

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 Payment²⁹**
- 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 (WTP)

Environmental Monitoring Plan

To monitor the extent of environmental impact of the proposed /implemented project, the contractor has to periodically monitor the ambient environmental quality along the proposed project area. The monitoring requirement for the different environmental components is presented in table below

Environmental Monitoring Plan

Air Quality Monitoring	
Project stage	Pre Construction , Construction & operation period (as agreed)
Parameter	SPM, RPM, SO ₂ , NO _x , CO and Pb
Sampling Method	Use method specified by CPCB for analysis
Standards	Ambient Air Quality Standards, CPCB, 1994, Air (Prevention and Control of Pollution) Act,1981
Frequency	Once before start of work & once every season of the year during construction period & upto 18 months (operation Period)
Duration	Continuous 24 hours / or for 1 full working day
Location	Sensitive locations, especially in the downwind direction along the pipe laying work, pumping / lifting station locations, WTP site.
Measures	Wherever air pollution parameters increase above specified standards, additional measures as decided by the engineer shall be adopted
Implementation	Contractor through approved monitoring agencies
Supervision	Implementing agency
Water quality Monitoring	
Project stage	Pre Construction, Construction & Operation period (as agreed)
Parameter	<ul style="list-style-type: none"> pH, BOD, COD, DO, TDS, Pb, Oil & Grease and Detergents for Surface water. Water pH, TDS, Total hardness, Sulphate, Fluorides, Chloride, Fe, Pb for groundwater. In addition to parameters (E.coli) determining drinking water quality.
Sampling Method	Grab sample collected from source and analysis as per Standard Methods for Examination of water and Waste water.
Standards	Indian standards for Inland Surface Water (IS; 2296, 1982) and for Drinking water (IS; 10500,1991)
Frequency	Twice a year (pre monsoon and post monsoon seasons) during the construction period
Duration	Grab sampling
Location	Locations representing water quality at <ul style="list-style-type: none"> source & surface water quality in the vicinity transmission lines storage points, distribution at representative locations including tail end.
Measures	At locations of variation in water quality/increased pollution, remedial measures to be adopted /all inflow channels shall be checked for pollution loads and channels delivering higher pollution load to the source shall be terminated from feeding the water source.
Implementation	Contractor through approved monitoring agencies
Supervision	Implementing agency

Noise Level Monitoring	
Project stage	Pre Construction , Construction & operation period (as agreed)
Parameter	Noise levels on dB (A) scale.
Special guidance	<ul style="list-style-type: none"> Free field at 1 m from the equipments whose noise level are being determined. Equivalent noise levels using an integrated noise level meter kept at a distance of 15m from edge of pavement
Standards	National Ambient Air Quality Standards in respect of Noise, Noise Pollution (Regulation and Control) Rules, 2000
Frequency	Once every season (except monsoon) for each year of construction
Duration	Reading to be taken at 15 seconds interval for 15 minutes every hour and then averaged
Location	<ul style="list-style-type: none"> Wherever the contractor decides to locate the equipment yard. At sensitive locations such as school, hospitals etc
Measures	In case of noise levels causing disturbance to the sensitive receptors, management measures as suggested in the EMP shall be carried out.
Implementation	Contractor through approved monitoring agencies
Supervision	Implementing agency
Soil Quality Monitoring	
Project stage	Pre Construction, Construction & Operation (as agreed)
Parameter	Monitoring of Pb, SAR and Oil & Grease
Sampling Method	<ul style="list-style-type: none"> Sample of soil collected to be acidified and analysed using absorption spectrophotometer
Standards	Threshold for each contaminated set by IRIS database of USEPA until national standards are promulgated
Frequency	<ul style="list-style-type: none"> During the pre monsoon post monsoon seasons each year for the entire construction and operation phase
Duration	Grab sampling
Location	<ul style="list-style-type: none"> At pumping / lifting station, WTP locations, OHT/distribution points etc
Measures	At location of increased in pollution levels, source shall be identified and shall be diverted.
Implementation	Contractor through approved monitoring agencies
Supervision	Implementing agency

Apart from the above mentioned monitoring requirements, any major accidents / spillage during bulk transport of hazardous materials by the contractor, depending on the type of spillages / accidents, the parameters to be monitored will be decided by the engineer and should be carried out by the contractor through approved monitoring agencies and supervised by the Implementing agency at their own cost.

FORMATS FOR REPORTING:

Formats for reporting / monitoring the progress / parameters achieved will be finalized in consultation with the successful bidder.

Environmental Compliance Report

The contractor shall submit a monthly progress report as per the reporting format approved by the engineer, on the status of the implementation of the EMP, and get it duly approved by the engineer for its compliance and for proceeding with the work. The Engineer and the Environmental and Social Safeguard (ESS) Manager, who will have access and authority to monitor the status based on the same and for which necessary facilities shall be made by the contractor.

