

KCL/ENV/EC-COMP/2025-26/02

Date: 27.05.2026

To,  
Additional Principal Chief Conservator of Forest (APCCF)  
Ministry of Environment, Forest and Climate Change,  
Integrated Regional Office,  
Aranya Bhavan, Fourth Floor, Room No. 407  
Sector 10 A, Gandhinagar, Gujarat 382010

**Sub: Six Monthly Environment Clearance Compliance status report of Greenfield Copper Refinery Project (1.0 MTPA) of Kutch Copper Limited Located in villages Siracha & Navinal, Taluka -Mundra, District-Kutch, Gujarat.**

**Ref: EC Letter No. J-11011/113/2016-IA.II(I) dated 08.05.2020 and subsequent EC amendment letter dated 23.06.2021.**

Dear Sir,

With reference to the above subject, please find enclosed herewith Six-Monthly Environment Clearances (EC) Compliance Status Report along with environmental monitoring data, annexures for the period of October-2025 to March-2026.

This is for your information & record please.

Thanking You,  
Yours faithfully,

For Kutch Copper Limited



Deepak Sopori  
(Head Operations)

Enclosed: as above.  
The Member Secretary  
Central Pollution Control Board  
Parivesh Bhavan, East Arjun Nagar  
Kendriya Paryavaran Bhawan  
New Delhi-110032

The Member Secretary  
Gujarat Pollution Control Board  
Paryavaran Bhawan, Sector-10A  
Gandhinagar - 382010

The Regional Officer  
Gujarat Pollution Control Board,  
Chetna Chamber, Sector-09  
Gandhidham, Kandla, Gujarat - 370201

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Adani Corporate House  
Shantigram, S G Highway  
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Regd Office: "Adani Corporate House", Shantigram, Near Vaishno Devi Circle, S. G. Highway, Khodiyar, Abad - 382421

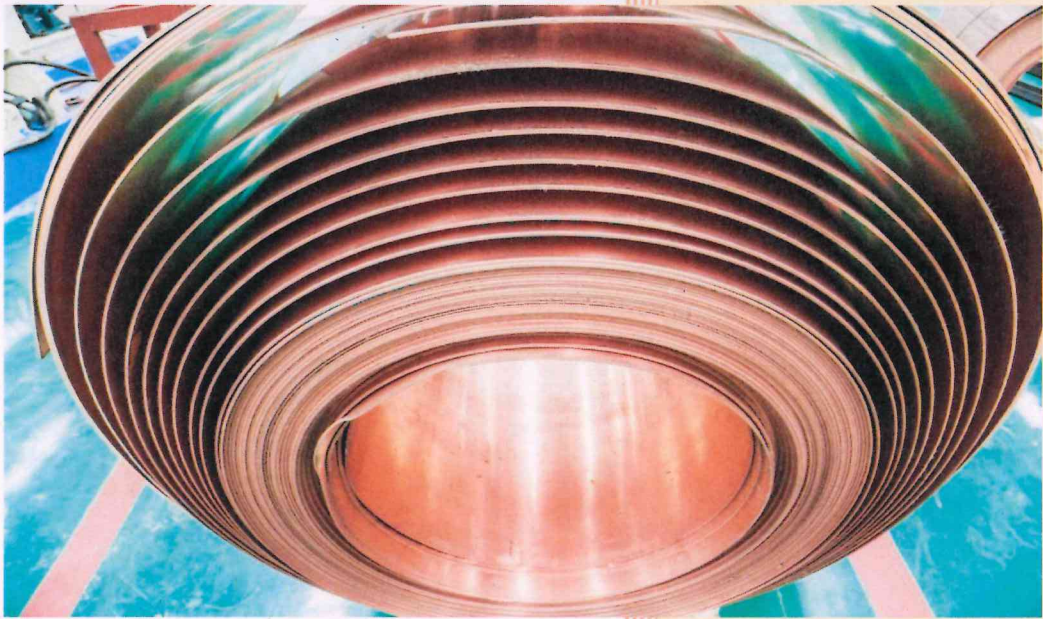
## Kutch Copper Limited

1.0 MTPA (One Million Tons per Annum) Greenfield Copper Refinery Project



For Period:  
**October 2025 to  
March 2026**

# SIX MONTHLY COMPLIANCE REPORT OF ENVIRONMENT CLEARANCE (EC)



### Submitted to:

Integrated Regional Office, Gandhinagar  
Ministry of Environment, Forest & Climate Change  
Central Pollution Control Board, New Delhi &  
Gujarat Pollution Control Board, Gandhinagar  
and Regional Office

### For

**1.0 MTPA  
(One Million Tons per Annum)  
Green Field Copper  
Refinery Project**

### Submitted by:

**Kutch Copper Limited  
Vill: Siracha, Navinal  
Tal: Mundra, Dist: Kutch – 370405  
Gujarat.**

**Taluka - Mundra  
District -Kutch,  
Gujarat**

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## Kutch Copper Limited

1.0 MTPA (One Million Tons per Annum) Greenfield Copper Refinery Project

### TABLE OF CONTENT

Sl. No.	Title	
1.	Introduction	
2.	Compliance Status report of Environment Clearance (EC)	
3.	Stack Emission Monitoring Summary Reports (Oct'25 to Mar'2026)	Annexure-1
4.	Ambient Air Quality Monitoring Summary Reports (Oct'25 to Mar'2026)	Annexure-2
5.	Fugitive Emission Monitoring Summary Reports (Oct'25 to Mar'2026)	Annexure-3
6.	Ground Water Quality Summary Reports (Oct'25 to Mar'2026)	Annexure-4
7.	Ambient Noise Monitoring Summary Reports (Oct'25 to Mar'2026)	Annexure-5
8.	STP Treated Water Summary Reports (Oct'25 to Mar'2026)	Annexure-6
9.	ETP Treated Water Summary Reports (Oct'25 to Mar'2026)	Annexure-7
10.	Statement on Carbon Footprint	Annexure-8
11.	Impact Assessment of Health Programme Report	Annexure-9

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## Kutch Copper Limited

1.0 MTPA (One Million Tons per Annum) Greenfield Copper Refinery Project

### Introduction

Kutch Copper Limited is setting up a Greenfield Copper Refinery Project of One Million Tons Per Annum (1.0 MTPA) capacity. The project site is located in Siracha and Navinal villages at Mundra taluka, Kutch district in the state of Gujarat.

Terms of Reference (TOR) for EIA study for the proposed project was accorded by MoEF&CC vide Letter F.No. J-11011/113/2016-IA.II (I) dated 21<sup>st</sup> June 2016. In accordance with the TOR conditions, the EIA - EMP report has been prepared by M/s. Vimta Labs Limited, Hyderabad based on three-months site-specific baseline environmental data monitored during 1<sup>st</sup> October 2016 to 31<sup>st</sup> December 2016 and submitted to MoEF&CC along with EC Application IA/GJ/IND/86812/2016 dated 06.12.2018.

Environmental clearance for 1.0 Million Tonnes per Annum Greenfield Copper Refinery Project was granted vide letter dated 08.05.2020 and its subsequent amendment dated 23.06.2021.

EC transfer letter from M/s. AEL to M/s. KCL was received vide letter No.F. No. J-11011/113/2016-IA.II(I), dt; 03.08.2021.

CTE granted vide CTE no 49273 dated 19/09/2021

CTO /CCA granted vide consent order no. AWH – 132498 dated 20-02-2024 for 0.5 MTPA.

There was an Appeal in National Green Tribunal vide Appeal No. 35/2020 (WZ). The matter was heard on 1<sup>st</sup> July 2024 and the said appeal is disposed off. The judgement has been pronounced on dated 6/08/2024.



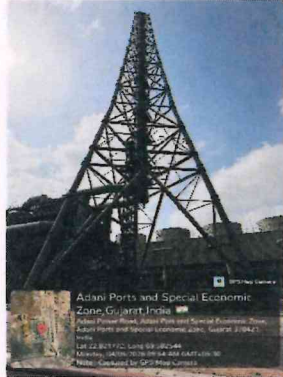
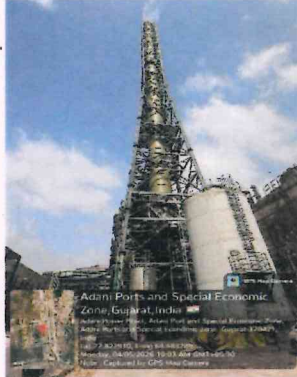
## Kutch Copper Limited

1.0 MTPA (One Million Tons per Annum) Greenfield Copper Refinery Project

Sl. No.	Conditions of EC	Compliance Status																					
<b>A</b>	<b>Specific Conditions</b>																						
i.	Dust Collected from Waste Heat Recovery Boiler (WHRB), Electrostatic Precipitators (ESPs) and bag filters in copper smelter shall be recycled back into copper plant and dust collected from Bag filters in phosphoric acid plant shall be recycled back into phosphoric acid plant.	Dust Collected from Waste Heat Recovery Boiler (WHRB), Electrostatic Precipitators (ESPs) and bag filters in copper smelter is being recycled back into copper plant. Phosphoric acid plant is yet to establish.																					
ii.	Off-Gases from Smelting, settling and converting furnaces in copper smelter plant shall be cleaned and converted to sulphuric acid by Double conversion Double absorption (DCDA) Process Technology. Super Caesium based catalyst shall be used in final bed of the catalytic converter of Sulphuric Acid Plant to achieve maximum conversion ratio.	Off-Gases from Smelting, settling and converting furnaces in copper smelter plant is cleaned and converted to sulphuric acid by Double conversion Double absorption (DCDA) Process Technology. Super Caesium based catalyst is being used in final bed of the catalytic converter of Sulphuric Acid Plant to achieve maximum conversion ratio.																					
iii.	Sulphur dioxide emission from the residual off-gases of sulphuric acid plant shall not be more than 0.7 Kg/Tonne of Sulphuric Acid produced.	Complied, Sulphur dioxide emission from the residual off-gases of sulphuric acid plant is well within 0.7 Kg/Tonne of Sulphuric Acid produced H2 FY 2025-26 is as under: <table border="1" data-bbox="954 1429 1425 1711"> <thead> <tr> <th>Sr. No.</th> <th>Month</th> <th>SO<sub>2</sub> (KG SO<sub>2</sub>/Tonne of H<sub>2</sub>SO<sub>4</sub>)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Oct'25</td> <td>0.30</td> </tr> <tr> <td>2</td> <td>Nov'25</td> <td>0.22</td> </tr> <tr> <td>3</td> <td>Dec'25</td> <td>0.21</td> </tr> <tr> <td>4</td> <td>Jan'26</td> <td>0.18</td> </tr> <tr> <td>5</td> <td>Feb'26</td> <td>0.14</td> </tr> <tr> <td>6</td> <td>Mar'26</td> <td>0.17</td> </tr> </tbody> </table>	Sr. No.	Month	SO <sub>2</sub> (KG SO <sub>2</sub> /Tonne of H <sub>2</sub> SO <sub>4</sub> )	1	Oct'25	0.30	2	Nov'25	0.22	3	Dec'25	0.21	4	Jan'26	0.18	5	Feb'26	0.14	6	Mar'26	0.17
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iv.	Sulphur dioxide emission from the stack of flue gas desulphurisation system shall not be more than 400 mg/Nm <sup>3</sup> .	Complied, Sulphur dioxide emission from the stack of flue gas desulphurisation system is well within 400 mg/Nm <sup>3</sup> H2 FY 2025-26 is as under: <table border="1" data-bbox="954 1912 1425 2033"> <thead> <tr> <th>Sr. No.</th> <th>Month</th> <th>SO<sub>2</sub> (mg/Nm<sup>3</sup>)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Oct'25</td> <td>118</td> </tr> <tr> <td>2</td> <td>Nov'25</td> <td>124</td> </tr> </tbody> </table>	Sr. No.	Month	SO <sub>2</sub> (mg/Nm <sup>3</sup> )	1	Oct'25	118	2	Nov'25	124												
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## Kutch Copper Limited




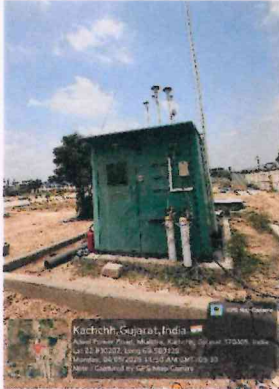
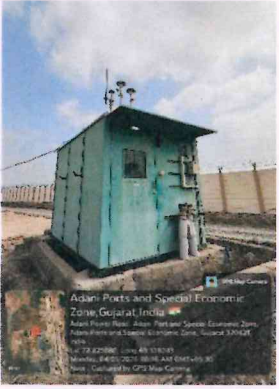


### 1.0 MTPA (One Million Tons per Annum) Greenfield Copper Refinery Project

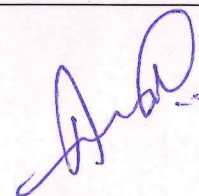
			3	Dec'25	127.3																					
			4	Jan'26	116.7																					
			5	Feb'26	121.3																					
			6	Mar'26	135.1																					
v.	Stack height of sulphuric acid plant and flue gas desulfurization system shall not be less than 150 meters.	Complied, Stack height of sulphuric acid plant and flue gas desulfurization system is 150 meters.																								
 <p>TGD Stack</p>		 <p>FGD Stack</p>																								
vi.	Acid mist from stack of Sulphuric acid plant shall be maintained at less than 50 mg/Nm <sup>3</sup> in compliance to the standards vide Notification G.S.R. 354(E) dated 02.05.2011.	Complied, Acid mist from stack of Sulphuric acid plant is being maintained well within 50 mg/Nm <sup>3</sup> H2 FY 2025-26 is as under:	<table border="1"> <thead> <tr> <th>Sr. No.</th> <th>Month</th> <th>Acid Mist (mg/Nm<sup>3</sup>)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Oct'25</td> <td>18.3</td> </tr> <tr> <td>2</td> <td>Nov'25</td> <td>25.2</td> </tr> <tr> <td>3</td> <td>Dec'25</td> <td>23.5</td> </tr> <tr> <td>4</td> <td>Jan'26</td> <td>21.3</td> </tr> <tr> <td>5</td> <td>Feb'26</td> <td>26.4</td> </tr> <tr> <td>6</td> <td>Mar'26</td> <td>24.3</td> </tr> </tbody> </table>			Sr. No.	Month	Acid Mist (mg/Nm <sup>3</sup> )	1	Oct'25	18.3	2	Nov'25	25.2	3	Dec'25	23.5	4	Jan'26	21.3	5	Feb'26	26.4	6	Mar'26	24.3
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vii.	On-line Stack Monitoring system shall be installed for sulphur di-oxide from the Sulphuric acid Plant and Flue Gas desulphurisation stack and shall be calibrated regularly.	Complied, On-line Stack Monitoring systems (3 No.) are installed for sulphur di-oxide from the Sulphuric acid Plant and Flue Gas desulphurisation stack and are being calibrated regularly.																								



## Kutch Copper Limited


### 1.0 MTPA (One Million Tons per Annum) Greenfield Copper Refinery Project

 <p>CEMS-FGD</p>	 <p>CEMS-TGD (1)</p>	 <p>CEMS-TGD (2)</p>	
<p>viii.</p>	<p>Regenerative sulphur dioxide recovery system such as scrubbing with amine shall be adopted for flue gas desulphurization for the secondary gases from flash smelter, Pierce Smith Convertor and for Tail gases from Sulphuric acid plant. Lime scrubbing system shall be adopted for flue gas desulphurisation of the gases from anode furnace, slag cleaning and scrap melting furnace.</p>	<p>Regenerative sulphur dioxide recovery system such as scrubbing with amine is adopted for flue gas desulphurization for the secondary gases from flash smelter, Pierce Smith Convertor and H<sub>2</sub>O<sub>2</sub> scrubbing system for tail gases from Sulphuric acid plant is also established. Amine based scrubbing system is adopted for flue gas desulphurisation of the gases from anode furnace &amp; Slag cleaning.</p>	
<p>ix.</p>	<p>Six No. CAAQMS shall be installed to monitor the Ambient Air Quality in and around the plant in consultation with SPCB.</p>	<p>As per general conditions-Air quality monitoring and preservation condition no. iii minimum four nos. CAAQMS have been installed to monitor the ambient air quality.</p>	
 <p>CAAQMS-North Gate</p>	 <p>CAAQMS-Near ETP</p>	 <p>CAAQMS-Near SLF</p>	 <p>CAAQMS - South Gate</p>
<p>x.</p>	<p>Mercury (Hg) in ambient air shall be monitored in addition to Air Quality Parameters prescribed in National Ambient Air Quality Standards (NAAQS) 2009 in the</p>	<p>Complied, Mercury (Hg) in ambient air is being monitored by MoEF &amp; NABL accredited agency in addition to Air Quality Parameters prescribed in National Ambient Air Quality</p>	



## Kutch Copper Limited

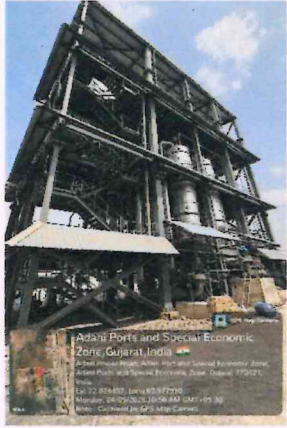

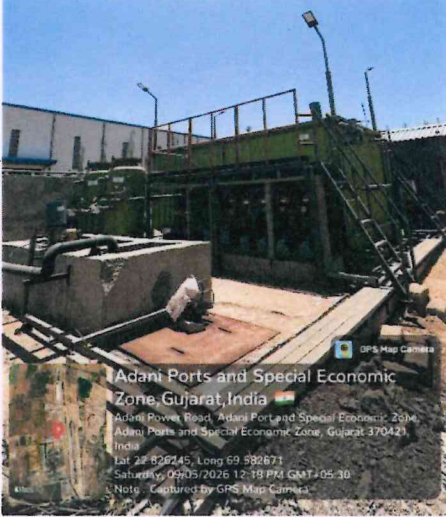
### 1.0 MTPA (One Million Tons per Annum) Greenfield Copper Refinery Project

	study area and report shall be submitted along with six monthly compliance report to Regional Office of the Ministry.	Standards (NAAQS) 2009 and report is being submitted along with six monthly compliance report to Regional Office of the Ministry.
xi.	Company shall install multistage fluoride scrubbing system in phosphoric acid plant so that Fluoride emission from Phosphoric acid plant shall not exceed the prescribed standards i.e 10 mg/Nm <sup>3</sup>	Noted, Phosphoric acid plant is yet to be established.
xii	Water requirement for the proposed copper refinery plant shall not be more than 30,000 m <sup>3</sup> /day. Water audit shall be carried out on annual basis and report submitted to Regional Office of the Ministry.	Water requirement for the proposed copper refinery plant is well within 30,000 m <sup>3</sup> /day. We are engaging an agency for conducting water audit for FY 2025-26. Report will be submitted to RO MoEF&CC.
xiii.	The entire waste water generated including effluents from the gas cleaning plant, sulphuric acid plant, secondary gas scrubbers of copper smelter, Copper refinery, Precious Metal Recovery plant, Leachate collected from Secured Landfill (SLF), shall be treated in effluent treatment plant (ETP). Treated effluent shall be recycled and reused in plant operations.	The entire waste water generated including effluents from the gas cleaning plant, sulphuric acid plant, secondary gas scrubbers of copper smelter, Copper refinery, Precious Metal Recovery plant, Leachate collected from Secured Landfill (SLF) is being treated in effluent treatment plant (ETP). Treated effluent is being recycled and reused in plant operations.  
xiv.	Leachate from Phospho-gypsum storage area shall be recycled back	Noted,

Effluent Treatment Plant (ETP)

## Kutch Copper Limited

### 1.0 MTPA (One Million Tons per Annum) Greenfield Copper Refinery Project

	into and utilised in the Phosphoric acid plant.	Phosphoric acid plant is yet to be established.
xv.	Reverse Osmosis plant along with multi effect evaporator (MEE)/MVR system shall be installed to achieve Zero liquid Discharge.	Complied, Reverse Osmosis plant along with multi effect evaporator (MEE)/MVR system is installed to achieve Zero Liquid Discharge.
 <p style="text-align: center;"><b>MVR-ETP</b></p>		 <p style="text-align: center;"><b>RO-ETP</b></p>
xvi.	Domestic effluent shall be treated in Sewage Treatment Plant (STP) and treated wastewater shall be used for the development of green belt.	Complied, Domestic effluent is being treated in Sewage Treatment Plant (STP) and treated wastewater is used for green belt development.
xvii.		 <p style="text-align: center;"><b>Sewage Treatment Plant (STP)</b></p>
	The ground water quality all around the solid waste storage of	Ground water quality is being monitored around SLF & Phospho-gypsum storage area

