



TERMS OF REFERENCE PREPARATION AND DESIGN CONSULTANTS (FIRM)

FOR PREPARATORY ACTIVITIES FOR THE INTEGRATED SOLID WASTE MANAGEMENT IMPROVEMENT PROJECT (ISWMIP)

I. Background

1. Bangladesh is one of the fastest urbanizing and most densely populated countries in the region, putting great pressure on basic urban services and infrastructure. Solid Waste Management (SWM) has been one of the major urban challenges in the country given its rapid urban growth. Despite the Government's efforts in improving the SWM system, waste collection and disposal capacity is still limited. Less than half of total waste generated is collected, while uncollected waste is often informally burned, buried, or illegally dumped in streets, public spaces, drainage channels, and waterways. This has resulted not only in public health hazards and the contamination of the environment, including air, water and soil, but also the blocking of major drainage channels and sewerage networks.
2. The proposed Integrated Solid Waste Management Improvement Project (ISWMIP), therefore, will improve the SWM system in selected municipal areas. This will help: (i) improve public health and quality of life by reducing exposure to pollutants and disease vectors associated with solid waste; (ii) strengthen the government's capacity to plan for and implement effective waste management services; and (iii) improve SWM practices in the country, encouraging waste minimization, recycling, and segregation at source. The Project is aligned to Government of Bangladesh (GoB)'s priorities for providing sustainable urban infrastructure. The country is, in particular, facing an immense challenge in its solid waste management. The Project would directly contribute to one of the key objectives of the 7th Five Year Plan and the long-term Perspective Plan for 2010-2021, that is to improve the urban environment and quality of life. The ISWMIP may include four components (subject to change based on outputs of this consultancy):
 - Component 1: Waste Collection and Transportation. This will help improve and optimize solid waste collection and transport services in selected Urban Local Bodies (ULBs), including collection containers and fleet, mechanical cleaning equipment, and transfer stations etc.
 - Component 2: Waste Processing and Disposal Systems. This will finance prioritized waste processing and disposal infrastructure, including closure of polluted landfill sites, construction and rehabilitation of engineered sanitary landfills (standalone or regional/ clustered), and provision of facilities related to composting, resource recovery, and waste-to-energy.
 - Component 3: Project Management and Supervision Support. This will support in the areas of project management, monitoring and evaluation, procurement, financial management, and environmental and social safeguards (including public awareness campaigns and public consultation), and provision of support with respect to supervision and maintenance of infrastructure investments.
 - Component 4: Policy Support and Capacity Building. This will support: (i) improvement of the SWM sector policy and legal framework; (ii) policy and guideline development related to waste minimization and recycling, private sector participation, inclusion of informal workers, and multi-jurisdictional waste management; and (iii) institutional capacity strengthening for relevant central and local agencies in SWM.



The GoB has received a Project Preparation Special Fund (PSF) from AIIB to support the preparation of proposed ISWMIP for consideration of USD500 million AIIB financing. The investment shall be undertaken in a phased manner with a likely investment size for Phase I of USD150 million. The PSF is being implemented by the Local Government Engineering Department (LGED) under the Local Government Division (LGD), the Ministry of Local Government Rural Development and Co-operatives (MLGRDC).

3. The project will function under overall guidance of a Steering Committee (SC) which will be chaired by the Secretary, Local Government Division (LGD), the Ministry of Local Government Rural Development and Co-operatives (MLGRDC). The SC will play a significant role in high-level decision making, ensure seamless coordination among the various governmental actors, and accelerate the implementation of the proposed activities under various Components. The SC will comprise representatives from various Ministries.

II. Objectives

4. The PSF proceeds will help prioritize investment sub-projects in consultation with participating Urban Local Bodies (ULBs), finalize detailed designs, and ensure project readiness and compliance with GoB and AIIB policy requirements.
5. The specific objectives are to: (i) prepare policy recommendations for improving the regulatory and institutional framework (ii) investment sub-project identification and prioritization; (iii) carry out pre-feasibility studies, detailed feasibility studies, including technical, economic and financial, legal, social and environmental aspects; (iv) prepare detailed engineering designs and cost estimates for a portion of Phase I sub-projects ; (v) prepare all necessary tender documents following AIIB's procurement policy; (vi) prepare environment and social safeguard instruments; (vii) undertake institutional and financial management capacity assessment of the project implementation units at ULB level; and (viii) assist relevant central and local governments including the LGED and participating ULBs in the procurement of works through a period of association following the delivery of outputs.

III. Scope of Work

6. The consultancy services will include the following:

Part A– Sector Review, Policy Briefs, ISWMIP Framework Documents

Under Part A, the consultant shall:

- a. review existing SWM sector analyses;
- b. produce Policy Brief 1 covering:
 - i. recommendations for addressing critical regulatory and institutional capacity barriers to both public sector-led SWM as well as greater private sector involvement;
 - ii. adjustments, if needed, to the inter-governmental fiscal transfer mechanism and own source revenue generation by ULBs for undertaking capital investments and recurring operational expenses with the aim of improving and sustaining municipal service delivery, including for SWM;
 - iii. range of acceptable SWM tariffs, disaggregated by user profile;



