

# **List of Appendix to Special Conditions of Contract**

- Appendix 1:       Resettlement Plan**
- Appendix 2:       Indigenous Peoples Plan**
- Appendix 3:       Environmental Monitoring Plan**
- Appendix 4:       Environmental Management Plan**
- Appendix 5:       Initial Environmental Examination (IEE) Report/  
Environmental Impact Assessment (EIA) Report**
- Appendix 6:       Gender Equality and Social Inclusion Action Plan**
- Appendix 7:       Terms and Procedures of Payment<sup>19</sup>**
- Appendix 8 :       Price Adjustment**
- Appendix 9 :       Insurance Requirements**
- Appendix 10:      Time Schedule**
- Appendix 11:      List of Major Items of Plant and Services and List of  
Approved Subcontractors**
- Appendix 12 :      Scope of Works and Supply by the Employer**
- Appendix 13:      List of Documents for Approval or Review**
- Appendix 14:      Functional Guarantees**

# **Appendix 1**

## **Resettlement Plan**

**(Available upon request)**

# **Appendix 2**

## **Indigenous Peoples Plan (IPP)**

### **(Not applicable)**

# **Appendix 3**

## **Environmental Monitoring Plan**

### Construction Stage Environmental Monitoring Plan (STP)

Monitoring field	Monitoring location	Monitoring parameters	Frequency	Responsibility
Construction disturbances, nuisances, public and worker safety,	All work sites	Implementation of construction stage EMP including dust control, noise control, traffic management, and safety measures. Site inspection checklist to review implementation is appended at <b>Appendix 7</b>	Weekly during construction	Supervising staff and safeguards specialists of CMSC
Ambient air quality	1 location (STP, at the boundary of the site downwind direction)	<ul style="list-style-type: none"> <li>PM10, PM2.5 NO2, SO2, CO</li> </ul>	Once before start of construction Quarterly (yearly 4-times) during construction (3 year period considered)	DB Contractor
Ambient noise	1 location (STP, at the boundary of the site downwind direction)	<ul style="list-style-type: none"> <li>Day time and night time noise levels</li> </ul>	Once before start of construction Quarterly (yearly 4-times) during construction (3 year period considered)	DB Contractor
Surface water quality	2 sampling locations (- Palar River, upstream and downstream of pipe bridge work site)	<ul style="list-style-type: none"> <li>pH, Oil and grease, Cl, F, NO3, TC, FC, Hardness, Turbidity BOD, COD, DO, Total Alkalinity</li> </ul>	Once before start of construction Half yearly during construction (3 year construction period considered)	DB Contractor
Baseline water quality of receiving water body at Sanankuppam Eri	3 points (1 at STP discharge location, 1 centre and one periphery near overflow weir)	<ul style="list-style-type: none"> <li>pH, TDS, TSS, DO, BOD, COD, E-coli, Total coliform, Nitrate, Total Phosphates, Oil &amp; grease, Total hardness, Sulphate, Fluoride, Chloride, Ammonia, Aluminum, Manganese, Iron, Zinc, Nickel, Magnesium, Phenolic compounds, Chromium, Arsenic, Mercury, Cadmium, Lead, Pesticides</li> </ul>	Twice (Pre monsoon and post monsoon during design phase)	DB Contractor
Baseline sediment quality in channel	3 points (1 at STP discharge location, 1 centre and one periphery near overflow weir)	<ul style="list-style-type: none"> <li>EC, pH, calcium, magnesium, % of total organic matter, Total organic carbon, N, P, K, Aluminum, faecal coliform, As, Cu, Cd, Cr, Pb, Fe, Mn, Hg, Zn, Ni.</li> </ul>	Once (premonsoon)	DB Contractor

### Operation Stage Environmental Monitoring Plan (STP)

Monitoring field	Monitoring location	Monitoring parameters	Frequency	Responsibility	Cost and Source of Funds
Monitoring of treated wastewater quality from STP	Inlet and outlet of STP	Parameters as specified by TNPCB in the consent. Concentration of various parameters in treated wastewater shall be within the specific limits as per the discharge standards for STP .	Monthly Once	TWAD B	Operating Cost
Water quality of receiving lake	3 points (1 at STP discharge location, 1 centre and one periphery near overflow weir)	pH, Cl, F, NO <sub>3</sub> , TC, FC, Hardness, Turbidity BOD, COD, DO, Total Alkalinity,  heavy metals and pesticides	Monthly once during operation  Yearly twice (pre & post monsoon)	TWAD B	O and M costs (water quality will be tested at the internal laboratory part of STP)
Water quality of overflow water	at the start of overflow channel, just downstream of overflow weir	Nematode (should be less than one viable nematode egg per litre) Faecal coliforms (less than 1000 faecal coliforms per 100 millilitres).	Monthly once during operation	TWAD B	O and M costs (water quality will be tested at the internal laboratory part of STP)
Odour monitoring at STP	3 points (at boundary in the downwind direction and at nearest house, and including other units within the STP)	Hydrogen sulphide (H <sub>2</sub> S)	Periodical (throughout the operation phase)	Villupuram Municipality	Handheld H <sub>2</sub> S meters to be procured as part of the project and operated by operating staff
Sludge quality and suitability as manure	STP	Analysis for concentration of heavy metals and confirm that value are within the limits specified in the SWM rules.	Start of operation and Yearly once	TWAD B	O and M costs (testing to be done at an accredited external laboratory)

