



Ports and  
Logistics

AKBTPL/Envcell/2022-23/02

23<sup>rd</sup> May'2023

To

**The Inspector General of Forest / Scientist C,**  
Integrated Regional Office (IRO),  
Ministry of Environment, Forest and Climate Change,  
Aranya Bhawan, A Wing, Room No. 409,  
Near CH 3 Circle, Sector – 10A,  
Gandhinagar – 382007.  
E-mail: [eccomplinace-guj@gov.in](mailto:eccomplinace-guj@gov.in)

**Sub** : Half yearly Compliance report of Environment and CRZ clearance for the project namely  
"Construction of berthing & allied facilities off Tekra near Tuna, Gujarat"

**Ref** : 1) Environment and CRZ clearance issued to M/s Kandla Port Trust (KPT) vide letter no. 10-10/2008-IA-III dated 1<sup>st</sup> November, 2011 and transferred to M/s Adani Kandla bulk Terminal Private Limited (AKBTPL) vide letter no. 10-10/2008-IA-III dated 10<sup>th</sup> November, 2014  
2) 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 23<sup>rd</sup> June, 2010.

Dear Sir,

Please find enclosed herewith point wise compliance reports of conditions stipulated in the above referred letters for the compliance period from **October 2022 to March 2023**.

Thank you,  
Yours Faithfully,

For **M/s Adani Kandla Bulk Terminal Pvt. Ltd.**

**Sandeep Jaiswal**  
(COO – AKBTPL)  
Authorized Signatory

**Copy to:**

1. The Director (Monitoring –IA Division), Ministry of Environment, Forests & Climate Change, Indira Paryavaran Bhawan, Jor Bagh Road, New Delhi-110003
2. The Director, Forests & Environment Department, Block - 14, 8<sup>th</sup> floor, Sachivalaya, Gandhi Nagar, Gujarat - 382 010
3. The Zonal Officer, Central Pollution Control Board, Zonal Office Vadodra, Parivesh Bhawan, Opposite VMC Ward office No. 10, Subhanpura, Vadodra-390023
4. The Chairman, Gujarat Pollution Control Board, Parvayaran Bhawan, Sector 10A, Gandhinagar-382010(Guj.)
5. The Regional Officer, Regional Office, GPCB - Kutch East, Room No.215-216, KPT administrative Building, Gandhidham, 370201
6. The Chief Engineer, Administrative Building, Kandla Port Trust, Gandhidham 370201

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](mailto:info@adani.com)  
[www.adaniports.com](http://www.adaniports.com)

# 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– 2022 to March– 2023

# Environmental and CRZ Clearance Letter issued by MoEF&CC

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

Environmental and CRZ clearance was obtained by Deendayal Port Trust (DPT) [Earlier named as Kandla Port Trust (KPT)] vide MoEF&CC letter dated 01.11.2011. AKBTPL and DPT 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

**Status of the conditions stipulated in Environment and CRZ Clearance**

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 as on 31.03.2023															
<b>5.</b>	<b>Specific Condition</b>																
(i)	<p>"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.</p>	<p><b>Complied.</b></p> <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 already completed, and the project is in operation phase since 2015. The present in-force CTO &amp; amended CTE are mentioned below.</li> </ul> <table border="1" data-bbox="805 898 1463 1058"> <thead> <tr> <th>Sr. No</th> <th>Permission</th> <th>Project</th> <th>Ref.No./Order No.</th> <th>Validity</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Amendment in CTE</td> <td>AKBTPL</td> <td>CTE-101194</td> <td>30.04.2024</td> </tr> <tr> <td>2</td> <td>CTO renewal</td> <td>AKBTPL</td> <td>AWH-105213</td> <td>02.12.2024</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>Copies of the stated permissions are already submitted as a part of half yearly compliance reports for the period of Oct'19 to Mar'20.</li> </ul>	Sr. No	Permission	Project	Ref.No./Order No.	Validity	1	Amendment in CTE	AKBTPL	CTE-101194	30.04.2024	2	CTO renewal	AKBTPL	AWH-105213	02.12.2024
Sr. No	Permission	Project	Ref.No./Order No.	Validity													
1	Amendment in CTE	AKBTPL	CTE-101194	30.04.2024													
2	CTO renewal	AKBTPL	AWH-105213	02.12.2024													
(ii)	<p>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.</p>	<p><b>Complied.</b></p> <ul style="list-style-type: none"> <li>M/s. Gujarat Institute of Desert Ecology, Bhuj 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 were already submitted as part of half yearly compliance report (Oct-2016 to March-2017).</li> <li>Further, in order to understand the impacts of the existing project activity on marine ecology, a study was carried out through M/s.</li> </ul>															

**Status of the conditions stipulated in Environment and CRZ Clearance**

**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 as on 31.03.2023
		<p>GUIDE. Details related to the same were already submitted as part of half yearly compliance report (Oct-2016 to March-2017).</p> <ul style="list-style-type: none"> <li>It may be noted that GUIDE is one of the authorized agencies of Forest &amp; Environment dept. Govt. of Gujrat.</li> </ul>
(iii)	<p>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>	<p><b>Complied.</b></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 DPT to carry out mangrove plantation in 500 ha. Area.</li> <li>As agreed, AKBTPL has already completed Mangrove plantation in 250 ha area at Sat Saida bet. Balance 250 ha. Mangrove plantation shall be carried out by DPT.</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)	<p>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>	<p><b>Complied.</b></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 DPT during the construction phase and the dredge material was disposed by DPT at a location identified by M/s. CWPRS, Pune in their study report.</li> <li>No digging activities are carried out during Period Oct'22 to Mar'23.</li> </ul>
(v)	<p>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</p>	<p><b>Complied.</b></p> <ul style="list-style-type: none"> <li>EMP was updated by AKBTPL and submitted to DPT. DPT has submitted the same vide letter dated 03.12.2013 to MoEF&amp;CC as part of compliance report.</li> </ul>

**Status of the conditions stipulated in Environment and CRZ Clearance**

**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 as on 31.03.2023
	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.	<ul style="list-style-type: none"> <li>Further, said EMP was also submitted by AKBTPL as a 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><b>Complied.</b></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 Head. Further, the site Environment Cell continuously remains in loop with Corporate Environment Cell.</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><b>Complied.</b></p> <ul style="list-style-type: none"> <li>Environmental Management Plan is in place and the funds earmarked (budgeted separately for 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) is approx. INR 281.03 Lakh for the period of Oct'22 to Mar'23. Please refer.</li> </ul> <p><b>Annexure – 1</b> for further details.</p>
<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><b>Complied.</b></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 carried out so far during Oct'22 to Mar'23.</li> </ul>

**Status of the conditions stipulated in Environment and CRZ Clearance**

**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 as on 31.03.2023																					
(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><b>Complied.</b></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 a part of half yearly compliance report (Oct-2016 to March-2017).</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><b>Complied.</b></p> <p>Compliance report of EC conditions is uploaded regularly. Last compliance report including results of monitoring data for the period of Apr'22 to Sept'22 was submitted to IRO MoEF&amp;CC Gandhinagar, Zonal Office of CPCB @ Baroda, GPCB @ Gandhinagar &amp; Gandhidham and Dept. of Forests &amp; Env., Gandhinagar vide our letter dated 25.11.2022. Copy of the same is also available on our web site <a href="https://www.adaniports.com/Downloads">https://www.adaniports.com/Downloads</a> A soft copy of the same was also submitted through e-mail on 25.11.2022 to all the concern authorities. Please refer below for the details regarding past six compliance submissions.</p> <table border="1" data-bbox="789 1539 1492 1808"> <thead> <tr> <th>Sr No.</th> <th>Compliance period</th> <th>Date of submission</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Oct'19 to Mar'20</td> <td>11.05.2020</td> </tr> <tr> <td>2</td> <td>Apr'20 to Sep'20</td> <td>27.11.2020</td> </tr> <tr> <td>3</td> <td>Oct'20 to Mar'21</td> <td>31.05.2021</td> </tr> <tr> <td>4</td> <td>Apr'21 to Sep'21</td> <td>27.11.2021</td> </tr> <tr> <td>5</td> <td>Oct'21 to Mar'22</td> <td>26.05.2022</td> </tr> <tr> <td>6</td> <td>Apr'22 to Sept'22</td> <td>25.11.2022</td> </tr> </tbody> </table>	Sr No.	Compliance period	Date of submission	1	Oct'19 to Mar'20	11.05.2020	2	Apr'20 to Sep'20	27.11.2020	3	Oct'20 to Mar'21	31.05.2021	4	Apr'21 to Sep'21	27.11.2021	5	Oct'21 to Mar'22	26.05.2022	6	Apr'22 to Sept'22	25.11.2022
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(iv)	Ministry of Environment & Forests or any other competent authority may stipulate any additional conditions or modify the existing ones, if necessary	<p><b>Point Noted.</b></p> <ul style="list-style-type: none"> <li>All applicable conditions in the interest of environment will be complied.</li> </ul>																					

**Status of the conditions stipulated in Environment and CRZ Clearance**

**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**

<b>Sr. No</b>	<b>Condition</b>	<b>Compliance status as on 31.03.2023</b>
	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.	<b>Point Noted.</b> <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 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.	<b>Complied.</b> <ul style="list-style-type: none"> <li>Details related to transfer of EC/CRZ clearance in the name of AKBTPL are submitted as a 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.	<b>Complied.</b> <ul style="list-style-type: none"> <li>DPT 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,	<b>Complied.</b> <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>

**Status of the conditions stipulated in Environment and CRZ Clearance**

**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 as on 31.03.2023
	the Public Liability (Insurance) Act, 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.	<p><b>Not Applicable.</b></p> <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	<p>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>.</p> <p>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.</p>	<p><b>Complied.</b></p> <ul style="list-style-type: none"> <li>DPT 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 was submitted to the Regional office, MoEF&amp;CC Bhopal by DPT 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	<p><b>Complied.</b></p> <ul style="list-style-type: none"> <li>Please refer Point No. iii (Main Point 6 – General Condition) for compliance submission</li> </ul>

**Status of the conditions stipulated in Environment and CRZ Clearance**

**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 as on 31.03.2023
	uploaded by the project proponent in its website.	
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.	<p><b>Complied.</b></p> <ul style="list-style-type: none"> <li>Clearance letter is uploaded on our website: <a href="https://www.adaniports.com/Downloads">https://www.adaniports.com/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.	<p><b>Complied.</b></p> <p>Please refer Above point no. 11 of General conditions</p>
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.	<p><b>Complied.</b></p> <ul style="list-style-type: none"> <li>Environment Statement for FY 2022- 23 has already been submitted to GPCB vide letter no. AKBTPL /ENVSTATEMENT /2022-23 dated 10.05.2023.</li> </ul> <p>Copy of the same is attached as <b>Annexure - 2</b>. The said Environment Statement is also uploaded on our website: <a href="https://www.adaniports.com/Downloads">https://www.adaniports.com/Downloads</a></p>

# **Compliance to CRZ Recommendation Letter**

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

**Status of the conditions stipulated in Environment and CRZ Clearance**

**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 23<sup>rd</sup> June, 2010**

Sr. No	Condition	Compliance
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.	<p><b>Complied.</b></p> <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.	<p><b>Complied.</b></p> <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.	<p><b>Complied.</b></p> <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 was submitted to MoEF&amp;CC New Delhi (as part of half yearly compliance report (Apr – Sep 2014) vide letter dated 13th November, 2014.</li> <li>Please refer condition No.15 regarding Oil spill Contingency Plan.</li> <li>Regional Level Pollution Response exercise "SWACHCHH SAMUDRA-NW 2019" was carried out by Indian Coast Guard on 18th Dec 2019. All participants from various Oil Handling Agencies and</li> </ul>

