Consortium Partners
SMEC International Pty. Ltd. (ACN-065440619/FCRN-F01483)
NJS Engineers India Pvt Ltd, India (CIN - U74210PN2007PTC129798)
Tata Consulting Engineers Limited, India (CIN- U74210MH1999PLC123010)
SMEC (India) Pvt. Ltd. (CIN: U93000DL1997PTC088574)

Ref: SMEC/ CMWSSB / 5061185/135

Date: 12th August 2020

SUPERINTENDING ENGINEER (DESAL) CMWSS BOARD, CHENNAI-7 12 AUG 2020

To,
The Superintending Engineer (Desalination)
6th floor, Chennai Metropolitan Water Supply and Sewerage Board,
No.1, Pumping Station Road,
Chintadripet, Chennai 600 002
Tamil Nadu, India

Sub: Consultancy for "Design, Preparation of Bid Documents & Evaluation of Bids for the Proposed Construction of 400 MLD Capacity Seawater Reverse Osmosis Desalination Plant at Perur along East Coast Road, South of Chennai, Tamil Nadu and Construction Management & Supervision for the Proposed Desalination Plant and its Product Water Conveyance Pipeline from the Plant and upto Porur and all allied works"
Action Taken Report / Reply to Queries on the Draft Concept Design Report and Draft Environmental Impact Assessment (EIA) Review Report for CP1 – Reg.

Ref:
1. Queries from CMWSSB vide your email, dated 10.08.2020
2. Draft EIA Review Meeting held at 6th floor in O/o SE (Desal, CMWSSB), dated 03.06.2020
3. Our Letter no. Ref: SMEC/ CMWSSB / 5061185/073, dated 26.05.2020
4. Our Letter no. Ref: SMEC/ CMWSSB / 7061563/005, dated 20.01.2020
5. Your Letter no. Lr.no.CMWSSB/SE(Desal)/400 MLD Plant / PMC/2020, dated 13.01.2020
6. Our Contract Agreement with CMWSSB, dated 09.01.2020

Dear Sir,

With reference to the queries received through an email from CMWSSB vide our letter cited in reference no.1, dated 10.08.2020, please find below details of the action taken report / reply to queries on the Draft Concept Design Report and Draft Environmental Impact Assessment (EIA) Review Report for CP1 components for the subject project.

Sl. No.	Queries from CMWSSB vide email, dated 10.08.2020	Action Taken Report/ Reply to Queries
1.	Pigging operation videos from the suppliers & performance report from end users.	Please refer to the Design Conceptual report pg.no: 50 wherein the following link is mentioned: https://www.pigtek.com/products/desalination-technology-and-sea-water-intake-pipe-pig/ Also please refer to the following Pigging operation videos link: https://www.youtube.com/watch?v=iFoYMf2z3yQ https://www.youtube.com/watch?v=IXawEgp3Ic8
2.	The identified environmental compliance requirements of Pollution Control Board for discharging the brine into the Sea and	The Environmental compliance requirements of Pollution Control Board for discharging the brine into the Sea was furnished in Annexure – 4 of Draft Environmental review

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Sl. No.	Queries from CMWSSB vide email, dated 10.08.2020	Action Taken Report/ Reply to Queries
	also to arrive the TSS in plant Wastewater to sea with Sludge treatment and without sludge treatment, since the land required for disposing of sludge is large.	report submitted dated 24th May 2020. The same is attached herewith for ready reference. Dewatered sludge would be generated from the plant. This sludge would be mainly of marine sand and silica. The average quantum of sludge generated from plant would be in tune of 89 tons/ day. The hazardous content in this sludge would be below the threshold as per Schedule-II of Hazardous Waste Management (HWM) Rules 2016. However, this requires secured disposal to avoid leaching of salinity to surface and groundwater. Following options are explored for disposal of de-watered sludge: (1) Disposal to the nearest solid waste dumping grounds at Perungudi and Kodungaiyur or any other abandoned quarries with approval from Tamil Nadu Pollution Control Board (TNPCB). (2) Disposal to common Hazardous Waste Treatment Storage and Disposal Facility (CHWTSDF), which is located in Gummidipundi in SIPCOT estate, located at about 109 km from Perur. The option (1) looks more feasible considering the quantum of waste and its transportation. It is proposed that the identification of land and transportation and disposal will be in the scope of the Contractor.
3.	Status of draft ToR for the appointment of any one institution for evolving a system for a close and continuous monitoring during construction and Post construction phases of the project and when it is to be progressed.	Please note that appointment of anyone institution such as the National Centre for Sustainable Coastal Management (NCSCM), Anna University, NIOT, IIT Madras is required whenever the Contractor starts construction activity. Formulations of ToR is taking time as this one of a kind requirement. ToR would be prepared in close coordination with all the concerned experts. Priority wise Onsite field survey, Final Environmental review report preparation are ongoing. PMC will share the ToR once these activities are completed.
4.	The appropriate Shoreline erosion control and management plan framed by State government for the proposed 400MLD	Please refer Annexure – I.

