



AMPTPL/ECR/CPCB /2017-18/06

9C  
Date: 20.12.2017

To  
**Chief Conservator of Forests,**  
Regional Office (SZ), Kendriya Sadan,  
IVth Floor, E&F Wings, 17th Main Road,  
Koramangala II Block, Bangalore-560034 (Karnataka).

Dear Sir,

**Sub :** Half yearly Compliance report of Environment and CRZ clearance for modernization and operation of Berth – 07 in M/s. Murmugao Port Trust – Reg.

**Ref :** Environmental and CRZ clearance for modernization of Berth No. 7 for coal handling granted to M/s Murmugao Port Trust vide letter dated 30<sup>th</sup> December, 2013 bearing F. No. 10-39/2009-IA.III.

Adani Mormugao Port Terminal Private Limited is concessionaire of M/s Murmugao Port Trust for Berth No. 7. Please find enclosed herewith condition wise compliance reports (Hard copy as well as in a CD) of conditions stipulated in the above referred clearance for the period of April-2017 to September-2017.

Thank you,  
Yours Faithfully,  
For M/s Adani Mormugao Port Terminal Private Limited

Mangesh Sangodkar  
(General Manager)

Encl: As above

Copy to:

1. **The Director (Monitoring – IA Division), Ministry of Environment, Forest & Climate Change, Indira Paryavaran Bhawan, Jor Bagh Road, New Delhi- 110003.**
2. **The Regional Officer, Central Pollution Control Board, 1<sup>st</sup> & 2<sup>nd</sup> Floor, Nisaraga bhawan, A Block, Thimmaiah Main Road, 7<sup>th</sup> D Cross, Shivanagar, opposite Pushpanjali theatre, Bengaluru – 560010.**
3. **The Member Secretary, Goa State Pollution Control board, Dempo Towers, 1<sup>st</sup> Floor, EDC Patto Plaza, Panaji, Goa-403001.**
4. **The Chairman, Murmugao Port trust, Administrative Office, Headland Sada, Murmugao, Goa – 403804.**

Adani Mormugao Port Terminal Pvt Ltd.  
Sub Station Building,  
Near Gate No. 2 of Mormugao Port Trust,  
Mormugao, 403 803,  
Goa, India

Tel: +91 832 2579200  
Fax: +91 832 2579299  
[info@adani.com](mailto:info@adani.com)  
[www.adani.com](http://www.adani.com)

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

DESPATCHER  
पर्यावरण वन् एवं जलवायु परिवर्तन मंत्रालय  
Ministry of Environment, Forests & Climate Change  
Gujarat, India  
पर्यावरण वन् एवं जलवायु परिवर्तन मंत्रालय  
Regional Office, Southern Zone  
केन्द्रीय सदन, चौथा तल, कोरमंगला  
Kendriya Sadan, 4th Floor, Koramangala  
बंगलुरु/Bengaluru-560 034



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सी. आर. अनुमति द्वारा प्राप्त किया  
Received by CR Section  
पर्यावरण एवं जलवायु परिवर्तन मंत्रालय  
Ministry of Environment, Forests & Climate Change  
भारत सरकार/Govt. of India  
इंदिरा पर्यावरण भवन/Indira Paryavaran Bhawan  
जारी करने वाला/Issued by: Jorbagh Road, Aliganj  
नई दिल्ली/New Delhi-110003

मंत्रालय  
पर्यावरण एवं जलवायु परिवर्तन मंत्रालय  
Ministry of Environment, Forests & Climate Change  
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28/12/17  
CENTRAL POLLUTION CONTROL BOARD  
MINISTRY OF ENVIRONMENT & FORESTS &  
CLIMATE CHANGE  
REGIONAL OFFICE (SOUTH)  
1ST & 2ND FLOOR, NISARAGA BHAWAN  
17TH 'D' MAIN, THIMMAIAH ROAD,  
SHIVANAGAR, BENGALURU - 560 079



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Goa State Pollution Control Board  
Panaji, Panaji, Goa  
Date: 20/12/17 Time:  
Inward no.:  
Receivers signature:



AMPTPL/ECR/CPCB /2017-18/06



Date: 20.12.2017

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<b>adani</b>	<b>Adani Mormugao Port Terminal Pvt.Ltd.</b>	<b>From : April 2017 To: September 2017</b>
<b>Status of conditions stipulated in Environmental and CRZ clearance.</b>		

**Half yearly Compliance report for Environment and CRZ Clearance for the modernization of Berth No. 7 for coal handling at Mormugao Port, Goa**

<b>Sr. No.</b>	<b>Conditions</b>	<b>Compliance</b>
<b>6</b>	<b>Specific Conditions</b>	
i	"Consent for Establishment" shall be obtained from Goa 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.	Complied, Consent to Establish (CTE) has been obtained from Goa Pollution Control Board vide letter No. 5/356/10-PCB/Vol. IV 8363 dated 02 <sup>nd</sup> March, 2012 and subsequently amendment in CTE vide letter No. 5/356/10-PCB/Vol. IV/379 dated 17 <sup>th</sup> April, 2012. Copies submitted with six monthly compliance reports dated 25 <sup>th</sup> November, 2014. Now construction completed and terminal is in operation with valid Consent from GSPCB.
ii	The project proponent shall provide lining for collection of run off from coal stockyard and the leachate shall be treated before disposal.	Complied, Runoff from Coal Stock Yard is being collected in RCC dump pond provided with proper lining. Settled water from dump pond is reused for dust suppression and settled coal solid particles is sent back to coal stock piles.
iii	The project proponent shall provide dry fog and sprinkling systems for effective dust suppression.	For effective dust suppression following measures are provided: <ul style="list-style-type: none"><li>• 224 Nos of dry fog dust suppression system has been provided in conveyor system and all transfer points.</li><li>• 45 Nos. Automatic Water Sprinklers have been provided at coal stock yard for dust suppression.</li><li>• 02 Nos Mist Canon provided. (one is mobile canon and other one tire mounted)</li></ul>
iv	Entire transportation of coal shall be in closed conveyor.	Complied, the coal is being transported through covered conveyor from jetty to silo/ stock yard. AMPTPL developed 2700 meters long covered conveyor system from jetty to silo including 11 closed transfer Points provided with DFDS nozzles.
v	There shall be no washing of conveyor belt	Noted and complying with.
vi	The project proponent shall provide wind screen min 15 m height fabric HDPE all along the periphery. The height shall be designed taking into account the wind velocity modelling etc. Also explore creepers in consultation with forest department.	Wind screen of MS structure along with HDPE fabric/perforated sheet of 15 meters height have been provided along the coal stacking yard facility and creepers are developed along the wind screen.

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<b>Status of conditions stipulated in Environmental and CRZ clearance.</b>		

<b>Half yearly Compliance report for Environment and CRZ Clearance for the modernization of Berth No. 7 for coal handling at Mormugao Port, Goa</b>		
<b>Sr. No.</b>	<b>Conditions</b>	<b>Compliance</b>
vii	Coal shall be kept under moist conditions using water sprinklers. Transportation shall be in closed conveyors with water spray.	The coal is being stored under the moist condition. Sprinklers are provided for the same. Coal is being transported through covered conveyors with inbuilt dry fog dust suppression system.
viii	All the conditions stipulated by Goa Coastal Zone Management Authority (GCZMA) vide letter No. GCZMA/S/13-14/09/360 dated 07.06.2013, shall be complied with.	Noted and Complied.
ix	Periodical study on shore line changes shall be conducted and mitigation carried out if necessary. The details shall be submitted along with the six monthly monitoring reports.	Not applicable as the said activity is taken up in the existing major port premises. This is an old berth and only modernization is done.
x	Oil spills if any shall be properly collected and disposed as per the Rules. Proper Oil Contingency Management Plan shall be put in place.	Complied, AMPTPL is handling dry cargo only such as coal. However, the AMPTPL is abiding by the Oil Spill Contingency Management Plan prepared by M/s MPT. (No such incident occurred till date)
xi	All the conditions stipulated in the earlier Clearances including the recommendations of Environment Management Plan, Disaster Management Plan shall be strictly complied with	Noted and being complied. All recommendations made in the Environment Management Plan as contained in the Environment Impact Assessment of the project are covered and effectively implemented.
xii	Cargo shall be unloaded directly into hopper from the ship and transported to the stack yards through closed conveyor system only. Inbuilt dust suppression systems shall be provided at hoppers and all the transfer points / storage yards. Cargo shall not be unloaded directly onto the Berth. Water meters shall be provided at different locations to record the consumption of water used for dust suppression and daily log shall be maintained.	Complied, coal is being unloaded directly into hopper from the ship and transported to the stack yards through closed conveyor system. In built dust suppression system has been provided in hoppers, transfer towers and storage yards to avoid fugitive emissions. Coal cargo is not being unloaded directly on berth.  AMPTPL has installed water meters and log sheet maintained to record water consumption in dust suppression system.  Monthly water cess returns is being submitted to GSPCB.

<b>adani</b>	<b>Adani Mormugao Port Terminal Pvt.Ltd.</b>	<b>From : April 2017</b> <b>To: September 2017</b>
<b>Status of conditions stipulated in Environmental and CRZ clearance.</b>		

<b>Half yearly Compliance report for Environment and CRZ Clearance for the modernization of Berth No. 7 for coal handling at Mormugao Port, Goa</b>		
<b>Sr. No.</b>	<b>Conditions</b>	<b>Compliance</b>
xiii	At least 15 m width of green belt along the periphery and 15 m width along the stockyard shall be undertaken including plantation of mangroves in consultation with Forest Department.	Green belt developed along the periphery and coal stock yard. Currently about <b>11233</b> plants are planted in port premises and survival rate is good. There is no mangrove in the vicinity of Berth No. 7.  In addition to existing we have planted <b>2350</b> saplings in current year.
xiv	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.	Complied, construction of the project is completed and currently it is operational.
xv	To prevent discharge of sewage and other liquid wastes including ballast into marine environment, adequate system for collection, treatment and disposal of liquid wastes must be provided.	The sewage is being collected in AMPTPL septic tanks and further it is send to Mormugao Port Trust Sewage Treatment Plant located at Baina. There is no discharge in marine environment. Ballast is not being taken by AMPTPL.
xvi	Necessary arrangements for the treatment of the effluents and solid wastes must be made and it must be ensured that the untreated effluents and solid wastes are not discharged into the water or on the beach; and no effluent or solid wastes shall be discharged on the beach.	Complied, domestic effluent is being sent to MPT - STP for treatment and solid waste generated is disposed to local authorities. No effluent or solid wastes is being discharged on the beach.
xvii	The quality of treated effluents, solid wastes, emissions and noise levels and the like, from project are must confirm to the standards laid down by the competent authorities including the Central or State Pollution Control Board under the Environment (Protection) Act 1986	Regular Environmental Monitoring is carried out to assess the quality of treated effluents from STP, Ambient Air Quality, Noise level are being monitored through NABL accredited laboratory. Copy of the monitoring report is enclosed as <b>Annexure -1</b>
xviii	All the mitigation measures submitted in the EIA report shall be prepared in a matrix format and the compliance for each mitigation plan shall be submitted to MoEF along with half yearly compliance report to MoEF-RO.	Compliance submitted through Half Yearly compliance of October-2016 to March-2017.

<b>adani</b>	<b>Adani Mormugao Port Terminal Pvt.Ltd.</b>	<b>From : April 2017 To: September 2017</b>
<b>Status of conditions stipulated in Environmental and CRZ clearance.</b>		

**Half yearly Compliance report for Environment and CRZ Clearance for the modernization of Berth No. 7 for coal handling at Mormugao Port, Goa**

<b>Sr. No.</b>	<b>Conditions</b>	<b>Compliance</b>
xix	The funds earmarked for environment management plan shall be included in the budget and this shall not be diverted for any other purpose.	Complied, AMPTPL has kept separate Budget earmarked for Environment Management Plan.  Budget allocated and being used for FY 17-18 is 34.3 Lakhs.
xx	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	AMPTPL has a well structured Environment Cell staffed with qualified manpower for implementation of the Environmental Management Plan under the supervision of a Senior Executive.

**7. General Conditions**

i	Appropriate measures must be taken while undertaking digging activities to avoid any likely degradation of water quality.	Compiled, construction activity is completed and project is in operational phase.
ii	Full support shall be extended to the officers of this Ministry/Regional Office at Bangalore 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.	Full support is extended to the officers of Ministry/Regional Office, MoEF as well as officers of Central and State Pollution Control Board during visits.
iii	A six-monthly monitoring report shall need to be submitted by the project proponents to the Regional Office of this Ministry at Bangalore regarding the implementation of the stipulated conditions.	Six monthly monitoring reports from April, 2017 to September, 2017 are enclosed as <b>Annexure - 1</b>
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.	Noted.
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.	Noted.
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.	Noted.

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<b>Status of conditions stipulated in Environmental and CRZ clearance.</b>		

<b>Half yearly Compliance report for Environment and CRZ Clearance for the modernization of Berth No. 7 for coal handling at Mormugao Port, Goa</b>		
<b>Sr. No.</b>	<b>Conditions</b>	<b>Compliance</b>
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.	Financial Closure Date: 14 <sup>th</sup> May, 2010 Concession agreement date with MPT: 22 <sup>nd</sup> September, 2009
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.	Complied by Mormugao Port Trust.
ix	Goa 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.	Noted.
8.	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.	Noted.
9.	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.	All applicable clearances from the concerned statutory authorities have been obtained.

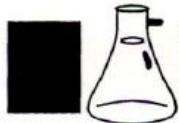
	Adani Mormugao Port Terminal Pvt.Ltd.	From : April 2017 To: September 2017
<b>Status of conditions stipulated in Environmental and CRZ clearance.</b>		

<b>Half yearly Compliance report for Environment and CRZ Clearance for the modernization of Berth No. 7 for coal handling at Murmugao Port, Goa</b>		
Sr. No.	Conditions	Compliance
10.	<p>The project proponent shall advertise in at least two local Newspapers widely circulated in the region, one of which shall be in the vernacular language informing that the project has been accorded Environmental and CRZ Clearance and copies of clearance letters are available with the Goa State Pollution Control Board and may also be seen on the website of the Ministry of Environment and Forests at <a href="http://www.envfor.nic.in">http://www.envfor.nic.in</a>. The advertisement should be made within 10 days from the date of receipt of the Clearance letter and a copy of the same should be forwarded to the Regional office of this Ministry at Bangalore.</p>	<p>MPT has given advertisement on 11<sup>th</sup> January, 2014 in the newspapers mentioned below.</p> <ol style="list-style-type: none"> <li>1) Sunaparant</li> <li>2) Times of India, Goa.</li> </ol>
11.	The 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.	Noted.
12.	Status of compliance to the various stipulated environmental conditions and environmental safeguards will be uploaded by the project proponent in its website.	<p>AMPTPL is regularly uploading the status of compliance on</p> <p>Link  <a href="http://www.adaniports.com/ports-downloads">http://www.adaniports.com/ports-downloads</a></p>
13.	Any appeal against this clearance shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.	Noted.
14.	A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zilla Parisaad/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 proponent.	Complied by Murmugao Port Trust.

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**Half yearly Compliance report for Environment and CRZ Clearance for the modernization of Berth No. 7 for coal handling at Mormugao Port, Goa**

<b>Sr. No.</b>	<b>Conditions</b>	<b>Compliance</b>
15.	The proponent shall upload the status of compliance of the stipulated Clearance 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.	AMPTPL is regularly uploading the status of compliance and monitoring results on its website. The same can be viewed on <a href="http://www.adaniports.com/ports-downloads">http://www.adaniports.com/ports-downloads</a>
16.	The environmental statement for each financial year ending 31 <sup>st</sup> March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of Clearance conditions and shall also be sent to the respective Regional Offices of MoEF by e-mail.	Form V of environment statement is submitted to Goa Pollution Control Board for the year FY 16-17 on 14 <sup>th</sup> July, 2017.  Copy of the same is available on the following web address. <a href="http://www.adaniports.com/ports-downloads">http://www.adaniports.com/ports-downloads</a>



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LABORATORIES PVT. LTD.

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

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

## "ENVIRONMENTAL MONITORING REPORT"

*FOR*

**adani**™

**ADANI MURMUGAO PORT TERMINAL PVT. LTD. (AMPTPL)  
GROUND FLOOR, PORT USERS COMPLEX,  
NEAR STATE BANK OF INDIA,  
MORMUGAO HARBOUR,  
GOA – 403 803, INDIA  
TEL NO. 832-2594253**

**APRIL 2017**

**PREPARED BY:**

**Pollucon**

**POLLUCON LABORATORIES PVT. LTD.  
544, BELGIUM TOWERS, RING ROAD, SURAT – 395 003  
PHONE/FAX (+91 261) 2455751, 2601106, 2601224  
E-mail: [pollucon@gmail.com](mailto:pollucon@gmail.com)      Web: [www.polluconlab.com](http://www.polluconlab.com)**

**T 0820 - 821**

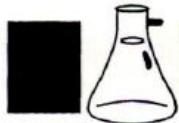
**ISO 9001:2008**

**ISO 14001:2004**

**OHSAS 18001:2007**

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## "ENVIRONMENTAL MONITORING REPORT"

*ZOR*

**ADANI MURMUGAO PORT TERMINAL PVT. LTD. (AMPTPL)  
GROUND FLOOR, PORT USERS COMPLEX,  
NEAR STATE BANK OF INDIA,  
MORMUGAO HARBOUR,  
GOA – 403 803, INDIA  
TEL NO. 832-2594253**

**For and on behalf of Pollucon Laboratories Pvt. Ltd., Surat**

**Approved by : Dr. Arun Kumar Bajpai**

**Signed :**

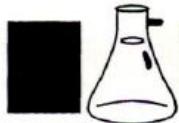


**Designation : Lab Manager (Q)**

**This report is prepared by Pollucon laboratories Pvt. Ltd. with all reasonable skills, care and diligence, incorporating our General Terms and Conditions of Business and taking account of the resources devoted. Name of the sampling location / sample identity details – provided by client itself.**

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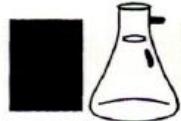
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SR. NO.	TITLE	PAGE NO.
1	<b>MARINE ECOLOGICAL SURVEY</b>	4
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2	<b>AMBIENT AIR QUALITY MONITORING TEST CERTIFICATE</b>	8
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4	<b>SEWAGE WATER (INLET &amp; OUTLET) TEST CERTIFICATE</b>	13
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## **MARINE ECOLOGICAL SURVEY**

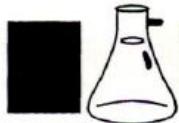
### **A. SEA WATER ANALYSIS**

**&**

### **B. SEDIMENT ANALYSIS**

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## TEST CERTIFICATE FOR SEA WATER

Page: 1 of 2

Location Number	:	1			
Name of Location	:	Sea Surface Water (Near Jetty)	Longitude		: N 15° 24.748'
Type of Sample	:	Marine Water Sample	Latitude		: E 073° 47.938'
Sampling Date	:	14/04/2017	Quantity/No. of Sample		: 10 Lit/Two
Sample Receipt Date	:	18/04/2017	Lab ID		: AG/1704/01 & 02
Date of Starting of Test	:	18/04/2017	Date of Completion		: 01/05/2017

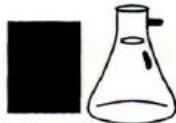
### RESULT TABLE

SR. NO.	TEST PARAMETERS	UNIT	RESULT		TEST/SAMPLING METHOD
			SURFACE	BOTTOM	
1	pH	--	8.03	8.15	IS3025 (P11)83Re.02
2	Temperature	°C	28	29	IS3025(P9)84Re.02
3	Total Suspended Solids	mg/L	76	88	IS3025(P17)84Re.02
4	BOD (3 Days @ 27 °C)	mg/L	BDL*	BDL*	IS 3025 (P44)1993 Re.03Edition2.1
5	Dissolved Oxygen	mg/L	5.2	4.6	IS3025(P38)89Re.99
6	Salinity	ppt	39.6	40.5	APHA 2550 B
7	Oil & Grease	mg/L	1.0	BDL*	APHA(22 <sup>nd</sup> Edi)5520D
8	Nitrate as NO <sub>3</sub>	mg/L	0.56	0.7	IS3025(P34)88
9	Nitrite as NO <sub>2</sub>	mg/L	0.046	0.05	IS3025(P34)88 NEDA
10	Ammonical Nitrogen as NH <sub>3</sub>	mg/L	0.32	0.43	IS3025(P34)88Cla.2.3
11	Phosphates as PO <sub>4</sub>	mg/L	0.16	0.31	APHA(22 <sup>nd</sup> Edi) 4500 C
12	Total Nitrogen	mg/L	0.92	1.19	IS3025(P34)88
13	Petroleum Hydrocarbon	µg/L	BDL*	BDL*	PLPL-TPH
14	Total Dissolved Solids	mg/L	46980	47420	IS3025(P16)84Re.02
15	COD	mg/L	22	19	APHA(22 <sup>nd</sup> Edi) 5520-D Open Reflux
16	Oxidisable Particular Organic Carbon	%	0.72	0.39	SOP – PLPL - 06
<b>A</b>	<b>Flora and Fauna</b>				
17.1	Primary Productivity	mgC/L/day	1.91	0.11	APHA (22 <sup>nd</sup> Edi) 10200-J

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**TEST CERTIFICATE FOR SEA WATER**  
**RESULT TABLE**

Page: 2 of 2

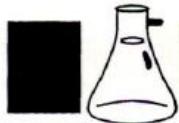
SR. NO.	TEST PARAMETERS	UNIT	RESULT		TEST/SAMPLING METHOD
			SURFACE	BOTTOM	
<b>B</b>	<b>Phytoplankton</b>				
18.1	Chlorophyll	mg/m <sup>3</sup>	1.81	0.24	APHA (22 <sup>nd</sup> Edi) 10200-H
18.2	Phaeophytin	mg/m <sup>3</sup>	0.14	1.64	APHA (22 <sup>nd</sup> Edi) 10200-H
18.3	Cell Count	Unit x 10 <sup>3</sup> /L	212	32	APHA (22 <sup>nd</sup> Edi) 10200-H
18.4	Name of Group Number and name of group species of each group	--	<b>Bacillariophyceae</b>	<b>Bacillariophyceae</b>	APHA (22 <sup>nd</sup> Edi) 10200-H
			<i>Nitzschia</i> sp.	<i>Nitzschia</i> sp.	
			<i>Coscinodiscus</i> sp.	<i>Synedra</i> sp.	
			<i>Rhizosolenia</i> sp.	<i>Fragillaria</i> sp.	
			<i>Fragillaria</i> sp.	<i>Cymbella</i> sp.	
			<b>Green Algae</b>	<i>Gyrosigma</i> sp.	
			<i>Volvox</i> sp.	<b>Green Algae</b>	
			<i>Chlorella</i> sp.	<i>Chlorella</i> sp.	
			<i>Pandorina</i> sp.	--	
			<b>Cyanophyceae</b>	--	
			<i>Oscillatoria</i> sp.	--	
<b>C</b>	<b>Zooplanktons</b>				
19.1	Abundance (Population)	no/m <sup>2</sup>	260	120	APHA (22 <sup>nd</sup> Edi) 10200-G
19.2	Name of Group Number and name of group species of each group	--	Krill	Gastropods	APHA (22 <sup>nd</sup> Edi) 10200-G
			Polychaete worms	Hydrozoans	
			Decapods	Mysids	
			Isopods	Snail	
			Hydrozoans	--	
19.3	Total Biomass	ml/100 m <sup>3</sup>	49	11	APHA (22 <sup>nd</sup> Edi) 10200-G
<b>D</b>	<b>Microbiological Parameters</b>				
20.1	Total Bacterial Count	CFU/ml	1870	1520	IS 5402:2002
20.2	Total Coliform	/ml	Absent	Absent	APHA(22ndEdi)9221-D
20.3	E.coli	/ml	Absent	Absent	IS:1622:1981Edi.2.4(2003-05)
20.4	Enterococcus species	/ml	Absent	Absent	IS:15186:2002
20.5	Salmonella species	/ml	Absent	Absent	IS:5887(P-3)
20.6	Shigella species	/ml	Absent	Absent	IS:1887(P-7)
20.7	Vibrio species	/ml	Absent	Absent	IS:5887(P-5)