## Kutch Copper Limited

### 1.0 MTPA (One Million Tons per Annum) Greenfield Copper Refinery Project

<p>Copper Slag, Phospho-Gypsum and SLF shall be monitored, in pre monsoon and post monsoon periods for pH, Arsenic and Fluoride levels along with other parameters and data submitted to the Ministry's Regional Office.</p>	<p>and data is being submitted to ministry's regional office along with Six monthly EC Compliance Report. Ground water quality monitoring report is enclosed as <b>Annexure-4</b>.</p>
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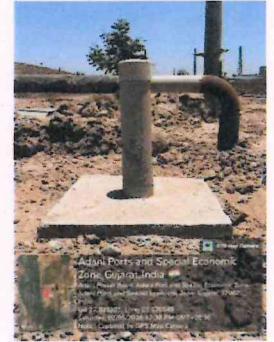
Piezo Well-1 (SLF)



Piezo Well-2 (SLF)



Piezo Well-3 (SLF)



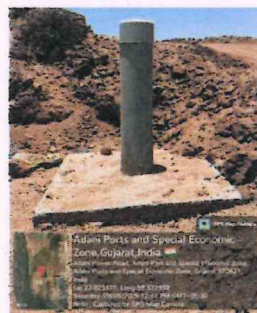
Piezo Well-4 (SLF)



Piezo Well-5 (PSF)



Piezo Well-6 (PSF)



Piezo Well-7 (PSF)



Piezo Well-8 (PSF)

<p>xviii.</p>	<p>Interlocking systems in the plant shall be provided to control the impact of accidental releases, if any. Records of such events including response and corrective actions shall be maintained.</p>	<p>Interlocking system is provided to control the impact of accidental releases. If any, Records of such events including response and corrective actions shall be maintained.</p>
<p>xix.</p>	<p>Wildlife Management Plan for conservation of active mud flats, and mangroves plantation in 500 ha (50 ha. per year in 10 years) and for development on the bank of Kotdi-I, Kotdi-II and Baradimata Creek systems shall be</p>	<p>Wildlife Management Plan had been prepared and submitted for approval to the Chief Wildlife Warden, Bhuj, Gujarat for further suggestion &amp; implementation. Ref no: AEL/Copper/Forest Department/2020/Jan-1</p>

## Kutch Copper Limited

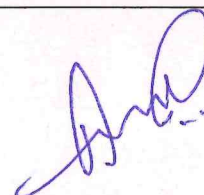
### 1.0 MTPA (One Million Tons per Annum) Greenfield Copper Refinery Project

	implemented in consultation with Gujarat Forest Department. Year wise implementation records including of spending of funds earmarked (Rs 372 Lakh) shall be maintained and submitted to Regional Office of the Ministry.	
xx.	All the recommendations made in the Charter on Corporate Responsibility for Environment Protection (CREP) for the Copper smelters shall be implemented.	All the recommendations made in the Charter on Corporate Responsibility for Environment Protection (CREP) for the Copper smelters is being implemented.
xxi.	During Construction phase, housing for construction labour shall be provided with all necessary infrastructure and facilities such as green fuel for cooking, toilets, STP, safe drinking water, medical health care, etc. The housing may be in the form of temporary structure.	Plant is in running phase & construction activity is completed. Housing was provided for construction labour during the construction phase and facilities such as toilets, STP, drinking water, OHC etc. had been provided for all the construction labours.
xxii.	Additional plantation shall be done against the trees removed from non-forest area during the project construction phase in 1:10 ratio.	No trees have been cut during the project construction phase.
xxiii.	A wall of at least nine feet height shall be constructed around the project boundary. Thick green belt of minimum 20 m width shall be developed around the project boundary to arrest fugitive dust emission.	A wall of 9 feet height has been constructed around project boundary. Thick green belt is being developed around the project boundary to arrest fugitive dust emission.
xxiv.	Green belt of 15 m width shall be developed all around the solid waste storage area.	Green belt shall be developed all around solid waste storage area.
xxv.	Care shall be taken to restrict cutting of trees to the minimum. For every tree cut minimum of 10 trees or the number as required by the state policy, whichever is more shall be planted.	No trees have been cut at the project site.
xxvi.	There will be bridges across the two land parcels for accessibility. Flow of water from Dhaneshwari	There are no bridges across the two land parcels. Dhaneshwari river passes alongside of the project area, which will be maintained.

## Kutch Copper Limited

### 1.0 MTPA (One Million Tons per Annum) Greenfield Copper Refinery Project

	Nadi shall not be disturbed. A green belt along with safety zone (towards river bank with gabion and gully plugs to avoid erosion of plant if any) 50 meter wide shall be developed along the banks (side) of Dhaneshwari Nadi and 100 meter wide wherever storage of solid waste is proposed. This green belt would be developed by giving protection to the area and planting local species so that a natural ecosystem is created that may promote wilderness.	
xxvii.	The runoff water from the raw material storage area, slag and phospho gypsum storage yard shall be treated, and recycled. The sludge from the treatment facilities shall be recycled back into plant or store at designated place.	The runoff water from the slag and phospho gypsum storage yard will be treated in the ETP. The sludge from treatment facility is stored at SLF area and treated water from ETP is being recycled back into plant process.
xxviii.	In order to mitigate salinity ingress, provision for ground water recharging by rainwater shall be provided inside and outside the plant at identified locations based on the lithological parameters derived through scientific investigation.	Ground water recharging is being done by the rainwater harvesting pond inside project site, for outside recharging pits are being constructed surrounding plant area. Check dams on water streams are constructed to further recharge the ground water.
xxix.	Water consumption shall not be more than 8.39 m <sup>3</sup> /Tonne of Copper Cathode and that for the entire Complex shall not be more than 10.83 m <sup>3</sup> /Tonne of Copper Cathode after stabilization of the plant. Water Audit shall be conducted once in a year for entire complex comprising all the individuals units and report submitted to Regional Office of the Ministry.	Water consumption is presently higher due to unstable and lower production levels during the reporting period. However, a consistent reducing trend in water intensity is observed with specific consumption declining from 9.7 m <sup>3</sup> /t in Oct'25 to 4.1 m <sup>3</sup> /t in Mar'26 and overall complex consumption reducing from 36.9 m <sup>3</sup> /t in Oct'25 to 13.8 m <sup>3</sup> /t in Mar'26. This indicates progressive stabilization and improved operational control. With further improvement in plant load and optimization measures, the water consumption is expected to align with the stipulated limits in the near term.



## Kutch Copper Limited

### 1.0 MTPA (One Million Tons per Annum) Greenfield Copper Refinery Project

		We are engaging an agency for conducting water audit for FY 2025-26. Report will be submitted to RO MoEF&CC.
xxx.	Energy consumption of the proposed plant shall not exceed 11 GJ/T of Copper Cathode at 100% capacity utilization and 17 GJ/T for entire Complex after stabilization of the plant. Energy Audit shall be conducted once in a year for entire complex comprising all the individual units and report submitted to Regional Office of the Ministry.	Energy consumption is presently higher due to sub-optimal and fluctuating production levels. There is a clear declining trend in energy intensity, with specific energy consumption reducing from 19.6 GJ/t in Oct'25 to 8.8 GJ/t in Mar'26 and complex energy consumption reducing from 35 GJ/t in Oct'25 to 15.7 GJ/t in Mar'26. This demonstrates continuous improvement in process efficiency and energy optimization. With stabilization of plant operations and achievement of rated capacity, energy consumption is expected to align with the stipulated limits in the near term. We are engaging an agency for conducting energy audit for FY 2025-26. Report will be submitted to RO MoEF&CC.
xxxii.	A statement on carbon footprint including the quantum of equivalent carbon dioxide being emitted by the existing plant operations will be prepared annually through some reputed institution every year and report submitted to the Regional Office of the Ministry annually.	A statement on carbon footprint including the quantum of equivalent carbon dioxide being emitted by the existing plant operations is being prepared and report is enclosed as <b>annexure-8</b> .
xxxiii.	Copper Concentrates and Rock Phosphate shall be transported from port to plant by closed conveyor system or by covered trucks with tarpaulin. Dust extraction/suppression system to handle dust will be provided at the truck unloading point. The storage facility shall be in a covered shed and paved with concrete. Sludge collected from tyre washing facility shall be recycled into copper smelter.	Copper Concentrate is being transported from port to plant in closed conveyor system. Dust suppression system and bag filters are installed to handle dust. The storage facility is in covered shed and paved with concrete.
xxxiiii.	Copper Slag/Ferro Sand/ Iron Silicate shall be transported	Copper Slag is being transported through a covered vehicle from point of generation to



## Kutch Copper Limited

### 1.0 MTPA (One Million Tons per Annum) Greenfield Copper Refinery Project

	transported through a covered truck to the storage facility and for further reuse and utilization.	Chemical gypsum is in the form of sludge and it is being transported safely to the storage facility.
xxxvii.	Action plan to reduce storage of Phospho-gypsum and Chemical gypsum in 5 years shall be prepared and implemented in a progressive manner so that at, any stage, the stacked quantity shall not exceed 5 years cumulative quantity. Records shall be maintained and annual audit shall be conducted and report submitted to the Regional Office of the Ministry.	Noted. Action plan to reduce storage of Phospho-gypsum and Chemical gypsum in five years after stabilisation of the plant shall be prepared and implemented in a progressive manner. Records shall be maintained and annual audit shall be conducted and report submitted to the Regional Office of the Ministry.
xxxviii.	The Chemical gypsum and Phospho-gypsum shall be analysed for their chemical characteristics before considering their storage provision i.e in same or separate land fill site.	Phospho-gypsum will be generated after installation of phosphoric acid plant. Chemical gypsum is being analysed for its chemical characteristics.
xxxix.	Arsenic Bearing Sludge generated in ETP, spent catalyst from Sulphuric Acid Plant, spent resins from DM, RO and Refinery plant, salts from Multi Effect Evaporator/MVR, other toxic substances (if any) shall be stored in Secured Land fill (SLF) with prior approval from Gujarat Pollution Control Board. Records of the generation and storage of these hazardous materials shall be maintained.	Arsenic Bearing Sludge generated in ETP, spent catalyst from Sulphuric Acid Plant, spent resins from DM, RO and Refinery plant, salts from Multi Effect Evaporator/MVR, other toxic substances are being stored in Secured Land fill (SLF) with prior approval from Gujarat Pollution Control Board. Records of the generation and storage of these hazardous materials are being maintained.
xl.	The 10 m wide approach road all along wastes storage yard shall be paved. Arrangement shall be made to spray water on Solid waste dumps of SLF and Phospho-gypsum Yard to control fugitive dust emission.	Wide approach road all along waste storage yard is developed. To control fugitive dust emission, water spray is arranged to spray on solid waste dumps of SLF if required. Phospho-gypsum will be generated after installation of phosphoric acid plant.
xli.	Spent Oil and batteries shall be disposed of and lifted by the authorized recyclers.	Disposal of spent oil is done by authorised recyclers.

## Kutch Copper Limited

### 1.0 MTPA (One Million Tons per Annum) Greenfield Copper Refinery Project

		Battery waste has not been generated however the same shall be disposed to authorised recycler.
xlii.	Occupational Health Surveillance for employees and workers shall be carried out on a regular basis as recommended by ICMR-NIOH study report and record shall be maintained as per Indian Factories Act. Health Survey should be carried out every year regularly in all the villages within three kilometres from the boundary of the project site. Survey reports will have to be regularly submitted to the Regional office of the Ministry.	Occupational Health Surveillance / Medical checkup is carried out for employees and workers on yearly basis. Health surveys and community health assessments are being conducted regularly in surrounding villages through CSR health interventions. A detailed impact assessment (May 2026) covering 19 villages indicates improved access to healthcare, reduced illness days, and enhanced preventive health practices among the community. Impact Assessment of Health Program Report is enclosed as <b>Annexure-9</b> .
xliii.	Corporate Environment Responsibility (CER) Fund shall be utilised in the various projects as submitted in the field of education, livelihood, drinking water arrangement, water shed management, outside project boundary green belt development, etc. during 5 years of project construction time.	Corporate Environment Responsibility (CER) Fund has been utilised in the various projects as submitted in the field of education, livelihood, drinking water arrangement, water shed management, outside project boundary green belt development, etc. during 5 years of project construction time.
xliiv.	Separate drainage system shall be laid to carry storm water run-off and industrial wastewater. Due precaution shall be taken while laying the drainage system to avoid mixing of storm water and industrial wastewater.	Separate drainage system has been laid to carry storm water run-off and industrial wastewater. While laying the drainage system due precaution has taken to avoid mixing of storm water and industrial wastewater.
<b>I</b>	<b>Statutory Compliance</b>	
(i)	The project proponent shall obtain forest clearance under the provisions of Forest (Conservation) Act, 1986, in case of the diversion of forest land for non- forest purpose involved in the project.	Complied, As per the EC and subsequent amendments granted there is no forest land involved in the project area.
(ii)	The project proponent shall prepare a Site- Specific Conservation Plan & Wildlife	Site Specific Conservation Plan & Wildlife Management Plan had been prepared and submitted for approval to the Chief Wildlife



## Kutch Copper Limited

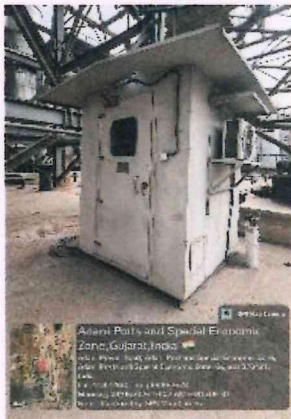
### 1.0 MTPA (One Million Tons per Annum) Greenfield Copper Refinery Project

	<p>Management Plan and approved by the Chief Wildlife Warden. The recommendations of the approved Site-Specific Conservation Plan/ Wildlife Management Plan shall be implemented in consultation with the State Forest Department. The implementation report shall be furnished along with the six-monthly compliance report.</p>	<p>Warden, Bhuj, Gujarat for further suggestion &amp; implementation.</p>
(iii)	<p>The project proponent shall obtain Consent to Establish/Operate under the provisions of Air (Prevention &amp; Control of Pollution) Act, 1981 and the (Water Prevention &amp; Control of Pollution) Act, 1974 from the concerned State Pollution Control Board/Committee.</p>	<p>Complied. a. Consent to Establish has been obtained from GPCB vide CTE no.49273 dated 19.09.2021. b. Consent to Operate has been obtained vide consent order no. AWH-132498 dated 20.02.2024 valid upto 07.01.2029 c. CCA Amendment has been granted vide consent order no. AH-155205 dated 30.03.2026 valid upto 07.01.2029</p>
(iv)	<p>The project proponent shall obtain the necessary permission from the Central Ground Water Authority, in case of drawl of ground water from the competent authority concerned in case of drawl of surface water required for the project.</p>	<p>No Ground water is proposed for the project.</p>
(v)	<p>The project proponent shall obtain authorization under the Hazardous and other Waste Management Rule, 2016 as amended from time to time.</p>	<p>Complied. Authorization under the Hazardous and other waste Management Rule, 2016 has been obtained vide consent order no. AWH-132498 dated 20.02.2024 valid upto 07.01.2029. Authorization amendment under the Hazardous and other waste Management Rule, 2016 has been obtained vide consent order no. AH-155205 dated 30.03.2026 valid upto 07.01.2029.</p>
<b>II</b>	<b>Air quality monitoring and preservation</b>	
(i)	<p>The project proponent shall install 24X7 continuous emission monitoring system at process</p>	<p>24X7 continuous emission monitoring systems are installed at process stacks to monitor stack emission, it is connected to</p>

## Kutch Copper Limited

### 1.0 MTPA (One Million Tons per Annum) Greenfield Copper Refinery Project

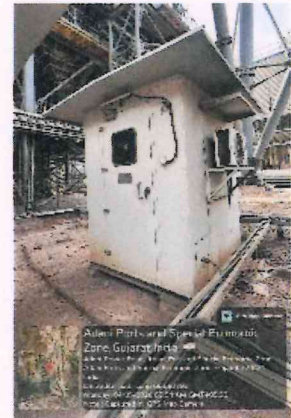
<p>stacks to monitor stack emission with respect to standards prescribed in Environmental (Protection) Rules 1986 vide G.S.R 742 (E) dated 30<sup>th</sup> August 1990 and thereafter amended vide G.S.R 46 (E) dated 3<sup>rd</sup> February 2006 (Aluminium); S.O. 3305 (E) dated 7<sup>th</sup> December 2015 (Thermal Power Plants) as amended from time to time and connected to SPCB and CPCB online servers and calibrate these system from time to time according to equipment supplier specification through labs recognised under Environment (Protection) Act, 1986 or NABL accredited laboratories.</p>	<p>CPCB online server and being calibrated from time to time according to equipment supplier specification through labs recognised under Environment (Protection) Act, 1986 or NABL accredited laboratories.</p>
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CEMS-FGD



CEMS-TGD (1)



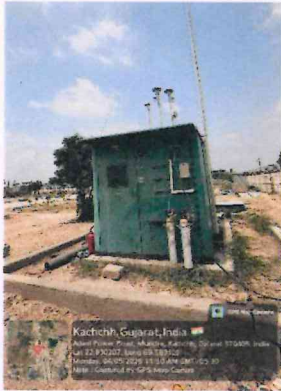
CEMS-TGD (2)

<p>(ii)</p>	<p>The project proponent shall monitor fugitive emissions in the plant premises at least once in every quarter through labs recognised under Environment (Protection) Act, 1986.</p>	<p>Being Complied. Fugitive emissions Monitoring is being done on regular basis through NABL accredited lab. Fugitive emission Monitoring report is enclosed as <b>Annexure-3</b>.</p>
<p>(iii)</p>	<p>The project proponent shall install system to carryout Continuous Ambient Air Quality monitoring for common/criterion parameters relevant to the main pollutants released (e.g. PM10 and PM2.5 in reference to PM emission and SO2</p>	<p>Complied. 4 nos. of Continuous Ambient Air Quality monitoring system have been installed inside plant premises.</p>

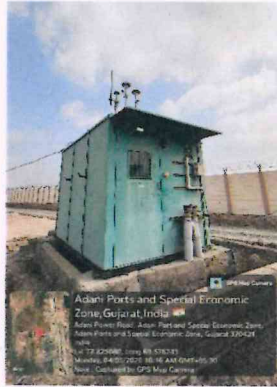
**Kutch Copper Limited**

**1.0 MTPA (One Million Tons per Annum) Greenfield Copper Refinery Project**

and NOx in reference to SO2 and NOx emissions) within and outside the plant area at least at four locations (one within and three outside the plant area at an angle of 120° each), covering upwind and downwind directions.



CAAQMS-North Gate



CAAQMS-Near ETP



CAAQMS-Near SLF



CAAQMS-South Gate

(iv) The project proponent shall submit monthly summary report of continuous stack emission and air quality monitoring and results of manual stack monitoring and manual monitoring of air quality/ fugitive emissions to Regional office of MoEFCC, Zonal office of CPCB and Regional Office of SPCB along with six- monthly monitoring report.

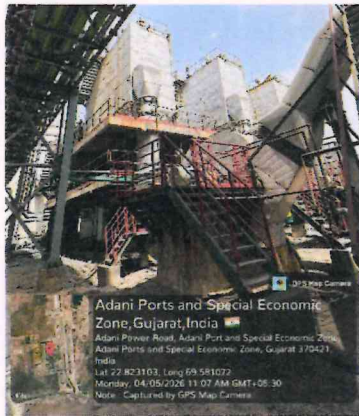
Being Complied.  
Monitoring of stack emission, ambient air quality & Fugitive emission is being done through NABL accredited lab. Stack emission, AAQ & Fugitive emission monitoring reports are enclosed as **Annexure-1, 2 & 3.**

(v) Appropriate Air Pollution Control (APC) system shall be provided for all the dust generating points including fugitive dust from all vulnerable sources, so as to comply prescribed stack emission and fugitive emission standards.

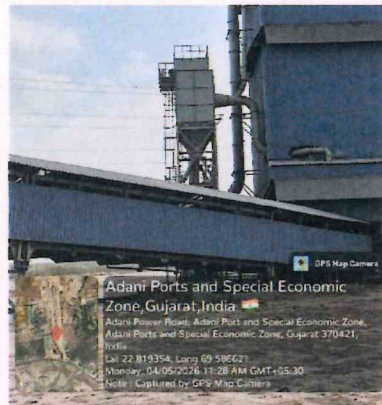
Appropriate air pollution control systems are Installed & are operational to comply with prescribed emission standards. Water sprinkling is also being done on regular basis.