ADDITIONAL MEASURES TO BE INCLUDED IN THE CURRENT CONSTRUCTION CONTRACT/BIDDING DOCUMENTS

1. Measures to protect water source from construction related impacts
 - a. Change of stream course due to diversion channels to construct intake structures
 - b. Safe disposal of construction debris
 - c. Ensuring stream is not obstructed affecting the down stream users (impacts arising due to coffer dams, etc.)
 - d. Establishing the baseline water quality prior to initiation of construction
 - e. Monitoring of water quality
 - f. Safe disposal of oil and grease without contaminating the source
 - g. Restoring river bed to its natural shape without any debris or construction junk material obstructing the flow
 - h. Safety measures
2. Pipes:
 - a. Prevention of accidents involving human beings animals or vehicles falling or accidents due to open trenches/manholes during construction period. This needs to be ensured with proper signages
 - b. Traffic diversion and traffic management measures during construction activities along the highways or road stretches
 - c. Debris disposal of earth in excess after completion of pumping/gravity mains
 - d. Sourcing of water without affecting the community sources for construction purposes
 - e. Protection of topsoil where the pipelines run in open land/agricultural lands
 - f. Shifting of community utilities
 - g. Safety aspects
 - h. Dust pollution control near settlements
3. Construction related impacts at Water Treatment Plant site
 - a. Debris Management
 - b. Oil and grease Management
 - c. Protection of topsoil (preserve for gardening purposes at WTP)
 - d. Measures to mitigate construction camp site if required
 - e. Safety aspects

All the EMP measures shall be integrated in the bidding documents providing necessary Bills of Quantities where ever necessary and feasible

Appendix 4

Environmental Management Plan

ENVIRONMENTAL MANAGEMENT PLAN - Water Supply

PRE - CONSTRUCTION PHASE MITIGATION MEASURES

Sl.no	Potential Negative Impacts	Mitigation Measures	Time frame	Responsible agencies
PRE-CONSTRUCTION STAGE				
1	Clearances	All clearance required for Environmental aspects during construction shall be ensured and made available before start of work.	Before construction	ULB / PIA / Concerned Departments & agency / Contractor
2	Tree Cutting	i) Try to save the trees by changing the alignment ii) Provide adequate protection to the trees to be retained with tree guards (e.g. Masonry tree guards, Low level RCC tree guards, Circular Iron Tree Guard with Bars) as required. ii) Identify the number of trees that will be affected with girth size & species type along the sewer mains, pumping / lifting station sites and sewerage treatment plant site. The details to be indicated in a strip map plan. iii) Trees shall be removed from the construction sites before commencement of construction with prior permission from the concerned department. iv) Undertake afforestation in nearby areas. v) Compensatory plantation by way of Re-plantation of at least twice the number of trees cut should be carried out in the project area.	Pre-construction & construction phase	Contractor / PIA
3	Utility Relocation	i) Identify the common utilities to be affected such as: telephone cables, electric cables, electric poles, water pipelines, public water taps, etc ii) Affected utilities shall be relocated with prior approval of the concerned agencies before construction starts.	Pre-construction & construction phase	PIA / Concerned departments
4	Baseline parameters	Adequate measures shall be taken and checked to control the Baseline parameters of Air, Water and Noise pollution. Base line parameters shall be recorded and ensured conformance till the completion of the project.	Pre-construction, construction and post-construction phase	Prospective contractor / PIA

5	Planning of temporary Traffic arrangements	i) Temporary diversion will be provided with the approval of the engineer. Detailed traffic control plans will be prepared and submitted to the engineers for approval, one week prior to commencement of works. ii) The traffic control plans shall contain details of temporary diversion, details of arrangements for construction under traffic, details of traffic arrangement after cessation of work each day, SIGNAGES, safety measures for transport of hazardous materials and arrangement of flagmen.	Pre-construction & construction phase	Prospective contractor / PIA
6	Disposal of waste water.	i) The waste water quality shall comply with the standards of TNPCB to let out into the stream / nullah /open land /irrigation purposes, and necessary permission to be obtained from the concerned department. ii) Ensure efficient working condition of treatment plant.	Pre-construction & construction phase	PIA
7	Storage of materials	The contractor shall identify the site for temporary use of land for construction sites /storage of construction materials, etc.	Pre-construction & construction phase	Prospective contractor / PIA
8	Construction of labour camps	Contractor shall follow all relevant provisions of the Factories Act, 1948 and the Building and the other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 for construction and maintenance of labour camp. The location, layout and basic facility provision of each labour camp will be submitted to Engineer prior to their construction. The construction will commence only upon the written approval of the Engineer. The contractor shall maintain necessary living accommodation and ancillary facilities in functional and hygienic manner and as approved by the Engineer. All temporary accommodation must be constructed and maintained in such a fashion that uncontaminated water is available for drinking, cooking and washing. The sewage system for the camp must be planned. Adequate health care is to be provided for the work force. The layout of the construction camp and details of the facilities provided should be prepared and shall be approved by the engineer.	During the construction	Prospective contractor

ENVIRONMENTAL MANAGEMENT PLAN - WATER SUPPLY PROJECTS
CONSTRUCTION & OPERATION PHASE MITIGATION MEASURES

No.	Systems / Impacts	Action to be taken	Responsible agencies	Time frame for implementation
1	Water Head Works			
1.1	Change of stream course due to diversion channels to construct intake structures	No appreciable change to the stream course shall occur due to diversion channel and intake structures shall be constructed accordingly.	PIA / Prospective contractor	Design, construction and operation
1.2	Disposal of construction debris and excavated materials.	A suitable site should be identified for safe disposal, in relatively low lying areas, away from the water bodies etc., and got approved by the Engineer.	PIA / Prospective contractor	Pre-construction and operation.
1.3	Disposal of oil and grease	A suitable site should be identified for safe disposal / without contaminating the source, in relatively low lying areas, away from the water bodies etc., as approved by the Engineer & as per specific procedures.	PIA / Prospective contractor	Pre-construction and operation.
1.4	Down stream users (impacts arising due to coffer dams, etc.)	Ensure that the stream is not obstructed, affecting the down stream users due to coffer dams, etc.	PIA / Prospective contractor	Design, construction and operation
1.5	Water quality in the source / water bodies	Establish the baseline water quality prior to initiation of construction and to be periodically monitored and report sent to the Engineer.	PIA / Prospective contractor	Pre-construction and Construction
1.6	Restoring river bed / water source	Ensure the restoring of river bed to its natural shape free from any debris or construction junk material that may obstruct the flow.	Prospective contractor	construction and operation
1.7	Safety measures	i) Barricading of construction site / manholes at all times in a day with adequate signage. ii) Where loose soil is met with, shoring and strutting shall be provided	Prospective contractor	construction and operation