- c. produce Policy Brief 2 as a guidance document for ULBs/ULB clusters to identify Best Practicable Options (BPOs) in SWM for collection, transportation, processing and disposal, building on a system for scoring, and applying appropriate weightages, to technologies or non-technological approaches which best respond to:
 - i. the annual waste quantity in the respective ULB/ULB cluster;
 - ii. the waste composition and typology;
 - iii. the time frame (short/medium/long-term) and technology life span;
 - iv. indicative capital and operational costs;
 - v. land requirement and ownership (including buffer zones);
 - vi. skills requirements, potential for job creation, especially for unskilled labour and opportunities for community-based approaches/ engagement;
 - vii. any technology restrictions (waste streams accepted, rate and quality of materials recovered, type of outputs, environmental impacts on and by the technology option);
 - viii. other likely environmental and social impacts;
- d. review and, if necessary, improve on existing sub-project selection criteria for ISWMIP;
- e. Sub-project identification, screening (including likely environmental and social impacts), phasing (with Phase I investment size around USD150 million) and pre-feasibility reports for entire ISWMIP;
- f. preparation of ISWMIP framework documents,¹ namely:
 - i. Environment and Social Management Planning Framework (ESMPF);Resettlement Planning Framework (RPF)/Livelihood Restoration Framework;
 - ii. Financial Management Manual and funds flow;
 - iii. Draft Project Delivery Strategy (PDS) and Draft Procurement Plan (PP);
 - iv. Draft Results Framework.

Part B – Phase-I Sub-project Preparation²

Once participating ULBs/ULB clusters are identified, the Consultant shall, under Part B of the consultancy, prepare detailed sub-projects focusing on their:

- a. Institutional viability, by:
 - i. conducting a local stakeholder analysis and consultation process, focusing on local conditions and views regarding decentralized vs regional/ clustered approaches to SWM;
 - ii. preparing a capacity assessment for the entire solid waste management chain at the local level, to(i) analyse institutional arrangements of all stakeholders directly/indirectly involved in the SWM services; (ii) assess capacity of local stakeholders from all relevant aspects (institutional, technical, financial management, project management);
 - iii. Evaluation of possibility for:
 - a. outsourcing any or all stages in the SWM chain to the private sector, especially in relation to cost optimization, or
 - b. creation of special purpose vehicles (SPVs) and other suitable models;
 - iv. Prepare institutional strengthening plan covering: (i) number and outline content of training modules to be provided, disaggregated by stakeholder group, and including cost

¹ All E&S instruments shall be prepared following Terms of Reference in accordance with AIB requirements. Some framework documents, such as PDS and Results Framework, can only be finalized after sub-projects have been fully prepared. At an early stage, however, drafts can be prepared containing the outline approach to, respectively, procurement and results monitoring in as much detail as possible.

² The focus areas and assessments outlined below are not intended to be addressed subsequently but concurrently.



- estimates, mode of instruction and training schedule for each module; (ii) project management and FM systems required during both preparation, implementation and operational phases;
 - v. obtaining in-principle agreement with ULBs/ULB clusters as to the proposed technology option (see 'Technical feasibility' section below), investment scope and likely O&M obligations;
 - vi. preparing municipal waste management plans for selected ULBs/ULB clusters, including respective implementation plans, which should ensure adequate interaction between LGED and the participating municipalities and include concept plans for investments in works and goods, multi-year phasing as well as the proposed service delivery models;
 - vii. prepare institutional arrangement and O&M plans covering clear roles and responsibilities across planning, operation and maintenance, financing, monitoring, and regulations.
- b. Technical feasibility³ by:
- i. carrying out all required secondary surveys, including waste volume assessment and 20-year projection, waste composition survey, total station/LiDAR survey, and utilities mapping;
 - ii. Conducting, for each ULB/ULB cluster, a systematic and balanced assessment of all technology options to identify Best Practicable Options (BPO) by applying the scoring system developed in Part A;
 - iii. Assessment of suitability of Waste to Energy options considering moisture content and calorific value of waste streams. Assess also the availability of air pollution control technologies available to control dioxin and furan emissions.
 - iv. Upon obtaining approval by respective ULBs/ULB clusters for the technology option or options proposed, conducting, for each proposed sub-project site, all necessary investigations including topographical, soil/geo-technical, and hydro-geological investigations, assessing potential impacts on design, constructability and project risks such as seismic or flood risks;
- c. Environment and Social Impact Assessments and Management Plans, by:
- i. producing, for all Phase 1 sub-projects, sub-project specific Environment and Social Impact Assessments (ESIAs)
 - ii. producing, for all Phase 1 sub-projects, sub-project specific Environment and Social Management Plans (ESMPs) including applicable social instruments (e.g. Indigenous Peoples (IP) Plan and Resettlement Action Plan (RAP)/Livelihood Restoration Plan).
- d. Economic and financial viability, by:
- i. performing scenario and optimization modelling through GIS to establish the most cost optimal model for SWM service provision, (e.g. comparison of regional/centralized and/or decentralized approaches).
 - ii. Estimating annual O&M expenditures for proposed sub-project investments (salaries for operation, maintenance, administration and security; electricity and water bills;⁴ fuel and oil consumption; equipment and facilities maintenance; supplies; residual/biodegradable waste disposal (e.g. for Material Recovery Facilities); facility depreciation);
 - iii. Exploring feasible and sustainable financing schemes, taking into account current institutional capacity before and after the implementation of capacity strengthening plans, barriers to private sector participation, and a detailed review of subsidy requirements, e.g. for servicing low density peri-urban areas⁵;

³ Much of this aspect will depend on the context and scope of prioritized sub-projects.

⁴ Use of renewable energy systems such as rooftop solar should to cover O&M electricity needs be incorporated for all sub-projects.

