

REF: PLL/DHJ/MoEF/040

Date: 18th July, 2017

The Director (Environment)
Forests & Environment Department,
Government of Gujarat,
Block No. 14, 8th Floor, Sachivalaya,
Gandhinagar – 382 010
(Fax No.: 079-23252156)

Kind Attn.: Shri K. C. Mistry

Subject: Half-yearly Compliance Report with respect to conditions stipulated by Ministry of Environment & Forests, Govt. of India and Department of Forests, Govt. of Gujarat for Installation of Terminal facilities to handle additional 10 MMTPA of LNG (Phase IIIA & Phase IIIB) at PLL Dahej, Gujarat by Petronet LNG Limited, Gujarat as on 30th June, 2017

Ref : (a) F. No. 11-63/2011-IA-III Dated 26th February, 2014
(b) ENV-10-2013-71-E Dated 13th January, 2014

Dear Sir,

The Compliance report as on 30th June, 2017 with respect to conditions stipulated by Ministry of Environment & Forests, Govt. of India and Department of Forests, Govt. of Gujarat for Installation of Terminal facilities to handle additional 10 MMTPA of LNG (Phase IIIA & Phase IIIB) at PLL Dahej, Gujarat by Petronet LNG Limited, Gujarat is enclosed.

With regards,



S B Singh
Sr. Vice President (Plant Head)

Encl.: As above

Copy to:-

Director,
Ministry of Environment & Forest,
Paryavaran Bhawan,
CGO Complex, Lodhi Road,
New Delhi – 110 003

Joint Director (S)
Ministry of Environment & Forests,
Regional Office, Western Region,
Kendriya Paryavaran Bhavan,
Link Road No. 3,
Bhopal – 462 016

CC to:

- Director (Technical)
- President (O&M)

COMPLIANCE STATEMENT AS ON 30.06.2017

Subject: Environmental and CRZ Clearance for installation of terminal facilities to handle 10 MMTPA of additional LNG (Phase IIIA & Phase IIIB) at PLL, Dahej, Gujarat by M/s Petronet LNG Limited, dated 26th February, 2014 (F.No.11-63/2011-IA-III)

Point-wise compliance statement for the subject environmental clearance is as below:

	<u>CONDITIONS</u>	<u>STATUS</u>
7.	<u>Special Conditions:</u>	
i)	"Consent for Establishment" shall be obtained from State Pollution Control Board under Air and Water Act and a copy shall be submitted to the Ministry before start of any construction work at the site.	"Consent for Establishment" application was filed with GPCB on 1.3.2014 (GPCB Inward No. 78835 dt.1.3.2014), GPCB conducted site inspection on 04.04.2014 and CTE issued vide their letter no. GPCB/BRCH/B-CCA611(2)/ID-15479/222771 Dated 21.08.2014.
ii)	All the recommendations and conditions stipulated by the Gujarat Coastal Zone Management Authority vide letter no. ENV-10-2013-71-E dated 13.01.2014, shall be strictly complied with.	Noted for Compliance. Please find Attached Annexure-I .
iii)	The facility shall be constructed in accordance with the NFPA 59 A- Standard for the Production, storage and handling of liquefied Natural gas, OISD-194- Standard for Storage and handling of LNG, EN 1473 - Installation and equipment for LNG - Design of onshore installations and M.B.Lal Committee report.	Noted. The facilities design document will is in-line with the specified requirements mentioned in the condition and the same will be adhered during construction. The construction and commissioning of the Phase-IIIA facilities at Dahej completed and is operational since October, 2014 and Phase-IIIB1 expansion work is in progress.
iv)	Precautionary measures shall be put in place to prevent leakage of LNG due to any disasters including tidal/ tsunami wave, seismic and other natural calamities. Disaster Management Plan shall put in place to manage emergencies.	Noted for Compliance. The terminal is designed considering all the specified factors for safe operations. Existing Disaster Management Plan is updated accordingly, before commissioning of Phase-IIIA expansion facilities, to the suit the additional facilities requirement.
v)	Oil Spill Contingency Management Plan shall be put in place.	Noted for Compliance. Existing DMP includes oil spill contingency plan, the same is updated accordingly before commissioning of Phase-IIIA expansion facilities.

