

Section 7. Terms of Reference

Ministry of Megapolis and Western Development - Government of Sri Lanka

Sustainable Urban Development Project (SUDP) under the Strategic Cities Development Programme (SCDP)

Consultancy Services for Planning, Design and Procurement of Traffic, Transportation and Mobility Improvements for Trincomalee, Dambulla, Kurunegala and Ratnapura in Sri Lanka

(Package No. SUDP DPC TR 01)

1. Background:

1) The Ministry of Megapolis and Western Development (MMWD), Government of Sri Lanka (GoSL) is planning to take up sustainable development initiatives in key strategic cities of the country with growth potential outside Colombo, which include cities in Colombo - Trincomalee economic corridor (Trincomalee, Dambulla and Kurunegala) and another important nodal city i.e Ratnapura which is a main commercial cum Agricultural city of Sabaragamuwa Province. The location map of these cities is given vide Annexure 1.

2) In this endeavor, Government of Sri Lanka and Asian Development Bank (ADB) have agreed to work together for Sustainable Urban Development Project (SUDP) under the Ministry's Strategic Cities Development Programme (SCDP) which is a Program envisaged to develop Strategic Cities across Sri Lanka.

3) In order to ensure project readiness before approval of the main loan, ADB has agreed to provide an Urban Project Preparatory Facility (UPPF) through a Technical Assistance (TA) Loan for Sri Lanka which is envisaged to strengthen project readiness by completing the required plans, feasibility studies, detailed designs, and procurement actions in advance to meet ADB financing requirements, and building capacities of implementing agencies in the urban sector prior to main project approval.

4) The subject consultancy assignment is planned to be financed through said TA Loan

2. Objectives of the Assignment:

5) One of the main objectives of Sustainable Urban Development Project (SUDP) is to improve urban services and public urban spaces through a properly planned urban upgrading initiatives in the selected Cities. SUDP envisages to work on improving livability by supporting priority investments in infrastructure and services; provide organized city functions to enhance public urban spaces; and achieving significant urban transformation to respond to economic growth. It has been recognized that a significant improvement in its transport function with improvements in mobility is one of the urgent steps to be taken for the resurgence of these cities.

- 6) Some of the immediate concerns to be addressed are gaps in requirements of infrastructure for improved movements in the city centers/ central business district (CBD), public transport including buses, trains and other modes of public transportation, multi-modal integration, traffic and parking management, traffic circulation, walkability, cycling facilities, improved road safety, missing links in city road networks, bottleneck treatment and intersection improvement, city by-passes and orbital movements.
- 7) The assignment also needs to evaluate the development of a multi-modal transportation system (with hubs as required and operational improvements) with a transit-oriented development plan in order to provide for the proposed development in the area.
- 8) Reducing congestion and travel delays, modernizing public transport, incorporating ICT applications to transport management, improving safety aimed at overall improvement in transport service delivery and higher economic benefits while improving financial sustainability are also the other objectives of the assignment.
- 9) With the above main objectives, the consultant would be required to (a) Carry out a Mobility Study (including traffic improvements), (b) Conduct necessary surveys and investigations; and (c) Prepare a Strategic and comprehensive Traffic, Transport and Mobility Improvement Plan including identification of interventions in both infrastructure and operational features for four cities. Among the total interventions identified, the priority investments to be implemented under the subject project to be finalized through stakeholder consultations and discussions with PMU.
- 10) Prepare the detailed designs for the priority interventions identified along with cost estimates along with preparing the bid documents for these works and assisting in procurement of works. To design all structures considering the climate change factors.
- 11) The consultants will undertake rapid environmental assessments using a checklist of parameters in order to categorize the future urban sub-projects as A, B and C. Initial Prepare Social and Environmental safeguard documents (Due Diligence Reports (DDR), Resettlement Plans (RPs), Indigenous Peoples Plan (IPP), Environmental screening reports, Environmental assessment reports in order to obtain TOR from CEA for Initial Environmental Examination (IEE), Environmental Impact Assessment (EIA) etc. for prescribed projects under NEA, based on subproject requirements in accordance to the Safeguard Policy Statement of ADB and the framework documents prepared for the Project. ¹ If existing facilities are involved an Environment Compliance Audit may also be needed. The design team will work closely with environment team to ensure that environment requirements are incorporated into project design from start. The design team needs to work with environment team to ensure that environment requirements are incorporated into project design from start.

¹ Even though category A sub-projects will be excluded from financing under ensuing loan projects, as a precautionary approach, the consultants may need to prepare Environmental Impact Assessments if any subprojects are found to be borderline category A based on the rapid environmental assessments.

12) Also follow the requirements of Gender Action Plan in project design and procurement.

3. Scope of Services, Tasks (Components) and Expected Deliverables

3.1 General Scope of Services:

13) The scope of services under the assignment mainly but not limited to include preparation of Comprehensive Traffic and Transportation (including public transport) and Mobility Plans including operation management plans for the selected cities of Sri Lanka as mentioned below.

1. Trincomalee City, Eastern Province, Sri Lanka
2. Dambulla City , Central Province, Sri Lanka
3. Kurunegala City, North Western Province, Sri Lanka
4. Rathnapura City, Sabaragamuwa Province, Sri Lanka

14) The study / planning area of each of the above cities should include the administrative area of each city and the surrounding area (urban agglomeration) from which there is regular commuting of passengers and freight movement, and if necessary extending up to distance of not more than four km from the town center as required for purposes of studying travel patterns, possible by-pass roads, satellite terminals and logistics centers etc. However, the areas of influence in terms of impact of movements (passengers, freight) (if any) to be considered even beyond the delimited areas.

