ऑयल इंडिया
OIL INDIA

HSE Department
Oil India Limited
Duliajan, Dibrugarh, 786602, Assam
Phone : 0374-2800542
Email: safety@oilindia.in

संदर्भ सं./Ref. No.: HSE/E/43C-1/717

दिनांक/Date:30.05.2026

From	:	Executive Director (HSE & ESG)
To	:	Deputy Director General of Forests (Central), Sub Office, Guwahati (under Regional Office, Shillong), 4th Floor, Housefed Building, Rukminigaon, Guwahati-781022. (**Email :** iro.guwahati-mefcc@gov.in, iro.moefcc.ghy@gmail.com)
Subject	:	Submission of Half-yearly (October 2025 to March 2026) compliance reports of the conditions stipulated in the Environment Clearance (EC) granted to Oil India Limited.

Sir,

Reference to above subject, please find enclosed herewith the Half-yearly (**October 2025 to March 2026**) compliance reports of the conditions stipulated in the Environment Clearance (EC) granted to Oil India Limited. List of the EC are tabulated below:

S.No	EC Identification No/File No.	Name of the EC proposal
1.	F. No. J-11011/413/2008-IA II (I) dated 24.01.2011	OCS Bhogpara.,Augmentation capacity of Intermediate Tank Farm (ITF)at Tengakhat, Hapjan Savitri Crude Oil Pipeline in Tengakhat Naharkatiya-Jorajan area.
2.	F. No. J-11011/1251/2007-IA II (I) dated 01.11.2011	Exploratory Drilling of 01 (One) well at Doomdooma-Pengry Area, District Tinsukia, Assam.
3.	F. No. J-11011/682/2008-IA II (I) dated 17.06.2013	Expansion of Gas field Development in Tengakhat-Naharkatia-Jorajan area and Doomdooma Pengry area, Assam by M/s Oil India Ltd.
4.	F. No. J-11011/116/2018-IA II (I) dated 07.01.2020	Onshore Oil & Gas Exploration & Development Drilling and Production in Ningru Oil & Gas Field in Districts Changlang and Namsai for Ningru PML Block (Arunachal Pradesh)
5.	F. No. J-11011/1260/2007-IA II (I) dated 09.04.2020	Onshore Oil & Gas Development Drilling and Production in Mechaki Area covering Mechaki, Mechaki Extension, Baghjan and Tinsukia Extension PMLs on District Tinsukia (Assam).
6.	F. No. J-11011/150/2016- IA II (I) dated 11.05.2020	Extension Drilling & Testing of Hydrocarbons at 7 (seven) Locations under Dibru-Saikhowa

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		National Park Area, North-West of Baghjan PML, District Tinsukia, Assam.
7.	F. No. J-11011/1253/2007-IA II (I) dated 28.12.2020	Onshore Oil & Gas development drilling and production by M/S Oil India Ltd in Dibrugarh district under Dibrugarh, Chabua, Hugrijan and Tinsukia PMLs. (Dibrugarh- Bhogpara)
8.	F. No. J-11011/375/2016-IA II (I) dated 28.12.2020	Onshore Oil & Gas Development Drilling and Production (179 wells and 9 Production Installations) in North Hapjan – Tinsukia – Dhola area under Tinsukia district, Assam
9.	F. No. J-11011/35/2018-IA II (I) dated 26.02.2021	Onshore Oil & Gas development drilling and production by M/S Oil India Ltd. Located in Khagorijan Oil & Gas Field in Dibrugarh & Tinsukia District under Tinsukia PML, Tinsukia Extension PML and Chabua PML District: Dibrugarh, Assam
10.	F. No. J-11011/186/2016-IA II (I) dated 03.03.2021	Onshore Oil & Gas development drilling and production in Borhat-Titlagarh area, Dibrugarh, Sibsagar and Charaideo Districts under Sapkainth, Borhat, Moran Extension and Doomdooma PMLs.
11.	EC22A002AS110311 F. No. J-11011/156/2017-IA II (I) dated 28.11.2022	Oil & Gas development drilling and production (16 exploratory, 73 developmental drilling wells and 9 Production Installations) in Moran Area under Dibrugarh, Sibsagar and Charaideo districts, Assam.
12.	EC23A002AS125690 F. No: J-11011/1254/2007-IA II (I) dated 13.01.2023	Oil & Gas development drilling and production (68 developmental drilling wells and 9 Production Installations) in Khowang Shalmari Area under Dibrugarh, Sibsagar districts, Assam.
13.	EC23A002AS188131 F.No J-11011/1257/2007- IA II (I) dated 17.04.2023	Onshore Oil & Gas development drilling and production (167 wells and 7 production Installations) in Tengakhat-Kathaloni-Dikom (TKD) under Dibrugarh district, Assam.
14.	EC23A002AS198872 F. No. J-11011/388/2016-IA II (I) dated 31.07.2023	Onshore Oil & Gas development drilling (67 wells) in Jorajan Area under Dibrugarh, Charaideo and Tinsukia districts, Assam.
15.	EC23A002AS146942 F.No. J-11011/546/2017-IA(I)	Onshore Oil & Gas development drilling and production (294 wells and 2 Production

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	dated 20.09.2023	Installations) in Naharkatiya-Deohal-Bogapani-Nagajan (NDBN) area under Dibrugarh & Tinsukia districts, Assam.
16.	**EC No:** J-11011/463/2008-I A II(I) DATED 16.01.2012	Baghjan - STF crude Oil Pipeline & Gas Transmission pipeline from Baghjan to CGGS

This is for your kind information please.

Thanking you.