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

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## TEST CERTIFICATE FOR SEA SEDIMENT

Location Number	: 1		
Name of Location	: Sea Sediment Water (Near Jetty)	Longitude	: N 15° 24.748'
Type of Sample	: Sediment Sample	Latitude	: E 073 ° 47.938'
Sampling Date	: 14/04/2017	Quantity/No. of Sample	: 10 Kg/One
Sample Receipt Date	: 18/04/2017	Lab ID	: AG/1704/03
Date of Starting of Test	: 18/04/2017	Date of Completion	: 01/05/2017

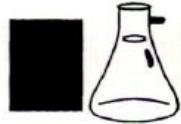
### RESULT TABLE

SR. NO.	TEST PARAMETERS	UNIT	RESULT	TEST/SAMPLING METHOD
			SEDIMENT	
1	Organic Matter	%	0.562	FCO: 2006
2	Phosphorus as P	mg/kg	146	APHA(22 <sup>nd</sup> Edi) 4500 C
3	Texture	--	Sandy	--
4	Petroleum Hydrocarbon	mg/kg	BDL*	PLPL-TPH
5	<b>Heavy Metals</b>			
5.1	Aluminum as Al	%	5.28	AAS APHA 3111 B
5.2	Total Chromium as Cr <sup>+3</sup>	mg/kg	0.39	AAS 3111B
5.3	Manganese as Mn	mg/kg	696	AAS APHA 3111 B
5.4	Iron as Fe	%	2.08	AAS APHA (22 <sup>nd</sup> Edi) 3111 B
5.5	Nickel as Ni	mg/kg	30.34	AAS APHA (22 <sup>nd</sup> Edi) 3111 B
5.6	Copper as Cu	mg/kg	52.11	AAS APHA (22 <sup>nd</sup> Edi) 3111 B
5.7	Zinc as Zn	mg/kg	58.47	AAS APHA (22 <sup>nd</sup> Edi) 3111 B
5.8	Lead as Pb	mg/kg	0.084	AAS APHA (22 <sup>nd</sup> Edi) 3111 B
5.9	Mercury as Hg	mg/kg	BDL*	AAS APHA- 3112 B
6	<b>Benthic Organisms</b>			
6.1	Macrobenthos (No and name of groups present, No and name of species of each group present)	--	Mysids Echinoderms Isopods	APHA (22 <sup>nd</sup> Edi) 10500-C
6.2	MeioBenthos (No and name of groups present, No and name of species of each group present)	--	Copepods	APHA (22 <sup>nd</sup> Edi) 10500-C
6.3	Population	no/m <sup>2</sup>	385	APHA (22 <sup>nd</sup> Edi) 10500-C

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

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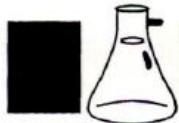


## **AMBIENT AIR QUALITY MONITORING**

## **TEST CERTIFICATE**

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## TEST CERTIFICATE FOR AMBIENT AIR QUALITY MONITORING

Location Number	: 1	Longitude	: N 15° 24.755'
Name of Location	: Sada Village	Latitude	: E 073° 47.942'
Type of Sample	: Ambient Air Quality Monitoring		
Sampling Duration	: 24 Hrs.		

### RESULT TABLE

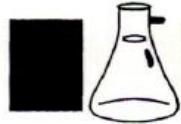
TEST PARAMETER	UNIT	DATE OF SAMPLING							LIMIT #	TEST/SAMPLING METHOD
		03/04/2017	06/04/2017	10/04/2017	13/04/2017	17/04/2017	20/04/2017	24/04/2017		
Lab ID (AGA/1704) [A - H]	2	5	8	11	14	17	20	23		
Wind Direction	WSW-ENE	S-N	SW-NE	W-E	NW-SE	SSE-NNW	SW-NE	WSW-ENE		
Particulate Matter (PM <sub>10</sub> )	µg/m <sup>3</sup>	90.35	81.25	76.65	86.25	98.20	89.65	95.36	70.33	100 IS:5182(Part 23):Gravimetric CPCB - Method (Vol.I,May-2011)
Particulate Matter (PM <sub>2.5</sub> )	µg/m <sup>3</sup>	34.17	46.25	38.75	41.67	59.58	40.83	48.33	28.33	60 Gravimetric- CPCB - Method (Vol.I,May-2011)
Lead as Pb	µg/m <sup>3</sup>	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	1.0 CPCB Method (Vol.I,May-2011)	
Benzo (a) Pyrene (BaP)- particulate phase only	ng/m <sup>3</sup>	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	1.0 CPCB Method (Vol.I,May-2011)	
Arsenic as As	ng/m <sup>3</sup>	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	6.0 CPCB Method (Vol.I,May-2011)	
Nickel as Ni	ng/m <sup>3</sup>	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	20 CPCB Method (Vol.I,May-2011)	
Carbon Monoxide as CO	mg/m <sup>3</sup>	0.38	0.50	0.34	0.49	0.60	0.44	0.51	0.32	4.0 NDIR Digital Gas Analyzer
Benzene as C <sub>6</sub> H <sub>6</sub>	µg/m <sup>3</sup>	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	5.0 IS 5182 (Part XI):2006/CPCB Method	
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	24.39	32.61	23.50	35.26	26.44	21.45	31.44	20.27	400 CPCB Method (Vol.I,May-2011)
Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	8.16	15.46	9.45	11.33	13.14	7.30	10.31	17.22	80 IS:5182(Part 2): Improved West and Gaeke
Oxides of Nitrogen (NO <sub>2</sub> )	µg/m <sup>3</sup>	21.61	29.99	35.63	32.82	25.35	20.80	34.53	24.53	80 IS:5182(Part 6):Modified Jacob & Hochheiser (Na-Arsenite)
Ozone (O <sub>3</sub> )\$	µg/m <sup>3</sup>	26.19	22.25	18.31	23.18	20.63	21.56	25.50	27.58	180 IS 5182 (PART IX) 1974/CPCB Method (Vol.I,May-2011)

Note: Limit#: Industrial, Residential, Rural and other Area Notification Dated 16th Nov.2009 as per national Ambient Air Quality Standards, CPCB New Delhi.

BDL\*: Below Detection Limit, Minimum Detection Limit, Lead as Pb (µg/m<sup>3</sup>):0.5, Benzo (a) Pyrene (BaP) - particulate phase only (ng/m<sup>3</sup>): 0.5, Nickel as Ni (ng/m<sup>3</sup>):10, Arsenic as As (ng/m<sup>3</sup>):2, Benzene as C<sub>6</sub>H<sub>6</sub> (µg/m<sup>3</sup>): 2

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## **NOISE MONITORING**

## **TEST CERTIFICATE**

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### TEST CERTIFICATE FOR NOISE MONITORING

Type of Sample	: <b>Noise Monitoring</b>	Test Method	: <b>IS:11702</b>
----------------	---------------------------	-------------	-------------------

#### Day Time Monitoring Report

Sampling Time	Fire Station	Near Security Tower	Sada Village	Adani Site Office Near Gate No.02
<b>Longitude</b>	<b>N 15° 24.523'</b>	<b>N 15° 24.438'</b>	<b>N 15° 24.755'</b>	<b>N 15° 24.607'</b>
<b>Latitude</b>	<b>E 073° 47.800'</b>	<b>E 073° 47.967'</b>	<b>E 073° 47.942'</b>	<b>E 073° 47.819'</b>
<b>Date of Monitoring</b>	<b>04/04/2017</b>	<b>07/04/2017</b>	<b>25/04/2017</b>	<b>12/04/2017</b>
6:00-7:00	45.5	40.0	42.2	40.3
7:00-8:00	48.1	45.2	45.0	43.5
8:00-9:00	45.7	45.6	48.7	41.6
9:00-10:00	50.7	50.6	45.9	46.1
10:00-11:00	55.6	48.8	50.4	49.1
11:00-12:00	58.1	48.2	43.0	50.0
12:00-13:00	55.5	52.7	51.5	51.3
13:00-14:00	50.9	54.0	53.1	50.2
14:00-15:00	48.6	56.7	49.2	52.2
15:00-16:00	50.5	55.2	50.5	50.7
16:00-17:00	55.0	57.9	52.4	49.6
17:00-18:00	56.9	52.1	51.6	48.4
18:00-19:00	53.3	50.3	48.9	48.5
19:00-20:00	50.1	49.3	49.9	46.0
20:00-21:00	49.4	47.0	47.3	44.2
21:00-22:00	48.0	49.5	48.3	44.8
Maximum	58.1	57.9	53.1	52.2
Minimum	45.5	40.0	42.2	40.3



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## TEST CERTIFICATE FOR NOISE MONITORING

Type of Sample	: <b>Noise Monitoring</b>	Test Method	: <b>IS:11702</b>
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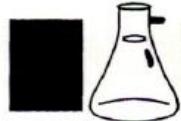
### Night Time Monitoring Report

Sampling Time	Fire Station	Near Security Tower	Sada Village	Adani Site Office Near Gate No.02
<b>Longitude</b>	<b>N 15° 24.523'</b>	<b>N 15° 24.438'</b>	<b>N 15° 24.755'</b>	<b>N 15° 24.607'</b>
<b>Latitude</b>	<b>E 073° 47.800'</b>	<b>E 073° 47.967'</b>	<b>E 073° 47.942'</b>	<b>E 073° 47.819'</b>
<b>Date of Monitoring</b>	<b>04/04/2017 &amp; 05/04/2017</b>	<b>07/04/2017 &amp; 08/04/2017</b>	<b>25/04/2017 &amp; 26/04/2017</b>	<b>12/04/2017 &amp; 13/04/2017</b>
22:00-23:00	49.8	48.0	46.5	45.7
23:00-00:00	48.6	46.4	48.1	44.3
00:00-01:00	45.2	48.3	44.7	45.5
01:00-02:00	44.8	46.2	46.8	43.8
02:00-03:00	47.3	45.6	47.4	41.4
03:00-04:00	48.4	44.5	44.9	40.1
04:00-05:00	46.3	42.0	45.4	42.4
05:00-06:00	45.3	43.9	42.5	40.3
Maximum	49.8	48.3	48.1	45.7
Minimum	44.8	42.0	42.5	40.1



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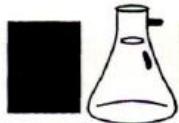
## **MONITORING OF SEWAGE WATER**

**(INLET & OUTLET)**

**MONTHLY TEST CERTIFICATE**

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### TEST CERTIFICATE FOR SEWAGE WATER

Location Number	: <b>1</b>	Quantity/No. of Samples	: <b>02 Lit/Two</b>
Name of Location	: <b>Near MPT Quarter STP</b>	Sampling Procedure	: <b>Grab</b>
Type of Sample	: <b>Sewage Water</b>	Lab ID	: <b>AG/1704/04 &amp; 05</b>
Date of Sampling	: <b>15/04/2017</b>	Date of Starting of Test	: <b>19/04/2017</b>
Date of Sample Receipt	: <b>19/04/2017</b>	Date of Completion	: <b>25/04/2017</b>

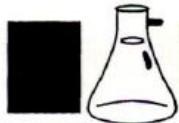
#### RESULT TABLE

TEST PARAMETER	UNIT	RESULTS		TEST/SAMPLING METHOD
		INLET	OUTLET	
pH	--	7.67	7.08	IS3025(P11)83Re.02
Total Suspended Solids	mg/L	98	22	IS3025(P17)84Re.02
BOD (3 Days @ 27 °C)	mg/L	52	19	IS3025 P44)1993Re.03Edition2.1
COD	mg/L	192	74	APHA(22 <sup>nd</sup> Edi) 5520-D Open Reflux
Oil & Grease	mg/L	1.47	BDL*	APHA(22 <sup>nd</sup> Edi)5520D
Residual Free Chlorine	mg/L	< 0.1	0.5	APHA(22 <sup>nd</sup> Edi)4500 CI

Not: BDL\*: Below Detection Limit: Minimum Detection Limit, Oil & Grease: 1.0 mg/L

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### TEST CERTIFICATE FOR SEWAGE WATER

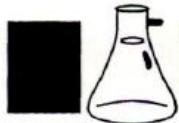
Location Number	: 2	Quantity/No. of Samples	: 02 Lit/One
Name of Location	: STP Outlet (Baina Severage Plant)	Sampling Procedure	: Grab
Type of Sample	: Sewage Water	Lab ID	: AG/1704/06
Date of Sampling	: 20/04/2017	Date of Starting of Test	: 22/04/2017
Date of Sample Receipt	: 22/04/2017	Date of Completion	: 28/04/2017

#### RESULT TABLE

TEST PARAMETER	UNIT	RESULTS	TEST/SAMPLING METHOD
		OUTLET	
pH	--	6.82	IS3025(P11)83Re.02
Total Suspended Solids	mg/L	106	IS3025(P17)84Re.02
BOD (3 Days @ 27 °C)	mg/L	40	IS3025 P44)1993Re.03Edition2.1
COD	mg/L	144	APHA(22 <sup>nd</sup> Edi) 5520-D Open Reflux
Oil & Grease	mg/L	1.2	APHA(22 <sup>nd</sup> Edi)5520D
Residual Free Chlorine	mg/L	0.5	APHA(22 <sup>nd</sup> Edi)4500 CI

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## **WEATHER DATA MONITORING MONTHLY TEST CERTIFICATE**

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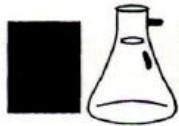
Page **16** of **18**

Date	Avg wind Speed (m/s)	Avg wind Direction (deg)	Temperature (°C)	RH %
01/04/2017	1.32	188.2	30	73.9
02/04/2017	1.39	210.4	29	71.1
03/04/2017	1.44	256.3	30	70.1
04/04/2017	1.50	272.4	29	75.3
05/04/2017	1.53	245.6	29	74.3
06/04/2017	1.67	185.6	30	75.2
07/04/2017	1.67	132.6	29	73.1
08/04/2017	1.79	174.2	29	67.6
09/04/2017	1.30	206.4	29	73.4
10/04/2017	1.50	231.5	30	74.4
11/04/2017	1.34	236.2	30	75.8
12/04/2017	1.67	282.6	30	77.9
13/04/2017	1.61	260.3	30	78.1
14/04/2017	1.76	295.6	30	75.1
15/04/2017	1.44	216.5	30	74.6
16/04/2017	1.34	289.7	30	74.1
17/04/2017	1.34	305.6	30	72.1
18/04/2017	1.39	246.5	30	73.4
19/04/2017	1.44	274.5	30	74.1
20/04/2017	1.19	154.8	30	74.9
21/04/2017	1.32	126.8	30	73.1
22/04/2017	1.50	317.8	30	70.5
23/04/2017	1.50	248.5	30	74.4
24/04/2017	1.35	230.6	30	72.9
25/04/2017	1.63	216.3	30	71.1
26/04/2017	1.87	178.6	30	66.0
27/04/2017	1.48	264.5	30	72.7
28/04/2017	1.44	232.6	30	70.7
29/04/2017	1.88	278.5	30	72.4
30/04/2017	1.26	244.2	27	87.0

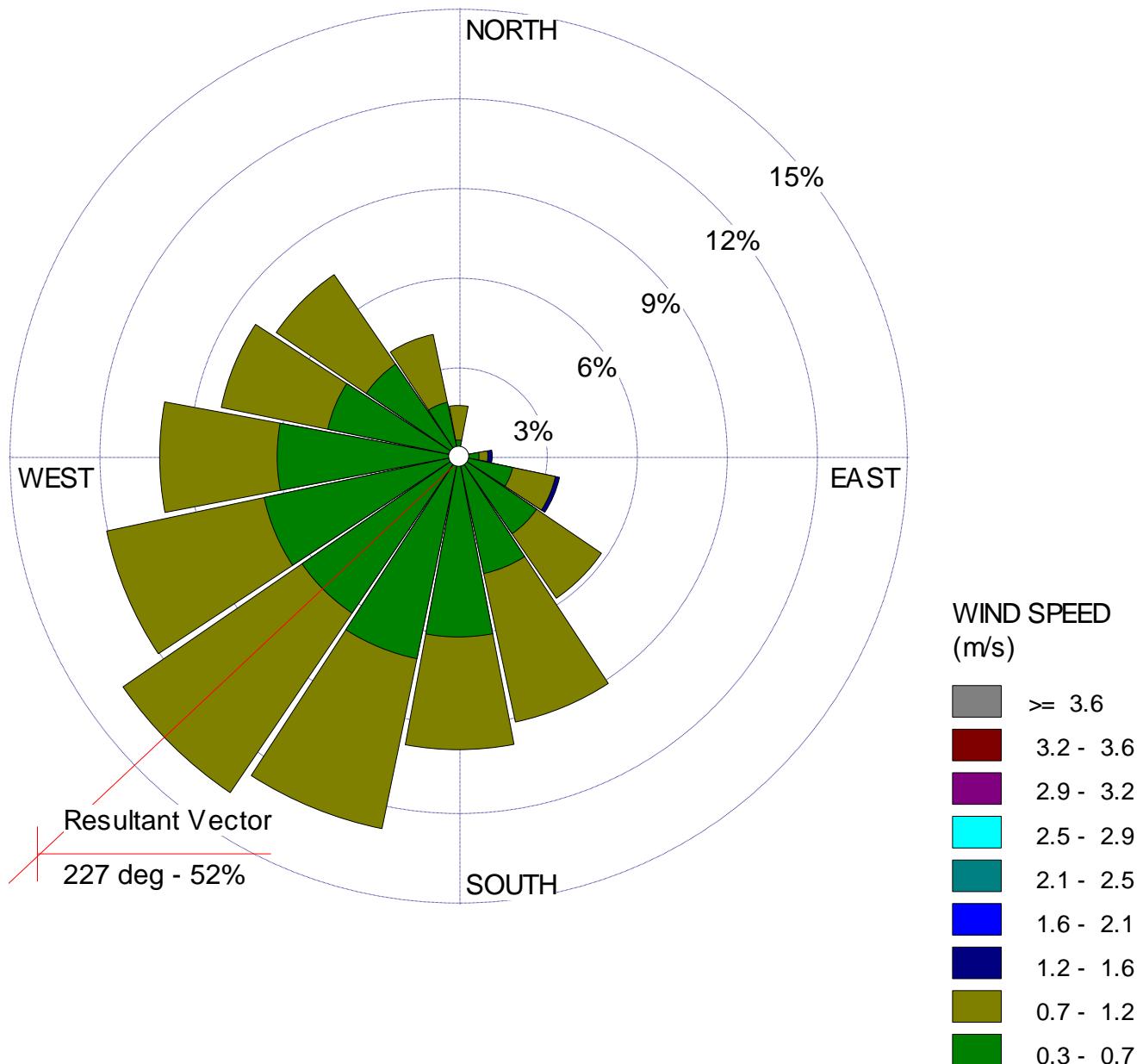


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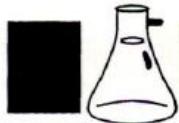


## WIND ROSE DIAGRAM APRIL 2017



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## "ENVIRONMENTAL MONITORING REPORT"

FOR



**ADANI MURMUGAO PORT TERMINAL PVT. LTD. (AMPTPL)**  
**GROUND FLOOR, PORT USERS COMPLEX,**  
**NEAR STATE BANK OF INDIA,**  
**MORMUGAO HARBOUR,**  
**GOA – 403 803, INDIA**  
**TEL NO. 832-2594253**

**MAY 2017**

**PREPARED BY:**



**POLLUCON LABORATORIES PVT. LTD.**  
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**T 0820 - 821**

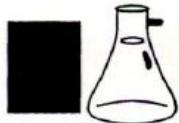
**ISO 9001:2008**

**ISO 14001:2004**

**OHSAS 18001:2007**

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**POLLUCON**

LABORATORIES PVT. LTD.

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

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## "ENVIRONMENTAL MONITORING REPORT"

FOR

**ADANI MURMUGAO**

**adani**™

**PORT TERMINAL PVT.**

**LTD. (AMPTPL)**  
**GROUND FLOOR, PORT USERS COMPLEX,**  
**NEAR STATE BANK OF INDIA,**  
**MORMUGAO HARBOUR,**  
**GOA – 403 803, INDIA**  
**TEL NO. 832-2594253**

For and on behalf of Pollucon Laboratories Pvt. Ltd., Surat

Approved by : Dr. Arun Kumar Bajpai

Signed :



Designation : Lab Manager (Q)

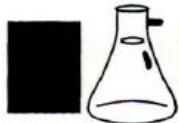
This report is prepared by Pollucon laboratories Pvt. Ltd. with all reasonable skills, care and diligence, incorporating our General Terms and Conditions of Business and taking account of the resources devoted. Name of the sampling location / sample identity details – provided by client itself.