**Status of the conditions stipulated in Environment and CRZ Clearance**

**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 23<sup>rd</sup> June, 2010**

Sr. No	Condition	Compliance
		Stakeholders (ICG, GMB Port, DPT Vadinar, IOCL, RIL, NAYARA Energy, BORL, ESBTL Salaya, APSEZL, HMEL, GSFC, PCB, Forest Dept., Customs, Fisheries & DPT Kandla) were participated in this exercise.
4	The KPT shall strictly ensure that no creeks or rivers are blocked due to any activity at Kandla.	<ul style="list-style-type: none"> <li>• <b>Complied.</b></li> <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 through creeks.</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. As outcome of that study is all water parameters are well within prescribe limit and no gross contamination could be discerned showing that the costal water in and around the jetty is clean and unpolluted. Also observed spatial variations in zooplankton density, composition was normal and no events negatively influencing the zooplankton community was noticed during the study. Details related to the same are already submitted as a 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	<p><b>Complied.</b></p> <ul style="list-style-type: none"> <li>• AKBTPL being BOOT operator, DPT requested AKBTPL to carry out mangrove plantation in 250 ha area. As agreed, AKBTPL has completed Mangrove plantation in 250 ha area at</li> </ul>

**Status of the conditions stipulated in Environment and CRZ Clearance**

**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 23<sup>rd</sup> June, 2010**

Sr. No	Condition	Compliance
	images shall be submitted to Ministry of Environment and Forests as well as to this department without fail.	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.
6	No activities other than those permitted by the competent authority under the CRZ Notification shall be carried out.	<p><b>Complied.</b></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, amended till date.</li> </ul>
7	No ground water shall be tapped for any purpose during the proposed expansion/modernization activities.	<p><b>Complied.</b></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 operation activities is Gujarat Water Infrastructure Limited (GWIL). water consumption for the period Oct'22 to Mar'23 was <b>1231 KLD.</b></li> </ul>
8	All necessary permission from different Government Departments/ agencies shall be obtained by the KPT before commencing the expansion activities.	<p><b>Not applicable at present</b></p> <ul style="list-style-type: none"> <li>All construction activities are completed in March 2015. No expansion activities are carried out. All necessary permissions will be obtained in future before commencing the expansion activities.</li> <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	<p><b>Complied.</b></p> <ul style="list-style-type: none"> <li>No effluent is generated at the project site.</li> </ul>

**Status of the conditions stipulated in Environment and CRZ Clearance**

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Sr. No	Condition	Compliance																									
	<p>prescribed by the Gujarat Pollution Control Board and would be reused/recycled within the plant premises.</p>	<ul style="list-style-type: none"> <li>Avg. 9.59 KLD of sewage generated during the period of Oct'22 to Mar'23 is treated in 25 KLD capacities STP based on FAB technology and treated water is used for horticulture purpose within plant premises after achieving permissible limits prescribed by GPCB.</li> <li>Third party analysis of the treated water is being carried out Twice 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-22 to Mar-23 is mentioned below.</li> </ul> <table border="1" data-bbox="862 1024 1484 1287"> <thead> <tr> <th>Parameter</th> <th>Unit</th> <th>Max</th> <th>Min</th> <th>Perm. Limit*</th> </tr> </thead> <tbody> <tr> <td>pH</td> <td>-</td> <td>7.84</td> <td>7.28</td> <td>6.5-9</td> </tr> <tr> <td>TSS</td> <td>mg/L</td> <td>26</td> <td>13</td> <td>30</td> </tr> <tr> <td>BOD (3 Days @ 27 °C)</td> <td>mg/L</td> <td>18</td> <td>11</td> <td>20</td> </tr> <tr> <td>Fecal Coliform</td> <td>MPN/100ml</td> <td>140</td> <td>63</td> <td>&lt;1000</td> </tr> </tbody> </table> <p>*as per CC&amp;A granted by GPCB'</p> <ul style="list-style-type: none"> <li>Please refer <b>Annexure - 3</b> for detailed analysis reports. Total expenditures of the Environment monitoring for the period (Oct'22 to Mar'23) are INR 4.30 lakh.</li> </ul>	Parameter	Unit	Max	Min	Perm. Limit*	pH	-	7.84	7.28	6.5-9	TSS	mg/L	26	13	30	BOD (3 Days @ 27 °C)	mg/L	18	11	20	Fecal Coliform	MPN/100ml	140	63	<1000
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10	<p>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>	<p><b>Complied.</b></p> <ul style="list-style-type: none"> <li>The EMP prepared by NIOT in the EIA report was updated by AKBTPL (based on the condition mentioned in the EC and CRZ clearance) and submitted to DPT. DPT 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 AKBTPL are</li> </ul>																									

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Sr. No	Condition	Compliance
		implemented for environment protection.
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><b>Complied.</b></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 DPT and the dredge material was disposed at a location identified by M/s. CWPRS, Pune in their study report.</li> <li>No digging activities are carried out during Oct'22 to Mar'23</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>
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.	<p><b>Complied.</b></p> <ul style="list-style-type: none"> <li>Construction of the project is completed in March, 2015.</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	<p><b>Complied.</b></p> <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</li> </ul>

**Status of the conditions stipulated in Environment and CRZ Clearance**

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Sr. No	Condition	Compliance
	conditions are not deteriorated by the construction labours.	ensured that environmental conditions are not deteriorated by the construction labours during the construction activities.
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.	<p><b>Complied.</b></p> <ul style="list-style-type: none"> <li>• DPT is already having updated Disaster Management Plan as well as Oil Spill Contingency Plan.</li> <li>• DPT 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 DPT 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.	<p><b>Complied.</b></p> <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 regular basis.</li> <li>• Approx. 16.09-hectare area is developed till Mar'23 as greenbelt so far with various types of trees Approx. <b>42172</b> plants and lawn. Please refer <b>Annexure – 4</b> for further details regarding greenbelt development. Total expenditures of the horticulture dept. for the period of Oct'22 to Mar'23 are INR 16.80 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	<p><b>Complied.</b></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</li> </ul>

**Status of the conditions stipulated in Environment and CRZ Clearance**

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Sr. No	Condition	Compliance
	Environment Department and the District Collector/District Development Officer.	<p>Foundation (AF). AF works in the following four main areas:</p> <ol 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> </ol> <ul style="list-style-type: none"> <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). Total expenditures of the CSR activities are INR <b>43</b> lakh for the period Oct'22 to Mar'23. Please refer <b>Annexure - 5</b> for 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><b>Complied.</b></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 Disposal of wastes; mechanization of operations etc.</li> <li>• Approximately INR 281.03 Lakh is spent during the period (Oct'22 to Mar'23) for various activities mentioned here. Please refer to <b>Annexure - 1</b> for details related to environmental expenditures and <b>Annexure - 5</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	<p><b>Complied.</b></p> <ul style="list-style-type: none"> <li>• AKBTPL has environment management cell with qualified manpower for implementation of environmental</li> </ul>

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Sr. No	Condition	Compliance																																																																																												
	management during construction and operational phases of the project.	safeguards and management. The Environment Cell continuously remains in loop with Corporate Environment Cell.																																																																																												
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><b>Complied.</b></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-22 to Mar-23 is mentioned below.</li> </ul> <p><b>AAQM and noise sampling locations: 4 Locations</b></p> <table border="1"> <thead> <tr> <th>Parameter</th> <th>Unit</th> <th>Max</th> <th>Min</th> <th>Perm. Limit*</th> </tr> </thead> <tbody> <tr> <td>PM<sub>10</sub></td> <td>µg/m<sup>3</sup></td> <td>80.80</td> <td>55.15</td> <td>100</td> </tr> <tr> <td>PM<sub>2.5</sub></td> <td>µg/m<sup>3</sup></td> <td>44.09</td> <td>26.01</td> <td>60</td> </tr> <tr> <td>SO<sub>2</sub></td> <td>µg/m<sup>3</sup></td> <td>20.13</td> <td>9.23</td> <td>80</td> </tr> <tr> <td>NO<sub>2</sub></td> <td>µg/m<sup>3</sup></td> <td>32.29</td> <td>19.05</td> <td>80</td> </tr> <tr> <th>Noise</th> <th>Unit</th> <th>Leq Max</th> <th>Leq Min</th> <th>Leq Perm. Limit*</th> </tr> <tr> <td>Day Time</td> <td>dB(A)</td> <td>73.5</td> <td>54.7</td> <td>75</td> </tr> <tr> <td>Night-time</td> <td>dB(A)</td> <td>66.7</td> <td>55.05</td> <td>70</td> </tr> </tbody> </table> <p>* As per NAAQ standards, 2009 (IS 9876/IS 9989) * As per CC&amp;A granted by GPCB</p> <p><b>Marine water sampling locations: 2 Nos.</b></p> <table border="1"> <thead> <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> </thead> <tbody> <tr> <td>pH</td> <td>--</td> <td>8.32</td> <td>8.07</td> <td>8.27</td> <td>7.99</td> </tr> <tr> <td>TDS</td> <td>mg/L</td> <td>37792</td> <td>36932</td> <td>38062</td> <td>37130</td> </tr> <tr> <td>TSS</td> <td>mg/L</td> <td>57</td> <td>38</td> <td>46</td> <td>32</td> </tr> <tr> <td>BOD (3 Days @ 27 oC)</td> <td>mg/L</td> <td>5.20</td> <td>4.20</td> <td>4.50</td> <td>3.60</td> </tr> <tr> <td>DO</td> <td>mg/L</td> <td>6.00</td> <td>5.60</td> <td>5.95</td> <td>5.50</td> </tr> <tr> <td>Salinity</td> <td>ppt</td> <td>36.84</td> <td>36.24</td> <td>37.16</td> <td>36.54</td> </tr> <tr> <td>COD</td> <td>mg/L</td> <td>21.00</td> <td>15.00</td> <td>18.00</td> <td>12.00</td> </tr> </tbody> </table> <p>ND* - NOT DETECTED</p>	Parameter	Unit	Max	Min	Perm. Limit*	PM <sub>10</sub>	µg/m <sup>3</sup>	80.80	55.15	100	PM <sub>2.5</sub>	µg/m <sup>3</sup>	44.09	26.01	60	SO <sub>2</sub>	µg/m <sup>3</sup>	20.13	9.23	80	NO <sub>2</sub>	µg/m <sup>3</sup>	32.29	19.05	80	Noise	Unit	Leq Max	Leq Min	Leq Perm. Limit*	Day Time	dB(A)	73.5	54.7	75	Night-time	dB(A)	66.7	55.05	70	Parameter	Unit	Surface		Bottom		Max	Min	Max	Min	pH	--	8.32	8.07	8.27	7.99	TDS	mg/L	37792	36932	38062	37130	TSS	mg/L	57	38	46	32	BOD (3 Days @ 27 oC)	mg/L	5.20	4.20	4.50	3.60	DO	mg/L	6.00	5.60	5.95	5.50	Salinity	ppt	36.84	36.24	37.16	36.54	COD	mg/L	21.00	15.00	18.00	12.00
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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, Gandhi agar, in consultation with Forest and Environment Department.	<p><b>Complied.</b></p> <ul style="list-style-type: none"> <li>National Green Corps Scheme is being implemented by GEER foundation. AKBTPL 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 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</li> </ul>																																																		
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.	<p><b>Complied.</b></p> <p>For further details, please refer point no. iii (Main Point No. 6 – General Condition).</p>																																																		

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Sr. No	Condition	Compliance
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.	<p><b>Complied.</b></p> <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 DPT 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.	<p><b>Complied.</b></p> <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. The 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) to MoEF &amp; CC vide letter dated 11.05.2015 and there is no further change.</li> </ul>
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.	<p><b>Complied.</b></p> <ul style="list-style-type: none"> <li>Please refer above point no. (vi) of Specific conditions.</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	<p><b>Complied.</b></p> <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</li> </ul>

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Sr. No	Condition	Compliance
	addition to plantation of mangrove in 1000 ha.	DPT). 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.
<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.	<p><b>Complied.</b></p> <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

## Expenditure Details on Environmental Safeguards

**Status of the conditions stipulated in Environment and CRZ Clearance**

## **Expenditure Details on Environmental Safeguards**

Sr. No.	Activity	Cost incurred. (INR in Lacs)			Budgeted Cost (INR in Lacs)
		2020 - 21	2021 - 22	2022 - 23	2022 - 23
1.	Environmental Monitoring	7.04	8.58	8.60	9.0
2.	Environment Days Celebration, Awareness Program, Award Application	0.82	0.76	2.0	2.0
3.	Greenbelt development	38.17	39.06	33.60	39.06
4.	Treatment and Disposal of Bio-medical Waste	0.84	1	1.08	1.11
5.	Hazardous/Non-Hazardous waste management & Disposal	11.95	11.62	11.63	11.63
6.	O&M of sewage treatment plant and OWC plant	7.35	7.72	11.96	11.97
7.	Dust Suppression Activities	223.21	236.62	240.32	335
8.	Maintenance of conveyor belt.	239.87	104.77	315.39	303.12
<b>Total</b>		<b>529.25</b>	<b>410.13</b>	<b>624.58</b>	<b>712.89</b>

# Annexure – 2

(FORM-V)

Environmental Statement for 2022-23

**adani**Ports and  
Logistics**Adani Kandla Bulk Terminal Pvt. Ltd.-Tuna**From: Oct'22  
To: Mar'23**Status of the conditions stipulated in Environment and CRZ Clearance**

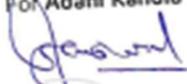
Evaluating unlicensed DynamicPDF feature. Click here for details. [4.0:eval]

**PCB ID: 46110****adani**Ports and  
LogisticsRef No. **AKBTPL/ENVSTATEMENT/2022-23**Date: 10<sup>th</sup> May 2023To,  
Member Secretary  
Gujarat Pollution Control Board  
Paryavaran Bhavan,  
Sector-10-A, Gandhinagar-382010**Sub:** Environmental Statement for the financial year ending 31<sup>st</sup> March 2023 for M/s  
**Adani Kandla Bulk Terminal Pvt Ltd (AKBTPL)****Ref:** PCB ID: - 46110, Consent Order No. AWH - 105213

Dear Sir,

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 2023.

