

# Environmental and CRZ Clearance Compliance Report

Of



Construction of berthing & allied  
facilities off Tekra near Tuna, Gujarat

Of

Adani Kandla Bulk Terminal Pvt. Ltd.

For Period:

October – 2017 to March– 2018



**Adani Kandla Bulk Terminal Pvt. Ltd.**

**From : October 2017  
To : March 2018**

## **Compliance to Environmental and CRZ Clearance Letter issued by MoEF&CC**

**Environmental and CRZ clearance was obtained by KPT vide MoEF&CC letter dated 01.11.2011. AKBTPL and KPT entered in to concession agreement for development of the dry bulk terminal at Tuna on BOOT basis. Said clearance was then transferred to AKBTPL vide MoEF&CC letter dated 10.11.2014**

**Half yearly Compliance report of Environment and CRZ Clearance issued by MoEF dated 1<sup>st</sup> November, 2011 bearing F. No. 10-10/2008-IA-III for Construction of berthing & allied facilities off Tekra near Tuna, Gujarat**

Sr. No	Condition	Compliance status															
5.	Specific Condition																
(i)	"Consent for Establishment" shall be obtained from State Pollution Control Board under Air and Water Act and a copy shall be submitted to the Ministry before start of any construction work at site.	<div>Complied.</div> <div><ul style="list-style-type: none"><li>Consent to establishment (CtE) and Consent to Operate (CtO) is Obtained and renewed/amended from time to time as per the progress of the project activity. Construction activities are completed and the project is now in operation phase. The present in-force CtO are mentioned below</li></ul></div> <table><tr><th>Sr. No</th><th>Permission</th><th>Project</th><th>Ref.No./Order No.</th><th>Validity</th></tr><tr><td>1</td><td>CtO Obtained by AKBTPL</td><td>AKBTPL</td><td>AWH-68051</td><td>02.12.2019</td></tr><tr><td>2</td><td>Correction in CtO</td><td>AKBTPL</td><td>PC/CCA-Kutch-1269/GPCB ID-46110/303738</td><td>02.12.2019</td></tr></table> <div><ul style="list-style-type: none"><li>Copies of the stated permissions are already submitted as a part of half yearly compliance report (Oct-14 to March-15) to MoEF &amp; CC vide letter dated 11.05.2015.</li><li>Copy of the Corrected CtO is attached as <b>Annexure-1</b>.</li></ul></div>	Sr. No	Permission	Project	Ref.No./Order No.	Validity	1	CtO Obtained by AKBTPL	AKBTPL	AWH-68051	02.12.2019	2	Correction in CtO	AKBTPL	PC/CCA-Kutch-1269/GPCB ID-46110/303738	02.12.2019
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(ii)	Scientific studies shall be carried out by some expert and reputed organization like BNHS focusing among other things the marine environment in general and preservation of mangroves in particular against any possible adverse impact due to creation of the proposed facilities.	<div>Complied.</div> <div><ul style="list-style-type: none"><li>M/s. Gujarat Institute of Desert Ecology, Bhuj (similar to BNHS) has conducted scientific studies for preservation and management of mangroves in May 2012. Details related to the same are already submitted as part of half yearly compliance report (Oct-14 to March-15) to MoEF &amp; CC vide letter dated 11.05.2015 and there is no further change.</li><li>Further, a study to ascertain tidal flushing in mangroves around the project area of the dry bulk terminal at Tuna was carried through M/s. GUIDE, Bhuj in April, 2014 when construction activities were ongoing. Details related to the same are</li></ul></div>															

**Half yearly Compliance report of Environment and CRZ Clearance issued by MoEF dated 1<sup>st</sup> November, 2011 bearing F. No. 10-10/2008-IA-III for Construction of berthing & allied facilities off Tekra near Tuna, Gujarat**

Sr. No	Condition	Compliance status
		<p>already submitted as part of half yearly compliance report (Oct-2016 to March-2017).</p> <ul style="list-style-type: none"> <li>Further, in order to understand the impacts of the existing project activity on marine ecology, a study was carried out through M/s. GUIDE. Details related to the same are already submitted as part of half yearly compliance report (Oct-2016 to March-2017).</li> <li>It may be noted that GUIDE is one of the authorized agencies of Forest &amp; Environment dept. Govt. of Gujrat.</li> </ul>
(iii)	Proponent shall explore the possibilities of plantation of mangrove in the entire mud flat areas and submit the action plan to the Ministry prior to the commencement of the activity.	<p>Complied.</p> <ul style="list-style-type: none"> <li>Based on the scientific studies for preservation and management of mangroves in May 2012 carried out by M/s. GUIDE it was suggested to KPT to carry out mangrove plantation in 500 ha. area.</li> <li>As agreed, AKBTPPL has already completed Mangrove plantation in 250 ha area at Sat Saida bet. Balance 250 ha. Mangrove plantation shall be carried out by KPT.</li> <li>Monitoring report prepared by M/s. GUIDE for mangrove plantation in 250 ha carried out at Sat Saida bet is submitted as part of half yearly compliance report (Oct-14 to March-15) to MoEF &amp; CC vide letter dated 11.05.2015.</li> </ul>
(iv)	The dredged material shall be reused for low level rising whenever possible and excess shall be dumped into sea at the designated dumping areas identified based on mathematical model studies.	<p>Complied.</p> <ul style="list-style-type: none"> <li>As per the study carried by IIT-Chennai the dredge material is not suitable for reclamation/low level rising.</li> <li>Capital dredging was completed by KPT during the construction phase and the dredge material was disposed by KPT at a location identified by M/s. CWPRS, Pune in their study report.</li> </ul>

**Half yearly Compliance report of Environment and CRZ Clearance issued by MoEF dated 1<sup>st</sup> November, 2011 bearing F. No. 10-10/2008-IA-III for Construction of berthing & allied facilities off Tekra near Tuna, Gujarat**

Sr. No	Condition	Compliance status
		<ul style="list-style-type: none"> <li>Project is now in operation phase and no dredging activity is carried out during October'17 to March'18.</li> </ul>
(v)	Though the project proponent has carried out EIA for individual components and it were examined by the committee before the issue of clearance, it is suggested that proponent shall update and submit a comprehensive EMP for the whole project and submit to the Ministry and Regional Office of the Ministry at Bhopal prior to commencement of the activity.	<p>Complied.</p> <ul style="list-style-type: none"> <li>EMP was updated by AKBTPL and submitted to KPT. KPT has submitted the same vide letter dated 03.12.2013 to MoEF&amp;CC as part of compliance report.</li> <li>Further, said EMP was also submitted by AKBTPL as part of half yearly compliance report (Oct-14 to March-15) to MoEF &amp; CC vide letter dated 11.05.2015 and there is no further change.</li> </ul>
(vi)	The project proponent shall set up environmental management cell for effective implementation of the stipulated environmental safeguards under the supervision of a Senior Executive.	<p>Complied.</p> <ul style="list-style-type: none"> <li>AKBTPL has environment management cell with qualified manpower for implementation of environmental safeguards and management. The site environment team directly reports to the site CEO. Further, the site environment cell continuously remains in loop with Corporate Environment Cell. Please refer <b>Annexure - 2</b> for further details.</li> </ul>
(vii)	The funds earmarked for environmental management plan shall be included in the budget and this shall not be diverted for any other purpose.	<p>Complied.</p> <ul style="list-style-type: none"> <li>Environmental Management Plan is in place and the funds earmarked (budgeted separately for the each financial year) are being utilized for effective implementation of environmental safeguards and environment monitoring. All the expenses related to environment management plan are recorded in advanced accounting system of the organization.</li> <li>Expenditure on environmental safeguards including horticulture expenses is approx. INR 269.30 Lac for FY 2017-18. Please</li> </ul>

**Half yearly Compliance report of Environment and CRZ Clearance issued by MoEF dated 1<sup>st</sup> November, 2011 bearing F. No. 10-10/2008-IA-III for Construction of berthing & allied facilities off Tekra near Tuna, Gujarat**

Sr. No	Condition	Compliance status
		refer <b>Annexure – 3</b> for further details.
<b>6</b>	<b>General Condition</b>	
(i)	Appropriate measures must be taken while undertaking digging activities to avoid any likely degradation of water quality.	<p>Complied.</p> <ul style="list-style-type: none"> <li>Construction activities of the project are completed in March, 2015.</li> <li>The project is now in operation phase and no digging activities are carried out during October'17 to March'18.</li> </ul>
(ii)	Full support shall be extended to the officers of this Ministry/Regional Office at Bhopal by the project proponent during inspection of the project for monitoring purposes by furnishing full details and action plan including action taken reports in respect of mitigation measures and other environmental protection activities.	<p>Complied.</p> <ul style="list-style-type: none"> <li>AKBTPL is always extending full support to the regulatory authorities during their visit to the project site.</li> <li>Details related to the last visit of Scientist 'D', MoEF&amp;CC, from Regional Office, Bhopal, were submitted as part of half yearly compliance report (Oct-2016 to March-2017).</li> <li>Last visit of Assistant environment engineer, Regional office GPCB, Gandhidham was done on 20.09.2017. AKBTPL has submitted the reply to the site visit report vide letter dated 09.10.2017 incorporating details of action taken with respect to the observations of site visit. Copy of the letter is enclosed as <b>Annexure-4</b></li> </ul>
(iii)	A six monthly monitoring report shall need to be submitted by the project proponent to the Regional Office of this Ministry at Bhopal regarding the implementation of the stipulated conditions.	<p>Complied.</p> <ul style="list-style-type: none"> <li>Six monthly compliance reports regarding the implementation of the stipulated conditions are regularly submitted to Regional Office of MoEF &amp;CC, Bhopal and other concerned authorities.</li> <li>Last compliance report for Apr'17 to Sep'17 period was submitted by AKBTPL vide letter dated 27.11.2017 to the all concerned authorities.</li> </ul>
(iv)	Ministry of Environment & Forests or any other competent authority may stipulate any additional conditions or	<p>Point Noted.</p> <ul style="list-style-type: none"> <li>All applicable conditions in the interest of environment will be complied.</li> </ul>

**Half yearly Compliance report of Environment and CRZ Clearance issued by MoEF dated 1<sup>st</sup> November, 2011 bearing F. No. 10-10/2008-IA-III for Construction of berthing & allied facilities off Tekra near Tuna, Gujarat**

Sr. No	Condition	Compliance status
	modify the existing ones, if necessary in the interest of environment and the same shall be complied with.	
(v)	The Ministry reserves the right to revoke this clearance if any of the conditions stipulated are not complied with the satisfaction of the Ministry.	Point Noted. <ul style="list-style-type: none"> <li>During the last compliance verification visit as mentioned in the sr. no ii of General Conditions above, there was no major non-compliance observed.</li> </ul>
(vi)	In the event of a change in the project profile or change in the implementation agency, a fresh reference shall be made to the Ministry of Environment and Forests.	Complied. <ul style="list-style-type: none"> <li>Details related to transfer of EC/CRZ clearance in the name of AKBTPL are submitted as part of half yearly compliance report (Oct-14 to March-15) to MoEF &amp; CC vide letter dated 11.05.2015. Please refer point no. I of specific conditions for further details.</li> </ul>
(vii)	The project proponent shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and date of start of land development work.	Complied. <ul style="list-style-type: none"> <li>KPT has informed about the Financial closure vide their letter no. EG/WK /4604(EC)/562 dated 26<sup>th</sup> December, 2012. There is no further change.</li> </ul>
(viii)	A copy of the clearance letter shall be marked to concern Panchayat /local NGO, if any, from whom any suggestion /representation have been made, received while processing the proposal.	<ul style="list-style-type: none"> <li>Condition is not applicable to AKBTPL.</li> </ul>
(ix)	State Pollution Control Board shall display a copy of the clearance letter at the Regional Office, District Industries Centre and Collector's Office/ Tehsildar's office for 30 days.	<ul style="list-style-type: none"> <li>Condition is not applicable to AKBTPL.</li> </ul>
7	These stipulations would be enforced among others under the provisions of Water (Prevention and Control of Pollution) Act 1974, the Air (Prevention and Control of Pollution) Act 1981, the Environment (Protection) Act, 1986, the Public Liability (Insurance) Act,	Complied. <ul style="list-style-type: none"> <li>Permissions under the applicable rules and acts mentioned are already obtained. Please refer point no. I of specific conditions for further details.</li> </ul>



**Half yearly Compliance report of Environment and CRZ Clearance issued by MoEF dated 1<sup>st</sup> November, 2011 bearing F. No. 10-10/2008-IA-III for Construction of berthing & allied facilities off Tekra near Tuna, Gujarat**

Sr. No	Condition	Compliance status
	1991 and EIA Notification, 1994 including the amendments and rules made thereafter.	
8	All other statutory clearances such as the approvals for the storage of diesel from Chief Controller of Explosives, Fire Department, Civil Aviation Department, Forest Conservation Act, 1980, Wildlife (Protection) Act, 1972 etc shall be obtained as applicable by the project proponents from the respective competent authorities.	Not Applicable. <ul style="list-style-type: none"> <li>The permissions from the authorities mentioned in the condition are not applicable to this project.</li> </ul>
9	The project proponent shall advertise in at least two local newspapers widely circulated in the region, one of which shall be in the vernacular language informing that the project has been accorded Env. Clearance and copies of clearances letters are available with the State Pollution Control Board and may also be seen on the website of the Ministry of Environment and Forests at <a href="http://www.envfor.nic.in">http://www.envfor.nic.in</a> . The advertisement should be made within 10 days from the date of receipt of the Clearance letter and a copy of the same should be forwarded to RO of this Ministry at Bhopal.	Complied. <ul style="list-style-type: none"> <li>KPT has published advertisement regarding accordance of the Environmental and CRZ clearance within 10 days from the date of receipt of the Clearance letter in two local newspapers (Aaj Kal and Divya Bhaskar) and copy of the same is submitted to the Regional office, MoEF&amp;CC Bhopal by KPT vide letter no. EG/WK/4604(EC)/1036 dated 25<sup>th</sup> November, 2011.</li> </ul>
10	Environmental Clearance is subject to final order of the Hon'ble Supreme Court of India in the matter of Goa Foundation Vs. Union of India in Writ Petition (Civil) No. 460 of 2004 as may be applicable to this project.	<ul style="list-style-type: none"> <li>Noted and same will be complied based on further directions given by concerned authorities in this regard.</li> </ul>
11	Status of compliance to the various stipulated environmental conditions and environmental safeguards will be uploaded by the project proponent in its website.	Complied. <ul style="list-style-type: none"> <li>The documents are being uploaded regularly on our website: <a href="http://www.adaniports.com/ports-downloads">http://www.adaniports.com/ports-downloads</a></li> </ul>