# **Appendix 4**

# **Environmental Management Plan**

### Design Stage Environmental Impacts and Mitigation Measures (STP)

Field	Anticipated Impact	Mitigation Measures	Responsibility of Mitigation	Cost and Source of Funds
Design of STP	Deficient treatment due to substandard operation / system malfunction	(i) Design the treatment process to meet the applicable discharge standards (i) Ensuring continuous uninterrupted power supply, including a back-up facility (such as generator) (ii) Providing operating manual with all standard operating procedures (SOPs) for operation and maintenance of the facility (iii) Necessary training to ULB staff dealing with STP. (iv) Extended contractor period for O and M, proper transfer of facility to ULB with adequate technical know-how on O and M and hands-on training to ULB staff (v) Provision for online monitoring of crucial wastewater quality parameters at the inlet and outlet of the plant (BOD, pH, ammonia etc.,)	DB Contractor and PIU	Project cost - DB Contractor
STP treatment efficiency	Change of inlet sewage parameters and deficient treatment quality	(i) No industrial wastewater shall be allowed to dispose into municipal sewers (ii) No domestic wastewater from industrial units shall be allowed into municipal sewers (iii) Ensure that there is no illegal discharge through manholes or inspection chambers (iv) Conduct public awareness programs; in coordination with TNPCB (v) Conduct regular wastewater quality monitoring (at inlet and at outlet of STP) to ensure that the treated effluent quality complies with the applicable standards	PIU/ULB	PIU Costs
Discharge of treated wastewater into lake	Safety and inundation issues	(i) Conduct channel baseline water quality and hydrological study, and assess the suitability of STP treated effluent disposal into the channel. This should be in terms of water quality, safety, stability, inundation and erosion risk of channel . Include appropriate measures in the project design for implementation (ii)	DB Contractor and PIU	Project cost - DB Contractor
	Odour nuisance	(i) Providing a green buffer zone of 15-20 m wide all around the STP with trees in multi-rows and land scaping. This will act as a visual screen around the facility and will improve the aesthetic appearance. Treated wastewater will be used for land scaping	DB Contractor and PIU	Project cost - DB Contractor
	Sludge disposal	(i) Prepare sludge management plan (collection, treatment, drying, disposal and periodic testing) and integrate into design, construction and operation	DB Contractor and PIU	Project cost - DB Contractor
	Noise	(i) Procure good quality latest technology high pressure pumps that guarantee controlled noise at a level of around 80 dB(A) at a distance of 1 m (ii) Use appropriate building materials and construction techniques for pump houses which can absorb sound rather than reflect noise	DB Contractor and PIU	Project cost - DB Contractor



Field	Anticipated Impact	Mitigation Measures	Responsibility of Mitigation	Cost and Source of Funds
		(iii) Use acoustic enclosures – manufacturer specified, for all pumps, motors (iv) Procure only CPCB approved generators with low emission and low noise fitted with acoustic enclosures (v) Provide sound mufflers for ventilators in the plant rooms; and sound proof doors (vi) Provide ear plugs to workers		
STP	Energy consumption	(i) Using low-noise and energy efficient pumping systems (ii) Efficient Pumping system operation (iii) Installation of Variable Frequency Drives (VFDs)	DB Contractor and PIU	Project cost - DB Contractor
STP	Tree cutting	(i) Minimize removal of trees by adopting to site condition and with appropriate layout design/alignment (ii) Obtain prior permission for tree cutting (iii) Plant and maintain 10 trees for each tree that is removed	DB Contractor and PIU	Project cost - DB Contractor

### Construction Stage Environmental Impacts and Mitigation Measures (applicable for all components)

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Cost and Source of Funds
EMP Implementation Training	Irreversible impact to the environment, workers, and community	(i) Project manager and all key workers will be required to undergo training on EMP implementation including spoils/waste management, Standard operating procedures (SOP) for construction works; occupational health and safety (OH and S), core labor laws, applicable environmental laws, etc.	Contractor	Project cost / PMU cost
Air Quality	Dust, emissions from construction vehicles, equipment, and machinery used for installation of pipelines resulting to dusts and increase in concentration of vehicle-related pollutants such as carbon monoxide, sulfur oxides, particulate matter, nitrous oxides, and hydrocarbons.	<b>For all construction works</b> (i) Provide a dust screen around the construction sites of pumping and lifting stations and STP (ii) Damp down the soil and any stockpiled material on site by water sprinkling; (iii) Stabilize surface soils where loaders, support equipment and vehicles will operate by using water and maintain surface soils in a stabilized condition (iv) Apply water prior to levelling or any other earth moving activity to keep the soil moist throughout the process (v) Cover the soil stocked at the sites with tarpaulins (vi) Control access to work area, prevent unnecessary movement of vehicle, public trespassing into work areas; limiting soil disturbance will minimize dust generation (vii) Use tarpaulins to cover the loose material (soil, sand, aggregate etc.,) when transported by open trucks; (viii) Control dust generation while unloading the loose material (particularly aggregate, sand, soil) at the site by sprinkling water and unloading inside the barricaded area (ix) Clean wheels and undercarriage of haul trucks prior to leaving construction site (x) Ensure that all the construction equipment, machinery are fitted with pollution control devices, which are operating correctly, and have a valid pollution under control (PUC) certificate	Contractor	Contractor costs
Surface water quality	Mobilization of settled silt materials, and chemical contamination from fuels and lubricants during construction can	(i) All earthworks be conducted during the dry season to prevent the problem of soil/silt run-off during rains (ii) Avoid stockpiling of earth fill especially during the monsoon season unless covered by tarpaulins or plastic sheets; (iii) Prioritize re-use of excess spoils and materials in the construction works. If	Contractor	Contractor costs