Yours faithfully,
For **Oil India Limited**

कार्यकारी निदेशक (एचएसई एवं ईएसजी)
Executive Director (HSE & ESG)
नोडल अधिकारी (ईसी/एफसी/एनबीडब्ल्यूएल)
Nodal Officer (EC/FC/NBWL)
ऑयल इंडिया लिमिटेड
Oil India Limited

(Arindam Bhattacharyya)
Executive Director (HSE & ESG)
Nodal Officer (EC, FC, NBWL)
For Resident Chief Executive

Encl: As above

Copy:

1. Director, Monitoring Cell, MoEF, Paryavaran Bhawan, CGO Complex, Lodhi Road, New Delhi-110003.
2. Zonal Office, Central Pollution Control Board, "TUM-SIR", Lower Motinagar, Near Fire Brigade Headquarter, Shillong-793014.
3. Chairman, Assam Pollution Control Board, Bamunimaidan, Guwahati-781021, Assam.
4. Chairman, Arunachal Pradesh State Pollution Control Board, Office of the Principal Chief and Secretary (E&F) Conservator of Forests, Govt. of Arunachal Pradesh, Itanagar-791111, Arunachal Pradesh.

- **Name of the Project**: Onshore Oil & Gas Development Drilling and Production in Ningru Oil & Gas Field in Districts Changlang and Namsai for Ningru PML Block (Arunachal Pradesh) by M/s Oil India Ltd.
- **Clearance L. No and date:** J-11011/116/2018-IA-II (I) Dated 07th January, 2020.
- **Period of Compliance Report:** October 2025 to March 2026.
- **Drilling Status:** No wells have been drilled during the above mentioned period.

Sl. No.	Specific condition	Compliance Status
1.	The environmental clearance is subject to obtaining prior clearance from the wildlife angle, including clearance from the Standing Committee of the National Board for Wildlife, as applicable. Grant of environmental clearance does not necessary imply that Wildlife Clearance shall be granted to the project and that their proposal for Wildlife Clearance will be considered by the respective authorities on its merit and decision taken.	**Complied**
2.	Drilling in forest areas shall be started after getting prior permission under the forest (Conservation) Act, 1980.	**Complied** Forest Clearance is obtained.
3.	Necessary permission as mandated under the water (Prevention and Control of Pollution) Act, 1974 and the Air (Prevention and control of Pollution) Act, 1981, as applicable from time to time, shall be obtained from the State Pollution Control Board.	**Will be Complied** Consent To Establish (CTE) and Consent To Operate (CTO) will be obtained before commencement of Drilling activity.
4.	To control source and the fugitive emission, suitable pollution control devices shall be installed to meet the prescribed norms and/or the NAAQS. The gaseous emission shall be dispersed through stack of adequate height as per CPCB/SPCB guidelines.	**Will be Complied** Adequate Stack height will be provided in DG sets as per CPCB guidelines.
5.	Necessary authorization required under the Hazardous and other Wastes (Management and Trans-Boundary Movement) Rules, 2016, Solid Waste Management Rules, 2016 shall be obtained and the provisions contained in the Rules shall be strictly adhered to.	**Will be Complied**

6.	Ambient air quality shall be monitored at the nearest human settlements as per the National Ambient Air quality Emission Standards issues by the Ministry' vide G.S.R. No. 826 (E) dated 16th November, 2009 for PM_{10}, $PM_{2.5}$, SO_2, NO_{X1}, CO_1, CH_4, HC, Non-methane HC etc.	**Will be Complied** Ambient Air Quality is being monitored as per NAAQS, 2009.
7.	During exploration, production, storage and handling, the fugitive emission of methane, if any, shall be monitored using Infrared camera/ appropriate technology.	**Will be Complied** Portable Multi- gas detector & Explosimeter are used to detect fugitive emissions of Methane (if any).
8.	The project proponent also to ensure trapping/storing of the CO_2 generated, if any, during the process and handling.	**Will be Complied** CO_2 generated (if any) will be trapped/stored.
9.	Approach road shall be made pucca to minimize generation of suspended dust.	**Will be Complied** Approach road to the drilling locations and Production Installations will be made pucca to minimize generation of suspended dust.
10.	The company shall make all arrangements for control of noise from the drilling activity. Acoustic enclosure shall be provided for the DG sets along with the adequate stack height as per CPCB guidelines.	**Will be Complied** Regular maintenance of equipment/ machinery are being carried out to minimize noise generation. DG sets are provided with acoustic enclosures and adequate Stack Height as per CPCB guidelines.
11.	Total fresh water requirement shall not exceed 20 cum/day. Prior permission shall be obtained from the concerned regulatory authority. Mobile ETP coupled with RO shall be installed to reuse the treated water in drilling system. Size of the waste shall be equal to the hole volume + volume of drill cutting and volume of discharged mud if any. Two feet free board may be left to accommodate rainwater. There shall be separate storm water channel and rainwater shall not be allowed to mix with wastewater. Alternatively, if possible pit less drilling be practiced instead of above.	**Will be Complied** Total freshwater water consumption will be within the permitted limit. Groundwater abstraction by Oil India Ltd for drilling activities are exempted from obtaining NOC from Central Ground Water Authority (CGWA) as per the Public Note dated 01.08.2023. Copy of the same is enclosed as **Annexure – E.** Mobile ETP coupled with RO will be installed to treat effluent generated from drilling location. Storm water will not be allowed to mix with wastewater.