4

	<u>CONDITIONS</u>	<u>STATUS</u>
vi)	Online sensor for load monitoring shall be provided, as committed.	Online sensors for gas turbine exhausts will be provided.
vii)	Temperature sensors, gas detectors, spill detectors shall be installed to take care of any type of spillage or leakage of the gas from the plant and the trucks.	Noted. These sensors placed as per design for instant detection of any leakage in Phase-IIIA Project and will be provided in Phase-IIIB expansion work.
viii)	Project proponent shall explore training the local population with the help of training institutes like ITI etc, to make them suitable for employment in the facility.	Petronet is working continuously for skill development of local people. PLL has recruited fair number of local people. For ancillary and support functions as security services, fire fighting and green belt maintenance etc. PLL is giving preference to local people. Housekeeping contract has been awarded to local Lakhigam village contractor.
ix)	All the recommendation of the EMP, Risk Assessment and Disaster Management Plan shall be complied within letter and spirit. All the mitigation measures submitted in the EMP/DMP 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.	Noted for Compliance.
x)	A separate Environment Monitoring Cell shall be set up especially for this plant and details shall be submitted to the Ministry prior to the commencement of operation.	Environment Monitoring Cell is already set up in the existing plant and is being used for Environment Monitoring of expansion project and a brief report is being submitted to MoEF on half yearly basis.
xi)	Construction activity shall be carried out strictly as per the provisions of CRZ Notification, 2011. No construction work other than those permitted in Coastal Regulation Zone Notification shall be carried out in Coastal Regulation Zone area.	Noted. It will be followed as per the condition.

	<u>CONDITIONS</u>	<u>STATUS</u>
xii)	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.	EMC is already setup in the company headed by Manager (HSE) and supported by Five HSE Officers and it will be used for Environment Monitoring of expansion project.
xiii)	The funds earmarked for environment management plan shall be included in the budget and this shall not be diverted for any other purposes.	Noted. Funds earmarked for environment management plan will be included in the budget and will be used for this activity only.
8.	<u>General conditions:</u>	
i)	Appropriate measures must be taken while undertaking digging activities to avoid any likely degradation of water quality.	Noted for compliance. Ground water samples are taken and being monitors regularly.
ii)	Full support shall be extended to the officers of this Ministry/Regional Office at Bhopal by the project proponent during inspection of the project for monitoring purposes by furnishing full details and action plan including action taken reports in respect of mitigation measures and other environmental protection activities.	Noted.
iii)	A Six-Monthly monitoring report shall need to be submitted by the project proponents to the Regional Office of this Ministry at Bhopal regarding the implementation of the stipulated conditions.	Noted.
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.

4

	<u>CONDITIONS</u>	<u>STATUS</u>
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.	Noted. Regional Office as well as the Ministry has been informed about the start of land development works vide our letter no. PLL/DHJ/MoEF/010 Dtd.12 th May, 2014.
viii)	A copy of the clearance letter shall be marked to concerned Panchayat/local NGO, if any, from whom any suggestion/ representation has been made received while processing the proposal.	The environment clearance was forwarded to concerned offices. A copy of inwards from such offices was submitted vide our letter no. PLL/DHJ/MoEF/011 Dt.13 th May, 2014.
ix)	State Pollution Control Board shall display a copy of the clearance letter at the Regional Office, District Industries Center and Collector's Office/Tehsildar's office for 30 days.	Copy of environment clearance was already forwarded to concerned offices.
9.	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.
10.	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.	Applicable clearances from following authorities obtained, a copy of same was submitted vide our letter no. PLL/DHJ/MoEF/011 Dt.13 th May, 2014: 1. PESO in principle approval obtained vide letter dated 10/10/2012 [PV(WC)S-784/GJ-II] and letter Dt 19/03/2014[PV(WC)S-784/GJ-II]. 2. Forest Dept. Approval obtained vide letter dated 30/10/2013, No.FCA-1013/10-13/11/SF-31-F.
11.	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 State Pollution Control Board and may also be seen on the website of the Ministry of Environment and Forests at	A Public Notice was advertized in the local newspapers in English and Gujarati languages. A copy of same was submitted vide our letter no. PLL/DHJ/MoEF/011 Dtd.13 th May, 2014. Sandesh Gujarati newspaper dated 07.03.2014 and Times of India English Newspaper dated 07.03.2014

