

16th April 2026

To
The Inspector General of Forests,
Integrated Regional Office,
Vijayawada Green House Complex,
Vijayawada – 520010, Andhra Pradesh
Email: iro.vijayawada-mefcc@gov.in

Sir/ Madam,

Subject: Six monthly progressive Environmental compliance report for the period Oct 2025 to Mar 2026
for Offshore PKGM-1 Block and Ravva Onshore facilities, Andhra Pradesh.

References:

1. J - 11011/11/90-IA dated 30th July 1990 (preliminary clearance) for Oil Production from Ravva Off-Shore Field in Godavari Basin and On-Shore Field Terminal at S'Yanam.
2. J - 11011/6/91-IA dated 19th December 1991 (preliminary clearance) for Oil/Gas Production off-Shore Field and On-Shore Field Terminal at S'Yanam.
3. J-110/2/59/95-1A-II (I), dated 3rd July 1996 for Oil Production from Ravva Off-Shore Field in Godavari Basin and On-Shore Field Terminal at S'Yanam.
4. J-11011/84/2000-IA II dated 30th January 2001 for Ravva Satellite Gas Development Project.
5. J-11011/50/2001-IA II dated September 17, 2001, for Exploratory Drilling of 8 wells for oil and gas in the PKGM-1 offshore block in East coast of India in the Bay of Bengal.
6. J-11011/207/2004-IA(II) I dated 4th August 2005 for Infill Well Drilling (Development Wells) Ravva Oil Field (PKGM-1) Block in KG Offshore Basin, Bay of Bengal, Andhra Pradesh.
7. 10-28/2004-IA-III dated 31st March 2006 for Exploratory drilling in onshore area of PKGM-1 Block located in Cheriyanam village, Uppalaguptam Mandal in East Godavari District.
8. J-11011/81/2013-IA II (I) dated 23rd February 2015 for Oil and Gas Development in existing Ravva Off-shore Field, PKGM-1 Block, located off S'Yanam in the Bay of Bengal, East Godavari District.
9. II-20/2015-IA. III dated 25th May 2017 CRZ Clearance for expansion of Oil & Gas Development facilities in existing Ravva Off-shore Field, PKGM-1 Block, off Surasaniyanam in Bay of Bengal, East Godavari District, Andhra Pradesh.
10. IA-J-11011/41/2018-IA/II (I) dated 15th October 2020 Expansion of Offshore and Onshore Oil and Gas Exploration, Development & Production in Ravva Field, PKGM-1 Block of 331.26 km² located near Surasaniyanam Village in Krishna-Godavari Basin, East Godavari District, Andhra Pradesh.

VEDANTA LIMITED

Cairn Oil & Gas: Ravva Onshore Terminal, Surasani Yanam-533212, Uppalaguptam Mandal, Dr. B.R. Ambedkar Konaseema District, Andhra Pradesh, India | Mobile No.9849623600 | www.cairnindia.com

Registered Office: Vedanta Limited, 1st Floor, 'C' wing, Unit 103, Corporate Avenue, Atul Projects, Chakala, Andheri (East), Mumbai – 400093, Maharashtra, India | T +91 22 664 34500 | F +91 22 664 34530 | www.vedantalimited.com

CIN: L13209MH1965PLC291394

Please find enclosed a copy of the six-monthly progressive compliance report for the period Oct 2025 to Mar 2026 to the conditions stipulated in the above-mentioned Environmental Clearances and Coastal Regulations Zone clearances. The EC and CRZ compliance reports have been uploaded in the APPCB and Cairn Web portals.

Thanking You,

Yours faithfully,

For Vedanta Ltd. (Div.: Cairn Oil & Gas)

**Dr BR
Jat**

Digitally signed by Dr BR
Jat
DN: cn=Dr BR Jat,
o=Cairn Oil and Gas,
ou=Vedanta Limited,
email=bhomaram.jat@ca
irnindia.com, c=IN
Date: 2026.05.01
14:36:30 +05'30'

Dr. Bhoma Ram Jat
Chief Environment Officer

Copy to:

1. Addl. Principal Chief Conservator of Forests (C), MoEFCC, 1st & 2nd Floor, HEPC Building, No. 34, Cathedral Garden Road, Nungambakkam, Chennai - 600 034. Email: ro.moefccc@gov.in
2. Regional Directorate Chennai, 77-A, Padi, Ambattur Industrial Estate, Chennai – 600058 Email: rdchennai.cpcb@gov.in
3. Environmental Engineer, Andhra Pradesh Pollution Control Board, Regional Office, H.No.2-532, Santhi Nagar, Near DIC Office, Ramanayapeta, Kakinada – 533 005. Email: rokkd-ee1@appcb.gov.in
4. Member Secretary, Andhra Pradesh Pollution Control Board, D.No. 33-26-14 D/2, Near Sunrise Hospital, Pushpa Hotel Centre, Chalamalavari Street, Kasthuribaipet, Vijayawada – 520 010. Email: membersecy@appcb.gov.in

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CIN: L13209MH1965PLC291394

COMPLIANCE STATUS OF CONDITIONS OF MOEF&CC DURING ENVIRONMENTAL CLEARANCE OF THE PROJECT

Name of the Project: Oil Production from Ravva Off-Shore Field in Godavari Basin and On-Shore Field Terminal at S'Yanam.

Clearance Letter No: J - 11011/11/90-IA-II dated 30th July 1990 (preliminary clearance)

Period of Compliance Report: Progressive EC Compliance Reporting period is October 2025 to March 2026.

Average production details: Average production details for the reporting period is detailed below

Parameter	Units	Approved Capacity	Present Avg. Production
Crude Oil production	BOPD	50,000	7502.38 BOPD
Associated Gas production	MMSCMD	2.32	0.144 MMSCMD

All the conditions mentioned in this EC are being complied. Within the Ravva field, there exists 8 oil and gas platforms. 6 platforms (RA, RB, RC, RD, RE and RF) are meant for crude oil production and remaining 2 (RG and RH) are meant for gas production. The point wise compliance is detailed below:

S. No.	CONDITIONS	COMPLIANCE STATUS
i)	The Project Authority must submit the comprehensive EIA report for the development of oil/gas fields for this project within a period of 9 months before commencement of the production.	Complied.
(ii)	The Project Authority must strictly adhere to the stipulations made by the Central Government as part of any international conventions or Merchant Shipping Act.	Stipulations made by the Central Government and Merchant Shipping Act are adhered to. Merchant Shipping Act are being adhered to as per the following: 1. The Merchant Shipping Act. 1958, as amended & applicable. 2. MARPOL 1973/1978 as amended & applicable. At present, MV Mahananda, Mat Swift has been engaged for supporting services.
(iii)	The crude and gas distribution network should be made in such a manner that the handling terminals need not expand their capacity to excessively high levels.	The terminal has been designed to handle required fluid volume. The field has been on decline and fluid rates are much lower than the installed capacity.
(iv)	The Project Authority must (a) collect all constructions wastes in ships for onshore disposal (b) control and remove any pollution or contamination which originated above the surface of the sea from negligence, spills of wells, lubricants, ballast and garbages within the project proponent's possession and control and (c) raise and remove all sunken plant structures or objects arising from the proposed activities.	No construction activities were carried out during the reporting period. There have been no incidents of oil spill or accidental discharges. Minor quantities of garbage and waste generated at offshore platforms are brought to the onshore terminal by vessel/ chopper on routine basis. There are no unused objects or sunken plant structures left in the Project area.
(v)	The Project Authority must shut down the system to provide primary protection by pressure control instrumentation, to prevent or minimize the escape of crude oil or gas.	Complied. As a part of design of offshore facilities, automatic shut-down systems through pressure control instrumentation are in place to prevent the escape of oil or natural gas in case of leakage. This function being tested periodically.
(vi)	The Project Authority must use such types of chemicals which are permissible and information regarding the type of chemicals used and toxicity must be made available to this Ministry regularly, changes in the use of any type of chemicals in addition to the	A list of production and treatment chemicals used are as follows. MSDS of all hazardous chemicals are maintained at site. Refer below Table for the list of chemicals used in the site.

S. No.	CONDITIONS	COMPLIANCE STATUS													
	above should be informed to this Ministry along with their quantity, consumption and toxicity levels. Any Chemicals which have accumulative property in benthos or sediments should be avoided or their use restricted to the minimum. They should monitor their concentration levels in sediments fauna, flora and fish tissues	<table><tr><td>De-emulsifier</td><td>Sodium Hypochlorite</td></tr><tr><td>Oil Corrosion Inhibitor</td><td>Glycol</td></tr><tr><td>Water Corrosion Inhibitor</td><td>Therminol 55</td></tr><tr><td>Biocide-1</td><td>Propane</td></tr><tr><td>Biocide-2</td><td>Gas Phase Corrosion Inhibitor</td></tr><tr><td>Biocide -3</td><td>Drag Reducing Agent</td></tr></table>	De-emulsifier	Sodium Hypochlorite	Oil Corrosion Inhibitor	Glycol	Water Corrosion Inhibitor	Therminol 55	Biocide-1	Propane	Biocide-2	Gas Phase Corrosion Inhibitor	Biocide -3	Drag Reducing Agent	Chemicals details being submitted to PCB and MoEF along with the six-monthly compliance report and annual environmental statement Form V. Monitoring water quality, sediment characteristics, plankton diversity and concentration of heavy metals in fish tissues has undertaken by Kadam Environmental Consultants in January 2023 further to this in this current calendar year it is planned to be carried by Andhra University. Refer Annexure 8 Offshore marine monitoring report.
De-emulsifier	Sodium Hypochlorite														
Oil Corrosion Inhibitor	Glycol														
Water Corrosion Inhibitor	Therminol 55														
Biocide-1	Propane														
Biocide-2	Gas Phase Corrosion Inhibitor														
Biocide -3	Drag Reducing Agent														
(vii)	The Project Authority should monitor the population of marine biota around the proposed exploration area and within a radius of 5 kms. The recorded data should be furnished once in six months to this Ministry. Any major changes observed should be reviewed carefully.	Monitoring of water quality, sediment characteristics, plankton diversity and concentration of heavy metals in fish tissues has undertaken by Kadam Environmental Consultants in January 2023 further to this in this current calendar year it is planned to be carried by Andhra University. Refer Annexure 8 Offshore marine monitoring report.													
(viii)	The Project Authority must provide earmuffs/ any other hearing protection measures to the employees at the time of their duty to mitigate the effect of noise.	“Mandatory use of Ear Protection” signage is provided in the high noise work area. All the employees working in high noise areas are provided with personnel protective equipment (PPE) including hearing protection devices like earmuffs/ ear plugs.													
(ix)	Releases containing pathogenic bacteria, viruses and parasites that survive in marine life must be completely, precluded by adequate treatment measures on the platforms.	Offshore platforms are unmanned with no accommodation facilities. Only maintenance staff visits the platform as and when required. There are no staying facilities provided in the Platform. During drilling campaigns rig crew stayed in the rig accommodation deck, waste generated from the rig being treated through sewage treatment plant at the rig and food waste processor before discharge into marine accordance with MARPOL regulations.													
(x)	The Project Authority must undertake adequate measures to minimize the burning of gas in flares and for smoke reduction at all the offshore installations. The flare should be non-luminous at all stages of operations. This will reduce the buildup of particulate matter in the environment. They should measure hydrocarbon emissions at regular intervals.	No flaring at offshore installations. Measures are already undertaken to reduce flaring at the onshore terminal by the installation of four associated Gas Compressors and a third stage Gas Recovery Compressor and the onshore terminals are provided with 3 No's. of flare stacks of 30m height. The facilities are installed with HC sensors to monitor any leakage. In addition, periodic fugitive emission leakage detection study is being carried out.													
(xi)	The Project Authority must strictly adhere to the regulations made by MARPOL Conventions 1973/1978, for setting limits, for discharges from offshore oil-gas exploration and production activities.	Being complied. Discharges from vessels engaged in the field meet the MARPOL requirements as applicable under Annex I, II, III, IV, V & VI. Following Certificates are issued towards compliance for Production Support Vessel Mahananda, currently engaged at Ravva Block: I. International Oil Pollution Prevention Certificate II. Certificate of Fitness for carrying Noxious Liquid Substances in Bulk.													

S. No.	CONDITIONS	COMPLIANCE STATUS
		III. Document of Compliance for carrying Dangerous Goods IV. International Sewage Pollution Prevention Certificate V. International Air Pollution Prevention Certificate VI. Garbage Management Plan Garbage generated on board vessel is handled as per Garbage Management Plan prepared. There have been no incidents of oil spill or accidental discharges.
(xii)	The Project Authority must perform Static Sheen Test of any other approved test for the drilling fluids, drill cuttings that are discharged into the sea.	Noted for compliance. No drilling activities have been carried out during reporting period.
(xiii)	The Project Authority must establish oil spill control centres at vulnerable areas with high pollution potential. The Project Authority must prepare contingency plan for (a) blow-out, (b) major fire (c) oil spill and (d) hydrogen Sulphide emissions.	Oil Spill Response and Contingency Plan has been prepared as per the NOS-DCP guidelines. Refer Annexure 4 Oil Spill Response (OSR) Plan and Equipment details. The facility complies with the following requirements: Tier-1 oil spill response capability of category – A of NOS-DCP requirements. Tier-2 MOU for the mutual aid agreement is held with other organizations such as RIL, OIL and ONGC and Vedanta Limited Tier-3 The organization has an associate agreement with OSRL, Singapore to support oil spill response of higher magnitude. The following contingency plan are prepared, and periodic mock drill is also carried out to check its effectiveness. - Emergency Response plan - Blow out prevention plan - Oil Spill Contingency Plan - MOU for Co-operation in Emergency Situations
(xiv)	The Project Authority must regularly analyse the characteristics of solid wastes before they are discharged into the sea from drilling rigs and process platform including kitchen wastes.	Solid wastes such as food waste, paper, plastic, metal scraps are collected and taken to onshore for disposal.
(xv)	The Project Authority must ensure that the liquid/ solid wastes would not disturb the marine ecosystem. The recorded data or analysis should be furnished to this Ministry / State pollution control Board once in six months.	Sewage generated from the terminal activities is treated through the aeration process in the STP installed within the onshore terminal. The treated sewage is used for the greenbelt development activities within the onshore area and thus no discharge is carried out beyond the terminal premises. The produced water separated from the hydrocarbon well fluids is treated through onshore ETP installed within the terminal area. The treated effluent after meeting the marine discharge standards as prescribed by APPCB is discharged into sea through marine outfall located about 500 m seawards from shore through diffuser. Periodic environmental monitoring is being carried out for the treated effluents. Refer Annexure 1 Environmental Monitoring report Ravva Onshore Terminal.
(xvi)	The Project Authority must set up adequate number of monitoring stations for sampling and analysis of various parameters including objectionable chemicals, in water, sediments, fish and other biological materials for heavy metals.	Monitoring of water quality, sediment characteristics, plankton diversity and concentration of heavy metals in fish tissues has undertaken by Kadam Environmental Consultants in January 2023 further to this in this current calendar year it is planned to be carried by Andhra University. Refer Annexure 8 Offshore marine monitoring report. The study concluded that the concentrations of physico-chemical and biological characteristics near the marine outfall as well as the

S. No.	CONDITIONS	COMPLIANCE STATUS
		entire Block are well within typical ranges of marine quality experienced in the region and do not reflect impact on the marine ecology. The productivity levels, diversity and species of benthos which are indicators for environmental response to pollution discharge also indicates no anomaly.
(xvii)	The Project Authority must establish their own laboratory facility for sampling and analysis of various parameters under the supervision of competent person.	Dedicated environmental expertise support is available both at the facilities and at corporate office. The site has established a laboratory to monitor the key parameters of Water, Wastewater and noise samples. However, for the detailed and regular monitoring, the third-party laboratory accredited by NABL, and Recognized by MoEFCC has been hired to carry out the environmental monitoring requirements of the at the facilities and offshore. Refer Annexure 1 Environmental Monitoring report Ravva Onshore Terminal.
(xviii)	The Project Authority must prepare a safety audit system and mock rehearsal must be carried out regularly to test the responsiveness of the concerned.	HSE Management System in place (certified to the ISO 14001, ISO 45001 & ISO 50001 standards). Mock drills have been conducted regularly. OISD (Oil Industry safety Directorate) also carried out the compliance audit with respect to OISD safety standards periodically and the recommendations are implemented and communicated to OISD.
(xix)	The integrated disaster management plan on the basis of risk analysis duly approved by Nodal Agency must be submitted to this ministry along with the comprehensive EIA report for review. This should cover detailed analysis of the explosion, fire and their cascading effect with respect to pressure wave radiation and fire borne impacts etc.	The disaster management plan/ emergency preparedness management plan is in place. Submitted to ministry along with EIA before obtaining EC and further to this DMP/EMP report is periodically revised. Detailed description about pre-disaster-preparedness, Mitigation and prevention, Disaster-response action, and post-disaster-relief, rehabilitation and reconstruction has been covered in the report.
(xx)	The Project Authority must widen and strengthen the existing road for transporting the crude at their own cost and in consultation with the State Government, till the proposed pipeline for transportation of crude is ready.	Routine crude transportation is by marine tankers after being loaded from Single Point Mooring (SPM)
(xxi)	The Project Authority should perform by bioassay test with suitable phytoplankton.	Monitoring of water quality, sediment characteristics, plankton diversity and concentration of heavy metals in fish tissues has undertaken by Kadam Environmental Consultants in January 2023 further to this in this current calendar year it is planned to be carried by Andhra University. Refer Annexure 8 Offshore marine monitoring report.
(xxii)	The flaring of gas should be kept as minimum as possible.	No flaring has been carrying at offshore installations. No excess gas flaring is carried out in the onshore Ravva Terminal. All the separate gas is being exported through the gas grid pipeline. Only operational flare is being carried out at Ravva Terminal. This flare is continuous and only minimum amount of the gas required to be flared is being carried out as per the safe operational philosophy of the Terminal.
(xxiii)	The reclamation at onshore facility should be done without indiscriminate quarrying of fill material. The Project Authorities may explore the possibility of using drill cuttings as landfill material.	Earth filling work was completed before the construction of phase-2 facilities. No earth filling of the land was required in the Onshore Terminal

S. No.	CONDITIONS	COMPLIANCE STATUS
(xxiv)	A separate environment management cell with suitably qualified technical personnel to carry out various functions related to environmental management to be set up under the control of senior technical personnel who will directly report to the Chief Executive.	Separate environment management cell is established with competent technical personnel at Ravva Terminal. In-house laboratory facilities are available for testing key parameters of Water, Wastewater, and noise. However, for the detailed and regular monitoring, the third-party laboratory accredited by NABL and Recognized by MoEFCC has been hired to carry out the environmental monitoring requirements of the at the facilities and offshore.
(xxv)	Adequate fund provision (capital and recurring expr.) must be made for environmental control measures and the fund so provided should not be diverted for any other purposes.	Budgetary provisions have been made exclusively for up-gradation/ maintenance/ operation of facilities developed for environmental protection. for Oct'25-Mar'26 an amount of INR 177 Lakhs spent for environmental monitoring, waste management, ETP & STP operation & Maintenance (O&M), Public Liability Insurance Premiums, Water treatment chemicals, Oil spill response membership fee, Biodiversity, and green belt maintenance
(xxvi)	The Ministry may add any other stipulations after review of comprehensive EIA report, for development of oil-gas fields of ONGC's offshore basin.	Additional stipulations were added in the final EC vide letter no J-11011/6/91-IA dated 19.12.1991. Compliance status to the additional stipulations is submitted with report.
(xxvii)	The Project Authority must not start commercial production at the proposed sites before getting final clearance from environmental angle.	Being Complied.

COMPLIANCE STATUS OF CONDITIONS OF MOEF&CC DURING ENVIRONMENTAL CLEARANCE OF THE PROJECT**Name of the Project:** Oil/Gas Production off-Shore Field and On-Shore Field Terminal at S'Yanam**Clearance Letter No:** J - 11011/6/91-IA dated 19th December 1991 (final clearance)**Period of Compliance Report:** Progressive EC Compliance Reporting period is October 2025 to March 2026.**Average production details:** Average production details for the reporting period are detailed below

Parameter	Units	Approved Capacity	Present Avg. Production
Crude Oil production	BOPD	50,000	7502.38 BOPD
Associated gas production	MMSCMD	2.32	0.144 MMSCMD

All the conditions mentioned in this EC are being complied. Within the Ravva field, there exists 8 oil and gas platforms. 6 platforms (RA, RB, RC, RD, RE and RF) are meant for crude oil production and the remaining 2 (RG and RH) are meant for gas production. The point wise compliance is detailed below:

S. No.	CONDITIONS	COMPLIANCE STATUS
(i)	Environment Audit Report should be submitted to this Ministry once every year.	Noted for compliance.
(ii)	A detailed study on the impacts (short term and long term) of laying sub-sea pipeline (at the time of laying) should be carried out and a report submitted within 6 months to this Ministry.	Complied. The Export Pipeline of 20-inch diameter was laid from onshore terminal to Sea fall point underground with length 1.5 km and from Sea fall Point to Single Buoy Mooring (SBM) on seabed with length of about 15 KM. Environmental Impact Assessment report consider the impacts of all environmental aspects related to Ravva field. A recent environmental impact assessment was submitted to MoEF in 2019. No laying of pipeline was carried out during the reporting period.
(iii)	A detailed report on the impact of the proposed project on mangroves and steps taken to reduce the adverse impact should be submitted to this Ministry within six months.	Complied. A detailed study on the impact of the proposed project on mangroves and steps taken to reduce the adverse impacts had been carried out through M/s. NEERI and the report had been submitted to MoEFCC earlier by M/s. ONGC. Mangrove's development activities have been taken to increase the mangrove cover. Total 86 Acres of man-made mangroves developed within the Ravva Terminal. Refer Annexure 3 Mangroves Planation details at Ravva
(iv)	Facilities to tackle disaster in case of accidental oil spill or blow-out should be developed before commencement of the project.	Oil Spill Response and Contingency Plan has been prepared as per the NOS-DCP guidelines. Refer Annexure 4 Oil Spill Response (OSR) Plan and Equipment details The facility complies with the following requirements: Tier-1 oil spill response capability of category – A of NOS-DCP requirements. Tier-2 MOU for the mutual aid agreement is held with other organizations such as RIL, OIL and ONGC and Vedanta Limited Tier-3 The organization has an associate agreement with OSRL, Singapore to support oil spill response of higher magnitude. The following contingency plan is prepared, and periodic mock drill is also carried out to check its effectiveness. - Emergency Response plan - Blow out prevention plan - Oil Spill Contingency Plan - MOU for Co-operation in Emergency Situations

S. No.	CONDITIONS	COMPLIANCE STATUS
(v)	The stack height of both bath-heater & flare should be increased to appropriate lengths in consultation with Andhra Pradesh State Pollution Control Board.	Complied, As per APPCB Specifications. The stack height of Hot oil heater and flare is 30 m.
(vi)	The flare should be of 60-m. height with steam injection facilities.	Flare was designed as per API standards of 30m height. This was later adopted in the industry specific standards specified under the EP Act vide notification no. G.S.R. 176(E), April 1996. For the better combustion purpose, the flare has provision of air to associated gas mixing.
(vii)	Ground water near the solid waste disposal site should be regularly monitored.	No solid waste disposal facility within Ravva facility. However, periodic ground water monitoring is carried out. Refer Annexure 1 Environmental Monitoring report Ravva Onshore Terminal.
(viii)	The project authority should prepare a well-defined scheme for disposal of sludge generated in the treatment plant. The site for disposal of solid waste should be identified based on scientific study. The plan for disposal should be submitted to the ministry within one year.	The ETP sludge which is mainly oily in nature is collected drums at a dedicated paved and contained hazardous waste storage area and disposed to CPCB/ APPCB authorized oily waste recyclers / secured landfill facility. The sludge generated from ETP is being disposed of to TSDF / Co-processing in Cement Kilns.
(ix)	The proposed post-project monitoring should be strictly implemented, and a report submitted to this Ministry every six months. The location and frequency of monitoring for the proposed environmental parameters should be identified on a scientific basis in consultation with Andhra Pradesh State Pollution Control Board.	Periodic monitoring of ambient air quality, effluent, air emissions, and ambient noise levels around the onshore terminal is carried out as per requirements of consent for operation (CFO). The monitoring reports are regularly submitted to APPCB. A trend analysis of ambient air quality parameters, Stack Monitoring, Ambient noise and major parameters in treated effluent is given in Annexure-1 for reference. All the parameters are found to be within the prescribed limits. Offshore environmental monitoring has been carried out by Kadam Environmental Consultants. Refer Annexure 8 Offshore marine monitoring report.
(x)	The storage tanks and spheres must conform to the stipulations made by Chief Inspectorate of Factories, Controller of Explosive etc. wherever required.	Being complied. Total Capacity of 1,70,015 KL approved by Chief Controller of Explosives valid till 31.12.2030
(xi)	A report on status of implementation of conditions stipulated by this Ministry should be submitted to this Ministry every year from date of issue of this letter.	Six monthly EC compliance report along with the annexures containing monthly Environmental monitoring results is regularly being submitted to MoEFCC. EC copy is displayed on our company website with compliance status PoliciesandDisclosures

COMPLIANCE STATUS OF CONDITIONS OF MOEF&CC DURING ENVIRONMENTAL CLEARANCE OF THE PROJECT

Name of the Project: Development of the Ravva Oil and Gas field located near the Godavari Basin, A. P. by M/s. Command Petroleum (India) Pvt. Ltd. Joint Venture with ONGC – Environmental Clearance

Clearance Letter No: J-11012/59/95-1A-II (I), dated 03.07.1996

Period of Compliance Report: Progressive EC Compliance Reporting period is October-2025 to March-2026.

Overall status of activities w.r.t. project defined in EC: The following development activities carried out under the EC:

- Single point Mooring (SPM) for crude oil loading to marine vessels.
- One 20" Export Pipeline from Onshore Terminal for transfer of crude oil with Pipeline End Manifold (PLEM) to SPM

Average production details: Average production details for the reporting period is detailed below

Parameter	Units	Approved Capacity	Present Avg. Production
Crude Oil production	BOPD	50,000	7502.38 BOPD
Associated gas production	MMSCMD	2.32	0.144 MMSCMD

All the conditions mentioned in this EC are being complied. Within the Ravva field, there exists 8 oil and gas platforms. 6 platforms (RA, RB, RC, RD, RE and RF) are meant for crude oil production and the remaining 2 (RG and RH) are meant for gas production. The point wise compliance is detailed below:

A) Onshore facilities:

S. No.	CONDITIONS	COMPLIANCE STATUS
i)	The Project Authorities must strictly adhere to the stipulation made by the Andhra Pradesh State Pollution Control Board for the onshore terminal facilities.	Being Complied to all the requirements specified by APPCB in the consent for operation (CFO). Compliance of CFO conditions is submitted to APPCB once in every six months apart from this compliance report on July 1 st and January 1 st of every year. A trend analysis of environmental monitoring results is given in Annexure-1 Environmental monitoring report. Refer Annexure-9 CFO and Authorization Compliance report.
ii)	Onsite and Offsite Emergency Preparedness Plan required under Rules 13 and 14 of the Management, Storage and Import of Hazardous Chemicals Rules, 1989 should be prepared and approved by the nodal agency.	Disaster management plan (DMP) and site incidents response plan (SIRP) that includes preparedness and response plans for onsite and offsite emergencies submitted to nodal agency are periodically updated. The Disaster Management Plan has been revised in August 2025. Detailed description about Pre-disaster-preparedness, Mitigation and prevention, Disaster-response action, and post-disaster-relief, rehabilitation and reconstruction have been covered in the report.
iii)	The project proponent should take appropriate measure to store the oily sludge in the crude tanks until a long-term plan for disposal of oily sludge has been finalised in consultation with the SPCB. A report on the proposed disposal plan should be submitted to this Ministry for review within six months. The feasibility of recovering oil from the oily sludges should also be considered.	Oily sludge is collected in drums at a dedicated paved and contained hazardous waste storage area and will be disposed to APPCB approved/ authorized vendors for co-processing in cement kilns/ TSDF/ recycler/Pre-processors.
iv)	Efforts should be made by the project proponent to reduce the flaring in the existing platform to the maximum extent possible. As indicated in the EMP, an indoor flare stack with scrubbers should be provided. The height of the stack should be as per guidelines of the Central Pollution	No flaring at offshore installations. Measures are already undertaken to reduce flaring at the onshore terminal by the installation of four associated Gas Compressors and a third stage Gas Recovery Compressor, and the onshore terminals are provided with 3 No's. of flare stacks of 30m height. The facilities are installed with HC sensors to monitor any leakage. In addition, a periodic fugitive emission leakage detection study is

S. No.	CONDITIONS	COMPLIANCE STATUS												
	Control Board.	being carried out. Ground level concentration environmental monitoring and flare gas details. Refer Annexure 1 Environmental Monitoring report Ravva Onshore Terminal												
v)	For facilities proposed within 500 Mts. of the high tide line, necessary approvals under CRZ notification should be obtained.	CRZ Clearance is in place, recent CRZ Clearance issued on No other facilities existing within 500 meters except laying of the Export Pipeline of 20-inch diameter from onshore terminal to Sea fall point underground with length 1.5 km and from Sea Fall Point to Single Buoy Mooring (SBM) on seabed only with length of about 15 km.												
B. Offshore facilities														
i).	The Project Authority must strictly adhere to the stipulations made by the Central Government as part of any International Convention(s) or Merchant Shipping Act.	Stipulations made by the Central Government and Merchant Shipping Act are being adhered to as per the following: 1. The Merchant Shipping Act. 1958, as amended & applicable. 2. MARPOL 1973/1978 as amended & applicable. At present, the project authorities obtained permission for Mahananda Ship												
ii).	The Project Authority must (a) disposed off construction wastes (b) control and remove any pollution or contamination of the sea due to spills of oil from the wells, lubricants, ballast and garbage resulting from the project activities and (c) raise and remove all sunken plant structures or objects arising from the proposed activities in accordance with MARPOL convention 1973/1978.	No construction activities were carried out during the reporting period. There have been no incidents of Oil spill or accidental discharges. Minor quantities of garbage and waste generated at offshore platforms are brought to the onshore terminal by vessels. There are no unused objects or sunken plant structures left in the Project area.												
iii)	The Project Authority must use such chemicals which are permissible and information regarding the type of chemicals used, and toxicity must be made available to this Ministry along with their quantity, composition and toxicity level chemicals which have accumulative property in benthos or sediments should be avoided or their use restricted to the minimum. The concentration levels of chemicals, especially heavy metals in sediments, fauna, flora and fish tissues should be monitored at regular intervals.	A list of production and treatment chemicals used are as follows. MSDS of all hazardous chemicals are maintained at site. Refer below Table for the list of chemicals used in the site. <table><tr><td>De-emulsifier</td><td>Sodium Hypochlorite</td></tr><tr><td>Oil Corrosion Inhibitor</td><td>Glycol</td></tr><tr><td>Water Corrosion Inhibitor</td><td>Therminol 55</td></tr><tr><td>Biocide-1</td><td>Propane</td></tr><tr><td>Biocide-2</td><td>Gas Phase Corrosion Inhibitor</td></tr><tr><td>Biocide -3</td><td>Drag Reducing Agent</td></tr></table> Monitoring water quality, sediment characteristics, plankton diversity and concentration of heavy metals in fish tissues has been undertaken by Kadam Environmental Consultants in January 2023 further to this in this current calendar year it is planned to be carried by Andhra University. Refer Annexure 8 Offshore marine monitoring report. Periodic environmental monitoring is being carried out. Refer Annexure 1 Environmental Monitoring report Ravva Onshore Terminal	De-emulsifier	Sodium Hypochlorite	Oil Corrosion Inhibitor	Glycol	Water Corrosion Inhibitor	Therminol 55	Biocide-1	Propane	Biocide-2	Gas Phase Corrosion Inhibitor	Biocide -3	Drag Reducing Agent
De-emulsifier	Sodium Hypochlorite													
Oil Corrosion Inhibitor	Glycol													
Water Corrosion Inhibitor	Therminol 55													
Biocide-1	Propane													
Biocide-2	Gas Phase Corrosion Inhibitor													
Biocide -3	Drag Reducing Agent													
iv)	The project proponent should provide barium recovery facilities.	Noted for Compliance. No drilling was carried out in the said reporting period												
v)	Only water based drilling mud and cutting having a low toxicity should be used for drilling operation. The drilling fluids should be reused to the maximum extent possible and should be discharged into the ocean only when not suitable for further drilling. Adequate solids control and fluid handling system should be provided to	Noted for Compliance. No drilling was carried out in the said reporting period												