Thank you.

Yours faithfully,  
For **Adani Kandla Bulk Terminal Pvt Ltd**  
Sardeep Jaiswal  
(COO - AKBTPL)

Encl: As above.

Copy to:

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

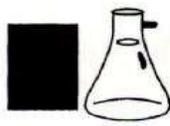
Adani Kandla Bulk Terminal Pvt Ltd  
Adani House  
Nr Mithakhali Circle, Navrangpura  
Ahmedabad 380 009  
Gujarat, India  
CIN: U63090GJ2012PTC069305Tel: +91 79 2656 5801  
Fax: +91 79 2555 6490  
info@adani.com  
www.adaniports.com

Registered Office: Adani House, Nr Mithakhali Circle, Navrangpura, Ahmedabad 380 009, Gujarat, India

# Annexure – 3

(Six Monthly Environment Monitoring Report)

**(Oct'22 to Mar'23)**



**POLLOCON** 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 2022 TO MARCH 2023**

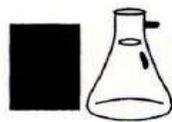
**H. T. Shah**

**Lab Manager**



**Dr. Arun Bajpai**

**Lab Manager (Q)**



**POLLOCON** LABORATORIES PVT. LTD.

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

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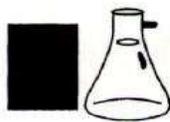
### METHODS AND EQUIPMENTS USED FOR SAMPLING AND ANALYSIS

SR. NO.	Monitoring Details	Equipments Used	Sampling and Analysis Method
1	Ambient Air Quality Monitoring	RDS,FDS, Gaseous Attachment with Impinger	CPCB Guideline/IS:5182
2	Noise Monitoring	Noise Meter	IS 9876/IS 9989
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 Monitoring Sampler/Kit	IS:11255/NDIR Gas Analyzer
8	Dump Pond Discharge	Sealed & Sterile Bottle	APHA/IS:3025
9	Wind Rose Diagram	Online Weather Station	Wind Rose Plotting Software

  
**H. T. Shah**  
Lab Manager



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



**POLLOGON LABORATORIES PVT. LTD.**

Environmental Auditors, Consultants & Analysts.  
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**NATIONAL AMBIENT AIR QUALITY STANDARDS  
DATED 16<sup>TH</sup> NOV.2009, CPCB NEW DELHI.**

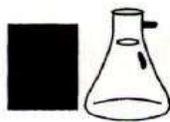
<b>SR. NO.</b>	<b>TEST PARAMETER</b>	<b>UNIT</b>	<b>Concentration in ambient air</b>	<b>Method Of Measurement</b>
1	Particulate Matter (PM <sub>10</sub> )	µg/m <sup>3</sup>	100	IS:5182(Part 23)
2	Particulate Matter (PM <sub>2.5</sub> )	µg/m <sup>3</sup>	60	CPCB guidelines for AAQM (Vol. I, NAAQMS/36/2012-13)
3	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	IS:5182(Part 2)
4	Oxides of Nitrogen (NO <sub>2</sub> )	µg/m <sup>3</sup>	80	IS:5182(Part6)

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)



**POLLOCON** LABORATORIES PVT. LTD.

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

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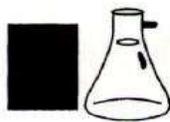
**TABLE NO. 1 RESULTS OF AAQM FOR LC GATE NO.2 [OCTOBER 2022 TO MARCH 2023]**

Sr No.	Date of Sampling	Particulate Matter (PM <sub>10</sub> ) (µg/m <sup>3</sup> )	Particulate Matter (PM <sub>2.5</sub> ) (µg/m <sup>3</sup> )	Sulphur Dioxide (SO <sub>2</sub> ) (µg/m <sup>3</sup> )	Oxides of Nitrogen (NO <sub>2</sub> ) (µg/m <sup>3</sup> )
1	03/10/2022	60.33	33.41	16.84	28.62
2	06/10/2022	52.64	21.14	20.50	32.52
3	10/10/2022	64.57	35.66	11.25	23.72
4	13/10/2022	57.54	27.59	6.60	29.68
5	17/10/2022	62.42	30.79	14.41	14.82
6	20/10/2022	72.45	25.47	8.60	18.74
7	24/10/2022	50.88	22.55	12.90	26.24
8	27/10/2022	61.47	32.42	10.34	22.63
9	31/10/2022	70.34	29.46	7.54	17.81
10	03/11/2022	56.35	32.46	19.40	24.67
11	07/11/2022	69.48	38.57	12.48	19.54
12	10/11/2022	50.06	21.85	14.48	15.68
13	14/11/2022	64.24	25.55	17.52	22.43
14	17/11/2022	58.65	28.46	8.45	17.54
15	21/11/2022	63.42	34.25	6.34	14.30
16	24/11/2022	70.58	36.54	13.21	23.79
17	28/11/2022	52.74	27.71	15.46	18.54
18	01/12/2022	45.36	18.27	8.49	25.34
19	05/12/2022	57.56	25.26	15.35	28.62
20	08/12/2022	67.55	33.46	12.26	19.57
21	12/12/2022	62.67	19.56	16.24	15.21
22	15/12/2022	56.48	29.46	11.20	23.47
23	19/12/2022	47.33	22.43	14.66	29.41
24	22/12/2022	54.27	26.47	9.49	16.52
25	26/12/2022	73.28	31.21	17.25	24.24
26	02/01/2023	63.51	25.47	12.42	23.33
27	05/01/2023	54.58	18.68	7.31	17.58
28	09/01/2023	60.64	23.51	13.46	20.23
29	12/01/2023	53.82	31.21	9.57	25.34
30	16/01/2023	65.34	26.59	6.68	15.62
31	19/01/2023	78.42	44.36	8.57	19.51
32	23/01/2023	61.32	27.26	14.87	24.61
33	26/01/2023	51.27	30.59	11.97	14.80
34	30/01/2023	64.21	33.21	16.34	21.42
35	02/02/2023	58.88	30.67	16.29	19.28
36	06/02/2023	41.57	16.94	11.91	14.86
37	09/02/2023	53.48	26.22	14.87	16.44
38	13/02/2023	43.21	22.47	6.30	21.25
39	16/02/2023	49.55	27.51	8.77	18.22
40	20/02/2023	56.34	33.79	10.24	26.25
41	23/02/2023	65.24	37.28	13.45	20.38
42	27/02/2023	55.94	28.80	7.27	17.33
43	02/03/2023	70.62	40.28	11.29	18.08
44	06/03/2023	60.45	28.59	9.21	13.04
45	09/03/2023	77.56	42.61	12.72	23.04
46	13/03/2023	62.62	25.63	8.25	28.73
47	16/03/2023	55.71	17.10	10.24	17.39
48	20/03/2023	65.68	37.37	18.23	21.98
49	23/03/2023	50.23	24.47	15.29	26.34
50	27/03/2023	71.68	29.25	6.48	15.34
51	30/03/2023	52.12	20.39	17.58	19.63

  
**H. T. Shah**  
Lab Manager



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



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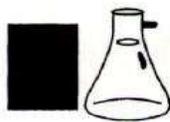
TABLE NO. 2 RESULTS OF AAQM FOR STARTING OF PILE APPROACH [OCTOBER 2022 TO MARCH 2023]

Sr No.	Date of Sampling	Particulate Matter (PM <sub>10</sub> ) (µg/m <sup>3</sup> )	Particulate Matter (PM <sub>2.5</sub> ) (µg/m <sup>3</sup> )	Sulphur Dioxide (SO <sub>2</sub> )(µg/m <sup>3</sup> )	Oxides of Nitrogen (NO <sub>2</sub> ) (µg/m <sup>3</sup> )
1	03/10/2022	74.88	40.65	12.65	26.55
2	06/10/2022	60.45	29.57	22.47	30.21
3	10/10/2022	77.34	39.52	9.35	14.66
4	13/10/2022	63.32	34.27	13.62	21.58
5	17/10/2022	73.58	42.65	18.63	27.51
6	20/10/2022	88.43	47.68	14.62	22.35
7	24/10/2022	68.72	36.40	20.25	29.27
8	27/10/2022	82.33	41.27	16.02	32.47
9	31/10/2022	75.38	35.48	8.84	19.87
10	03/11/2022	66.54	38.61	20.52	27.55
11	07/11/2022	84.20	46.56	7.75	31.22
12	10/11/2022	72.36	42.65	10.73	28.70
13	14/11/2022	81.42	47.27	15.57	32.41
14	17/11/2022	70.51	37.52	19.22	29.28
15	21/11/2022	76.75	44.10	13.54	23.52
16	24/11/2022	55.14	30.36	16.96	25.87
17	28/11/2022	67.85	40.23	21.49	30.43
18	01/12/2022	64.23	35.27	17.10	33.43
19	05/12/2022	71.28	40.27	10.71	22.62
20	08/12/2022	76.27	45.64	8.18	25.60
21	12/12/2022	56.23	26.40	11.60	23.15
22	15/12/2022	80.96	49.77	9.88	20.67
23	19/12/2022	58.38	25.36	16.29	31.66
24	22/12/2022	70.57	42.52	12.72	24.62
25	26/12/2022	78.65	46.27	18.83	34.27
26	02/01/2023	73.73	31.48	14.60	30.80
27	05/01/2023	67.63	34.19	17.35	21.13
28	09/01/2023	71.62	29.94	19.11	23.78
29	12/01/2023	77.51	39.56	13.53	29.43
30	16/01/2023	69.31	36.36	15.26	33.34
31	19/01/2023	82.62	48.43	11.67	28.25
32	23/01/2023	66.23	23.24	18.86	31.25
33	26/01/2023	61.55	37.56	16.88	27.67
34	30/01/2023	75.22	41.44	9.45	19.68
35	02/02/2023	71.22	33.52	9.45	26.33
36	06/02/2023	62.26	30.28	15.55	27.27
37	09/02/2023	80.23	42.40	18.89	31.24
38	13/02/2023	72.62	37.52	10.35	28.22
39	16/02/2023	58.61	31.78	14.69	32.51
40	20/02/2023	64.22	35.82	12.69	35.45
41	23/02/2023	76.52	39.11	17.36	23.72
42	27/02/2023	70.72	36.52	19.39	21.14
43	02/03/2023	77.32	44.56	19.53	33.84
44	06/03/2023	66.23	35.48	16.52	23.83
45	09/03/2023	88.62	48.56	20.22	17.78
46	13/03/2023	78.65	42.56	12.44	21.53
47	16/03/2023	61.22	28.19	18.64	22.01
48	20/03/2023	76.53	40.23	21.63	29.72
49	23/03/2023	70.25	29.24	11.72	19.47
50	27/03/2023	83.47	43.94	14.53	30.53
51	30/03/2023	67.51	34.57	22.37	31.22