15) The studies should ***commence from (i) Study of Existing Situation through (a) analysis and presentation of primary and secondary data; (b) in-depth field observations of issues and problems; (c) stakeholder consultations and discussions; (d) required surveys and investigations; and followed by (ii) Projections of requirements in line with the most likely development scenarios; (iii) preparation of the comprehensive, traffic, transportation and mobility plan for the agreed plan-period; and (iv) conclude with detailed designs, estimated costs and bid documents for procurement of priority interventions along with their estimated costs.***

16) In general, the various features of traffic, transportation and mobility plan is required to include but not limited to the following:

- a) Preparation of a Transportation System Improvement Plan which includes bus system, sub-urban transit systems (all modes) as per requirements;
- b) Connectivity Improvement of various economic nodes / Central Business District and important places like railway stations, airports etc.;

- c) Plan for improvement of mobility and parking in the Central Business District and other key areas;
 - d) Plan for public transport system as required in the City;
 - e) Plan for pedestrian and non-motorized transport development in the City;
 - f) Plan for the roads and street systems in the city based on existing and projected traffic;
 - g) Plan for all important intersections (as agreed with the PMU) (both at grade and grade separated);
 - h) Plan for traffic safety improvement proposals;
 - i) Traffic and Transport Demand Management Measures;
 - j) Plan for new / improvement of existing passenger terminals and depots (Bus / Rail etc. as required);
 - k) Plan or new links, missing links and bypasses as required and assessed during studies;
 - l) Plan for Parking facilities (off street, on street, multilevel in case of busy / central areas);
 - m) Suggest movement pattern with required one ways, vehicular restrictions during busy areas etc.
 - n) Study the developments in the region and its impact on the city and plan required interventions accordingly.
- A proper service level benchmarking to be done before starting the planning of the interventions;
 - The plans and development interventions to be prepared after a proper study of the existing traffic, transportation systems, mobility and projecting the traffic, transport demand including the floating population; and
 - The proposals should also be based on review of existing and proposed land use (if proposed planned land use is not available, then the consultant need to assess the development pattern in discussion with the local authority)
 - Adequate stakeholder consultation to be carried out at all required stages in the assignments.
 - The target year for planning to be considered as 2035.

3.2 Detailed Scope of Services:

17) **Tasks:** The scope of work for the Consultancy would include but not limited the following task and could be divided into the following:

- (i) Task 1: Define Approach and Plan;
- (ii) Task 2: Data Collection, Surveys, Investigations, Studies and analysis of existing situation and forecast / projections for the plan period;
- (iii) Task 3: Development of Transport Scenarios;
- (iv) Task 4: Development of Comprehensive Traffic, Transportation and Mobility Plan; *(This task includes the preparation of above said plan including finalizing the interventions required to implement the plan (after adequate studies, surveys, investigations, analysis, stakeholder consultations and prefeasibility studies). This task also includes finalization of priority interventions to be implemented under the Project and preparation of implementation program)*
- (v) Task 5: Preparation of Feasibility and Detailed Project Reports *(This task includes preparation of feasibility reports (economic, social and environmental), Detailed Project Reports (DPRs) with include designs (including structural), drawings (suitable for construction), detailed specifications and estimate of quantities (for bid documents), estimate of costs and other required documents for implementation of priority interventions finalized to be implemented under the Project. This task also includes preparation of safeguard documents as indicated in the General Scope of work above.)*
- (vi) Task 6: Preparation of Bid documents and assisting in Procurement Process
- (vii) Task 7: Preparation of Operation and Management Plan, Broad Construction Schedule, Quality Assurance Manual and Completion Report.

18) The scope of each task is detailed as below:

Task 1: Define Approach and Plan.

This task defines the approach of the study which includes the finalization of Vision, Planning Horizon and Work Plan of the Planning area, identification and finalization of study areas (for 4 cities). This task / stage involves extensive stake holder consultations on the problems that the city is facing and stakeholder opinion on the requirements. It involves a reconnaissance study of the existing situation, the output of the Task would be a specific Inception Report which defines the vision, approach, planning horizon of the preparation of the said plan for the four cities. The Inception Report should also spell out the modalities of approval of the client at various stages for the deliverables, the resource use in terms experts (key and non-key) with the duration and the schedule for such inputs.

Task 2: Data Collection, Surveys, Investigations, Studies and analysis of existing situation and forecast / projections for the plan period.

19) This task involves the following sub-tasks.

2.1 Review the city and regional Profile. This task involves review of profile of the project area which includes land area and use, demographic profile (Population, growth rates), Socio-economic data (includes information regarding agricultural and Industrial activities, economic gross product and future growth rates), internal and external / regional linkages for traffic movement etc.

2.2 Delineation of Traffic Analysis Zones: This task involves analysis and development of travel demand forecasting model. For this purpose, the study area is required to be subdivided into Traffic Analysis Zones (TAZs). The Plan should ensure safe accessibility and movement for all, irrespective of their socio-economic background and in a way, that does not affect the city's environment. TAZs are delineated taking into account various factors like administrative boundaries, physical barriers like water bodies, railway lines which are cutting across zones, road network and public transport network in the study area, homogeneous land uses and special generators like railway station, sports complexes / major freight centres etc., maybe considered as separate zones.

2.3 Review of Land Use Pattern and Population Density: This includes review of Land Use and density Patterns in the cities. CDP or master plans (if any) are the prime data sources for reviewing existing land-use patterns.

2.4 Review of existing transportation systems and traffic problems through various studies and surveys: This includes review of the existing transport infrastructure and facilities for each transport mode, which may include walking, bicycle, auto three wheelers, four wheelers and public transport. The review should include all types of facilities and amenities such as pavement description, intersections treatment, lighting, parking space, parking cost, etc. The consultant to review through various traffic surveys and inventory studies the following:

- Road and Rail Network Inventory (includes studies on road network capacity and functionality, railway network, station and service features, multimodal hubs / transport network with integration between rail and road transport, integrated ticketing)
- Study of Public Transport System and Passenger surveys (includes performance and level of service provision for public transport users - need to cover mainly the Bus routes (bus priority lanes, bus stops, bus depots and terminal and priority measures), Bus Operator data, mapping of trip generators and attractors, Bus volume counts at screen lines (at least 2 cordons CBD and City boundary), details of bus passenger boarding / alighting at terminals and key stops and passenger information system)
- Para-Transit System (fleet usage detail, route detail, cost and fare etc)
- Walkability Surveys;
- Freight Transport / Freight Services and Logistics (Vehicle movement and Parking facilities);