⁵ If no subsidy is required, this can be omitted



- iv. assessing the borrowing/current expenditure capacity of the participating ULBs/ULB clusters to determine appropriate ULB shares of capex/opex financing;
- v. Capital and O&M planning w.r.t. requirements to ensure infrastructure creation and sustainable service delivery.
- vi. determining the Economic Internal Rate of Return⁶ and Net Present Value of each sub-project;
- e. Detailed engineering designs (DEDs) and cost estimates, by:
 - i. preparing detailed designs, including supporting calculations, good for construction (GFC) drawings for minimum sub-project investments of USD50 million⁷, including, but not limited to:
 - a. transfer stations;
 - b. landfill improvement/establishment covering earthworks/soil provision for cover material, liner systems, leachate collection and treatment, gas vent systems, storm water and ground water drainage, control rooms and weighbridges, access and internal service roads, all MEP (mechanical, electrical, plumbing) drawings;
 - c. manual/mechanized Material Recovery Facilities covering site layouts detailing all relevant areas (receiving/tipping, sorting/processing, recyclables storage, residual storage, loading of recyclables/residuals, offices); structural drawings, fencing, access and internal roads, sorting lines and conveyor systems, hoppers, trommels, magnetic separators, bottle perforators, balers, weighbridges and weighing scales, all drawings for MEP and telecommunications systems.
 - d. Waste-to-Energy plants covering site layouts, civil and structural drawings for all buildings (administrative, bunker, delivery hall etc.), access and internal service roads, all drawings for MEP and telecommunications systems, power supply (own power production and genset), combustion system, process control systems, fire safety measures, air pollution control systems (dioxin and furan emissions), waste water treatment, fly-ash management, prevention of chemical leakage, arrangements for cooling water supply, monitoring and control systems.
 - ii. Detailed cost estimates for capex and opex;
- f. Procurement, by:
 - i. preparing the technical specifications for the procurement of all goods and works for the investment projects for which detailed designs have been prepared under point e. (i);
 - ii. preparing tender documents for those same sub-project investments, in compliance with AIIB's *Procurement Policy* and *Interim Operational Directive on Procurement Instructions for Recipients* as well as relevant regulations of the government;
 - iii. Assessing procurement risk and capacity of PIUs
- g. Financial Management, :
 - i. assess the FM capacity of proposed project implementation units;
 - ii. suggest appropriate FM arrangements for the proposed project
 - iii. identify FM risks and suggest mitigation measures
 - iv. prepare detailed project financial management assessment and proposed implementation report
 - v. support on the financial management implementation and closure of Special Fund grant
 - vi. suggest PIUs in the appropriate FM systems for the sustainable implementation of ISWMIP at the sub-project level.

⁶Financial Internal Rates of Return may be required depending on the financing model chosen.

⁷ DEDs for the balance investments will be prepared through the main loan's technical assistance component.



IV. Consultancy Period and Implementation Arrangements

7. The Preparation and Design Consultant will be engaged under the Project Management and Coordination Unit (PMCU) for a total period of 12 months. The consulting team will be comprised **6 person-months of international and 211 person-months of national inputs**. The team will be headed by an International Team Leader supported by national experts. The office space for the consultants will be located in the LGED headquarters building in Dhaka.

v. Deliverables

8. Expected Key Deliverables (KDs), timelines and payment terms for PMCU:

KD	Milestones	Delivery (in months)	Payment Trigger	Payment Share
1.	Inception Report: refined methodology, work program, national-level stakeholder analysis, outcome of preliminary consultations.	T+1	Submission	10%
2.	Pre-Feasibility Reports containing Part A : <ul style="list-style-type: none"> Activities a.-f. 	T+4	Satisfactory incorporation of comments ⁸	25%
3.	Draft Feasibility Reports for each sub-project containing Part B (1) : <ul style="list-style-type: none"> Institutional (all activities) Environment & Social Impact Assessments and Management Plans (all) Technical (i. and ii.) Economic/Financial (i.-iv.) Financial Management (i.) 	T+7	Satisfactory incorporation of comments	Pro-rata per sub-project totaling 15% of contract value
4.	Final Feasibility Reports covering Part B(2) which shall contain all <u>final</u> outputs under KD-3 in addition to: <ul style="list-style-type: none"> Technical (iii) Economic/Financial (v) Financial Management (ii-iv) 	T+9	Satisfactory incorporation of comments	Pro-rata per sub-project totaling 15% of contract value
5.	Draft DEDs covering Part B (3) which shall contain: <ul style="list-style-type: none"> DEDs and costs (all activities in point e) 	T+10	Satisfactory incorporation of comments	Pro-rata per sub-project totaling 15% of contract value

⁸ Further guidance regarding this type of payment trigger: The consultant is expected to incorporate revisions within 2 weeks. At most two rounds of revision per document.