	<u>CONDITIONS</u>	<u>STATUS</u>
	http://www.envfor.nic.in . The advertisement should be made within 10 days from the date of receipt of the Clearance letter and a copy of the same should be forwarded to the Regional office of this Ministry at Bhopal.	A copy of this notice is already forwarded to RO, Bhopal vide letter dated 07.03.2014 PLL/DHJ/MoEF/2014/007.
12.	This 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.
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.	Status of compliance to the various stipulated environmental conditions and environmental safeguards will be uploaded by the project proponent in its website.	Six monthly compliance are uploaded at company website www.petronetlng.com .
15.	A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zilla Parishad/ Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the company by the proponent.	Refer reply to 8 (viii). The Environment and CRZ Clearance is already uploaded at company website www.petronetlng.com .
16.	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	Complied. The Environment and CRZ Clearance compliance status is already uploaded at company website www.petronetlng.com . The monitored reports are regularly sent to MoEF RO, Bhopal with copy to GPCB & CPCB.
17.	The environmental statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of Clearance conditions and shall also be sent to the respective Regional Offices of MoEF by e-mail.	Noted. The Form-V is being updated on company website and sent to MoEF Regional Office by e-mail.

3

COMPLIANCE STATEMENTAS ON 30.06.2017

Subject: Compliance to conditions as conveyed by Department of Forests & Environment, Govt. of Gujarat, Letter No. ENV-10-2013-71-E dated 13th January, 2014 as on 30.06.2017

Point-wise compliance statement for the subject environmental clearance is as below:

<u>SR. NO.</u>	<u>CONDITIONS</u>	<u>STATUS</u>
1	The provisions of the CRZ notification of 2011 shall be strictly adhered to by the PLL	Noted
2	PLL shall have to comply with all the Standards/norms prescribed by the Central Pollution Control Board for this project	Noted for compliance.
3	PLL shall have to revise the Emergency Preparedness plan in close coordination with District Authority prior to Commissioning of expansion project.	Noted for compliance. Emergency Preparedness plan is updated accordingly, before commissioning of Phase-IIIA expansion facilities, to the suit the additional facilities requirement.
4	All the recommendations and suggestions given by the VIMTA LABS in their Comprehensive Environment Management Plan shall be implemented strictly by the PLL	Noted for compliance.
5	The construction debris and sewage generated during the construction phase shall not be discharged into the creek, sea, estuary or into the CRZ area. The debris shall be removed from the construction site immediately after the construction is over and shall be disposed off as per the guidance of the GPCB.	Agreed.
6	The construction camps shall be located outside the CRZ area and the construction labours shall be provided with the necessary amenities, including sanitation, water supply and fuel and it shall be ensured that the environmental conditions are not deteriorated by the construction labours	Noted for compliance.
7	The groundwater shall not be tapped to meet with the water requirements during construction or operation phase in any case.	Agreed

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<u>SR. NO.</u>	<u>CONDITIONS</u>	<u>STATUS</u>
8	A Disaster Management Plan to meet with any eventualities that may arise during construction and/or operation phase shall be prepared implemented.	Noted for compliance.
9	Necessary permissions/Clearances from different departments/ agencies under different laws/ acts shall be obtained before commencing any enabling activities.	Noted for compliance.
10	A separate Environmental Cell with qualified personnel shall be created to implement the Environmental Management Plan and a separate budget shall be provided for this purpose.	Environment Monitoring Cell is already set up in the existing plant and it will be used for Environment Monitoring of expansion project.
11	The cost of the external agency that may be appointed by this department for supervision / monitoring of the project activities during construction/ operational phases shall be borne by the PLL.	Noted.
12	Massive greenbelt development program including the mangrove plantation in 100 ha. shall be carried out in consultation with the Gujarat Ecology Commission/ Forest Department by PLL.	Noted for compliance. PLL has completed 100 ha. Mangrove Plantation in consultation Forest Department.
13	A large scale socio-economic upliftment program in consultation with the District Collector/ DDO shall be carried out. A separate budget shall be provided for this purpose and details be furnished to this Department from time to time.	Primary health services, Gynec health and Pulse Polio campaign (Pakhajan PHC) to Luvara village. PLL supported noble cause of Construction of Storm water drainage at Shravan Chokdi to Jambusar by pass (over bridge) in Bharuch. This project is executed under District Collector office. Request from CDHO (Chief District Health Officer) was received to participate in various health initiatives. PLL agreed during meeting with DM to provide the