## INDEX



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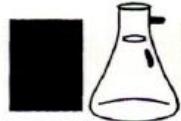
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SR. NO.	TITLE	PAGE NO.
1	<b>MARINE ECOLOGICAL SURVEY</b>	<b>4</b>
A	<b>SEA WATER TEST CERTIFICATE</b>	<b>5</b>
B	<b>SEDIMENT TEST CERTIFICATE</b>	<b>7</b>
2	<b>AMBIENT AIR QUALITY MONITORING TEST CERTIFICATE</b>	<b>8</b>
3	<b>NOISE MONITORING TEST CERTIFICATE</b>	<b>10</b>
4	<b>SEWAGE WATER (INLET &amp; OUTLET) TEST CERTIFICATE</b>	<b>13</b>
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## **MARINE ECOLOGICAL SURVEY**

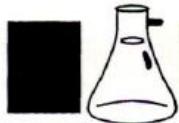
### **A. SEA WATER ANALYSIS**

**&**

### **B. SEDIMENT ANALYSIS**

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## TEST CERTIFICATE FOR SEA WATER

Page: 1 of 2

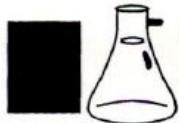
Location Number	:	1			
Name of Location	:	<b>Sea Surface Water (Near Jetty)</b>	Longitude	:	<b>N 15° 24.748'</b>
Type of Sample	:	<b>Marine Water Sample</b>	Latitude	:	<b>E 073° 47.938'</b>
Sampling Date	:	<b>19/05/2017</b>	Quantity/No. of Sample	:	<b>10 Lit/Two</b>
Sample Receipt Date	:	<b>23/05/2017</b>	Lab ID	:	<b>AG/1705/03 &amp; 04</b>
Date of Starting of Test	:	<b>23/05/2017</b>	Date of Completion	:	<b>30/05/2017</b>

### RESULT TABLE

SR. NO.	TEST PARAMETERS	UNIT	RESULT		TEST/SAMPLING METHOD
			SURFACE	BOTTOM	
1	pH	--	8.11	8.17	IS3025 (P11)83Re.02
2	Temperature	°C	29	30	IS3025(P9)84Re.02
3	Total Suspended Solids	mg/L	54	98	IS3025(P17)84Re.02
4	BOD (3 Days @ 27 °C)	mg/L	BDL*	BDL*	IS 3025 (P44)1993 Re.03Edition2.1
5	Dissolved Oxygen	mg/L	5.4	4.8	IS3025(P38)89Re.99
6	Salinity	ppt	40.4	38.7	APHA 2550 B
7	Oil & Grease	mg/L	BDL*	BDL*	APHA(22 <sup>nd</sup> Edi)5520D
8	Nitrate as NO <sub>3</sub>	mg/L	0.582	0.734	IS3025(P34)88
9	Nitrite as NO <sub>2</sub>	mg/L	0.08	0.085	IS3025(P34)88 NEDA
10	Ammonical Nitrogen as NH <sub>3</sub>	mg/L	0.69	0.88	IS3025(P34)88Cla.2.3
11	Phosphates as PO <sub>4</sub>	mg/L	2.08	2.72	APHA(22 <sup>nd</sup> Edi) 4500 C
12	Total Nitrogen	mg/L	0.82	0.96	IS3025(P34)88
13	Petroleum Hydrocarbon	µg/L	BDL*	BDL*	PLPL-TPH
14	Total Dissolved Solids	mg/L	46890	47260	IS3025(P16)84Re.02
15	COD	mg/L	20	18	APHA(22 <sup>nd</sup> Edi) 5520-D Open Reflux
16	Oxidisable Particular Organic Carbon	%	0.5	0.44	SOP – PLPL - 06
<b>A</b>	<b>Flora and Fauna</b>				
17.1	Primary Productivity	mgC/L/day	1.688	0.788	APHA (22 <sup>nd</sup> Edi) 10200-J
<i>Continue...</i>					

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**TEST CERTIFICATE FOR SEA WATER**  
**RESULT TABLE**

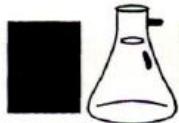
Page: 2 of 2

SR. NO.	TEST PARAMETERS	UNIT	RESULT		TEST/SAMPLING METHOD
			SURFACE	BOTTOM	
<b>B</b>	<b>Phytoplankton</b>				
18.1	Chlorophyll	mg/m <sup>3</sup>	2.35	0.24	APHA (22 <sup>nd</sup> Edi) 10200-H
18.2	Phaeophytin	mg/m <sup>3</sup>	BDL*	1.816	APHA (22 <sup>nd</sup> Edi) 10200-H
18.3	Cell Count	Unit x 10 <sup>3</sup> /L	225	49	APHA (22 <sup>nd</sup> Edi) 10200-H
18.4	Name of Group Number and name of group species of each group	--	<b>Bacillariophyceae</b> <i>Asterionella</i> sp. <i>Coscinodiscus</i> sp. <i>Navicula</i> sp.. <i>Skeletonema</i> sp. <i>Fragillaria</i> sp. <i>Gomphonema</i> sp. <b>Green Algae</b> <i>Chlorella</i> sp. <b>Green Algae</b> <i>Ankistrodesmus</i> sp. <i>Chlorella</i> sp. <i>Pediastrum</i> sp. <i>Ulothrix</i> sp. <b>Cyanophyceae</b> <i>Anabaena</i> sp. <i>Oscillatoria</i> sp.	<b>Bacillariophyceae</b> <i>Nitzschia</i> sp. <i>Gyrosigma</i> sp. <i>Pinnularia</i> sp. <i>Gomphonema</i> sp. <b>Green Algae</b> <i>Chlorella</i> sp. <i>Ulothrix</i> sp. <i>Spirogyra</i> sp. <b>Cyanophyceae</b> <i>Anabaena</i> sp. <i>--</i> <b>Cyanophyceae</b> <i>Anabaena</i> sp. <i>--</i>	APHA (22 <sup>nd</sup> Edi) 10200-H
<b>C</b>	<b>Zooplanktons</b>				
19.1	Abundance (Population)	no/m <sup>2</sup>	350	75	APHA (22 <sup>nd</sup> Edi) 10200-G
19.2	Name of Group Number and name of group species of each group	--	<i>Daphnia</i> <i>Ostracods</i> <i>Decapods</i> <i>Copepods</i> <i>Krill</i>	Copepods Gastropods Crustaceans <i>--</i> <i>--</i>	APHA (22 <sup>nd</sup> Edi) 10200-G
19.3	Total Biomass	ml/100 m <sup>3</sup>	82.5	7.9	APHA (22 <sup>nd</sup> Edi) 10200-G
<b>D</b>	<b>Microbiological Parameters</b>				
20.1	Total Bacterial Count	CFU/ml	1460	1020	IS 5402:2002
20.2	Total Coliform	/ml	Absent	Absent	APHA(22ndEdi)9221-D
20.3	E.coli	/ml	Absent	Absent	IS:1622:1981Edi.2.4(2003-05)
20.4	Enterococcus species	/ml	Absent	Absent	IS:15186:2002
20.5	Salmonella species	/ml	Absent	Absent	IS:5887(P-3)
20.6	Shigella species	/ml	Absent	Absent	IS:1887(P-7)
20.7	Vibrio species	/ml	Absent	Absent	IS:5887(P-5)

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

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## TEST CERTIFICATE FOR SEA SEDIMENT

Location Number	: 1		
Name of Location	: Sea Sediment Water (Near Jetty)	Longitude	: N 15° 24.748'
Type of Sample	: Sediment Sample	Latitude	: E 073 ° 47.938'
Sampling Date	: 19/05/2017	Quantity/No. of Sample	: 10 Kg/One
Sample Receipt Date	: 23/05/2017	Lab ID	: AG/1705/05
Date of Starting of Test	: 23/05/2017	Date of Completion	: 30/05/2017

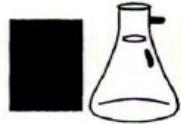
### RESULT TABLE

SR. NO.	TEST PARAMETERS	UNIT	RESULT	TEST/SAMPLING METHOD
			SEDIMENT	
1	Organic Matter	%	0.562	FCO: 2006
2	Phosphorus as P	mg/kg	146	APHA(22 <sup>nd</sup> Edi) 4500 C
3	Texture	--	Sandy	--
4	Petroleum Hydrocarbon	mg/kg	BDL*	PLPL-TPH
5	<b>Heavy Metals</b>			
5.1	Aluminum as Al	%	5.28	AAS APHA 3111 B
5.2	Total Chromium as Cr <sup>+3</sup>	mg/kg	0.39	AAS 3111B
5.3	Manganese as Mn	mg/kg	696	AAS APHA 3111 B
5.4	Iron as Fe	%	2.08	AAS APHA (22 <sup>nd</sup> Edi) 3111 B
5.5	Nickel as Ni	mg/kg	30.34	AAS APHA (22 <sup>nd</sup> Edi) 3111 B
5.6	Copper as Cu	mg/kg	52.11	AAS APHA (22 <sup>nd</sup> Edi) 3111 B
5.7	Zinc as Zn	mg/kg	58.47	AAS APHA (22 <sup>nd</sup> Edi) 3111 B
5.8	Lead as Pb	mg/kg	0.084	AAS APHA (22 <sup>nd</sup> Edi) 3111 B
5.9	Mercury as Hg	mg/kg	BDL*	AAS APHA- 3112 B
6	<b>Benthic Organisms</b>			
6.1	Macrobenthos (No and name of groups present, No and name of species of each group present)	--	Mysids Echinoderms Isopods	APHA (22 <sup>nd</sup> Edi) 10500-C
6.2	MeioBenthos (No and name of groups present, No and name of species of each group present)	--	Copepods	APHA (22 <sup>nd</sup> Edi) 10500-C
6.3	Population	no/m <sup>2</sup>	385	APHA (22 <sup>nd</sup> Edi) 10500-C

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

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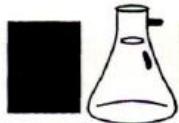


## **AMBIENT AIR QUALITY MONITORING**

## **TEST CERTIFICATE**

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TEST CERTIFICATE FOR AMBIENT AIR QUALITY MONITORING

Location Number	: 1								
Name of Location	: Sada Village			Longitude					: N 15° 24.755'
Type of Sample	: Ambient Air Quality Monitoring			Latitude					: E 073° 47.942'
Sampling Duration	: 24 Hrs.								

RESULT TABLE

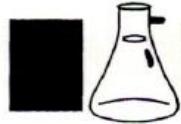
TEST PARAMETER	UNIT	DATE OF SAMPLING									LIMIT#	TEST/SAMPLING METHOD
		01/05 /2017	04/05 /2017	08/05 /2017	11/05 /2017	16/05 /2017	18/05 /2017	22/05 /2017	25/05 /2017	29/05 /2017		
Lab ID (AGA/1705) [A - H]	3	6	9	12	15	18	21	24	27			
Wind Direction	WSW-ENE	S-N	SW-NE	W-E	NW-SE	SSE-NNW	SW-NE	WSW-ENE	SW-NE			
Particulate Matter (PM <sub>10</sub> )	µg/m <sup>3</sup>	82.64	94.65	76.36	87.69	72.64	92.74	80.62	97.28	86.45	100	IS:5182(Part 23):Gravimetric CPCB - Method (Vol.I,May-2011)
Particulate Matter (PM <sub>2.5</sub> )	µg/m <sup>3</sup>	39.58	54.58	32.50	48.75	37.50	51.25	42.50	33.33	29.58	60	Gravimetric- CPCB - Method (Vol.I,May-2011)
Lead as Pb	µg/m <sup>3</sup>	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	1.0	CPCB Method (Vol.I,May-2011)
Benzo (a) Pyrene (BaP)- particulate phase only	ng/m <sup>3</sup>	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	1.0	CPCB Method (Vol.I,May-2011)
Arsenic as As	ng/m <sup>3</sup>	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	6.0	CPCB Method (Vol.I,May-2011)
Nickel as Ni	ng/m <sup>3</sup>	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	20	CPCB Method (Vol.I,May-2011)
Carbon Monoxide as CO	mg/m <sup>3</sup>	0.38	0.34	0.45	0.53	0.43	0.36	0.57	0.39	0.30	4.0	NDIR Digital Gas Analyzer
Benzene as C <sub>6</sub> H <sub>6</sub>	µg/m <sup>3</sup>	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	5.0	IS 5182 (Part XI):2006/CPCB Method
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	22.04	34.08	16.16	21.74	28.21	19.69	30.56	17.33	23.50	400	CPCB Method (Vol.I,May-2011)
Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	14.14	16.42	11.24	7.30	10.49	13.83	18.15	8.21	12.10	80	IS:5182(Part 2): Improved West and Gaeke
Oxides of Nitrogen (NO <sub>2</sub> )	µg/m <sup>3</sup>	26.66	31.35	20.61	16.25	22.34	36.23	28.69	15.32	27.47	80	IS:5182(Part 6):Modified Jacob & Hochheiser (Na-Arsenite)
Ozone (O <sub>3</sub> )\$	µg/m <sup>3</sup>	21.75	18.68	23.88	25.77	20.33	26.72	17.73	19.39	24.59	180	IS 5182 (PART IX):1974/CPCB Method (Vol.I,May-2011)

Note: Limit#: Industrial, Residential, Rural and other Area Notification Dated 16th Nov.2009 as per national Ambient Air Quality Standards, CPCB New Delhi.

BDL\*: Below Detection Limit, Minimum Detection Limit, Lead as Pb (µg/m<sup>3</sup>):0.5, Benzo (a) Pyrene (BaP) - particulate phase only (ng/m<sup>3</sup>): 0.5, Nickel as Ni (ng/m<sup>3</sup>):10, Arsenic as As (ng/m<sup>3</sup>):2, Benzene as C<sub>6</sub>H<sub>6</sub> (µg/m<sup>3</sup>): 2

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## **NOISE MONITORING**

## **TEST CERTIFICATE**

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### TEST CERTIFICATE FOR NOISE MONITORING

Type of Sample	: <b>Noise Monitoring</b>	Test Method	: <b>IS:11702</b>
----------------	---------------------------	-------------	-------------------

#### Day Time Monitoring Report

Sampling Time	Fire Station	Near Security Tower	Sada Village	Adani Site Office Near Gate No.02
<b>Longitude</b>	<b>N 15° 24.523'</b>	<b>N 15° 24.438'</b>	<b>N 15° 24.755'</b>	<b>N 15° 24.607'</b>
<b>Latitude</b>	<b>E 073° 47.800'</b>	<b>E 073° 47.967'</b>	<b>E 073° 47.942'</b>	<b>E 073° 47.819'</b>
<b>Date of Monitoring</b>	<b>05/05/2017</b>	<b>09/05/2017</b>	<b>12/05/2017</b>	<b>17/05/2017</b>
6:00-7:00	40.05	45.08	43.03	42.06
7:00-8:00	45.04	42.05	44.02	43.07
8:00-9:00	46.09	44	45.06	46.08
9:00-10:00	49	45.02	52	49.09
10:00-11:00	50.01	44	55.1	51.04
11:00-12:00	52.06	48.05	54.02	53.05
12:00-13:00	54.09	46.02	53	49
13:00-14:00	55.06	49.02	30	50.01
14:00-15:00	55.09	52	51.01	52.09
15:00-16:00	54.02	53.01	49	53.01
16:00-17:00	54	54.09	47.06	54.06
17:00-18:00	53.02	52.04	49.02	55.08
18:00-19:00	52.03	49.03	48.02	53.01
19:00-20:00	51.08	48	50	50.02
20:00-21:00	50	46.05	51.01	49.08
21:00-22:00	48.06	45	49.07	48.01
Maximum	55.9	54.9	55.1	55.8
Minimum	40.5	42.05	43.3	42.06



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### TEST CERTIFICATE FOR NOISE MONITORING

Type of Sample	: <b>Noise Monitoring</b>	Test Method	: <b>IS:11702</b>
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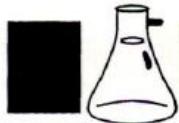
#### Night Time Monitoring Report

Sampling Time	Fire Station	Near Security Tower	Sada Village	Adani Site Office Near Gate No.02
<b>Longitude</b>	<b>N 15° 24.523'</b>	<b>N 15° 24.438'</b>	<b>N 15° 24.755'</b>	<b>N 15° 24.607'</b>
<b>Latitude</b>	<b>E 073° 47.800'</b>	<b>E 073° 47.967'</b>	<b>E 073° 47.942'</b>	<b>E 073° 47.819'</b>
<b>Date of Monitoring</b>	<b>05/05/2017 &amp; 06/05/2017</b>	<b>09/05/2017 &amp; 10/05/2017</b>	<b>12/05/2017 &amp; 17/05/2017</b>	<b>17/05/2017 &amp; 18/05/2017</b>
22:00-23:00	46	46.09	49	47.07
23:00-00:00	45.09	47.08	47.7	48.06
00:00-01:00	43.02	45.06	46	46.04
01:00-02:00	44	44.03	45.02	43.03
02:00-03:00	46.06	42.09	43.09	42.01
03:00-04:00	44.09	41	45.08	44.06
04:00-05:00	43.01	40.09	44.01	45.09
05:00-06:00	42.03	43.06	42.02	42.08
Maximum	46.6	47.8	49.0	48.6
Minimum	42.3	41.0	42.2	42.1



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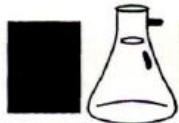
## **MONITORING OF SEWAGE WATER**

**(INLET & OUTLET)**

**MONTHLY TEST CERTIFICATE**

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## TEST CERTIFICATE FOR SEWAGE WATER

Location Number	: 1	Quantity/No. of Samples	: 02 Lit/Two
Name of Location	: Near MPT Quarter STP	Sampling Procedure	: Grab
Type of Sample	: Sewage Water	Lab ID	: AG/1705/01 & 02
Date of Sampling	: 18/05/2017	Date of Starting of Test	: 18/05/2017
Date of Sample Receipt	: 18/05/2017	Date of Completion	: 29/05/2017

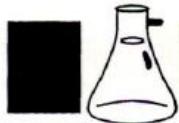
### RESULT TABLE

TEST PARAMETER	UNIT	RESULTS		TEST/SAMPLING METHOD
		INLET	OUTLET	
pH	--	6.91	7.43	IS3025(P11)83Re.02
Total Suspended Solids	mg/L	130	24	IS3025(P17)84Re.02
BOD (3 Days @ 27 °C)	mg/L	48	11	IS3025 P44)1993Re.03Edition2.1
COD	mg/L	174	44	APHA(22 <sup>nd</sup> Edi) 5520-D Open Reflux
Oil & Grease	mg/L	1.06	BDL*	APHA(22 <sup>nd</sup> Edi)5520D
Residual Free Chlorine	mg/L	< 0.1	0.8	APHA(22 <sup>nd</sup> Edi)4500 CI

Not: BDL\*: Below Detection Limit: Minimum Detection Limit, Oil & Grease: 1.0 mg/L

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### TEST CERTIFICATE FOR SEWAGE WATER

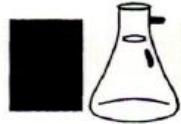
Location Number	: 2	Quantity/No. of Samples	: 02 Lit/One
Name of Location	: STP Outlet (Baina Severage Plant)	Sampling Procedure	: Grab
Type of Sample	: Sewage Water	Lab ID	: AG/1705/06
Date of Sampling	: 20/05/2017	Date of Starting of Test	: 25/05/2017
Date of Sample Receipt	: 25/05/2017	Date of Completion	: 31/05/2017

#### RESULT TABLE

TEST PARAMETER	UNIT	RESULTS	TEST/SAMPLING METHOD
		OUTLET	
pH	--	8.01	IS3025(P11)83Re.02
Total Suspended Solids	mg/L	18	IS3025(P17)84Re.02
BOD (3 Days @ 27 °C)	mg/L	10	IS3025 P44)1993Re.03Edition2.1
COD	mg/L	38	APHA(22 <sup>nd</sup> Edi) 5520-D Open Reflux
Oil & Grease	mg/L	BDL*	APHA(22 <sup>nd</sup> Edi)5520D
Residual Free Chlorine	mg/L	0.7	APHA(22 <sup>nd</sup> Edi)4500 CI

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## **WEATHER DATA MONITORING MONTHLY TEST CERTIFICATE**

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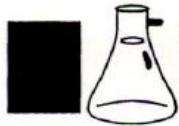
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Date	Avg wind Speed (m/s)	Avg wind Direction (deg)	Temperature (°C)	RH %
01/05/2017	1.39	146.2	28.0	71.0
02/05/2017	1.11	185.4	26.0	66.5
03/05/2017	1.18	175.6	28.0	71.0
04/05/2017	1.25	165.8	29.0	62.0
05/05/2017	1.32	148.2	26.0	61.0
06/05/2017	1.19	200.5	30.0	63.0
07/05/2017	2.15	208.9	27.0	68.0
08/05/2017	1.39	221.6	22.0	70.0
09/05/2017	1.32	186.6	28.0	66.0
10/05/2017	1.04	194.5	28.0	71.0
11/05/2017	1.29	214.6	26.0	65.0
12/05/2017	1.11	138.2	27.0	68.0
13/05/2017	1.34	126.3	24.0	73.0
14/05/2017	1.20	134.6	25.0	75.0
15/05/2017	1.22	188.6	28.0	72.0
16/05/2017	1.11	209.5	28.0	70.0
17/05/2017	1.11	215.6	26.0	71.0
18/05/2017	1.39	192.6	29.0	72.0
19/05/2017	1.43	198.4	28.0	65.0
20/05/2017	1.35	204.6	28.0	67.0
21/05/2017	1.28	211.8	30.0	63.0
22/05/2017	1.65	226.5	31.0	61.0
23/05/2017	1.27	245.6	29*	75.0
24/05/2017	1.11	215.4	29.0	73.0
25/05/2017	1.22	198.2	31.0	70.0
26/05/2017	1.19	228.4	30.0	64.0
27/05/2017	1.25	188.6	29.0	68.0
28/05/2017	1.28	196.5	32.0	65.0
29/05/2017	1.56	144.6	32.0	73.0
30/05/2017	1.28	152.6	28.0	65.0
31/05/2017	1.25	172.5	28.0	72.0

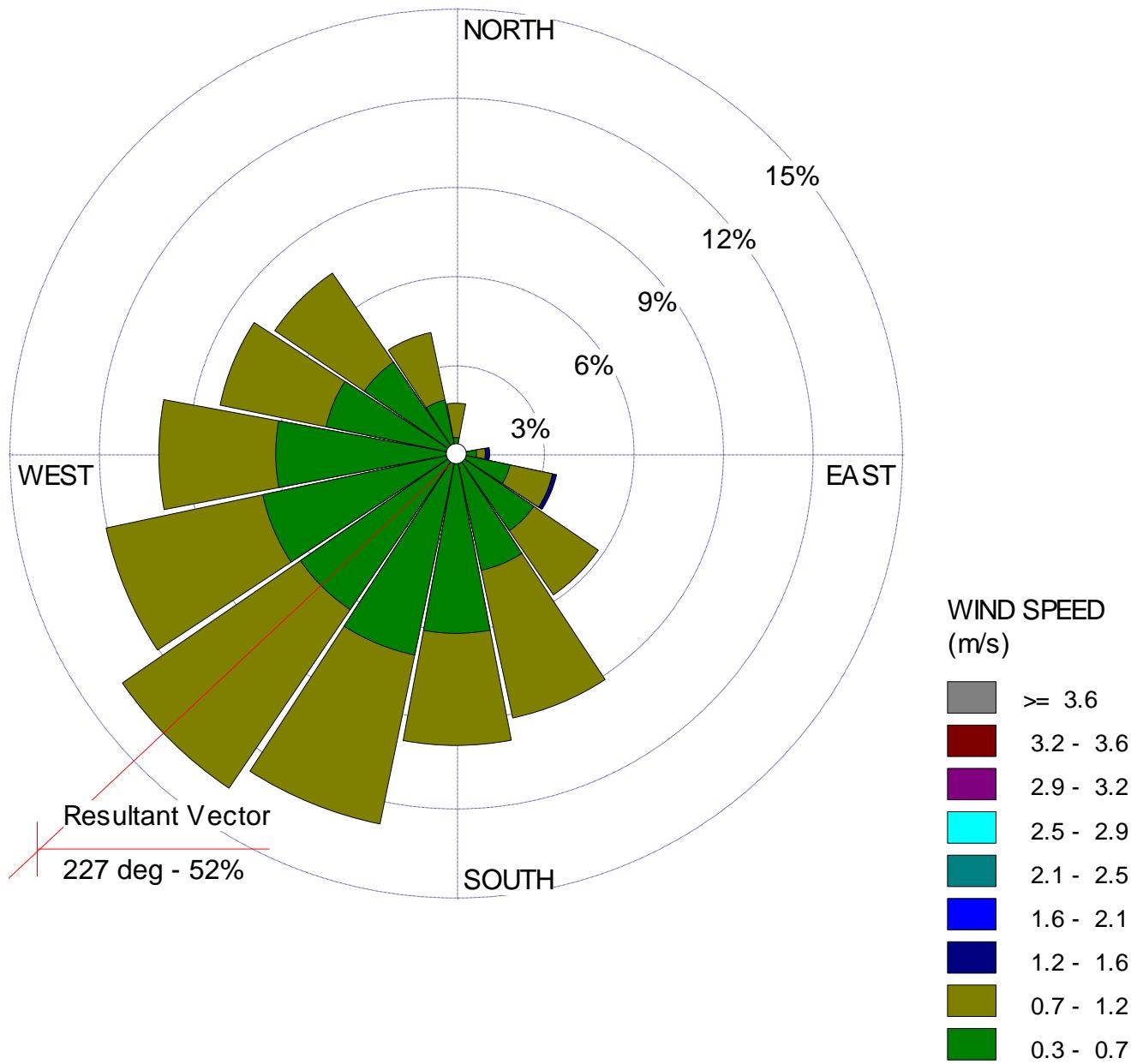


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## WIND ROSE DIAGRAM MAY 2017



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## "ENVIRONMENTAL MONITORING REPORT"

*FOR*



**ADANI MURMUGAO PORT TERMINAL PVT. LTD. (AMPTPL)  
GROUND FLOOR, PORT USERS COMPLEX,  
NEAR STATE BANK OF INDIA,  
MORMUGAO HARBOUR,  
GOA – 403 803, INDIA  
TEL NO. 832-2594253**

**JUNE - 2017**

**PREPARED BY:**



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**T 0820 - 821**

**ISO 9001:2008**

**ISO 14001:2004**

**OHSAS 18001:2007**



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## "ENVIRONMENTAL MONITORING REPORT"

FOR



**ADANI MURMUGAO PORT TERMINAL PVT. LTD. (AMPTPL)**  
**GROUND FLOOR, PORT USERS COMPLEX,**  
**NEAR STATE BANK OF INDIA,**  
**MORMUGAO HARBOUR,**  
**GOA – 403 803, INDIA**  
**TEL NO. 832-2594253**

For and on behalf of Pollucon Laboratories Pvt. Ltd., Surat

Approved by : Dr. Arun Kumar Bajpai

Signed : 

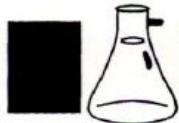


Designation : Lab Manager (Q)

This report is prepared by Pollucon laboratories Pvt. Ltd. with all reasonable skills, care and diligence, incorporating our General Terms and Conditions of Business and taking account of the resources devoted. Name of the sampling location / sample identity details – provided by client itself.