**H. T. Shah**  
Lab Manager



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



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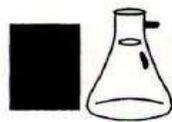
**TABLE NO. 3 RESULTS OF AAQM FOR SOUTH WEST CORNER AT PUMP HOUSE [OCTOBER 2022 TO MARCH 2023]**

Sr No.	Date of Sampling	Particulate Matter (PM <sub>10</sub> ) (µg/m <sup>3</sup> )	Particulate Matter (PM <sub>2.5</sub> ) (µg/m <sup>3</sup> )	Sulphur Dioxide (SO <sub>2</sub> )(µg/m <sup>3</sup> )	Oxides of Nitrogen (NO <sub>2</sub> ) (µg/m <sup>3</sup> )
1	03/10/2022	54.33	30.18	14.69	20.61
2	06/10/2022	47.58	24.37	16.94	25.64
3	10/10/2022	52.82	28.65	13.64	19.52
4	13/10/2022	44.61	21.84	11.67	15.64
5	17/10/2022	68.45	39.48	17.56	23.48
6	20/10/2022	78.66	36.24	9.45	13.68
7	24/10/2022	61.22	32.26	15.61	24.57
8	27/10/2022	72.63	26.45	8.52	28.43
9	31/10/2022	55.32	23.42	10.52	26.92
10	03/11/2022	61.24	27.61	15.67	21.81
11	07/11/2022	74.52	30.43	9.51	24.53
12	10/11/2022	60.26	35.70	7.82	22.58
13	14/11/2022	77.53	34.79	14.45	26.48
14	17/11/2022	46.55	24.54	11.58	25.40
15	21/11/2022	55.22	29.39	8.90	18.68
16	24/11/2022	50.54	18.43	6.22	29.43
17	28/11/2022	62.47	33.30	17.20	23.86
18	01/12/2022	40.07	24.33	10.20	18.40
19	05/12/2022	64.58	29.60	12.60	31.57
20	08/12/2022	70.63	37.53	6.55	15.63
21	12/12/2022	42.23	23.83	13.24	19.91
22	15/12/2022	71.53	32.67	7.25	16.31
23	19/12/2022	41.36	26.57	11.57	26.25
24	22/12/2022	59.93	31.55	9.62	21.51
25	26/12/2022	65.41	39.61	14.26	30.28
26	02/01/2023	67.42	28.48	7.67	20.48
27	05/01/2023	59.42	22.25	11.37	26.27
28	09/01/2023	66.57	26.40	8.87	18.43
29	12/01/2023	61.21	36.54	6.45	21.63
30	16/01/2023	58.95	31.55	10.64	23.57
31	19/01/2023	72.62	40.35	19.23	17.63
32	23/01/2023	57.33	34.54	16.58	28.43
33	26/01/2023	47.66	20.59	9.25	16.55
34	30/01/2023	70.62	38.49	13.67	24.13
35	02/02/2023	65.31	25.66	6.53	23.54
36	06/02/2023	56.28	21.51	8.58	18.61
37	09/02/2023	72.58	36.66	10.54	21.60
38	13/02/2023	53.98	26.53	19.21	17.63
39	16/02/2023	42.48	23.46	11.27	24.25
40	20/02/2023	49.27	31.22	7.62	20.26
41	23/02/2023	58.56	33.55	15.37	16.33
42	27/02/2023	48.26	24.58	12.19	25.32
43	02/03/2023	66.71	27.44	13.44	25.63
44	06/03/2023	53.52	24.54	6.78	20.37
45	09/03/2023	82.62	45.25	9.54	29.41
46	13/03/2023	73.52	30.14	14.65	32.66
47	16/03/2023	68.68	21.63	16.26	27.02
48	20/03/2023	60.22	34.54	11.82	23.36
49	23/03/2023	55.27	20.26	8.71	18.88
50	27/03/2023	76.24	40.23	10.60	24.26
51	30/03/2023	57.13	25.66	12.41	21.26

  
**H. T. Shah**  
Lab Manager



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

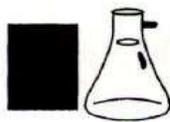


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TABLE NO. 4 RESULTS OF AAQM FOR NORTH EAST CORNER AT RAILWAY BUILDING [OCTOBER 2022 TO MARCH 2023]

Sr No.	Date of Sampling	Particulate Matter (PM <sub>10</sub> ) (µg/m <sup>3</sup> )	Particulate Matter (PM <sub>2.5</sub> ) (µg/m <sup>3</sup> )	Sulphur Dioxide (SO <sub>2</sub> )(µg/m <sup>3</sup> )	Oxides of Nitrogen (NO <sub>2</sub> ) (µg/m <sup>3</sup> )
1	03/10/2022	82.62	45.65	18.17	34.40
2	06/10/2022	66.41	33.45	24.79	41.20
3	10/10/2022	83.87	44.82	17.81	38.61
4	13/10/2022	69.32	38.41	15.46	33.46
5	17/10/2022	86.21	46.27	21.27	30.61
6	20/10/2022	94.23	50.36	16.60	26.34
7	24/10/2022	74.54	39.53	22.40	35.40
8	27/10/2022	88.61	47.51	19.39	37.29
9	31/10/2022	80.32	43.62	13.90	29.55
10	03/11/2022	78.64	41.43	17.59	32.51
11	07/11/2022	90.41	50.28	14.56	37.50
12	10/11/2022	76.58	45.28	16.53	33.47
13	14/11/2022	87.68	48.13	19.51	42.42
14	17/11/2022	79.68	39.82	22.10	35.43
15	21/11/2022	88.52	47.84	18.98	28.60
16	24/11/2022	75.38	42.42	21.40	34.55
17	28/11/2022	81.23	46.27	24.54	36.50
18	01/12/2022	67.61	42.88	14.53	37.78
19	05/12/2022	75.64	44.95	21.27	34.66
20	08/12/2022	82.43	50.44	15.63	28.30
21	12/12/2022	68.65	36.88	17.56	32.41
22	15/12/2022	84.98	52.14	19.48	27.27
23	19/12/2022	60.18	39.45	22.32	35.43
24	22/12/2022	76.55	46.23	18.25	31.13
25	26/12/2022	86.24	51.23	23.49	38.63
26	02/01/2023	82.42	34.15	19.78	35.12
27	05/01/2023	76.82	38.33	15.76	31.62
28	09/01/2023	81.34	36.63	21.79	26.14
29	12/01/2023	86.35	43.54	16.32	34.57
30	16/01/2023	77.62	47.26	18.65	38.44
31	19/01/2023	90.34	52.51	13.25	23.40
32	23/01/2023	72.23	44.24	22.36	36.54
33	26/01/2023	68.64	41.43	14.56	29.34
34	30/01/2023	83.55	46.48	23.13	27.75
35	02/02/2023	76.23	39.36	23.22	27.71
36	06/02/2023	69.32	36.35	13.83	29.86
37	09/02/2023	86.32	47.34	22.31	34.02
38	13/02/2023	77.57	42.63	15.27	23.94
39	16/02/2023	64.34	37.92	17.58	28.38
40	20/02/2023	73.53	43.62	14.27	32.46
41	23/02/2023	82.72	48.58	21.78	26.13
42	27/02/2023	75.35	40.27	16.38	31.53
43	02/03/2023	83.68	47.55	25.28	29.56
44	06/03/2023	72.86	41.10	22.18	25.36
45	09/03/2023	93.68	51.23	14.23	31.73
46	13/03/2023	87.15	46.93	17.24	35.64
47	16/03/2023	73.33	36.26	21.30	30.80
48	20/03/2023	84.57	50.28	24.39	34.46
49	23/03/2023	76.33	45.28	18.41	28.66
50	27/03/2023	90.36	48.29	15.75	33.28
51	30/03/2023	71.37	38.25	20.29	36.27

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

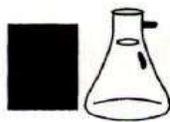


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**AMBIENT AIR QUALITY ANALYSIS REPORT OBSERVATIONS**

Ambient Air Quality Monitoring Sample Analysis									
Sr.No.	Month	Particulate Matter (PM <sub>10</sub> ) (µg/m <sup>3</sup> )		Particulate Matter (PM <sub>2.5</sub> ) (µg/m <sup>3</sup> )		Sulphur Dioxide (SO <sub>2</sub> )(µg/m <sup>3</sup> )		Oxides of Nitrogen (NO <sub>2</sub> ) (µg/m <sup>3</sup> )	
		Max	Min	Max	Min	Max	Min	Max	Min
<b>L.C. Gate No.2</b>									
1	October-22	72.45	50.88	35.66	21.14	20.50	6.60	32.52	14.82
2	November-22	70.58	50.06	38.57	21.85	19.40	6.34	24.67	14.30
3	December-22	73.28	45.36	33.46	18.27	17.25	8.49	29.41	15.21
4	January-23	78.42	51.27	44.36	18.68	16.34	6.68	25.34	14.80
5	February-23	65.24	41.57	37.28	16.94	16.29	6.30	26.25	14.86
6	March-23	77.56	50.23	42.61	17.10	18.23	6.48	28.73	13.04
<b>Starting Of Pile Approach (Near SS2 Building)</b>									
1	October-22	88.43	60.45	47.68	29.57	22.47	8.84	32.47	14.66
2	November-22	84.20	55.14	47.27	30.36	21.49	7.75	32.41	23.52
3	December-22	80.96	56.23	49.77	25.36	18.83	8.18	34.27	18.77
4	January-23	82.62	61.55	48.43	23.24	19.11	9.45	33.34	19.68
5	February-23	80.23	58.61	42.40	30.28	19.39	9.45	35.45	21.14
6	March-23	88.62	61.22	48.56	28.19	22.37	11.72	33.84	17.78
<b>South West Corner at Pump House</b>									
1	October-22	78.66	44.61	39.48	21.84	17.56	8.52	28.43	13.68
2	November-22	77.53	46.55	35.70	18.43	17.20	6.22	29.43	18.68
3	December-22	71.53	40.07	39.61	23.83	17.68	6.55	31.57	15.63
4	January-23	72.62	47.66	40.35	20.59	19.23	6.45	28.43	16.55
5	February-23	72.58	42.48	36.66	21.51	19.21	6.53	25.32	16.33
6	March-23	82.62	53.52	45.25	20.26	16.26	6.78	32.66	18.88
<b>North East Corner at Railway Building</b>									
1	October-22	94.23	66.41	50.36	33.45	24.79	13.90	41.20	26.34
2	November-22	90.41	75.38	50.28	39.82	24.54	14.56	42.42	28.60
3	December-22	86.24	60.18	52.14	36.88	23.49	14.53	38.63	27.27
4	January-23	90.34	68.64	52.51	34.15	23.13	13.25	38.44	23.40
5	February-23	86.32	64.34	48.58	36.35	23.22	13.83	34.02	23.94
6	March-23	93.68	71.37	51.23	36.26	25.28	14.23	36.27	25.36

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



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**RESULTS OF NOISE LEVEL MONITORING**

Sampling Date	: As Per Table
Test Method	: IS 9876/IS 9989
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 2022 TO MARCH 2023]**

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 at Railway Building	
	Month	Max	Min	Max	Min	Max	Min	Max	Min
1.	October-22	72.4	52.5	72.5	54.6	72.8	55.0	72.0	56.3
2.	November-22	73.8	54.9	73.1	57.1	73.2	57.7	74.1	58.8
3.	December-22	74.0	53.7	73.2	57.1	73.5	56.1	73.4	58.7
4.	January-23	74.1	54.6	73.9	54.1	74.2	57.3	73.8	59.2
5.	February-23	73.9	57.4	74.1	55.6	74.2	60.1	73.7	61.5
6.	March-23	73.8	57.1	73.7	56.2	74.1	8.8	73.4	59.8