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Cost and Source of Funds
	contaminate nearby surface water quality.  Ponding of water in the pits / foundation excavations	spoils will be disposed, only designated disposal areas shall be used; (iv) Install temporary silt traps or sedimentation basins along the drainage leading to the water bodies; (v) Place storage areas for fuels and lubricants away from any drainage leading to water bodies; (vi) Store fuel, construction chemicals etc., on an impervious floor, also avoid spillage by careful handling; provide spill collection sets for effective spill management (vii) Dispose any wastes generated by construction activities in designated sites; (viii) Conduct surface quality inspection according to the Environmental Management Plan (EMP).		
	Water accumulation in trenches/pits	(i) As far as possible control the entry of runoff from upper areas into the excavated pits, and work area by creation of temporary drains or bunds around the periphery of work area (ii) Pump out the water collected in the pits / excavations to a temporary sedimentation pond; dispose off only clarified water into drainage channels/streams after sedimentation in the temporary ponds Consider safety aspects related to pit collapse due to accumulation of water	Contractor	Contractor costs
Noise Levels	Increase in noise level due to earth-moving and excavation equipment, and the transportation of equipment, materials, and people	(i) Plan activities in consultation with PIU so that activities with the greatest potential to generate noise are conducted during periods of the day which will result in least disturbance; (ii) Minimize noise from construction equipment by using vehicle silencers, fitting jackhammers with noise-reducing mufflers, and use portable street barriers to minimise sound impact to surrounding sensitive receptor; and (iii) Maintain maximum sound levels not exceeding 80 decibels (dBA) when measured at a distance of 10 m or more from the vehicle/s. (iv) Identify any buildings at risk from vibration damage and avoiding any use of pneumatic drills or heavy vehicles in the vicinity; (v) Horns should not be used unless it is necessary to warn other road users or animals of the vehicle's approach; (vi) Consult local communities in advance of the work to identify and address key issues, and avoid working at sensitive times, such as religious and cultural festivals.	Contractor	Contractor costs
Landscape and aesthetics – waste generation	Impacts due to excess excavated earth, excess construction materials, and solid waste such as removed concrete, wood, packaging materials, empty containers, spoils, oils, lubricants, and other similar items.	(i) Prepare and implement a Construction Waste Management Plan (refer Appendix 3) (ii) As far as possible utilize the debris and excess soil in construction purpose, for example for raising the ground level or construction of access roads etc., (iii) Avoid stockpiling any excess spoils at the site for long time. Excess excavated soils should be disposed off to approved designated areas immediately (iv) If disposal is required, the site shall be selected preferably from barren, infertile lands; sites should located away from residential areas, forests, water bodies and any other sensitive land uses	Contractor	Contractor costs

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Cost and Source of Funds
		(v) Domestic solid wastes should be properly segregated in biodegradable and non-biodegradable for collection and disposal to designated solid waste disposal site; create a compost pit at workers camp sites for disposal of biodegradable waste; non-biodegradable / recyclable material shall be collected separately and sold in the local recycling material market (vi) Residual and hazardous wastes such as oils, fuels, and lubricants shall be disposed off in disposal sites approved by TNPCB; (vii) Prohibit burning of construction and/or domestic waste; (viii) Ensure that wastes are not haphazardly thrown in and around the project site; provide proper collection bins, and create awareness to use the dust bins. (ix) Conduct site clearance and restoration to original condition after the completion of construction work; PIU to ensure that site is properly restored prior to issuing of construction completion certificate		
Socio-Economic Loss of access to houses and business	Loss of income	(i) Inform all businesses and residents about the nature and duration of any work well in advance so that they can make necessary preparations; (ii) Do not block any access; leave spaces for access between barricades/mounds of excavated soil and other stored materials and machinery, and providing footbridges so that people can crossover open trenches (iii) Barricade the construction area and regulate movement of people and vehicles in the vicinity, and maintain the surroundings safely with proper direction boards, lighting and security personnel – people should feel safe to move around (iv) Control dust generation (v) Immediately consolidate the backfilled soil and restore the road surface; this will also avoid any business loss due to dust and access inconvenience of construction work. (vi) Employee best construction practices, speed up construction work with better equipment, increase workforce, etc., in the areas with predominantly commercial, and with sensitive features like hospitals, and schools; (vii) Consult businesses and institutions regarding operating hours and factoring this in work schedules; and (viii) Provide sign boards for pedestrians to inform nature and duration of construction works and contact numbers for concerns/complaints.	Contractor	Contractor costs
Socio-Economic - Employment	Generation of temporary employment and increase in local revenue	(i) Employ local labour force as far as possible (iii) Comply with labor laws	Contractor	Contractor costs
Occupational Health and Safety	Occupational hazards which can arise during work	(i) Follow all national, state and local labour laws (indicative list is in Appendix 2); (ii) Develop and implement site-specific occupational health and safety (OH and S) Plan which shall include measures such as: (a) safe and documented construction procedures to be followed for all site activities;	Contractor	Contractor costs