**Half yearly Compliance report of Environment and CRZ Clearance issued by MoEF dated 1<sup>st</sup> November, 2011 bearing F. No. 10-10/2008-IA-III for Construction of berthing & allied facilities off Tekra near Tuna, Gujarat**

Sr. No	Condition	Compliance status
12	A copy of clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parishad/Municipal Corporation, Urban Local Body and the Local NGO, if any from whom suggestions / representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the company by the proponent.	Complied. <ul style="list-style-type: none"> <li>Clearance letter is uploaded on our website: <a href="http://www.adaniports.com/ports-downloads">http://www.adaniports.com/ports-downloads</a></li> </ul>
13	The proponent shall upload the status of compliance of the stipulated EC conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of MoEF, the respective Zonal Office of CPCB and the SPCB.	Complied. <ul style="list-style-type: none"> <li>Compliance report for period (Apr'17 to Sep'17) was submitted to respective authorities mentioned in the condition vide our letter dated 27.11.2017. The said report is also uploaded on our website: <a href="http://www.adaniports.com/ports-downloads">http://www.adaniports.com/ports-downloads</a>.</li> </ul>
14	The environmental statement for each financial year ending 31 <sup>st</sup> March in Form -V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environmental (Protection) Rules, 1986 as amended subsequently, shall also be put on the website of the company along with the status of compliance of EC conditions and shall also be sent to the respective Regional Offices of MoEF by e-mail.	Complied. <ul style="list-style-type: none"> <li>Environment Statement for FY 2017 – 18 has already been submitted to GPCB vide letter No. AKBTP/ENVSTATEMENT/2017-18 dated 19.04.2018. Copy of the same is attached as <b>Annexure – 5</b></li> </ul>

# **Compliance to CRZ Recommendation Letter**

**Issued by Forest and Environment  
Department, Govt. of Gujarat**

**Half yearly Compliance report of CRZ Recommendation for creation of Berthing and Allied Facilities off Tekra near Tuna issued by Forest and Environment, Govt. of Gujarat vide letter bearing no. ENV-10-2009-1543-E dated 23rd June, 2010**

<b>Sr. No</b>	<b>Condition</b>	<b>Compliance</b>
1	The provisions of the CRZ notification of 1991 and subsequent amendments issued from time to time shall be strictly adhered to by the KPT. No activity in contradiction to the provisions of the CRZ Notification shall be carried out by the KPT.	Complied. <ul style="list-style-type: none"> <li>All activities are in line with the CRZ Notification 1991 and its subsequent amendment.</li> </ul>
2	No dredging reclamation or any other project related activities shall be carried out in the CRZ area categorized as CRZ I (i) and it shall have to be ensured that the mangroves habitats and other ecologically important and significant areas, if any, in the region are not affected due to any of the project activities.	Complied. <ul style="list-style-type: none"> <li>Construction of the project is completed in March, 2015. All construction activities were carried out as per the environmental and CRZ clearance granted vide MoEF&amp;CC letter dated 01.11.2011.</li> <li>All necessary precautions such as allowing free flow of water in the mangrove areas, waste management as per the applicable laws, treatment of sewage, dust suppression measures etc. are taken to ensure that the mangroves habitats and other ecologically important and significant areas in the region are not affected due to any of the project activities.</li> </ul>
3	The KPT shall participate financially for installing and operating the Vessel Traffic Management System in the Gulf of Kutch and shall also take lead in preparing and operational sing the Regional Oil Spill Contingency plan in the Gulf of Kutch.	Complied. <ul style="list-style-type: none"> <li>M/s Kandla Port Trust contributed an amount of INR 41.25 Cr for installing and operating VTMS in Gulf of Kutch. Information is submitted to MoEF&amp;CC New Delhi (as part of half yearly compliance report (Apr – Sept, 2014) vide letter dated 13<sup>th</sup> November, 2014.</li> <li>Please refer condition No.15 regarding Oil spill contingency plan.</li> <li>There is no further change.</li> </ul>
4	The KPT shall strictly ensure that no creeks or rivers are blocked due to any activity at Kandla.	Complied. <ul style="list-style-type: none"> <li>No rivers are present at the project site. 3 Bridges and 8 culverts have been provided with total cost of 2.01 crores to allow free flow of water</li> </ul>

**Half yearly Compliance report of CRZ Recommendation for creation of Berthing and Allied Facilities off Tekra near Tuna issued by Forest and Environment, Govt. of Gujarat vide letter bearing no. ENV-10-2009-1543-E dated 23rd June, 2010**

Sr. No	Condition	Compliance
		<p>through creeks.</p> <ul style="list-style-type: none"> <li>Further, a study to ascertain tidal flushing in mangroves around the project area of the dry bulk terminal at Tuna was carried through M/s. GUIDE, Bhuj in April, 2014 when construction activities were ongoing. Details related to the same are already submitted as part of half yearly compliance report (Oct-2016 to March-2017). The conditions as mentioned in the report are maintained.</li> </ul>
5	Mangrove plantation in an area of 1000 ha. Shall be carried out by the KPT within 5 years in a time bound manner on Gujarat coastline either within or outside the Kandla Port Trust area and six monthly compliance reports along with the satellite images shall be submitted to Ministry of Environment and Forests as well as to this department without fail.	<p>Complied.</p> <ul style="list-style-type: none"> <li>AKBTPL being BOOT operator, KPT requested AKBTPL to carry out mangrove plantation in 250 ha area. As agreed, AKBTPL has completed Mangrove plantation in 250 ha area at Sat Saida bet. For further information regarding mangrove plantation activity, please refer reply to specific condition no ii and iii of the Environmental and CRZ clearance letter above.</li> </ul>
6	No activities other than those permitted by the competent authority under the CRZ Notification shall be carried out.	<p>Complied.</p> <ul style="list-style-type: none"> <li>All activities are being carried out as per the Environmental and CRZ clearance granted vide MoEF&amp;CC letter dated 01.11.2011.</li> </ul>
7	No ground water shall be tapped for any purpose during the proposed expansion/modernization activities.	<p>Complied.</p> <ul style="list-style-type: none"> <li>AKBTPL does not draw any ground water for the water requirement. Present source of water for various project activities is Narmada water through Gujrat water infrastructure Limited (GWIL). Present water consumption is <b>457.05 KLD</b>.</li> </ul>
8	All necessary permission from different Government Departments/ agencies shall	<p>Not applicable at present</p> <ul style="list-style-type: none"> <li>All construction activities are</li> </ul>

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Sr. No	Condition	Compliance																				
	be obtained by the KPT before commencing the expansion activities.	<p>completed in March, 2015. No expansion activities are carried out. All necessary permissions will be obtained in future before commencing the expansion activities.</p> <ul style="list-style-type: none"><li>• However, an application for carrying out additional capital dredging in the existing approach channel, berth pockets and turning circles (in order to handle capsized vessels, not to expand the approved project activity) to obtain Environment and CRZ clearance is in process with the MoEF&amp;CC. the said activity will be carried out only after obtaining the requisite permissions.</li></ul>																				
9	No effluent or sewage shall be discharged into the sea/creek or in the CRZ area and it shall be treated to conform to the norms prescribed by the Gujarat Pollution Control Board and would be reused/recycled within the plant premises.	<p>Complied.</p> <ul style="list-style-type: none"><li>• No effluent is generated at the project site.</li><li>• Approx.10-12KLD of sewage generated is treated in 25 KLD capacities STP based on FAB technology and treated water is used for horticulture purpose within plant premise.</li><li>• Third party analysis of the treated water is being carried out once in a month by NABL and MoEF&amp;CC accredited agency namely M/s. Pollucon Laboratories Pvt. Ltd. Summary of the same for duration from Oct-17 to Mar-18 is mentioned below.</li></ul> <table><tr><th>Parameter</th><th>Unit</th><th>Max</th><th>Min</th><th>Perm. Limit<sup>\$</sup></th></tr><tr><td>TSS</td><td>mg/L</td><td>28</td><td>20</td><td>30</td></tr><tr><td>Residual Chlorine</td><td>PPM</td><td>0.8</td><td>0.5</td><td>&gt; 0.5</td></tr><tr><td>BOD (3 Days @ 27 °C)</td><td>mg/L</td><td>19</td><td>11</td><td>20</td></tr></table> <p><sup>\$</sup> as per CC&amp;A granted by GPCB BDL – Below Detection Limit</p> <ul style="list-style-type: none"><li>• Please refer <b>Annexure – 6</b> for detailed</li></ul>	Parameter	Unit	Max	Min	Perm. Limit <sup>\$</sup>	TSS	mg/L	28	20	30	Residual Chlorine	PPM	0.8	0.5	> 0.5	BOD (3 Days @ 27 °C)	mg/L	19	11	20
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TSS	mg/L	28	20	30																		
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**Half yearly Compliance report of CRZ Recommendation for creation of Berthing and Allied Facilities off Tekra near Tuna issued by Forest and Environment, Govt. of Gujarat vide letter bearing no. ENV-10-2009-1543-E dated 23rd June, 2010**

Sr. No	Condition	Compliance
		analysis reports. Total expenditures of the Environment monitoring for the period (Oct'17 to Mar'18) are INR 4.16 lakh.
10	All the recommendations and suggestions given by the NIOT in their Comprehensive Environment Impact Assessment report for conservation /protection and betterment of environment shall be implemented strictly by the KPT.	<p>Complied.</p> <ul style="list-style-type: none"> <li>The EMP prepared by NIOT in the EIA report was updated by AKBTPPL (based on the condition mentioned in the EC and CRZ clearance) and submitted to KPT. KPT has submitted the same vide letter dated 03.12.2013 to MoEF&amp;CC as part of compliance report. All the measures mentioned in the updated EMP prepared by AKBTPPL are implemented for environment protection.</li> </ul>
11	The construction and operation activities shall be carried out in such a way that there is no negative impact on mangroves and other coastal/marine habitats. The construction activities and dredging shall be carried out only under the constant supervision and guidelines of the NIOT.	<p>Complied.</p> <ul style="list-style-type: none"> <li>All construction and operation activities are carried out meticulously to ensure that there is no negative impact on mangroves and other coastal / marine habitats. Please refer to Sr. no. ii and iii of the specific conditions of the EC and CRZ clearance above for further details.</li> <li>Construction activities have been completed in March, 2015 based on the NIOT recommendations. During construction phase capital dredging was carried out by KPT and the dredge material was disposed at a location identified by M/s. CWPRS, Pune in their study report.</li> <li>No maintenance dredging activity is carried out from Oct-17 to Mar-18.</li> </ul>
12	The KPT shall contribute financially for any common study or project that may be proposed by this Department for environmental management/ conservation / improvement for the Gulf of Kutch.	<ul style="list-style-type: none"> <li>Noted and same will be complied on receipt of such recommendations from concerned authorities</li> </ul>

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<b>Sr. No</b>	<b>Condition</b>	<b>Compliance</b>
13	The construction debris and/or any other type of waste shall not be disposed-off into the sea, creek or in the CRZ areas. The debris shall be removed from the construction site immediately after construction is over.	Complied. <ul style="list-style-type: none"> <li>Construction of the project is completed in March, 2015. All construction debris and other solid wastes are removed from the construction sites.</li> </ul>
14	The construction camps shall be located outside the CRZ area and the construction labour shall be provided with the necessary amenities, including sanitation, water supply and fuel and it shall be ensured that the environmental conditions are not deteriorated by the construction labours.	Complied. <ul style="list-style-type: none"> <li>Construction of the project is completed in March, 2015 and during construction of the project we have provided necessary amenities like sanitation, water supply and fuel to the construction labours. Also we have ensured that environmental conditions are not deteriorated by the construction labours during the construction activities.</li> </ul>
15	The KPT shall regularly update its Local Oil Spill Contingency and Disaster Management Plan in consonance with the National Oil Spill and Disaster Contingency Plan and shall submit the same to the MoEF, GOI and this Department after having it vetted through the Indian Coast Guard.	Complied. <ul style="list-style-type: none"> <li>KPT is already having updated Disaster Management Plan as well as Oil Spill Contingency Plan.</li> <li>KPT has also executed MoU with oil companies i.e. IOCL, HPCL, BPCL etc. for setting up of their Tier I facility for combating Oil Spill at Kandla.</li> <li>Necessary action will be taken by AKBTPPL in consultation with KPT to combat with emergency situations.</li> </ul>
16	The KPT shall bear the cost of the external agency that may be appointed by this Department for supervision/ monitoring of proposed activities and the environmental impacts of proposed activities.	<ul style="list-style-type: none"> <li>Noted and same will be complied on receipt of such recommendations from concerned authorities</li> </ul>
17	The KPT shall take up massive greenbelt development activities in and around Kandla and also within the KPT limits.	Complied. <ul style="list-style-type: none"> <li>Plantation activity is an on-going process. As part of the same, greenbelt within and along the periphery of the back-up area is being developed on</li> </ul>



**Half yearly Compliance report of CRZ Recommendation for creation of Berthing and Allied Facilities off Tekra near Tuna issued by Forest and Environment, Govt. of Gujarat vide letter bearing no. ENV-10-2009-1543-E dated 23rd June, 2010**

