

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:

April – 2017 to September– 2017



Adani Kandla Bulk Terminal Pvt. Ltd.

From : April 2017
To : September 2017

Environmental and CRZ Clearance Letter issued by MoEF&CC

F.No.10-10/2008-IA-III
Government of India
Ministry of Environment & Forests
(IA Division)

Paryavaran Bhawan,
CGO Complex, Lodhi Road,
New Delhi - 110 003.

Dated: 1 November 2011

To,
The Deputy Chairman,
M/s Kandla Port Trust,
Administrative Office Building,
Post Box No. 50, Gandhidham (Kutch),
Gujarat - 370 201.

**Subject: Environmental and CRZ clearance for construction of
berthing & allied facilities off Tekra near Tuna, Gujarat by
M/s Kandla Port Trust -Reg.**

This has reference to letter No: ENV-10-2009-1543-E dated 23.06.2010 from Director and Additional Secretary, Forests & Environment Department, Govt. of Gujarat and your subsequent letter dated 13.03.2011, 29.07.2011 seeking prior Environmental and CRZ Clearance for the above project under the EIA Notification - 2006 and Coastal Regulation Zone (CRZ) Notification, 1991/ 2011. The proposal has been appraised as per prescribed procedure in the light of provisions under the EIA Notification - 2006 and Coastal Regulation Zone Notification, 1991/2011 on the basis of the mandatory documents enclosed with the application viz., the Questionnaire, recommendation of State Coastal Zone Management Authority, EIA, EMP and the additional clarifications furnished in response to the observations of the Expert Appraisal Committee constituted by the competent authority in its meetings held on 18th - 20th January, 2011 and 21st - 23rd September, 2011.

2. It is interalia, noted that the proposal is for construction of berthing & allied facilities Off Tekra near Tuna, Gujarat. The Kandla Port is located on the West Coast of India, in the Gulf of Kutch and along the West Bank of Kandla creek at 70° 00' 13"E longitude and 23° 00' 01"N Latitude. At present Port has 10 berths for handling Dry cargo, 2 berths for handling containers, Six Oil Jetties for handling POL products of liquid cargo traffic at Kandla within Kandla Creek and 3 SBMs at Vadinar for handling Crude oil. Kandla Port is already developed up to the Shore Line i.e. having infrastructural facility like berthing facilities, Tank Farms, Roads, Railways, Storm water Drains, Warehouses & all other amenities. The total traffic handled by the Port has increased from 24.50 Million Tonnes in 1993-94 to 79.5 Million tonnes of cargo in 2009-10. The present handling capacity of existing ten dry cargo berths, as assessed is only 15.00 Million Tonnes. As against this, these berths have handled 24.58 MMT, which has resulted in berth occupancy of over 90% resulting in high waiting time for

ships. The Port is also in the process of constructing additional four berths on BOT basis (13th to 16th berths) based on the environmental and CRZ clearance already obtained, with a programme to commission the facilities by 2012. With commissioning of these berths by 2012, the existing dry cargo handling capacity will increase by 8 MMTPA and the total capacity will be around 23 MMTPA. Still, there will be a shortfall between demand and supply to the extent of about 06.94 MMTPA, 08.58 MMTPA and 09.74 MMTPA by the year 2011-12, 2012 -13 and 2013-14 respectively.

3. Further, topography of Kandla Creek has its own limitations and it may not be possible to go in for further developments beyond the construction of the 17th berth in the Kandla Creek. Hence, in order to meet the requirements of the trade and to overcome the draft restrictions at Kandla Creek, it is proposed to an off-shore Berthing Facility at Tekra near Tuna in the form of 'T' Shape. Dimensions of the Jetty system: 600m X 60m (Latitude 22 53'18"N & 70 06'20"E). The berthing facility shall be connected by 2000mX18m piled approach & 1700mX18m rubble mound approach (Total 3.7 km) to back up area. The backup area proposed shall be 80 hectares. The Dredged material will be dumped in area earmarked near back up area. The back up area shall be connected to Tuna Port by road of 5.0 km length and also with railway line along the road of 5.0 km length. The quantity of Dredging worked out by CWPRS shall be 784000 m³. The Terminal will be capable of handling four vessels at a time viz. two vessels, each of 1,00,000 DWT & 15 m draught on front and two vessels, each of 75,000 DWT & 14 m draught on rear side of Jetty head. The proposed Terminal (project) will handle all type of dry bulk cargo like coal, fertilizer, its raw material, salt, wheat, iron etc. The handling capacity of the terminal is worked out to 14 MMTPA. Total capital cost of the project is estimated at Rs.1060 crores (BOT operator: 818 crores + KPT:240 crores) and the implementation period is reckoned as 24 months.

4. The Expert Appraisal Committee, after due consideration of the relevant documents submitted by the project proponent and additional clarifications furnished in response to its observations, have recommended for the grant of Environmental and CRZ Clearance for the project. Accordingly, the Ministry hereby accord necessary Environmental Clearance for the above project as per the provisions of Environmental Impact Assessment Notification - 2006 and Coastal Regulation Zone Notification, 2011, subject to strict compliance of the terms and conditions as follows:

5. SPECIFIC CONDITIONS :

- (i) "Consent for Establishment" shall be obtained from State Pollution Control Board under Air and Water Act and a copy shall be submitted to the Ministry before start of any construction work at the site.
- (ii) Scientific studies shall be carried out by some expert & reputed organization like BNHS focusing among other things the marine environment in general and the preservation of mangroves in

particular against any possible adverse impact due to creation of the proposed facilities.

- (iii) Proponent shall explore the possibilities of plantation of mangroves in the entire mud flat areas and submit the action plan to the Ministry prior to the commencement of the activity.
- (iv) The dredge material shall be reused for low level rising wherever possible and excess shall be dumped into sea at the designated dumping areas identified based on mathematical model studies.
- (v) Though the project proponent has carried out EIA for individual components and it were examined by the Committee before the issue of clearances , it is suggested that proponent shall update and submit a comprehensive EMP for the whole project and submit to the Ministry and Regional Office of the Ministry at Bhopal prior to commencement of the activity.
- (vi) The project proponent shall set up separate environmental management cell for effective implementation of the stipulated environmental safeguards under the supervision of a Senior Executive.
- (vii) The funds earmarked for environment management plan shall be included in the budget and this shall not be diverted for any other purposes.

6. GENERAL CONDITIONS:

- (i) Appropriate measures must be taken while undertaking digging activities to avoid any likely degradation of water quality.
- (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.
- (iii) A six-Monthly monitoring report shall need to be submitted by the project proponents to the Regional Office of this Ministry at Bhopal regarding the implementation of the stipulated conditions.
- (iv) Ministry of Environment & Forests or any other competent authority may stipulate any additional conditions or modify the existing ones, if necessary in the interest of environment and the same shall be complied with.
- (v) The Ministry reserves the right to revoke this clearance if any of the conditions stipulated are not complied with the satisfaction of the Ministry.

- (vi) In the event of a change in project profile or change in the implementation agency, a fresh reference shall be made to the Ministry of Environment and Forests.
- (vii) The project proponents 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 the date of start of land development work.
- (viii) A copy of the clearance letter shall be marked to concerned Panchayat/local NGO, if any, from whom any suggestion/representation has been made received while processing the proposal.
- (ix) State Pollution Control Board shall display a copy of the clearance letter at the Regional Office, District Industries Center and Collector's Office/Tehsildar's office for 30 days.

7. These stipulations would be enforced among others under the provisions of Water (Prevention and Control of Pollution) Act 1974, the Air (Prevention and Control of Pollution) Act 1981, the Environment (Protection) Act, 1986, the Public Liability (Insurance) Act, 1991 and EIA Notification 1994, including the amendments and rules made thereafter.

8. All other statutory clearances such as the approvals for storage of diesel from Chief Controller of Explosives, Fire Department, Civil Aviation Department, Forest Conservation Act, 1980 and Wildlife (Protection) Act, 1972 etc. shall be obtained, as applicable by project proponents from the respective competent authorities.

9. The project proponent shall advertise in at least two local Newspapers widely circulated in the region, one of which shall be in the vernacular language informing that the project has been accorded Environmental Clearance and copies of clearance 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 <http://www.envfor.nic.in>. 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 the Regional office of this Ministry at Bhopal

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.

11. Status of compliance to the various stipulated environmental conditions and environmental safeguards will be uploaded by the project proponent in its website.

12. A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zilla 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.

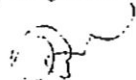
13. The proponent shall upload the status of compliance of the stipulated EC conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of MoEF, the respective Zonal Office of CPCB and the SPCB.

14. The environmental statement for each financial year ending 31st 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 Environment (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.


(E. Thirunavukkarasu)
Deputy Director (IA-III)

Copy to:

1. The Principal Secretary, Forest and Environment Department, Block no. 14/ 8 floor Sachivalaya, Gandhinagar - 382 010, Gujarat.
2. The Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD-cum- Office Complex, East Arjun Nagar, Delhi - 110 032.
3. The Member Secretary, Gujarat Coastal Zone Management Authority & Director, (Environment) Forests & Environment Department, Block No. 14, 8th Floor, Sachivalaya, GandhiNagar-382.
4. The Chief Conservator of Forests, Ministry of Environment and Forests, Regional Office, Western Region, Kendriya Paryavaran Bhavan, Link Road No. 3, Ravishankar Nagar, Bhopal - 462016 (M.P.)
5. The Member Secretary, Gujarat State Pollution Control Board, Paryavaran Bhawan, Sector 10-A, Gandhi Nagar 382043, Gujarat
6. Director (EI), Ministry of Environment and Forests.
7. Guard File.
8. Monitoring File.


(E. Thirunavukkarasu)
Deputy Director (IA-III)

F. No. 10-10/2008-IA.III
Government of India
Ministry of Environment, Forests and Climate Change

Indira Paryavaran Bhawan,
Jorbagh,
New Delhi – 110 003
Dated: 10th November, 2014

To

M/s Adani Kandla Bulk Terminal Pvt Ltd.
Adani House,
Near Mithakhali Six Roads,
Navarangpura,
Ahmedabad,
Gujarat- 380 009

Subject: Change of name/transfer of EC/CRZ granted for the project “Creation of berthing and allied facilities of Tekra near Tuna (Outside Kandla creek) – Reg.

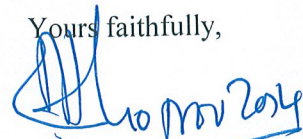
Sir,

This has reference to your letter dated 21.06.2014 regarding the subject mentioned above.

2. The request of transfer of EC/CRZ clearance dated 01.11.2011 granted to M/s Kandla Port Trust has been examined in the Ministry alongwith the MoU, Board resolution, NOC from KPT etc. The EC/CRZ clearance dated 01.11.2011 is hereby transferred to M/s Adani Kandla Bulk Terminal Pvt. Ltd. with the following conditions:

Though M/s Adani Kandla Bulk Terminal Pvt Ltd is the concessionaire for implementation of the project, the responsibility/ accountability to comply with conditions stipulated in the EC shall remain with both M/s Adani Kandla Bulk Terminal Pvt Ltd & M/s Kandla Port Trust. The Ministry of Environment, Forests and Climate Change shall hold both M/s Adani Kandla Bulk Terminal Pvt Ltd & M/s Kandla Port Trust accountable for non- compliance of EC/ CRZ conditions.

Yours faithfully,



(Dr. Manoranjan Hota) –
Director

Recd
21/11/14
[Signature]

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

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

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

Sr. No	Condition	Compliance status
5.	Specific Condition	
(i)	“Consent for Establishment” shall be obtained from State Pollution Control Board under Air and Water Act and a copy shall be submitted to the Ministry before start of any construction work at site.	<p>Complied.</p> <ul style="list-style-type: none"> Consent to establishment is obtained by KPT vide GPCB letter no. PC/CTE/CCA-Kutch-179(3)/GPCB ID-17907/16480 dated 28th July 2009 which was extended for the validity vide letter no. PC/CCA-Kutch-179(3)/GPCB ID-1790/203285 dated 05th February, 2014. Consent To Establishment is transferred to AKBTPL vide GPCB letter no. PC/CCA-Kutch-179(4) /GPCB ID-17907/234899 dated 31st December, 2014. Consent to operate is obtained by AKBTPL vide consent order no. AWH-68051 dated 03/02/2015 valid up to 02/12/2019. Copies of the stated permissions are already submitted (as a part of half yearly compliance report (Oct-14 to March-15) to MoEF & CC vide letter dated 11.05.2015 and there is no further change.
(ii)	Scientific studies shall be carried out by some expert and reputed organization like BNHS focusing among other things the marine environment in general and preservation of mangroves in particular against any possible adverse impact due to creation of the proposed facilities.	<p>Complied.</p> <ul style="list-style-type: none"> M/s. Gujarat Institute of Desert Ecology, Bhuj (similar to BNHS) has conducted scientific studies for preservation and management of mangroves in May 2012. Details related to the same are already submitted (as a part of half yearly compliance report (Oct-14 to March-15) to MoEF & CC vide letter dated 11.05.2015 and there is no further change. 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,

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

Sr. No	Condition	Compliance status
		<p>Bhuj in April, 2014 when construction activities were ongoing. Details related to the same are already submitted (As a part of half yearly compliance report (Oct-2016 to March-2017).</p> <ul style="list-style-type: none"> • Further, in order to understand the impacts of the existing project activity on marine ecology, a study was carried out through M/s. GUIDE. Details related to the same are already submitted (as a part of half yearly compliance report (Oct-2016 to March-2017). • It may be noted that GUIDE is one of the authorized agencies of Forest & Environment dept. Govt. of Gujrat.
(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>Complied.</p> <ul style="list-style-type: none"> • Based on the scientific studies for preservation and management of mangroves in May 2012 carried out by M/s. GUIDE it was suggested to KPT to carry out mangrove plantation in 500 ha. area. • 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 KPT. • 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 & CC vide letter dated 11.05.2015.
(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>Complied.</p> <ul style="list-style-type: none"> • Capital dredging was completed by KPT during the construction phase and the dredge material was disposed by KPT at a location identified by M/s. CWPRS, Pune in their study report. • Project is now in operation phase and

Half yearly Compliance report of Environment and CRZ Clearance issued by MoEF dated 1st 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
		no dredging activity is carried out during April'17 to September'17.
(v)	Though the project proponent has carried out EIA for individual components and it were examined by the committee before the issue of clearance, it is suggested that proponent shall update and submit a comprehensive EMP for the whole project and submit to the Ministry and Regional Office of the Ministry at Bhopal prior to commencement of the activity.	<p>Complied.</p> <ul style="list-style-type: none"> • EMP was updated by AKBTPL and submitted to KPT. KPT has submitted the same vide letter dated 03.12.2013 to MoEF&CC as part of compliance report. • Further, said EMP was also submitted by AKBTPL (as part of half yearly compliance report (Oct-14 to March-15) to MoEF & CC vide letter dated 11.05.2015 and there is no further change.
(vi)	The project proponent shall set up environmental management cell for effective implementation of the stipulated environmental safeguards under the supervision of a Senior Executive.	<p>Complied</p> <ul style="list-style-type: none"> • AKBTPL has environment management cell with qualified manpower for implementation of environmental safeguards and management. The site environment team directly reports to the site CEO. Further, the site environment cell continuously remains in loop with Corporate Environment Cell. Please refer Annexure - 1 for further details.
(vii)	The funds earmarked for environmental management plan shall be included in the budget and this shall not be diverted for any other purpose.	<p>Complied.</p> <ul style="list-style-type: none"> • Environmental Management Plan is in place and the funds earmarked (budgeted separately for the each financial year) are being utilized for effective implementation of environmental safeguards and environment monitoring. All the expenses related to environment management plan are recorded in advanced accounting system of the organization. • Expenditure on environmental safeguards including horticulture