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Cost and Source of Funds
		<p>(b) ensuring all workers are provided with and use personal protective equipment; (c) OH and S Training for all site personnel, (d) excluding public from the work sites; and (e) documentation of work-related accidents; Follow International Standards such as the World Bank Group's Environment, Health and Safety Guidelines<sup>1</sup>.</p> <p>(iii) Ensure that qualified first-aid is provided at all times. Equipped first-aid stations shall be easily accessible throughout the sites;</p> <p>(iv) Secure all installations from unauthorized intrusion and accident risks</p> <p>(v) Provide H and S orientation training to all new workers to ensure that they are apprised of the basic site rules of work at the site, personal protective protection, and preventing injuring to fellow workers;</p> <p>(vi) Provide visitor orientation if visitors to the site can gain access to areas where hazardous conditions or substances may be present. Ensure also that visitor/s do not enter hazard areas unescorted;</p> <p>(vii) Ensure the visibility of workers through their use of high visibility vests when working in or walking through heavy equipment operating areas;</p> <p>(viii) Ensure moving equipment is outfitted with audible back-up alarms;</p> <p>(ix) Mark and provide sign boards for hazardous areas such as energized electrical devices and lines, service rooms housing high voltage equipment, and areas for storage and disposal. Signage shall be in accordance with international standards and be well known to, and easily understood by workers, visitors, and the general public as appropriate; and</p> <p>(x) Disallow worker exposure to noise level greater than 85 dBA for duration of more than 8 hours per day without hearing protection. The use of hearing protection shall be enforced actively.</p> <p>(xi) Provide supplies of potable drinking water;</p> <p>(xii) Provide clean eating areas where workers are not exposed to hazardous or noxious substances</p>		
Community Health and Safety.	Traffic accidents and vehicle collision with pedestrians during material and waste transportation	<p>(i) Consult PIU before locating project offices, sheds, and construction plants;</p> <p>(ii) Select a camp site away from residential areas (at least 100 m buffer shall be maintained) or locate the camp site within the existing facilities of City Corporation</p> <p>(iii) Avoid tree cutting for setting up camp facilities</p> <p>(iv) Provide a proper fencing/compound wall for camp sites</p> <p>(v) Camp site shall not be located near (100 m) water bodies, flood plains flood prone/low lying areas, or any ecologically, socially, archeologically sensitive areas</p> <p>(vi) Separate the workers living areas and material storage areas clearly with a fencing and separate entry and exit</p> <p>(vii) Ensure conditions of liveability at work camps are maintained at the</p>	Contractor	Contractor costs

<sup>1</sup> <http://www.ifc.org/wps/wcm/connect/a99ab8804365b27aa60fb6d3e9bda932/EHS-Guidelines+101-Webinar.pdf?MOD=AJPERES>

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Cost and Source of Funds
		<p>highest standards possible at all times; living quarters and construction camps shall be provided with standard materials (as far as possible to use portable ready to fit-in reusable cabins with proper ventilation); thatched huts, and facilities constructed with materials like GI sheets, tarpaulins, etc., shall not be used as accommodation for workers</p> <p>(viii) Camp shall be provided with proper drainage, there shall not be any water accumulation</p> <p>(ix) Provide drinking water, water for other uses, and sanitation facilities for employees</p> <p>(x) Prohibit employees from cutting of trees for firewood; contractor should provide cooking fuel (cooking gas); fire wood not allowed</p> <p>(xi) Train employees in the storage and handling of materials which can potentially cause soil contamination</p> <p>(xii) Wastewater from the camps shall be disposed properly either into sewer system; if sewer system is not available, provide on-site sanitation with septic tank and soak pit arrangements</p> <p>(xiii) Recover used oil and lubricants and reuse or remove from the site;</p> <p>(xiv) Manage solid waste according to the following preference hierarchy: reuse, recycling and disposal to designated areas; provide a compost pit for bio degradable waste, and non-biodegradable / recyclable waste shall be collected and sold in local market</p> <p>(xv) Remove all wreckage, rubbish, or temporary structures which are no longer required; and</p> <p>(xvi) At the completion of work, camp area shall be cleaned and restored to pre-project conditions, and submit report to PIU; PIU to review and approve camp clearance and closure of work site</p>		
Work Camps and worksites	<p>Temporary air and noise pollution from machine operation, water pollution from storage and use of fuels, oils, solvents, and lubricants</p> <p>Unsanitary and poor living conditions for workers</p>	<p>(i) As far as possible located the camp site within the work sites (at STP or large pumping station sites); if any camp to be established outside these, then select a camp site away from residential areas (at least 100 m buffer shall be maintained)</p> <p>(ii) Avoid tree cutting for setting up camp facilities</p> <p>(iii) Ensure that a proper compound wall is provided, and erect a wind/dust screen around</p> <p>(iv) Camp site shall not be located near (100 m) water bodies, flood plains flood prone/low lying areas, or any ecologically, socially, archeologically sensitive areas</p> <p>(v) Separate the workers living areas and material storage areas clearly with a fencing and separate entry and exit</p> <p>(vi) Provide proper temporary accommodation with proper materials, adequate lighting and ventilation, appropriate facilities for winters and summers; ensure conditions of liveability at work camps are maintained at the highest standards possible at all times;</p> <p>(vii) Consult PIU before locating project offices, sheds, and construction plants;</p>	Contractor	Contractor costs

