COMPLIANCE OF ENVIRONMENTAL CLEARANCE CONDITIONS FOR THE PERIOD 1ST April 2022 TO 30th September 2022

Project: 'Setting of Rajasthan Refinery Township at Sambhra Village, Pachpadra Tehsil-Barmer, Rajasthan by M/s HPCL Rajasthan Refinery Limited (HRRL).

Reference No.: F1F1(4)/SEIAA/SEAC-Raj/Sectt/Project/Cat.7(d) B1 (15347)/2018-19 dated 03rd May 2019 by State Level environment Impact Assessment Authority, Rajasthan.

S. NO.	Terms and conditions (Part-A-Specific Conditions-Construction Phase)	COMPLIANCE
1.	Consent to Establish" Shall be obtained from RPCB before start of any construction work related to proposed project at the site and RSPCB shall ensure from the records/site at the time of grant of CTE/CTO that no violation has been carried out by the PP as per MoEF Notification dated 14.03.2017 and 08.03.2018.	Complied. CTE has been obtained from RSPCB vide Letter no.F(MUID)/Barmer(Pachpadra)/1819(1)/2018-2019/2415-2417 dated 19/07/2018.
2.	The PP Shall obtain a "NO objection certificate for height clearance for the envisaged level from the Airports Authority of India.	NOC has been obtained from Indian Air Force for Township site on 02 August 2018.
3.	No Mobile tower shall be installed.	Complied. There is no mobile tower in the approved plot plan.
4.	As envisaged the P.P shall invest the an amount of Rs. 86 Lakh as capital cost and Rs. 0.5 Lakh as annual recurring cost for implementing various environmental protection measure.	Noted. Provision of 86 lakhs as capital cost and 5.8 Lakhs as recurring cost/annum has been kept for implementing environmental protection measures.

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S. NO.	Terms and conditions (Part-A-Specific Conditions-Construction Phase)	COMPLIANCE
5.	An amount of Rs. 1.935 Cr (1.5% if the project cost of 129cr). This amount be sourced from the CER (Corporate Environment Responsibility) allocation of 107.82 Cr (0.25% of the overall project cost of 43129 Cr). As proposed in the PPs letter RP 19/AJ/RRP/46 dated 11.02.2019 is required to be spent over a period of 3 years as CER. The expenditure on these activates shall be reflected in the books of account when presented for auditing of accounts. The proposal should contain provision for toilets for girls in nearby schools. The proposal should contain provision for monthly medical camps,distribution of medicines and improvement in educational facilities in the nearby schools. The detailed action plan of CSR activities shall be submitted by the PP to RSPCB at the time of applying for Consent to Establish/Consent to Operate. During construction phase and post construction / operation phase, the project proponent shall be responsible for implementation of EIA/EMP. Commitment of proponent in this regard shall be submitted to RPCB at the time of applying for CTE/CTO.	Comprehensive action plan including construction of toilets for girls in nearby schools, distribution of medicines, conducting monthly medical camps, etc. has been submitted to Government of Rajasthan (GoR) and approved by GOR. Following is the status: • Construction of Toilet Completed and handed over to SS School and Primary School in Pachpadra. • Medical camps are periodically conducted. Planned for Next two years every two months • As a part of improvement in educational facilities school furniture distributed in seven schools
6.	Green belt/Landscaping should be developed in 33 % of total plot Area, as proposed.	Greenbelt Development Plan was prepared and discussed with DFO, Barmer district for further execution. As per Forest Department suggestion, a detailed Project Report (DPR) with 'Terms of Reference' (TOR) by Forest dept to be prepared by AFRI, Jodhpur. The greenbelt plan was discussed with AFRI and TOR was finalized. A Feasibility Study is going on by AFRI and draft DPR is expected shortly. Once the feasibility study done, Forest Department will initiate plantation activities.
7.	That the grant of this E.C. is issued from the environmental angle only, and does not absolve the project proponent from the other statutory obligations prescribed under any other law or any other instrument in force. The sole and complete responsibility to comply with the conditions laid down in all other laws	Noted.

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S. NO.	Terms and conditions (Part-A-Specific Conditions-Construction Phase)	COMPLIANCE
	for the time-being in force, rests with the industry / unit / project proponent. Any appeal against this environmental clearance lies 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.	
8.	For conservation of electricity and to reduce energy losses the management shall ensure that the electrical voltage is stepped down from 33 KV to 11 KV and distributed at this level and finally brought to 440 volts or as per prescribed norms.	Township is receiving 2 nos. 11 kV stepped down supply from Refinery substation. Power is being transported to distribution substations (ESS) at 11 kV and then brought to 440/433V as per prescribed norms.
9.	The PP shall obtain approval of drawings of laying electrical lines from the concerned SE of RRVPNL/ JVVNL and comply with the provisions as per Terms and Conditions for Supply of Electricity-2004 of JVVNL.	Shall be complied.
10.	The PP shall fulfill the requirements of energy regulatory commission.	Shall be complied.
11.	All energy saving measures proposed by the PP should be implemented before the project is put into use.	This is a GRIHA rated project, hence best energy saving practices will be implemented before the project is put into use.
12.	A preventive action plan (as part of conceptual plan) for earthquake resistance buildings as per NBC code specifically for zone 3,4, 5 should be submitted along with the Form 1, Form 1A and conceptual plan to RSPCB at the time of applying for CTE /CTO.	Buildings are designed as per applicable Indian Standards and NBC. The designs are vetted by M/s Engineers India Ltd. for adequacy and safety. CTO has been obtained from RSPCB for CISF Complex only with vide letter no. F (MUID) / Barmer (Pachpadra) / 1819(1) / 2018-2019 / 3078-3080; dated: 12.10.2022.
13.	Road width and bend should be adequate for easy movement of fire fighting vehicles.	All Road networks in the township have been designed by considering the easy movement of Fire Fighting vehicles.

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S. NO.	Terms and conditions (Part-A-Specific Conditions-Construction Phase)	COMPLIANCE
14.	Proposals for provisions regarding accessibility to the various floors of the project and other related parts for Divyang people should be provided.	Ground floors of all buildings have been designed for Divyang people as access has been provided suitably for Lifts/elevators also. Toilets/Rest rooms have also been suitably designed for physically challenged people.
15.	Details of all the points mentioned at point no. 9 under energy conservation of Form. IA would be explicitly taken care of.	Shall be complied with.
16.	The P.P. shall ensure taking necessary steps on urgent basis to improve the living conditions of the labor at site. An amount shall be spent as Budgetary provision for the housing of construction labor within the site with all necessary infrastructure and facilities such as health, sanitation, fuel/LPG for cooking, safe drinking water, medical camps, toilets for women and crèche for infants etc. Such housing may be in the form of temporary structures to be removed after the completion of the project. Details of provisions should be submitted to RPCB at the time of obtaining CTE.	Being complied with.
17.	The PP will comply with the provisions as per the Building and Other Construction Workers (Regulation of Employment & Condition of Service) Act 1996.	Complied.
18.	The STP should be so designed so that it can cater the minimal flow due to lesser occupancy in the project so as to bring the waste water quality as per the prescribed standards.	Complied. There are 3 chains of STP in the township. During periods of lower occupancy, one or two of the trains can be operated.
19.	The drains should be of adequate capacity and be lined till the final disposal points.	Shall be complied with.

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S. NO.	Terms and conditions (Part-A-Specific Conditions-Construction Phase)	COMPLIANCE
20.	As proposed, the entire waste water should be discharged through a STP of capacity 0.85 MID of MBR technology. The construction of the STP should be carried out simultaneously with that of the project and the STP should be functional before the project is put into use. The STP should have a separate hourly meter and energy meter.	A STP of 1.53 MLD is under installation within township. Suitable design margin will be considered over this capacity during design. Membrane bio-reactor (MBR) technology has been considered for the proposed STP. STP will be functional before the township actually starts habitation. The STP will have a flowmeter and energy meter.
21.	The PP shall comply with Construction & Demolition Waste Management Rules, 2016 as applicable	Complied.
22.	All required sanitary and hygienic measures shall be put in place before starting construction activities. The safe disposal of waste water and solid waste generated during the Construction phase shall be ensured.	Shall be complied with.
23.	All the laborers engaged for construction shall be screened for health and adequately treatedbefore engaging them to work at the site.	Being complied with.
24.	All the topsoil excavated during the construction shall be stored for use in horticulture/landscape development within the project site.	Shall be complied with.
25.	Disposal of muck during construction phase should only be at approved sites with the approval of competent authority.It should not create any adverse effect on the neighboring communities and be disposed by taking necessary precautions for general safety and health aspects of the people.	Shall be complied with.
26.	Soil and ground water samples will be tested to ascertain that there is no threat to the ground water quality by leaching of heavy metals and other toxic contaminants.	Shall be complied with.
27.	Construction spoils, including bituminous material and other hazardous materials must not be allowed to contaminate water courses and the dump	Shall be complied with.