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Sl. No.	Queries from CMWSSB vide email, dated 10.08.2020	Action Taken Report/ Reply to Queries
	Desalination Plant at Perur during construction and post construction phases.	
5.	Comment about maintaining finished Floor as +7m above MSL	Please refer Annexure – II.
6.	When the survey near the intake for a radius of 10Km will be carried out by PMC to study about the white fibrous particle.	Based on the laboratory analysis of TOC content, PMC will do the reconnaissance survey to identify and assess the streams / nallahs with sewage joining into the sea for possibility of pollution. The reconnaissance survey will briefly consists of 5Km radius.
7.	It is requested to make a note, not to entertain/ consider any KOEL DG sets for procurement for CMWSSB projects & O&M works.	Noted. PMC will prepare an approved vendor list accordingly for CMWSSB's approval.

Thanking you assuring our services at all times.

Yours truly,
For **Consortium of SMEC International Pty Ltd-TCE Ltd.-NJS Engineers India Pvt. Ltd.-SMEC (India) Pvt. Ltd.**

S.Srinivasa Rao
Project Coordinator

SMEC International Pty. Ltd.-TCE Ltd.- NJSEI Pvt. Ltd.-SMEC (India) Pvt. Ltd. ★ PMC for 400 MLD Chennai.

Encl: Annexure – I & II

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ANNEXURE – I

CRZ Condition	Conclusions from Studies submitted for CRZ clearance	PMC conclusion and recommendation
As per CRZ environmental clearance Part A-Specific conditions (i) : "The project proponent shall implement the shoreline erosion control and management plan framed by the State government, as may be applicable in the area."	It may be noted that in the Additional details documents submitted to MoEF &CC for obtaining CRZ clearance for 400 MLD Perur DSP the following were observed (Pg.no. 77 to 104). 1) Findings of the Study on Shoreline report concludes, as mentioned below: In the present development of Phase II and Phase III desalination plants, construction of bund does not arise as the pipeline is going to be buried. The intake and outfall pipelines will be buried in the seafloor at a depth of minimum 1.0 m below the seafloor. The littoral drift will not be obstructed due to the burial of pipelines. **Hence there will not be any impact on the shoreline and erosion due to the proposed development.** 2) Findings of Mathematical modelling report on Impact of Shoreline due to the laying of Submarine pipelines for 150 MLD and 400 MLD seawater desalination plants concludes as mentioned below: The mathematical modelling study shows that there is no change in sediment transport flux and inturn no changes in bed level due to the laying of intake and outfall pipelines. Further, the pipeline will be buried below the seabed, and hence the bed profile will maintain its equilibrium conditions. Therefore, the laying of pipelines will not cause any change in coastal morphology and the seabed. Also, it will not cause any significant change in the current flow.	Based on the report's findings, it was clear that the Shoreline near Perur DSP is quite stable and no Shoreline erosion control with Boulders and Groins, etc., would be required to be implemented. Further, the condition of MoEF &CC only indicates **as may be applicable in the area.** As per the PWD report, Government of Tamil Nadu (pg. 34) it is indicated that " A significant stretch of coast south of Kovalam has a wide beach conducive for plantations as a long-term measure for protecting the coast." However, as a precaution - PMC proposes to include the conditions in Bid document: (i) Laying of offshore Pipelines to be taken up only during the calm seasonal months (typically between January to April) to avoid any Shoreline erosion. (ii) The offshore activities carried out by the bidder should not cause any coastal erosion and alter the beach configuration. GPS survey would be carried out in 1km stretch of Perur plant in North and South direction for monitoring of any shoreline changes This scope is proposed to be included in any one reputed Academic institutions and research institutes viz., NIOT Chennai, IIT Madras, NCSCM - Anna university.

