanes, public transport corridor, bicycle lane, pedestrian walk ways, bus bays, IPT parking bays, utility service ducts, drainage, plantation strips, incidental sickbays, Street lights, etc. requirements for the proposed City road network following Road Hierarchal System in integration with regional transport network and its development with phasing
2. Assess the requirement for number of bridges, cross and catch drainage, and other hydraulic infrastructure development with phasing.

5.2.3. Public Transport System:

1. Assess the demand and recommend development of Public Transport network and infrastructure System requirements for rail, road sector (such as Ordinary Bus/BRT/LRT/Tram/Metro/etc.,) with its phasing.
2. Assess the demand and recommend Pedestrian walkway and cycle track network.
3. Assess the demand and recommend development of Multi-modal Corridors, Terminals and other infrastructure with regional network system integration and phasing.
4. Feasibility studies and preparation of Plans for Urban Waterways (Canal Navigation system).
5. Assess the demand and recommend development for Feeder/Intermediate Para-Transit (IPT) network and infrastructure system with phasing.
6. Assess the demand and recommend development of Integrated Commuter Transit nodes, Regional Passenger Rail/Bus Terminals, other infrastructure etc., with

phasing.

7. Assess the demand and recommend development of goods terminals such as Logistic Parks/hubs, Truck Terminals, etc., with phasing.

5.2.4. Traffic Management System:

1. Assess the demand and recommend phased development of Junction Design plans (Grade separated structures such as RoB/RuB/Flyovers/Subways/FoBs etc.,) based on traffic demand for various years with traffic signal time and other infrastructure requirement including Pedestrian Crossings, area requirements, etc.
2. Assess the demand and recommend phased development of Intelligent Transport System (ITS) Master Plan covering the equipments lists, system & physical architecture and infrastructure requirements with specifications.
3. Assess and identify the strategic locations and for parking of Emergency Vehicles.
4. Assess and identify the strategic locations for parking of Emergency Vehicles

5.2.5. Integration of Transport Systems:

1. Recommend the plan of action for integration of various transportation network and infrastructure systems.
2. Develop location plans with geo-referenced coordinates and unique coding number systems for every transport, other physical infrastructure elements location plan.

5.2.6. Policies, Norms, guidelines and standards

1. Parking, Street Design Guidelines, NMT Policies with standards and norms based on benchmarking,
2. Financial Resource Mobilization for implementing the planned projects.
3. Preparation of Transit Oriented Development (TOD) Plans with guidelines and Phasing.
4. Preparation of Traffic Impact Assessment (TIA) and its mitigation Guidelines for the capital city.
5. Preparation of Institutional Framework Plan for implementing the planned projects

5.3. Water management plan

5.3.1. Water supply plan

1. Study the existing water supply demand and system in place for the existing villages in the Green-Field-Area.
2. Study and presentation of Standards, norms and best practices for water consumption for varied uses.
3. Site assessment and identification of project in influence area, site constraints and consultation with departments on the collection of data on existing, ongoing and any future proposals.
4. Finalization of various water demands; domestic, commercial, recreational, industrial etc. for each zone for the Year 2050.
5. To Identify the various alternatives of source in the Project area as per Demand Projections
6. Assessment of available and proposed water supply from various sources, integration requirements and provision for water sourcing.
7. The particular nature and characteristics of the project site such as topography, hydrology, groundwater, rainwater harvesting etc. Hydrological water balance, water quantity and quality for water availability for the proposed development of Source.
8. Explore self-reliant zone planning approach.
9. The consultants will consider alternatives for the layout configuration for Zoning and mode of operation of the water distribution system including the locations and patterns of storage reservoirs and pumping stations.
10. The water treatment technology options shall be analyzed in detailed from sustainability and O&M considerations pertaining to environmental parameters, land use requirements, quality, cost economics etc.
11. Design of Water Supply transmission system from existing source /proposed source, up to proposed Water distribution Centers, including pumping arrangement with pumping machinery and electrical equipment's as required
12. To design the Water distribution Centers, decide locations of ESR / GSR(if required) for each water district for the project area, capacities of ESR/GSR, staging heights,

13. To prepare master plan for water supply distribution system for the project area, including designs of Water Supply distribution system under supply of 24x7 systems.
14. In consideration of smart and sustainable planning development principles, the consultant shall Endeavour to minimize the use of net fresh intake of water. It shall evaluate options for alternative water sources such as rainwater, recycle / treated water etc.
15. The costs estimates for Capital and O&M shall be carried out for the various components of the water infrastructure system.
16. Prepare conceptual master plan for water supply.
17. The application of SCADA to reduce the UFW in the O&M of water supply system to be made as part of designs.
18. Installation of bulkflow and smart meters for users.
19. City Command and Control Centre for monitoring of O&M of system
20. Phasing of the components in parallel with the development plan envisaged in Master Plan
21. Integration of source availability with rain water collected within the city to be explored to minimize the dependency on the external sources.

5.4. Waste Water and Storm water management plan

5.4.1. Waste Water:

1. Study the existing sewerage system existing in the city and nearby area and in the Green-Field-Area. Based on the future development asses the requirement and plan accordingly.
2. Estimation of sewerage generation, storm water entering in to the sewerage system.
3. Assessment for sewerage collection, treatment, recycle and reuse of treated water for various uses etc.
4. The study and analysis for the wastewater system shall be carried out involved various processes and technologies in an order and scope similar to those followed up for network treatment system.

5. Identify technologies for abstraction, conveyance, wastewater treatment, sanitation, distribution and collection; Efficient and reduced energy consumption and infrastructure management etc.
6. To suggest Sewerage Zoning for project area keeping in views the profile and the drainage aspects.
7. To design hydraulic sewerage collection and recycle system including size and slope of sewers, bedding details, considering soil strata available in project area, type, location and size of manholes, vent shafts etc. The general arrangement of pumps, pumping capacity required for areas for the installation.
8. To identify of no. & location of sewerage pumping stations, also to prepare hydraulic design, pump house, wet well / dry well details, pumping machinery, suction pipes, rising main, delivery main, manifold no. and pipes of pumps, all civil hydraulic electrical mechanical details, dg sets etc.
9. Selection of technology for STP shall be critically analyzed based on the cost and land use as per O&M requirements with reference to life cycle cost.
10. To prepare detailed hydraulic and structural designs, drawings for system including sewage pump house, rising main, STP / Package Treatment Plant (PTP) Including design calculations.
11. The collection and disposal of wastewater system shall be carefully analyzed. The Consultants will Endeavour to reduce pumping and/ or lift stations to minimum.
12. Design of transmission / pumping main from sewage pump house to out fall sewer and interception sewers if required for additional flow other than de-signed to carry to STP.
14. Scope includes the design of components from sewage generation, conveyance up to STP and STP to final disposal.
15. The STPs can be in phases using modules which can be expanded as per the need arise in future i.e. Modular approach.
16. Submit detailed specifications for individual items including electrical and mechanical equipments.
17. To prepare detailed cost estimates for total sewage master Plan system including collection, transmission and treatment for the priority items mentioned in Phase I&II scope of the work.

18. Designing of recycling of treated wastewater for watering of green belts, plantation along the roads, replenish of water in three lakes due to evapotranspiration loss etc. including pipeline and pumping network
19. Design of smart measuring devices to be installed i.e. individual plots to measure the wastewater of allotted before discharging the same into the sewer.
20. City sanitation plan such as the requirement of PUTS and the plan of implementation and O&M.
21. Integrated with SCADA and Integrated Command and Control Centre for monitoring of O&M of system

5.4.2. Storm Water:

1. Study site features. Site and geographical location. Existing and proposed land use. Subsoil water level and its fluctuations, drainage facilities available.
2. To study the rainfall pattern for finalizing design parameters like rainfall intensity etc. and study of existing ponds and irrigation canals. Hydrological analysis of the catchment basin based on ultimate development of the catchment area.
3. Work out Critical intensity of rain fall to be considered for based on the size of the catchment /watershed using meteorological Data.
4. The study of the project area includes the hydrology and storm water drainage scheme will be carried out taking in consideration the hydrological characteristics of the project area, identification of storm water network, water course regime, the rainfall- intensity, river flow, storm water and river discharge, sediment analysis, ground aquifer conditions, catchment area characteristics from regional and local considerations etc.
5. To study the design parameters and requirements, on the basis of the extent, type and nature of the green space. The source of water to be used for irrigation shall preferably be treated water and appropriate water system shall be designed.
6. The Consultant shall take into consideration various planning principles and approaches such as centralization / de-centralization, self-reliant zoning, effectiveness, reliability, cost-effectiveness in operations and maintenance etc. for carrying out optimization of the network to ensure reliable and quality service delivery.
7. The hydraulic analysis through simulation and modeling of the network shall be carried out on the various alternatives in order to enable the selection and the

recommendation of the most feasible alternative.

8. It would include model set up, model calibration and exploratory runs food monitoring estimation of 1:25, 1:50, 1:100, 1:500, 1:1000 years flood and flood generation of flood hydrographs from regional, city, drainage considerations; set up of rainfall-runoff & hydrodynamic modeling, model calibration and exploratory runs; sediment transport and deposition modeling (river morphology) to understand impact of proposed development.
9. Hydraulic design and structural designs of the network and other flow regulatory systems.
10. For the proposed development and in consideration of project influence area, the overall assessment and determination of planning and design parameters in consideration with the various return periods to arrive at design brief for safe development, phased nature of development for flood mitigation and management measures, drainage system and structures, protective works and measures, risk management and impact on proposed development. The site development and landscape aspect shall be looked upon along with. The Consultant shall develop flood mitigation strategies, sustainable urban drainage system strategy and proposed suitable mitigation measures in response to climate vulnerabilities for integrated site development and road networks.
11. The analysis of alternatives and recommendations for safe and sustainable development of the city the storm water as per local and regional considerations in a phased manner shall be provided by the Consultant.
12. The site development aspect, catchment characteristics, storm water drainage, rainwater harvesting, landscape, road network design, streetscape elements etc. shall be compatible.
13. Feasibility and design of design of detention ponds for temporary detention of rain water.
14. The green and blue reaches including appropriate buffer facilities for disposal of peak floods.
15. Options for conservation of runoff flux by way of construction of reservoirs to reduce the intensity of impact of flooding on Downstream side
16. The detailed designing of minor bridges and culverts will comprise of innovative models.

5.5. Power plan

1. Study the existing policy of the state and list down the fundamentals for city wide development;
2. Arrive at the integrated power supply distribution system for the city with details such as distribution network, sub stations, underground systems etc.
3. Identify the land most suitable on the basis of infrastructure requirements like transformers, sub stations, control rooms etc.
4. Develop the strategy for engaging the execution agency for city.
5. Develop strategy for various cost and implementation options including options of different innovative technologies.
6. To develop strategy and tender document for engaging operation and maintenance operators on long term basis for running of plants; such agency to handle all billing, metering etc requirement for client (if need be).
7. Recommend the entities at the macro level (state and nodal agencies) and at the meso level (state and financial institutions, OEMs, investors, project developers) along with the predefined roles and responsibilities for successfully execution.
8. Develop an institutional setup that can be used for discussion point with various institutions proposed for implementation of strategy.
9. Based on the discussion with the various institutions, revise and finalize the implementation.
10. Prepare the detailed phasing, financing and institutional framework.