KD	Milestones	Delivery (in months)	Payment Trigger	Payment Share
6.	Final DEDs covering Part B (4) which shall contain: <ul style="list-style-type: none"> Final KD-5 and Procurement (all activities in point f) 	T+12	Satisfactory incorporation of comments	Pro-rata per sub-project totaling 20% of contract value

VI. KEY PERSONNEL

9. The personnel requirement (Person Months) for the scope of works described above have been estimated as follows:

SL. No.	Position of Professionals/ Experts	Number	Person Months (PM)		
			International	National	Total
A	Key Experts (International)				
1	Solid Waste Management Expert	1	6	0	6
	Sub-Total Key Experts (International):	1	6	0	6
B	Key Experts (National)				
1	Senior SWM Expert/DTL	1	0	12	12
2	Senior E&S Expert	1	0	12	12
3	SWM Expert	2	0	6	12
4	Institutional Capacity Development Specialist	2	0	6	12
5	Structural Engineer	2	0	6	12
6	Drainage Engineer	2	0	6	12
7	Electrical Engineer	1	0	9	9
8	GIS Specialist	2	0	6	12
9	Environmental /Climate Change Specialist	2	0	9	18
10	Social Development Specialist	2	0	9	18
11	Economist/PPP Specialist	1	0	6	6
12	Public Financial Management Specialist	1	0	6	6
13	Procurement Specialist	1	0	6	6
14	Architect	1	0	4	4
	Sub-Total Key Experts (National):	21	0	103	151
C	Non-Key Experts (National)				
1	Junior Social Development Specialist	2	0	6	12
2	Junior Environmental Specialist	2	0	6	12
3	Field Engineer	3	0	6	18
4	Quantity Surveyor	2	0	3	6
5	Land Surveyor	2	0	3	6
6	CAD Operator	2	0	3	6
	Sub-Total Non-Key Experts (National):	13	0	27	60
	Grand Total	35	6	130	217



VII. TERMS OF REFERENCE (TOR) FOR EACH KEY EXPERT

10. Generally, each key expert will work under direct guidance/supervision of designated Team Leader of the Preparation and Design Consultant team through whom he/she will be responsible to the Project Director, PMCU. Consultants preparing, designing, and working in subprojects at field level will keep close liaison with the Head of the respective Project Implementation Unit (PIU). Outline Terms of Reference (TOR) of Preparation and Design consultants are described below.

11. These Outline Terms of Reference cover the proposed responsibilities of each Key Expert.

- (i) Wherever possible (in the context of their contract terms) the Key Experts (International and National) will assist in the preparation of all (pre-) feasibility studies; and
- (ii) generally ensure that the subproject outputs are delivered in a timely manner and to a high standard of quality.

Key Experts (International)

Key Expert Position (Sl. No.)	Qualification Requirements	Summary TOR
Principal SWM Expert (Sl. No. 1)	Masters degree in civil engineering or similar / relevant discipline with a minimum 15 years relevant working experience in design, management and supervision of SWM infrastructure projects, demonstrated leadership qualities with at least two SWM projects in the capacity of Team Leader. MDB project experience a must-have requirement.	<p>Overall Management of the Project</p> <ul style="list-style-type: none"> (i) Responsible in assisting overall management of the Preparation and Design Consultancy Services for the LGED, municipalities covered under the Project, such as: (ii) provide LGED with expert guidance in their functions and responsibilities in project development, design and implementation; <p>Technical:</p> <ul style="list-style-type: none"> (iii) Review Waste Management Plan in consultation with concerned ULB(s) (iv) assess potential technology options (for collection, transportation, processing and disposal) and recommendation for enhancing outcomes (v) assess potential decentralized (standalone/ local), regional (centralized/ clustered) models for Integrated SWM (processing and disposal)



Key Expert Position (Sl. No.)	Qualification Requirements	Summary TOR
		<ul style="list-style-type: none">(vi) assist in the planning of surveys as required(vii) review feasibility of identified subproject as prioritised in the Plan(viii) review detailed designs of sub-projects prior to approval, ensure compliance with all applicable national guidelines and incorporation of international best practices;(ix) Any other tasks assigned by the LGED (Project Director).

Key Experts (National)

Position of Key Expert (Sl. No.)	Qualification Requirements	Summary TOR
Senior Solid Waste Management Expert/Deputy Team Leader (DTL) (Sl. No. 1)	Masters degree in Civil Engineering or similar / relevant discipline with a minimum 12 years relevant working experience in design, management and supervision of SWM infrastructure projects, having demonstrated leadership experience with at least two SWM projects as Team Leader. MDB project experience a distinct advantage.	Overall Management of the Project <ul style="list-style-type: none">(i) Managing the consultant team in all aspects of facilitation of the Preparation and Design Consultancy Services and managing day to day co-ordination and liaison with other relevant team members / counterpart officials and PD or designated representative as required.(ii) Manage all tasks required under the contract and ensure delivery of outputs in a timely and satisfactory manner in accordance with the overall project implementation schedule;(iii) Responsible for leading overall management of the Preparation and Design Consultancy Services for the LGED, municipalities covered under the Project(iv) coordinate and assist the LGED in their functions and responsibilities in project development, design and



Position of Key Expert (Sl. No.)	Qualification Requirements	Summary TOR
		<p>implementation;</p> <p>(v) Manage the preparation and implementation of comprehensive stakeholder consultation with all stakeholders during the duration of the consultancy.</p> <p>Technical</p> <p>(vi) Review/ prepare Waste Management Plans in consultation with ULB(s) concerned</p> <p>(vii) assess potential technology options (for collection, transportation, processing and disposal) and recommendation for enhancing outcomes</p> <p>(viii) assess potential decentralized (standalone/ local), regional (centralized/ clustered) models for Integrated SWM (processing and disposal)</p> <p>(ix) plan and carry out surveys as required</p> <p>(x) conduct feasibility for identified subproject as prioritised in the Plan</p> <p>(xi) review detailed designs for SWM prior to approval, ensure compliance with all applicable national guidelines and incorporation of international best practices;</p> <p>(xii) Prepare sections of monthly/ quarterly reports pertaining to overall implementation</p> <p>(xiii) Any other tasks assigned by the LGED (Project Director).</p>
Senior ES Expert (Sl. No. 2)	Masters Degree in Environmental Engineering, Environment and/or Natural Resource Management or Social Science, International Development, and Sustainable Development,	<p>(i) Lead preparation of ES Framework Instruments (ESMPF, RPF/Livelihood Restoration Framework).</p> <p>(ii) Coordinate with the technical feasibility team and lead on the preparation of the ESDD (screening) instruments for all subprojects as</p>