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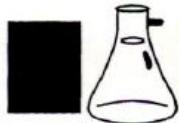


## INDEX

SR. NO.	TITLE	PAGE NO.
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A	<b>SEA WATER TEST CERTIFICATE</b>	5
B	<b>SEDIMENT TEST CERTIFICATE</b>	7
2	<b>AMBIENT AIR QUALITY MONITORING TEST CERTIFICATE</b>	8
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6	<b>SOIL QUALITY MONITORING TEST CERTIFICATE</b>	19
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8	<b>WIND ROSE DIAGRAM</b>	24

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## **MARINE ECOLOGICAL SURVEY**

### **A. SEA WATER ANALYSIS**

**&**

### **B. SEDIMENT ANALYSIS**

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## TEST CERTIFICATE FOR SEA WATER

Page: 1 of 2

Location Number	:	1	Longitude	:	N 15° 24.748'
Name of Location	:	Sea Surface Water (Near Jetty)	Latitude	:	E 073° 47.938'
Type of Sample	:	Marine Water Sample	Quantity/No. of Sample	:	05 Lit./Two
Sampling Date	:	09/06/2017	Lab ID	:	AG/1706/01 & 02
Sample Receipt Date	:	13/06/2017	Date of Completion	:	18/06/2017
Date of Starting of Test	:	13/06/2017			

### RESULT TABLE

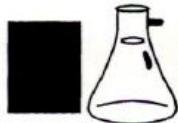
SR. NO.	TEST PARAMETERS	UNIT	RESULT		TEST/SAMPLING METHOD
			SURFACE	BOTTOM	
1	pH	--	7.93	8.08	IS3025 (P11)83Re.02
2	Temperature	°C	28	29	IS3025(P9)84Re.02
3	Total Suspended Solids	mg/L	66	78	IS3025(P17)84Re.02
4	BOD (3 Days @ 27 °C)	mg/L	BDL*	BDL*	IS 3025 (P44)1993 Re.03Edition2.1
5	Dissolved Oxygen	mg/L	5.6	4.4	IS3025(P38)89Re.99
6	Salinity	ppt	43.2	44.1	APHA 2550 B
7	Oil & Grease	mg/L	BDL*	BDL*	APHA(22 <sup>nd</sup> Edi)5520D
8	Nitrate as NO <sub>3</sub>	mg/L	0.58	0.73	IS3025(P34)88
9	Nitrite as NO <sub>2</sub>	mg/L	0.08	0.06	IS3025(P34)88 NEDA
10	Ammonical Nitrogen as NH <sub>3</sub>	mg/L	0.55	0.79	IS3025(P34)88Cla.2.3
11	Phosphates as PO <sub>4</sub>	mg/L	1.98	2.2	APHA(22 <sup>nd</sup> Edi) 4500 C
12	Total Nitrogen	mg/L	1.21	1.58	IS3025(P34)88
13	Petroleum Hydrocarbon	µg/L	0.6	BDL*	PLPL-TPH
14	Total Dissolved Solids	mg/L	44280	45620	IS3025(P16)84Re.02
15	COD	mg/L	24	19	APHA(22 <sup>nd</sup> Edi) 5520-D Open Reflux
16	Oxidisable Particular Organic Carbon	%	0.71	0.43	SOP – PLPL - 06
<b>A</b>	<b>Flora and Fauna</b>				
17.1	Primary Productivity	mgC/L/day	1.46	0.225	APHA (22 <sup>nd</sup> Edi) 10200-J

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**TEST CERTIFICATE FOR SEA WATER**  
**RESULT TABLE**

Page: 2 of 2

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

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## TEST CERTIFICATE FOR SEA SEDIMENT

Location Number	: 1		
Name of Location	: <b>Sea Sediment Water (Near Jetty)</b>	Longitude	: <b>N 15° 24.748'</b>
Type of Sample	: <b>Sediment Sample</b>	Latitude	: <b>E 073° 47.938'</b>
Sampling Date	: <b>09/06/2017</b>	Quantity/No. of Sample	: <b>05 Lit./One</b>
Sample Receipt Date	: <b>13/06/2017</b>	Lab ID	: <b>AG/1706/03</b>
Date of Starting of Test	: <b>13/06/2017</b>	Date of Completion	: <b>18/06/2017</b>

### RESULT TABLE

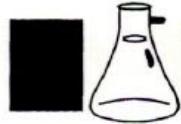
SR. NO.	TEST PARAMETERS	UNIT	RESULT	TEST/SAMPLING METHOD
			SEDIMENT	
1	Organic Matter	%	0.909	FCO: 2006
2	Phosphorus as P	mg/kg	168	APHA(22 <sup>nd</sup> Edi) 4500 C
3	Texture	--	Sandy	--
4	Petroleum Hydrocarbon	mg/kg	BDL*	PLPL-TPH
<b>5</b>	<b>Heavy Metals</b>			
5.1	Aluminum as Al	%	4.49	AAS APHA 3111 B
5.2	Total Chromium as Cr <sup>+3</sup>	mg/kg	0.413	AAS 3111B
5.3	Manganese as Mn	mg/kg	706	AAS APHA 3111 B
5.4	Iron as Fe	%	1.91	AAS APHA (22 <sup>nd</sup> Edi) 3111 B
5.5	Nickel as Ni	mg/kg	32.64	AAS APHA (22 <sup>nd</sup> Edi) 3111 B
5.6	Copper as Cu	mg/kg	49.22	AAS APHA (22 <sup>nd</sup> Edi) 3111 B
5.7	Zinc as Zn	mg/kg	52.78	AAS APHA (22 <sup>nd</sup> Edi) 3111 B
5.8	Lead as Pb	mg/kg	0.814	AAS APHA (22 <sup>nd</sup> Edi) 3111 B
5.9	Mercury as Hg	mg/kg	BDL*	AAS APHA- 3112 B
<b>6</b>	<b>Benthic Organisms</b>			
6.1	Macrobenthos (No and name of groups present, No and name of species of each group present)	--	<i>Mysids</i> <i>Echinoderms</i> <i>Decapods</i>	APHA (22 <sup>nd</sup> Edi) 10500-C
			<i>Chaetognaths</i>	
6.2	MeioBenthos (No and name of groups present, No and name of species of each group present)	--	<i>Copepods</i> <i>Hydrozoa</i> <i>Foraminiferans</i>	APHA (22 <sup>nd</sup> Edi) 10500-C
6.3	Population	no/m <sup>2</sup>	440	APHA (22 <sup>nd</sup> Edi) 10500-C

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



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

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## **AMBIENT AIR QUALITY MONITORING**

## **TEST CERTIFICATE**

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## TEST CERTIFICATE FOR AMBIENT AIR QUALITY MONITORING

Location Number	: 1								
Name of Location	: Sada Village			Longitude					: N 15° 24.755'
Type of Sample	: Ambient Air Quality Monitoring			Latitude					: E 073° 47.942'
Sampling Duration	: 24 Hrs.								

### RESULT TABLE

TEST PARAMETER	UNIT	DATE OF SAMPLING									LIMIT #	TEST/SAMPLING METHOD
		01/06/2017	05/06/2017	08/06/2017	12/06/2017	15/06/2017	19/06/2017	22/06/2017	26/06/2017	29/06/2017		
Lab ID (AGA/1706) [A - H]	3	6	9	12	15	18	21	24	27			
Wind Direction	WSW-ENE	W-E	WNW-ESE	NW-SE	SW-NE	SW-NE	SSW-NNE	ESE-WNW				
Particulate Matter (PM <sub>10</sub> )	µg/m <sup>3</sup>	89.63	73.26	81.22	90.24	94.11	63.33	84.12	72.66	69.96	100	IS:5182(Part 23):Gravimetric CPCB - Method (Vol.I,May-2011)
Particulate Matter (PM <sub>2.5</sub> )	µg/m <sup>3</sup>	42.08	40.00	45.83	39.58	55.24	35.41	41.24	29.99	26.25	60	Gravimetric- CPCB - Method (Vol.I,May-2011)
Lead as Pb	µg/m <sup>3</sup>	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	1.0	CPCB Method (Vol.I,May-2011)
Benzo (a) Pyrene (BaP)- particulate phase only	ng/m <sup>3</sup>	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	1.0	CPCB Method (Vol.I,May-2011)
Arsenic as As	ng/m <sup>3</sup>	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	6.0	CPCB Method (Vol.I,May-2011)
Nickel as Ni	ng/m <sup>3</sup>	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	20	CPCB Method (Vol.I,May-2011)
Carbon Monoxide as CO	mg/m <sup>3</sup>	0.47	0.48	0.33	0.58	0.39	0.42	0.52	0.71	0.38	4.0	NDIR Digital Gas Analyzer
Benzene as C <sub>6</sub> H <sub>6</sub>	µg/m <sup>3</sup>	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	5.0	IS 5182 (Part XI):2006/CPCB Method
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	28.30	30.03	24.54	36.09	30.03	25.41	32.05	23.39	25.12	400	CPCB Method (Vol.I,May-2011)
Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	9.65	12.16	10.07	13.42	15.10	8.39	9.65	15.52	14.78	80	IS:5182(Part 2): Improved West and Gaeke
Oxides of Nitrogen (NO <sub>2</sub> )	µg/m <sup>3</sup>	22.63	31.42	36.96	35.41	29.63	24.15	32.11	29.87	30.24	80	IS:5182(Part 6):Modified Jacob & Hochheiser (Na-Arsenite)
Ozone (O <sub>3</sub> )\$	µg/m <sup>3</sup>	23.25	20.32	19.64	24.15	23.48	19.86	20.09	26.41	23.63	180	IS 5182 (PART IX) 1974/CPCB Method (Vol.I,May-2011)

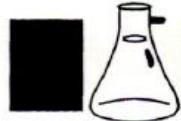
Note: Limit#: Industrial, Residential, Rural and other Area Notification Dated 16th Nov.2009 as per national Ambient Air Quality Standards, CPCB New Delhi.

BDL\*: Below Detection Limit, Minimum Detection Limit, Lead as Pb (µg/m<sup>3</sup>):0.5, Benzo (a) Pyrene (BaP) - particulate phase only (ng/m<sup>3</sup>): 0.5, Nickel as Ni (ng/m<sup>3</sup>):10, Arsenic as As (ng/m<sup>3</sup>):2, Benzene as C<sub>6</sub>H<sub>6</sub> (µg/m<sup>3</sup>): 2



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## **NOISE MONITORING**

## **TEST CERTIFICATE**

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## TEST CERTIFICATE FOR NOISE MONITORING

Type of Sample	<b>: Noise Monitoring</b>	Test Method	<b>: IS:11702</b>
----------------	---------------------------	-------------	-------------------

### Day Time Monitoring Report

Sampling Time	Fire Station	Near Security Tower	Sada Village	Adani Site Office Near Gate No.02
<b>Longitude</b>	<b>N 15° 24.523'</b>	<b>N 15° 24.438'</b>	<b>N 15° 24.755'</b>	<b>N 15° 24.607'</b>
<b>Latitude</b>	<b>E 073° 47.800'</b>	<b>E 073° 47.967'</b>	<b>E 073° 47.942'</b>	<b>E 073° 47.819'</b>
<b>Date of Monitoring</b>	<b>13/06/2017</b>	<b>06/06/2017</b>	<b>21/06/2017</b>	<b>16/06/2017</b>
6:00-7:00	41.06	42.06	40.02	41.09
7:00-8:00	42.07	43.07	42.04	42.08
8:00-9:00	46.09	42.09	44	44.06
9:00-10:00	48	44.06	46.09	46.02
10:00-11:00	50.02	47	49.01	45.09
11:00-12:00	51.05	48.09	50.02	49
12:00-13:00	53.06	49	52.06	51.06
13:00-14:00	54.07	50.06	53.04	52.09
14:00-15:00	55.08	51.03	54.06	53.04
15:00-16:00	56.09	52.04	52.02	55.09
16:00-17:00	54.03	53.05	51.03	54.02
17:00-18:00	53.05	52	50.09	52
18:00-19:00	52.06	50.06	49.06	51.02
19:00-20:00	50.03	49.01	48	50.09
20:00-21:00	49.02	48.02	47.02	49.03
21:00-22:00	42.03	46.04	45	48
Maximum	56.09	53.05	54.06	55.09
Minimum	41.06	42.06	40.02	41.09



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### TEST CERTIFICATE FOR NOISE MONITORING

Type of Sample	: <b>Noise Monitoring</b>	Test Method	: <b>IS:11702</b>
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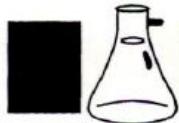
#### Night Time Monitoring Report

Sampling Time	Fire Station	Near Security Tower	Sada Village	Adani Site Office Near Gate No.02
<b>Longitude</b>	<b>N 15° 24.523'</b>	<b>N 15° 24.438'</b>	<b>N 15° 24.755'</b>	<b>N 15° 24.607'</b>
<b>Latitude</b>	<b>E 073° 47.800'</b>	<b>E 073° 47.967'</b>	<b>E 073° 47.942'</b>	<b>E 073° 47.819'</b>
<b>Date of Monitoring</b>	<b>13/06/2017 &amp; 14/06/2017</b>	<b>06/06/2017 &amp; 07/06/2017</b>	<b>21/06/2017 &amp; 22/06/2017</b>	<b>16/06/2017 &amp; 17/06/2017</b>
22:00-23:00	46.04	45.02	44.02	46.04
23:00-00:00	45.04	44.03	43.01	45.03
00:00-01:00	44.09	43	42	43.01
01:00-02:00	42.05	43.09	41.06	42.02
02:00-03:00	43.09	42.01	39.07	42.07
03:00-04:00	42	40	38.02	41
04:00-05:00	41.02	41.08	39.04	40.05
05:00-06:00	40.09	41	40.05	41.04
Maximum	46.04	45.02	44.02	46.04
Minimum	40.09	40	38.02	40.05



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## **MONITORING OF SEWAGE WATER (INLET & OUTLET)**

### **MONTHLY TEST CERTIFICATE**

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## TEST CERTIFICATE FOR SEWAGE WATER

Location Number	: 1	Quantity/No. of Samples	: 02 Lit/Two
Name of Location	: Near MPT Quarter STP	Sampling Procedure	: Grab
Type of Sample	: Sewage Water	Lab ID	: AG/1706/04 & 05
Date of Sampling	: 10/06/2017	Date of Starting of Test	: 14/06/2017
Date of Sample Receipt	: 14/06/2017	Date of Completion	: 19/06/2017

### RESULT TABLE

TEST PARAMETER	UNIT	RESULTS		TEST/SAMPLING METHOD
		STP INLET	STP OUTLET	
Sample Source				
pH	--	7.06	7.49	IS3025(P11)83Re.02
Total Suspended Solids	mg/L	88	24	IS3025(P17)84Re.02
BOD (3 Days @ 27 °C)	mg/L	48	18	IS3025 P44)1993Re.03Edition2.1
COD	mg/L	170	52	APHA(22 <sup>nd</sup> Edi) 5520-D Open Reflux
Oil & Grease	mg/L	1.9	BDL*	APHA(22 <sup>nd</sup> Edi)5520D
Residual Free Chlorine	mg/L	< 0.1	0.5	APHA(22 <sup>nd</sup> Edi)4500 CI

Not: BDL\*: Below Detection Limit: Minimum Detection Limit, Oil & Grease: 1.0 mg/L



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## TEST CERTIFICATE FOR SEWAGE WATER

Location Number	: 2	Quantity/No. of Samples	: 02 Lit/One
Name of Location	: STP Outlet (Baina Severage Plant)	Sampling Procedure	: Grab
Type of Sample	: Sewage Water	Lab ID	: AG/1706/06
Date of Sampling	: 10/06/2017	Date of Starting of Test	: 14/06/2017
Date of Sample Receipt	: 14/06/2017	Date of Completion	: 19/06/2017

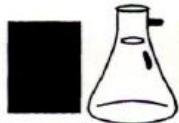
### RESULT TABLE

TEST PARAMETER	UNIT	RESULTS	TEST/SAMPLING METHOD
		OUTLET	
pH	--	7.42	IS3025(P11)83Re.02
Total Suspended Solids	mg/L	62	IS3025(P17)84Re.02
BOD (3 Days @ 27 °C)	mg/L	26	IS3025 P44)1993Re.03Edition2.1
COD	mg/L	90	APHA(22 <sup>nd</sup> Edi) 5520-D Open Reflux
Oil & Grease	mg/L	1.20	APHA(22 <sup>nd</sup> Edi)5520D
Residual Free Chlorine	mg/L	0.6	APHA(22 <sup>nd</sup> Edi)4500 CI



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## **MONITORING OF DUMP POND DISCHARGE QUARTERLY TEST CERTIFICATE**

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## TEST CERTIFICATE FOR DUMP POND DISCHARGE WATER

Location Number	: 1	Quantity/No. of Samples	: 05 Lit/One
Name of Location	: Dump Pond - 1 Near CT - 8	Sampling Procedure	: Grab
Type of Sample	: Dump Pond Discharge water	Lab ID	: AG/1706/07
Date of Sampling	: 14/06/2017	Date of Starting of Test	: 19/06/2017
Sample Receipt Date	: 19/06/2017	Date of Completion	: 24/06/2017

### RESULT TABLE

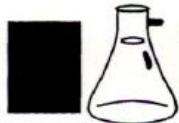
TEST PARAMETER	UNIT	RESULTS	TEST/SAMPLING METHOD
pH	--	7.31	IS3025(P11)83Re.02
Total Dissolved Solids	mg/L	286	IS3025(P16)84Re.02
Total Suspended Solids	mg/L	12	IS3025(P17)84Re.02
Turbidity	NTU	7.18	APHA 2130-B
BOD (3 Days @ 27 °C)	mg/L	46	IS 3025 (P44)1993 Re.03Edition2.1
Dissolved Oxygen	mg/L	4.8	IS3025(P38)89Re.99
COD	mg/L	182	APHA(22 <sup>nd</sup> Edi) 5520-D Open Reflux
Salinity	ppt	0.079	APHA 2550 B
Oil & Grease	mg/L	BDL*	APHA(22 <sup>nd</sup> Edi)5520D
Total Hardness as CaCO <sub>3</sub>	mg/L	126	IS3025(P-21) 84EDTARe.02
Fluoride as F	mg/L	0.465	APHA(22 <sup>nd</sup> Edi) 4500 F D SPANDS
Chloride as Cl	mg/L	50.8	IS3025(P-32) 88Re.99Argentometric method
Zinc as Zn	mg/L	0.13	AAS- APHA (22ndEdition) 3111 B
Cadmium as Cd	mg/L	BDL*	AAS- APHA (22nd Edition) 3111 B
Lead as Pb	mg/L	0.064	AAS- APHA (22nd Edition) 3111 B
Mercury as Hg	mg/L	BDL*	AAS-APHA 22 Edition 3112 B

Note: BDL\*: Below Detection Limit, Minimum Detection Limit, Cadmium as Cd: 0.001 mg/L, Mercury as Hg: 0.00025 mg/L



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## TEST CERTIFICATE FOR DUMP POND DISCHARGE WATER

Location Number	: 2	Quantity/No. of Samples	: 05 Lit/One
Name of Location	: Dump Pond - 2 Near Pump House	Sampling Procedure	: Grab
Type of Sample	: Dump Pond Discharge water	Lab ID	: AG/1706/08
Date of Sampling	: 14/06/2017	Date of Starting of Test	: 19/06/2017
Sample Receipt Date	: 19/06/2017	Date of Completion	: 24/06/2017