5.6. Solid waste management plan

1. Study the existing SW practices in the villages of Green Field Area and surrounding Town/Villages. If any
2. The existing facilities available for Solid waste Management's in surrounding and its availability for Green-Field-Area.
3. Assessment of the solid waste management techniques, types of solid waste, collection, storage, transportation and treatment

4. Estimation of the different types of solid waste including e-waste, hazardous waste etc likely to be generated
5. Estimation and appropriate practices for the collection and transport of the street and floating waste.
6. Waste characterization
7. Assessment of the required management practices, best suited disposal options, technology and handling options, recycling and resource recovery, waste to energy options.
8. Options to minimize waste that is led to landfill, thereby minimizing landfill site requirements.
9. The waste reduction techniques shall be detailed by the Consultant. It shall make use of the 3R approach i.e. Reduce, Recycle, Reuse.
10. Based on the SWM assessment and characterization the Consultant shall identify the potential SWM options for storage, collection, transport and disposal for all categories of waste.
11. Identification of collection zones and sub-zones indicating Transit points.
12. Propose strategy and measures to segregate the waste at source.
13. The waste handling strategies shall be on sustainable principles.
14. Prepare Plan showing collection route duly identification of Scientific Landfill. The Design of Scientific Landfill to be decided as per site conditions.
15. Details of final disposal system (Self Sustaining System) including reuse and disposal of Construction & Demolition waste
16. The Consultant shall recommend the SWM plan and technology with the objective of maintaining high level of cleanliness, hygiene, scientific and sustainable treatment of waste considering waste as resource there by maximizing resource recovery, safe disposal of residual waste.
17. Provide the options analysis for ideal and cost effective treatment technologies. It shall identify evaluate various technologies like waste to Energy /Bio-Methanization etc. /Gasification and composting/ incineration. The advantages,

issues and constraints shall be highlighted.

18. The usage of ICT in solid waste systems management to be presented. The provisions for ICT integration shall be provided.
19. The Phasing of the plan, financing and institutional framework to be detailed.

5.7. Gas MasterPlan

1. Demand forecast: This report sets a general overview of the methodology which Gas plan has used to forecast gas demand and supply in city. The model on demand and supply of gas for up to 15 years ahead and across several possible scenarios to be developed. Forecasting gas demand is an important activity at planning level as it feeds directly into the assessment of the natural gas infrastructure. Accurate forecasting is also a prerequisite to determine future investment requirements. Gas demand forecasts are also relevant for providing insights on network developments, the evolution of tariffs and expectations of the market. The demand forecasts should include following components:
 2. Total annual gas demand forecast for the average year, across the different economic segments and up to 15 years ahead;
 3. Peak-day gas demand forecast for the average year, which is the day with the highest gas demand requirement in a given year;
 4. Peak-day gas demand forecast for the peak-year.

There are many different and variable factors that can affect gas demand forecasts (weather conditions, economic growth, renewable energy sources, etc.) The forecasts produced should reject best estimates regarding the evolution of such factors.

5. Supply Strategy: Source: The plan in all details shall specify the supply side strategy for the city distribution networks by earmarking sources either on centralized or decentralized sources. In addition to modeling what future gas demand might look like for the different economic segments, a number of supply scenarios are also to be considered.
6. Uncertainties related to gas supply from the principal source or secondary sources in terms of storage in case of imports and other supply sources.

Distribution system: The plan shall contain exhaustive reports containing provisions for distribution networks in the city. The distribution scope shall

cover the main 4 types of piping systems namely:

- Feeder pipes- From the feeder mains to the supply mains.
- Distribution lines- From feeder main to primarily residential, commercial and smaller industrial consumers. They may also provide for certain smaller industrial units.
- Service lines- From the distribution mains in the street to the consumer's meter. Service lines shall be the property and responsibility of the utility.
- Fuel lines- For usage as fuel for vehicles.

The distribution system shall also entail an exhaustive detailed control and command centre for e effective monitoring and smooth function of the city wide gas distribution network. The soft and hard components that need to be included in such an apparatus need to be elaborated in the plan.

6. Energy management measures: Energy management measures shall be enlisted for having comprehensive planning by linking all energy sources and potential alternatives. They can be broadly categories as follows:

(a) Measure/benchmark future energy consumption. The report shall consist of benchmarking similar project cases from amongst the best practices available globally. The benchmarking study shall conclusively highlight the future gap in demand and supply, after suggesting appropriate projections.

(b) Develop an energy consumption profile. An energy consumption profile to demonstrate how energy uses is distributed among building systems (e.g., heating, water, lighting, office equipment, refrigeration, and so on) as well as identify the energy source for each system (natural gas, fuel oil, district cooling, electricity) Metering and related hardware arrangements along with cost effective alternatives for avoiding operation losses shall be suggested comprehensively in the plan.

7. Non-conventional energy sources: Incorporate and suggest use of alternative renewable sources on the city scale. The study of such options shall be conducted on a preliminary basis but the feasibility may be proposed at the planning stage itself. Such proposals shall also include the SWOT analysis as a vital component to the plan.

5.8. Smart city integrated infrastructure plan

The broad scope of the work is to create and establish excellent Information & Communication technology infrastructure for the city, and integrate the Information and communication technology in design, construction, operation and maintenance of major infrastructure services and facilities. The plan for ICT

infrastructure in the city must cover high-speed optical fiber connections for various kinds of residential and commercial uses, and the network and infrastructure required for the same. Plan for the smart city should include majorly three parts, first, Introduction of new initiatives to improve public services delivery, second, application of technologies for integrated and efficient management of city and third, governance system to achieve the intended objectives.

1. Identification of specific areas in infrastructure services where ICT & IEC (Information Education and Communication programs) may integrate in operation and management of that area. For a smart city, some of the issues that need to be addressed are as follows, but not limited to;
 - (a) Education Facility Management
 - (b) Civic amenities
 - (c) Public Utilities
 - (d) Health Management
 - (e) Energy Management
 - (f) Transport System Management
 - (g) Traffic System Management
 - (h) Land and Housing Management
 - (i) Environment Management (including public paths, open space)
 - (j) Disaster Management
 - (k) Innovation and Entrepreneurship Hub
 - (l) ICT Platform for public Services
 - (m) ICT management of public utilities (Energy, water, traffic, street lights, etc.)
 - (n) GIS Mapping of all Public services.
 - (o) Safety & Surveillance {Crisis management centers, Video Surveillance etc
 - (p) E-Governance {Municipal E-Governance, Smart City Dashboard, Net-work

Operation Center etc.,

(q) Likely MIS for the City Management Authorities (CRDA, Public Health Department, ULB's and other Concern Dept.) [Dashboard (both Mobile and Desktop) and Weekly / Monthly/ Quarterly / Yearly Reports]

The areas of ICT intervention in each of the sector will be defined here.

2. Identification of ICT network for the city including optic fibers, central and regional switching centers.
3. Developing the IT Strategy and Roadmap.
4. System Integration-It should provide details of system architecture, Technical Feasibility of ICT Integration.
5. Study and assessment of modern, robust and resilient and adaptable technologies like fiber optics, wireless sensor networks, low power sensors based on micro electro mechanical systems (MEMS), computer vision and energy harvesting for creation of smart infrastructure facilities in the city.
6. Create platform for providing data to enable smarter and proactive asset decisions for construction of new Green Field Area-Rajkot Smart City.
7. Mapping of ICT services and their integration with all infrastructure services and facilities.
8. Create a Smart grid to develop citizen insight and share rapidly in the Green-Field-Area.
9. Develop a concept of City Command and Control Centre for Smart City Operations.
10. Define Business architecture & technology defining the strategy for service delivery by understanding the functional processes & the business environment.
11. Develop a Smart City Strategy at a policy level which allows for the creation of 'innovation zones' that free up areas from the constraints of regulation in selected domains and for limited duration in order to act as an incubator to test solutions. To scale up and make broadly available the lessons learned.
12. Implement collaborative, integrated smart city planning (city planning forums) and operation that maximize city-wide data to deliver more agile processes;

employing modern multi-criteria simulation and visualization tools.

13. Phasing and Implementation strategy with detailed cost estimates for ICT services. Detail out the investment requirement, phasing strategy, resource requirements, timelines and the implementation plan of the Program; Sustainability Model-solution life-cycle management, scalability, benchmarking, and post-implementation monitoring mechanisms, service monetization etc.,

14. Complete ICT will not be a part of the scope of the work, As a separate agency is already appointed for the work of ICT Work under PAN City smart Solutions, However the consultants will have to engage a ICT expert, so that he/she can coordinate with the PAN City Smart Solutions Consultants.

The Plan for Smart City should integrate the above sectors / components and present a document for addressing them in a holistic manner.

5.9. District cooling plan

1. Study and presentation of Standards, norms and best practices for District cooling systems for varied projects around the world.
2. Site feasibility assessment and identification of project influence area, site constraints and consultation with the departments on the collection of data on ongoing and any future proposals.
3. Assessment of various demands; domestic, commercial, recreational, industrial etc. for each theme city for the Horizon Year 2050.
4. Chillers: The Configuration of the chillers planned to work on all times based on the load demand required.
5. Appropriate pumping system details
6. Cooling Towers details
7. Consider alternatives for the layout configuration for Zoning and mode of operation of the water distribution system including the locations and patterns of storage reservoirs and pumping stations.
8. The water treatment technology options shall be analyzed in detailed from sustainability and O&M considerations pertaining to environmental parameters, land use requirements, quality, cost economics etc.

9. Design of Water Supply transportation system from existing source /proposed source, up to proposed Water distribution Centers, including pumping arrangement with pumping machinery and electrical equipments as required.
10. Air Handling Units of Various capacities at Building level including infrastructure such as modulating damper with Actuator, duct pressure sensors etc.
11. DOAU - Dedicated Outdoor Air Units
12. Chilled Water Piping System. The Valves and fittings etc. to be with specifications and rating.
13. Insulation system.
14. In consideration of smart and sustainable planning development principles, minimize the use of net fresh intake of water. Evaluate options for alternative water sources such as rainwater, recycle / treated water etc.
15. LCA - Life cycle assessment considerations to be taken. The general global warming potential to be brought down with the proposed system.
16. The costs estimates for Capital and O&M shall be carried out for the various components of the above said system.
17. Phasing of the components in parallel with the development plan envisaged in Master Plan.
18. Integration of source availability with rain water collected within the city roofs to be explored to minimize the dependency on the external sources.

5.10. Safety and security plan

The Broad scope of work is to prepare Safety and security policies for a city:

1. Identifying the Safety and Security parameters for a new city while in planning, designing and Construction.
2. Assess the safety and security measures during construction of Buildings in capital city and also identify the impact of construction activity in its surrounding areas.
3. Need assessment for safety and security measures for important public building and city as a whole.

4. The following are the major areas where safety and security measures need to be studied and produce a mitigation measures for the same.
 - (a) Public Buildings
 - (b) Utility Infrastructure
 - (c) Circulations areas and Road safety
 - (d) Vehicular Movement
 - (e) Parking areas
 - (f) Pedestrian safety
 - (g) Fire safety
 - (h) Safety from Threatening and allied criminal activities.
 - (i) Ambulance Service
5. Identify the Strategic locations for Safety and Security Infrastructure in the city.
6. Broad assessment of surveillance and cyber infrastructure (Hardware, Software, ICT elements) like Physical Access Control System (PACS), Intrusion Detection System (IDS), Video Assessment and Surveillance System, Security Intercommunications.
7. Concept for Security Management based on various identified contexts.
8. Develop a well established framework to manage a safety and security within the city.
9. Identify the key safety and security related infrastructure required for capital city and prepare a strategic location plan for Safety and Security related infrastructure required in the city and their phasing with cost estimates.
10. Develop measures for road safety, Disaster Mitigation, Women and child safety.
11. Develop a policy document to induce safety and security measure in development of Green field Area-Rajkot Smart City.