- Traffic management (Traffic Conditions and congestion, manual classified counts and speed & delay surveys, intersection control, vehicle restraint measures etc.);
- Origin and Destination Surveys (includes Origin destination interviews at terminals and key stops; Origin destination of private vehicle users, railway passengers origin-destination interviews);
- Manual Classified Counts / Manual Classified Counts at Screen lines
- Turning Movement Counts at key intersections;
- Road /Traffic Safety (accident data and black spot identification);
- Linkages between transport terminals including public and private transport facilities and issues (includes travel time data for public and private vehicles and buses);
- Areas unserved / underserved by transport facilities and over-crowding of transport medium (buses / trains) during peak hours;
- Traffic problems near educational institutions (also study school transport pattern and requirements), hospitals, business establishments / commercial areas etc.;
- Pedestrian interviews and Surveys; (including study of pedestrian facilities and walkability and on requirement of pedestrian streets);
- Parking surveys with inventory (including on street parking demand and storage, off street parking demand and storage)
- Study of non-motorized transport (including cycling)
- Interviews to be performed for (i) Non-Motorized transport users; (ii) Freight transport operators; (iii) on logistics with wholesalers, retailers and manufacturers; and (iv) user perception survey / attitudinal survey for new interventions.
- Tourist travel pattern and requirements;
- Port / Airport related activities and requirements;
- Topographic Surveys at Key Sections / Junctions; and Geo-technical investigations etc.
- Other related plans and studies done by other agencies need to be consulted and the applicable data / results to be collected;
- All other issues not-withstanding the list of issues mentioned above.

2.5 Availability of Logistics. Following to be studied.

- Access to markets, city centres, commercial areas and other important landmarks;
- Availability of adequate place for wholesale markets with facilities;
- Street Infrastructure etc.

2.6 Study Existing Travel Behavior: This is to study the travel behavior. Two important considerations should be taken into account while collecting data on travel patterns. The collected data should be representative and cover the travel behavior of all individuals within a household, and the data should be segregated by social group and trip purpose, which can represent people's perceptions towards different modes of transport in terms of time, cost, comfort, safety and security. The sample size could be 2 % of total population equally distributed across the region covering all income categories.

2.7 Review and Energy and Environment. Energy consideration is one of the key concerns of a "Smart City." Quantifying energy consumption for transport is important for estimating the CO₂ and local air pollutant emissions from transport-related activities. To create a complete

picture, both top-down and bottom-up approaches for estimating energy consumptions are required. In general, energy balances cover all fuels, however since the focus here is on transport, only diesel, petrol, LPG, CNG51 and electricity (as applicable) will be covered. Ambient air quality should be collected for understanding the impacts of transport on air pollution.

2.8 *Service Level Benchmarks*. Infrastructural data have to be collected. This data should be then compared with the service-level benchmarks to understand the level of service provided to the citizen of certain specified parameters.

2.9 *Analysis of Indicators (Comparison with Benchmarks)*: Indicators provide an easy way to communicate a city's transport status, or to make comparisons across alternative scenarios. The indicators for transport level can be broadly divided in the following categories:

- i. Indicators for mobility and accessibility;
- ii. Infrastructure and land use;
- iii. Safety and security;
- iv. Environmental impacts; and
- v. Economic

Most of the indicators can also be directly linked to the Standard / agreed Service Level Benchmarks

2.10 *Related Studies*. The consultant shall undertake detailed field observations of the Project area in respect of related components. The observation shall include:

- Visual evaluation of the existing condition of roadway structures streets / sidewalks and urban furniture and evaluation of required extent of replacement of such elements under the project;
- Capacities and conditions of existing drainage structures and suggest improvements required in drainage system;
- Identification of flood courses;
- A comprehensive baseline photographic survey / documentation of the streets and urban spaces to be covered by the project with explanatory captions cross referenced and annotated on survey drawings.

20) The following analysis and forecast need to be carried out for the plan period.

- Workout primary statistical analysis of all primary data;
- Prepare graphical presentation of all time-based measurements to 15 mn flow tables and figures;
- Prepare Origin- Destination matrices / desire lines;
- Prepare speed mapping by type of vehicle;
- Prepare road network flow mapping by vehicle flows;
- Access / Egress modes;
- Analysis of trip purpose;
- Analysis of Fright movements;

- Finalize scenarios of economic growth and economic scenarios in discussion with PMU;
- Workout current transport demand patterns by each mode and key characteristics and performance indicators;
- Identify and analyze the current and future issues in demand for mobility of passengers and freight, the constraints in supply and gaps that need to be filled;
- Workout different urban transport strategies (including transit-oriented development strategy) that are most appropriate for each city in discussion with PMU.
- Using suitable transport demand models and forecasting tools, forecast the transport demand for different modes for the plan period under the selected economic growth and development scenarios;
- Determine a sustainable multimodal urban transport development strategy;

Task 3: Development of Transport Scenarios;

21) Development of transport scenarios will develop the following:

- (i) *Business As Usual (BAU) scenario*. which is to be developed based on existing trends and without any radical policy interventions for sustainable for sustainable development and emission mitigation. However, it should consider infrastructure development and land use according to the Master Plans or plans of local authorities. (This includes working out (a) Socio economic projections (Demographic projections, Employment Projections, and Industrial Growth Projections); (b) Study of Land use transitions; (c) Transport Demand Analysis; (d) Technology Transitions; and (e) CO2 emissions and air quality.
- (ii) *Sustainable Urban Transport Scenarios*. Following needs to be considered
 - (a) *Framework for Scenario Assessment*. The selection of a sustainable urban transport scenario should visualize social, economic, environmental and technological transitions through which societies respond to climate change, local environment and mobility challenges. The scenario should assume deep emissions cuts using low carbon energy sources (e.g., renewables, natural gas, etc.), highly efficient technologies (e.g., improved vehicle efficiency), adoption of behavioral and consumption styles consistent with sustainable development, changes in urban development and enhanced use of non-motorized and public transport infrastructure.
 - (b) *Strategies for Sustainable Urban Transport Scenario*. The scenario to be adopted, should be aimed at limiting private vehicle usage. The scenarios also will assume an increase in motorized transport to some extent and investigate transit-oriented development strategies. Therefore, emphasis is also to be placed on improving technology in terms of efficiency and emissions. The strategies can be typically categorized into the following four categories:
 - Change in urban structure
 - Improving non-motorized transport
 - Improving public transport

- Technological changes

These strategies will deliver full benefits if they are implemented collectively; however, for analysis it may be useful to present them one by one to see the individual effect.