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<u>SR. NO.</u>	<u>CONDITIONS</u>	<u>STATUS</u>
		<p>ambulance for PHC, Pakhajan Village of Vagra Taluka. PLL is supporting Luvara School for reference books, uniform, school picnic and creating awareness on environment, health, safety and security aspects through various programs regularly, rewarding bright students etc. PLL celebrated Shala Pravesh Utsav at Luvara School and distributed tool box to children.</p> <p>Bharuch has problem of solid waste management and garbage disposal. To improve on cleanliness of the town, PLL is supporting initiative of GREEN BHARUCH CLEAN BHARUCH by donating two dumper placer worth Rs. 23.94 Lakh.</p> <p>Due to delay in recruitment of teachers, primary schools in and around Dahej has 40% teaching staff. To support education by deploying young educated teachers, PLL sponsored 14 teachers in 4 schools of villages of Dahej, Lakhigam and Luvara.</p> <p>PLL constructed 11hosues of homeless tribes in Luvara village at a cost of 25 Lakh. PLL initiated drive to make Luvara open defecation free by sponsoring toilets for 172 houses at a cost of Rs. 17.2 Lakh.</p> <p>As a part of initiate for Swachh Bharat Abhiyan, PLL constructed five toilet blocks for school at Lakhigam, Luvara, Ambetha, Jageshwar</p>



<u>SR. NO.</u>	<u>CONDITIONS</u>	<u>STATUS</u>
		<p>& Dahej. Also, PLL has constructed 91 Toilet blocks at an estimated expenditure of Rs. 172 Lakhs for various schools in fifteen district of Assam in co-ordination with Rashtriya Madhiyamik Siksha Abhiyan (RMSA).</p> <p>Cancer screening done (Pep and Breast) for female above 18 years at Luvara village. Establishment of equipment for Ultra Sonography Ward done at General/Civil Hospital, Bharuch. Motivational Awards (Academics and punctuality), School kit and reference books given for Luvara School students. Nutrition and clothing kit (105 nos.) was given to under nourished baby and mother.</p> <p>PLL has sponsored Drawing competition, Educational tour and uniform distribution at Primary School Luvara. PLL sponsored Medical Equipment such as Eye sight testing, ECG Machine, Spirometer, Pulse Oxymeter etc. to Luvara Primary Health Centre. PLL also celebrated Swatch Bharat Pakhwada during 16th June, 2016 to 30th June, 2016 in co-ordination and consultation with neighboring villages, communities, schools etc.</p> <p>The launch of Project Vidhyagam was organized in Luwara Primary School wherein a classroom library for std. 7 & 8 students is setup. About 130 books (syllabus and general reading</p>

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<u>SR. NO.</u>	<u>CONDITIONS</u>	<u>STATUS</u>
		<p>including comics, biographies, story books, general knowledge, science fiction in Gujarati, Hindi and English language) has been kept in the library. The idea behind this project is that students develop interest in reading and thus studying. The PLL Disha Ladies Club organized for food and distribution of educational kits for 65 girls in the Orphanage in Bharuch on 11th Sept 2016. A focused group discussion on importance of hygiene and cleanliness was organized by Ladies club members as well.</p> <p>Roofing item worth Rs. 2 Lacs was provided to the Gram Panchayat Office of Luwara Village for construction of house for 10 tribal families living below the poverty line. This material consisted of cement roof, channel, and hooks. It is expected that the construction of houses will be done by mid-January 2017.</p> <p>Petronet LNG Limited celebrated the World Sight Day on 13th October 2016 by organizing the Eye Screening Camp for contractual labor at the company premises. The camp was organized in association with Wockhardt Foundation and about 200 labor and 60 employees participated in the same. During the camp; 125 specs and 60 unit of drops were distributed to beneficiaries based on assessment by Doctors.</p>

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<u>SR. NO.</u>	<u>CONDITIONS</u>	<u>STATUS</u>
		<p>On the occasion of 147th birth anniversary of Father of Nation Shri Mahatma Gandhi Health and Hygiene talk, Swachhta Selfie Campaign, Drawing Competition at Govt. High School, Lakhigam and other activities were organized as part of Swachh Bharat Abhiyaan.</p> <p>It is observed that there is a shortage of regular teachers in local schools and severely hampering the quality of education of poor children in schools. To mitigate this problem, PLL has started supporting para teachers in local school and ensuring improvement in quality of education in local schools.</p> <p>PLL CSR team participated in world school day celebration on 23 March, 2017. As a part of celebration PLL has distributed Uniforms to Std. 8th Students. It was decided to provide two pair of uniforms to all students in school. The uniforms were prepared by Sardar Mahila Vikas Mandal a group of tribal women for employment generation and livelihood opportunity. PLL provided work order worth of Rs. 2,23,980/-</p> <p>As the students studying in primary schools are coming from BPL and poor families, most of the families are not able to afford educational tours for their children.</p>