5.11. Disaster management plan

1. Identify various hazard elements associated with the City's development, habitat, infrastructure & services and analyze the vulnerability associated
2. The scientific data & information shall be gathered from various sources and use of different codes, regulation, guidelines need to be identified.
3. Plan for unified system for Emergency Management
4. Concept for Emergency Response System for preparedness, handling and management of various emergency operations in a proactive and effective manner.
5. The preparation of Risk Management Plan, Emergency Management and Response Plan, Standard Operating Procedure and Checklists, Monitoring and evaluation shall be prepared commensurate with the development.
6. It should lay down the framework for preparing a detailed disaster management plan for the specific areas.
7. The unified system for Emergency Preparedness and Response System shall prescribe roles and responsibilities of the various stakeholders.

5.12.Parks Gardens and Green Spaces, Recreation

1. Identify various elements of green space associated with the City's environment, habitat, infrastructure & services.
2. Identify the suitable location for Parks and garden and Green space within Green field area.
3. Integrated with NMT and road infrastructure.
4. Identify the species suitable to local environment and required comparative less water. Also workout the total water requirement in different season.
5. Layout and planning for Drip irrigation, Sprinkler irrigation and usage of recycled waste water.
6. Work out the schedule for periodic maintenance.
7. Integration of location of Recreation space with Garden

5.13. Rejuvenation of Water Bodies Plan

1. Identify and study of the catchment area of each lake and prepare contour map of 0.25mt. interval for whole green field area.
2. Based on rainfall data work out the hydraulics and runoff.
3. Study and suggest the measures for strengthening of embankment.
4. Identify the seasonal variation in evapotranspiration loss and water requirements for replenish the same.
5. Planning for Beautification along the lake and water channel.
6. Feasibility for inter connecting three lakes.
7. Work out the schedule for periodic maintenance.

Note: Above plans are briefly classified and it will include all the basic & smart and modern infrastructure in respect to 1) Urban Infrastructures and 2) Information and Communication Technology(ICT) Projects mentioned in Rajkot Smart City Proposal.

Part III

Detailed Project Reports and Detailed Designs

6. List of projects

1. Development of arterial and sub-arterial integrated road infrastructure (@30, 40, 45, 60mRoW) including interchanges / grade separators, NMT, Pedestrian way etc. for Green Field Area – Rajkot Smart City
2. Development of smart power transmission and distribution systems for Green Field Area – Rajkot Smart City
3. Development of Water supply plan including source, Water treatment plant(s), storage reservoirs, distribution network, automated control and command center and so on, for Green Field Area – Rajkot Smart City.
4. Development of Waste water management plan including collection network, Sewerage treatment plants, pumping stations, disposal, reuse network, automated control and command center and so on, for Green Field Area – Rajkot Smart City
5. Development of Solid Waste Management Infrastructure including automated control and command center, required for Green Field Area – Rajkot Smart City.
6. Development of storm water disposal system for Green Field Area – Rajkot Smart City.
7. Development of IT infrastructure and Central Command & Control Centers, Surveillance systems, Intelligent Traffic and Transport System, Fiber Optic for all infrastructure and services for Green Field Area – Rajkot Smart City.
8. Development of smart infrastructure for Approx. 930 acres of Green Field Area – Rajkot Smart City.
9. Development of part infrastructure within Approx. 930 acres of returnable lands under various scheme.
10. Development of Parks & Gardens with Landscaping and Rejuvenation of existing 3 water bodies(lakes) forming Recreational Spaces for Green Field Area – Rajkot Smart City.
11. Note: Above projects are briefly classified and it will include all the basic

&smart infrastructure projects belongs to 1) Urban Infrastructures and 2) Information and Communication Technology(ICT) Projects mentioned in Rajkot Smart City Proposal for approx.. 930 Acres of Green Field Area – Rajkot Smart City.

7. General Scope of Service

The below are the activities that need to be performed for the 9 projects as mentioned in Specific Scope of services. Wherever specific activities are require for any activity, they have been mentioned in the Specific scope of services.

1. Conduct detailed geo-technical investigations
2. Prepare feasibility report
3. Prepare detailed designs and drawings (GAD and GFC)
4. Prepare SOR and seek statutory approvals
5. Prepare cost estimates as per SOR (Schedule of Rates)
6. Assist in technical scrutiny and approval of DPR
7. Prepare standard bid documents
8. Assist in procurement
 - (a) The tender documentation shall prepare comprehensive guidelines / requirements / conditions related to Environment, Health and Safety (EHS), Quality Assurance, Statutory Obligations / Regulations to be met for safety, labor etc. taking into consideration the Applicable Laws, Local Conditions etc. and shall be as per best industry practices.
 - (b) Prepare the following necessary documentations (non-exhaustive) for tender process, :
 - i. Scope of Works
 - ii. Technical Standards and Specifications
 - iii. Tender Drawings
 - iv. Detailed Bill of Quantities
9. Revision of designs and drawings during execution
10. Prepare DPR in conformity with the requirements of the international multi-lateral/bilateral funding

Note:

1. All DPRs and detailed designs to be conform with the strategy prescribed in the Master Plan
2. All drawings, plans and reports will be vetted by the Programme Management Consultant to RMC/RSCDL, who will provide feedback and inputs on the same.
3. All the detailed designs & DPRs of any component shall be done with the purpose of making that system full-functional and operable
4. The list of items provided in Part-II are indicative in nature (and not exhaustive) and the bidder is expected to fill in the gaps and improvise the list as per industry best practices
5. Draft masterplan is as provided in Appendix 2.

8. Specific Scope of services

8.1. Development of arterial and sub-arterial integrated road infrastructure (@ 30, 40, 45,60mRoW) including inter-changes / grade separators

8.1.1. Feasibility study

1. Conduct Geo-technical investigations
2. Fix benchmarks and geo-reference corridors
3. Follow master plan principles
4. Fix road level as per the specifications considering MFL
5. Prepare pre-feasibility report covering road alignment and its infrastructure such as location of bus stops, parking bays, cycle tracks, pedestrian bays, sick-bays, street lighting, street scaping, dustbins, signal lights and poles, other street furniture, IPT, Goods, Emergency parking locations, junctions, etc.,
6. Financing and tariff modeling for utility services under Utility corridors

8.1.2. Standards & design

1. Adopt IRC codes, BIS standards, MORTH specifications or applicable British/American standards
2. Design road geometry in compliance with relevant standards

8.1.3. Detailed Design

Prepare detailed designs & drawings covering structural designs & drawings for the following elements,

Regional Level:

1. RoW with Carriageway and other detailed infrastructure covering geometrical elements for regional road network around capital city (including improvements for existing, new and missing links for integration).
2. Passenger & Freight transport network connectivity, terminal, other infrastructure, multimodal hubs, etc., through rail, water, air sectors for around capital city (including improvements for existing, new and missing links for integration)

City Level (@ {30, 40 & 45, 60mt (RoW)

1. RoW with Carriageway and other detailed infrastructure covering Geometrical elements
2. Segregated common utility tunnel capable of handling next 100 year requirements (for water supply, waste water drain, storm water drain, re hydrant supply, irrigation, gas supply lines, power supply lines, data cable m, cooling, ICT, etc.)

3. Special provisions for elevated, underground, underpass, and high embankment structure roads and other infrastructure
4. Pavement designs including medians, with materials and specifications
5. NMT (cycle/electric) tracks with parking infrastructure and its connectivity to public transport stations, etc.
6. Pedestrian walkways and its connectivity to public transport stations, etc.
7. Plantation strips, types of plants and irrigation system
8. Smart street lighting and ITS Related {equipment (along with locations) and integration with ICT plan
9. Street Scaping with street furniture (including bins)
10. Bus/BRTS bays, sick bays with area requirements
11. On and Off street parking for IPT, Goods Vehicles, emergency, etc.,
12. Public Transport Network system (BRT/MRT, etc.) corridors integrated with IPT/feeder network (with requisite infrastructures) and integrated stations
13. Signage on road network, other locations with related infrastructure in 2 or 3 languages as per IRC
14. Pavement markings on road network, other locations with related infrastructure as per IRC
15. Junctions with signal design and cycle phasing, interchanges and grade separators details including area requirements, zebra crossings, turning radius, speed limits, Transition kerb, islands with respect to phasing
16. Cross Masonry /Cross Drainage works (CM/CD) and other hydraulic structures if any
17. OBs/ RUBs, bridges & culverts, flyovers, clover leaf, other structures, infrastructure, etc.,
18. Multi-modal network, bus and rail transport nodes, interchange hubs, other infrastructure requirements including facilities and amenities

8.1.4. Concept design, schematic design and detailed architectural designs

1. Prepare at least 3 architectural concept designs for all important structures/ items such as grade separators, interchanges, ROB/RUBs, Flyovers, bridges & culverts, transition kerbs at intersection, FOBs, utility corridors, street furniture, street scaping, landscaping, public transport stations, etc.
2. Prepare merits de-merits for each concept design and obtain approvals for the most aesthetic design and thereafter prepare schematic and detailed designs
3. Prepare architectural drawings, structural designs and drawings for grade separators, interchanges, ROB/RUBs, Flyovers, bridges

&culverts, FOBs, utility corridors etc.

8.1.5 Assess and prepare plan for:

1. Shifting existing utilities & services
2. Compliance with concept plans and detailed designs prepared by Architects of Government Complex/Buildings.

8.1.6 Prepare GAD and obtain approvals

1. Plot all site plans, L-section and C-section. Scale to be 1:1000 for longitudinal axis (along the road), 1:100 for lateral axis (across the road) and 1:50 for vertical axis (height above or below the road level)
2. Prepare good for construction drawings for all the components
3. Prepare structural designs and drawings for all the components

8.1.7. Prepare DPR which will include the following (list not exhaustive),

1. Detailed designs
2. Detailed estimations
3. Value Engineering
4. Detailed Bill of Quantities (BoQ)
5. Rate Analysis
6. Detailed Capital Cost
7. O&M cost estimates
8. Phasing of the project
9. Good for construction GAD
10. Project implementation schedule

8.1.8. Conduct SIA, EIA and EMP

8.1.9. General:

1. Prepare 2D/3D artistic views and photo montages of the designs.
2. Prepare 3D animation of the proposed transportation system
3. Make presentations on any scope of work as and when required
4. Submit DPRS - 4 hard copies, soft copy of report word, data in excel/csv/ relevant digital formats
5. Provide geo-referenced locations (coordinates) of street furniture and all infrastructure assets with appropriate identification codes
6. Prepare an appropriate coding system (nomenclature) for the infrastructure assets

8.1.10. Tender Documentations

1. Prepare contracting strategy including packaging and obtain approval

8.1.11. Support during execution

1. Revise plans and drawings

8.1.12. Representative photographs indicating the desired finish/ look and feel

[Available Photographs provided in Appendix 3. The below photos are applicable for this project report.]

1. Arterial roads
2. Cycle tracks
3. Carriageway
4. Utility tunnel capable
5. Underground storm water drainage within the row (underground)
6. Pavement and medians
7. Space for solid waste bins
8. Pedestrian walkways
9. Plantation strips and street scaping
10. Smart street lighting
11. Bus bays
12. Public transport stations
13. Surveillance infrastructure
14. Signage and pavement markings
15. Junctions, interchanges and grade separators
16. Robs/ rubs, bridges & culverts, flyovers,
17. Multi-model interchange hubs
18. Transition kerbs at intersection

8.2. Development of smart power generation, transmission and distribution systems for Green Field Area – Rajkot Smart City.