S. No.	CONDITIONS	COMPLIANCE STATUS
	ensure minimum losses to the ocean.	
vi)	Horizontal Direction Drilling (HDD) technique should be adopted during the laying of the export pipeline.	The Export Pipeline of 20-inch diameter was laid from onshore terminal to Sea fall point underground with length 1.5 KM and From Sea Fall Point to Single Buoy Mooring (SBM) on seabed only with length of about 15 KM.
vii)	The pigging chemicals used for cleaning the interfiled pipelines should not be discharged into the ocean but collected after use and returned to the gas and condensate export line. To minimize accidental release / contain oil spill the pigging chemicals should be stored in defined bunded areas.	No chemicals are used in the pigging of lines. The material collected during pigging is re-circulated into the process streams.
viii)	Release containing pathogens bacteria, viruses and parasites which survive in marine life must be completely precluded by adequate treatment measures on the platform.	Offshore platforms are unmanned with no accommodation facilities. Only maintenance staff visit the platform as and when required. There are no staying facilities provided in the Platform. Crew stayed during Drilling in the Rig accommodation deck and well services stay in the vessel. The domestic waste and food waste generated from rig and vessels are being treated before discharge into sea.
ix)	The Project Authority must strictly adhere to the regulations made by MARPOL convention 1973 / 1978 for setting limits, for discharge from offshore oil / gas exploration and production activities.	Being complied. Discharges from vessels engaged in the field meet the MARPOL requirements as applicable under Annex I, II, III, IV, V & VI. Following Certificates are issued towards compliance for Production Support Vessel Mahananda, currently engaged at Ravva Block: I. International Oil Pollution Prevention Certificate II. Certificate of Fitness for carrying Noxious Liquid Substances in Bulk. III. Document of Compliance for carrying Dangerous Goods IV. International Sewage Pollution Prevention Certificate V. International Air Pollution Prevention Certificate VI. Garbage Management Plan Garbage generated on board the vessel is handled as per the Garbage Management Plan as applicable. There have been no incidents of oil spills or accidental discharges.
x).	The Project Authority must perform static sheen test or any other approved test for the drilling fluids and drill cuttings that are discharged into the sea to ensure that there is no discharge of free oil in the sea. Strict compliance with the CPCB discharge standard of 40 ppm oil should be ensured.	Noted for Compliance. No drilling was carried out in the said reporting period
xi).	The Project Authority must set up an adequate number of monitoring stations within an area of 400 M radius around the drilling rigs, processing platforms, the point of discharge of drilling mud and drilling fluids. The monitoring should cover oil and grease in produced water, hydrocarbon in deck drainage etc.	Noted for Compliance. No drilling was carried out in the said reporting period

S. No.	CONDITIONS	COMPLIANCE STATUS
xii).	The Project Authority must analyse relevant parameters including chemicals, hydrocarbons and heavy metals in water, sediments and their concentration levels in sediments on fauna, flora and fish tissues and should furnish the data to this Ministry.	Monitoring water quality, sediment characteristics, plankton diversity and concentration of heavy metals in fish tissues has been undertaken by Kadam Environmental Consultants in January 2023 further to this in this current calendar year it is planned to be carried by Andhra University. Refer Annexure 8 Offshore marine monitoring report. The study concluded that the concentrations of physio-chemical and biological characteristics near the marine outfall as well as the entire Block are well within typical ranges of marine quality experienced in the region and do not reflect impact on the marine ecology. The productivity levels, diversity and species of benthos which are indicators for environmental response to pollution discharge also indicates no anomaly.
xiii)	The Project Authority should monitor the population of marine biota including fishes for the effects of these drilling operations preferably within a radius of 7 kms. The recorded data should be furnished once in six months to this Ministry. Any major change observed should be reviewed carefully and necessary preventive measures should be taken immediately.	Noted for Compliance. No drilling was carried out in the said reporting period
xiv)	The Project Authority must provide ear plugs / muffs as protection measures to the employees at the time of their duty to mitigate the effect of noise.	All the employees working in high noise areas are provided with personnel protective equipment (PPE) including hearing protection devices like earmuffs/ ear plugs.
xv)	The Project Authority must prepare a safety audit system and mock rehearsal must be carried out regularly to test the responsiveness.	HSE Management System in place (certified to the ISO 14001, ISO 45001 & ISO 50001 standards). Mock drills have been conducted regularly. OISD (Oil Industry safety Directorate) also carried out the compliance audit with respect to OISD safety standards periodically and the recommendations are implemented and communicated to OISD.
xvi)	The Project Authority must establish oil spill control centers at vulnerable area with high pollution potential. The project authorities should upgrade the existing oil spill control capabilities to the maximum extent possible. The project authorities should also create an all-weather capability for rescue operations.	Oil Spill Response and Contingency Plan has been prepared as per the NOS-DCP guidelines. Refer Annexure 4 Oil Spill Response (OSR) Plan and Equipment details. The facility complies with the following requirements: Tier -1 oil spill response capability of category – A of NOS-DCP requirements. Tier – 2 MOU for the mutual aid agreement is held with other organizations such as RIL, OIL and ONGC and Vedanta Limited Tier - 3 The organization has an associate agreement with OSRL, Singapore to support oil spill response of higher magnitude. The following contingency plan are prepared, and periodic mock drill is also carried out to check its effectiveness. - Emergency Response plan - Blow out prevention plan - Oil Spill Contingency Plan - MOU for Co-operation in Emergency Situations
xvii)	Adequate infrastructural facilities should be provided near the offshore installations so that booms, skimmers, chemicals dispersants could be deployed immediately in case of Oil leakage from the installations. Efforts should be made to curtail the oil slick	Provided with the Following: Boom Reel, Power packs, Skimmers, Oil Spill Dispersant, and others as per Oil Spill Contingency plan for offshore operations of Ravva field. In addition, sufficient inventory as per Tier 1 response equipment as per NOSDCP Guidelines. Refer Annexure 4 Oil Spill Response (OSR) Plan and Equipment details

S. No.	CONDITIONS	COMPLIANCE STATUS
	within 500 meters of the installation and accordingly an action plan and facilities to check the oil slick beyond 500 meters should be provided.	
xviii).	Facilities existing with the Coast Guard are also required to be strengthened with respect to deployment of booms, oil skimmers etc. The project proponent may consider providing necessary funds for strengthening such facilities.	Vedanta (Cairn Oil & Gas) works in consultation with coast guard for oil spill preparedness and response and periodic joint mock drills are also conducted to check the effectiveness of the preparedness. Mutual sharing of resources among other oil & gas companies like OIL, ONGC and Reliance through a MoU. And, for Tier- 3 response Ravva JV has entered MoU with Oil Spill Response Limited (OSRL) in case of major oil spill scenario.
xix).	A separate Environment Management Cell with suitably qualified technical personnel to carry out various functions related to environmental management should be set up under the control of senior technical personnel who will directly report to the Chief Executive.	Separate environment management cell is established with competent technical personnel at Ravva Terminal. In-house laboratory facilities are available for testing key parameters of Water, Wastewater and noise. However, for the detailed and regular monitoring, the third-party laboratory accredited by NABL, and Recognized by MoEFCC has been hired to carry out the environmental monitoring requirements of the at the facilities and offshore.
xx).	Adequate fund provision (capital and recurring expenditure) must be made for environmental control measures and upgradation of facilities for major oil spill control and the funds so provided should not be diverted for any other purpose. The fund provision should be clearly reflected in their proposal for financial approvals to the competent authority.	Budgetary provisions have been made exclusively for up-gradation/ maintenance/ operation of facilities developed for environmental protection. for Oct'25-Mar'26 an amount of INR 177 Lakhs spent for environmental monitoring, waste management, ETP & STP operation & Maintenance (O&M), Public Liability Insurance Premiums, Water treatment chemicals, Oil spill response membership fee, Biodiversity, and green belt maintenance
xxi)	The project would be monitored by the Ministry's Regional Office, Bangalore, and a status report on compliance of conditions stipulated by the MOEF should be submitted to this Ministry and Regional Office, Bangalore every six months for review.	Six monthly EC compliance report along with the annexures containing monthly Environmental monitoring results is regularly being submitted to MoEF&CC. EC copy is displayed on our company website with compliance status PoliciesandDisclosures

COMPLIANCE STATUS OF CONDITIONS OF MOEF&CC DURING ENVIRONMENTAL CLEARANCE OF THE PROJECT

Name of the Project: Ravva Satellite Gas Development Project.

Clearance Letter No: J-11011/84/2000-IA II dated 30th January 2001

Period of Compliance Report: Progressive EC Compliance Reporting period is October-2025 to March-2026

Average production details: Average production details for the reporting period are detailed below

Parameter	Units	Approved Capacity	Present Avg. Production
Crude Oil production	BOPD	50,000	7502.38 BOPD
Associated gas production	MMSCMD	2.32	0.144 MMSCMD

All the conditions mentioned in this EC are being complied. Within the Ravva field, there exists 8 oil and gas platforms. 6 platforms (RA, RB, RC, RD, RE and RF) are meant for crude oil production and the remaining 2 (RG and RH) are meant for gas production.

Pipelines:

- One number 6" Sub Sea flow line between RF and RG platform
- One number 6" Sub Sea flow line between RD and RH platform
- One number 8" Sub Sea Pipeline from RH to onshore Terminal

The point wise compliance is detailed below:

S. No.	Conditions	Compliance Status
	Specific Conditions:	
i).	The Schedule for commencement by the drilling operation should be intimated at least one month in advance to the Wildlife Warden having jurisdiction over the nearest coastal area to enable him to monitor its impact, if any, as on the wildlife.	Noted for Compliance. However, no drilling program was executed during reporting period.
ii)	Approval from DG Shipping under the Merchant Shipping Act prior to commencement of the drilling operations should be obtained. At least 30 days prior to the commencement of drilling, the exact location should be intimated to the Director General of Shipping, Mumbai and the Company should abide by any direction he may issue with respect to ensuring the safety of navigation in the area.	Noted for Compliance. However, there is no drilling program executed during reporting period. Required Statutory approvals are taken prior commencement of drilling. Additional instructions / advisory, if any, issued by Statute including those from Director General of Shipping are adhered to as applicable. Movement and operation of drilling rigs being done under intimation to DG Shipping before commencement of activities.
iii)	As reflected in the EMP the drilling fluid should be reused/ recycled. As per the norms stipulated under EPA, efforts should be made not to discharge drilling fluid/mud/cuttings into sea. The drill cuttings/mud should be disposed off onshore in a secured landfill site approved by the Andhra Pradesh SPCB. In case disposal on land is not feasible, Ministry hereby grants provisional permission for one-year for disposal of the residual water-based drilling fluids and drill cuttings after proper washing into sea subject to following conditions: • The project authority should ensure that only low toxicity chemical additive shall be used for preparation of drilling fluids. • The disposal point should be located at least 5 KM away from the shoreline and ecologically sensitive areas.	Noted for Compliance. However, no drilling program was executed during reporting period.

S. No.	Conditions	Compliance Status
	- At the disposal point, the seabed currents should have a minimum velocity of 60cm/sec and sea depth of 50 meter minimum must be available for proper dilution and dispersion. - The drill cuttings should be discharged intermittently to avoid turbidity and reduction in transmittance. - Company should submit well-wise data on the quantity of water-based muds / cuttings used/generated along with slurry volume and properties (particle size distribution etc.) - Company should monitor the sea surface water quality in terms of oil content around the well and submit reports to the Ministry monthly during the period of drilling operations.	
iv)	The company should monitor the heavy metal concentration in the marine fish species before taking up the drilling activities and subsequently thereafter on a yearly basis.	Monitoring water quality, sediment characteristics, plankton diversity and concentration of heavy metals in fish tissues has been undertaken by Kadam Environmental Consultants in January 2023. Further to this in this current calendar year it is planned to be carried by Andhra University. Refer to Annexure 8 Offshore marine monitoring report.
v)	Even though the proposed site is not part of National Park or wildlife sanctuary, it is seen that degraded mangrove forests exists in the region. The company should submit a plan/scheme for mangrove regeneration/compensatory development in consultation with the local Forest/Wildlife office. About 25% of the land acquired for the onshore terminal should be developed as green belt.	Greenbelt including development of mangroves has been taken up and the area of total greenbelt is 58.1% of the Operational Area. Plantation is carried out in the Onshore Terminal on regular basis. Approximately 136 acres of terminal area has been as developed as part of Greenbelt development. Also, 46 acres of Casuarina plantation developed in association with AP Forest Department. Refer Annexure 3 Green Belt and Mangroves development in Ravva Terminal.
vi)	Adequate infrastructural facilities should be provided in offshore installations so that booms skimmers chemical dispersants could be deployed immediately in case of oil leakage from the installations such that the oil slick if any, is contained within 500 meters of the installation and accordingly, action plan and facilities to check the oil slick beyond 500 meters should be provided.	Oil Spill Response and Contingency Plan has been prepared as per the NOS-DCP guidelines. Refer Annexure 4 Oil Spill Response (OSR) Plan and Equipment details. The facility complies with the following requirements: Tier -1 Oil spill response capability of category – A of NOS-DCP requirements. Tier – 2 MOU for the mutual aid agreement is held with other organizations such as RIL, OIL and ONGC and Vedanta Limited Tier - 3 The organization has an associate agreement with OSRL, Singapore to support oil spill response of higher magnitude. The following contingency plan are prepared, and periodic mock drill is also carried out to check its effectiveness. - Emergency Response plan - Blow out prevention plan - Oil Spill Contingency Plan - MOU for Co-operation in Emergency Situations
vii)	The project proponent shall also comply with the environmental protection measure and safeguards recommended in the EIA/EMP/Risk	Noted and being complied. Refer Annexure 6 Environment Management Plan compliance report prepared reference to EC No. J-

S. No.	Conditions	Compliance Status
	Analysis report as well as the recommendations of the Public Hearing Panel.	11011/81/2013-I.A. II(I). Refer Annexure 5 Public hearing points compliance
	General Conditions:	
1	The project authority must strictly adhere to the stipulations made by the Central Government as part of any International Convention(s) or Merchant Shipping Act.	Stipulations made by the Central Government and Merchant Shipping Act are being adhered to as per the following: 1. The Merchant Shipping Act. 1958, as amended & applicable. 2. MARPOL 1973/1978 as amended & applicable. At present, Mahananda Vessel, Mat Swift has been engaged for supporting services.
2.	The project authorities must strictly adhere to the stipulations made by the Andhra Pradesh State Pollution Control Board and the State Government.	Being Complied to all the requirements specified by APPCB in the consent for operation (CFO). Environmental monitoring includes ambient air quality as per NAAQS, stack emissions, wastewater discharges, surface & groundwater quality and ambient noise conducted on regular basis. Compliance of CFO conditions is submitted to APPCB once in every six months apart from this compliance report on July 1 st and January 1 st of every year. Refer Annexure 9 CFO and Authorization Compliance report.
3.	No further expansion or modifications in the proposal should be carried out without prior approval of MoEF. In case of deviations or alterations in the project proposal from those submitted to this Ministry for clearance, a fresh reference should be made to the Ministry to assess the adequacy of conditions imposed and to add additional environmental protection measures required, if any	Noted and no activities presently being carried out without obtain of EC and other applicable approvals. Amendments in existing environmental clearances are periodically obtained from MoEF&CC for future expansion and modification projects as per the requirements.
4.	The project must strictly adhere to the regulations made by MARPOL convention 1973/1978 for setting limits, for discharges from offshore oil/gas exploration and production activities.	Being complied. Discharges from vessels engaged in the field meet the MARPOL requirements as applicable under Annex I, II, III, IV, V & VI. Following Certificates are issued towards compliance for Production Support Vessel Mahananda, currently engaged at Ravva Block: I. International Oil Pollution Prevention Certificate II. Certificate of Fitness for carrying Noxious Liquid Substances in Bulk. III. Document of Compliance for carrying Dangerous Goods IV. International Sewage Pollution Prevention Certificate V. International Air Pollution Prevention Certificate VI. Garbage Management Plan Garbage generated on board the vessel is handled as per the Garbage Management Plan as applicable. There have been no incidents of oil spills or accidental discharges.
5.	The project authorities must strictly comply with the rules and regulations under Manufacture, Storage and Import of Hazardous chemicals Rules, 1989 as amended on 3 rd October 1994. Prior approvals from Chief Inspectorate of	Being complied. Total Capacity of 1,70,015 KL approved by Chief Controller of Explosives valid till 31.12.2030

S. No.	Conditions	Compliance Status
	Factories, Chief Controller of Explosives, Fire Safety Inspectorate etc. must be obtained wherever applicable.	
6.	The project authorities must strictly comply with rules and regulations about handling and disposal of hazardous wastes in accordance with the Hazardous Wastes (Management & Handling) Rules, 1989 wherever applicable. Authorization from the State Pollution Control Board must be obtained for collections/treatment/storage/disposal of hazardous wastes.	Being complied. Obtained HW Authorization from APPCB and valid till 31.10.2026. In Compliance to conditions is submitted to APPCB once in every six months apart from this compliance report on July 1st and January 1st of every year. Refer Annexure-9 CFO and Authorization Compliance report.
7.	The overall noise levels in and around the rig area should be kept well within the standards (85 dBA) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA rules, 1989 viz. 75 dB(A) (daytime) and 70 dB(A) (night-time).	Being complied. All the high noise equipment is fitted with the noise control measures to reduce the noise source. Ambient noise level is being measured at periodic intervals and the values are within the prescribed limits.
8.	A separate environmental management cell equipped with full-fledged laboratory facilities must be set up to carry out the environmental management and monitoring functions.	Separate environment management cell is established with competent technical personnel at Ravva Terminal. In-house laboratory facilities are available for testing key parameters of Water, Wastewater and noise. However, for the detailed and regular monitoring, the third-party laboratory accredited by NABL, and recognized by MoEF&CC has been hired to carry out the environmental monitoring requirements of the at the facilities and offshore.
9.	The project authorities will provide adequate funds both recurring and non-recurring to implement the conditions stipulated by the MoEF as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so provided should not be diverted for any other purpose.	Budgetary provisions have been made exclusively for up-gradation/ maintenance/ operation of facilities developed for environmental protection. for Oct'25-Mar'26 an amount of INR 177 Lakhs spent for environmental monitoring, waste management, ETP & STP operation & Maintenance (O&M), Public Liability Insurance Premiums, Water treatment chemicals, Oil spill response membership fee, Biodiversity, and green belt maintenance
10.	The implementation of the project vis-à-vis environmental action plans will be monitored by Ministry's Regional Office at Bangalore, State Pollution Control Board/ CPCB. Six monthly compliance status report should be submitted to the monitoring agencies.	Six monthly EC compliance report along with the annexures containing monthly Environmental monitoring results is regularly being submitted to MoEF&CC. EC copy is displayed on our company website with compliance status. PoliciesandDisclosures
11.	The Project Proponent should inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the State Pollution Control Board/Committee and may also be seen at Website of the Ministry and Forests at http://www.envfor.nic.in . This should be advertised in at least two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned.	Advertised in the local newspapers on 5th February 2001 and copies were submitted earlier. A public notice informing the grant of this EC by MOEF&CC was published by Cairn as follows: • Deccan Chronicle (English) • Eenadu (Telugu)

COMPLIANCE STATUS OF CONDITIONS OF MOEF&CC DURING ENVIRONMENTAL CLEARANCE OF THE PROJECT

Name of the Project: Exploratory Drilling of 8 wells for oil and gas in the PKGM-1 offshore block in East coast of India in the Bay of Bengal.

Clearance Letter No: J-11011/50/2001-IA II dated September 17, 2001.

Period of Compliance Report: Progressive EC Compliance Reporting period is October-2025 to March-2026

Average production details: Average production details for the reporting period are detailed below

Parameter	Units	Approved Capacity	Present Avg. Production
Crude oil production	BOPD	50,000	7502.38 BOPD
Associated gas production	MMSCMD	2.32	0.144 MMSCMD

Within the Ravva field, there exists 8 oil and gas platforms. 6 platforms (RA, RB, RC, RD, RE and RF) are meant for crude oil production and the remaining 2 (RG and RH) are meant for gas production.

As against 8 Nos. of Exploratory Drilling, 7 nos. have been drilled.

All the conditions mentioned in this EC are being complied. No drilling activities taken up during the reporting period. The point wise compliance is detailed below:

S. No.	Conditions	Compliance Status
i.	The Schedule for commencement by the drilling operation should be intimated at least one month in advance to the Wildlife Warden having jurisdiction over the nearest coastal area to enable him to monitor its impact, if any, on the wildlife.	Complied.
ii.	Approval from DG Shipping under the Merchant Shipping Act prior to commencement of the drilling operations should be obtained. At-least 30 days prior to the commencement of drilling, the exact location should be intimated to the Director General of Shipping, Mumbai and the company should abide by any direction he may issue regarding ensuring the safety of navigation in the area.	Noted for compliance. No drilling activities taken up during the reporting period.
iii.	Only water-based drilling fluids/ mud should be used for the drilling operation. Ministry hereby grants provisional permission for one-year for disposal of the residual water-based drilling fluids and drill cuttings after proper washing subject to following conditions.	Noted for compliance.
a.	The water-based muds must have low toxicity (i.e 96 LC50 value > 30,000 ppm). The project authority should ensure that only low toxicity chemical additives shall be used for preparation of drilling fluids.	Water Based Mud (WBM) and Synthetic Oil Based mud being used for the drilling campaign, which are low toxicity tested on mysid found to be LC50 >30,000 ppm for both fluids for 96 hrs. Drilling fluids are recovered and recycle through vertical cuttings dryer and centrifuge. Treated Drill cuttings only disposed to sea as per GSR 546 (E). No drilling activities have been carried out during reporting period.
b.	The disposal point should be atleast 5 Km away from the shoreline and ecologically sensitive areas.	Complied.

S. No.	Conditions	Compliance Status
c.	At disposal point, the seabed currents should have a minimum velocity of 60 Cm/second sea depth of 50 m minimum must be available for proper dilution and dispersion.	No drilling activities have been carried out during reporting period
d.	The drill cuttings should be discharged intermittently to avoid turbidity and reduction in transmittance.	No drilling campaign during the reporting period
e.	Company should submit well-wise data on the quantity of water-based muds used/ cuttings generated along the slurry volume and properties.	Noted for compliance. No drilling activities have been carried out during reporting period.
f.	Companies should monitor the sea surface water quality in terms of oil content around the well and submit reports to the Ministry on a monthly basis during the period of drilling operations.	Noted for compliance. No drilling activities have been carried out during reporting period
iv.	The Company should monitor the Petroleum hydrocarbons and heavy metal concentrations in the marine fish species regularly and submit report to the Ministry	Monitoring water quality, sediment characteristics, plankton diversity and concentration of heavy metals in fish tissues has undertaken by Kadam Environmental Consultants in January 2023 further to this in this current calendar year it is planned to be carried by Andhra University. Refer Annexure 8 Offshore marine monitoring report. The study concluded that the concentrations of physio-chemical and biological characteristics near the marine outfall as well as the entire Block are well within typical ranges of marine quality experienced in the region and do not reflect impact on the marine ecology. The productivity levels, diversity and species of benthos which are indicators for environmental response to pollution discharge also indicates no anomaly.
v.	In case the commercial viability of the project is established, the company will prepare a detailed plan for development of oil and gas fields in PKGM -1 in the Bay of Bengal and obtain fresh clearance from Ministry.	Prepared a detailed plan for development of Oil and gas field and obtained EC for infill well drilling (Development Wells) and obtained EC dated 04.08.2005. Recently EC was obtained in October'2020 for expansion and exploration.
vi.	Adequate infrastructural facilities should be provided near the offshore installations, so that booms, skimmers and chemical dispersants could be deployed immediately in case of oil leakage from the installations. Efforts should be made to curtail the oil slick within 500 m of the installation and accordingly, action plan and facilities to check the oil slick beyond 500 m should be provided.	Oil Spill Response and Contingency Plan has been prepared as per the NOS-DCP guidelines. Refer Annexure 4 Oil Spill Response (OSR) Plan and Equipment details. The facility complies with the following requirements: Tier -1 oil spill response capability of category – A of NOS-DCP requirements. Tier – 2 MOU for the mutual aid agreement is held with other organizations such as RIL, GSPC and ONGC and Vedanta Limited Tier - 3 The organization has an associate agreement with OSRL, Singapore to support oil spill response of higher magnitude. The following contingency plan are prepared, and periodic mock drill is also carried out to check its effectiveness. a. Emergency Response plan b. Blow out prevention plan c. Oil Spill Contingency Plan d. MOU for Co-operation in Emergency Situations
vii.	The project proponent shall also comply with the environmental protection measures and safeguards recommended in the EIA/EMP	Actions recommended in the EMP being implemented and the recommendations of the public hearing panel are also being complied with.

S. No.	Conditions	Compliance Status												
	report as well as the recommendations of the public hearing panel.	Refer Annexure 6 Environment Management Plan compliance report prepared with reference to EC No. J-11011/81/2013-I.A.II(I). Refer Annexure 5 Public hearing points compliance with reference to PH conducted on 05 December 2013 and 11 October 2018.												
General conditions														
i.	The project authority must strictly adhere to the stipulations made by the Central Government as part of the international conventions and Merchant Shipping Act.	Stipulations made by the Central Government and Merchant Shipping Act are being adhered to as per the following: 1. The Merchant Shipping Act. 1958, as amended & applicable. 2. MARPOL 1973/1978 as amended & applicable. At present, the project authorities obtained permission for Mahananda & Mat Swift Ship.												
ii.	The project authorities must strictly adhere to the stipulations made by the Andhra Pradesh State Pollution Control Board and the State Government.	Being Complied to all the requirements specified by APPCB in the consent for operation (CFO). Environmental monitoring includes ambient air quality as per NAAQS, stack emissions, wastewater discharges, surface & groundwater quality and ambient noise conducted on regular basis. Compliance of CFO conditions is submitted to APPCB once in every six months apart from this compliance report on July 1 st and January 1 st of every year. Refer Annexure 9 CFO and Authorization Compliance report												
iii.	No further expansion or modifications in the plant should be carried out without prior approval of the Ministry of Environment and Forests. In case of deviations or alterations in the project proposal from those submitted to this Ministry for clearance, a fresh reference should be made to the Ministry to assess the adequacy of conditions imposed and to add additional environmental protection measures required if any.	Noted and no activities presently being carried out without any EC requirements. Amendments in existing environmental clearances are periodically obtained from MoEFCC for future expansion and modification projects as per the requirements.												
iv.	The project authorities must strictly comply with the rules and regulations under Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 as amended on 3 rd October 1994. Prior approvals from the Chief Inspectorate of Factories, Chief Controller of Explosives, Fire Safety Inspectorate etc., must be obtained wherever applicable.	Being complied. Total Capacity of 1,70,015 KL approved by Chief Controller of Explosives valid till 31.12.2030 A list of production and treatment chemicals used are as follows. MSDS of all hazardous chemicals are maintained at site <table><tr><td>De-emulsifier</td><td>Sodium Hypochlorite</td></tr><tr><td>Oil Corrosion Inhibitor</td><td>Glycol</td></tr><tr><td>Water Corrosion Inhibitor</td><td>Therminol 55</td></tr><tr><td>Biocide-1</td><td>Propane</td></tr><tr><td>Biocide-2</td><td>Gas Phase Corrosion Inhibitor</td></tr><tr><td>Biocide -3</td><td>Drag Reducing Agent</td></tr></table>	De-emulsifier	Sodium Hypochlorite	Oil Corrosion Inhibitor	Glycol	Water Corrosion Inhibitor	Therminol 55	Biocide-1	Propane	Biocide-2	Gas Phase Corrosion Inhibitor	Biocide -3	Drag Reducing Agent
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Biocide-2	Gas Phase Corrosion Inhibitor													
Biocide -3	Drag Reducing Agent													
v.	The project authorities must comply with the rules and regulations regarding handling and disposal of hazardous wastes in accordance with the Hazardous Wastes (Management & Handling) Rules, 1989 wherever applicable. Authorization from the State Pollution Control Board must be obtained for collection/treatment/storage/disposal of hazardous wastes.	Being Complied to all the requirements specified by APPCB in the consent for operation (CFO). Environmental monitoring includes ambient air quality as per NAAQS, stack emissions, wastewater discharges, surface & groundwater quality and ambient noise conducted on regular basis. Compliance of CFO conditions is submitted to APPCB once in every six months apart from this compliance report on July 1 st and January 1 st of every year. Refer Annexure 9 CFO and Authorization Compliance												

S. No.	Conditions	Compliance Status
		report.
vi.	The overall noise levels in and around the rig area should be kept well within the standards (85 dB(A)) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA Rules, 1989 viz, 75 dB (A) (daytime) and 70 dB(A) (nighttime).	Being Complied. All the high noise equipment is fitted with noise control measures to reduce the noise source. Ambient noise level is being measured at periodic intervals and the values are within the prescribed limits.
vii.	A separate environment management cell equipped with full-fledged laboratory facilities must be set up to carry out the environment monitoring functions.	Separate environment management cell is established with competent technical personnel at Ravva Terminal. In-house laboratory facilities are available for testing key parameters of Water, Wastewater and noise. However, for the detailed and regular monitoring, the third-party laboratory accredited by NABL and recognized by MoEFCC has been hired to carry out the environmental monitoring requirements of the at the facilities and offshore.
viii.	The project authorities will provide adequate funds both recurring and non-recurring to implement the conditions stipulated by the MOEF as well as the state government along with the implementation schedule for all the conditions stipulated herein. The funds so provided should not be diverted for any other purpose.	Budgetary provisions have been made exclusively for up-gradation/ maintenance/ operation of facilities developed for environmental protection. for Oct'25-Mar'26 an amount of INR 177 Lakhs spent for environmental monitoring, waste management, ETP & STP operation & Maintenance (O&M), Public Liability Insurance Premiums, Water treatment chemicals, Oil spill response membership fee, Biodiversity, and green belt maintenance
ix.	The implementation of the project vis-à-vis environmental action plans will be monitored by Ministry's regional office at Bangalore, State Pollution Control Board and Central Pollution Control board. A six-monthly compliance status report should be submitted to the monitoring agencies.	Six monthly EC compliance report along with the annexures containing monthly Environmental monitoring results is regularly being submitted to MoEF&CC. EC copy is displayed on our company website with compliance status PoliciesandDisclosures
x.	The project proponent should inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the State Pollution Control Board/Committee and may also be seen at Website of the MOEF at http://WWW.envfor.nic.in . This should be advertised in at least two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same should be forwarded to the regional office.	Environmental clearance of the project was advertised in the newspapers and copies of the same were submitted earlier. And the newly issued EC in October 2020 has also notified to the public through Paper notifications in Telugu Daily Eenadu and English daily The Hindu dated 20 October 2020.

COMPLIANCE STATUS OF CONDITIONS OF MOEF&CC DURING ENVIRONMENTAL CLEARANCE OF THE PROJECT

Name of the Project: Infill Well Drilling (Development Wells) Ravva Oil Field (PKGM-1) Block in KG Offshore Basin, Bay of Bengal, Andhra Pradesh

Clearance Letter No: J - 11011/207/2004-IA (II) I dated 4th August 2005

Period of Compliance Report: Progressive EC Compliance Reporting period is October-2025 to March-2026

Average production details: Average production details for the reporting period are detailed below

Parameter	Units	Approved Capacity	Present Avg. Production
Crude Oil production	BOPD	50,000	7502.38 BOPD
Associated gas production	MMSCMD	2.32	0.144 MMSCMD

Within the Ravva field, there exists 8 oil and gas platforms. 6 platforms (RA, RB, RC, RD, RE and RF) are meant for crude oil production and remaining 2 (RG and RH) are meant for gas production

As against 15 Nos. of permitted in-fill wells (Development Wells), 15 nos. have been drilled till date. Out of the fifteen (15) nos. of development wells permitted, currently ten (10) nos. of wells are producing oil and four (04) nos. of wells are functioning as water injectors and one (01) well is shut.

All the conditions mentioned in this EC are being complied. No activities undertaken under the scope of this EC. The point wise compliance is detailed below:

S. No.	Conditions	Compliance Status
i)	Use of diesel-based mud is prohibited. The project authorities should ensure that only water-based mud drilling fluid should be used for the proposed offshore drillings. Ministry hereby grants permission for disposal of residual water-based drilling fluid and drill cutting after proper washing subject to the following conditions:	Noted for Compliance. No drilling program was conducted during the reporting period.
	The chemical additives used in water-based drilling fluid should be biodegradable (mainly organic constituents) and should have toxicity of 96 hr LC50 value >30,000 mg/l as per mysid toxicity or toxicity test conducted on locally available sensitive sea species	Noted for Compliance. No drilling program was conducted during the reporting period.
	Thoroughly washed drill cuttings (DC) separated from WBM and unusable portions of WBM having toxicity of 96 hr LC50>30,000 mg/l shall be discharged offshore into sea intermittently at an average rate of 50 bbl./hr/well from a platform so as to have proper dilution and dispersion without any adverse impact on marine environment.	
	Drill cuttings of any composition should not be discharged in sensitive areas notified by Ministry of Environment & Forests.	There are no notified sensitive areas within the designated mining area of PKGM-1 block.
	Discharge of DC from the installation located within 5 Km away from shore should have no adverse impact on marine eco-system and on the shore. If adverse impact is observed, the company should bring the DC onshore for disposal in an impervious waste disposal pit.	Noted for Compliance. No drilling program was conducted during the reporting period.
	The company should analyze the drill cuttings generated from each well from any recognized laboratory for its characteristics and results be submitted to MOEF/CPCB/SPCB periodically.	Noted for Compliance. No drilling program was conducted during the reporting period.