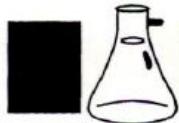
### RESULT TABLE

TEST PARAMETER	UNIT	RESULTS	TEST/SAMPLING METHOD
pH	--	7.21	IS3025(P11)83Re.02
Total Dissolved Solids	mg/L	292	IS3025(P16)84Re.02
Total Suspended Solids	mg/L	10	IS3025(P17)84Re.02
Turbidity	NTU	7.34	APHA 2130-B
BOD (3 Days @ 27 °C)	mg/L	42	IS 3025 (P44)1993 Re.03Edition2.1
Dissolved Oxygen	mg/L	4.7	IS3025(P38)89Re.99
COD	mg/L	176	APHA(22 <sup>nd</sup> Edi) 5520-D Open Reflux
Salinity	ppt	0.091	APHA 2550 B
Oil & Grease	mg/L	BDL*	APHA(22 <sup>nd</sup> Edi)5520D
Total Hardness as CaCO <sub>3</sub>	mg/L	130	IS3025(P-21) 84EDTARe.02
Fluoride as F	mg/L	0.53	APHA(22 <sup>nd</sup> Edi) 4500 F D SPANDS
Chloride as Cl	mg/L	49.16	IS3025(P-32) 88Re.99Argentometric method
Zinc as Zn	mg/L	0.11	AAS- APHA (22ndEdition) 3111 B
Cadmium as Cd	mg/L	BDL*	AAS- APHA (22nd Edition) 3111 B
Lead as Pb	mg/L	0.093	AAS- APHA (22nd Edition) 3111 B
Mercury as Hg	mg/L	BDL*	AAS-APHA 22 Edition 3112 B

Note: BDL\*: Below Detection Limit, Minimum Detection Limit, Cadmium as Cd: 0.001 mg/L, Mercury as Hg: 0.00025 mg/L, Oil & Grease: 1.0 mg/L

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## **SOIL QUALITY MONITORING QUARTERLY TEST CERTIFICATE**

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### TEST CERTIFICATE FOR SOIL

Location Number	: 1	Quantity/No. of Samples	: 05 Kg/One
Name of Location	: Near CT-1	Sampling Procedure	: Grab
Longitude	: N 15° 24.448'	Latitude	: E 073° 47.587'
Type of Sample	: Soil Sample	Lab ID	: AG/1706/09
Date of Sampling	: 15/06/2017	Date of Starting of Test	: 19/06/2017
Sample Receipt Date	: 19/06/2017	Date of Completion	: 24/06/2017

#### RESULT TABLE

TEST PARAMETER	UNIT	RESULTS
Type	--	Brown
Gravel	%	0.4
Coarse Sand	%	2.88
Medium Sand	%	13.36
Fine Sand	%	10.46
Total Sand	%	23.06
Silt & Clay	%	77.28
pH (1:5)	--	8.79
Electricity Conductivity	µmho/cm	585
Alkali matter	mg/kg	658
Cation Exchange Capacity	meq/100 gm	7.85
Sodium Absorption Ratio	--	12.38
Organic Matter	mg/kg	0.39
Available Nitrogen	meq/100 gm	0.36
Available Potassium	mg/kg	3.27
Available Phosphorus	mg/kg	0.161
Available Sodium	%	1.02
Permeability	%	0.96



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### TEST CERTIFICATE FOR SOIL

Location Number	: 2	Quantity/No. of Samples	: 05 Kg/One
Name of Location	: Near Adani Site	Sampling Procedure	: Grab
Longitude	: N 15° 24.613'	Latitude	: E 073° 47.848'
Type of Sample	: Soil Sample	Lab ID	: AG/1706/10
Date of Sampling	: 15/06/2017	Date of Starting of Test	: 19/06/2017
Sample Receipt Date	: 19/06/2017	Date of Completion	: 24/06/2017

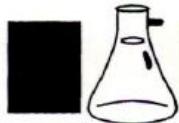
#### RESULT TABLE

TEST PARAMETER	UNIT	RESULTS
Type	--	Brown
Gravel	%	0.56
Coarse Sand	%	3.41
Medium Sand	%	13.40
Fine Sand	%	11.79
Total Sand	%	18.59
Silt & Clay	%	80.03
pH (1:5)	--	8.79
Electricity Conductivity	µmho/cm	559.5
Alkali matter	mg/kg	686.3
Cation Exchange Capacity	meq/100 gm	7.78
Sodium Absorption Ratio	--	11.83
Organic Matter	mg/kg	0.37
Available Nitrogen	meq/100 gm	0.38
Available Potassium	mg/kg	3.41
Available Phosphorus	mg/kg	0.16
Available Sodium	%	1.06
Permeability	%	0.87



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## **WEATHER DATA MONITORING MONTHLY TEST CERTIFICATE**

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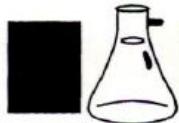
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Date	Avg wind Speed (m/s)	Avg wind Direction (deg)	Temperature (°C)	RH %	Precip. (mm)
01/06/2017	1.92	220.5	31	70.0	0.0
02/06/2017	2.24	219.6	30	75.5	1.0
03/06/2017	2.24	219.0	29	71.0	0.0
04/06/2017	2.72	219.5	29	68.0	5.0
05/06/2017	2.72	219.0	28	78.5	0.0
06/06/2017	3.16	217.7	29	77.5	29.0
07/06/2017	3.12	220.0	27	85.0	22.0
08/06/2017	3.44	219.7	28	87.5	6.0
09/06/2017	3.6	218.9	27	89.0	37.0
10/06/2017	3.8	221.6	27	86.0	170.0
11/06/2017	2.4	217.7	25	92.0	6.0
12/06/2017	2.69	217.9	26	91.5	31.0
13/06/2017	2.84	218.2	25	97.0	8.0
14/06/2017	3.12	217.9	28	77.0	13.0
15/06/2017	3.12	220.0	29	71.5	15.0
16/06/2017	3.68	217.4	25	87.0	7.0
17/06/2017	3.52	220.4	29	78.0	37.0
18/06/2017	4.0	217.0	27	82.0	10.0
19/06/2017	4.0	216.3	26	90.0	64.0
20/06/2017	4.24	222.7	26	89.0	20.0
21/06/2017	2.8	219.1	25	97.5	1.0
22/06/2017	3.04	220.7	26	86.5	0.0
23/06/2017	3.16	219.0	25	96.5	5.0
24/06/2017	3.64	218.8	25	92.5	29.0
25/06/2017	3.64	222.1	25	95.0	56.0
26/06/2017	4.04	217.3	25	95.0	93.0
27/06/2017	4.08	219.7	25	97.5	21.0
28/06/2017	4.4	216.2	26	97.5	151.0
29/06/2017	4.72	218.2	25	97.5	240.0
30/06/2017	4.64	221.8	26	91.0	21.0

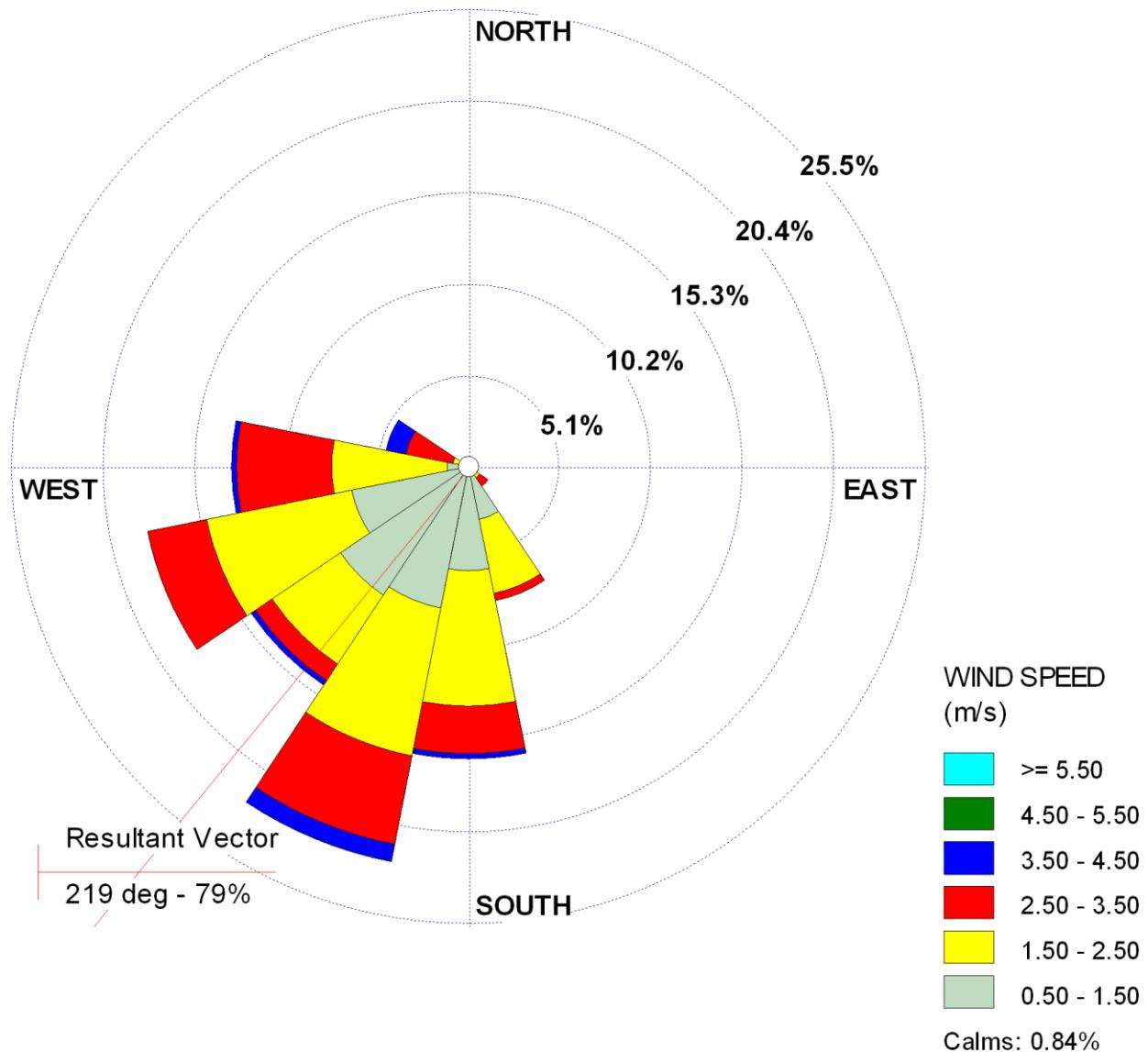


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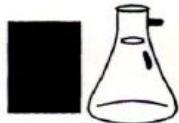


## WIND ROSE DIAGRAM JUNE 2017



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## "ENVIRONMENTAL MONITORING REPORT"

*FOR*

**adani**™

**ADANI MURMUGAO PORT TERMINAL PVT. LTD. (AMPTPL)  
GROUND FLOOR, PORT USERS COMPLEX,  
NEAR STATE BANK OF INDIA,  
MORMUGAO HARBOUR,  
GOA – 403 803, INDIA  
TEL NO. 832-2594253**

**JULY - 2017**

**PREPARED BY:**

**Pollucon**

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**T 0820 - 821**

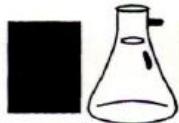
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**ISO 14001:2004**

**OHSAS 18001:2007**

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**GOA – 403 803, INDIA**  
**TEL NO. 832-2594253**

**For and on behalf of Pollucon Laboratories Pvt. Ltd., Surat**

**Approved by** : **Dr. Arun Kumar Bajpai**

**Signed** :

**Designation** : **Lab Manager (Q)**

This report is prepared by Pollucon laboratories Pvt. Ltd. with all reasonable skills, care and diligence, incorporating our General Terms and Conditions of Business and taking account of the resources devoted. Name of the sampling location / sample identity details – provided by client itself.

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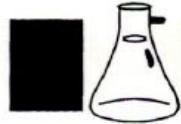
## INDEX

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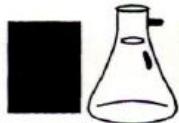
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## **AMBIENT AIR QUALITY MONITORING**

## **TEST CERTIFICATE**

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## TEST CERTIFICATE FOR AMBIENT AIR QUALITY MONITORING

Location Number	: 3	Longitude	: N 15° 24.755'
Name of Location	: Sada Village	Latitude	: E 073° 47.942'
Type of Sample	: Ambient Air Quality Monitoring		
Sampling Duration	: 24 Hrs.		

### RESULT TABLE

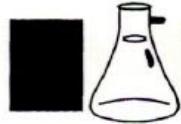
TEST PARAMETER	UNIT	DATE OF SAMPLING									LIMIT #	TEST/SAMPLING METHOD
		03/07 /2017	06/07 /2017	10/07 /2017	13/07 /2017	17/07 /2017	20/07 /2017	24/07 /2017	27/07 /2017	31/07 /2017		
Lab ID (AGA/1707) [A - H]	3	6	9	12	15	18	21	24	27			
Wind Direction	WSW-ENE	W-E	WNW-ESE	NW-SE	SW-NE	NW-SE	SW-NE	SSW-NNE	ESE-WNW			
Particulate Matter (PM <sub>10</sub> )	µg/m <sup>3</sup>	82.16	75.55	86.39	91.24	69.37	89.99	79.51	59.34	85.23	100	IS:5182(Part 23):Gravimetric CPCB - Method (Vol.I,May-2011)
Particulate Matter (PM <sub>2.5</sub> )	µg/m <sup>3</sup>	44.17	39.17	39.17	44.58	32.49	50.41	48.74	29.16	29.17	60	Gravimetric- CPCB - Method (Vol.I,May-2011)
Lead as Pb	µg/m <sup>3</sup>	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	1.0	CPCB Method (Vol.I,May-2011)
Benzo (a) Pyrene (BaP)- particulate phase only	ng/m <sup>3</sup>	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	1.0	CPCB Method (Vol.I,May-2011)
Arsenic as As	ng/m <sup>3</sup>	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	6.0	CPCB Method (Vol.I,May-2011)
Nickel as Ni	ng/m <sup>3</sup>	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	20	CPCB Method (Vol.I,May-2011)
Carbon Monoxide as CO	mg/m <sup>3</sup>	0.45	0.56	0.88	0.70	0.39	0.42	0.52	0.79	0.38	4.0	NDIR Digital Gas Analyzer
Benzene as C <sub>6</sub> H <sub>6</sub>	µg/m <sup>3</sup>	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	5.0	IS 5182 (Part XI):2006/CPCB Method
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	29.67	31.14	26.44	33.20	29.67	36.14	40.25	26.15	31.44	400	CPCB Method (Vol.I,May-2011)
Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	7.98	13.44	9.24	15.12	14.28	12.18	12.18	10.08	12.26	80	IS:5182(Part 2): Improved West and Gaeke
Oxides of Nitrogen (NO <sub>2</sub> )	µg/m <sup>3</sup>	24.17	34.13	28.98	37.03	31.10	35.13	26.40	24.06	28.75	80	IS:5182(Part 6):Modified Jacob & Hochheiser (Na-Arsenite)
Ozone (O <sub>3</sub> )\$	µg/m <sup>3</sup>	18.64	21.14	20.23	25.23	19.54	21.14	23.18	21.82	22.19	180	IS 5182 (PART IX) 1974/CPCB Method (Vol.I,May-2011)

Note: Limit#: Industrial, Residential, Rural and other Area Notification Dated 16th Nov.2009 as per national Ambient Air Quality Standards, CPCB New Delhi.

BDL\*: Below Detection Limit, Minimum Detection Limit, Lead as Pb (µg/m<sup>3</sup>):0.5, Benzo (a) Pyrene (BaP) - particulate phase only (ng/m<sup>3</sup>): 0.5, Nickel as Ni (ng/m<sup>3</sup>):10, Arsenic as As (ng/m<sup>3</sup>):2, Benzene as C<sub>6</sub>H<sub>6</sub> (µg/m<sup>3</sup>): 2

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## **NOISE MONITORING**

## **TEST CERTIFICATE**

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

### TEST CERTIFICATE FOR NOISE MONITORING

Type of Sample	: <b>Noise Monitoring</b>	Test Method	: <b>IS:11702</b>
----------------	---------------------------	-------------	-------------------

#### Day Time Monitoring Report

Sampling Time	Fire Station	Near Security Tower	Sada Village	Adani Site Office Near Gate No.02
<b>Longitude</b>	<b>N 15° 24.523'</b>	<b>N 15° 24.438'</b>	<b>N 15° 24.755'</b>	<b>N 15° 24.607'</b>
<b>Latitude</b>	<b>E 073° 47.800'</b>	<b>E 073° 47.967'</b>	<b>E 073° 47.942'</b>	<b>E 073° 47.819'</b>
<b>Date of Monitoring</b>	<b>18/07/2017</b>	<b>05/07/2017</b>	<b>21/07/2017</b>	<b>12/07/2017</b>
6:00-7:00	35.1	39.2	40.4	42.5
7:00-8:00	37.8	39.9	42.0	44.1
8:00-9:00	41.3	41.2	44.5	45.6
9:00-10:00	41.7	42.8	46.9	48.0
10:00-11:00	44.5	46.2	48.3	49.5
11:00-12:00	48.6	45.2	47.3	51.2
12:00-13:00	50.2	49.3	51.3	52.4
13:00-14:00	53.6	51.8	55.6	54.2
14:00-15:00	56.8	57.9	49.3	56.1
15:00-16:00	54.2	55.6	51.3	58.3
16:00-17:00	52.1	55.1	49.9	53.7
17:00-18:00	48.6	51.3	45.6	49.8
18:00-19:00	47.6	52.6	47.8	49.6
19:00-20:00	45.2	48.1	43.2	46.8
20:00-21:00	48.6	49.1	47.2	44.3
21:00-22:00	34.2	38.6	41.9	43.2
Maximum	56.8	57.9	55.6	58.3
Minimum	34.2	38.6	40.4	42.5



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## TEST CERTIFICATE FOR NOISE MONITORING

Type of Sample	: Noise Monitoring	Test Method	: IS:11702
----------------	--------------------	-------------	------------

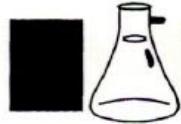
### Night Time Monitoring Report

Sampling Time	Fire Station	Near Security Tower	Sada Village	Adani Site Office Near Gate No.02
Longitude	<b>N 15° 24.523'</b>	<b>N 15° 24.438'</b>	<b>N 15° 24.755'</b>	<b>N 15° 24.607'</b>
Latitude	<b>E 073° 47.800'</b>	<b>E 073° 47.967'</b>	<b>E 073° 47.942'</b>	<b>E 073° 47.819'</b>
Date of Monitoring	<b>18/07/2017 &amp; 19/07/2017</b>	<b>05/07/2017 &amp; 06/07/2017</b>	<b>21/07/2017 &amp; 22/07/2017</b>	<b>12/07/2017 &amp; 13/07/2017</b>
22:00-23:00	47.2	48.3	44.1	45.6
23:00-00:00	47.8	48.9	46.1	50.3
00:00-01:00	42.3	43.8	41.7	44.9
01:00-02:00	41.2	43.6	40.5	44.3
02:00-03:00	42.6	44.8	45.6	42.3
03:00-04:00	42.0	43.1	41.1	44.3
04:00-05:00	41.1	47.8	45.3	43.1
05:00-06:00	39.0	40.3	45.3	42.8
Maximum	47.8	48.9	46.1	50.3
Minimum	39.0	40.3	40.5	42.8



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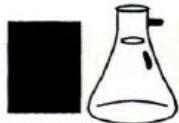
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## **MONITORING OF SEWAGE WATER (INLET & OUTLET)**

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### TEST CERTIFICATE FOR SEWAGE WATER

Location Number	: <b>1</b>	Quantity/No. of Samples	: <b>02 Lit/Two</b>
Name of Location	: <b>Near MPT Quarter STP</b>	Sampling Procedure	: <b>Grab</b>
Type of Sample	: <b>Sewage Water</b>	Lab ID	: <b>AG/1707/04 &amp; 05</b>
Date of Sampling	: <b>15/07/2017</b>	Date of Starting of Test	: <b>19/07/2017</b>
Date of Sample Receipt	: <b>19/07/2017</b>	Date of Completion	: <b>26/07/2017</b>

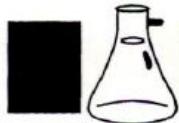
#### RESULT TABLE

TEST PARAMETER	UNIT	RESULTS		TEST/SAMPLING METHOD
		STP INLET	STP OUTLET	
pH	--	7.29	7.67	IS3025(P11)83Re.02
Total Suspended Solids	mg/L	68	20	IS3025(P17)84Re.02
BOD (3 Days @ 27 °C)	mg/L	29	16	IS3025 P44)1993Re.03Edition2.1
COD	mg/L	102	48	APHA(22 <sup>nd</sup> Edi) 5520-D Open Reflux
Oil & Grease	mg/L	1.14	BDL*	APHA(22 <sup>nd</sup> Edi)5520D
Residual Free Chlorine	mg/L	< 0.1	0.6	APHA(22 <sup>nd</sup> Edi)4500 CI

Not: BDL\*: Below Detection Limit: Minimum Detection Limit, Oil & Grease: 1.0 mg/L

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### TEST CERTIFICATE FOR SEWAGE WATER

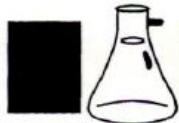
Location Number	: 2	Quantity/No. of Samples	: 02 Lit/One
Name of Location	: STP Outlet (Baina Severage Plant)	Sampling Procedure	: Grab
Type of Sample	: Sewage Water	Lab ID	: AG/1707/06
Date of Sampling	: 15/07/2017	Date of Starting of Test	: 18/07/2017
Date of Sample Receipt	: 18/07/2017	Date of Completion	: 26/07/2017

#### RESULT TABLE

TEST PARAMETER	UNIT	RESULTS	TEST/SAMPLING METHOD
		OUTLET	
pH	--	7.12	IS3025(P11)83Re.02
Total Suspended Solids	mg/L	84	IS3025(P17)84Re.02
BOD (3 Days @ 27 °C)	mg/L	32	IS3025 P44)1993Re.03Edition2.1
COD	mg/L	118	APHA(22 <sup>nd</sup> Edi) 5520-D Open Reflux
Oil & Grease	mg/L	1.06	APHA(22 <sup>nd</sup> Edi)5520D
Residual Free Chlorine	mg/L	0.7	APHA(22 <sup>nd</sup> Edi)4500 CI