12.	The company shall construct the garland drain to prevent runoff of any oil containing waste into the nearby water bodies. Separate drainage system shall be created for oil contaminated and non-oil contaminated. Effluent shall be properly treated and treated wastewater shall conform to CPCB standards.	**Will be Complied** Garland drains will be constructed around the drilling location to prevent runoff any oil containing waste into the nearby water bodies. Separate drainage system is created for oil contaminated and non-oil contaminated.
13.	Drill cuttings separate from drilling fluid shall be adequately washed and disposed in HDPE lined pit. Waste mud shall be tested for hazardous contaminants and disposed according to HWMH Rules, 2016. No effluent/drilling mud shall be discharged/disposed off into nearby surface water bodies. The company shall comply with guidelines for disposal of solid waste, drill cutting and drilling fluids for onshore drilling operation notified vide GSR.546 (e) dated 30th August, 2005.	**Will be Complied** Drill cuttings separated from drilling fluid will be adequately washed and disposed in HDPE lined pit. No effluent/ drilling mud will be discharged/disposed off into nearby surface water bodies..
14.	OIL spillage prevention and mitigation scheme shall be prepared. In case of oil spillage/contamination, action plan shall be prepared to clean the site by adopting proven technology. The recyclable waste (oily sludge) and spent oil shall be disposed of to the authorized recyclers.	**Will be Complied** In case of Oil spillage/ contamination, action will be taken as per the Oil spill contingency plan prepared by OIL. Recyclable waste (oily sludge) and spent oil is being sent to Pollution Control Board, Arunachal Pradesh authorized recyclers
15.	The company shall take necessary measures to prevent fire hazards, containing oil spill and soil remediation as needed. Possibility of using ground flare shall be explored. At the place of ground flaring, the overhead flaring stack with knockout drums shall be installed to minimize gaseous emissions during operation.	**Will be Complied** Fixed firefighting system is installed at drilling locations and in case of any oil spillage, necessary remediation actions will be taken as per the Oil Spill Contingency Plan.
16.	The company shall develop a contingency plan for H_2S release including all necessary aspects from evacuation to resumption of normal operations. The workers shall be provided with personal H_2S detectors in locations of high risk of exposure along with self-containing breathing apparatus.	**Will be Complied** Contingency Plan for H_2S release is in place. OIL never encountered H_2S and no such evidence exists in our field of operation. However, multi-gas detector and Self Containing Breathing Apparatus (SCBA) will be kept available to meet the emergency situation, if any.

17.	Blow Out Preventer system shall be installed to prevent well blowouts during drilling operations.	**Will be Complied** Blow Out Preventer (BOP) system is installed to prevent blowouts during drilling operations
18.	Emergency Response Plan shall be based on the guidelines prepared by OISD, DGMS and Govt. of India.	**Will be Complied** OIL has site specific Emergency plan and contingency plan and Disaster management plan (DMP) based on

		relevant and realistic emergency scenarios.
19.	After completion of drilling process, suitable measures shall be taken for well plugging and secured enclosures, and drilling site shall be restored to the original condition. In case of the hydrocarbon not found economically viable. A full abandonment plan shall be implemented for the drilling site in accordance with the applicable Indian Petroleum Regulations.	**Will be Complied** OIL has site specific Emergency plan and contingency plan and Disaster management plan (DMP) based on relevant and realistic emergency scenarios.
20.	All the Commitments made to the public during public consultation/ hearing shall be satisfactorily implemented.	**Being Complied**
21.	At least Rs 5 crore shall be allocated for Corporate Environment Responsibility (CER) and item-wise details along with time bound action plan shall be prepared and submitted to the Ministry's Regional Office.	**Being Complied**
22.	Occupational Health surveillance of the workers shall be carried out as per the prevailing Acts and Rules.	**Will be Complied** Occupational Health Surveillance of workers i.e., PME engaged in drilling operation will be carried out.
23.	Company shall prepare operating manual in respect of all activities, which would cover all safety & environment related issues and measures to be taken for protection. One set of environmental manual shall be made available at the drilling site/project site. Awareness shall be created at each level of the management. All the schedules and results of environmental monitoring shall be available at the project site office. Remote monitoring of site should be done.	**Complied** SOPs for all the operations covering safety and environment related issues are prepared. OIL has prepared Environmental manual which is made available at the drilling location. Copy of the same is enclosed **Annexure – B**. Also, all the environmental monitoring reports related to ambient air quality, Stack Gas monitoring, ETP effluent, Noise level will be maintained at the drilling location.

Annexure - E

F. No- CGWA-26/7/2021-CGWA

Government of India
Ministry of Jal Shakti

Department of Water Resources, River Development & Ganga Rejuvenation
Central Ground Water Authority

PUBLIC NOTICE No. 11/2023

New Delhi, Dated 1st August, 2023

(In supersession of the Public Notice no. 06/2023 dated 11.05.2023 regarding "Exemption to obtain NOC for ground water well drilling used for scientific study by Government Organisation/Institute")

Sub: Exemption to obtain NOC for ground water well drilling used for scientific study by Government Organisation/Institute – reg.

Whereas the Central Government constituted the Central Ground Water Authority (hereinafter referred to as the Authority) vide notification Number S.O. 38(E), dated 14th January, 1997, followed by notification number S.O. 1124(E) dated 6th November, 2000 and S.O. 1121 (E) dated 13th May, 2010 of the Government of India in the Ministry of Environment & Forests, for the purposes of regulation and control of ground water development and management in the whole of India and to issue necessary regulatory directions.

And whereas, the Ministry of Jal Shakti has issued 'Guidelines to control and regulate ground water extraction in India' vide notification number S.O. 3289(E) dated 24th September, 2020, notified by Department of Water Resources, River Development and Ganga Rejuvenation, Ministry of Jal Shakti.

And whereas an Amendment Notification dated 29.03.2023 has been further issued by Ministry of Jal Shakti, published in the Gazette of India, Extraordinary, Part II, section 3, sub-section (ii), vide Notification number S.O. 1509 (E).

This is to bring to the notice that-:

- Government organizations/Institutes dealing in ground water well drilling, such as drilling of Exploratory well, Piezometer, Observation Well, Pilot well etc. for scientific studies and exploration activities, **and such PSUs like ONGC, Oil India Ltd. etc. involved in research and exploration activities requiring site-specific temporary borewells,** shall remain exempted from seeking of No Objection Certificate for Ground Water extraction for the period of scientific studies, from Central Ground Water Authority.
- However, such Government organizations/Institutes shall be required to submit details of the drilling to the concerned Regional Office of CGWB.
- In case, another agency uses the well for ground water extraction, after the completion of scientific studies and exploration activities, the same shall be required to obtain No Objection Certificate from CGWA as per the due process.