## Kutch Copper Limited

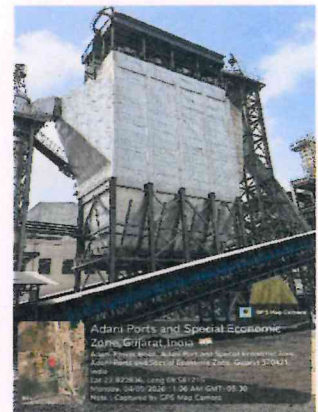
### 1.0 MTPA (One Million Tons per Annum) Greenfield Copper Refinery Project



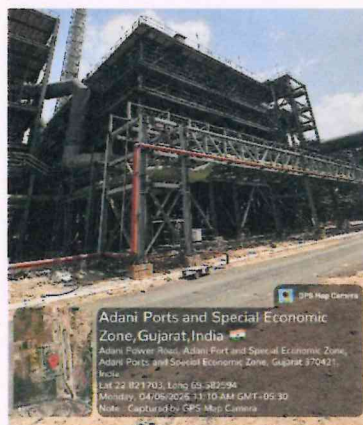
Bag Filters – Smelter



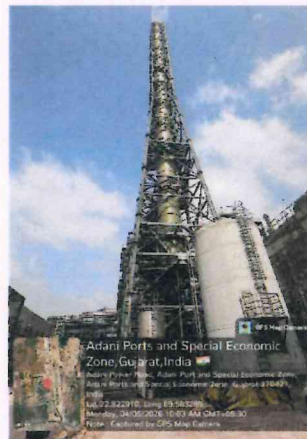
Bag Filter - RMHS



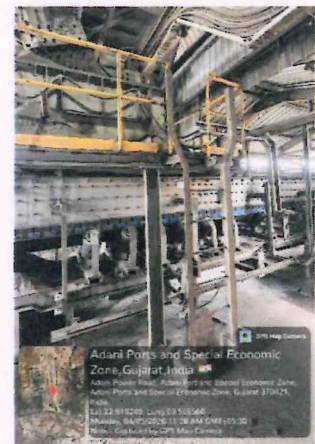
ESP - Smelter



ESP - SAP



FGD


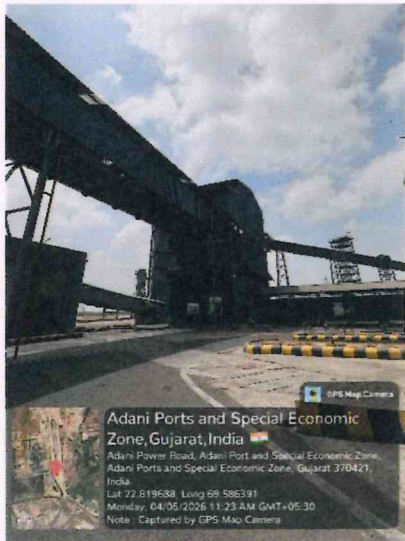


Dust separation system-  
RMHS

(vi)	The project proponent shall provide leakage detection and mechanised bag cleaning facilities for better maintenance of bags	Complied. leakage detection and mechanised bag cleaning facilities for better maintenance of bags are provided.
(vii)	Pollution control system in the plant shall be provided as per the CREP Guidelines of CPCB.	Complied. Pollution control system in the plant has been provided as per the CREP Guidelines of CPCB.
(viii)	Sufficient number of mobile or stationary vacuum cleaners shall be provided to clean plant roads, shop floors, roofs, regularly.	Dust sweeping and vacuum cleaner machines are available at site and proper housekeeping is being maintained.

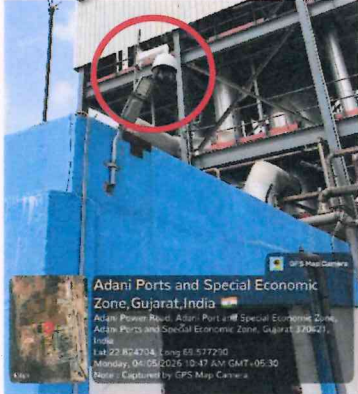
**Kutch Copper Limited**

1.0 MTPA (One Million Tons per Annum) Greenfield Copper Refinery Project

		 <p>Dust Sweeping &amp; Vacuum Machine</p>
(ix)	Ensure covered transportation and conveying of ore, coal and other raw material to prevent spillage and dust generation.	<p>Being Complied. Raw material i.e. copper concentrate is being transported through covered conveyor belt.</p>  <p>Covered Conveyor System</p>
(x)	Adopt measures to recover fluoride gas from electrolytic cells and recycle the same in the process.	Not applicable as it has been deleted in the amended EC.
(xi)	Ventilation system shall be designed for adequate air changes as per ACGIH document for all tunnels, motor houses.	Ventilation system is designed for adequate air changes as per ACGIH document for all tunnels, motor houses.
<b>III</b>	<b>Water quality monitoring and preservation</b>	
(i)	The project proponent shall install 24X7 continuous effluent monitoring system with respect to standards prescribed in Environmental (Protection) Rules	As per CPCB Guidelines for online continuous monitoring system for effluents – November 2014, if an industry is implementing ZLD, then PTZ Camera & Flowmeter need to be installed rather than

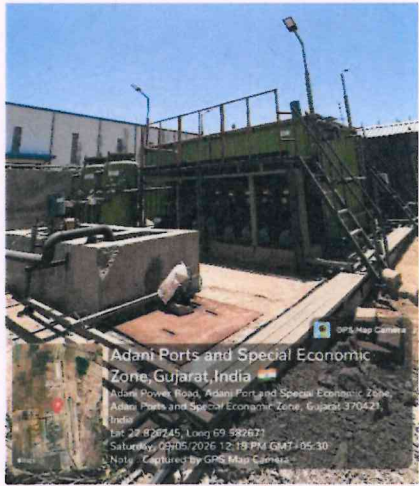
**Kutch Copper Limited**

1.0 MTPA (One Million Tons per Annum) Greenfield Copper Refinery Project

	<p>1986 vide G.S.R 742 (E) dated 30<sup>th</sup> August 1990 and further amended vide G.S.R 46 (E) dated 3<sup>rd</sup> February 2006 (Aluminium); S.O. 3305 (E) dated 7<sup>th</sup> December 2015 (Thermal Power Plants) as amended from time to time and connected to SPCB and CPCB online servers and calibrate these system from time to time according to equipment supplier specification through labs recognised under Environment (Protection) Act, 1986 or NABL accredited laboratories.</p>	<p>24X7 continuous effluent monitoring system. We are implementing ZLD and have installed flowmeter &amp; PTZ Camera at effluent treatment plant.</p>  <p>PTZ Camera at ETP</p>
<p>(ii)</p>	<p>The project proponent shall monitor regularly ground water quality at twice a year (pre and post monsoon) at sufficient numbers of piezometers/ sampling wells in the plant and adjacent areas through labs recognised under Environment (Protection) Act, 1986 or NABL accredited laboratories</p>	<p>Being Complied. Ground water is being monitored regularly at 8 numbers of piezometers/sampling wells into the plant premises and 3 numbers of borewell ground water samples outside plant through NABL accredited lab. The monitoring report is enclosed as <b>Annexure-4</b>.</p>
<p>(iii)</p>	<p>The project proponent shall submit monthly summary report of continuous effluent monitoring and results of manual effluent testing and manual monitoring of ground water quality to Regional</p>	<p>Being Complied. As per CPCB Guidelines for online continuous monitoring system for effluents – November 2014, if an industry is implementing ZLD, then PTZ Camera &amp; Flowmeter need to be installed rather than</p>

## Kutch Copper Limited

### 1.0 MTPA (One Million Tons per Annum) Greenfield Copper Refinery Project

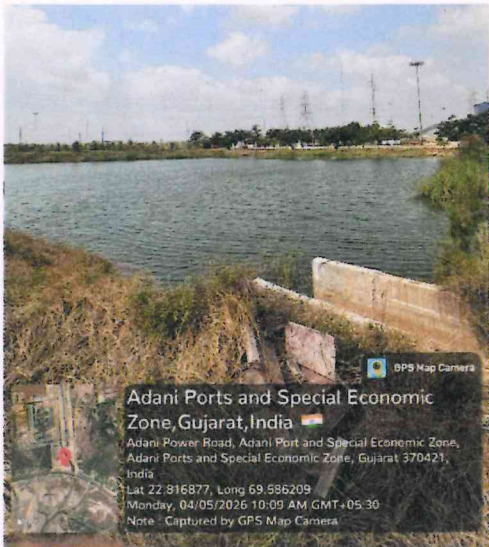
	Office of MoEFCC, Zonal office of CPCB and Regional Office of SPCB along with six-monthly monitoring report.	24X7 continuous effluent monitoring system. As we are implementing ZLD, Manual effluent quality and ground water quality is being monitored regularly through NABL accredited lab. The monitoring report of Ground water quality & ETP Treated water quality is enclosed as <b>Annexure-4 &amp; 7</b> .
(iv)	Adhere to 'Zero Liquid Discharge'	Being Complied. Plant is designed to operate with Zero Liquid Discharge.
(v)	Sewage Treatment Plant shall be provided for treatment of domestic wastewater to meet the prescribed standards.	Sewage Treatment Plant has been installed for treatment of domestic wastewater. The monitoring report is enclosed as <b>Annexure-6</b> .  
(vi)	Garland drains and collection pits shall be provided for each stockpile to arrest the run-off in the events of heavy rains and to check the water pollution due to surface run off.	Garland piping network & collection pit has been developed at storage facilities (Slag Yard, SLF, etc.)
(vii)	The project proponent shall practice rainwater harvesting to maximum possible extent.	Rainwater harvesting pond has been developed to conserve rainwater.

Sewage Treatment Plant (STP)



## Kutch Copper Limited

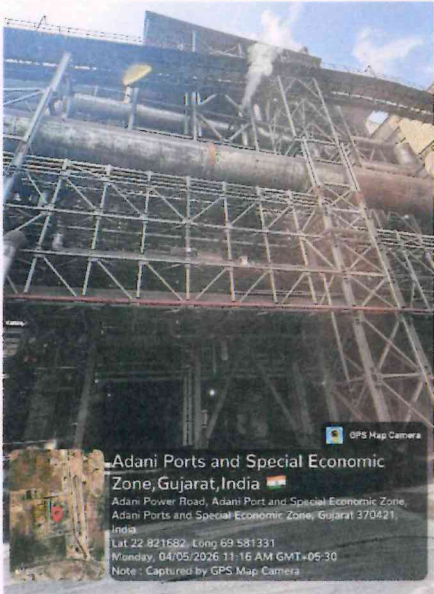
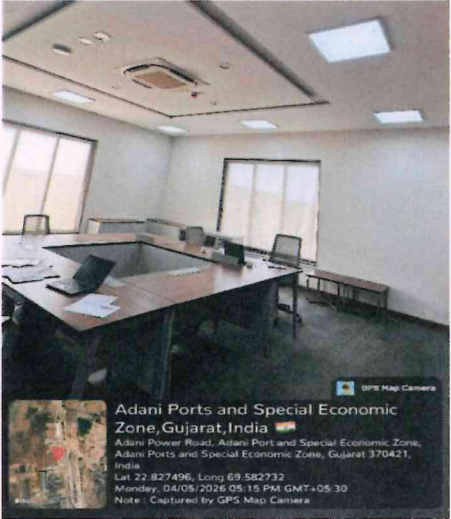
### 1.0 MTPA (One Million Tons per Annum) Greenfield Copper Refinery Project

		 <p style="text-align: center;">Rainwater Harvesting Pond</p>
(viii)	The project proponent shall make efforts to minimise water consumption in the Copper plant complex by segregation of used water, practicing cascade use and by recycling treated water.	The Plant is designed to operate with Zero Liquid Discharge followed by recycling systems like effluent treatment plant & sewage treatment plant.
<b>IV Noise monitoring and prevention</b>		
(i)	Noise level survey shall be carried as per the prescribed guidelines and report in this regard shall be submitted to Regional Officer of the Ministry as a part of six-monthly compliance report.	Noise monitoring is being carried out through NABL accredited lab. Noise level monitoring report is enclosed as <b>Annexure-5</b> .
(ii)	The ambient noise levels should conform to the standards prescribed under E(P)A Rules, 1986 viz 75 dB(A) during day time and 70 dB(A) during night time	Being Complied. Noise monitoring is being carried out through NABL accredited lab. Noise level monitoring report is enclosed as <b>Annexure-5</b> .
<b>V Energy Conservation measures</b>		
(i)	The project proponent shall provide waste heat recovery system (pre-heating of combustion air) at the flue gases.	Waste heat recovery system has been provided to recover waste heat from the flue gases.




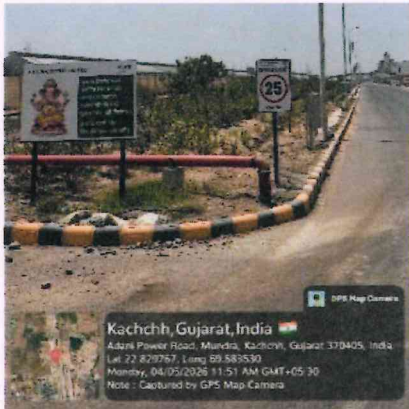
**Kutch Copper Limited**

1.0 MTPA (One Million Tons per Annum) Greenfield Copper Refinery Project

		 <p>Waste Heat Recovery Boiler (WHRB)</p>
(ii)	<p>Provide solar power generation on roof tops of buildings, for solar light system for all common areas, streetlights, parking around project area and maintain the same regularly;</p>	<p>Solar based streetlights provided in the plant area. we have also planned to utilise solar power in plant.</p>
(iii)	<p>Provide LED lights in their offices and residential areas.</p>	<p>Complied. LED lights have been provided in the offices and residential areas.</p>  <p>LED Lights in office</p>

## Kutch Copper Limited

### 1.0 MTPA (One Million Tons per Annum) Greenfield Copper Refinery Project

VI	Waste management	
(i)	Used refractories shall be recycled as far as possible.	Noted.
(ii)	A plan for 100% utilisation of phosphogypsum generated shall be implemented. Under the action plan, MOU with potential buyers including cement companies for supply of phosphogypsum.	Noted. Phosphoric Acid Plant is yet to establish.
(iii)	The waste oil, grease and other hazardous waste shall be disposed of as per the Hazardous & Other waste (Management & Transboundary Movement) Rules, 2016.	Being Complied. The waste oil, grease and other hazardous waste is being disposed through authorised recyclers as per the Hazardous & Other waste (Management & Transboundary Movement) Rules, 2016.
(iv)	Kitchen waste shall be composted or converted to biogas for further use.	Being Complied. Kitchen waste is being converted to biogas.
VII	Green Belt	
(i)	Green belt shall be developed in an area equal to 35% of the plant area with a native tree species in accordance with CPCB guidelines. The greenbelt shall inter alia cover the entire periphery of the plant.	Being Complied. Plantation is being carried out within plant premises. 17250 nos. of plants have been planted till March 2026.
<div style="display: flex; justify-content: space-around;">   </div> <p style="text-align: center;">Green belt development inside plant</p>		
(ii)	The project proponent shall prepare GHG emissions inventory for the plant and shall submit the programme for the reduction of the same including carbon	Inventory is being carried out and report with reduction program will be submitted once the plant operates at full capacity. Plantation is being done for carbon sequestration. Agreement finalization for



## Kutch Copper Limited

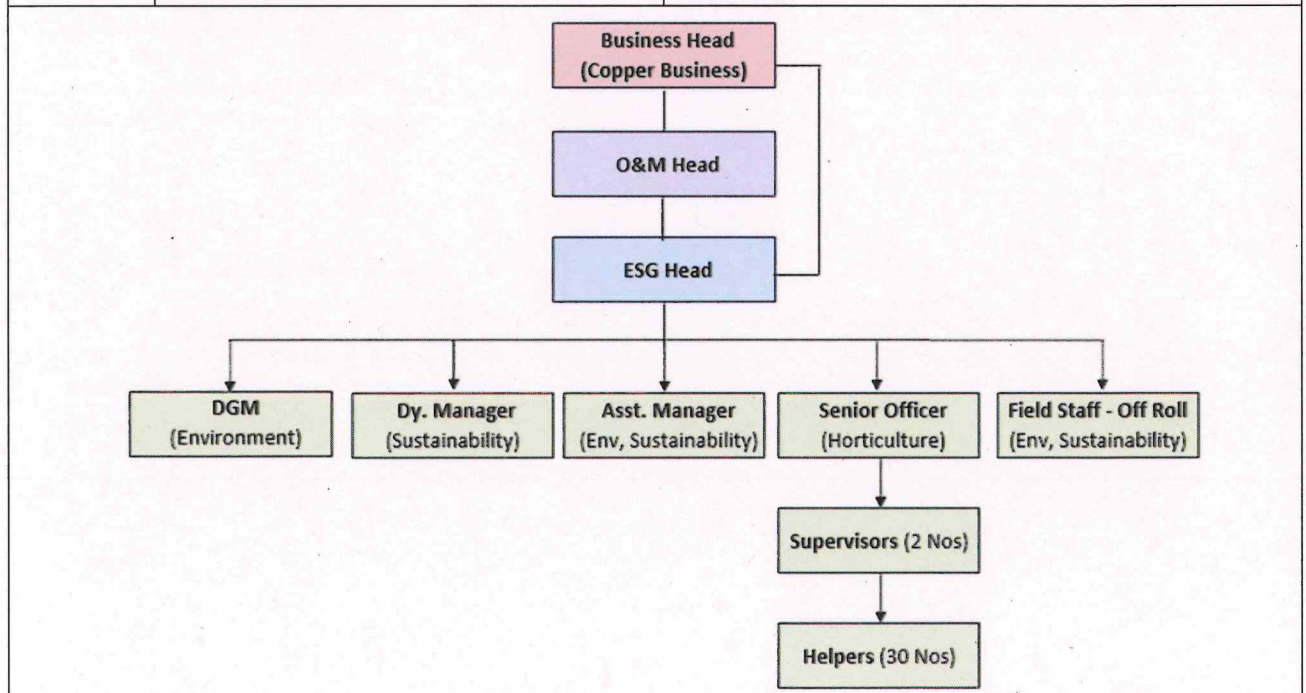
### 1.0 MTPA (One Million Tons per Annum) Greenfield Copper Refinery Project

	sequestration including plantation.	sourcing of 110 MW RE power is under progress.
<b>VIII</b>	<b>Public hearing and Human health issues</b>	
(i)	Emergency preparedness plan based on the Hazard identification and Risk Assessment (HIRA) and Disaster Management Plan shall be implemented.	Emergency preparedness plan based on the Hazard identification and Risk Assessment (HIRA) and Disaster Management Plan is being implemented.
(ii)	The project proponent shall carry out heat stress analysis for the workmen who work in high temperature work zone and provide Personal Protection Equipment (PPE) as per the norms of Factory Act.	Being Complied. High-temperature work zones have been identified within the plant. Training on heat stress has been conducted for personnel working in the identified areas, and awareness posters to avoid heat stress have also been displayed in these locations. Personal Protective Equipment (PPEs) has been provided as per the norms of Factory Act.
(iii)	Provision shall be made for the housing of construction labour within the site with all necessary infrastructures and facilities such fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	Plant is in running phase & construction activity is completed. Housing was provided for construction labour during the construction phase and facilities such as toilets, STP, drinking water, OHC etc. had been provided for all the construction labours at site during construction phase.
(iv)	Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.	Being Complied. Occupational health surveillance of the workers is being done on regular basis and records are being maintained.
<b>IX</b>	<b>Corporate Environment Responsibility</b>	
(i)	The project proponent shall comply with the provisions contained in this Ministry's OM vide F.No. 22-65/2017-IA.III dated 1 <sup>st</sup> May 2018, as applicable, regarding Corporate Environment Responsibility	KCL has allocated Rs. 60.5 Crores on total project cost of Rs. 11,000/- Crores for Corporate Environment Responsibility (CER budget) as per Ministry's OM vide F.No. 22-65/2017-IA.III dated 01 <sup>st</sup> May 2018.