S. No.	Conditions	Compliance Status
	M/s ONGC are required to record daily discharge of DC and DF to offshore and to monitor the daily effluent quality and submit the compliance report once every six months to MoEFCC.	Noted for Compliance. No drilling program was conducted during the reporting period.
	Companies should monitor the sea surface water quality in terms of oil content around the well and submit reports to the Ministry monthly during the period of drilling operations.	Monitoring of water quality, sediment characteristics, plankton diversity and concentration of heavy metals in fish tissues has undertaken by Kadam Environmental Consultants in January 2023 further to this in this current calendar year it is planned to be carried by Andhra University. Refer Annexure 8 Offshore marine monitoring report
	In case DC is associated with high oil content from hydrocarbon bearing formation, then disposal of DC should not have oil content > 10 mg/kg.	Noted for Compliance. No drilling program was conducted during the reporting period.
	DC wash water should be treated to conform to limits notified under the Environment (Protection) Act, 1986, before disposal into sea. The treated effluent should be monitored regularly.	Noted for Compliance. No drilling program was conducted during the reporting period.
	Barite used in preparation of DF shall not contain Hg > 1 mg/kg & Cd > 3 mg/kg.	Noted for Compliance. No drilling program was conducted during the reporting period.
	Should any environment friendly technology emerge for substitution of DF and disposal technology, it may be brought to the notice of MoEFCC and regulatory agencies. If the operator desires to adopt such environmentally friendly technology prior approval from MoEFCC should be taken.	Noted for Compliance. No drilling program was conducted during the reporting period.
(ii)	To address the specific operational problems during exploration like stuck pipe, overpressure and hole instability etc. M/S CIL proposes to use Synthetic Base Muds (SBMs). Ministry hereby grants permission for use of the SBMs subject to the following conditions:	Noted for Compliance. In past the drilling in the PKGM-1 Block was carried out using biodegradable synthetic based mud of low toxicity confirming with G.S.R. 546 (E) requirements.
	Well-wise data on the quality of SBMs used / wastes including cuttings generated and discharged daily must be maintained and report submitted to Ministry of Environment & Forests and CPCB.	Noted for Compliance. No drilling program was conducted during the reporting period.
	The chemical additives used in the SBMs should have toxicity of 96 hr LC50 value > 30,000 mg/l as per mysid toxicity or toxicity test conducted on locally available sensitive species. The company should ensure that various chemicals used in the proposed SBMs should be bio-degradable in nature.	Noted for Compliance. No drilling program was conducted during the reporting period.
	Hexavalent chromium compound should not be used in drilling fluid (DF). Alternate chemicals in place of chrome lignosulphonate should be used in the drilling fluids. In case chrome compound is used the DF/DC should not be disposed offshore. Barite used in the drilling fluid shall not contain Hg	Noted for Compliance. No drilling program was conducted during the reporting period.

S. No.	Conditions	Compliance Status
	> 1 mg/kg and Cd > 3 mg/kg Thoroughly washed drill cuttings separated from SBMs and unusable portions of SBM having toxicity of 96 hr LC50 value >30,000 mg/l shall be discharged offshore into sea intermittently at a rate of 50 bbl./hr/well from a platform so as to have proper dilution and dispersion without any adverse impact on marine environment. SBM should be recycled to the maximum extent.	Noted for Compliance. No drilling program was conducted during the reporting period.
(iii)	The company should monitor the petroleum hydrocarbons and heavy metals concentration in the marine fish species regularly and submit report to the Ministry.	Monitoring of water quality, sediment characteristics, plankton diversity and concentration of heavy metals in fish tissues has undertaken by Kadam Environmental Consultants in January 2023 further to this in this current calendar year it is planned to be carried by Andhra University. Refer Annexure 8 Offshore marine monitoring report
(iv)	Treated wastewater (produced water or formation water or sanitary sewage) should comply with the marine disposal standards (for oil & grease at <10 mg/l) notified under the Environment (Protection) Act, 1986.	Sewage generated from the terminal activities is treated through the aeration process in the STP installed within the onshore terminal. The treated sewage is used for the greenbelt development activities within the onshore area and thus no discharge is carried out beyond the terminal premises. The produced water separated from the hydrocarbon well fluids is treated through onshore ETP installed within the terminal area. The treated effluent after meeting the marine discharge standards as prescribed by APPCB is discharged into sea through marine outfall located about 500 m seawards from shore through diffuser. Periodic environmental monitoring is being carried out for the treated sewage and the treated effluents. Refer Annexure 1 Environmental Monitoring report Ravva Onshore Terminal
(v)	Requisite infrastructure facilities should be provided near the offshore installations so that booms and skimmers/chemical dispersants could be deployed immediately in case of oil leakage from the installations. Efforts should be made to curtail the oil slick between 500 meters of the installation and accordingly, action plan and facilities to check the oil slick beyond 500 meters should be provided.	Oil Spill Response and Contingency Plan has been prepared as per the NOS-DCP guidelines. Refer Annexure 4 Oil Spill Response (OSR) Plan and Equipment details. The facility complies with the following requirements: Tier -1 oil spill response capability of category – A of NOS-DCP requirements. Tier – 2 MOU for the mutual aid agreement is held with other organizations such as RIL, OIL and ONGC and Vedanta Limited Tier - 3 The organization has an associate agreement with OSRL, Singapore to support oil spill response of higher magnitude. The following contingency plan is prepared, and periodic mock drill is also carried out to check its effectiveness. - Emergency Response plan - Blow out prevention plan - Oil Spill Contingency Plan - MOU for Co-operation in Emergency Situations

S. No.	Conditions	Compliance Status												
(vi)	Approval from DG Shipping under the Merchant Shipping Act prior to commencement of the drilling operations should be obtained. At least 30 days prior to the commencement of drilling, the exact location should be intimated to the Director General of Shipping and the company should abide by any direction he may issue regarding ensuring the safety of navigation in the area.	Noted for Compliance. No drilling program was conducted during the reporting period.												
(vii)	The project proponent should also comply with the environmental protection measures and safeguards recommended in the EIA/ EMP /risk analysis report as well as the recommendations of the public hearing panel.	Actions recommended in the EMP being implemented and the recommendations of the public hearing panel are also being complied with. Refer Annexure 6 Environment Management Plan compliance report prepared reference to EC No. J-11011/81/2013-I.A.II(I). Refer Annexure 5 Public hearing points compliance.												
B	GENERAL CONDITIONS													
i	The project authority must strictly adhere to the stipulations made by the Central Government as part of the international conventions and Merchant Shipping Act	Stipulations made by the Central Government and Merchant Shipping Act are being adhered to as per the following: 1. The Merchant Shipping Act. 1958, as amended & applicable. 2. MARPOL 1973/1978 as amended & applicable. At present, Mahananda Vessel, Mat Swift has been engaged for supporting services.												
ii	No further expansion or modifications in the plant should be carried out without prior approval of the Ministry of Environment and Forests. In case of deviations or alterations in the project proposal from those submitted to this Ministry for clearance, a fresh reference should be made to the Ministry to assess the adequacy of conditions imposed and to add additional environmental protection measures required if any	Noted and no activities presently being carried out without any EC requirements. Amendments in existing/fresh environmental clearances are periodically obtained from MoEFCC for future expansion and modification projects as per the requirements.												
iii	The project authorities must strictly comply with the rules and regulations under Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 as amended on 3 rd October 1994. Prior approvals from Chief Inspectorate of Factories, Chief Controller of Explosives, Fire Safety Inspectorate etc, must be obtained wherever applicable	Noted and is being complied. Total Capacity of 1,70,015 KL approved by Chief Controller of Explosives vid dated valid till 31.12.2030. A list of production and treatment chemicals used are as follows. MSDS of all hazardous chemicals are maintained at site. <table><tr><td>De-emulsifier</td><td>Sodium Hypochlorite</td></tr><tr><td>Oil Corrosion Inhibitor</td><td>Glycol</td></tr><tr><td>Water Corrosion Inhibitor</td><td>Therminol 55</td></tr><tr><td>Biocide-1</td><td>Propane</td></tr><tr><td>Biocide-2</td><td>Gas Phase Corrosion Inhibitor</td></tr><tr><td>Biocide -3</td><td>Drag Reducing Agent</td></tr></table>	De-emulsifier	Sodium Hypochlorite	Oil Corrosion Inhibitor	Glycol	Water Corrosion Inhibitor	Therminol 55	Biocide-1	Propane	Biocide-2	Gas Phase Corrosion Inhibitor	Biocide -3	Drag Reducing Agent
De-emulsifier	Sodium Hypochlorite													
Oil Corrosion Inhibitor	Glycol													
Water Corrosion Inhibitor	Therminol 55													
Biocide-1	Propane													
Biocide-2	Gas Phase Corrosion Inhibitor													
Biocide -3	Drag Reducing Agent													
iv	The project authorities must comply with the rules and regulations regarding handling and disposal of hazardous wastes in accordance with the Hazardous Wastes (Management & Handling) Rules, 1989 wherever applicable. Authorization from the State Pollution Control Board must be obtained for collection/treatment/storage/disposal of hazardous wastes.	Noted and is being complied. HW Authorization has been obtained from APPCB valid till 31.10.2026. The copy of CFO (combined with HWA) is issued having order APPCB/VSP/RJY/546/CFO/HO/2016, dated 19.01.2025 and valid up to 31.10.2026. Refer Annexure 9 CFO and Authorization Compliance report.												

S. No.	Conditions	Compliance Status
v	The overall noise levels in and around the rig area should be kept well within standards (85 dBA) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA Rules, 1989 viz, 75 dBA (daytime) and 70 dBA (nighttime).	Being complied. All the high noise equipment is fitted with noise control measures to reduce the noise source. Ambient noise level is being measured at periodic intervals and the values are within the prescribed limits.
vi	A separate environment management cell equipped with full-fledged laboratory facilities must be set up to carry out the environmental management and monitoring functions.	Separate environment management cell is established with competent technical personnel at Ravva Terminal. In-house laboratory facilities are available for testing key parameters of Water, Wastewater and noise. However, for the detailed and regular monitoring, the third-party laboratory accredited by NABL and MoEFCC has been hired to carry out the environmental monitoring requirements of the at the facilities and offshore.
vii	The project authorities will provide adequate funds both recurring and nonrecurring to implement the conditions stipulated by the MOEF as well as the state government along with the implementation schedule for all the conditions stipulated herein. The funds so provided should not be diverted for any other purpose.	Budgetary provisions have been made exclusively for up-gradation/ maintenance/ operation of facilities developed for environmental protection. for Oct'25-Mar'26 an amount of INR 177 Lakhs spent for environmental monitoring, waste management, ETP & STP operation & Maintenance (O&M), Public Liability Insurance Premiums, Water treatment chemicals, Oil spill response membership fee, Biodiversity, and green belt maintenance
viii	The implementation of the project vis-à-vis environmental action plans will be monitored by Ministry's regional office at Bangalore, State Pollution Control Board/ Central Pollution Control board. A six-monthly compliance status report should be submitted to the monitoring agencies.	Six monthly EC compliance report along with the annexures containing monthly Environmental monitoring results is regularly being submitted to MoEF&CC. EC copy is displayed on our company website with compliance status PoliciesandDisclosures
ix	The project proponent should inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the State Pollution Control Board/Committee and may also be seen at Website of the MOEF at http://WWW.envfor.nic.in . This should be advertised within seven days from the date of issue of the clearance letter at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same should be forwarded to the regional office.	Environmental clearance of the project was advertised in the newspapers and copies of the same were submitted earlier. And the newly issued EC in October 2020 has also notified to the public through Paper notifications in Telugu Daily Eenadu and English daily The Hindu dated 20 October 2020
4	The Ministry or any competent authority may stipulate any further condition(s) on receiving reports from the project authorities. The above conditions will be monitored by the Regional Office of the Ministry located at Bangalore.	Noted
5	The Ministry may revoke or suspend the clearance if implementation of any of the above conditions is not satisfactory.	Noted
6	Any other conditions or alteration in the above conditions will have to be implemented by the project authorities in a time bound manner.	Agreed to comply

S. No.	Conditions	Compliance Status
7	The above conditions will be enforced, inter-alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Hazardous Waste (Management & Handling) Rules, 2003 and the Public Liability Insurance Act, 1991 along with their amendments and rules.	Noted. Public Liability Insurance (PLI) is valid till March 31, 2027. Refer Annexure 10 Public Liability Insurance.

COMPLIANCE STATUS OF CONDITIONS OF MOEF&CC DURING ENVIRONMENTAL CLEARANCE OF THE PROJECT

Name of the Project: Exploratory drilling in onshore area of PKGM-1 Block located in Chirrayanam village, Uppalagupam Mandal in East Godavari District.

Clearance Letter No: 10-28/2004-IA-III dated 31st March, 2006

Period of Compliance Report: Progressive EC Compliance Reporting period is October-2025 to March-2026

Average production details: Average production details for the reporting period are detailed below

Parameter	Units	Approved Capacity	Present Avg. Production
Crude Oil production	BOPD	50,000	7502.38 BOPD
Associated gas production	MMSCMD	2,32	0.144 MMSCMD

Within the Ravva field, there exists 8 oil and gas platforms. 6 platforms (RA, RB, RC, RD, RE and RF) are meant for crude oil production and remaining 2 (RG and RH) are meant for gas production.

As against two (02) nos. of permitted exploratory wells, one (01) exploratory well (RX-9) was drilled during July – August 2006 in Chiryanm village (Latitude: 16° 30' 27.7" N & Longitude: 82° 09' 36.8" E).

All the conditions mentioned in this EC are being complied. No activities undertaken under the scope of this EC. The production capacities and facilities detailed have been achieved and installed. The point wise compliance is detailed below:

S. No.	Condition	Compliance status
i.	It should be ensuring that the drilling site will be constructed in such a manner to avoid the any offsite emergencies such as fires and explosions. Though, the drilling pad would occupy and area of approximately 5000 m ² (70 m x 70 m), an area of about 2.2 ha (150 m x 150 m) should be made available at each drill site. The rest of the area should serve as buffer zone and should be used for housing containers, drilling pipes, material storages, workshops, etc.	No onshore well pads developed during reporting period. During engineering stage well pad design will follow the condition stipulated.
ii.	Since "blow out" can cause destruction of drilling rig, precautions should be taken to prevent blowouts. All measures indicated in the risk assessment should be implemented.	Blow out preventor (BOP) is a mandatory auxiliary system operated with remote control systems through hydraulics during emergency as per OISD and API standards. BOP tested regularly at 5000 psi for emergency response and preparedness. In addition, Emergency response plan is place and periodic mock drill being carried out.
iii.	Drilling bore wells in the intertidal/ transaction zone for augmenting water supply to the work is not permissible. Proponent should make alternate arrangements.	Being complied. APWALTA permission renewal is under process.
iv.	Hydrocarbon releases should be prevented.	All operations are accordance with the OISD and API standards. No onshore exploration or drilling conducted during reporting period.
v.	No flare pit to flare hydrocarbon should be located within 500 m from the habitations.	No Onshore well pads constructed, and no onshore drilling carried out during reporting period.
vi.	No activity should be carried in mangrove and fish breeding mudflat.	Noted and being complied. No Exploration and Drilling activities were carried out inside the mangroves or fish breeding mudflat area.
vii	The discharge of drilling slurries, wastewaters should not be allowed to enter coastal water.	Noted for compliance.

S. No.	Condition	Compliance status
viii.	Approval from DG Shipping under the Merchant Shipping Act prior to commencement of the drilling operations should be obtained.	Not applicable, as the proposed drilling under this EC scope is to be carried out in the onshore only.
ix.	Use of diesel base mud is prohibited. Only water-based drilling fluids / mud should be used for the drilling operation. As reflected in the EMP the drilling fluid should be recycled to a maximum extent. There should be no discharge of drilling fluid/ mud/ cuttings into sea. The unusable drilling fluid and entire drill cuttings should be disposed-off onshore in a well-designed pit lined with impervious liner. The disposal pit should be provided with a leakage collection system. Design details of the waste disposal pit, capping of disposal pit should be approved by the Andhra Pradesh Pollution Control Board. The waste pit after it is filled up should be covered with impervious liner over which, a thick layer of native soil with slope should be provided.	Noted for Compliance. No drilling was carried out in the reporting period.
x.	The chemical additives used for preparation of drilling fluid (DF) should have low toxicity i.e., 96hr LC50 > 30,000 mg/l as per mysid toxicity test conducted on locally available sensitive sea species. The chemicals used (mainly organic constituent) should be biodegradable.	Noted from Compliance. No onshore drilling was carried out in the reporting period.
xi.	Barite used in preparation of DF should not contain Hg > 1mg/kg and Cd > 3mg/kg.	Noted for Compliance. No drilling was carried out in the reporting period
xii.	Drilling wastewater, including drill cutting wash water should be collected in the disposed pit, evaporated and treated and should comply with notified standards for onshore disposal. The company should get analyzed the drill cuttings generated from each well from any recognized laboratory for its characteristics and results should be submitted to Ministry of Environment & Forests/ CPCB/ Andhra Pradesh Pollution Control Board periodically.	Noted for Compliance. No drilling was carried out in the reporting period
xiii.	The used oil generated from drill site should be collected and sold to registered recyclers having environmentally sound management facility.	Noted for Compliance. No drilling was carried out in the reporting period
xiv.	In case the commercial viability of the project is established, the company will prepare a detailed plan for development of oil and gas fields and obtain fresh clearance from the Ministry.	Noted for compliance.
xv.	Adequate infrastructure facilities should be provided near the offshore installations so that booms, skimmers, chemical dispersants could be deployed immediately in case of oil leakage from the installation. Appropriate Oil Spill Management Plan should be drawn, and efforts should be made to curtail the oil slick within 500 meters of the installation and accordingly,	Oil Spill Response and Contingency Plan has been prepared as per the NOS-DCP guidelines. Refer Annexure 4 Oil Spill Response (OSR) Plan and Equipment details. The facility complies with the following requirements: Tier -1 oil spill response capability of category – A of NOS-DCP requirements. Tier – 2 MOU for the mutual aid agreement is held with other organizations such as RIL, OIL and ONGC and

S. No.	Condition	Compliance status
	action plan and facilities to check the oil slick beyond 500 meters should be provided.	Vedanta Limited Tier - 3 The organization has an associate agreement with OSRL, Singapore to support oil spill response of higher magnitude. The following contingency plan are prepared, and periodic mock drill is also carried out to check its effectiveness. a. Emergency Response plan b. Blow out prevention plan c. Oil Spill Contingency Plan d. MOU for Co-operation in Emergency Situations
xvi.	No drilling well should be in mangrove area.	Noted for compliance and no well will be drilled in Mangroves area.
xvii.	It shall be ensured that during movement of man and material no destruction of mangroves is carried out.	Noted for compliance.
xviii.	No groundwater from the Coastal Regulation Zone area should be tapped for the project.	Noted for the compliance.
xix.	The solid waste generated during the drilling process and from the equipment should be disposed of safely in consultation with Andhra Pradesh State Pollution Control Board.	Noted for compliance. No onshore drilling campaign conducted during reporting period.
xx.	The solid waste generated from the drill cutting, solar evaporated drilling mud sediments should be disposed off in the TSDF facility approved by the Andhra Pradesh Board.	
xxi.	No camp sites for labours should be set up in Coastal Regulation Zone area. The toilets to be constructed in Coastal Regulation Zone area should have septic tank and soak pit.	Noted for compliance. No onshore drilling campaign conducted during reporting period.
xxii.	The wastewater generated from the project shall be treated and disposed of as per the norms laid down by Andhra Pradesh State Pollution Control Board.	Noted for compliance. No onshore drilling campaign conducted during reporting period.
xxiii.	Oil blow out preventing device to be provided against the hazard of oil blow out.	Blow out Preventers (BOP) is an integral part of drilling operation. However, no onshore drilling campaign conducted during reporting period.
xxiv.	Hydrocarbon leak due to loss of containment to be checked and prevented.	Noted for compliance. No onshore drilling campaign conducted during reporting period.
xxv.	The project proposed shall also comply with the environmental protection measures and safeguards recommended in the EIA/EMP/DMP report.	Actions recommended in the EMP being implemented and the recommendations of the public hearing panel are also being complied with. Refer Annexure 6 Environment Management Plan compliance report prepared reference to EC No. J-11011/81/2013-I.A.II(I) Refer Annexure 5 Public hearing points compliance against Public Hearing points carried out on 05 December 2013.
B	GENERAL CONDITIONS:	
i.	The Project authority must strictly adhere to the stipulations made by the Central Government	Agreed to comply the Stipulations made by the Central Government and Merchant Shipping while undertaking the

S. No.	Condition	Compliance status
	as part of any International Convention (s) or Merchant Shipping Act.	activity: 1. The Merchant Shipping Act. 1958, as amended & applicable. 2. MARPOL 1973/1978 as amended & applicable.
ii.	The project authorities must strictly adhere to the stipulations made by the Andhra Pradesh State Pollution Control Board and the State Government.	Noted for compliance
iii.	No further expansion or modifications in the plant should be carried out without prior approval of the Ministry of Environment & Forests. In case of deviations or alterations in the project proposal from those submitted to this Ministry for clearance, a fresh reference should be made to the Ministry to assess the adequacy of conditions imposed and to add additional environmental protection measures required, if any.	Noted and no activities presently being carried out without any EC requirements. Amendments in existing / fresh environmental clearances are periodically obtained from MoEF&CC for future expansion and modification projects as per the requirements.
iv.	The project must strictly adhere to the regulations made by MARPOL convention 1973/1978 for setting limits, for discharges from offshore oil/gas exploration and production activities.	Not applicable as the proposed project is onshore activity as per this EC scope.
v.	The project authorities must strictly comply with the rules and regulations under: - Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 as amended on 3 rd October 1994. Prior approvals from Chief Inspectorate of Factories, Chief Controller of Explosives, Fire Safety Inspectorate etc. must be obtained wherever applicable.	Noted for Compliance, however, no onshore drilling operations conducted during reporting period.
vi.	The project authorities must strictly comply with the rules and regulations with regard to handling and disposal of hazardous waste (Management & Handling) Rules, 1989/2003 Wherever applicable. Authorization from the State Pollution Control Board must be obtained for collections/treatment/storage/disposal of hazardous wastes.	Noted for compliance.
vii.	The overall noise level in and around the rig area should be kept well within the standards (85 dBA) by providing noise control measures including acoustic hoods, silencers, enclosures etc. On all sources of noise generation. The ambient noise levels should conform to all the standards prescribed under EPA RULES, 1989 viz. 75 dBA (day time) and 70 dBA (night time).	Noted for Compliance. No drilling was carried out in the reporting period
viii.	A separate environmental management cell equipped with full fledged laboratory facilities must be set up to carry out the environmental management and monitoring functions.	Separate environment management cell is established with competent technical personnel at Ravva Terminal. In-house laboratory facilities are available for testing of key parameters of Water, Wastewater and noise. However, for the detailed and regular monitoring, the third-party laboratory accredited by NABL and MoEF&CC has been hired to carry out the environmental monitoring requirements of the at the facilities and offshore.

S. No.	Condition	Compliance status
ix.	The project authorities will provide adequate funds both recurring and non-recurring to implement the conditions stipulated by the Ministry of Environment & Forests as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so provided should not be diverted for other purpose.	Noted for compliance
x.	The implementation of the project vis-à-vis environmental action plans will be monitored by Ministry's Regional Office at Bhopal/State Pollution Control Board / Central Pollution Control Board. A six-monthly compliance status report should be submitted to the monitoring agencies.	Being complied. Six monthly compliance report is submitted to MoEF&CC.
xi.	The Project Proponent should inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the State Pollution Control Board/ Committee and may also be seen at Website of the Ministry and Forests. This should be advertised within seven days from the date of issue of the clearance letter in at least two local newspapers that we are widely circulated in the region of which one shall be in the vernacular language of the locality concerned.	A public notice informing the grant of EC by MOEF for drilling two exploratory wells in PKGM onshore Area, Chirrayanam village, East Godavari district and availability of its copies was published in the e following newspapers: 1) Eenadu (Telugu) – dated. 25-04-2006 2) Deccan Chronicle (English) –dated. 25-04-2006 Newly issued EC in October 2020 has also notified to the public through Paper notifications in Telugu Daily Eenadu and English daily The Hindu dated 20 October 2020
xii.	The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.	Noted
xiii.	The Ministry reserves the right to stipulated additional conditions if found necessary. The company will implement these conditions in a time bound manner.	Noted

COMPLIANCE STATUS OF CONDITIONS OF MOEF&CC DURING ENVIRONMENTAL CLEARANCE OF THE PROJECT

Name of the Project: Oil and Gas Development in existing Ravva Off-shore Field, PKGM-1 Block, located off Surasaniyanam (S. Yanam) in the Bay of Bengal, East Godavari District, Andhra Pradesh by M/s. Cairn India Limited

Clearance Letter J-11011/81/2013-IA II (I) dated 23rd February, 2015

Period of Compliance Report: Progressive EC Compliance Reporting period is October-2025 to March-2026

Average production details: Average production details for the reporting period is detailed below

Parameter	Units	Approved Capacity	Present Avg. Production
Crude oil production	BOPD	50,000	7502.38 BOPD
Associated gas production	MMSCMD	2.32	0.144 MMSCMD

Within the Ravva field, there exists 8 oil and gas platforms. 6 platforms (RA, RB, RC, RD, RE and RF) are meant for crude oil production and the remaining 2 (RG and RH) are meant for gas production.

Project activity during reporting period No activities under the scope of this EC were undertaken during the reporting period in the block

S. No.	Conditions	Compliance Status
	Specific Conditions	
i.	All the specific conditions and general conditions specified in the environmental clearance letter accorded vide Ministry's letter nos. J-11011/6/1991-IA dated 19th December 1990 and J-11011/6/91-IA dated 19th December 1991, J-11011/50/2001-IA dated 17th September, 2001 and J-11011/207/2004-IA II (I) dated 4th August, 2005 shall be implemented.	Compliance status of all the specific conditions is implemented.
ii.	Only high efficiency DG set with adequate stack height and modern emission control equipment and low Sulphur clean diesel shall be used. Acoustic enclosure shall be provided to the DG sets to mitigate the noise pollution.	At present the industry has one number of DG set capacity 1010 KVA (equivalent to 800 kW) and provided acoustic enclosures for control of noise pollution and provided with adequate stack height.
iii.	CRZ clearance shall be obtained.	Complied. CRZ Clearance has been granted by MoEF&CC, vide Letter No. 11-20/2015-IA. II dated May 25, 2017 and latest CRZ clearance issued by MOEF&CC vide letter No. IA-J-11011/41/2018-IA II(I) dated 15 th Oct 2020.
iv.	Gas produced during testing shall be flared with appropriate flaring booms.	Noted for the compliance.
v.	The flare system shall be designed as per good oil field practices and Oil Industry Safety Directorate (OISD) guidelines. The stack height shall be provided as per the regulatory requirements and emissions from stacks will meet the MOEF/CPCB guidelines.	Complied. Flare stacks are designed as per the OISD and API standards. Flare stacks are designed to combust Gas efficiently by maintaining Gas to air ratio at flare tips to minimize the emissions.
vi.	Total water requirement shall not exceed 85m ³ /day (45m ³ /day fresh water + 40m ³ /day seawater) and prior permission shall be obtained from the Competent Authority for the drawl of water. Only water-based mud system shall be used.	Noted for the compliance. No drilling activity carried out in reporting period
vii.	Water based drilling mud shall be discharged to the sea after proper dilution as per E(P) Rules vide G.S.R 546(E) dated 30 th August, 2005.	Noted for the compliance. No drilling activity carried out in reporting period.

S. No.	Conditions	Compliance Status
viii.	The Company shall ensure that there shall be no impact on flora fauna due to drilling of wells in the offshore sea. The company shall undertake conservation measures to protect the marine animals/biota in the region. The company shall monitor the petroleum hydrocarbons and heavy metals concentration in the marine fish species regularly and submit report to the Ministry.	Noted for compliance. No Drilling activity carried out in reporting period
ix.	Treated wastewater (produced water or formation water) shall comply with the marine disposal standards notified under the Environment (Protection) Act, 1986. Sewage treatment on board of the rig as per MARPOL regulation. Residual chlorine shall not exceed 1 mg/l before disposal. Standards for injection produced water into confined hydrocarbon reservoir structure at more than 1000 m with oil in water content of less than 10 ppm shall be complied.	Being complied. Treated wastewater disposal to marine as per the rules specified by EP Act, monthly reports being submitted to APPCB. Discharges from Rig/ vessels engaged in the field meet the MARPOL requirements as applicable under Annex I, II, III, IV, V & VI. Refer Annexure 1 Environmental Monitoring report Ravva Onshore Terminal.
x.	The drill cutting (DC) wash water shall be treated to conform to limits notified under the Environment (Protection) Act, 1986, before disposal into sea. The treated effluent shall be monitored regularly.	Noted for compliance. No drilling activity carried out in reporting period
xi.	All the guidelines shall be followed for the disposal of solid waste, drill cutting and drilling fluids for onshore and offshore drilling operation notified vide GSR.546 (E) dated 30 th August 2005. Different types of wastes shall be kept segregated.	Noted for compliance. No drilling activity carried out in reporting period
xii.	High efficiency equipment shall be used to separate solids, hydrocarbons and water such as shale shakers with improved capacity to filter smaller solids, low shear pumps for use in produced water shall be employed.	Noted for compliance. No drilling activity carried out in reporting period
xiii.	Good bookkeeping practices shall be put in place to manage wastes such as waste tracking program i.e. identify where and when the waste generated, the type of waste and its volume, the disposal method and its location, and the personnel responsible for the waste management.	Being Complied. All waste generation, disposal and the management details are maintained in Form 3 as per Hazardous waste rules.
xiv.	A waste minimization plan shall be developed and followed through proper inventory management following best practices in drilling operations, good housekeeping practices and optimized equipment maintenance schedules.	Noted for compliance. No drilling activity carried out in reporting period
xv.	Only essential rig personnel shall be on board the rig. Emergency Response Plan and health, safety and environment (HSE) system shall be installed. Geo- hazard and geotechnical studies shall be carried out to ensure safe drilling operations.	Noted for compliance. No drilling activity carried out in reporting period
xvi.	All the hazardous waste generated at the rig/offshore facility shall be properly treated, transported to on shore and disposed of in accordance with the Hazardous Waste (Management, Handling and Transboundary Movement) Rules 2008. No waste oil shall be disposed off into sea. Waste/used oil shall be brought onshore and sold to MOEF/CPCB	Noted for compliance. No drilling activity carried out in reporting period

S. No.	Conditions	Compliance Status
	authorized recyclers/re-processors only.	
xvii.	Requisite infrastructure facilities shall be provided near the offshore installations so that booms and skimmers/ chemical dispersants could be deployed immediately in case of oil leakage from the installations. Efforts shall be made to curtail the oil slick within 500 meters of the installation and accordingly, action plan and facilities to check the oil slick within 500 meters shall be provided.	Oil Spill Response and Contingency Plan has been prepared as per the NOS-DCP guidelines. Refer Annexure 4 Oil Spill Response (OSR) Plan and Equipment details. The facility complies with the following requirements: Tier -1 oil spill response capability of category – A of NOS-DCP requirements. Tier – 2 MOU for the mutual aid agreement is held with other organizations such as RIL, OIL and ONGC and Vedanta Limited Tier - 3 The organization has an associate agreement with OSRL, Singapore to support oil spill response of higher magnitude. The following contingency plan are prepared, and periodic mock drill is also carried out to check its effectiveness. - Emergency Response plan - Blow out prevention plan - Oil Spill Contingency Plan - MOU for Co-operation in Emergency Situations
xviii	Approval from DG Shipping under the Merchant Shipping Act prior to commencement of the drilling operations shall be obtained. At least 30 days prior to the commencement of drilling, the exact location shall be intimated to the Director General of Shipping and the Company shall abide by any direction he may issue regarding ensuring the safety of navigation in the area.	Noted for compliance. No drilling campaign carried out in reporting period Required Statutory approvals are taken prior commencement of drilling. Additional instructions / advisory, if any, issued by Statute including those from Director General of Shipping are adhered to as applicable. Movement and operation of drilling rigs being done under intimation to DG Shipping before commencement of activities
xix.	The International 'Good Practices' adopted by the Petroleum Industry viz international norms to safeguard the coastal and marine biodiversity shall be implemented by the company.	Vedanta Limited (Cairn Oil & Gas) and Andhra Pradesh Forest Department has formed The Marine & Costal Biodiversity Conservation & Development foundation in Dr. B. R. Ambedkar Konaseema district to work on various biodiversity projects and mangroves conservation project. - Cairn, APFD & DA entered a MoU to carryout biodiversity conservation and development projects around Ravva terminal in which Development of 3 lakh mangrove plantation taken as 1st project. A cheque of 26.6L has been Submitted to DFO for the initial phase of plantation. - The fishing cat conservation project was initiated at Coringa wildlife sanctuary. Cairn and APFD entered MoU for Conservation of Fishing Cat an endangered species at wetlands of Coringa wildlife sanctuary. Cairn has allocated INR 73 Lakhs for the project
xx.	The Company shall take necessary measures to reduce noise levels such as proper casing at the drill site and meet DG set norms notified by the MOEF. Height of all the stacks/vents shall be provided as per the CPCB guidelines.	At present the industry has one number of DG set capacity 1010 KVA. provided acoustic enclosures for control of noise pollution and provided with adequate stack height. Stack monitoring being carried out for both DG sets, complied as per the DG set rules.