		to avoid collapse of soil. iii) The contractor shall supply all necessary safety appliances such as safety goggles, helmets, safety belts, ear plugs, mask etc to workers and staff.		
2.	Construction of Transmission Mains			
2.1	Shifting of common utilities	Ensure community consensus and minimum impact to common utilities like telephone cable, electric cables, electric poles, water taps and etc., Proper clearance to be obtained from the concerned authorities and sent to the PIA before commencement of works.	Pre-construction & construction phase	Concerned departments / PIA

2.2	Compensatory plantation of trees	Compensatory plantation of atleast twice the number trees felled should be done in line with competent authority guidelines	Prospective contractor	Pre-construction and Construction
2.3	Disposal of construction debris and excavated materials.	<p>The contractor shall identify the sites for debris disposal and should be finalized prior to start of the earthworks; taking into account the following</p> <ul style="list-style-type: none"> (a) The dumping does not impact natural drainage courses (b) no endangered / rare flora is impacted by such dumping (c) Settlement area located at least 1.0 km away from the site. (d) Should be located in non residential areas located in the down wind side (e) located at least 100m from the designated forest land. (f) avoid disposal on productive land. (g) should be located with the consensus of the local community , in consultation with the engineer and shall be approved by the highways department <p>Minimize the construction debris by balancing the cut and fill requirements.</p>	PIA / Prospective contractor	Pre-construction and operation.
2.4	Protection of top soil	The top soil to be protected and compacted after completion of work, where the pipelines run, including open lands and agricultural lands.	PIA / Prospective contractor	Construction and operation
2.5	Laying of pipeline	Adequate precautions should be taken while laying the water supply mains to avoid the possibility of cross connection with sewer lines.	During construction	Prospective contractor
2.6	Traffic diversion	<p>Before taking up of construction activity, a Traffic Control Plan shall be devised and implemented to the satisfaction of the Engineer.</p> <p>Construction shall be taken phase –wise so that sections are available for traffic.</p> <p>Temporary diversion will be provided with the approval of the engineer. The Detailed traffic control plans prepared and submitted to the engineers for approval one week prior to commencement of works shall contain details of temporary diversion, details of arrangements for construction under traffic, details of traffic arrangement after cessation of work each day, SIGNAGES, safety measures for transport of hazardous materials and arrangement of flagmen.</p> <p>The arrangement for the temporary diversion of the land shall ensure to</p>	During pre-construction and construction	Prospective contractor / PIA

		<p>minimize the environmental impacts, like loss of vegetation, productive lands etc., prior to the finalization of diversion and detours.</p> <p>Special consideration will be given to the preparation of the traffic control plan for safety of pedestrians and workers at night.</p> <p>The contractor will ensure that the diversion / detour is always maintained in running condition, particularly during the monsoon to avoid disruption to traffic flow. He shall inform local community of changes to traffic routes, conditions and pedestrians access arrangements.</p> <p>This plan will be periodically reviewed with respect to site conditions.</p> <p>The temporary traffic detour will be kept free of dust by frequent application of water.</p>		
2.7	Temporary flooding due to excavation.	Proper drainage arrangements to be made, to avoid the overflowing of existing drains due to excavation during the laying of sewer mains.	During construction	Prospective contractor / PIA
2.8	Using of modern machineries	Using of modern machineries such as JCBs, backhoes etc, shall be used to minimize the construction period, it will reduce the construction period impacts to the nearby residents.	During construction	Prospective contractor
2.9	Prevention of accidents	Prevention of accidents involving human beings, animals or vehicles falling or accidents due to open trenches/manholes during construction period. This needs to be ensured with proper signages and barricading.	PIA / Prospective contractor	Construction and operation
2.10	Barricading site	The construction site should be barricaded at all time in a day with adequate marking, flags, reflectors etc. for safety of general traffic movement and pedestrians.	Prospective contractor	During construction
2.11	Dust Pollution near settlements	<p>i) All earth work will be protected in manner acceptable to the engineer to minimize generation of dust. Area under construction shall be covered & equipped with dust collector.</p> <p>ii) Construction material shall be covered or stored in such a manner so as to avoid being affected by wind direction.</p> <p>iii) Unpaved haul roads near / passing through residential and commercial areas to be watered thrice a day.</p> <p>iv) Trucks carrying construction material to be adequately covered to avoid the dust pollution and to avoid the material spillage</p>	Prospective contractor	During construction