Half yearly Compliance report of Environment and CRZ Clearance issued by MoEF dated 1st 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
		expenses is approx. INR 131.24 Lac. Please refer Annexure - 2 for further details.
6	General Condition	
(i)	Appropriate measures must be taken while undertaking digging activities to avoid any likely degradation of water quality.	Complied. <ul style="list-style-type: none"> Construction activities of the project are completed in March, 2015. The project is now in operation phase and no digging activities are carried out during April'17 to September'17.
(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.	Complied <ul style="list-style-type: none"> AKBTPL is always extending full support to the regulatory authorities during their visit to the project site. Details related to the last visit of Scientist 'D', MoEF&CC, from Regional Office, Bhopal, were submitted (as part of half yearly compliance report (Oct-2016 to March-2017)). Last visit of Assistant environment engineer, Regional office GPCB, Gandhidham was done on 20.09.2017. AKBTPL has submitted the reply to the site visit report vide letter dated 09.10.2017 incorporating details of action taken with respect to the observations of site visit.
(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.	Complied <ul style="list-style-type: none"> Six monthly compliance reports regarding the implementation of the stipulated conditions are regularly submitted to Regional Office of MoEF &CC, Bhopal and other concerned authorities. Last compliance report for Oct'16 to Mar'17 period was submitted by AKBTPL vide letter dated 24.05.2017.
(iv)	Ministry of Environment & Forests or any other competent authority may stipulate	Point Noted. <ul style="list-style-type: none"> All applicable conditions in the interest

Half yearly Compliance report of Environment and CRZ Clearance issued by MoEF dated 1st 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
	any additional conditions or modify the existing ones, if necessary in the interest of environment and the same shall be complied with.	of environment will be complied.
(v)	The Ministry reserves the right to revoke this clearance if any of the conditions stipulated are not complied with the satisfaction of the Ministry.	Point Noted. <ul style="list-style-type: none"> During the last compliance verification visit as mentioned in the sr. no ii of General Conditions above, there was no major non-compliance observed.
(vi)	In the event of a change in the project profile or change in the implementation agency, a fresh reference shall be made to the Ministry of Environment and Forests.	Complied. <ul style="list-style-type: none"> Details related to transfer of EC/CRZ clearance in the name of AKBTPL are submitted as part of half yearly compliance report (Oct-14 to March-15) to MoEF & CC vide letter dated 11.05.2015 and there is no further change
(vii)	The project proponent shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and date of start of land development work.	Complied. <ul style="list-style-type: none"> KPT has informed about the Financial closure vide their letter no. EG/WK /4604(EC)/562 dated 26th December, 2012. There is no further change.
(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.	Condition is not applicable to AKBTPL
(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.	Condition is not applicable to AKBTPL
7	These stipulations would be enforced among others under the provisions of Water (Prevention and Control of Pollution) Act 1974, the Air (Prevention and Control of Pollution) Act 1981, the Environment (Protection) Act, 1986, the	Complied. <ul style="list-style-type: none"> Permissions under the applicable rules and acts mentioned are already obtained. Please refer point no. I of specific conditions for further details.

Half yearly Compliance report of Environment and CRZ Clearance issued by MoEF dated 1st 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
	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.	Not Applicable <ul style="list-style-type: none"> The permissions from the authorities mentioned in the condition are not applicable to this project.
9	The project proponent shall advertise in at least two local newspapers widely circulated in the region, one of which shall be in the vernacular language informing that the project has been accorded Env. Clearance and copies of clearances letters are available with the State Pollution Control Board and may also be seen on the website of the Ministry of Environment and Forests at http://www.envfor.nic.in . The advertisement should be made within 10 days from the date of receipt of the Clearance letter and a copy of the same should be forwarded to RO of this Ministry at Bhopal.	Complied. <ul style="list-style-type: none"> KPT has published advertisement regarding accordance of the Environmental and CRZ clearance within 10 days from the date of receipt of the Clearance letter in two local newspapers (Aaj Kal and Divya Bhaskar) and copy of the same is submitted to the Regional office, MoEF&CC Bhopal by KPT vide letter no. EG/WK/4604(EC)/1036 dated 25th November, 2011.
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"> Noted and same will be complied based on further directions given by concerned authorities in this regard.
11	Status of compliance to the various stipulated environmental conditions and environmental safeguards will be uploaded by the project proponent in its website.	Complied. <ul style="list-style-type: none"> The documents are being uploaded regularly on our website: http://www.adaniports.com/ports-downloads
12	A copy of clearance letter shall be sent by	Complied.

Half yearly Compliance report of Environment and CRZ Clearance issued by MoEF dated 1st 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
	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.	<ul style="list-style-type: none"> Clearance letter is uploaded on our website: http://www.adaniports.com/ports-downloads
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>Complied.</p> <ul style="list-style-type: none"> Compliance report for period (Oct'16 to Mar'17) was submitted to respective authorities mentioned in the condition vide our letter dated 24.05.2017. The said report is also uploaded on our website: http://www.adaniports.com/ports-downloads.
14	The environmental statement for each financial year ending 31 st 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>Complied.</p> <ul style="list-style-type: none"> Environment Statement for FY 2016 – 17 has already been submitted to GPCB vide letter No. AKBTPL/ENVSTATEMENT/2016-17 dated 25.04.2017. Copy of the same is attached as Annexure – 3.

Compliance to CRZ Recommendation Letter

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

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

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.	Complied. <ul style="list-style-type: none"> All activities are in line with the CRZ Notification 1991 and its subsequent amendment.
2	No dredging reclamation or any other project related activities shall be carried out in the CRZ area categorized as CRZ I (i) and it shall have to be ensured that the mangroves habitats and other ecologically important and significant areas, if any, in the region are not affected due to any of the project activities.	Complied. <ul style="list-style-type: none"> 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&CC letter dated 01.11.2011. 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.
3	The KPT shall participate financially for installing and operating the Vessel Traffic Management System in the Gulf of Kutch and shall also take lead in preparing and operational sing the Regional Oil Spill Contingency plan in the Gulf of Kutch.	Complied. <ul style="list-style-type: none"> M/s Kandla port trust contributed an amount of INR 41.25 Cr for installing and operating VTMS in Gulf of Kutch. Information is submitted to MoEF&CC New Delhi (as part of half yearly compliance report (Apr – Sept, 2014) vide letter dated 13th November, 2014. There is no further change.
4	The KPT shall strictly ensure that no creeks or rivers are blocked due to any activity at Kandla.	Complied. <ul style="list-style-type: none"> No rivers are present at the project site. 3 Bridges and 6 culverts have been provided to allow free flow of water through creeks. Further, a study to ascertain tidal flushing in mangroves around the

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

Sr. No	Condition	Compliance
		project area of the dry bulk terminal at Tuna was carried through M/s. GUIDE, Bhuj in April, 2014 when construction activities were ongoing. Details related to the same are already submitted (as part of half yearly compliance report (Oct-2016 to March-2017). The conditions as mentioned in the report are maintained.
5	Mangrove plantation in an area of 1000 ha. Shall be carried out by the KPT within 5 years in a time bound manner on Gujarat coastline either within or outside the Kandla Port Trust area and six monthly compliance reports along with the satellite images shall be submitted to Ministry of Environment and Forests as well as to this department without fail.	Complied. <ul style="list-style-type: none"> AKBTPL being BOOT operator, KPT requested AKBTPL to carry out mangrove plantation in 250 ha area. As agreed, AKBTPL has completed Mangrove plantation in 250 ha area at Sat Saida bet. For further information regarding mangrove plantation activity, please refer reply to specific condition no ii and iii of the Environmental and CRZ clearance letter above.
6	No activities other than those permitted by the competent authority under the CRZ Notification shall be carried out.	Complied. <ul style="list-style-type: none"> All activities are being carried out as per the environmental and CRZ clearance granted vide MoEF&CC letter dated 01.11.2011.
7	No ground water shall be tapped for any purpose during the proposed expansion/modernization activities.	Complied. <ul style="list-style-type: none"> Ground water is not being used. Present water consumption is 573 KLPD. Source of water is Narmada (sourced through Gujarat Water Infrastructure Limited).
8	All necessary permission from different Government Departments/ agencies shall be obtained by the KPT before commencing the expansion activities.	Not applicable at present <ul style="list-style-type: none"> 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

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

Sr. No	Condition	Compliance																				
		<p>expansion activities.</p> <ul style="list-style-type: none">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&CC. the said activity will be carried out only after obtaining the requisite permissions.																				
9	No effluent or sewage shall be discharged into the sea/creek or in the CRZ area and it shall be treated to conform to the norms prescribed by the Gujarat Pollution Control Board and would be reused/recycled within the plant premises.	<p>Complied.</p> <ul style="list-style-type: none">No effluent is generated at the project site.Approx.10-12KLD of sewage generated is treated in 25 KLD capacity STP based on FAB technology and treated water is used for horticulture purpose within plant premise.Third party analysis of the treated water is being carried out once in a month by NABL and MoEF&CC accredited agency namely M/s. Pollucon Laboratories Pvt. Ltd. Summary of the same for duration from Apr-17 to Sep-17 is mentioned below. <table><tr><th>Parameter</th><th>Unit</th><th>Max</th><th>Min</th><th>Perm. Limit^s</th></tr><tr><td>TSS</td><td>mg/L</td><td>28</td><td>18</td><td>30</td></tr><tr><td>Residual Chlorine</td><td>ppm</td><td>0.8</td><td>0.5</td><td>> 0.5</td></tr><tr><td>BOD (3 Days @ 27 °C)</td><td>mg/L</td><td>14</td><td>6</td><td>20</td></tr></table> <p>^s as per CC&A granted by GPCB BDL – Below Detection Limit</p> <ul style="list-style-type: none">Please refer Annexure – 4 for detailed analysis reports. Total expenditures of the Environment monitoring for the period (Apr'17 to Sep'17) are INR 4.02 lakh.	Parameter	Unit	Max	Min	Perm. Limit ^s	TSS	mg/L	28	18	30	Residual Chlorine	ppm	0.8	0.5	> 0.5	BOD (3 Days @ 27 °C)	mg/L	14	6	20
Parameter	Unit	Max	Min	Perm. Limit ^s																		
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Residual Chlorine	ppm	0.8	0.5	> 0.5																		
BOD (3 Days @ 27 °C)	mg/L	14	6	20																		
10	All the recommendations and suggestions given by the NIOT in their Comprehensive	<p>Complied.</p> <ul style="list-style-type: none">The EMP prepared by NIOT in the EIA																				

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

Sr. No	Condition	Compliance
	Environment Impact Assessment report for conservation /protection and betterment of environment shall be implemented strictly by the KPT.	report was updated by AKBTPPL (based on the condition mentioned in the EC and CRZ clearance) and submitted to KPT. KPT has submitted the same vide letter dated 03.12.2013 to MoEF&CC as part of compliance report. All the measures mentioned in the updated EMP prepared by AKBTPPL are 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>Complied.</p> <ul style="list-style-type: none"> 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. Construction activities have been completed in March, 2015 based on the NIOT recommendations. During construction phase capital dredging was carried out by KPT and the dredge material was disposed at a location identified by M/s. CWPRS, Pune in their study report. No maintenance dredging activity is carried out from Apr-17 to Sep-17.
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"> Noted and same will be complied on receipt of such recommendations from concerned authorities
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	<p>Complied.</p> <ul style="list-style-type: none"> Construction of the project is completed in March, 2015. All construction debris and other solid wastes are removed from the

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

Sr. No	Condition	Compliance
	construction is over.	construction sites.
14	The construction camps shall be located outside the CRZ area and the construction labour shall be provided with the necessary amenities, including sanitation, water supply and fuel and it shall be ensured that the environmental conditions are not deteriorated by the construction labours.	Complied. <ul style="list-style-type: none"> Construction of the project is completed in March, 2015.
15	The KPT shall regularly update its Local Oil Spill Contingency and Disaster Management Plan in consonance with the National Oil Spill and Disaster Contingency Plan and shall submit the same to the MoEF, GOI and this Department after having it vetted through the Indian Coast Guard.	Complied. <ul style="list-style-type: none"> KPT is already having updated Disaster Management Plan as well as Oil Spill Contingency Plan. KPT has also executed MoU with oil companies i.e. IOCL, HPCL, BPCL etc. for setting up of their Tier I facility for combating Oil Spill at Kandla. Necessary action will be taken by AKBTP in consultation with KPT to combat with emergency situations.
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"> Noted and same will be complied on receipt of such recommendations from concerned authorities
17	The KPT shall take up massive greenbelt development activities in and around Kandla and also within the KPT limits.	Complied. <ul style="list-style-type: none"> 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. Approx. 14.10 hectare area is developed as greenbelt so far with various types of trees, plants and lawn. Please refer Annexure-7 for further details regarding greenbelt development. Total expenditures of the horticulture dept. for the period

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

Sr. No	Condition	Compliance
		(Apr'17 to Sep'17) are INR 53.35 lakh.
18	The KPT shall have to contribute financially for taking up the socio-economic upliftment activities in this region in consultation with the Forest and Environment Department and the District Collector/District Development Officer.	<p>Complied.</p> <ul style="list-style-type: none"> Adani Foundation is the CSR wing of Adani group. All CSR activities are planned out at Tuna by Adani Foundation. AF works in the following four main areas: <ul style="list-style-type: none"> 1 Education 2 Community Health 3 Sustainable livelihood 4 Rural Infrastructure Development Various activities related to above mentioned areas are being carried out on regular basis for socio-economic upliftment of surrounding villages by Adani Foundation. Details of the activities carried out are shared with FOKIA (Federation of Kutch Industries Association) chaired by District Collector quarterly. Total expenditures of the CSR activities are INR 279.03 lakh. Please refer Annexure - 5 for further details.
19	A separate budget shall be earmarked for environmental management and socio-economic activities and details thereof shall be furnished to this Department as well as the MoEF, Gol. The details with respect to the expenditure from this budget head shall also be furnished.	<p>Complied.</p> <ul style="list-style-type: none"> 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. Approximately INR 131.24 Lakh is spent for various activities mentioned here. Please refer to Annexure - 2 for details related to environmental expenditures and Annexure - 5 for expenditures related to CSR activities.