Sr. No	Condition	Compliance
		<p>regular basis.</p> <ul style="list-style-type: none"> <li>Approx. 14.10 hectare area is developed as greenbelt so far with various types of trees, plants and lawn. Please refer <b>Annexure-7</b> for further details regarding greenbelt development. Total expenditures of the horticulture dept. for the period (Apr'17 to Mar'18) are INR 69.35 lakh.</li> </ul>
18	The KPT shall have to contribute financially for taking up the socio-economic upliftment activities in this region in consultation with the Forest and Environment Department and the District Collector/District Development Officer.	<p>Complied.</p> <ul style="list-style-type: none"> <li>Adani Foundation is the CSR wing of Adani group. All CSR activities are planned out at Tuna by Adani Foundation. AF works in the following four main areas: <ul style="list-style-type: none"> <li>1 Education</li> <li>2 Community Health</li> <li>3 Sustainable livelihood</li> <li>4 Rural Infrastructure Development</li> </ul> </li> <li>Various activities related to above mentioned areas are being carried out on regular basis for socio-economic upliftment of surrounding villages by Adani Foundation. Details of the activities carried out are shared with FOKIA (Federation of Kutch Industries Association) chaired by District Collector quarterly. Total expenditures of the CSR activities are INR 55.32 lakh for the period Oct'17 to Mar'18. Please refer <b>Annexure - 8</b> for further details.</li> </ul>
19	A separate budget shall be earmarked for environmental management and socio-economic activities and details thereof shall be furnished to this Department as well as the MoEF, Gol. The details with respect to the expenditure from this budget head shall also be furnished.	<p>Complied.</p> <ul style="list-style-type: none"> <li>Main constituents of the environmental management plan are environmental monitoring; greenbelt development; mangrove plantation; maintaining bridges/ culverts for protection of creeks; treatment and</li> </ul>

**Half yearly Compliance report of CRZ Recommendation for creation of Berthing and Allied Facilities off Tekra near Tuna issued by Forest and Environment, Govt. of Gujarat vide letter bearing no. ENV-10-2009-1543-E dated 23rd June, 2010**

Sr. No	Condition	Compliance																																								
		<p>disposal of wastes; mechanization of operations etc.</p> <ul style="list-style-type: none"><li>Approximately INR 269.30 Lac is spent for various activities mentioned here. Please refer to <b>Annexure - 3</b> for details related to environmental expenditures and <b>Annexure - 8</b> for expenditures related to CSR activities.</li></ul>																																								
20	A separate environmental management cell with qualified personnel shall be created for environmental monitoring and management during construction and operational phases of the project.	<p>Complied.</p> <ul style="list-style-type: none"><li>AKBTPL has environment management cell with qualified manpower for implementation of environmental safeguards and management. The Environment Cell continuously remains in loop with Corporate Environment Cell. Please refer <b>Annexure - 2</b> for further details.</li></ul>																																								
21	An Environmental report indicating the changes, if any, with respect to the baseline environment quality in the coastal and marine environment shall be submitted every year by the KPT to this Department as well as to the MoEF, Gol.	<p>Complied.</p> <ul style="list-style-type: none"><li>Ambient Air Quality (twice in a week), and Noise (once in a month) level monitoring at 4 Nos locations and marine water and sediment monitoring (once in a month) at 2 Nos locations are being carried out by NABL and MoEF&amp;CC accredited agency namely M/s. Pollucon Laboratories Pvt. Ltd. Summary of the same for duration from Oct-17 to Mar-18 is mentioned below.</li></ul> <p><b>AAQ and noise sampling locations: 4 Nos.</b></p> <table><tr><th>Parameter</th><th>Unit</th><th>Max</th><th>Min</th><th>Perm. Limit<sup>\$</sup></th></tr><tr><td>PM<sub>10</sub></td><td>µg/m<sup>3</sup></td><td>95.58</td><td>41.6</td><td>100</td></tr><tr><td>PM<sub>2.5</sub></td><td>µg/m<sup>3</sup></td><td>86.21</td><td>15.35</td><td>60</td></tr><tr><td>SO<sub>2</sub></td><td>µg/m<sup>3</sup></td><td>28.39</td><td>5.34</td><td>80</td></tr><tr><td>NO<sub>2</sub></td><td>µg/m<sup>3</sup></td><td>44.49</td><td>13.52</td><td>80</td></tr><tr><th>Noise</th><th>Unit</th><th>Max</th><th>Min</th><th>Perm. Limit</th></tr><tr><td>Day Time</td><td>dB(A)</td><td>74.9</td><td>48.5</td><td>75</td></tr><tr><td>Night Time</td><td>dB(A)</td><td>69.2</td><td>41.2</td><td>70</td></tr></table> <p><sup>\$</sup> as per NAAQ standards, 2009</p>	Parameter	Unit	Max	Min	Perm. Limit <sup>\$</sup>	PM <sub>10</sub>	µg/m <sup>3</sup>	95.58	41.6	100	PM <sub>2.5</sub>	µg/m <sup>3</sup>	86.21	15.35	60	SO <sub>2</sub>	µg/m <sup>3</sup>	28.39	5.34	80	NO <sub>2</sub>	µg/m <sup>3</sup>	44.49	13.52	80	Noise	Unit	Max	Min	Perm. Limit	Day Time	dB(A)	74.9	48.5	75	Night Time	dB(A)	69.2	41.2	70
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**Half yearly Compliance report of CRZ Recommendation for creation of Berthing and Allied Facilities off Tekra near Tuna issued by Forest and Environment, Govt. of Gujarat vide letter bearing no. ENV-10-2009-1543-E dated 23rd June, 2010**

Sr. No	Condition	Compliance																																																																																																		
		<p><b>Marine water and sediment sampling locations: 2 Nos.</b></p> <table><tr><th rowspan="2">Parameter</th><th rowspan="2">Unit</th><th colspan="2">Surface</th><th colspan="2">Bottom</th></tr><tr><th>Max</th><th>Min</th><th>Max</th><th>Min</th></tr><tr><td>pH</td><td>--</td><td>7.84</td><td>7.11</td><td>8.44</td><td>7.27</td></tr><tr><td>TDS</td><td>mg/L</td><td>37780</td><td>33990</td><td>38750</td><td>34580</td></tr><tr><td>TSS</td><td>mg/L</td><td>436</td><td>240</td><td>542</td><td>254</td></tr><tr><td>BOD (3 Days @ 27 °C)</td><td>mg/L</td><td>5</td><td>3.6</td><td>4</td><td>3</td></tr><tr><td>DO</td><td>mg/L</td><td>6</td><td>5.5</td><td>5.4</td><td>5</td></tr><tr><td>Salinity</td><td>ppt</td><td>37.6</td><td>33.6</td><td>38.6</td><td>34.4</td></tr><tr><td>COD</td><td>mg/L</td><td>36</td><td>24</td><td>26</td><td>16</td></tr></table> <table><tr><th rowspan="2">Parameter</th><th rowspan="2">Unit</th><th colspan="2">Sediment</th></tr><tr><th>Max</th><th>Min</th></tr><tr><td>Organic Matter</td><td>%</td><td>0.67</td><td>0.432</td></tr><tr><td>Phosphorus as P</td><td>mg/kg</td><td>546</td><td>236</td></tr><tr><td>Aluminium as Al</td><td>%</td><td>6.02</td><td>4.4</td></tr><tr><td>Total Chromium as Cr+3</td><td>mg/kg</td><td>184</td><td>120</td></tr><tr><td>Manganese as Mn</td><td>mg/kg</td><td>1268</td><td>640</td></tr><tr><td>Iron as Fe</td><td>%</td><td>7.8</td><td>5.42</td></tr><tr><td>Nickel as Ni</td><td>%</td><td>38</td><td>28</td></tr><tr><td>Copper as Cu</td><td>mg/kg</td><td>52</td><td>23</td></tr><tr><td>Zinc as Zn</td><td>mg/kg</td><td>93.3</td><td>72</td></tr><tr><td>Lead as Pb</td><td>mg/kg</td><td>16</td><td>2.6</td></tr></table> <ul style="list-style-type: none"><li>Please refer <b>Annexure – 6</b> for detailed analysis reports. Approx. INR 4.16 Lakh is spent for all environmental monitoring activities during the (Oct'17 to Mar'18) periods.</li></ul>	Parameter	Unit	Surface		Bottom		Max	Min	Max	Min	pH	--	7.84	7.11	8.44	7.27	TDS	mg/L	37780	33990	38750	34580	TSS	mg/L	436	240	542	254	BOD (3 Days @ 27 °C)	mg/L	5	3.6	4	3	DO	mg/L	6	5.5	5.4	5	Salinity	ppt	37.6	33.6	38.6	34.4	COD	mg/L	36	24	26	16	Parameter	Unit	Sediment		Max	Min	Organic Matter	%	0.67	0.432	Phosphorus as P	mg/kg	546	236	Aluminium as Al	%	6.02	4.4	Total Chromium as Cr+3	mg/kg	184	120	Manganese as Mn	mg/kg	1268	640	Iron as Fe	%	7.8	5.42	Nickel as Ni	%	38	28	Copper as Cu	mg/kg	52	23	Zinc as Zn	mg/kg	93.3	72	Lead as Pb	mg/kg	16	2.6
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22	The KPT shall have to contribute financially to support the National Green Corps Scheme being implemented in the Gujarat by GEER Foundation, Gandhinagar, in consultation with Forest and Environment Department.	<p>Complied.</p> <ul style="list-style-type: none"><li>National Green Corps Scheme is being implemented by GEER foundation. AKBTPPL requested GEER foundation to provide details of the program and financial assistance required so that necessary support may be provided. Further to the communication from GEER foundation, various activities were carried out on 21 March, international Day of Forests in 2014, at a school in Rampar, under National</li></ul>																																																																																																		

**Half yearly Compliance report of CRZ Recommendation for creation of Berthing and Allied Facilities off Tekra near Tuna issued by Forest and Environment, Govt. of Gujarat vide letter bearing no. ENV-10-2009-1543-E dated 23rd June, 2010**

Sr. No	Condition	Compliance
		Green Corps. Details regarding the same were submitted as part of the compliance period Oct' 13 to Mar'14. Support will be extended to GEER foundation for any such activities in future
23	A six monthly report on compliance of the conditions mentioned in this letter shall have to be furnished by the KPT on a regular basis to this Department/MoEF, GOI.	Complied. <ul style="list-style-type: none"> <li>Six monthly compliance reports regarding the implementation of the stipulated conditions are regularly submitted to all concerned authorities.</li> <li>Last compliance report for Apr'17 to Sep'17 period was submitted by AKBTPPL vide letter dated 27.11.2017</li> </ul>
24	The KPT before commencing any activity, at the location under the consideration, shall have the latest CRZ map prepared through one of the authorized agencies and the map shall have land use features within the area of 5 km radius from the location along with the HTL and LTL and CRZ boundary and inland if any or mangroves area shall be used for the proposed development.	Complied. <ul style="list-style-type: none"> <li>CRZ map including land features prepared by institute of Remote sensing, Anna University, Chennai is already submitted by KPT to MoEF&amp;CC vide letter no. EG/WK/4604 (EC)/146 dated 14.02.2012.</li> </ul>
25	The entire jetty and approach shall be constructed on piles to ensure the free flow of water and that no creeks are blocked in any way.	Complied. <ul style="list-style-type: none"> <li>As per the Environmental/ CRZ clearance obtained from MoEF&amp;CC approach road of 2 km is constructed on rubble mound and 1.7 km approach road below low water line is constructed on piles. Entire jetty is constructed on piles. Bridges are constructed at three creeks and box/piped culverts are placed with total cost of 2.01 crores at various locations to allow free flow of water.</li> <li>Photographs of the same are already submitted as part of half yearly compliance report (Oct-14 to March-15)</li> </ul>

**Half yearly Compliance report of CRZ Recommendation for creation of Berthing and Allied Facilities off Tekra near Tuna issued by Forest and Environment, Govt. of Gujarat vide letter bearing no. ENV-10-2009-1543-E dated 23rd June, 2010**

Sr. No	Condition	Compliance
		to MoEF & CC vide letter dated 11.05.2015 and there is no further change.
26	The KPT shall create a full-fledged and environmental cell for implementation of the Environment Management Programme and monitoring of the environmental parameters/post project monitoring.	Complied. <ul style="list-style-type: none"> <li>AKBTPL has environment management cell with qualified manpower for implementation of environmental safeguards and management. The Environment Cell continuously remains in loop with Corporate Environment Cell. Please refer <b>Annexure - 2</b> for further details.</li> </ul>
27	The KPT shall have to take up in-situ biodiversity conservation project for mangroves at least in 5 ha. of area in addition to plantation of mangrove in 1000 ha.	Complied. <ul style="list-style-type: none"> <li>5 ha in-situ biodiversity conservation project for mangroves is carried out at sat saida bet (location identified by KPT). M/s GUIDE has prepared a final report of the same. Details related to the same are already submitted (as part of half yearly compliance report (Apr-2017 to Sep-2017).</li> </ul>
	<b>General conditions</b>	
28	A separate budget shall be earmarked for environmental management and socio-economic activities and details thereof shall be furnished to this Department as well as the MoEF, Gol. The details with respect to the expenditure from this budget head shall also be furnished.	Complied. <ul style="list-style-type: none"> <li>Please refer point no. 19 above for the reply to this condition.</li> </ul>
29	Any other condition that may be stipulated by this Department from time to time for environment protection /management purpose shall also have to be complied with by the KPT.	<ul style="list-style-type: none"> <li>Agreed.</li> </ul>

# Annexure – 1



# GUJARAT POLLUTION CONTROL BOARD

PARYAVARAN BHAVAN  
Sector-10-A, Gandhinagar-382 021.  
Website : www.gpcb.gov.in

**BY, R.P.A.D**

NO: PC/ CCA- KUTCH-1269/ GPCB ID: 46110/

DATE:-

Amendment in Consolidated Consent & Authorization orders no AWH -68051 dated 03/02/2015. (Under the provisions/rules of Environmental acts)

## CONSENTS AND AUTHORISATION:

(Under the provisions /rules of the aforesaid environmental acts)

To,

M/S ADANI KANDLA BULK TERMINAL PVT LTD (NEW NAME),  
ADANI HOUSE,  
NEAR MITHAKHALI SIX ROADS,  
NAVARANGPURA,  
AHMEDABAD, GUJARAT.

In exercise of the power conferred under section-25 of the Water (Prevention and Control of Pollution) Act-1974, under section-21 of the Air (Prevention and Control of Pollution)-1981 and Authorization under rule 5(4) of the Hazardous Waste (Management, Handling and Transboundary Movement) Rules 2008 & as amended from time to time framed under the Environment (Protection) Act-1986 this board has granted the Consent order AWH-68051 vide letter No. PC/CCA-KUTCH-1269/GPCBID- 46110/303738.; dated 09/02/2015 which is valid up to 02/12/2019.