Position of Key Expert (Sl. No.)	Qualification Requirements	Summary TOR
	or other relevant discipline; Minimum 10 years of relevant professional experience in E&S risk management of at least two MDB-financed infrastructure projects as well as proven experience in SWM	prioritized in the Plan. (iii) Lead preparation of Phase 1 Subproject ES Instruments (ESIA and accompanying management plans such as ESMP, RP/Livelihood Restoration Plan ,IPP/Tribal Plan (iv) Provide guidance and coordinate with the Environmental Specialist and Social Development Specialist in preparing the required ES outputs.
SWM Expert (Sl. No. 3)	Masters degree in Civil Engineering or similar / relevant discipline with a minimum 10 years relevant working experience in design, management and supervision of SWM infrastructure projects	Overall Management of the Project (i) Responsible in assisting overall management of the Preparation and Design Consultancy Services for the LGED, municipalities covered under the Project (ii) coordinate and assist the LGED in their functions and responsibilities in project development, design and implementation; Technical: (iii) Review/ prepare municipal waste management plan in consultation with state concerned (iv) assess potential technology options (for collection, transportation, processing and disposal) and recommendation for enhancing outcomes (v) assess potential decentralized (standalone/ local), regional (centralized/ clustered) models for Integrated SWM (processing and disposal) (vi) plan and carry out surveys as required (vii)conduct (pre-) feasibility for identified subproject as prioritised in the Plan (viii) produce detailed designs for SWM, ensuring compliance with all applicable guidelines;



Position of Key Expert (Sl. No.)	Qualification Requirements	Summary TOR
		<p>(ix) Prepare sections of monthly/ quarterly reports pertaining to overall implementation</p> <p>(x) Any other tasks assigned by the LGED (Project Director).</p>
<p>Institutional Capacity Development Expert (Sl. No. 4)</p>	<p>Masters degree in Economics, Public Policy, Public Administration or similar/relevant discipline with a minimum 10 years relevant working experience.</p>	<p>Policy Development</p> <ul style="list-style-type: none">(i) Lead preparation of detailed Policy Briefs 1 and 2;(ii) Lead the critical analysis of the institutional and regulatory framework affecting Bangladesh's urban and SWM sectors;(iii) Developing policy recommendations based on comparative policies of incentives in the region as well as international best practices;(iv) Lead the policy dialogue with all relevant stakeholders, taking into account both technical, political, financial and legal considerations;(v) Discuss the structure and the preliminary contents and messages of the Policy Briefs at client meetings and incorporating feedback <p>Capacity Development</p> <ul style="list-style-type: none">(vi) Carryout training needs assessment of the LGED, ULBs and PIUs;(vii) Identify group of personnel to be trained in SWM infrastructure development and management;(viii) Develop training plans to be implemented under the main loan's technical assistance component;(ix) Identify 'off-the-shelf_local and foreign training resources;(x) Prepare bespoke trainings, targeted at the various cadres and areas of



Position of Key Expert (Sl. No.)	Qualification Requirements	Summary TOR
		<p>expertise relevant for different stakeholders in the SWM sector;</p> <p>(xi) Identify the best available resource person to carry out the training;</p> <p>(xii) Maintaining liaison with the resource persons, public and private sector stakeholders;</p> <p>(xiii) Any other tasks assigned by the Team Leader and the Project Director.</p>
Structural Engineer (Sl. No. 5)	Bachelor degree in Civil Engineering or similar / relevant discipline with a minimum 10 years working experience in structural engineering.	<p>He/she will assist and be responsible to the Team Leader for implementing the following principle tasks:</p> <p>(i) Assist in the preparation of a set of design guidelines of integrated solid waste management facilities from the structural engineering perspective;</p> <p>(ii) Prepare general as well as detailed engineering designs, including specifications, drawings, and cost estimates for structural components;</p> <p>(iii) Work closely with the other experts in the team to design structural components with a view to optimizing operational efficiency and minimizing operational expenditures;</p> <p>(iv) Assist in any other task assigned by the TL or DTL.</p>
Drainage Engineer (Design) (Sl. No. 6)	Bachelor degree in Civil Engineering or similar / relevant discipline, with at least 10 years relevant working experience.	<p>He/she will be responsible for carrying out the following principle tasks in association with the other consultants in the consultant team:</p> <p>(i) Conduct technical analysis of drainage and flood risks in subproject areas;</p> <p>(ii) Prepare initial designs and O&M arrangements for drainage and flood control at subproject sites;</p> <p>(iii) Work closely with the other experts in the team to examine and incorporate climate resilience into drainage and</p>