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

Sr. No	Condition	Compliance																																																																										
20	A separate environmental management cell with qualified personnel shall be created for environmental monitoring and management during construction and operational phases of the project.	Complied <ul style="list-style-type: none">AKBTPL has environment management cell with qualified manpower for implementation of environmental safeguards and management. The Environment Cell continuously remains in loop with Corporate Environment Cell. Please refer Annexure – 1 for further details.																																																																										
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.	<div>Complied<ul style="list-style-type: none">Ambient Air Quality (twice in a week), Noise (once in a month) and marine water and sediment (once in a month) monitoring are being carried out by NABL and MoEF&CC accredited agency namely M/s. Pollucon Laboratories Pvt. Ltd. Summary of the same for duration from Apr-17 to Sep-17 is mentioned below.</div> <div>Total ambient air and noise Sampling Locations: 4 Nos.</div> <table><tr><th>Parameter</th><th>Unit</th><th>Max</th><th>Min</th><th>Perm. Limit^s</th></tr><tr><td>PM₁₀</td><td>µg/m³</td><td>96.52</td><td>42.18</td><td>100</td></tr><tr><td>PM_{2.5}</td><td>µg/m³</td><td>56.45</td><td>18.75</td><td>60</td></tr><tr><td>SO₂</td><td>µg/m³</td><td>29.23</td><td>5.71</td><td>80</td></tr><tr><td>NO₂</td><td>µg/m³</td><td>49.96</td><td>13.24</td><td>80</td></tr><tr><th>Noise</th><th>Unit</th><th>Max</th><th>Min</th><th>Perm. Limit</th></tr><tr><td>Day Time</td><td>dB(A)</td><td>74.6</td><td>48.3</td><td>75</td></tr><tr><td>Night Time</td><td>dB(A)</td><td>69.8</td><td>43.1</td><td>70</td></tr></table> <div>^s as per NAAQ standards, 2009</div> <div>Total marine water sampling locations: 2 Nos.</div> <table><tr><th rowspan="2">Parame ter</th><th rowspan="2">Unit</th><th colspan="2">Surface</th><th colspan="2">Bottom</th></tr><tr><th>Max</th><th>Min</th><th>Max</th><th>Min</th></tr><tr><td>pH</td><td>--</td><td>8.18</td><td>7.05</td><td>8.7</td><td>7.5</td></tr><tr><td>TDS</td><td>mg/L</td><td>48200</td><td>36250</td><td>48800</td><td>36340</td></tr><tr><td>TSS</td><td>mg/L</td><td>290</td><td>30</td><td>316</td><td>34</td></tr><tr><td>BOD (3 Days @ 27 °C)</td><td>mg/L</td><td>6</td><td>3</td><td>4</td><td>3.5</td></tr></table>	Parameter	Unit	Max	Min	Perm. Limit ^s	PM ₁₀	µg/m ³	96.52	42.18	100	PM _{2.5}	µg/m ³	56.45	18.75	60	SO ₂	µg/m ³	29.23	5.71	80	NO ₂	µg/m ³	49.96	13.24	80	Noise	Unit	Max	Min	Perm. Limit	Day Time	dB(A)	74.6	48.3	75	Night Time	dB(A)	69.8	43.1	70	Parame ter	Unit	Surface		Bottom		Max	Min	Max	Min	pH	--	8.18	7.05	8.7	7.5	TDS	mg/L	48200	36250	48800	36340	TSS	mg/L	290	30	316	34	BOD (3 Days @ 27 °C)	mg/L	6	3	4	3.5
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Half yearly Compliance report of CRZ Recommendation for creation of Berthing and Allied Facilities off Tekra near Tuna issued by Forest and Environment, Govt. of Gujarat vide letter bearing no. ENV-10-2009-1543-E dated 23rd June, 2010

Sr. No	Condition	Compliance					
		DO	mg/L	5.8	4.6	4.8	4.2
		Salinity	ppt	40.7	31.45	41.7	32.07
		COD	mg/L	32	20.4	41	16
		Total sea-sediment sampling locations: 2 Nos.					
		Parameter	Unit	Sediment			
				Max	Min		
		Organic Matter	%	0.67	0.3		
		Phosphorus as P	mg/kg	404	239		
		Aluminium as Al	%	7.0	2.8		
		Total Chromium as Cr+3	mg/kg	175.0	47.98		
		Manganese as Mn	mg/kg	980.0	608		
		Iron as Fe	%	6.7	2.39		
Nickel as Ni	%	68.0	31.36				
Copper as Cu	mg/kg	110.0	40				
Zinc as Zn	mg/kg	169.0	67				
Lead as Pb	mg/kg	2.4	1				
		<ul style="list-style-type: none">Please refer Annexure – 4 for detailed analysis reports. Approx. INR 4.02 Lakh is spent for all environmental monitoring activities during the (Apr'17 to Sep'17) periods.					
22	The KPT shall have to contribute financially to support the National Green Corps Scheme being implemented in the Gujarat by GEER Foundation, Gandhinagar, in consultation with Forest and Environment Department.	Complied <ul style="list-style-type: none">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					
23	A six monthly report on compliance of the conditions mentioned in this letter shall have to be furnished by the KPT on a	Complied. <ul style="list-style-type: none">Six monthly compliance reports regarding the implementation of the					

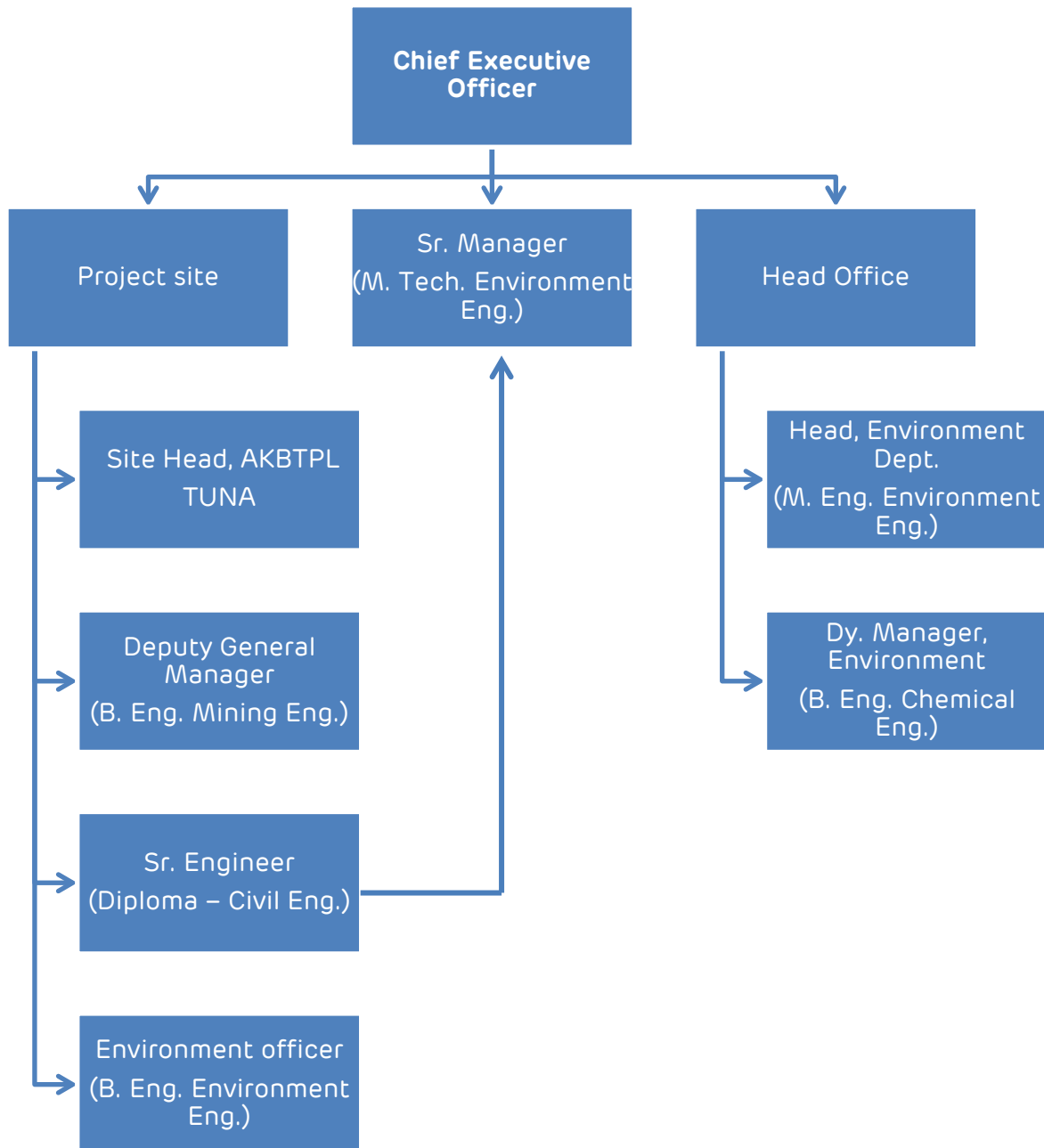
Half yearly Compliance report of CRZ Recommendation for creation of Berthing and Allied Facilities off Tekra near Tuna issued by Forest and Environment, Govt. of Gujarat vide letter bearing no. ENV-10-2009-1543-E dated 23rd June, 2010

Sr. No	Condition	Compliance
	regular basis to this Department/MoEF, GOI.	<p>stipulated conditions are regularly submitted to all concerned authorities.</p> <ul style="list-style-type: none"> Last compliance report for Oct'16 to Mar'17 period was submitted by AKBTPPL vide letter dated 24.05.2017
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>Complied.</p> <ul style="list-style-type: none"> CRZ map including land features prepared by institute of Remote sensing, Anna University, Chennai is already submitted by KPT to MoEF&CC vide letter no. EG/WK/4604 (EC)/146 dated 14.02.2012.
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>Complied.</p> <ul style="list-style-type: none"> As per the Environmental/ CRZ clearance obtained from MoEF&CC approach road of 2 km is constructed on rubble mound and 1.7 km approach road below low water line is constructed on piles. Entire jetty is constructed on piles. Bridges are constructed at three creeks and box/piped culverts are placed at various locations to allow free flow of water. Photographs of the same are already submitted as part of half yearly compliance report (Oct-14 to March-15) to MoEF & CC vide letter dated 11.05.2015 and there is no further change.
26	The KPT shall create a full-fledged and environmental cell for implementation of the Environment Management Programme and monitoring of the environmental parameters/post project monitoring.	<p>Complied.</p> <ul style="list-style-type: none"> AKBTPL has environment management cell with qualified manpower for implementation of environmental safeguards and management. The Environment Cell continuously

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

Sr. No	Condition	Compliance
		remains in loop with Corporate Environment Cell. Please refer Annexure – 1 for further details.
27	The KPT shall have to take up in-situ biodiversity conservation project for mangroves at least in 5 ha. of area in addition to plantation of mangrove in 1000 ha.	Complied <ul style="list-style-type: none"> 5 ha in-situ biodiversity conservation project for mangroves is carried out at sat saida bet (location identified by KPT). M/s GUIDE has prepared a final report of the same. Please refer Annexure – 6 for further details.
	General conditions	
28	A separate budget shall be earmarked for environmental management and socio-economic activities and details thereof shall be furnished to this Department as well as the MoEF, Gol. The details with respect to the expenditure from this budget head shall also be furnished.	Complied. <ul style="list-style-type: none"> Please refer point no. 19 above for the reply to this condition.
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"> Agreed.

Annexure – 1: Environmental Management Cell



Annexure- 2: Expenditure Details on Environmental Safeguards

(Apr'17 to Sept'17)

Sr. no.	Activity	Budget F.Y.2017-18 (INR in Lakh)	Cost incurred (INR in Lakh)
1	Environmental Monitoring.	9.00	4.02
2	Greenbelt development [Area: 14.10 Hectare]	38.45	28.35
3	Mangrove plantation (including biodiversity mangrove plantation).	25.00	25.00
4	Disposal of wastes (including STP operation).	12.12	7.15
5	Firefighting Equipment.	213.00	51.58
6	Dust Suppression.		
7	Maintenance of conveyor belt.	102.59	15.14
Total		400.16	131.24

Annexure – 3

(FORM-V)

Environmental Statement for 2016-17

Environment Statement for 2016-17 for M/s Adani Kandla Bulk Terminal Pvt Ltd

o/c
adani™

Ref No. AKBTP/ENVSTATEMENT/2016-17

Date: 25th April, 2017

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

Dear Sir,

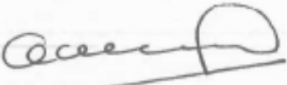
Sub: Environmental Statement for the financial year ending 31st March, 2017 for
M/s Adani Kandla Bulk Terminal Pvt Ltd (AKBTPL)

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

With reference to the above mentioned subject and reference, please find enclosed Environmental Statement in Form V prescribed under Rule 14 of the Environment (Protection) Rules 1986, for M/s Adani Kandla Bulk Terminal Pvt Ltd, Ta. Anjar for the financial year ending 31st March 2017.

Thank you,

Yours faithfully,
For Adani Kandla Bulk Terminal Pvt Ltd



Col. Parag Srivastava
(Head - AKBTP)

Encl: As above.

Copy to:

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

Received
Gujarat Pollution Control Board
Regional Office
Kutch (East)


25-4-17

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

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

Environment Statement for 2016-17 for M/s Adani Kandla Bulk Terminal Pvt Ltd

FORM V (See Rule 14)

Environmental Statement for the Financial Year ending 31st March 2017

PART – A

- (i) Name and address of the Owner/ Occupier of the Industry Operation or Process : Col. Parag Srivastava
Head – AKBTPPL
Adani Kandla Bulk Terminal Pvt Ltd.
Tuna Tekra, Taluka - Anjar
Dist. Kutch (Gujarat)
- (ii) Industry Category : Red – Large
Primary (STC Code) NA
Secondary (STC Code) NA
- (iii) Production Capacity : Dry Bulk Cargo Handling – 12 MMTPA
- (iv) Year of Establishment : 2011 – 12 (As per certification of incorporation date of company)
- (v) Date of last Environment Statement submitted : 01.08.2016

Environment Statement for 2016-17 for M/s Adani Kandla Bulk Terminal Pvt Ltd

PART – B

Water and Raw Material Consumption

(i) Water Consumption

Water Consumption Cu.Mtr./Day	
Process	Nil
Cooling (Used in sprinkling / gardening / dust suppression)	630.328 m ³ /day*
Domestic	9.297 m ³ /day*

Name of Products	Process Water Consumption per unit of Product Output	
	During the previous financial year (2015 – 16)	During the current financial year (2016 – 17)
Handling and Storage of dry bulk cargo*	3.727 MMT	4.456 MMT

(ii) Raw Material Consumption

Name of Raw Material	Name of Products	Consumption of Raw Material per Unit of output	
		During the previous financial year (2015 – 16)	During the current financial year (2016 – 17)
NIL*	Not Applicable	Nil	Nil

Note: AKBTPPL is involved logistic business, hence there no raw material being used.

Environment Statement for 2016-17 for M/s Adani Kandla Bulk Terminal Pvt Ltd

PART – C

Pollutants discharged to Environment/Unit of Output (Parameters as specified in consent issued)

Pollutants	Quantity of pollutants discharged (Mass/day)	Concentrations of pollutants in discharges (mass/volume)	Percentage of variation from prescribed standards with reasons
(a) Water	AKBTPL is involved in logistic business; hence there is no process effluent discharge.		
(b) Air	<ul style="list-style-type: none">• DG sets are provided as standby power source and used during power failure.• All the ambient air parameters are within standards.• Refer Annexure 3 [Ambient Air Monitoring Reports]		

Environment Statement for 2016-17 for M/s Adani Kandla Bulk Terminal Pvt Ltd

PART – D

Hazardous Wastes

(As specified under Hazardous Wastes Management and Handling Rules 1989)

Hazardous Wastes	Total Quantity (Kg)	
	During the previous financial year (2015-16)	During the current financial year (2016-17)
(a) From Process Used Oil	Generation – 8.29 KL Reuse – 1.16 KL (Used in Railway siding and MBU machine as a lubricant)	Generation – 3.61 KL Reuse – 1.643 KL (Used in Railway siding and MBU machine as a lubricant)
* (b) From Pollution Control facilities A	Nil	Nil

AKBTPL is involved in logistic business; hence there is no process waste

PART – E

Solid Waste

Solid Waste	Total Quantity Generated (MT/Annum)	
	During the previous financial year (2015-16)	During the current financial year (2016-17)
(a) From Process (Ash)	Nil	Nil
(b) From Pollution Control facilities	Nil	Nil
(C-1) Quantity recycled or reutilized within the unit	--	--
(C-2) Sold	--	--
(C-3) Disposed	--	--

Environment Statement for 2016-17 for M/s Adani Kandla Bulk Terminal Pvt Ltd

PART - F

Please specify the characterization (in terms of Composition and quantum) of Hazardous as well as solid wastes and indicate disposal practice adopted for both these categories of wastes:

Used oil is being used as a lubricant
for maintenance purpose.

PART – G

Impact of the pollution abatement measures taken on conservation of natural resources and on the cost of production.

Unit has installed Sewage Treatment Plant and for treatment of the Sewage water being generated at site. AKBTPPL has planted mangroves in 250 ha area near Satsaida Bet (Kandla), Kutch sea coast. Unit has formed dedicated Horticulture department & developing green belt within port premises.

During the project, the total cost incurred on environmental protection measures is enclosed as Annexure 1 and the green belt developed so far enclosed as Annexure 2.

PART – H

Additional measures /investment/ proposal for environmental protection including abatement of pollution, prevention of pollution.