And whereas Board has received your letter dated 09/04/2015 seeking amendment in Consolidated Consent and Authorization (CC & A) of this Board. After careful consideration and under the provisions/rules of the aforesaid acts. Consents & Authorization are hereby further amended as under:

1. Parameter & Permissible limit mentioned in Condition No-3.3 shall be read as under:-

PARAMETER	PERMISSIBLE LIMIT
Suspended Solids	30 mg / l
BOD (3Days at 27 °C)	20 mg / l
Residual Chlorine	Minimum 0.5 mg/Ltr

2. Condition No 4.1 shall be read as -

4.1.1 The following shall be used as flue in boiler/furnace/heater respectively.

SR.NO.	FUEL	QUANTITY
1.	HSD	20 Liter /Hour

Clean Gujarat Green Gujarat

ISO - 9001 - 2008 & ISO - 14001 - 2004 Certified Organisation



4.1.2 The applicant shall install & operate air pollution control system in order to achieve flue gas emission norms as prescribed below.

Sr.	Stack attached to	Stack height in meters	Parameter	Permissible limit
1	D.G.Sets -125 KVA (To be use in emergency purpose)	5	P M SO <sub>2</sub> NO <sub>x</sub>	150 mg/NM <sup>3</sup> 100 ppm 50 ppm

3. The other terms and condition mentioned in the AWH – 68051 Issued vide CCA letter PC/CC&A-KUTCH-1269/GPCBID- 46110/303738; dated 09/02/2015 shall remain unchanged.

For and on behalf of  
GUJARAT POLLUTION CONTROL BOARD



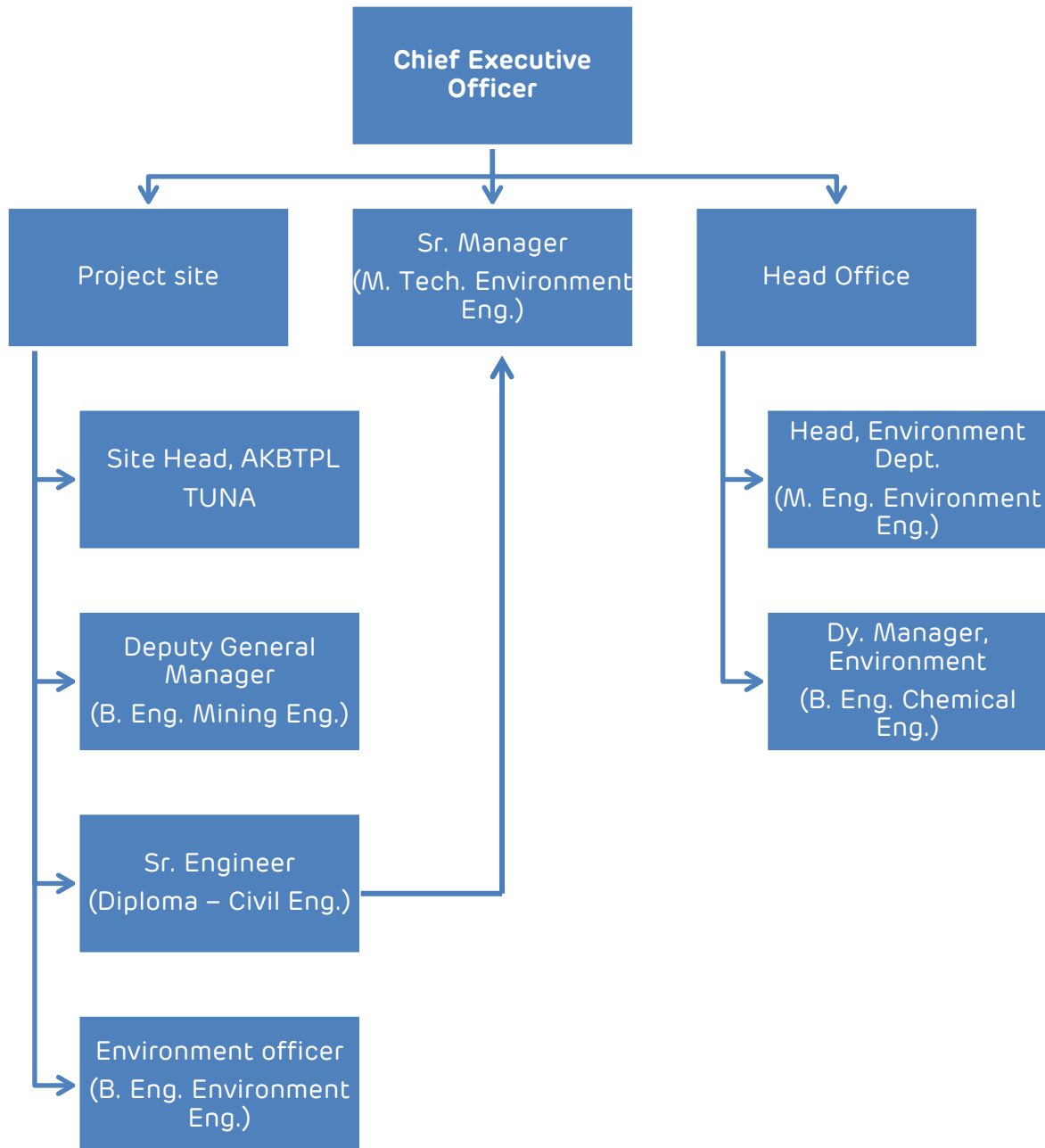
(Sushil Vegda)

Senior Environment Engineer

Outward No: 320121-05107120

# **Annexure – 2**

## Annexure – 2: Environmental Management Cell



# Annexure – 3

### Annexure- 3: Expenditure Details on Environmental Safeguards.

Sr. no.	Activity	Cost (INR in Lakh)			
		Recurring cost			
		2015 - 16	2016 - 17	2017-18	2017-18 (Budgeted)
1	Environmental Monitoring	16.00	20.00	8.18	9.00
2	Greenbelt development	60.59	54.13	44.35	44.35
3	Biodiversity conservation project for mangroves (5 ha)	--	5.00	25.00	25.00
4	Disposal of wastes (including STP operation).	10.86	5.03	12.12	12.12
5	Firefighting Equipment.	85.00	122.52	116.20	213.00
6	Dust Suppression.				
7	Maintenance of conveyor belt.	68.50	49.04	63.40	88.24
<b>Total</b>		<b>240.95</b>	<b>255.72</b>	<b>269.30</b>	<b>391.71</b>

# Annexure – 4



AKBTPL/ENVIRONMENT/2017-18/03

09 Oct'2017

To,  
**Gujarat Pollution Control Board,**  
Paryavaran Bhavan,  
Sector 10- A,  
**Gandhinagar- 382 010**

**Sub. :** Submission of compliance to observation/suggestion/instruction made by GPCB officials during inspection.

**Ref.:** GPCB inspection letter dated 20.09.2017, PCB ID: 46110 (Annexure -A)

Dear Sir,

With reference to the above mentioned subject, please note that reply to improvement notice raised by the GPCB, RO, Kutch (East) vide letter dated 20.09.2017. However, a point wise reply is provided below.

**1. Our response against your observation -1**

**Reply:** As mentioned in our last reply against your notice; At AKBTPL, we have dedicated dust control system in term of fixed and portable (bowzers and tenders). In addition to that, we have a dedicated gang of housekeeping along with mechanized equipment (i.e. sweeping machines and Loaders) for regular cleaning of all the roads (internal & external) and peripheries on daily basis throughout the year. The same is being monitored and recorded. Please see the attached Annexures.

**Annexure - 1:** Photographs of Equipment working for dust control in respective areas.

**Annexure - 4:** Typical record sheet of Equipment trips being used in Dust Control (sept'2017).

**Annexure - 4:** Typical record sheet of road cleaning (sept'2017).

**2. Our response against your observation -2**

**Reply:** It may be noted that the prominent wind direction is from South-West to North-East direction. We have coal storage area on the Eastern side of the back-up area. The fertilizer godown is on the Western side of the coal storage area. Height of the godown is approx. 23m and 650m in length. Hence, the godown works as the wind breaking wall. Please refer **Annexure - 2** for a layout of the back-up area.

It may further be noted that coal handling guideline is being complied at Tuna port. Nevertheless, there is state of the art, following advanced pollution control measures and mechanization is provided as pollution control measures.





The Photographs of the same are attached as **Annexure - 3**.

- Hopper dust suppression system.
- Closed conveyor system from jetty to coal storage terminal.
- Spray jet for water sprinkling on coal stock pile.

We hope this reply is in line with your requirement. In case of further information/clarification required, we shall be pleased to provide the same.

Thanking you,  
For, **Adani Kandla Bulk Terminal Pvt Ltd.**

Authorised signatory

**Copy to:**  
Regional Office,  
Gujarat Pollution Control Board, Kutch East  
Gandhidham

Adani Kandla Bulk Terminal Pvt Ltd  
Adani House  
Nr Mithakhali Circle, Navrangpura  
Ahmedabad 380 009  
Gujarat, India  
CIN: U63090GJ2012PTC069305

Tel +91 79 2656 5801  
Fax +91 79 2555 6490  
info@adani.com  
www.adani.com

# Annexure – 5

(FORM-V)

Environmental Statement for 2017-18

o/c

adani<sup>TM</sup>

Ref No. AKBTPL/ENVSTATEMENT/2017-18

Date: 19<sup>th</sup> April, 2018

To,  
Member Secretary  
Gujarat Pollution Control Board  
Paryavaran Bhavan,  
Sector-10-A, Gandhinagar-382010

Dear Sir,

**Sub:** Environmental Statement for the financial year ending 31<sup>st</sup> March, 2018 for M/s **Adani Kandla Bulk Terminal Pvt Ltd (AKBTPL)**

**Ref:** PCB ID: - 46110, Consent Order No. AWH – 68051

With reference to the above mentioned subject and reference, please find enclosed Environmental Statement in Form V prescribed under Rule 14 of the Environment (Protection) Rules 1986, for M/s **Adani Kandla Bulk Terminal Pvt Ltd, Ta. Anjar** for the financial year ending 31<sup>st</sup> March 2018.

Thank you,

Yours faithfully,  
For **Adani Kandla Bulk Terminal Pvt Ltd**



Hiren Shah  
(BU Head – AKBTPL)

Encl: As above.

Copy to:

1. The Regional Officer, Gujarat Pollution Control Board, Gandhidham.

02-05-18  
**Received**  
Gujarat Pollution Control Board  
Regional Office  
Kutch (East)

Adani Kandla Bulk Terminal Pvt Ltd  
Adani House,  
Nr Mithakhali Circle, Navrangpura  
Ahmedabad 380 009  
Gujarat, India  
CIN: U63090GJ2012PTC069305

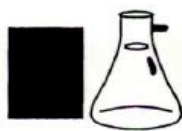
Tel +91 79 2656 5801  
Fax +91 79 2555 6490  
info@adani.com  
www.adani.com

26/4/18  
Gujarat Pollution Control Board  
Sector No. 10 A,  
Gandhinagar - 382 010

# Annexure – 6

(Six Monthly Environment Monitoring Report)

**(Oct'17 to Mar'18)**



**POLLUCON**

**LABORATORIES PVT. LTD.**

Environmental Auditors, Consultants & Analysts.  
Cleaner Production / Waste Minimization Facilitator

---

Recognised by MoEF, New Delhi Under Sec. 12 of Environmental (Protection) Act-1986

# **“ENVIRONMENTAL MONITORING REPORT”**

**For**

**ADANI KANDLA BULK TERMINAL PRIVATE  
LIMITED.  
KANDLA, KUTCH.**

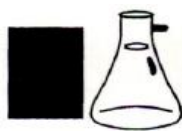
**OCTOBER 2017 TO MARCH 2018**

**H. T. Shah**  
Lab Manager



**Dr. Arun Bajpai**  
Lab Manager (Q)



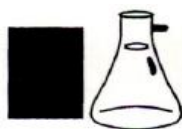
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**METHODS AND EQUIPMENTS USED FOR SAMPLING AND ANALYSIS**

SR. NO.	Monitoring Details	Equipments Used	Sampling and Analysis Method
1	Ambient Air Quality Monitoring	RDS,FDS, Impinger	CPCB Guideline/IS 5182
2	Noise Monitoring	Noise Meter	IS 11702
3	Sea Water Monitoring	Depth Sampler	IS:3025/APHA/USEPA/ASTM
4	Sea Sediment Monitoring	Grab Sampler	CPCB Guideline/ IS/APHA/USEPA/ASTM
5	Drinking Water Analysis	Sealed & Sterile Bottle	IS:10500:2012
6	Sewage water Analysis	Sealed & Sterile Bottle	APHA/IS:3025
7	Stack Monitoring	Stack Kit	IS:11255

**H. T. Shah**  
Lab Manager**Dr. Arun Bajpai**  
Lab Manager (Q)

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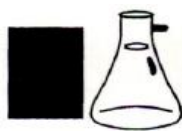
**National Ambient Air Quality Standards Dated 16<sup>th</sup> Nov.2009, CPCB New Delhi.**

SR. NO.	TEST PARAMETER	UNIT	Concentration in ambient air	Method Of Measurement
1	Particulate Matter (PM <sub>10</sub> )	µg/m <sup>3</sup>	100	IS:5182(Part 23):Gravimetric CPCB - Method (Vol.I, November-2011)
2	Particulate Matter (PM <sub>2.5</sub> )	µg/m <sup>3</sup>	60	Gravimetric- CPCB - Method (Vol.I, November-2011)
3	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	IS:5182(Part 2): Improved West and Gaeke
4	Oxides of Nitrogen (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	IS:5182(Part 6):Modified Jacob & Hochheiser (Na-Arsenite)

NS#: Not Specified, \*\* National Ambient Air Quality Standards Dated: 18/11/2009 as per Central Pollution Control Board, New Delhi.