S. No.	Conditions	Compliance Status
xxi.	The design, material of construction, assembly, inspection, testing and safety aspects of operation and maintenance of pipeline and transporting the natural gas/oil shall be governed by ASME/ANSI B 31.8/B31.4 and OISD standard 141.	Being complied, all pipelines follow OISD 141. Periodic inspection, testing, pigging, intelligent pigging of pipelines being conducted for integrity. All pipelines are healthy to operate. OISD audit has completed in August 2023 for asset compliance.
xxii.	The project proponent shall also comply with the environmental protection measures and safeguards recommended in the EIA /EMP/RA/NIO report.	Noted and being complied. Refer Annexure 6 Environment Management Plan compliance report prepared reference to EC No. J-11011/81/2013-I.A. II(I)
xxxiii.	Full drawings and details of Blow Out Preventer to encounter well kick due to high formation presence, if encountered, shall be submitted to the Ministry's Regional Office within 3 months of the issue of environment clearance.	Complied, BOP drawings were submitted to MOEF.
xxiv.	On completion of activities, the well shall be either plugged and suspended (if the well evaluation indicates commercial quantities of hydrocarbon) or killed and permanently abandoned with mechanical plugs and well cap. If well is suspended, it shall be filled with a brine solution containing small quantities of inhibitors to protect the well. The position at the end of the activities shall be communicated in detail to the Ministry indicating the steps taken i.e. whether all the wells are plugged or abandoned, and necessary precautions taken.	Noted for compliance.
xxv.	A brief report on environmental status & safety related information generated and measures taken as well as frequency of such reporting to the higher Authority shall be submitted to this Ministry and its respective Regional Office at Bangalore.	Noted for compliance. Six-monthly compliance reports submitted to MoEFCC, CPCB and APPCB
xxvi.	Petroleum and Natural Gas (Safety in Offshore Operations) Rules 2008 of OISD shall be strictly adhered to.	Being complied
xxvii.	Recommendations mentioned in the Risk Assessment & Consequence Analysis and Disaster Management Plan shall be followed.	Disaster management plan (DMP) and site incidents response plan (SIRP) that includes preparedness and response plans for onsite and offsite emergencies submitted to nodal agency. The Disaster Management report has been revised in August 2025. Detailed description about Pre-disaster-preparedness, Mitigation and prevention, Disaster-response action, and Post-disaster-relief, rehabilitation and reconstruction has been covered in the report.
xxviii.	Adequate funds both recurring and non-recurring shall be earmarked to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so provided shall not be diverted for any other purposes.	Budgetary provisions have been made exclusively for up-gradation/ maintenance/ operation of facilities developed for environmental protection. for Oct'25-Mar'26 an amount of INR 177 Lakhs spent for environmental monitoring, waste management, ETP & STP operation & Maintenance (O&M), Public Liability Insurance Premiums, Water treatment chemicals, Oil spill response membership fee, Biodiversity, and green belt maintenance
xxix.	Petroleum and Natural Gas (safety in Offshore Operations) Rules 2008 of OISD shall be strictly adhered to.	Noted for compliance.
xxx.	All commitment made during public hearing /public	Being complied.

S. No.	Conditions	Compliance Status										
	consultation should be satisfactorily complied. As being done in existing facility, tripartite implementation program between the PP, District administration and Local Panchayat should be accomplished and adequate fund to fulfill public grievance should be kept in the budgetary provision of the company.	Refer Annexure 5 Public hearing points compliance.										
xxxi.	Concrete plan of action for Enterprise Social Responsibility consisting 5 % of project cost shall be prepared in consultation with the District Authority and the local people and a mechanism for it monitoring should be worked out. Action plan shall be submitted to MoEF's RO Office for monitoring.	Noted for compliance. Cairn is working with District administration to uplift the socio-economic conditions of the local community by allocating 6 crores every year. Consolidated Budget Summary – FY 2025-26 (Till date) <table><tr><th>Sector</th><th>Budget Outflow</th></tr><tr><td>Health</td><td>Rs. 66.60 Lakhs</td></tr><tr><td>Education</td><td>Rs. 78.70 Lakhs</td></tr><tr><td>Infrastructure & Beach Tourism</td><td>Rs. 3.00 Crores</td></tr><tr><td>Social Welfare & Community Support</td><td>Rs. 12–15 Lakhs</td></tr></table> Total – Approx 4.6 Cr District Collector as a nodal officer for budget allocation and program finalization. Refer Annexure 2 Corporate Social Responsibility Program	Sector	Budget Outflow	Health	Rs. 66.60 Lakhs	Education	Rs. 78.70 Lakhs	Infrastructure & Beach Tourism	Rs. 3.00 Crores	Social Welfare & Community Support	Rs. 12–15 Lakhs
Sector	Budget Outflow											
Health	Rs. 66.60 Lakhs											
Education	Rs. 78.70 Lakhs											
Infrastructure & Beach Tourism	Rs. 3.00 Crores											
Social Welfare & Community Support	Rs. 12–15 Lakhs											
xxxii.	On completion of drilling, the company has to plug the drilled wells safely and obtain certificate from environment safety angle from the concerned authority.	Noted for compliance. Till now, no such instances of well plugged or abandoned activity was carried out in reporting period										
	General Conditions											
i.	The project authorities must strictly adhere to the stipulations made by the Andhra Pradesh Pollution Control Board (APPCB), State Government and any other statutory authority.	Being Complied to all the requirements specified by APPCB in the consent for operation (CFO). Environmental monitoring includes ambient air quality as per NAAQS, stack emissions, wastewater discharges, surface & groundwater quality and ambient noise conducted on regular basis. Compliance of CFO conditions is submitted to APPCB once in every six months apart from this compliance report on July 1st and January 1st of every year. Refer Annexure 9 CFO and Authorization Compliance report.										
ii.	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests. In case of deviations or alterations in the project proposal from those submitted to this Ministry for clearance, a fresh reference shall be made to the Ministry to assess the adequacy of conditions imposed and to add additional environmental protection measures required, if any.	Noted and no activities carried out without any EC requirements. Amendments in existing/ fresh environmental clearances are periodically obtained from MoEFCC for future expansion and modification projects as per the requirements.										
iii.	The National Ambient Air Quality Emission Standards issued by the Ministry vide G.S.R.No. 826(E) dated 16 th November 2009 shall be followed.	Complied and Refer Annexure 1 Environmental Monitoring report Ravva Onshore Terminal.										

S. No.	Conditions	Compliance Status										
iv.	The locations of ambient air quality monitoring stations shall be decided in consultation with the State Pollution Control Board (SPCB) and it shall be ensured that at least one stations is installed in the upwind and downwind direction as well as where maximum ground level concentrations are anticipated.	Complied with the requirements. Environmental Monitoring Plan developed based on the impact assessment, GLC from point sources and receptors modelling, AAQ monitoring locations and other environmental monitoring like Wastewater ground water, surface water and Noise sampling surrounding Ravva plant has prepared for approval from APPCB.										
v.	The overall noise levels in and around the plant area shall be kept well within the standards by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels shall conform to the standards prescribed under Environment (Protection) Act, 1986 Rules, 1989 viz. 75 dBA (day time) and 70 dBA (night time).	DG sets, compressors and pumps are the sources of noise. The following are the noise pollution control measures: • Provision of generators with acoustic enclosures • Silencers for exhausts • Personnel Protected Equipment for people working near noise sources Refer Annexure 1 Environmental Monitoring report Ravva Onshore Terminal										
vi.	The Company shall harvest rainwater from the roof tops of the buildings and storm water drains to recharge the ground water and use the same water for the process activities of the project to conserve fresh water.	Around 50,000 m ³ of rainwater is harvested annually from various catchment areas /rainwater harvesting ponds situated within the Ravva terminal. Recharge of the rainwater is not possible because the water table is at <3 meters due to proximity to back water zone.										
vii.	Training shall be imparted to all employees on the safety and health aspects of chemicals handling. Pre-employment and routine periodical medical examinations for all employees shall be undertaken on a regular basis. Training to all employees on handling of chemicals shall be imparted.	Periodic training being imparted to employees on HSE including handling of chemicals. Pre-employment and routine periodical medical examinations for all employees are being undertaken on regular basis.										
viii.	The company shall also comply with all the environmental protection measures and safeguards proposed in the documents submitted to the Ministry. All the recommendations made in the EIA/EMP in respect of environmental management, risk mitigation measures and public hearing relating to the project shall be implemented.	Actions recommended in the EMP being implemented and the recommendations of the public hearing panel are also being complied with. Refer Annexure 6 Environment Management Plan compliance report prepared reference to EC No. J-11011/81/2013-I.A.II(I) Refer Annexure 5 Public hearing points compliance against Public Hearing points carried out on 05 December 2013 and 11 October 2018.										
ix.	The company shall undertake all relevant measures for improving the socio-economic conditions of the surrounding area. CSR activities shall be undertaken by involving local villages and administration.	Cairn is working with District administration to uplift the socio-economic conditions of the local community by allocating 6 crores every year. Consolidated Budget Summary – FY 2025-26 (Till date) <table><tr><th>Sector</th><th>Budget Outflow</th></tr><tr><td>Health</td><td>Rs. 66.60 Lakhs</td></tr><tr><td>Education</td><td>Rs. 78.70 Lakhs</td></tr><tr><td>Infrastructure & Beach Tourism</td><td>Rs. 3.00 Crores</td></tr><tr><td>Social Welfare & Community Support</td><td>Rs. 12–15 Lakhs</td></tr></table> Total – Approx 4.6 Cr Refer Annexure 2 Corporate Social Responsibility Program.	Sector	Budget Outflow	Health	Rs. 66.60 Lakhs	Education	Rs. 78.70 Lakhs	Infrastructure & Beach Tourism	Rs. 3.00 Crores	Social Welfare & Community Support	Rs. 12–15 Lakhs
Sector	Budget Outflow											
Health	Rs. 66.60 Lakhs											
Education	Rs. 78.70 Lakhs											
Infrastructure & Beach Tourism	Rs. 3.00 Crores											
Social Welfare & Community Support	Rs. 12–15 Lakhs											

S. No.	Conditions	Compliance Status
x.	The company shall undertake eco-developmental measures including community welfare measures in the project area for the overall improvement of the environment.	Refer Annexure 2 Corporate Social Responsibility Program
xi.	A separate Environmental Management Cell equipped with full-fledged laboratory facilities shall be set up to carry out the Environmental Management and Monitoring functions.	Separate environment management cell is established with competent technical personnel at Ravva Terminal. In-house laboratory facilities are available for testing key parameters of Water, Wastewater and noise. However, for the detailed and regular monitoring, the third-party laboratory accredited by NABL and recognized by MoEFCC has been hired to carry out the environmental monitoring requirements of the at the facilities and offshore.
xii.	The company shall earmark sufficient funds towards capital cost and recurring cost per annum to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so earmarked for environment management /pollution control measures shall not be diverted for any other purpose.	Budgetary provisions have been made exclusively for up-gradation/ maintenance/ operation of facilities developed for environmental protection. for Oct'25-Mar'26 an amount of INR 177 Lakhs spent for environmental monitoring, waste management, ETP & STP operation & Maintenance (O&M), Public Liability Insurance Premiums, Water treatment chemicals, Oil spill response membership fee, Biodiversity, and green belt maintenance
xiii.	A copy of the clearance letter shall be sent by the project proponent to be concerned Panchayat, Zilla Parishad/ Municipal Corporation, Urban local Body and the local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal.	Complied and Environmental Clearance is submitted to concern local bodies, in addition EC are displayed on our company website with compliance status.
xiv.	The project proponent shall also submit six monthly reports on the status of compliance of the stipulated Environmental Clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the respective Regional Office of MoEF, the respective Zonal Office of CPCB and APPCB. A copy of Environmental Clearance and six-monthly compliance status report shall be posted on the website of the company.	Six monthly EC compliance report along with the annexures containing monthly Environmental monitoring results is regularly being submitted to MoEF&CC.
xv.	The environmental statement for each financial year ending 31st March in Form-V as is mandated shall be submitted to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental clearance conditions and shall also be sent to the respective Regional Offices of MoEF by e-mail.	Complied, The Annual Environmental Statement (Form V) is submitted every year to APPCB and also uploaded in the website of the company. Refer Annexure 7 Environmental Statement for FY 2024-25.
xvi.	The project proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB/Committee and may also be seen at Website of the Ministry at www.moef.nic.in. This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same shall	Complied. A public notice informing the grant of EC by MOEF&CC has been published in the following newspapers: - Eenadu (Telugu), East Godavari Dist. Edition– dtd. 18-03-2015. - The Hindu (English), Visakhapatnam Edition–dtd. 19-03-2015. And the newly issued EC in October 2020 has also notified to the public through Paper notifications in Telugu Daily Eenadu and English daily The Hindu dated

S. No.	Conditions	Compliance Status
	be forwarded to the concerned Regional Office of the Ministry.	20 October 2020
xvii.	The project authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of start of the project.	Agreed to comply

COMPLIANCE STATUS OF CONDITIONS OF MOEF&CC DURING CRZ CLEARANCE OF THE PROJECT

Name of the Project: Expansion of Oil & Gas Development facilities in existing Ravva Off-shore Field, PKGM-1 Block, off Surasaniyanam in Bay of Bengal, East Godavari District, Andhra Pradesh

Clearance Letter: F. No. 11-20/2015-IA.III dated 25th May, 2017

Period of Compliance Report: Progressive CRZ Compliance Reporting period is October-2025 to March-2026

Field wise the average production details: Average production details for the reporting period is detailed below:

Parameter	Units	Approved Capacity	Present Avg. Production
Crude oil production	BOPD	50,000	7502.38 BOPD
Associated gas production	MMSCMD	2.32	0.144 MMSCMD

Within the Ravva field, there exists 8 oil and gas platforms. 6 platforms (RA, RB, RC, RD, RE and RF) are meant for crude oil production and remaining 2 (RG and RH) are meant for gas production.

Project activity during reporting period No activities under the scope of this CRZ Clearance were undertaken during the reporting period in the block

S. No.	Conditions	Compliance Status
	A. Specific Conditions	
i.	All the terms and conditions stipulated by the APCZMA in their letter No.4751/ENV/CZMA/2014 dated 06.08.2014, shall be strictly complied with and the status of implementation shall be submitted to all concerned agencies including regional office of the Ministry of Environment, Forest and Climate Change.	Being Complied. Compliance status of all the specific conditions is implemented and the status of the same is submitted to MoEFCC as part of six-monthly compliance report.
ii.	The project/ activity shall be carried out strictly be in accordance with the provisions of CRZ Notification, 2011, and shall endeavor to render the coastal ecology of the area including flora and fauna to its original state after completion of the project.	Noted for compliance.
iii.	The project proponent shall ensure that no piling work is undertaken during migratory season of turtles; Project proponent shall develop Sea Turtle Conservation Plan and implementation strategy with special focus on Sacramento Island in consultation with Wildlife Institute of India and Andhra Pradesh Forest Department.	Noted for compliance. No project construction activities carried out during reporting period. Environmental Management Plan developed for each Aspects covers the risk with mitigation plan. Andhra Pradesh Forest department (APFD) has already taken turtles conservation through entire Andhra coastal areas including S'Yanam area. Forest department has identified nesting grounds with shelter zones with a security of the nesting grounds.
iv.	The project proponent shall ensure compliance to the National Oil Spill Disaster Contingency Plan (NOSDCP) and fulfill the responsibilities as vested therein. A local plan based on NOSDCP shall be prepared by the proponent to mitigate and manage the risk of oil spillage.	Oil Spill Response and Contingency Plan has been prepared as per the NOS-DCP guidelines. Refer Annexure 4 Oil Spill Response (OSR) Plan and Equipment details. The facility complies with the following requirements: Tier -1 oil spill response capability of category – A of

S. No.	Conditions	Compliance Status
		NOS-DCP requirements. Tier – 2 MOU for the mutual aid agreement is held with other organizations such as RIL, OIL and ONGC and Vedanta Limited Tier - 3 The organization has an associate agreement with OSRL, Singapore to support oil spill response of higher magnitude. The following contingency plan are prepared, and periodic mock drill is also carried out to check its effectiveness. - Emergency Response plan - Blow out prevention plan - Oil Spill Contingency Plan - MOU for Co-operation in Emergency Situations
v.	The project proponent shall deposit 2% of the cost of the project (proportional to construction of platform and cost of oil and gas producing wells found after exploratory work) for conservation of coastal and marine biodiversity in the states of Andhra Pradesh. Government of Andhra Pradesh shall establish an independent Marine and Coastal Biodiversity Foundation where this 2% contribution is to be deposited as a corpus fund and its interest shall be used to undertake activities specific to marine and coastal biodiversity conservation. Guidelines to establishment of the Marine and Coastal Biodiversity Foundation can be followed based on the guidelines of Mangrove Foundation of Maharashtra. The project proponent shall follow up with the State Government in this regard and ensure that the Foundation is established during the development of the project itself.	Noted for compliance. Vedanta Limited (Cairn Oil & Gas) and Andhra Pradesh Forest Department has formed The Marine & Coastal Biodiversity Conservation & Development foundation in Dr. B. R. Ambedkar Konaseema district to work on various biodiversity projects and mangroves conservation project. - Cairn, APFD & DA entered a MoU to carryout biodiversity conservation and development projects around Ravva terminal in which Development of 3 lakh mangrove plantation taken as 1st project. A cheque of 26.6L has been submitted to DFO for the Initial phase of plantation. - The fishing cat conservation project was initiated at Coringa wildlife sanctuary. Cairn and APFD entered MoU for Conservation of Fishing Cat an endangered species at wetlands of Coringa wildlife sanctuary. Cairn has allocated INR 73 Lakhs for the project.
vi.	There shall be no disposal of solid or liquid wastes on the coastal area. Solid waste management shall be as per Solid Wastes Management Rules, 2016. A team comprising of members of the EAC and others with expertise in the subject may visit the project site periodically during the construction phase to supervise and suggest additional measures if desired.	Being complied.
vii.	The project proponent shall ensure that monitoring of hydrocarbons & temperature is regularly carried out through independent institutes like IIT, Chennai, Andhra University or other accredited institutes in addition to in-house monitoring. The monitoring reports shall be submitted to the concerned department in the State Government and the regional office of the Ministry.	Monitoring of water quality, sediment characteristics, plankton diversity and concentration of heavy metals in fish tissues has undertaken by Kadam Environmental Consultants in January 2023 further to this in this current calendar year it is planned to be conducted. Refer Annexure 8 Offshore marine monitoring report.

S. No.	Conditions	Compliance Status
viii.	The project proponent shall ensure that marker buoy and light indicators are established close to the route of the pipeline to avoid damage to the fishing nets (if any) and shall ensure that round the clock surveillance around the RC Platform is carried out to avoid any damage to the local fishing vessels.	Marker buoys and light indicators are not feasible considering the frequent operational vessel movements. Cairn facilities are geo fenced with restricted activities within 500-meter buffer zone and all activities within the block area being monitored continuously by Radio officer and patrolling boat available for 24x7 surveillance within the Block area.
ix.	The project proponent shall undertake post-project monitoring of estuarine and coastal waters at regular intervals and follow internationally acceptable protocols while dealing with marine biological aspects. The monitoring reports shall be submitted to the concerned department in the State Government and the regional office of the Ministry	Noted for compliance. Monitoring of water quality, sediment characteristics, plankton diversity and concentration of heavy metals in fish tissues has undertaken by Kadam Environmental Consultants in January 2023 further to this in this current calendar year it is planned to be conducted. Refer Annexure 8 Offshore marine monitoring report.
x.	The guidelines issued by the CPCB for extraction of oil and gas shall be strictly followed. The drill cuttings and drilling fluids for offshore installations should confine to the guidelines issued by CPCB/ APPCB.	Noted for compliance. No drilling activity carried out in the reporting period
B	General Conditions	
i.	Adequate provision for infrastructure facilities including water supply, fuel and sanitation must be ensured for construction workers during the construction phase of the project to avoid any damage to the environment.	Noted for compliance. However, no project construction activities were carried out in the said compliance period.
ii.	Full support shall be extended by the project proponent to the officers of this Ministry/ Regional Office of the Ministry, during inspection of the project for monitoring purposes by furnishing full details and action plan including action taken reports in respect of mitigation measures and other environmental protection activities.	Noted for compliance.
iii.	A six-monthly monitoring report shall need to be submitted by the project proponents to the Regional Office of this Ministry regarding the implementation of the stipulated conditions.	Six monthly compliance report being submitted to regional office MoEFCC on a regular basis. Last report submitted on 2 nd June 2025.
iv.	The Ministry of Environment, Forest & Climate Change or any other competent authority may stipulate any additional conditions or modify the existing ones, if necessary, in the interest of environment and the same shall be complied with.	Noted.
v.	The Ministry reserves the right to revoke this clearance if any of the conditions stipulated are not complied with to the satisfaction of the Ministry.	Noted.
vi.	In the event of a change in project profile or change in the implementation agency, a fresh reference shall be made to the Ministry.	Noted. Amendments in existing environmental clearances are periodically obtained from MoEFCC for future expansion and modification projects as per the requirements
vii.	The project proponents shall inform the Regional Office of the Ministry, the date of financial closure and final approval of the project by the concerned	Noted for compliance.

S. No.	Conditions	Compliance Status
	authorities and the date of start of land development work.	
viii.	A copy of the CRZ Clearance letter shall also be displayed on the website of the concerned State Pollution Control Board. The Clearance letter shall also be displayed at the Regional Office, District Industries Centre and Collector's Office/ Tehsildar's Office for 30 days.	Complied.
5.	The above stipulations would be enforced among others under the provisions of Water (Prevention and Control of Pollution) Act 1974, the Air (Prevention and Control of Pollution) Act 1981, the Environment (Protection) Act, 1986, the Public Liability (Insurance) Act, 1991 and EIA Notification 1994, including the amendments and rules made thereafter.	Noted
6.	All other statutory clearances such as the approvals for storage of diesel from Chief Controller of Explosives, Fire Department, Civil Aviation Department, and clearances under the Forest Conservation Act, 1980 and Wildlife (Protection) Act, 1972 etc. shall be obtained, as applicable by project proponents from the respective competent authorities.	Noted for the compliance. All statutory approvals are in place and valid.
7.	The project proponent shall advertise in at least two local Newspapers widely circulated in the region, one of which shall be in the vernacular language informing that the project has been accorded CRZ Clearance and copies of clearance letters are available with the State Pollution Control Board and may also be seen on the website of the Ministry of Environment, Forest & Climate Change at The advertisement should be made within Seven days from the date of receipt of the Clearance letter and a copy of the same should be forwarded to the Regional office of this Ministry at Chennai.	Complied. A public notice has been published in the following newspapers: - Eenadu (Telugu), East Godavari Dist. Edition– dtd. 02-06-2017. - The Hindu (English), East Godavari Dist. Edition– dtd. 02-06-2017. And the newly issued EC in October 2020 has also notified to the public through Paper notifications in Telugu Daily Eenadu and English daily The Hindu dated 20 October 2020
8.	This Clearance is subject to final order of the Hon'ble Supreme Court of India in the matter of Goa Foundation Vs. Union of India in Writ Petition (Civil) No.460 of 2004, as may be applicable to this project.	The Project Proponent Agreed to comply while undertaking the activity
9.	Any appeal against this clearance shall be with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010	Noted.
10.	Status of compliance to the various stipulated environmental conditions and environmental safeguards will be uploaded by the project proponent on its website.	Complied. All clearances and Compliance reports available at Cairn website accessible to public.
11.	A copy of the clearance letter shall be sent by the proponent to concern Panchayat, Zilla Parishad/ Municipal Corporation, Urban Local Body and the	Complied

S. No.	Conditions	Compliance Status
	Local NGO, if any, from whom suggestions/representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the company by the proponent.	
12.	The proponent shall upload the status of compliance of the stipulated EC conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the Ministry, the respective Zonal Office of CPCB and the SPCB.	Complied. All clearances and Compliance reports available in Cairn website.
13.	The project proponent shall also submit six monthly reports on the status of compliance of the stipulated EC conditions including results of monitored data (both in hard copies as well as by e-mail) to the respective Regional Office of MoEF&CC, the respective Zonal Office of CPCB and the SPCB.	Six monthly compliance report being submitted to regional office MoEFCC on a regular basis. Last report submitted on 2 nd June 2025.
14.	The environmental statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of EC conditions and shall also be sent to the respective Regional Offices of the Ministry by e-mail.	Complied. Refer Annexure 7.

NOC (No Objection Certificate) issued by APCZMA:

S. No.	Conditions	Compliance Status
1.	The proposed installation shall conform to the norms prescribed in the CRZ Notification, 2011 issued by the Ministry of Environment and Forests, Government of India S. O. No. 19(E), dated 06-01-2011.	Noted for compliance.
2.	Regular monitoring of treated wastewater discharged into the sea shall be taken up to study the impact on marine organism.	Monitoring of water quality, sediment characteristics, plankton diversity and concentration of heavy metals in fish tissues has undertaken by Kadam Environmental Consultants in January 2023 further to this in this current calendar year it is planned to be conducted Refer Annexure 8 Offshore marine monitoring report.
3.	The monitoring of hydrocarbons & temperature shall be entrusted to an independent agency like Andhra University and other accredited institutions in addition to in-house monitoring.	Monitoring of water quality, sediment characteristics, plankton diversity and concentration of heavy metals in fish tissues has undertaken by Kadam Environmental Consultants in January 2023 further to this in this current calendar year it is planned to be conducted Refer Annexure 8 Offshore marine monitoring report.
4.	Marker buoy and light indicators shall be established close to the route of the pipeline to avoid damage to the fishing nets. Round the clock surveillance around the RC Platform shall be maintained to avoid any damage to the local fishing vessels.	Noted for compliance. Cairn facilities are geo fenced with restricted activities within 500-meter buffer zone and all activities within the block area being monitored continuously by Radio officer and patrolling boat available for 24x7 surveillance at platforms.
5.	The industry shall undertake large-scale afforestation measures in surrounding areas and available waste lands along the coast which is devoid of tree growth particularly near Surasaniyanam Village and areas in the vicinity, where the denudation has been rather intensive.	Cairn in collaboration with the AP Forest Department has developed 46 acres of Casuarina plantation along the coast till date. Cairn, APFD & DA entered a MoU to carryout biodiversity conservation and development projects around Ravva terminal in which Development of 3 lakh mangrove plantation taken as 1st project. A cheque of 26.6L has been submitted to DFO for the Initial phase of plantation. Through CSR program, Cairn distributed fruit bearing saplings in the Surasaniyanam village and nearby villages for development of greenbelt beyond the fence.
6.	The industry shall supplement the activities of the Forest and Wildlife Department in conservation of Coringa Wetland Eco-system including mangroves.	Vedanta Limited (Cairn Oil & Gas) and Andhra Pradesh Forest Department have formed The Marine & Costal Biodiversity Conservation & Development foundation in Dr. B. R. Ambedkar Konaseema district to work on various biodiversity projects and mangroves conservation project. 1. Cairn, APFD & DA entered a MoU to carryout biodiversity conservation and development projects around Ravva terminal in which Development of 3 lakh mangrove plantation taken as 1st project. A cheque of 26.6L has been submitted to DFO for the Initial phase of plantation 2. The fishing cat conservation project was initiated

S. No.	Conditions	Compliance Status
		at Coringa wildlife sanctuary. Cairn and APFD entered MoU for Conservation of Fishing Cat an endangered species at wetlands of Coringa wildlife sanctuary. Cairn has allocated INR 73 Lakhs for the project.
7.	The nearby coastal waters are known to support rich and diverse biotic communities, where some of the best fishing grounds of the east coast exist. The industry shall undertake post-project monitoring of estuarine and coastal waters and the industry is advised to follow internationally acceptable protocols while dealing with marine biological aspects.	Noted for compliance. Monitoring of water quality, sediment characteristics, plankton diversity and concentration of heavy metals in fish tissues are undertaken periodically during offshore environmental monitoring carried out by Kadam Environmental Consultants. Refer Annexure 8 Offshore marine monitoring report.
8.	The industry shall follow international codes and standards for laying the submarine pipelines.	Cairn is following international standards for installation of platforms, pipelines as per API, ANSI and OISD standards.
9.	Adequate safety measures shall be incorporated to avoid any possible accidents due to structural failures and to prevent blow outs of Natural Gas / Hydrocarbons.	Blow Out Preventors installed on wellheads to withhold 5000 Psi and tested periodically. Emergency Response Plan and Disaster Management Plan is in place to deal with such scenarios and adequate controls are in place.
10.	There shall not be any obstruction to fishing activity beyond 500m exclusive drilling zone.	Noted for compliance.
11.	Bio-assay analysis shall be conducted periodically to establish the toxicity levels. Fish tissue analysis of local fish species shall be conducted to evaluate the bioaccumulation of hydrocarbons and heavy metals.	Monitoring of water quality, sediment characteristics, plankton diversity and concentration of heavy metals in fish tissues has undertaken by Kadam Environmental Consultants in January 2023 further to this in this current calendar year it is planned to be conducted. Refer Annexure 8 Offshore marine monitoring report.
12.	The guidelines issued by the CPCB for extraction of oil and gas shall be followed. The drill cuttings and drilling fluids for offshore installations should confine to the guidelines issued by CPCB/ APPCB.	Noted for compliance. No drilling activities carried out during reporting period
13.	Solid waste generated during drilling operations shall be in accordance with the guidelines stipulated under Environment (Protection) Third Amendment Rules, 2005 notified vide Notification No. GSR 546(E), dated 30-08-2005.	Noted for compliance. No drilling activities carried out during reporting period
14.	Effluent generated from the drilling operations shall be disposed after treatment and preferably re-used subject to its suitability.	Noted for compliance. No drilling activities carried out during reporting period
15.	The conditions stipulated in Petroleum and Natural Gas (Safety in Offshore operations) Rules, 2008 shall be followed scrupulously.	Noted for compliance.

COMPLIANCE STATUS OF CONDITIONS OF MOEF&CC DURING ENVIRONMENTAL CLEARANCE OF THE PROJECT

Name of the Project: Expansion of Offshore and Onshore Oil and Gas Exploration, Development & Production in Ravva Field, PKGM-1 Block of 331.26 km² located near Surasaniyanam Village (S. Yanam) in Krishna-Godavari Basin, East Godavari District, Andhra Pradesh by M/s Vedanta Limited (Cairn Oil & Gas Division)-Environmental and CRZ Clearance.

Clearance Letter: F.No. IA-J-11011/41/2018-IA 11(1) dated 15th October 2020.

Period of Compliance Report: Progressive EC Compliance Reporting period is October-2025 to March-2026

Average production details: Average production details for the reporting period are detailed below

Parameter	Units	Approved Capacity	Present Avg. Production
Crude oil production	BOPD	50,000	7502.38 BOPD
Associated gas production	MMSCMD	2.32	0.144 MMSCMD

Project activity during reporting period: No activities were initiated under the scope of this EC during the reporting period in the block

S. No.	Conditions	Compliance Status
	Specific Conditions	
i.	The project proponent shall comply with all the conditions stipulated in the APSCZMA CRZ recommendations and NOC issued for the same.	Noted for compliance, No activities were initiated so far under the scope of recent CRZ clearance and EC.
ii.	The company shall comply with all the environmental protection measures and safeguards proposed in the documents submitted to the Ministry. All the recommendations made in the EIA/EMP in respect of environmental management, and risk mitigation measures relating to the project shall be implemented.	Actions recommended in the EMP being implemented and the recommendations of the public hearing panel are also being complied with. Refer Annexure 6 Environment Management Plan compliance report prepared reference to EC No. J-11011/81/2013-I.A. II(I) Refer Annexure 5 Public hearing points compliance against Public Hearing points carried out on 05 December 2013 and 11 October 2018.
iii.	No pipelines or its part shall be laid in the Forest land/Protected Area without prior permission/approval from the Competent Authority.	Noted for compliance. No activities have been initiated under the scope of this EC.
iv.	As proposed by the project proponent, Zero Liquid Discharge shall be ensured and no waste/treated water shall be discharged to any surface water body, sea and/or on land. Mobile ETP along with RO plant shall be installed to treat the wastewater.	Noted for compliance. No activities have been initiated under the scope of this EC.
v.	During exploration, production, storage and handling, the fugitive emission of methane, if any, shall be monitored using Infra-red camera/ appropriate technology.	Noted for compliance. No activities have been initiated under the scope of this EC. However, in existing operations Fugitive emissions study was conducted during 2022 by external agency for entire Onshore and offshore facilities. Based on the study results, Leak detection and Repair (LDAR) programs being implemented to minimize the fugitive emissions from Operations.
vi.	The project proponent also to ensure trapping/storing of the CO ₂ generated, if any, during the process and handling.	Noted for compliance. No activities have been initiated under the scope of this EC.
vii.	Approach road shall be made pucca to minimize generation of suspended dust.	Noted for Compliance. All approach roads to drilling sites will be strengthened and made pucca roads. For dust suppression periodic water sprinkling will be carried out.

EC Compliance Report -: Oil and Gas Development in existing Ravva Off-shore Field, PKGM-1 Block, located off Surasaniyanam (S'Yanam)

S. No.	Conditions	Compliance Status
viii.	The project proponent 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	DG sets, compressors and pumps are the sources of noise. The following are the noise pollution control measures will be implemented: • Provision of generators with acoustic enclosures • Silencers for exhausts • Personnel Protected Equipment for people working near noise sources
ix.	Total freshwater requirement shall not exceed 25 cum/day/well. 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 discarded 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.	Noted for Compliance. No activities were carried under the scope of this EC
x.	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.	Noted for compliance. No activities have been started under this EC. Separate drainage will be constructed to collect storm water for reuse and recharge purposes.
xi.	Drill cuttings separated 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 of into nearby surface water bodies. The company shall comply with the guidelines for disposal of solid waste, drill cutting and drilling fluids for onshore drilling operation notified vide GSR.546(E) dated 30th August 2005.	Noted for compliance. No activities were started under the scope of this EC.
xii.	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.	Noted for Compliance. Oil Spill Response and Contingency Plan has been prepared as per the NOS-DCP guidelines. Waste oil/oily sludge being disposed through MoEFCC SPCB authorised waste oil recyclers
xiii.	The project proponent shall take necessary measures to prevent fire hazards, containing oil spill and soil remediation as needed. At fixed installations or plants use of 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.	Noted for Compliance. Emergency response plan is available. Fire tenders are available at LQ and plant for any emergency case. No activities were started under the scope of this EC.
xiv.	The project proponent shall develop a contingency plan for H ₂ S release including all necessary aspects from evacuation to resumption of normal operations. The workers shall be provided with personal H ₂ S detectors in locations of high risk of exposure along with self-containing breathing apparatus.	H ₂ S gas safety and management measures are included in Emergency Preparedness and Response Plan. H ₂ S Gas detectors are being installed at the potential places. Individual H ₂ S gas monitoring devices are also provided for the persons working in the remote locations including platforms. The well fluids are being treated with H ₂ S scavengers to control the gas reactions and release. The working locations are provided with Self-contained breathing apparatus (SCBA).
xv.	Blow Out Preventer system shall be installed to	Noted for compliance.