Position of Key Expert (Sl. No.)	Qualification Requirements	Summary TOR
		flood control components; (iv) Prepare general as well as detailed engineering designs, including specifications, drawings, and cost estimates for drainage components; (v) Assist in any other task assigned by the TL or DTL.
Electrical Engineer (Sl. No. 7)	Bachelor degree in Electrical Engineering or similar / relevant discipline, with at least 10 years relevant work experience in the design and implementation of material recovery facilities and waste-to-energy plants.	(i) Design proposed requirements of electrical load, power supply system, distribution network and details of new MEPS/electrical assets including suitable design of electrical substation and safety protection (earthing network and standby power supply arrangements). (ii) Calculation/measurement of existing/proposed loads with justification and specification of equipments for capacity augmentation provided by the consultant.
GIS Specialist (Sl. No. 8)	Bachelor degree in Engineering/urban planning and/or geography or similar / relevant discipline with at least 10 years of relevant working experience in designing and operating GIS systems in the engineering sector.	He/she will assist and be responsible to the Team Leader for implementing the following principle tasks: (i) Prepare GISbased maps required for subprojects; (ii) Assist the consultant team in preparing and analyzing the GIS database and maps; (iii) Provide GIS material for presentation purposes; (iv) Provide support and advice to all PIUs on all mapping and GIS activities; (v) Develop and deliver relevant practitioner (on the job) training inputs (for downstream users) in consultation with the community development specialist; and (vi) Perform any other task assigned by the TL or DTL.
Environmental/ Climate Change Specialist (Sl. No. 9)	Bachelor degree in Civil Engineering or Environmental Engineering with specialization in Environment or similar / relevant discipline with at	He/she will coordinate with the Senior ES specialist in preparing all the environmental safeguards instruments of the project. Together with the Senior ES specialist, they will be jointly responsible to the Team Leader for implementing the following principal tasks:



Position of Key Expert (Sl. No.)	Qualification Requirements	Summary TOR
	least 10 years of relevant working experience.	<ul style="list-style-type: none">(i) Prepare Framework Documents: ESMFP(ii) Prepare Sub-Project Level Documents: Initial Environmental Examination (IEEs)/Environmental and Social Impact Assessments (ESIAs); ESMPs(iii) Ensure all ESMP measures are included in the tender documents and respective works contracts;(iv) Ensure compliance with all relevant national laws as well as Bank policies;(v) Interact with the sector specialists, especially the GIS Specialist, to determine impact vectors and integrate environmentally sound practices into the feasibility reports and detailed design of project components;(vi) Provide support to client on national legal framework as well as AIB's policy requirements for environmental safeguards, provisions for consultations and disclosure;(vii) Prepare activity plans as identified in IEE/ESIA (includes site management plans, waste management plans, sludge management and disposal plans, occupational safety plans, etc.);(viii) Establish dialogue with the potentially affected communities and ensure that the environmental concerns and suggestions are incorporated into respective safeguards instruments;(ix) Respond to any public grievance on any of the proposed sub-projects;



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		<p>and</p> <p>(x) Assist in any other task assigned by the supervising consultant in relevance to effective project implementation.</p> <p>Climate Change:</p> <p>(xi) Provide inputs at both (pre-) feasibility and detailed design stages to mitigate any likely impacts both on sub-projects through climate change induced events as well as impacts sub-projects on GHG emissions;</p> <p>(xii) Prepare a set of design guidelines and restoration advice for applying climate change adaptation and resilience principles to SWM project design for use by public and private stakeholders; and</p> <p>(xiii) Estimate sub-project GHG emissions in comparison to business as usual scenario to arrive at potential reductions as inputs to both the project's overall economic analysis as well as potential client submission for additional green financing.</p>
Social Development Specialist (Sl. No. 10)	Bachelor degree in Sociology/ Social Anthropology or similar / relevant discipline as well as minimum 10 years proven experience related to one or more areas of social risk management, such as: stakeholder engagement, labor and working conditions, gender, involuntary resettlement, indigenous peoples.	He/she will assist and be responsible to the Team Leader for implementing the following principle tasks: (i) Prepare Framework Documents: ESMPF; RPF/Livelihood Restoration Framework (ii) Conduct initial social screening of possible social impacts of all identified priority subprojects and contribute in the preparation of the ESDD report/section as part of the pre-feasibility study. (iii) Prepare Phase 1 Sub-project Level Social



Position of Key Expert (Sl. No.)	Qualification Requirements	Summary TOR
	<p>The specialist should be well conversant with laws relating to land acquisition, state procedures in implementation of resettlement packages and AIB procedures or equivalent standards of other MDBs.</p>	<p>Documents: ESIA's, ESMPs, and other applicable social instruments Resettlement Plans (RPs)/Livelihood Restoration Plan</p> <p>(iv) Conduct social risk and impact assessment and stakeholder analysis relevant to social concerns in the SWM value chain to inform preparation of framework, ESDD screening, and subproject ES instruments preparation.</p> <p>Social Impact Assessment and Management Framework/Plans</p> <p>(v) Undertake a review of potential social and economic risks and impacts, both positive and adverse, associated with the Project/subprojects, not limited to land requirement.</p> <p>(vi) Assess any risks or impacts related to women and/or other vulnerable groups (informal waste pickers), including IPs/Tribal Groups</p> <p>(vii) Prepare an approach to minimize social and economic disruption caused by the Project/subproject activities;</p> <p>(viii) Design and manage a detailed socio-economic survey of all those affected by subprojects;</p> <p>(ix) Prepare IP Framework/Plan (Tribal Plan or Tribal Engagement Plan)</p> <p>(x) Prepare social inclusion/gender framework/plan</p> <p>(xi) Prepare stakeholder mapping and engagement framework and plan;</p> <p>(xii) Prepare communication/behaviour change strategy/plan</p> <p>(xiii) Coordinate with environment specialist in preparing measures for labor management, and occupational and</p>