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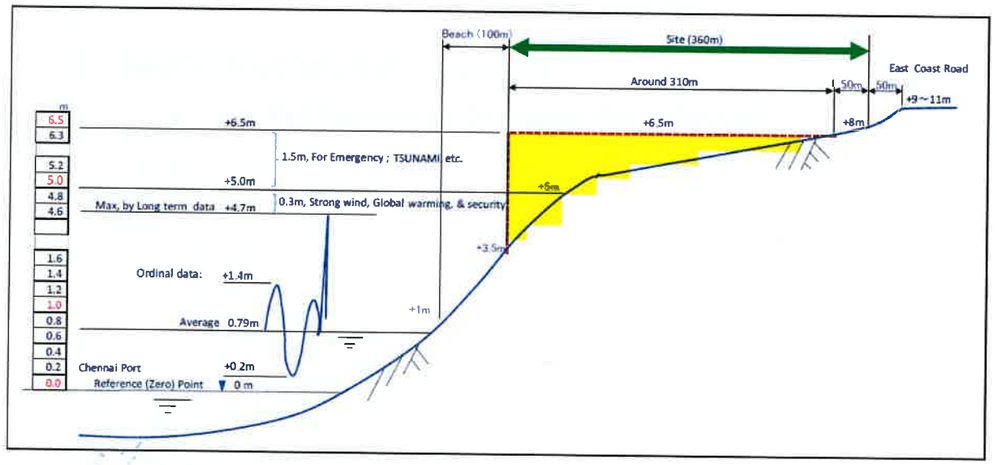
ANNEXURE – II
BASIS FOR FIXING OF FINISHED FLOOR LEVEL FOR PERUR DSP

The height of the project site varies between +2 to 3 m CD. Hence is it proposed to raise the site by additional earth fill up to 4.5 m to realize the Finished Ground Level (FGL) of CD +6.5 m. Raising of Finished ground level (FGL) upto +6.5 m CD is warranted to maintain 0.3m safety factor to protect from strong winds and global warming. Also above this 0.3 m, an additional 1.5 m has been considered for Tsunami and other emergency conditions. Please refer Fig. 1 from JICA study report indicating the recorded max wave levels at CD +4.7m plus 0.3m due to strong wind/ global warming and 1.5m due to Tsunami and planned ground level for the proposed Perur DSP at CD +6.5m.

The boundary of the Perur DSP will be on the constructed land with 3 – 4 m high retaining wall of reinforced concrete. The retaining wall is proposed with pile foundation to keep it more stable. Fig.2 presents the proposed land development plan for the proposed Perur DSP.



Source: JICA Study Team

Fig.1 Recorded Wave level and the Planned Ground Elevation for Proposed Perur DSP

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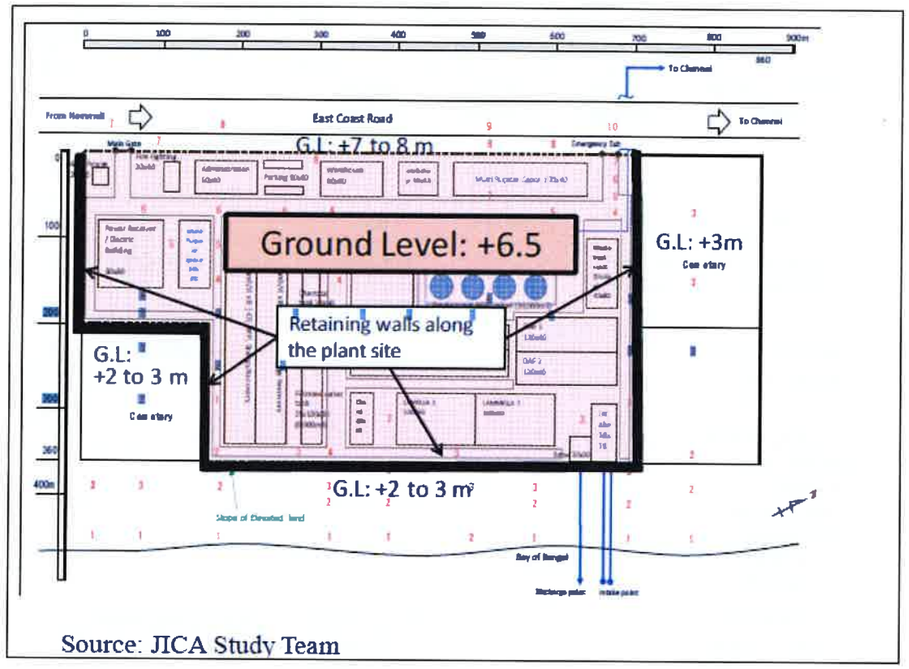

Source: JICA Study Team

Fig.2 Proposed Land Development Plan for Perur DSP

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[1][SCHEDULE – VI]

(See rule 3A)

GENERAL STANDARDS FOR DISCHARGE OF ENVIRONMENTAL POLLUTANTS PART-A : EFFLUENTS

S. No.	Parameter	Standards			
		Inland surface water	Public Sewers	Land for irrigation	Marine coastal areas
1	2	3			
		(a)	(b)	(c)	(d)
1.	Colour and odour	See 6 of Annexure-I	--	See 6 of Annexure -I	See 6 of Annexure-I
2.	Suspended solids mg/l, Max.	100	600	200	(a) For process waste water- 100 (b) For cooling water effluent 10 percent above total suspended matter of influent.
3.	Particulate size of suspended solids	Shall pass 850 micron IS Sieve	--	--	(a) Floatable solids, max. 3 mm. (b) Settleable solids, max. 850 microns.
[2]4.	***	*	--	***	--
5.	pH Value	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0
6.	Temperature	shall not exceed 5°C above the receiving water temperature	--	--	shall not exceed 5°C above the receiving water temperature