- (c) Socio-Economic Projections: A city's future economic transitions depend on the current economic transitions taking place across the country. As such following projections should be attempted.
- Demographic Projections
 - Employment Projection
 - Industrial Growth Projection
 - Projection of Motorization
- (d) Land Use Transitions. The land use transitions shall be reviewed and studied considering the transition in land use type as well as built up areas in accordance with the data available with the client / city authorities. The objective of successful land-use development and growth models is to identify where, how much and what kinds of land use will develop. When modelling urban developments, it is necessary to consider changes from vacant to built-up, as well as changes to the land use itself, such as from residential to commercial. Simulation tools should be used to study these types of land use changes. The land use type should be disaggregated into residential, commercial, retail, recreational, industrial, educational, religious, and other categories.
- (e) Transport Demand Analysis. Demand for passenger transport to be estimated together with likely modal share for each scenario.
- (f) Technology Transitions. An understanding of vehicles, fuels and CO2 emissions from electricity used in transportation system is essential to understand the implications of travel demand on CO2 emissions and air quality.
- (g) CO2 Emissions and Air Quality. The framework for sustainable urban mobility needs to utilize the four strategic levers: urban form, Non-Motorized Transport (NMT), Public Transport (PT) and Technology. The framework should study the impacts of alternative strategies using key indicators for mobility, safety, and local environment, as well as more aggregate indicators like CO2 and energy use.
- (h) National Urban Transport Policies and Strategies. The consultant shall also identify and critically compare each urban transport development scenario with all urban transport policy and strategy documents available.

22) Based on the scenario finalized, the transport demand for every five-year period upto the plan period need to worked out.

Task 4: Development of Comprehensive Traffic, Transportation and Mobility Plan

23) This task includes the preparation of above said plan including finalizing the interventions required to implement the plan (after adequate studies, surveys, investigations, analysis, stakeholder consultations and prefeasibility studies). This task also includes finalization of priority interventions to be implemented under the Project and preparation of implementation program.

24) The plan to include all the points and features discussed in point no. 14 above.

25) The Plan should aim at directing effective development of important locations and help in develop got both passengers and goods movement within the city / region as the case may be with and give a sustainable plan. The plan should be developed in due consultation with stakeholders and on base of studies, surveys, investigations, analysis, consultants carried out in the previous tasks. The major mobility constraints of the project cities which will prevent immediate and future growth as livable and economically active areas to be identified in the plan.

26) The Plan can be prepared along the following lines and subplans:

- (a) Integrated Land Use and Urban Mobility Plan based on selected development scenario;
- (b) Public Transport Improvement Plan (including terminals and priority lanes, services and management; integration, park and ride etc.);
- (c) Road Network Development Plan (including, by-passes, missing links, and improvement to road aesthetics, safety and functionality);
- (d) Non-Motorized Transport Facility Improvement Plan (including walkability improvements and pedestrianized areas);
- (e) Freight Movement and Logistics Plan (if required for a city);
- (f) Traffic Management Plan (Measures, traffic circulation, by-passes, one-way systems, promotion of off-street parking facilities);
- (g) Parking Management Plan including demand and supply policies for both on street and off street, quantity and pricing regimes;
- (h) Safety Enhancement Plan, for pedestrians, schools, speed restrictions, lighting, road signs and markings and treatment of black spot treatment;
- (i) Fiscal Measures that influence mobility and selection of modes of transport.

The plan should mainly but not-limited to, achieve the following:

- Make the most productive use of the existing transport system resources, while decongesting the traffic in the city core centre;

- Support the development of quality public transport as a viable option for reducing motorized transport;
- Support cycling and enable the provision of a network of cycling routes;
- Enhance pedestrian mobility and safety;
- Improve transport safety and protect the most vulnerable users, such as pedestrians and non-motorized vehicles;
- Improve the existing transport system to meet specific objectives for a given city, including (but not limited to) the reduction of vehicular crossing of the core city center to protect the most sensible components of urban environment etc;
- Manage the loading-unloading of goods and passengers in the city centre and along major corridors and to manage vehicle parking; and Reduce the impact of road traffic on the environment (i.e to reduce pollution, noise etc.) and improve urban aesthetics and livability; and
- Upgrading of roads / streets with better traffic management, safety, speed and capacity where possible.

27) The Mobility plan should also include a list of the necessary interventions for these measures and shall include a set of actionable points to be implemented in the cities and prioritized based on a timeframe. This should include: a. Projects for improving the quality of services as well as initiate new services that would increase the overall public transport use. The main instrument should address (i) Operation of quality transport infrastructure; (ii) modern terminal and public transport operating systems; and (iii) improved service delivery through improved development of stakeholder capacity including regulation. This should ensure that the current problems would be addressed. The key outcome would be that the bus routes are (i) not oversupplied; (ii) reduced passenger transfers, transfer times and waiting times with demand-based scheduling and routing; (iii) adequate bus parking and park and ride facilities; (iv) increased institutional capacity of stakeholder institutions.

28) The plan should aim for effective management of traffic and pedestrian flow in the central areas (Central Business Districts) of the cities. The plan for each city in CBD's should develop projects to ensure that the mobility will remain at satisfactory levels. The key outcomes would be (i) a well-developed plan which manages the present and increased mobility in CBDs.; (ii) Plan intersections and roads in CBD to projected the personal and freight movements by the most appropriate mode of transport including public transport; (iii) Parking plan to meet the demand; (iv) Planning pedestrian walkways and sidewalks and crossings for greater safety and convenience; and (v) reduction of noise and other intrusive effectives in CBD areas in the city.