Member Secretary
CGWA

Common Environment Management Plan for Onshore Oil & Gas Drilling Activity

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1.0 INTRODUCTION:

OIL INDIA LIMITED (OIL), a Government of India Maharatna Enterprise, is currently engaged in carrying out hydrocarbon exploration and production activities mostly in its operational areas in Upper Assam, Arunachal Pradesh and Mizoram in the North Eastern part of India. OIL is also undertaking hydrocarbon exploration activities in few Indian states and few overseas countries. Oil India Limited was incorporated on 18th February 1959 to expand and develop the newly discovered oil fields of Naharkatia and Moran in the Indian North East. In 1961, it became a joint venture company between the Indian Government and Burmah Oil Company Limited, UK. In 1981, OIL became a wholly owned Government of India enterprise. Today, OIL is a premier Indian National Oil Company engaged in the business of exploration, development and production of crude oil and natural gas, transportation of crude oil and production of LPG.

Govt. of India and Assam has awarded Petroleum Mining Leases (PML) to OIL for exploration and development of oil & gas at Dibrugarh, Chabua, Tinsukia, Hugrujan, Naharkatiya Extn, Dholiya and Dumduma areas including the adjoining areas in Dibrugarh, Tinsukia and Sibsagar Districts.

2.0 Environmental Management Plan

This Environmental Management Plan and Monitoring Framework is a site-specific document for the drilling activities that have been developed to ensure that OIL can implement the project in an environmentally conscious manner and where all contractors, understand the potential environmental risks arising out of the proposed project and take appropriate actions to properly manage such risk.

This EMP will be an overview document that will guide environmental management of all aspects of OIL's activities i.e. construction and operation of drilling wells. This EMP will be backed up by more specific Environmental Action Plans, Procedures and Bridging Documents.

The EMP describes the actions to be adopted in terms of:

- National Policies and Regulations;
- Best Practices and guides; and
- Local Environmental and Social Sensitivities.

The Environment Policy of OIL is presented below.

ऑयल इंडिया लिमिटेड

Oil India Limited

ENVIRONMENT POLICY

Oil India Limited is guided by its Core purpose of "being a fastest growing energy company with global presence and providing value to all stake holders". Currently as an E&P company, OIL has a pan India presence with overseas foot prints.

In alignment with the core purpose, OIL is deeply committed to the Preservation of Environment & Ecology, Sustainable Development, Enrichment of the quality of life of Employees, Customers and the Community around its operational areas.

In pursuance of the above mentioned policy OIL is committed to:

1. Ensure an environment friendly work place in all our operations.

2. Comply with relevant Environmental Laws and Regulations in OIL's operations, prescribed by the statutory bodies..

3. Follow a systemic approach to Environmental Management Plan in order to achieve continual performance improvement.

4. Adopt technologies that conserve energy, prevent pollution, maximize recycling, reduce wastes, discharge and emissions.

5. Develop green belts and plant trees in and around OIL's operational areas in harmony with nature.

6. Protect aesthetic, cultural, social patterns and historical characteristics in and around OIL's operational areas.

7. Promote a culture among OIL employees, contractors and all the stake holders associated with OIL for shared responsibility towards environmental protection.

8. Promote and nurture a healthy, safe & productive environment in its area of operations.

(S.RATH)

DIRECTOR (OPERATIONS)

Effective Date: 25th April, 2012

Approved in the 420th Board Meeting

3.0 IMPACT ASSESSMENT

The potential impacts arising due to the construction and operation of the drilling activitiesare given below:

3.1 Air Quality: The operation of DG/GG sets, movement of vehicles and machineries during construction and drilling at drill sites will result in the generation of air pollutants viz. PM, NOx and SOx that may affect the ambient air quality temporarily. Air pollutants like particulate matter, hydrocarbons and NOx will also be generated during drilling operations.

3.2 Noise Quality: Operation of heavy machinery/equipments and vehicular movement during site preparatory and road strengthening/construction activities may result in the generation of increased noise levels. Operational phase noise impacts are anticipated from therunning of drilling rig and ancillary equipment *viz*. shale shakers, mud pumps and diesel generators, gas generators.

3.3 Soil Quality: Stripping of top soil will affect the soil fertility of the well sites temporarily. Potential adverse impacts on soil quality may also result from improper storage and handling of fuel, lubricants, drilling mud and drill cuttings.

3.4 Water Quality and Hydrogeology: All wastewater discharged from the drilling operations will be treated in the ETP and discharges will conform to CPCB standards. As the volume of water to be discharged is small, it is anticipated to cause minor increase in pollution load for specific parameters in receiving water bodies.Uncontrolled surface runoff from the drill sites may compose of waste fluids or storm water mixed with oil and grease and may pollute the surface water quality. However, the surface runoff will be treated with sedimentation tank and oil water separator at site.

3.5 Biological Environment:

The existing vegetation at the proposed drill sites, approach roads and RoU of the pipeline will be felled for site development.Noise generated from drilling operations and vehicular movement within the drill sites and approach roads may affect the reptiles, birds and mammals adversely and may result in their moving away from the project area for a temporary period. OIL will obtain Forest Clearance from MoEF&CC for drilling within the forestlands; all the conditions mentioned in the forest clearance would be complied. Surface runoff from the drill sites contaminated with sediment, may reachsurface water channels and increase the suspended solids load of the channel water. Increaseof suspended solid will increase the turbidity of river water that ultimately will adversely affect the DO level in the water. The turbid water and lower DO may affect the primary productivity of the impacted areas of the rivers. The process effluent will be adequately treated in the ETP to meet the industrial effluent discharge standards. The discharge of treated effluent is not expected to cause perceptible changes in the water quality of the receiving stream.

3.6 Socio-Economic Environment: Approximately 3 ha. land would be required for each well.Land will be purchased from local communities however; no physical displacement during land procurement is anticipated. Additionally, land will also be procured for construction of 100-200 m approach road to the drill site from existing roads. Anticipated number of families directly impacted would be limited to 2-5 nos. for each of the drill sites. The dependency of the landowner in case of generation of livelihood is limited as the land is classified as monocropped agricultural land.