2.12	Protection of residential / sensitive receptors.	<p>i) Noisy construction operations in residential and sensitive areas should be done only between 7.30 am and 6.00 pm.</p> <p>ii) Preventive maintenance of construction equipment and vehicles to meet emission standards and to keep them with low noise.</p> <p>iii) Provision of enclosing generators and concrete mixers at site.</p> <p>iv) Sound barriers in inhabited areas shall be installed during the construction phase.</p> <p>v) Adequate barricading / other measures to protect dust pollution near sensitive receptors like schools and hospital etc to be ensured.</p>	During construction	Prospective contractor / PIA
2.13	Vehicular noise pollution at residential / sensitive receptors.	<p>i) Idling of temporary trucks or other equipment should not be permitted during periods of loading / unloading or when they are not in active use. The practice must be ensured especially near residential / commercial / sensitive areas.</p> <p>ii) Stationary construction equipment will be kept at least 500m away from sensitive receptors.</p> <p>iii) All possible and practical measures to control noise emissions during drilling shall be employed. The PIA may direct to take adequate controls measures depending on site conditions.</p>	During construction	Prospective contractor / PIA
2.14	Noise from vehicles, plants and equipments	<p>i) Servicing of all construction vehicles and machinery will be done regularly and during routine servicing operations, the effectiveness of exhaust silencers will be checked and if found defective will be replaced.</p> <p>ii) Maintenance of vehicles, equipment and machinery shall be regular and up to the satisfaction of the Engineer to keep noise levels at the minimum.</p>	During construction	Prospective contractor / PIA
2.15	Storage of construction materials	Site for storage of pipes and construction materials to be identified, without affecting the traffic and other common utilities.	Prospective contractor	During construction
2.16	Storage of chemicals and other hazardous materials	<p>i) A suitable site should be identified for the safe storage and handling of chemicals and other hazardous materials with proper display of requirements and marking as protected area.</p> <p>ii) Providing specific appliances for safe working of personnel in critical areas like chlorination plant shall be ensured.</p>	Prospective contractor / respective operating agency	During construction and operation

2.17	Labour camp & facilities	<p>Setting up of labour camps needs to be done as per the procedures. Adequate potable water facilities, sanitation and drainage etc., in conformity with the Indian labour laws shall be ensured. The contractor shall also guarantee the following:</p> <ul style="list-style-type: none"> i) The location, layout and basic facility provision of each labour camp will be submitted to Engineer prior to their construction. ii) The construction will commence only upon the written approval of the Engineer. iii) The Contractor shall construct and maintain all labour accommodation in such a fashion that uncontaminated water is available for drinking, cooking and washing. iv) Supply of sufficient quantity of potable water (as per IS) in every workplace/labor camp site at suitable and easily accessible places and regular maintenance of such facilities. v) The sewage system for the camp shall be designed, built and operated in such a fashion that no health hazards occurs and no pollution to the air, ground water or adjacent water courses take place. Ensure adequate water supply is to be provided in all toilets and urinals. 	Pre-construction and construction	Perspective contractor / PIA
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2.18	Waste Disposal	<p>i) The contractor shall provide garbage bins in the camps and ensure that these are regularly emptied and disposed off in a hygienic manner as per the Comprehensive Solid Waste Management Plan approved by the Engineer.</p> <p>ii) Unless otherwise arranged by local sanitary authority, arrangements for disposal of night soils (human excreta) suitably approved by the local medical health or municipal authorities or as directed by Engineer will have to be provided by the contractor.</p>	During Construction	Prospective contractor
2.19	Clearing of construction camps and restoration	<p>i) Contractor to prepare site restoration plans, the plan is to be implemented by the contractor prior to demobilization.</p> <p>ii) On completion of the works, all temporary structures will be cleared away, all rubbish cleared, excreta or other disposal pits or trenches filled in and effectively sealed off and the site left clean and tidy, at the contractor's expenses, to the entire satisfaction of the engineer.</p>	After completion of the project	Prospective contractor
2.20	Pollution from Construction Wastes	<p>The Contractor shall take all precautionary measures to prevent the wastewater generated during construction (e.g. during the testing of pipeline) from entering into streams, water bodies or the irrigation system.</p> <p>All waste arising from the project is to be disposed off in the manner that is acceptable by the Engineer.</p> <p>The engineer shall certify that all liquid wastes disposed off from the sites meet the discharge standard.</p>	During Construction and post-construction	Prospective contractor / PIA
2.21	Pollution from Fuel and Lubricants	<p>i) The contractor shall ensure that all construction vehicle parking location, fuel/lubricants storage sites, vehicle, machinery and equipment maintenance and refueling sites will be located at least 500 m from rivers and irrigation canal/ponds.</p> <p>ii) All location and lay-out plans of such sites shall be submitted by the Contractor prior to their establishment and will be approved by the Engineer.</p> <p>iii) Contractor shall ensure that all vehicle/machinery and equipment operation, maintenance and refueling will be carried out in such a fashion that spillage of fuels and lubricants does not contaminate the ground.</p> <p>iv) Contractor shall arrange for collection, storing and disposal of oily wastes to the pre-identified disposal sites (list to be submitted to</p>	construction and operation	PIA / Prospective contractor