**H. T. Shah**  
Lab Manager**Dr. Arun Bajpai**  
Lab Manager (Q)



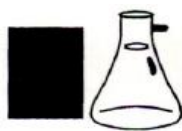
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**TABLE NO. 1 RESULTS OF AAQM FOR LC GATE NO.2 [OCT 2017 - MARCH 2018]**

Sr No.	Date of Sampling	Particulate Matter (PM10) ( $\mu\text{g}/\text{m}^3$ )	Particulate Matter (PM2.5) ( $\mu\text{g}/\text{m}^3$ )	Sulphur Dioxide ( $\text{SO}_2$ ) ( $\mu\text{g}/\text{m}^3$ )	Oxides of Nitrogen ( $\text{NO}_2$ ) ( $\mu\text{g}/\text{m}^3$ )
1	02/10/2017	77.10	42.44	28.39	42.65
2	05/10/2017	66.69	28.57	23.75	35.38
3	09/10/2017	71.59	40.34	17.51	21.46
4	12/10/2017	63.38	35.72	22.44	38.45
5	16/10/2017	78.37	44.73	26.56	28.35
6	19/10/2017	54.28	32.36	10.44	24.56
7	23/10/2017	76.31	39.50	25.49	30.65
8	26/10/2017	69.28	41.60	19.39	33.68
9	30/10/2017	91.42	53.37	17.42	16.36
10	02/11/2017	81.42	46.64	25.39	39.32
11	06/11/2017	59.38	33.62	8.33	19.60
12	09/11/2017	86.40	42.44	21.77	35.57
13	13/11/2017	74.58	36.56	15.56	27.71
14	16/11/2017	65.71	24.47	13.75	22.35
15	20/11/2017	83.21	34.46	23.28	34.48
16	23/11/2017	70.63	38.24	19.56	28.89
17	27/11/2017	52.57	21.43	14.55	17.65
18	30/11/2017	78.61	28.57	18.40	31.64
19	04/12/2017	73.39	30.38	26.47	38.34
20	07/12/2017	52.71	29.46	9.53	21.58
21	11/12/2017	78.39	37.23	24.57	39.38
22	14/12/2017	62.72	32.27	17.33	30.61
23	18/12/2017	71.29	41.14	11.45	16.46
24	21/12/2017	65.63	33.66	21.49	33.52
25	25/12/2017	58.59	18.78	16.71	19.26
26	28/12/2017	69.38	25.13	20.42	35.35
27	01/01/2018	84.59	37.61	23.37	36.40
28	04/01/2018	48.59	27.65	19.32	27.77
29	08/01/2018	79.28	46.18	26.46	34.51
30	11/01/2018	56.32	25.25	10.33	20.33
31	15/01/2018	67.49	38.36	18.64	17.47
32	18/01/2018	70.92	29.62	24.63	28.44
33	22/01/2018	62.50	24.46	17.54	22.57
34	25/01/2018	74.72	47.65	22.37	32.85
35	29/01/2018	68.29	28.32	12.35	37.51
36	01/02/2018	61.61	28.66	8.52	17.60
37	05/02/2018	70.33	34.50	16.38	38.53
38	08/02/2018	92.29	40.80	13.34	31.55
39	12/02/2018	68.29	27.69	20.62	42.46
40	15/02/2018	74.52	39.41	10.48	32.82
41	19/02/2018	48.61	21.39	15.59	24.14
42	22/02/2018	84.37	35.21	12.52	29.41
43	26/02/2018	77.60	38.62	21.39	23.55
44	01/03/2018	57.62	24.37	14.35	32.69
45	05/03/2018	65.40	32.27	11.29	35.59
46	08/03/2018	53.79	29.46	9.61	18.46
47	12/03/2018	48.58	20.55	17.41	24.25
48	15/03/2018	60.38	30.47	23.49	44.46
49	19/03/2018	59.28	23.19	12.42	26.40
50	22/03/2018	71.48	34.58	20.58	37.26
51	26/03/2018	62.28	19.54	16.70	40.34
52	29/03/2018	50.32	21.64	13.29	30.28

**H. T. Shah**  
Lab Manager**Dr. Arun Bajpai**  
Lab Manager (Q)

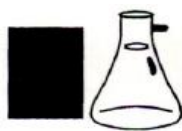
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**TABLE NO. 2 RESULTS OF AAQM FOR STARTING OF PILE APPROACH [OCT 2017 - MARCH 2018]**

Sr No.	Date of Sampling	Particulate Matter (PM10) ( $\mu\text{g}/\text{m}^3$ )	Particulate Matter (PM2.5) ( $\mu\text{g}/\text{m}^3$ )	Sulphur Dioxide ( $\text{SO}_2$ ) ( $\mu\text{g}/\text{m}^3$ )	Oxides of Nitrogen ( $\text{NO}_2$ ) ( $\mu\text{g}/\text{m}^3$ )
1	02/10/2017	84.30	46.63	17.60	38.54
2	05/10/2017	56.32	25.62	19.65	28.85
3	09/10/2017	80.31	48.73	15.50	18.39
4	12/10/2017	72.70	39.49	26.45	35.57
5	16/10/2017	64.30	30.67	10.34	21.68
6	19/10/2017	49.22	20.58	14.43	29.36
7	23/10/2017	71.80	33.61	20.57	24.35
8	26/10/2017	52.42	29.40	22.55	42.47
9	30/10/2017	78.58	43.69	11.35	20.34
10	02/11/2017	69.41	34.45	22.64	37.45
11	06/11/2017	53.49	28.56	12.75	22.63
12	09/11/2017	77.49	37.39	16.46	31.46
13	13/11/2017	58.39	25.62	18.51	34.23
14	16/11/2017	84.62	44.53	9.67	30.41
15	20/11/2017	72.49	39.49	20.31	42.45
16	23/11/2017	60.59	30.25	15.55	23.60
17	27/11/2017	86.71	45.37	11.43	15.56
18	30/11/2017	70.42	32.77	21.34	26.52
19	04/12/2017	88.61	35.12	16.51	44.49
20	07/12/2017	47.62	25.37	14.57	24.88
21	11/12/2017	68.68	33.14	18.49	36.40
22	14/12/2017	51.61	22.89	20.61	38.24
23	18/12/2017	78.32	45.62	24.40	41.22
24	21/12/2017	83.58	26.93	17.50	26.35
25	25/12/2017	90.57	40.41	12.55	15.57
26	28/12/2017	76.31	29.19	23.45	29.41
27	01/01/2018	74.51	31.13	20.52	26.45
28	04/01/2018	62.41	24.24	23.36	35.46
29	08/01/2018	94.41	51.25	12.43	41.31
30	11/01/2018	50.28	21.63	16.70	23.41
31	15/01/2018	86.58	47.38	14.63	38.38
32	18/01/2018	75.39	32.64	19.47	24.24
33	22/01/2018	69.32	28.19	11.28	31.37
34	25/01/2018	81.41	50.32	26.28	27.24
35	29/01/2018	79.62	33.40	18.52	32.44
36	01/02/2018	55.37	23.36	14.62	20.45
37	05/02/2018	95.29	50.28	11.55	34.20
38	08/02/2018	81.48	34.82	9.79	23.44
39	12/02/2018	76.12	30.41	6.66	37.49
40	15/02/2018	87.61	42.60	13.48	28.22
41	19/02/2018	68.42	27.60	13.38	31.57
42	22/02/2018	93.39	49.19	10.63	36.70
43	26/02/2018	82.42	46.21	17.42	42.69
44	01/03/2018	77.49	34.40	10.57	25.35
45	05/03/2018	81.52	47.80	14.57	30.44
46	08/03/2018	70.42	36.42	15.57	21.83
47	12/03/2018	82.58	41.38	23.68	34.45
48	15/03/2018	75.59	45.62	18.62	29.35
49	19/03/2018	64.27	28.65	6.60	15.65
50	22/03/2018	80.31	48.56	25.39	40.51
51	26/03/2018	92.41	55.45	21.67	44.35
52	29/03/2018	84.30	37.55	11.54	39.41

**H. T. Shah**  
Lab Manager**Dr. Arun Bajpai**  
Lab Manager (Q)

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**TABLE NO. 3 RESULTS OF AAQM FOR SOUTH WEST CORNER AT PUMP HOUSE [OCT 2017 - MARCH 2018]**

Sr No.	Date of Sampling	Particulate Matter (PM10) ( $\mu\text{g}/\text{m}^3$ )	Particulate Matter (PM2.5) ( $\mu\text{g}/\text{m}^3$ )	Sulphur Dioxide ( $\text{SO}_2$ ) ( $\mu\text{g}/\text{m}^3$ )	Oxides of Nitrogen ( $\text{NO}_2$ ) ( $\mu\text{g}/\text{m}^3$ )
1	02/10/2017	57.39	29.29	26.39	33.56
2	05/10/2017	49.28	20.50	15.42	21.65
3	09/10/2017	62.61	38.38	11.66	29.60
4	12/10/2017	55.52	27.74	19.46	31.23
5	16/10/2017	71.50	33.63	12.51	25.29
6	19/10/2017	41.60	23.69	8.38	18.53
7	23/10/2017	53.62	23.55	18.50	36.36
8	26/10/2017	60.28	39.69	16.57	28.20
9	30/10/2017	73.29	46.52	6.66	13.52
10	02/11/2017	76.84	42.64	10.54	19.29
11	06/11/2017	45.52	22.68	6.29	15.25
12	09/11/2017	57.62	25.30	14.37	28.40
13	13/11/2017	65.31	30.69	11.73	22.36
14	16/11/2017	79.51	40.35	5.34	16.46
15	20/11/2017	61.21	27.57	21.62	26.66
16	23/11/2017	50.62	20.50	12.50	18.55
17	27/11/2017	67.61	33.58	9.43	23.51
18	30/11/2017	59.48	24.55	15.56	20.25
19	04/12/2017	52.60	24.08	12.48	29.32
20	07/12/2017	42.60	19.76	5.47	16.77
21	11/12/2017	56.48	22.29	15.70	32.43
22	14/12/2017	46.79	26.94	10.73	24.63
23	18/12/2017	67.32	37.33	8.36	21.22
24	21/12/2017	58.71	17.92	13.70	20.67
25	25/12/2017	72.58	29.53	9.74	25.25
26	28/12/2017	62.40	21.50	17.61	22.65
27	01/01/2018	61.29	20.50	17.61	31.32
28	04/01/2018	50.41	15.35	12.41	22.51
29	08/01/2018	71.49	38.38	8.45	26.49
30	11/01/2018	44.21	16.35	5.51	15.60
31	15/01/2018	78.62	43.76	10.62	30.35
32	18/01/2018	63.35	27.48	15.62	34.22
33	22/01/2018	54.51	23.55	7.61	17.28
34	25/01/2018	60.30	34.93	19.61	21.48
35	29/01/2018	72.81	30.37	9.72	28.53
36	01/02/2018	48.32	18.35	5.51	15.44
37	05/02/2018	76.58	40.56	9.48	27.57
38	08/02/2018	66.49	30.18	11.38	29.34
39	12/02/2018	58.43	23.25	15.70	33.40
40	15/02/2018	80.39	33.21	7.66	22.46
41	19/02/2018	54.20	24.51	10.40	19.44
42	22/02/2018	77.50	32.40	6.37	30.20
43	26/02/2018	59.49	19.32	13.50	34.55
44	01/03/2018	52.41	15.68	12.63	28.55
45	05/03/2018	70.60	35.41	8.46	23.67
46	08/03/2018	64.50	33.54	5.36	15.55
47	12/03/2018	71.62	29.43	10.59	20.42
48	15/03/2018	68.50	37.37	13.65	36.38
49	19/03/2018	49.59	18.39	9.44	22.42
50	22/03/2018	76.77	41.69	18.42	35.28
51	26/03/2018	66.77	21.68	14.57	27.62
52	29/03/2018	58.57	28.39	7.54	33.44

**H. T. Shah**  
**Lab Manager****Dr. Arun Bajpai**  
**Lab Manager (Q)**

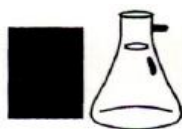
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**TABLE NO. 4 RESULTS OF AAQM FOR NORTH EAST CORNER OF BACK UP AREA [OCT 2017 - MARCH 2018]**

Sr No.	Date of Sampling	Particulate Matter (PM10) ( $\mu\text{g}/\text{m}^3$ )	Particulate Matter (PM2.5) ( $\mu\text{g}/\text{m}^3$ )	Sulphur Dioxide ( $\text{SO}_2$ ) ( $\mu\text{g}/\text{m}^3$ )	Oxides of Nitrogen ( $\text{NO}_2$ ) ( $\mu\text{g}/\text{m}^3$ )
1	02/10/2017	71.21	37.35	19.36	30.38
2	05/10/2017	82.59	35.43	25.56	28.69
3	09/10/2017	76.38	42.33	22.45	34.49
4	12/10/2017	91.23	49.39	12.52	26.52
5	16/10/2017	80.59	39.43	21.73	42.43
6	19/10/2017	58.28	34.45	17.72	27.75
7	23/10/2017	61.30	28.34	15.76	38.93
8	26/10/2017	77.50	44.41	27.40	35.56
9	30/10/2017	68.42	40.67	14.44	27.75
10	02/11/2017	90.40	49.39	8.40	33.64
11	06/11/2017	64.52	25.42	14.45	22.75
12	09/11/2017	70.51	30.30	12.50	31.25
13	13/11/2017	83.37	39.43	23.42	38.40
14	16/11/2017	73.60	34.45	11.33	27.57
15	20/11/2017	88.58	45.66	16.72	20.53
16	23/11/2017	77.61	32.51	21.41	35.39
17	27/11/2017	82.41	37.35	18.60	29.42
18	30/11/2017	65.41	36.52	10.44	24.56
19	04/12/2017	78.61	40.47	18.50	22.29
20	07/12/2017	57.83	22.34	16.59	36.54
21	11/12/2017	62.38	26.81	13.48	33.35
22	14/12/2017	73.41	34.82	25.47	42.33
23	18/12/2017	85.60	50.59	19.75	37.36
24	21/12/2017	92.62	28.68	23.67	39.30
25	25/12/2017	86.63	33.64	20.38	31.17
26	28/12/2017	71.21	32.00	11.57	26.93
27	01/01/2018	67.39	27.60	14.56	39.51
28	04/01/2018	79.39	30.34	24.66	42.44
29	08/01/2018	85.39	43.37	18.76	20.46
30	11/01/2018	63.52	29.55	12.56	33.39
31	15/01/2018	90.40	51.51	22.59	36.20
32	18/01/2018	87.48	37.44	26.32	31.52
33	22/01/2018	76.27	31.63	13.73	27.51
34	25/01/2018	69.40	42.33	15.40	24.39
35	29/01/2018	83.38	36.52	20.37	43.55
36	01/02/2018	70.58	30.42	11.41	28.36
37	05/02/2018	86.28	44.64	19.61	31.36
38	08/02/2018	76.27	33.49	15.59	34.55
39	12/02/2018	81.42	37.52	12.43	29.14
40	15/02/2018	93.41	86.21	17.55	38.46
41	19/02/2018	79.38	32.42	22.36	35.53
42	22/02/2018	89.31	41.18	16.37	42.48
43	26/02/2018	95.58	55.70	24.71	27.33
44	01/03/2018	66.87	37.64	16.27	36.73
45	05/03/2018	91.19	51.27	18.62	41.16
46	08/03/2018	80.29	42.54	11.53	30.61
47	12/03/2018	62.41	24.45	20.53	37.45
48	15/03/2018	83.38	48.35	25.62	39.57
49	19/03/2018	74.48	30.42	15.37	23.54
50	22/03/2018	92.28	52.56	23.46	32.41
51	26/03/2018	85.39	45.45	19.68	35.36
52	29/03/2018	90.40	40.18	17.26	29.17