## Kutch Copper Limited

### 1.0 MTPA (One Million Tons per Annum) Greenfield Copper Refinery Project

(ii)	<p>The company shall have a well laid down environmental policy duly approve by the Board of Directors. The environmental policy should prescribe for standard operating procedures to have proper checks and balances and to bring into focus any infringements / deviation / violation of the environmental / forest / wildlife norms / conditions. The company shall have defined system of reporting infringements / deviation / violation of the environmental / forest/ wildlife norms / conditions and/or shareholders / stakeholders. The copy of the board resolution in this regard shall be submitted to the MoEFCC as a part of six-monthly report.</p>	<p>Kutch Copper Limited has well laid Environment policy.</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  <p>Page 1 of 2</p> </div> <div style="text-align: center;">  <p>Page 2 of 2</p> </div> </div>
(iii)	<p>A separate Environmental Cell both at the project and company head quarter level, with qualified personnel shall be set up under the control of senior Executive, who will directly report to the head of the organisation.</p>	<p>Complied. At Kutch Copper Limited, ESG Department has been established at site with qualified personnel, where ESG Head closely works with Operation Head along with his team and directly reports to Business Head – Copper.</p>




## Kutch Copper Limited

### 1.0 MTPA (One Million Tons per Annum) Greenfield Copper Refinery Project

Sr No.	Name	Qualification	Designation	Length of Experience	Area of Working
1	Anand Prakash	M.Tech. Environment	Head ESG (AGM)	22 Years	Environment, Sustainability & Horticulture
2	Sandeep Bhimta	M.Sc. Botany	D.G.M.	32 Years	Environment
3	Harish Barewar	M.Sc. Environmental Science	D.M.	8 Years	Sustainability
4	Bharath Kumar A.	M.B.A. Energy & Sustainability	A.M.	5 Years	Environment, Sustainability
5	Dhaval Hansaliya	M.Sc. Agriculture	Senior Officer	5 Years	Horticulture
6	Meetkumar Nakar	M.Sc. Analytical Chemistry	Field Staff	2 Years	Environment, Sustainability
7	Hanif Node	ITI	Supervisor	6 Years	Horticulture
8	Firoz	10 <sup>th</sup> std	Supervisor	5 Years	Horticulture
9	Helpers (30 Nos)	-	Helper	-	Horticulture
(iv)	All the recommendations made in the Charter on Corporate Responsibility for Environment Protection (CREP) for the Copper Industry shall be implemented.		Being Complied. All the recommendations made in the Charter on Corporate Responsibility for Environment Protection (CREP) for the Copper Industry are being implemented.		
<b>X</b>	<b>Miscellaneous</b>				
(i)	The project proponent shall make public the environmental clearance granted for their project along with the environmental conditions and safeguards at their cost by prominently advertising it at least in two local newspapers of the District or State, of which one shall be in the vernacular language within seven days and in addition this shall also be displayed in the project proponent's website permanently.		Complied. Advertisement regarding grant of EC has been published in Times of India dated 14 <sup>th</sup> May 2020 and Kutch Mitra (local News) dated 15 <sup>th</sup> May 2020. Copies of newspaper advertisement were sent along with compliance report for period of April 2020 to September 2020. The copy of the same is appended below. Environmental Clearance is available on company's website <a href="#">Adani Enterprises Ltd</a> under download section.		
(ii)	The copies of the environmental clearance shall be submitted by the project proponent to the Heads of local bodies, Panchayat and Municipal Bodies in addition to the relevant offices of the		Complied. Copies of Environment Clearance has been submitted to Village Panchayat office of Tunda, Desalpar, Borana, Dhrab, Jarpara, Mota Bhadiya, Mota Bhujpur Juth, Mota Kandgra, Moti khakhar, Nana Bhadiya, Nani		

## Kutch Copper Limited

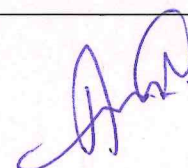
### 1.0 MTPA (One Million Tons per Annum) Greenfield Copper Refinery Project

	Government who in turn has to display the same for 30 days from the date of receipt.	Khakhar, Navinal, Shiracha, Tragadi, Tunda, Vandh, Taluka: - Mundra, Mandvi District: - Kutch vide letter AEL/Copper/ EC/2020/ May-1 dated 11/05/2020. The EC Copies has also been submitted to following offices through post. i. The Mamlatdar Office, Mundra Kutch ii. Regional Office Kutch (East), GPCB, Gandhidham. iii. The Taluka Development Office, Mundra-Kutch iv. District Industries Centre, Bhuj-Kutch v. The District Collector, Bhuj-Kutch vi. The District Development Office, Bhuj-Kutch
(iii)	The project proponent shall upload the status of compliance of the stipulated environmental clearance conditions, including results of monitored data on their website and update the same on half-yearly basis.	Being Complied. Half yearly EC Compliance status report is being submitted to MoEF&CC, CPCB & GPCB. The same is being uploaded on company's website: <a href="#">Kutch Copper Limited</a>
(iv)	The project proponent shall monitor the criteria pollutant level namely, PM <sub>10</sub> , SO <sub>2</sub> , NO <sub>x</sub> (ambient levels as well as stack emissions) or critical sectoral parameters, indicated for the projects and display the same as a convenient location for disclosure to the public and put on the website of the company.	Being Complied. PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>2</sub> , NO <sub>x</sub> , and other parameters are being displayed on a display board at the company entrance gate for public disclosure.
(v)	The project proponent shall submit six- monthly reports on the status of the compliance of the stipulated environmental conditions on the website of the ministry of Environment, Forest and Climate Change at environment clearance portal.	Being Complied. Half yearly EC Compliance status report is being submitted on regular basis to MoEF&CC environment clearance portal.
(vi)	The project proponent shall submit environmental statement for each financial year in Form- V to the concerned State Pollution Control Board as prescribed under the	Being Complied. Yearly Environmental statement for FY 2024-25 submitted to the Gujarat Pollution Control Board vide letter No: KCL/ENV/ES/2025-26/01 Dated: 11.09.2025

## Kutch Copper Limited

### 1.0 MTPA (One Million Tons per Annum) Greenfield Copper Refinery Project

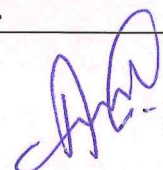
	Environmental (Protection) Rules, 1986, as amended subsequently and put on the website of the company.	and uploaded on company website: <a href="#">Kutch Copper Limited</a>
(vii)	The project proponent shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities, commencing the land development work and start of production operation by the project.	Financial closure is already achieved.
(viii)	The project authorities must strictly adhere to the stipulations made by the State Pollution control Board and the State Government.	Noted & agreed.
(ix)	The project proponent shall abide by the commitment and recommendations made in the EIA/ EMP report, commitment made during Public Hearing and also that during their presentation to the Expert Appraisal Committee.	Being complied.
(x)	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment, Forest and Climate Change (MoEF & CC)	Noted & agreed.
(xi)	Concealing factual data or submission of false/ fabricated data may result in revocation of the environmental clearance and attract action under the provisions of Environmental (Protection) Act, 1986.	Noted.
(xii)	The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory	Noted.



## Kutch Copper Limited

### 1.0 MTPA (One Million Tons per Annum) Greenfield Copper Refinery Project

(xiii)	The Ministry reserves the right to stipulate additional conditions if found necessary. The Company in a time bound manner shall implement these conditions.	Noted.
(xiv)	The Regional Office of this Ministry shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data/ information/ monitoring reports.	Noted & agreed.
(xv)	The above conditions shall be enforced, inter-alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, Air (Prevention & Control of Pollution) Act, 1981, the Environmental Protection Act 1986, Hazardous and Other Waste (Management and Transboundary Movement) Rules, 2016 and the Public Liability Insurance Act, 1991 along with their amendment and Rules and any other orders passed by the Hon'ble Supreme Court of India/ High Courts and any other Court of Law relating to the subject matter.	Noted.
(xvi)	Any appeal against this EC 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, 2020.	There was an Appeal filed in Hon'ble National Green Tribunal vide Appeal no. 35/2020 (WZ). The matter was heard on 1 <sup>st</sup> July,2024 and the said appeal is disposed off. The judgement has been pronounced on dated 06/08/2024.
<b>Additional Specific Conditions as per Amendment in EC dated 23/06/2021</b>		
Sl. No.	Condition of EC	Compliance Status
i	Project proponent shall abide by all the orders and judicial pronouncements, made from time to time passed by Hon'ble National Green Tribunal, Western Zone in Original Appeal No. 35/2020 (WZ).	There was an Appeal filed in Hon'ble National Green Tribunal vide Appeal no. 35/2020 (WZ). The matter was heard on 1 <sup>st</sup> July,2024 and the said appeal is disposed off. The judgement has been pronounced on dated 06/08/2024.



## Kutch Copper Limited

### 1.0 MTPA (One Million Tons per Annum) Greenfield Copper Refinery Project

ii	Particulate matter emission from all the stacks shall not exceed 30 mg/Nm <sup>3</sup>	<p>The Particulate matter emission from the process stacks has been well within the prescribed limit of 30 mg/ Nm<sup>3</sup>.</p> <table border="1" data-bbox="979 371 1394 667"> <thead> <tr> <th>Sr No.</th> <th>Month</th> <th>FGD PM (mg/Nm<sup>3</sup>)</th> <th>TGD PM (mg/Nm<sup>3</sup>)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Oct'25</td> <td>28</td> <td>16</td> </tr> <tr> <td>2</td> <td>Nov'25</td> <td>22</td> <td>20</td> </tr> <tr> <td>3</td> <td>Dec'25</td> <td>25</td> <td>18</td> </tr> <tr> <td>4</td> <td>Jan'26</td> <td>20</td> <td>15</td> </tr> <tr> <td>5</td> <td>Feb'26</td> <td>23</td> <td>19</td> </tr> <tr> <td>6</td> <td>Mar'26</td> <td>27</td> <td>22</td> </tr> </tbody> </table>	Sr No.	Month	FGD PM (mg/Nm <sup>3</sup> )	TGD PM (mg/Nm <sup>3</sup> )	1	Oct'25	28	16	2	Nov'25	22	20	3	Dec'25	25	18	4	Jan'26	20	15	5	Feb'26	23	19	6	Mar'26	27	22
Sr No.	Month	FGD PM (mg/Nm <sup>3</sup> )	TGD PM (mg/Nm <sup>3</sup> )																											
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3	Dec'25	25	18																											
4	Jan'26	20	15																											
5	Feb'26	23	19																											
6	Mar'26	27	22																											
iii	The Mangrove and Mudflat conservation plan submitted to Deputy Conservator of Forests, Gujarat Forest Department shall be implemented in a time bound manner and periodic compliance status in this regard shall be submitted to Regional Office of the MoEF & CC along with the six-monthly compliance report.	Site Specific Mangrove and Mudflat Conservation Plan & Wildlife Management Plan had been prepared and submitted for approval of the Chief Wildlife Warden, Bhuj, Gujarat for further suggestion & implementation.																												
iv	Sulphur and Flourine emission pollution shall not exceed 3641 TPA for sulphur and 33 TPA for Flourine as committed by the project proponent.	Being complied. The system has been designed to limit the Sulphur & is operational not exceeding the limit 3641 TPA.																												
v	SO <sub>2</sub> from sulphuric acid plant stack will be less than 0.7 Kg SO <sub>2</sub> /T of H <sub>2</sub> SO <sub>4</sub> and from Flue Gas Desulphurization (FGD) stack will be less than 400 mg/Nm <sup>3</sup> as committed by the project proponent.	<p>Complied. SO<sub>2</sub> emission from sulphuric acid plant stack is well within 0.7 Kg SO<sub>2</sub>/Ton of H<sub>2</sub>SO<sub>4</sub> and from Flue Gas Desulphurization (FGD) stack is less than 400 mg/Nm<sup>3</sup>.</p> <table border="1" data-bbox="903 1469 1466 1765"> <thead> <tr> <th>Sr No.</th> <th>Month</th> <th>TGD SO<sub>2</sub> (KG SO<sub>2</sub>/Ton of H<sub>2</sub>SO<sub>4</sub>)</th> <th>FGD SO<sub>2</sub> (mg/Nm<sup>3</sup>)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Oct'25</td> <td>0.30</td> <td>118</td> </tr> <tr> <td>2</td> <td>Nov'25</td> <td>0.22</td> <td>124</td> </tr> <tr> <td>3</td> <td>Dec'25</td> <td>0.21</td> <td>127.3</td> </tr> <tr> <td>4</td> <td>Jan'26</td> <td>0.18</td> <td>116.7</td> </tr> <tr> <td>5</td> <td>Feb'26</td> <td>0.14</td> <td>121.3</td> </tr> <tr> <td>6</td> <td>Mar'26</td> <td>0.17</td> <td>135.1</td> </tr> </tbody> </table>	Sr No.	Month	TGD SO <sub>2</sub> (KG SO <sub>2</sub> /Ton of H <sub>2</sub> SO <sub>4</sub> )	FGD SO <sub>2</sub> (mg/Nm <sup>3</sup> )	1	Oct'25	0.30	118	2	Nov'25	0.22	124	3	Dec'25	0.21	127.3	4	Jan'26	0.18	116.7	5	Feb'26	0.14	121.3	6	Mar'26	0.17	135.1
Sr No.	Month	TGD SO <sub>2</sub> (KG SO <sub>2</sub> /Ton of H <sub>2</sub> SO <sub>4</sub> )	FGD SO <sub>2</sub> (mg/Nm <sup>3</sup> )																											
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4	Jan'26	0.18	116.7																											
5	Feb'26	0.14	121.3																											
6	Mar'26	0.17	135.1																											
vi	Flouride from phosphoric acid plant stack will be less than 10 mg/Nm <sup>3</sup> as committed by the project proponent.	Noted, Phosphoric acid plant is yet to be established.																												

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# Annexure-1

Stack Emission Monitoring Summary Report							
Stack	Sr.No	Parameters	Test Method	UOM	Permissible Limit	Period-H2 (Oct'25-Mar'26)	
						Minimum	Maximum
FGD	1	Particulate Matteer as PM	IS 11255 (Part 1)	mg/NM3	30	20	28
	2	Sulphur Dioxide as SO2	IS 11255 (Part 2)	mg/NM4	400	116.7	135.1
TGD-1	1	Particulate Matteer as PM	IS 11255 (Part 1)	mg/NM3	30	15	22
	2	Acid Mist	SA EPA	mg/NM4	50	21.3	26.4
	3	SO2 emission per tonne of H2SO4	IS 11255 (Part 1)	KG SO2/Tonne of H2SO4	0.7	0.14	0.29
TGD-2	1	Particulate Matteer as PM	IS 11255 (Part 1)	mg/NM3	30	13	19
	2	Acid Mist	SA EPA	mg/NM4	50	20.6	25.7
	3	SO2 emission per tonne of H2SO4	IS 11255 (Part 1)	KG SO2/Tonne of H2SO4	0.7	0.11	0.15



# Annexure-3

## Fugitive Emission Monitoring Summary Report

Location	Sr.No	Parameters	Test Method	UOM	Period-H2 (Oct'25-Mar'26)	
					Minimum	Maximum
CRP (Near Cell House)	1	Sulphur Dioxide as SO2	IS 5182 (Part 2)	µg/m3	8.5	10.1
	2	Dust	NIOSH 0500	µg/m3	129	141
CCR (Near Copper Coil Handling Area)	1	Sulphur Dioxide as SO2	IS 5182 (Part 2)	µg/m3	14.7	17.4
	2	Dust	NIOSH 0500	µg/m3	203	219
Utility Area (Near ASU)	1	Sulphur Dioxide as SO2	IS 5182 (Part 2)	µg/m3	15.3	18.7
	2	Dust	NIOSH 0500	µg/m3	261	283
Raw Material Handling Area (Near Admin Block)	1	Sulphur Dioxide as SO3	IS 5182 (Part 2)	µg/m3	10.8	11.5
	2	Dust	NIOSH 0500	µg/m3	323	339
SLF (Near up stream side)	1	Sulphur Dioxide as SO4	IS 5182 (Part 2)	µg/m3	11.9	14.8
	2	Dust	NIOSH 0500	µg/m3	173	182
Smelter (Near Anode Furnace)	1	Sulphur Dioxide as SO5	IS 5182 (Part 2)	µg/m3	7.2	8.8
	2	Dust	NIOSH 0500	µg/m3	74	82
Smelter (Near Flash Smelting Furnace)	1	Sulphur Dioxide as SO5	IS 5182 (Part 2)	µg/m3	9.3	9.7
	2	Dust	NIOSH 0500	µg/m3	85	91
Sulphuric Acid Plant (Near acid unloading area)	1	Sulphur Dioxide as SO6	IS 5182 (Part 2)	µg/m3	24.8	29.3
	2	Dust	NIOSH 0500	µg/m3	118	126

# Annexure-4

## Ground Water Analysis Summary Report

Location	Sr.No	Parameters	Test Method	Unit	As Per IS 10500:2012		Period-H2 (Oct'25-Mar'26)	
					Desirable Limit	Permissible limit in the absence of alternate source	Minimum	Maximum
Zarpara	1	pH @ 25 ° C	IS 3025(Part 11):2022	--	6.5 – 8.5	No Relaxation	7.74	8.1
	2	Conductivity	IS 3025(Part 14):2013	µS/cm	--	--	2610	2768
	3	Total Dissolved Solids	IS 3025(Part 16):2023	mg/L	500 Max.	2000 Max.	1722	1830
	4	Chloride as Cl <sup>-</sup>	IS 3025(Part 32):1988	mg/L	250 Max.	1000 Max.	689.8	762.5
	5	Carbonate as CaCO <sub>3</sub>	IS 3025(Part 51):2021	mg/L	--	--	BDL(MDL:4.0)	BDL(MDL:4.0)
	6	Bicarbonate as CaCO <sub>3</sub>	IS 3025(Part 51):2021	mg/L	--	--	404.4	485.6
	7	Total Alkalinity	IS 3025(Part 23):2023,	mg/L	250 Max.	600 Max.	331.5	398
	8	Calcium as Ca	APHA 24th Ed., 2023,3500 Ca. B	mg/L	75 Max.	200 Max.	37	68.1
	9	Magnesium as Mg	APHA 24th Ed., 2023, 3500 Mg. B	mg/L	30 Max.	100 Max.	18.7	28.7
	10	Sodium as Na	APHA 24th Ed., 2023,3500 Na, B	mg/L	--	--	492	572
	11	Potassium as K	APHA 24th Ed., 2023,3500 K, B	mg/L	--	--	2.8	3.4
	12	Total Hardness as CaCO <sub>3</sub>	IS 3025(Part 21): 2009	mg/L	200 Max.	600 Max.	180.4	288
	13	Sulphate as SO <sub>4</sub> -2	IS 3025(Part 24):2022	mg/L	200 Max.	400 Max.	74	94
	14	Nitrate as NO <sub>3</sub>	APHA 24th Ed., 2023,4500 NO <sub>3</sub> -B	mg/L	45 Max.	No Relaxation	0.8	1.5
	15	Phosphate as PO <sub>4</sub>	APHA 24th Ed., 2023,4500-P, D	mg/L	--	--	BDL(MDL:0.1)	BDL(MDL:0.1)
	16	Fluoride as F	APHA 24th Ed., 2023,4500 F, D	mg/L	1.0 Max.	1.5 Max.	0.72	0.86
	17	Residual Free Chlorine	APHA 24th Ed.,2023,4500-Cl-G	mg/L	0.2 Min.	1.0 Min.	BDL(MDL:0.1)	BDL(MDL:0.1)
	18	Salinity	APHA 24th Ed., 2023, 2520-B,	ppt	--	--	1.25	1.38
	19	Mercury as Hg	APHA 24th Ed., 2023,3112-B	mg/L	0.001 Max.	No Relaxation	BDL(MDL:0.001)	BDL(MDL:0.001)
	20	Arsenic as As	APHA 24th Ed., 2023,3114-C	mg/L	0.01 Max.	0.05 Max.	BDL(MDL:0.01)	BDL(MDL:0.01)
	21	Lead as Pb	IS 3025 (Part 47):1994	mg/L	0.01 Max.	No Relaxation	BDL(MDL:0.01)	BDL(MDL:0.01)
	22	Chromium as Cr	IS 3025 (Part 52):2003	mg/L	0.05 Max.	No Relaxation	BDL(MDL:0.05)	BDL(MDL:0.05)
	23	Cadmium as Cd	IS 3025(Part 41):2023	mg/L	0.003 Max.	No Relaxation	BDL(MDL:0.003)	BDL(MDL:0.003)
	24	Copper as Cu	IS 3025(Part 42):1992	mg/L	0.05 Max.	1.5 Max.	BDL(MDL:0.05)	BDL(MDL:0.05)
	25	Manganese as Mn	APHA 24th Ed., 2023,3500 Mn B	mg/L	0.1 Max.	0.3 Max.	BDL(MDL:0.1)	BDL(MDL:0.1)
	26	Nickel as Ni	IS 3025(Part 54):2003,	mg/L	0.02 Max.	No Relaxation	BDL(MDL:0.02)	BDL(MDL:0.02)
	27	Barium as Ba	APHA 24th Ed., 2023-3500 –Ba,	mg/L	0.7 Max.	No Relaxation	N.D.	N.D.
	28	Iron (as Fe)	IS 3025(Part 53):2024	mg/L	0.3 Max.	No Relaxation	BDL(MDL:0.1)	BDL(MDL:0.1)
	29	Zinc (as Zn)	IS 3025(Part 49):2024	mg/L	5 Max.	15 Max.	BDL(MDL:0.05)	BDL(MDL:0.05)
	30	Total Coliform	APHA 24th Ed.2023, 9222-B	CFU/100 ml	Absent	Absent	Absent	Absent
	31	E. coli	IS :15185:2016	CFU/100 ml	Absent	Absent	Absent	Absent
Navinal	1	pH @ 25 ° C	IS 3025(Part 11):2022	--	6.5 – 8.5	No Relaxation	7.82	8.12
	2	Conductivity	IS 3025(Part 14):2013	µS/cm	--	--	2750	2918
	3	Total Dissolved Solids	IS 3025(Part 16):2023	mg/L	500 Max.	2000 Max.	1816	1930
	4	Chloride as Cl <sup>-</sup>	IS 3025(Part 32):1988	mg/L	250 Max.	1000 Max.	645.5	756.2
	5	Carbonate as CaCO <sub>3</sub>	IS 3025(Part 51):2021	mg/L	--	--	BDL(MDL:4.0)	BDL(MDL:4.0)
	6	Bicarbonate as CaCO <sub>3</sub>	IS 3025(Part 51):2021	mg/L	--	--	452.4	491.6
	7	Total Alkalinity	IS 3025(Part 23):2023,	mg/L	250 Max.	600 Max.	381.1	1370.8
	8	Calcium as Ca	APHA 24th Ed., 2023,3500 Ca. B	mg/L	75 Max.	200 Max.	75.4	101
	9	Magnesium as Mg	APHA 24th Ed., 2023, 3500 Mg. B	mg/L	30 Max.	100 Max.	42	56.1
	10	Sodium as Na	APHA 24th Ed., 2023,3500 Na, B	mg/L	--	--	244	580
	11	Potassium as K	APHA 24th Ed., 2023,3500 K, B	mg/L	--	--	2.9	3.9
	12	Total Hardness as CaCO <sub>3</sub>	IS 3025(Part 21): 2009	mg/L	200 Max.	600 Max.	362	483
	13	Sulphate as SO <sub>4</sub> -2	IS 3025(Part 24):2022	mg/L	200 Max.	400 Max.	88	110
	14	Nitrate as NO <sub>3</sub>	APHA 24th Ed., 2023,4500 NO <sub>3</sub> -B	mg/L	45 Max.	No Relaxation	0.8	1.2
	15	Phosphate as PO <sub>4</sub>	APHA 24th Ed., 2023,4500-P, D	mg/L	--	--	BDL(MDL:0.1)	BDL(MDL:0.1)
	16	Fluoride as F	APHA 24th Ed., 2023,4500 F, D	mg/L	1.0 Max.	1.5 Max.	0.76	0.94