		Engineer) and approved by the Engineer. All spills and collected petroleum products will be disposed off in accordance with MoEF and state PCB guidelines. v) Engineer will certify that all arrangements comply with the guidelines of PCB/ MoEF or any other relevant laws.		
2.22	Safety Aspects	<p>i) Adequate precautions shall be taken to prevent the accidents and from the machineries. All machines used shall conform to the relevant Indian standards Code and shall be regularly inspected by the PIA.</p> <p>ii) Where loose soil is met with, shoring and strutting shall be provided to avoid collapse of soil.</p> <p>iii) Protective footwear and protective goggles to all workers employed on mixing of materials like cement, concrete etc.</p> <p>iii) Welder's protective eye-shields shall be provided to workers who are engaged in welding works.</p> <p>iv) Earplugs shall be provided to workers exposed to loud noise, and workers working in crushing, compaction, or concrete mixing operation.</p> <p>v) The contractor shall supply all necessary safety appliances such as safety goggles, helmets, safety belts, ear plugs, mask etc to workers and staffs.</p> <p>The contractor will comply with all the precautions as required for ensuring the safety of the workmen as per the International Labor Organization (ILO) Convention No. 62 as far as those are applicable to this contract.</p> <p>The contractor will make sure that during the construction work all relevant provisions of the Factories Act, 1948 and the Building and other Construction Workers (regulation of Employment and Conditions of Services) Act, 1996 are adhered to.</p> <p>The contractor shall not employ any person below the age of 14 years for any work and no woman will be employed on the work of painting with products containing lead in any form.</p>	During construction	Prospective contractor

2.23	Risk from Electrical Equipment(s)	The Contractor shall take all required precautions to prevent danger from electrical equipment and ensure that - i) No material will be so stacked or placed as to cause danger or inconvenience to any person or the public. ii) All necessary fencing and lights will be provided to protect the public in construction zones. All machines to be used in the construction will conform to the relevant Indian Standards (IS) codes, will be free from patent defect, will be kept in good working order, will be regularly inspected and properly maintained as per IS provision and to the satisfaction of the Engineer.	During construction	Prospective contractor
2.24	First Aid	The contractor shall arrange for: i) A readily available first aid unit including an adequate supply of sterilized dressing materials and appliances as per the Factories Rules in every work zone ii) Availability of suitable transport at all times to take injured or sick person(s) to the nearest hospital	During construction	Prospective contractor
3.	Water Treatment Plant / Booster stations			
3.1	Tree cutting	Try to save the trees by changing the alignment and provide adequate protection to the trees with tree guards as required. Such as Masonry tree guards, Low level RCC tree guards, Circular Iron Tree Guard with Bars, etc	Pre-construction and Construction	PIA / Prospective contractor
3.2	Compensatory plantation of trees	Compensatory plantation of atleast twice the number of trees felled should be done in line with competent authority guidelines.	Pre-construction and Construction	Prospective contractor / PIA
3.3	Protection of top soil & Environmental enhancing	The top soil to be protected and compacted after completion of work. Top soil from the WTP area should be stored in stock piles and that can be used for gardening purposes at WTP site which will be an environmental enhancing measure.	TWAD / Prospective contractor	During construction
3.4	Disposal of construction debris and excavated materials.	A suitable site should be identified for safe disposal, in relatively low lying areas, away from the water bodies, residential and agricultural fields etc., and got approved by the Engineer. Care should be taken that dumped material does not affect natural drainage system.	PIA / Prospective contractor	During construction

3.5	Pollution from Fuel and Lubricants	<p>i) The contractor shall ensure that all construction vehicle parking location, fuel/lubricants storage sites, vehicle, machinery and equipment maintenance and refueling sites will be located at least 500 m from rivers and irrigation canal/ponds.</p> <p>ii) All location and lay-out plans of such sites shall be submitted by the Contractor prior to their establishment and will be approved by the Engineer.</p> <p>iii) Contractor shall ensure that all vehicle/machinery and equipment operation, maintenance and refueling will be carried out in such a fashion that spillage of fuels and lubricants does not contaminate the ground.</p> <p>iv) Contractor will arrange for collection, storing and disposal of oily wastes to the pre-identified disposal sites (list to be submitted to Engineer) and approved by the Engineer. All spills and collected petroleum products will be disposed off in accordance with MoEF and state PCB guidelines.</p> <p>v) Engineer will certify that all arrangements comply with the guidelines of PCB/ MoEF or any other relevant laws.</p>	Construction and operation.	Prospective contractor / PIA
3.6	Pollution from Construction Wastes	<p>The Contractor shall take all precautionary measures to prevent the wastewater generated during construction from entering into streams, water bodies or the irrigation system.</p> <p>All waste arising from the project is to be disposed off in the manner that is acceptable by the Engineer.</p>	During Construction	Prospective contractor / PIA
3.7	Storage of chemicals and other hazardous materials	<p>i) A suitable site should be identified / construct for the safe storage and handling of chemicals and other hazardous materials with proper display of requirements and marking as protected area.</p> <p>ii) Providing specific appliances for safe working of personnel in critical areas like chlorination plant shall be ensured.</p>	Prospective contractor / respective operating agency	During construction and operation
3.8	Disposal of sludge	A suitable site should be identified for the safe disposal of sludge generated at the WTP site and got approved by the Engineer. Prepare a sludge disposal plan and adheres to the same.	PIA / TWAD / Prospective contractor	Pre-construction / construction and operation stage.
3.9	Informatory Signs and Hoardings	The contractor shall provide, erect and maintain informatory/safety signs, hoardings written in English and local language, wherever required or as suggested by the Engineer.	During construction	Prospective contractor / PIA