- Unit is doing Regular Environmental Monitoring of Port & surrounding area through reputed NABL certified Laboratory. All the required environmental parameters are well within specified limit & the details are being submitted regularly to GPCB, CPCB, MOEF & concerned authorities.
- Unit has installed STP for treatment of the Sewage water being generated at site. Unit has also provided dump pond & conveyance channel for collection of runoff generated from Coal Yard.
- Unit has provided DSS at coal yard & conveyer system and carrying out regular water spreading to control the dust exposure.
- Unit is developing green belt within port and outside continually with help of Horticulture dept.
- Continually taking new initiatives for protection of environment with respect to air-water-soil.

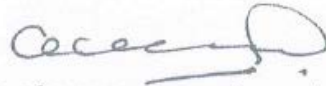
PART – I

Any other particulars for improving the quality of environment:

- Environmental awareness programs have been conducted for workmen.
- Integrated housekeeping and waste management being maintained regularly.

Environment Statement for 2016-17 for M/s Adani Kandla Bulk Terminal Pvt Ltd

Date : 25.04.2017



(Signature of a person carrying out an industry,
operation or process)

Name : Col. Parag Srivastava

Designation : Head – AKBTP

Address : Adani Kandla Bulk Terminal Pvt Ltd,
Tuna Tekra, Taluka Anjar. District Kutch (Gujarat)

Environment Statement for 2016-17 for M/s Adani Kandla Bulk Terminal Pvt Ltd

Annexure 1: Expenditure Details on Environmental Safeguards during FY 2016– 17

Sr. no.	Activity	Cost incurred (INR in Lakh)
1	Environmental Monitoring	10.50
2	Greenbelt development [Area: 7.15 Hectare]	54.13
3	Mangrove plantation	15.00
4	Disposal of wastes	4.00
5	Firefighting Equipment	75.00
Total		158.63

Environment Statement for 2016-17 for M/s Adani Kandla Bulk Terminal Pvt Ltd

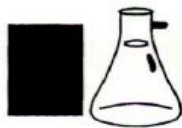
Annexure – 2 Green developments for Year 2016 -17

Sr. No.	Green Zone Nos.	Location	Area (Ha)	Tree (No.)	Name of Species/Plant	Shrubs (SQM)	Green Carpet (SQM)	Palm (No.)
1	71a	SITE OFFICE BUILDING AND POB BUILDING AREA, SS-1 BUILDING	0.004	5	Neem (AZARDICA INDICA),			
			0.20	2000	CASURINA PLANT			
			0.01	25	Ficus Panda Topiary			
			0.00	0	Delonix regia			
			0.03	0	Washingtonia f.f.			87
			0.003	0	Almanda Dwarf.	25		
			0.00	0	IXORA RED	15		
			0.03	0	Lilly (HYMENOCALLIS SPECIOSA)	275		
			0.0015	0	Euphorbia Milli	15		
			0.60	1500	Eucalyptus spp			
			0.00	0	Boungainvella Red	25		
			0.02	0	Cycus			48
			0.03	0	Clerodendron Inerme.	260		
			0.15	0	Flat lawn		1480	
2	71b	GREEN BELT AREA	2.31	5779	Casurina Spp.			
			0.334	417	Neem (AZARDICA INDICA),			
			0.334	417	Peltophorum			
					Nerrium	100		
3	71c	5KM. ROAD	0.40	0	Washingtonia F.F			1000
4	71d	SS-2 BUILDING AREA	0.00	0	Washingtonia F.F			
			0.08	815.00	Casurina Spp.			
			0.00		Lilly (HYMENOCALLIS SPECIOSA)			
			0.00		Inermi			
			0.50	1251.00	Coconut			
			0.00		Sloppy lawn			
4	71e	INTERNAL ROAD, RAILWAY BUILDING	0.10		Washingtonia F.F			250.00
			0.70	7000.00	Casurina Spp.			
			0.114	143	Neem (AZARDICA INDICA),			
			0.114	143	Peltophorum			
			1.08	2700	Eucalyptus spp			
			0.01	0	Flat lawn		60.78	
			0.00	0	Clerodendron Inerme.	100		

Annexure – 4

(Six Monthly Environment Monitoring Report)

(Apr'17 to Sep'17)



POLLUCON

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Environmental Auditors, Consultants & Analysts.
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“ENVIRONMENTAL MONITORING REPORT”

For

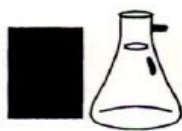
**ADANI KANDLA BULK TERMINAL PRIVATE LIMITED.
KANDLA, KUTCH.**

APRIL 2017 TO SEPTEMBER 2017

H. T. Shah
Lab Manager



Dr. Arun Bajpai
Lab Manager (Q)

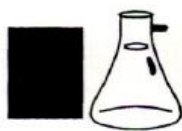
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METHODS AND EQUIPMENTS USED FOR SAMPLING AND ANALYSIS

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

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

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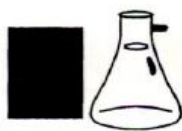
National Ambient Air Quality Standards Dated 16th Nov.2009, CPCB New Delhi.

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

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

Date of Sampling	:	As Per Table	Sampling Location	:	As Per Table
Sampling By	:	Pollucon Laboratories Pvt. Ltd.	Protocol (purpose)	:	Ambient Air Quality Monitoring

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

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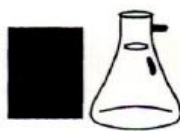
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Table No. 1 Results of AAQM for LC Gate No.2 [APRIL 2017 - SEPTEMBER 2017]

Sr No.	Date of Sampling	Particulate Matter (PM10) ($\mu\text{g}/\text{m}^3$)	Particulate Matter (PM2.5) ($\mu\text{g}/\text{m}^3$)	Sulphur Dioxide (SO ₂) ($\mu\text{g}/\text{m}^3$)	Oxides of Nitrogen (NO ₂) ($\mu\text{g}/\text{m}^3$)
1	10/04/2017	91.89	48.74	18.98	30.43
2	13/04/2017	88.64	38.66	20.92	35.33
3	17/04/2017	70.64	30.25	11.39	23.36
4	20/04/2017	95.09	47.48	13.92	27.28
5	24/04/2017	76.36	39.92	17.36	26.38
6	27/04/2017	92.52	52.52	10.54	29.67
7	01/05/2017	63.24	29.41	12.02	27.56
8	04/05/2017	77.59	38.24	17.71	35.25
9	08/05/2017	67.10	31.09	14.34	24.37
10	11/05/2017	82.27	44.12	21.37	31.70
11	15/05/2017	90.16	52.52	16.02	37.97
12	18/05/2017	69.93	36.14	13.49	25.68
13	22/05/2017	76.35	31.93	23.59	33.42
14	25/05/2017	85.13	42.86	15.18	36.01
15	29/05/2017	72.65	37.82	10.96	23.61
16	01/06/2017	52.12	21.62	9.62	24.14
17	05/06/2017	69.11	34.50	19.83	32.11
18	08/06/2017	83.11	45.31	8.44	42.21
19	12/06/2017	75.26	31.18	18.99	36.60
20	15/06/2017	48.12	27.49	10.55	30.42
21	19/06/2017	62.25	23.75	7.59	29.86
22	22/06/2017	48.96	19.16	9.70	31.43
23	26/06/2017	77.96	30.41	11.39	40.19
24	29/06/2017	64.52	24.94	19.24	38.84
25	03/07/2017	49.25	22.45	9.57	23.11
26	06/07/2017	71.12	39.08	12.59	29.33
27	10/07/2017	85.24	49.05	14.69	46.43
28	13/07/2017	78.99	34.92	10.07	35.21
29	17/07/2017	51.24	29.16	7.55	26.33
30	20/07/2017	66.34	29.58	6.30	28.99
31	31/07/2017	60.44	26.19	9.57	29.66
32	03/08/2017	51.22	24.11	9.64	25.41
33	07/08/2017	68.15	35.75	10.57	31.11
34	10/08/2017	79.34	41.99	12.26	43.08
35	14/08/2017	70.16	32.01	9.30	32.48
36	17/08/2017	55.41	29.16	7.18	24.16
37	21/08/2017	62.35	30.83	8.03	29.29
38	24/08/2017	49.55	22.91	8.03	24.16
39	28/08/2017	72.14	39.16	18.17	42.17
40	31/08/2017	65.18	33.26	9.64	27.12
41	04/09/2017	74.62	33.62	22.57	41.56
42	07/09/2017	82.61	44.54	19.48	33.49
43	11/09/2017	60.21	26.47	8.35	28.42
44	14/09/2017	78.62	40.76	16.47	39.38
45	18/09/2017	86.32	45.57	23.36	27.47
46	21/09/2017	50.37	20.59	7.40	19.46
47	25/09/2017	79.51	41.60	14.60	25.81
48	28/09/2017	84.47	46.64	20.56	31.50


H. T. Shah
 Lab Manager


Dr. Arun Bajpai
 Lab Manager (Q)

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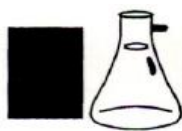
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Table No. 2 Results of AAQM for Starting of pile approach [APRIL 2017 - SEPTEMBER 2017]

Sr No.	Date of Sampling	Particulate Matter (PM ₁₀) (µg/m ³)	Particulate Matter (PM _{2.5}) (µg/m ³)	Sulphur Dioxide (SO ₂) (µg/m ³)	Oxides of Nitrogen (NO ₂) (µg/m ³)
1	03/04/2017	78.20	36.13	19.69	29.36
2	06/04/2017	65.72	30.25	14.41	20.58
3	10/04/2017	70.25	37.39	10.60	22.48
4	13/04/2017	79.14	31.51	16.56	28.30
5	17/04/2017	61.58	26.88	9.40	19.38
6	20/04/2017	81.25	41.17	11.45	24.48
7	24/04/2017	94.25	50.83	8.48	13.24
8	27/04/2017	88.82	45.79	6.26	16.21
9	01/05/2017	50.31	24.36	10.29	21.16
10	04/05/2017	70.01	30.67	20.77	32.64
11	08/05/2017	58.83	26.46	16.11	20.38
12	11/05/2017	64.28	34.03	12.08	26.57
13	15/05/2017	79.52	41.59	21.93	34.10
14	18/05/2017	85.92	47.05	16.53	22.50
15	22/05/2017	69.22	35.71	19.08	29.41
16	25/05/2017	74.55	39.49	12.98	30.22
17	29/05/2017	56.61	28.14	23.74	35.20
18	01/06/2017	46.12	20.14	9.97	18.19
19	05/06/2017	66.12	27.54	17.86	34.26
20	08/06/2017	59.22	24.25	14.12	30.69
21	12/06/2017	71.52	33.29	19.10	40.29
22	15/06/2017	75.12	38.33	20.35	31.47
23	19/06/2017	73.51	26.24	19.52	27.01
24	22/06/2017	62.15	23.33	14.12	32.81
25	26/06/2017	49.11	28.33	7.06	29.35
26	29/06/2017	82.77	37.40	20.01	37.41
27	03/07/2017	51.22	27.13	8.73	24.18
28	06/07/2017	70.14	35.35	14.97	32.14
29	10/07/2017	61.42	26.72	11.23	32.91
30	13/07/2017	78.91	41.10	19.96	44.61
31	17/07/2017	81.42	44.16	22.46	34.68
32	20/07/2017	74.14	29.58	17.88	31.25
33	31/07/2017	84.11	48.91	21.29	48.99
34	03/08/2017	47.88	24.25	7.90	29.00
35	07/08/2017	68.33	32.47	13.31	34.10
36	10/08/2017	57.41	29.59	10.40	24.13
37	14/08/2017	71.41	40.28	21.63	38.97
38	17/08/2017	79.66	49.16	24.13	41.24
39	21/08/2017	80.24	43.32	13.31	32.40
40	24/08/2017	61.41	29.16	8.32	31.27
41	28/08/2017	42.18	31.24	6.24	27.42
42	31/08/2017	84.22	45.21	23.80	49.35
43	04/09/2017	62.41	26.46	15.70	32.60
44	07/09/2017	71.61	39.49	8.36	24.60
45	11/09/2017	54.50	22.68	11.57	23.36
46	14/09/2017	70.41	36.55	18.37	27.38
47	18/09/2017	93.19	52.51	14.51	19.80
48	21/09/2017	68.22	27.72	9.66	21.81
49	25/09/2017	89.42	49.57	12.48	20.89
50	28/09/2017	78.42	41.59	16.68	34.62


H. T. Shah
 Lab Manager


Dr. Arun Bajpai
 Lab Manager (Q)

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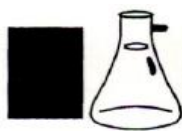
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Table No. 3 Results of AAQM for South West Corner at Pump House [APRIL 2017 - SEPTEMBER 2017]

Sr No.	Date of Sampling	Particulate Matter (PM10) ($\mu\text{g}/\text{m}^3$)	Particulate Matter (PM2.5) ($\mu\text{g}/\text{m}^3$)	Sulphur Dioxide (SO_2) ($\mu\text{g}/\text{m}^3$)	Oxides of Nitrogen (NO_2) ($\mu\text{g}/\text{m}^3$)
1	03/04/2017	69.53	29.72	12.42	23.39
2	06/04/2017	72.34	38.09	10.85	14.33
3	10/04/2017	64.43	31.39	7.71	17.65
4	13/04/2017	71.65	28.88	14.56	24.61
5	17/04/2017	55.64	22.60	6.78	15.02
6	20/04/2017	76.23	34.32	9.85	19.64
7	24/04/2017	68.46	26.79	11.13	22.40
8	27/04/2017	74.52	36.00	18.53	31.21
9	01/05/2017	56.09	20.51	8.14	15.24
10	04/05/2017	63.82	25.53	14.46	26.58
11	08/05/2017	73.73	34.32	12.42	18.12
12	11/05/2017	57.68	28.88	9.42	21.10
13	15/05/2017	51.29	32.65	13.11	28.45
14	18/05/2017	62.41	21.77	9.85	16.90
15	22/05/2017	58.87	26.37	16.27	23.75
16	25/05/2017	69.27	30.98	18.08	27.52
17	29/05/2017	49.25	23.44	11.30	17.26
18	01/06/2017	48.52	20.46	8.04	15.82
19	05/06/2017	61.22	25.89	13.54	28.95
20	08/06/2017	74.24	32.57	10.15	31.41
21	12/06/2017	70.21	34.24	15.23	29.73
22	15/06/2017	76.39	29.99	8.04	22.44
23	19/06/2017	60.12	27.08	14.38	32.42
24	22/06/2017	87.41	40.41	10.58	28.95
25	26/06/2017	68.96	29.16	12.27	30.40
26	29/06/2017	50.24	31.32	14.38	21.43
27	03/07/2017	55.24	29.65	9.32	24.20
28	06/07/2017	67.87	30.48	12.28	30.20
29	10/07/2017	81.11	48.86	13.56	35.41
30	13/07/2017	75.57	39.67	10.59	28.98
31	17/07/2017	69.37	33.33	8.05	23.65
32	20/07/2017	62.36	29.58	13.13	34.64
33	31/07/2017	52.22	35.08	18.64	34.19
34	03/08/2017	48.72	26.31	7.18	23.80
35	07/08/2017	71.41	35.08	13.52	36.22
36	10/08/2017	84.24	50.11	10.56	32.12
37	14/08/2017	76.39	34.24	8.45	30.18
38	17/08/2017	81.14	42.07	9.71	29.04
39	21/08/2017	64.77	31.24	12.25	35.88
40	24/08/2017	89.34	52.07	6.34	40.21
41	28/08/2017	81.42	45.41	8.87	29.84
42	31/08/2017	58.96	32.57	16.47	38.72
43	04/09/2017	54.20	23.69	12.65	25.41
44	07/09/2017	79.41	48.41	10.59	30.51
45	11/09/2017	45.58	18.75	6.67	19.40
46	14/09/2017	52.61	30.69	13.56	24.27
47	18/09/2017	63.52	27.74	21.60	32.55
48	21/09/2017	55.27	24.55	5.71	15.56
49	25/09/2017	69.37	38.38	9.67	35.44
50	28/09/2017	58.18	32.71	14.61	21.44