**TABLE NO. 6 RESULTS OF NIGHT TIME NOISE LEVEL MONITORING [OCTOBER 2022 TO MARCH 2023]**

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 at Railway Building	
	Month	Max	Min	Max	Min	Max	Min	Max	Min
1.	October-22	66.5	49.2	61.1	51.5	67.5	57.1	65.1	55.6
2.	November-22	68.3	51.1	63.1	52.7	68.9	58.3	66.6	57.3
3.	December-22	67.1	51.6	62.7	54.4	68.8	58.2	67.3	55.9
4.	January-23	69.4	51.4	61.8	51.9	68.9	56.7	67.1	56.3
5.	February-23	69.1	52.6	63.5	53.6	68.3	57.7	68.6	59.4
6.	March-23	69.2	54.9	65.3	55.9	68.5	59.2	68.4	58.9

**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			

  
**H. T. Shah**  
 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 at Railway Building	N 23° 0' 48.34" E 70° 12' 30.47"

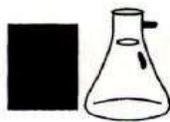
**FIGURE NO. 1 GOOGLE EARTH IMAGE OF AMBIENT AIR QUALITY MONITORING & NOISE QUALITY MONITORING LOCATION**



  
**H. T. Shah**  
Lab Manager



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



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## RESULTS OF SEA WATER MONITORING

### TABLE NO. 7 RESULTS OF SEA WATER [OCTOBER 2022 TO MARCH 2023]

Description of Sample	: Sea Water (Surface & Bottom)	Quantity/No. of Samples	: 10 Lit/12
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

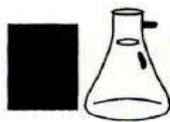
SR. NO	TEST PARAMETERS	UNIT	Near Mouth of Creek (M1)		Near Jetty (M2)		Near Mouth of Creek (M1)	
			October-22		November-22		December-22	
			17/10/2022		15/11/2022		15/12/2022	
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM
1	pH	--	8.07	7.99	8.24	8.17	8.17	8.1
2	Temperature	°C	29.5	29.3	29.7	29.6	29.8	29.7
3	Total Suspended Solids	mg/L	51	37	43	35	53	41
4	BOD (3 Days@27°C)	mg/L	4.7	Not Detected	5.2	4.5	4.6	3.8
5	Dissolved Oxygen	mg/L	5.9	5.75	5.85	5.7	5.8	5.65
6	Salinity	ppt	36.28	36.54	36.47	36.72	36.24	36.58
7	Oil & Grease	mg/L	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
8	Nitrate as NO <sub>3</sub>	µmol/L	3.76	3.51	3.61	3.43	4.32	4.16
9	Nitrite as NO <sub>2</sub>	µmol/L	0.39	0.4	0.57	0.49	0.27	0.23
10	Ammonical Nitrogen as NH <sub>3</sub>	µmol/L	2.8	2.65	2.7	2.61	2.81	2.54
11	Phosphates as PO <sub>4</sub>	µmol/L	1.94	1.73	2.18	1.95	2.31	2.27
12	Total Nitrogen	µmol/L	6.95	6.4	6.88	6.53	7.4	6.93
13	Petroleum Hydrocarbon	µg/L	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
14	Total Dissolved Solids	mg/L	37410	37528	36932	37130	37246	37578
15	COD	mg/L	18	15	20	17	18.4	15.6
<b>A</b>	<b>Flora and Fauna</b>							
16.1	Primary Productivity	mgC/L/day	50.40		47.70		49.50	
<b>B</b>	<b>Phytoplankton</b>							
17.1	Chlorophyll	mg/m <sup>3</sup>	2.69	2.53	3.01	2.72	2.69	2.58
17.2	Phaeophytin	mg/m <sup>3</sup>	0.78	0.6	0.23	0.29	0.99	0.92
17.3	Cell Count	No.x 10 <sup>3</sup> /L	253	210	275	225	302	289
17.4	Name of Group Number and name of group species of each group	--	Stauroneis sp. Biddulphia sp. Rhizosolenia sp. Coscinodiscus sp.	Gyro sigma sp. Nitzschia sp. Pediastrum sp. Synedra sp.	Stauroneis sp. Coscinodiscus sp. Thalassionema sp. Pleurosigma sp. Biddulphia sp.	Nitzschia sp. Synedra sp. Pediastrum sp. Melosira sp. Rhizosolenia sp.	Cyclotella sp. Rhizosolenia sp. Odontella sp. Spirulina sp. Biddulphia sp. Pediastrum sp.	Skeletonema sp. Pleurosigma sp. Nitzschia sp. Navicula sp. Synedra sp.
<b>C</b>	<b>Zooplanktons</b>							
18.1	Abundance (Population)	noX10 <sup>3</sup> /100 m <sup>3</sup>	42		37		31	
18.2	Name of Group Number and name of group species of each group	--	Polychaetes Ostracods Foraminiferans Decapods		Polychaetes Decapods Foraminiferans Copepods		Polychaetes Decapods Gastropods Mysids	
18.3	Total Biomass	mL/100 m <sup>3</sup>	3.75		3.60		2.95	
<b>D</b>	<b>Microbiological Parameters</b>							
19.1	Total Bacterial Count	CFU/mL	1470		2160		2070	
19.2	Total Coliform	/mL	Present		Present		Present	
19.3	E.coli	/mL	Absent		Absent		Absent	
19.4	Enterococcus species	/mL	Present		Present		Present	
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: Minimum Detection Limit; Oil & Grease: 2.0 mg/L, Petroleum Hydrocarbon: 1.0 µg/L

  
**H. T. Shah**  
Lab Manager



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



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**TABLE NO. 8 RESULTS OF SEA WATER [OCTOBER 2022 TO MARCH 2023]**

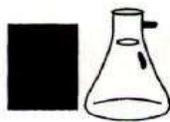
SR. NO.	TEST PARAMETERS	UNIT	Near Jetty (M2)		Near Mouth of Creek (M1)		Near Jetty (M2)	
			January-23		February-23		March-23	
			17/01/2023		16/02/2023		20/03/2023	
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM
1	pH	--	8.29	8.2	8.17	8.04	8.32	8.27
2	Temperature	°C	29.5	29.4	29.9	29.8	30.4	30.1
3	Total Suspended Solids	mg/L	38	32	57	46	41	35
4	BOD (3 Days @27°C)	mg/L	4.2	3.6	4.9	4.5	4.2	3.6
5	Dissolved Oxygen	mg/L	5.85	5.7	5.6	5.5	6	5.95
6	Salinity	ppt	36.4	36.85	36.84	37.16	36.24	36.68
7	Oil & Grease	mg/L	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
8	Nitrate as NO <sub>3</sub>	µmol/L	3.87	3.72	4.68	4.37	5.16	4.92
9	Nitrite as NO <sub>2</sub>	µmol/L	0.56	0.43	0.35	0.31	0.57	0.46
10	Ammonical Nitrogen as NH <sub>3</sub>	µmol/L	2.71	2.56	1.69	1.58	2.38	2.1
11	Phosphates as PO <sub>4</sub>	µmol/L	2.39	2.34	2.4	2.33	2.79	2.54
12	Total Nitrogen	µmol/L	7.14	6.71	7.63	7.4	8.29	7.63
13	Petroleum Hydrocarbon	µg/L	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
14	Total Dissolved Solids	mg/L	37362	37726	37792	38062	37298	37642
15	COD	mg/L	15	12	21	18	20.8	15.2
<b>A Flora and Fauna</b>								
16.1	Primary Productivity	mgC/L/day	45.00		47.70		46.80	
<b>B Phytoplankton</b>								
17.1	Chlorophyll	mg/m <sup>3</sup>	3.31	2.91	2.85	2.69	3.25	3.01
17.2	Phaeophytin	mg/m <sup>3</sup>	0.37	0.6	0.79	0.82	0.46	0.42
17.3	Cell Count	No. x 10 <sup>3</sup> /L	325	296	314	278	442	429
17.4	Name of Group Number and name of group species of each group	--	Skeletonema sp. Rhizosolenia sp. Melosira sp. Leptocylindris sp. Coscinodiscus sp.	Navicula sp. Nitzschia sp. Pleurosigma sp. Pediastrum sp.	Rhizosolenia sp. Biddulphia sp. Pleurosigma sp. Skeletonema sp. Cheatoceros sp.	Nitzschia sp. Stauroneis sp. Synedra sp. Thalassionema sp.	Skeletonema sp. Leptocylindris sp. Melosira sp. Coscinodiscus sp.	Nitzschia sp. Biddulphia sp. Pleurosigma sp. Synedra sp.
<b>C Zooplanktons</b>								
18.1	Abundance (Population)	noX10 <sup>3</sup> /100m <sup>3</sup>	28		34		46	
18.2	Name of Group Number and name of group species of each group	--	Polychaetes Decapods Gastropods Ostracods		Polychaetes Ostracods Mysids Foraminiferans		Polychaetes Foraminiferans Gastropods Decapods	
18.3	Total Biomass	mL/100 m <sup>3</sup>	2.60		3.25		4.20	
<b>D Microbiological Parameters</b>								
19.1	Total Bacterial Count	CFU/mL	2350		2480		2520	
19.2	Total Coliform	/mL	Present		Present		Present	
19.3	E.coli	/mL	Absent		Absent		Absent	
19.4	Enterococcus species	/mL	Present		Present		Present	
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: Minimum Detection Limit; BOD: 1.0 mg/L, Oil & Grease: 2.0 mg/L, Petroleum Hydrocarbon: 1.0 µg/L

**H. T. Shah**  
Lab Manager



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



**POLLOCON** LABORATORIES PVT. LTD.

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

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**SEA WATER REPORT OBSERVATION**

SeaWater Sample Analysis		Month : October-22 to March-23			
Test Parameter	Unit	Surface		Bottom	
		Max	Min	Max	Min
pH	--	8.32	8.07	8.27	7.99
Total Dissolved Solids	mg/L	37792	36932	38062	37130
Total Suspended Solids	mg/L	57	38	46	32
BOD (3 Days @ 27 °C)	mg/L	5.20	4.20	4.50	3.60
Dissolved Oxygen	mg/L	6.00	5.60	5.95	5.50
Salinity	ppt	36.84	36.24	37.16	36.54
COD	mg/L	21.00	15.00	18.00	12.00

**H. T. Shah**

**Lab Manager**



**Dr. Arun Bajpai**

**Lab Manager (Q)**

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**RESULTS OF SEA SEDIMENT MONITORING**
**TABLE NO. 9 RESULTS OF SEA SEDIMENT [OCTOBER 2022 TO MARCH 2023]**

Description of Sample	: Sea Sediment	Quantity/No. of Samples	: 10 Kg/06
Sampling By	: Pollucon Laboratories Pvt. Ltd.	Sampling Procedure	: Grab
Packing/Seal	: Sealed	Protocol (purpose)	: Env. Monitoring
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-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23
			17/10/2022	15/11/2022	15/12/2022	17/01/2023	16/02/2023	20/03/2023
1	Organic Matter	%	0.398	4.28	0.326	0.418	0.298	0.356
2	Phosphorus as P	µg/g	652	713	639	702	670	719
3	Texture	--	Sandy	Sandy	Sandy	Sandy	Sandy	Sandy
4	Petroleum Hydrocarbon	µg/g	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
<b>5</b>	<b>Heavy Metals</b>							
5.1	Aluminum as Al	%	4.99	5.14	4.92	5.2	5.17	5.29
5.2	Total Chromium as Cr+3	µg/g	93.57	109	87.59	97.93	108	81.37
5.3	Manganese as Mn	µg/g	729	827	714	814	759	802
5.4	Iron as Fe	%	4.86	5.1	4.78	5.12	4.74	4.98
5.5	Nickel as Ni	µg/g	40.57	37.68	42.39	34.63	49.63	31.75
5.6	Copper as Cu	µg/g	53.29	46.15	51.78	41.67	53.72	40.16
5.7	Zinc as Zn	µg/g	89.25	94.73	83.24	95.13	102	73.26
5.8	Lead as Pb	µg/g	2.67	1.64	1.35	1.09	1.73	1.14
5.9	Mercury as Hg	µg/g	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
<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)	--	Polychaetes Amphipods Gastropods	Polychaetes Crustaceans Amphipods Branchyurans	Polychaetes Branchyurans Gastropods	Polychaetes Bivalves Crustaceans	Brachyurans Amphipods Polychaetes Gastropods	Brachyurans Polychaetes Gastropods Ostracodes
6.2	MeioBenthos (No and name of groups present, No and name of species of each group present)	--	Nematodes	Nematodes	Foraminiferans	--	Nematodes	Foraminiferans
6.3	Population	no/m <sup>2</sup>	762	645	550	468	950	497