17	Residual Free Chlorine	APHA 24th Ed.,2023,4500-Cl-G	mg/L	<b>0.2 Min.</b>	<b>1.0 Min.</b>	BDL(MDL:0.1)	BDL(MDL:0.1)
18	Salinity	APHA 24th Ed., 2023, 2520-B,	ppt	--	--	1.17	1.37
19	Mercury as Hg	APHA 24th Ed., 2023,3112-B	mg/L	<b>0.001 Max.</b>	<b>No Relaxation</b>	BDL(MDL:0.001)	BDL(MDL:0.001)
20	Arsenic as As	APHA 24th Ed., 2023,3114-C	mg/L	<b>0.01 Max.</b>	<b>0.05 Max.</b>	BDL(MDL:0.01)	BDL(MDL:0.01)
21	Lead as Pb	IS 3025 (Part 47):1994	mg/L	<b>0.01 Max.</b>	<b>No Relaxation</b>	BDL(MDL:0.01)	BDL(MDL:0.01)
22	Chromium as Cr	IS 3025 (Part 52):2003	mg/L	<b>0.05 Max.</b>	<b>No Relaxation</b>	BDL(MDL:0.05)	BDL(MDL:0.05)
23	Cadmium as Cd	IS 3025(Part 41):2023	mg/L	<b>0.003 Max.</b>	<b>No Relaxation</b>	BDL(MDL:0.003)	BDL(MDL:0.003)
24	Copper as Cu	IS 3025(Part 42):1992	mg/L	<b>0.05 Max.</b>	<b>1.5 Max.</b>	BDL(MDL:0.05)	BDL(MDL:0.05)
25	Manganese as Mn	APHA 24th Ed., 2023,3500 Mn B	mg/L	<b>0.1 Max.</b>	<b>0.3 Max.</b>	BDL(MDL:0.1)	BDL(MDL:0.1)
26	Nickel as Ni	IS 3025(Part 54):2003,	mg/L	<b>0.02 Max.</b>	<b>No Relaxation</b>	BDL(MDL:0.02)	BDL(MDL:0.02)
27	Barium as Ba	APHA 24th Ed., 2023-3500 –Ba,	mg/L	<b>0.7 Max.</b>	<b>No Relaxation</b>	N.D.	N.D.
28	Iron (as Fe)	IS 3025(Part 53):2024	mg/L	<b>0.3 Max.</b>	<b>No Relaxation</b>	BDL(MDL:0.1)	BDL(MDL:0.1)
29	Zinc (as Zn)	IS 3025(Part 49):2024	mg/L	<b>5 Max.</b>	<b>15 Max.</b>	BDL(MDL:0.05)	BDL(MDL:0.05)
30	Total Coliform	APHA 24th Ed.2023, 9222-B	CFU/100 ml	<b>Absent</b>	<b>Absent</b>	Absent	Absent
31	E. coli	IS :15185:2016	CFU/100 ml	<b>Absent</b>	<b>Absent</b>	Absent	Absent

Shiracha	1	pH @ 25 ° C	IS 3025(Part 11):2022	--	<b>6.5 – 8.5</b>	<b>No Relaxation</b>	7.74	8.15
	2	Conductivity	IS 3025(Part 14):2013	µS/cm	--	--	2840	3010
	3	Total Dissolved Solids	IS 3025(Part 16):2023	mg/L	<b>500 Max.</b>	<b>2000 Max.</b>	1874	1990
	4	Chloride as Cl <sup>-</sup>	IS 3025(Part 32):1988	mg/L	<b>250 Max.</b>	<b>1000 Max.</b>	679.8	762.2
	5	Carbonate as CaCO <sub>3</sub>	IS 3025(Part 51):2021	mg/L	--	--	BDL(MDL:4.0)	BDL(MDL:4.0)
	6	Bicarbonate as CaCO <sub>3</sub>	IS 3025(Part 51):2021	mg/L	--	--	455.2	515.2
	7	Total Alkalinity	IS 3025(Part 23):2023,	mg/L	<b>250 Max.</b>	<b>600 Max.</b>	373.1	422.3
	8	Calcium as Ca	APHA 24th Ed., 2023,3500 Ca. B	mg/L	<b>75 Max.</b>	<b>200 Max.</b>	88.2	96.2
	9	Magnesium as Mg	APHA 24th Ed., 2023, 3500 Mg. B	mg/L	<b>30 Max.</b>	<b>100 Max.</b>	48.6	52.9
	10	Sodium as Na	APHA 24th Ed., 2023,3500 Na, B	mg/L	--	--	496	584
	11	Potassium as K	APHA 24th Ed., 2023,3500 K, B	mg/L	--	--	2.5	3.2
	12	Total Hardness as CaCO <sub>3</sub>	IS 3025(Part 21): 2009	mg/L	<b>200 Max.</b>	<b>600 Max.</b>	422.4	455.4
	13	Sulphate as SO <sub>4</sub> -2	IS 3025(Part 24):2022	mg/L	<b>200 Max.</b>	<b>400 Max.</b>	96	140
	14	Nitrate as NO <sub>3</sub>	APHA 24th Ed., 2023,4500 NO <sub>3</sub> -B	mg/L	<b>45 Max.</b>	<b>No Relaxation</b>	2.1	2.8
	15	Phosphate as PO <sub>4</sub>	APHA 24th Ed., 2023,4500-P, D	mg/L	--	--	BDL(MDL:0.1)	BDL(MDL:0.1)
	16	Fluoride as F	APHA 24th Ed., 2023,4500 F, D	mg/L	<b>1.0 Max.</b>	<b>1.5 Max.</b>	0.84	0.92
	17	Residual Free Chlorine	APHA 24th Ed.,2023,4500-Cl-G	mg/L	<b>0.2 Min.</b>	<b>1.0 Min.</b>	BDL(MDL:0.1)	BDL(MDL:0.1)
	18	Salinity	APHA 24th Ed., 2023, 2520-B,	ppt	--	--	1.23	1.38
	19	Mercury as Hg	APHA 24th Ed., 2023,3112-B	mg/L	<b>0.001 Max.</b>	<b>No Relaxation</b>	BDL(MDL:0.001)	BDL(MDL:0.001)
	20	Arsenic as As	APHA 24th Ed., 2023,3114-C	mg/L	<b>0.01 Max.</b>	<b>0.05 Max.</b>	BDL(MDL:0.01)	BDL(MDL:0.01)
	21	Lead as Pb	IS 3025 (Part 47):1994	mg/L	<b>0.01 Max.</b>	<b>No Relaxation</b>	BDL(MDL:0.01)	BDL(MDL:0.01)
	22	Chromium as Cr	IS 3025 (Part 52):2003	mg/L	<b>0.05 Max.</b>	<b>No Relaxation</b>	BDL(MDL:0.05)	BDL(MDL:0.05)
	23	Cadmium as Cd	IS 3025(Part 41):2023	mg/L	<b>0.003 Max.</b>	<b>No Relaxation</b>	BDL(MDL:0.003)	BDL(MDL:0.003)
	24	Copper as Cu	IS 3025(Part 42):1992	mg/L	<b>0.05 Max.</b>	<b>1.5 Max.</b>	BDL(MDL:0.05)	BDL(MDL:0.05)
	25	Manganese as Mn	APHA 24th Ed., 2023,3500 Mn B	mg/L	<b>0.1 Max.</b>	<b>0.3 Max.</b>	BDL(MDL:0.1)	BDL(MDL:0.1)
	26	Nickel as Ni	IS 3025(Part 54):2003,	mg/L	<b>0.02 Max.</b>	<b>No Relaxation</b>	BDL(MDL:0.02)	BDL(MDL:0.02)
	27	Barium as Ba	APHA 24th Ed., 2023-3500 –Ba,	mg/L	<b>0.7 Max.</b>	<b>No Relaxation</b>	N.D.	N.D.
	28	Iron (as Fe)	IS 3025(Part 53):2024	mg/L	<b>0.3 Max.</b>	<b>No Relaxation</b>	BDL(MDL:0.1)	BDL(MDL:0.1)
	29	Zinc (as Zn)	IS 3025(Part 49):2024	mg/L	<b>5 Max.</b>	<b>15 Max.</b>	BDL(MDL:0.05)	BDL(MDL:0.05)
	30	Total Coliform	APHA 24th Ed.2023, 9222-B	CFU/100 ml	<b>Absent</b>	<b>Absent</b>	Absent	Absent
	31	E. coli	IS :15185:2016	CFU/100 ml	<b>Absent</b>	<b>Absent</b>	Absent	Absent

## Ground Water Analysis Reports - Piezowell

Location	Sr.No	Parameters	Test Method	Unit	As Per IS 10500:2012		Period-H2 (Oct'25-Mar'26)	
					Desirable Limit	Permissible limit in the absence of alternate source	Minimum	Maximum
Piezometer Well-1	1	pH @ 25 ° C	IS 3025(Part 11):2022	--	6.5 – 8.5	No Relaxation	7.2	7.74
	2	Conductivity	IS 3025(Part 14):2013	µS/cm	--	--	7100	7450
	3	Total Dissolved Solids	IS 3025(Part 16):2023	mg/L	500 Max.	2000 Max.	4708	4914
	4	Chloride as Cl <sup>-</sup>	IS 3025(Part 32):1988	mg/L	250 Max.	1000 Max.	372.3	582.4
	5	Carbonate as CaCO <sub>3</sub>	IS 3025(Part 51):2021	mg/L	--	--	BDL(MDL:4.0)	BDL(MDL:4.0)
	6	Bicarbonate as CaCO <sub>3</sub>	IS 3025(Part 51):2021	mg/L	--	--	148.2	203.1
	7	Total Alkalinity	IS 3025(Part 23):2023,	mg/L	250 Max.	600 Max.	148.5	166.5
	8	Calcium as Ca	APHA 24th Ed., 2023,3500 Ca. B	mg/L	75 Max.	200 Max.	218.5	241
	9	Magnesium as Mg	APHA 24th Ed., 2023, 3500 Mg. B	mg/L	30 Max.	100 Max.	47.1	76.2
	10	Sodium as Na	APHA 24th Ed., 2023,3500 Na, B	mg/L	--	--	940	1080
	11	Potassium as K	APHA 24th Ed., 2023,3500 K, B	mg/L	--	--	12	20.5
	12	Total Hardness as CaCO <sub>3</sub>	IS 3025(Part 21): 2009	mg/L	200 Max.	600 Max.	795.4	901.6
	13	Sulphate as SO <sub>4</sub> -2	IS 3025(Part 24):2022	mg/L	200 Max.	400 Max.	2251	2460
	14	Nitrate as NO <sub>3</sub>	APHA 24th Ed., 2023,4500 NO <sub>3</sub> -B	mg/L	45 Max.	No Relaxation	3.2	3.5
	15	Phosphate as PO <sub>4</sub>	APHA 24th Ed., 2023,4500-P, D	mg/L	--	--	5.5	9.75
	16	Fluoride as F	APHA 24th Ed., 2023,4500 F, D	mg/L	1.0 Max.	1.5 Max.	1.11	1.42
	17	Residual Free Chlorine	APHA 24th Ed.,2023,4500-Cl-G	mg/L	0.2 Min.	1.0 Min.	BDL(MDL:0.1)	BDL(MDL:0.1)
	18	Salinity	APHA 24th Ed., 2023, 2520-B,	ppt	--	--	0.39668565	1.05
	19	Mercury as Hg	APHA 24th Ed., 2023,3112-B	mg/L	0.001 Max.	No Relaxation	BDL(MDL:0.001)	BDL(MDL:0.001)
	20	Arsenic as As	APHA 24th Ed., 2023,3114-C	mg/L	0.01 Max.	0.05 Max.	BDL(MDL:0.01)	BDL(MDL:0.01)
	21	Lead as Pb	IS 3025 (Part 47):1994	mg/L	0.01 Max.	No Relaxation	BDL(MDL:0.01)	BDL(MDL:0.01)
	22	Chromium as Cr	IS 3025 (Part 52):2003	mg/L	0.05 Max.	No Relaxation	BDL(MDL:0.05)	BDL(MDL:0.05)
	23	Cadmium as Cd	IS 3025(Part 41):2023	mg/L	0.003 Max.	No Relaxation	BDL(MDL:0.003)	BDL(MDL:0.003)
	24	Copper as Cu	IS 3025(Part 42):1992	mg/L	0.05 Max.	1.5 Max.	BDL(MDL:0.05)	BDL(MDL:0.05)
	25	Manganese as Mn	APHA 24th Ed., 2023,3500 Mn B	mg/L	0.1 Max.	0.3 Max.	BDL(MDL:0.1)	BDL(MDL:0.1)
	26	Nickel as Ni	IS 3025(Part 54):2003,	mg/L	0.02 Max.	No Relaxation	0.098	0.098
	27	Barium as Ba	APHA 24th Ed., 2023-3500 –Ba,	mg/L	0.7 Max.	No Relaxation	N.D.	N.D.
	28	Iron (as Fe)	IS 3025(Part 53):2024	mg/L	0.3 Max.	No Relaxation	BDL(MDL:0.1)	BDL(MDL:0.1)
	29	Zinc (as Zn)	IS 3025(Part 49):2024	mg/L	5 Max.	15 Max.	BDL(MDL:0.05)	BDL(MDL:0.05)
	30	Total Coliform	APHA 24th Ed.2023, 9222-B	CFU/100 ml	Absent	Absent	Absent	Absent
	31	E. coli	IS :15185:2016	CFU/100 ml	Absent	Absent	Absent	Absent
Piezometer Well-2	1	pH @ 25 ° C	IS 3025(Part 11):2022	--	6.5 – 8.5	No Relaxation	7.48	7.56
	2	Conductivity	IS 3025(Part 14):2013	µS/cm	--	--	10100	10690
	3	Total Dissolved Solids	IS 3025(Part 16):2023	mg/L	500 Max.	2000 Max.	6660	7056
	4	Chloride as Cl <sup>-</sup>	IS 3025(Part 32):1988	mg/L	250 Max.	1000 Max.	521.3	563.2
	5	Carbonate as CaCO <sub>3</sub>	IS 3025(Part 51):2021	mg/L	--	--	BDL(MDL:4.0)	BDL(MDL:4.0)
	6	Bicarbonate as CaCO <sub>3</sub>	IS 3025(Part 51):2021	mg/L	--	--	106.5	126.2
	7	Total Alkalinity	IS 3025(Part 23):2023,	mg/L	250 Max.	600 Max.	87.3	112.5
	8	Calcium as Ca	APHA 24th Ed., 2023,3500 Ca. B	mg/L	75 Max.	200 Max.	286.3	326
	9	Magnesium as Mg	APHA 24th Ed., 2023, 3500 Mg. B	mg/L	30 Max.	100 Max.	58.1	68
	10	Sodium as Na	APHA 24th Ed., 2023,3500 Na, B	mg/L	--	--	1220	1733
	11	Potassium as K	APHA 24th Ed., 2023,3500 K, B	mg/L	--	--	16.1	25.6
	12	Total Hardness as CaCO <sub>3</sub>	IS 3025(Part 21): 2009	mg/L	200 Max.	600 Max.	977.6	1052.5
	13	Sulphate as SO <sub>4</sub> -2	IS 3025(Part 24):2022	mg/L	200 Max.	400 Max.	3320	3662
	14	Nitrate as NO <sub>3</sub>	APHA 24th Ed., 2023,4500 NO <sub>3</sub> -B	mg/L	45 Max.	No Relaxation	2.1	2.4
	15	Phosphate as PO <sub>4</sub>	APHA 24th Ed., 2023,4500-P, D	mg/L	--	--	6.4	11.4
	16	Fluoride as F	APHA 24th Ed., 2023,4500 F, D	mg/L	1.0 Max.	1.5 Max.	1.05	1.35
	17	Residual Free Chlorine	APHA 24th Ed.,2023,4500-Cl-G	mg/L	0.2 Min.	1.0 Min.	BDL(MDL:0.1)	BDL(MDL:0.1)
	18	Salinity	APHA 24th Ed., 2023, 2520-B,	ppt	--	--	0.55544515	1.02
	19	Mercury as Hg	APHA 24th Ed., 2023,3112-B	mg/L	0.001 Max.	No Relaxation	BDL(MDL:0.001)	BDL(MDL:0.001)
	20	Arsenic as As	APHA 24th Ed., 2023,3114-C	mg/L	0.01 Max.	0.05 Max.	BDL(MDL:0.01)	BDL(MDL:0.01)
	21	Lead as Pb	IS 3025 (Part 47):1994	mg/L	0.01 Max.	No Relaxation	BDL(MDL:0.01)	BDL(MDL:0.01)
	22	Chromium as Cr	IS 3025 (Part 52):2003	mg/L	0.05 Max.	No Relaxation	BDL(MDL:0.05)	BDL(MDL:0.05)
	23	Cadmium as Cd	IS 3025(Part 41):2023	mg/L	0.003 Max.	No Relaxation	BDL(MDL:0.003)	BDL(MDL:0.003)

24	Copper as Cu	IS 3025(Part 42):1992	mg/L	0.05 Max.	1.5 Max.	BDL(MDL:0.05)	BDL(MDL:0.05)
25	Manganese as Mn	APHA 24th Ed., 2023,3500 Mn B	mg/L	0.1 Max.	0.3 Max.	BDL(MDL:0.1)	BDL(MDL:0.1)
26	Nickel as Ni	IS 3025(Part 54):2003,	mg/L	0.02 Max.	No Relaxation	0.166	0.166
27	Barium as Ba	APHA 24th Ed., 2023-3500 –Ba,	mg/L	0.7 Max.	No Relaxation	N.D.	N.D.
28	Iron (as Fe)	IS 3025(Part 53):2024	mg/L	0.3 Max.	No Relaxation	BDL(MDL:0.1)	BDL(MDL:0.1)
29	Zinc (as Zn)	IS 3025(Part 49):2024	mg/L	5 Max.	15 Max.	BDL(MDL:0.05)	BDL(MDL:0.05)
30	Total Coliform	APHA 24th Ed.2023, 9222-B	CFU/100 ml	Absent	Absent	Absent	Absent
31	E. coli	IS :15185:2016	CFU/100 ml	Absent	Absent	Absent	Absent