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Cost and Source of Funds
		<ul style="list-style-type: none"> <li>(viii) Minimize removal of vegetation and disallow cutting of trees</li> <li>(ix) Ensure conditions of liveability at work camps are maintained at the highest standards possible at all times; living quarters and construction camps shall be provided with standard materials (as far as possible to use portable ready to fit-in reusable cabins with proper ventilation); thatched huts, and facilities constructed with materials like GI sheets, tarpaulins, etc., shall not be allowed as accommodation for workers</li> <li>(x) Camp shall be provided with proper drainage, there shall not be any water accumulation</li> <li>(xi) Provide drinking water, water for other uses, and sanitation facilities for employees</li> <li>(xii) Prohibit employees from cutting of trees for firewood; contractor should be provide proper facilities including cooking fuel (oil or gas; fire wood not allowed)</li> <li>(xiii) Train employees in the storage and handling of materials which can potentially cause soil contamination</li> <li>(xiv) Recover used oil and lubricants and reuse or remove from the site</li> <li>(xv) Manage solid waste according to the following preference hierarchy: reuse, recycling and disposal to designated areas; provide a compost pit for biodegradable waste, and non-biodegradable / recyclable waste shall be collected and sold in local market</li> <li>(xvi) Remove all wreckage, rubbish, or temporary structures which are no longer required</li> <li>(xvii) At the completion of work, camp area shall be cleaned and restored to pre-project conditions, and submit report to PIU; PIU to review and approve camp clearance and closure of work site</li> </ul>		
Post-construction clean-up	Damage due to debris, spoils, excess construction materials	<ul style="list-style-type: none"> <li>(i) Remove all spoils wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required; and</li> <li>(ii) All excavated roads shall be reinstated to original condition.</li> <li>(iii) All disrupted utilities restored</li> <li>(iv) All affected structures rehabilitated/compensated</li> <li>(v) The area that previously housed the construction camp is to be checked for spills of substances such as oil, paint, etc. and these shall be cleaned up.</li> <li>(vi) All hardened surfaces within the construction camp area shall be ripped, all imported materials removed, and the area shall be top soiled and regressed using the guidelines set out in the revegetation specification that forms part of this document.</li> <li>(vii) The contractor must arrange the cancellation of all temporary services.</li> <li>(viii) Request PIU to report in writing that worksites and camps have been vacated and restored to pre-project conditions before acceptance of work.</li> </ul>	Contractor	Contractor costs

### Operation Stage Environmental Impacts and Mitigation Measures

Field	Anticipated Impact	Mitigation Measures	Responsible for Mitigation	Cost and Source of Funds
STP operation – malfunction and effect on efficiency	Public health, safety and environmental impacts	<ul style="list-style-type: none"> <li>(i) Ensure proper knowledge transfer, hands-on training to municipal staff engaged in STP operation has been provided by contractor prior to handover of facility</li> <li>(ii) Ensure continuous uninterrupted power supply</li> <li>(iii) Operate and maintain the facility following standard operating procedures of operational manual</li> <li>(iv) Undertake preventive and periodic maintenance activities as required</li> <li>(v) Maintain the mechanical / electrical parts as per the maintenance plan to avoid any hazards</li> <li>(vi) Conduct periodic training to workers</li> <li>(vii) Ensure that all safety apparatus at STP including personal protection equipment are in good condition all times; and are at easily accessible and identifiable place; periodically check the equipment, and conduct mock drills to deal with emergency situations</li> <li>(viii) Implement sludge management plan at the STP</li> <li>(ix) No wastewater from industrial premises (including domestic wastewater) shall be allowed to dispose into municipal sewers</li> <li>(x) Monitor regularly and ensure that there is no illegal discharge through manholes or inspection chambers; conduct public awareness programs; in coordination with TNPCB</li> <li>(vii) Conduct regular wastewater quality monitoring at inlet and at outlet of STP to ensure that the treated effluent quality complies with the standards (viii) Conduct periodic testing of dried sludge/compost to check presence of heavy metals and confirming stipulated concentrations to use as compost</li> </ul>	DBOT / O&M contractor is primary responsibility	Operating costs



**Appendix 5**

**Initial Environmental Examination  
(IEE) Report/ Environmental Impact  
Assessment (EIA) Report**

**(Available upon Request)**

# **Appendix 6**

## **Gender Equality and Social Inclusion Action Plan**

### **(Applicable upon request)**

## **Appendix 7 - Terms and Procedures of Payment**

In accordance with the provisions of GCC Clause 12 (Terms of Payment), the Employer shall pay the Contractor in the following manner and at the following times, based on the Price Breakdown given in the section on Price Schedules. Payments will be made in the currencies quoted by the Bidder unless otherwise agreed between the parties. Applications for payment in respect of part deliveries may be made by the Contractor as work proceeds.

### **(A) Terms of Payment**

#### **Schedule No. 1 - Plant and Mandatory Spare Parts Supplied from Abroad**

In respect of plant and mandatory spare parts supplied from abroad, the following payments shall be made:

Ten percent (10%) of the total CIP amount as an advance payment upon completion of Design services against receipt of invoice and an irrevocable advance payment security for the equivalent amount made out in favor of the Employer. The advance payment security may be reduced in proportion to the value of the plant and mandatory spare parts delivered to the site, as evidenced by delivery documents.

Seventy percent (70%) of the total or pro rata CIP amount upon Incoterm "CIP," upon delivery to the site within 45 days after receipt of invoice.

Fifteen percent (15%) of the total or pro rata CIP amount upon issue of the Completion Certificate, within 45 days after receipt of invoice.

Five percent ( 5%) of the total or pro rata CIP amount upon issue of the Operational Acceptance Certificate, within 45 days after receipt of invoice.

Subject to the Appendix 8 (Functional Guarantee) of the Contract Agreement, pro rata value of Operation and Maintenance services performed by the Contractor as evidenced by the Employer's authorization of the Contractor's monthly applications, upon issue of the successful Operation and Maintenance Certificate, within 45 days after receipt of invoice.

