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: SSNT PMC 400 MLD/ CMWSSB / 5061185/ 267

Date: 09th February 2021

SUPERINTENDING ENGINEER (DESAL) ★ 09 FEB 2021 ★ CMWSS BOARD, CHENNAI-7

To,
The Superintending Engineer (Desalination)
Chennai Metropolitan Water Supply and Sewerage Board,
Urban Administrative Building, 2nd Floor,
No.75, Santhome High Road,
Raja Annamalaipuram,
Chennai 600 028
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 (**JICA Loan ID-P267**)"
Reply to your email from SE (Desal), CMWSSB, dated 21.01.2021 – Intake and outfall pipeline – Reg.

Ref:
1. Email from your office, dated 21.01.2021
2. Our Letter no. Ref: SMEC/ CMWSSB / 7061563/005, dated 20.01.2020
3. Your Letter no. Lr.no.CMWSSB/SE(Desal)/400 MLD Plant / PMC/2020, dated 13.01.2020
4. Our Contract Agreement with CMWSSB, dated 09.01.2020
5. Our Letter no. Ref : 1600991/LOA/07, dated 08.11.2019
6. Your Letter no. Lr.no.CMWSSB /CNT/CON/DESAL/ICB/GoI/016/2018-19, dated 06.11.2019

Dear Sir,

With reference to your email dated 21st January 2021, we would like to inform you that we have gone through the M/s Indomer's note and drawings attached in your mail provided by M/s Indomer regarding the Intake and Outfall location for 400 MLD SWRO desalination plant.

M/s Indomer should have presented the dispersion analysis using latest mathematical model configured based on the available current input data and analyzing the previous studies of the brine dispersion. Based on these, they could have built an argument on the technical outcome in terms unwarranted energy consumption and environmental benefits, rather focusing on the difficulties in obtaining the approval of the revised locations of the intake and outfall positions proposed by JICA.

As per the M/s Indomer's note, it may be noted that the difference in the values of current speeds (presented in table below) in the three seasons is not significant for the brine dispersion. Moreover, the current speed during South West (SW) Monsoon from September to October is much lower than the Fair / Static Weather and North East (NE) Monsoon condition. M/s Indomer has not explained this and presented the Static weather as the most severe climate situation for the brine dispersion, which is not justified by the current speeds presented in the table given below.

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Seasons	Current Speed (m/s) – 750 m from the seashore					
	Surface		Mid depth		Bottom	
	Average	Maximum	Average	Maximum	Average	Maximum
Static/Fair Weather (February to May)	0.17	0.40	0.15	0.39	0.13	0.35
SW Monsoon (September to October)	0.13	0.36	0.12	0.33	0.1	0.34
NE Monsoon (October to January)	0.19	0.55	0.16	0.49	0.15	0.43

PMC had also engaged M/s Indomer for brine dispersion analysis. They have presented an increase in TDS at Intake point (1150m from seashore) up to 2000 mg/L during the static condition for the outfall at 750m from seashore, whereas no increase in TDS beyond 200m from the outfall during Monsoon conditions. The brine dispersion analysis results are not conceivable and justified while considering the current speeds presented in the table. This shows the lack of understanding and inconsistency in modelling results and conclusions made by M/s Indomer. Moreover, M/s Indomer has failed to respond to the queries raised by PMC related to the input data used for the modelling software. Due to uncertainty in input data and output results of the model and failure to respond to the basic queries, PMC does not find any basis to value the modelling work conducted by M/s Indomer.

We have reviewed the brine dispersion modelling results carried out by JICA and found it more consistent and reasonable for the brine dispersion study during the static weather and two monsoon seasons. For the Outfall at 750m and Intake at 1150m, the additional energy consumption at 400 MLD SWRO plant due to increase in feed seawater TDS (900 mg/l) as predicted by JICA modelling results during static weather is about 2000 kWh/day while as per M/s Indomer modelling results, the additional energy consumption is around 5000 kWh/day for the increase of feed TDS (2000 mg/l). Moreover, JICA predicts the TDS increase up to 700 mg/l during monsoon seasons too. So, it is to be noted that the increase in energy is not only during static weather condition but also during SW and NE monsoon seasons.

We also need to understand that the increase in feed seawater TDS is not only at 400 MLD Perur desalination plant, but there will also be an increase in feed TDS at the other two Nemmeli desalination plants. Due to the above increase in energy consumption at the three desalination plants in the vicinity over the O&M period of 20 years and beyond, PMC recommends changing the outfall position from 750m to 1800m keeping the intake approved position at 1150m from the seashore. This will be beneficial for the marine life and the overall environmental saving by consuming less power which will indirectly reduce the toxic fumes from power plants, conserve the earth's natural resources, and protect ecosystems from destruction.

As the plant area has been designated as the Ecological Sensitive Area (ESA) and it falls under CRZ I-A, the validity of the CRZ approval taken in 2013 for laying of pipeline and discharge of brine in the sea may also be challenged, and NCSCM may ask CMWSSB for the revised approval. In case NCSCM honours the old approval and allows to lay the pipeline for the brine discharge, there is no reason for the rejection or delay in approval for the brine discharge further deep inside the sea. This is to be noted that the change has been done only for the outfall location further inside the sea, and there is no change in the intake location. The brine discharge at 1800m instead of 750m from the seashore will promote fast dispersion and less affect the marine ecosystem.

We expect the Intake and Outfall works to be carried out in the static weather from February to March 2022 about one year from now. This lends sufficient time for the approval of the changes in the outfall location. After awarding the project, which is expected by October 2021, the Contractor may procure the pipeline, intake heads (towers),

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diffusers, and start work on the seashore until January 2022 before starting the pipeline in February 2022. Considering the importance of the project for the city of Chennai and government officials' involvement, we are confident that the approval for the change in outfall location will be available within the 6 months. Moreover, it will be easy taking decision by NCSCM on the change as it is beneficial for the marine ecosystem and overall environmental protection.

Some of the issues, such as the Turtle migration study and Turtle Management Plan, have already been conducted, and the study will be valid for submission to NCSCM. We do not expect that the new committee will ask for the extraction of salt or storage of brine in the pond. These are not feasible technologies worldwide for brine management. There are hundreds of large SWRO desalination plants in the Middle East, Singapore, Australia, and other African countries where brine is discharged in the sea directly and not at a single plant these techniques are practised. The desalination plant will produce water which is an essential commodity of life for the survival of humanity. So, any contradictory action of an NGO against the construction of the plant will not be sustainable in front of MoEF&CC and GoTN or the people of Chennai.

In view of the above, PMC recommends and requests CMWSSB to approve the change of outfall location from 750m to 1800m as soon as possible which will be good for the marine life and be aligned to the demand and campaign for energy saving and environmental protection.

Thanking you assuring our services at all times.

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

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

S.Srinivasarao
Project Coordinator

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