3.10	Risk from Electrical Equipments	<p>The Contractor shall take all required precautions to prevent danger from electrical equipment and ensure that -</p> <ul style="list-style-type: none"> i) No material will be so stacked or placed as to cause danger or inconvenience to any person or the public. ii) All necessary fencing and lights will be provided to protect the public in construction zones. <p>All machines to be used in the construction will conform to the relevant Indian Standards (IS) codes, will be free from patent defect, will be kept in good working order, will be regularly inspected and properly maintained as per IS provision and to the satisfaction of the Engineer.</p>	During construction	Prospective contractor
3.11	Labour camp & facilities	<p>Setting up of labour camps needs to be done as per the procedures. Adequate potable water facilities, sanitation and drainage etc., in conformity with the Indian labour laws shall be ensured. The contractor shall also guarantee the following:</p> <ul style="list-style-type: none"> i) The location, layout and basic facility provision of each labour camp will be submitted to Engineer prior to their construction. ii) The construction will commence only upon the written approval of the Engineer. iii) The Contractor shall construct and maintain all labour accommodation in such a fashion that uncontaminated water is available for drinking, cooking and washing. iv) Supply of sufficient quantity of potable water (as per IS) in every workplace/labor camp site at suitable and easily accessible places and regular maintenance of such facilities. v) The sewage system for the camp are designed, built and operated in such a fashion that no health hazards occurs and no pollution to the air, ground water or adjacent water courses take place. Ensure adequate water supply is to be provided in all toilets and urinals. 	During Pre-construction and construction	Perspective contractor / PIA
3.12	Safety Aspects	<ul style="list-style-type: none"> i) Adequate precautions shall be taken to prevent the accidents and from the machineries. All machines used shall conform to the relevant Indian standards Code and shall be regularly inspected by the PIA. ii) Where loose soil is met with, shoring and strutting shall be provided to avoid collapse of soil. 	During construction	Prospective contractor

		<p>iii) Protective footwear and protective goggles to all workers employed on mixing of materials like cement, concrete etc.</p> <p>iii) Welder's protective eye-shields shall be provided to workers who are engaged in welding works.</p> <p>iv) Earplugs shall be provided to workers exposed to loud noise, and workers working in crushing, compaction, or concrete mixing operation.</p> <p>v) The contractor shall supply all necessary safety appliances such as safety goggles, helmets, safety belts, ear plugs, mask etc to workers and staffs.</p> <p>The contractor will comply with all the precautions as required for ensuring the safety of the workmen as per the International Labor Organization (ILO) Convention No. 62 as far as those are applicable to this contract.</p> <p>The contractor will make sure that during the construction work all relevant provisions of the Factories Act, 1948 and the Building and other Construction Workers (regulation of Employment and Conditions of Services) Act, 1996 are adhered to.</p> <p>The contractor will not employ any person below the age of 14 years for any work and no woman will be employed on the work of painting with products containing lead in any form.</p>		
3.13	First Aid	<p>The contractor shall arrange for :</p> <p>i) A readily available first aid unit including an adequate supply of sterilized dressing materials and appliances as per the Factories Rules in every work zone</p> <p>ii) Availability of suitable transport at all times to take injured or sick person(s) to the nearest hospital</p>	During construction	Prospective contractor

4	Distribution Network and OHTs			
4.1	Shifting of community utilities	Ensure community consensus and minimum impact to community utilities like telephone cable, electric cables and electric poles, water taps. Proper clearance to be obtained from the concerned authorities and sent to the PIA before commencement of works.	Prospective contractor	Pre-construction and Construction
4.2	Laying of distribution pipelines	i) Traffic regulation: Adequate actions to direct and regulate traffic shall be taken in consultation with PIA, Dept. of Police to prevent jamming of roads during construction. While planning alternative routes, care to be taken to minimize congestion and negative impacts at sensitive receptors such as Schools & hospitals. ii) Adequate precautions should be taken while laying the water distribution lines to avoid possibility of cross connection with the sewer lines.	Prospective contractor	During construction
4.3	Using of modern machineries	Using of modern machineries such as JCBs, backhoes etc, shall be used to minimize the construction period.	Prospective contractor	During construction
4.4	Disposal of construction debris and excavated materials.	i) A suitable site should be identified for safe disposal, in relatively low lying areas, away from the water bodies, residential and agricultural fields etc., and got approved by the Engineer. ii) Care should be taken that dumped material does not affect natural drainage system. iii) Minimize the construction debris by balancing the cut and fill requirements. iv) All vehicles delivering material to the site shall be covered to avoid material spillage.	Prospective contractor	During construction
4.5	Dust Pollution near settlements	i) Unpaved haul roads near / passing through residential and commercial areas to be watered thrice a day. ii) Trucks carrying construction material to be adequately covered to avoid the dust pollution and to avoid the material spillage	Prospective contractor	During construction
4.6	Vehicular noise pollution at residential / sensitive receptors.	i) Idling of temporary trucks or other equipment should not be permitted during periods of loading / unloading or when they are not in active use. The practice must be ensured especially near residential / commercial / sensitive areas. ii) Construction activity induced noise level shall be mitigated at the residential and sensitive receptors. The Contractor shall employ mitigation measures as directed by the PIA.	Prospective contractor	During construction