8.2.1. Feasibility study

1. Conduct geo-technical investigations
2. Assess load requirement
3. Assess source availability
4. Locate transmission and distribution sub-stations (with capacity of PTRs)

5. Provide ROW in utility ducts
6. Locate DTRs

8.2.2. Standards & design:

1. Adopt IE, BIS and relevant standards for all the designs
2. State of the art energy efficiency/ sustainability norms (minimum T&D loss)

8.2.3. Detailed Design

1. Prepare detailed designs & drawings covering structural designs & drawings for the following elements,
2. Indoor substations (400/220 kV, 220/132 kV, 132/ 33 kV and 33/11 kV), power transformer of varied capacities and modern office space
3. Concealed Distribution transformers with CT meters as per load
4. City wide underground smart transmission & distribution network of various capacities and sizes along with accessories
5. City wide underground back-up cable network
6. SCADA system and central command center capable of monitoring up to consumer e-meters
7. 11 kV Ring main system
8. Smart street lighting network with central control room
9. Net metering facility across the city
10. Provision for trams, MRT/LRT/BRT, district cooling systems at various locations in city
11. Number of HT points required (33kV and 11kV potential) along with materials including data transfer system
12. Identification and design of LT panels (distribution box) in the utility corridors
13. Use of non-conventional energy wherever feasible
14. Smart meters system with facility to send real-time reports

8.2.4. Assess and prepare plan for:

1. Upgrading the existing supply system in the Green Field Area and integrating with the new system (If any)
2. Dismantling the existing agricultural power network and dtrs (If any)

8.2.5. Prepare GAD and obtain approvals

1. Prepare plans - 1:100 for LT, 1:500 for 11kV, 1:1000 for 33 kV, and 1:2000 for 132 kV and above
2. Prepare good for construction drawings for all the components
3. Prepare structural designs and drawings for all the components

8.2.6. Prepare DPR which will include the following (list not exhaustive),

1. Detailed designs
2. Detailed estimations
3. Value engineering
4. Detailed bill of quantities (BoQ)
5. Rate analysis
6. Detailed capital cost
7. O&M cost estimates
8. Phasing of the project
9. Good for construction GAD
10. Project implementation schedule

8.2.7. Conduct SIA if required

8.2.8. General

1. Prepare 2D/3D artistic views and photo montages of the designs.
2. Make presentations on any scope of work and obtain approvals as and when required
3. Submit DPRS - 4 hard copies, soft copy of report word, data in excel/csv/ relevant digital formats
4. Provide geo-referenced locations (coordinates) of all infrastructure assets with appropriate identification codes
5. Prepare an appropriate coding system (nomenclature) for the infrastructure assets

8.2.9. Tender Documentations

Prepare contracting strategy including packaging and obtain approval

8.2.10. Support during execution

1. Revise plans and drawings

8.2.11. Representative photographs indicating the desired finish/ look and feel

[Available Photographs provided in Appendix 3. The below photos are applicable for this project report.]

1. Power cables in utility corridors
2. Indoor sub-stations
3. Concealed distribution box

4. Concealed DTR box

8.3. Development of Water supply plan including source, water treatment plant(s), storage reservoirs, trunk distribution network, automated control and command center and so on, for Green Field Area – Rajkot Smart City.

8.3.1. Feasibility study

1. Conduct geo-technical investigations
2. Assess demand requirement for residential, industrial, re, and urban irrigation
3. Locate source, WTP, trunk distribution centers, water re-use lines (if necessary) and storage reservoirs
4. Locate pumping stations with capacities across the city
5. Provide ROW in utility ducts

8.3.2. Standards & design:

1. CPHEEO manual, BIS standards or applicable British/ American standards
2. Limit unaccounted water usage to less than 5
3. 24x7 pressurized potable water supply system
4. System should be durable and easy to implement, operate and maintain

8.3.3. Detailed Design

Prepare detailed designs & drawings covering structural designs & drawings for the following elements,

1. Intake structure at source
2. Hydraulic and structural designs of WTP, transmission mains, city-wide water transmission & distribution system including pumps, appurtenances, storages (where necessary) etc.
3. Ensure 24x7 potable water supply (with back-up arrangements) without pro-vision of sumps at the consumer-end for residential, commercial and industrial
4. Water supply system for urban plantations, parks, landscaping and street scaping (urban irrigation)
5. Water supply system for firefighting including fire hydrants
6. All required pumping systems
7. SCADA system and central command and control center monitoring supply up to consumer end
8. Data connectivity to smart water meters located at the transmission,

distribution and consumer end

9. Leakage detection and UFW reduction system
10. Selection of appropriate materials/ equipment for entire system

8.3.4. Assess and prepare plan for:

1. Upgrading and integrating the existing village level water supply system with the new system

8.3.5. Prepare GAD and obtain approvals

1. Prepare plans - 1:1000 for transmission and distribution and 1:100 for WTP
2. Prepare good for construction drawings for all the components
3. Prepare structural designs and drawings (1:25) for all the components

8.3.6. Prepare DPR which will include the following (list not exhaustive),

1. Detailed designs
2. Detailed estimations
3. Value engineering
4. Detailed bill of quantities (BoQ)
5. Rate analysis
6. Detailed capital cost
7. O&M cost estimates
8. Phasing of the project
9. Good for construction GAD
10. Project implementation schedule

8.3.7. Conduct SIA, EIA and EMP

8.3.8.General:

1. Prepare 2D/3D artistic views and photo montages of the designs.
2. Prepare 3D animation of the proposed system
3. Make presentations on any scope of work and obtain approvals as and when required
4. Submit DPRS - 4 hard copies, soft copy of report word, data in excel/csv/ relevant digital formats
5. Provide geo-referenced locations (coordinates) of all infrastructure assets with appropriate identification codes
6. Prepare an appropriate coding system (nomenclature) for the infrastructure assets

8.3.9.Tender Documentations

1. Prepare contracting strategy including packaging and obtain approval

8.3.10. Support during execution

1. Revise plans and drawings

8.3.11. Representative photographs indicating the desired finish/ look and feel

[Available Photographs provided in Appendix 3. The below photos are applicable for this project report.]

1. Intake structure
2. Water lines in utility corridors
3. WTP
4. Control center

8.4. Development of Waste water management system including trunk network, sewerage treatment plant(s), pumping stations, disposal, reuse network, automated control and command center and so on, for Green Field Area - Rajkot Smart City.

8.4.1. Feasibility study

1. Demand assessment of sewage / waste water generated from residential, commercial & industrial sectors
2. Assessment of quality of sewerage
3. Formation of sewerage zones
4. Sewerage networks (lateral, branch & trunk network)
5. Intermittent pumping stations
6. Location of sewerage treatment plants (modular and scalable treatment system)
7. Network for reuse of treated waste water for irrigation/other purposes
8. Effluent disposal system
9. Treatment and disposal of industrial waste
10. City sanitation plan
11. Provision of ROW in utility ducts / separate networks

8.4.2. Standards & design:

1. CPHEEO manual, BIS standards or applicable British/ American standards
2. System should be durable and easy to implement, operate and maintain
3. GPCB guidelines

8.4.3. Detailed Design

Prepare detailed designs & drawings covering structural designs & drawings for the following elements,

1. Hydraulic design of sewerage collection system including size and slope of sewers; size, type & location of manholes, vent shafts
2. Hydraulic and structural designs of pump house, STP, transmission mains, pumps, appurtenances, wet-wells, disposal of treated waste water, etc.

3. Detailed design specifications for individual items including mechanical and electrical equipment
4. Design of recycling treated waste water for watering of green belts, plants along roads
5. SCADA system and central command and control center for entire sewerage system
6. Data connectivity to smart sewerage leakage & blockage detection systems, and other sensors required
7. Selection of appropriate materials/ equipment for entire system

8.4.4. Assess and prepare plan for:

1. Upgrading and integrating the existing village level septage systems with the new system

8.4.5. Prepare GAD and obtain approvals

1. Prepare plans - 1:1000 for collection network and transmission network, and 1:25 for STP
2. Prepare good for construction drawings for all the components of the system such as index plan, key plan & general layout, zonal plans, L sections, layout of treatment plant & pumping system (if any)
3. Prepare structural designs and drawings (1:25) for all the structural components

8.4.6. Prepare DPR which will include the following (list not exhaustive)

1. Detailed designs
2. Detailed estimations
3. Value engineering
4. Detailed bill of quantities (BoQ)
5. Rate analysis
6. Detailed capital cost
7. O&M cost estimates
8. Phasing of the project
9. Good for construction GAD
10. Project implementation schedule

8.4.7. Conduct SIA, EIA and EMP

8.4.8. General:

1. Prepare 2D/3D artistic views and photo montages of the designs.
2. Prepare 3D animation of the proposed system
3. Make presentations on any scope of work and obtain approvals as and when required
4. Submit DPRS - 4 hard copies, soft copy of report word, data in excel/csv/ relevant digital formats
5. Provide geo-referenced locations (coordinates) of all infrastructure assets with appropriate identification codes
6. Prepare an appropriate coding system (nomenclature) for the infrastructure assets

8.4.9. Tender Documentations

1. Prepare contracting strategy including packaging and obtain approval

8.4.10. Support during execution

1. Revise plans and drawings

8.4.11. Representative photographs indicating the desired finish/look and feel

[Available Photographs provided in Appendix 3. The below photos are applicable

for this project report.]

1. Sewer lines in utility corridors
2. STP
3. Control center

8.5. Development of Solid Waste Management Infrastructure including collection, treatment, disposal, automated control and command center, required for Green Field Area – Rajkot Smart City.

8.5.1. Feasibility study

1. Best practices wherever applicable and available
2. Study the existing solid waste practices in the villages of Green Field Area – Rajkot Smart City. and surrounding regions.
3. Estimation of different types of solid waste including e-waste, hazardous waste, etc. likely to be generation
4. Assessment of solid waste management techniques, types of solid waste, collection, transportation and treatment
5. Feasibility of various efficient collection systems, segregation at source / collection point
6. Feasibility of Reduce, reuse and recycling of waste
7. Examine the possibility of community participation in the promotion of best practices
8. Various options of treatment process
9. Usage of Smart systems in solid waste management
10. Assessment of various solid waste treatment processes and technologies
11. Identification of collection zones and sub-zones indicating collection points
12. Location of transfer systems
13. Assess solid waste generation
14. Street and floating waste
15. Final disposal systems
16. Provide ROW in utility ducts and studies for automatic collection, treatment and disposal
17. PPP partners for total or components of system
18. Waste to Energy Generation Project.

8.5.2. Standards & design:

1. Adopt Supreme Court orders of Solid waste management, 2004; CPHEEO

manual, PCB norms

2. BIS standards or applicable British/ American standards
3. State of the art sustainability norms

8.5.3.Detailed Design

1. Prepare detailed designs & drawings covering structural designs & drawings for the following elements,
2. Design scientific solid waste collection system for entire area
3. Estimation of the number of collectors bins / chutes required
4. Develop mechanism for door-to-door collection till end point delivery
5. Design of primary transportation and nodal collection points
6. Number and design of transit and transfer stations
7. Design of secondary transportation
8. Segregation and recycling of collected waste into items such as paper, plastic, glass, metal, organic waste and so on with systems/machinery for recycling
9. Treatment process - composting / gasification / waste to energy / incineration
10. Disposal of hazardous / industrial waste
11. Smart operational systems for management of Solid waste
12. Central command center capable of monitoring and controlling entire system including items such as vehicular movement, waste received, waste recycled by machines, quantity incinerated, land fill and so on.

