

10. ENVIRONMENT MANAGEMENT PLAN

The Environment Management Plan would consist of all mitigation measures for each item wise activity to be undertaken during the construction, operation and the entire life cycle to minimize adverse environmental impacts as a result of the activities of the project. It would also delineate the environmental monitoring plan for compliance of various environmental regulations. It will state the steps to be taken in case of emergency such as accidents at the site including fire.

Proposed Environmental Mitigation Measures

These measures together constitute part of Environmental Management Plan (EMP). The environmental mitigation measures for construction and operation phases have been given in the following Table.

Proposed Environmental Mitigation Measures	
Area	Mitigation Measures
	Construction Stage:
Water quality	• Toilet and drinking water facilities for construction workers will be provided by the contractor at the construction site to avoid unhygienic condition at site. • Sewage from toilets at construction site will be collected and disposed STP through authorized tankers.
Air quality	• Barricades of sufficient height all along the project boundary will be erected to prevent dispersion of dust and noise • Regular sprinkling of water on roads and vulnerable areas of the construction site will be carried out for dust suppression. • Properly tuned construction machinery & vehicles in good working condition with low noise & emission will be used and engines will be turned off when not in use. DG sets to comply with emission norms & stack height regulations. • Construction materials will be properly stored at the storage yard with proper shades and covers located at the off-site. • Trucks carrying construction materials and debris will be suitably covered by tarpaulin and plastic sheets. • Use of mask by construction workers.
Noise level	• Enclosed/ canopy type DG sets will be used. • Protective gears such as ear mufflers etc. will be provided to construction personnel exposed to high noise levels.



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Solid wastes	- Construction wastes will be recycled and excess construction debris will be disposed at designated places in tune with the local norms. - Municipal solid wastes from construction site will be disposed at designated dumping site through authorized vendors.
Landscape	Appropriate landscape including plantation of evergreen and ornamental flowering trees, palms, shrubs and ground covers at open spaces within the complex will be done, which would serve the dual purpose of controlling fugitive dust and improving the aesthetics of the area.
Health & Safety	- Personal protective equipment (PPE) and other safety measures will be provided to the construction workers as per occupational safety norms to prevent accidents/ hazards. - First aid and health checkup facility will be provided at the construction site.
Operation Stage:	
Water quality	- Sewage will be treated up to the tertiary level in the on-site STP. - Entire treated sewage will be reused for cooling, toilet flushing and horticulture. - Regular monitoring of STP and STP effluent quality will be carried out as per norms.
Air quality	- Back up DG sets will comply the applicable emission norms. - Adequate stack height for DG sets will be provided as per norms. - Back up DG sets will be used only during power failure. - Regular monitoring of emissions from DG sets and ambient air quality will be carried out as per norms.
Noise level	- DG sets will be installed in the basement to minimize the vibration and impact on ambient noise. - DG room will be treated acoustically as per norms to control the noise from DG sets. - Pumps, Compressors, DG sets etc. will be properly maintained for fuel efficiency and noise control. - Personal protective equipment will be provided to the maintenance staff working in high noise areas.
Solid wastes	- Solid wastes will be segregated into biodegradable & non-biodegradable components. - Biodegradable wastes will be composted in an on-site composting unit and the manure will be used for landscaping. - Non-biodegradable/ recyclable wastes will be disposed at designated dumping site through authorized vendors.
Hazardous waste	Used/spent oil from DG sets will be temporarily stored in an isolated area with proper marking & restriction and finally sold to registered recyclers as per HW rules.



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Rainwater harvesting	Adequate rainwater harvesting pits will be provided for collection of rainwater and recharge into the groundwater.
Fire protection	- Adequate fire protection facilities will be installed including fire detectors, fire alarm and firefighting system as per National Building Code of India. - Firefighting training & mock drills will be conducted at regular intervals as per norms and safety manual
Landscape	Proper maintenance of landscape round the year including replacement of the decayed plants.
Health & Safety	- Adequate safety measures will be provided to the maintenance staff complying to the occupational safety manuals to prevent accidents / hazards. - First aid and health checkup facility will be provided at the building.
Others	- The building will be provided with disabled-friendly design, timber-free construction, energy efficient lighting & ventilation, and control of indoor environment. - Undertaking all necessary pollution control measures to maintain the emissions and discharges within the prescribed/stipulated limits.

Environmental Monitoring Plan

The environmental monitoring plan during the construction and operation phases of the project including attribute, number and location of monitoring stations, frequency of sampling and parameters to be covered is summarized in the following **Tables**.

During the construction phase, the contractor will be responsible for the environmental monitoring under the supervision of site-in-charge. The operational phase environmental monitoring will be conducted under the supervision of Building Manager. Monitoring will be get carried out by recognized laboratories.

Environmental Monitoring Plan – Construction Phase

Attribute	Monitoring Location	Parameters	Frequency
Ambient Air Quality	At 1 location at boundary of the project site.	PM ₁₀ , PM _{2.5} , SO ₂ , NO _x and CO	Twice a year or as per conditions of EC
Ambient Noise	At 1 location at boundary of the project site.	Day and night equivalent noise level	Twice a year or as per conditions of EC
Ground water	At 1 location nearest to the project site.	As per standards	Twice a year or as per conditions of EC
Soil	At 1 location outside the project site.	As per standards	Twice a year or as per conditions of EC



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Environmental Monitoring Plan – Operation Phase

Attribute	Monitoring Location	Parameters	Frequency
DG set emissions	DG stacks	SPM, SO ₂ , NO _x	Twice a year or as per conditions of EC or as per requirement of SPCB
DG set noise	At 0.5 m distance from DG enclosure/ DG room	Noise level	Twice a year or as per conditions of EC or as per requirement of SPCB
Sewage and Effluent Treatment Plant	Inlet and Outlet of STP and STP	pH, BOD, Suspended Solid, Oil & Grease	Twice a year or as per conditions of EC or as per requirement of SPCB
Ambient Air Quality	At 1 location (at boundary of the project site along predominant wind direction)	PM ₁₀ , PM _{2.5} , SO ₂ , NO _x and CO	Twice a year or as per conditions of EC or as per requirement of SPCB
Ambient Noise	At 1 location (at boundary of the project site nearest to adjoining residential area)	Day and night equivalent noise level	Twice a year or as per conditions of EC or as per requirement of SPCB

Environment Management Cell

The composition of the Environment Management Cell and responsibilities of its various members are given in the **Table** below.