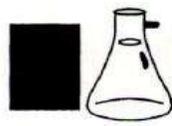
Note: Minimum Detection Limit, Mercury as Hg: 0.00025 mg/L, Petroleum Hydrocarbon: 5 µg/g



**H. T. Shah**  
Lab Manager




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



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**SEA SEDIMENT REPORT OBSERVATION**

Sea Sediment Sample Analysis		Month : October-22 to March-23	
Test Parameter	Unit	Sediment	
		Max	Min
Organic Matter	%	4.280	0.298
Phosphorus as P	µg/g	719	639
Aluminum as Al	%	5.29	4.92
Total Chromium as Cr <sup>+3</sup>	µg/g	109	81.37
Manganese as Mn	µg/g	827	714
Iron as Fe	%	5.12	4.74
Nickel as Ni	µg/g	49.63	31.75
Copper as Cu	µg/g	53.72	40.16
Zinc as Zn	µg/g	102	73.26
Lead as Pb	µg/g	2.67	1.09
Mercury as Hg	µg/g	Not Detected	Not Detected

**H. T. Shah**

**Lab Manager**



**Dr. Arun Bajpai**

**Lab Manager (Q)**

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**SEA WATER & SEA SEDIMENT LOCATIONS**

Sr. No	Name of Location	GPS Coordinate
1.	NEAR MOUTH OF CREEK (M1)	N 22°54'10.58" E 70° 8'34.86"
2.	NEAR JETTY (M2)	N 22°53.60" E 70° 6.47"

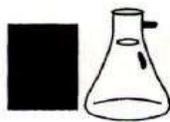
**FIGURE NO. 2 GOOGLE EARTH IMAGE OF SEA WATER AND SEDIMENT LOCATION**



  
**H. T. Shah**  
Lab Manager



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

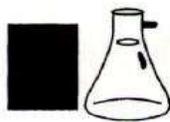


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**RESULTS OF DRINKING WATER ANALYSIS****STANDARD METHODS & PERMISSIBLE LIMIT FOR DRINKING WATER**

<b>SR. NO.</b>	<b>PARAMETERS</b>	<b>UNIT</b>	<b>DESIRABLE LIMIT AS PER IS:10500:2012</b>	<b>TEST METHOD</b>
<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	IS3025(P23)86Re.03
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	Mineral Oil	mg/L	Max 0.5	APHA(22 <sup>nd</sup> Edi)5520D
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)3500CrB
16	Cadmium as Cd	mg/L	Max 0.003	APHA(22 <sup>nd</sup> Edi)3500Cd
17	Copper as Cu	mg/L	Max 0.05	IS3025(P42)92Re.03
18	Zinc as Zn	mg/L	Max 5	APHA(22 <sup>nd</sup> Edi)3500 Zn
19	Iron as Fe	mg/L	Max 0.3	APHA(22 <sup>nd</sup> Edi)3500Fe B
20	Lead as Pb	mg/L	Max 0.01	APHA(22 <sup>nd</sup> Edi)3500PbD
21	Mercury as Hg	mg/L	Max 0.001	IS3025(P48)94
22	Selenium as Se	mg/L	Max 0.01	APHA(22 <sup>nd</sup> Edi)3500 Se
23	Aluminum as Al	mg/L	Max 0.03	APHA(22 <sup>nd</sup> Edi)3500 Al
24	Manganese as Mn	mg/L	Max 0.1	APHA(22 <sup>nd</sup> Edi)3500 Mn B
25	Arsenic as As	mg/L	Max 0.01	IS3025(P-37)88
26	Sulphate as SO <sub>4</sub>	mg/L	Max 200	APHA(22 <sup>nd</sup> Edi)4500 SO <sub>4</sub> E
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	GC MS
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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**TABLE NO.10 RESULTS OF DRINKING WATER [OCTOBER 2022 TO MARCH 2023]**

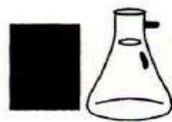
**TABLE NO.10.1 RESULTS OF DRINKING WATER [ESSENTIAL PARAMETER IN OCTOBER 2022 TO MARCH 2023]**

SR. NO.	TEST PARAMETERS	UNIT	October-22	
			Narmada Pump House	POB Building
			17/10/2022	17/10/2022
1	Odour	--	Agreeable	Agreeable
2	Colour	Hazen	3	2
3	Taste	--	Agreeable	Agreeable
4	pH	--	7.47	6.67
5	Turbidity	NTU	0.17	0.05
6	Total Dissolved Solids	mg/L	483	145
7	Total Hardness as CaCO <sub>3</sub>	mg/L	184	49
8	Residual Free Chlorine	mg/L	Not Detected	Not Detected
9	Chloride as Cl	mg/L	198	58.48
10	Fluoride as F	mg/L	0.32	Not Detected
11	Iron as Fe	mg/L	0.079	Not Detected
12	Coliform	/100 ml	Absent	Absent
13	E-Coli	/100 ml	Absent	Absent

  
**H. T. Shah**  
Lab Manager



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

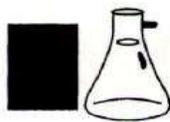


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**TABLE NO.10.2 RESULTS OF DRINKING WATER [ESSENTIAL PARAMETER IN OCTOBER 2022 TO MARCH 2023]**

SR. NO.	TEST PARAMETERS	UNIT	November-22	
			Narmada Pump House	Staff Canteen
			15/11/2022	15/11/2022
1	Odour	--	Agreeable	Agreeable
2	Colour	Hazen	4	2
3	Taste	--	Agreeable	Agreeable
4	pH	--	7.32	7.01
5	Turbidity	NTU	0.21	0.04
6	Total Dissolved Solids	mg/L	844	132
7	Total Hardness as CaCO <sub>3</sub>	mg/L	256	30
8	Residual Free Chlorine	mg/L	Not Detected	Not Detected
9	Chloride as Cl	mg/L	349	59.9
10	Fluoride as F	mg/L	Not Detected	Not Detected
11	Iron as Fe	mg/L	Not Detected	Not Detected
12	Coliform	/100 ml	Absent	Absent
13	E-Coli	/100 ml	Absent	Absent

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



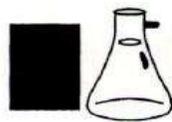
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**TABLE NO.10.3 RESULTS OF DRINKING WATER [FULL PARAMETER IN OCTOBER 2022 TO MARCH 2023]**

SR. NO.	PARAMETERS	UNIT	December-22	
			Narmada Pump House	POB Building
			15/12/2022	15/12/2022
<b>Chemical Parameters</b>				
1	Odour	--	Agreeable	Agreeable
2	Colour	Hazen	5	2
3	Taste	--	Agreeable	Agreeable
4	pH Value	--	8.02	7.25
5	Turbidity	NTU	0.18	0.04
6	Total Dissolved Solids	mg/L	232	168
7	Total Hardness as CaCO <sub>3</sub>	mg/L	64	28
8	Alkalinity	mg/L	140	17
9	Residual Free Chlorine	mg/L	Not Detected	Not Detected
10	Chloride as Cl	mg/L	88	43.98
11	Calcium as Ca	mg/L	14	6.8
12	Magnesium as Mg	mg/L	6.96	2.64
13	Mineral Oil	mg/L	Not Detected	Not Detected
14	Phenolic compounds as C <sub>6</sub> H <sub>5</sub> OH	mg/L	Not Detected	Not Detected
15	Chromium as Cr <sup>+6</sup>	mg/L	Not Detected	Not Detected
16	Cadmium as Cd	mg/L	Not Detected	Not Detected
17	Copper as Cu	mg/L	Not Detected	Not Detected
18	Zinc as Zn	mg/L	Not Detected	Not Detected
19	Iron as Fe	mg/L	0.062	Not Detected
20	Lead as Pb	mg/L	Not Detected	Not Detected
21	Mercury as Hg	mg/L	Not Detected	Not Detected
22	Selenium as Se	mg/L	Not Detected	Not Detected
23	Aluminum as Al	mg/L	Not Detected	Not Detected
24	Manganese as Mn	mg/L	Not Detected	Not Detected
25	Arsenic as As	mg/L	Not Detected	Not Detected
26	Sulphate as SO <sub>4</sub>	mg/L	Not Detected	Not Detected
27	Cyanide as CN	mg/L	Not Detected	Not Detected
28	Boron as B	mg/L	Not Detected	Not Detected
29	Fluoride as F	mg/L	0.25	Not Detected
30	Nitrate Nitrogen as NO <sub>3</sub>	mg/L	2.4	0.18
31	Anionic Detergents as MBAS	mg/L	Not Detected	Not Detected
32	Pesticides	mg/L	Not Detected	Not Detected
<b>Microbiological Parameters</b>				
33	Coliform	/100 ml	Absent	Absent
34	E-Coli	/100 ml	Absent	Absent

  
**H. T. Shah**  
 Lab Manager

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



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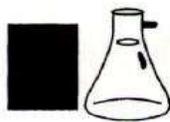
**TABLE NO.10.4 RESULTS OF DRINKING WATER [ESSENTIAL PARAMETER IN OCTOBER 2022 TO MARCH 2023]**

SR. NO.	TEST PARAMETERS	UNIT	January-23	
			Narmada Pump House	Staff Canteen
			17/01/2023	17/01/2023
1	Odour	--	Agreeable	Agreeable
2	Colour	Hazen	3	2
3	Taste	--	Agreeable	Agreeable
4	pH	--	7.47	6.71
5	Turbidity	NTU	0.09	0.06
6	Total Dissolved Solids	mg/L	423	128
7	Total Hardness as CaCO <sub>3</sub>	mg/L	110	36
8	Residual Free Chlorine	mg/L	Not Detected	Not Detected
9	Chloride as Cl	mg/L	96	42
10	Fluoride as F	mg/L	0.27	Not Detected
11	Iron as Fe	mg/L	0.093	Not Detected
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.10.5 RESULTS OF DRINKING WATER [ESSENTIAL PARAMETER IN OCTOBER 2022 TO MARCH 2023]**

SR. NO.	TEST PARAMETERS	UNIT	February-23	
			Narmada Pump House	Staff Canteen
			16/02/2023	16/02/2023
1	Odour	--	Agreeable	Agreeable
2	Colour	Hazen	2	3
3	Taste	--	Agreeable	Agreeable
4	pH	--	7.39	7.46
5	Turbidity	NTU	0.08	0.07
6	Total Dissolved Solids	mg/L	314	208
7	Total Hardness as CaCO <sub>3</sub>	mg/L	106	59
8	Residual Free Chlorine	mg/L	Not Detected	Not Detected
9	Chloride as Cl	mg/L	51.48	48.98
10	Fluoride as F	mg/L	0.27	0.183
11	Iron as Fe	mg/L	0.14	0.093
12	Coliform	/100 ml	Absent	Absent
13	E-Coli	/100 ml	Absent	Absent

BDL\*: Below Detection Limit

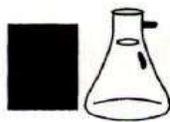
**H. T. Shah**

**Lab Manager**



**Dr. Arun Bajpai**

**Lab Manager (Q)**

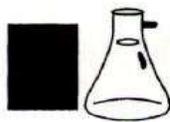


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**TABLE NO.10.6 RESULTS OF DRINKING WATER [FULL PARAMETER IN OCTOBER 2022 TO MARCH 2023]**