		<p>iii) Stationary construction equipment will be kept at least 500m away from sensitive receptors.</p> <p>iv) All possible and practical measures to control noise emissions during drilling shall be employed. The PIA may direct to take adequate controls measures depending on site conditions.</p>		
4.7	Protection of residential / sensitive receptors.	<p>i) Noisy construction operations in residential and sensitive areas should be restricted between 7.30 am and 6.00 pm.</p> <p>ii) Preventive maintenance of construction equipment and vehicles to meet emission standards and to keep them with low noise.</p> <p>iii) Provision of enclosing generators and concrete mixers at site.</p> <p>iv) Sound barriers in inhabited areas shall be installed during the construction phase.</p> <p>v) Adequate barricading / other measures to protect dust pollution near sensitive receptors like schools and hospital etc to be ensured.</p>	Prospective contractor	During construction
4.8	Barricading site	The construction site should be barricaded at all time in a day with adequate marking, flags, reflectors etc. for safety of general traffic movement and pedestrians	Prospective contractor	During construction
4.9	Safety Aspects	<p>i) Adequate precautions shall be taken to prevent the accidents and from the machineries. All machines used shall confirm to the relevant Indian standards Code and shall be regularly inspected by the PIA.</p> <p>ii) Provide temporary crossing / bridges wherever necessary to facilitate normal life and business</p> <p>iii) Where loose soil is met with, shoring and strutting shall be provided to avoid collapse of soil.</p> <p>iv) The contractor shall supply all necessary safety appliances such as safety goggles, helmets, safety belts, ear plugs, mask etc to workers and staffs.</p> <p>v) A readily available first aid unit including an adequate supply of sterilized dressing materials and appliances as per the Factories Rules in every work zone</p> <p>vi) Availability of suitable transport at all times to take injured or sick person(s) to the nearest hospital</p>	Prospective contractor	During construction

5.0	Environmental enhancement and special issues:		Implementing Agency	Location
5.1	Flora and Chance found Fauna	<p>The contractor will take reasonable precaution to prevent his workmen or any other persons from removing and damaging any flora (plant/vegetation) and fauna (animal) including fishing in any water body and hunting of any animal.</p> <p>If any wild animal is found near the construction site at any point of time, the contractor will immediately upon discovery thereof acquaint the Engineer and carry out the Engineer's instructions for dealing with the same.</p> <p>The Engineer will report to the near by forest office (range office or divisional office) and will take appropriate steps/ measures, if required in consultation with the forest officials.</p>	Prospective contractor	Project area
5.2	Chance Found Archaeological Property	<p>All fossils, coins, articles of value of antiquity, structures and other remains or things of geological or archaeological interest discovered on the site shall be the property of the Government and shall be dealt with as per provisions of the relevant legislation.</p> <p>The contractor will take reasonable precautions to prevent his workmen or any other persons from removing and damaging any such article or thing. He will, immediately upon discovery thereof and before removal acquaint the Engineer of such discovery and carry out the SC's instructions for dealing with the same, waiting which all work shall be stopped.</p> <p>The Engineer will seek direction from the Archaeological Survey of India (ASI) before instructing the Contractor to recommence the work in the site.</p>	Prospective contractor	Project area
5.3	Monitoring of environment parameters	The contractor shall undertake seasonal monitoring of air, water, noise and soil quality through an approved monitoring agency. The parameter to be monitored, frequency and duration of monitoring plan shall be prepared	Prospective contractor	Corridor of Impact
5.4	Sensitive Areas	The sensitive areas like Schools, hospitals to be provided with suitable noise barriers and safety measures, prior to the start of work in order to minimize the dust and noise impacts due to vehicle movement during construction and their effectiveness to be checked during operation phase.	Prospective contractor	Corridor of Impact
5.5	Clearing of construction of	Contractor to prepare site restoration plans for approval by the engineer. The plan is to be implemented by the contractor prior to	Prospective contractor	All construction workers camps

	camp and restoration	demobilization. On completion of the works, all temporary structures will be cleared away, all rubbish cleared, excreta or other disposal pits or trenches filled in and effectively sealed off and the site left clean and tidy, at the contractor's expenses, to the entire satisfaction of the engineer.		
5.6	Tree Protection, Tree Planting,	<ul style="list-style-type: none"> • Giving due protection to the trees that fall in the shoulders /corridor of impact shall be the prime focus during Construction/post construction • Masonry tree guards, Low level RCC tree guards, Circular Iron Tree Guard with Bars, use of plate compactors near trees may also be considered where necessary • Re-plantation of at least twice the number of trees cut should be carried out along the project road. Since the major portion of the project road may pass through open lands, planting of trees along the entire stretch of the road is recommended as an enhancement measure. • Growth and survival of trees planted shall be ensured and monitoring done at least for a period of 3 years .Survival status shall be reported on monthly basis to Engineer in-charge. 	Concerned agency/Contractor / PIA	All tree plantation / greenery areas of the project

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

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

Raw water Intake process

In respect of raw water Intake process, the following payments shall be made:

Ten percent (10%) of the total or pro rata EXW amount upon completion of Design services against receipt of invoice. The advance payment security may be reduced in proportion to the value of the raw water Intake process after got approved by the competent authority on the employer side with submission of hot (5 Nos) and soft copies.

Fifty percent (50%) of the total or pro rata EXW amount upon delivery of pipe material to the site with necessary Third party inspection certificate & got tested in the nearest TWAD Board material testing Lab along with receipt of invoice.

Twenty percent (20%) of the total or pro rata EXW amount upon laying, jointing and testing of pipe material at the site by producing required certificates and documents.

Fifteen percent (15%) of the total or pro rata EXW amount upon issue of the Completion Certificate with hydraulic testing of pipe for required test pressure, after satisfactory trial run and issue of the Operational Acceptance Certificate.