Environment Management Cell

SN	Level & Person	Proposed Responsibility
1.	Corporate Level: Environment Department	• Environmental policy and directions • Overall responsibility for environment management and decision making for all environmental issues • Ensuring legal compliance and interaction with regulatory agencies
2.	Project Level (Construction): Site In-charge of the Contractor	• Environmental management & pollution control during construction stage • Installation of pollution control facilities and implementation of the conditions of Environmental Clearance and Consent to Establish • Environmental monitoring during construction stage



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		• Secondary responsibility for ensuring legal compliance during construction stage
3.	Project Level (Operation): Building Manager	• Environmental management and operation & maintenance of pollution control facilities during operation stage • Environmental monitoring during operation stage • Secondary responsibility for environment management and decision making for all environmental issues • Secondary responsibility for ensuring legal compliance and interaction with regulatory agencies during operation stage

Environmental Budget

The budget provision has been kept in the project cost towards the environmental protection, control & mitigation measures and implementation of the EMP, both during the construction and operation phase.

ENVIRONMENT BUDGET (Construction Stage)			
S. No.	Particulars	Capital Cost (INR Lacs)	Recurring Cost / annum (INR Lacs)
1.	Barricading of Construction Site	4.00	-
2.	Anti-Smog Gun With Complete System)	4	2
3.	Display Of Dust Mitigation Measures	1.5	0.3
4.	Site Sanitation -	2	0.8
5.	Mobile STP	3	1
6.	Disinfection/ Pest Control	-	1
7.	Labor Welfare (Canteen, Creche, Safe Access Road - Water Power)	2	1.0
8.	Waste Storage Bins - Labour Camp/Site Offices	1	0.5
9.	Traffic Management Signages	1	0.1
10.	Safety Training To Workers	-	0.25
11.	Environment Monitoring & 6 Monthly compliance Report Of EC Conditions		2
TOTAL		18.5	8.86

ENVIRONMENT BUDGET (Operation Stage)			
S. No.	Particulars	Capital Cost (Lacs)	Recurring Cost / annum (Lacs)
1	Cost of STP	48.00	6.00

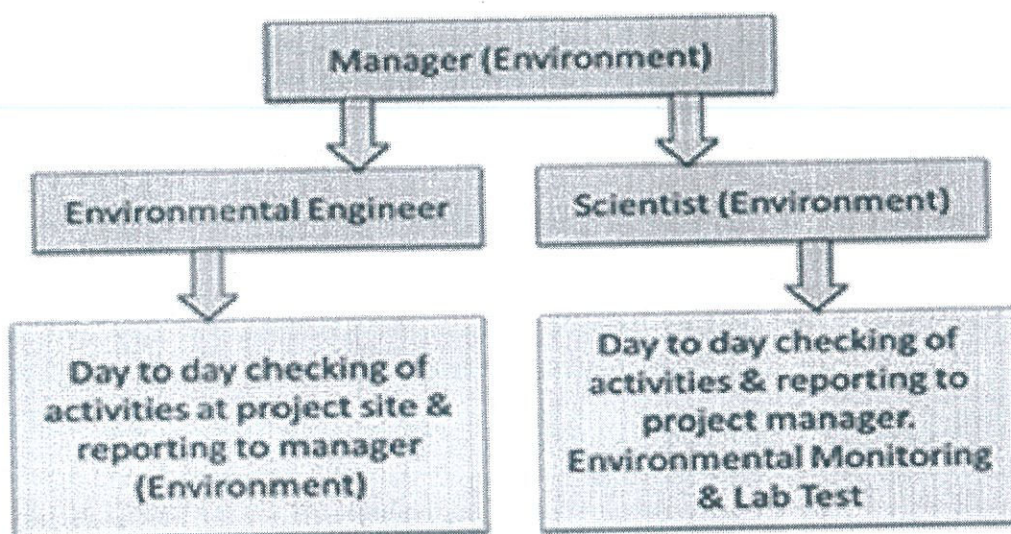


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2.	Rain Water Harvesting System	5	1
	Solid Waste Storage Bins & Composter	2	1
3.	Horticulture Development (Tree Plantation & Landscaping)	1	0.8
4.	Environment Monitoring & 6 Monthly Compliances Of Environment Clearance Conditions	--	1.5
TOTAL		56	10.3

Environment Cell

The composition of the Environment Management Cell and responsibilities of its various members are given below:



Corporate Social Responsibility (CSR):

The budget for expenditure on Corporate Social Responsibility (CSR) for the above project will be total Rs. 1.0 crore, which is 2% (being Greenfield project) of the capital investment of Rs. 50 crore. (Rs. 24 crores for existing project & Rs. 26 crores for proposed project)

The CSR activities shall be limited to infrastructure creation such as drinking water supply, sanitation, health, education, skill development, roads, cross drains, electrification including solar power, solid waste management facilities, rain water harvesting, avenue plantation and plantation in community areas around the project site as per need of the area.

SITA CONSTRUCTIONS
Shishu Kumar
 Partner