#### **Schedule No. 2 - Plant and Mandatory Spare Parts Supplied from Within the Employer's Country**

In respect of plant and mandatory spare parts supplied from within the Employer's country, the following payments shall be made:

Ten percent (10%) of the total EXW amount as an advance payment upon completion of Design services against receipt of invoice, and an irrevocable advance payment security for the equivalent amount made out in favor of the Employer. The advance payment security may be reduced in proportion to the value of the plant and mandatory spare parts delivered to the site, as evidenced by delivery documents.

Seventy percent (70%) of the total or pro rata EXW amount upon Incoterm "Ex-Works," upon delivery to the site within 45 days after receipt of invoice.

Fifteen percent (15%) of the total or pro rata EXW amount upon issue of the Completion Certificate, within 45 days after receipt of invoice.

Five percent (5%) of the total or pro rata EXW amount upon issue of the Operational Acceptance Certificate, within 45 days after receipt of invoice.

Subject to the Appendix 8 (Functional Guarantee) of the Contract Agreement, pro rata value of Operation and Maintenance services performed by the Contractor as evidenced by the Employer's authorization of the Contractor's monthly applications, upon issue of the successful Operation and Maintenance Certificate, within 45 days after receipt of invoice.

### **Schedule No. 3 - Design Services**

In respect of design services for both the foreign currency and the local currency portions, the following payments shall be made:

Ten percent (10%) of the total design services amount as an advance payment against receipt of invoice and an irrevocable advance payment security for the equivalent amount made out in favor of the Employer.

Ninety percent (90%) of the total design services amount upon acceptance of design by the Project Manager within 45 days after receipt of invoice.

### **Schedule No. 4 - Installation and Other Services**

In respect of installation services for both the foreign and local currency portions, the following payments shall be made:

Ten percent (10%) of the total installation and other services amount as an advance payment against receipt of invoice and an irrevocable advance payment security for the equivalent amount made out in favor of the Employer. The advance payment security may be reduced in proportion to the value of work performed by the Contractor as evidenced by the invoices for installation services.

Eighty percent (80%) of the measured value of work performed by the Contractor, as identified in the said Program of Performance, during the preceding month, as evidenced by the Employer's authorization of the Contractor's application, will be made monthly within 45 days after receipt of invoice.

Five percent (5%) of the total or pro rata value of installation services performed by the Contractor as evidenced by the Employer's authorization of the Contractor's monthly applications, upon issue of the Completion Certificate, within 45 days after receipt of invoice.

Five percent (5%) of the total or pro rata value of installation services performed by the Contractor as evidenced by the Employer's authorization of the Contractor's monthly applications, upon issue of the Operational Acceptance Certificate, within 45 days after receipt of invoice.

Subject to the Appendix 8 (Functional Guarantee) of the Contract Agreement, pro rata value of Operation and Maintenance services performed by the Contractor as evidenced by the Employer's authorization of the Contractor's monthly applications, upon issue of the successful Operation and Maintenance Certificate, within 45 days after receipt of invoice.

In the event that the Employer fails to make any payment on its respective due date, the Employer shall pay to the Contractor interest on the amount of such delayed payment at the rate of Eight percent (8.0%) per Annum for period of delay until payment has been made in full.

**Schedule No. 5 - operation and maintenance services**

The Operation and maintenance charges will be paid on a prorated basis on a monthly basis based on the yearly operation and maintenance charges quoted by the bidder. Monthly charges will be paid to the bidder subject to the condition that the plant performance meets the functional guarantee i.e., the agreed discharge standards for the treated sewage. In case the discharge standards are not met by the bidder, only half of the monthly maintenance charges will be paid by the employer for the period during which the bidder has not met the discharge standards. This amount has to be forfeited by the bidder forever. However, the monthly operation and maintenance charges will be restored to full as soon as the bidder rectifies the plant and meets the functional guarantee. However, this period of non-compliance of functional guarantee should not exceed two months at any time.

**(B) Payment Procedures**

When applying for certification and making payments, the procedures shall be as follows:

When applying for certification and making payments, the procedures shall be as follows:

The contractor shall submit the invoice with supporting papers and documents in triplicate to the Project Manager. The Project Manager will scrutinize and certify the claims, and will recommend for payment to the Employer.

Value of invoice shall not be less than 2.0 % (Two Percent) of the contract price (excluding cost of Operation and Maintenance). However, this limitation shall not be applicable for first three invoices.

## Appendix 8 - Price Adjustment

Prices payable to the Contractor, in accordance with the Contract, shall be subject to adjustment during performance of the Contract to reflect changes in the cost of labor and material components, in accordance with the following formula:

$$P_1 = P_0 \times \left( a + b \frac{L_1}{L_0} + c \frac{M_1}{M_0} \right) - P_0$$

in which:

$P_1$  = adjustment amount payable to the Contractor

$P_0$  = Contract price (base price)

$a$  = percentage of fixed element in Contract price ( $a = \%$ )

$b$  = percentage of labor component in Contract price ( $b = \%$ )

$c$  = percentage of material and equipment component in Contract price ( $c = \%$ )

$L_0, L_1$  = Average monthly labor indexes applicable to the appropriate industry in the country of origin for the month in which the base date falls and the Average monthly of the month under consideration for adjustment, respectively

$M_0, M_1$  = Average monthly material and equipment indexes in the country of origin for the month in which the base date falls and the Average of the month under consideration for adjustment, respectively

### Conditions Applicable to Price Adjustment

The base date shall be the date 28 days prior to the deadline for submission of the Bid.

The date of adjustment shall be the mid-point of the period of manufacture or installation of the component or Plant.