Piezometer Well-3

1	pH @ 25 ° C	IS 3025(Part 11):2022	--	6.5 – 8.5	No Relaxation	8.12	8.48
2	Conductivity	IS 3025(Part 14):2013	µS/cm	--	--	690	780
3	Total Dissolved Solids	IS 3025(Part 16):2023	mg/L	500 Max.	2000 Max.	452	508
4	Chloride as Cl <sup>-</sup>	IS 3025(Part 32):1988	mg/L	250 Max.	1000 Max.	88.4	104
5	Carbonate as CaCO <sub>3</sub>	IS 3025(Part 51):2021	mg/L	--	--	10.8	24.5
6	Bicarbonate as CaCO <sub>3</sub>	IS 3025(Part 51):2021	mg/L	--	--	153.7	207.1
7	Total Alkalinity	IS 3025(Part 23):2023,	mg/L	250 Max.	600 Max.	153	178.5
8	Calcium as Ca	APHA 24th Ed., 2023,3500 Ca. B	mg/L	75 Max.	200 Max.	8.6	15.5
9	Magnesium as Mg	APHA 24th Ed., 2023, 3500 Mg. B	mg/L	30 Max.	100 Max.	4.28	9.42
10	Sodium as Na	APHA 24th Ed., 2023,3500 Na, B	mg/L	--	--	105	142
11	Potassium as K	APHA 24th Ed., 2023,3500 K, B	mg/L	--	--	1.4	2
12	Total Hardness as CaCO <sub>3</sub>	IS 3025(Part 21): 2009	mg/L	200 Max.	600 Max.	39.2	77.6
13	Sulphate as SO <sub>4</sub> -2	IS 3025(Part 24):2022	mg/L	200 Max.	400 Max.	48.2	62.1
14	Nitrate as NO <sub>3</sub>	APHA 24th Ed., 2023,4500 NO <sub>3</sub> -B	mg/L	45 Max.	No Relaxation	0.2	0.31
15	Phosphate as PO <sub>4</sub>	APHA 24th Ed., 2023,4500-P, D	mg/L	--	--	0.27	0.45
16	Fluoride as F	APHA 24th Ed., 2023,4500 F, D	mg/L	1.0 Max.	1.5 Max.	0.95	1.21
17	Residual Free Chlorine	APHA 24th Ed.,2023,4500-Cl-G	mg/L	0.2 Min.	1.0 Min.	BDL(MDL:0.1)	BDL(MDL:0.1)
18	Salinity	APHA 24th Ed., 2023, 2520-B,	ppt	--	--	0.10409935	0.19
19	Mercury as Hg	APHA 24th Ed., 2023,3112-B	mg/L	0.001 Max.	No Relaxation	BDL(MDL:0.001)	BDL(MDL:0.001)
20	Arsenic as As	APHA 24th Ed., 2023,3114-C	mg/L	0.01 Max.	0.05 Max.	BDL(MDL:0.01)	BDL(MDL:0.01)
21	Lead as Pb	IS 3025 (Part 47):1994	mg/L	0.01 Max.	No Relaxation	BDL(MDL:0.01)	BDL(MDL:0.01)
22	Chromium as Cr	IS 3025 (Part 52):2003	mg/L	0.05 Max.	No Relaxation	BDL(MDL:0.05)	BDL(MDL:0.05)
23	Cadmium as Cd	IS 3025(Part 41):2023	mg/L	0.003 Max.	No Relaxation	BDL(MDL:0.003)	BDL(MDL:0.003)
24	Copper as Cu	IS 3025(Part 42):1992	mg/L	0.05 Max.	1.5 Max.	BDL(MDL:0.05)	BDL(MDL:0.05)
25	Manganese as Mn	APHA 24th Ed., 2023,3500 Mn B	mg/L	0.1 Max.	0.3 Max.	BDL(MDL:0.1)	BDL(MDL:0.1)
26	Nickel as Ni	IS 3025(Part 54):2003,	mg/L	0.02 Max.	No Relaxation	BDL(MDL:0.02)	BDL(MDL:0.02)
27	Barium as Ba	APHA 24th Ed., 2023-3500 –Ba,	mg/L	0.7 Max.	No Relaxation	N.D.	N.D.
28	Iron (as Fe)	IS 3025(Part 53):2024	mg/L	0.3 Max.	No Relaxation	BDL(MDL:0.1)	BDL(MDL:0.1)
29	Zinc (as Zn)	IS 3025(Part 49):2024	mg/L	5 Max.	15 Max.	BDL(MDL:0.05)	BDL(MDL:0.05)
30	Total Coliform	APHA 24th Ed.2023, 9222-B	CFU/100 ml	Absent	Absent	Absent	Absent
31	E. coli	IS :15185:2016	CFU/100 ml	Absent	Absent	Absent	Absent

Piezometer Well-4

1	pH @ 25 ° C	IS 3025(Part 11):2022	--	6.5 – 8.5	No Relaxation	7.96	8.28
2	Conductivity	IS 3025(Part 14):2013	µS/cm	--	--	990	1030
3	Total Dissolved Solids	IS 3025(Part 16):2023	mg/L	500 Max.	2000 Max.	652	680
4	Chloride as Cl <sup>-</sup>	IS 3025(Part 32):1988	mg/L	250 Max.	1000 Max.	130.3	209.4
5	Carbonate as CaCO <sub>3</sub>	IS 3025(Part 51):2021	mg/L	--	--	27	27
6	Bicarbonate as CaCO <sub>3</sub>	IS 3025(Part 51):2021	mg/L	--	--	214.1	248.9
7	Total Alkalinity	IS 3025(Part 23):2023,	mg/L	250 Max.	600 Max.	193.5	220.5
8	Calcium as Ca	APHA 24th Ed., 2023,3500 Ca. B	mg/L	75 Max.	200 Max.	5.7	31.1
9	Magnesium as Mg	APHA 24th Ed., 2023, 3500 Mg. B	mg/L	30 Max.	100 Max.	7.62	23.5
10	Sodium as Na	APHA 24th Ed., 2023,3500 Na, B	mg/L	--	--	174	210
11	Potassium as K	APHA 24th Ed., 2023,3500 K, B	mg/L	--	--	2.2	4.1
12	Total Hardness as CaCO <sub>3</sub>	IS 3025(Part 21): 2009	mg/L	200 Max.	600 Max.	70.5	174.6
13	Sulphate as SO <sub>4</sub> -2	IS 3025(Part 24):2022	mg/L	200 Max.	400 Max.	124	146.7
14	Nitrate as NO <sub>3</sub>	APHA 24th Ed., 2023,4500 NO <sub>3</sub> -B	mg/L	45 Max.	No Relaxation	BDL(MDL:0.1)	BDL(MDL:0.1)
15	Phosphate as PO <sub>4</sub>	APHA 24th Ed., 2023,4500-P, D	mg/L	--	--	0.4	0.52
16	Fluoride as F	APHA 24th Ed., 2023,4500 F, D	mg/L	1.0 Max.	1.5 Max.	BDL(MDL:0.2)	BDL(MDL:0.2)
17	Residual Free Chlorine	APHA 24th Ed.,2023,4500-Cl-G	mg/L	0.2 Min.	1.0 Min.	BDL(MDL:0.1)	BDL(MDL:0.1)
18	Salinity	APHA 24th Ed., 2023, 2520-B,	ppt	--	--	0.2231157	0.31
19	Mercury as Hg	APHA 24th Ed., 2023,3112-B	mg/L	0.001 Max.	No Relaxation	BDL(MDL:0.001)	BDL(MDL:0.001)

20	Arsenic as As	APHA 24th Ed., 2023,3114-C	mg/L	0.01 Max.	0.05 Max.	BDL(MDL:0.01)	BDL(MDL:0.01)
21	Lead as Pb	IS 3025 (Part 47):1994	mg/L	0.01 Max.	No Relaxation	BDL(MDL:0.01)	BDL(MDL:0.01)
22	Chromium as Cr	IS 3025 (Part 52):2003	mg/L	0.05 Max.	No Relaxation	BDL(MDL:0.05)	BDL(MDL:0.05)
23	Cadmium as Cd	IS 3025(Part 41):2023	mg/L	0.003 Max.	No Relaxation	BDL(MDL:0.003)	BDL(MDL:0.003)
24	Copper as Cu	IS 3025(Part 42):1992	mg/L	0.05 Max.	1.5 Max.	BDL(MDL:0.05)	BDL(MDL:0.05)
25	Manganese as Mn	APHA 24th Ed., 2023,3500 Mn B	mg/L	0.1 Max.	0.3 Max.	BDL(MDL:0.1)	BDL(MDL:0.1)
26	Nickel as Ni	IS 3025(Part 54):2003,	mg/L	0.02 Max.	No Relaxation	BDL(MDL:0.02)	BDL(MDL:0.02)
27	Barium as Ba	APHA 24th Ed., 2023-3500 –Ba,	mg/L	0.7 Max.	No Relaxation	N.D.	N.D.
28	Iron (as Fe)	IS 3025(Part 53):2024	mg/L	0.3 Max.	No Relaxation	0.482	0.515
29	Zinc (as Zn)	IS 3025(Part 49):2024	mg/L	5 Max.	15 Max.	BDL(MDL:0.05)	BDL(MDL:0.05)
30	Total Coliform	APHA 24th Ed.2023, 9222-B	CFU/100 ml	Absent	Absent	Absent	Absent
31	E. coli	IS :15185:2016	CFU/100 ml	Absent	Absent	Absent	Absent

Piezometer Well-5

1	pH @ 25 ° C	IS 3025(Part 11):2022	--	6.5 – 8.5	No Relaxation	7.81	8.29
2	Conductivity	IS 3025(Part 14):2013	µS/cm	--	--	990	1130
3	Total Dissolved Solids	IS 3025(Part 16):2023	mg/L	500 Max.	2000 Max.	648	744
4	Chloride as Cl <sup>-</sup>	IS 3025(Part 32):1988	mg/L	250 Max.	1000 Max.	102.4	200.1
5	Carbonate as CaCO <sub>3</sub>	IS 3025(Part 51):2021	mg/L	--	--	16.2	16.2
6	Bicarbonate as CaCO <sub>3</sub>	IS 3025(Part 51):2021	mg/L	--	--	181.1	318.4
7	Total Alkalinity	IS 3025(Part 23):2023,	mg/L	250 Max.	600 Max.	175.5	297
8	Calcium as Ca	APHA 24th Ed., 2023,3500 Ca. B	mg/L	75 Max.	200 Max.	5.49	23.3
9	Magnesium as Mg	APHA 24th Ed., 2023, 3500 Mg. B	mg/L	30 Max.	100 Max.	17.4	18.8
10	Sodium as Na	APHA 24th Ed., 2023,3500 Na, B	mg/L	--	--	124	210
11	Potassium as K	APHA 24th Ed., 2023,3500 K, B	mg/L	--	--	1.5	2.2
12	Total Hardness as CaCO <sub>3</sub>	IS 3025(Part 21): 2009	mg/L	200 Max.	600 Max.	90.2	135.8
13	Sulphate as SO <sub>4</sub> -2	IS 3025(Part 24):2022	mg/L	200 Max.	400 Max.	124	144
14	Nitrate as NO <sub>3</sub>	APHA 24th Ed., 2023,4500 NO <sub>3</sub> -B	mg/L	45 Max.	No Relaxation	0.1	0.1
15	Phosphate as PO <sub>4</sub>	APHA 24th Ed., 2023,4500-P, D	mg/L	--	--	0.28	0.5
16	Fluoride as F	APHA 24th Ed., 2023,4500 F, D	mg/L	1.0 Max.	1.5 Max.	BDL(MDL:0.2)	BDL(MDL:0.2)
17	Residual Free Chlorine	APHA 24th Ed.,2023,4500-Cl-G	mg/L	0.2 Min.	1.0 Min.	BDL(MDL:0.1)	BDL(MDL:0.1)
18	Salinity	APHA 24th Ed., 2023, 2520-B,	ppt	--	--	0.18	0.28
19	Mercury as Hg	APHA 24th Ed., 2023,3112-B	mg/L	0.001 Max.	No Relaxation	BDL(MDL:0.001)	BDL(MDL:0.001)
20	Arsenic as As	APHA 24th Ed., 2023,3114-C	mg/L	0.01 Max.	0.05 Max.	BDL(MDL:0.01)	BDL(MDL:0.01)
21	Lead as Pb	IS 3025 (Part 47):1994	mg/L	0.01 Max.	No Relaxation	BDL(MDL:0.01)	BDL(MDL:0.01)
22	Chromium as Cr	IS 3025 (Part 52):2003	mg/L	0.05 Max.	No Relaxation	BDL(MDL:0.05)	BDL(MDL:0.05)
23	Cadmium as Cd	IS 3025(Part 41):2023	mg/L	0.003 Max.	No Relaxation	BDL(MDL:0.003)	BDL(MDL:0.003)
24	Copper as Cu	IS 3025(Part 42):1992	mg/L	0.05 Max.	1.5 Max.	BDL(MDL:0.05)	BDL(MDL:0.05)
25	Manganese as Mn	APHA 24th Ed., 2023,3500 Mn B	mg/L	0.1 Max.	0.3 Max.	BDL(MDL:0.1)	BDL(MDL:0.1)
26	Nickel as Ni	IS 3025(Part 54):2003,	mg/L	0.02 Max.	No Relaxation	BDL(MDL:0.02)	BDL(MDL:0.02)
27	Barium as Ba	APHA 24th Ed., 2023-3500 –Ba,	mg/L	0.7 Max.	No Relaxation	N.D.	N.D.
28	Iron (as Fe)	IS 3025(Part 53):2024	mg/L	0.3 Max.	No Relaxation	BDL(MDL:0.1)	BDL(MDL:0.1)
29	Zinc (as Zn)	IS 3025(Part 49):2024	mg/L	5 Max.	15 Max.	BDL(MDL:0.05)	BDL(MDL:0.05)
30	Total Coliform	APHA 24th Ed.2023, 9222-B	CFU/100 ml	Absent	Absent	Absent	Absent
31	E. coli	IS :15185:2016	CFU/100 ml	Absent	Absent	Absent	Absent

Piezometer Well-6

1	pH @ 25 ° C	IS 3025(Part 11):2022	--	6.5 – 8.5	No Relaxation	8.24	8.38
2	Conductivity	IS 3025(Part 14):2013	µS/cm	--	--	930	1030
3	Total Dissolved Solids	IS 3025(Part 16):2023	mg/L	500 Max.	2000 Max.	610	680
4	Chloride as Cl <sup>-</sup>	IS 3025(Part 32):1988	mg/L	250 Max.	1000 Max.	112.6	132.1
5	Carbonate as CaCO <sub>3</sub>	IS 3025(Part 51):2021	mg/L	--	--	16.2	21.6
6	Bicarbonate as CaCO <sub>3</sub>	IS 3025(Part 51):2021	mg/L	--	--	180.4	203.1
7	Total Alkalinity	IS 3025(Part 23):2023,	mg/L	250 Max.	600 Max.	155.2	193.5
8	Calcium as Ca	APHA 24th Ed., 2023,3500 Ca. B	mg/L	75 Max.	200 Max.	11.78	15.5
9	Magnesium as Mg	APHA 24th Ed., 2023, 3500 Mg. B	mg/L	30 Max.	100 Max.	9.52	18.8
10	Sodium as Na	APHA 24th Ed., 2023,3500 Na, B	mg/L	--	--	140.4	202
11	Potassium as K	APHA 24th Ed., 2023,3500 K, B	mg/L	--	--	2	2.5
12	Total Hardness as CaCO <sub>3</sub>	IS 3025(Part 21): 2009	mg/L	200 Max.	600 Max.	68.6	116.4
13	Sulphate as SO <sub>4</sub> -2	IS 3025(Part 24):2022	mg/L	200 Max.	400 Max.	96	124.9
14	Nitrate as NO <sub>3</sub>	APHA 24th Ed., 2023,4500 NO <sub>3</sub> -B	mg/L	45 Max.	No Relaxation	0.2	0.2
15	Phosphate as PO <sub>4</sub>	APHA 24th Ed., 2023,4500-P, D	mg/L	--	--	0.34	0.45

16	Fluoride as F	APHA 24th Ed., 2023,4500 F, D	mg/L	1.0 Max.	1.5 Max.	0.2	0.34
17	Residual Free Chlorine	APHA 24th Ed.,2023,4500-Cl-G	mg/L	0.2 Min.	1.0 Min.	BDL(MDL:0.1)	BDL(MDL:0.1)
18	Salinity	APHA 24th Ed., 2023, 2520-B,	ppt	--	--	0.12391765	0.24
19	Mercury as Hg	APHA 24th Ed., 2023,3112-B	mg/L	0.001 Max.	No Relaxation	BDL(MDL:0.001)	BDL(MDL:0.001)
20	Arsenic as As	APHA 24th Ed., 2023,3114-C	mg/L	0.01 Max.	0.05 Max.	BDL(MDL:0.01)	BDL(MDL:0.01)
21	Lead as Pb	IS 3025 (Part 47):1994	mg/L	0.01 Max.	No Relaxation	BDL(MDL:0.01)	BDL(MDL:0.01)
22	Chromium as Cr	IS 3025 (Part 52):2003	mg/L	0.05 Max.	No Relaxation	BDL(MDL:0.05)	BDL(MDL:0.05)
23	Cadmium as Cd	IS 3025(Part 41):2023	mg/L	0.003 Max.	No Relaxation	BDL(MDL:0.003)	BDL(MDL:0.003)
24	Copper as Cu	IS 3025(Part 42):1992	mg/L	0.05 Max.	1.5 Max.	BDL(MDL:0.05)	BDL(MDL:0.05)
25	Manganese as Mn	APHA 24th Ed., 2023,3500 Mn B	mg/L	0.1 Max.	0.3 Max.	BDL(MDL:0.1)	BDL(MDL:0.1)
26	Nickel as Ni	IS 3025(Part 54):2003,	mg/L	0.02 Max.	No Relaxation	BDL(MDL:0.02)	BDL(MDL:0.02)
27	Barium as Ba	APHA 24th Ed., 2023-3500 –Ba,	mg/L	0.7 Max.	No Relaxation	N.D.	N.D.
28	Iron (as Fe)	IS 3025(Part 53):2024	mg/L	0.3 Max.	No Relaxation	BDL(MDL:0.1)	BDL(MDL:0.1)
29	Zinc (as Zn)	IS 3025(Part 49):2024	mg/L	5 Max.	15 Max.	BDL(MDL:0.05)	BDL(MDL:0.05)
30	Total Coliform	APHA 24th Ed.2023, 9222-B	CFU/100 ml	Absent	Absent	Absent	Absent
31	E. coli	IS :15185:2016	CFU/100 ml	Absent	Absent	Absent	Absent

Piezometer Well-7

1	pH @ 25 ° C	IS 3025(Part 11):2022	--	6.5 – 8.5	No Relaxation	7.88	8.11
2	Conductivity	IS 3025(Part 14):2013	µS/cm	--	--	1120	1190
3	Total Dissolved Solids	IS 3025(Part 16):2023	mg/L	500 Max.	2000 Max.	740	782
4	Chloride as Cl <sup>-</sup>	IS 3025(Part 32):1988	mg/L	250 Max.	1000 Max.	93	112.2
5	Carbonate as CaCO3	IS 3025(Part 51):2021	mg/L	--	--	BDL(MDL:4.0)	BDL(MDL:4.0)
6	Bicarbonate as CaCO3	IS 3025(Part 51):2021	mg/L	--	--	373.3	430.9
7	Total Alkalinity	IS 3025(Part 23):2023,	mg/L	250 Max.	600 Max.	315.3	353.2
8	Calcium as Ca	APHA 24th Ed., 2023,3500 Ca. B	mg/L	75 Max.	200 Max.	5.49	62.2
9	Magnesium as Mg	APHA 24th Ed., 2023, 3500 Mg. B	mg/L	30 Max.	100 Max.	23.5	37.62
10	Sodium as Na	APHA 24th Ed., 2023,3500 Na, B	mg/L	--	--	132	186
11	Potassium as K	APHA 24th Ed., 2023,3500 K, B	mg/L	--	--	2.5	4.1
12	Total Hardness as CaCO <sub>3</sub>	IS 3025(Part 21): 2009	mg/L	200 Max.	600 Max.	168.5	252.2
13	Sulphate as SO4-2	IS 3025(Part 24):2022	mg/L	200 Max.	400 Max.	102	124
14	Nitrate as NO3	APHA 24th Ed., 2023,4500 NO3-B	mg/L	45 Max.	No Relaxation	0.1	0.1
15	Phosphate as PO <sub>4</sub>	APHA 24th Ed., 2023,4500-P, D	mg/L	--	--	0.25	0.35
16	Fluoride as F	APHA 24th Ed., 2023,4500 F, D	mg/L	1.0 Max.	1.5 Max.	BDL(MDL:0.2)	BDL(MDL:0.2)
17	Residual Free Chlorine	APHA 24th Ed.,2023,4500-Cl-G	mg/L	0.2 Min.	1.0 Min.	BDL(MDL:0.1)	BDL(MDL:0.1)
18	Salinity	APHA 24th Ed., 2023, 2520-B,	ppt	--	--	0.1091072	0.2
19	Mercury as Hg	APHA 24th Ed., 2023,3112-B	mg/L	0.001 Max.	No Relaxation	BDL(MDL:0.001)	BDL(MDL:0.001)
20	Arsenic as As	APHA 24th Ed., 2023,3114-C	mg/L	0.01 Max.	0.05 Max.	BDL(MDL:0.01)	BDL(MDL:0.01)
21	Lead as Pb	IS 3025 (Part 47):1994	mg/L	0.01 Max.	No Relaxation	BDL(MDL:0.01)	BDL(MDL:0.01)
22	Chromium as Cr	IS 3025 (Part 52):2003	mg/L	0.05 Max.	No Relaxation	BDL(MDL:0.05)	BDL(MDL:0.05)
23	Cadmium as Cd	IS 3025(Part 41):2023	mg/L	0.003 Max.	No Relaxation	BDL(MDL:0.003)	BDL(MDL:0.003)
24	Copper as Cu	IS 3025(Part 42):1992	mg/L	0.05 Max.	1.5 Max.	BDL(MDL:0.05)	BDL(MDL:0.05)
25	Manganese as Mn	APHA 24th Ed., 2023,3500 Mn B	mg/L	0.1 Max.	0.3 Max.	BDL(MDL:0.1)	BDL(MDL:0.1)
26	Nickel as Ni	IS 3025(Part 54):2003,	mg/L	0.02 Max.	No Relaxation	BDL(MDL:0.02)	BDL(MDL:0.02)
27	Barium as Ba	APHA 24th Ed., 2023-3500 –Ba,	mg/L	0.7 Max.	No Relaxation	N.D.	N.D.
28	Iron (as Fe)	IS 3025(Part 53):2024	mg/L	0.3 Max.	No Relaxation	BDL(MDL:0.1)	BDL(MDL:0.1)
29	Zinc (as Zn)	IS 3025(Part 49):2024	mg/L	5 Max.	15 Max.	BDL(MDL:0.05)	BDL(MDL:0.05)
30	Total Coliform	APHA 24th Ed.2023, 9222-B	CFU/100 ml	Absent	Absent	Absent	Absent
31	E. coli	IS :15185:2016	CFU/100 ml	Absent	Absent	Absent	Absent