H. T. Shah
 Lab Manager


Dr. Arun Bajpai
 Lab Manager (Q)

**POLLUCON****LABORATORIES PVT. LTD.**Environmental Auditors, Consultants & Analysts.
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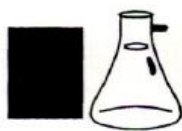
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Table No. 4 Results of AAQM for North East corner of back up area [APRIL 2017 - SEPTEMBER 2017]

Sr No.	Date of Sampling	Particulate Matter (PM10) ($\mu\text{g}/\text{m}^3$)	Particulate Matter (PM2.5) ($\mu\text{g}/\text{m}^3$)	Sulphur Dioxide (SO_2) ($\mu\text{g}/\text{m}^3$)	Oxides of Nitrogen (NO_2) ($\mu\text{g}/\text{m}^3$)
1	03/04/2017	91.52	46.07	24.36	32.98
2	06/04/2017	86.25	53.13	16.36	24.33
3	10/04/2017	78.35	41.50	12.59	20.33
4	13/04/2017	94.87	47.32	26.57	38.35
5	17/04/2017	76.06	36.11	15.52	28.43
6	20/04/2017	88.90	52.71	19.72	32.65
7	24/04/2017	80.25	48.56	14.61	27.50
8	27/04/2017	96.52	56.45	22.23	36.22
9	01/05/2017	68.09	34.45	16.39	32.56
10	04/05/2017	81.38	42.33	23.07	38.97
11	08/05/2017	88.24	48.15	19.30	28.47
12	11/05/2017	70.14	37.77	15.50	35.30
13	15/05/2017	84.23	46.07	25.59	42.86
14	18/05/2017	91.73	53.96	21.82	30.63
15	22/05/2017	86.93	40.67	29.23	37.93
16	25/05/2017	79.59	36.52	20.98	40.59
17	29/05/2017	93.52	51.05	15.94	33.66
18	01/06/2017	78.11	35.38	14.12	25.13
19	05/06/2017	67.41	30.38	22.96	34.73
20	08/06/2017	84.42	49.53	24.23	42.15
21	12/06/2017	80.15	48.28	19.98	32.67
22	15/06/2017	65.22	26.24	13.69	29.70
23	19/06/2017	91.24	54.16	29.00	36.44
24	22/06/2017	76.68	40.41	25.59	37.01
25	26/06/2017	64.12	34.16	20.97	32.44
26	29/06/2017	89.11	51.19	16.21	42.15
27	03/07/2017	74.14	31.22	13.71	29.61
28	06/07/2017	61.24	29.97	22.13	32.21
29	10/07/2017	89.65	51.19	25.97	45.21
30	13/07/2017	79.44	41.20	16.18	35.72
31	17/07/2017	70.11	34.99	10.28	31.08
32	20/07/2017	73.66	37.08	26.48	38.88
33	31/07/2017	90.24	52.44	18.79	49.96
34	03/08/2017	87.44	35.38	12.47	26.90
35	07/08/2017	58.78	27.89	21.50	34.09
36	10/08/2017	82.16	55.36	23.65	46.27
37	14/08/2017	70.38	36.63	16.34	36.99
38	17/08/2017	67.41	32.08	9.03	28.99
39	21/08/2017	73.47	38.74	22.36	31.19
40	24/08/2017	77.12	31.24	17.63	30.38
41	28/08/2017	85.13	37.91	16.77	34.56
42	31/08/2017	69.36	34.13	17.63	42.21
43	04/09/2017	79.60	36.52	26.39	31.56
44	07/09/2017	90.52	52.52	20.55	20.65
45	11/09/2017	66.20	29.47	14.67	35.57
46	14/09/2017	59.59	25.73	22.58	33.45
47	18/09/2017	78.48	33.62	16.52	38.45
48	21/09/2017	62.61	30.71	11.62	25.34
49	25/09/2017	82.40	45.43	18.62	40.59
50	28/09/2017	69.18	38.60	12.58	28.74


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

Table No. 5 Results of Day Time Noise level monitoring [APRIL 2017 TO SEPTEMBER 2017]

Noise Level Day Time dB (A)Leq*									
Sr. No.	Name of Location	LC Gate No.2		Starting Of Pile Approach		South West Corner at Pump House		North East Corner of Back up Area	
	Month	Max	Min	Max	Min	Max	Min	Max	Min
1.	April	73.0	68.6	74.3	71.1	74.6	61.1	65.4	62.5
2.	May	67.2	50.9	72.3	62.1	72.3	52.1	73.5	52.3
3.	June	66.5	50.9	72.9	62.0	74.3	54.2	74.2	55.4
4.	July	67.4	51.1	74.1	54.2	71.9	52.6	71.6	55.8
5.	August	65.7	49.8	72.5	53.4	70.5	50.1	72.0	54.4
6.	September	65.9	48.3	73.2	51.2	72.6	48.7	74.5	50.9

Table No. 6 Results of Night Time Noise level monitoring [APRIL 2017 TO SEPTEMBER 2017]

Noise Level Night Time dB (A)Leq*									
Sr. No.	Name of Location	LC Gate No.2		Starting Of Pile Approach		South West Corner at Pump House		North East Corner of Back up Area	
	Month	Max	Min	Max	Min	Max	Min	Max	Min
1.	April	69.8	66.5	69.5	64.8	68.7	62.8	68.8	55.7
2.	May	60.3	44.8	64.3	47.6	62.2	46.3	66.3	43.1
3.	June	63.6	45.7	67.3	51.2	63.8	47.3	69.3	44.2
4.	July	63.5	45.8	67.8	53.1	68.7	51.3	66.9	45.1
5.	August	61.5	44.8	66.8	52.1	66.7	45.3	68.3	47.1
6.	September	62.3	43.2	67.8	51.1	69.3	44.3	67.6	46.7

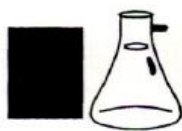
Ambient Air Quality Standards for Noise Specified by CPCB

Area Code	Category of Area/Zone	Limits in dB (A) Leq [#]	
		Day time	Night time
A	Industrial area	75	70

Notes:

- Day time shall mean from 6.00 a.m. to 10.00 p.m.
- Night time shall mean from 10.00 p.m. to 06.00 a.m.

[#]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)

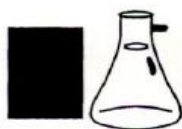
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Ambient Air Quality Monitoring & Noise quality Monitoring Locations

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 Of Back Up Area	N 22°55' 48.37' E 70°06 28.10'

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

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RESULTS OF SEA WATER MONITORING**Table No. 7 Results of Sea water [APRIL 2017 to SEPTEMBER 2017]**

Description of Sample : **Sea Water Samples** Quantity/No. of Samples : **10 Lit/Two**
 Sampling By : **Pollucon Laboratories Pvt. Ltd.** Sampling Procedure : **Grab**
 Packing/Seal : **Sealed** Protocol (purpose) : **Env. Monitoring**
 Test Method : **IS 3025 & APHA (22nd 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)	
			April-17		May-17		June-17	
			28/04/2017		23/05/2017		23/06/2017	
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM
1	pH	--	7.47	7.52	7.05	8.77	7.9	8.1
2	Temperature	°C	29	28	30	30	29	28
3	Total Suspended Solids	mg/L	56	62	38	42	42	51
4	BOD (3 Days@27°C)	mg/L	6	4	BDL*	BDL*	3	BDL*
5	Dissolved Oxygen	mg/L	5.6	4.8	5.4	4.6	5.6	4.4
6	Salinity	ppt	38.9	39.7	40.62	41.07	40.7	41.7
7	Oil & Grease	mg/L	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*
8	Nitrate as NO ₃	µmol/L	0.52	0.67	0.59	0.72	0.612	0.706
9	Nitrite as NO ₂	mg/L	0.071	0.077	0.071	0.053	0.218	0.079
10	Ammonical Nitrogen as NH ₃	mg/L	0.56	0.82	0.4	0.46	0.206	0.357
11	Phosphates as PO ₄	mg/L	1.03	1.89	0.13	0.2	0.182	0.239
12	Total Nitrogen	mg/L	1.16	1.58	1.061	1.234	1.036	1.142
13	Petroleum Hydrocarbon	µg/L	11	BDL*	4	BDL*	12	BDL*
14	Total Dissolved Solids	mg/L	43110	43980	47200	47990	48200	48800
15	COD	mg/L	22	16	20.4	30.6	28	20
16	Oxidisable Particular Organic Carbon	%	0.6	0.4	0.62	0.38	0.41	0.32
A	Flora and Fauna							
17.1	Primary Productivity	mgC/L/day	1.23	0.24	1.575	0.563	2.02	0.337
B	Phytoplankton							
18.1	Chlorophyll	mg/m ³	1.28	0.45	1.81	0.29	1.335	0.24
18.2	Phaeophytin	mg/m ³	0.98	1.43	0.072	1.55	0.627	1.816
18.3	Cell Count	Unit x 10 ³ /L	210	28	198	68	215	58
18.4	Name of Group Number and name of group species of each group	--	Bacillariophyceae <i>Asterionella sp.</i> <i>Coscinodiscus sp.</i> <i>Skeletonema sp.</i> <i>Rhizosolenia sp.</i> <i>Nitzschia sp.</i> <i>Cyclotella sp.</i>	Bacillariophyceae <i>Melosira sp.</i> <i>Fragillaria sp.</i> <i>Navicula sp.</i> -- -- -- -- --	Bacillariophyceae <i>Achnanthes sp.</i> <i>Cocconeis sp.</i> <i>Gomphonema sp.</i> <i>Pinnularia sp.</i> <i>Coscinodiscus sp.</i> <i>Skeletonema sp.</i> Green Algae <i>Chlorella sp.</i> <i>Hydrodictyon sp.</i> <i>Pediastrum sp.</i> Cyanophyceae <i>Spirulina sp.</i> <i>Oscillatoria sp.</i>	Bacillariophyceae <i>Pinnularia sp.</i> <i>Fragillaria sp.</i> <i>Nitzschia sp.</i> <i>Thallasiosira sp.</i> <i>Biddulphia sp.</i> Green Algae <i>Oedogonium sp.</i> <i>Pandorina sp.</i> Cyanophyceae <i>Oscillatoria sp.</i> <i>Lyngbya sp.</i> -- --	Bacillariophyceae <i>Coscinodiscus sp.</i> <i>Navicula sp.</i> <i>Melosira sp.</i> <i>Rhizosolenia sp.</i> <i>Achnanthes sp.</i> <i>Thallasiosira sp.</i> <i>Amphora sp.</i> <i>Cymbella sp.</i> <i>synedra</i>	Bacillariophyceae <i>Melosira sp.</i> <i>Fragillaria sp.</i> <i>Navicula sp.</i> -- -- -- -- --


H. T. Shah
 Lab Manager


Dr. Arun Bajpai
 Lab Manager (Q)



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C Zooplanktons								
19.1	Abundance (Population)	no/m ²	280	60	250	75	260	20
19.2	Name of Group Number and name of group species of each group	--	Daphnia Nematodes Hydrozoa -- -- --	Krill Cyclops -- -- -- --	Gastropods Chaetognathes Polychaete worms -- -- --	Copepods Ostracods Gastropods -- -- --	Gastropods Nematodes Foraminiferans Isopodes Crustaceans Polychaete worm	Gastropods -- -- -- --
19.3	Total Biomass	mL/ 100 m ³	89	12	112	7.8	163	2.54
D Microbiological Parameters								
20.1	Total Bacterial Count	CFU/ mL	1520	1680	1220	1050	1830	1420
20.2	Total Coliform	/mL	Absent	Absent	Absent	Absent	Absent	Absent
20.3	E.coli	/mL	Absent	Absent	Absent	Absent	Absent	Absent
20.4	Enterococcus species	/mL	Absent	Absent	Absent	Absent	Absent	Absent
20.5	Salmonella species	/mL	Absent	Absent	Absent	Absent	Absent	Absent
20.6	Shigella species	/mL	Absent	Absent	Absent	Absent	Absent	Absent
20.7	Vibrio species	/mL	Absent	Absent	Absent	Absent	Absent	Absent

Note: BDL*: Below Detection Limit, Minimum Detection Limit, BOD: 03 mg/L, Oil & Grease: 1.0 mg/L, Phaeophytin: 0.1 mg/m³, Petroleum Hydrocarbon: 10 µg/L**H. T. Shah**
Lab Manager**Dr. Arun Bajpai**
Lab Manager (Q)

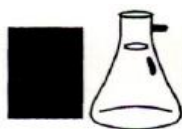


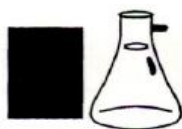
Table No. 8 Results of Sea water [APRIL 2017 to SEPTEMBER 2017]

SR. NO.	TEST PARAMETERS	UNIT	Near Jetty (M2)		Near Mouth of Creek (M1)		Near Jetty (M2)	
			July-17		August-17		September-17	
			28/07/2017		29/08/2017		19/09/2017	
			SURFACE	BOTTOM	SURFACE	BOTTOM	SURFACE	BOTTOM
1	pH	--	7.7	7.6	8.18	8.3	7.87	8.5
2	Temperature	°C	25.9	25.4	29	30	29	30
3	Total Suspended Solids	mg/L	290	316	36	38	30	34
4	BOD (3 Days @27°C)	mg/L	3.1	3.5	BDL*	BDL*	BDL*	BDL*
5	Dissolved Oxygen	mg/L	4.6	4.2	5.8	4.8	5.2	4.6
6	Salinity	ppt	37.4	37.5	33.6	34.8	31.45	32.07
7	Oil & Grease	mg/L	3.5	BDL*	<1.0	BDL*	BDL*	BDL*
8	Nitrate as NO ₃	µmol/L	12.5	14.2	0.59	0.69	0.53	0.68
9	Nitrite as NO ₂	mg/L	1.9	2.1	0.092	0.064	0.084	0.056
10	Ammonical Nitrogen as NH ₃	mg/L	1.8	1.7	0.258	0.37	0.38	0.44
11	Phosphates as PO ₄	mg/L	1.2	1.1	0.145	0.16	0.16	0.21
12	Total Nitrogen	mg/L	16	18	0.94	1.124	0.994	1.176
13	Petroleum Hydrocarbon	µg/L	7.6	5.2	12	BDL*	3	BDL*
14	Total Dissolved Solids	mg/L	36250	36340	46980	47220	38280	39860
15	COD	mg/L	32	24	30.9	41	20.83	31.24
A	Flora and Fauna							
16.1	Primary Productivity	mgC/L /day	1.4	1.1	1.463	0.113	2.300	0.600
B	Phytoplankton							
17.1	Chlorophyll	mg/m ³	1.9	1.1	1.522	0.774	3.31	0.053
17.2	Phaeophytin	mg/m ³	0.8	1.5	0.522	1.263	ND*	2.53
17.3	Cell Count	Unit x 10 ³ /L	120	95	208	75	275	79
17.4	Name of Group Number and name of group species of each group	--	Bacillariophyceae <i>Melosira sp.</i> <i>Coscinodiscus sp.</i> <i>Biddulphia sp.</i> <i>Skeletonema sp.</i>	Bacillariophyceae <i>Thalassiosira sp.</i> <i>Rhizosolenia sp.</i> <i>Pleurosigma sp.</i> <i>Coscinodiscus sp.</i>	Bacillariophyceae <i>Astrionella sp.</i> <i>Navicula sp.</i> <i>Nitzschia sp.</i> <i>Melosira sp.</i> <i>Coscinodiscus sp.</i> <i>Rhizosolenia sp.</i> <i>Skeletonema sp.</i> Cyanophyceae <i>Oscillatoria sp.</i> <i>Microcystis sp.</i> <i>Spirulina sp.</i> Grean Algae <i>Chlorella sp.</i> <i>Pandorina sp.</i> <i>Ulothrin sp.</i>	Bacillariophyceae <i>Cocconeis sp.</i> <i>Coscinodiscus sp.</i> <i>Navicula sp.</i> <i>Nitzschia sp.</i> <i>Melosira sp.</i> <i>Coscinodiscus sp.</i> <i>Rhizosolenia sp.</i> <i>Skeletonema sp.</i> Cyanophyceae <i>Oscillatoria sp.</i> <i>Spirulina sp.</i> Grean Algae <i>Chlorella sp.</i> Volvox --	Bacillariophyceae <i>Cocconeis sp.</i> <i>Coscinodiscus sp.</i> <i>Navicula sp.</i> <i>Pleurosigma sp.</i> <i>Skeletonema sp.</i> Cyanophyceae <i>Oscillatoria sp.</i> <i>Microcystis sp.</i> <i>Spirulina sp.</i> Grean Algae <i>Chlorella sp.</i> <i>Pandorina sp.</i> <i>Ulothrin sp.</i>	