The following conditions shall apply:

- (a) No price increase will be allowed beyond the original delivery date unless covered by an extension of time awarded by the Employer under the terms of the Contract. No price increase will be allowed for periods of delay for which the Contractor is responsible. The Employer will, however, be entitled to any price decrease occurring during such periods of delay.
- (b) If the currency in which the Contract price,  $P_0$ , is expressed is different from the currency of the country of origin of the labor and/or materials indexes, a correction factor will be applied to avoid incorrect adjustments of the Contract price. The correction factor shall correspond to the ratio of exchange rates between the two currencies on the base date and the date for adjustment as defined above.
- (c) No price adjustment shall be payable on the portion of the Contract price paid to the Contractor as an advance payment.

## Appendix 9 - Insurance Requirements

### (A) Types of Insurance to Be Taken Out by the Contractor

In accordance with the provisions of GCC Clause 34, the Contractor shall at its expense take out and maintain in effect, or cause to be taken out and maintained in effect, during the performance of the Contract, the types of insurance set forth below in the sums and with the deductibles and other conditions specified. The identity of the insurers and the form of the policies shall be subject to the approval of the Employer, such approval not to be unreasonably withheld.

#### (a) Cargo Insurance

Covering loss or damage occurring, while in transit from the supplier's or manufacturer's works or stores until arrival at the Site, to the Facilities (including spare parts therefore) and to the construction equipment to be provided by the Contractor or its Subcontractors.

Amount [in currency(ies)]	Deductible limits [in currency(ies)]	Parties insured [names]	From [place]	To [place]
Indian National Rupee (INR) Equivalent to the 110% of the cost of Equipment or Supply	100%	Contractor and the Employer	Cargo Port	Work Site

#### (b) Installation All Risks Insurance

Covering physical loss or damage to the Facilities at the Site, occurring prior to completion of the Facilities, with an extended maintenance coverage for the Contractor's liability in respect of any loss or damage occurring during the defect liability period while the Contractor is on the Site for the purpose of performing its obligations during the defect liability period.

Amount [in currency(ies)]	Deductible limits [in currency(ies)]	Parties insured [names]	From [place]	To [place]
Indian National Rupee (INR) Equivalent to the 110% of the cost of Equipment	100%	Contractor and the Employer	Not Applicable	Work Site

#### (c) Third Party Liability Insurance

Covering bodily injury or death suffered by third parties (including the Employer's personnel) and loss of or damage to property (including the Employer's property and any parts of the Facilities that have been accepted by the Employer) occurring in connection with the supply and installation of the Facilities.

Amount [in currency(ies)]	Deductible limits [in currency(ies)]	Parties insured [names]	From [place]	To [place]
Indian National Rupee (INR)	100%	Contractor, Sub Contractor	Not Applicable	Work Site

20,000,000 with unlimited number of occurrences.				

**(d) Automobile Liability Insurance**

Covering use of all vehicles used by the Contractor or its Subcontractors (whether owned by them or not) in connection with the supply and installation of the Facilities. Comprehensive insurance in accordance with statutory requirements.

**(e) Workers' Compensation**

In accordance with the statutory requirements applicable in any country where the Facilities or any part thereof is executed.

**(f) Employer's Liability**

In accordance with the statutory requirements applicable in any country where the Facilities or any part thereof is executed.

**(g) Other Insurance**

The Contractor is also required to take out and maintain at its own cost the following types of insurance:

Details:

Amount [in currency(ies)]	Deductible limits [in currency(ies)]	Parties insured [names]	From [place]	To [place]
Not Applicable				

The Employer shall be named as co-insured under all insurance policies taken out by the Contractor pursuant to GCC Subclause 34.1, except for the Third Party Liability, Workers' Compensation, and Employer's Liability Insurance, and the Contractor's Subcontractors shall be named as co-insureds under all insurance policies taken out by the Contractor pursuant to GCC Subclause 34.1, except for the Cargo, Workers' Compensation and Employer's Liability Insurance. All insurer's rights of subrogation against such co-insureds for losses or claims arising out of the performance of the Contract shall be waived under such policies.



**(B) Types of Insurance to Be Taken Out by the Employer**

The Employer shall at its expense take out and maintain in effect during the performance of the Contract the following insurance policies.

Details:

<b>Amount [in currency(ies)]</b>	<b>Deductible limits [in currency(ies)]</b>	<b>Parties insured [names]</b>	<b>From [place]</b>	<b>To [place]</b>
Nil	Nil	Nil	Not Applicable	Not Applicable

## Appendix 10 - Time Schedule

<b>S. No.</b>	<b>Description of Milestones</b>	<b>Time for Completion from the date of Receipt of LTC</b>
1	Submission of layout, unit sizing, process design and drawings	5 Weeks
2	Mobilization to the site and establishment of field office and quality control laboratory	3 Weeks
3	Approval of designs and drawings	3 Months
4	Completion of civil works	18 Months
5	Completion of installation of Plant and equipment	24 Months
6	Completion of Trial Run of the Treatment Plant	30 Months
7	Completion of Commissioning, performance guarantee test and taking over by the Employer	90 Months

## **Appendix 11 - List of Major Items of Plant and Services and List of Approved Subcontractors**

"DBO Contractor shall submit a detailed list of Subcontractors and Manufacturers required/ planned to be used for carrying out the works indicated. In accordance with GCC Subclause 19.1, the Contractor is free to submit proposals for Subcontractors for additional items from time to time. No Subcontracts shall be placed with any such Subcontractors for additional items until the Subcontractors have been approved in writing by the Employer and their names have been added to this list of Approved Subcontractors."