OIL/its contractors would endeavour to provide maximum employment to the local people; however, certain percentage of semi-skilled and highly skilled migrant labour would be used by contractors for manning technical activities. It is anticipated that occasional conflicts would arise with the local community over the recruitment of migrant workers. Discomfort due to dust and noise to adjoining communities, influx of people are likely to occur.

The construction phase of the project is likely to generate both direct and indirect opportunities for employment. The estimated direct employment would be approximately 50 un-skilled workers during the peak construction phase that will primarily sourced from nearby areas. Indirect employment would be primarily in the supply chain as vendors, which are anticipated to be set up to support the construction.

3.7 Impact on Community Health & Safety: Community health and safety of inhabitants residing close to the proposed well sites stand to get affected from frequent heavy vehicular movements along village access roads and due to noise from drilling rig operations, movement of heavy vehicles during construction etc.

4.0 DETAIL ENVIRONMENTAL MANAGEMENT PLAN

4.1 Air Quality Management Plan

- Vehicles delivering raw materials like fine aggregates will be covered to prevent fugitive emissions.
- Sprinkling of water on earthworks, material haulage and transportation routes on a regular basis during construction and decommissioning phase of the wells.
- Flare stacks of adequate height would be provided.
- DG/GG set stacks would have adequate height, as per statutory requirements, to be able to adequately disperse exhaust gases
- Periodic monitoring of DG/GG set stack emission will be carried out in accordance with the Environmental Monitoring Plan to assess compliance with CPCB DG set exhaust standards.

4.2 Noise Management Plan

- Selection and use of low noise generating equipment with in-built engineering controls viz. mufflers, silencers, etc.
- All DG/GG sets would be provided with acoustic enclosures.
- Appropriate PPEs (e.g. ear plugs) will be used for by workers while working near high noise generating equipment.

- All vehicles utilized in transportation of raw materials and personnel will have valid Pollution under Control Certificates (PUC).
- All high noise generating equipment will be identified and subjected to periodic preventive maintenance.
- No night time operation of vehicles and construction activities will be undertaken.

4.3 Soil Quality Management Plan

- Drip trays to be used during vehicular/equipment maintenance and during re-fuelling operations.
- Spill kits will be made available at all fuel and lubricant storage areas. All spills/leaks contained, reported and cleaned up immediately.
- Dedicated paved storage area will be identified for the drilling chemicals, fuel, lubricants and oils within the drill sites.
- 1.5 mm HDPE lined pits will be considered for the disposal of unusable drilling mud cuttings and drilling wastewater etc.

4.4 Surface Water Quality Management Plan

- Levelling and grading operations will be undertaken with minimal disturbance to the existing site contours thereby maintaining the general slope and topographical profile of the site.
- During site preparation and construction, surface water run-off will be channelized through appropriately designed drainage system.
- Sediment filters and oil-water separators will be installed to intercept run-off and remove sediment before it enters water courses.
- Domestic wastewater generated from drill sites will be treated through septic tank and soak pit system and then discharged.
- Process wastewater would be treated in Effluent Treatment Plant (ETP)at drill sites.

4.5 Ground Water Quality Management Plan

- Water based mud would be used as a drilling fluid for the proposed project.
- Eco-friendly synthetic based mud if required for deeper sections, will be used after providing intimation to the Pollution Control Board;
- The drill cutting along with spent mud will be stored in HDPE lined pit.

4.6 Waste Management Plan

- Use of low toxicity chemicals for the preparation of drilling fluid.
- Management of drill cuttings, waste drilling mud, waste oil and domestic waste, wastewater in accordance with Standards for Emission or Discharge of Environmental Pollutants from Oil Drilling and Gas Extraction Industry of CPCB as modified in 2005.
- The hazardous waste (waste and used oil) will be managed in accordance with Hazardous Waste (Management, Handling & Transboundary Movement) Rules, 2016.
- The kitchen waste will be disposed in nearest municipal/village dumping site on a daily basis through approved waste handling contractors.
- The sewage generated will be treated through septic tank and soak pit system.
- Used batteries will be recycled through the vendors supplying lead acid batteries as required under the Batteries (Management & Handling) Rules, 2001.
- The drilling cuttings pit will be bunded and kept covered using tarpaulin sheets during monsoon.

4.7 Wildlife Management Plan

- Movement of heavy vehicles will be restricted at night time, especially if access roads pass though forest areas, as most of the mammals movement occurs during night;
- Noise levels at the drill siteswill be controlled through selection of low noise generating equipment and installation of sufficient engineering controls viz. mufflers, silencers etc.
- No temporary electric supply connection line from the grid will be laid for the proposed project activity. All electric requirements will be supplied from the internal DG sets.
- OIL will have to take Forest Clearance from MoEFCC for development of drill sites, access roads and laying of pipeline within forest areas.

4.8 Road Safety & Traffic Management Plan

- The condition of roads and bridges identified for movement of vehicles and drilling rig will be assessed and if required strengthened by OIL to ensure their safe movement.
- Precautions will be taken by the contractor to avoid damage to the public access routes including highways during vehicular movement.
- Traffic flows will be scheduled wherever practicable during period of increased commuter movement.

4.9 Occupation Health & Safety Management Plan

- All machines to be used in the construction will conform to the relevant Indian Standards (IS) codes, will be kept in good working order, will be regularly inspected and properly maintained as per IS provisions and to the satisfaction of the site Engineer.
- Hazardous and risky areas, installations, materials, safety measures, emergency exits, etc. shall be appropriately marked.

4.10 Management of Social issues and concerns

- People from adjoining areas especially given job preference through local contractors according to the skill sets possessed.
- Prior to the commencement of the proposed activity, a consultation program will be conducted by OIL with the target groups and local authorities. The primary objective of such consultation will be to share with the concerned villagers/stakeholders the objective of the proposed project associated impacts and their mitigation.
- OIL will give more emphasis and priority on periphery development, development of health facilities and provision for drinking water facility as per Corporate Social Responsibility (CSR) Plan.
- The drill sites would be fenced and gates would be constructed so that the children are refrained from straying into the site.

