'ANNEXURE'

THE SINGARENI COLLIERIES COMPANY LIMITED.
(A Government Company)
KOTHAGUDEM COLLIERIES
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I About the Technology:

The objective of Constructed Wet Land technology is to utilize the decomposable organic matter present in sewage, which can be disposed of into the environment without causing health hazards or nuisance. The degree of treatment to be adopted would not only meet the regulatory agencies (surface water discharge standards) but also result in the maximum use of end product consistent with economy.

Constructed Wet Lands are complex and modular systems that provide an efficient and sustainable purification treatment method that is applicable to practically all pollutant sources and in all climatic and environmental conditions. Constructed Wet Lands are based on the activity of plants together with microorganism communities in the root zone. Together they degrade, accumulate, extract, and volatilize contaminants of all kinds in water, soil and the air, resulting in clean and purified outflow.

II. *Scope of the Work:*

i) Designing, developing, erection and commissioning of 0.60 MLD Sewage Treatment Plant using Constructed Wet Land technology at 8 Incline colony, Bhupalpalli, Jayashankar Dist., Telangana State.

a) The firm is required to design, develop, test and commission sewage treatment system based on constructed wetland technology. The required tanks, hydrology, plant(s) system, process equipment, electro-mechanicals, piping, instrumentation etc., are to be designed considering the quantity and quality of raw sewage. The system is to be designed duly observing retention periods in various stages as per norms. Aerobic conditions to avoid foul smell in premises are to be ensured throughout operation of the system. For this pumps and ozonation system shall be made operational in auto mode through level controllers, timers etc. The raw sewage quality and expected quality of treated sewage are furnished below for designing the treatment system.

S.No.	Parameters	Values	
		Raw Sewage	Treated Sewage
1	pH	8.8 to 9.1	6.5 to 7.5
2	BOD	About 300 ppm	< 10 ppm
3	COD	About 550 ppm	< 100 ppm
4	TSS	About 300 ppm	< 10 ppm
5	Oil & Grease	10 to 15 ppm	< 5 ppm
6	Residual Chlorine	-	0.5

ii) *Maintenance:*

a) The firm has to maintain the sewage treatment system for a period of **3 years.** Power & water will be supplied by client free of cost from the nearest available source at one point. However, the firm has to make its own arrangements from the point.

b) Repairs & Maintenance to equipment/ facility in maintenance period is to contractors account.

c) Cost of replacement of plants during the maintenance period is to contractors account.

d) Testing charges of effluent quarterly at TSPCB in maintenance period is to contractors account.

e) During the maintenance period the firm has to engage one Lab Technician including instruments and other workmen as required for conducting/ preparing day to day test reports of effluent.

f) General maintenance and housekeeping of the premises is to be done by agency with its cost to maintain aesthetics of the plant and safe guarding the material during the maintenance period.

iii) *Components to be supplied by the firm:*

A) **Civil units:**

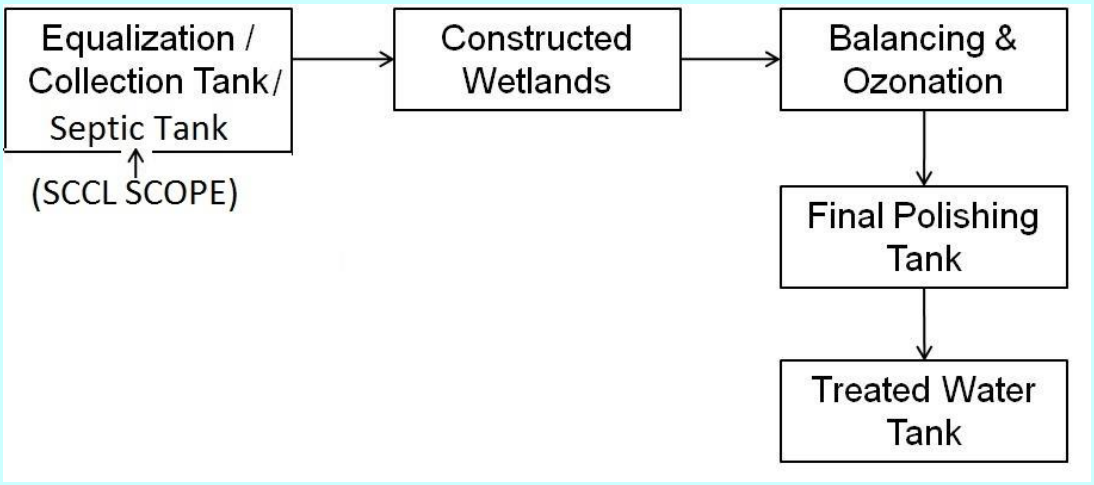
1) Wetland tank: RCC M 25 for floor and walls
2) Balancing tank: RCC M 25 for floor and walls
3) Final polishing tank: RCC M 25 for floor and walls
4) Sludge drying beds: RCC M 25 for floor and walls
5) Treated water tank: RCC M 25 for floor and walls
6) Chain link mesh fencing (1.40M height) around STP including S&F gate.
7) Drains: Fly ash brick masonry
8) General yard lighting
9) **Watchman room cum toilets:** Watchman room - 3.0x3.0M, Toilets -2.1x1.20M.
10) **Store room:** 3.60x3.0M
11) **Laboratory room:** 3.60x3.0M
12) **Water storage tank:** 1000 litres capacity
13) **CC pavement:** Approach road from existing road & inside the premises
14) Pathways inside the premises
15) Mechanical equipment of reputed make:
16) Plumbing & piping with CPVC/ HDPE pipes
17) Electrical of reputed make:
18) Flow meter
19) UV Chamber/ Ozonelines