Five percent (5%) of the total or pro rata EXW amount after commissioning of the entire scheme as against unconditional irrevocable bank Guarantee for a period of 2 years.

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.

Construction and setting up of WTP using Ultra filtration Methodology

In respect of Construction and setting up of WTP using Ultra filtration Methodology, the following payments shall be made:

Ten percent (10%) of the total or pro rata amount of Construction and setting up of WTP using Ultra filtration Methodology upon acceptance of design by the Project Manager on Design engineering in Civil, Electrical, Electro mechanical infrastructural components, piping and Instrumentation, PLC automation and complete plant design including Hydraulic design, detailed process design of each and every components with input and output parameter standards, UFTP back wash / chemical wash process etc., and services got duly approved by the competent authority on the employer side with submission of hot (5 nos) and soft copies of complete design against receipt of invoice. The advance payment security may be reduced in proportion to the value of the Construction and setting up of WTP using Ultra filtration Methodology, as evidenced by delivery documents.

Twenty percent (20%) of the total or pro rata amount of Construction and setting up of WTP using Ultra filtration Methodology on completion of construction of civil works which includes sump, pump house, all

buildings etc., as per the approved design and specifications given by the competent authority on Employer side.

Thirty percent (30%) of the total or pro rata amount of Construction and setting up of WTP using Ultra filtration Methodology on completion of supply, delivery and erection of mechanical & electro mechanical works including Ultra filtration units as per the approved design and specifications given by the competent authority on Employer side with concerned Third party inspection certificate, required warranty certificates and documents found necessary for ensuring functional guarantee of the equipment supplied by the manufacturer.

Twenty percent (20%) of the total or pro rata amount of Construction and setting up of WTP using Ultra filtration Methodology on completion of Supply, delivery, erection / installation of Electrical and instrumentation items including obtaining HT / LT power supply connection works for Water Treatment Plant etc., complete as per the approved design and specifications given by the competent authority on Employer side with concerned Third party inspection certificate, required warranty certificates and documents found necessary for ensuring functional guarantee of the equipment supplied by the manufacturer.

Fifteen percent (15%) of the total or pro rata amount of Construction and setting up of WTP using Ultra filtration Methodology upon issue of the Completion Certificate on Completion of entire Erection and commissioning of complete water treatment including Ultra Filtration and, after satisfactory trial run and issue of the Operational Acceptance Certificate.

Five percent (5%) of the total or pro rata amount of Construction and setting up of WTP using Ultra filtration Methodology after commissioning of the entire scheme as against unconditional irrevocable bank Guarantee for a period of 2 years.

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.

Other Services

In respect of other Services, the following payments shall be made:

Twenty percent (20%) of the total or pro rata amount of other Services on completion of construction of compound wall for Water Treatment Plant on front side with MS gate and wicket gate arrangements in the front side and providing hot dip G.I chain link fencing with RCC pillar post on other sides as per the approved design and specifications given by the competent authority on Employer side.

Fourty percent (40%) of the total or pro rata amount of other Services on completion of construction of Internal BT Road with side drain and internal path ways to all components of Water Treatment Plant etc., complete as per the approved design and specifications given by the competent authority on Employer side

Ten percent (10%) of the total or pro rata amount of other Services on completion of providing adequate Green Belt, Landscaping with water sprinkler arrangements etc., complete as per the approved design and specifications given by the competent authority on Employer side.

Ten percent (10%) of the total or pro rata amount of other Services on plant survival of all green belt and landscaping plant ensuring completely developed Green Belt, Landscaping and required manuring of trees and plant etc., complete to the satisfaction of the TWAD Board officers.

Fifteen percent (15%) of the total or pro rata amount of other Services upon issue of the Completion Certificate after satisfactory trial run and issue of the Operational Acceptance Certificate.

Five percent (5%) of the total or pro rata amount of other Services, after commissioning of the entire scheme as against unconditional irrevocable bank Guarantee for a period of 2 years.

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.

Operation and maintenance services

The Operation and maintenance charges will be paid on a prorata 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 product water. 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 employer 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 scrutiny 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

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

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) 20,000,000 with unlimited number of occurrences.	100%	Contractor, Sub Contractor	Not Applicable	Work Site

(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:

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

Appendix 10

Time Schedule

Appendix 10 - Time Schedule

S. No.	Description of Milestones	Time for Completion from the date of Receipt of LTC
1	Submission of layout, unit sizing, process design and drawings	1 Month
2	Mobilization to the site and establishment of field office and quality control laboratory	2 Month
3	Approval of designs and drawings	3 Month
4	Completion of civil works	12 Month
5	Completion of installation of Plant and equipment	18 Month
6	Completion of Trial Run of the Treatment Plant	24 Month
7	Completion of Commissioning and performance guarantee test and Operational Acceptance certificate by the Employer	24 Month
8	Completion of Commissioning and performance guarantee test and taking over by the Employer after completion of Maintenance of the Project (5 years)	84 Month

Appendix 11

List of Major Items of Plant and Services and List of Approved Subcontractors

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."

Major Items of Plant and Services	Approved Subcontractors and Manufacturers	Nationality

Appendix 12

Scope of Works and Supply by the Employer

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 5 years : Electricity.	Nil, subject to Appendix 8 (Functional Guarantee) of the Contract.

Appendix 13

List of Documents for Approval or Review

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 13

Functional Guarantees

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