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S. NO.	Terms and conditions (Part-A-Specific Conditions-Construction Phase)	COMPLIANCE
	sites for such material must be secured so that they do not leach into the ground water.	
28.	The diesel generator sets to be used during and post construction phase shall be of low-sulphurdiesel type and shall conform to Environment (Protection) Rules for air and noise emission standards.	Shall be complied with.
29.	Vehicles hired for bringing construction material and laborers to the site shall be in good conditions and shall conform to applicable air and noise emission standards and shall be operated during non-peak/approved hours.	Being complied with.
30.	Ambient noise levels shall conform to residential standards both during day and night. Incremental pollution loads on the ambient air and noise quality shall be closely monitored during construction phase.	Shall be complied with. Ambient air and Noise quality will be periodically monitored during construction phase.
31.	Fly ash shall be used as building material in the construction as per the provisions of Fly Ash notification of September. 1999 and as amended till date.	Complied. Fly ash bricks are being used for superstructure of all Buildings.
32.	NOC shall be obtained from National State Disaster Management Authority wherever applicable.	Not Applicable
33.	Provision for proposed storm water harvesting and its re-use as per CGWA and BIS standards for various applications should be implemented before the project is put into use.	Storm water management and rain water harvesting shall be suitably provided.
34.	Guidelines issued by Concerned Ministry for water scarce areas be followed.	Shall be complied with.
35.	Water demand during construction shall be reduced by the use of pre-mixed concrete, curing agents and other best practices. Effort should be made to use treated waste water from nearby areas in place of fresh water.	Shall be complied with.
36.	Total domestic water requirement shall 1000 KLD in post construction phase, as proposed. The necessary permission of water supply should be submitted to RSPCB at the time of applying for CTE/CTO. At the time of applying for CTE the PP should get it confirmed from RSPCB that no illegal bore well exists in the proposed site.	The raw water consumption for the township is estimated to be approximately 1200 KLD. Raw water will be sourced from Indra Gandhi Canal at Nachna. HRRL has already requested Public Health Engineering Department (PHED),

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S. NO.	Terms and conditions (Part-A-Specific Conditions-Construction Phase)	COMPLIANCE
		Jodhpur to supply water. The concerned authorities also agreed to supply 5 MLD of fresh water from Nagana Reservoir for construction and consider supply of the raw water as required by HRRL vide Summary Records of Meeting (No. 9406-9419 dated 13.09.2013). There is no bore well at the proposed township site. AJ
37.	Building Plan should be got approved from the competent Authority and the construction should be as per the approved building plan and as per applicable provisions in NBC.	Being complied with.
38.	The P.P. should ensure compliance of the order of the Hon'ble Rajasthan High Court. Jodhpur in D. B. Civil writ petition no. 1536 of 2003 in the matter of Abdul Rahman vs. State of Rajasthan and others. The PP shall not allow making of any obstacle in the way of any natural water course/natural nallaha/stream carrying rain water to any water body. Adequate measures shall be taken to reduce air and noise pollution during construction as per CPCB norms.	Shall be complied with.
39.	Fixtures for showers, toilet flushing and drinking shall be of low flow either by use of aerators of pressure reducing devices or sensor based control.	Shall be complied with.
40.	Use of glass may be reduced by up to 40% lo reduce the electricity consumption and load in air Conditioning. If necessary, use high quality double glass with special reflective coating windows.	Shall be complied with.
41.	Roofing should meet prescriptive requirement as per Energy Conservation Building Code by using appropriate thermal insulation material to fulfill requirement.	Shall be complied with.
42.	Opaque walls shall meet prescriptive requirement as per Energy Conservation Building Code for all air-conditioned spaces, whereas, for non- air-conditioned spaces, by use of appropriate thermal insulation material to fulfill the requirement.	Building envelope is designed as per GRIHA-LD requirement.

S. NO.	Terms and conditions (Part-A-Specific Conditions-Construction Phase)	COMPLIANCE
43.	Provision of solar water heating/chilling/street lighting etc. shall be explored and implemented.	Solar street lightings have already been considered. Solar water heating is not considered because of its reduced efficiency. Instead, this space is being utilized for solar PV panels.
44.	A first-aid room should be provided at the project site, both, during construction and operation phase of the project.	Being complied with.
45.	Any hazardous waste generated during construction phase shall be disposed of as per applicable rules and norms with necessary authorization of the RPCB.	Shall be complied with.
46.	The approval of the competent authority shall be obtained for structural safety of the building due to earthquake, adequacy of firefighting equipment, etc. as per National Building Code 2005 including protection measures from lightening etc.	Shall be complied with.
47.	Regular supervision of the above and other measures for monitoring shall be in place throughout the construction phase, so as to avoid nuisance to the surroundings.	Shall be complied with.
48.	The project proponent shall fulfill in letter and spirit, all the commitments made /submitted to the SEAC office.	Noted & shall be complied with.
49.	The Company shall provide stacks of adequate height to the along with acoustic enclosures for noise control as per CPCB guidelines, The DG Sets shall comply with the norms notified under - Environment (Protection) Act, 1986.	There are no DG sets envisaged in township.
50.	The PP shall obtain all requisite permissions/ approvals/clearances from concerning departments and district administration relating to project.	Shall be complied with respect to building plan, fire and GRIHA.
51.	The PP shall procure required fresh water only from the authorized and legal source after approval from the competent Authority and such procurement of water shall be informed to RSPCB at time of applying for CTO/CTE.	Noted & shall be complied with.
52.	The PP shall provide water flow meter at all suitable points to measure quantity of daily water consumption. Besides PP shall also provide water flow meters at	Shall be complied with.

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S. NO.	Terms and conditions (Part-A-Specific Conditions-Construction Phase)	COMPLIANCE
	waste water generation points, treated waste water, waste water recycled and utilized for plantation/gardening purposes. The daily record of this should be maintained properly in a logbook.	
53.	The PP shall dispose of the sludge of STP in Scientific manner.	Sludge of STP will be used as soil conditioning/ manure within township.
54.	The PP shall make compliance of the standards, for Noise and National Ambient Air Quality, as Prescribed under the Environment (Protection) Act 1986.	Noted & shall be complied with.
55.	The total waste water generation will be utilized and disposed as proposed.	Treated STP discharge/effluent shall be totally recycled and used for green belt development/gardening inside township.
56.	The PP shall not discharge treated waste water in to any natural water flow or in to any water body but make efforts to utilize maximum of the treated effluent within the premises of the project.	Shall be complied with.
57.	The PP shall ensure that solid waste generated should be properly collected & segregated. Wet garbage should be composed and dry/inert solid waste should be disposed-off to approved sites for land filling after recovering recyclable material.	All solid wastes mostly domestic waste generated in the township shall be properly segregated, stored, treated and disposed as per the guidelines for Solid Waste Management- Segregation, Collection and Utilization at Household/ Community Levels, 2016.
58.	The CFs/FLs / E-waste should be properly collected and disposed-off/ sent for recycle as per the prevailing rules / guidelines issued by the regulatory authority. Use of solar panel also may be done to the possible extent.	All CFL/E-waste shall be properly segregated, stored, treated and disposed as per the regulatory guidelines.

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S. NO.	Terms and conditions (Part-A-Specific Conditions-Construction Phase)	COMPLIANCE
59.	The adequate measure should be taken to prevent odour problem from STP.	STP shall be made as per the latest technologies (MBR) and every effort shall be done to control maximum odour from the same.
60.	The PP should obtain prior Consent to Operate before commissioning of the project or handed over to the occupier.	Being complied with.
61.	The PP shall provide and maintain the O&G trap in good condition, so that the O&G coming Waste Water from Kitchen/laundry should retain in trap.	Grease trap shall be provided to retain oil & grease.

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S.No.	Terms and conditions (Part-B-Specific Conditions-Operations Phase)	COMPLIANCE
1.	An independent expert shall certify the installation of the Sewage. Treatment Plants (STP) and a report in this regard shall be submitted to the RPCB, before the project is commissioned for operation. Discharge of treated sewage shall conform to the norms & standards prescribed under the Environment (Protection) Act 1986 or the standards laid down by the Rajasthan State Pollution Control Board.	Shall be complied with.
2.	Adequate measures shall be taken to prevent odour from solid waste processing and STP.	STP shall be made as per the latest approved technologies (MBR) and every effort shall be done to control maximum odour from the same.
3.	Proper system of channelizing excess storm water shall be provided.	Shall be complied with.
4.	Rain water harvesting (RWH) for roof top run - off and surface run - off, as planned shall be implemented. Before recharging the surface run off, pre-treatment must be done to remove suspended matter, oil and grease. The Rain Water Harvesting plan shall be as per GoI manual.	For Terrace Area Design criteria 31 mm rain fall. Rain water harvesting storage shall be of Modular system with stainless steel filter. PVC Modules wrapped with double geo fabric 400 gsm. Storm water networks modular rain water storage with filters and suitable interceptors are to be planned. For External Development (Roads, Paved & Green areas) Design criteria 31 mm rain fall. As the soil is of very salty nature, storm water run-off accumulated in external development areas like, Green, roads & pavements, becomes also salty. It should not be harvested and a rain

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S.No.	Terms and conditions (Part-B-Specific Conditions-Operations Phase)	COMPLIANCE
		water storage lake/pond shall be planned in low lying areas with overflow to external drain. The capacity of pond shall be designed as per peak rainfall intensity per hour with 15 minutes of retention period (As complied to GRIHA requirements regarding storm water disposal).
5.	The proposals on the energy conservation measures conforming to energy conservation norms finalized by Bureau of Energy Efficiency shall be implemented.	This is a GRIHA rated project hence best energy saving practices as per BEE will be implemented.
6.	The power factor shall be maintained near unity.	The same will be complied. Power factor correction banks have been considered.
7.	Application of solar energy shall be incorporated for illumination of common areas, lighting for gardens and street lighting in addition to provisions for solar water heating. A hybrid system or fully solar system for a portion of the apartments shall be provided.	Solar street lightings have already been considered. Solar water heating is not considered because of its reduced efficiency. Instead, utilizing that space for solar PV panels.
8.	The parking place shall have separate entry and exit points. Traffic congestion near the entry and exit points from the roads adjoining the proposed project site must be avoided. Parking shall be fully internalized and no public space shall be utilized.	Shall be complied with.
9.	Regular and periodic mock drills shall be undertaken by the fire department at least once in a year.	Shall be complied with.
10.	The D. G. sets to be operated with stack height as per EP Act. 1986 along with acoustic enclosure.	Shall be complied with.