29) The plan should focus on improving traffic flow such as for provisions of changes to traffic circulation, intersection redesign and control, pedestrian crossings, parking facilities, road geometric improvements, road signs and lane markings, curbs and guard rails. As well as

requirements during major festivals, fairs, gatherings (like perahera etc.) should be considered and planned accordingly. The requirements of flyovers and underpass, foot-over bridges etc. to reduce the congestions to be considered and planned accordingly.

30) The comprehensive plan with the subplans as discussed above should be prepared by the consultants in discussion with all relevant agencies.

31) *Plan of Interventions.* The plan should be followed by identification of all required interventions to implement the plan (which includes physical, operational, institutional and capacity building interventions)

32) *Stakeholder Consultations.* The final draft and the proposed interventions should be put into adequate stakeholder discussions based on which the final plan to be prepared. The initial priority interventions to be implemented under the project also to be finalized.

33) The approximate amounts that would be available to implement the traffic, transportation and mobility improvement projects in the project would be around USD 68 million (Trincomalee - USD. 18 million; Dambulla - USD. 18 million; Kurunegala - USD 24 million; and Ratnapura - USD 8 million). The consultant need to consider an availability of around this amount for finalizing the priority projects.

34) The final plan along with its subplans, full list of interventions, priority list of interventions and other related documents to be submitted to the client in accordance to the agreed schedule.

35) *Preparation of the Implementation Program.* The detailed program of implementation of the identified in the plan to be provided in general. But specific program on implementation of the priority interventions to be provided in detail with targets for preparation of designs, procurement and execution of works / interventions to suit the main project schedule. This program will be basis of implementation of all programs.

Task 5: Preparation of Feasibility and Detailed Project Reports

36) This task includes preparation of feasibility reports (economic, social and environmental), Detailed Project Reports (DPRs) with include designs (including structural), drawings (suitable for construction), detailed specifications and estimate of quantities (for bid documents), estimate of costs and other required documents for implementation of priority interventions finalized to be implemented under the Project. This task also includes preparation of safeguard documents as indicated in the General Scope of work above.

37) The initial subtask in this is the feasibility studies (economic, social and environmental) for the interventions identified. A broad feasibility or prefeasibility study is carried out for the all interventions finalized and the detailed feasibility assessment is carried out for priority interventions.

38) *Economic feasibility.* includes calculation of EIRRs, / Cost benefit Analysis etc. as per standard procedures followed for projects. The project is considered economically when the

economic internal rate of return (EIRR) exceeds the economic opportunity cost of capital (EOCC) at 12%.

39) While working out Economic feasibility, the possibility of garnering the private sector participation need to be evaluated and proposals for the same to be presented to the private sector need to be prepared.

40) Social feasibility and safeguards. This includes (i) study of the project frameworks on social safeguards developed for the Project (Resettlement Framework (RF) and Indigenous People Planning Framework (IPPF) as developed by the project; (ii) assessment of social issues, resettlement requirements etc. and categorize the project as A, B, C in accordance to the guidelines of ADB and Safeguard Policy Statement (SPS) as applicable during the period.

41) A Due Diligence Report (DDR) needs to be prepared for category 'C' projects which do not have any resettlement and Indigenous Peoples issues in accordance with ADB guidelines. Resettlement Plan (RP) needs to be prepared for the cases of Resettlement and Indigenous Peoples Plan (IPP) to be prepared for the projects which have presence of Indigenous People. Proper public consultation to be conducted to understand the social issues on subproject implementation and remedial measures worked out to ensure that the public are not disturbed during subproject implementation.

42) Implementation of Gender Action Plan and Grievance Redressal Mechanism also need to be discussed and reports prepared as a part of this task.

43) Environmental feasibility and safeguards. This includes (i) study of the project frameworks on environmental safeguards developed for the Project (Environmental Assessment Review Framework (EARF)); (ii) assessment of environmental issues and categorize the project as A, B, C in accordance to the guidelines of ADB and Safeguard Policy Statement (SPS) as applicable during the period.

44) A Due Diligence Report (DDR) needs to be prepared for category 'C' projects (which do not have any or has very negligible environmental issues) in accordance with ADB guidelines. Environmental Management Plan along with monitoring mechanism needs to be prepared for compliance during project execution as per ADB guidelines. Proper public consultation and assessment to be conducted to understand the environmental issues on subproject implementation and remedial measures worked out to ensure that the public are not disturbed during subproject implementation.

45) Environmental assessments will have to be conducted based on the categorization of the subprojects (A and B) and relevant reports prepared for approval of ADB.

46) Costs required to implement social and environmental safeguard measures are to be estimated.

47) Detailed Project Reports (DPRs). needs to prepared the consultant (DPRs include detailed designs (plan and structural design), quantity and cost estimates, drawings (suitable for

construction), specifications, summary of feasibility reports, plan of implementation etc.) (The structure / contents of DPR to be got approved from PMU). The detailed designs should consider the climate change factor also. The relevant national / international standards to be followed in the designs and specification.

48) The sub-activities of Task 5 are to be carried out for each sub-project under the project.

Task 6: Preparation of Bid documents and assisting in Procurement Process

49) This task preparation of Bid Documents. (Bid Documents to be in line standard documents and guidelines of Asian Development Bank) and the approved Procurement Plan for the Project.

50) The consultant need to prepare all the sections of the bid documents and submit to the client in accordance with the approved schedule. The consultant will also be required to assist the client in the conduct of pre-bid meetings, preparation of minutes of prebid meeting, preparation of replies to the queries of the contractors and issuing Addenda as necessary to the bid documents.

51) The consultant will also assist in bid opening and also assist the Technical Evaluation Committee in evaluation of the bids and preparation of the bid evaluation reports.

52) The consultant will support the PMU in award of contract and entering into the agreements.

Task 7: Preparation of Operation and Management Plan, Broad Construction Schedule, Quality Assurance Manual and Completion Report.

53) The consultant will prepare the Operation and Management Plan for the works after construction which will be updated by the supervision consultant.

54) The consultant will prepare a Construction Schedule and list of activities to be performed by various stakeholders in implementation of the project.

55) The consultant will prepare a Quality Assurance Manual for ensuring quality of works under the Project.

56) The completion report of the assignment will be submitted by the consultant at the end of the assignment.