EC Compliance Report -: Oil and Gas Development in existing Ravva Off-shore Field, PKGM-1 Block, located off Surasaniyanam (S'Yanam)

S. No.	Conditions	Compliance Status
	prevent well blowouts during drilling operations.	No activities have been initiated under the scope of this EC. BOP drawings were submitted to MOEF.
xvi.	On completion of the project, necessary measures shall be taken for safe plugging of wells with secured enclosures to restore the drilling site to the original condition. The same shall be confirmed by the concerned regulatory authority from environment safety angle. In case of hydrocarbon not found economically viable, a full abandonment plan shall be implemented for the drilling site in accordance with the applicable DGH /Indian Petroleum Regulations.	Noted for compliance. No activities have been initiated under the scope of this EC
xvii.	All the commitments made to the public during public hearing/consultation shall be satisfactorily implemented. As committed Rs. 20 crores shall be allocated for Corporate Environment Responsibility (CER) shall be utilized for meeting the commitment of the issues of public hearing. The CER plan shall be completed before commissioning or expansion project.	Being complied. Refer Annexure 5 Public hearing points compliance.
xviii	No lead acid batteries shall be utilized in the project/site.	Noted for compliance. All lead acid batteries shall be managed as per the Batteries (Management and Handling) Rules.
xix.	Occupational health surveillance of the workers shall be carried out as per the prevailing Acts and Rules. All workers & employees shall be provided with required safety kits/mask for personal protection.	Periodic Industrial Hygiene survey being conducted to assess the occupational health conditions prevailing in the workplace. Any risk identified in the survey are mitigated. Periodic Medical Checkup program is carried out for all workers as per the OMR, 2017. All workers & employees are provided with PPE kits for personal protection based on the job safety assessment study outcome.
xx.	Oil content in the drill cuttings shall be monitored and report & shall sent to the Ministry's Regional Office.	Noted for compliance. No drilling was carried out in the said period.
xxi.	The project proponent 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 manuals 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.	Noted for compliance. Established HSE Management system in place. No drilling or any activity as mentioned in this EC was carried out in the said period.
	General Conditions	
i.	No further expansion or modifications in the plant, other than mentioned in the EIA Notification, 2006 and its amendments, shall be carried out without prior approval of the Ministry of Environment, Forest, and Climate Change/SEIAA, as applicable. In case of deviations or alterations in the project proposal from those submitted to this Ministry for clearance, a fresh reference shall be made to the Ministry/SEIAA to assess the adequacy of conditions imposed and to add additional environmental protection measures required, if any.	Noted for compliance. No activities have been carried out under this EC during reporting period.
ii.	The energy source for lighting purpose shall be	Noted for Compliance.

EC Compliance Report -: Oil and Gas Development in existing Ravva Off-shore Field, PKGM-1 Block, located off Surasaniyanam (S'Yanam)

S. No.	Conditions	Compliance Status
	preferably LED based, or advance having preference in energy conservation and environment betterment.	Energy audit was carried out to identify and conservations programs are already implemented/under implementation including installation of LED bulbs, occupancy sensors, VFD etc.
iii.	The locations of ambient air quality monitoring stations shall be decided in consultation with the State Pollution Control Board (SPCB) and it shall be ensured that at least one station each is installed in the upwind and downwind direction as well as where maximum ground level concentrations are anticipated.	Noted for compliance. Environmental Monitoring Plan has been prepared in consultation with APPCB and submitted to APPCB for formal approval of the plan.
iv.	The National Ambient Air Quality Emission Standards issued by the Ministry vide G.S.R. No. 826(E) dated 16th November 2009 shall be followed.	Compiled. Refer Annexure-1 Environmental monitoring reports
v.	The overall noise levels in and around the plant area shall be kept well within the standards by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels shall conform to the standards prescribed under Environment (Protection) Act, 1986 Rules, 1989 viz. 75 dBA (daytime) and 70 dBA (nighttime).	DG sets, compressors and pumps are the sources of noise. The following are the noise pollution control measures: • Provision of generators with acoustic enclosures • Silencers for exhausts • Personnel Protected Equipment for people working near noise sources Refer Annexure-1 Environmental monitoring report
vi.	The Company shall harvest rainwater from the roof tops of the buildings and storm water drains to recharge the ground water and to utilize the same for process requirements.	Around 35000 m ³ of rainwater is harvested annually from various catchment areas /rainwater harvesting ponds situated within the Ravva terminal. Recharge of the rainwater is not possible because the water table is at <3 meters due to proximity to back water zone.
vii.	Training shall be imparted to all employees on safety and health aspects of chemicals handling. Pre-employment and routine periodical medical examinations for all employees shall be undertaken on regular basis. Training to all employees on handling of chemicals shall be imparted.	Periodic trainings being imparted to employees on HSE including handling of chemicals. Pre-employment and routine periodical medical examinations for all employees are being undertaken on regular basis.
viii.	The company shall undertake all relevant measures for improving the socioeconomic conditions of the surrounding area. CER activities shall be undertaken by involving local villages and administration and shall be implemented.	Ravva JV allocating about INR 6 crores per annum every year under CSR for developmental activities involving local villagers and District Administration focus on Education, Health, Employment, Skill development, Women welfare and Entrepreneurs development and social welfare. Refer Annexure 2 Corporate Social Responsibility Program
ix.	The company shall undertake eco-developmental measures including community welfare measures in the project area for the overall improvement of the environment.	Refer Annexure 2 Corporate Social Responsibility Program
x.	A separate Environmental Management Cell (having qualified person with Environmental Science/Environmental Engineering/specialization in the project area) equipped with full-fledged laboratory facilities shall be set up to carry out the Environmental Management and Monitoring functions.	Separate environment management cell is established with competent technical personnel at Ravva Terminal. In-house laboratory facilities are available for testing key parameters of Water, Wastewater and noise. However, for the detailed and regular monitoring, the third-party laboratory accredited by NABL and MoEFCC has been hired to carry out the environmental monitoring requirements of the at the facilities and offshore.
xi.	The company shall earmark sufficient funds towards capital cost and recurring cost per annum to	Budgetary provisions have been made exclusively for up-gradation/ maintenance/ operation of facilities

EC Compliance Report -: Oil and Gas Development in existing Ravva Off-shore Field, PKGM-1 Block, located off Surasaniyanam (S'Yanam)

S. No.	Conditions	Compliance Status
	implement the conditions stipulated by the Ministry of Environment, Forest and Climate Change as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so earmarked for environment management/ pollution control measures shall not be diverted for any other purpose.	developed for environmental protection. for Oct'25-Mar'26 an amount of INR 177 Lakhs spent for environmental monitoring, waste management, ETP & STP operation & Maintenance (O&M), Public Liability Insurance Premiums, Water treatment chemicals, Oil spill response membership fee, Biodiversity, and green belt maintenance
xii.	A copy of the clearance letter shall be sent by the project proponent to concern Panchayat, Zilla Parishad/Municipal Corporation, Urban local Body and the local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal.	Environmental Clearance copies was submitted to concern local bodies.
xiii.	The project proponent shall also submit six monthly reports on the status of compliance of the stipulated Environmental Clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the respective Regional Office of MoEF&CC & CC, the respective Zonal Office of CPCB and SPCB. A copy of Environmental Clearance and six-monthly compliance status report shall be posted on the website of the company.	Six monthly EC compliance report along with the annexures containing monthly Environmental monitoring results is regularly being submitted to MoEF&CC. EC copy is displayed on our company website with compliance status PoliciesandDisclosures
xiv.	The environmental statement for each financial year ending 31 st March in Form-V as is mandated shall be submitted to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental clearance conditions and shall also be sent to the respective Regional Offices of MoEF&CC by e-mail.	Complied, The Annual Environmental Statement (Form V) submitted every year to APPCB and uploaded in the website of the company
xv.	The project proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB/Committee and may also be seen at Website of the Ministry and at https://parivesh.nic.in/ . This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same shall be forwarded to the concerned Regional Office of the Ministry.	Complied. A public notice informing the grant of EC by MOEF&CC has been published in the following newspapers: - Eenadu Telugu Daily (20 October 2020) - The Hindu English Daily (20 October 2020)
xvi.	The project authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of start of the project.	Noted for compliance. No activities initiated in the said period as mentioned in this EC.
xvii.	This Environmental clearance is granted subject to outcome of Hon'ble Supreme Court of India, Hon'ble High Court, Hon'ble NGT and any other Court of Law, if any, as may be applicable to this project.	No Cases are pending/ order has been passed against the project mentioned in the EC.

List of Annexures

List of Annexures	Details
Annexure No. 1	Environmental Monitoring report Ravva Onshore Terminal
Annexure No. 2	Corporate Social Responsibility Program- Ravva Onshore Terminal
Annexure No. 3	Green Belt and Mangroves development in Ravva Terminal
Annexure No. 4	Oil Spill Response (OSR) Plan and Equipment details
Annexure No. 5	Public hearing points compliance
Annexure No. 6	Environmental Management Plan compliance report
Annexure No. 7	Environmental Statement of Ravva for FY 2023-24
Annexure No. 8	Offshore marine monitoring report
Annexure No. 9	CFO and Authorization Compliance report
Annexure No. 10	Public liability insurance copy of Ravva

ANNEXURE NO. 01

Environmental Monitoring Report Ravva Onshore Terminal
(Reporting Period 01st October 2025 to 31st March 2026)

1. Ambient Air Quality Monitoring Results in Ravva- Onshore Terminal

Two locations were selected within 10.0 km radius around the Plant site for Ambient Air quality monitoring. Samples are collected as per APPCB guidelines based on wind direction. The graphical interpretation of the results is provided below.

Figure 1: Graphical representation of Particulate Matter Ambient air monitoring data around Block area

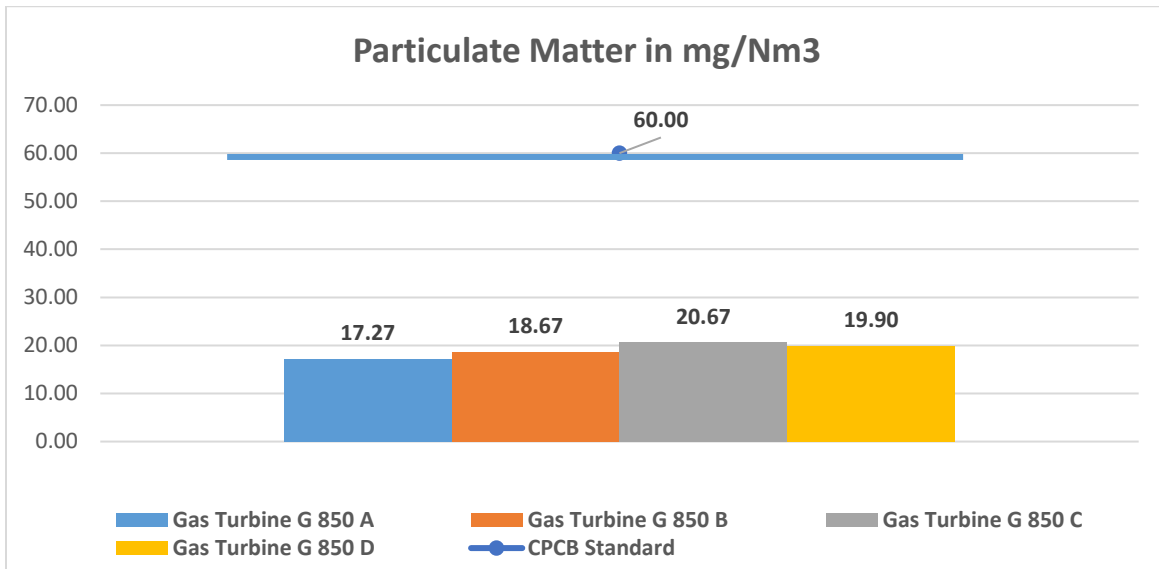


Figure 2: Graphical representation of NO_x Ambient air monitoring data around Block area

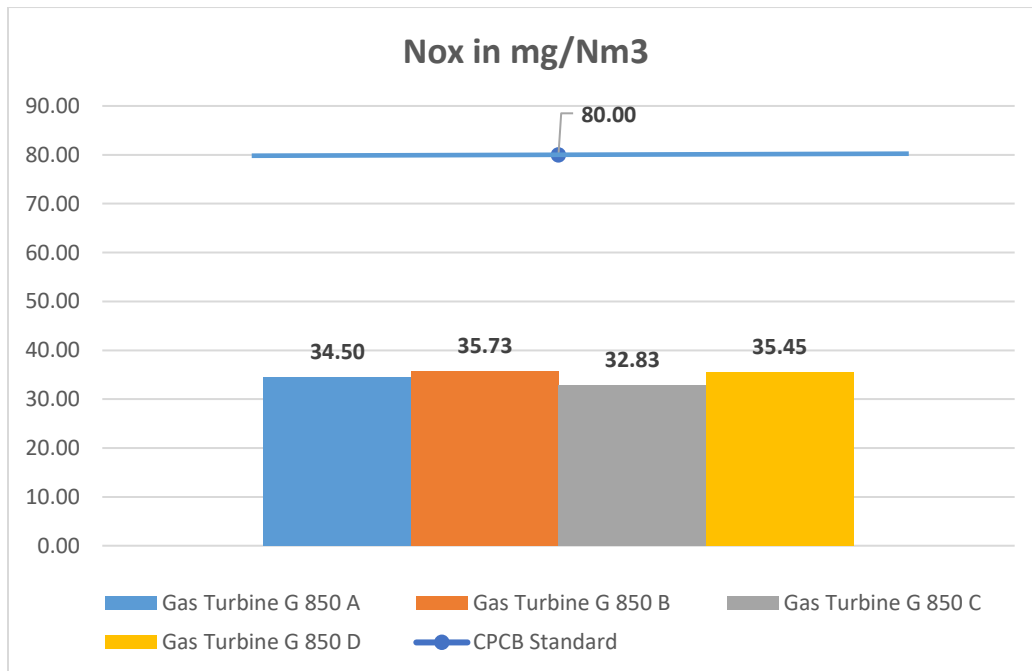


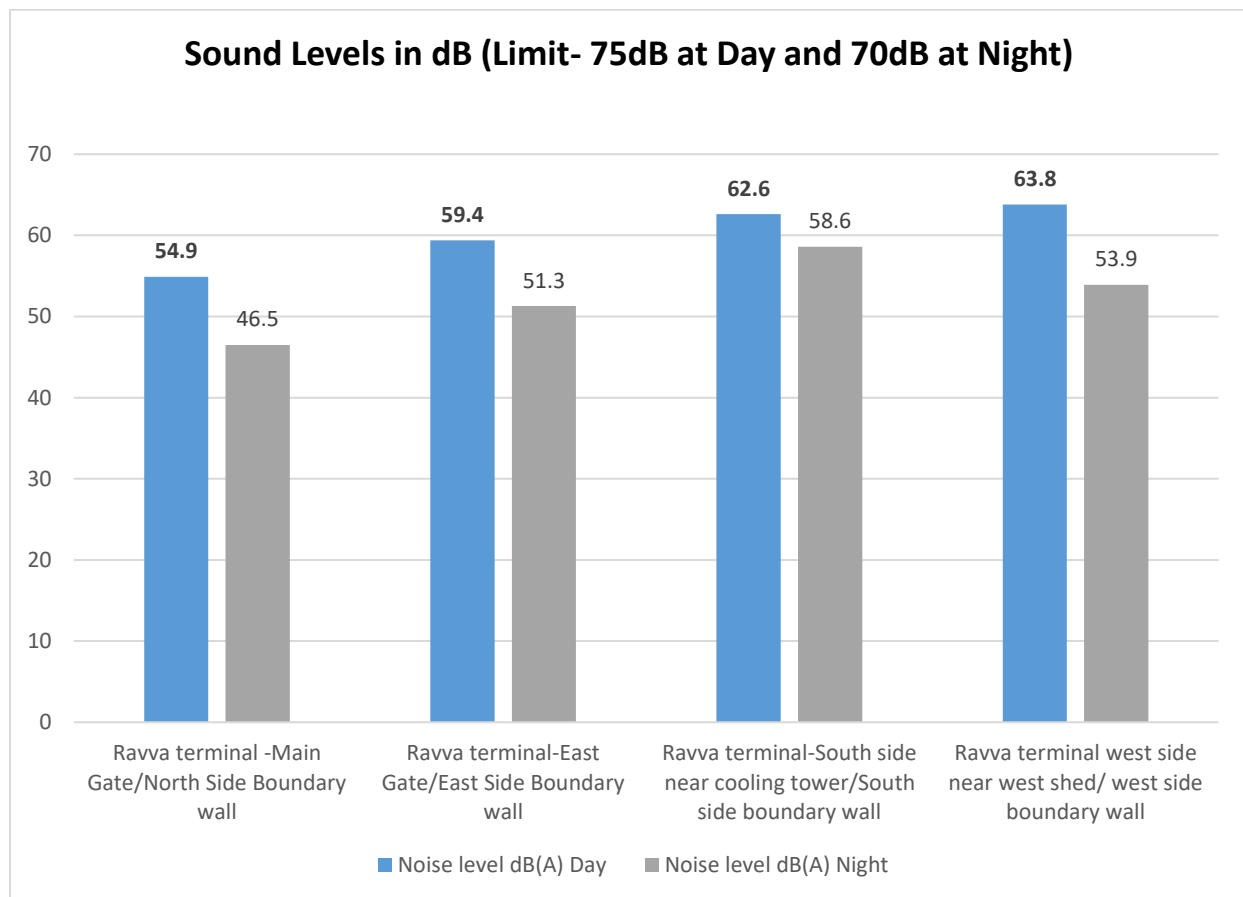
Table: SO₂ Ambient air monitoring data around Block area

SO ₂ in mg/m ³	
Gas Turbine G 850 A	BLQ(LOQ : 3.0)
Gas Turbine G 850 B	BLQ(LOQ : 3.0)
Gas Turbine G 850 C	BLQ(LOQ : 3.0)
Gas Turbine G 850 D	BLQ(LOQ : 3.0)

2. Ambient Noise Quality Monitoring Results in Ravva Onshore Terminal

Sound Pressure Level (SPL) measurements were measured at four locations. One reading for every hour was taken for 24 hours. The day's noise levels have been monitored from 6 am to 10 pm and night levels during 10 pm to 6 am at all the four locations. Four locations were monitored inside the plant premises within the 10-km radius of the plant.

Figure 3: Graphical representation of Ambient Noise (Day time & Night time)



3. Effluent Quality Marine Discharge Monitoring Results in Ravva Onshore Terminal

Figure 04: Graphical representation of pH and O&G of Treated Effluent Quality

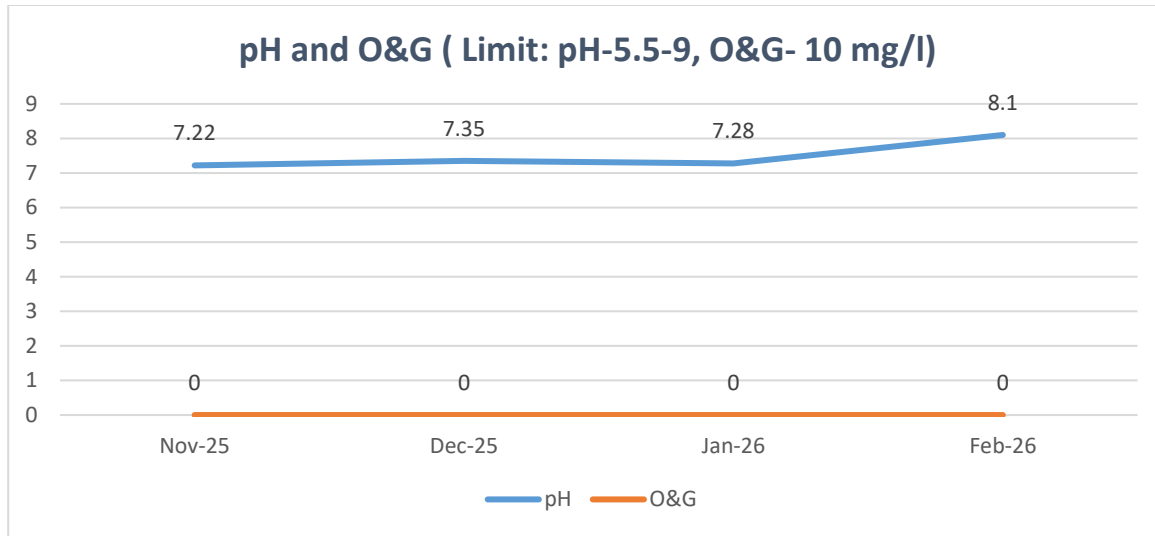
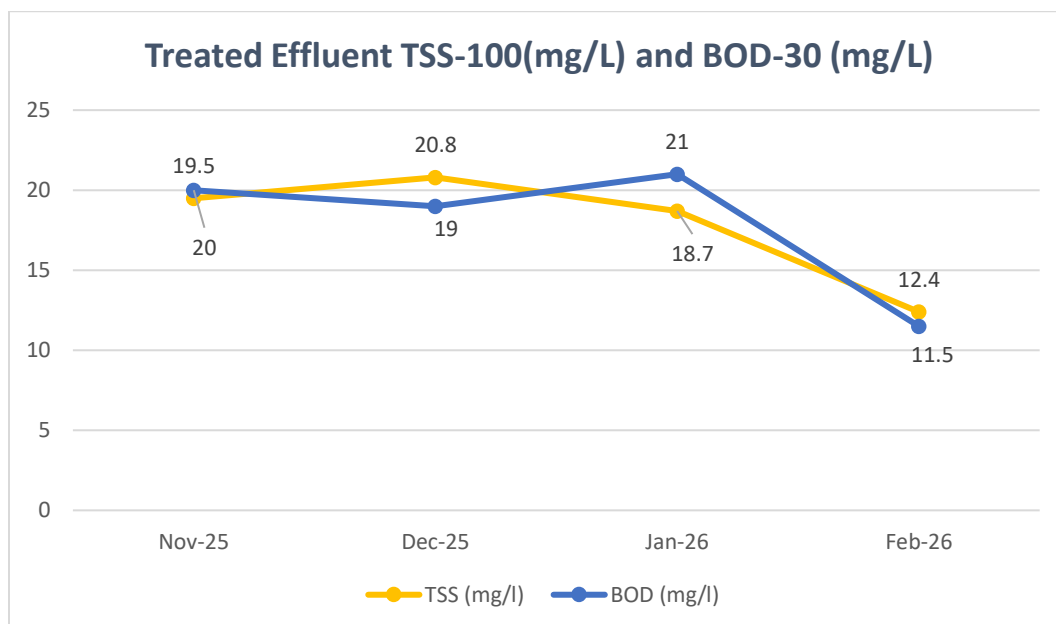


Figure 05: Graphical representation of TSS and BOD Treated Effluent



4. Sewage Quality Monitoring Results in Ravva Onshore Terminal

Figure 6: Graphical representation of pH and O&G of Treated Sewage

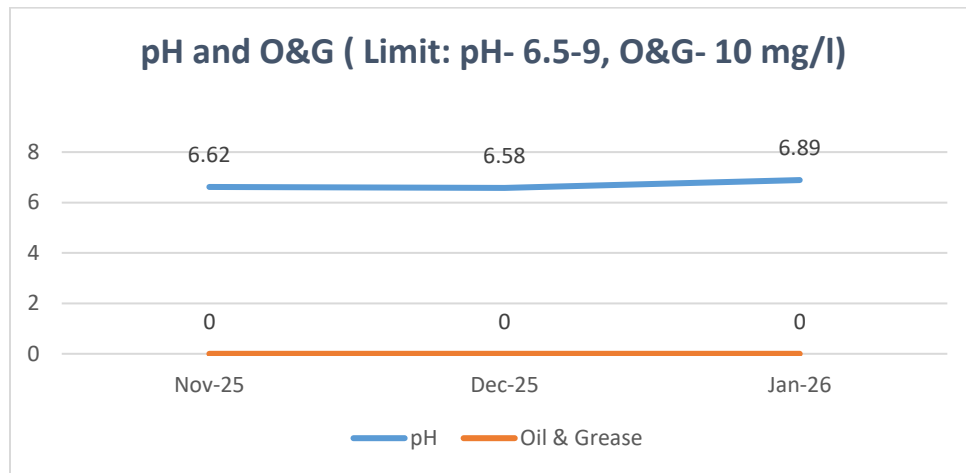
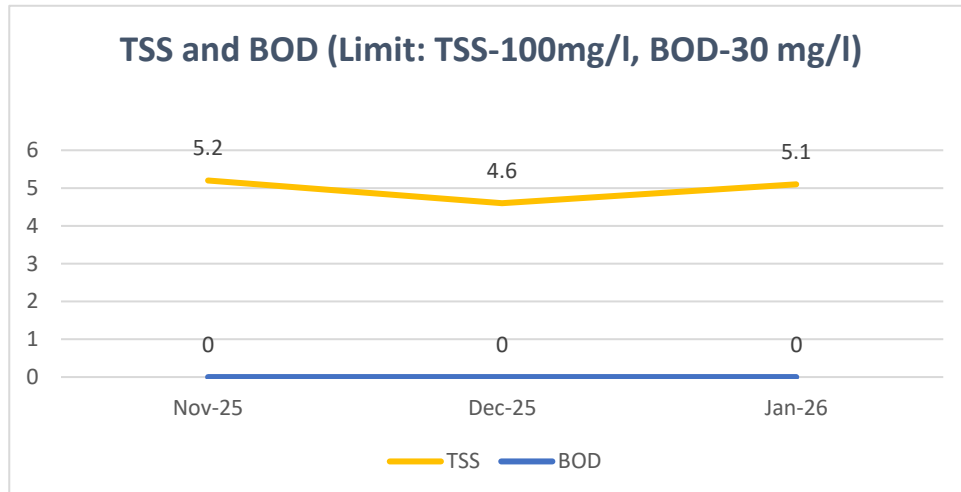


Figure 7: Graphical representation of TSS and BOD of Treated Sewage



Report No.: EN25101201
Report Date: 16-Oct-2025
ULR No.: TC858226000001116F

TEST REPORT



Report Issued To :	Sample Received On	Analysis Duration	
		Start Date	Completion Date
Vedanta Limited(Cairn oil & Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalaguptam Mandal, Andhra Pradesh, India, 533213	14-Oct-2025	14-Oct-2025	16-Oct-2025

Sample Description :

Sample Name : Stack Emission
Sample Description : Stack Emission
Date of Sampling : 13-Oct-2025
Sample Submission Type : Collected by Lab Representative
Sample Condition : Good
Sampling Location : G - 850 A 2.5 MW Stack

Test Results :

Sr.No	Specific Test	Units	LOQ	Requirements	Result	Test Method
Discipline : CHEMICAL Main Group : ATMOSPHERIC POLLUTION						
1	Stack Temperature	K	303	-	583	IS 11255 (Part 3)
2	Velocity	m/sec	2.5	-	27.1	EPA method 1-3 (Title 40 - Protection of Environment)
3	Gaseous Discharge	Nm ³ /Hr	65	-	37126	IS 11255 (Part 3)
4	Oxygen as O ₂	%	0.1	-	20.4	GL/EN/SOP/149 Issue no & Dt : 02/05.04
5	Carbon Monoxide as CO	mg/Nm ³	1.14	-	23.4	GL/EN/SOP/149 Issue no & Dt : 02/05.04
6	Carbon Dioxide as CO ₂	%	0.1	-	2.6	GL/EN/SOP/149 Issue no & Dt : 02/05.04
7	Particulate Matter	mg/Nm ³	5	150	16.6	GL/EN/SOP/113 Issue no & Dt : 02/05.04
8	Oxides of Nitrogen as Nox	mg/Nm ³	2	-	30.6	GL/EN/SOP/149 Issue no & Dt : 02/05.04

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 CHEMIST

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Report No.: EN25101202
Report Date: 16-Oct-2025
ULR No.: TC858226000001142F

TEST REPORT



Report Issued To :	Sample Received On	Analysis Duration	
		Start Date	Completion Date
Vedanta Limited(Cairn oil & Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalaguptam Mandal, Andhra Pradesh, India, 533213	14-Oct-2025	14-Oct-2025	16-Oct-2025

Sample Description :

Sample Name : Stack Emission
Sample Description : Stack Emission
Date of Sampling : 13-Oct-2025
Sample Submission Type : Collected by Lab Representative
Sample Condition : Good
Sampling Location : G - 850 B 2.5 MW Stack

Test Results :

Sr.No	Specific Test	Units	LOQ	Requirements	Result	Test Method
Discipline : CHEMICAL Main Group : ATMOSPHERIC POLLUTION						
1	Stack Temperature	K	303	-	578	IS 11255 (Part 3)
2	Velocity	m/sec	2.5	-	23.1	EPA method 1-3 (Title 40 - Protection of Environment)
3	Gaseous Discharge	Nm3/Hr	65	-	32561	IS 11255 (Part 3)
4	Oxygen as O2	%	0.1	-	18.2	GL/EN/SOP/149 Issue no & Dt : 02/05.04
5	Carbon Monoxide as CO	mg/Nm3	1.14	-	28.8	GL/EN/SOP/149 Issue no & Dt : 02/05.04
6	Carbon Dioxide as CO2	%	0.1	-	2.5	GL/EN/SOP/149 Issue no & Dt : 02/05.04
7	Particulate Matter	mg/Nm3	5	150	17.6	GL/ EN/SOP/113 Issue no & Dt : 02/05.04
8	Oxides of Nitrogen as Nox	mg/Nm3	2	-	32.4	GL/EN/SOP/149 Issue no & Dt : 02/05.04

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E. PRITHIVIRAJAN
LAB MANAGER

GLENS INNOVATION LABS Pvt Ltd, #6/1,1 St Floor , Sri Jothi Complex Murugesan Street , Balavinayagar Nagar , Arumbakkam Chennai 600106

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TEST REPORT

Report No.: EN25101202-A

Report Date: 16-Oct-2025

Report Issued To	Sample Received On	Analysis Duration	
		Start Date	End Date
Vedanta Limited(Cairn oil & Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalaguptam Mandal, Andhra Pradesh, India, 533213	14-Oct-2025	14-Oct-2025	16-Oct-2025

Sample Description :

Sample Name : Stack Emission
Sample Description : Stack Emission
Date of Sampling : 13-Oct-2025
Sample Submission Type : Collected by Lab Representative
Sample Condition : Good
Sampling Location : G - 850 B 2.5 MW Stack

Test Results :

Sr.No	Specific Test	Units	LOQ	Result	Test Method
Discipline : CHEMICAL Main Group : ATMOSPHERIC POLLUTION					
1	Hydrocarbon	mg/m3	1.0	BLQ	IS 5182 (Part 17)

BLQ - Below Limit of Quantification | LOQ - Limit of Quantification

Sample ID MI260131092 consists of two Test Reports. Report No: MI260131092 and Report No: MI260131092A

Remarks : The above Stack Complies as per CPCB norms with respect to the above tested parameters.



Report

***** End Of Report *****

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E. PRITHVIRAJAN
LAB MANAGER

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Report No.: EN25101203
Report Date: 16-Oct-2025
ULR No.: TC858226000001111F

TEST REPORT



Report Issued To :	Sample Received On	Analysis Duration	
		Start Date	Completion Date
Vedanta Limited(Cairn oil & Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalaguptam Mandal, Andhra Pradesh, India, 533213	14-Oct-2025	14-Oct-2025	16-Oct-2025

Sample Description :

Sample Name : Stack Emission
Sample Description : Stack Emission
Date of Sampling : 13-Oct-2025
Sample Submission Type : Collected by Lab Representative
Sample Condition : Good
Sampling Location : G - 850 C 2.5 MW Stack

Test Results :

Sr.No	Specific Test	Units	LOQ	Requirements	Result	Test Method
Discipline : CHEMICAL Main Group : ATMOSPHERIC POLLUTION						
1	Stack Temperature	K	303	-	577	IS 11255 (Part 3)
2	Velocity	m/sec	2.5	-	23.3	EPA method 1-3 (Title 40 - Protection of Environment)
3	Gaseous Discharge	Nm3/Hr	65	-	31422	IS 11255 (Part 3)
4	Oxygen as O2	%	0.1	-	19.1	GL/EN/SOP/149 Issue no & Dt : 02/05.04
5	Carbon Monoxide as CO	mg/Nm3	1.14	-	27.4	GL/EN/SOP/149 Issue no & Dt : 02/05.04
6	Carbon Dioxide as CO2	%	0.1	-	2.6	GL/EN/SOP/149 Issue no & Dt : 02/05.04
7	Particulate Matter	mg/Nm3	5	150	20.2	GL/ EN/SOP/113 Issue no & Dt : 02/05.04
8	Oxides of Nitrogen as Nox	mg/Nm3	2	-	33.5	GL/EN/SOP/149 Issue no & Dt : 02/05.04

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E. PRITHIVIRAJAN
LAB MANAGER

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Report No.: EN25101203-A

Report Date: 16-Oct-2025

Report Issued To	Sample Received On	Analysis Duration	
		Start Date	End Date
Vedanta Limited(Cairn oil & Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalagupam Mandal, Andhra Pradesh, India, 533213	14-Oct-2025	14-Oct-2025	16-Oct-2025

Sample Description :

Sample Name : Stack Emission
Sample Description : Stack Emission
Date of Sampling : 13-Oct-2025
Sample Submission Type : Collected by Lab Representative
Sample Condition : Good
Sampling Location : G - 850 C 2.5 MW Stack

Test Results :

Sr.No	Specific Test	Units	LOQ	Result	Test Method
Discipline : CHEMICAL Main Group : ATMOSPHERIC POLLUTION					
1	Hydrocarbon	mg/m3	1.0	BLQ	IS 5182 (Part 17)

BLQ - Below Limit of Quantification | LOQ - Limit of Quantification

Sample ID MI260131093 consists of two Test Reports. Report No: MI260131093 and Report No: MI260131093A

Remarks : The above Stack Complies as per CPCB norms with respect to the above tested parameters.