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## **WEATHER DATA MONITORING MONTHLY TEST CERTIFICATE**

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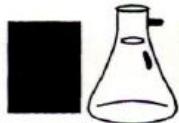
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Date	Avg wind Speed (m/s)	Avg wind Direction (deg)	Temperature (°C)	RH %	Precip. (mm)
01/07/2017	1.2	310.2	28	88.0	13
02/07/2017	2.5	268.4	27	78.0	18
03/07/2017	2.2	279.7	26	91.0	19
04/07/2017	3.5	280.9	28	86.0	8
05/07/2017	2.8	264.6	27	82.0	22
06/07/2017	1.7	314.1	26	87.0	0
07/07/2017	1.4	264.3	26	85.0	0
08/07/2017	1.6	270.5	27	90.0	2
09/07/2017	2.1	288.7	26	94.0	41
10/07/2017	2.8	262.4	28	81.0	1
11/07/2017	1.6	252.9	27	83.0	14
12/07/2017	1.7	279.1	28	79.0	8
13/07/2017	2.0	263.7	27	81.0	10
14/07/2017	1.3	289.8	27	96.0	15
15/07/2017	1.5	264.3	26	89.0	9
16/07/2017	1.9	275.1	28	83.0	8
17/07/2017	2.3	280.2	26	86.0	71
18/07/2017	1.8	305.7	28	89.0	142
19/07/2017	1.6	281.9	28	95.0	115
20/07/2017	2.2	264.6	27	88.0	26
21/07/2017	2.3	100.5	26	85.0	21
22/07/2017	1.7	256.7	28	78.0	7
23/07/2017	1.3	295.3	27	93.0	9
24/07/2017	0.8	254.2	27	87.0	18
25/07/2017	0.7	279.6	26	82.0	9
26/07/2017	0.6	284.3	28	91.0	7
27/07/2017	0.9	281.9	28	80.0	8
28/07/2017	1.1	296.4	28	88.0	8
29/07/2017	0.5	268.2	25	90.0	8
30/07/2017	0.9	274.1	26	93.0	10
31/07/2017	1.4	264.8	28	81.0	28

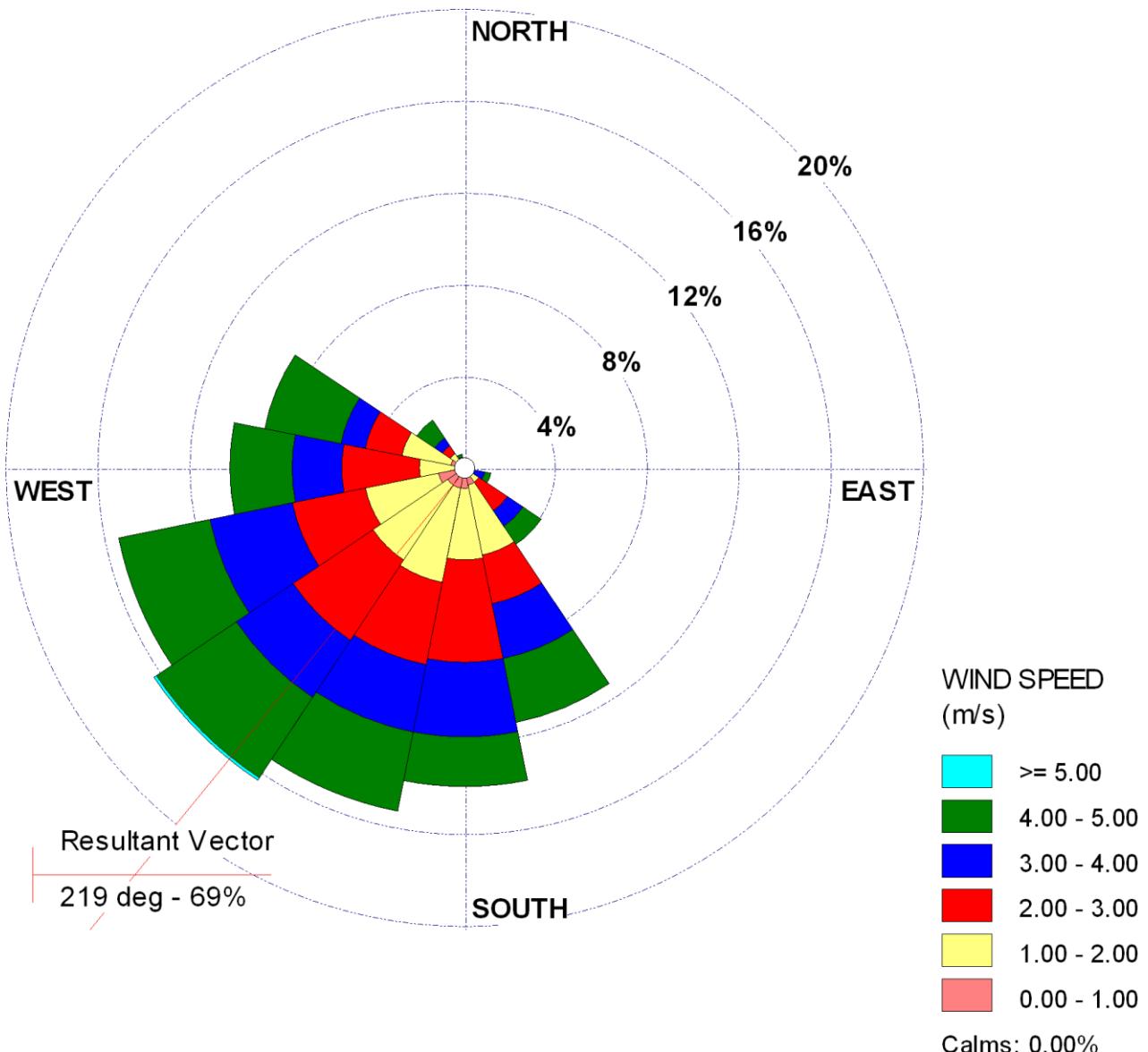


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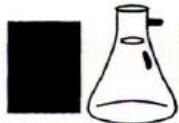


## WIND ROSE DIAGRAM JULY 2017



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

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## "ENVIRONMENTAL MONITORING REPORT"

*FOR*

**adani**™

**ADANI MURMUGAO PORT TERMINAL PVT. LTD. (AMPTPL)**  
**GROUND FLOOR, PORT USERS COMPLEX,**  
**NEAR STATE BANK OF INDIA,**  
**MORMUGAO HARBOUR,**  
**GOA – 403 803, INDIA**  
**TEL NO. 832-2594253**

**AUGUST - 2017**

**PREPARED BY:**

**Pollucon**

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**PHONE/FAX (+91 261) 2455751, 2601106, 2601224**  
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**TC-5945**

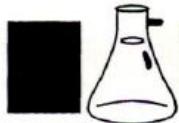
**ISO 9001:2008**

**ISO 14001:2004**

**OHSAS 18001:2007**

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LABORATORIES PVT. LTD.

Environmental Auditors, Consultants & Analysts.  
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**"ENVIRONMENTAL MONITORING REPORT"***FOR*

**ADANI MURMUGAO PORT TERMINAL PVT. LTD. (AMPTPL)**  
**GROUND FLOOR, PORT USERS COMPLEX,**  
**NEAR STATE BANK OF INDIA,**  
**MORMUGAO HARBOUR,**  
**GOA – 403 803, INDIA**  
**TEL NO. 832-2594253**

**For and on behalf of Pollucon Laboratories Pvt. Ltd., Surat**

**Approved by** : Dr. Arun Kumar Bajpai

**Signed** :

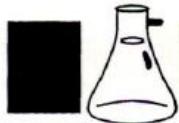


**Designation** : Lab Manager (Q)

This report is prepared by Pollucon laboratories Pvt. Ltd. with all reasonable skills, care and diligence, incorporating our General Terms and Conditions of Business and taking account of the resources devoted. Name of the sampling location / sample identity details – provided by client itself.

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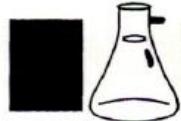
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Recognised by MoEF, New Delhi Under Sec. 12 of Environmental (Protection) Act-1986**INDEX**

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## **MARINE ECOLOGICAL SURVEY**

### **A. SEA WATER ANALYSIS**

**&**

### **B. SEDIMENT ANALYSIS**

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## TEST CERTIFICATE FOR SEA WATER

Page: 1 of 2

Location Number	:	1			
Name of Location	:	Sea Surface Water (Near Jetty)	Longitude	:	N 15° 24.748'
Type of Sample	:	Marine Water Sample	Latitude	:	E 073° 47.938'
Sampling Date	:	11/08/2017	Quantity/No. of Sample	:	05 Lit./Two
Sample Receipt Date	:	14/08/2017	Lab ID	:	AG/1708/01 & 02
Date of Starting of Test	:	14/08/2017	Date of Completion	:	31/08/2017

### RESULT TABLE

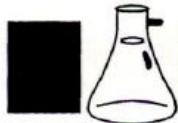
SR. NO.	TEST PARAMETERS	UNIT	RESULT		TEST/SAMPLING METHOD
			SURFACE	BOTTOM	
1	pH	--	8.03	8.15	IS3025 (P11)83Re.02
2	Temperature	°C	28	29	IS3025(P9)84Re.02
3	Total Suspended Solids	mg/L	76	88	IS3025(P17)84Re.02
4	BOD (3 Days @ 27 °C)	mg/L	BDL*	BDL*	IS 3025 (P44)1993 Re.03Edition2.1
5	Dissolved Oxygen	mg/L	5.2	4.6	IS3025(P38)89Re.99
6	Salinity	ppt	39.6	40.5	APHA 2550 B
7	Oil & Grease	mg/L	1.0	BDL*	APHA(22 <sup>nd</sup> Edi)5520D
8	Nitrate as NO <sub>3</sub>	mg/L	0.56	0.7	IS3025(P34)88
9	Nitrite as NO <sub>2</sub>	mg/L	0.046	0.05	IS3025(P34)88 NEDA
10	Ammonical Nitrogen as NH <sub>3</sub>	mg/L	0.032	0.43	IS3025(P34)88Cla.2.3
11	Phosphates as PO <sub>4</sub>	mg/L	0.16	0.31	APHA(22 <sup>nd</sup> Edi) 4500 C
12	Total Nitrogen	mg/L	0.926	1.19	IS3025(P34)88
13	Petroleum Hydrocarbon	µg/L	BDL*	BDL*	PLPL-TPH
14	Total Dissolved Solids	mg/L	36980	37420	IS3025(P16)84Re.02
15	COD	mg/L	22	19	APHA(22 <sup>nd</sup> Edi) 5520-D Open Reflux
16	Oxidisable Particular Organic Carbon	%	0.72	0.39	SOP – PLPL - 06
<b>A</b>	<b>Flora and Fauna</b>				
17.1	Primary Productivity	mgC/L/day	1.913	0.113	APHA (22 <sup>nd</sup> Edi) 10200-J

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# TEST CERTIFICATE FOR SEA WATER

Page: 2 of 2

## RESULT TABLE

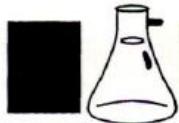
SR. NO.	TEST PARAMETERS	UNIT	RESULT		TEST/SAMPLING METHOD
			SURFACE	BOTTOM	
<b>B</b>	<b>Phytoplankton</b>				
18.1	Chlorophyll	mg/m <sup>3</sup>	1.816	0.24	APHA (22 <sup>nd</sup> Edi) 10200-H
18.2	Phaeophytin	mg/m <sup>3</sup>	0.147	1.647	APHA (22 <sup>nd</sup> Edi) 10200-H
18.3	Cell Count	Unit x 10 <sup>3</sup> /L	212	32	APHA (22 <sup>nd</sup> Edi) 10200-H
18.4	Name of Group Number and name of group species of each group	--	<b>Bacillariophyceae</b>	<b>Bacillariophyceae</b>	APHA (22 <sup>nd</sup> Edi) 10200-H
			<i>Nitzschia</i> sp.	<i>Nitzschia</i> sp.	
			<i>Coscinodiscus</i> sp.	<i>Synedra</i> sp.	
			<i>Rhizosolenia</i> sp.	<i>Fragillaria</i> sp.	
			<i>Thallasiosira</i> sp.	<i>Cymbella</i> sp.	
			<i>Fragillaria</i> sp.	<i>Gyrosigma</i> sp.	
			<b>Green Algae</b>	--	
			<i>Volvox</i> sp.	--	
			<i>Chlorella</i> sp.	--	
<b>C</b>	<b>Zooplanktons</b>				
19.1	Abundance (Population)	no/m <sup>2</sup>	260	120	APHA (22 <sup>nd</sup> Edi) 10200-G
19.2	Name of Group Number and name of group species of each group	--	<i>Hydrozoa</i>	<i>Gastropods</i>	APHA (22 <sup>nd</sup> Edi) 10200-G
			<i>Isopods</i>	<i>Hydrozoa</i>	
			Krill	<i>Mysis</i>	
			<i>Polychaete worms</i>	<i>Decapods</i>	
19.3	Total Biomass	ml/100 m <sup>3</sup>	49	11	APHA (22 <sup>nd</sup> Edi) 10200-G
<b>D</b>	<b>Microbiological Parameters</b>				
20.1	Total Bacterial Count	CFU/ml	1870	1520	IS 5402:2002
20.2	Total Coliform	/ml	Absent	Absent	APHA(22ndEdi)9221-D
20.3	E.coli	/ml	--	--	IS:1622:1981Edi.2.4(2003-05)
20.4	Enterococcus species	/ml	--	--	IS:15186:2002
20.5	Salmonella species	/ml	--	--	IS:5887(P-3)
20.6	Shigella species	/ml	--	--	-
20.7	Vibrio species	/ml	--	--	IS:5887(P-5)

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

*[Signature]*

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**TEST CERTIFICATE FOR SEA SEDIMENT**

Location Number	: 1	Longitude	: N 15° 24.748'
Name of Location	: Sea Sediment Water	Latitude	: E 073° 47.938'
Type of Sample	: Sediment Sample	Quantity/No. of Sample	: 05 Lit./One
Sampling Date	: 11/08/2017	Lab ID	: AG/1708/03
Sample Receipt Date	: 14/08/2017	Date of Completion	: 31/08/2017
Date of Starting of Test	: 14/08/2017		

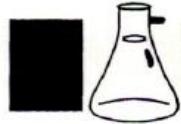
**RESULT TABLE**

SR. NO.	TEST PARAMETERS	UNIT	RESULT	TEST/SAMPLING METHOD
			SEDIMENT	
1	Organic	%	0.57	FCO: 2006
2	Phosphorus as P	µg/kg	278	APHA(22 <sup>nd</sup> Edi) 4500 C
3	Texture	--	Sandy	--
4	Petroleum Hydrocarbon	mg/kg	BDL*	PLPL-TPH
5	<b>Heavy Metals</b>			
5.1	Aluminum as Al	%	5.06	AAS APHA 3111 B
5.2	Total Chromium as Cr <sup>+3</sup>	µg/kg	0.39	AAS 3111B
5.3	Manganese as Mn	µg/kg	801	AAS APHA 3111 B
5.4	Iron as Fe	%	2.14	AAS APHA (22 <sup>nd</sup> Edi) 3111 B
5.5	Nickel as Ni	µg/kg	22.24	AAS APHA (22 <sup>nd</sup> Edi) 3111 B
5.6	Copper as Cu	µg/kg	50.09	AAS APHA (22 <sup>nd</sup> Edi) 3111 B
5.7	Zinc as Zn	µg/kg	49.94	AAS APHA (22 <sup>nd</sup> Edi) 3111 B
5.8	Lead as Pb	µg/kg	1.13	AAS APHA (22 <sup>nd</sup> Edi) 3111 B
5.9	Mercury as Hg	µg/kg	BDL*	AAS APHA- 3112 B
6	<b>Benthic Organisms</b>			
6.1	Macrofauna (No and name of groups present, No and name of species of each group present)	--	<i>Polychaete worms</i> <i>Molluscs</i> <i>Isopods</i> <i>Crustaceans</i>	APHA (22 <sup>nd</sup> Edi) 10500-C
6.2	MeioBenthos (No and name of groups present, No and name of species of each group present)	--	<i>Nematodes</i> <i>Copepods</i>	APHA (22 <sup>nd</sup> Edi) 10500-C
6.3	Population	no/m <sup>2</sup>	318	APHA (22 <sup>nd</sup> Edi) 10500-C

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

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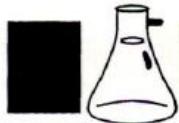


## **AMBIENT AIR QUALITY MONITORING**

## **TEST CERTIFICATE**

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## TEST CERTIFICATE FOR AMBIENT AIR QUALITY MONITORING

Location Number	: 3								
Name of Location	: Sada Village			Longitude					: N 15° 24.755'
Type of Sample	: Ambient Air Quality Monitoring			Latitude					: E 073° 47.942'
Sampling Duration	: 24 Hrs.								

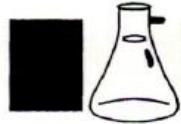
### RESULT TABLE

TEST PARAMETER	UNIT	DATE OF SAMPLING									LIMIT #	TEST/SAMPLING METHOD
		03/08/2017	07/08/2017	10/08/2017	14/08/2017	17/08/2017	21/08/2017	24/08/2017	28/08/2017	31/08/2017		
Lab ID (AGA/1708) [A - H]	03	06	09	12	15	18	21	24	27			
Wind Direction	WSW-ENE	W-E	WNW-ESE	NW-SE	SW-NE	NW-SE	SW-NE	SSW-NNE	ESE-WNW			
Particulate Matter (PM <sub>10</sub> )	µg/m <sup>3</sup>	42.38	36.50	30.40	26.43	54.81	48.37	38.41	21.50	58.56	100	IS:5182(Part 23):Gravimetric CPCB - Method (Vol.I,May-2011)
Particulate Matter (PM <sub>2.5</sub> )	µg/m <sup>3</sup>	20.42	19.58	21.67	16.67	30.41	24.16	18.75	15.41	28.75	60	Gravimetric- CPCB - Method (Vol.I,May-2011)
Lead as Pb	µg/m <sup>3</sup>	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	1.0	CPCB Method (Vol.I,May-2011)
Benzo (a) Pyrene (BaP)- particulate phase only	ng/m <sup>3</sup>	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	1.0	CPCB Method (Vol.I,May-2011)
Arsenic as As	ng/m <sup>3</sup>	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	6.0	CPCB Method (Vol.I,May-2011)
Nickel as Ni	ng/m <sup>3</sup>	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	20	CPCB Method (Vol.I,May-2011)
Carbon Monoxide as CO	mg/m <sup>3</sup>	0.48	0.63	0.73	0.84	0.56	0.53	0.61	0.81	0.38	4.0	NDIR Digital Gas Analyzer
Benzene as C <sub>6</sub> H <sub>6</sub>	µg/m <sup>3</sup>	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	5.0	IS 5182 (Part XI):2006/CPCB Method
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	34.07	38.40	29.74	37.83	28.87	36.38	42.16	35.23	41.29	400	CPCB Method (Vol.I,May-2011)
Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	9.24	15.12	7.14	17.64	12.18	8.40	15.12	9.24	15.65	80	IS:5182(Part 2): Improved West and Gaeke
Oxides of Nitrogen (NO <sub>2</sub> )	µg/m <sup>3</sup>	26.98	30.19	25.14	41.09	34.21	28.35	31.11	27.09	32.71	80	IS:5182(Part 6):Modified Jacob & Hochreiser (Na-Arsenite)
Ozone (O <sub>3</sub> )\$	µg/m <sup>3</sup>	19.64	23.70	21.22	26.19	18.28	23.25	24.15	18.96	23.63	180	IS 5182 (PART IX) 1974/CPCB Method (Vol.I,May-2011)

Note: Limit#: Industrial, Residential, Rural and other Area Notification Dated 16th Nov.2009 as per national Ambient Air Quality Standards, CPCB New Delhi.  
BDL\*: Below Detection Limit, Minimum Detection Limit, Lead as Pb (µg/m<sup>3</sup>):0.5, Benzo (a) Pyrene (BaP) - particulate phase only (ng/m<sup>3</sup>): 0.5, Nickel as Ni (ng/m<sup>3</sup>):10, Arsenic as As (ng/m<sup>3</sup>):2, Benzene as C<sub>6</sub>H<sub>6</sub> (µg/m<sup>3</sup>): 2

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## **NOISE MONITORING**

## **TEST CERTIFICATE**

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## TEST CERTIFICATE FOR NOISE MONITORING

Type of Sample	: <b>Noise Monitoring</b>	Test Method	: <b>IS:11702</b>
----------------	---------------------------	-------------	-------------------

### Day Time Monitoring Report

Sampling Time	Fire Station	Near Security Tower	Sada Village	Adani Site Office Near Gate No.02
<b>Longitude</b>	<b>N 15° 24.523'</b>	<b>N 15° 24.438'</b>	<b>N 15° 24.755'</b>	<b>N 15° 24.607'</b>
<b>Latitude</b>	<b>E 073° 47.800'</b>	<b>E 073° 47.967'</b>	<b>E 073° 47.942'</b>	<b>E 073° 47.819'</b>
<b>Date of Monitoring</b>	<b>04/08/2017</b>	<b>09/08/2017</b>	<b>19/08/2017</b>	<b>23/08/2017</b>
6:00-7:00	33.8	42.3	37.6	41.5
7:00-8:00	42.5	38.9	45.2	43.2.
8:00-9:00	44.2	43.6	48.1	46.6
9:00-10:00	42.9	45.2	47.2	54.2
10:00-11:00	43.8	44.1	45.7	47.2
11:00-12:00	47.9	44.08	49.5	49.5
12:00-13:00	51.5	48.2	52.3	52.6
13:00-14:00	52.3	50.9	53.5	53.7
14:00-15:00	53.4	52.6	48.9	55.8
15:00-16:00	55.8	54.7	50.2	54.4
16:00-17:00	52.1	56.6	49.6	49.5
17:00-18:00	50.9	53.8	47.7	50.6
18:00-19:00	49.0	51.6	46.2	48.2
19:00-20:00	45.6	49.2	44.1	47.0
20:00-21:00	46.3	47.2	49.3	45.02
21:00-22:00	43.1	44.1	42.8	44.8
Maximum	55.8	56.5	53.5	54.4
Minimum	33.8	38.9	37.6	41.5



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## TEST CERTIFICATE FOR NOISE MONITORING

Type of Sample	: <b>Noise Monitoring</b>	Test Method	: <b>IS:11702</b>
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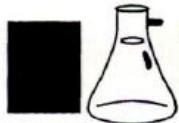
### Night Time Monitoring Report

Sampling Time	Fire Station	Near Security Tower	Sada Village	Adani Site Office Near Gate No.02
<b>Longitude</b>	<b>N 15° 24.523'</b>	<b>N 15° 24.438'</b>	<b>N 15° 24.755'</b>	<b>N 15° 24.607'</b>
<b>Latitude</b>	<b>E 073° 47.800'</b>	<b>E 073° 47.967'</b>	<b>E 073° 47.942'</b>	<b>E 073° 47.819'</b>
<b>Date of Monitoring</b>	<b>04/08/2017 &amp; 05/08/2017</b>	<b>09/08/2017 &amp; 10/08/2017</b>	<b>19/08/2017 &amp; 20/08/2017</b>	<b>23/08/2017 &amp; 24/08/2017</b>
22:00-23:00	45.8	51.5	47.4	43.1
23:00-00:00	43.1	45.3	48.7	44.2
00:00-01:00	45.2	44.5	44.4	45.4
01:00-02:00	42.7	42.1	44.5	43.1
02:00-03:00	42.5	41.4	39.3	42.5
03:00-04:00	44.2	42.1	43.5	45.6
04:00-05:00	42.5	43.7	44.5	45.9
05:00-06:00	42.1	45.3	43.7	43.2
Maximum	45.8	51.5	47.4	45.9
Minimum	42.1	41.4	39.4	42.5