8.5.4.Assess and prepare plan for:

1. Up gradation of the existing solid waste management systems in concern villages and integration with existing treatment processes in surrounding preparation of Smart integrated Infrastructure Masterplan and DPR for Green Field Area – Rajkot Smart City.

8.5.5.Prepare GAD and obtain approvals

1. Plans for collection routes
2. Plans for collection zones and sub-zones indicating transit points
3. Drawings for land fill
4. Prepare good for construction drawings for all the components
5. Prepare structural designs and drawings for all the components

8.5.6.Prepare DPR which will include the following (list not exhaustive)

1. Detailed designs
2. Detailed estimations
3. Value engineering

4. Detailed bill of quantities (BoQ)
5. Rate analysis
6. Detailed capital cost
7. O&M cost estimates
8. Phasing of the project
9. Good for construction GAD
10. Project implementation schedule

8.5.7. Conduct SIA, EIA and EMP

8.5.8. General:

1. Prepare 2D/3D artistic views and photo montages of the designs.
2. Make presentations on any scope of work and obtain approvals as and when required
3. Submit DPRS - 4 hard copies, soft copy of report word, data in excel/csv/ relevant digital formats
4. Provide geo-referenced locations (coordinates) of all infrastructure assets with appropriate identification codes
5. Prepare an appropriate coding system (nomenclature) for the infrastructure assets

8.5.9. Tender Documentations

1. Prepare contracting strategy including packaging and obtain approval

8.5.10. Support during execution

1. Revise plans and drawings

8.5.11. Representative photographs indicating the desired finish/ look and feel

[Available Photographs provided in Appendix 3. The below photos are applicable for this project report.]

1. Land fill treatment process
2. Automatic waste collection system
3. Bins
4. Transfer station
5. Segregation plant

8.6. Development of storm water disposal system for Green Field Area – Rajkot Smart City.

8.6.1. Feasibility study

1. Conduct geographical investigations, contours and hydrology of the catchments
2. Identify location of possible disturbances, erodible soils, steep slopes, forest conservation areas, stream valley buffers
3. Study of subsoil water level, existing and proposed land use
4. Estimation of critical intensity of rainfall and runoff
5. Identification of flood prone areas
6. Identification of storm water drainage basins
7. Conserving storm water for water supply and irrigation purposes
8. Conserving storm water for recreation usages
9. Rainwater harvesting systems

8.6.2. Standards & design:

1. CPHEEO manual, BIS standards or applicable British/ American standards
2. System should be durable and easy to implement, operate and maintain

8.6.3. Detailed Design

Prepare detailed designs & drawings covering structural designs & drawings for the following elements,

1. Storm water network (lateral, branches and outfall drains)
2. Hydraulic and structural designs for detention ponds
3. Conservation systems
4. Storage of water supply
5. Blue and green canal systems
6. Mechanical systems for flood mitigation
7. Regulatory systems linking to canal irrigation
8. Treatment systems
9. Pumping systems
10. Minor bridges and culverts for CD works
11. SCADA system and central command and control center for automatic flood monitoring and control
12. Automatic rain gauges
13. Data connectivity to flood flow detectors and other equipment
14. Selection of appropriate materials/ equipment for entire system

15. Modeling and simulation of storm water system under various scenarios
16. Underground collection tunnels

8.6.4. Assess and prepare plan for:

1. Integrating with existing flow regime in adjoining streams/river.

8.6.5. Prepare GAD and obtain approvals

1. Prepare plans - 1:1000 for storm water networks and 1:100 for Storm water Treatment System
2. Plan of SWD system, alignment and position of storm water drainage along the road giving the details of size of drains, invert levels, HFL and road edge level
3. Plan and Sectional details of drains, channels, etc. including Longitudinal sections
4. Layout plan to the scale 1:2000 with proposed formation level, high flood level (HFL), invert level (IL), discharge, velocity and freeboard data in a tabular form
5. Prepare good for construction drawings for all the components, minor bridges, culverts and regulatory systems
6. Prepare structural designs and drawings (1:25) for all the components including CD works

8.6.6. Prepare DPR which will include the following (list not exhaustive),

1. Detailed designs
2. Detailed estimations
3. Value engineering
4. Detailed bill of quantities (BoQ)
5. Rate analysis
6. Detailed capital cost
7. O&M cost estimates
8. Phasing of the project
9. Good for construction GAD
10. Project implementation schedule

8.6.7. Conduct SIA, EIA and EMP

8.6.8. General:

1. Prepare 2D/3D artistic views and photo montages of the designs.
2. Prepare 3D animation of the proposed system
3. Make presentations on any scope of work and obtain approvals as and when required

4. Submit DPRS - 4 hard copies, soft copy of report word, data in excel/csv/
relevant digital formats
5. Provide geo-referenced locations (coordinates) of all infrastructure assets
with appropriate identification codes
6. Prepare an appropriate coding system (nomenclature) for the infrastructure
assets

8.6.9. Tender Documentations

1. Prepare contracting strategy including packaging and obtain approval

8.6.10. Support during execution

1. Revise plans and drawings

8.6.11. Representative photographs indicating the desired finish/ look and feel

[Available Photographs provided in Appendix 3. The below photos are applicable
for this project report.]

1. Blue and green canal
2. Rainwater harvesting
3. Storm water treatment plant
4. Control center
5. Underground collection tunnel

8.7. Development of IT infrastructure and Central Command & Control Centers, Surveillance systems, Intelligent Traffic and Transport System, Fiber Optic Network for all infrastructure and services for Green Field Area – Rajkot Smart City.

8.7.1. Feasibility study

The feasibility study for the development of IT infrastructure and Central Command
and Control Centers for all infrastructure and services for Green Field Area – Rajkot
Smart City

1. The study should include following aspects but not limited to:
 - (a) Education Facility Management
 - (b) Civic amenities
 - (c) Public Utilities
 - (d) Health Management
 - (e) Energy Management
 - (f) Transport Management
 - (g) Traffic Management

- (h) Land and Housing Management
 - (i) Environment Management (including public paths, open space)
 - (j) Disaster Management
 - (k) Innovation and Entrepreneurship Hub
 - (l) ICT Platform for public Services
 - (m) ICT management of public utilities (Energy, water, traffic, street lights, etc.)
 - (n) GIS Mapping of all Public services.
 - (o) Safety & Surveillance {Crisis management centers, Video Surveillance etc.
 - (p) E-Governance {Municipal E-Governance, Smart City Dashboard, Network Operation Center etc.
2. Prepare prefeasibility report:
 3. Bandwidth assessment for various sectors, including residential, commercial, industry and so on.
 4. Provision of RoW in Utility corridor
 5. Optic fibre network system and comparison of various systems of operation (PPP, etc)

8.7.2. Standards & design:

1. Refer MoUD Smart city Guidelines
2. Standard Data Base formats for all infrastructure services.
3. Standards for design and space requirements for CCTV installation and Central Command & Control Centers.
4. Design Standards for Monitoring workstations, Handled devices, Video calls, LED Displays.
 - (a) BIS and other British/American references
 - (b) Geo referencing to incorporated throughout the platform

8.7.3. Detailed Design

- A. Prepare detailed designs & drawings of equipment & software with specifications, for the smart management of following elements,
 1. Education Facility Management
 2. Civic amenities

3. Public Utilities
4. Gas and power Management
5. Intelligent Transport System
6. Asset Management
7. Environment Management (including public paths, open space)
8. Disaster Management
9. Safety & Surveillance {Crisis management centers, Video Surveillance etc.
10. E-Governance
11. Citizen charter services

B. Detailed designs also have to be furnished for the following

1. Software and system architecture for integration of various elements
2. City-wide network plans
3. ICT infrastructure plan including locations
4. Command and control center

8.7.4. Assess and prepare plan for:

1. Plan for existing village level IT infrastructure with the new system and pre-prepare a plan for Central command and control centers for existing village settlements
2. Integration with other SCADA systems and other city governance management system

8.7.5. Prepare GAD and obtain approvals

1. Prepare plans for detailed IT infrastructure requirements for each of the town-ship and smart city components.
2. Prepare Plans for Center Command and Control Centers.
3. Prepare good for construction drawings for all the components
4. Prepare structural designs and drawings (1:25) for all structural components

8.7.6. Prepare DPR which will include the following (list not exhaustive),

1. Detailed designs
2. Detailed estimations
3. Value engineering
4. Detailed bill of quantities (BoQ)
5. Rate analysis
6. Detailed capital cost
7. O&M cost estimates

8. Phasing of the project
9. Good for construction GAD
10. Project implementation schedule

8.7.7. Conduct SIA.

8.7.8. General:

1. Prepare 2D/3D artistic views and photo montages of the designs.
2. Prepare 3D animation of the proposed IT Infrastructure details.
3. Make presentations on any scope of work as and when required
4. Submit DPRS - 4 hard copies, soft copy of report word, data in excel/csv/ relevant digital formats
5. Provide geo-referenced locations (coordinates) of street furniture and all infrastructure assets with appropriate identification codes
6. Prepare an appropriate coding system (nomenclature) for the infrastructure assets

8.7.9. Tender Documentations

1. Prepare contracting strategy including packaging and obtain approval

8.7.10. Support during execution

1. Revise plans and drawings
2. Technical Advisory service for selection of type technology/ Software/Hardware Requirements.

8.7.11. Representative photographs indicating the desired finish/ look and feel

[Available Photographs provided in Appendix 3. The below photos are applicable for this project report.]

1. CCTV
2. Smart Dash Boards
3. Central Command and Control centers
4. Intelligent Traffic and Transportation System.

8.8. Development of infrastructure in approx. 930 acres like Management Convention centre/ Indoor / Outdoor Exhibition centre / Sports Complex / Government Complex/Building/Shopping Centre/ Affordable Housing.

8.8.1. Feasibility study

Transport:

1. Conduct Geo-technical investigations
2. Fix benchmarks and geo-reference corridors
3. Follow master plan principles
4. Fix road level as per the specifications considering MFL
5. Prepare pre-feasibility report
6. Location of parking

Water supply:

1. Assess demand requirement for water supply, fire system, plantation irrigation
2. Provide ROW in utility ducts
3. Water distribution center, pumping systems, distribution systems

Waste water:

1. Demand assessment of sewage / waste water generated from Govt. Complex/Building/Shopping Centre.
2. Assessment of quality of sewerage
3. Sewerage networks (lateral, branch & trunk network)
4. Intermittent pumping stations
5. Network for reuse of treated waste water for irrigation/other purposes
6. Provision of ROW in utility ducts / separate networks

Storm water:

1. Conduct geographical investigations, contours and hydrology of the catchments
2. Study of subsoil water level, existing and proposed land use
3. Identification of flood prone areas
4. Identification of storm water drainage basins
5. Conserving storm water for gardening
6. Rainwater harvesting systems

Power:

1. Conduct geo-technical investigations
2. Assess load requirement
3. Locate distribution sub-station (with capacity of PTRs)
4. Provide ROW in utility ducts
5. Locate DTRs

District cooling plant

1. Understanding the technology and different approaches
2. Heat rejection based on various usages of water.
3. Understanding the development and assess the cooling requirements for the complex.
4. Financial feasibility with respect to the conventional systems
5. Risk Assessment - Lower energy sales / revenue generation
6. Location of chiller plant
7. Provide ROW in utility ducts