3.2 Downstream Work

57) The Consultants would be required provide the required clarifications during the design issues during the Construction Stage as and when required. All corrective actions to be addressed

by the consultants at no additional cost to the client and additional works (if any) would be considered for payment which could be suitably discussed and arrived at.

3.3 Training as a specific component of the assignment

58) There is no specific training component in the assignment.

4. Team Composition & Qualification Requirements for the Key Experts and Key Activities

4.1 Key Experts - International and National:

59) The list of Key Experts (International and National are given in Table 1 below.

Table 1 - Key Staff

No.	Details of the Expert	Number	Months / Qty
International Experts - Key Expert			
1.	UrbanTransport Planner / Engineer and Team Leader	1	10
2.	Public Transport Planner / Engineer	1	4
3.	Road Safety Expert	1	1
4.	Bus Transport Operation Expert	1	1
5.	Transport Terminal Designer	1	1
6.	Transport Demand Analyst and Modeler	1	1
Sub Total International Experts		6	18
National Experts - Key Expert			
1	Transport Planner and National Deputy Team Leader	1	14
2	Railway Engineer	1	6
3.	Public Transport Planner / Engineer	1	8
4.	Highway and Traffic Engineer	1	12
5.	Transportation System Analyst	1	8
6,	Road Safety Expert	1	6

7.	Terminal Design Expert	1	4
8.	Pavement Design Expert	1	8
9.	Transport Economist / Financial Analyst	1	6
10.	Senior Quantity Surveyor	1	9
11.	Safeguard Specialist (Environment)	1	4
12.	Safeguard Specialist (Social)	1	4
13.	Gender and Communication Expert	1	2
14	Procurement Specialist	1	10
15,	Geotechnical Engineer / Expert	1	4
16.	GIS/Survey Expert	1	4
17.	Structural Engineer	1	9
18.	Drainage / Hydraulic Expert	1	4
19.	Civil / Infrastructure Design Engineer	4	9
20	Electrical Engineer	1	4
21.	Mechanical Engineer	1	4
22.	Urban Planner / Designer	1	4
	Total	25	170
National - Non-Key Experts			
1	Quantity Surveyor	4	12
2	Junior Civil Engineer / Project Coordinator	4	12
	Total	8	96
Support Staff			
1.	Office Manager / Secretary / Computer Operator	1	15
2.	Autocad Draughtsman	4	12
3.	Office Assistant	2	15
	Total	7	93

4.2 Key Staff - Qualifications and Key Responsibilities - International Experts

60) **Expected Qualification Requirements and Tasks assigned to the Key experts:** The Consultant is expected to propose experts adequately qualified and experienced to undertake efficiently the task/ responsibility assigned to them. The tasks/ responsibility assigned and detailed educational qualification and experience requirement for the respective expert are as mentioned below. Notwithstanding the responsibilities of the experts as below, the expert should cover all the responsibilities mentioned in the Terms of Reference pertaining to the expert and other activities required for successful completion of the assignment. One of the international experts should be the Team Leader. Team leader will be responsible for overall project management and administration, appraisal of subproject as required, advice on procurement and bid process management. The expert should guide the team in technical aspects of the planning and designing and ensure that all the designs are in accordance to the standards and ensure that the project local authorities have implementable and sustainable mobility, traffic and transportation.

- 61) **Urban Transport Planner / Engineer cum Team Leader (International):** The preferred qualification is a graduate civil engineer with post graduate degree in Transportation Engineering / Planning with or equivalent with relevant membership with around 15 years of experience in senior positions in similar projects preferably funded by external funded agencies in developing countries. The expert is responsible for overall management of the assignment and all the outputs. The expert would guide the team on submission of the quality deliverables on schedule.
- 62) **Public Transport Planning / Engineer (International):** The preferred qualification are Master degree in transportation engineering / planning or equivalent with relevant membership with around 10 years of experience in public transport planning including bus and railway in developing country environments. The expert would assist the assignment in planning of the public transportation systems and guide the national expert on this.
- 63) **Road Safety Expert (International):** This preferred qualification is Master degree in highway engineering or equivalent with relevant membership with extensive experience in road safety assignments. The expert will have around 10 years of experience in related assignments. The expert needs to prepare guidelines on safety requirements in design of road, bridges and send to the project for use during road design. The expert will also prepare guidelines on assessment of accident spots and attending them accordingly and on use of signages based on road network. The relevant consultant (national and international) will use the guidance in planning and design.
- 64) **Bus Transport Operation Expert (International):** The preferred qualification is Master Degree or Post Graduate diploma relevant membership or equivalent in Transportation or equivalent with relevant membership with around 10 years of experience in relevant assignments. The expert would prepare the guidelines on management and planning the bus transport movements, routing them and planning additional requirements based on projected traffic and activities in the planning area. The relevant staff (national and international) will use the expert's guidance in planning and design.
- 65) **Transport Terminal Designer / Architect (International):** The preferred qualification is graduation in architecture and post-graduation in Architecture or equivalent with relevant membership with around 10 years of experience in relevant assignment. The expert would draw international experiences in designing the structures and creating landmarks to the Local Authorities. He will review the requirements and guide the local design staff accordingly.
- 66) **Transport Demand Analyst and Modeller (International):** The preferred qualification would be master degree in transportation engineering relevant membership with around 10 years' experience in related filed and especially in transportation and traffic modelling. He / She would get the details of plans, routes, existing transport details, land-use and activities details and prepare the required traffic and transportation models.