***** End Of Report *****

Report

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CHEMIST

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E. PRITHIVIRAJAN
LAB MANAGER

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Report No.: EN25101204
Report Date: 16-Oct-2025
ULR No.: TC858226000001141F

TEST REPORT



Report Issued To :	Sample Received On	Analysis Duration	
		Start Date	Completion Date
Vedanta Limited(Cairn oil & Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalaguptam Mandal, Andhra Pradesh, India, 533213	14-Oct-2025	14-Oct-2025	16-Oct-2025

Sample Description :

Sample Name : Stack Emission
Sample Description : Stack Emission
Date of Sampling : 13-Oct-2025
Sample Submission Type : Collected by Lab Representative
Sample Condition : Good
Sampling Location : G - 850 D 2.5 MW Stack

Test Results :

Sr.No	Specific Test	Units	LOQ	Requirements	Result	Test Method
Discipline : CHEMICAL Main Group : ATMOSPHERIC POLLUTION						
1	Stack Temperature	K	303	-	569	IS 11255 (Part 3)
2	Velocity	m/sec	2.5	-	23.7	EPA method 1-3 (Title 40 - Protection of Environment)
3	Gaseous Discharge	Nm3/Hr	65	-	35378	IS 11255 (Part 3)
4	Oxygen as O2	%	0.1	-	18.4	GL/EN/SOP/149 Issue no & Dt : 02/05.04
5	Carbon Monoxide as CO	mg/Nm3	1.14	-	26.6	GL/EN/SOP/149 Issue no & Dt : 02/05.04
6	Carbon Dioxide as CO2	%	0.1	-	2.4	GL/EN/SOP/149 Issue no & Dt : 02/05.04
7	Particulate Matter	mg/Nm3	5	150	20.3	GL/ EN/SOP/113 Issue no & Dt : 02/05.04
8	Oxides of Nitrogen as Nox	mg/Nm3	2	-	37.6	GL/EN/SOP/149 Issue no & Dt : 02/05.04

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CHEMIST

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E. PRITHIVIRAVAN
LAB MANAGER

GLENS INNOVATION LABS Pvt Ltd, #6/1,1 St Floor, Sri Jothi Complex Murugesan Street, Balavinayagar Nagar, Arumbakkam Chennai 600106

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Report No.: EN25101204-A

Report Date: 16-Oct-2025

TEST REPORT

Report Issued To	Sample Received On	Analysis Duration	
		Start Date	End Date
Vedanta Limited(Caim oil & Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalagupam Mandal, Andhra Pradesh, India, 533213	14-Oct-2025	14-Oct-2025	16-Oct-2025

Sample Description :

Sample Name : Stack Emission
Sample Description : Stack Emission
Date of Sampling : 13-Oct-2025
Sample Submission Type : Collected by Lab Representative
Sample Condition : Good
Sampling Location : G - 850 D 2.5 MW Stack

Test Results :

Sr.No	Specific Test	Units	LOQ	Result	Test Method
Discipline : CHEMICAL Main Group : ATMOSPHERIC POLLUTION					
1	Hydrocarbon	mg/m3	1.0	BLQ	IS 5182 (Part 17)

BLQ - Below Limit of Quantification | LOQ - Limit of Quantification

Sample ID MI260131094 consists of two Test Reports. Report No: MI260131094 and Report No: MI260131094A

Remarks : The above Stack Complies as per CPCB norms with respect to the above tested parameters.



***** End Of Report *****

Report

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Report No.: EN251129160
Report Date: 06-Dec-2025
ULR No.: TC858226000001101F

TEST REPORT



Report Issued To :	Sample Received On	Analysis Duration	
		Start Date	Completion Date
Vedanta Limited(Cairn oil & Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalaguptam Mandal, Andhra Pradesh, India, 533213	29-Nov-2025	29-Nov-2025	06-Dec-2025

Sample Description :

Sample Name : Stack Emission
Sample Description : Stack Emission
Date of Sampling : 27-Nov-2025
Sample Submission Type : Lab
Sample Condition : Good
Sampling Location : G - 850 A 2.5 MW Stack

Test Results :

Sr.No	Specific Test	Units	LOQ	Requirements	Result	Test Method
Discipline : CHEMICAL Main Group : ATMOSPHERIC POLLUTION						
1	Stack Temperature	K	273	-	574	IS 11255 (Part 3)
2	Velocity	m/sec	2.5	-	28.8	EPA method 1-3 (Title 40 - Protection of Environment)
3	Gaseous Discharge	Nm3/Hr	65	-	38651	IS 11255 (Part 3)
4	Oxygen as O2	%	0.1	-	20.8	GL/EN/SOP/149 Issue no & Dt : 02/05.04
5	Carbon Monoxide as CO	mg/Nm3	1.14	-	24.6	GL/EN/SOP/149 Issue no & Dt : 02/05.04
6	Carbon Dioxide as CO2	%	0.1	-	2.8	GL/EN/SOP/149 Issue no & Dt : 02/05.04
7	Particulate Matter	mg/Nm3	5	150	18.6	GL/ EN/SOP/113 Issue no & Dt : 02/05.04
8	Oxides of Nitrogen as Nox	mg/Nm3	2	-	21.2	GL/EN/SOP/149 Issue no & Dt : 02/05.04

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S. SANKAR
SENIOR CHEMIST

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E. PRITHIVIRAJAN
LAB MANAGER

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Report No.: EN251129160
Report Date: 06-Dec-2025
ULR No.: TC858226000001101F

TEST REPORT



Discipline : CHEMICAL | Main Group : ATMOSPHERIC POLLUTION

9	Sulphur Dioxide as SO ₂	mg/m ³	3	-	BLQ	EPA 6 (Title 40 – Protection of Environment)
10	Moisture Content	%	1	-	BLQ	EPA Method 1-3 (Title 40 – Protection of Environment)

BLQ - Below Limit of Quantification | LOQ - Limit of Quantification

Remarks : The above stack complies as per CPCB Norms with respect to the above tested Parameters



Scope

***** End Of Report *****



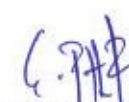
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SENIOR CHEMIST

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TEST REPORT

Report No.: EN251129160A

Report Date: 06-Dec-2025

Report Issued To	Sample Received On	Analysis Duration	
		Start Date	End Date
Vedanta Limited(Cairn oil & Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalaguptam Mandal, Andhra Pradesh, India, 533213	29-Nov-2025	29-Nov-2025	06-Dec-2025

Sample Description :

Sample Name : Stack Emission
Sample Description : Stack Emission
Date of Sampling : 27-Nov-2025
Sample Submission Type : Lab
Sample Condition : Good
Sampling Location : G - 850 A 2.5 MW Stack

Test Results :

Sr.No	Specific Test	Units	LOQ	Result	Test Method
Discipline : CHEMICAL Main Group : ATMOSPHERIC POLLUTION					
1	Hydrocarbon	mg/m3	0.1	BLQ	By GCMS Method

BLQ - Below Limit of Quantification | LOQ - Limit of Quantification

Remarks : The above stack complies as per CPCB Norms with respect to the above tested Parameters



Report

***** End Of Report *****

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S. SANKAR
SENIOR CHEMIST

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Report No.: EN251129161
Report Date: 06-Dec-2025
ULR No.: TC858226000001102F

TEST REPORT



Report Issued To :	Sample Received On	Analysis Duration	
		Start Date	Completion Date
Vedanta Limited(Cairn oil & Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalaguptam Mandal, Andhra Pradesh, India, 533213	29-Nov-2025	29-Nov-2025	06-Dec-2025

Sample Description :

Sample Name : Stack Emission
Sample Description : Stack Emission
Date of Sampling : 27-Nov-2025
Sample Submission Type : Lab
Sample Condition : Good
Sampling Location : G - 850 B 2.5 MW Stack

Test Results :

Sr.No	Specific Test	Units	LOQ	Requirements	Result	Test Method
Discipline : CHEMICAL Main Group : ATMOSPHERIC POLLUTION						
1	Stack Temperature	K	273	-	581	IS 11255 (Part 3)
2	Velocity	m/sec	2.5	-	24.6	EPA method 1-3 (Title 40 - Protection of Environment)
3	Gaseous Discharge	Nm ³ /Hr	65	-	35104	IS 11255 (Part 3)
4	Oxygen as O ₂	%	0.1	-	19.2	GL/EN/SOP/149 Issue no & Dt : 02/05.04
5	Carbon Monoxide as CO	mg/Nm ³	1.14	-	26.5	GL/EN/SOP/149 Issue no & Dt : 02/05.04
6	Carbon Dioxide as CO ₂	%	0.1	-	2.5	GL/EN/SOP/149 Issue no & Dt : 02/05.04
7	Particulate Matter	mg/Nm ³	5	150	20.8	GL/ EN/SOP/113 Issue no & Dt : 02/05.04

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S. SANKAR
SENIOR CHEMIST

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E. PRITHIVIRAJAN
LAB MANAGER

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Report No.: EN251129161
Report Date: 06-Dec-2025
ULR No.: TC858226000001102F

TEST REPORT



Discipline : CHEMICAL | Main Group : ATMOSPHERIC POLLUTION

8	Oxides of Nitrogen as Nox	mg/Nm3	2	-	42.4	GL/EN/SOP/149 Issue no & Dt : 02/05.04
9	Sulphur Dioxide as SO2	mg/m3	3	-	BLQ	EPA 6 (Title 40 – Protection of Environment)
10	Moisture Content	%	1	-	BLQ	EPA Method 1-3 (Title 40 – Protection of Environment)

BLQ - Below Limit of Quantification | LOQ - Limit of Quantification

Remarks : The above stack complies as per CPCB Norms with respect to the above tested Parameters



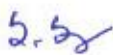
Scope

***** End Of Report *****



Report

Reviewed By


S. SANKAR
SENIOR CHEMIST

Page 2 Of 2

Authorised By


E. PRITHVIRAJAN
LAB MANAGER

GLENS INNOVATION LABS Pvt Ltd, #6/1,1 St Floor , Sri Jothi Complex Murugesan Street , Balavinayagar Nagar , Arumbakkam Chennai 600106

Terms and Conditions:

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GLens Innovation Labs Pvt Ltd.

Certified as per ISO 9001:2015 & ISO 45001:2018

Report No.: EN251129161A

Report Date: 06-Dec-2025

TEST REPORT

Report Issued To	Sample Received On	Analysis Duration	
		Start Date	End Date
Vedanta Limited(Cairn oil & Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalagupam Mandal, Andhra Pradesh, India, 533213	29-Nov-2025	29-Nov-2025	06-Dec-2025

Sample Description :

Sample Name : Stack Emission
Sample Description : Stack Emission
Date of Sampling : 27-Nov-2025
Sample Submission Type : Lab
Sample Condition : Good
Sampling Location : G - 850 B 2.5 MW Stack

Test Results :

Sr.No	Specific Test	Units	LOQ	Result	Test Method
Discipline : CHEMICAL Main Group : ATMOSPHERIC POLLUTION					
1	Hydrocarbon	mg/m3	0.1	BLQ	By GCMS Method

BLQ - Below Limit of Quantification | LOQ - Limit of Quantification

Remarks : The above stack complies as per CPCB Norms with respect to the above tested Parameters



***** End Of Report *****

Report

Reviewed By

S. SANKAR
SENIOR CHEMIST

Authorised By

E. PRITHIVIRAJAN
LAB MANAGER

Page 1 Of 1

GLENS INNOVATION LABS Pvt Ltd, #6/1, 1 St Floor, Sri Jothi Complex Murugesan Street, Balavinayagar Nagar, Arumbakkam Chennai 600106

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Report No.: EN251129162
 Report Date: 06-Dec-2025
 ULR No.: TC858226000001103F

TEST REPORT



Report Issued To :	Sample Received On	Analysis Duration	
		Start Date	Completion Date
Vedanta Limited(Cairn oil & Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalaguptam Mandal, Andhra Pradesh, India, 533213	29-Nov-2025	29-Nov-2025	06-Dec-2025

Sample Description :

Sample Name : Stack Emission
 Sample Description : Stack Emission
 Date of Sampling : 27-Nov-2025
 Sample Submission Type : Lab
 Sample Condition : Good
 Sampling Location : G - 850 C 2.5 MW Stack

Test Results :

Sr.No	Specific Test	Units	LOQ	Requirements	Result	Test Method
Discipline : CHEMICAL Main Group : ATMOSPHERIC POLLUTION						
1	Stack Temperature	K	273	-	564	IS 11255 (Part 3)
2	Velocity	m/sec	2.5	-	21.8	EPA method 1-3 (Title 40 – Protection of Environment)
3	Gaseous Discharge	Nm3/Hr	65	-	33810	IS 11255 (Part 3)
4	Oxygen as O2	%	0.1	-	18.2	GL/EN/SOP/149 Issue no & Dt : 02/05.04
5	Carbon Monoxide as CO	mg/Nm3	1.14	-	27.8	GL/EN/SOP/149 Issue no & Dt : 02/05.04
6	Carbon Dioxide as CO2	%	0.1	-	2.6	GL/EN/SOP/149 Issue no & Dt : 02/05.04
7	Particulate Matter	mg/Nm3	5	150	21.6	GL/ EN/SOP/113 Issue no & Dt : 02/05.04
8	Oxides of Nitrogen as Nox	mg/Nm3	2	-	31.5	GL/EN/SOP/149 Issue no & Dt : 02/05.04

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S. SANKAR
 SENIOR CHEMIST

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E. PRITHIVIRAJAN
 LAB MANAGER

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Report No.: EN251129162
Report Date: 06-Dec-2025
ULR No.: TC85822600001103F

TEST REPORT



Discipline : CHEMICAL | Main Group : ATMOSPHERIC POLLUTION

9	Sulphur Dioxide as SO ₂	mg/m ³	3	-	BLQ	EPA 6 (Title 40 – Protection of Environment)
10	Moisture Content	%	1	-	BLQ	EPA Method 1-3 (Title 40 – Protection of Environment)

BLQ - Below Limit of Quantification | LOQ - Limit of Quantification

Remarks : The above stack complies as per CPCB Norms with respect to the above tested Parameters



Scope

***** End Of Report *****



Report

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SENIOR CHEMIST

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GLens Innovation Labs Pvt Ltd.

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TEST REPORT

Report No.: EN251129162A

Report Date: 06-Dec-2025

Report Issued To	Sample Received On	Analysis Duration	
		Start Date	End Date
Vedanta Limited(Cairn oil & Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalaguptam Mandal, Andhra Pradesh, India, 533213	29-Nov-2025	29-Nov-2025	06-Dec-2025

Sample Description :

Sample Name : Stack Emission
Sample Description : Stack Emission
Date of Sampling : 27-Nov-2025
Sample Submission Type : Lab
Sample Condition : Good
Sampling Location : G - 850 C 2.5 MW Stack

Test Results :

Sr.No	Specific Test	Units	LOQ	Result	Test Method
Discipline : CHEMICAL Main Group : ATMOSPHERIC POLLUTION					
1	Hydrocarbon	mg/m3	0.1	BLQ	By GCMS Method

BLQ - Below Limit of Quantification | LOQ - Limit of Quantification

Remarks : The above stack complies as per CPCB Norms with respect to the above tested Parameters

***** End Of Report *****



Report

Reviewed By

S. SANKAR
SENIOR CHEMIST

Page 1 Of 1

Authorised By

E. PRITHIVIRAJAN
LAB MANAGER

GLENS INNOVATION LABS Pvt Ltd, #6/1,1 St Floor , Sri Jothi Complex Murugesan Street , Balavinayagar Nagar , Arumbakkam Chennai 600106

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Report No.: EN251129163
Report Date: 06-Dec-2025
ULR No.: TC858226000001104F

TEST REPORT



Report Issued To :	Sample Received On	Analysis Duration	
		Start Date	Completion Date
Vedanta Limited(Cairn oil & Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalaguptam Mandal, Andhra Pradesh, India, 533213	29-Nov-2025	29-Nov-2025	06-Dec-2025

Sample Description :

Sample Name : Stack Emission
Sample Description : Stack Emission
Date of Sampling : 27-Nov-2025
Sample Submission Type : Lab
Sample Condition : Good
Sampling Location : G - 850 D 2.5 MW Stack

Test Results :

Sr.No	Specific Test	Units	LOQ	Requirements	Result	Test Method
Discipline : CHEMICAL Main Group : ATMOSPHERIC POLLUTION						
1	Stack Temperature	K	273	-	586	IS 11255 (Part 3)
2	Velocity	m/sec	2.5	-	22.5	EPA method 1-3 (Title 40 - Protection of Environment)
3	Gaseous Discharge	Nm ³ /Hr	65	-	34216	IS 11255 (Part 3)
4	Oxygen as O ₂	%	0.1	-	18.6	GL/EN/SOP/149 Issue no & Dt : 02/05.04
5	Carbon Monoxide as CO	mg/Nm ³	1.14	-	31.8	GL/EN/SOP/149 Issue no & Dt : 02/05.04
6	Carbon Dioxide as CO ₂	%	0.1	-	2.4	GL/EN/SOP/149 Issue no & Dt : 02/05.04
7	Particulate Matter	mg/Nm ³	5	150	19.1	GL/ EN/SOP/113 Issue no & Dt : 02/05.04
8	Oxides of Nitrogen as Nox	mg/Nm ³	2	-	40.8	GL/EN/SOP/149 Issue no & Dt : 02/05.04

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S. SANKAR
SENIOR CHEMIST

Page 1 Of 2

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E. PRITHIVIRAJAN
LAB MANAGER

GLENS INNOVATION LABS Pvt Ltd, #6/1,1 St Floor , Sri Jothi Complex Murugesan Street , Balavinayagar Nagar , Arumbakkam Chennai 600106

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GLens Innovation Labs Pvt Ltd.

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Report No.: EN251129163
Report Date: 06-Dec-2025
ULR No.: TC858226000001104F

TEST REPORT



Discipline : CHEMICAL | Main Group : ATMOSPHERIC POLLUTION

9	Sulphur Dioxide as SO ₂	mg/m ³	3	-	BLQ	EPA 6 (Title 40 – Protection of Environment)
10	Moisture Content	%	1	-	BLQ	EPA Method 1-3 (Title 40 – Protection of Environment)

BLQ - Below Limit of Quantification | LOQ - Limit of Quantification

Remarks : The above stack complies as per CPCB Norms with respect to the above tested Parameters



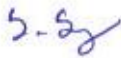
Scope

***** End Of Report *****



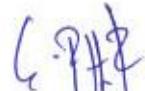
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S. SANKAR
SENIOR CHEMIST

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E. PRITHIVIRAJAN
LAB MANAGER

GLENS INNOVATION LABS Pvt Ltd, #6/1,1 St Floor , Sri Jothi Complex Murugesan Street , Balavinayagar Nagar , Arumbakkam Chennai 600106

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GLens Innovation Labs Pvt Ltd.

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Report No.: EN251129163A

TEST REPORT

Report Date: 06-Dec-2025

Report Issued To	Sample Received On	Analysis Duration	
		Start Date	End Date
Vedanta Limited(Cairn oil & Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalaguptam Mandal, Andhra Pradesh, India, 533213	29-Nov-2025	29-Nov-2025	06-Dec-2025

Sample Description :

Sample Name : Stack Emission
Sample Description : Stack Emission
Date of Sampling : 27-Nov-2025
Sample Submission Type : Lab
Sample Condition : Good
Sampling Location : G - 850 D 2.5 MW Stack

Test Results :

Sr.No	Specific Test	Units	LOQ	Result	Test Method
Discipline : CHEMICAL Main Group : ATMOSPHERIC POLLUTION					
1	Hydrocarbon	mg/m3	0.1	BLQ	By GCMS Method

BLQ - Below Limit of Quantification | LOQ - Limit of Quantification

Remarks : The above stack complies as per CPCB Norms with respect to the above tested Parameters



Report

***** End Of Report *****

Reviewed By

S. SANKAR
SENIOR CHEMIST

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Report No.: MI260131091
Report Date: 03-Feb-2026
ULR No.: TC858226000001116F

TEST REPORT



TC-8582

Report Issued To :	Sample Received On	Analysis Duration	
		Start Date	Completion Date
Vedanta Limited(Cairn oil & Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalaguptam Mandal, Andhra Pradesh, India, 533213	31-Jan-2026	31-Jan-2026	03-Feb-2026

Sample Description :

Sample Name : Stack Emission
Sample Description : Stack Emission
Date of Sampling : Oct
Sample Submission Type : Customer
Sample Condition : Good
Sampling Location : G - 850 A 2.5 MW Stack

Test Results :

Sr.No	Specific Test	Units	LOQ	Requirements	Result	Test Method
Discipline : CHEMICAL Main Group : ATMOSPHERIC POLLUTION						
1	Stack Temperature	K	30	-	583	IS 11255 (Part 3)
2	Velocity	m/sec	2.5	-	27.1	EPA method 1-3 (Title 40 - Protection of Environment)
3	Gaseous Discharge	Nm3/Hr	65	-	37126	IS 11255 (Part 3)
4	Oxygen as O2	%	0.1	-	20.4	GL/EN/SOP/149 Issue no & Dt : 02/05.04
5	Carbon Monoxide as CO	mg/Nm3	1.14	-	23.4	GL/EN/SOP/149 Issue no & Dt : 02/05.04
6	Carbon Dioxide as CO2	%	0.1	-	2.6	GL/EN/SOP/149 Issue no & Dt : 02/05.04
7	Particulate Matter	mg/Nm3	5	150	16.6	GL/ EN/SOP/113 Issue no & Dt : 02/05.04
8	Oxides of Nitrogen as Nox	mg/Nm3	2	-	30.6	GL/EN/SOP/149 Issue no & Dt : 02/05.04

Reviewed By

S. SANKAR
SENIOR CHEMIST

Authorised By

E. PRITHIVIRAJAN
LAB MANAGER

Report No.: MI260131091
Report Date: 03-Feb-2026
ULR No.: TC858226000001116F

TEST REPORT



TC-8582

Discipline : CHEMICAL | Main Group : ATMOSPHERIC POLLUTION

9	Sulphur Dioxide as SO ₂	mg/Nm ³	3	-	BLQ	EPA 6 (Title 40 – Protection of Environment)
10	Moisture Content	%	1	-	BLQ	EPA Method 1-3 (Title 40 – Protection of Environment)

BLQ - Below Limit of Quantification | LOQ - Limit of Quantification

Remarks : The above Stack Complies as per CPCB norms with respect to the above tested parameters.



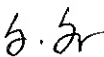
Scope

***** End Of Report *****



Report

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S. SANKAR
SENIOR CHEMIST

Page 2 Of 2

Authorised By


E. PRITHIVIRAJAN
LAB MANAGER

Report No.: MI260131001A
Report Date: 03-Feb-2026

TEST REPORT

Report Issued To	Sample Received On	Analysis Duration	
		Start Date	End Date
Vedanta Limited(Cairn oil & Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalaguptam Mandal, Andhra Pradesh, India, 533213	31-Jan-2026	31-Jan-2026	03-Feb-2026

Sample Description :

Sample Name : Stack Emission
Sample Description : Stack Emission
Date of Sampling : April
Sample Submission Type : Customer
Sample Condition : Good
Sampling Location : G - 850 A 2.5 MW Stack

Test Results :

Sr.No	Specific Test	Units	LOQ	Result	Test Method
Discipline : CHEMICAL Main Group : ATMOSPHERIC POLLUTION					
1	Hydrocarbon	mg/m3	0.1	BLQ	By GCMS Method

BLQ - Below Limit of Quantification | LOQ - Limit of Quantification
Sample ID MI260131001 consists of two Test Reports. Report No: MI260131001 and Report No: MI260131001A

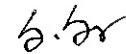
Remarks : The above Stack Complies as per CPCB norms with respect to the above tested parameters.



***** End Of Report *****

Report

Reviewed By


S. SANKAR
SENIOR CHEMIST

Authorised By


E. PRITHIVIRAJAN
LAB MANAGER

Report No.: MI260131092
Report Date: 03-Feb-2026
ULR No.: TC858226000001142F

TEST REPORT



Report Issued To :	Sample Received On	Analysis Duration	
		Start Date	Completion Date
Vedanta Limited(Cairn oil & Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalagupam Mandal, Andhra Pradesh, India, 533213	31-Jan-2026	31-Jan-2026	03-Feb-2026

Sample Description :

Sample Name : Stack Emission
Sample Description : Stack Emission
Date of Sampling : Oct
Sample Submission Type : Customer
Sample Condition : Good
Sampling Location : G - 850 B 2.5 MW Stack

Test Results :

Sr.No	Specific Test	Units	LOQ	Requirements	Result	Test Method
Discipline : CHEMICAL Main Group : ATMOSPHERIC POLLUTION						
1	Stack Temperature	K	30	-	578	IS 11255 (Part 3)
2	Velocity	m/sec	2.5	-	23.1	EPA method 1-3 (Title 40 - Protection of Environment)
3	Gaseous Discharge	Nm3/Hr	65	-	32561	IS 11255 (Part 3)
4	Oxygen as O2	%	0.1	-	18.2	GL/EN/SOP/149 Issue no & Dt : 02/05.04
5	Carbon Monoxide as CO	mg/Nm3	1.14	-	28.8	GL/EN/SOP/149 Issue no & Dt : 02/05.04
6	Carbon Dioxide as CO2	%	0.1	-	2.5	GL/EN/SOP/149 Issue no & Dt : 02/05.04
7	Particulate Matter	mg/Nm3	5	150	17.6	GL/ EN/SOP/113 Issue no & Dt : 02/05.04
8	Oxides of Nitrogen as Nox	mg/Nm3	2	-	32.4	GL/EN/SOP/149 Issue no & Dt : 02/05.04

Reviewed By

S. SANKAR
SENIOR CHEMIST

Authorised By

E. PRITHIVIRAJAN
LAB MANAGER

Report No.: MI260131092
Report Date: 03-Feb-2026
ULR No.: TC858226000001142F

TEST REPORT



Discipline : CHEMICAL | Main Group : ATMOSPHERIC POLLUTION

9	Sulphur Dioxide as SO ₂	mg/Nm ³	3	-	BLQ	EPA 6 (Title 40 – Protection of Environment)
10	Moisture Content	%	1	-	BLQ	EPA Method 1-3 (Title 40 – Protection of Environment)

BLQ - Below Limit of Quantification | LOQ - Limit of Quantification

Sample ID MI260131092 consists of two Test Reports. Report No: MI260131092 and Report No: MI260131092A

Remarks : The above Stack Complies as per CPCB norms with respect to the above tested parameters.



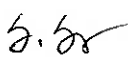
Scope

***** End Of Report *****



Report

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SENIOR CHEMIST

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LAB MANAGER

TEST REPORT

Report No.: MI260131092A
Report Date: 03-Feb-2026

Report Issued To	Sample Received On	Analysis Duration	
		Start Date	End Date
Vedanta Limited(Cairn oil &Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalaguptam Mandal, Andhra Pradesh, India, 533213	31-Jan-2026	31-Jan-2026	03-Feb-2026

Sample Description :

Sample Name : Stack Emission
Sample Description : Stack Emission
Date of Sampling : Oct
Sample Submission Type : Customer
Sample Condition : Good
Sampling Location : G - 850 B 2.5 MW Stack

Test Results :

Sr.No	Specific Test	Units	LOQ	Result	Test Method
Discipline : CHEMICAL Main Group : ATMOSPHERIC POLLUTION					
1	Hydrocarbon	g/kw-hr	1	BLQ	IS 5182 (Part 17)

BLQ - Below Limit of Quantification | LOQ - Limit of Quantification
Sample ID MI260131092 consists of two Test Reports. Report No: MI260131092 and Report No: MI260131092A

Remarks : The above Stack Complies as per CPCB norms with respect to the above tested parameters.



Report

***** End Of Report *****

Reviewed By

S. SANKAR
SENIOR CHEMIST

Authorised By

E. PRITHIVIRAJAN
LAB MANAGER

Report No.: MI260131093
Report Date: 03-Feb-2026
ULR No.: TC858226000001111F

TEST REPORT



TC-8582

Report Issued To :	Sample Received On	Analysis Duration	
		Start Date	Completion Date
Vedanta Limited(Cairn oil & Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalaguptam Mandal, Andhra Pradesh, India, 533213	31-Jan-2026	31-Jan-2026	03-Feb-2026

Sample Description :

Sample Name : Stack Emission
Sample Description : Stack Emission
Date of Sampling : Oct
Sample Submission Type : Customer
Sample Condition : Good
Sampling Location : G - 850 C 2.5 MW Stack

Test Results :

Sr.No	Specific Test	Units	LOQ	Requirements	Result	Test Method
Discipline : CHEMICAL Main Group : ATMOSPHERIC POLLUTION						
1	Stack Temperature	K	30	-	577	IS 11255 (Part 3)
2	Velocity	m/sec	2.5	-	23.3	EPA method 1-3 (Title 40 - Protection of Environment)
3	Gaseous Discharge	Nm3/Hr	65	-	31422	IS 11255 (Part 3)
4	Oxygen as O2	%	0.1	-	19.1	GL/EN/SOP/149 Issue no & Dt : 02/05.04
5	Carbon Monoxide as CO	mg/Nm3	1.14	-	27.4	GL/EN/SOP/149 Issue no & Dt : 02/05.04
6	Carbon Dioxide as CO2	%	0.1	-	2.6	GL/EN/SOP/149 Issue no & Dt : 02/05.04
7	Particulate Matter	mg/Nm3	5	150	20.2	GL/ EN/SOP/113 Issue no & Dt : 02/05.04
8	Oxides of Nitrogen as Nox	mg/Nm3	2	-	33.5	GL/EN/SOP/149 Issue no & Dt : 02/05.04

Reviewed By

S. SANKAR

S. SANKAR
SENIOR CHEMIST

Authorised By

E. PRITHIVIRAJAN

E. PRITHIVIRAJAN
LAB MANAGER

TEST REPORT

Report No.: MI260131093

Report Date: 03-Feb-2026

ULR No.: TC858226000001111F



TC-8582

Discipline : CHEMICAL | Main Group : ATMOSPHERIC POLLUTION

9	Sulphur Dioxide as SO ₂	mg/Nm ³	3	-	BLQ	EPA 6 (Title 40 – Protection of Environment)
10	Moisture Content	%	1	-	BLQ	EPA Method 1-3 (Title 40 – Protection of Environment)

BLQ - Below Limit of Quantification | LOQ - Limit of Quantification

Sample ID MI260131093 consists of two Test Reports. Report No: MI260131093 and Report No: MI260131093A

Remarks : The above Stack Complies as per CPCB norms with respect to the above tested parameters.



Scope

***** End Of Report *****



Report

Reviewed By

S. Sankar
S. SANKAR
SENIOR CHEMIST

Page 2 Of 2

Authorised By

E. Prithivirajan
E. PRITHIVIRAJAN
LAB MANAGER

Report No.: MI260131093A

Report Date: 03-Feb-2026

TEST REPORT

Report Issued To	Sample Received On	Analysis Duration	
		Start Date	End Date
Vedanta Limited(Cairn oil & Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalaguptam Mandal, Andhra Pradesh, India, 533213	31-Jan-2026	31-Jan-2026	03-Feb-2026

Sample Description :

Sample Name : Stack Emission
Sample Description : Stack Emission
Date of Sampling : Oct
Sample Submission Type : Customer
Sample Condition : Good
Sampling Location : G - 850 C 2.5 MW Stack

Test Results :

Sr.No	Specific Test	Units	LOQ	Result	Test Method
Discipline : CHEMICAL Main Group : ATMOSPHERIC POLLUTION					
1	Hydrocarbon	mg/m3	0.1	BLQ	By GCMS Method

BLQ - Below Limit of Quantification | LOQ - Limit of Quantification

Sample ID MI260131093 consists of two Test Reports. Report No: MI260131093 and Report No: MI260131093A

Remarks : The above Stack Complies as per CPCB norms with respect to the above tested parameters.