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<u>SR. NO.</u>	<u>CONDITIONS</u>	<u>STATUS</u>
		Every year school is organizing such tour sponsored by PLL. Students will get exposures to various places and gain experience. About 150 students get benefit of this tour and places covered like Dwarka, Somnath, Porbandar, Smruti Mandir, Naheru Planetorium, Sasan Gir etc.
14	Environmental Audit report shall be submitted every year. The report shall also cover the change in the coastal and marine environment enroute the proposed rerouted pipeline and due to commissioning of the proposed activities.	Noted for compliance.
15	A six monthly progress reports regarding the compliance of the conditions shall be submitted to this department.	Noted for compliance.
16	Any additional condition that may be imposed by the Ministry of Environment and Forests, Government of India/This department from time to time shall have to be complied with by the PLL	Noted.

14

ANNEXURE - II

AMBIENT AIR QUALITY STATUS REPORT

All units are in $\mu\text{g}/\text{m}^3$.

Sr.no.	Month	PM10		PM2.5		SOx		NOx		HC as Methane CH ₄	
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
	NAAQ norms	100 $\mu\text{g}/\text{m}^3$		60 $\mu\text{g}/\text{m}^3$		80 $\mu\text{g}/\text{m}^3$		80 $\mu\text{g}/\text{m}^3$		Absent	
1	Jan-17	66.00	124.00	21.00	42.00	11.20	19.20	12.40	21.30	0	0
2	Feb-17	66.00	124.00	19.00	41.00	11.20	19.60	14.30	22.70	0	0
3	Mar-17	77.00	123.00	22.00	44.00	12.80	19.40	16.40	23.90	0	0
4	Apr-17	81.00	126.00	26.00	43.00	11.60	19.40	13.40	22.10	0	0
5	May-17	81.00	121.00	26.00	41.00	11.20	19.40	15.40	22.30	0	0
6	Jun-17	72.00	117.00	23.00	39.00	11.40	17.80	15.30	21.60	0	0
7	Jul-17										
8	Aug-17										
9	Sep-17										
10	Oct-17										
11	Nov-17										
12	Dec-17										
	Range	66-126		19-44		11.2-19.6		12.4-23.9		0-0	

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ANNEXURE - II

STACK EMISSION AIR QUALITY STATUS REPORT

Sr.no.	Month	GTG			DG SET			FIRE ENGINE		
		SPM 150 mg/NM ³	SO _x 100 ppm	NO _x 50 ppm	SPM 150 mg/NM ³	SO _x 100 ppm	NO _x 50 ppm	SPM 150 mg/NM ³	SO _x 100 ppm	NO _x 50 ppm
1	Jan-17	BDL	BDL	24.00	89.00	44.00	76.00	42.00	47.00	
2	Feb-17	BDL	BDL	17.40	96.00	41.00	84.00	43.00	48.00	
3	Mar-17	BDL	BDL	15.60	94.00	46.00	88.00	42.00	46.00	
4	Apr-17	BDL	BDL	17.10	91.00	42.00	86.00	41.00	48.00	
5	May-17	BDL	BDL	14.80	89.00	44.00	84.00	44.00	47.00	
6	Jun-17	BDL	BDL	13.60	81.00	43.00	82.00	41.00	45.00	
7	Jul-17									
8	Aug-17									
9	Sep-17									
10	Oct-17									
11	Nov-17									
12	Dec-17									
	Range	BDL	BDL	13.6-24	81-96	41-46	76-88	41-44	45-48	

BDL: Below Detection Level.