H. T. Shah
Lab Manager




Dr. Arun Bajpai
Lab Manager (Q)



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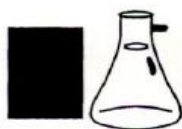
C	Zooplanktons						
18.1	Abundance (Population)	no/m ²	1600	280	60	650	
18.2	Name of Group Number and name of group species of each group	--	Cheatoceros sp. Amphiprora sp. Isopods Fish egg	Crustaceans Gastropods Copepods Mysids Snail	Echinodeams Polycheates worm -- --	Nauplivslaovae Decapods Nematodes Mysids Isopods	
18.3	Total Biomass	mL/100 m3	2.3	89	12	60	
D	Microbiological Parameters						
19.1	Total Bacterial Count	CFU/mL	2500	1340	1160	1280	
19.2	Total Coliform	/mL	Present	Absent	Absent	Present	Present
19.3	E.coli	/mL	Present	Absent	Absent	Present	Present
19.4	Enterococcus species	/mL	Absent	Absent	Absent	Absent	Absent
19.5	Salmonella species	/mL	Absent	Absent	Absent	Absent	Absent
19.6	Shigella species	/mL	Absent	Absent	Absent	Absent	Absent
19.7	Vibrio species	/mL	Present	Absent	Absent	Absent	Absent

Note: BDL*: Below Detection Limit, Minimum Detection Limit, BOD: 03 mg/L, Oil & Grease: 1.0 mg/L, Phaeophytin: 0.1 mg/m³, Petroleum Hydrocarbon: 10 µg/L

H. T. Shah
Lab Manager



Dr. Arun Bajpai
Lab Manager (Q)



RESULTS OF SEA SEDIMENT MONITORING

Table No. 9 Results of Sea Sediment [APRIL 2017 TO SEPTEMBER 2017]

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

SR. NO.	TEST PARAMETERS	UNIT	Near Mouth of Creek (M1)	Near Jetty (M2)	Near Mouth of Creek (M1)	Near Jetty (M2)	Near Mouth of Creek (M1)	Near Jetty (M2)
			April-17	May-17	June-17	July-17	August-17	September - 17
			28/04/2017	23/05/2017	23/06/2017	28/07/2017	29/08/2017	19/09/2017
1	Organic Matter	%	0.42	0.67	0.445	0.3	0.5	0.52
2	Phosphorus as P	mg/kg	289	354	239	350	404	371
3	Texture	--	Sandy	Sandy	Sandy	Sandy	Sandy	Sandy
4	Petroleum Hydrocarbon	mg/kg	BDL*	BDL*	BDL*	1.6	BDL*	BDL*
5	Heavy Metals							
5.1	Aluminum as Al	%	5.59	7	5.49	2.8	5.24	6.66
5.2	Total Chromium as Cr+3	mg/kg	47.98	118	49.73	175	112	122
5.3	Manganese as Mn	mg/kg	839	960	789	980	813	608
5.4	Iron as Fe	%	2.39	3.02	2.8	6.7	2.54	2.74
5.5	Nickel as Ni	mg/kg	31.36	37.98	39.86	68	39.98	40.64
5.6	Copper as Cu	mg/kg	61.77	40	81.99	49	88	110
5.7	Zinc as Zn	mg/kg	109	140	169	67	150	148
5.8	Lead as Pb	mg/kg	1	1.68	1.06	2.2	2.38	1.84
5.9	Mercury as Hg	mg/kg	BDL*	BDL*	BDL*	<0.01	BDL*	BDL*
6	Benthic Organisms							
6.1	Macrobenthos (No and name of groups present, No and name of species of each group present)	--	Polychaete worms Isopods	Polychaete worms Isopods Echinoderms	Isopods Polychaete worms	Polychaete worms Gastropods Isopods	Echinoderms Isopods Decapods Myside --	Polychaete worms Echinoderms Crabs
6.2	MeioBenthos (No and name of groups present, No and name of species of each group present)	--	Bryozoans Nematodes	Nematodes Copepods Foraminiferans	Nematodes Bryozoans	Foraminiferans	Matodesn Bryozoans	Copepods
6.3	Population	no/m2	314	503	377	59	385	288

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

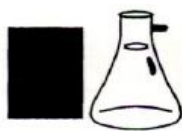


H. T. Shah
Lab Manager





Dr. Arun Bajpai
Lab Manager (Q)

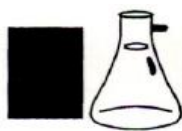
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Sea Water & Sea Sediment Locations

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

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

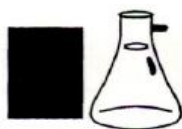
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RESULTS OF DRINKING WATER ANALYSIS**Standard Methods & Permissible limit for Drinking water**

SR. NO.	PARAMETERS	UNIT	DESIRABLE LIMIT AS PER IS:10500:2012	TEST METHOD
Chemical Parameters				
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 ₃	mg/L	Max 200	IS3025(P-21) 84EDTARE.02
8	Alkalinity	mg/L	Max 200	IS 3025(P-23)
9	Residual Free Chlorine	mg/L	Min 0.2	APHA(22 nd Edi)4500 Cl
10	Chloride as Cl	mg/L	Max 250	IS3025(P-32) 88Re.99Argentometric method
11	Calcium as Ca	mg/L	Max 75	IS3025(P40)91Re.03EDTA
12	Magnesium as Mg	mg/L	Max 30	IS3025(P46)94Re.99EDTA
13	Oil & Grease	mg/L	Max 0.5	IS3025(P-39)
14	Phenolic compounds as C ₆ H ₅ OH	mg/L	Max 0.001	IS3025(P43)92Re.03
15	Hexavalent Chromium as Cr ⁺⁶	mg/L	Max 0.05	APHA (22 nd Edi) 3500 Cr B
16	Cadmium as Cd	mg/L	Max 0.003	AAS-APHA(22 nd Edi) 3111 B
17	Copper as Cu	mg/L	Max 0.05	AAS-APHA(22 nd Edi) 3111 B
18	Zinc as Zn	mg/L	Max 5	AAS-APHA(22 nd Edi) 3111 B
19	Iron as Fe	mg/L	Max 0.3	AAS-APHA(22 nd Edi) 3111 B
20	Lead as Pb	mg/L	Max 0.01	AAS-APHA(22 nd Edi) 3111 B
21	Mercury as Hg	mg/L	Max 0.001	AAS-APHA 3112 B
22	Selenium as Se	mg/L	Max 0.01	AAS-APHA 3114 B
23	Aluminum as Al	mg/L	Max 0.03	AAS-APHA(22 nd Edi) 3111 B
24	Manganese as Mn	mg/L	Max 0.1	AAS-APHA(22 nd Edi) 3111 B
25	Arsenic as As	mg/L	Max 0.01	AAS-APHA(22 nd Edi) 3114 B
26	Sulphate as SO ₄	mg/L	Max 200	IS 3025(P-24)
27	Cyanide as CN	mg/L	Max 0.05	APHA(22 nd Edi)4500CN E
28	Boron as B	mg/L	Max 0.5	APHA(22 nd Edi)4500 B
29	Fluoride as F	mg/L	Max 1.0	APHA(22 nd Edi) 4500 F D SPANDS
30	Nitrate Nitrogen as NO ₃	mg/L	Max 45	IS3025(P34)88
31	Anionic Detergents as MBAS	mg/L	Max 0.2	14542/Methylene Blue extraction method
32	Pesticides	mg/L	Absent	GCMS
33	Coliform	/100 mL	Absent	APHA (22 nd 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 [APRIL 2017 TO SEPTEMBER 2017]

Results of Drinking Water [May -2017]

SR. NO.	PARAMETERS	UNIT	May - 2017
			23/05/2017
			Near Fertilizer Godown
Chemical Parameters			
1	Colour	Hazen	< 1.0
2	Odour	--	Agreeable
3	Taste	--	Agreeable
4	Turbidity	NTU	0.63
5	pH Value	--	7.78
6	Total Hardness as CaCO3	mg/L	90
7	Iron as Fe	mg/L	0.077
8	Chloride as Cl	mg/L	16.5
9	Residual Free Chlorine	mg/L	< 0.1
10	Fluoride as F	mg/L	0.09
11	Total Dissolved Solids	mg/L	110
12	Calcium as Ca	mg/L	16
13	Magnesium as Mg	mg/L	12.32
14	Copper as Cu	mg/L	BDL*
15	Manganese as Mn	mg/L	BDL*
16	Sulphate as SO4	mg/L	BDL*
17	Nitrate Nitrogen as NO3	mg/L	BDL*
18	Phenolic compounds as C6H5OH	mg/L	BDL*
19	Mercury as Hg	mg/L	BDL*
20	Cadmium as Cd	mg/L	BDL*
21	Selenium as Se	mg/L	BDL*
22	Arsenic as As	mg/L	BDL*
23	Cyanide as CN	mg/L	BDL*
24	Lead as Pb	mg/L	BDL*
25	Zinc as Zn	mg/L	0.13
26	Anionic Detergents as MBAS	mg/L	BDL*
27	Chromium as Cr+6	mg/L	BDL*
28	Mineral Oil	mg/L	BDL*
29	Alkalinity	mg/L	84
30	Aluminum as Al	mg/L	BDL*
31	Boron as B	mg/L	BDL*
32	Pesticides	mg/L	BDL*
Microbiological Parameters			
33	Coliform	/100 mL	Absent
34	E-Coli	/100 mL	Absent


H. T. Shah
Lab Manager




Dr. Arun Bajpai
Lab Manager (Q)

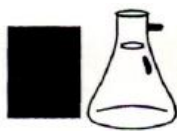
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Results of Drinking Water [Essential parameter in APRIL 2017 – SEPTEMBER 2017]

SR. NO.	TEST PARAMETERS	UNIT	July 2017	September 2017
			28/07/2017	19/09/2017
			Driver Rest Room	Driver Rest Room
1	Odour	--	Agreeable	Agreeable
2	Colour	Hazen	< 1.0	<1.0
3	Taste	--	Agreeable	Agreeable
4	pH	--	7.71	6.9
5	Turbidity	NTU	0.23	0.4
6	Total Dissolved Solids	mg/L	28	112
7	Total Hardness as CaCO ₃	mg/L	16	58
8	Residual Free Chlorine	mg/L	< 0.1	<0.1
9	Chloride as Cl	mg/L	2.24	21.74
10	Fluoride as F	mg/L	BDL*	0.2
11	Iron as Fe	mg/L	BDL*	0.11
12	Coliform	/100 mL	Absent	Absent
13	E-Coli	/100 mL	Absent	Absent

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



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Table No.11 Results of Sewage Water [APRIL 2017 TO SEPTEMBER 2017]

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

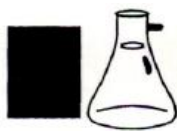
RESULTS OF SEWAGE WATER ANALYSIS

DATE OF SAMPLING			28/04/2017	
SR. NO.	PARAMETERS	UNIT	STP Inlet	STP Outlet
1	pH	--	6.86	8.01
2	Total Suspended Solids	mg/L	252	20
3	Residual Chlorine	mg/L	< 0.1	0.8
4	BOD (3 Days @ 27 oC)	mg/L	40	8

DATE OF SAMPLING			23/05/2017	
SR. NO.	PARAMETERS	UNIT	STP Inlet	STP Outlet
1	pH	--	5.92	7.01
2	Total Suspended Solids	mg/L	264	24
3	Residual Chlorine	mg/L	BDL*	0.7
4	BOD (3 Days @ 27 °C)	mg/L	58	14

DATE OF SAMPLING			23/06/2017	
SR. NO.	PARAMETERS	UNIT	STP Inlet	STP Outlet
1	pH	--	6.96	7.8
2	Total Suspended Solids	mg/L	234	22
3	Residual Chlorine	mg/L	< 0.1	0.7
4	BOD (3 Days @ 27 °C)	mg/L	46	6

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

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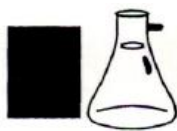
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DATE OF SAMPLING			28/07/2017	
SR. NO.	PARAMETERS	UNIT	STP Inlet	STP Outlet
1	pH	--	7.06	7.77
2	Total Suspended Solids	mg/L	222	22
3	Residual Chlorine	mg/L	< 0.1	0.6
4	BOD (3 Days @ 27 °C)	mg/L	48	7

DATE OF SAMPLING			29/08/2017	
SR. NO.	PARAMETERS	UNIT	STP Inlet	STP Outlet
1	pH	--	7.07	7.66
2	Total Suspended Solids	mg/L	198	28
3	Residual Chlorine	mg/L	<0.1	0.6
4	BOD (3 Days @ 27 °C)	mg/L	50	10

DATE OF SAMPLING			19/09/2017	
SR. NO.	PARAMETERS	UNIT	STP Inlet	STP Outlet
1	pH	--	6.97	8.01
2	Total Suspended Solids	mg/L	192	18
3	Residual Chlorine	mg/L	<0.1	0.5
4	BOD (3 Days @ 27 °C)	mg/L	52	10

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

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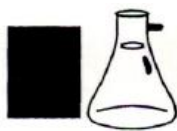
Table No.12 Results Of Stack Monitoring**Permissible limit for stack monitoring**

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

RESULTS OF STACK MONITORING

Date of Monitoring			26/06/2017		
Sampling Location			SS-1 DG Set -1 (125 KVA)	SS-2 DG Set -2 (125 KVA)	SS-3 DG Set -3 (125 KVA)
SR. NO.	TEST PARAMETER	UNIT	RESULTS		
1	Particulate Matter	mg/Nm ³	20.32	24.25	25.61
2	Sulfur Dioxide as SO ₂	ppm	6.36	5.37	7.43
3	Oxides of Nitrogen as NO _x	ppm	29.09	19.56	37.61

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



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Table No.13 Results Of Dump Pond Discharge

RESULTS OF DUMP POND DISCHARGE

Standard Methods & Permissible limit for Dump Pond Discharge

SR NO	TEST PARAMETER	UNIT	TEST/SAMPLING METHOD
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 oC)	mg/L	IS 3025 (P44)1993 Re.03Edition2.1
6	Dissolved Oxygen	mg/L	IS3025(P38)89Re.99
7	COD	mg/L	APHA(22ndEdi) 5520-D Open Reflux
8	Salinity	ppt	APHA 2550 B
9	Oil & Grease	mg/L	APHA(22ndEdi)5520D
10	Total Hardness as CaCO ₃	mg/L	IS3025(P-21) 84EDTARe.02
11	Fluoride as F	mg/L	APHA(22ndEdi) 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 nd Edition) 3111 B
14	Cadmium as Cd	mg/L	AAS - APHA (22 nd Edition) 3111 B
15	Lead as Pb	mg/L	AAS - APHA (22 nd Edition) 3111 B
16	Mercury as Hg	mg/L	AAS - APHA (22 nd Edition) 3112 B