**H. T. Shah**  
**Lab Manager****Dr. Arun Bajpai**  
**Lab Manager (Q)**

**POLLUCON****LABORATORIES PVT. LTD.**Environmental Auditors, Consultants & Analysts.  
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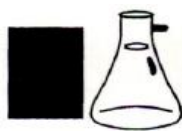
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**Ambient Air Quality Analysis Report Observations**

Ambient Air Quality Monitoring Sample Analysis									
Sr.No.	Month	Particulate Matter (PM <sub>10</sub> )		Particulate Matter (PM <sub>2.5</sub> )		Sulphur Dioxide (SO <sub>2</sub> )		Oxides of Nitrogen (NO <sub>x</sub> )	
		Max	Min	Max	Min	Max	Min	Max	Min
L.C. Gate No.2									
1	Oct-17	91.42	54.28	53.37	28.57	28.39	10.44	42.65	16.36
2	Nov-17	86.40	52.57	46.64	21.43	25.39	8.33	39.32	17.65
3	Dec-17	78.39	52.71	41.14	18.78	26.47	9.53	39.38	16.46
4	Jan-18	84.59	48.59	47.65	24.46	26.46	10.33	37.51	17.47
5	Feb-18	92.29	48.61	40.80	21.39	21.39	8.52	42.46	17.60
6	Mar-18	71.48	48.58	34.58	19.54	23.49	9.61	44.46	18.46
Starting Of Pile Approach (Near SS2 Building)									
1	Oct-17	84.30	49.22	48.73	20.58	26.45	10.34	42.47	18.39
2	Nov-17	86.71	53.49	45.37	25.62	22.64	9.67	42.45	15.56
3	Dec-17	90.57	47.62	45.62	22.89	24.40	12.55	44.49	15.57
4	Jan-18	94.41	50.28	51.25	21.63	26.28	11.28	41.31	23.41
5	Feb-18	95.29	55.37	50.28	23.36	17.42	6.66	42.69	20.45
6	Mar-18	92.41	64.27	55.45	28.65	25.39	6.60	44.35	15.65
South West Corner Of Back Up Area									
1	Oct-17	73.29	41.60	46.52	20.50	26.39	6.66	36.36	13.52
2	Nov-17	79.51	45.52	42.64	20.50	21.65	5.34	28.40	15.25
3	Dec-17	72.58	42.60	37.33	17.92	17.61	5.47	32.43	16.77
4	Jan-18	78.62	44.21	43.76	15.35	19.61	5.51	34.22	15.60
5	Feb-18	80.39	48.32	40.56	18.35	15.70	5.51	34.55	15.44
6	Mar-18	76.77	49.59	41.69	15.68	18.42	5.36	36.38	15.55
North East Corner Of Back Up Area									
1	Oct-17	91.23	58.28	49.39	28.34	27.40	12.52	42.43	26.52
2	Nov-17	90.40	64.52	49.39	25.42	23.42	8.40	38.40	20.53
3	Dec-17	92.62	57.83	50.59	22.34	25.47	11.57	42.33	22.29
4	Jan-18	90.40	63.52	51.51	27.60	26.32	12.56	43.55	20.46
5	Feb-18	95.58	70.58	86.21	30.42	24.71	11.41	42.48	27.33
6	Mar-18	92.28	62.41	52.56	24.45	25.62	11.53	41.16	23.54

**H. T. Shah**  
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**RESULTS OF NOISE LEVEL MONITORING**

Sampling Date	: As Per Table
Test Method	: IS 11702
Sampling Location	: As Per Table
Sampling By	: Pollucon Laboratories Pvt. Ltd.
Protocol (purpose)	: Environmental Monitoring

**Table No. 5 Results of Day Time Noise level monitoring [October 2017 to March 2018]**

Noise Level Day Time dB (A)Leq*									
Sr. No.	Name of Location	LC Gate No.2		Starting Of Pile Approach		South West Corner at Pump House		North East Corner of Back up Area	
	Month	Max	Min	Max	Min	Max	Min	Max	Min
1.	October	66.4	50.2	72.5	54.4	71.6	49.2	71.8	55.8
2.	November	67.7	48.5	74.2	55.7	71.2	49.7	70.7	57
3.	December	70.4	52.7	74.9	54.3	74	51.2	73.7	61
4.	January	73.9	53.2	72.5	55.2	74.2	51.8	71.3	52.2
5.	February	70.1	52.3	71.6	57.9	69.5	54.2	70.5	59.4
6.	March	68.9	49.3	73.1	53.9	72.9	50	71.6	55.5

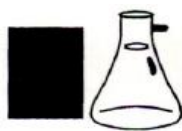
**Table No. 6 Results of Night Time Noise level monitoring [October 2017 to March 2018]**

Noise Level Night Time dB (A)Leq*									
Sr. No.	Name of Location	LC Gate No.2		Starting Of Pile Approach		South West Corner at Pump House		North East Corner of Back up Area	
	Month	Max	Min	Max	Min	Max	Min	Max	Min
1.	October	60.4	43.2	66.5	53.5	65.8	44.7	67.6	48.2
2.	November	59.5	43.1	69.0	54.2	66.7	43.6	67.5	47.4
3.	December	62.2	45.6	69.2	56.8	67.6	46.6	68.9	50.0
4.	January	62.6	41.2	67.3	54.5	68.4	43.0	66.3	47.3
5.	February	61.4	43.3	68.5	56.0	67.1	44.4	66.8	48.2
6.	March	63.4	43.0	67.4	58.3	68.8	43.4	64.4	47.4

**Ambient Air Quality Standards for Noise Specified by CPCB**

Area Code	Category of Area/Zone	Limits in dB (A) Leq <sup>#</sup>	
		Day time	Night time
A	Industrial area	75	70
<b>Notes:</b>			
1. Day time shall mean from 6.00 a.m. to 10.00 p.m.			
2. Night time shall mean from 10.00 p.m. to 06.00 a.m.			
<sup>#</sup> dB(A) Leq denotes the time weighted average of the level of sound in decibels on scale A which is relatable to human hearing			

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Lab Manager**Dr. Arun Bajpai**  
Lab Manager (Q)

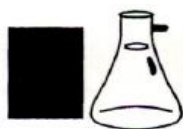
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**Ambient Air Quality Monitoring & Noise quality Monitoring Locations**

Sr. No	Name of Location	GPS Coordinate
1.	LC Gate No.2	N 22°58' 14.29' E 70°05 51.07'
2.	Starting Of Pile Approach	N 22°54' 27.47' E 70°06 15.63'
3.	South West Corner at Pump House	N 22°55' 22.98' E 70°06 7.37'
4.	North East Corner Of Back Up Area	N 22°55' 48.37' E 70°06 28.10'

**Figure No. 1 Google earth image of Ambient Air Quality Monitoring & Noise quality monitoring location**  
**H. T. Shah**  
Lab Manager  
**Dr. Arun Bajpai**  
Lab Manager (Q)



**RESULTS OF SEA WATER MONITORING**

**Table No. 7 Results of Sea water [October 2017 to March 2018]**

Description of Sample : **Sea Water Samples** Quantity/No. of Samples : **10 Lit/Two**  
Sampling By : **Pollucon Laboratories Pvt. Ltd.** Sampling Procedure : **Grab**  
Packing/Seal : **Sealed** Protocol (purpose) : **Env. Monitoring**  
Test Method : **IS 3025 & APHA (22<sup>nd</sup> Edi.) 2008** Test Parameters : **As per Table**

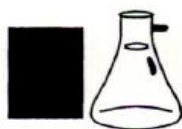
SR. NO.	TEST PARAMETERS	UNIT	Near Mouth of Creek (M1)		Near Jetty (M2)		Near Mouth of Creek (M1)	
			October-17		November-17		December-17	
			26/10/2017		23/11/2017		21/12/2017	
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM
1	pH	--	7.84	8.44	7.75	8.07	7.11	7.27
2	Temperature	°C	29	28	30	29	28.5	27.2
3	Total Suspended Solids	mg/L	434	542	244	256	436	528
4	BOD (3 Days@27°C)	mg/L	5	4	4	3	3.6	3.4
5	Dissolved Oxygen	mg/L	5.8	5.2	6	5	5.8	5.4
6	Salinity	ppt	33.6	34.4	36.9	37.4	34.8	35.6
7	Oil & Grease	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*
8	Nitrate as NO <sub>3</sub>	µmol/L	16.6	17.3	12.7	13.8	16.8	17.1
9	Nitrite as NO <sub>2</sub>	µmol/L	1.2	1.92	1.96	2.24	1.3	1.64
10	Ammonical Nitrogen as NH <sub>3</sub>	µmol/L	2	2.3	1.56	1.34	2.36	2.44
11	Phosphates as PO <sub>4</sub>	µmol/L	1.87	2.36	1.89	1.03	2.2	1.76
12	Total Nitrogen	µmol/L	19.8	21.52	16.22	17.38	21.51	22.7
13	Petroleum Hydrocarbon	µg/L	10.6	BDL*	BDL*	BDL*	10.2	BDL*
14	Total Dissolved Solids	mg/L	33990	34580	36550	36910	35220	36110
15	COD	mg/L	36	26	33	24	24	18
<b>A</b>	<b>Flora and Fauna</b>							
16.1	Primary Productivity	mgC/L/day	0.94	0.76	2.02	0.337	1.62	0.48
<b>B</b>	<b>Phytoplankton</b>							
17.1	Chlorophyll	mg/m <sup>3</sup>	0.99	0.72	1.98	1	0.92	0.67
17.2	Phaeophytin	mg/m <sup>3</sup>	1.27	1.38	0.592	1.754	1.64	1.82
17.3	Cell Count	No. x 10 <sup>3</sup> /L	84	68	160	92	92	72
17.4	Name of Group Number and name of group species of each group	--	<i>Bacillariophyceae</i> <i>Coscinodiscus</i> sp. <i>Navicula</i> sp. <i>Melosira</i> sp. <i>Rhizosolenia</i> sp. <i>Achnanthes</i> sp. <i>Amphora</i> sp. <i>Cyanophyceae</i> <i>synedra</i> -- -- --	<i>Bacillariophyceae</i> <i>Cocconeis</i> sp. <i>Coscinodiscus</i> sp. <i>Navicula</i> sp. <i>Pleurosigma</i> sp. <i>Skeletonema</i> sp. <i>Oscillatoria</i> sp. <i>Microcystis</i> sp. <i>Spirulina</i> sp. <i>Green Algae</i> <i>Chlorella</i> sp. <i>Pandorina</i> sp. <i>Ulothrix</i> sp.	<i>Bacillariophyceae</i> <i>Coscinodiscus</i> sp. <i>Navicula</i> sp. <i>Melosira</i> sp. <i>Achnanthes</i> sp. <i>Amphora</i> sp. <i>Cyanophyceae</i> <i>synedra</i>	<i>Bacillariophyceae</i> <i>Melosira</i> sp. <i>Fragillaria</i> sp. <i>Navicula</i> sp. <i>Rhizosolenia</i> sp. -- -- --	<i>Bacillariophyceae</i> <i>Achnanthes</i> sp. <i>Cocconeis</i> sp. <i>Gomphonema</i> sp. <i>Pinnularia</i> sp. <i>Coscinodiscus</i> sp. <i>Skeletonema</i> sp. <i>Green Algae</i> <i>Chlorella</i> sp. <i>Hydrodictyon</i> sp. <i>Pediastrum</i> sp. <i>Cyanophyceae</i>	<i>Bacillariophyceae</i> <i>Pinnularia</i> sp. <i>Fragillaria</i> sp. <i>Nitzschia</i> sp. <i>Thalassiosira</i> sp. <i>Biddulphia</i> sp. <i>Green Algae</i> <i>Oedogonium</i> sp. -- --

  
**H. T. Shah**  
Lab Manager



  
**Dr. Arun Bajpai**  
Lab Manager (Q)





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							<i>Spirulina sp.</i> <i>Oscillatoria sp.</i>	
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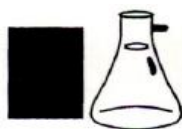
C Zooplanktons					
18.1	Abundance (Population)	noX10 <sup>3</sup> / 100 m <sup>3</sup>	17	15	14
18.2	Name of Group Number and name of group species of each group	--	Nauplivslovae Decapods Nematodes Mysids Isopods	Isopods Nematodes Gastropods	Gastropods Chaetognathes Polychaete worms
18.3	Total Biomass	mL/ 100 m <sup>3</sup>	13.2	4.2	8.6
D Microbiological Parameters					
19.1	Total Bacterial Count	CFU/mL	2800	2450	2960
19.2	Total Coliform	/mL	1010	970	Absent
19.3	E.coli	/mL	630	530	Absent
19.4	Enterococcus species	/mL	Absent	Absent	Absent
19.5	Salmonella species	/mL	Absent	Absent	Absent
19.6	Shigella species	/mL	Absent	Absent	Absent
19.7	Vibrio species	/mL	Absent	Absent	Absent

Note: BDL\*: Below Detection Limit, Minimum Detection Limit, BOD: 3.0 mg/L, Oil & Grease: 1.0 mg/L, Phaeophytin: 0.1 mg/m<sup>3</sup>, Petroleum Hydrocarbon: 10 µg/L

**H. T. Shah**  
Lab Manager



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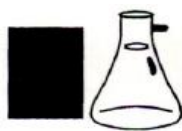
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**Table No. 8 Results of Sea water [October 2017 to March 2018]**