ANNEXURE - II

NOISE LEVEL REPORT

Sr.no.	Location	Unit	Limit	Jan-17		Feb-17		Mar-17		Apr-17		May-17		Jun-17		Jul-17		Aug-17		Sep-17		Oct-17		Nov-17		Dec-17		
				L _{day}	L _{night}	L _{day}	L _{night}	L _{day}	L _{night}	L _{day}	L _{night}	L _{day}	L _{night}	L _{day}	L _{night}	L _{day}	L _{night}	L _{day}	L _{night}	L _{day}	L _{night}	L _{day}	L _{night}	L _{day}	L _{night}	L _{day}	L _{night}	L _{day}
1	North	decibel	Day-75 db Night-70db	58	76	51	48	55	47	53	48	56	46	52	48													
2	East	decibel	Day-75 db Night-70db	57	44	55	41	54	46	53	42	55	43	57	46													
3	West	decibel	Day-75 db Night-70db	55	47	52	46	56	44	53	43	52	44	53	47													
4	South	decibel	Day-75 db Night-70db	52	42	56	42	52	43	56	44	54	47	55	44													

ANNEXURE - II

GROUND WATER QUALITY STATUS REPORT

Sr.no.	Parameter	Unit	Feb-17		May-17	
			GW1	GW2	GW1	GW2
1	Temperature	*C	30	30	32	32
2	PH	-	8.35	8.39	8.73	8.62
3	Total Dissolved Solids (TDS)	mg/L	5416	5140	5096	5168
4	Chlorides as CL	mg/L	2039.4	1559	1882.3	1787.5
5	Sulphate as SO4	mg/L	480	770	644	1075.5
6	BOD (3 days @ 27*C)	mg/L	ND	ND	ND	ND
7	COD	mg/L	ND	ND	ND	ND
8	Oil & Grease	mg/L	ND	ND	ND	ND
9	Phenolic Compound	mg/L	ND	ND	ND	ND
10	Zinc as Zn	mg/L	0.024	0.023	0.033	0.031
11	Total Chromium as Cr+3	mg/L	0.051	0.041	0.042	0.056
12	Lead as Pb	mg/L	ND	ND	ND	ND
13	Cyanide as CN	mg/L	ND	ND	ND	ND
14	Flouride as F	mg/L	0.77	0.82	0.65	0.93
15	Copper as Cu	mg/L	0.022	0.025	0.041	0.033
16	Insecticide	mg/L	ND	ND	ND	ND
17	Pesticide	mg/L	ND	ND	ND	ND
18	Mercury as Hg	mg/L	ND	ND	ND	ND

ND*: Not detected

ANNEXURE - II

MARINE WATER QUALITY STATUS REPORT

Sr.no.	Parameter	Unit	Feb-17		May-17	
			MW	MW	MW	MW
1	Temperature	*C	31		30	
2	PH	-	8		8.55	
3	Color	Co-pt	20		20	
4	Total Suspended Solids	mg/L	31604		29360	
5	Total Dissolved Solids (TDS)	mg/L	1836		1026	
6	Chlorides as CL	mg/L	16728.1		16656.5	
7	Sulphate as SO4	mg/L	2120		3218	
8	BOD (3 days @ 27°C)	mg/L	244.1		198.6	
9	COD	mg/L	74		60	
10	Oil & Grease	mg/L	6		4	
11	Phenolic Compound	mg/L	ND		ND	
12	Zinc as Zn	mg/L	0.031		0.022	
13	Total Chromium as Cr+3	mg/L	0.042		0.031	
14	Lead as Pb	mg/L	ND		ND	
15	Cyanide as CN	mg/L	ND		ND	
16	Flouride as F	mg/L	0.63		0.55	
17	Copper as Cu	mg/L	ND		ND	
18	Insecticide	mg/L	ND		ND	
19	Pesticide	mg/L	ND		ND	
20	Mercury as Hg	mg/L	ND		ND	
21	Hexavalent Chromium as Cr+6	mg/L	ND		ND	
22	Nickel as Ni	mg/L	0.052		0.041	
ND*: Not detected						

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Mangroves planted in 50 ha. area at NADA Coast during 2009-10



14

Mangroves planted in 100 ha. area at Ankalva Coast during 2010-11



26

Mangroves planted in 200 ha. area at Ankalva Coast during 2011-12



Mangroves planted in 200 ha. area at Ankalva Coast during 2012-13



18

Mangroves planted in 100 ha. area at Bhavnagar Coast during 2012-13



18

Mangroves planted in 200 ha. area at Bhavnagar Coast during 2013-14



3

Mangroves planted in 200 ha. area at Bhavnagar Coast during 2014-15



11
5

Mangroves plantation planted in 50 ha. area at Kentiyajal Coast during 2014-15



4

Mangroves planted in 50 ha. area at Gadhula, Talaja, BVNR, during 2016-17



18