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S.No.	Terms and conditions (Part-B-Specific Conditions-Operations Phase)	COMPLIANCE
11.	Incremental pollution loads on the ambient air quality noise and water quality shall periodically monitored after commissioning of the project and report to be submitted to RPCB.	Ambient air quality, noise and water parameters will be periodically monitored and the report will be submitted to RSPCB.
12.	The solid waste generated shall be properly collected & segregated before disposal to the Municipal Facility. The in - vessel bio - conversion technique may be used for composting the organic waste.	Noted. All solid waste shall be properly segregated, stored, treated and disposed as per the guidelines/ waste management rules.
13.	Any hazardous waste including biomedical waste shall be disposed of as per applicable rules and norms with necessary approvals of the Rajasthan State Pollution Control Board.	Noted. All hazardous solid waste shall be properly segregated, stored, treated and disposed as per the statutory guidelines/hazardous waste management rules.
14.	The green belt design along the periphery of the plot shall achieve attenuation factor conforming to the day and night noise standards prescribed for residential land use. The proposed open space inside the plot shall be suitably landscaped and covered with vegetation of indigenous species.	Shall be complied with.
15.	Local species of trees and shrubs of shall be planted to allow habitat for birds with adequate distance from the boundary.	Shall be complied with.
16.	The SEIAA, Rajasthan reserved the right to add new conditions, modify /annual any condition and / or to revoke the clearance if implementation of any of the aforesaid condition / other stipulations imposed by competent authorities is not satisfactory. Six monthly compliance status report of the project along with implementation of environmental measures shall be submitted to MoEF, Regional Office, Lucknow, SEIAA, Rajasthan & RPCB Jaipur.	Noted & shall be complied with.
17.	The PP shall provide adequate and proper compost pit for utilization of all the leaf litter and ensure that such waste should not be burnt.	Shall be complied with.

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S.No.	Terms and conditions (Part-C-General Conditions)	COMPLIANCE
1.	That the grant of this E.C. is issued from the environmental angle only, and does not absolve the project proponent from the other statutory obligations prescribed under any other law or any other instrument in force. The sole and complete responsibility, to comply with the conditions laid down in all other laws for the time-being in Force, rests with the industry / unit / project proponent. Any appeal against this environmental 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.
2.	No further expansion or modifications in the project shall be carried out without prior approval of the SEIAA/Ministry of Environment and Forests as the case may be. In case of deviations or alterations in the project proposal from those submitted to this Authority for clearance, a fresh reference shall be made to the Authority to assess the adequacy of conditions imposed and to add additional environmental protection measures required, if any.	Noted.
3.	The implementation of the project vis-å-vis environmental action plans shall be monitored by MoEF Regional Office at Lucknow / RSPCB / CPCB / SEIAA, Department of Environment,Government of Rajasthan, Jaipur and this office. A six monthly compliance status report shall be submitted to monitoring agencies.	Shall be complied with. Six monthly Compliance status reports is being regularly submitted to Monitoring agencies as stipulated in the EC condition.
4.	The project authorities shall inform the MoEF Regional Office at Lucknow / RSPCB / CPCB / SEIAA Departmentof Environment, Government of Rajasthan, Jaipur and the date of financial closure and final approval of the project by the concerned authorities and the date of start of the project.	Final approval of the project from MoPNG has been obtained on 9th October 2017. Financial closure was completed on 28th January 2019. Date of start of the project : 16th January 2018.

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5.	Officials from the Department of Environment, Government of Rajasthan, Jaipur/ Regional Office of MOEF, Lucknow, RSPCB who would be monitoring the implementation of Environmental safeguards should be given full cooperation, facilities and documents/data by the project proponents during their inspection. A complete set of all the documents submitted to SEIAA should be forwarded to the CCF. Regional Office of MoEF. Lucknow / SEIAA, Department of Environment, Government or Rajasthan, Jaipur / RSPCB.	Shall be complied with.
6.	The Authority reserves the right to add additional safeguard measures subsequently, if found necessary. And to take action including revoking of the environment clearance under the provision of the Environment (Protection) Act. 1986, to ensure effective implementation of the suggested safeguard measures in a time bound and satisfactory manner.	Noted.
7.	The project proponent should advertise in at least two local Newspapers widely circulated in the region, one of which shall be in the vernacular language informing that the project has been accorded environmental Clearance and copies of clearance letters are available with the Rajasthan State Pollution Control Board and may also be seen on the website of the RSPCB. The advertisement should be made within 7 days from the day of issue of the clearance letter and a copy of the same should be forwarded to the Regional Office of MoEF at Lucknow/Department of Ecology and Environment, Government of Rajasthan, Jaipur.	Complied.
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, 2006, along with their amendments and rules.	Noted.
9.	The E.C. is subjected to the specific condition that the PP shall obtain prior clearance form forestry and wild Life angle including clearance from standing committee of National Board of Wild Life(as applicable). It is further categorically stated that grant of	Noted.

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	EC does not necessary implies that Forestry and Wild Life clearance shall be granted to the project and that proposals for forestry and wild Life clearance will be considered by the respective authorities on their merits and decision taken. The investment made in the project, if any based on EC so granted, in anticipation of clearance from Forestry and Wild Life angle shall be entirely at the cost risk of the PP and MOEF/SEIAA shall not be responsible in this regard in any manner.	
10.	The SEIAA, Rajasthan may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.	Noted.
11.	Periodic monitoring of ambient air quality shall be carried out for PM 10, PM2.5, SPM, S02 and NOX monitoring. Location of the stations (Minimum 6) shall be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring shall be decided in consultation with the Rajasthan State pollution Control Board (RPCB). Six monthly reports of the data so collected shall be regularly submitted to the RPCB/CPCB including the MOEF, Regional office, Lucknow.	Shall be complied with. Six monthly monitoring data is being submitted along with this compliance report to RSPCB/CPCB and MoEFCC-RO.
12.	Personnel working in dusty areas shall wear protective respiratory devices they shall also be provided with adequate training and information on safety and health aspects.	Being complied with.
13.	The environmental statement for each financial year ending 31st March in Form-V shall be submitted to the Rajasthan State Pollution Control Board/SEIAA 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 environmental clearance conditions and shall also be sent to the Lucknow Regional offices of MOEF, SEIAA by e- mail as well as hard copy dually signed by competent person of company.	Shall be complied with.

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Post Environmental Monitoring Report

For

M/s HPCL Rajasthan Refinery Limited (HRRL)

At

Barmer, Rajasthan

Period : **April – June 2022**

Prepared by

Netel (India) Limited

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POST ENVIRONMENTAL DATA COLLECTION AT BARMER, RAJASTHAN

Name of Client	M/s HPCL Rajasthan Refinery Limited (HRRL) Tel Bhavan, Sahkar Marg Lal Kothi Vistar Jyoti Nagar, Jaipur – 302 005 Rajasthan. Project Management Consultant (PMC) M/s. Engineers India Limited (EIL) Sector-16 (on NH-8), Gurugram, Haryana 122001
Name of Contractor	NETEL (INDIA) LIMITED Environment Management Services W-408. Pipeline Road, MIDC Rabale TTC Industrial Area, Navi Mumbai – 400 701
Work Order	HRRL/LOA/2020/18, Dated 21.08.2020
Nature of Job	Environmental Baseline Data Collection

		
Prepared By **Sr. Chemist**	**Approved By** **Technical Manager**	**Issued By** **Quality Manager**

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1. AMBIENT AIR QUALITY

Parameter Details:

Sr. No.	Parameters	Unit	Analysis Method	CPCB limit
1	Particulate Matter (PM_{10})	µg/m³	IS 5182 (Part 23)	100
2	Particulate Matter ($PM_{2.5}$)	µg/m³	IS 5182 (Part 24)	60
3	Sulphur Dioxide (SO_2)	µg/m³	IS 5182 (Part 2)	80
4	Oxides of Nitrogen (NO_X)	µg/m³	IS 5182 (Part 6)	80
5	Carbon Monoxide (CO)	mg/m³	IS 5182 (Part 10)	2
6	Ozone (O_3)	µg/m³	IS 5182 (Part 9)	100
7	Benzene (C_6H_6)	µg/m³	IS 5182 (Part 11)	5

Results:

Sr. No.	Parameters	Unit	Richholi Village		
---	**Date of Sampling**	---	**05.04.2022**	**19.04.2022**	**02.05.2022**
---	**Sample Code**	---	**NIL/OT/04/22/324**	**NIL/OT/04/22/330**	**NIL/OT/05/22/141**
1	Particulate Matter (PM_{10})	µg/m³	76.6	76.9	74.7
2	Particulate Matter ($PM_{2.5}$)	µg/m³	27.8	39.9	36.5
3	Sulphur Dioxide (SO_2)	µg/m³	11.7	11.2	14.4
4	Oxides of Nitrogen (NO_X)	µg/m³	14.7	14.4	19.6
5	Carbon Monoxide (CO)	mg/m³	1.09	0.64	0.69
6	Ozone (O_3)	µg/m³	8.5	14.9	15.0
7	Benzene (C_6H_6)	µg/m³	<1.0	<1.0	<1.0

Sr. No.	Parameters	Unit	Richholi Village		
---	**Date of Sampling**	---	**16.05.2022**	**01.06.2022**	**15.06.2022**
---	**Sample Code**	---	**NIL/OT/05/22/192**	**NIL/OT/06/22/050**	**NIL/OT/06/22/186**
1	Particulate Matter (PM_{10})	µg/m³	69.7	75.0	65.4
2	Particulate Matter ($PM_{2.5}$)	µg/m³	25.2	38.2	29.9
3	Sulphur Dioxide (SO_2)	µg/m³	13.5	12.5	11.4
4	Oxides of Nitrogen (NO_X)	µg/m³	17.0	15.8	15.6
5	Carbon Monoxide (CO)	mg/m³	0.78	0.78	0.71
6	Ozone (O_3)	µg/m³	8.6	15.3	12.9
7	Benzene (C_6H_6)	µg/m³	1.1	<1.0	<1.0

Results:

Sr. No.	Parameters	Unit	Kiyar Village		
---	**Date of Sampling**	---	**07.04.2022**	**21.04.2022**	**04.05.2022**
---	**Sample Code**	---	**NIL/OT/04/22/325**	**NIL/OT/04/22/331**	**NIL/OT/05/22/142**
1	Particulate Matter (PM_{10})	µg/m³	56.8	62.1	65.0
2	Particulate Matter ($PM_{2.5}$)	µg/m³	27.8	25.6	30.4
3	Sulphur Dioxide (SO_2)	µg/m³	12.4	10.7	9.1
4	Oxides of Nitrogen (NO_X)	µg/m³	16.1	15.0	11.4
5	Carbon Monoxide (CO)	mg/m³	0.97	1.01	0.90
6	Ozone (O_3)	µg/m³	7.2	11.3	7.1
7	Benzene (C_6H_6)	µg/m³	1.2	<1.0	1.3

Sr. No.	Parameters	Unit	Kiyar Village		
---	**Date of Sampling**	---	**18.05.2022**	**03.06.2022**	**17.06.2022**
---	**Sample Code**	---	**NIL/OT/05/22/193**	**NIL/OT/06/22/051**	**NIL/OT/06/22/187**
1	Particulate Matter (PM_{10})	µg/m³	58.4	56.6	50.2
2	Particulate Matter ($PM_{2.5}$)	µg/m³	23.9	29.9	21.3
3	Sulphur Dioxide (SO_2)	µg/m³	11.8	12.7	11.0
4	Oxides of Nitrogen (NO_X)	µg/m³	15.1	17.0	15.0
5	Carbon Monoxide (CO)	mg/m³	0.87	1.15	0.99
6	Ozone (O_3)	µg/m³	9.2	6.5	9.3
7	Benzene (C_6H_6)	µg/m³	<1.0	1.2	1.3

Results:

Sr. No.	Parameters	Unit	Sajiyali Village		
---	**Date of Sampling**	---	**07.04.2022**	**21.04.2022**	**04.05.2022**
---	**Sample Code**	---	**NIL/OT/04/22/326**	**NIL/OT/04/22/332**	**NIL/OT/05/22/143**
1	Particulate Matter (PM_{10})	µg/m³	71.5	71.5	78.2
2	Particulate Matter ($PM_{2.5}$)	µg/m³	25.6	36.5	40.8
3	Sulphur Dioxide (SO_2)	µg/m³	13.7	14.6	13.1
4	Oxides of Nitrogen (NO_X)	µg/m³	18.2	18.8	18.2
5	Carbon Monoxide (CO)	mg/m³	1.12	1.14	1.07
6	Ozone (O_3)	µg/m³	8.6	8.5	7.7
7	Benzene (C_6H_6)	µg/m³	<1.0	<1.0	1.3

Sr. No.	Parameters	Unit	Sajiyali Village		
---	**Date of Sampling**	---	**18.05.2022**	**03.06.2022**	**17.06.2022**
---	**Sample Code**	---	**NIL/OT/05/22/194**	**NIL/OT/06/22/052**	**NIL/OT/06/22/188**
1	Particulate Matter (PM_{10})	µg/m³	74.3	73.7	70.8
2	Particulate Matter ($PM_{2.5}$)	µg/m³	30.4	34.7	33.4
3	Sulphur Dioxide (SO_2)	µg/m³	13.2	15.4	14.1
4	Oxides of Nitrogen (NO_X)	µg/m³	18.1	21.1	17.6
5	Carbon Monoxide (CO)	mg/m³	0.74	0.98	0.88
6	Ozone (O_3)	µg/m³	9.6	8.3	9.1
7	Benzene (C_6H_6)	µg/m³	<1.0	<1.0	<1.0

Results:

Sr. No.	Parameters	Unit	Samra ki Dhani		
---	**Date of Sampling**	---	**09.04.2022**	**22.04.2022**	**06.06.2022**
---	**Sample Code**	---	**NIL/OT/04/22/327**	**NIL/OT/04/22/333**	**NIL/OT/05/22/144**
1	Particulate Matter (PM_{10})	µg/m³	74.5	78.7	79.5
2	Particulate Matter ($PM_{2.5}$)	µg/m³	35.2	36.0	43.8
3	Sulphur Dioxide (SO_2)	µg/m³	14.8	12.7	11.8
4	Oxides of Nitrogen (NO_X)	µg/m³	20.4	17.1	15.8
5	Carbon Monoxide (CO)	mg/m³	1.04	1.07	0.88
6	Ozone (O_3)	µg/m³	14.2	7.6	13.2
7	Benzene (C_6H_6)	µg/m³	1.2	1.3	<1.0

Sr. No.	Parameters	Unit	Samra ki Dhani		
---	**Date of Sampling**	---	**20.05.2022**	**05.06.2022**	**19.06.2022**
---	**Sample Code**	---	**NIL/OT/05/22/195**	**NIL/OT/06/22/053**	**NIL/OT/06/22/189**
1	Particulate Matter (PM_{10})	µg/m³	75.8	81.4	65.9
2	Particulate Matter ($PM_{2.5}$)	µg/m³	34.3	29.9	32.1
3	Sulphur Dioxide (SO_2)	µg/m³	12.0	15.1	14.5
4	Oxides of Nitrogen (NO_X)	µg/m³	15.8	21.0	18.1
5	Carbon Monoxide (CO)	mg/m³	1.07	1.17	1.04
6	Ozone (O_3)	µg/m³	11.5	15.6	7.5
7	Benzene (C_6H_6)	µg/m³	<1.0	1.3	1.2

Results:

Sr. No.	Parameters	Unit	Kasajiyon Ki Dhani		
---	**Date of Sampling**	---	**09.04.2022**	**22.04.2022**	**06.06.2022**
---	**Sample Code**	---	**NIL/OT/04/22/328**	**NIL/OT/04/22/334**	**NIL/OT/05/22/145**
1	Particulate Matter (PM_{10})	µg/m³	66.5	58.0	60.4
2	Particulate Matter ($PM_{2.5}$)	µg/m³	36.5	23.9	27.3
3	Sulphur Dioxide (SO_2)	µg/m³	11.6	12.7	11.0
4	Oxides of Nitrogen (NO_X)	µg/m³	14.8	17.3	13.9
5	Carbon Monoxide (CO)	mg/m³	0.80	0.75	1.09
6	Ozone (O_3)	µg/m³	12.4	12.5	8.4
7	Benzene (C_6H_6)	µg/m³	<1.0	<1.0	<1.0

Sr. No.	Parameters	Unit	Kasajiyon Ki Dhani		
---	**Date of Sampling**	---	**20.05.2022**	**05.06.2022**	**19.06.2022**
---	**Sample Code**	---	**NIL/OT/05/22/196**	**NIL/OT/06/22/054**	**NIL/OT/06/22/190**
1	Particulate Matter (PM_{10})	µg/m³	63.5	62.4	55.6
2	Particulate Matter ($PM_{2.5}$)	µg/m³	22.1	30.4	27.3
3	Sulphur Dioxide (SO_2)	µg/m³	13.0	12.8	10.8
4	Oxides of Nitrogen (NO_X)	µg/m³	17.7	17.4	15.1
5	Carbon Monoxide (CO)	mg/m³	0.79	0.77	1.10
6	Ozone (O_3)	µg/m³	9.1	8.1	9.9
7	Benzene (C_6H_6)	µg/m³	1.0	1.3	1.2

Results:

Sr. No.	Parameters	Unit	Pachpadra		
---	**Date of Sampling**	---	**05.04.2022**	**19.04.2022**	**02.05.2022**
---	**Sample Code**	---	**NIL/OT/04/22/323**	**NIL/OT/04/22/329**	**NIL/OT/05/22/140**
1	Particulate Matter (PM_{10})	µg/m³	69.0	63.9	63.0
2	Particulate Matter ($PM_{2.5}$)	µg/m³	27.8	32.6	30.4
3	Sulphur Dioxide (SO_2)	µg/m³	10.7	12.3	14.0
4	Oxides of Nitrogen (NO_X)	µg/m³	13.6	16.5	18.1
5	Carbon Monoxide (CO)	mg/m³	0.80	0.75	0.91
6	Ozone (O_3)	µg/m³	8.1	13.6	6.7
7	Benzene (C_6H_6)	µg/m³	<1.0	1.1	<1.0

Sr. No.	Parameters	Unit	Pachpadra		
---	**Date of Sampling**	---	**16.05.2022**	**01.06.2022**	**15.06.2022**
---	**Sample Code**	---	**NIL/OT/05/22/191**	**NIL/OT/06/22/049**	**NIL/OT/06/22/185**
1	Particulate Matter (PM_{10})	µg/m³	67.0	68.7	60.9
2	Particulate Matter ($PM_{2.5}$)	µg/m³	29.9	26.9	28.6
3	Sulphur Dioxide (SO_2)	µg/m³	12.6	10.5	9.8
4	Oxides of Nitrogen (NO_X)	µg/m³	17.4	13.3	13.5
5	Carbon Monoxide (CO)	mg/m³	0.69	1.02	0.62
6	Ozone (O_3)	µg/m³	7.3	12.9	11.1
7	Benzene (C_6H_6)	µg/m³	1.3	1.0	1.0

2. WATER QUALITY

Parameter Details:

Sr. No.	Parameters	Unit	IS 10500 Limits (Desirable / Permissible)	Analysis Method
1	Temperature	°C	---	IS 3025 (Part 9)
2	Colour	Hazen	5 / 15	IS 3025 (Part 4)
3	Odour	–	Agreeable	IS 3025 (Part 5)
4	Taste	–	Agreeable	IS 3025 (Part 7 & 8)
5	pH	–	6.5 – 8.5	IS 3025 (Part 11)
6	Turbidity	NTU*	1 / 5	IS 3025 (Part 10)
7	Total Dissolved Solids	mg/lit	500 / 2000	IS 3025 (Part 16)
8	Total Suspended Solids	mg/lit	---	IS 3025 (Part 17)
9	Total Alkalinity	mg/lit	200 / 600	IS 3025 (Part 23)
10	Total Hardness	mg/lit	200 / 600	IS 3025 (Part 21)
11	Calcium Hardness	mg/lit	---	IS 3025 (Part 40)
12	Magnesium Hardness	mg/lit	---	IS 3025 (Part 21 & 40)
13	COD	mg/lit	---	IS 3025 (Part 58)
14	BOD	mg/lit	---	IS 3025 (Part 44)
15	Chloride	mg/lit	250 / 1000	APHA 4500-Cl
16	Salinity	ppt	---	IS 3025 (Part 32)
17	Sulphate	mg/lit	200 / 400	IS 3025 (Part 24)
18	Fluoride	mg/lit	1 / 1.5	IS 3025 (Part 60)
19	Nitrate	mg/lit	45	IS 3025 (Part 34)
20	Total Phosphorus	mg/lit	---	APHA 4500-P-C
21	Total Nitrogen	mg/lit	---	IS 3025 (Part 34)
22	Sodium	mg/lit	---	IS 3025 (Part 45)
23	Potassium	mg/lit	---	IS 3025 (Part 45)
24	Iron	mg/lit	0.3	APHA 3111-B
25	Manganese	mg/lit	0.1 / 0.3	APHA 3111-B
26	Cadmium	mg/lit	0.003	APHA 3111-B
27	Lead	mg/lit	0.01	APHA 3111-B
28	Zinc	mg/lit	5 / 15	APHA 3111-B
29	Nickel	mg/lit	0.02	APHA 3111-B
30	Copper	mg/lit	0.05 / 1.5	APHA 3111-B
31	Total Coliform	MPN/100ml	Absent	IS 1622 : 1981
32	Faecal Coliform	–	Absent	IS 1622 : 1981

Note: * Nephelometric Turbidity Unit

Results: Surface Water

Sr. No.	Parameters	Unit	Gulab Sagar Lake (S/W)		
---	**Date of Sampling**	---	**06.04.2022**	**03.05.2022**	**02.06.2022**
---	**Sample Code**	---	**NIL/OT/04/22/317**	**NIL/OT/05/22/134**	**NIL/OT/06/22/043**
1	Temperature	°C	27.2	26.9	27.3
2	Colour	Hazen	45	51	42
3	Odour	–	Agreeable	Agreeable	Agreeable
4	Taste	–	Agreeable	Agreeable	Agreeable
5	pH	–	7.93	8.17	8.21
6	Turbidity	NTU	28.3	31.3	29.6
7	Total Dissolved Solids	mg/lit	234	274	290
8	Total Suspended Solids	mg/lit	23	16	19
9	Total Alkalinity	mg/lit	93.5	90.9	89.2
10	Total Hardness	mg/lit	45.6	49.7	54.6
11	Calcium Hardness	mg/lit	36.7	34.9	37.7
12	Magnesium Hardness	mg/lit	8.9	14.8	16.9
13	COD	mg/lit	11	9	8
14	BOD	mg/lit	<5	<5	<5
15	Chloride	mg/lit	14.8	16.5	17.2
16	Salinity	ppt	0.07	0.05	0.06
17	Sulphate	mg/lit	3.0	2.8	3.3
18	Fluoride	mg/lit	0.2	0.3	0.3
19	Nitrate	mg/lit	<0.5	<0.5	<0.5
20	Total Phosphorus	mg/lit	0.8	1.1	0.9
21	Total Nitrogen	mg/lit	1.8	2.3	2.1
22	Sodium	mg/lit	12.6	14.0	11.6
23	Potassium	mg/lit	<0.05	<0.05	<0.05
24	Iron	mg/lit	0.56	0.73	0.69
25	Manganese	mg/lit	<0.1	<0.1	<0.1
26	Cadmium	mg/lit	<0.003	<0.003	<0.003
27	Lead	mg/lit	<0.01	<0.01	<0.01
28	Zinc	mg/lit	<0.05	<0.05	<0.05
29	Nickel	mg/lit	<0.01	<0.01	<0.01
30	Copper	mg/lit	<0.04	<0.04	<0.04
31	Total Coliform	MPN/100ml	4	6	7
32	Faecal Coliform	–	Absent	Absent	Absent

Results: Surface Water

Sr. No.	Parameters	Unit	Kumbhariya Ka Talaw (S/W)		
---	**Date of Sampling**	---	**06.04.2022**	**03.05.2022**	**02.06.2022**
---	**Sample Code**	---	**NIL/OT/04/22/318**	**NIL/OT/05/22/135**	**NIL/OT/06/22/044**
1	Temperature	°C	27.0	25.1	26.3
2	Colour	Hazen	13	15	15
3	Odour	–	Agreeable	Agreeable	Agreeable
4	Taste	–	Agreeable	Agreeable	Agreeable
5	pH	–	7.84	8.27	8.41
6	Turbidity	NTU	6.4	7.4	5.8
7	Total Dissolved Solids	mg/lit	519	573	616
8	Total Suspended Solids	mg/lit	8	5	6
9	Total Alkalinity	mg/lit	66.7	73.3	69.3
10	Total Hardness	mg/lit	208.8	232.8	271.2
11	Calcium Hardness	mg/lit	117.5	102.5	122.1
12	Magnesium Hardness	mg/lit	91.3	130.3	149.1
13	COD	mg/lit	29	26	33
14	BOD	mg/lit	9	6	8
15	Chloride	mg/lit	171.1	174.4	152.9
16	Salinity	ppt	0.30	0.42	0.34
17	Sulphate	mg/lit	38.3	29.9	38.6
18	Fluoride	mg/lit	0.5	0.4	0.6
19	Nitrate	mg/lit	<0.5	<0.5	<0.5
20	Total Phosphorus	mg/lit	<1	<1	<1
21	Total Nitrogen	mg/lit	2.5	2.2	2.2
22	Sodium	mg/lit	6209	6509	5210
23	Potassium	mg/lit	1183	976	1013
24	Iron	mg/lit	<0.1	<0.1	<0.1
25	Manganese	mg/lit	<0.1	<0.1	<0.1
26	Cadmium	mg/lit	<0.003	<0.003	<0.003
27	Lead	mg/lit	<0.01	<0.01	<0.01
28	Zinc	mg/lit	<0.05	<0.05	<0.05
29	Nickel	mg/lit	<0.01	<0.01	<0.01
30	Copper	mg/lit	<0.04	<0.04	<0.04
31	Total Coliform	MPN/100ml	8	5	6
32	Faecal Coliform	–	Absent	Absent	Absent