4.3. Qualifications and Key Responsibilities - National Experts

- 67) **Expected Qualification Requirements and Tasks assigned to the Key experts:** The Consultant is expected to propose experts adequately qualified and experienced to undertake efficiently the task/ responsibility assigned to them. The tasks/ responsibility assigned and detailed educational qualification and experience requirement for the respective expert are as mentioned below. Notwithstanding the responsibilities of the experts as below, the expert should cover all the responsibilities mentioned in the Terms of Reference pertaining to the expert and other activities required for successful completion of the assignment.
- 68) **Transport Planner and National Deputy Team Leader/Project Manager:** The preferred qualification is a graduate civil engineer with post graduate degree in Engineering/Transportation /Architect/Planning or equivalent with relevant membership with around 10 years of experience in senior positions in urban similar projects preferably funded by external funded agencies. The expert is responsible for overall management of the assignment and all the outputs. The expert would guide the team on submission of the quality deliverables on schedule. Dy. Team leader will be responsible for overall project management and administration, appraisal of subproject as required, advice on procurement and bid process management. The expert should guide the team in technical aspects of the planning and designing and ensure that all the designs are in accordance to the standards and ensure that the project local authorities have implementable and sustainable mobility, traffic and transportation. The expert will act as a nodal officer / project manager for the assignment from the consultant side.
- 69) **Railway Engineer:** The preferred qualification is a graduation in civil engineering with post-graduation in transportation and specialization in railway engineering or equivalent with relevant membership. An experience in related assignments of around 5 years is preferred. The expert will assist in works related to railways in this assignment.
- 70) **Public Transport Planner / Engineer:** The preferred qualification is a Master degree in transportation engineering / planning or equivalent with relevant membership with around 8 years of experience in public transport planning. The expert would assist the assignment in planning of the public transportation systems.
- 71) **Highway and Traffic Engineer:** The preferred qualification is a graduate civil engineer with post graduate degree in Highway / Traffic Engineering or equivalent with relevant membership with around 8 years of experience in highway and traffic management assignments. The expert will work in accordance with the Highway and Traffic Engineer (International) as per the requirements of the Terms of Reference for the said position.
- 72) **Transport System Analyst:** The preferred qualification is a post-graduation in transportation relevant membership with around 5 years' experience and will do a system analysis for various modes of transport system required for planning.
- 73) **Road Safety Expert (National):** This preferred qualification is Master degree in highway engineering or equivalent with relevant membership with extensive experience in road safety assignments. The expert will have around 10 years of experience in related assignments. The expert needs to prepare guidelines on safety requirements in design of

road, bridges and send to the project for use during road design. The expert will also prepare guidelines on assessment of accident spots and attending them accordingly and on use of signages based on road network. The relevant consultant will use the guidance in planning and design.

- 74) **Terminal Design Expert:** The preferred qualification is graduation in architecture and post-graduation in Architecture or equivalent with relevant membership with around 5 years of experience in relevant assignment. Would along with the International expert finalize the plans and elevations and work under the guidance of the international expert.
- 75) **Pavement Design Expert:** The preferred qualification would be Master degree in pavement design / Highway design or relevant subject with relevant membership with experience in design of pavements for over a period of around 8 years. The expert would be responsible for design of pavements and the adjacent drainage structures to the locally acceptable standards. The expert should be using the locally available materials in the designs and consider climate factors in the designs. The designs need to ensure sustainability of the pavements and consider all kinds of loads that would come on the pavement for designs.
- 76) **Transport Economist / Financial Analyst:** The preferred qualification and experience of the Finance Expert is a post-graduation in finance /economics or equivalent qualification with relevant degree with relevant membership with around 8 years of experience of working on similar projects, transport economics and local government financing. The expert will assist in working out the economic analysis of various transport scenarios based on cost and benefit (monetary and non-monetary) analysis and assist in selecting the most beneficial option. The expert will be working on the financial and economic analysis on the subprojects and the package as a whole and ensure that the packages which are financially and economically viable are taken up under the Project. Assist in preparation of the financial / economic analysis sections of the detailed Project report. The expert should assist the local authorities and advise on steps to ensure the returns of 10 % on the package of projects after implementation of all the projects.
- 77) **Senior Quantity Surveyor:** The preferred qualification would be a graduation in quantity surveying with relevant membership with around 10 years of experience in quantity surveying work in government projects. The expert will prepare templates of quantity surveying of all the sectors. Review the estimates prepared by the Quantity Surveyors attached to the towns and assist the Procurement Specialist in preparation of the bid documents.
- 78) **Safeguard Specialist (Environment):** The preferred qualification and experience of safeguard expert (environmental safeguards) is a relevant post-graduation degree with relevant membership with around 10 years of experience working on similar assignment on environmental safeguards preferably in externally funded projects. The expert will prepare the Environmental assessment reports to obtain the TOR from CEA for Initial Environmental Examination and Environmental Impact Assessment for the prescribed

projects under the NEA. Consultant shall Prepare Environmental screening reports for non-prescribed projects in line with the ADB safeguard policies. , Due Diligence Report and related report in accordance to the project categorization and Environmental Assessment Review Framework (EARF) prepared for the project and assist the team in preparing the environmental safeguard reports in the Detailed Project Report. Also, will prepare a Environmental Management Plans for compliance in the construction sites. The expert will prepare brief awareness modules on environmental safeguards for project and contractors staff with list of compliance requirements. The experts' deliverables will be in accordance to the ADB - Safeguards Policy Statement as applicable to date.

- 79) **Safeguard Specialist (Social):** The preferred qualification and experience of the safeguard expert (social safeguards) is a relevant post-graduation degree with relevant membership with around 10 years of experience working on similar assignments on social safeguards preferably in externally funded project. The expert will prepare social screening reports, the Resettlement Plans and Indigenous Peoples Plan as applicable to the subprojects in line with the Resettlement Policy Framework and Indigenous Peoples Planning framework prepared for the project. Also, will prepare the Diligence Reports for the Social Safeguards for category 'C' subprojects. The social expert will prepare a Grievance Redressal Mechanism for in line with the requirements and ensure its implementation as and when need arises. The expert will prepare brief awareness modules on social safeguards for the project and contractor's staff with list of compliance requirements. The expert will also assist the team in preparation Social Safeguards section of the Detailed Project Report. The experts' deliverables will be in accordance to the ADB - Safeguard Policy Statement as applicable to date. The safeguard specialist (Social) will all assist in stakeholder consultation in line with the consultation plan prepared for the project.
- 80) **Gender and Communication Expert:** The preferred qualification and experience of the Gender and Communication Expert will be a relevant degree with relevant membership with around 8 years of experience of working on similar assignments on gender and communications preferably in external aided projects. The expert is required to develop public consultation strategies in line with the Gender Action Plan and Consultation plan prepared for the Project. He should assist in public consultation meetings, list the priorities of the people and women in the area and necessary design features to be added into the subproject design and submit to the design section on approval of PMU for consideration during designs of subprojects.
- 81) **Procurement Specialist:** The preferred qualification for this position is the graduation in civil engineering with relevant membership and experience as procurement of works in government projects for the last 10 years preferably in externally funded projects. The expert would be responsible for the preparation of the standard bidding documents for the project, assist the project in the preparation of the bid documents for the specific subprojects. The procurement specialist will collect all the details from the team members and prepare the bid documents. Will assist the project in invitation of the documents, pre-bid meetings, evaluation and award of bids and obtaining the PCSS numbers for the awarded contracts. Will also prepare the procurement fact sheets for uploading in project website.
- 82) **Geotechnical Engineer / Expert:** The preferred qualifications for the expert is graduation in civil engineering with post-graduation in Geotechnical Engineering with relevant