SR. NO.	PARAMETERS	UNIT	March-23	
			Narmada Pump House	POB Building
			10/03/2023	10/03/2023
<b>Chemical Parameters</b>				
1	Odour	--	Agreeable	Agreeable
2	Colour	Hazen	4	2
3	Taste	--	Agreeable	Agreeable
4	pH Value	--	7.95	7.19
5	Turbidity	NTU	0.15	0.03
6	Total Dissolved Solids	mg/L	224	149
7	Total Hardness as CaCO <sub>3</sub>	mg/L	60	22
8	Alkalinity	mg/L	135	24
9	Residual Free Chlorine	mg/L	Not Detected	Not Detected
10	Chloride as Cl	mg/L	79.9	39.9
11	Calcium as Ca	mg/L	12	6
12	Magnesium as Mg	mg/L	7.2	1.68
13	Mineral Oil	mg/L	Not Detected	Not Detected
14	Phenolic compounds as C <sub>6</sub> H <sub>5</sub> OH	mg/L	Not Detected	Not Detected
15	Chromium as Cr <sup>+6</sup>	mg/L	Not Detected	Not Detected
16	Cadmium as Cd	mg/L	Not Detected	Not Detected
17	Copper as Cu	mg/L	Not Detected	Not Detected
18	Zinc as Zn	mg/L	Not Detected	Not Detected
19	Iron as Fe	mg/L	0.11	Not Detected
20	Lead as Pb	mg/L	Not Detected	Not Detected
21	Mercury as Hg	mg/L	Not Detected	Not Detected
22	Selenium as Se	mg/L	Not Detected	Not Detected
23	Aluminum as Al	mg/L	Not Detected	Not Detected
24	Manganese as Mn	mg/L	Not Detected	Not Detected
25	Arsenic as As	mg/L	Not Detected	Not Detected
26	Sulphate as SO <sub>4</sub>	mg/L	Not Detected	Not Detected
27	Cyanide as CN	mg/L	Not Detected	Not Detected
28	Boron as B	mg/L	Not Detected	Not Detected
29	Fluoride as F	mg/L	0.2	Not Detected
30	Nitrate Nitrogen as NO <sub>3</sub>	mg/L	0.14	0.12
31	Anionic Detergents as MBAS	mg/L	Not Detected	Not Detected
32	Pesticides	mg/L	Not Detected	Not Detected
<b>Microbiological Parameters</b>				
33	Coliform	/100 ml	Absent	Absent
34	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 2022 TO MARCH 2023]**

SR. NO.	PARAMETERS	UNIT	STP OUTLET PERMISSIBLE LIMIT*	TEST METHOD
1	pH	--	Not Specified	IS: 3025 (Part – 11) (Electrometric Method)
2	Total Suspended Solids	mg/L	30	IS3025(P17)
3	BOD (3 Days @ 27 °C)	mg/L	20	IS 3025 (Part – 44)
4	Fecal Coliform	MPN/100 ml	Not Specified	APHA(22 <sup>nd</sup> Edi)9221 C & E

**RESULTS OF SEWAGE WATER ANALYSIS**

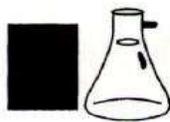
DATE OF SAMPLING			October-22			
			17/10/2022		31/10/2022	
SR. NO.	PARAMETERS	UNIT	STP Inlet	STP Outlet	STP Inlet	STP Outlet
1	pH	--	7.23	7.28	7.56	7.69
2	Total Suspended Solids	mg/L	108	21	113	25
3	BOD (3 Days @ 27 °C)	mg/L	39	16	46	14
4	Fecal Coliform	MPN/100 ml	>1600	120	>1600	79

DATE OF SAMPLING			November-22			
			15/11/2022		29/11/2022	
SR. NO.	PARAMETERS	UNIT	STP Inlet	STP Outlet	STP Inlet	STP Outlet
1	pH	--	7.76	7.61	7.68	7.43
2	Total Suspended Solids	mg/L	127	25	103	20
3	BOD (3 Days @ 27 °C)	mg/L	32	11	45	16
4	Fecal Coliform	MPN/100 ml	>1600	84	>1600	140

DATE OF SAMPLING			December-22			
			15/12/2022		30/12/2022	
SR. NO.	PARAMETERS	UNIT	STP Inlet	STP Outlet	STP Inlet	STP Outlet
1	pH	--	7.86	7.75	7.62	7.71
2	Total Suspended Solids	mg/L	144	26	192	18
3	BOD (3 Days @ 27 °C)	mg/L	62	18	91	15
4	Fecal Coliform	MPN/100 ml	>1600	120	>1600	94

  
**H. T. Shah**  
 Lab Manager

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



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DATE OF SAMPLING			January-23			
			17/01/2023		31/01/2023	
SR. NO.	PARAMETERS	UNIT	STP Inlet	STP Outlet	STP Inlet	STP Outlet
1	pH	--	7.61	7.84	7.74	7.68
2	Total Suspended Solids	mg/L	157	15	169	13
3	BOD (3 Days @ 27 °C)	mg/L	75	13	83	17
4	Fecal Coliform	MPN/100 ml	>1600	63	>1600	79

DATE OF SAMPLING			February-23			
			16/02/2023		28/02/2023	
SR. NO.	PARAMETERS	UNIT	STP Inlet	STP Outlet	STP Inlet	STP Outlet
1	pH	--	7.31	7.46	7.24	7.38
2	Total Suspended Solids	mg/L	129	17	153	13
3	BOD (3 Days @ 27 °C)	mg/L	68	14	79	16
4	Fecal Coliform	MPN/100 ml	>1600	110	>1600	84

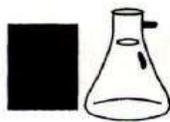
DATE OF SAMPLING			March-23			
			10/03/2023		21/03/2023	
SR. NO.	PARAMETERS	UNIT	STP Inlet	STP Outlet	STP Inlet	STP Outlet
1	pH	--	7.49	7.58	7.4	7.48
2	Total Suspended Solids	mg/L	112	15	134	14
3	BOD (3 Days @ 27 °C)	mg/L	80	16	88	17
4	Fecal Coliform	MPN/100 ml	>1600	140	>1600	110

SR. NO.	PARAMETERS	UNIT	STP Outlet		Permissible Limit**
			Max.	Min.	
1	pH	--	7.84	7.28	6.5-9.0
2	Total Suspended Solids	mg/L	26	13	30
3	BOD (3 Days @ 27 °C)	mg/L	18	11	20
4	Fecal Coliform	MPN/100 ml	140	63	<1000

\*\*: Details provided by customer.

  
**H. T. Shah**  
 Lab Manager

  
**Dr. Arun Bajpai**  
 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)
2	Sulfur Dioxide as SO <sub>2</sub>	ppm	100	IS:11255 (Part-2)
3	Oxides of Nitrogen as NO <sub>x</sub>	ppm	50	IS: 11255 (Part-7)

\*\*Details provided by customer.

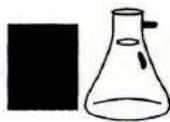
**RESULTS OF STACK MONITORING**

Date of Monitoring			December-22		
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	24/12/2022		
1	Particulate Matter	mg/Nm <sup>3</sup>	22.45	20.34	18.62
2	Sulfur Dioxide as SO <sub>2</sub>	ppm	6.23	8.06	5.32
3	Oxides of Nitrogen as NO <sub>x</sub>	ppm	30.52	32.62	28.42
4	<b>Noise Level Monitoring</b>				
4.1	Near DG Set	dB(A)	72.6	70.3	71.8

  
**H. T. Shah**  
Lab Manager



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



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**TABLE NO. 13 RESULTS OF DUMP POND DISCHARGE**

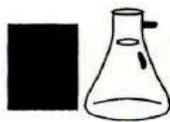
<b>SR. NO.</b>	<b>PARAMETERS</b>	<b>UNIT</b>	<b>TEST METHOD</b>
1	pH	--	IS3025(P11)83Re.02
2	Total Dissolved Solids	mg/L	IS3025(P16)84Re.02
3	Total Suspended Solids	mg/L	IS3025(P17)84Re.02
4	Turbidity	NTU	APHA 2130-B
5	BOD (3 Days @ 27 °C)	mg/L	IS 3025 (P44)1993 Re.03Edition2.1
6	Dissolved Oxygen	mg/L	IS3025(P38)89Re.99
7	COD	mg/L	APHA(22 <sup>nd</sup> Edi) 5520-D Open Reflux
8	Salinity	ppt	APHA 2550 B
9	Oil & Grease	mg/L	APHA(22 <sup>nd</sup> Edi)5520D
10	Total Hardness as CaCO <sub>3</sub>	mg/L	IS3025(P-21) 84EDTARe.02
11	Fluoride as F	mg/L	APHA(22 <sup>nd</sup> Edi) 4500 F D SPANDS
12	Chloride as Cl	mg/L	IS3025(P-32) 88Re.99Argentometric method
13	Zinc as Zn	mg/L	AAS- APHA (22 <sup>nd</sup> Edition) 3111 B
14	Cadmium as Cd	mg/L	AAS- APHA (22 <sup>nd</sup> Edition) 3111 B
15	Lead as Pb	mg/L	AAS- APHA (22 <sup>nd</sup> Edition) 3111 B
16	Mercury as Hg	mg/L	AAS-APHA (22 <sup>nd</sup> Edition) 3112 B

**H. T. Shah**

Lab Manager

**Dr. Arun Bajpai**

Lab Manager (Q)



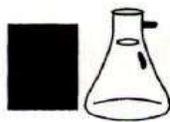
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**RESULTS OF DUMP POND DISCHARGE**

Location Name			Dump Pond Near TT4	Dump Pond Near TT4
Date			October-22	January-23
SR. NO.	TEST PARAMETER	UNIT	17/10/2022	17/01/2023
1	pH	--	8.41	8.32
2	Total Dissolved Solids	mg/L	1372	1168
3	Total Suspended Solids	mg/L	81	72
4	Turbidity	NTU	11.8	10.3
5	BOD (3 Days @ 27 °C)	mg/L	16	27
6	Dissolved Oxygen	mg/L	6	5.7
7	COD	mg/L	132	149
8	Salinity	ppt	0.23	0.193
9	Oil & Grease	mg/L	Not Detected	Not Detected
10	Total Hardness as CaCO <sub>3</sub>	mg/L	158	136
11	Fluoride as F	mg/L	0.7	0.59
12	Chloride as Cl	mg/L	129	107
13	Zinc as Zn	mg/L	0.058	0.061
14	Cadmium as Cd	mg/L	Not Detected	Not Detected
15	Lead as Pb	mg/L	0.022	0.031
16	Mercury as Hg	mg/L	Not Detected	Not Detected

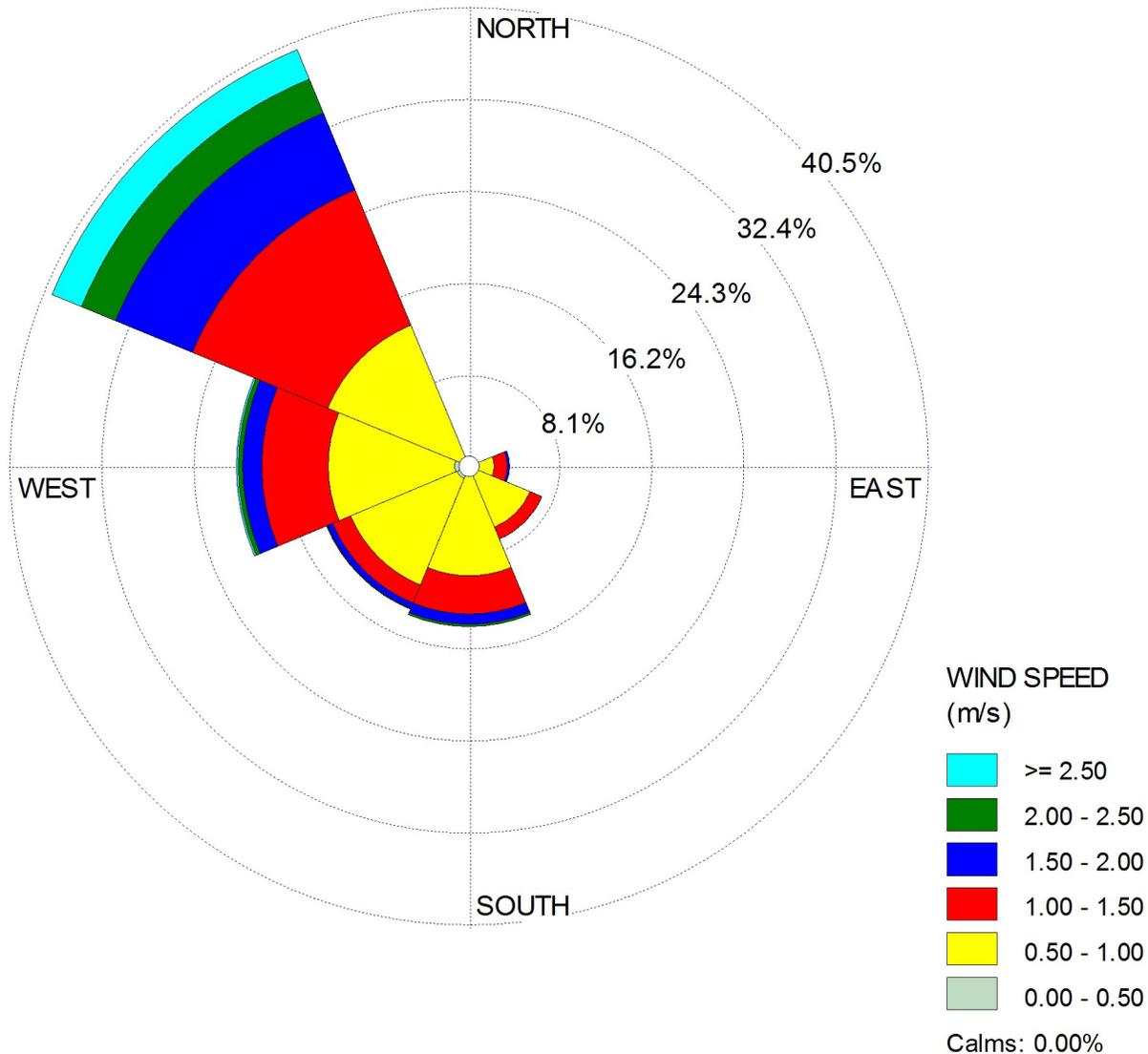
Note: Minimum Detection Limit: Oil &amp; Grease: 2.0 mg/L, Cadmium as Cd: 0.001 mg/L, Mercury as Hg: 0.00025mg/L