Position of Key Expert (Sl. No.)	Qualification Requirements	Summary TOR
		<p>community health and safety</p> <p>(xiv) Develop and deliver relevant practitioner (on the job) training inputs in consultation with the Training/Capacity Development Specialist; and</p> <p>Resettlement Framework/Plans</p> <p>(xv) Establish dialogue with the potentially affected persons/communities and ensure that their concerns and suggestions are incorporated into respective social instruments;</p> <p>(xvi) Determine land requirement for subproject and related mode of acquisition including legacy issues;</p> <p>(xvii) Design and manage a detailed census of PAPs and inventory of properties affected by subprojects</p> <p>(xviii) Coordinate valuation of land by the valuation committees with close consultation with PAPs;</p> <p>(xix) Provide support to client on national legal framework as well as AIIB's policy requirements for land acquisition, entitlement matrices, provisions for consultations and disclosure, etc.</p> <p>(xx) Ensure compliance with all Government rules and regulations and ensure the RP is in compliance with AIIB's ESP/ESS 2 on Involuntary Resettlement;</p> <p>(xxi) Lead community consultation during design phase of components and as part of the preparation of the SIAs RP;</p> <p>(xxii) Respond to any public grievance on any of the proposed sub-projects, and</p> <p>(xxiii) Assist in any other task assigned by the Team Leader</p>
Economist/PPP Specialist	Bachelor degree in Economics, Finance or	He/she will report to the Team Leader and will be responsible for implementing the following



Position of Key Expert (Sl. No.)	Qualification Requirements	Summary TOR
(Sl. No. 11)	similar / relevant discipline with at least 10 years of relevant working experience.	principle tasks: (i) Prepare economic and financial assessments of all sub projects in accordance with LGED and AIIB requirements; (ii) Provide inputs to the design of municipal SWM plans and sub-project designs to ensure all sub projects maximize economic and financial returns; (iii) Identify opportunities for private sector participation in Integrated Solid Waste Management (iv) Participate in the proposed Community Consultation process and programme of Community Awareness on roles and responsibilities of private sector parties; (v) Liaise with the key stakeholders to ensure the proposed institutional arrangements, land management aspects and financial arrangements will be supported; (vi) Develop and deliver relevant practitioner (on the job) training inputs on SWM operations and PPP implementation in consultation with the Training/Capacity Development Specialist; and (vii) Assist in any other task assigned by the Team Leader in relevance to effective project implementation.
Public Financial Management (PFM) Specialist (Sl. No. 12)	Chartered accountant or Masters degree in Public Financial Management or similar / relevant discipline with at least 10 years of relevant experiences in Financial Management preferably of urban development projects.	He/she will assist and be responsible to the Team Leader for implementing the following principle tasks: (i) Establish FM system for the Project to be used in PMCU and PIUs in accordance with AIIB's and GoB's relevant rules and regulations.; (ii) Carry out FM assessment of PIUs/potential PIUs, identify risks, suggest mitigation measures and propose possible FM arrangements for the proposed project;



Position of Key Expert (Sl. No.)	Qualification Requirements	Summary TOR
		(iii) Assist the team, PMCU and PIUs in the smooth implementation of financial management of the project.
Procurement Specialist (Sl. No. 13)	Bachelor degree in Civil Engineering with specialization in procurement or similar / relevant discipline with at least 10 years of relevant working experience, and working experience in at least two MDB-financed projects.	He/she will report to the Team Leader and will be responsible for implementing the following principle tasks: i) Prepare framework documents: Draft PDS; Draft Procurement Plan ii) Prepare tender documents for all sub-project for which detailed designs are being prepared, ensuring compliance with AIB's and procurement policies, and obtaining approval on all prior review tender documents from AIB; iii) Prepare PPP transaction documents (EOIs, RFQ, RFP, draft Concession Agreement) in consultation with the Economist/PPP & Financial Expert iv) Provide advice and support to PIUs and PMCU to prepare and manage any all procurement activities under the Project. v) Asses procurement risk and capacity assessment of the PIUs
Architect (Sl. No. 14)	Bachelor degree in Architecture with specialization in urban design or similar/relevant discipline with a minimum 10 years of relevant working experience related landscape architecture and site planning a distinct advantage	He/she will report to the Team Leader and will be responsible for implementing the following principle tasks: i) Prepare schematic and detailed landscape and architectural designs for sub-project structures and installations, with a view to maximizing operational efficiency and appropriateness of design, while minimizing operational resource use



Position of Key Expert (Sl. No.)	Qualification Requirements	Summary TOR
		<p>and the footprint of permanent structures;</p> <p>ii) Developing landscape and architectural design guidelines to be adopted for minimizing the possible negative aesthetic impact of sub-projects on surrounding landscapes and urban areas;</p> <p>iii) Develop guidelines for PIUs for project siting and site planning;</p> <p>iv) Participate in consultations with local stakeholders and incorporate feedback into landscape and architectural designs.</p> <p>v) Any other tasks assigned by the Team Leader and the Project Director.</p>

Non-Key Experts (National)

Position of Non-Key Expert (Sl. No.)	Qualification Requirements	Summary TOR
Junior Social Development Specialist (Sl. No. 1)	<p>Qualification: Bachelor's degree in Sociology/ Social Anthropology or similar / relevant discipline.</p> <p>Experience: Minimum 5 years relevant working experience.</p>	He/she will be responsible to the Team Leader and work closely with the members of the consultant team and engaged in assisting on all matters relating to Social Impact Assessment and Management Framework/Plans, Resettlement Framework/Plans for preparation and design consultancy services.
Junior Environmental Specialist (Sl. No. 2)	<p>Qualification: Bachelor degree in Civil Engineering or Environmental Engineering or similar / relevant discipline.</p> <p>Experience: Minimum 5 years relevant working experience.</p>	He/she will be responsible to the Team Leader and work closely with the members of the consultant team and engaged in assisting on all matters relating to environment/climate change for preparation and design consultancy services.