4.11 Emergency Response Plan

- Drilling rig and related equipment to be used for drilling will be conformed to international standards specified for such equipment.
- Blow-out preventers and related well control equipment shall be installed, operated, maintained and tested generally in accordance with internationally recognized standards.
- Appropriate gas and leak detection system will be made available at each of the drill sites.
- Adequate fire-fighting equipment shall be provided at each drilling site.

The environmental mitigation measures and plans are presented in form of a matrix according to the sequential flow of activities in the project life cycle. The matrix focuses on strategies to be adopted for safe guard of the environment from possible impacts resulting out of the project activities. The strategies have further been detailed out as management procedures and programmes in subsequent sections.

The EMP helps establish the linkage between the activities environmental impacts and mitigation measures and presents the monitoring framework i.e. the Environmental Performance Indicator (EPI) No. as well as the Environmental Quality Indicator (EQI).

5.0 Environment Management Matrix

S No	Activity	Ref	Aspect	Impact	Mitigation Measures	Monitoring	Timing/ Frequency	Responsible Party	Related Plans
1.	Physical Presence of drill site, rig and other machinery.	1.1	Change in visual characteristics of the area due to installation of drilling setup	Temporary change in landscape	On completion of works (in phases) all temporary structures, surplus materials and wastes will be completely removed. Only structure required for safety purposes would be retained on the bare drill site.	Site Inspection	Construction &Drilling	OIL/Contractor	Waste Management Plan
		1.2	Increase of illumination at night time due to installation of drilling setup	Temporary disturbance of the nearby villagers	Appropriate shading of lights to prevent scattering	Grievance records/ Consultation with Villagers	Construction &Drilling	OIL/Contractor	Management of social issues & concerns
		1.3	Influx of man power & immigrant labour force to nearby villages	Possibility Cultural and behavioural conflict	Preference used of local labour forces to the extent possible	Grievance records	Construction &Drilling	OIL/Contractor	Management of social issues & concerns
2.	Storage & Handling of Materials & Spoils	2.1	Emission of fugitive dust from loading & unloading operation	Temporary impact on air quality especially SPM	All loading and unloading activities to be carried out as close as possible to the storage facilities.	Site Inspection	Construction &Drilling	OIL/Contractor	Air Quality Management
		2.2	Accidental spillage of oil & chemicals	Potential contamination surface water body resulting impact on aquatic ecosystem	All spills to be reported and contained to prevent entry of spilled chemicals/fuels to any surface water body or drainage channel	Records of spills/Community Grievances	Construction &Drilling	OIL/Contractor	Surface water quality management plan, Wildlife Management Plan
				Potential impact on soil quality	All spills to be reported and remedial measures to be taken for clean-up of the spill.	Records of Spills/Site Inspection	Construction &Drilling	OIL/Contractor	Spill management plan

S No	Activity	Ref	Aspect	Impact	Mitigation Measures	Monitoring	Timing/ Frequency	Responsible Party	Related Plans
3.	Transport of Materials, Spoils and Machinery	3.1	Emission of gaseous pollutants from vehicle during transportation of materials, spoils and machinery	Temporary deterioration on air quality along transport route	All diesel-powered equipment will be regularly maintained and idling time reduced to minimise emissions; Vehicle / equipment air emissions will be controlled by good practice procedures (such as turning off equipment when not in use); Vehicle / equipment exhausts observed emitting significant black smoke in their exhausts will be serviced/ replaced	Records and Site Inspection	Construction &Drilling	OIL/Contractor	Air Quality Management plan
		3.2	Noise emission during transport of materials, spoils and machinery	Temporary deterioration in ambient noise along the transportation route	Undertake preventive maintenance of vehicles and machinery to reduce noise levels. Restriction on unnecessary use of horns by trucks and vehicle in settlement area	Site Inspection/Records of repairs	Construction &Drilling	OIL/Contractor	Noise Quality Management Plan
4.	Operation & maintenance of rig and associated machinery.	4.1	Emission of air pollutant from DG/GG sets	Temporary impact on air quality due to increase in concentration of gaseous pollutants e.g. NOx , HC	Preventive maintenance of DG sets to be undertaken as per manufacturers schedule	Site Inspection/Records of repairs	Drilling	OIL/Contractor	Air Quality Management plan
		4.2	Emission of Noise from DG/GG sets	Temporary increase of ambient as well a	All workers working near high noise generating equipment to be provided	Recording of Noise	Drilling	OIL/Contractor	Noise Quality Management Plan and

S No	Activity	Ref	Aspect	Impact	Mitigation Measures	Monitoring	Timing/ Frequency	Responsible Party	Related Plans
				work place noise level	with Personal Protective equipment Preventive maintenance of machinery to be undertaken as per manufacturers schedule Install sufficient engineering control (mufflers) to reduce noise level at source				Occupational Health & Safety Management Plan
		4.3	Emission of noise from operation of the rig	Temporary increase of ambient as well a work place noise level	All workers working near high noise generating equipment to be provided with Personal Protective equipment Preventive maintenance of machinery to be undertaken as per manufacturers schedule	Site Inspection	Drilling of Wells	OIL/Contractor	Noise Quality Management Plan and Occupational Health & Safety Management Plan
		4.4	Abstraction of ground water for project usage	Depletion of ground water resources	Optimize use of water during drilling operations	Record Keeping and Auditing	Construction &Drilling	OIL/Contractor	None
		4.5	Noise from mud pump during preparation of drilling mud	Temporary increase of ambient & work place noise level	Preventive maintenance of machinery to be undertaken as per manufacturers schedule	Recording of Noise	Drilling of Wells	OIL/Contractor	Noise Quality Management Plan and Occupational Health &Safety Management