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## **MONITORING OF SEWAGE WATER**

**(INLET & OUTLET)**

**MONTHLY TEST CERTIFICATE**

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### TEST CERTIFICATE FOR SEWAGE WATER

Location Number	: 1	Quantity/No. of Samples	: 02 Lit/Two
Name of Location	: STP Plant	Sampling Procedure	: Grab IS 4733: 1972
Type of Sample	: Sewage Water	Lab ID	: AG/1708/04 & 05
Date of Sampling	: 12/08/2017	Date of Starting of Test	: 15/08/2017
Date of Sample Receipt	: 15/08/2017	Date of Completion	: 24/08/2017

#### RESULT TABLE

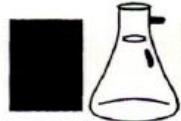
TEST PARAMETER	UNIT	RESULTS		TEST/SAMPLING METHOD
		STP INLET	STP OUTLET	
pH	--	7.42	7.83	IS3025(P11)83Re.02
Total Suspended Solids	mg/L	110	20	IS3025(P17)84Re.02
BOD (3 Days @ 27 °C)	mg/L	44	12	IS3025 P44)1993Re.03Edition2.1
COD	mg/L	196	34	APHA(22 <sup>nd</sup> Edi) 5520-D Open Reflux
Oil & Grease	mg/L	1.56	BDL*	APHA(22 <sup>nd</sup> Edi)5520D
Residual Free Chlorine	mg/L	<0.1	0.7	APHA(22 <sup>nd</sup> Edi)4500 CI

Not: BDL\*: Below Detection Limit: Minimum Detection Limit, Oil & Grease: 1.0 mg/L



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## **WEATHER DATA MONITORING MONTHLY TEST CERTIFICATE**

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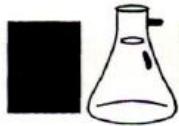
Page **15** of **17**

Date	Avg wind Speed (m/s)	Avg wind Direction (deg)	Temperature (°C)	RH %	Precip. (mm)
01/08/2017	1.2	324	26	81	5.1
02/08/2017	1.6	317	27	87	1.5
03/08/2017	2.5	271	28	90	13.5
04/08/2017	2.8	297	26	83	13.0
05/08/2017	2.0	335	26	91	4.1
06/08/2017	1.8	303	27	86	8.1
07/08/2017	1.6	221	26	91	3.8
08/08/2017	1.4	229	28	88	0.0
09/08/2017	1.1	189	28	91	4.1
10/08/2017	2.2	273	27	80	18.0
11/08/2017	0.8	201	27	84	47.0
12/08/2017	2.1	300	26	80	26.2
13/08/2017	1.8	342	29	87	0.0
14/08/2017	1.2	192	28	80	0.5
15/08/2017	1.7	170	26	80	3.0
16/08/2017	1.3	337	27	87	23.1
17/08/2017	0.6	256	28	83	4.8
18/08/2017	1.8	309	28	85	0.5
19/08/2017	2.5	224	27	86	10.9
20/08/2017	0.4	230	27	84	17.0
21/08/2017	2.2	322	26	83	6.1
22/08/2017	2.2	210	26	86	10.7
23/08/2017	2.4	220	28	91	0.0
24/08/2017	2.8	315	27	88	15.5
25/08/2017	1.6	298	27	80	13.5
26/08/2017	1.4	336	28	83	22.9
27/08/2017	1.8	234	26	85	35.1
28/08/2017	1.1	342	25	90	72.4
29/08/2017	0.8	203	27	91	50.3
30/08/2017	0.7	315	26	84	23.4
31/08/2017	1.3	244	27	90	7.6

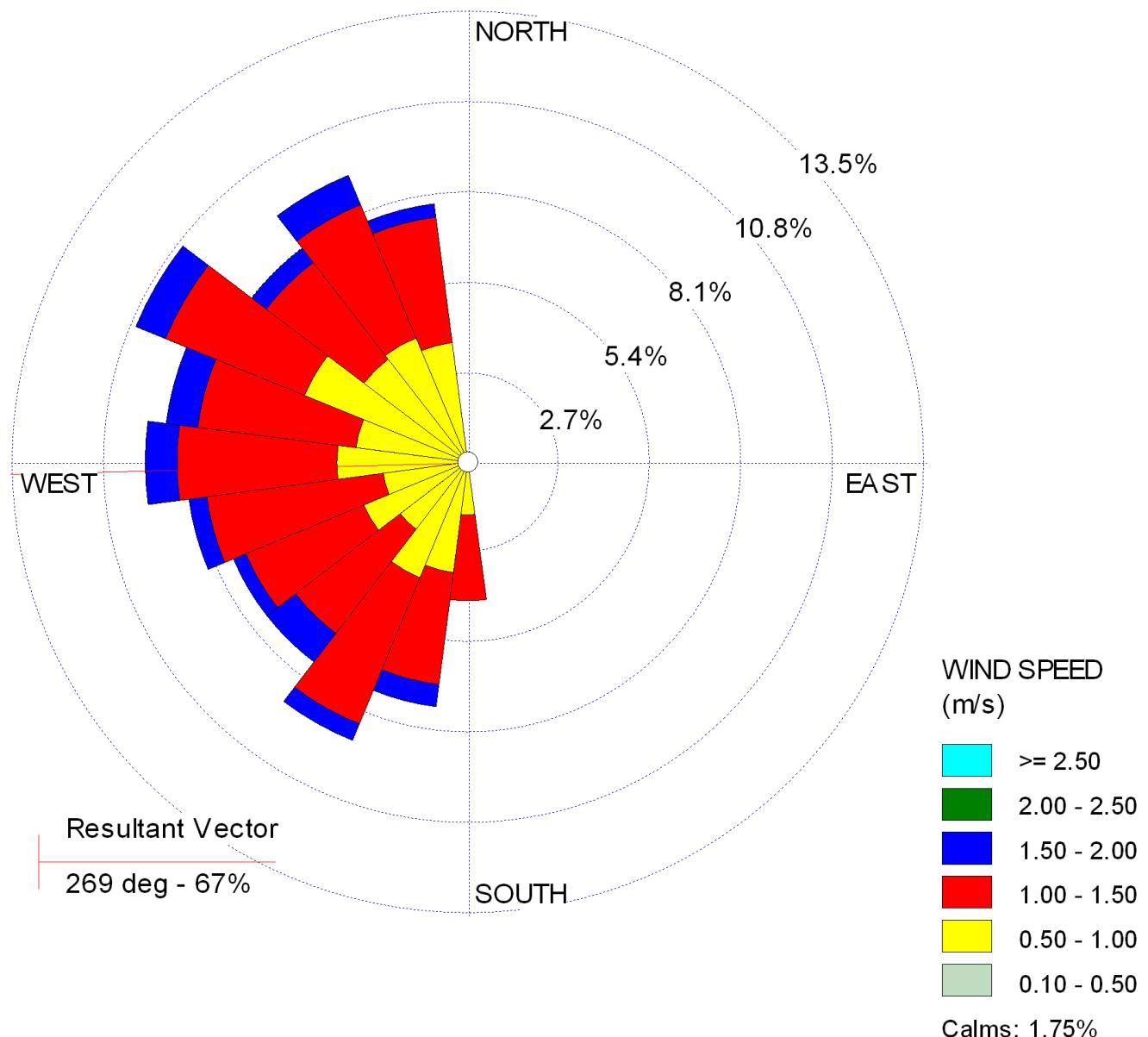


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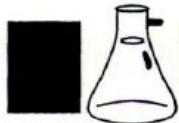


## WIND ROSE DIAGRAM AUGUST 2017



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

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## "ENVIRONMENTAL MONITORING REPORT"

FOR

**ADANI MURMUGAO PORT TERMINAL PVT. LTD. (AMPTPL)**  
**GROUND FLOOR, PORT USERS COMPLEX,**  
**NEAR STATE BANK OF INDIA,**  
**MORMUGAO HARBOUR,**  
**GOA – 403 803, INDIA**  
**TEL NO. 832-2594253**

**SEPTMBER - 2017**

**PREPARED BY:**

**POLLUCON LABORATORIES PVT. LTD.**  
**PLOT NO.5/6 "POLLUCON HOUSE", OPP. BALAJI INDUSTRIAL**  
**SOCIETY, OLD SHANTINATH MILL LANE, NEAR GAYTRI FARSAK,**  
**NAJVIVAN CIRCLE, UDHANA MAGDALLA ROAD SURAT-395007**  
**[www.polloconlab.com](http://www.polloconlab.com), [pollucon@gmail.com](mailto:pollucon@gmail.com)**

**TC-5945**

**ISO 9001:2008**

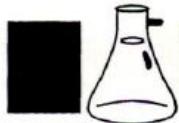
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**GOA – 403 803, INDIA**  
**TEL NO. 832-2594253**

For and on behalf of Pollucon Laboratories Pvt. Ltd., Surat

Approved by : Dr. Arun Kumar Bajpai

Signed :



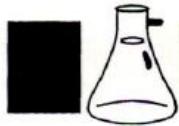
Designation : Lab Manager (Q)

This report is prepared by Pollucon laboratories Pvt. Ltd. with all reasonable skills, care and diligence, incorporating our General Terms and Conditions of Business and taking account of the resources devoted. Name of the sampling location / sample identity details – provided by client itself.

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www.polluconlab.com, pollucon@gmail.com

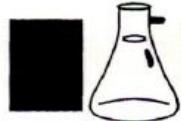
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A	<b>SEA WATER TEST CERTIFICATE</b>	5
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2	<b>AMBIENT AIR QUALITY MONITORING TEST CERTIFICATE</b>	8
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6	<b>SOIL QUALITY MONITORING TEST CERTIFICATE</b>	20
7	<b>WEATHER DATA TEST CERTIFICATE</b>	23
8	<b>WIND ROSE DIAGRAM</b>	25

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## **MARINE ECOLOGICAL SURVEY**

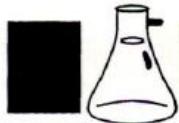
### **A. SEA WATER ANALYSIS**

**&**

### **B. SEDIMENT ANALYSIS**

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## TEST CERTIFICATE FOR SEA WATER

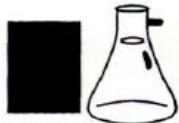
Page: 1 of 2

Location Number	:	1			
Name of Location	:	<b>Sea Surface Water (Near Jetty)</b>	Longitude	:	<b>N 15° 24.748'</b>
Type of Sample	:	<b>Marine Water Sample</b>	Latitude	:	<b>E 073° 47.938'</b>
Sampling Date	:	<b>13/09/2017</b>	Quantity/No. of Sample	:	<b>05 Lit./Two</b>
Sample Receipt Date	:	<b>16/09/2017</b>	Lab ID	:	<b>AG/1709/01 &amp; 02</b>
Date of Starting of Test	:	<b>16/09/2017</b>	Date of Completion	:	<b>26/09/2017</b>

### RESULT TABLE

SR. NO.	TEST PARAMETERS	UNIT	RESULT		TEST/SAMPLING METHOD
			SURFACE	BOTTOM	
1	pH	--	7.41	7.49	IS3025 (P11)83Re.02
2	Temperature	°C	28	29	IS3025(P9)84Re.02
3	Total Suspended Solids	mg/L	58	78	IS3025(P17)84Re.02
4	BOD (3 Days @ 27 °C)	mg/L	BDL*	BDL*	IS 3025 (P44)1993 Re.03Edition2.1
5	Dissolved Oxygen	mg/L	5.8	4.6	IS3025(P38)89Re.99
6	Salinity	ppt	38.8	39.62	APHA 2550 B
7	Oil & Grease	mg/L	0.8	BDL*	APHA(22 <sup>nd</sup> Edi)5520D
8	Nitrate as NO <sub>3</sub>	mg/L	0.5	0.68	IS3025(P34)88
9	Nitrite as NO <sub>2</sub>	mg/L	0.06	0.074	IS3025(P34)88 NEDA
10	Ammonical Nitrogen as NH <sub>3</sub>	mg/L	0.54	0.8	IS3025(P34)88Cla.2.3
11	Phosphates as PO <sub>4</sub>	mg/L	1.03	1.93	APHA(22 <sup>nd</sup> Edi) 4500 C
12	Total Nitrogen	mg/L	1.1	1.55	IS3025(P34)88
13	Petroleum Hydrocarbon	µg/L	1	BDL*	PLPL-TPH
14	Total Dissolved Solids	mg/L	32928	34080	IS3025(P16)84Re.02
15	COD	mg/L	24	18	APHA(22 <sup>nd</sup> Edi) 5520-D Open Reflux
16	Oxidisable Particular Organic Carbon	%	0.64	0.44	SOP – PLPL - 06
<b>A</b>	<b>Flora and Fauna</b>				
17.1	Primary Productivity	mgC/L/day	1.463	0.338	APHA (22 <sup>nd</sup> Edi) 10200-J
<i>Continue...</i>					

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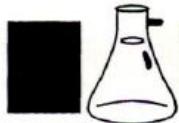
**TEST CERTIFICATE FOR SEA WATER**  
**RESULT TABLE**

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SR. NO.	TEST PARAMETERS	UNIT	RESULT		TEST/SAMPLING METHOD
			SURFACE	BOTTOM	
<b>B</b>	<b>Phytoplankton</b>				
18.1	Chlorophyll	mg/m <sup>3</sup>	1.095	0.134	APHA (22 <sup>nd</sup> Edi) 10200-H
18.2	Phaeophytin	mg/m <sup>3</sup>	1.372	1.885	APHA (22 <sup>nd</sup> Edi) 10200-H
18.3	Cell Count	Unit x 10 <sup>3</sup> /L	196	23	APHA (22 <sup>nd</sup> Edi) 10200-H
18.4	Name of Group Number and name of group species of each group	--	<b>Bacillariophyceae</b> <i>Achnanthes sp.</i> <i>Amphora sp.</i> <i>Asterionella sp</i> <i>Coscinodiscus sp.</i> <i>Pinnularia sp.</i> <i>Thallasiosira sp.</i> <b>Green Algae</b> <i>Hydrodictyon sp.</i> <b>Cyanophyceae</b> <i>Oscillatoria sp.</i> <i>Spirulina sp.</i>	<b>Bacillariophyceae</b> <i>Fragillaria sp.</i> <i>Synedra sp.</i> <i>Gyrosigma sp.</i> <i>Gomphonema sp.</i> <b>Green Algae</b> <i>Pandorina sp.</i> <i>Chlorella sp.</i> <b>Cyanophyceae</b> <i>Oscillatoria sp.</i> <i>Nostoc sp.</i> --	APHA (22 <sup>nd</sup> Edi) 10200-H
<b>C</b>	<b>Zooplanktons</b>				
19.1	Abundance (Population)	no/m <sup>2</sup>	220	60	APHA (22 <sup>nd</sup> Edi) 10200-G
19.2	Name of Group Number and name of group species of each group	--	<i>Copepods</i> <i>Cyclops</i> <i>Krill</i> <i>Polychaete worms</i> <i>Decapods</i>	<i>Copepods</i> <i>Ctenophores</i> <i>Rotifers</i> <i>Snail</i>	APHA (22 <sup>nd</sup> Edi) 10200-G
19.3	Total Biomass	ml/100 m <sup>3</sup>	35	7	APHA (22 <sup>nd</sup> Edi) 10200-G
<b>D</b>	<b>Microbiological Parameters</b>				
20.1	Total Bacterial Count	CFU/ml	1640	1270	IS 5402:2002
20.2	Total Coliform	/ml	Absent	Absent	APHA(22ndEdi)9221-D
20.3	E.coli	/ml	Absent	Absent	IS:1622:1981Edi.2.4(2003-05)
20.4	Enterococcus species	/ml	Absent	Absent	IS:15186:2002
20.5	Salmonella species	/ml	Absent	Absent	IS:5887(P-3)
20.6	Shigella species	/ml	Absent	Absent	IS:1887(P-7)
20.7	Vibrio species	/ml	Absent	Absent	IS:5887(P-5)

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

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## TEST CERTIFICATE FOR SEA SEDIMENT

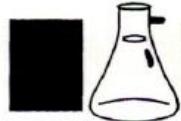
Location Number	: 1	Longitude	: N 15° 24.748'
Name of Location	: Sea Sediment Water (Near Jetty)	Latitude	: E 073 ° 47.938'
Type of Sample	: Sediment Sample	Quantity/No. of Sample	: 05 Kg/One
Sampling Date	: 13/09/2017	Lab ID	: AG/1709/03
Sample Receipt Date	: 16/09/2017	Date of Completion	: 26/09/2017
Date of Starting of Test	: 16/09/2017		

### RESULT TABLE

SR. NO.	TEST PARAMETERS	UNIT	RESULT	TEST/SAMPLING METHOD
			SEDIMENT	
1	Organic Matter	%	Sandy	FCO: 2006
2	Phosphorus as P	µg/kg	178	APHA(22 <sup>nd</sup> Edi) 4500 C
3	Texture	--	Sandy	--
4	Petroleum Hydrocarbon	mg/kg	BDL*	PLPL-TPH
5	<b>Heavy Metals</b>			
5.1	Aluminum as Al	%	5.06	AAS APHA 3111 B
5.2	Total Chromium as Cr <sup>+3</sup>	µg/kg	0.402	AAS 3111B
5.3	Manganese as Mn	µg/kg	690	AAS APHA 3111 B
5.4	Iron as Fe	%	14.94	AAS APHA (22 <sup>nd</sup> Edi) 3111 B
5.5	Nickel as Ni	µg/kg	20.9	AAS APHA (22 <sup>nd</sup> Edi) 3111 B
5.6	Copper as Cu	µg/kg	52.26	AAS APHA (22 <sup>nd</sup> Edi) 3111 B
5.7	Zinc as Zn	µg/kg	62.6	AAS APHA (22 <sup>nd</sup> Edi) 3111 B
5.8	Lead as Pb	µg/kg	0.888	AAS APHA (22 <sup>nd</sup> Edi) 3111 B
5.9	Mercury as Hg	µg/kg	BDL*	AAS APHA- 3112 B
6	<b>Benthic Organisms</b>			
6.1	Macrobenthos (No and name of groups present, No and name of species of each group present)	--	<i>Polychaete worms</i> <i>Isopods</i> <i>Decapods</i>	APHA (22 <sup>nd</sup> Edi) 10500-C
			<i>Foraminiferans</i>	
6.2	MeioBenthos (No and name of groups present, No and name of species of each group present)	--	<i>Bryozoans</i> <i>Ciliates</i>	APHA (22 <sup>nd</sup> Edi) 10500-C
6.3	Population	no/m <sup>2</sup>	481	APHA (22 <sup>nd</sup> Edi) 10500-C

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

**Authorized Signatory**

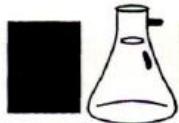


## **AMBIENT AIR QUALITY MONITORING**

## **TEST CERTIFICATE**

**Authorized Signatory**

PLOT NO.5/6 "POLLUCON HOUSE", OPP. BALAJI INDUSTRIAL SOCIETY, OLD SHANTINATH MILL LANE, NEAR GAYTRI FARSAN, NAVJIVAN CIRCLE, UDHANA MAGDALLA ROAD SURAT-395007  
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TEST CERTIFICATE FOR AMBIENT AIR QUALITY MONITORING

Location Number	: 3	Longitude	: N 15° 24.755'
Name of Location	: Sada Village	Latitude	: E 073° 47.942'
Type of Sample	: Ambient Air Quality Monitoring		
Sampling Duration	: 24 Hrs.		

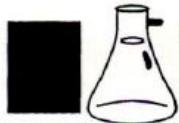
RESULT TABLE

TEST PARAMETER	UNIT	DATE OF SAMPLING								LIMIT#	TEST/SAMPLING METHOD
		04/09 /2017	07/09 /2017	11/09 /2017	14/09 /2017	21/09 /2017	23/09 /2017	25/09 /2017	28/09/ 2017		
Lab ID (AGA/1709) [A - H]		03	06	09	12	15	18	21	24		
Wind Direction		WSW-ENE	W-E	WNW-ESE	NW-SE	SW-NE	NW-SE	SW-NE	SSW-NNE		
Particulate Matter (PM <sub>10</sub> )	µg/m <sup>3</sup>	60.40	45.41	34.63	40.98	30.49	59.51	44.57	29.51	100	IS:5182(Part 23):Gravimetric CPCB - Method (Vol.I,May-2011)
Particulate Matter (PM <sub>2.5</sub> )	µg/m <sup>3</sup>	25.42	21.67	19.58	23.75	17.50	29.58	22.50	16.67	60	Gravimetric- CPCB - Method (Vol.I,May-2011)
Lead as Pb	µg/m <sup>3</sup>	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	1.0	CPCB Method (Vol.I,May-2011)
Benzo (a) Pyrene (BaP)- particulate phase only	ng/m <sup>3</sup>	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	1.0	CPCB Method (Vol.I,May-2011)
Arsenic as As	ng/m <sup>3</sup>	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	6.0	CPCB Method (Vol.I,May-2011)
Nickel as Ni	ng/m <sup>3</sup>	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	20	CPCB Method (Vol.I,May-2011)
Carbon Monoxide as CO	mg/m <sup>3</sup>	0.38	0.45	0.21	0.53	0.25	0.40	0.30	0.17	4.0	NDIR Digital Gas Analyzer
Benzene as C <sub>6</sub> H <sub>6</sub>	µg/m <sup>3</sup>	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	BDL*	5.0	IS 5182 (Part XI):2006/CPCB Method
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	35.32	28.70	18.61	31.37	14.64	24.50	36.27	10.46	400	CPCB Method (Vol.I,May-2011)
Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	15.57	10.45	8.35	12.66	7.50	9.61	11.57	5.34	80	IS:5182( Part 2): Improved West and Gaeke
Oxides of Nitrogen (NO <sub>2</sub> )	µg/m <sup>3</sup>	27.62	22.30	20.41	25.25	18.54	32.42	29.42	16.72	80	IS:5182( Part 6):Modified Jacob & Hochreiser (Na-Arsenite)
Ozone (O <sub>3</sub> )\$	µg/m <sup>3</sup>	23.47	19.47	16.64	22.50	20.61	24.68	18.62	15.71	180	IS 5182 (PART IX) 1974/CPCB Method (Vol.I,May-2011)

Note: Limit#: Industrial, Residential, Rural and other Area Notification Dated 16th Nov.2009 as per national Ambient Air Quality Standards, CPCB New Delhi.