Results: Ground Water

Sr. No.	Parameters	Unit	Akarli Village (G/W)			Limits*
---	**Date of Sampling**	---	**06.04.2022**	**03.05.2022**	**02.06.2022**	---
---	**Sample Code**	---	**NIL/OT/04/22/313**	**NIL/OT/05/22/130**	**NIL/OT/06/22/039**	---
1	Temperature	°C	26.6	25.2	25.8	---
2	Colour	Hazen	49	56	51	5 / 15
3	Odour	–	Agreeable	Agreeable	Agreeable	Agreeable
4	Taste	–	Agreeable	Agreeable	Agreeable	Agreeable
5	pH	–	8.34	8.75	8.47	6.5 – 8.5
6	Turbidity	NTU	<1	<1	<1	1 / 5
7	Total Dissolved Solids	mg/lit	2860	2683	2908	500 / 2000
8	Total Suspended Solids	mg/lit	28	18	31	---
9	Total Alkalinity	mg/lit	533.0	572.2	611.5	200 / 600
10	Total Hardness	mg/lit	277.4	277.4	297.0	200 / 600
11	Calcium Hardness	mg/lit	228.1	189.1	212.3	---
12	Magnesium Hardness	mg/lit	49.3	88.3	84.7	---
13	COD	mg/lit	96	86	87	---
14	BOD	mg/lit	31	24	32	---
15	Chloride	mg/lit	3290.4	4451.8	4258.2	250 / 1000
16	Salinity	ppt	7.51	6.88	6.04	---
17	Sulphate	mg/lit	698.1	713.4	657.5	200 / 400
18	Fluoride	mg/lit	1.3	0.9	1.0	1 / 1.5
19	Nitrate	mg/lit	30.3	27.0	30.0	45
20	Total Phosphorus	mg/lit	<1	<1	<1	---
21	Total Nitrogen	mg/lit	3010.9	2787.9	2866.7	---
22	Sodium	mg/lit	4585	6969	6641	---
23	Potassium	mg/lit	1230.0	1672	1586	---
24	Iron	mg/lit	<0.1	<0.1	<0.1	0.3
25	Manganese	mg/lit	<0.1	<0.1	<0.1	0.1 / 0.3
26	Cadmium	mg/lit	<0.001	<0.001	<0.001	0.003
27	Lead	mg/lit	<0.01	<0.01	<0.01	0.01
28	Zinc	mg/lit	<0.05	<0.05	<0.05	5 / 15
29	Nickel	mg/lit	<0.01	<0.01	<0.01	0.02
30	Copper	mg/lit	<0.04	<0.04	<0.04	0.05 / 1.5
31	Total Coliform	MPN/100ml	25	19	21	Absent
32	Faecal Coliform	–	Absent	Absent	Absent	Absent

Note: *As per IS10500:2012 (Desirable/Permissible)

Results: Ground Water

Sr. No.	Parameters	Unit	Meghwali Ki Dhani (G/W)			Limits*
---	**Date of Sampling**	---	**06.04.2022**	**03.05.2022**	**02.06.2022**	---
---	**Sample Code**	---	**NIL/OT/04/22/314**	**NIL/OT/05/22/131**	**NIL/OT/06/22/040**	---
1	Temperature	°C	26.5	26.5	27.2	---
2	Colour	Hazen	45	38	34	5 / 15
3	Odour	–	Agreeable	Agreeable	Agreeable	Agreeable
4	Taste	–	Agreeable	Agreeable	Agreeable	Agreeable
5	pH	–	7.83	8.24	7.76	6.5 – 8.5
6	Turbidity	NTU	24.9	31.1	23.7	1 / 5
7	Total Dissolved Solids	mg/lit	3958	3692	3427	500 / 2000
8	Total Suspended Solids	mg/lit	787	667	834	---
9	Total Alkalinity	mg/lit	190.2	213.2	196.3	200 / 600
10	Total Hardness	mg/lit	287.0	234.6	227.1	200 / 600
11	Calcium Hardness	mg/lit	172.5	117.5	123.3	---
12	Magnesium Hardness	mg/lit	114.5	117.1	103.8	---
13	COD	mg/lit	104	97	126	---
14	BOD	mg/lit	33	38	47	---
15	Chloride	mg/lit	2600.7	2776.4	2754.1	250 / 1000
16	Salinity	ppt	9.57	10.02	9.48	---
17	Sulphate	mg/lit	259.8	307.6	265.8	200 / 400
18	Fluoride	mg/lit	4.7	5.5	4.4	1 / 1.5
19	Nitrate	mg/lit	<0.5	<0.5	<0.5	45
20	Total Phosphorus	mg/lit	2.3	2.2	2.6	---
21	Total Nitrogen	mg/lit	1.9	2.3	2.5	---
22	Sodium	mg/lit	684.5	779.2	686.5	---
23	Potassium	mg/lit	18.5	23.8	25.8	---
24	Iron	mg/lit	7.9	6.36	7.96	0.3
25	Manganese	mg/lit	0.30	0.26	0.22	0.1 / 0.3
26	Cadmium	mg/lit	<0.001	<0.001	<0.001	0.003
27	Lead	mg/lit	<0.01	<0.01	<0.01	0.01
28	Zinc	mg/lit	0.52	0.48	0.41	5 / 15
29	Nickel	mg/lit	<0.01	<0.01	<0.01	0.02
30	Copper	mg/lit	<0.04	<0.04	<0.04	0.05 / 1.5
31	Total Coliform	MPN/100ml	9	8	11	Absent
32	Faecal Coliform	–	Absent	Absent	Absent	Absent

Note: *As per IS10500:2012 (Desirable/Permissible)

Results: Ground Water

Sr. No.	Parameters	Unit	Kiyar Village (G/W)			Limits*
---	**Date of Sampling**	---	**06.04.2022**	**03.05.2022**	**02.06.2022**	---
---	**Sample Code**	---	**NIL/OT/04/22/315**	**NIL/OT/05/22/132**	**NIL/OT/06/22/041**	---
1	Temperature	°C	25.7	27.1	25.4	---
2	Colour	Hazen	13	11	15	5 / 15
3	Odour	–	Agreeable	Agreeable	Agreeable	Agreeable
4	Taste	–	Agreeable	Agreeable	Agreeable	Agreeable
5	pH	–	7.83	8.24	8.17	6.5 – 8.5
6	Turbidity	NTU	37.4	33.3	36.7	1 / 5
7	Total Dissolved Solids	mg/lit	3827	3960	3975	500 / 2000
8	Total Suspended Solids	mg/lit	18	15	15	---
9	Total Alkalinity	mg/lit	172.0	181.2	168.4	200 / 600
10	Total Hardness	mg/lit	334.1	403.2	437.8	200 / 600
11	Calcium Hardness	mg/lit	95.6	110.9	96.1	---
12	Magnesium Hardness	mg/lit	238.5	292.3	341.7	---
13	COD	mg/lit	126	138	135	---
14	BOD	mg/lit	45	52	46	---
15	Chloride	mg/lit	3169.3	2977.0	2730.9	250 / 1000
16	Salinity	ppt	5.77	6.27	6.16	---
17	Sulphate	mg/lit	648.8	578.8	682.2	200 / 400
18	Fluoride	mg/lit	0.3	0.2	0.3	1 / 1.5
19	Nitrate	mg/lit	<0.5	<0.5	<0.5	45
20	Total Phosphorus	mg/lit	<1	<1	<1	---
21	Total Nitrogen	mg/lit	2.1	2.3	2.4	---
22	Sodium	mg/lit	609.3	586.4	634.8	---
23	Potassium	mg/lit	17.8	19.6	23.5	---
24	Iron	mg/lit	2.0	2.29	2.25	0.3
25	Manganese	mg/lit	<0.1	<0.1	<0.1	0.1 / 0.3
26	Cadmium	mg/lit	<0.001	<0.001	<0.001	0.003
27	Lead	mg/lit	<0.01	<0.01	<0.01	0.01
28	Zinc	mg/lit	0.16	0.11	0.20	5 / 15
29	Nickel	mg/lit	<0.01	<0.01	<0.01	0.02
30	Copper	mg/lit	<0.04	<0.04	<0.04	0.05 / 1.5
31	Total Coliform	MPN/100ml	Absent	Absent	Absent	Absent
32	Faecal Coliform	–	Absent	Absent	Absent	Absent

Note: *As per IS10500:2012 (Desirable/Permissible)

Results: Ground Water

Sr. No.	Parameters	Unit	Sajiyali Village (G/W)			Limits*
---	**Date of Sampling**	---	**06.04.2022**	**03.05.2022**	**02.06.2022**	---
---	**Sample Code**	---	**NIL/OT/04/22/316**	**NIL/OT/05/22/133**	**NIL/OT/06/22/042**	---
1	Temperature	°C	26.0	25.9	26.2	---
2	Colour	Hazen	80	74	67	5 / 15
3	Odour	–	Agreeable	Agreeable	Agreeable	Agreeable
4	Taste	–	Agreeable	Agreeable	Agreeable	Agreeable
5	pH	–	8.13	7.30	7.89	6.5 – 8.5
6	Turbidity	NTU	<1	<1	<1	1 / 5
7	Total Dissolved Solids	mg/lit	3282	3316	3395	500 / 2000
8	Total Suspended Solids	mg/lit	15	12	13	---
9	Total Alkalinity	mg/lit	279.3	250.0	242.1	200 / 600
10	Total Hardness	mg/lit	161.7	172.0	161.7	200 / 600
11	Calcium Hardness	mg/lit	57.8	59.8	59.1	---
12	Magnesium Hardness	mg/lit	103.9	112.2	102.6	---
13	COD	mg/lit	104	94	113	---
14	BOD	mg/lit	30	39	38	---
15	Chloride	mg/lit	1873.6	2066.2	1978.4	250 / 1000
16	Salinity	ppt	9.20	10.49	10.30	---
17	Sulphate	mg/lit	695.7	773.0	611.3	200 / 400
18	Fluoride	mg/lit	4.3	5.1	4.8	1 / 1.5
19	Nitrate	mg/lit	0.5	<0.5	0.6	45
20	Total Phosphorus	mg/lit	<1	<1	<1	---
21	Total Nitrogen	mg/lit	1.7	2.6	2.8	---
22	Sodium	mg/lit	716	681.8	693	---
23	Potassium	mg/lit	18.6	15.2	13.8	---
24	Iron	mg/lit	<0.1	<0.1	<0.1	0.3
25	Manganese	mg/lit	<0.1	<0.1	<0.1	0.1 / 0.3
26	Cadmium	mg/lit	<0.001	<0.001	<0.001	0.003
27	Lead	mg/lit	<0.01	<0.01	<0.01	0.01
28	Zinc	mg/lit	0.23	0.17	0.28	5 / 15
29	Nickel	mg/lit	<0.01	<0.01	<0.01	0.02
30	Copper	mg/lit	<0.04	<0.04	<0.04	0.05 / 1.5
31	Total Coliform	MPN/100ml	Absent	Absent	Absent	Absent
32	Faecal Coliform	–	Absent	Absent	Absent	Absent