Piezometer Well-8

1	pH @ 25 ° C	IS 3025(Part 11):2022	--	6.5 – 8.5	No Relaxation	7.6	8.32
2	Conductivity	IS 3025(Part 14):2013	µS/cm	--	--	3600	7010
3	Total Dissolved Solids	IS 3025(Part 16):2023	mg/L	500 Max.	2000 Max.	2368	4022
4	Chloride as Cl <sup>-</sup>	IS 3025(Part 32):1988	mg/L	250 Max.	1000 Max.	293.2	1124.1
5	Carbonate as CaCO3	IS 3025(Part 51):2021	mg/L	--	--	21.6	21.6
6	Bicarbonate as CaCO3	IS 3025(Part 51):2021	mg/L	--	--	163.9	208.6
7	Total Alkalinity	IS 3025(Part 23):2023,	mg/L	250 Max.	600 Max.	134.3	207
8	Calcium as Ca	APHA 24th Ed., 2023,3500 Ca. B	mg/L	75 Max.	200 Max.	23.56	108.8
9	Magnesium as Mg	APHA 24th Ed., 2023, 3500 Mg. B	mg/L	30 Max.	100 Max.	42.4	114.3
10	Sodium as Na	APHA 24th Ed., 2023,3500 Na, B	mg/L	--	--	646	1560
11	Potassium as K	APHA 24th Ed., 2023,3500 K, B	mg/L	--	--	8.4	12.2

12	Total Hardness as CaCO <sub>3</sub>	IS 3025(Part 21): 2009	mg/L	<b>200 Max.</b>	<b>600 Max.</b>	432.4	529.2
13	Sulphate as SO4-2	IS 3025(Part 24):2022	mg/L	<b>200 Max.</b>	<b>400 Max.</b>	990	1068.4
14	Nitrate as NO3	APHA 24th Ed., 2023,4500 NO3-B	mg/L	<b>45 Max.</b>	<b>No Relaxation</b>	1.2	1.6
15	Phosphate as PO <sub>4</sub>	APHA 24th Ed., 2023,4500-P, D	mg/L	--	--	0.88	1.2
16	Fluoride as F	APHA 24th Ed., 2023,4500 F, D	mg/L	<b>1.0 Max.</b>	<b>1.5 Max.</b>	1.06	1.24
17	Residual Free Chlorine	APHA 24th Ed.,2023,4500-Cl-G	mg/L	<b>0.2 Min.</b>	<b>1.0 Min.</b>	BDL(MDL:0.1)	BDL(MDL:0.1)
18	Salinity	APHA 24th Ed., 2023, 2520-B,	ppt	--	--	0.3124046	2.03
19	Mercury as Hg	APHA 24th Ed., 2023,3112-B	mg/L	<b>0.001 Max.</b>	<b>No Relaxation</b>	BDL(MDL:0.001)	BDL(MDL:0.001)
20	Arsenic as As	APHA 24th Ed., 2023,3114-C	mg/L	<b>0.01 Max.</b>	<b>0.05 Max.</b>	BDL(MDL:0.01)	BDL(MDL:0.01)
21	Lead as Pb	IS 3025 (Part 47):1994	mg/L	<b>0.01 Max.</b>	<b>No Relaxation</b>	BDL(MDL:0.01)	BDL(MDL:0.01)
22	Chromium as Cr	IS 3025 (Part 52):2003	mg/L	<b>0.05 Max.</b>	<b>No Relaxation</b>	BDL(MDL:0.05)	BDL(MDL:0.05)
23	Cadmium as Cd	IS 3025(Part 41):2023	mg/L	<b>0.003 Max.</b>	<b>No Relaxation</b>	BDL(MDL:0.003)	BDL(MDL:0.003)
24	Copper as Cu	IS 3025(Part 42):1992	mg/L	<b>0.05 Max.</b>	<b>1.5 Max.</b>	BDL(MDL:0.05)	BDL(MDL:0.05)
25	Manganese as Mn	APHA 24th Ed., 2023,3500 Mn B	mg/L	<b>0.1 Max.</b>	<b>0.3 Max.</b>	BDL(MDL:0.1)	BDL(MDL:0.1)
26	Nickel as Ni	IS 3025(Part 54):2003,	mg/L	<b>0.02 Max.</b>	<b>No Relaxation</b>	BDL(MDL:0.02)	BDL(MDL:0.02)
27	Barium as Ba	APHA 24th Ed., 2023-3500 –Ba,	mg/L	<b>0.7 Max.</b>	<b>No Relaxation</b>	N.D.	N.D.
28	Iron (as Fe)	IS 3025(Part 53):2024	mg/L	<b>0.3 Max.</b>	<b>No Relaxation</b>	BDL(MDL:0.1)	BDL(MDL:0.1)
29	Zinc (as Zn)	IS 3025(Part 49):2024	mg/L	<b>5 Max.</b>	<b>15 Max.</b>	BDL(MDL:0.05)	BDL(MDL:0.05)
30	Total Coliform	APHA 24th Ed.2023, 9222-B	CFU/100 ml	<b>Absent</b>	<b>Absent</b>	Absent	Absent
31	E. coli	IS :15185:2016	CFU/100 ml	<b>Absent</b>	<b>Absent</b>	Absent	Absent

# Annexure-5

Ambient Noise Monitoring Summary Report								
Month	Sr No.	Location Name	Noise Level Leq. dB(A) Day Time			Noise Level Leq. dB(A) Night Time		
			IS: 9989 : 1981			IS: 9989 : 1981		
			Average	Max	Min	Average	Max	Min
Oct'25	1	KCL Complex (South Gate)	56.5	64.3	53.2	49.3	53.7	45.1
	2	KCL Complex (Near ETP)	61.0	66.7	56.1	52.0	55.7	48.6
	3	KCL Complex (Admin Building)	57.8	64.7	51.8	51.6	53.1	50.3
	4	MAIN GATE (K.C.T.L)	59.0	65.4	52.6	52.8	54.9	48.8
	5	Shiracha Village	53.8	57.2	49.8	45.0	46.2	43.2
	6	Wandh Village	54.1	58.8	50.7	45.5	48.5	43.2
	7	Navinal Village	51.3	55.1	48.3	43.6	45.1	41.9
Nov'25	1	KCL Complex (South Gate)	56.8	63.4	53.2	50.4	53.1	46.5
	2	KCL Complex (Near ETP)	61.2	66.2	54.2	51.7	55.2	47.3
	3	KCL Complex (Admin Building)	57.7	63.8	52.8	50.9	52.8	48.5
	4	MAIN GATE (K.C.T.L)	60.2	66.5	54.3	53.1	55.7	50.4
	5	Shiracha Village	54.2	57.4	49.8	45.1	47.3	43.1
	6	Wandh Village	54.9	57.4	52.3	47.5	50.1	45.3
	7	Navinal Village	52.5	56.3	48.6	44.3	45.4	43.2
Dec'25	1	KCL Complex (South Gate)	56.7	63.4	52.4	51.4	54.7	48.3
	2	KCL Complex (Near ETP)	62.1	66.7	55.3	53.1	56.2	49.5
	3	KCL Complex (Admin Building)	56.7	62.4	51.6	49.6	52.4	46.6
	4	MAIN GATE (K.C.T.L)	60.9	65.6	56.7	53.1	56.7	50.7
	5	Shiracha Village	55.4	59.7	50.3	46.2	49.3	43.8
	6	Wandh Village	55.3	59.4	50.8	48.5	50.9	45.9
	7	Navinal Village	53.5	58.3	48.6	45.9	47.5	43.9
Jan'26	1	KCL Complex (South Gate)	56.5	61.3	53.5	51.8	55.3	48.3
	2	KCL Complex (Near ETP)	61.6	65.4	56.4	54.1	57.4	50.8
	3	KCL Complex (Admin Building)	56.0	61.4	51.8	49.5	52.7	46.5
	4	MAIN GATE (K.C.T.L)	60.7	66.1	55.5	52.6	55.4	50.4
	5	Shiracha Village	55.5	58.3	51.6	46.2	48.6	44.5
	6	Wandh Village	54.8	58.7	50.4	49.1	51.3	46.3
	7	Navinal Village	53.0	57.4	47.3	46.2	47.7	44.6
Feb'26	1	KCL Complex (South Gate)	56.3	60.4	52.7	51.7	54.6	47.6
	2	KCL Complex (Near ETP)	61.3	66.1	55.7	53.4	55.8	50.3
	3	KCL Complex (Admin Building)	56.1	58.7	53.4	50.5	53.8	47.5
	4	MAIN GATE (K.C.T.L)	60.4	65.8	55.2	53.1	55.1	49.6
	5	Shiracha Village	55.7	58.4	52.0	45.7	47.5	43.7
	6	Wandh Village	54.7	59.3	49.1	48.3	50.3	45.9
	7	Navinal Village	52.9	57.6	47.6	46.2	48.5	44.3
Mar'26	1	KCL Complex (South Gate)	56.3	61.1	54.2	51.8	54.3	48.1
	2	KCL Complex (Near ETP)	61.8	65.8	56.1	54.4	56.3	51.6
	3	KCL Complex (Admin Building)	56.0	58.9	53.2	50.4	52.4	46.5
	4	MAIN GATE (K.C.T.L)	60.7	65.3	55.7	53.0	55.4	50.9
	5	Shiracha Village	53.9	56.9	48.7	43.7	45.3	41.7
	6	Wandh Village	52.6	55.1	46.5	45.4	46.2	44.2
	7	Navinal Village	51.4	55.8	45.8	43.5	44.7	41.7

# Annexure-6

STP Treated Water Analysis Summary Reports						
SR. NO.	PARAMETERS	Test Method	Norms	UOM	Period-H2 (Oct'25-Mar'26)	
					Minimum	Maximum
1	pH @ 25 ° C	IS 3025(Part 11):2022	6.5 to 9.0	--	7.15	7.54
2	Total Suspended Solids	APHA 24th Ed.,2023,2540- D	100	mg/L	12	28
3	Biochemical Oxygen Demand (BOD)(5 days at 20 ° C)	APHA 24th Ed.,2023, 5210-B	30	mg/L	8	16
4	Fecal Coliform	IS 1622: 1981	1000 MPN /100 ml	MPN/100ml	4	21
1	Chemical Oxygen Demand (COD)	IS: 3025 (Part 58):2023	--	mg/L	28.5	44.8
2	Ammonical Nitrogen	APHA 24th Ed.,2023,4500 NH <sub>3</sub> -B&C	--	mg/L	4.4	6.8
3	Residual Chlorine	APHA 24th Ed.,2023,4500-CL- G	--	mg/L	0.58	0.74
4	Oil & Grease	IS 3025(Part 39):2021	--	mg/L	BDL(MDL:4.0)	BDL(MDL:4.0)
5	Total Phosphorus	APHA 24th Ed.,2023,4500-P, D	--	mg/L	0.67	0.88

# Annexure-7

ETP Treated Water Analysis Summary Reports					
SR. NO.	PARAMETERS	Test Method	UOM	Period-H2 (Oct'25-Mar'26)	
				Minimum	Maximum
1	pH @ 25 ° C	IS 3025(Part 11):2022	--	6.54	7.18
2	Colour	IS 3025 (Part -4)	Pt. Co. Scale	30	30
3	Total Dissolved Solids	APHA 24th Edition: 2540-C	mg/L	6	80
4	Total Suspended Solids	APHA 24th Ed.,2023,2540- D	mg/L	0	0
5	Chemical Oxygen Demand (COD)	IS: 3025 (Part 58):2023	mg/L	8.2	24.2
6	Biochemical Oxygen Demand (BOD)(5 days at 20 ° C)	APHA 24th Ed.,2023, 5210-B	mg/L	1	5
7	Oil & Grease	IS 3025(Part 39):2021	mg/L	BDL(MDL:4.0)	BDL(MDL:4.0)
8	Chloride as Cl-	APHA 24th Edition: 4500-ClB	mg/L	9.7	41.3
9	Sulphate as SO4-	IS 3025 (Part- 24)	mg/L	11.9	42.2
10	Nitrate as NO3-	APHA 24th Edition: 4500-NO3 B	mg/L	BDL(MDL:0.1)	BDL(MDL:0.1)
11	Carbonate	IS 3025 (Part -5.1)	mg/L	BDL(MDL:4.0)	BDL(MDL:4.0)
12	Sulphide	APHA 24th, Ed.2023 ,4500 S-2 F	mg/L	BDL(MDL:0.1)	BDL(MDL:0.1)
13	Ammonical Nitrogen	IS 3025 (Part 34) :1988	mg/L	BDL(MDL:5.0)	BDL(MDL:5.0)
14	Fluoride	APHA 24th, Ed.2023 ,4500 F, D	mg/L	BDL(MDL:0.2)	BDL(MDL:0.2)
15	Arsenic	APHA 24th, Ed.2023 ,3114-C	mg/L	BDL(MDL:0.01)	BDL(MDL:0.01)
16	Mercury	APHA 24th, Ed.2023 ,3112-B	mg/L	BDL(MDL:0.001)	BDL(MDL:0.001)
17	Lead	APHA 24th, Ed.2023 ,3111-B,	mg/L	BDL(MDL:0.01)	BDL(MDL:0.01)
18	Cadmium	APHA 24th, Ed.2023 ,3111-B,	mg/L	BDL(MDL:0.003)	BDL(MDL:0.003)
19	Hexavalent Chromium	APHA 24th, Ed.2023 ,3500CrB	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)
20	Total Chromium	APHA 24th, Ed.2023 ,3111-B,	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)
21	Nickel	APHA 24th, Ed.2023 ,3111-B,	mg/L	BDL(MDL:0.02)	BDL(MDL:0.02)
22	Cyanide	IS 3025 (Part 27) :2021	mg/L	BDL(MDL:0.05)	BDL(MDL:0.05)
23	Iron	APHA 24th, Ed.2023 ,3111-B,	mg/L	BDL(MDL:0.1)	BDL(MDL:0.1)
24	Silver as Ag	APHA 24th Ed.,2023-3111 B-	mg/L	BDL(MDL:0.1)	BDL(MDL:0.1)
25	Nitrite as NO2-	APHA 24th Edition: 4500-NO2 B	mg/L	BDL(MDL:0.01)	BDL(MDL:0.01)
26	Selenium as Se	IS 3025(Part 56):2003	mg/L	N.D.	N.D.



**Carbon Footprint Assessment Report**  
**FY 2025-26**

**Kutch Copper Limited (KCL)**

## 1. Introduction

Carbon footprint represents the total greenhouse gas (GHG) emissions generated directly and indirectly from industrial operations. For Kutch Copper Limited (KCL), effective management of carbon emissions is critical due to the energy-intensive nature of copper smelting and refining processes.

KCL has adopted a structured GHG accounting approach aligned with the GHG Protocol Corporate Standard, ensuring accuracy, transparency, and auditability of emissions data.

This report presents an overview of KCL's carbon footprint, emission profile, monitoring systems, and key focus areas for emission reduction.

## 2. GHG Accounting Framework

KCL follows a comprehensive framework for tracking greenhouse gas emissions, supported by internal Standard Operating Procedures (SOPs).

### 2.1 Emission Categories

Emissions are classified into three scopes:

- **Scope 1 (Direct Emissions):** Emissions from on-site fuel combustion (LNG, HSD, LDO, coke) used in metallurgical and utility operations
- **Scope 2 (Indirect Emissions):** Emissions from purchased electricity consumption across core operations
- **Scope 3 (Other Indirect Emissions):** Emissions from value chain activities including transportation and logistics

## 3. Carbon Footprint Profile

### 3.1 Total GHG Emissions

The total carbon footprint of KCL for FY 2025–26 is summarized below:

Emission Scope	Emissions (tCO <sub>2</sub> e)	Contribution (%)
Scope 1	122,468.7	4.5%
Scope 2	344,217.5	12.6%
Scope 3	2,244,185.7	82.9%
<b>Total</b>	<b>2,710,871.9</b>	<b>100%</b>

### 3.2 Key Observations

- **Scope 3 emissions dominate (83%),** indicating significant contribution from upstream and downstream value chain activities
- **Scope 2 emissions (13%)** reflect high dependence on grid electricity for electro-metallurgical processes

- **Scope 1 emissions (5%)** arise from fuel combustion required for thermal and metallurgical operations

#### 4. Emission Drivers and Characteristics

The carbon footprint profile of KCL is influenced by the following operational factors:

##### 4.1 Electricity Consumption (Scope 2)

- Electricity is the largest operational energy input, supporting electro-refining, smelting, and auxiliary systems
- High electricity usage makes Scope 2 emissions a critical focus area

##### 4.2 Fuel Consumption (Scope 1)

- LNG, LDO, HSD, and coke are used for process heating and metallurgical reactions
- These fuels contribute directly to emissions through combustion

##### 4.3 Value Chain Activities (Scope 3)

- Includes transportation of raw materials and finished goods
- Accounts for the largest portion of total emissions due to supply chain dependencies

#### 5. Linkage with Energy Consumption

Carbon emissions at KCL are directly linked to energy consumption:

- **Total energy consumption:** 3,322,835 GJ
- **Electricity consumption:** dominant share (1.7 million GJ)
- Fuel consumption supports process operations and contributes to direct emissions

This highlights that energy optimization is the primary lever for reducing carbon footprint.

#### 6. Monitoring and Data Management

KCL has implemented a robust system for carbon footprint monitoring:

##### 6.1 Data Collection

- SAP-based operational data
- Metered electricity consumption
- Fuel usage records

##### 6.2 Emission Calculation

- Based on recognized emission factors from:
  - IPCC

- Central Electricity Authority (CEA)
- India GHG Program

### 6.3 Reporting Framework

- Monthly monitoring
- Quarterly dashboard reporting
- Annual disclosure and compliance reporting

This structured approach ensures data traceability and audit readiness.

### 7. Emission Intensity and Performance

Emission intensity is used as a key performance indicator to assess environmental efficiency relative to production output.

With production stabilization, KCL is expected to achieve improvements in emission intensity through:

- Higher capacity utilization
- Improved process integration
- Energy-efficient operations

### 8. Key Insights

The carbon footprint assessment indicates:

- **Strong dominance of Scope 3 emissions**, highlighting value chain impact
- **Electricity-driven emissions profile**, typical for copper smelting operations
- **Fuel usage remains essential**, limiting complete elimination of direct emissions
- Emissions are closely linked to production scale and operational efficiency

### 9. Conclusion

Kutch Copper Limited has established a comprehensive carbon footprint management framework aligned with international standards.

The emissions profile is dominated by Scope 3 emissions, followed by electricity-related Scope 2 emissions, reflecting the energy-intensive and supply chain-dependent nature of operations. While direct emissions from fuel combustion remain necessary for metallurgical processes, there is significant opportunity to reduce overall carbon footprint through energy efficiency, process optimization, and adoption of cleaner energy sources.

KCL remains committed to continuous improvement in carbon management, supporting regulatory compliance and long-term sustainability objectives.

# ***Impacting Lives, Transforming Communities in Kutch:***

**Impact Assessment of Adani Foundation  
Health Programme in Kutch  
May 2026**



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## Table of Contents

List of Figures .....	2
List of Tables .....	2
List of Acronyms .....	2
1. Introduction.....	3
1.1 Overview of CSR Programme Assessed.....	3
2. Approach and Methodology .....	3
2.1. Study Objectives .....	4
2.2 OECD-DAC Evaluation Criteria .....	4
3. Study Findings and Impact.....	6
Health Programme .....	6
4. Conclusion and Recommendation .....	13

## List of Figures

Figure 1: OECD-DAC Criteria.....	5
Figure 2: Beneficiary of nutrition and health awareness session .....	9
Figure 3: Illustration of impact of health programme .....	10

## List of Tables

Table 1: Impact map of health programme .....	6
Table 2: Relevant Indian policies and schemes aligned to health programme .....	8
Table 3: SDGs linked to support to health programme .....	8

## List of Acronyms

Acronym	Full Form
CER	Corporate Environmental Responsibility
CSR	Corporate Social Responsibility
HDI	Human Development Index
PHC	Primary Health Centre
PwD	Persons with Disabilities
SDGs	Sustainable Development Goals
SROI	Social Return on Investment

## 1. Introduction

Adani Foundation, the CSR arm of the Adani Group, is committed to fostering inclusive and sustainable development in communities across India<sup>1</sup>. In the coastal belt of Kutch, particularly in the regions of Mundra and Mandvi, the Foundation has undertaken a wide spectrum of initiatives designed to address local priorities, enhance community wellbeing, and create pathways for long-term socio-economic progress.