SR. NO.	TEST PARAMETERS	UNIT	Near Jetty (M2)		Near Mouth of Creek (M1)		Near Jetty (M2)	
			January-18		February-18		March-18	
			19/01/2018		22/02/2018		24/03/2018	
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM
1	pH	--	7.51	7.73	7.48	7.57	7.61	7.83
2	Temperature	°C	30	29	28	27	29.6	28.7
3	Total Suspended Solids	mg/L	252	260	240	254	420	502
4	BOD (3 Days @27°C)	mg/L	4.5	3.2	4.7	3.8	4.9	3.7
5	Dissolved Oxygen	mg/L	5.6	5	6	5.4	5.5	5
6	Salinity	ppt	37.6	38.6	35.2	36.8	36.6	37.8
7	Oil & Grease	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*
8	Nitrate as NO <sub>3</sub>	μmol/L	12.8	15.1	13.4	14.6	17.2	17.9
9	Nitrite as NO <sub>2</sub>	μmol/L	1.86	2.24	1.92	2.33	1.22	1.46
10	Ammonical Nitrogen as NH <sub>3</sub>	μmol/L	1.78	1.66	1.38	1.21	2.43	2.55
11	Phosphates as PO <sub>4</sub>	μmol/L	1.18	0.97	1.96	1.17	2.31	1.97
12	Total Nitrogen	μmol/L	17.22	20.6	16.93	18.64	21.44	22.89
13	Petroleum Hydrocarbon	μg/L	BDL*	BDL*	BDL*	BDL*	11.3	BDL*
14	Total Dissolved Solids	mg/L	37780	38750	35940	37060	36420	37160
15	COD	mg/L	28	22	26	16	32	19
<b>A</b>	<b>Flora and Fauna</b>							
16.1	Primary Productivity	mgC/L/day	2.21	0.97	1.84	0.69	1.37	0.89
<b>B</b>	<b>Phytoplankton</b>							
17.1	Chlorophyll	mg/m <sup>3</sup>	1.82	1.43	1.74	1.49	1.02	0.95
17.2	Phaeophytin	mg/m <sup>3</sup>	0.87	0.97	0.6	0.85	0.33	0.55
17.3	Cell Count	No. x 10 <sup>3</sup> /L	170	76	182	74	86	58
17.4	Name of Group Number and name of group species of each group	--	<i>Bacillariophyceae</i> <i>Asterionella sp.</i> <i>Coscinodiscus sp.</i> <i>Skeletonema sp.</i> <i>Rhizosolenia sp.</i> <i>Nitzschia sp.</i> <i>Cyclotella sp.</i>	<i>Bacillariophyceae</i> <i>Melosira sp.</i> <i>Fragillaria sp.</i> <i>Navicula sp.</i> --	<i>Bacillariophyceae</i> <i>Cheateoceros sp.</i> <i>Echinoderms</i> <i>Navicula sp.</i> <i>Lamellibranch</i> <i>es</i> --	<i>Bacillariophyceae</i> <i>Nitzschia sp.</i> <i>Pleurosigma sp.</i> <i>Surirella sp.</i> <i>Navicula sp.</i> <i>Cheateoceros sp.</i>	<i>Cyanophyceae</i> <i>Rhizosolenia sp.</i> <i>Oscillatoria sp.</i> <i>GreenAlgae</i> <i>Chlorella sp.</i>	<i>Cyanophyceae</i> <i>Pandorina sp.</i> <i>Oscillatoria sp.</i> <i>Lyngbya sp.</i> --

**H. T. Shah**  
Lab Manager**Dr. Arun Bajpai**  
Lab Manager (Q)

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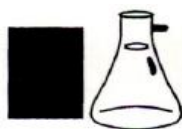
<b>C Zooplanktons</b>					
18.1	Abundance (Population)	noX10 <sup>3</sup> / 100 m <sup>3</sup>	13	19	22
18.2	Name of Group Number and name of group species of each group	--	Daphnia Nematodes Hydrozoa	Copepods Gastropods Fish egg	Krill Cyclops
18.3	Total Biomass	mL/ 100 m <sup>3</sup>	9.4	10.8	12.4
<b>D Microbiological Parameters</b>					
19.1	Total Bacterial Count	CFU/mL	2650	3100	2520
19.2	Total Coliform	/mL	Absent	Absent	Absent
19.3	E.coli	/mL	Absent	Absent	Absent
19.4	Enterococcus species	/mL	Absent	Absent	Absent
19.5	Salmonella species	/mL	Absent	Absent	Absent
19.6	Shigella species	/mL	Absent	Absent	Absent
19.7	Vibrio species	/mL	Absent	Absent	Absent

Note: BDL\*: Below Detection Limit, Minimum Detection Limit, BOD: 3.0 mg/L, Oil & Grease: 1.0 mg/L, Phaeophytin: 0.1 mg/m<sup>3</sup>, Petroleum Hydrocarbon: 10 µg/L

### Sea Water Report Observation

Sea water sample Analysis		Month : Oct-17 to Mar-18			
Parameter	Unit	Surface		Bottom	
		Max	Min	Max	Min
pH	--	7.84	7.11	8.44	7.27
Total Dissolved Solids	mg/L	37780	33990	38750	34580
Total Suspended Solids	mg/L	436	240	542	254
BOD (3 Days @ 27 oC)	mg/L	5	3.6	4	3
Dissolved Oxygen	mg/L	6	5.5	5.4	5
Salinity	ppt	37.6	33.6	38.6	34.4
COD	mg/L	36	24	26	16

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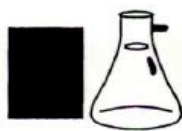
**RESULTS OF SEA SEDIMENT MONITORING****Table No. 9 Results of Sea Sediment [October 2017 to March 2018]**

Description of Sample	: Sea Sediment Sample	Quantity/No. of Samples	: 10 Kg/Two
Sampling By	: Pollucon Laboratories Pvt. Ltd.	Sampling Procedure	: Grab
Packing/Seal	: Sealed	Protocol (purpose)	: QC
Test Method	: IS/ASTM/CPCB Guidelines	Test Parameters	: As per Table

SR. NO.	TEST PARAMETERS	UNIT	Near Mouth of Creek (M1)	Near Jetty (M2)	Near Mouth of Creek (M1)	Near Jetty (M2)	Near Mouth of Creek (M1)	Near Jetty (M2)
			Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	March -18
			26/10/2017	23/11/2017	21/12/2017	19/01/2018	22/02/2018	24/03/2018
1	Organic Matter	%	0.443	0.67	0.432	0.614	0.47	0.598
2	Phosphorus as P	µg/g	546	236	470	246	455	254
3	Texture	--	Sandy	Sandy	Sandy	Sandy	Sandy	Sandy
4	Petroleum Hydrocarbon	µg/g	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*
<b>5</b>	<b>Heavy Metals</b>							
5.1	Aluminum as Al	%	6.02	4.6	5.84	4.84	5.68	4.4
5.2	Total Chromium as Cr+3	µg/g	165	120	155	136	184	148
5.3	Manganese as Mn	µg/g	1268	640	1160	780	1090	710
5.4	Iron as Fe	%	5.42	7.8	6.7	7.4	6.24	7.2
5.5	Nickel as Ni	µg/g	28	36	32	34	30	38
5.6	Copper as Cu	µg/g	44	29.3	48	23	52	24.5
5.7	Zinc as Zn	µg/g	76	93.3	72	90	74	88.2
5.8	Lead as Pb	µg/g	14	2.6	12	2.9	16	2.8
5.9	Mercury as Hg	µg/g	0.4	0.009	0.2	0.015	0.3	0.057
<b>6</b>	<b>Benthic Organisms</b>							
6.1	Macrobenthos (No and name of groups present, No and name of species of each group present)	--	Polychaete worms Isopods	Polychaete worms Isopods	Polychaete worms Isopods	Polychaete worms Gastropods Isopods	Polychaete worms Gastropods Nematodes	Polychaete worms Echinoderms
6.2	MeioBenthos (No and name of groups present, No and name of species of each group present)	--	Bryozoans Nematodes	Bryozoans Nematodes	Bryozoans Nematodes	Foraminiferans	Foraminiferans	Copepods
6.3	Population	no/m2	116	60	92	64	122	74

Note: BDL\*: Below Detection Limit, Minimum Detection Limit, Mercury as Hg: 0.00025 mg/L, Petroleum Hydrocarbon: 5 µg/g

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Lab Manager (Q)

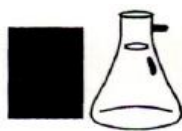
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**Sea Sediment Report Observation**

Sea Sediment sample analysis		Month : Oct'17 to Mar'18	
Parameter	Unit	Sediment	
		Max	Min
Organic Matter	%	0.67	0.432
Phosphorus as P	µg/g	546	236
Aluminum as Al	%	6.02	4.4
Total Chromium as Cr+3	µg/g	184	120
Manganese as Mn	µg/g	1268	640
Iron as Fe	%	7.8	5.42
Nickel as Ni	µg/g	38	28
Copper as Cu	µg/g	52	23
Zinc as Zn	µg/g	93.3	72
Lead as Pb	µg/g	16	2.6
Mercury as Hg	µg/g	0.4	0.009

**H. T. Shah**  
Lab Manager**Dr. Arun Bajpai**  
Lab Manager (Q)

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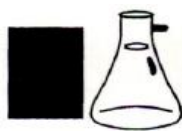
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**Sea Water & Sea Sediment Locations**

Sr. No	Name of Location	GPS Coordinate
1.	NEAR MOUTH OF CREEK (M1)	N 22° 54' 04.68" E 70° 06' 16.56"
2.	NEAR JETTY (M2)	N 22° 53' 15.99" E 70° 06' 15.60"

**Figure No. 2 Google earth image of sea water and sediment location**  
**H. T. Shah**  
Lab Manager  
**Dr. Arun Bajpai**  
Lab Manager (Q)



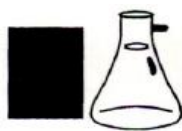
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**RESULTS OF DRINKING WATER ANALYSIS****Standard Methods & Permissible limit for Drinking water**

SR. NO.	PARAMETERS	UNIT	DESIRABLE LIMIT AS PER IS:10500:2012	TEST METHOD
<b>Chemical Parameters</b>				
1	Odour	--	Agreeable	IS3025(P-5)83Re.02
2	Colour	Hazen	Max 5	IS3025(P-4)83Re.02
3	Taste	--	Agreeable	IS3025(P-8)84Re.02
4	pH Value	--	6.5 to 8.5	IS3025(P-11)83Re.02
5	Turbidity	NTU	Max 1	APHA 2130-B
6	Total Dissolved Solids	mg/L	Max 500	IS3025(P16)84Re.02
7	Total Hardness as CaCO <sub>3</sub>	mg/L	Max 200	IS3025(P-21) 84EDTARE.02
8	Alkalinity	mg/L	Max 200	IS 3025(P-23)
9	Residual Free Chlorine	mg/L	Min 0.2	APHA(22 <sup>nd</sup> Edi)4500 Cl
10	Chloride as Cl	mg/L	Max 250	IS3025(P-32) 88Re.99Argentometric method
11	Calcium as Ca	mg/L	Max 75	IS3025(P40)91Re.03EDTA
12	Magnesium as Mg	mg/L	Max 30	IS3025(P46)94Re.99EDTA
13	Oil & Grease	mg/L	Max 0.5	IS3025(P-39)
14	Phenolic compounds as C <sub>6</sub> H <sub>5</sub> OH	mg/L	Max 0.001	IS3025(P43)92Re.03
15	Hexavalent Chromium as Cr <sup>+6</sup>	mg/L	Max 0.05	APHA (22 <sup>nd</sup> Edi) 3500 Cr B
16	Cadmium as Cd	mg/L	Max 0.003	AAS-APHA(22 <sup>nd</sup> Edi) 3111 B
17	Copper as Cu	mg/L	Max 0.05	AAS-APHA(22 <sup>nd</sup> Edi) 3111 B
18	Zinc as Zn	mg/L	Max 5	AAS-APHA(22 <sup>nd</sup> Edi) 3111 B
19	Iron as Fe	mg/L	Max 0.3	AAS-APHA(22 <sup>nd</sup> Edi) 3111 B
20	Lead as Pb	mg/L	Max 0.01	AAS-APHA(22 <sup>nd</sup> Edi) 3111 B
21	Mercury as Hg	mg/L	Max 0.001	AAS-APHA 3112 B
22	Selenium as Se	mg/L	Max 0.01	AAS-APHA 3114 B
23	Aluminum as Al	mg/L	Max 0.03	AAS-APHA(22 <sup>nd</sup> Edi) 3111 B
24	Manganese as Mn	mg/L	Max 0.1	AAS-APHA(22 <sup>nd</sup> Edi) 3111 B
25	Arsenic as As	mg/L	Max 0.01	AAS-APHA(22 <sup>nd</sup> Edi) 3114 B
26	Sulphate as SO <sub>4</sub>	mg/L	Max 200	IS 3025(P-24)
27	Cyanide as CN	mg/L	Max 0.05	APHA(22 <sup>nd</sup> Edi)4500CN E
28	Boron as B	mg/L	Max 0.5	APHA(22 <sup>nd</sup> Edi)4500 B
29	Fluoride as F	mg/L	Max 1.0	APHA(22 <sup>nd</sup> Edi) 4500 F D SPANDS
30	Nitrate Nitrogen as NO <sub>3</sub>	mg/L	Max 45	IS3025(P34)88
31	Anionic Detergents as MBAS	mg/L	Max 0.2	14542/Methylene Blue extraction method
32	Pesticides	mg/L	Absent	GCMS
33	Coliform	/100 mL	Absent	APHA (22 <sup>nd</sup> Edi. Method) 9221-D
34	E-Coli	/100 mL	Absent	IS: 1622:1981 Edi. 2.4 (2003-05)

**H. T. Shah**  
Lab Manager**Dr. Arun Bajpai**  
Lab Manager (Q)

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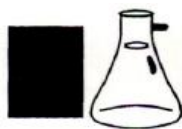
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**Table No.10 Results of Drinking Water [October 2017 to March 2018]****Results of Drinking Water [March -2018]**