Solid waste

1. Estimation of different types of solid waste including e-waste, paper waste, etc. likely to be generation
2. Assessment of solid waste management techniques, types of solid waste, collection, storage, transportation and treatment
3. Feasibility of various efficient collection systems, segregation at source / collection point
4. Feasibility of Reduce, reuse and recycling of waste, including Construction debris recycling
5. Examine the possibility of community participation in the promotion of best practices
6. Identification of collection zones and sub-zones indicating collection points
7. Location of transfer systems, if needed
8. Street and floating waste
9. Provide ROW in utility ducts and studies for automatic collection
10. PPP partners for total or components of system

Surveillance system:

1. Study of Surveillance system of International and National cities.
2. Assessment of vulnerabilities and potential points of intrusion
3. Identification of high security & strategic locations
4. Development of Surveillance system & the type of technology
5. Automated detection of threats from video surveillance

8.8.2. Standards & designs:

1. Adopt IRC codes, BIS standards, MORTH specifications or applicable British/ American standards
2. Design road geometry in compliance with relevant standards
3. State of the art energy efficiency/ sustainability norms (minimum T&D loss)
4. CPHEEO manual for water supply, waste water and for storm water
5. Limit unaccounted water usage to less than 5
6. 24x7 pressurized potable water supply system
7. System should be durable and easy to implement, operate and maintain
8. GPCB guidelines
9. Adopt Supreme Court orders of Solid waste management , 2004
10. Adopt ECBC and GRIHA and other relevant standards for all the designs under District cooling

8.8.3. Detailed Design

Prepare detailed designs & drawings covering structural designs & drawings for the following elements,

Transport:

1. RoW with Carriageway and other detailed infrastructure covering Geometrical elements
2. Segregated common utility tunnel capable of handling next 100 year requirements (for water supply, waste water drain, storm water drain, re hydrant supply, irrigation, gas supply lines, power supply lines, cooling, ICT, etc.)
3. Special provisions for elevated, underground, underpass, and high embankment structure roads and other infrastructure
4. Pavement designs including medians, with materials and specifications
5. NMT (cycle/electric) tracks with parking infrastructure and its connectivity to public transport stations, etc.
6. Pedestrian walkways and its connectivity to public transport stations, etc.
7. Plantation strips, types of plants and irrigation system
8. Smart street lighting and ITS Concern{ equipment (along with locations) and integration with ICT plan
9. Street Scaping with street furniture (including bins)
10. Bus/BRTS bays, sick bays with area requirements
11. On and Off street parking for IPT, emergency, etc.,
12. Public Transport Network system (BRT/MRT, etc.,) corridors integrated with IPT/feeder network (with requisite infrastructures) and integrated stations
13. Signage on road network, other locations with related infrastructure in 2 or 3 languages as per IRC
14. Pavement markings on road network, other locations with related infrastructure as per IRC
15. Junctions with signal design and cycle phasing and grade separators details including area requirements, zebra crossings, turning radius, speed limits, Transition kerb, islands with respect to phasing
16. Cross Masonry /Cross Drainage works (CM/CD) and other hydraulic structures if any
17. Bridges & culverts, flyovers, other structures, infrastructure, etc.,
18. Multi-model network, bus and rail transport nodes, interchange hubs, other infrastructure requirements including facilities and amenities

Water supply:

1. Hydraulic and structural designs for transmission and distribution system including pumps, appurtenances, storages (where necessary) etc.
2. Ensure 24x7 potable water supply (with back-up arrangements) without

provision of sumps

3. Water supply system for urban plantations, parks, landscaping and street scaping (urban irrigation)
4. Water supply system for firefighting including fire hydrants
5. All required pumping systems
6. SCADA system
7. Data connectivity to smart water meters located at the distribution and consumer end
8. Leakage detection and UFW reduction system
9. Selection of appropriate materials/ equipment for entire system

Waste water:

1. Hydraulic design of sewerage collection system including size and slope of sewers; size, type & location of manholes, vent shafts
2. Hydraulic and structural designs of pump house, transmission mains, pumps, appurtenances, wet-wells, etc.
3. Design of recycling treated waste water for watering of green belts, plants along roads
4. SCADA system
5. Data connectivity to smart sewerage leakage & blockage detection systems, and other sensors required
6. Selection of appropriate materials/ equipment for entire system

Storm water:

1. Protection works required like flood bank strengthening/realignment, raising of platform level of site and any other measures required for protecting site from inundation
2. Storm water network (lateral, branches)
3. Minor bridges and culverts for CD works
4. Automatic rain gauges
5. Data connectivity to food flow detectors and other equipment
6. Selection of appropriate materials/ equipment for entire system
7. Modeling and simulation of storm water system under various scenarios
8. Underground collection tunnels

Power:

1. Indoor substations (33/11 kV), power transformer of varied capacities and modern office space
2. Concealed Distribution transformers with CT meters as per load
3. Underground smart distribution network of various capacities and sizes along with accessories for internal buildings
4. Underground back-up cable network
5. SCADA system and central command center capable of monitoring up to consumer e-meters
6. Smart street lighting network

7. Net metering facility
8. Identification and design of LT panels (distribution box) in the utility corridors
9. Use of non-conventional energy wherever feasible
10. Smart meters system with facility to send real-time reports

District Cooling system:

1. Details and elements of cooling systems on both condenser side and evaporator side including all related components
2. Control diagrams and all details of heating systems such as boilers, burners, heaters etc.
3. Coolant distribution system and the specifications required to be followed by building detailed designers
4. Duct Layout drawings along with the layouts of accessories such as diffuser, dampers, grills etc.
5. Equipment Layouts and schedules for Chillers / DX Units, Air Handling Equipment, Ducting Accessories (grills, diffusers, dampers, etc.), Pump etc.
6. All electrical, mechanical and other equipment required to implement full scale district cooling system for all buildings in the Government campus
7. Non-conventional energy systems if prescribed
8. Smart meters system with facility to send real-time reports

Solid waste:

1. Design scientific solid waste collection system for entire area
2. Estimation of the number of collector bins / chutes required
3. Develop mechanism for door-to-door collection
4. Design of primary transportation and nodal collection points
5. Number and design of transit and transfer stations
6. Design of secondary transportation
7. Segregation and recycling of collected waste into items such as paper, plastic, glass, metal, organic waste and so on with systems/machinery for recycling
8. Smart operational systems for management of Solid waste

Surveillance system:

1. Emergency call box system and their location
2. CCTV location and design aspects.
3. Detailed system architecture design for surveillance system integration with Police Stations, Fire Stations and Ambulance
4. Variable Messaging Signs, Parking lot availability automation.
5. Connectivity for Sensors and other Smart City Initiatives like temperature sensors, air quality sensors, flood water sensors, fire /smoke sensors, capture GPS data from select vehicles, etc.
6. Integration with e-challan Smart Traffic Enforcement, Detailed designs for Intelligent Street Lighting System
7. Detailed design for Public address system.

8. Central Command and control center
9. IT infrastructure and switching/routing components for surveillance
10. Fiber optic communication network
11. Software, support and cyber-security

8.8.4. Assess and prepare plan for:

Transport:

1. Shifting existing utilities & services
2. Compliance with concept plans prepared by master architect of government complex

Power, water supply, waste water, solid waste, storm water, surveillance system:

1. Integration with city-level trunk infrastructure and ensure provisions for city-level infrastructure components as per masterplan
2. Ensure provisions for city-level infrastructure components as per masterplan

8.8.5. Prepare GAD and obtain approvals

Transport

1. Plot all site plans, L-section and C-section. Scale to be 1:1000 for longitudinal axis (along the road), 1:100 for lateral axis (across the road) and 1:50 for vertical axis (height above or below the road level)
2. Prepare good for construction drawings for all the components
3. Prepare structural designs and drawings for all the components

Water supply

1. Prepare plans - 1:1000 for transmission and distribution
2. Prepare good for construction drawings for all the components
3. Prepare structural designs and drawings (1:25) for all the components

Waste water:

1. Prepare plans - 1:1000 for collection network and transmission network
2. Prepare good for construction drawings for all the components of the system such as index plan, key plan & general layout, zonal plans, L sections
3. Prepare structural designs and drawings (1:25) for all the structural components

Storm water:

1. Plan of SWD system, alignment and position of storm water drainage along the road giving the details of size of drains, invert levels, HFL and road edge level
2. Plan and Sectional details of drains, channels, etc. including Longitudinal sections

3. Layout plan to the scale 1:2000 with proposed formation level, high ood level (HFL), invert level (IL), discharge, velocity and freeboard data in a tabular form
4. Prepare good for construction drawings for all the components, minor bridges, culverts and regulatory systems
5. Prepare structural designs and drawings (1:25) for all the components including CD works

Power

1. Prepare plans - 1:100 for LT, 1:500 for 11kV
2. Prepare good for construction drawings for all the components
3. Prepare structural designs and drawings for all the components

District Cooling Plant

1. Prepare good for construction drawings for all the components
2. Prepare structural designs and drawings for all the components

Solid waste;

1. Plans for collection routes
2. Prepare good for construction drawings for all the components
3. Prepare structural designs and drawings for all the components

Surveillance system:

1. Prepare plans for detailed IT infrastructure requirements for each of the town-ship and smart city components.
2. Prepare Plans for Center Command and Control Centers.
3. Prepare good for construction drawings for all the components
4. Prepare structural designs and drawings (1:25) for all structural components

8.8.6.Prepare DPR which will include the following (list not exhaustive),

1. Detailed designs
2. Detailed estimations
3. Value engineering
4. Detailed bill of quantities (BoQ)
5. Rate analysis
6. Detailed capital cost
7. O&M cost estimates
8. Phasing of the project
9. Good for construction GAD
10. Project implementation schedule

8.8.7.Conduct SIA, EIA and EMP

8.8.8.General:

1. Prepare 2D/3D artistic views and photo montages of the designs.

2. Prepare 3D animation of the proposed transportation system
3. Make presentations on any scope of work as and when required
4. Submit DPRS - 4 hard copies, soft copy of report word, data in excel/csv/
relevant digital formats
5. Provide geo-referenced locations (coordinates) of street furniture and
all infrastructure assets with appropriate identification codes
6. Prepare an appropriate coding system (nomenclature) for the
infrastructure assets
7. Tender Documentations
8. Prepare contracting strategy including packaging and obtain approval

8.8.9.Tender Documentations

1. Prepare contracting strategy including packaging and obtain approval

8.8.10. Support during execution

1. Revise plans and drawings
2. Technical Advisory service for selection of type technology/
Software/Hardware Requirements.

8.8.11. Representative photographs indicating the desired finish/look and feel

[Available Photographs provided in Appendix 3. The below photos are applicable
for this project report.]