Rooted in the ethos of responsible stewardship, the Foundation's work in these regions focuses on strengthening essential community systems through interventions in education, healthcare, sustainable livelihoods, community infrastructure, and environmental conservation. The unique socio-economic context of Mundra and Mandvi- characterized by coastal vulnerabilities, dispersed settlements, livelihood transitions, and varying access to essential services, has guided the design of targeted programmes that are both context-sensitive and community-driven.

The Foundation partners with government bodies, local institutions, and community groups to ensure that development is holistic and participatory. Through evidence-based interventions, innovative models, and consistent engagement, Adani Foundation strives to contribute meaningfully to national development goals while uplifting communities at the grassroots.

This Impact Assessment Report presents an evaluation of the Foundation's health initiatives in Mundra and Mandvi, capturing the outcomes achieved, the social value created, and the extent to which these interventions have contributed to enhancing quality of life.

### 1.1 Overview of CSR Programme Assessed

The CSR programmes covered under this study covers the multiple programmes under the health theme such as mobile health vans, infrastructure support to hospitals, community awareness sessions on menstrual health, hygiene and nutrition.

The programme is aimed at enhancing the availability, accessibility, and quality of healthcare services in target communities, through strengthened infrastructure, trained health personnel, community awareness, and timely medical interventions, thereby improving overall health outcomes and well-being

## 2. Approach and Methodology

The impact assessment study evaluates outcomes and effectiveness of Adani Foundation CSR initiatives under the health theme in Mundra and Mandvi villages in Kutch Gujarat. The assessment

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<sup>1</sup> [Adanifoundation.org/annual-reports](https://adanifoundation.org/annual-reports)

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aims to generate evidence-based insights that can inform future CSR planning, strengthen programme design, and enhance long-term community impact.

## 2.1. Study Objectives

The study is designed to specifically assess the following:

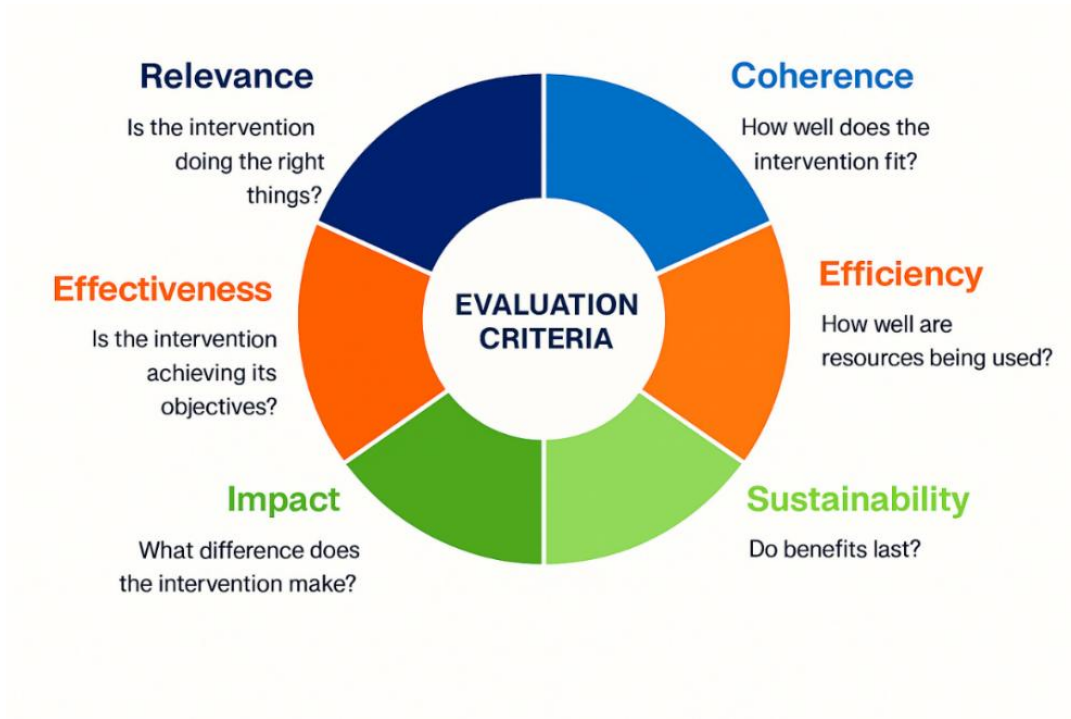
1. **Assess the relevance** of the CSR programmes in relation to community needs, local development priorities, and Adani Foundation CSR strategy.
2. **Evaluate the effectiveness** of the interventions in achieving their intended outputs and outcomes for target beneficiaries.
3. **Examine the efficiency** of programme resources, including financial, human, and institutional inputs, and their conversion into intended results.
4. **Assess the impact** of the initiatives by identifying intended and unintended, positive and negative, short-term and long-term changes generated at the community level.
5. **Evaluate the sustainability** of programme outcomes, including the likelihood that benefits will continue beyond project support.
6. **Document lessons learned and best practices** to guide strategic decision-making, programme refinement, and future CSR investments.
7. **Provide actionable recommendations** to improve programme scale, efficiency, and long-term effectiveness.

The impact assessment adopts a **mixed-methods approach**. The secondary data for the study included publicly available reports, project documents and monitoring data. The primary data under health theme included interaction with 97 beneficiaries.

## 2.2 OECD-DAC Evaluation Criteria

The study is anchored in the six internationally recognized OECD Development Assistance Committee (DAC) criteria:

Figure 1: OECD-DAC Criteria



### 3. Study Findings and Impact

#### Health Programme

Adani Foundation’s health intervention adopts a comprehensive, last-mile approach to strengthen healthcare access, infrastructure, and preventive care in underserved communities. The programme enhances emergency and mobile health services through ambulance support and mobile health vans, while also strengthening taluka-level health infrastructure by upgrading rural health clinics, laboratories, X-ray facilities, medical equipment, and hospital buildings. Complementary efforts focus on nutrition and health awareness, with targeted training and outreach on malnutrition for children, pregnant women, and the elderly, along with capacity building of frontline health workers. In addition, the Foundation conducts multi-specialty health camps in collaboration with partners such as Vision Care, providing consultations, spectacles, and treatment, and implements “Cataract-free Mundra” village-level camps to address avoidable blindness among vulnerable populations. Together, these interventions aim to improve healthcare reach, service quality, early detection, and preventive care, contributing to better health outcomes across the lifecycle. The impact map describing the activities and the impact is given below (Table 1 )

Table 1: Impact map of health programme

Goal	Activities	Output	Outcome	Impact
To enhance the availability, accessibility, and quality of healthcare services in target communities, through strengthened infrastructure, community awareness, and timely medical interventions, thereby improving overall health outcomes and well-being.	<ul style="list-style-type: none"> <li>Emergency &amp; Mobile Health Services (Ambulance Service, Mobile Health Van)</li> </ul>	<ul style="list-style-type: none"> <li>Number of mobile health vans operational</li> <li>Number of villages covered</li> </ul>	<ul style="list-style-type: none"> <li>% increase in individuals able to access to timely medical care</li> <li>% increase in villages with access to emergency health care</li> </ul>	<ul style="list-style-type: none"> <li>Strengthened rural health systems to deliver quality care, diagnostics, preventive coverage, and early treatment access for sustainable health outcomes.</li> </ul>
	<ul style="list-style-type: none"> <li>Health Infrastructure at Taluka Level (Health rural clinics, Laboratory, X-ray Machine, Equipment provided to government hospitals , Building Repairing, Toilet Repairing/New, Water Facility)</li> </ul>	<ul style="list-style-type: none"> <li>Number of health centers upgraded</li> <li>Number of labs equipped with diagnostic tools</li> </ul>	<ul style="list-style-type: none"> <li>% increase in patient footfall at health centers</li> <li>% increase in satisfaction levels of beneficiaries being treated at the health centres</li> </ul>	

	<ul style="list-style-type: none"> <li>Awareness Sessions- on nutrition, menstrual hygiene</li> </ul>	<ul style="list-style-type: none"> <li>Number of awareness sessions conducted</li> </ul>	<ul style="list-style-type: none"> <li>%improvement in knowledge of nutrition practices and menstrual hygiene</li> </ul>	
	<ul style="list-style-type: none"> <li>Multi specialty camps in collaboration with Vision Care wherein spectacles and treatment was provided</li> </ul>	<ul style="list-style-type: none"> <li>Number of health camps conducted</li> <li>Number of beneficiaries screened</li> </ul>	<ul style="list-style-type: none"> <li>%improvement in eye-related issues</li> </ul>	

## OECD-DAC Evaluation

### a. Relevance

India's large population of about 1.47 billion creates a wide burden of health conditions, spanning communicable and non-communicable diseases, acute illnesses, and chronic conditions. The country faces high prevalence of diabetes and cardiovascular diseases, alongside persistent health challenges linked to poverty and undernutrition. Maternal and child malnutrition remains a critical concern, accounting for over two-thirds of deaths among children under five<sup>2</sup>. While India's healthcare system serves a vast and diverse population and has made significant progress, it continues to face constraints such as limited healthcare infrastructure in many regions, shortages of trained medical personnel, inadequate availability of equipment and medicines, and socio-economic barriers that restrict access, especially in rural areas<sup>3</sup>.

In Kutch, healthcare access is particularly constrained, with approximately 20 primary health centres serving the entire district, placing pressure on service delivery. Secondary data also highlights gaps in emergency care, diagnostic facilities, preventive services, and awareness of nutrition and health practices. Given these systemic challenges and the specific needs of communities in Kutch, the health interventions, focused on strengthening infrastructure, improving last-mile access, and promoting preventive care are highly relevant and aligned with local health needs<sup>4</sup>.

### b. Coherence

The programme demonstrates coherence with below listed in Table 2 Indian policies and schemes.

<sup>2</sup> <https://www.sciencedirect.com/science/article/pii/S2213398424000459>

<sup>3</sup> <https://statisticstimes.com/demographics/country/india-population.php>

<sup>4</sup> <https://kachchh.nic.in/public-utility-category/hospitals/page/2/>

Table 2: Relevant Indian policies and schemes aligned to health programme

Relevant Policies & Schemes: Health	
Level	List of Policies & Schemes
National Level	<ul style="list-style-type: none"> <li>National Health Policy</li> </ul>
National Missions	<ul style="list-style-type: none"> <li>National Health Mission (NHM)</li> <li>Ayushman Bharat</li> <li>National Nutrition Mission</li> </ul>
Schemes	<ul style="list-style-type: none"> <li>Pradhan Mantri Jan Arogya Yojana</li> <li>Janani Suraksha Yojana</li> <li>POSHAN Abhiyaan</li> </ul>

The SDGs aligned to the programme are listed below:

Table 3: SDGs linked to support to health programme

SDG	Description
<b>SDG 2: Zero Hunger</b>	Nutrition and malnourishment awareness programmes for children, pregnant women, and the elderly address undernutrition and associated health risks.
<b>SDG 3: Good Health and Well-Being</b>	Core alignment through emergency services (ambulance, mobile health vans), strengthened health facilities, diagnostics (labs, X-ray), nutrition and malnutrition prevention, capacity building of frontline workers, and disease prevention via specialty and cataract camps.
<b>SDG 10: Reduced Inequalities</b>	Mobile services and village-level camps reduce access gaps for rural and vulnerable populations by bringing healthcare closer to communities

### c. Effectiveness

The programme led to measurable improvements in healthcare access, affordability, and preventive health practices by supporting villages in Kutch district. Health interventions are highly effective because they deliver clear, measurable improvements in access, cost savings, and health outcomes.

Emergency and mobile health services reduced travel time for care by 25–30 minutes per visit and saved families about Rs 450 per emergency, with 82% reporting faster treatment. Upgraded clinics and diagnostics drastically cut medical costs from Rs 400–Rs 1,500 per visit in private clinics to about Rs 20, while maintaining 100% satisfaction (ratings 4–5).

Nutrition and health-awareness programmes led to strong behaviour change. As reported, the illness days dropped from 2–6 per month to 1–2 days in a month, and monthly medical spending reduced from Rs 200–Rs 900 to nearly 0 for surveyed respondents. All families reported of adopting healthier practices such as handwashing, improved feeding, better diet diversity, and higher water intake.

Overall, the data shows consistent reductions in illness, time saved, and financial relief—demonstrating effectiveness of the programme.



*Figure 2: Beneficiary of nutrition and health awareness session*

### d. Efficiency

Under the health programme, multiple activities were implemented in collaboration with existing hospitals, government departments, and private organisations. These partnerships enabled the Foundation to optimize costs and maximize impact by leveraging existing infrastructure rather than creating parallel systems.

e. Impact

**Impact of Health Programme**

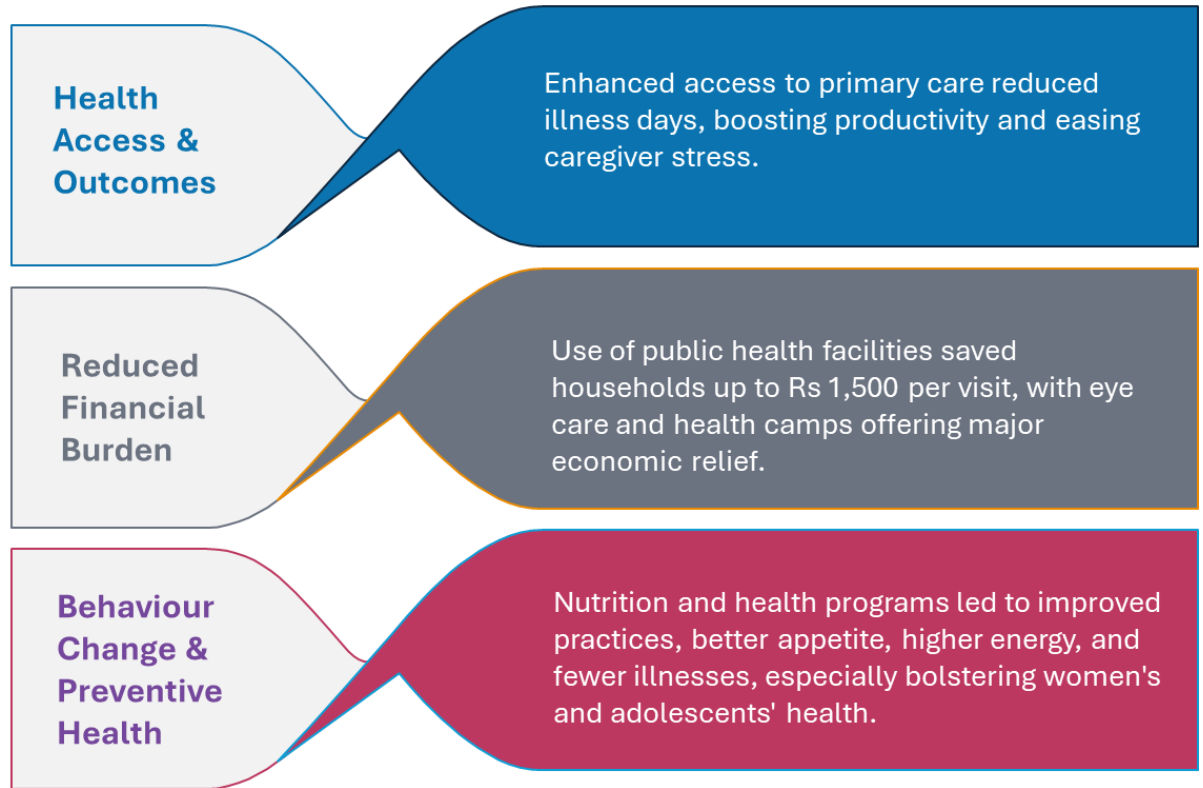


Figure 3: Illustration of impact of health programme

**Health Access & Outcomes:** The programme improved access to primary healthcare through emergency and outreach services, with 82% of respondents reporting quicker treatment and improved continuity of care. Illness days reduced from an average of 2 to 1 per month, leading to better daily functioning, higher productivity, and reduced caregiver burden for households managing recurring or chronic conditions.

**Reduced Financial Burden:** The intervention significantly lowered out-of-pocket health expenses for low-income households. Use of upgraded public health facilities allowed families to save up to Rs 1,500 per medical visit compared to private care. Eye-care beneficiaries avoided expenses of up to Rs 20,000 for diagnostics and treatment, representing a major economic relief. Health camps further reduced costs by offering consultations and tests that saved Rs 500 – Rs 1,000 per person, making essential healthcare affordable and accessible.

*“The eyecare programme is implemented by Adani Foundation and Vision Screen collectively. It is an independent camp providing specialized services for eye care only. We have the camp for full day and time slots are given to the villagers- this ensures that the wait time is less. Also, the spectacles are provided to the beneficiaries in 4-5 days. We try to make the camp as efficient as possible so that villagers benefit the most without wasting too much time in waiting here.”*

-Camp Lead from Dhrab Village

**Behaviour Change & Preventive Health:** All participants of the nutrition and health awareness programmes reported adoption of improved health practices, indicating strong behaviour change outcomes. Families observed better appetite, higher energy levels, fewer disease episodes, and reduced symptoms of anemia among women. Adolescents reported improved hygiene awareness, supporting healthier routines and long-term preventive health outcomes.

#### f. Sustainability

The programme has strengthened access to healthcare services for residents of Mundra and Mandvi villages, with most respondents expressing confidence that upgraded facilities will continue to benefit their communities over the long term. Reported improvements in nutrition-related behaviours, including hygiene, dietary practices, and child-feeding, are likely to persist beyond the intervention period. The provision of ambulances, free health camps, and low-cost diagnostics reflects effective integration with the public health system, while affordable services have encouraged continued use of government facilities and reduced reliance on private clinics.

In terms of long-term sustainability, many components such as ambulance operations, health camps, equipment maintenance, and outreach activities, require ongoing financial and operational support. Local health systems currently lack sufficient resources and capacity to independently sustain these services at the same level. Without clear transition plans, capacity




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building of public institutions, or alternative funding mechanisms, the continuity and scale of these healthcare interventions remain dependent on continued support from Adani Foundation.







## 4. Conclusion and Recommendation

The Adani Foundation's health initiatives across Mundra and Mandvi have generated meaningful improvements in healthcare for the community. The programme demonstrates relevance to local needs, effectiveness in delivering measurable benefits, and efficiency through partnership-driven implementation.

The programme performance was assessed through a structured scoring matrix that assigned scores to OECD-DAC parameters, based on information through primary and secondary data. Rating is provided based on the traffic light approach.

Rating	Indicator
Good	
Average	
Poor	

### Performance of the Programme on OECD-DAC Criteria: Health (Mobile Health Vans, Health Camps, Awareness Sessions)

Criteria	Findings	Rating
<b>Relevance</b>	Addresses critical healthcare access gaps in remote villages of Kutch.	
<b>Effectiveness</b>	Positive feedback from beneficiaries across activities under the intervention.	
<b>Coherence</b>	Aligned with NHM, Ayushman Bharat, POSHAN Abhiyaan, JSY, and SDGs.	
<b>Efficiency</b>	Lack of mechanisms, reports and data on programme design, monitoring and implementation. This limits the assessment of efficiency.	
<b>Impact</b>	Significant reach into target population; long-term improvements in health outcomes; strongly inclusive of marginalized groups.	
<b>Sustainability</b>	No defined local stakeholders to continue health services; benefits related to ambulances, camps, outreach, and diagnostics	

	rely on ongoing financial and operational support, limiting independent sustainability	
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Detailed explanation on the rating is provided in the annexure.

**Recommendations:**

- **Planning process**  
 For each intervention, a needs assessment exercise should be conducted, which should feed into the theory of change and design of the interventions. A clear theory of change will help track long-term impact pathways and will help build a strong project design.
- **Develop monitoring systems across programmes:**  
 Each intervention should have a baseline assessment. Monitoring and follow-up processes can be systematized to track long-term outcomes across CSR interventions. This includes submission of quarterly assessments reports or post-training follow-ups, etc. Developing a unified monitoring framework with standardized indicators covering usage rates, learning outcomes of the health training, health improvements, etc. would enable more consistent and comparable outcome measurement across programmes.  
 A digital monitoring dashboard may be introduced to record progress at regular intervals. Longitudinal tracking of beneficiaries for one to two years after programme completion can help assess the durability of outcomes, identify emerging needs, and inform modifications in programme design. Strengthening data quality protocols would also support more robust impact assessments in future.
- **Integrating beneficiary feedback loops:**  
 It is essential for responsive programme management, therefore, regular short surveys, WhatsApp-based grievance channels, and periodic community review meetings can provide real-time insights from users. This feedback should be documented and systematically used for quick course correction and refinement of programme activities.
- **Governance models:**  
 There is a need to strengthen community led governance mechanisms, defining clear accountability structures at village and programme levels. Setting up intervention-specific governance committees can formalise responsibilities for upkeep and oversight.