---

1. Schedule VI inserted by Rule 2(d) of the Environment (Protection) Second Amendment Rules, 1993 notified vide G.S.R. 422(E) dated 19.05.1993, published in the Gazette No. 174 dated 19.05.1993.
2. Omitted by Rule 2(d)(i) of the Environment (Protection) Third Amendment Rules, 1993 vide Notification No.G.S.R.801(E), dated 31.12.1993.

S. No.	Parameter	Standards			
		Inland surface water	Public Sewers	Land for irrigation	Marine coastal areas
1	2	3			
		(a)	(b)	(c)	(d)
7.	Oil and grease mg/l Max.	10	20	10	20
8.	Total residual chlorin mg/l Max.	1.0	--	--	1.0
9.	Ammonical nitrogen (as N), mg/l Max.	50	50	--	50
10.	Total Kjeldahl Nitrogen (as NH_3) mg/l, Max.	100	--	--	100
11.	Free ammonia (as NH_3) mg/l, Max.	5.0	--	--	5.0
12.	Biochemical Oxygen demand [1][3 days at 27°C] mg/l max.	30	350	100	100
13.	Chemical Oxygen Demand, mg/l, max.	250	--	--	250
14.	Arsenic (as As), mg/l, max.	0.2	0.2	0.2	0.2
15.	Mercury (as Hg), mg/l, Max.	0.01	0.01	--	0.01
16.	Lead (as Pb) mg/l, Max.	0.1	1.0	--	2.0
17.	Cadmium (as Cd) mg/l, Max.	2.0	1.0	--	2.0
18.	Hexavalent Chromium (as Cr+6), mg/l max.	0.1	2.0	--	1.0

[1] Substituted by Rule2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176, dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred.

S. No.	Parameter	Standards			
		Inland surface water	Public Sewers	Land for irrigation	Marine coastal areas
1	2	3			
		(a)	(b)	(c)	(d)
19.	Total chromium (as Cr.) mg/l, Max.	2.0	2.0	--	2.0
20.	Copper (as Cu) mg/l, Max.	3.0	3.0	--	3.0
21.	Zinc (As Zn.) mg/l, Max.	5.0	15	--	15
22.	Selenium (as Se.) mg/l, Max.	0.05	0.05	--	0.05
23.	Nickel (as Ni) mg/l, Max.	3.0	3.0	--	5.0
[1]24.	* * *	*	*	*	*
[1]25.	* * *	*	*	*	*
[1]26.	* * *	*	*	*	*
27.	Cyanide (as CN) mg/l Max.	0.2	2.0	0.2	0.2
[1]28.	* * *	*	*	*	*
29.	Fluoride (as F) mg/l Max.	2.0	15	--	15
30.	Dissolved Phosphates (as P), mg/l Max.	5.0	--	--	--
[2]31.	* * *	*	*	*	*
32.	Sulphide (as S) mg/l Max.	2.0	--	--	5.0
33.	Phenoile compounds (as C_6H_5OH) mg/l, Max.	1.0	5.0	--	5.0

[1] Omitted by Rule 2(d)(i) of the Environment (Protection) Third Amendment Rules, 1993 vide Notification No.G.S.R.801(E), dated 31.12.1993.

S. No.	Parameter	Standards			
		Inland surface water	Public Sewers	Land for irrigation	Marine coastal areas
1	2	3			
		(a)	(b)	(c)	(d)
34.	Radioactive materials :				
	(a) Alpha emitter micro curie/ml.	10^{-7}	10^{-7}	10^{-8}	10^{-7}
	(b) Beta emitter micro curie/ml.	10^{-6}	10^{-6}	10^{-7}	10^{-6}
35.	Bio-assay test	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent
36.	Manganese (as Mn)	2 mg/l	2 mg/l	--	2 mg/l
37.	Iron (as Fe)	3 mg/l	3 mg/l	--	3 mg/l
38.	Vanadium (as V)	0.2 mg/l	0.2 mg/l	--	0.2 mg/l
39.	Nitrate Nitrogen	10 mg/l	--	--	20 mg/l
[1]40.	* * *	*	*	*	*

[1] Omitted by Rule 2(d)(i) of the Environment (Protection) Third Amendment Rules, 1993 vide Notification No. G.S.R. 801(E) dated 31.12.1993