S No	Activity	Ref	Aspect	Impact	Mitigation Measures	Monitoring	Timing/ Frequency	Responsible Party	Related Plans
					All workers working near high noise generating equipment to be provided with Personal Protective equipment				Plan
		4.6	Accidental spillage of chemicals during preparation drill mud	Contamination of soil resulting loss of soil living organism	Manage spills of contaminants on soil	Records of spills	Drilling of Wells	OIL/Contractor	Spill Management plan
		4.7	Accidental spillage of chemicals during preparation drill mud	Potential impact on surface water quality and aquatic ecosystem	All spill to be contained so that it does not reach any surface water body or drainage channels	Records of spills	Drilling of Wells	OIL/Contractor	Surface water quality management plan
5.	Operation & maintenance of Vehicles	5.1	Emission of Noise from vehicles	Temporary increase of noise level in areas abutting transport route	Preventive maintenance of vehicles to be undertaken as and when required	Maintenance Records	Construction &Drilling	OIL/Contractor	Noise quality management plan
		5.2	Emission of gaseous air pollutant from vehicles	Temporary deterioration air quality in areas abutting transport routes	Preventive maintenance of vehicles to be undertaken as and when required	Site Inspection/Records of repairs	Construction &Drilling	OIL/Contractor	Air quality management plan
		5.3	Spillage of fuels & lubricants from vehicles	Contamination of soil resulting loss of soil living organism	Adopt best practices e.g. use pumps and dispensing nozzle for transfer of fuel, use of drip trays. Etc.	Site Inspections/Audits	Construction &Drilling	OIL/Contractor	Spill Management plan
				Impact on surface water quality and	The drainage system on site to be provided with Sedimentation tank and Oil-	Site Inspection/Audits	Drilling	OIL/Contractor	Surface water quality management

S No	Activity	Ref	Aspect	Impact	Mitigation Measures	Monitoring	Timing/ Frequency	Responsible Party	Related Plans
				aquatic ecosystem	water Separator to prevent contamination especially oil and grease from being carried off by runoff.				plan and Spill Management plan
6.	Casing & cementing of well	6.1	Noise from machinery during preparation of cement slurry	Temporary increase of ambient noise level	Install sufficient engineering control on equipment and machineries (like mufflers in DG sets) to reduce noise and vibration emission levels at source, carry out proper maintenance and subject them to rigid noise and vibration control procedures.	Site Inspection	Drilling of Wells	OIL/Contractor	Noise quality management plan
		6.2	Loss of drilling mud and cement slurry during casing of well	Potential contamination of ground water aquifer	Proper engineering controls during cementing operation to prevent migration of drilling mud and cement slurry into ground water aquifer	Site Inspection	Drilling of Wells	OIL/Contractor	Ground water quality management plan
7.	Temporary storage, handling & disposal of process waste	7.1	Accidental spillage of process waste (unused cement slurry, return mud & drill cuttings) at the temporary storage site	Potential for contamination of soil and ground water	Proper engineering controls for the drilling and cementing operations;	Drilling and Decommissioning Phases	Drilling and Decommissioning Phases	OIL/Contractor	Ground water quality management plan
		7.2	Surface runoff from temporary storage site of drill cuttings & unused mud into surface water bodies	Impact on surface water quality and aquatic ecosystem	All Temporary waste storage area will have proper bunds to prevent any escape of contaminated runoff Ensure that any runoff from such temporary storage area	Site Inspection and Record keeping	Drilling and Decommissioning Phases	OIL/Contractor	Surface water quality management plan and Spill Management plan

S No	Activity	Ref	Aspect	Impact	Mitigation Measures	Monitoring	Timing/ Frequency	Responsible Party	Related Plans
					are channelized into ETP				
		7.3	Accidental leakage/spillage of oils and lubricants and fuel from temporary storages	Contamination of soil resulting in loss of soil living organism	Dispose process waste and domestic waste as per regulation/ best practices Dispose debris and waste in designated areas and as per plan to prevent degradation of land	Site Inspection	Construction &Drilling	OIL/Contractor	Waste Management Plan and Spill Management plan
		7.4	Accidental leakage/spillage of oils and lubricants from temporary storages	Contamination of surface water resulting in deterioration of surface water quality and adverse impact on aquatic ecosystem	All chemical and fuel storage areas will have proper bunds so that contaminated run-off cannot escape into the storm-water drainage system. The waste pits (waste water and drill cuttings) will be bounded and covered by tarpaulin sheet to prevent mixing of runoff water with waste water and leachate from waste pit and also reduce the volume of waste water.	Site Inspection	Construction &Drilling	OIL/Contractor	Waste Management Plan and Spill Management plan
		7.5	Disposal/spillage of spent oils & lubricants into environmental media	Contamination of soil resulting loss of soil living organism Contamination of surface water resulting deterioration of surface water quality and aquatic	Ensure recycling of spent oil & lubricant through authorized dealer	Site Inspection	Construction &Drilling	OIL/Contractor	Waste Management Plan and Spill Management plan

S No	Activity	Ref	Aspect	Impact	Mitigation Measures	Monitoring	Timing/ Frequency	Responsible Party	Related Plans
				ecosystem					
		7.6	Disposal of used battery & spent filters in environmental media	Potential for contamination of soil, ground water and surface water body	Ensure recycling of waste through authorized waste recycler	Site Inspection and Record Keeping	Construction &Drilling	OIL/Contractor	Waste Management Plan and Spill Management plan
		7.7	Offsite disposal of metallic, packing, scrap	Localized visual impacts		Site Inspection and Record Keeping	Construction &Drilling	OIL/Contractor	Waste Management Plan
8.	Testing & Flaring of natural gas	8.1	Emission of air pollutants from flare stack at drill site .	Temporary localized deterioration air quality (NOx, HC)	Proper engineering controls to ensure complete combustion of gas Location of Flare stack to be chosen considering the sensitive receptors adjoining the site	Engineering Designs /Site inspections	Construction & Drilling	OIL S& E Teamand Drilling team	Waste Management Plan
9.	Storage of materials (equipment, chemicals, fuel)	9.1	Accidental spillage during storage and handling of materials	Potential for contamination of soil & ground water	Impervious storage area, especially for fuel & lubricant, chemical, hazardous waste, etc.	Site Inspection	Construction &Drilling	OIL/Contractor	Spill Management plan
				Safety concerns for workers involved in handing of hazardous materials	Personal protective equipment to be provided to workers involving in handling of hazardous materials	Site Inspection	Construction &Drilling	OIL/Contractor	Health and Safety Plan