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



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**FIGURE NO.3 WIND ROSE DIAGRAM [OCTOBER 2022 TO MARCH 2023]**



  
**H. T. Shah**  
Lab Manager



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

# Annexure - 4

(GREEN ZONE DETAILS OF TUNA PORT (AKBTPL) UP TO Mar'2023.)

**Status of the conditions stipulated in Environment and CRZ Clearance**

**CURRENT GREEN ZONE DETAILS OF TUNA PORT (AKBTPL) UP TO Mar'2023.**

Sr. No.	Location	Area (Ha)	Tree (No.)	Shrubs (SQM)	Green Carpet (SQM)	Palm (No.)
1	Staff Canteen, POB & SS1 Building	2.25	4491	1975	8569	307
2	Green Belt area & Pump House	6.34	15779	250	00	75
3	Approach Road Zero Point to Main Gate	0.60	220	00	00	1150
4	SS2 Building & Jetty Road Area.	3.45	8002	1230	00	00
5	Internal Road & Railway Building	3.34	13180	150	60	250
6	Near Weight Bridge -04	0.11	500	00	00	00
<b>Total</b>		<b>16.09</b>	<b>42172</b>	<b>3605</b>	<b>8629</b>	<b>1782</b>



**Surrounding Of Adani canteen**



**Around POB office**



**Near SS-01 Building**



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



**Near SS-02 Building**



**Near Weight Bridge**

**adani**

Ports and  
Logistics

Adani Kandla Bulk Terminal Pvt. Ltd.-Tuna

From: Oct'22  
To : Mar'23

Status of the conditions stipulated in Environment and CRZ Clearance

# Annexure – 5

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

**Status of the conditions stipulated in Environment and CRZ Clearance**
**CSR WORK BY ADANI FOUNDATION, AKBTPL [PERIOD: OCT'22 TO Mar'23]**

<b>DETAILS</b>			
<b>VILLAGE &amp; FISHERMAN VASAHAAT.</b>	<b>CSR ACTIVITIES (OCT'22 TO Mar'23)</b>	<b>BENEFICIARIES</b>	<b>EXPENSES IN LAKH</b>
<b>1</b>	<b>HEALTH PROJECTS</b>		
Vandi & Rampar	Rural Clinic	<b>152</b>	<b>0.04</b>
Vira Bandar Fiserman Vasahat	Mobile Van	<b>257</b>	<b>0.06</b>
Dhavar varo, Vandi	General Health Camp	<b>61</b>	<b>0.02</b>
Tuna,Vandi & Rampar	Medical Support	<b>46</b>	<b>0.37</b>
Vandi Village	Water Supply	<b>2000</b>	<b>4.93</b>
Vira Bandar Fiserman Vasahat	Water Supply	<b>350</b>	<b>2.53</b>
Dhavar varo Fisherman Vasahat	Water Supply	<b>250</b>	<b>1.93</b>
<b>2</b>	<b>EDUCATION PROJECTS</b>		
Tuna,Vandi & Rampar	Drawing Competition in Primary School	<b>110</b>	<b>0.3</b>
<b>3</b>	<b>Rural Infrastructure Development</b>		
Tuna,	<ol style="list-style-type: none"> <li>1. Development of Common Gathering Place P.B. Work Near Ismalsh pir Dargah.</li> <li>2. Renovation Compound wall Maheswari Samaj Bhavan.</li> <li>3. Construction of Common Gathering Open Shed Gurjar Samaj BhavanTuna Village.</li> </ol>	<b>4200</b>	<b>14.54</b>
Rampar	Takro Fisherman Vasahat Solar Light Batry 17 Supprt (Budget Corporate Affairs)	<b>85</b>	<b>1.19</b>
Rampar	Construction Compound wall Primary School.	<b>376</b>	<b>8.9</b>
Vandi	New Panchayat Furniture Support Budget Corporate Affairs)	<b>4600</b>	<b>1.16</b>
Vandi	Construction of CC Road Near Cabrstan.	<b>1500</b>	<b>7.03</b>
	<b>TOTAL</b>	<b>13987</b>	<b>43</b>

**adani**

Ports and  
Logistics

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

From: Oct'22  
To : Mar'23

**Status of the conditions stipulated in Environment and CRZ Clearance**

**AKBTPL TUNA CSR ACTIVITY (Oct'22 to Mar'23)**



**Provided JCB-Tractor for Water Drainage Work@ Tuna - Vandil Vil.**



**Paver block work in public space at Tuna village**



**Provide Furniture@Tuna Gram Panchayat**



**Provided Solar Batteries @ Rampar Fishermen.**



**Constructed RCC Road @Vandil Vill.**



**Built Boundary Wall & Main Gate @Rampar Primary School**

	<b>Adani Kandla Bulk Terminal Pvt. Ltd.-Tuna</b>	<b>From: Oct'22 To : Mar'23</b>
<b>Status of the conditions stipulated in Environment and CRZ Clearance</b>		

## • Waste Management

AKBTPL has adopted the 5R concept for environmentally sound management of different types of solid & liquid wastes. Please refer below details about management of each type of waste.

**Non-Hazardous Solid Waste:** A well-established system for segregation of dry & wet waste is in place. All wet waste (Organic waste) is being segregated & utilized for compost manufacturing. The compost is further used by in house horticulture team for greenbelt development. Whereas dry recyclable waste is being sorted in various categories. Presently manual sorting is being done for sorting different types of solid waste. Segregated recyclable materials such as Paper, Plastic, Cardboard, PET Bottles, and Glasses, etc. are then sent to respective recycling units, whereas remaining non-recyclable waste is bailed and sent to cement plant (M/s. Ambuja Cement Ltd., Kodinar) for Co-processing as RDF (Refused Derived Fuel).

AKBTPL, Tuna is certified for Zero Waste to Landfill management system (CII/ZWL/2022/002) by Confederation of Indian Industries (valid up to 31.07.2025). ZWL certificate is attached as Annexure -6.

**adani**

Ports and  
Logistics

Adani Kandla Bulk Terminal Pvt. Ltd.-Tuna

From: Oct'22  
To : Mar'23

Status of the conditions stipulated in Environment and CRZ Clearance

# Annexure – 6

(Zero Waste to Landfill Certificate)

**adani**

Ports and  
Logistics

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

From: Oct'22  
To : Mar'23

**Status of the conditions stipulated in Environment and CRZ Clearance**



CII-ITC Centre of Excellence  
for Sustainable Development



Confederation of Indian Industry

## Certificate

### Zero Waste to Landfill

#### Adani Kandla Bulk Terminal Pvt. Ltd, Tuna

This is to certify that Adani Kandla Bulk Terminal Pvt. Ltd, Tuna, Kutch (Gujarat) has the best waste management practices with the achievement of a waste diversion rate of above 95% in the year 2021-22.

This Certificate is valid from 01 August 2022 to 31 July 2025 subject to a satisfactory annual surveillance assessment.



**Seema Arora**  
*Deputy Director General*  
*Confederation of Indian Industry (CII)*  
*Centre of Excellence for Sustainable Development (CESD)*

**Certificate Date:** 28 July 2022

**Certificate No.:** CII/ZWL/2022/002

This certificate has been awarded after the company fulfilled the requirements for zero waste to landfill practice and provided evidence for it. Responsibility for the data provided to CII rests solely with the company. The conditions of certification are detailed in the Annex.

## Status of the conditions stipulated in Environment and CRZ Clearance



CII-ITC Centre of Excellence  
for Sustainable Development



Confederation of Indian Industry

**Scope and limitations:**

The verification was based on the procedures, documents, records, data provided by the client, virtual site visits as not verified physically at the site due to the virtual nature of the assessment. Meetings, clarifications from the client through con calls.

The boundary is as set out in the report covering zero waste to landfill activities including the waste diversion rate of Tuna Port. During the assurance process, we did not come across limitations to the scope of the agreed assurance engagement. No external vendor was interviewed as part of this assurance engagement. This statement relates specifically to the information disclosed in the ZWL report and may not be interpreted as validating environmental data reporting in other sources.

**Findings, conclusions, and recommendations:**

Based on the assurance task, the report, virtual site visit provides a fair representation of the company's ZWL related practices. The Report includes statements and claims that reflect the company's achievements and challenges supported by documentary evidence and internal records. It is confirmed that the report, along with the referenced information meets the requirement of Type-1, Moderate Assurance according to the AA1000AS.

**Positive Observations:**

- Strong thrust from top management and the team of waste management projects was evident.
- Having a dedicated team working on the industry's waste management to strengthen the process.
- Organic waste converter to convert wet municipal solid waste to manure and utilizing the outcome product within the premises for horticulture purposes.
- ISO 14001:2015 certified.

**Recommendations:**

1. During the audit it was observed that the waste management process is well defined and documented. However, the implementation and monitoring need to be strengthened.
2. The audit has identified deviations that need immediate attention from the port management.
3. It is recommended that the port needs to engage with its waste management vendors on regular basis to bring an overall change in the diversion rate.

**Conclusions:**

The assessment and verification of zero waste to landfill practices at the Tuna port is conducted on 27-04-2022. The ZWL assessment is verified through a virtual site visit, documentation review and interaction with the concerned person.

The main source of waste generation at the port is the operational area, offices and cargo handling. The Tuna port has various good practices in place like having a dedicated team working on the waste management, organic waste converter to convert wet municipal solid waste to manure and utilizing the outcome product within the premises for horticulture purposes, ISO14001:2015 certification, recipient of the gold award in the service sector for outstanding achievement in environment improvement (sustainable development foundation), etc.

**Status of the conditions stipulated in Environment and CRZ Clearance****CII-ITC Centre of Excellence  
for Sustainable Development**

Confederation of Indian Industry

Based on the ZWL assessment carried out, it is verified that the Tuna port has adopted the best waste management practices and diverted more than 99% of plastic, MSW, e-waste, and battery streams for recycling, reuse, reprocessing, co-process, recovery, etc. instead of sending it for landfills. However, 70.05% of hazardous waste has been diverted and the remaining hazardous waste along with biomedical wastes has been sent to incineration plants without energy recovery. Hence, the Tuna port is qualified for the ZWL accreditation for the year 2021-22 subject to surveillance assessment and improvement suggested during the assessment.

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