Report

***** End Of Report *****

Reviewed By

S. SANKAR
SENIOR CHEMIST

Page 1 Of 1

Authorised By

E. PRITHIVIRAJAN
LAB MANAGER

Report No.: MI260131094
Report Date: 03-Feb-2026
ULR No.: TC858226000001141F

TEST REPORT



Report Issued To :	Sample Received On	Analysis Duration	
		Start Date	Completion Date
Vedanta Limited(Cairn oil & Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalaguptam Mandal, Andhra Pradesh, India, 533213	31-Jan-2026	31-Jan-2026	03-Feb-2026

Sample Description :

Sample Name : Stack Emission
Sample Description : Stack Emission
Date of Sampling : Oct
Sample Submission Type : Customer
Sample Condition : Good
Sampling Location : G - 850 D 2.5 MW Stack

Test Results :

Sr.No	Specific Test	Units	LOQ	Requirements	Result	Test Method
Discipline : CHEMICAL Main Group : ATMOSPHERIC POLLUTION						
1	Stack Temperature	K	30	-	569	IS 11255 (Part 3)
2	Velocity	m/sec	2.5	-	23.7	EPA method 1-3 (Title 40 - Protection of Environment)
3	Gaseous Discharge	Nm3/Hr	65	-	35378	IS 11255 (Part 3)
4	Oxygen as O2	%	0.1	-	18.4	GL/EN/SOP/149 Issue no & Dt : 02/05.04
5	Carbon Monoxide as CO	mg/Nm3	1.14	-	26.6	GL/EN/SOP/149 Issue no & Dt : 02/05.04
6	Carbon Dioxide as CO2	%	0.1	-	2.4	GL/EN/SOP/149 Issue no & Dt : 02/05.04
7	Particulate Matter	mg/Nm3	5	150	20.3	GL/ EN/SOP/113 Issue no & Dt : 02/05.04
8	Oxides of Nitrogen as Nox	mg/Nm3	2	-	37.6	GL/EN/SOP/149 Issue no & Dt : 02/05.04

Reviewed By

S. SANKAR
SENIOR CHEMIST

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E. PRITHIVIRAJAN
LAB MANAGER

Report No.: MI260131094
Report Date: 03-Feb-2026
ULR No.: TC858226000001141F

TEST REPORT



Discipline : CHEMICAL | Main Group : ATMOSPHERIC POLLUTION

9	Sulphur Dioxide as SO ₂	mg/Nm ³	3	-	BLQ	EPA 6 (Title 40 – Protection of Environment)
10	Moisture Content	%	1	-	BLQ	EPA Method 1-3 (Title 40 – Protection of Environment)

BLQ - Below Limit of Quantification | LOQ - Limit of Quantification

Sample ID MI260131094 consists of two Test Reports. Report No: MI260131094 and Report No: MI260131094A

Remarks : The above Stack Complies as per CPCB norms with respect to the above tested parameters.



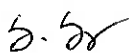
Scope

***** End Of Report *****



Report

Reviewed By


S. SANKAR
SENIOR CHEMIST

Page 2 Of 2

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E. PRITHIVIRAJAN
LAB MANAGER

TEST REPORT

Report No.: MI260131094A
Report Date: 03-Feb-2026

Report Issued To	Sample Received On	Analysis Duration	
		Start Date	End Date
Vedanta Limited(Cairn oil &Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalaguptam Mandal, Andhra Pradesh, India, 533213	31-Jan-2026	31-Jan-2026	03-Feb-2026

Sample Description :

Sample Name : Stack Emission
Sample Description : Stack Emission
Date of Sampling : Oct
Sample Submission Type : Customer
Sample Condition : Good
Sampling Location : G - 850 D 2.5 MW Stack

Test Results :

Sr.No	Specific Test	Units	LOQ	Result	Test Method
Discipline : CHEMICAL Main Group : ATMOSPHERIC POLLUTION					
1	Hydrocarbon	mg/m3	0.1	BLQ	By GCMS Method

BLQ - Below Limit of Quantification | LOQ - Limit of Quantification
Sample ID MI260131094 consists of two Test Reports. Report No: MI260131094 and Report No: MI260131094A

Remarks : The above Stack Complies as per CPCB norms with respect to the above tested parameters.



***** End Of Report *****

Report

Reviewed By

S. SANKAR
SENIOR CHEMIST

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E. PRITHIVIRAJAN
LAB MANAGER

Report No.: EN260202001
Report Date: 10-Feb-2026
ULR No.: TC858226000001466F

TEST REPORT



Report Issued To :	Sample Received On	Analysis Duration	
		Start Date	Completion Date
Vedanta Limited(Cairn oil & Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalaguptam Mandal, Andhra Pradesh, India, 533213	02-Feb-2026	02-Feb-2026	06-Feb-2026

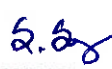
Sample Description :

Sample Name : Stack Emission
Sample Description : Stack Emission
Sampling Location : Solar Turbine - G850D
Sample Submission Type : Collected By Lab Representative
Sample Condition : Good
Sampling Plan and Method : GL/EN/SOP/111
Date of Sampling : 31-Jan-2026

Test Results :

Sr.No	Specific Test	Units	LOQ	Requirements	Result	Test Method
Discipline : CHEMICAL Main Group : ATMOSPHERIC POLLUTION						
1	Stack Temperature	K	303	-	571	IS 11255 (Part 3)
2	Velocity	m/sec	2.5	-	23.59	EPA method 1-3 (Title 40 – Protection of Environment)
3	Gaseous Discharge	Nm3/Hr	65	-	34660	IS 11255 (Part 3)
4	Oxygen as O2	%	0.1	-	18.1	GL/EN/SOP/149 Issue no & Dt : 02/05.04
5	Carbon Monoxide as CO	mg/Nm3	1.14	-	14.3	GL/EN/SOP/149 Issue no & Dt : 02/05.04
6	Carbon Dioxide as CO2	%	0.1	-	1.9	GL/EN/SOP/149 Issue no & Dt : 02/05.04
7	Particulate Matter	mg/Nm3	5	150	12.6	GL/EN/SOP/113 Issue no & Dt : 02/05.04

Reviewed By


S. SANKAR
SENIOR CHEMIST

Page 1 Of 2

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LAB MANAGER

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Report No.: EN260202001
Report Date: 10-Feb-2026
ULR No.: TC858226000001466F

TEST REPORT



Discipline : CHEMICAL | Main Group : ATMOSPHERIC POLLUTION

8	Oxides of Nitrogen as Nox	mg/Nm3	2	-	38.1	GL/EN/SOP/149 Issue no & Dt : 02/05.04
9	Sulphur Dioxide as SO2	mg/m3	3	-	BLQ	EPA 6 (Title 40 – Protection of Environment)
10	Moisture Content	%	1	-	BLQ	EPA Method 1-3 (Title 40 – Protection of Environment)

BLQ - Below Limit of Quantification | LOQ - Limit of Quantification

Remarks : The above Stack Complies as per CPCB norms with respect to the above tested parameters.



Scope



Report

***** End Of Report *****

Reviewed By

S. SANKAR
SENIOR CHEMIST

Page 2 Of 2

Authorised By

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LAB MANAGER

GLENS INNOVATION LABS Pvt Ltd, #6/1,1 St Floor , Sri Jothi Complex Murugesan Street , Balavinayagar Nagar , Arumbakkam Chennai 600106

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TEST REPORT

Report No.: EN260202001A

Report Date: 10-Feb-2026

Report Issued To	Sample Received On	Analysis Duration	
		Start Date	End Date
Vedanta Limited(Cairn oil & Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalaguptam Mandal, Andhra Pradesh, India, 533213	02-Feb-2026	02-Feb-2026	06-Feb-2026

Sample Description :

Sample Name : Stack Emission
Sample Description : Stack Emission
Sampling Location : Solar Turbine - G850D
Sample Submission Type : Collected By Lab Representative
Sample Condition : Good
Sampling Plan and Method : GL/EN/SOP/111
Date of Sampling : 31-Jan-2026

Test Results :

Sr.No	Specific Test	Units	LOQ	Result	Test Method
Discipline : CHEMICAL Main Group : ATMOSPHERIC POLLUTION					
1	Hydrocarbon	mg/m3	1	BLQ	IS 5182 (Part 17)

BLQ - Below Limit of Quantification | LOQ - Limit of Quantification



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SENIOR CHEMIST

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TEST REPORT



Report No.: EN260202002
Report Date: 10-Feb-2026
ULR No.: TC858226000001465F

Report Issued To :	Sample Received On	Analysis Duration	
		Start Date	Completion Date
Vedanta Limited(Cairn oil & Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalaguptam Mandal, Andhra Pradesh, India, 533213	02-Feb-2026	02-Feb-2026	06-Feb-2026

Sample Description :

Sample Name : Stack Emission
Sample Description : Stack Emission
Sampling Location : Solar Turbine - G850A
Sample Submission Type : Collected By Lab Representative
Sample Condition : Good
Sampling Plan and Method : GL/EN/SOP/111
Date of Sampling : 31-Jan-2026

Test Results :

Sr.No	Specific Test	Units	LOQ	Requirements	Result	Test Method
Discipline : CHEMICAL Main Group : ATMOSPHERIC POLLUTION						
1	Stack Temperature	K	303	-	584	IS 11255 (Part 3)
2	Velocity	m/sec	2.5	-	23.3	EPA method 1-3 (Title 40 – Protection of Environment)
3	Gaseous Discharge	Nm ³ /Hr	65	-	33467	IS 11255 (Part 3)
4	Oxygen as O ₂	%	0.1	-	17.6	GL/EN/SOP/149 Issue no & Dt : 02/05.04
5	Carbon Monoxide as CO	mg/Nm ³	1.14	-	13.2	GL/EN/SOP/149 Issue no & Dt : 02/05.04
6	Carbon Dioxide as CO ₂	%	0.1	-	2.2	GL/EN/SOP/149 Issue no & Dt : 02/05.04
7	Particulate Matter	mg/Nm ³	5	150	10.5	GL/EN/SOP/113 Issue no & Dt : 02/05.04

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SENIOR CHEMIST

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Report No.: EN260202002A

Report Date: 10-Feb-2026

TEST REPORT

Report Issued To	Sample Received On	Analysis Duration	
		Start Date	End Date
Vedanta Limited(Cairn oil & Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalaguptam Mandal, Andhra Pradesh, India, 533213	02-Feb-2026	02-Feb-2026	06-Feb-2026

Sample Description :

Sample Name : Stack Emission
Sample Description : Stack Emission
Sampling Location : Solar Turbine - G850A
Sample Submission Type : Collected By Lab Representative
Sample Condition : Good
Sampling Plan and Method : GL/EN/SOP/111
Date of Sampling : 31-Jan-2026

Test Results :

Sr.No	Specific Test	Units	LOQ	Result	Test Method
Discipline : CHEMICAL Main Group : ATMOSPHERIC POLLUTION					
1	Hydrocarbon	mg/m3	1	BLQ	IS 5182 (Part 17)

BLQ - Below Limit of Quantification | LOQ - Limit of Quantification



***** End Of Report *****

Report

Reviewed By

S. SANKAR
SENIOR CHEMIST

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E. PRITHIVIRAJAN
LAB MANAGER

Page 1 Of 1

GLENS INNOVATION LABS Pvt Ltd, #6/1,1 St Floor , Sri Jothi Complex Murugesan Street , Balavinayagar Nagar , Arumbakkam Chennai 600106

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Report No.: EN260202008 - 15
Report Date: 10-Feb-2026
ULR No.: TC858226000001460 - 53F

TEST REPORT



Report issued To :	Sample Received On	Analysis Duration	
		Start Date	Completion Date
Vedanta Limited(Cairn oil & Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalaguptam Mandal, Andhra Pradesh, India, 533213	02-Feb-2026	02-Feb-2026	05-Feb-2026

Sample Description :

Sample Name : Ambient Noise
Sample Description : Ambient Noise
Sample Submission Type : Collected By Lab Representative
Sample Condition : Good
Date of Sampling : 31-Jan-2026
Sampling Plan and Method : IS 9989

Test Results :

S.No	Sample Location	Noise Level dB(A)	
		Day	Night
1	R-ON-N1/Ravva Terminal - Main Gate/North Side Boundary Wall	54.9	46.5
2	R-ON-N2/Ravva Terminal - East Gate/East Side Boundary Wall	59.4	51.3
3	R-ON-N3/Ravva Terminal /South Side Near Cooling Tower/South Side Boundary Wall	62.6	58.6
4	R-ON-N4/Ravva Terminal /West Side Near West Shed/ West Side Boundary Wall	63.8	53.9
5	R-ON-N5/Living Quarters(LQ) -/055KMtoNE	60.6	52.8
6	R-ON-N6/Syanam Village/08km to NE	58.6	56.1
7	R-ON-N7/Syanam Beach Cyclone Shelter/1.2km to SE	60.1	52.3
8	R-ON-N8/Outside Ravva Terminal-Near Anjaneya Temple/06km to N	57.1	49.3
Limit		70	75

BLQ - Below Limit of Quantification | LOQ - Limit of Quantification

Limit Set by CPCB:

I) Industrial Area	: Day Time-75 dB (A);	Night Time-70 dB (A)
II) Commercial Area	: Day Time-65 dB (A);	Night Time-55 dB (A)
III) Residential Area	: Day Time-55 dB (A);	Night Time-45 dB (A)
IV) Silence Area	: Day Time-50 dB (A);	Night Time-40 dB (A)

***** End Of Report *****

Reviewed By

S. Sankar

S. SANKAR
SENIOR CHEMIST

Page 1 Of 1

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E. Prithivirajan

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Report No.: EN251129159
Report Date: 05-Dec-2025
ULR No.: TC858226000001092F

TEST REPORT

Report Issued To :	Sample Received On	Analysis Duration	
		Start Date	Completion Date
Vedanta Limited(Cairn oil & Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalagupam Mandal, Andhra Pradesh, India, 533213	29-Nov-2025	01-Dec-2025	05-Dec-2025

Sample Description :

Sample Name : Waste Water
Sample Description : ETP Outlet
Sample Quantity : 2.5L
Date of Sampling : 28-Nov-2025
Sample Submission Type : Lab
Sample Condition : Good
Sampling Location : ETP Treated

Test Results :

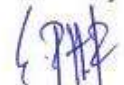
Sr.No	Specific Test	Units	LOQ	Requirements	Result	Test Method
Discipline : CHEMICAL Main Group : POLLUTION & ENVIRONMENT						
1	pH value @ 25°C	-	1	5.5 to 9.0	7.22	APHA 24th Edition Part 4500 H+ B
2	Oil and Grease	mg/l	4	10	BLQ	APHA 24th Edition Part 5520 B (Partition Gravimetric method)
3	Total suspended solids(TSS)	mg/L	1	100	19.5	APHA 24th Edition Part 2540 D
4	Total Dissolved solids	mg/L	1	2100	1947	APHA 24th Edition Part 2540 C
5	Biochemical Oxygen demand at 27°C for 3 days	mg/l	2	30	20	IS 3025 (Part 44)
6	Chemical oxygen demand	mg/l	4	250	64	APHA 24th Edition Part 5220 B,C
7	Mercury as Hg	mg/L	0.0005	0.01	BLQ	APHA 24rd Edition Part 3125 B
8	Fluoride as F	mg/l	0.1	2	0.25	APHA 24th Edition Part 4500 F D

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SENIOR CHEMIST

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LAB MANAGER

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Report No.: EN251129159

Report Date: 05-Dec-2025

ULR No.: TC858226000

TEST REPORT



Discipline : CHEMICAL | **Main Group :** POLLUTION & ENVIRONMENT

9	Total Chromium as Cr	mg/L	0.005	2	0.010	APHA 24rd Edition Part 3125 B
10	Lead as Pb	mg/L	0.005	0.1	BLQ	APHA 24rd Edition Part 3125 B
11	Copper as Cu	mg/L	0.005	3	BLQ	APHA 24rd Edition Part 3125 B
12	Zinc as Zn	mg/L	0.005	1	0.032	APHA 24rd Edition Part 3125 B
13	Cyanide as CN	mg/l	0.1	0.2	BLQ	APHA 24th Edition Part 4500 CN- C,E,F
14	Nickel as Ni	mg/L	0.005	3	BLQ	APHA 24rd Edition Part 3125 B

BLQ - Below Limit of Quantification | **LOQ** - Limit of Quantification

Remarks : The above ETP Outlet water sample is below the APPCB discharge limit against the above the tested parameters for which the limit has been provided in the specification.



Scope

***** End Of Report *****



Report

Reviewed By

S. Sankar
S. SANKAR
SENIOR CHEMIST

Page 2 Of 2

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E. Prithvi Rajan
E. PRITHVI RAJAN
LAB MANAGER

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TEST REPORT

Report No.: EN251229166
Report Date: 02-Jan-2026
ULR No.: TC858226000001096F



Report Issued To :	Sample Received On	Analysis Duration	
		Start Date	Completion Date
Vedanta Limited(Cairn oil & Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalaguptam Mandal, Andhra Pradesh, India, 533213	29-Dec-2025	29-Dec-2025	02-Jan-2026

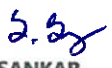
Sample Description :

Sample Name : Waste Water
Sample Description : ETP Outlet
Sample Quantity : 2.5L
Date of Sampling : 27-Dec-2025
Sample Submission Type : Lab
Sample Condition : Good
Sampling Location : ETP Treated Water

Test Results :

Sr.No	Specific Test	Units	LOQ	Requirements	Result	Test Method
Discipline : CHEMICAL Main Group : POLLUTION & ENVIRONMENT						
1	pH value @ 25°C	-	1	5.5 to 9.0	7.35	APHA 24th Edition Part 4500 H+ B
2	Oil and Grease	mg/l	4	10	BLQ	APHA 24th Edition Part 5520 B (Partition Gravimetric method)
3	Total suspended solids(TSS)	mg/L	1	100	20.8	APHA 24th Edition Part 2540 D
4	Total Dissolved solids	mg/L	1	2100	1898	APHA 24th Edition Part 2540 C
5	Biochemical Oxygen demand at 27°C for 3 days	mg/l	2	30	19	IS 3025 (Part 44)
6	Chemical oxygen demand	mg/l	4	250	62	APHA 24th Edition Part 5220 B,C
7	Mercury as Hg	mg/L	0.0005	0.01	BLQ	APHA 24rd Edition Part 3125 B
8	Fluoride as F	mg/l	0.1	2	0.29	APHA 24th Edition Part 4500 F D

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SENIOR CHEMIST

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Report No.: MI260131096
Report Date: 05-Feb-2026
ULR No.: TC858226000001256F

TEST REPORT



TC-8582

Report Issued To :	Sample Received On	Analysis Duration	
		Start Date	Completion Date
Vedanta Limited(Cairn oil & Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalagupam Mandal, Andhra Pradesh, India, 533213	31-Jan-2026	31-Jan-2026	04-Feb-2026

Sample Description :

Sample Name : Waste Water
Sample Description : ETP Outlet
Sample Quantity : 2.5L
Date of Sampling : Oct
Sample Submission Type : Customer
Sample Condition : Good
Sampling Location : ETP Treated

Test Results :

Sr.No	Specific Test	Units	LOQ	Requirements	Result	Test Method
Discipline : CHEMICAL Main Group : POLLUTION & ENVIRONMENT						
1	pH value @ 25°C	-	1	5.5 to 9.0	7.28	APHA 24th Edition Part 4500 H+ B
2	Oil and Grease	mg/l	4	10	BLQ	APHA 24th Edition Part 5520 B (Partition Gravimetric method)
3	Total suspended solids(TSS)	mg/L	1	100	18.7	APHA 24th Edition Part 2540 D
4	Total Dissolved solids	mg/L	1	2100	1902	APHA 24th Edition Part 2540 C
5	Biochemical Oxygen demand at 27°C for 3 days	mg/l	2	30	21	IS 3025 (Part 44)
6	Chemical oxygen demand	mg/l	4	250	60	APHA 24th Edition Part 5220 B,C
7	Mercury as Hg	mg/L	0.0005	0.01	BLQ	APHA 24rd Edition Part 3125 B
8	Fluoride as F	mg/l	0.1	2	0.27	APHA 24th Edition Part 4500 F D

Reviewed By

S. SANKAR
SENIOR CHEMIST

Page 1 Of 2

Authorised By

E. PRITHIVIRAJAN
LAB MANAGER

Report No.: MI260131096
Report Date: 05-Feb-2026
ULR No.: TC858226000001256F

TEST REPORT



TC-8582

Discipline : CHEMICAL | Main Group : POLLUTION & ENVIRONMENT

9	Total Chromium as Cr	mg/L	0.005	2	0.057	APHA 24rd Edition Part 3125 B
10	Lead as Pb	mg/L	0.005	0.1	BLQ	APHA 24rd Edition Part 3125 B
11	Copper as Cu	mg/L	0.005	3	BLQ	APHA 24rd Edition Part 3125 B
12	Zinc as Zn	mg/L	0.005	1	0.039	APHA 24rd Edition Part 3125 B
13	Cyanide as CN	mg/l	0.1	0.2	BLQ	APHA 24th Edition Part 4500 CN- C,E,F
14	Nickel as Ni	mg/L	0.005	3	BLQ	APHA 24rd Edition Part 3125 B

BLQ - Below Limit of Quantification | LOQ - Limit of Quantification

Remarks : The above ETP Outlet water sample is Below the APPCB discharge limit against the above tested parameters for which the limit has been provided in the specification.



Scope

***** End Of Report *****



Report

Reviewed By


S. SANKAR
SENIOR CHEMIST

Page 2 Of 2

Authorised By


E. PRITHIVIRAJAN
LAB MANAGER



GLens Innovation Labs Pvt Ltd.

Certified as per ISO 9001:2015 & ISO 45001:2018

Report No.: EN260202005A

Report Date: 10-Feb-2026

TEST REPORT

Report Issued To	Sample Received On	Analysis Duration	
		Start Date	End Date
Vedanta Limited(Cairn oil & Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalaguptam Mandal, Andhra Pradesh, India, 533213	02-Feb-2026	02-Feb-2026	10-Feb-2026

Sample Description :

Sample Name : Effluent Water
Sample Description : ETP Inlet
Sample Quantity : 2.5L
Sampling Location : ETP Plant
Sample Submission Type : Collected By Lab Representative
Sample Condition : Good
Sampling Plan and Method : GL/EN/SOP/001&003, GL/MB/SOP/06
Date of Sampling : 31-Jan-2026

Test Results :

Sr.No	Specific Test	Units	LOQ	Result	Test Method
Discipline : CHEMICAL Main Group : POLLUTION & ENVIRONMENT					
1	Fluoride as F	mg/l	0.1	17.4	APHA 24th Edition Part 4500 F D
2	Chloride as Cl	mg/l	1	12132	APHA 24th Edition Part 4500 Cl - B

BLQ - Below Limit of Quantification | LOQ - Limit of Quantification



***** End Of Report *****

Report

Reviewed By

S. SANKAR

SENIOR CHEMIST

Authorised By

ABUBACKERSITHICK

CHEMIST

Page 1 Of 1

GLENS INNOVATION LABS Pvt Ltd, #6/1,1 St Floor, Sri Jothi Complex Murugesan Street, Balavinayagar Nagar, Arumbakkam Chennai 600106

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Report No.: EN260202006
Report Date: 10-Feb-2026
ULR No.: TC858226000001462F

TEST REPORT



Report Issued To :	Sample Received On	Analysis Duration	
		Start Date	Completion Date
Vedanta Limited(Cairn oil & Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalaguptam Mandal, Andhra Pradesh, India, 533213	02-Feb-2026	02-Feb-2026	10-Feb-2026

Sample Description :

Sample Name : Effluent Water
Sample Description : ETP Outlet
Sample Quantity : 2.5L
Sampling Location : ETP Plant
Sample Submission Type : Collected By Lab Representative
Sample Condition : Good
Sampling Plan and Method : GL/EN/SOP/001&003, GL/MB/SOP/06
Date of Sampling : 31-Jan-2026

Test Results :

Sr.No	Specific Test	Units	LOQ	Requirements	Result	Test Method
Discipline : CHEMICAL Main Group : POLLUTION & ENVIRONMENT						
1	pH value @ 25°C	-	1	5.5 to 9.0	8.10	APHA 24th Edition Part 4500 H+ B
2	Oil and Grease	mg/l	4	10	BLQ	APHA 24th Edition Part 5520 B (Partition Gravimetric method)
3	Total suspended solids(TSS)	mg/L	1	100	12.4	APHA 24th Edition Part 2540 D
4	Total Dissolved solids	mg/L	1	2100	17451	APHA 24th Edition Part 2540 C
5	Biochemical Oxygen demand at 27°C for 3 days	mg/l	2	30	115	IS 3025 (Part 44)
6	Chemical oxygen demand	mg/l	4	250	460	APHA 24th Edition Part 5220 B,C
7	Mercury as Hg	mg/L	0.0005	0.01	BLQ	APHA 24rd Edition Part 3125 B
8	Fluoride as F	mg/l	0.1	2	0.99	APHA 24th Edition Part 4500 F D

Reviewed By



S. SANKAR
SENIOR CHEMIST

Page 1 Of 2

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ABUBACKERSITHICK
CHEMIST

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TEST REPORT



Report No.: EN260202005
Report Date: 10-Feb-2026
ULR No.: TC858226000001463F

Report Issued To :	Sample Received On	Analysis Duration	
		Start Date	Completion Date
Vedanta Limited(Cairn oil & Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalagupam Mandal, Andhra Pradesh, India, 533213	02-Feb-2026	02-Feb-2026	10-Feb-2026

Sample Description :

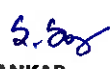
Sample Name : Effluent Water
Sample Description : ETP Inlet
Sample Quantity : 2.5L
Sampling Location : ETP Plant
Sample Submission Type : Collected By Lab Representative
Sample Condition : Good
Sampling Plan and Method : GL/EN/SOP/001&003, GL/MB/SOP/06
Date of Sampling : 31-Jan-2026

Test Results :

Sr.No	Specific Test	Units	Result	Test Method
Discipline : BIOLOGICAL Main Group : ENVIRONMENT AND POLLUTION				
1	Faecal coliform	MPN/10 0ml	350	APHA 24th Edition 9221E

Sr.No	Specific Test	Units	LOQ	Result	Test Method
Discipline : CHEMICAL Main Group : POLLUTION & ENVIRONMENT					
2	pH value @ 25°C	-	1	7.22	APHA 24th Edition Part 4500 H+ B
3	Temperature	°C	25	26.8	APHA 24th Edition Part 2150 B
4	Oil and Grease	mg/l	4	32.4	APHA 24th Edition Part 5520 B (Partition Gravimetric method)
5	Total Suspended Solids(TSS)	mg/L	1	214	APHA 24th Edition Part 2540 D
6	Total Dissolved solids	mg/L	1	19665	APHA 24th Edition Part 2540 C
7	Biochemical Oxygen demand at 27°C for 3 days	mg/l	2	530	IS 3025 (Part 44)

Reviewed By


S. SANKAR
SENIOR CHEMIST

Page 1 Of 2


Bhuvaneswari .B
Deputy Manager - Microbiology

Authorised By


ABUBACKERSITHICK
CHEMIST

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GLens Innovation Labs Pvt Ltd.

Certified as per ISO 9001:2015 & ISO 45001:2018



Report No.: EN251129173
Report Date: 06-Dec-2025
ULR No.: TC858226000001100F

TEST REPORT

Report Issued To :	Sample Received On	Analysis Duration	
		Start Date	Completion Date
Vedanta Limited(Cairn oil & Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalagupam Mandal, Andhra Pradesh, India, 533213	29-Nov-2025	01-Dec-2025	05-Dec-2025

Sample Description :

Sample Name : Sewage Water
Sample Description : STP Outlet
Sample Quantity : 2.5L
Date of Sampling : 28-Nov-2025
Sample Submission Type : Lab
Sample Condition : Good
Sampling Location : STP Plant

Test Results :

Sr.No	Specific Test	Units	Requirements	Result	Test Method
Discipline : BIOLOGICAL Main Group : ENVIRONMENT AND POLLUTION					
1	Faecal coliform	MPN/100ml	<1000	63	APHA 24th Edition 9221E
2	Total coliform	MPN/100ml	-	120	APHA 24th Edition 9221B

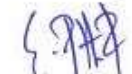
Sr.No	Specific Test	Units	LOQ	Requirements	Result	Test Method
Discipline : CHEMICAL Main Group : POLLUTION & ENVIRONMENT						
3	Biochemical Oxygen demand at 27°C for 3 days	mg/l	2	30	BLQ	IS 3025 (Part 44)
4	pH value @ 25°C	-	1	6.5-9.0	6.62	APHA 24th Edition Part 4500 H+ B
5	Total suspended solids(TSS)	mg/L	1	100	5.2	APHA 24th Edition Part 2540 D
6	Chemical oxygen demand	mg/l	4	-	12.1	APHA 24th Edition Part 5220 B,C
7	Total Dissolved solids	mg/L	1	-	529	APHA 24th Edition Part 2540 C
8	Mercury as Hg	mg/L	0.0005	-	BLQ	APHA 24rd Edition Part 3125 B

Reviewed By


S. SANKAR
SENIOR CHEMIST

Page 1 Of 2

Authorized By


E. PRITHIVIRAJAN
LAB MANAGER

GLENS INNOVATION LABS Pvt Ltd, #6/1, 1st Floor, Sri Jothi Complex Murugesan Street, Balavinayagar Nagar, Arumbakkam Chennai 600106

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GLens Innovation Labs Pvt Ltd.

Certified as per ISO 9001:2015 & ISO 45001:2018



TC-4562

Report No.: EN251129173
Report Date: 06-Dec-2025
ULR No.: TC858226000001100F

TEST REPORT

Discipline : CHEMICAL | Main Group : POLLUTION & ENVIRONMENT

9	Fluoride as F	mg/l	0.1	-	0.11	APHA 24th Edition Part 4500 F D
10	Total Phosphorous as P	mg/L	0.05	-	0.18	APHA 24th Edition Part 4500 P B,D
11	Oil and Grease	mg/l	4	-	BLQ	APHA 24th Edition Part 5520 B (Partition Gravimetric method)

BLQ - Below Limit of Quantification | LOQ - Limit of Quantification, MPN - Most Probable Number

Sample ID MI260131124 consists of two Test Reports. Report No: MI260131124 and Report No: MI260131124A

Remarks : The above STP Outlet water sample is Below the APPCB discharge limit against the above tested parameters for which the limit has been provided in the specification.



Scope

***** End Of Report *****



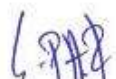
Report

Reviewed By


S. SANKAR
SENIOR CHEMIST

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Authorized By


E. PRITHIVIRAJAN
LAB MANAGER

GLENS INNOVATION LABS Pvt Ltd, #16/1, 1 St Floor, Sri Jothi Complex Murugesan Street, Balavinayagar Nagar, Arumbakkam Chennai 600106

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GLens Innovation Labs Pvt Ltd.

Certified as per ISO 9001:2015 & ISO 45001:2018

Report No.: EN2512290163A

TEST REPORT

Report Date: 02-Jan-2026

Report Issued To	Sample Received On	Analysis Duration	
		Start Date	End Date
Vedanta Limited(Cairn oil & Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalaguptam Mandal, Andhra Pradesh, India, 533213	29-Dec-2025	29-Dec-2025	02-Jan-2026

Sample Description :

Sample Name : Sewage Water
Sample Description : STP Outlet
Sample Quantity : 2.5L
Date of Sampling : 27-Dec-2025
Sample Submission Type : Lab
Sample Condition : Good
Sampling Location : STP Plant

Test Results :

Sr.No	Specific Test	Units	LOQ	Result	Test Method
Discipline : CHEMICAL Main Group : POLLUTION & ENVIRONMENT					
1	Total Nitrogen as N	mg/l	1	8.7	APHA 24th Edition Part 4500

BLQ - Below Limit of Quantification | LOQ - Limit of Quantification

Remarks : The above sample complies with CPCB norms with respect to the above tested Parameters



***** End Of Report *****

Report

Reviewed By

S. SANKAR
SENIOR CHEMIST

Page 1 Of 1

Authorized By

E. PRITHVIRAJAN
LAB MANAGER

GLENS INNOVATION LABS Pvt Ltd, #6/1,1 St Floor , Sri Jothi Complex Murugesan Street , Balavinayagar Nagar , Arumbakkam Chennai 600106

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GLens Innovation Labs Pvt Ltd.