Transport:

1. Arterial roads
2. Cycle tracks
3. Carriageway
4. Utility tunnel capable
5. Underground storm water drainage within the row (underground)
6. Pavement and medians
7. Space for solid waste bins
8. Pedestrian walkways
9. Plantation strips and street-scaping
10. Smart street lighting
11. Bus bays
12. Public transport stations
13. Surveillance infrastructure
14. Signage and pavement markings

15. Junctions, interchanges and grade separators
16. Robs/ rubs, bridges & culverts, flyovers
17. Multi-model interchange hubs
18. Transition kerbs at intersection

Water supply:

1. Water lines in utility corridors
2. Control center

Waste water:

1. Sewer lines in utility corridors

Storm water:

1. Rainwater harvesting
2. Underground collection tunnel

Power:

1. Power cables in utility corridors
2. Indoor sub-stations
3. Concealed distribution box
4. Concealed DTR box

District Cooling plant

1. District cooling plant
2. Cooling Tower
3. Chilled water supply and return for institutions

Solid waste;

1. Automatic waste collection system
2. Bins
3. Transfer station

Surveillance system:

1. CCTV
2. Smart Dash Boards
3. Central Command and Control centers

8.9. Development of infrastructure for approx. 400 acres of returnable lands under various schemes.

8.9.1. Feasibility study

Transport:

1. Conduct Geo-technical investigations
2. Fix benchmarks and geo-reference corridors

3. Follow master plan principles
4. Fix road level as per the specifications considering MFL
5. Prepare pre-feasibility report
6. Location of parking

Water supply:

1. Assess demand requirement
2. Provide ROW in utility ducts
3. Water distribution center, pumping systems, distribution systems

Waste water:

1. Demand assessment of sewage / waste water generated from Govt. complex
2. Assessment of quality of sewerage
3. Sewerage networks (lateral, branch & trunk network)
4. Intermittent pumping stations
5. Network for reuse of treated waste water for irrigation/other purposes
6. Provision of ROW in utility ducts / separate networks

Storm water:

1. Conduct geographical investigations, contours and hydrology of the catchments
2. Study of subsoil water level, existing and proposed land use
3. Identification of flood prone areas
4. Identification of storm water drainage basins
5. Conserving storm water for gardening
6. Rainwater harvesting systems

Solid waste

1. Estimation of different types of solid waste including e-waste, paper waste, etc. likely to be generation
2. Assessment of solid waste management techniques, types of solid waste, collection, storage, transportation and treatment
3. Feasibility of various efficient collection systems, segregation at source / collection point
4. Feasibility of Reduce, reuse and recycling of waste
5. Examine the possibility of community participation in the promotion of best practices
6. Identification of collection zones and sub-zones indicating collection points
7. Location of transfer systems, if needed
8. Street and floating waste
9. Provide ROW in utility ducts and studies for automatic collection
10. PPP partners for total or components of system

Power:

1. Conduct geo-technical investigations
2. Assess load requirement

3. Locate distribution sub-station (with capacity of PTRs)
4. Provide ROW in utility ducts
5. Locate DTRs

ICT:

1. Bandwidth assessment for various sectors, including residential, commercial, industry and so on.
2. Provision of RoW in Utility corridor

8.9.2. Standards & designs:

1. Adopt IRC codes, BIS standards, MORTH specifications or applicable British/ American standards
2. Design road geometry in compliance with relevant standards
3. State of the art energy efficiency/ sustainability norms (minimum T&D loss)
4. CPHEEO manual for water supply, waste water and for storm water
5. Limit unaccounted water usage to less than 5
6. 24x7 pressurized potable water supply system
7. System should be durable and easy to implement, operate and maintain
8. GPCB guidelines
9. Adopt Supreme Court orders of Solid waste management , 2004
10. Entire Planning should be in according with prevailing Rules and Regulation under GTP/UDA:1976

8.9.3. Detailed Design

1. Prepare detailed designs & drawings covering structural designs & drawings for the following elements,

Transport:

1. RoW with Carriageway and other detailed infrastructure covering Geometrical elements
2. Segregated common utility tunnel capable of handling next 100 year requirements (for water supply, waste water drain, storm water drain, fire hydrant supply, irrigation, gas supply lines, power supply lines, cooling, ICT, etc.)
3. Special provisions for elevated, underground, underpass, and high embankment structure roads and other infrastructure
4. Pavement designs including medians, with materials and specifications
5. NMT (cycle/electric) tracks with parking infrastructure and its connectivity to public transport stations, etc.
6. Pedestrian walkways and its connectivity to public transport stations, etc.
7. Plantation strips, types of plants and irrigation system
8. Smart street lighting and ITS Concern {equipment (along with locations) and integration with ICT plan

9. Street-scaping with street furniture (including bins)
10. Bus/BRTS bays, sick bays with area requirements
11. On and Off -street parking for IPT, emergency, etc.,
12. Public Transport Network system (BRT/MRT, etc.,) corridors integrated with IPT/feeder network (with requisite infrastructures) and integrated stations
13. Signage on road network, other locations with related infrastructure in 2 or 3 languages as per IRC
14. Pavement markings on road network, other locations with related infrastructure as per IRC
15. Junctions with signal design and cycle phasing and grade separators details including area requirements, zebra crossings, turning radius, speed limits, Transition kerb, islands with respect to phasing

16. Cross Masonry /Cross Drainage works (CM/CD) and other hydraulic structures if any
17. Bridges & culverts, flyovers, other structures, infrastructure, etc.,
18. Multi-modal network, bus and rail transport nodes, interchange hubs, other infrastructure requirements including facilities and amenities

Power:

1. Indoor substations (33/11 kV), power transformer of varied capacities and modern office space
2. Concealed Distribution transformers with CT meters as per load
3. Underground smart distribution network of various capacities and sizes along with accessories for internal buildings
4. Underground back-up cable network
5. SCADA system and central command center capable of monitoring up to consumer e-meters
6. Smart street lighting network
7. Net metering facility
8. Identification and design of LT panels (distribution box) in the utility corridors
9. Use of non-conventional energy wherever feasible
10. Smart meters system with facility to send real-time reports

Water supply:

1. Hydraulic and structural designs for transmission and distribution system including pumps, appurtenances, storages (where necessary) etc.
2. Ensure 24x7 potable water supply (with back-up arrangements) without pro-vision of sumps
3. Water supply system for urban plantations, parks, landscaping and

street scaping (urban irrigation)

4. Water supply system for fire fighting including fire hydrants
5. All required pumping systems
6. SCADA system
7. Data connectivity to smart water meters located at the distribution and consumer end
8. Leakage detection and UFW reduction system
9. Selection of appropriate materials/ equipment for entire system

Waste water:

1. Hydraulic design of sewerage collection system including size and slope of sewers; size, type & location of manholes, vent shafts
2. Hydraulic and structural designs of pump house, transmission mains, pumps, appurtenances, wet-wells, etc.
3. Design of recycling treated waste water for watering of green belts, plants along roads
4. SCADA system
5. Data connectivity to smart sewerage leakage & blockage detection systems, and other sensors required
6. Selection of appropriate materials/ equipment for entire system

Solid waste:

1. Design scientific solid waste collection system for entire area
2. Estimation of the number of collector bins / chutes required
3. Develop mechanism for door-to-door collection
4. Design of primary transportation and nodal collection points
5. Number and design of transit and transfer stations
6. Design of secondary transportation
7. Segregation and recycling of collected waste into items such as paper, plastic, glass, metal, organic waste and so on with systems/machinery for recycling
8. Smart operational systems for management of Solid waste

Storm water:

1. Storm water network (lateral, branches)
2. Minor bridges and culverts for CD works
3. Automatic rain gauges for monitoring flood prevention measures
4. Data connectivity to flood flow detectors and other equipment
5. Selection of appropriate materials/ equipment for entire system
6. Modeling and simulation of storm water system under various scenarios
7. Underground collection tunnels

ICT:

1. Fiber optic communication network
2. IT infrastructure and switching/routing components

8.9.4. Assess and prepare plan for:

Transport:

1. Shifting existing utilities & services
2. Compliance with concept plans prepared by master architect of government complex

Power, water supply, waste water, solid waste, storm water, ICT:

1. Integration with city-level trunk infrastructure and ensure provisions for city-level infrastructure components as per masterplan
2. Ensure provisions for city-level infrastructure components as per masterplan

8.9.5. Prepare GAD and obtain approvals

Transport:

1. Plot all site plans, L-section and C-section. Scale to be 1:1000 for longitudinal axis (along the road), 1:100 for lateral axis (across the road) and 1:50 for vertical axis (height above or below the road level)
2. Prepare good for construction drawings for all the components
3. Prepare structural designs and drawings for all the components

Water supply:

1. Prepare plans - 1:1000 for transmission and distribution
2. Prepare good for construction drawings for all the components
3. Prepare structural designs and drawings (1:25) for all the components

Waste water:

1. Prepare plans - 1:1000 for collection network and transmission network
2. Prepare good for construction drawings for all the components of the system such as index plan, key plan & general layout, zonal plans, L sections
3. Prepare structural designs and drawings (1:25) for all the structural components

Storm water:

1. Plan of SWD system, alignment and position of storm water drainage along the road giving the details of size of drains, invert levels, HFL and road edge level
2. Plan and Sectional details of drains, channels, etc. including Longitudinal sections
3. Layout plan to the scale 1:2000 with proposed formation level, high flood level (HFL), invert level (IL), discharge, velocity and freeboard data in a tabular form
4. Prepare good for construction drawings for all the components, minor bridges, culverts and regulatory systems
5. Prepare structural designs and drawings (1:25) for all the components including CD works

Solid waste

1. Plans for collection routes
2. Prepare good for construction drawings for all the components
3. Prepare structural designs and drawings for all the components

Power:

1. Prepare plans - 1:100 for LT, 1:500 for 11kV
2. Prepare good for construction drawings for all the components
3. Prepare structural designs and drawings for all the components

ICT system:

1. Prepare plans for detailed IT infrastructure requirements and smart city components.
2. Prepare good for construction drawings for all the components
3. Prepare structural designs and drawings (1:25) for all structural components

8.9.6. Prepare DPR which will include the following (list not exhaustive),

1. Detailed designs
2. Detailed estimations
3. Value engineering
4. Detailed bill of quantities (BoQ)
5. Rate analysis
6. Detailed capital cost
7. O&M cost estimates
8. Phasing of the project
9. Good for construction GAD
10. Project implementation schedule

8.9.7. Conduct SIA, EIA and EMP

8.9.8. General:

1. Prepare 2D/3D artistic views and photo montages of the designs.
2. Prepare 3D animation of the proposed transportation system
3. Make presentations on any scope of work as and when required
4. Submit DPRS - 4 hard copies, soft copy of report word, data in excel/csv/ relevant digital formats
5. Provide geo-referenced locations (coordinates) of street furniture and all infrastructure assets with appropriate identification codes
6. Prepare an appropriate coding system (nomenclature) for the infrastructure assets

8.9.9. Tender Documentations

1. Prepare contracting strategy including packaging and obtain approval

8.9.10. Support during execution

1. Revise plans and drawings
2. Technical Advisory service for selection of type technology/ Software/Hardware Requirements.

8.9.11. Representative photographs indicating the desired finish/ look and feel

[Available Photographs provided in Appendix 3. The below photos are applicable for this project report.]

Transport:

1. Arterial roads
2. Cycle tracks
3. carriageway
4. utility tunnel capable
5. Underground storm water drainage within the ROW (underground)
6. pavement and medians
7. space for solid waste bins
8. pedestrian walkways
9. plantation strips and street-scaping
10. smart street lighting
11. bus bays
12. public transport stations
13. surveillance infrastructure
14. signage and pavement markings
15. Junctions, interchanges and grade separators
16. ROBs/ RUBs, bridges & culverts, flyovers,
17. Multi-model interchange hubs
18. transition kerbs at intersection

Water supply:

1. Water lines in utility corridors
2. Control center

Waste water:

1. Sewer lines in utility corridors

Storm water:

1. Rainwater harvesting
2. Underground collection tunnel

Solid waste;

1. Automatic waste collection system
2. Bins
3. Transfer station

Power:

1. Power cables in utility corridors

2. Indoor sub-stations
3. Concealed distribution box
4. Concealed DTR box

Part-IV

Assistance during execution

9. Assistance during execution

9.1. For Master Plan Component

The expected list of activities from the Consultant during the execution of the project is as below.

1. Time to Time Co-ordination and Preparation of Updates/Revisions in Master Plan as well as in presentation of the same using appropriate tools like 3D-2D Views, MS Power Point, Model making etc.
2. Revisions and clarifications to detailed drawings required during execution of project in Accordance with Master Plan.
3. Use of Latest Tools & Techniques to represent complex data like MIS, GIS etc.