SR. NO.	PARAMETERS	UNIT	March - 2018
			21/03/2018
			Staff Canteen
Chemical Parameters			
1	Odour	--	Agreeable
2	Colour	Hazen	< 1.0
3	Taste	--	Agreeable
4	pH Value	--	7.9
5	Turbidity	NTU	0.025
6	Total Dissolved Solids	mg/L	118
7	Total Hardness as CaCO3	mg/L	20
8	Alkalinity	mg/L	24
9	Residual Free Chlorine	mg/L	< 0.1
10	Chloride as Cl	mg/L	48
11	Calcium as Ca	mg/L	4
12	Magnesium as Mg	mg/L	2.4
13	Mineral Oil	mg/L	BDL*
14	Phenolic compounds as C6H5OH	mg/L	BDL*
15	Chromium as Cr+6	mg/L	BDL*
16	Cadmium as Cd	mg/L	BDL*
17	Copper as Cu	mg/L	BDL*
18	Zinc as Zn	mg/L	BDL*
19	Iron as Fe	mg/L	0.018
20	Lead as Pb	mg/L	BDL*
21	Mercury as Hg	mg/L	BDL*
22	Selenium as Se	mg/L	BDL*
23	Aluminum as Al	mg/L	BDL*
24	Manganese as Mn	mg/L	BDL*
25	Arsenic as As	mg/L	BDL*
26	Sulphate as SO4	mg/L	14.4
27	Cyanide as CN	mg/L	BDL*
28	Boron as B	mg/L	BDL*
29	Fluoride as F	mg/L	BDL*
30	Nitrate Nitrogen as NO3	mg/L	0.34
31	Anionic Detergents as MBAS	mg/L	BDL*
32	Pesticides	mg/L	BDL*
Microbiological Parameters			
33	Coliform	/100 mL	Absent
34	E-Coli	/100 mL	Absent

**H. T. Shah**  
Lab Manager**Dr. Arun Bajpai**  
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**Results of Drinking Water [ Essential parameter in October 2017 to March 2017 ]**

SR. NO.	TEST PARAMETERS	UNIT	November 2017	January 2018
			23/11/2017	19/01/2018
			Driver Rest Room	Narmada Pump House
1	Odour	--	Agreeable	Agreeable
2	Colour	Hazen	< 1.0	< 1.0
3	Taste	--	Agreeable	Agreeable
4	pH	--	8.13	7.52
5	Turbidity	NTU	0.11	0.26
6	Total Dissolved Solids	mg/L	98	106
7	Total Hardness as CaCO <sub>3</sub>	mg/L	10	34
8	Residual Free Chlorine	mg/L	< 0.1	< 0.1
9	Chloride as Cl	mg/L	48.9	35.32
10	Fluoride as F	mg/L	BDL*	0.21
11	Iron as Fe	mg/L	BDL*	0.11
12	Coliform	/100 mL	Absent	Absent
13	E-Coli	/100 mL	Absent	Absent

**H. T. Shah**  
Lab Manager**Dr. Arun Bajpai**  
Lab Manager (Q)



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**Table No.11 Results of Sewage Water [October 2017 to March 2018]**

SR. NO.	PARAMETERS	UNIT	TEST METHOD
1	pH	--	IS3025(P11)83Re.02
2	Total Suspended Solids	mg/L	IS3025(P17)84Re.02
3	Residual Chlorine	mg/L	APHA(22ndEdi)4500 Cl
4	BOD (3 Days @ 27 oC)	mg/L	IS 3025 (P44)1993 Re.03 Edition 2.1
5	COD	mg/L	APHA(22ndEdi) 5520-D Open Reflux
6	Oil & Grease	mg/L	APHA(22ndEdi)5520D

**RESULTS OF SEWAGE WATER ANALYSIS**

DATE OF SAMPLING			26/10/2017	
SR. NO.	PARAMETERS	UNIT	STP Inlet	STP Outlet
1	pH	--	7.17	7.93
2	Total Suspended Solids	mg/L	182	28
3	Residual Chlorine	mg/L	< 0.1	0.6
4	BOD (3 Days @ 27 °C)	mg/L	76	19
5	COD	mg/L	268	64
6	Oil & Grease	mg/L	1.4	BDL*

DATE OF SAMPLING			23/11/2017	
SR. NO.	PARAMETERS	UNIT	STP Inlet	STP Outlet
1	pH	--	6.93	7.51
2	Total Suspended Solids	mg/L	232	24
3	Residual Chlorine	mg/L	< 0.1	0.5
4	BOD (3 Days @ 27 °C)	mg/L	48	12
5	COD	mg/L	204	28
6	Oil & Grease	mg/L	1.1	BDL*

DATE OF SAMPLING			21/12/2017	
SR. NO.	PARAMETERS	UNIT	STP Inlet	STP Outlet
1	pH	--	7.52	7.76
2	Total Suspended Solids	mg/L	164	22
3	Residual Chlorine	mg/L	< 0.1	0.8
4	BOD (3 Days @ 27 °C)	mg/L	118	16
5	COD	mg/L	376	52
6	Oil & Grease	mg/L	1.6	< 1.0



**H. T. Shah**  
Lab Manager





**Dr. Arun Bajpai**  
Lab Manager (Q)

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DATE OF SAMPLING			19/01/2018	
SR. NO.	PARAMETERS	UNIT	STP Inlet	STP Outlet
1	pH	--	7.13	7.8
2	Total Suspended Solids	mg/L	194	24
3	Residual Chlorine	mg/L	< 0.1	0.6
4	BOD (3 Days @ 27 °C)	mg/L	68	14
5	COD	mg/L	244	46
6	Oil & Grease	mg/L	1.38	< 1.0

DATE OF SAMPLING			22/02/2018	
SR. NO.	PARAMETERS	UNIT	STP Inlet	STP Outlet
1	pH	--	5.78	7.96
2	Total Suspended Solids	mg/L	296	26
3	Residual Chlorine	mg/L	< 0.1	0.7
4	BOD (3 Days @ 27 °C)	mg/L	70	11
5	COD	mg/L	382	32
6	Oil & Grease	mg/L	1.6	< 1.0

DATE OF SAMPLING			24/03/2018	
SR. NO.	PARAMETERS	UNIT	STP Inlet	STP Outlet
1	pH	--	6.95	7.14
2	Total Suspended Solids	mg/L	184	20
3	Residual Chlorine	mg/L	< 0.1	0.5
4	BOD (3 Days @ 27 °C)	mg/L	48	14
5	COD	mg/L	290	48
6	Oil & Grease	mg/L	4.8	0.6

**H. T. Shah**  
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Lab Manager (Q)

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**Table No.12 Results of Stack Monitoring****Permissible limit for stack monitoring**

SR. NO.	TEST PARAMETER	UNIT	GPCB LIMIT**	TEST/SAMPLING METHOD
1	Particulate Matter	mg/Nm <sup>3</sup>	150	IS:11255 (Part-1) : 1985
2	Sulfur Dioxide as SO <sub>2</sub>	ppm	100	IS:11255 (Part-2) : 1985
3	Oxides of Nitrogen as NO <sub>x</sub>	ppm	50	IS: 11255 (Part-7) : 2005

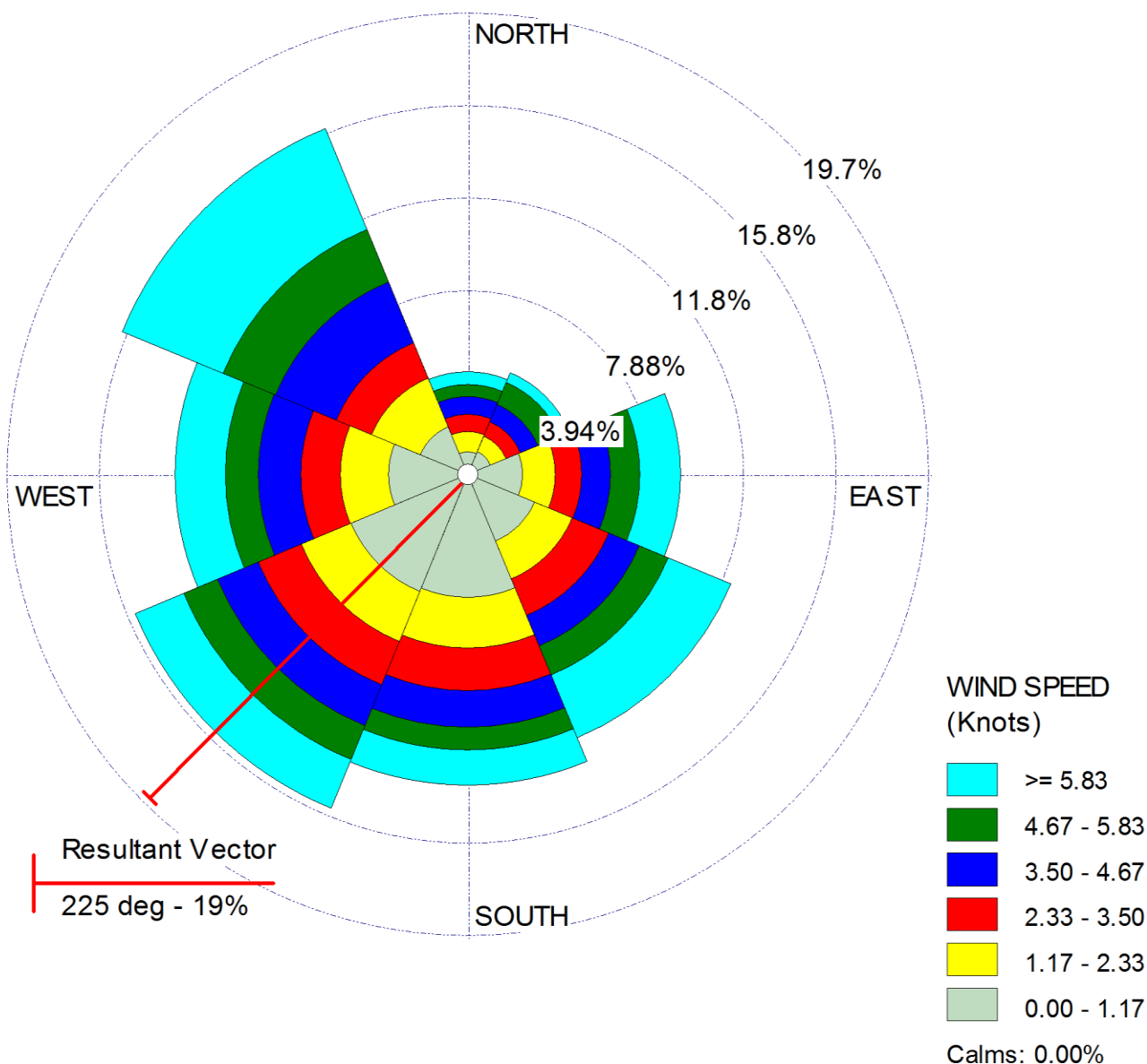
**RESULTS OF STACK MONITORING**

Date of Monitoring			21/12/2017		
Sampling Location			SS-1 DG Set -1 (125 KVA)	SS-2 DG Set -2 (125 KVA)	SS-3 DG Set -3 (125 KVA)
SR. NO.	TEST PARAMETER	UNIT	RESULTS		
1	Particulate Matter	mg/Nm <sup>3</sup>	20.31	24.24	25.61
2	Sulfur Dioxide as SO <sub>2</sub>	ppm	6.34	5.44	6.89
3	Oxides of Nitrogen as NO <sub>x</sub>	ppm	29.14	19.73	37.51


**H. T. Shah**  
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**Figure No.3 Wind Rose Diagram [October 2017 to March 2018]****H. T. Shah**  
Lab Manager**Dr. Arun Bajpai**  
Lab Manager (Q)

# Annexure – 7

	<b>Adani Kandla Bulk Terminal Pvt. Ltd.</b>	<b>From : October 2017</b> <b>To : March 2018</b>
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## **Annexure – 7 (GREEN ZONE DETAILS OF TUNA PORT (AKBTPL) UP TO Mar'2018.)**

CURRENT GREEN ZONE DETAILS OF TUNA PORT (AKBTPL) UP TO Mar'2018.						
Sr. No.	Location	Area (Ha)	Tree (No.)	Shrubs (SQM)	Green Carpet (SQM)	Palm (No.)
1	Staff Canteen, POB & SS1 Building	2.17	4341	1403	8569	234
2	Green Belt area & Pump House	6.66	15294	198	0	0
3	Approach Road Zero Point to Main Gate	0.40	0	0	0	1006
4	SS2 Building & Jetty Road Area.	2.57	5776	875	0	0
5	Internal Road & Railway Building	2.30	10571	130	61	250
<b>Total</b>		<b>14.10</b>	<b>35982</b>	<b>2606</b>	<b>8630</b>	<b>1490</b>



**Near Adani canteen**



**Around POB office**



**Near SS-01 Building**



**Approach Road- Zero Point to Main Gate**



**Near SS-02 Building**



**Near Railway Building**



# Annexure – 8

(Details of CSR activities carried out by Adani Foundation.)



## **Annexure – 8: Details of CSR activities carried out by Adani Foundation.**

Sr. no.	Village	CSR activity done	Expenses (INR in Lakh)
1		<b>Rural Infrastructure Development</b>	
	Wandi	Drinking water pipeline	7.78
	Tuna	Fodder Shed and Wall at Tuna	10.36
	Takro	Solar light-4 at Takro bander	8.20
2		<b>Health Projects</b>	
	Rampar, Tuna, Wandi	Rural Clinic	0.54
	Rampar, Tuna, Wandi	Senior Citizen	0.28
	Rampar, Wandi	Medical Support	0.59
3		<b>SLD (sustainable livelihood) Projects</b>	
	Rampar	Fodder Support	5.94
	Tuna	Fodder Support	15.81
	Rampar	Beti padhavo Programme	0.24
	Tuna		0.83
	Rampar	IG (Income Generation) & Handicap Support	0.53
	Tuna		0.37
4		<b>Education Projects</b>	
	Tuna	Green Board	0.25
5		<b>Fisherman Projects</b>	
	Virabandar	Potable Water	1.98
	Ghavarvaro Banadar	Potable Water	1.62
<b>Total</b>			<b>55.32</b>

### **Rural Infrastructure Development**



**Fodder shed in village-Tuna village**



**Boundary wall around fodder shed-Tuna**

## Rural Infrastructure Development



Solar light at Ghavar and Takro bander



Drinking water pipeline – Wandi village

## Health Projects