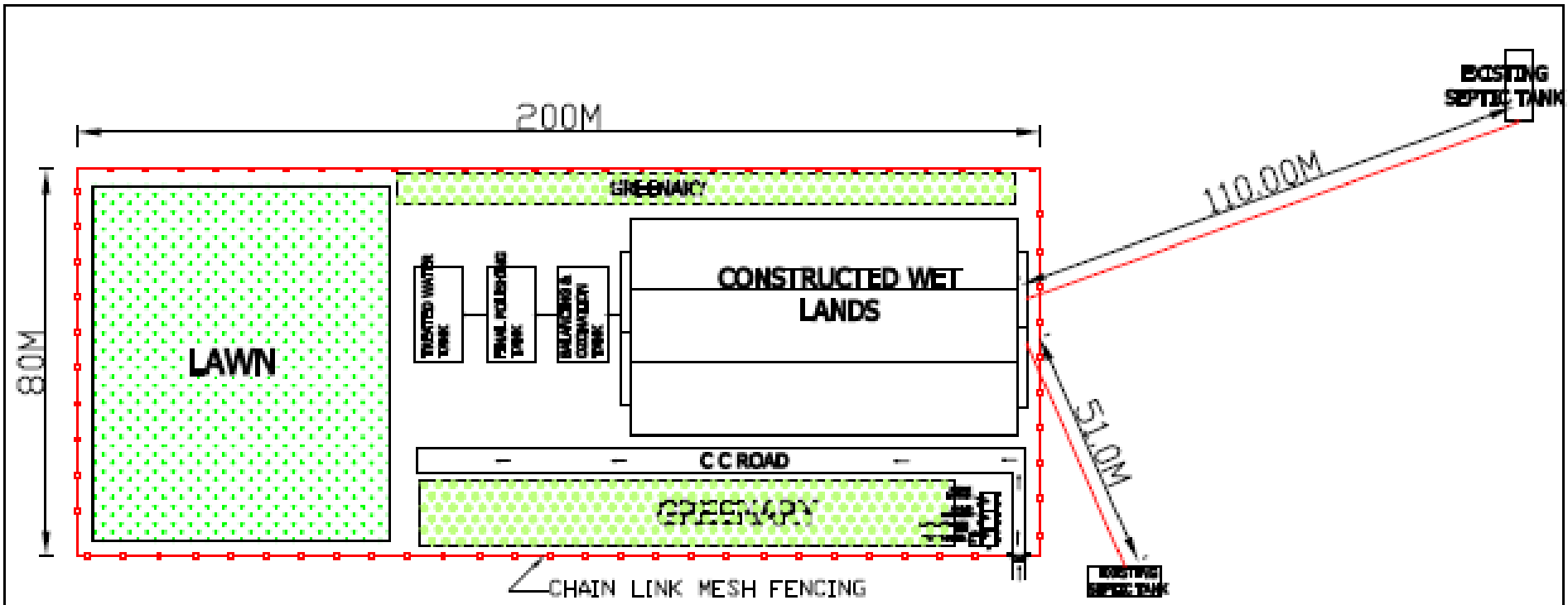
ii) *Scope of the client:*

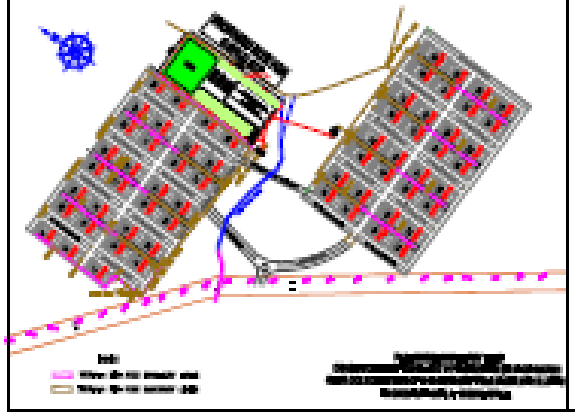
1) Equalization/ raw sewage collection tank/ Septic tanks
2) Water point
3) Electric point

} On chargeable basis during construction and free of cost during maintenance period.

iii) *FLOW DIAGRAM:*







NOT TO SCALE

PLAN SHOWING PROPOSED 0.60 MLD CAPACITY STP WITH CONSTRUCTED WETLAND TECHNOLOGY AT 1000 Nos MD TYPE QUARTERS, BHUPALAPALLI.