Results of Dump Pond Discharge

Sampling Location			Dump Pond Near TTP	Dump Pond Near TTP
Date of Sampling			28/04/2017	19/09/2017
SR NO	TEST PARAMETER	UNIT	RESULTS	RESULTS
1	pH	--	7.77	7.23
2	Total Dissolved Solids	mg/L	10720	210
3	Total Suspended Solids	mg/L	36	12
4	Turbidity	NTU	4.36	10.76
5	BOD (3 Days @ 27 oC)	mg/L	156	66
6	Dissolved Oxygen	mg/L	5.2	4.8
7	COD	mg/L	706	274
8	Salinity	ppt	3.94	0.077
9	Oil & Grease	mg/L	BDL*	BDL*
10	Total Hardness as CaCO ₃	mg/L	6968	114
11	Fluoride as F	mg/L	0.742	0.42
12	Chloride as Cl	mg/L	2144	42.99
13	Zinc as Zn	mg/L	0.059	0.05
14	Cadmium as Cd	mg/L	BDL*	BDL*
15	Lead as Pb	mg/L	0.067	0.021
16	Mercury as Hg	mg/L	BDL*	BDL*

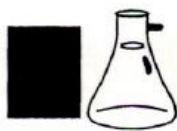


H. T. Shah
Lab Manager





Dr. Arun Bajpai
Lab Manager (Q)

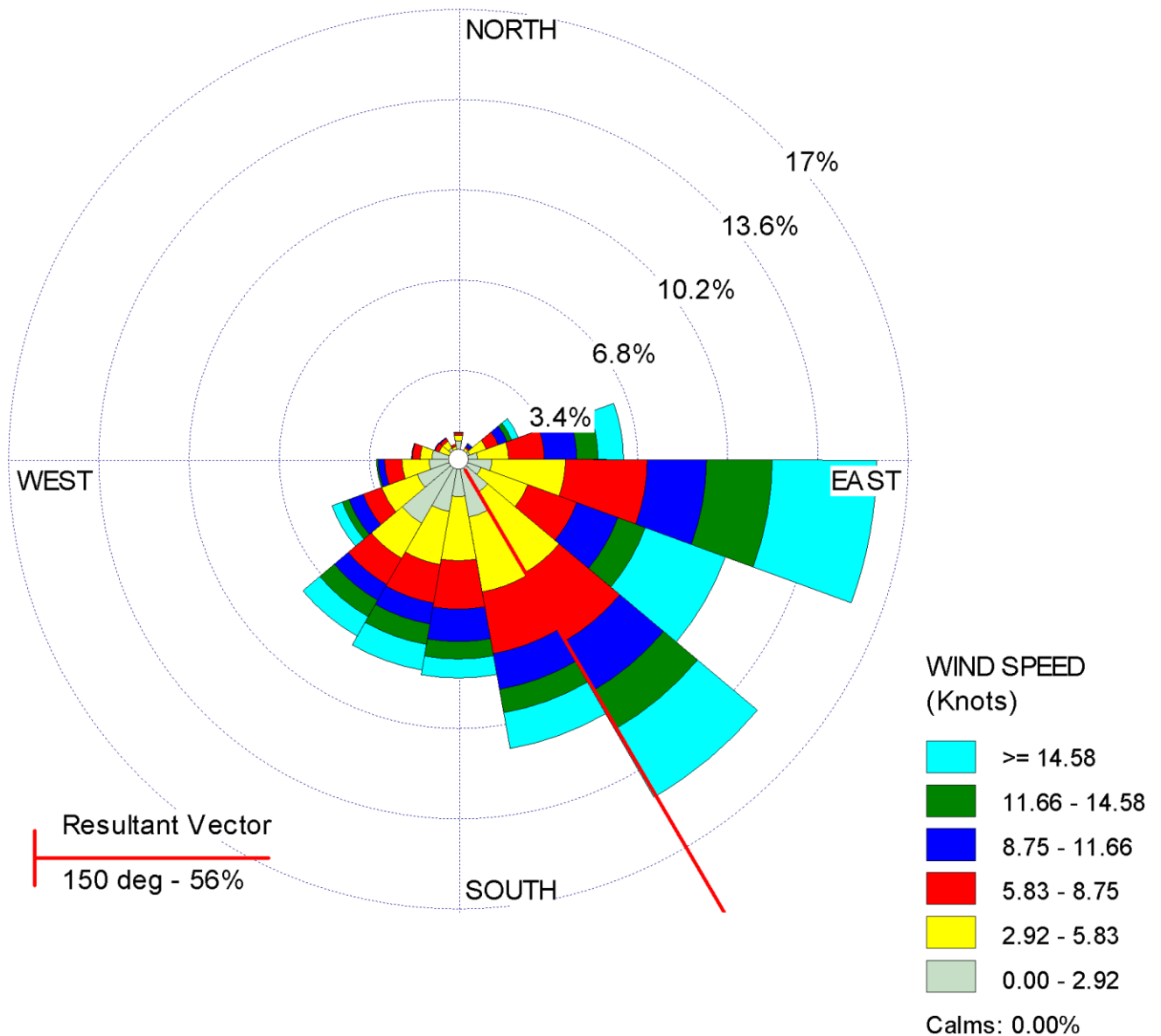


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Figure No.3 Wind Rose Diagram [APRIL 2017 – SEPTEMBER 2017]



H. T. Shah
Lab Manager



Dr. Arun Bajpai
Lab Manager (Q)

Annexure – 5

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

Annexure – 5: Details of CSR activities carried out by Adani Foundation.

SUMMARY OF TOTAL EXPENSE FOR CSR WORKS - TUNA				
No	Project detail	Village	Expense (Rs. In Lacs)	Status of work
Rural Infrastructure Development				
1	Wandi			
i	Repairing of existing water storage tanks	Wandi	0.94	better storage capacity in existing structures
ii	Construction of underground water storage tank- 100 KL	Wandi	12.00	created water storage 100 KL with water pipe 500 rmt for villagers
iii	Construction of village dispensary	Wandi	18.92	for better health facilitation by doctor
iv	Construction of internal road in village	Wandi	17.68	Total road length = 2600 rmt in village with metal and cc road
v	Construction of community hall	Wandi	14.94	for general event of villages like : marriage, community function etc.
vi	Construction of boundary wall in masjid	Wandi	9.19	total length of boundary = 250 rmt with gate
v	Providing dust bins for village cleaning	Wandi	1.00	for village cleaning purpose- 10 places
	TOTAL		74.67	
2	Tuna			
i	Repairing work in school	Tuna	0.6	for drinking water and sanitation repair
ii	Repairing work in rural clinic	Tuna	0.39	for better health facilitation
iii	Construction of fodder shed in village	Tuna	10.75	for fodder storage
iv	construction of boundary wall around fodder shed	Tuna	8.75	for fodder food of cows in boundary area
v	construction of boundary wall in Kabrastan	Tuna	18.21	for project of Kabrastan for Muslim community
vi	Construction of fodder shed in Wadi Vistar	Tuna	0.00	work in progress @ cost 9.00 lacs
	TOTAL		38.7	
3	Rampar			
i	Construction of underground water storage tank- 100 KL	Rampar	7.01	created water storage 100 KL for villagers
ii	Renovation of compound wall in school, Rampar	Rampar	2.37	Height of wall increased for school purpose
iii	Construction of study rooms for Muslim community	Rampar	5.67	for reading purpose of students
iv	Construction of boundary wall in crematorium with gate	Rampar	12.54	for protection of crematorium
v	Construction of fodder shed, Rampar	Rampar	10.01	for fodder storage
	TOTAL		37.60	
4	Veera fisherman			
i	Construction of water platform with pvc tank-3 no's	Veera	3.98	for drinking water storage
ii	Construction of temporary Balwadi room	Veera	1.78	for education purpose of kids

iii	Construction of metal road	Veera	8.62	3000 rmt road with metal for easy transportation
iv	Installation of solar lights	Veera	4.96	for lighting - total solar- 19
	TOTAL		19.34	
5	Ghavar fisherman			
i	Construction of water platform with pvc tank-3 nos	Ghavar	1.70	for drinking water storage
ii	Installation of solar lights	Ghavar	4.96	for lighting - total solar- 19
	TOTAL		6.66	
6	Takro fisherman			
i	Installation of solar lights	Takro	2.40	for lighting - total solar- 10
	TOTAL		179.30	
Health Projects				
1	Rural Clinic		1.54	2016/17
			0.45	2017/18
2	Medical Support		0.62	2016/17
			0.64	2017/18
3	Health Card to Sr.Citizen		0.73	2016/17
			0.24	2017/18
	Medical Support Poor Patient (Bhuj)		0.78	No of Patient -673
	TOTAL		5.00	
SLD (Social Livelihood) Projects				
1	Fodder Support			
	Tuna		53.62	43928 Mann (2014-2017)
	Rampar		34.89	27598 Mann (2014-2017)
			88.51	
2	Potable Water Supply	Veera	2.97	10000ltr per day
		Dhavarvaro	2.40	7500 ltr per day
	TOTAL		5.37	
Education Projects				
1	Furniture support to Primary School, Maulana Azad school kandla		0.64	
2	Education kit support for fishermen student.	Tuna cluster Total 9 schools	0.14	Support to 9 TO 12 standard 9 students who are in YMC school Bhadreswar.
	TOTAL		0.78	
Total Expense till date			279.03	

Rural Infrastructure Development



Health Projects



Annexure – 6

(5 ha Mangrove biodiversity plantation – final report by GUIDE)

**MULTI-SPECIES MANGROVE PLANTATION NEAR
SAT SAIDA BET-KANDLA
FINAL REPORT**

**Report Submitted to
Adani Kandla Bulk Terminal Pvt. Ltd.
Tuna-Kandla**

**Report Submitted by
T. JayanthiThivakar**

**Technical Assistance
Dr.G.A.Thivakaran
Marine Biologist
Gujarat Institute of Desert Ecology
Bhuj-Kachchh
September 2017**

MULTI-SPECIES MANGROVE PLANTATION NEAR SAT SAIDA BET, KANDLA

FINAL REPORT

1 Introduction

Kachchh coast is the home for largest mangroves of the Indian west coast with an extent of 789 sq.km. But mangrove formation of Kachchh is predominantly constituted by a single species, *Avicennia marina* with very sporadic distribution of three other true mangrove species namely, *Rhizophoramucronata*, *Ceriopstagal* and *Aegiceras corniculatum* only in few locations such as Mundra and Kandla. Inherent hyper-salinity, poor precipitation and other geomorphological factors significantly contribute to this single species dominance. In addition to this, for ongoing massive mangrove plantation efforts, mangrove plantation agencies mostly choose *A. marina* as the candidate species due to its tolerance to high salinity. With this background, Adani Kandla Bulk Terminal Pvt. Ltd., desired to carry out mangrove biodiversity plantation with more than one mangrove species as per Ministry of Environment, Forests and Climate Change (MoEF&CC) mandate. This multi-species plantation will also enable propagation of other species in this area as they are naturally occurring in Kandla area, where the present plantation in an area of five ha. has been carried out. The site chosen for this multi-species mangrove plantation is a minor Island system fringing the northern border of Sat Saida Bet, opposite to Kandla Port at Gandhidham taluka of Kachchh district. This final completion report narrates the results achieved in this multi-species mangrove plantation effort.

2. Objectives

Major objective of this multi-species mangrove plantation is to promote diversity among Kachchh mangroves. Accordingly, three candidate species namely, *Rhizophoramucronata*, *Ceriopstagal* and *Aegiceras corniculatum* have been chosen for plantation through the method of propagule dibbling. Though these three species were earlier recorded only at Mundra and Kandla mangroves, they occur only as very few individual plants in Kandla. Especially, only two individual plants of *Aegiceras corniculatum* are known to occur at Kandla creek systems and it is totally absent in Mundra mangrove formation. Further, propagation of these three species is totally curtailed apparently due to lack of propagule dispersal as only very few individuals are present. Hence, their plantation in large numbers will enable further propagation and spreading

of these species in Kandla and other regions of Kachchh. In addition, their occurrence in Kandla, albeit very few in numbers, attest their ability to survive in the elevated salinity regime of Kandla region.

3 Plantation Site

The present multi-species plantation was carried out at a minor Island on the northern border of Sat Saida Bet in Kandla creek systems (Fig. 1 & 2; Table 1). Availability of vast mudflat with good tidal inundation, proven suitability of the site as observed in the earlier plantation results and availability of skilled and trained labourers for plantation activity are the positive factors for choosing this site. Though the site has some accessibility issues due to its proximity to port premises, other positive factors negate this issue. The entire area around the Kandla Port Trust is in the possession of Kandla Port Trust (KPT) including the site where the present multi-species plantation was carried out.

Table 1: Co-Ordinates of Multi-Species Mangrove Plantation site

Planted Species	Latitude	Longitude
<i>Ceriopstagal</i>	23°5'42.437"N	70°14'15.5"E
	23°5'32.947"N	70°14'15.925"E
<i>Rhizophoramucronata</i>	23°5'30.822"N	70°14'12.667"E
	23°5'16.444"N	70°14'20.528"E
	23°5'33.088"N	70°14'18.616"E
	23°5'21.048"N	70°14'28.815"E
<i>Aegicerascorniculatum</i>	23°5'44.137"N	70°14'23.291"E
	23°5'34.009"N	70°14'27.611"E

4 Plantation Methodology

Propagule dibbling is the chosen method of plantation in the present attempt. Nursery method is a long drawn, time-consuming process and all the three species used presently have fruiting seasons in different months of the year requiring nursery development over an extended period of time. Similarly, raised bed (*Otla*) method is mostly adapted in sites with high tidal currents and its suitability for other species except *A. marina* is not proven. Contrarily, propagule dibbling is cost and time efficient and survival results and known quickly, enabling us to increase survival rates further within two months period.

At the chosen site, mangrove plantation through seed dibbling with an aim to achieve final surviving saplings of 6,565/ha was planned. In total, propagules of around 50,500 of all the three

species were used to raise this plantation, which, after 35% mortality was expected to produce a density of 6,565 plants/ha. Since the chosen three species require continuous water inundation, propagule dibbling was carried out in a linear fashion along minor creek banks which would get inundated almost daily. For *Ceriopstagal* and *Aegiceras corniculatum*, around 12,500 and 13000 propagules, respectively were dibbled whereas for *Rhizophoramucronata* around 25,000 propagules were dibbled along minor creek banks which would be equivalent to a total area of 5 hectares with a density of 6,565 plants/ha (considering 65% survival). Dibbling was carried out during different months extending from October 2016 to May 2017 (Table 2). All the propagules (seeds) used were procured from Jamnagar mangrove formations due to its proximity and identical environmental conditions.

Direct propagule dibbling method is widely used in Kachchh since it yields better survival at a lesser cost and results are known within a month period enabling remedial measures. This method is simple and even untrained labours can follow this method. Propagules once procured were dibbled within 10 days when they were still viable. To begin with, they were soaked in freshwater for more than 40 hours which triggered fast germination and increased survival rate. Since all the three species used require daily tidal flushing, they were dibbled along minor creek banks in a linear manner ensuring regular tidal flushing in almost all days of a month. Propagules were dibbled in such a way that nearly two-third remained outside the sediment while one-third of the propagule is inside the sediment. Half dibbling asphyxiates the propagule leading to its death and decay. Better results could be achieved by dibbling the propagule in a dug-out pit which loosens the sediment and enable easy anchorage of propagule roots and higher survival rate. Spacing of one meter was uniformly maintained between dibbled propagules throughout the exercise.

It is planned to carry out a survival assessment study during April 2018 in order to estimate gap filling requirement. If survival of any of the three species dibbled is less than 40%, additional gap filling activity will be undertaken from April-May, 2018 for *Aegiceras corniculatum* and *Rhizophora mucronata* and during October-November, 2018 for *Ceriops tagal* in order to rise the survival percentage more than 50%. However, additional financial resources will be required for this gap filling activity.