BDL\*: Below Detection Limit, Minimum Detection Limit, Lead as Pb (µg/m<sup>3</sup>):0.5, Benzo (a) Pyrene (BaP) - particulate phase only (ng/m<sup>3</sup>): 0.5, Nickel as Ni (ng/m<sup>3</sup>):10, Arsenic as As (ng/m<sup>3</sup>):2, Benzene as C<sub>6</sub>H<sub>6</sub> (µg/m<sup>3</sup>): 2

Authorized Signatory



## **NOISE MONITORING**

## **TEST CERTIFICATE**

**Authorized Signatory**

PLOT NO.5/6 "POLLUCON HOUSE", OPP. BALAJI INDUSTRIAL SOCIETY, OLD SHANTINATH MILL LANE, NEAR GAYTRI FARSAN, NAVJIVAN CIRCLE, UDHANA MAGDALLA ROAD SURAT-395007  
[www.polluconlab.com](http://www.polluconlab.com), [pollucon@gmail.com](mailto:pollucon@gmail.com)

## TEST CERTIFICATE FOR NOISE MONITORING

Type of Sample	: <b>Noise Monitoring</b>	Test Method	: <b>IS:11702</b>
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### Day Time Monitoring Report

Sampling Time	Fire Station	Near Security Tower	Sada Village	Adani Site Office Near Gate No.02
<b>Longitude</b>	<b>N 15° 24.523'</b>	<b>N 15° 24.438'</b>	<b>N 15° 24.755'</b>	<b>N 15° 24.607'</b>
<b>Latitude</b>	<b>E 073° 47.800'</b>	<b>E 073° 47.967'</b>	<b>E 073° 47.942'</b>	<b>E 073° 47.819'</b>
<b>Date of Monitoring</b>	<b>15/09/2017</b>	<b>12/09/2017</b>	<b>06/09/2017</b>	<b>20/09/2017</b>
6:00-7:00	38.2	42.3	42.4	41.6
7:00-8:00	40.6	39.9	43.5	43.4
8:00-9:00	42.9	43.6	44.8	45.8
9:00-10:00	44.7	45.2	46.1	46.9
10:00-11:00	48.4	44.1	49.6	48.5
11:00-12:00	49.3	44.8	51.3	49.7
12:00-13:00	50.8	48.2	50.4	50.2
13:00-14:00	52.6	50.9	52.9	53.9
14:00-15:00	51.2	52.6	54.6	49.4
15:00-16:00	53.4	54.7	56.9	53.1
16:00-17:00	54.1	56.6	57.2	55.4
17:00-18:00	52.3	53.8	55.3	54.8
18:00-19:00	50.9	51.6	53.5	51.6
19:00-20:00	48.5	49.2	52.6	53.2
20:00-21:00	49.1	47.2	50.2	52.8
21:00-22:00	46.4	44.1	49.1	48.5
Maximum	53.4	56.6	57.2	55.4
Minimum	38.2	39.9	42.4	41.6



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### TEST CERTIFICATE FOR NOISE MONITORING

Type of Sample	: Noise Monitoring	Test Method	: IS:11702
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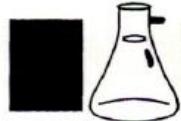
#### Night Time Monitoring Report

Sampling Time	Fire Station	Near Security Tower	Sada Village	Adani Site Office Near Gate No.02
Longitude	<b>N 15° 24.523'</b>	<b>N 15° 24.438'</b>	<b>N 15° 24.755'</b>	<b>N 15° 24.607'</b>
Latitude	<b>E 073° 47.800'</b>	<b>E 073° 47.967'</b>	<b>E 073° 47.942'</b>	<b>E 073° 47.819'</b>
Date of Monitoring	<b>15/09/2017&amp; 16/09/2017</b>	<b>12/09/2017&amp; 13/09/2017</b>	<b>06/09/2017&amp; 07/09/2017</b>	<b>20/09/2017&amp; 21/09/2017</b>
22:00-23:00	45.7	46.1	48.6	47.5
23:00-00:00	42.4	44.9	46.3	46.3
00:00-01:00	44.5	45.8	45.4	48.8
01:00-02:00	43.1	43.6	44.3	45.2
02:00-03:00	41.8	44.2	43.2	44.1
03:00-04:00	40.2	42.7	42.5	46.7
04:00-05:00	39.9	40.3	41.7	43.8
05:00-06:00	38.5	41.1	40.8	42.5
Maximum	45.7	46.1	48.6	48.8
Minimum	38.5	40.3	40.8	42.5



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## **MONITORING OF SEWAGE WATER**

**(INLET & OUTLET)**

**MONTHLY TEST CERTIFICATE**

**Authorized Signatory**

PLOT NO.5/6 "POLLUCON HOUSE", OPP. BALAJI INDUSTRIAL SOCIETY, OLD SHANTINATH MILL LANE, NEAR GAYTRI FARSAN, NAVJIVAN CIRCLE, UDHANA MAGDALLA ROAD SURAT-395007  
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## TEST CERTIFICATE FOR SEWAGE WATER

Location Number	: 1	Quantity/No. of Samples	: 02 Lit/Two
Name of Location	: Near MPT Quarter STP	Sampling Procedure	: Grab/IS: 4733 1972
Type of Sample	: Sewage Water	Lab ID	: AG/1709/04 & 05
Date of Sampling	: 13/09/2017	Date of Starting of Test	: 16/09/2017
Date of Sample Receipt	: 16/09/2017	Date of Completion	: 26/09/2017

### RESULT TABLE

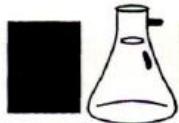
TEST PARAMETER	UNIT	RESULTS		TEST/SAMPLING METHOD
		STP INLET	STP OUTLET	
pH	--	6.56	7.43	IS3025(P11)83Re.02
Total Suspended Solids	mg/L	130	24	IS3025(P17)84Re.02
BOD (3 Days @ 27 °C)	mg/L	98	16	IS3025 P44)1993Re.03Edition2.1
COD	mg/L	334	50	APHA(22 <sup>nd</sup> Edi) 5520-D Open Reflux
Oil & Grease	mg/L	1.86	BDL*	APHA(22 <sup>nd</sup> Edi)5520D
Residual Free Chlorine	mg/L	<0.1	0.5	APHA(22 <sup>nd</sup> Edi)4500 CI

Not: BDL\*: Below Detection Limit: Minimum Detection Limit, Oil & Grease: 1.0 mg/L



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## TEST CERTIFICATE FOR SEWAGE WATER

Location Number	: 2	Quantity/No. of Samples	: 02 Lit/One
Name of Location	: STP Outlet (Baina Severage Plant)	Sampling Procedure	: Grab/IS: 4733 1972
Type of Sample	: Sewage Water	Lab ID	: AG/1709/06
Date of Sampling	: 13/09/2017	Date of Starting of Test	: 16/09/2017
Date of Sample Receipt	: 16/09/2017	Date of Completion	: 26/09/2017

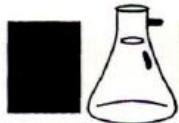
### RESULT TABLE

TEST PARAMETER	UNIT	RESULTS	TEST/SAMPLING METHOD
		STP OUTLET	
pH	--	7.66	IS3025(P11)83Re.02
Total Suspended Solids	mg/L	28	IS3025(P17)84Re.02
BOD (3 Days @ 27 °C)	mg/L	12	IS3025 P44)1993Re.03Edition2.1
COD	mg/L	40	APHA(22 <sup>nd</sup> Edi) 5520-D Open Reflux
Oil & Grease	mg/L	BDL*	APHA(22 <sup>nd</sup> Edi)5520D
Residual Free Chlorine	mg/L	0.6	APHA(22 <sup>nd</sup> Edi)4500 CI

BDL\*: Below Detection Limit. Minimum Detection Limit: oil & Grease: < 1.0 mg/L

**Authorized Signatory**

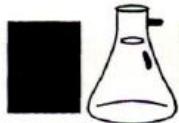
PLOT NO.5/6 "POLLUCON HOUSE", OPP. BALAJI INDUSTRIAL SOCIETY, OLD SHANTINATH MILL LANE, NEAR GAYTRI FARSAN, NAVJIVAN CIRCLE, UDHANA MAGDALLA ROAD SURAT-395007  
www.polluconlab.com, pollucon@gmail.com



## **MONITORING OF DUMP POND DISCHARGE QUARTERLY TEST CERTIFICATE**

**Authorized Signatory**

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## TEST CERTIFICATE FOR DUMP POND DISCHARGE WATER

Location Number	: 1	Quantity/No. of Samples	: 05 Lit/One
Name of Location	: Dump Pond - 1 Near CT - 8	Sampling Procedure	: Grab
Type of Sample	: Dump Pond Discharge water	Lab ID	: AG/1709/13
Date of Sampling	: 28/09/2017	Date of Starting of Test	: 02/10/2017
Sample Receipt Date	: 02/10/2017	Date of Completion	: 05/10/2017

### RESULT TABLE

TEST PARAMETER	UNIT	RESULTS	TEST/SAMPLING METHOD
pH	--	7.33	IS3025(P11)83Re.02
Total Dissolved Solids	mg/L	204	IS3025(P16)84Re.02
Total Suspended Solids	mg/L	14	IS3025(P17)84Re.02
Turbidity	NTU	9.6	APHA 2130-B
BOD (3 Days @ 27 °C)	mg/L	62	IS 3025 (P44)1993 Re.03Edition2.1
Dissolved Oxygen	mg/L	4.6	IS3025(P38)89Re.99
COD	mg/L	258	APHA(22 <sup>nd</sup> Edi) 5520-D Open Reflux
Salinity	ppt	0.08	APHA 2550 B
Oil & Grease	mg/L	BDL*	APHA(22 <sup>nd</sup> Edi)5520D
Total Hardness as CaCO <sub>3</sub>	mg/L	110	IS3025(P-21) 84EDTARe.02
Fluoride as F	mg/L	0.35	APHA(22 <sup>nd</sup> Edi) 4500 F D SPANDS
Chloride as Cl	mg/L	44.5	IS3025(P-32) 88Re.99Argentometric method
Zinc as Zn	mg/L	0.04	AAS- APHA (22ndEdition) 3111 B
Cadmium as Cd	mg/L	BDL*	AAS- APHA (22nd Edition) 3111 B
Lead as Pb	mg/L	0.01	AAS- APHA (22nd Edition) 3111 B
Mercury as Hg	mg/L	BDL*	AAS-APHA 22 Edition 3112 B

Note: BDL\*: Below Detection Limit, Minimum Detection Limit, Cadmium as Cd: 0.001 mg/L, Mercury as Hg: 0.00025 mg/L

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## TEST CERTIFICATE FOR DUMP POND DISCHARGE WATER

Location Number	: 2	Quantity/No. of Samples	: 05 Lit/One
Name of Location	: Dump Pond - 2 Near Pump House	Sampling Procedure	: Grab
Type of Sample	: Dump Pond Discharge water	Lab ID	: AG/1709/14
Date of Sampling	: 28/09/2017	Date of Starting of Test	: 02/10/2017
Sample Receipt Date	: 02/10/2017	Date of Completion	: 05/10/2017

### RESULT TABLE

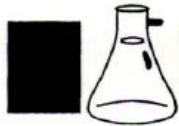
TEST PARAMETER	UNIT	RESULTS	TEST/SAMPLING METHOD
pH	--	7.2	IS3025(P11)83Re.02
Total Dissolved Solids	mg/L	376	IS3025(P16)84Re.02
Total Suspended Solids	mg/L	10	IS3025(P17)84Re.02
Turbidity	NTU	4.9	APHA 2130-B
BOD (3 Days @ 27 °C)	mg/L	32	IS 3025 (P44)1993 Re.03Edition2.1
Dissolved Oxygen	mg/L	4.9	IS3025(P38)89Re.99
COD	mg/L	118	APHA(22 <sup>nd</sup> Edi) 5520-D Open Reflux
Salinity	ppt	0.08	APHA 2550 B
Oil & Grease	mg/L	BDL*	APHA(22 <sup>nd</sup> Edi)5520D
Total Hardness as CaCO <sub>3</sub>	mg/L	148	IS3025(P-21) 84EDTARe.02
Fluoride as F	mg/L	0.6	APHA(22 <sup>nd</sup> Edi) 4500 F D SPANDS
Chloride as Cl	mg/L	56.1	IS3025(P-32) 88Re.99Argentometric method
Zinc as Zn	mg/L	0.08	AAS- APHA (22ndEdition) 3111 B
Cadmium as Cd	mg/L	BDL*	AAS- APHA (22nd Edition) 3111 B
Lead as Pb	mg/L	0.028	AAS- APHA (22nd Edition) 3111 B
Mercury as Hg	mg/L	BDL*	AAS-APHA 22 Edition 3112 B

Note: BDL\*: Below Detection Limit, Minimum Detection Limit, Cadmium as Cd: 0.001 mg/L, Mercury as Hg: 0.00025 mg/L, Oil & Grease: 1.0 mg/L



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**TEST CERTIFICATE FOR DUMP POND DISCHARGE WATER**

Location Number	: 3	Quantity/No. of Samples	: 05 Lit/One
Name of Location	: Dump Pond – 3 Near Jetty	Sampling Procedure	: Grab
Type of Sample	: Dump Pond Discharge water	Lab ID	: AG/1709/15
Date of Sampling	: 28/09/2017	Date of Starting of Test	: 02/10/2017
Sample Receipt Date	: 02/10/2017	Date of Completion	: 05/10/2017

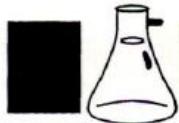
**RESULT TABLE**

TEST PARAMETER	UNIT	RESULTS	TEST/SAMPLING METHOD
pH	--	7.37	IS3025(P11)83Re.02
Total Dissolved Solids	mg/L	284	IS3025(P16)84Re.02
Total Suspended Solids	mg/L	12.2	IS3025(P17)84Re.02
Turbidity	NTU	16.2	APHA 2130-B
BOD (3 Days @ 27 °C)	mg/L	46	IS 3025 (P44)1993 Re.03Edition2.1
Dissolved Oxygen	mg/L	4.2	IS3025(P38)89Re.99
COD	mg/L	356	APHA(22 <sup>nd</sup> Edi) 5520-D Open Reflux
Salinity	ppt	0.079	APHA 2550 B
Oil & Grease	mg/L	BDL*	APHA(22 <sup>nd</sup> Edi)5520D
Total Hardness as CaCO <sub>3</sub>	mg/L	126	IS3025(P-21) 84EDTARe.02
Fluoride as F	mg/L	0.81	APHA(22 <sup>nd</sup> Edi) 4500 F D SPANDS
Chloride as Cl	mg/L	50.74	IS3025(P-32) 88Re.99Argentometric method
Zinc as Zn	mg/L	0.11	AAS- APHA (22ndEdition) 3111 B
Cadmium as Cd	mg/L	BDL*	AAS- APHA (22nd Edition) 3111 B
Lead as Pb	mg/L	0.23	AAS- APHA (22nd Edition) 3111 B
Mercury as Hg	mg/L	BDL*	AAS-APHA 22 Edition 3112 B

Note: BDL\*: Below Detection Limit, Minimum Detection Limit, Cadmium as Cd: 0.001 mg/L, Mercury as Hg: 0.00025 mg/L, Oil & Grease: 1.0 mg/L

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## **SOIL QUALITY MONITORING QUARTERLY TEST CERTIFICATE**

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## TEST CERTIFICATE FOR SOIL

Location Number	: 1	Quantity/No. of Samples	: 05 Kg/One
Name of Location	: Near CT-1	Sampling Procedure	: Grab
Longitude	: N 15° 24.448'	Latitude	: E 073° 47.587'
Type of Sample	: Soil Sample	Lab ID	: AG/1709/11
Date of Sampling	: 21/09/2017	Date of Starting of Test	: 25/09/2017
Sample Receipt Date	: 25/09/2017	Date of Completion	: 02/10/2017

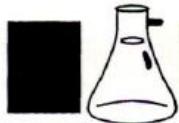
### RESULT TABLE

TEST PARAMETER	UNIT	RESULTS
Type	--	Brown
Gravel	%	0.46
Coarse Sand	%	3.62
Medium Sand	%	4.9
Fine Sand	%	7.2
Total Sand	%	16.18
Silt & Clay	%	83.82
pH (1:5)	--	8.6
Electricity Conductivity	µmho/cm	530
Alkali matter	mg/kg	683
Cation Exchange Capacity	meq/100 gm	7.7
Sodium Absorption Ratio	--	12.2
Organic Matter	%	0.4
Available Nitrogen	meq/100 gm	0.3
Available Potassium	mg/kg	3.3
Available Phosphorus	mg/kg	0.1
Available Sodium	%	1.1
Permeability	%	0.9



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## TEST CERTIFICATE FOR SOIL

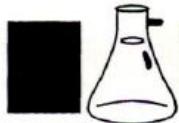
Location Number	: 2	Quantity/No. of Samples	: 05 Kg/One
Name of Location	: Near Adani Site	Sampling Procedure	: Grab
Longitude	: N 15° 24.613'	Latitude	: E 073° 47.848'
Type of Sample	: Soil Sample	Lab ID	: AG/1709/12
Date of Sampling	: 21/09/2017	Date of Starting of Test	: 25/09/2017
Sample Receipt Date	: 25/09/2017	Date of Completion	: 02/10/2017

### RESULT TABLE

TEST PARAMETER	UNIT	RESULTS
Type	--	Brown
Gravel	%	0.32
Coarse Sand	%	3.0
Medium Sand	%	9.10
Fine Sand	%	8.4
Total Sand	%	20.62
Silt & Clay	%	79.38
pH (1:5)	--	8.7
Electricity Conductivity	µmho/cm	652
Alkali matter	mg/kg	667
Cation Exchange Capacity	meq/100 gm	8.1
Sodium Absorption Ratio	--	11.6
Organic Matter	mg/kg	0.3
Available Nitrogen	meq/100 gm	0.3
Available Potassium	mg/kg	3.5
Available Phosphorus	mg/kg	0.1
Available Sodium	%	1.0
Permeability	%	0.84

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## **WEATHER DATA MONITORING MONTHLY TEST CERTIFICATE**

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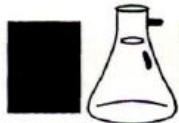
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Date	Avg wind Speed (m/s)	Avg wind Direction (deg)	Temperature (°C)	RH %	Precip. (mm)
01/09/2017	1.2	230	26	77	18
02/09/2017	0.9	244	27	92	7
03/09/2017	1.1	212	28	85	2
04/09/2017	1.5	273	26	94	0
05/09/2017	1.3	261	26	78	0
06/09/2017	0.5	265	27	82	0
07/09/2017	1.1	274	26	81	2
09/09/2017	0.7	242	28	77	0
09/09/2017	0.8	227	28	85	0
10/09/2017	0.5	237	27	95	1
11/09/2017	0.7	271	27	79	46
12/09/2017	0.5	200	26	82	0
13/09/2017	1.5	187	29	91	0
14/09/2017	0.5	189	28	85	0
15/09/2017	0.7	242	26	82	48
16/09/2017	0.6	170	27	95	7
17/09/2017	1.3	218	28	82	54
18/09/2017	1.1	256	28	95	81
19/09/2017	1.4	242	27	95	147
20/09/2017	1.0	262	27	77	40
21/09/2017	0.6	246	26	91	37
22/09/2017	1.5	241	26	94	0
23/09/2017	0.5	260	28	87	0
24/09/2017	0.7	234	27	79	1
25/09/2017	0.5	221	27	86	0
26/09/2017	0.5	257	28	87	2
27/09/2017	1.4	212	26	82	6
28/09/2017	1.2	246	27	89	1
29/09/2017	0.9	197	27	83	26
30/09/2017	1.5	195	26	90	0

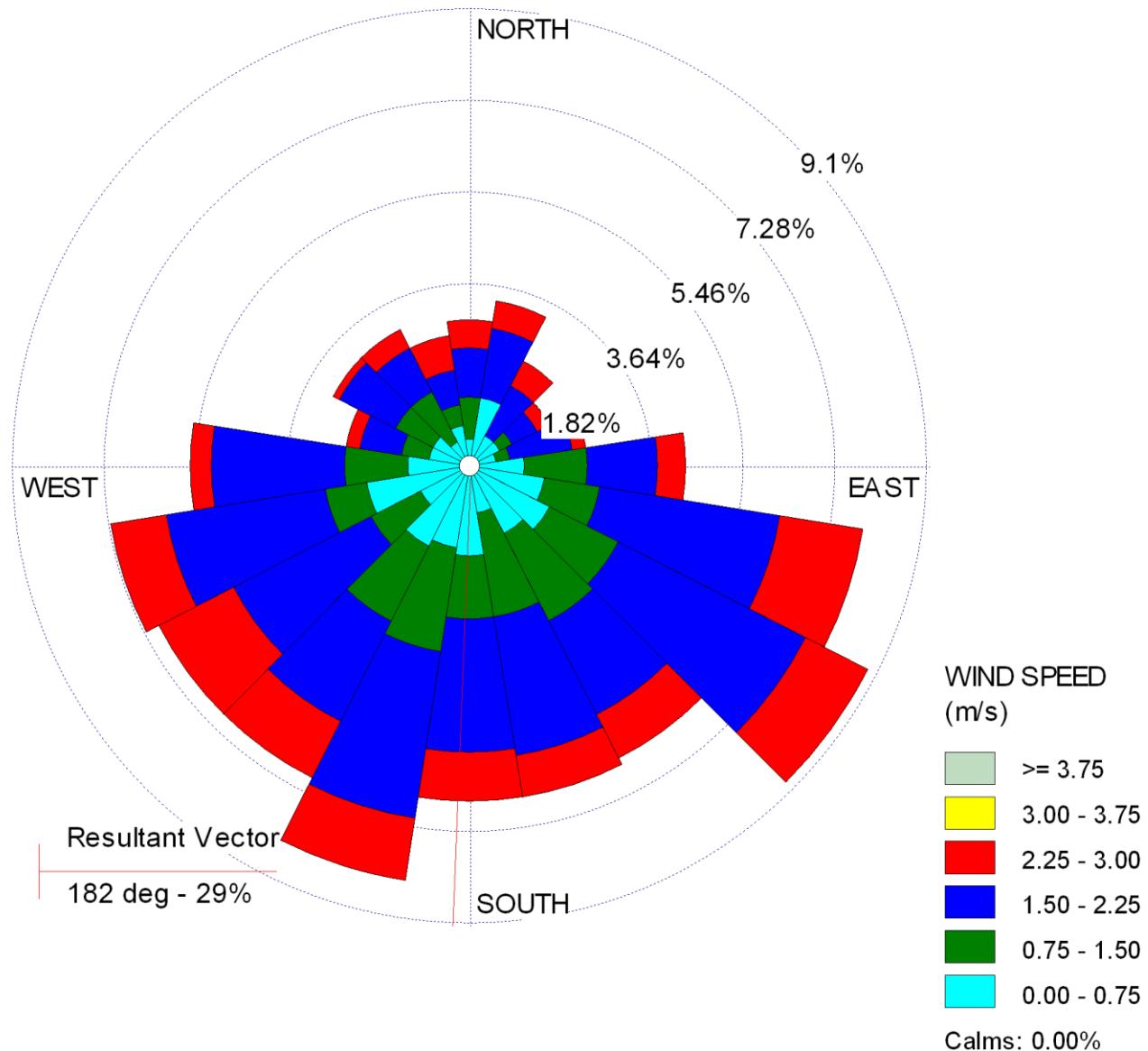


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## WIND ROSE DIAGRAM SEPTEMBER 2017



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