Note: *As per IS10500:2012 (Desirable/Permissible)

3. SOIL QUALITY

Parameter Details:

Sr. No.	Parameters	Unit	Analysis Method
1	Particle Size Distribution		
	i. Sand	%	International Pipette Method
	ii. Silt	%	International Pipette Method
	iii Clay	%	International Pipette Method
2	Texture	–	International Pipette Method
3	pH Value	–	IS 2720 (Part 26)
4	Electrical Conductivity	mS/cm	IS 14767
5	Specific Gravity	mg/kg	ASTM D854
6	Bulk Density	g/cm³	Note 1*
7	Organic Matter	%	Lab SOP No. NIL/SOP/05***
8	Sodium Absorption Ratio (SAR)	–	IS 11624
9	Porosity	%	Note 2**
10	NPK Value	mg/kg	APHA 4500-N-C and Lab SOP No. NIL/SOP/10***

Note :

1. * Environmental Analysis – Water, Soil and Air, by M.M. Saxena
2. ** Soil Sampling, Preparation and Analysis (2nd Edition) by Kim H. Tan
3. *** Based on Manual of Soil testing in India, Ministry of Agriculture, GOI, 2011

Results:

Sr. No.	Parameters	Unit	Near Project Site (Dewal Ki Dhani)		
---	**Date of Sampling**	---	**06.04.2022**	**03.05.2022**	**02.06.2022**
---	**Sample Code**	---	**NIL/OT/04/22/319**	**NIL/OT/05/22/136**	**NIL/OT/06/22/045**
1	Particle Size Distribution				
	i. Sand	%	**98.7**	**98.3**	**98.1**
	ii. Silt	%	**0.7**	**1.1**	**0.8**
	iii Clay	%	**0.6**	**0.6**	**1.1**
2	Texture	–	**Sand**	**Sand**	**Sand**
3	pH Value	–	**7.71**	**8.13**	**7.97**
4	Electrical Conductivity	mS/cm	**2.265**	**2.536**	**2.437**
5	Specific Gravity	mg/kg	**2.70**	**2.36**	**2.54**
6	Bulk Density	g/cm³	**1.77**	**2.14**	**2.07**
7	Organic Matter	%	**2.12**	**1.86**	**1.70**
8	Sodium Absorption Ratio (SAR)	–	**1.57**	**1.39**	**1.47**
9	Porosity	%	**19.5**	**21.1**	**17.3**
10	NPK Value	mg/kg	**357.6**	**293.3**	**374.4**

Sr. No.	Parameters	Unit	Kasajiyon ki Dhani		
---	**Date of Sampling**	---	**06.04.2022**	**03.05.2022**	**02.06.2022**
---	**Sample Code**	---	**NIL/OT/04/22/320**	**NIL/OT/05/22/137**	**NIL/OT/06/22/046**
1	Particle Size Distribution				
	i. Sand	%	**98.2**	**98.0**	**98.2**
	ii. Silt	%	**0.5**	**0.8**	**1.0**
	iii Clay	%	**1.3**	**1.2**	**0.8**
2	Texture	–	**Sand**	**Sand**	**Sand**
3	pH Value	–	**8.08**	**7.91**	**8.22**
4	Electrical Conductivity	mS/cm	**0.192**	**0.204**	**0.228**
5	Specific Gravity	mg/kg	**2.55**	**2.52**	**2.68**
6	Bulk Density	g/cm³	**1.96**	**2.11**	**2.05**
7	Organic Matter	%	**1.76**	**1.19**	**1.31**
8	Sodium Absorption Ratio (SAR)	–	**3.14**	**2.60**	**3.12**
9	Porosity	%	**20.8**	**27.4**	**21.1**
10	NPK Value	mg/kg	**866.9**	**910.0**	**810.2**

Results:

Sr. No.	Parameters	Unit	Sajiyali Village		
---	**Date of Sampling**	---	**06.04.2022**	**03.05.2022**	**02.06.2022**
---	**Sample Code**	---	**NIL/OT/04/22/321**	**NIL/OT/05/22/138**	**NIL/OT/06/22/047**
1	Particle Size Distribution				
	i. Sand	%	**98.6**	**98.4**	**98.9**
	ii. Silt	%	**0.9**	**0.8**	**0.9**
	iii Clay	%	**0.5**	**0.8**	**0.2**
2	Texture	–	**Sand**	**Sand**	**Sand**
3	pH Value	–	**8.23**	**8.25**	**8.44**
4	Electrical Conductivity	mS/cm	**0.113**	**0.118**	**0.107**
5	Specific Gravity	mg/kg	**2.08**	**1.87**	**1.95**
6	Bulk Density	g/cm³	**1.80**	**2.11**	**2.26**
7	Organic Matter	%	**0.94**	**0.75**	**0.74**
8	Sodium Absorption Ratio (SAR)	–	**5.91**	**6.13**	**7.37**
9	Porosity	%	**17.0**	**18.1**	**18.4**
10	NPK Value	mg/kg	**286.3**	**321.3**	**315.1**

Sr. No.	Parameters	Unit	Godaro Ki Dhani		
---	**Date of Sampling**	---	**06.04.2022**	**03.05.2022**	**02.06.2022**
---	**Sample Code**	---	**NIL/OT/04/22/322**	**NIL/OT/05/22/139**	**NIL/OT/06/22/048**
1	Particle Size Distribution				
	i. Sand	%	**97.9**	**98.8**	**97.7**
	ii. Silt	%	**1.2**	**1.1**	**0.8**
	iii Clay	%	**0.9**	**0.1**	**1.5**
2	Texture	–	**Sand**	**Sand**	**Sand**
3	pH Value	–	**7.91**	**8.17**	**7.68**
4	Electrical Conductivity	mS/cm	**0.095**	**0.115**	**0.103**
5	Specific Gravity	mg/kg	**2.66**	**2.63**	**2.69**
6	Bulk Density	g/cm³	**1.96**	**2.29**	**1.85**
7	Organic Matter	%	**0.76**	**0.74**	**0.64**
8	Sodium Absorption Ratio (SAR)	–	**7.27**	**6.91**	**5.88**
9	Porosity	%	**23.7**	**25.8**	**19.9**
10	NPK Value	mg/kg	**2934.4**	**2795.9**	**3398.2**

4. NOISE LEVEL MONITORING

Standard:

As per the Noise Pollution (Regulation and Control) Rules, 2000 the Ambient Air Quality Standards in respect of Noise are as below:

Area Code	Category of Area / Zone	Limits in dB(A) Leq*	
		Day Time	Night Time
A	Industrial area	75	70
B	Commercial area	65	55
C	Residential area	55	45
D	Silence Zone	50	40

Note:-

1. Day time mean from 6.00 a.m. to 10.00 p.m.
2. Night time mean from 10.00 p.m. to 6.00 a.m.
3. Silence zone is an area comprising not less than 100 metres around hospitals, educational institutions, courts, religious places or any other area which is declared as such by the competent authority
4. Mixed categories of areas may be declared as one of the four above mentioned categories by the competent authority.

* dB(A) Leq denotes the time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.