5 Results

***Ceriopstagal* Plantation**

Ceriopstagal was chosen as one of the candidate species due to its very sporadic occurrence in pockets of Kachchh coast, especially in Mundra and Kandla. Since this species is known to grow and propagate naturally in Kachchh waters, it is likely to yield better results in plantation. *Ceriopstagal* propagules of 12,500 were dibbled along the banks of minor creeks at a distance of one meter during the first week of October, 2016 (Fig. 3). Propagules of *Ceriopstagal* were procured from Jamnagar mangrove forests and they were soaked for a day in freshwater in order to enable fast germination before transportation to the site. Many adjacent minor creek systems were chosen to dibble the propagules. The propagules started germinating during early November 2016 after a period of about one month as water salinity was high having range of 39 to 40 ppt. Almost 80% survival was counted with around 10,000 propagules germinating by the end of December 2016 which declined to approx. 7,900 surviving saplings (63%) during end of May 2017 on completion of all the activities (Table 2).

***Rhizophoramucronata* Plantation**

During February 2017, seed dibbling for the next species, *Rhizophoramucronata* was initiated. Initially 10,000 propagules procured from Mundra mangrove forest were dibbled after freshwater soaking along the banks of the minor creek systems in a linear fashion similar to *C. tagal*. Here also a gap of 1 meter was followed. Initial germination results with these propagules collected from Mundra was not satisfactory due to reasons like unripe propagules faulty dibbling, etc. Out of 10,000 propagules sowed, only approx. 960 germinating and surviving saplings were counted, accounting for less than 10% survival. Following this, another 15,000 propagules of *R. mucronata* procured from Jamnagar mangrove forest were dibbled during the end of February 2017 along minor creek banks (Fig. 4). In total around 25,000 propagules of *R. mucronata* were dibbled with the assumption of producing at least 12,000 surviving saplings in the final count. As germination was slow due to higher water salinity in the range of 39-40ppt, first leaf in the dibbled propagules was recorded only during the end of March 2017. An initial germination percentage of 73% out of 25,000 propagules dibbled (i.e. around 18,250 propagules) was recorded by the end of April 2017. However, this declined further and a final surviving and

germinating propagules of approx. 14,250 accounting for 57% of the total dibbled propagules of 25000 could be counted during May 2017 (Table 2).

***Aegiceras Corniculatum* Plantation**

During end of April 2017, plantation of the third species, *Aegiceras corniculatum* was initiated. This species were chosen for the multi-species plantation since only two individuals of this species were observed in Sat Saida bet itself attesting its ability to survive and grow in the *milieu* of Kandla creek systems. Flowering and fruiting of this species occurs during April-September in a cyclic manner and propagule of this species is not easily available in Gujarat due to its sporadic distribution. In total, 13,000 propagules procured from Jamnagar mangrove forest were dibbled. To begin with, the propagules were thoroughly sorted for mature seeds and dibbled at a gap of 1 meter along minor creek systems (Fig. 5 & 6). They were also dibbled along with other two species in the gaps which would create a mosaic of all the three dibbled species. *Aegiceras corniculatum*, similar to other species is a frontline mangrove and requires regular tidal inundation. Hence, it was dibbled along creek banks where a regular water flushing is ensured. Dibbling was completed during the first week of May 2017 and assessment of survival rate of *A. corniculatum* carried out during end of May 2017 showed 8,190 (63%) saplings surviving and germinating (Table 2).

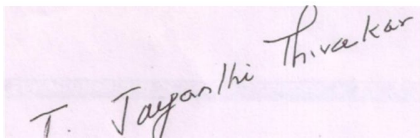
A final survival count of all the three species was carried out during the end of May 2017 which showed that out of total propagules of 50,500 dibbled, survival of approx. 30,340 seedlings were counted with the overall survival percentage of 60.07% (Table 2). While *C. tagal* and *R. mucronata* showed 63% survival, it was less for *R. mucronata* with only 57%. Since summer of 2017 has been tide over, only marginal decline in survival in the near future is anticipated. It is planned to carry out a survival assessment during the end of 2017.

Table 2. Details of Multi-Species Plantation near Sat Saida Bet-2016-17

Species	Time of dibbling	No of propagules dibbled	Final Surviving seedlings and % -May 2017
<i>Ceriopstagal</i>	October, 2016	12,500	7,900 (63%)
<i>Rhizophoramucronata</i>	February, 2017	25,000 (10,000+15,000)	14,250(57%)
<i>Aegiceras corniculatum</i>	April-May, 2017	13,000	8,190 (63%)
Total propagules		50,500	30,340 (60.07%)

6 Conclusion

Kachchh mangroves in the Northern shore of Gulf of Kachchh are predominantly single species formations unlike the northern Jamnagar coast where at least nine species of true mangroves have been reported in the literature. Though governing environmental conditions are similar, Kachchh mangroves were naturally rendered single species mostly due to lack of propagules dispersal from the southern Jamnagar shore. The present plantation of three chosen mangrove species is expected to propagate further rendering Kandla and other Kachchh coastal mangrove multi-species. Similar multi-species plantation ventures in a limited area of 5 to 10 ha will further stimulate the process and increase the population density of other species. As it is well known, a multi-species plantation will discharge better ecological services, increasing the coastal biodiversity manifold.



T. Jayanthi Thivakar, Contractor



G.A. Thivakaran, Technical Consultant

Fig. 1. Multi-Species Mangrove Plantation site near Sat Saida Bet, Kandla

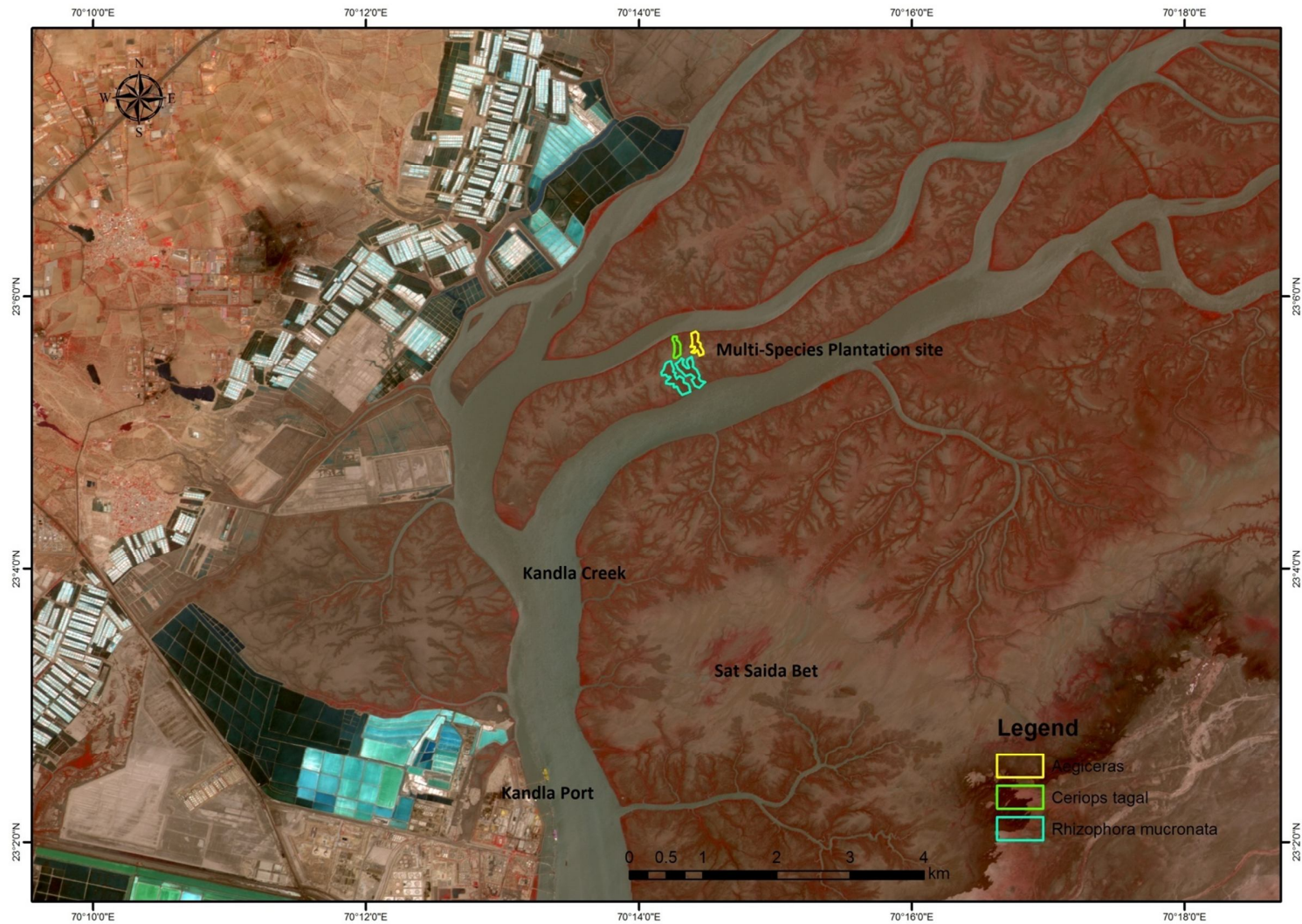


Fig. 2. Plantation Location of Three Mangrove Species along Minor Creek Systems

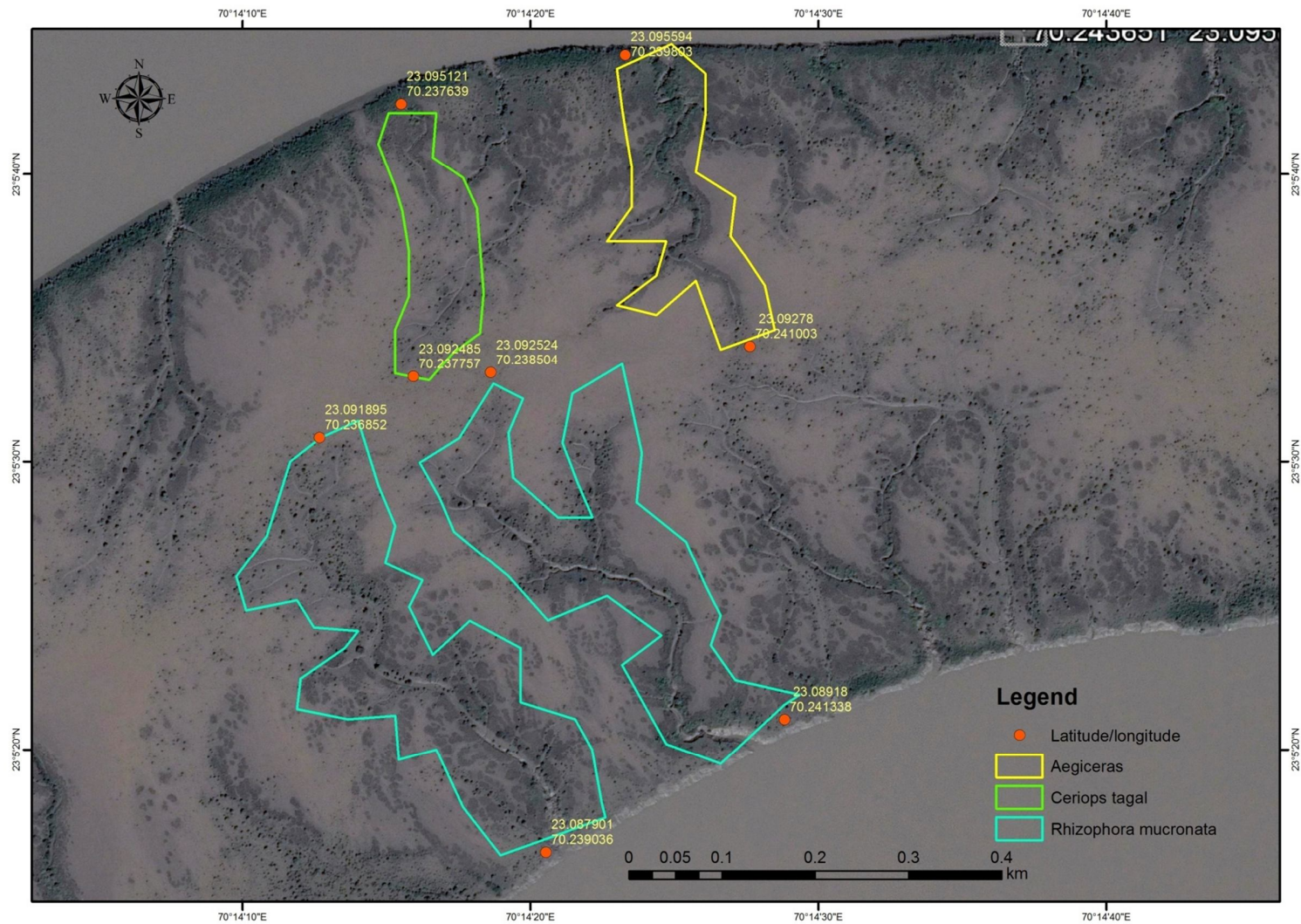


Fig. 3. *Ceriopstagal* Plantation carried out during October 2016



Fig. 4. Dibbled *Rizhophoramucronata* during February 2017



Figure 5: Sorting of *Aegiceras corniculatum* – May 2017



Figure 6: Planting of *Aegiceras corniculatum* during April – May 2017



Annexure – 7

(GREENBELT DETAILS OF TUNA PORT (AKBTPL) UP TO Nov.-2017)

GREENBELT DETAILS OF TUNA PORT (AKBTPL) UP TO Nov.-2017

Sr. No.	Green Zone Nos.	Location	Area (Ha)	Tree (No.)	Name of Species/Plant	Shrubs (SQM)	Green Carpet (SQM)	Palm (No.)
1	71a	SITE OFFICE BUILDING AND POB BUILDING AREA, SS-1 BUILDING	0.009	11	Neem (AZARDICA INDICA),			
			0.22	2190	CASURINA PLANT			
			0.01	25	Ficus Panda Topiary			
			0.03		Washingtonia f.f.			87
			0.003		Almunda Dwarf.	25		
			0.00		IXORA RED	15		
			0.03		Lilly (HYMENOCALLIS SPECIOSA)	275		
			0.0015		Euphorbia Milli	15		
			0.85	2115	Eucalyptus spp			
			0.00		Boungainvillia Red	25		
			0.03		Cycus			68
			0.06		Inermi	625		
			0.03		Coconut			79
			0.04		Clerodendron Inerme.	423		
			0.86		Flat lawn		8569	
			2.17	4341		1403.00	8569.00	234
2	71b	GREEN BELT AREA & PUM HOUSE	3.82	9549	Casurina Spp.			
			0.674	843	Neem (AZARDICA INDICA),			
			0.334	417	Peltophorum			
			1.79	4485	Eucalyptus spp			
			0.01		Coconut			34
			0.01		Inermi	50		
			0.00		IXORA RED	48		
			0.01		Nerrium	100		
			6.66	15294.00		198.00	0.00	0.00
3	71c	5KM. ROAD						
			0.40		Washingtonia F.F			1006
			0.40	0.00		0.00	0.00	1006.00
4	71d	SS-2 BUILDING AREA & Jetty Road						
			0.43	4262	Casurina Spp.			
			0.03	36	Neem (AZARDICA INDICA)			
			0.02	227	Casurina			
			0.09		Inermi	875.00		
			2.00	1251.00	Coconut			
			2.57	5776.00		875.00	0.00	0.00
5	71e	INTERNAL ROAD,	0.10		Washingtonia F.F			250.00
			0.72	7156	Casurina Spp.			

	RAILWAY BUILDING	0.13	143	Neem (AZARDICA INDICA),			
		0.114	143	Peltophorum			
		0.05	51	Neem (AZARDICA INDICA),			
		0.02	153	Casurina			
		1.17	2925	Eucalyptus spp			
		0.01		Flat lawn		60.78	
		0.00		Inermi	30		
		0.00		Clerodendron Inerme.	100		
		2.30	10571.00		130.00	60.78	250.00
Total		14.10	35982.00		2606.00	8629.78	1490



Near Adani canteen



Around POB office



Near SS-01 Building



5KM Road- Zero Point to Main Gate



Near SS-02 Building



Near Railway Building