membership. The expert will be responsible for conducting all the soil investigations in accordance to the requirements of the project and also recommend foundation types based on the soil conditions.

- 83) **GIS / Survey Expert:** The preferred qualifications for the expert in a graduation in the relevant field with qualifications in GIS / Surveys with relevant membership. The expert will help the project team in surveys and mapping and also the other experts in mapping of the areas (if required).
- 84) **Structural Engineer:** The preferred qualifications for expert is post-graduation in structural engineering or equivalent with relevant membership with around 5 years of experience in relevant area. The expert should work on design of the structures that are taken up in the project.
- 85) **Drainage / Hydraulic Expert:** The experts' preferred qualification is post-graduation in the subject discipline with relevant membership and around 5 years in preparation of detailed project reports for drainage projects in towns / cities preferably in externally funded projects. The expert should study the Storm Water Drainage situation in the sub-project areas local authorities and recommend appropriate drainage systems for roads, bridges and other structures to be constructed under the subject project. He will study the areas of flooding in the areas where improvements are proposed and come out with appropriate solutions. The expert will design the priority drains.
- 86) **Civil / Infrastructure Design Expert:** The experts' preferred qualification is graduation in civil engineering and post-graduation in civil / infrastructure engineering or equivalent with relevant membership with 5 years of experience in design of urban infrastructure and preferably in externally funded projects. The expert is required to assist the team in designing the facilities, prepare specifications and preparation of drawings for construction for all the subprojects taken up under the project.
- 87) **Electrical Engineer:** The preferred qualification for the expert is graduation in electrical engineering with relevant membership with around 10 years or relevant experience. The expert will design all the electrical components of the subprojects.
- 88) **Mechanical Engineer:** The preferred qualification for the expert is graduation in mechanical engineering with relevant membership with around 10 years or relevant experience. The expert will design all the mechanical components of the subprojects.
- 89) **Urban Planner / Designer:** The preferred qualifications are Master degree in Urban Planning or equivalent with relevant membership with around 12 years of experience in related assignments. The Urban Planner should provide the planning inputs to the assignment and assist in locations of parking spaces, land-use studies and its impact on traffic pattern and city centre planning based on the activities and volume of traffic and pedestrians to be handled.

5. Reporting Requirements and Time Schedule for Deliverables

90) The General Deliverables with time lines of some common reports are as follows*:

Type of Report	Time Line from starting day 1
Inception Report	Within 15 days of Mobilization
Reports of all surveys and investigations and analysis	Within 6 months
Report on Transport Scenarios	Within 6 months
Comprehensive Traffic, Transportation and Mobility Plan along with priority interventions to be taken up under project.	Within 9 months
Feasibility Reports, Detailed Designs, Drawings, Estimates, Specifications (DPRs) and social & Environmental Safeguard documents	10 - 14 months
Bid Documents and Bidding Support	10 - 15 months
Quality Assurance Manual, O & M Plans and Construction Schedule	Within 15 months
Final Report	15 months

* This will be further detailed during the negotiations.

91) The consultant will need to submit any other reports as desired by the Project Management Unit and Project Implementation Units.

92) The submission needs to be in 5 copies of each report with 2 Softcopies in CDs.

93) All reports need to be submitted to the particular Project Implementation Unit and Project Management Unit.

5.1 Working Hours

94) The experts shall not be entitled to be paid for overtime nor to take paid sick leave or vacation leave.

95) The consultant should work all the days in the month excluding Sundays and Mercantile holidays for the eligibility of billable one month otherwise the remuneration will be proportionally. A working of 22 days will be considered as one billable month and each billable day is for 8 hours.

6. Client's Input and Counterpart Personnel

6.1 Services, facilities and property to be made available to the consultant by the client:

96) The maps and other data related to this work, to the extent available will be provided. All other logistics to be the responsibility of the Consultant.

6.2 Professional and support counterpart personnel to be assigned by the client to the consultant's team:

97) The client will provide support through the staff of PMU and PIU. But there will not be any specific counterpart personnel assigned by the client to the consultant team.

98) Sector Expert at PMU: There would be a team of local transport sector experts engaged as short-term and part time basis reporting to the Project Director. The composition of the team would be as follows:

- Transport Sector Lead
- Highway & Traffic Engineer
- Public Transport Planner
- Any other expert as found necessary during implementation.

99) They shall be responsible for:

- The overall technical direction and coordination between the different consultants and reaching a common development strategy with the Project Director who will be assisted by the Transport Sector Lead and Deputy Project Director.
- The Transport Sector Lead will lead the traffic engineer and public transport planner and will ensure the proper assessment of all proposals made by the consultant.
- The Project Director assisted by the Transport Lead and the consultants will be responsible and guide the consultants for presenting the plans, development proposals to the different stakeholders for approval.

100) There would be two engineers with high level project management expertise who will be attached to the PMU to support the consultants in arranging all monitoring activities and coordination with consultants and stakeholders.

101) However, they will not be assigned to the consultant team, but will be reviewing and supporting the work of consultants.

7. Client will provide the following inputs, project data and reports to facilitate preparation of proposals:

102) The data, maps and reports as available with the client will be provided to the Consultant.

Map Showing Location of the Proposed Project Towns – Sustainable Urban Development Project (SUDP)