Result:

LOCATION		Kiyar					
DATE		11.04.2022	22.04.2022	05.05.2022	19.05.2022	04.06.2022	18.06.2022
Hourly L_{eq}	06:00 - 07:00	44.8	49.4	50.7	47.1	48.8	55.0
	07:00 - 08:00	45.8	51.0	48.5	54.8	49.5	52.8
	08:00 - 09:00	47.1	51.8	47.8	50.9	53.7	51.6
	09:00 - 10:00	47.9	55.2	52.3	51.2	51.3	54.5
	10:00 - 11:00	53.1	49.3	51.9	54.3	52.7	56.2
	11:00 - 12:00	48.5	48.0	52.2	50.3	54.7	58.3
	12:00 - 13:00	49.3	46.9	51.6	57.1	54.3	60.5
	13:00 - 14:00	43.6	46.4	50.7	54.1	42.7	51.3
	14:00 - 15:00	48.1	48.8	53.5	53.6	54.3	56.7
	15:00 - 16:00	49.1	48.6	55.7	54.6	55.1	58.2
	16:00 - 17:00	48.8	51.6	52.9	52.7	51.0	56.8
	17:00 - 18:00	48.5	54.0	53.3	54.2	53.7	61.7
	18:00 - 19:00	49.5	53.5	51.4	54.1	53.7	56.5
	19:00 - 20:00	46.4	52.0	53.7	55.1	52.9	58.6
	20:00 - 21:00	46.8	49.0	48.6	53.7	48.5	47.3
	21:00 - 22:00	47.9	54.2	53.6	55.5	48.3	47.0
	22:00 - 23:00	39.3	46.2	41.1	50.2	43.4	40.3
	23:00 - 00:00	35.7	45.2	41.9	47.4	45.2	47.3
	00:00 - 01:00	36.9	44.3	39.2	42.4	41.2	42.9
	01:00 - 02:00	34.2	46.1	40.5	39.0	44.9	45.0
	02:00 - 03:00	34.8	45.6	40.6	36.0	45.5	45.2
	03:00 - 04:00	34.3	43.6	41.2	34.5	48.1	45.3
	04:00 - 05:00	31.8	45.1	46.4	35.5	46.5	44.0
	05:00 - 06:00	40.4	45.7	45.7	42.1	41.2	45.8
L_{eq} Day		**48.4**	**51.4**	**52.2**	**53.9**	**52.5**	**56.8**
L_{eq} Night		**36.8**	**45.3**	**42.8**	**44.2**	**45.1**	**44.9**
L_{DN}		**47.9**	**53.1**	**52.4**	**54.0**	**53.5**	**56.3**

Note: All Values in **dB(A)**

Result

LOCATION		Akarli					
DATE		08.04.2022	22.04.2022	05.05.2022	19.05.2022	04.06.2022	18.06.2022
Hourly L_{eq}	06:00 - 07:00	52.3	50.8	48.5	43.3	57.5	50.9
	07:00 - 08:00	46.1	53.6	48.9	38.2	58.8	48.2
	08:00 - 09:00	45.8	54.5	49.0	38.7	52.7	47.1
	09:00 - 10:00	51.1	56.2	50.8	48.4	54.4	49.2
	10:00 - 11:00	46.7	57.5	51.7	54.0	55.2	49.6
	11:00 - 12:00	47.2	56.2	50.4	47.8	56.6	49.0
	12:00 - 13:00	51.3	59.4	50.9	48.2	56.6	50.5
	13:00 - 14:00	45.3	57.7	46.5	41.2	49.8	45.8
	14:00 - 15:00	50.2	55.9	49.1	46.3	54.8	46.3
	15:00 - 16:00	50.1	55.9	50.8	46.8	55.1	49.6
	16:00 - 17:00	48.7	56.5	50.4	45.3	55.2	45.9
	17:00 - 18:00	49.4	56.9	50.9	45.9	54.4	47.7
	18:00 - 19:00	46.2	58.7	50.5	46.1	56.5	50.1
	19:00 - 20:00	47.4	58.0	48.6	44.1	52.5	50.2
	20:00 - 21:00	43.4	56.7	47.3	36.3	54.7	44.1
	21:00 - 22:00	44.2	55.6	50.3	39.2	52.0	48.6
	22:00 - 23:00	36.6	53.6	44.3	31.9	49.9	38.1
	23:00 - 00:00	38.3	49.4	43.8	47.1	45.1	39.2
	00:00 - 01:00	45.7	43.7	45.2	42.6	45.6	41.2
	01:00 - 02:00	46.7	43.0	45.1	39.6	41.6	45.4
	02:00 - 03:00	39.7	41.0	45.3	42.6	38.2	52.0
	03:00 - 04:00	40.6	41.1	43.9	38.9	37.8	51.9
	04:00 - 05:00	45.3	41.5	43.8	41.9	36.7	42.0
	05:00 - 06:00	48.4	45.2	43.9	44.4	49.6	43.8
L_{eq} Day		**48.6**	**56.7**	**49.9**	**46.6**	**55.3**	**48.7**
L_{eq} Night		**44.4**	**47.3**	**44.5**	**42.7**	**45.6**	**47.2**
L_{DN}		**51.5**	**56.9**	**52.0**	**49.7**	**55.4**	**53.5**

Note: All Values in **dB(A)**

Result

LOCATION		Dewal ki Dhani					
DATE		12.04.2022	25.04.2022	09.06.2022	23.05.2022	08.06.2022	22.06.2022
Hourly L_{eq}	06:00 - 07:00	52.3	47.5	52.2	46.9	50.7	42.8
	07:00 - 08:00	46.3	44.2	56.8	41.2	50.6	58.3
	08:00 - 09:00	46.9	40.7	57.1	37.5	50.8	36.0
	09:00 - 10:00	52.8	42.9	55.3	41.5	53.4	43.6
	10:00 - 11:00	49.0	57.0	56.6	45.7	53.7	39.4
	11:00 - 12:00	48.6	50.3	57.0	44.6	52.5	45.3
	12:00 - 13:00	52.9	46.7	56.6	43.6	53.8	44.6
	13:00 - 14:00	50.3	50.9	49.6	33.4	53.3	38.0
	14:00 - 15:00	48.5	60.3	51.7	41.5	52.8	35.9
	15:00 - 16:00	48.9	55.4	55.5	44.7	58.9	38.9
	16:00 - 17:00	48.1	47.2	56.4	43.9	59.1	41.3
	17:00 - 18:00	48.4	45.5	49.3	42.8	63.1	40.3
	18:00 - 19:00	48.5	35.9	52.2	43.1	62.1	39.7
	19:00 - 20:00	51.8	51.3	55.3	40.9	55.4	34.2
	20:00 - 21:00	48.6	47.9	49.2	37.5	58.2	35.4
	21:00 - 22:00	47.1	47.1	53.6	37.0	52.4	40.5
	22:00 - 23:00	42.1	43.7	51.6	33.2	46.2	37.6
	23:00 - 00:00	45.7	45.6	44.4	34.2	44.3	33.6
	00:00 - 01:00	37.9	44.6	47.1	38.4	39.4	38.5
	01:00 - 02:00	42.0	31.4	43.7	38.2	37.2	39.4
	02:00 - 03:00	36.9	44.6	42.0	33.9	31.5	26.7
	03:00 - 04:00	38.3	41.9	41.8	38.7	31.1	34.6
	04:00 - 05:00	43.9	40.6	42.5	35.4	33.5	36.2
	05:00 - 06:00	41.0	42.7	43.3	37.6	38.5	37.4
L_{eq} Day		**49.8**	**52.2**	**54.8**	**42.8**	**57.0**	**47.3**
L_{eq} Night		**41.9**	**43.1**	**46.0**	**36.7**	**40.7**	**36.6**
L_{DN}		**50.6**	**52.5**	**55.2**	**44.5**	**55.7**	**47.1**

Note: All Values in **dB(A)**

Result

LOCATION		Panch Padra					
DATE		07.04.2022	21.04.2022	04.05.2022	18.05.2022	03.06.2022	17.06.2022
Hourly L_{eq}	06:00 - 07:00	45.1	49.8	49.2	51.0	52.3	48.0
	07:00 - 08:00	44.8	51.0	47.9	48.6	50.7	54.8
	08:00 - 09:00	44.8	52.3	49.6	53.5	56.7	51.0
	09:00 - 10:00	45.4	54.6	55.6	51.7	53.2	53.3
	10:00 - 11:00	45.4	49.8	55.4	55.2	56.9	53.0
	11:00 - 12:00	45.4	48.5	59.8	53.9	55.6	53.0
	12:00 - 13:00	45.3	47.3	55.3	55.8	57.4	52.7
	13:00 - 14:00	44.6	46.7	60.7	50.0	52.6	52.6
	14:00 - 15:00	45.0	48.4	56.8	53.8	55.8	53.2
	15:00 - 16:00	44.9	48.9	57.3	52.8	54.5	54.5
	16:00 - 17:00	46.0	52.1	57.4	52.5	53.8	53.2
	17:00 - 18:00	46.1	54.4	58.6	52.7	54.8	52.4
	18:00 - 19:00	42.7	54.5	55.3	54.6	56.4	54.2
	19:00 - 20:00	43.7	52.1	55.9	52.8	54.3	50.9
	20:00 - 21:00	44.0	49.8	54.3	52.9	54.3	52.4
	21:00 - 22:00	44.9	53.6	53.7	51.3	53.3	51.6
	22:00 - 23:00	40.2	46.1	44.6	48.5	48.5	45.4
	23:00 - 00:00	39.5	45.4	42.1	45.9	48.2	42.7
	00:00 - 01:00	40.0	44.6	45.2	46.4	49.1	39.0
	01:00 - 02:00	39.6	46.1	41.3	42.1	44.8	37.8
	02:00 - 03:00	40.4	46.4	38.6	39.6	40.8	38.3
	03:00 - 04:00	39.9	44.2	39.2	43.3	43.9	41.5
	04:00 - 05:00	40.3	45.9	49.9	41.8	43.2	40.6
	05:00 - 06:00	41.0	46.1	48.4	40.8	42.7	42.7
L_{eq} Day		**45.0**	**51.6**	**56.4**	**53.1**	**54.9**	**52.8**
L_{eq} Night		**40.1**	**45.7**	**45.3**	**44.5**	**46.1**	**41.7**
L_{DN}		**47.4**	**53.4**	**56.1**	**53.6**	**55.3**	**52.5**

Note: All Values in **dB(A)**