The bidder would be required to perform the required clarifications/revisions upon receiving a request for the same from RMC. But under No Circumstances any extra payment will be paid.

9.2. For DPR and RFP Component

The expected list of activities from the Consultant for preparation of DPR and RFP and during the execution of the project is as below.

1. Time to Time Co-ordination and Preparation of Updates/Revisions in DPR and RFP, Detail Estimation, Detail drawings etc. as well as in presentation of the same using appropriate tools like 3D-2D Views, MS Power Point, Model making etc.
2. Revisions and clarifications to detailed drawings required during execution of project in Accordance with Master Plan and DPR.
3. Use of Latest Tools & Techniques to represent complex data like MIS, GIS etc.

The bidder would be required to perform the required clarifications/revisions upon receiving a request for the same from RMC. But under No Circumstances any extra payment will be paid.

9.3 For Project Management Consultancy

The expected list of activities from the Consultant for preparation of DPR and RFP and during the execution of the project is as below.

1. Time to Time Co-ordination and Preparation of implementation of project in line of Master plan and Updates/Revisions in DPR,
2. The Bidder has to deploy sufficient qualified manpower during execution and also deploy quality control engineer for respected field.
3. The bidder must ensure that project must be complete as per time line and accordance to RFP.
4. Use of Latest Tools & Techniques to represent complex data like MS Project, MIS, GIS etc.
5. **Detail Scope of Infrastructure (PMC) work includes:**
 - I. Project Management and coordination
 - II. Design & implement asset management methodology & maintenance services
 - III. Assistance in procurement planning & its finalization
 - IV. Scope management and approval of implementation plan
 - V. Problem resolution/ review implementation alternatives.
 - VI. Assistance in preparation of Annual plan and periodic performance reports
 - VII. Presentations, fund flow statement preparation
 - VIII. Technical appraisal of project designs
 - IX. PPP Structuring & Risk Assessment
 - X. Prefeasibility and feasibility studies
 - XI. Preparation of Detail Project Report
 - XII. Project Schedule monitoring
 - XIII. Preparation of Bid document and Bid Process management
 - XIV. Evaluation of Bids and assisting client in finalization of Contract,
 - XV. Construction Supervision Services
 - XVI. Contracts monitoring, escalation and claim management
 - XVII. Review of Contractor's design and construction document,
 - XVIII. Inspection of materials, machineries and equipment
 - XIX. Review of As-Built drawings and documentation of O&M Manuals
 - XX. Commissioning assistance
 - XXI. Services during defects liability period
 - XXII. Proposals for Fund utilization and further release.
 - XXIII. All activities from Preparation of DPR to Finalization of Work contract
 - XXIV. Development of City wide Concept Plan
 - XXV. Monitoring Project activities using MIS/latest cyber tools

The bidder would be required to perform the required clarifications/revisions upon receiving a request for the same from RMC. But under No Circumstances any extra payment will be paid.

Part-V

Deliverables and Key Personnel

10. Deliverables for Master Plan

- 10.1. Draft Master Plan in 4.5 (Four & Half) Months**
- 10.2. Final Master Plan in 1.5 (One & Half) Month after approval of draft plan**

11. Deliverables for DPR

- 11.1. Detail Project report for each Infrastructural services and components in 3 (Three) Months**

12. Deliverables during Execution

- 12.1. Technical assistance during execution is expected to go on until, during which it is required that the Consultant would have resources available for technical assistance in terms of revision of drawings, clarifications to contractors and other such requirements that may arise from time to time.**

13. Key Personnel

Sr. No	Position
1	Project Manager / Team Leader
2	Infrastructure Planner
3	Urban Planner
4	Water Supply & Waste Water Expert
5	Storm water & Drainage Expert
6	Environmental / Sustainability Planner
7	Urban Transportation – Planner
8	Energy and Power Expert
9	ICT / Instrumentation Expert
10	Landscape Expert
11	Disaster Management Expert

12	Urban Transport Engineer
13	Architect
14	Structural Design Expert
15	Electrical engineer
16	Geotechnical Expert
17	3D/GIS Expert

Note: The Consultant shall deploy personnel on-site during the execution of the scope, which shall include an expert for each Infrastructure sector, covering Transportation, Energy, Water, Solid waste, Safety & security, ICT etc. (List Not Exhaustive)

Part-VI

Others

14. Glossary

BoQ	Bill of quantities
BRT	Bus rapid transport
DPR	Detailed project report
GAD	General arrangement drawings
GFC	Good for construction
ICT	Information and communication technology
IPT	Intermediate public transport
IRC	Indian road congress
NMT	Non-motorized transport
ROB	Railway over bridge
RUB	Railway under bridge
DTR	Distribution transformer
PTR	Power transformer
WTP	Water treatment plant
RSCDL	Rajkot Smart City Development Limited
RMC	Rajkot Municipal Corporation
WRM	Water Resource Management
DTP	Draft Tender Papers

15. Appendix 1

15.1. Concept plan

1. Introduction
 - (a) Purpose
 - (b) Roles of plan
 - (c) Planning process (As in Accordance with GTP/UDA:1976 & Enforced TP Schemes)
 - (d) Masterplan elements
 - (e) Amendments
2. Vision
3. Background
4. Goals
5. Issues, concepts and objective (To be provided for each masterplan elements)

15.2. Transport plan

Part I

1. Introduction
2. Vision
3. Background
4. Goals
5. Issues, Concepts & Objectives

Part II

1. Regional Connectivity plan
2. Air
3. Rail
4. Public transport (including last mile and first mile connectivity)
5. Roads
 - (a) Utility corridors
 - (b) Bus bays
 - (c) Pedestrian crossing
 - (d) Signage's
 - (e) Planting strip
 - (f) Street furniture
 - (g) Smart street lights
 - (h) Accident relief system
6. Canal transport
7. NMT
8. Parking
9. Freight
10. Multi-modal integration
11. ITS
 - (a) Signaling
 - (b) Control & Communication systems

- (c) Variable message signs
 - (d) Auto vehicle number-plate recognition system
- Part III
- 1. Integration with other infrastructure facilities / services
 - 2. Phasing
 - 3. Cost estimates & financing
 - 4. Action plans
 - 5. Institutional framework and its phasing
 - 6. Policy framework

15.3. Water plan

Part I

- 1. Introduction
- 2. Vision
- 3. Background
- 4. Goals
- 5. Issues, Concepts & Objectives

Part II: Water supply

- 1. Source development
- 2. Central command and control centre C4

Part III: Waste water

- 1. Modular and scalable treatment system
- 2. Reuse network
- 3. Central command and control centre (C4)

Part IV: Rainwater

- 1. Network
- 2. Lakes and water bodies
- 3. Central command and control centre C4
- 4. Harvesting

Part V: Irrigation

- 1. Central command and control centre (C4)
- 2. Avenue plantations

Part VI: Fire hydrant network Part VII

- 1. Integration with other infrastructure facilities / services
- 2. Phasing
- 3. Cost estimates & financing
- 4. Action plans
- 5. Institutional framework and its phasing
- 6. Policy framework

15.4. Power plan

Part I

- 1. Introduction
- 2. Vision

3. Background
4. Goals
5. Issues, Concepts & Objectives

Part II

1. Demand forecast
2. Source
3. Transmission system
4. Distribution system with Central command and control centre (C4)

[C4]

4. Energy management measures
5. Non-conventional energy sources

Part III

1. Integration with other infrastructure facilities / services
2. Phasing
3. Cost estimates & financing
4. Action plans
5. Institutional framework and its phasing
6. Policy framework

15.5. Solid waste management plan

Part I

1. Introduction
2. Vision
3. Background
4. Goals
5. Issues, Concepts & Objectives

Part II

1. Waste reduction measures
2. Wastegenerationforecast
3. Collection
4. Segregation
5. Reuse & recycle
6. Treatment
7. Disposal

Part III

1. Integration with other infrastructure facilities / services
2. Phasing
3. Cost estimates & financing
4. Action plans
5. Institutional framework and its phasing
6. Policy framework

15.6. Gas Masterplan

Part I

1. Introduction
2. Vision
3. Background
4. Goals
5. Issues, Concepts & Objectives

Part II

1. Demand forecast
2. Source
3. Transmission system
5. Distribution system with Central command and control centre (C4)
4. Energy management measures
5. Non-conventional energy sources

Part III

1. Integration with other infrastructure facilities / services
2. Phasing
3. Cost estimates & financing
4. Action plans
5. Institutional framework and its phasing
6. Policy framework

15.7. Smart city integrated infrastructure plan

Part I

1. Introduction
2. Vision
3. Background
4. Goals
5. Issues, Concepts & Objectives

Part II

1. Transport
2. Water supply
3. Waste water
4. Flood control
5. Solid waste
6. Gas
7. District cooling
8. Pollution monitoring
9. Security & surveillance
10. Health services
11. Education
12. Civic services [bill payments for utilities, etc]
13. Employment
14. Housing

15. Public Distribution System
16. Pensions
17. Property registrations
19. Judiciary
20. Crime records
21. Resident data base
22. ICT infrastructure (including networking)
23. ICT Architecture
24. Central command control centre

Part III

1. Integration with other infrastructure facilities / services
2. Phasing
3. Cost estimates & financing
4. Action plans
5. Institutional framework and its phasing
6. Policy framework

15.8. District cooling plan

Part I

1. Introduction
2. Vision
3. Background
4. Goals
5. Issues, Concepts & Objectives

Part II

1. Analysis of alternatives (economic analysis)
2. Proposed system
3. Demand forecast
4. Transmission system
5. Distribution system with Central command and control centre (C4)

Part III

1. Integration with other infrastructure facilities / services
2. Phasing
3. Cost estimates & financing
4. Action plans
5. Institutional framework and its phasing
6. Policy framework

15.9. Safety and security plan

Part I

1. Introduction
2. Vision
3. Background
4. Goals

5. Issues, Concepts & Objectives

Part II

1. Planning & design
 - (a) Prevention through environmental design
2. Key infrastructure
3. Strategic locations
4. Threat assessments
5. Vulnerability assessments
6. Security measures
 - (a) General
 - (b) Women safety
 - (c) Child safety
 - (d) Road safety
7. Police
8. Fire
9. Ambulance services

Part III

1. Integration with other infrastructure facilities / services
2. Phasing
3. Cost estimates & financing
4. Action plans
5. Institutional framework and its phasing
6. Policy framework

15.10. Disaster management plan

Part I

1. Introduction
2. Vision
3. Background
4. Goals
5. Issues, Concepts & Objectives

Part II

1. Risk and hazard analysis
2. Flood control
3. Earthquake
4. Cyclones
5. Building collapse
6. Control Centre [C4]
7. Community participation
8. Standard Operating Procedures
9. Infrastructure

Part III

1. Integration with other infrastructure facilities / services
2. Phasing

3. Cost estimates & financing
4. Action plans
5. Institutional framework and its phasing
6. Policy framework

15.11. Landscaping, Parks and Gardens, Green space

Part I

1. Introduction
2. Vision
3. Background
4. Goals
5. Issues, Concepts & Objectives

Part II

1. Location
2. Integration with Road network
3. Environment issues
4. Types of species suitable to local environment
5. Seasonal Assessment of Water requirements
6. Operation and Maintenance

Part III

1. Integration with other infrastructure facilities / services
2. Phasing
3. Cost estimates & financing
4. Action plans
5. Institutional framework and its phasing
6. Policy framework