<b>Major Items of Plant and Services</b>	<b>Approved Subcontractors and Manufacturers</b>	<b>Nationality</b>

## Appendix 12 - Scope of Works and Supply by the Employer

The following personnel, facilities, works, and supplies will be provided or supplied by the Employer, and the provisions of GCC Clauses 10, 21, and 24 shall apply as appropriate.

All personnel, facilities, works, and supplies will be provided by the Employer in good time so as not to delay the performance of the Contractor, in accordance with the approved Time Schedule and Program of Performance pursuant to GCC Subclause 18.2.

Unless otherwise indicated, all personnel, facilities, works, and supplies will be provided free of charge to the Contractor.

Personnel	Charge to Contractor (if any)
Nil	

Facilities	Charge to Contractor (if any)
Nil	

Works	Charge to Contractor (if any)
Power connection up to the site for Operation and Maintenance Period.	Nil

Supplies	Charge to Contractor (if any)
Until the achievement of successful Operational Acceptance of the Plant and Facility: Nil	
During the Operation and Maintenance period of <b>5 years</b> : Electricity.	Nil, subject to Appendix 8 (Functional Guarantee) of the Contract.

## **Appendix 13 - List of Documents for Approval or Review**

Pursuant to GCC Subclause 20.3.1, the Contractor shall prepare, or cause its Subcontractor to prepare, and present to the Project Manager in accordance with the requirements of GCC Subclause 18.2 (Program of Performance), the following documents for

### **(A) Approval**

1. ....
2. ....
3. ....

### **(B) Review**

1. ....
2. ....
3. ....

## Appendix 14 - Functional Guarantees

### 1. General

This Appendix sets out

- (a) the functional guarantees referred to in GCC Clause 28 (Functional Guarantees)
- (b) the preconditions to the validity of the functional guarantees, either in production and/or consumption, set forth below
- (c) the minimum level of the functional guarantees
- (d) the formula for calculating liquidated damages for failure to attain the functional guarantees test for the purpose of Operational acceptance and during the Operation and Maintenance period under the Contract.

### 2. Preconditions

The Contractor gives the functional guarantees (specified herein) for the facilities, subject to the following preconditions being fully satisfied:

- i) Input parameters (Quantitative) as per Section 6 – Employer's Requirements
- ii) Input parameters (Qualitative) as per Section 6 – Employer's Requirements

### 3. Functional Guarantees

Subject to compliance with the foregoing preconditions, the Contractor guarantees as follows:

#### 3.1 Production Capacity

- i) Out-put parameters (Quantitative) as per Section 6 – Employer's Requirements
- ii) Out-put parameters (Qualitative) as per Section 6 – Employer's Requirements

#### 3.2 Electricity Consumption

\_\_\_\_\_, As per Form – (Functional Guarantee of the Proposed Facilities) submitted by the Bidder as a part of its bid.

#### 3.3 Raw Materials and Utilities Consumption

Not Applicable

### 4. Failure in Guarantees and Liquidated Damages

#### 4.1 Failure to Attain Guaranteed Production Capacity

If the production capacity of the facilities attained in the guarantee test, pursuant to GCC Subclause 25.2, is less than the guaranteed figure specified in para. 3.1 above, but the

actual production capacity attained in the guarantee test is not less than the minimum level specified in para. 4.3 below, and the Contractor elects to pay liquidated damages to the Employer in lieu of making changes, modifications and/or additions to the Facilities, pursuant to GCC Subclause 28.3, then the Contractor shall pay liquidated damages at the rate of 5.0% for every complete 1% of the deficiency in the production capacity of the Facilities, or at a proportionately reduced rate for any deficiency, or part thereof, of less than a complete 1%.

#### **4.2 Electricity Consumption in Excess of Guaranteed Level**

If the actual measured figure of Electricity consumed per unit exceeds the guaranteed figure specified in para. 3.2 above, but the actual consumption attained in the guarantee test, pursuant to GCC Subclause 25.2, is not more than the maximum level specified in para. 4.3 below, and the Contractor elects to pay liquidated damages to the Employer in lieu of making changes, modifications and/or additions to the Facilities pursuant to GCC Subclause 28.3, then the Contractor shall pay liquidated damages at the rate of 4 % of the quoted capital Cost for every complete 1% of the excess consumption of the Electricity, or part thereof, of less than a complete 1%.

During the Operation and Maintenance Period stated in Appendix 4 of the Contract, the Contractor shall pay an amount equivalent to 2.5 times the actual cost of electricity (on monthly basis) that exceeds the Guaranteed value committed by the Contractor in Bidding form-Section 4.

#### **4.3 Minimum Levels**

Notwithstanding the provisions of this paragraph, if as a result of the guarantee test(s), the following minimum levels of performance guarantees (and consumption guarantees) are not attained by the Contractor, the Contractor shall at its own cost make good any deficiencies until the Facilities reach any of such minimum performance levels, pursuant to GCC Subclause 28.2:

- (a) Production capacity: Out-put parameters (Quantitative) attained in the guarantee test: 98% of the guaranteed production capacity.
- (b) Production capacity: Out-put parameters (Qualitative) attained in the guarantee test: 100% of the guaranteed production capacity.
- (c) Average total cost of consumption of Electricity: 102% of the guaranteed figures.

#### **4.4 Limitation of Liability**

Subject to para. 4.3 above, the Contractor's aggregate liability to pay liquidated damages for failure to attain the functional guarantees shall not exceed ten percent (10 %) of the Contract price