S No	Activity	Ref	Aspect	Impact	Mitigation Measures	Monitoring	Timing/ Frequency	Responsible Party	Related Plans
10.	Technical Emergencies	10.1	Probability of accidental leakage of gas/ liquid hydro-carbons due to failure of safety devices	Potential adverse impact on personnel, environment & assets	Proper engineering controls to prevent leakage of sour gases Obtain an early warning of emergency conditions so as to prevent a negative impact on personnel, the environment, and assets Safeguard personnel to prevent injuries or loss of life by either protecting personnel from the hazard and/or evacuating them from the facilities Minimize the impact of such an event on the environment and the facilities by mitigating the potential for escalation and, where possible, containing the release Develop evacuation procedures to handle emergency situations.	Site Inspection	Drilling	OIL/Contractor	Emergency Response Plan
11.	Dismantling of rig & associated machineries	11.1	Emission of noise during dismantling of rig	Temporary deterioration of ambient noise quality resulting in discomfort	All noise generating activities will be restricted during day time	Site Inspection	Well Decommissioning Phase	OIL/Contractor	Noise quality management plan
		11.2	Generation of waste during dismantling of rig	Temporary visual impacts	Storage of waste in designated areas only recyclable waste should be recycled through authorized	Site Inspection	Well Decommissioning Phase	OIL/Contractor	Waste Management Plan

S No	Activity	Ref	Aspect	Impact	Mitigation Measures	Monitoring	Timing/ Frequency	Responsible Party	Related Plans
					water recycler				
		11.3	Disposal/spillage of spent oils &lubricants into environmental media	Contamination of soil resulting loss of soil living organism Contamination of surface water resulting deterioration of surface water quality and aquatic ecosystem	Manage spills of contaminants on soil	Site Inspection and Record keeping	Well Decommissioning Phase	OIL/Contractor	Waste Management Plan
12.	Transportation of drilling facilities	12.1	Emission of gaseous air pollutant during transportation of drilling facilities	Temporary localized deterioration of air quality due to emission gaseous pollutants	Vehicle / equipment air emissions will be controlled by good practice procedures (such as turning off equipment when not in use); and Vehicle / equipment exhausts observed emitting significant black smoke in their exhausts will be serviced/ replaced	Site Inspection and Record keeping	Well Decommissioning Phase	OIL/Contractor	Air quality management plan
		12.2	Fugitive emissions due to re-entrainment of dust during transport of drilling facilities	Temporary localized deterioration of air quality due to increase in SPM levels	Approach road to be sprinkled daily with water	Site Inspection	Well Decommissioning Phase	OIL/Contractor	Air quality management plan
		12.3	Emission of noise during transport of drilling facilities	Temporary deterioration of noise quality	Restrict all noise generating operations, except drilling, to daytime	Site Inspection	Well Decommissioning Phase	OIL/Contractor	Noise quality management plan

S No	Activity	Ref	Aspect	Impact	Mitigation Measures	Monitoring	Timing/ Frequency	Responsible Party	Related Plans
					Restriction on unnecessary use of horns by trucks and vehicle in settlement area				

6.0 Summary and Conclusion

The EMP has been made to assess the potential significant adverse environmental effects due to the proposed construction and drilling activities.

Mitigation measures have been proposed as part of EMP to minimize adverse environmental impacts, if any. Risk assessment includes Jet Fire and Vapour Cloud Explosion for blowout of wells. The existing Emergency Management Plan of OIL will be extended to this project, strengthened as necessary and implemented in the event of any emergency arising due to above mentioned risks.

The present impact assessment study indicates that the overall impact from the proposed project will be short to medium term, reversible, localised and are not expected to contribute significantly to the surrounding environment. Also, with the implementation of the pollution control and strengthen the existing environment management measures, these anticipated impacts due to proposed site preparation and drilling operation and decommissioning activities of the proposed project will be mitigated. Summary of impact significance without mitigation measures and with mitigation measures is presented at the table below.

Summary of Impact Significance without and with Mitigation Measures

Impact	Impact significance without mitigation measures	Impact significance with mitigation measures
Aesthetic & visual	Moderate	Minor
Land Use	Negligible	-
Soil Quality	Moderate	Minor
Air Quality	Moderate	Minor
Noise Quality	Major	Moderate
Road & Traffic	Moderate	Minor
Surface Water Quality	Moderate	Moderate
Ground water resource	Minor	Minor
Ground Water Quality	Moderate	Minor
Terrestrial Ecology	Negligible	-
	Minor	Minor
	Major	Moderate
Aquatic Ecology	Moderate	Moderate
Livelihood & Income generation	Moderate	Moderate
Conflict with local people	Moderate	Moderate
Benefit to Local Enterprises	Positive	-
Employment Generation	Positive	-
Occupational health & safety	Moderate	Minor
Community health & safety	Moderate	Minor

OIL will also ensure that the environmental performances of all the activities are monitored throughout execution of the project during site preparation, drilling and decommissioning phases. Monitoring will be carried out for ambient air quality, stack emission, noise quality, quality of treated effluents, surface and groundwater qualities, waste generated and disposed etc. and verified that they meet the prescribed standards. OIL will continue to report environmental performance and submit monitoring reports regularly to statutory authorities.

The effective management system coupled with monitoring of environmental components and efforts for continual improvements will result in satisfactory environmental performance of the proposed oil and gas drilling and development project.

THANKS YOU