Position of Non-Key Expert (Sl. No.)	Qualification Requirements	Summary TOR
Field Engineer (Sl. No. 3)	Qualification: Bachelor degree in Civil Engineering or similar / relevant discipline. Experience: Minimum 5 years relevant working experience.	He/she will assist and be responsible to the Team Leader and provide support with the other consultants in consultant team in relevant aspects of preparation and design consultancy services. Any other tasks assigned by the Team Leader and the Project Director.
Quantity Surveyor (Sl. No. 4)	Qualification: Diploma in Civil Engineering or similar / relevant discipline. Experience: Minimum 5 years relevant working experience.	He/she will be responsible to the Team Leader and work closely with the members of the consultant team and engaged in assisting on all matters relating to quantity survey for preparation and design consultancy services.
Land Surveyor (Sl. No. 5)	Qualification: Diploma in Civil Engineering or similar / relevant discipline. Experience: Minimum 5 years relevant working experience.	He/she will be responsible to the Team Leader and work closely with the members of the consultant team and engaged in assisting on all matters relating to Land survey for preparation and design consultancy services.
CAD Operator (Sl. No. 6)	Qualification: Diploma in Civil Engineering or similar / relevant discipline. Experience: Minimum 5 years relevant working experience.	He/she will be responsible to the Team Leader and work closely with the members of the consultant team and engaged in assisting on all matters relating to computer aided designs and outputs.

VIII. FORMATS FOR DELIVERY AND DATA MANAGEMENT

12. All deliverables shall be provided to the Client in both soft copy, submitted both via cloud storage service as well as via two pen drives/external hard drives, and three hard copies each, the cost of which is to be included in the tender price.
13. As part of the Inception Report, the consultant shall submit a list of software applications to be used for each area of work and obtain approval of the Employer.
14. The design calculations to be submitted for approval shall be in the following formats:
 - a) any software application commonly used in the industry, the use of which has been previously approved by the employer;
 - b) input/ output data including clear description of the variables used;
 - c) draft detailed design calculations shall be submitted on MS-Excel for cross checking by the Employer.
15. All structural drawings shall be generated using an authorized version of AutoCAD. For ease of proof checking, the consultant is not required to supply a copy of the authorized software. However, while



assisting the Employer in obtaining approval of designs from respective authorities, the consultant may have to submit a soft copy of the design programme and demonstrate the same, if required.

16. Final detailed structural designs and drawings as well as electrical designs and drawings (good for construction) shall be submitted after incorporating all changes/modifications indicated during proof checking and suggestions by the Employer.
17. The consultant will be required to make presentations to the Employer with and without other stakeholders at all milestone stages of the consultancy, i.e. whenever submitting any of the Key Deliverables 1-6.
18. Upon completion of the assignment, the consultant shall hand-over to the Employer all input data, working drafts and final outputs in soft copy. This shall be made available (i) on a cloud storage service which shall be accessible to the Employer at least until six months after the end of the consultancy, and (ii) on two external hard drives, each with a complete set of documents. The data shall be logically labelled and catalogued, in the first instance, by key deliverable, secondly by sub-project, and thirdly in chronological order.

IX. REPORTING REQUIREMENTS AND IMPLEMENTATION ARRANGEMENTS

19. The Local Government Engineering Department (LGED), with extensive experience in managing urban projects supported by development partner, will be the ISWMIP Executing Agency (EA). The GoB will provide qualified counterpart staff, including their field per diem and field transportation; office accommodation and office equipment. A suitably staffed PMCU under LGED at its headquarters in Dhaka will be in place.
20. The Consultant shall report to the Project Director of the PMCU at LGED.
21. LGED with established PMCU will (i) recruit Preparation and Design consultants, (ii) submit withdrawal application to AIB for direct payment to consultants, (iii) be responsible for project administration, and reporting to AIB, (iv) guide PIUs in pourashavas and provide overall guidance to PIUs during project preparation, (v) liaise with AIB to address any issues during the Preparation and Design consultancy services, (vi) prepare quarterly progress reports based on the information submitted to PMCU, (vii) monitor progress of Preparation and Design consultancy services, (viii) oversee safeguard due diligence and disclosure requirements including resettlement and environmental safeguards in accordance with AIB's and GoB requirements, (ix) develop projects of high quality and as per GoB and AIB requirement, (x) establish a project performance management system (PPMS), (xi) monitor implementation of the facility in line with the PPMS, and (xii) provide support to AIB missions.

X. CLIENT'S INPUT AND COUNTERPART PERSONNEL

The Consultant will have access to LGED's Geographic Information System (GIS) and LGED Library. They will also be provided with previously available reports, data, and information relevant to their assignment. LGED will provide the office space in the LGED campus at no cost.