Certified as per ISO 9001:2015 & ISO 45001:2018

Report No.: EN251229164
Report Date: 02-Jan-2026
ULR No.: TC858226000001139F

TEST REPORT



Report Issued To :	Sample Received On	Analysis Duration	
		Start Date	Completion Date
Vedanta Limited(Caim oil & Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalagupam Mandal, Andhra Pradesh, India, 533213	29-Dec-2025	29-Dec-2025	02-Jan-2026

Sample Description :

Sample Name : Sewage Water
Sample Description : STP Outlet
Sampling Location : STP Plant
Sample Quantity : 2.5L
Date of Sampling : 27-Dec-2025
Sample Submission Type : Customer
Sample Condition : Good

Test Results :

Sr.No	Specific Test	Units	Requirements	Result	Test Method
Discipline : BIOLOGICAL Main Group : ENVIRONMENT AND POLLUTION					
1	Faecal coliform	MPN/100ml	<1000	70	APHA 24th Edition 9221E
2	Total coliform	MPN/100ml	-	110	APHA 24th Edition 9221B

Sr.No	Specific Test	Units	LOQ	Requirements	Result	Test Method
Discipline : CHEMICAL Main Group : POLLUTION & ENVIRONMENT						
3	Biochemical Oxygen demand at 27°C for 3 days	mg/l	2	30	BLQ	IS 3025 (Part 44)
4	pH value @ 25°C	-	1	6.5-9.0	6.58	APHA 24th Edition Part 4500 H+ B
5	Total suspended solids(TSS)	mg/L	1	100	4.6	APHA 24th Edition Part 2540 D
6	Chemical oxygen demand	mg/l	4	-	16.2	APHA 24th Edition Part 5220 B,C
7	Total Dissolved solids	mg/L	1	-	564	APHA 24th Edition Part 2540 C
8	Mercury as Hg	mg/L	0.0005	-	BLQ	APHA 24rd Edition Part 3125 B

Reviewed By

S. SANKAR
SENIOR CHEMIST

Authorized By

Page 1 Of 2

Bhuvaneswari . B
Deputy Manager - Microbiology

E. PRITHIVIRAJAN
LAB MANAGER

GLENS INNOVATION LABS Pvt Ltd, #6/1,1 St Floor , Sri Jothi Complex Murugesan Street , Balavinayagar Nagar , Arumbakkam Chennai 600106

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Report No.: MI260131008
Report Date: 05-Feb-2026
ULR No.: TC858226000001263F

TEST REPORT



TC-8582

Report Issued To :	Sample Received On	Analysis Duration	
		Start Date	Completion Date
Vedanta Limited(Cairn oil & Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalaguptam Mandal, Andhra Pradesh, India, 533213	31-Jan-2026	31-Jan-2026	03-Feb-2026

Sample Description :

Sample Name : Sewage Water
Sample Description : STP Outlet
Sample Quantity : 2.5L
Date of Sampling : April
Sample Submission Type : Customer
Sample Condition : Good
Sampling Location : STP Plant

Test Results :

Sr.No	Specific Test	Units	Requirements	Result	Test Method
Discipline : BIOLOGICAL Main Group : ENVIRONMENT AND POLLUTION					
1	Faecal coliform	MPN/10 0ml	<1000	110	APHA 24th Edition 9221E
2	Total coliform	MPN/10 0ml	-	220	APHA 24th Edition 9221B

Sr.No	Specific Test	Units	LOQ	Requirements	Result	Test Method
Discipline : CHEMICAL Main Group : POLLUTION & ENVIRONMENT						
3	Biochemical Oxygen demand at 27°C for 3 days	mg/l	2	30	BLQ	IS 3025 (Part 44)
4	pH value @ 25°C	-	1	6.5-9.0	6.78	APHA 24th Edition Part 4500 H+ B
5	Total suspended solids(TSS)	mg/L	1	100	4.8	APHA 24th Edition Part 2540 D
6	Chemical oxygen demand	mg/l	4	-	8.1	APHA 24th Edition Part 5220 B,C
7	Total Dissolved solids	mg/L	1	-	539	APHA 24th Edition Part 2540 C
8	Mercury as Hg	mg/L	0.0005	-	BLQ	APHA 24rd Edition Part 3125 B

Reviewed By

S. SANKAR
SENIOR CHEMIST

Authorised By

E. PRITHIVIRAJAN
LAB MANAGER

Report No.: MI260131008

TEST REPORT

Report Date: 05-Feb-2026

ULR No.: TC858226000001263F



TC-8582

Discipline : CHEMICAL | Main Group : POLLUTION & ENVIRONMENT

9	Fluoride as F	mg/l	0.1	-	0.16	APHA 24th Edition Part 4500 F D
10	Total Phosphorous as P	mg/L	0.05	-	0.21	APHA 24th Edition Part 4500 P B,D
11	Oil and Grease	mg/l	4	-	BLQ	APHA 24th Edition Part 5520 B (Partition Gravimetric method)

BLQ - Below Limit of Quantification | LOQ - Limit of Quantification

Sample ID MI260131008 consists of two Test Reports. Report No: MI260131008 and Report No: MI260131008A

Remarks : The above STP Outlet water sample is Below the CPCB discharge limit against the above tested parameters for which the limit has been provided in the specification.



Scope

***** End Of Report *****



Report

Reviewed By

S. SANKAR
SENIOR CHEMIST

Page 2 Of 2

Authorised By

E. PRITHIVIRAJAN
LAB MANAGER

TEST REPORT



Report No.: EN260202003
Report Date: 10-Feb-2026
ULR No.: TC858226000001467F

Report Issued To :	Sample Received On	Analysis Duration Start Date	Completion Date
Vedanta Limited(Cairn oil & Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalaguptam Mandal, Andhra Pradesh, India, 533213	02-Feb-2026	02-Feb-2026	10-Feb-2026

Sample Description :

Sample Name : Sewage Water
Sample Description : STP Inlet
Sample Quantity : 2.5L
Sampling Location : STP Plant
Sample Submission Type : Collected By Lab Representative
Sample Condition : Good
Sampling Plan and Method : GL/EN/SOP/001&003, GL/MB/SOP/06
Date of Sampling : 31-Jan-2026

Test Results :

Sr.No	Specific Test	Units	Result	Test Method
Discipline : BIOLOGICAL Main Group : ENVIRONMENT AND POLLUTION				
1	Total coliform	MPN/10 0ml	920	APHA 24th Edition 9221B
2	Faecal coliform	MPN/10 0ml	280	APHA 24th Edition 9221E

Sr.No	Specific Test	Units	LOQ	Result	Test Method
Discipline : CHEMICAL Main Group : POLLUTION & ENVIRONMENT					
3	Biochemical Oxygen demand at 27°C for 3 days	mg/l	2	8.0	IS 3025 (Part 44)
4	pH value @ 25°C	-	1	6.28	APHA 24th Edition Part 4500 H+ B
5	Total suspended solids(TSS)	mg/L	1	42	APHA 24th Edition Part 2540 D
6	Oil and Grease	mg/l	4	BLQ	APHA 24th Edition Part 5520 B (Partition Gravimetric method)
7	Total Dissolved solids	mg/L	1	667	APHA 24th Edition Part 2540 C
8	Total Phosphorous as P	mg/L	0.05	0.58	APHA 24th Edition Part 4500 P B,D
9	Chemical oxygen demand	mg/l	4	32	APHA 24th Edition Part 5220 B,C

Reviewed By

S. Sankar

S. SANKAR
SENIOR CHEMIST

Authorised By

Abubackersithick

ABUBACKERSITHICK
CHEMIST

Page 1 Of 2

Bhuvaneswari .B
Bhuvaneswari .B
Deputy Manager - Microbiology

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Report No.: EN260202003
Report Date: 10-Feb-2026
ULR No.: TC858226000001467F

TEST REPORT



BLQ - Below Limit of Quantification | LOQ - Limit of Quantification



Scope

***** End Of Report *****



Report

Reviewed By

S. SANKAR
SENIOR CHEMIST

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ABUBACKERSITHICK
CHEMIST

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GLens Innovation Labs Pvt Ltd.

Certified as per ISO 9001:2015 & ISO 45001:2018

Report No.: EN260202003A

Report Date: 10-Feb-2026

TEST REPORT

Report Issued To	Sample Received On	Analysis Duration	
		Start Date	End Date
Vedanta Limited(Cairn oil & Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalagupam Mandal, Andhra Pradesh, India, 533213	02-Feb-2026	02-Feb-2026	10-Feb-2026

Sample Description :

Sample Name : Sewage Water
Sample Description : STP Inlet
Sample Quantity : 2.5L
Sampling Location : STP Plant
Sample Submission Type : Collected By Lab Representative
Sample Condition : Good
Sampling Plan and Method : GL/EN/SOP/001&003, GL/MB/SOP/06
Date of Sampling : 31-Jan-2026

Test Results :

Sr.No	Specific Test	Units	LOQ	Result	Test Method
Discipline : CHEMICAL Main Group : POLLUTION & ENVIRONMENT					
1	Total Nitrogen as N	mg/l	1	18.7	APHA 24th Edition Part 4500 Norg

BLQ - Below Limit of Quantification | LOQ - Limit of Quantification



***** End Of Report *****

Report

Reviewed By

S. SANKAR
SENIOR CHEMIST

Authorised By

ABUBACKERSITHICK
CHEMIST

Page 1 Of 1

GLENS INNOVATION LABS Pvt Ltd, #6/1,1 St Floor, Sri Jothi Complex Murugesan Street, Balavinayagar Nagar, Arumbakkam Chennai 600106

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Report No.: EN260202004
Report Date: 10-Feb-2026
ULR No.: TC858226000001464F

TEST REPORT



Report Issued To :	Sample Received On	Analysis Duration	
		Start Date	Completion Date
Vedanta Limited(Cairn oil & Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalaguptam Mandal, Andhra Pradesh, India, 533213	02-Feb-2026	02-Feb-2026	10-Feb-2026

Sample Description :

Sample Name : Sewage Water
Sample Description : STP Outlet
Sample Quantity : 2.5L
Sampling Location : STP Plant
Sample Submission Type : Collected By Lab Representative
Sample Condition : Good
Sampling Plan and Method : GL/EN/SOP/001&003, GL/MB/SOP/06
Date of Sampling : 31-Jan-2026

Test Results :

Sr.No	Specific Test	Units	Requirements	Result	Test Method
Discipline : BIOLOGICAL Main Group : ENVIRONMENT AND POLLUTION					
1	Faecal coliform	MPN/100ml	<1000	94	APHA 24th Edition 9221E
2	Total coliform	MPN/100ml	-	210	APHA 24th Edition 9221B

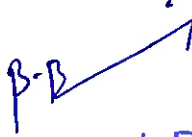
Sr.No	Specific Test	Units	LOQ	Requirements	Result	Test Method
Discipline : CHEMICAL Main Group : POLLUTION & ENVIRONMENT						
3	Biochemical Oxygen demand at 27°C for 3 days	mg/l	2	30	BLQ	IS 3025 (Part 44)
4	pH value @ 25°C	-	1	6.5-9.0	6.57	APHA 24th Edition Part 4500 H+ B
5	Total suspended solids(TSS)	mg/L	1	100	6.4	APHA 24th Edition Part 2540 D
6	Oil and Grease	mg/l	4	-	BLQ	APHA 24th Edition Part 5520 B (Partition Gravimetric method)
7	Total Dissolved solids	mg/L	1	-	609	APHA 24th Edition Part 2540 C

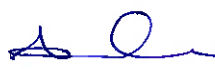
Reviewed By


S. SANKAR
SENIOR CHEMIST

Authorised By

Page 1 Of 2


Bhuvaneswari .B
Deputy Manager - Microbiology


ABUBACKERSITHICK
CHEMIST

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GLens Innovation Labs Pvt Ltd.

Certified as per ISO 9001:2015 & ISO 45001:2018

Report No.: EN260202004
Report Date: 10-Feb-2026
ULR No.: TC858226000001464F

TEST REPORT



Discipline : CHEMICAL Main Group : POLLUTION & ENVIRONMENT						
8	Total Phosphorous as P	mg/L	0.05	-	0.18	APHA 24th Edition Part 4500 P B,D
9	Chemical oxygen demand	mg/l	4	-	12.0	APHA 24th Edition Part 5220 B,C

BLQ - Below Limit of Quantification | LOQ - Limit of Quantification

Remarks : The above STP Outlet water sample is Below the CPCB discharge limit against the above tested parameters for which the limit has been provided in the specification.



Scope

***** End Of Report *****



Report

Reviewed By

S. SANKAR
SENIOR CHEMIST

Page 2 Of 2

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CHEMIST

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GLens Innovation Labs Pvt Ltd.

Certified as per ISO 9001:2015 & ISO 45001:2018

TEST REPORT

Report No.: EN260202004A

Report Date: 10-Feb-2026

Report Issued To	Sample Received On	Analysis Duration	
		Start Date	End Date
Vedanta Limited(Cairn oil & Gas) Ravva Onshore and Offshore Facility Surasani Yanam Uppalaguptam Mandal, Andhra Pradesh, India, 533213	02-Feb-2026	02-Feb-2026	10-Feb-2026

Sample Description :

Sample Name : Sewage Water
Sample Description : STP Outlet
Sample Quantity : 2.5L
Sampling Location : STP Plant
Sample Submission Type : Collected By Lab Representative
Sample Condition : Good
Sampling Plan and Method : GL/EN/SOP/001&003, GL/MB/SOP/06
Date of Sampling : 31-Jan-2026

Test Results :

Sr.No	Specific Test	Units	LOQ	Result	Test Method
Discipline : CHEMICAL Main Group : POLLUTION & ENVIRONMENT					
1	Total Nitrogen as N	mg/l	1	10.4	APHA 24th Edition Part 4500 Norg

BLQ - Below Limit of Quantification | LOQ - Limit of Quantification

Remarks : The above STP Outlet water sample is Below the CPCB discharge limit against the above tested parameters for which the limit has been provided in the specification.



Report

***** End Of Report *****

Reviewed By

S. SANKAR
SENIOR CHEMIST

Authorised By

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CHEMIST

Page 1 Of 1

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ANNEXURE NO. 02

Corporate Social Responsibility report

DETAILS OF CAIRN CSR OUTREACH PROGRAM IN RAVVA,
Dr. B. R. AMBEDKAR KONASEEMA DISTRICT OF ANDHRA PRADESH

1. Background

Vedanta Limited – Cairn Oil & Gas (Ravva JV) has been implementing CSR / Local Community Development (LCD) initiatives in S. Yanam village and surrounding areas in close coordination with the District Administration, Dr. B. R. Ambedkar Konaseema District. The focus areas include Health, Education, Infrastructure & Tourism Support, and Social Welfare.

The approved annual CSR/LCD (Local Community Development) budget is Rs. 6.00 Crores.

2. Sector-wise Interventions and Budget Outflow

A. Health

Objective: To strengthen primary healthcare delivery and referral systems at S'Yanam village.

Confirmed Interventions:

- Ravva JV has allocated **Rs. 47.00 Lakhs per annum** to improve the Primary Health Centre (PHC) at S'Yanam, covering strengthening of health infrastructure, doctor facilitation, medicines, sanitation, and biomedical waste disposal systems.
- Approximately **3000** patients received treatment at the PHC during the period January to November 2025.
- A **trauma care–equipped ambulance** has been assigned to the PHC to facilitate timely referral and transport of patients to upgraded hospitals for advanced treatment.
- **Nutrition support** has been provided to **around 100 pregnant women** in the PHC operational area.
- **Aayu Bharosa Health Insurance Scheme** implemented for eligible S'Yanam villagers, which also includes **medical awareness and outreach activities**.

Confirmed Budget Outflow:

- Primary healthcare strengthening (PHC): **Rs. 47.00 Lakhs**
- Ayu Bharosa health insurance (including medical awareness): **Rs. 19.60 Lakhs**

Total – Health: Rs. 66.60 Lakhs

B. Education

Objective: Strengthen school education systems and support continuity of learning in S'Yanam village.

Confirmed Interventions:

- Financial support towards **teachers' remuneration** in village schools to address staff gaps and ensure continuity of education.
-

- Engagement of **beach watchmen**, supporting safety and enabling uninterrupted school and community activities linked to the coastal belt.
- Implementation of the **Protsaham Scholarship Scheme** for Intermediate students of S'Yanam village.

Confirmed Budget Outflow:

- Teachers' support and beach watchmen salary: **Rs. 37.00 Lakhs**
- Protsaham Scholarships (Intermediate students): **Rs. 41.70 Lakhs**

Total – Education: Rs. 78.70 Lakhs

C. Infrastructure & Beach Tourism Development (S. Yanam)

Objective: Improve public infrastructure and support regulated beach tourism development at S. Yanam.

Key Interventions:

- Construction and strengthening of **approach roads to S. Yanam beach and restaurant area**
- Development of basic tourism-support infrastructure and allied facilities
- Associated civil works executed through District Administration

Budget Outflow:

- Beach approach roads, restaurant access, and tourism facilities: **Rs. 3.00 Crores**

Note: The above works are carry-forward projects from previous years and are being completed during FY 2025-2026.

D. Social Welfare & Community Support

Objective: Address essential community needs and ensure social stability.

Key Interventions:

- Community safety and welfare support through local administration
- Stakeholder engagement, grievance redressal awareness, and village consultations

Budget Outflow:

- Social welfare initiatives: **Rs. 12–15 Lakhs**

3. Consolidated Budget Summary – FY 2025–2026 (Till Date)

Sector	Budget Outflow
Health	Rs. 66.60 Lakhs
Education	Rs. 78.70 Lakhs
Infrastructure & Beach Tourism	Rs. 3.00 Crores
Social Welfare & Community Support	Rs. 12–15 Lakhs

Total – Approx 4.6 Cr

ANNEXURE NO. 03

Greenbelt and Mangroves Development in Ravva Terminal

1. Greenbelt Development in Ravva Onshore Terminal

Ravva Onshore terminal is located at East coast Krishna Godavari Basin PKGM-1 Block area, near Surasaniyanam village Uppalaguptam Mandal East Godavari District of Andhra Pradesh. The block extends between latitude 16°20'44.8" N to 16°33'26.6" N and Longitude 82°04'17.3" E to 82°19'04.3" E. The total block area is 311.56 km² Ravva terminal area is about 225 acres and living quarters extend up to 9 acres. Cairn has developed ~136.1 acres of Greenbelt area within the Terminal and living quarters covers up to 58.1% of total facility area of 234 Acres. Refer below Table

Ravva Greenbelt Coverage Data (Based on geo-spatial analysis)		
Site Name	Facility in Acres	Greenbelt developed (In Acres)
Main Facility Area	225	47.73
Living Quarters Area	9	2.07
Mangrove Area	-	56.30 (Old) + 30 (New)
Total Area	234	136.10
Total Greenbelt coverage		58.1%

Table 1: Greenbelt coverage details of Ravva Terminal

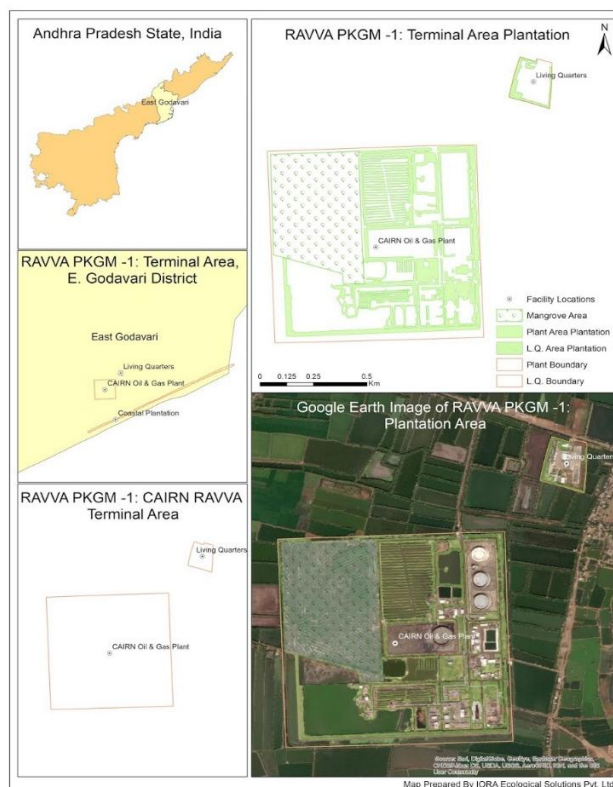


Figure 1: Ravva Onshore Terminal Location



Figure 2: Plantation coverage in Terminal and LQ

Details of Greenbelt developed at Ravva Terminal facility area

S. No	Local name	Common name	Scientific name	No. of Plants
1	Minnumaanu	Earleaf Acacia	<i>Acacia auriculiformis</i>	419
2	Nidra ganneru	Rain tree	<i>Albizia saman</i>	30
3	Vepa	Neem	<i>Azadirachta indica</i>	480
4	Tatichettu	Doub palm	<i>Borassus flabellife</i>	3
5	Seesa Brush	Weeping bottle brush	<i>Callistemon citrinus</i>	33
6	Saruguda	Whistling pine	<i>Casuarina equisetifolia</i>	694
7	Kobbari chettu	Coconut	<i>Cocos nucifera</i>	38
8	Baditha	Indian coral tree	<i>Erythrina variegata</i>	10
9	Marri chettu	Banyan	<i>Ficus Bengalensis</i>	9
10	Ravichettu	Peepal	<i>Ficus religiosa</i>	4
11	Nagari	Subabool	<i>Leucaena leucocephala</i>	15
12	Mamidi	Mango	<i>Mangifera indica</i>	6
13	Simaippacettu	Sapota	<i>Manilkara zapota</i>	3
14	Pagada	Spanish cherry	<i>Mimusops elengi</i>	12
15	Togaru	Indian mulberry	<i>Morinda coreia</i>	9
16	Mulaga	Drum stick tree	<i>Moringa oleifera</i>	5
17	Karepaku	Kaddi patta	<i>Murraya koenigii</i>	1
18	Kondachinta	Yellow Flametree	<i>Peltophorum pterocarpum</i>	1058
19	Kanuga	Karanj	<i>Pongamia pinnata</i>	1003
20	Mulla tumma	Algaroba	<i>Prosopis juliflora</i>	11
21	Patadi	African Tulip	<i>Spathodea campanulata</i>	18
22	Teku	Teak	<i>Tectona grandis</i>	597
23	Tella maddi	Arjun	<i>Terminalia arjuna</i>	63
24	Baadaamu chettu	Indian Almond	<i>Terminalia catappa</i>	4
Total				4525

Table 2: Planation details at Ravva terminal facility area



Figure 3: Ravva Terminal Facility area Greenbelt

Details of Greenbelt developed at Ravva Living quarters area

S. No	Local Name	Common Name	Scientific Name	Number
1	Nidra ganneru	Rain tree	<i>Albizia saman</i>	4
2	Vepa	Neem	<i>Azadirachta indica</i>	9
3	Punnaga	Beauty Leaf	<i>Calophyllum inophyllum</i>	1
4	Pamparapanasa	Pomelo	<i>Citrus grandis</i>	1
5	Nimma pandu	Lemon	<i>Citrus limon</i>	1
6	Kobbari chettu	Coconut	<i>Cocos nucifera</i>	96
7	Nakkera	Isura	<i>Cordia myxa</i>	1
8	Marri chettu	Banyan	<i>Ficus benghalensis</i>	7
9	Ravichettu	Peepal	<i>Ficus religiosa</i>	3
10	Mamidi	Mango	<i>Mangifera indica</i>	4
11	Simaippacettu	Sapota	<i>Manilkara zapota</i>	3
12	Pagada	Spanish cherry	<i>Mimusops elengi</i>	1
13	Togaru	Indian mulberry	<i>Morinda coreia</i>	1
14	Kondachinta	yellow flametree	<i>Peltophorum pterocarpum</i>	10
15	Devdaru	False ashoka	<i>Polyalthia longifolia</i>	7
16	Kanuga	Karanj	<i>Pongamia pinnata</i>	26
17	Jama	Guava	<i>Psidium guajava</i>	3
18	Neredu	Black plum	<i>Syzygium cumini</i>	26
19	Gulaabijaamichettu	Java apple	<i>Syzygium samarangense</i>	1
20	Tella maddi	Arjun	<i>Terminalia arjuna</i>	1
Total				206

Table 3: Living quarters Plantation details



Figure 4 Ravva Living quarters Plantation area

2. Carbon Sequestration potential of Plantation at Ravva

The carbon sequestration potential of the Cairn plantations is calculated based on the total carbon stock stored. The total CO₂ sequestered by the plantations under the Terminal is 17,959 tCO₂e. Additional 1200 tCO₂e will be added after the maturity of the newly developed mangroves in 30 acres within terminal

S. No	Plantation Type	Total Carbon stored (tC)	Total GHG stored in the plantation (tCO ₂ e)
1	Main facility terminal area	2762.08	10128
2	Living quarters	118.43	434
3	Mangroves area	2017.48	7397
Total			17,959

Table 4: Carbon sequestration of plantation at Ravva

3. Mangroves plantation at Ravva

At Ravva Terminal, mangrove dense cover has been developed towards the ecology and biodiversity improvement. At Ravva facility, 8 mangrove species and 5 associated species have been developed over last ten years. The complex mesh of roots and the thick canopy of lush green branches spanning over ~56 acres developed inside Ravva terminal back water zone are a sight to behold. Mangrove plantation provides excellent rooting site to many avifaunal species and refuge to the smooth coated otter. A total of 16 species of trees and 1 climber, 1 Shrub and 4 herbaceous mangrove associates were enumerated from the mangrove habitats. Additionally, more 30 acres of mangroves were developed within the terminal



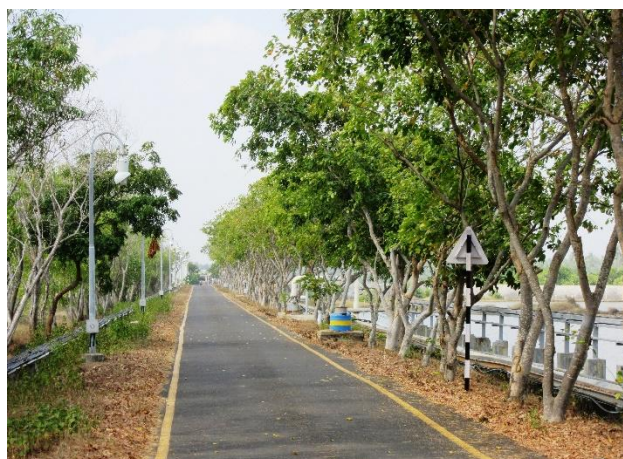
Figure 5 Mangroves Canopy density map at Ravva facility



Figure 6 Newly developed mangroves area at Ravva facility

4. Few Glimpses of Green-belt plantation in Ravva Onshore Terminal







ANNEXURE NO. 04

Oil Spill Response Plan and TIER 1 Compliance to NOSDCP

a. Executive Summary

Based on the issued Terms of Reference (ToR) by the Coast Guard, Delhi, who has decided that all the Ports and Oil Companies should have approved Oil Spill Contingency Plan as per NOSDCP-2015. M/s Environ Software (P) Ltd, Bangalore carried out Oil Spill Modeling, Risk analysis studies and response plan, Marine Atlas all along the coasts of Andhra Pradesh, East coast of India. M/s Vedanta Limited (Carin oil & Gas) has already procured and comply with pollution control equipment's to contain any oil spill.

This Oil Spill Contingency Plan (OSCP) is prepared based on the output of various studies consisting of Hydrodynamic modeling, Oil spill modelling, Environmental sensitive index mapping and Net Environmental Benefit Analysis

b. Hydrodynamic Modeling:

- Preparing the input data for model.
- Calibration and Validation of hydrodynamic model with the available tides.
- Numerical runs were carried for various hydrological conditions for predicting the tides and tidal currents in the East coast of India.
- Flow model studies were carried out using the Hydrodyn-FLOSOFT, with local refinement in the area of marine facilities incorporation of marine sensitive areas and existing marine structures and facilities in the area of influence.
- For all possible marine facilities, spring and neap tide conditions were simulated.
- Flow modeling will be carried out for entire year combined with seasons.

c. Oil Spill Modeling:

- Sensitivity mapping of the study area was prepared considering environmental, ecological, social, economic and other factors.
- Risk assessment carried out to identify potential oil spill scenarios software.
- Crude oil weathering and dispersibility study was considered to provide necessary data dispersant efficacy and to optimize oil spill response plans.
- Generation of data such as: tidal current, ocean current, local winds and others was gathered.
- Oil spill modeling considering worst case scenarios was prepared.
- Oil spill response action plan & strategies as per NOSDCP-2015 and latest requirements; Tier-1, 2 & 3 arrangements were compiled.
- Discussion of OSRP with site team and Training was carried out.

d. Environmental Sensitivity Index mapping

- Sensitivity Index Mapping was prepared to develop action plans against oil pollution and protect the shorelines and its clean-up requirements.
- Identification of the most sensitive site and resources potentially exposed to oil spills due to operation and drilling activities.
- The sensitivity maps cover the entire coastline of the susceptible area including inlets and islands. Mapping the sensitivity of the terrestrial environment surrounding the installations and pipelines was also considered.
- Maps (including the mapping of coastal sub tidal habitats) were prepared to support the application of dispersant by providing information on the potential impact of dispersed oil in the water column.
- The Environment Sensitivity Index Mapping ranges from 1 (low sensitivity) to 10 (very high sensitivity), integrating the 1. shoreline type, its grain size and slope which determines the capacity of oil penetration and/or burial on the shore, and movement, 2. Exposure to wave and tidal energy which determines the natural persistence time of oil on the shoreline and 3. General biological productivity and sensitivity. The 10 levels of Environment Sensitive Index were color coded from cool color to warm color indicating increased sensitivity. Each color corresponds to a particular type of Coast, allowing identification of the type and relative sensitivity at a glance.

- The mapping of biological resources considers the seasonal and life stages present, i.e. breeding, spawning, hatching, migration etc. Depending on the information available, the species concentration information is simple (presence/absence) or more detailed (1. no information, 2. Rare, 3. Common, 4. Abundant and 5. Highly abundant). The use of the four seasons, spring, summer, autumn and winter was avoided to prevent confusion between northern and southern hemispheres.
- Since some of the sub-tidal habitats (coral reefs, sea grass beds and kelp beds) are essential for the coastal marine biodiversity, they were also considered and localized while preparing the maps.
- Sensitive socio-economic features are mapped to include the non-living resources that may be directly injured during oil spill. These features are grouped into various categories like 1. subsistence, artisanal and commercial fishing, and fishing villages, 2. aquaculture, 3. water intakes like salt marsh plant, desalinization plant, aquaculture and salt production and industrial use, 4. Tourism and recreation areas like hotels, restaurants, marinas, beaches, recreational fishing, diving, etc., 5. Port including the activities and infrastructures, 6. Industrial activities relying on maritime transport activities, and 7. Cultural sites like archaeological, historical, religious, etc.

e. NEBA Studies

NEBA studies is prepared to evaluate and compare the oil spill response options against oil spill response plan. In addition, the NEBA intend to support spill response efforts, in the unlikely event of a spill incident, and provide a basis for acquiring approval for the use of Oil Spill Dispersants with Indian Coast Guard on the matter.

The emphasis of the NEBA is on a structured qualitative analysis to identify response options which offer a net environmental improvement over the natural attenuation as a baseline. It is not intended to be a quantitative analysis. The purpose of the analysis is to help to form informed decisions. In summary, NEBA is a holistic approach that:

- Consider potential impact to the resources of concern.
- Consider how well the resources (such as, marine sensitive areas, tidal flats, islands and coastal areas) can be protected with the available response techniques at the time of a spill.

f. Oil Spill Response Plan

The Ravva block is presently operated by Vedanta (Cairn Oil & Gas) in joint venture with Videocon International, Ravva Oil Singapore and ONGC. Oil and gas production from Ravva block is continued for the past 20 years with a current production rate of approx. 10510 BOPD and gas production of 0.2252279 MMSCMD Ravva Operations of Cairn Oil & Gas Vedanta Limited, as a responsible upstream company gives high importance to health, safety and environment.

As the upstream industries are exposed to risks of oil spills, Cairn has prepared contingency plans to mitigate any emergencies arising out the operations involving the best technologies and services available in the industry. The key to effective management of an emergency is to have trained manpower, response resources and pre-established organizational arrangements for mobilizing and responding for mitigation without much loss of time.

The plan is to primarily deal with oil spill emergencies resulting from exploration, production and transportation of crude oil from the Ravva offshore facilities and include the surface facilities viz., platforms, drilling rigs, vessels and subsurface pipelines and all other associated infrastructure required for the production operations

This OSCP is structured based on the directives and guidelines of Indian Coast Guard and general guidelines of IPIECA and primarily divided into three sections.

1. A strategy section defining details of operational and environmental risk assessment, strategies for oil spill response, response plan organization of the Vedanta Cairn aligned for oil spill response and associated activities like media briefing, training and documentation etc.
2. An action plan describing how to activate the OSCP in terms of notification, mobilization and response decisions in case of dynamic situations of oil spill hitting various coastal resources. Operational planning and coordination among other participants, stakeholders and monitoring of the response actions till the close out of the activities are covered in this section.
3. A data directory compiling the details of location maps and charts, equipment and services available for response and technical database on the equipment, deployment methodology and supporting documents for response.

h. The Report consists of four parts including Main Part

Main Part: Oil Spill Contingency Plan. The report consists of the following sections

1. **Strategy Section:** This section consists of oil spill risk assessment, objectives, strategies, and details of available response equipment's. This section discusses the possible oil spill scenarios, the ways and means to respond effectively to minimize pollution. This part covers Chapter 2 to Chapter 6.
2. **Action and Operation Section:** This section includes specific instructions for responders once the spill occurs, on what to do and how to do, for each oil spill incident. This is to ensure that emergency action initiated by the responders are addressed in a promptly and orderly manner. This part is covered between Chapter 7 to Chapter 10.
3. **Data Directory:** This section includes information on statutory regulations, area of operation, training and competence, weathering data on ADIOS, Mud flat shore cleanup techniques, OSD Specifications etc.

i. Agreements with external agencies

While the company's own facilities and the response facilities with the nearby operators can help tackle small and medium spills, it is inevitable to depend on external agencies for larger spills for longer periods. Apart from the facilities of Coast Guard available at the nearby region, additional facilities of external agencies would also be sought for large spills. A few such Oil Spill Response Organizations (OSROs) are available globally among which the service of Oil Spill Response Ltd (M/S OSRL), a nonprofit, industry supported OSRO in Singapore are considered to logistically relevant and technically competent. The services of M/S OSRL are also sought by several other operators in India. Vedanta Cairn Oil & Gas took associate membership with M/S OSRL for support in case of spills of larger magnitude and inclusive of offering equipment for mobilization and help of experts for technical coordination and guidance.

j. The general strategy of deployment of resources for various types of spills is given below:

Tier I	<100 tons	Use Local Spill kits
	<700 tons	Deploy Cairn Facilities. Engage other operators and Coast Guard
Tier II	<10000 tons	Deploy Cairn Facilities. Engage other operators and Coast Guard
Tier III	>10000 tons	Cairn facilities, other operators, Coast Guard and M/S OSRL

ANNEXURE NO. 05

Public Hearing Points Compliance 2013 and 2018

EC Reference

1. Oil and Gas Development in Existing Ravva Offshore Field, PKGM-1 Block, located · off Surasaniyanam (S.Yanam) in the Bay of Bengal, East Godavari District, Andhra Pradesh - Environmental Clearance issued 23rd February 2015 – Public hearing held on 05 December 2013
2. Expansion of Offshore and Onshore Oil and Gas Exploration, Development & Production in Ravva Field, PKGM-1 Block of 331.26 km² located near Surasaniyanam Village (S. Yanam) in Krishna-Godavari Basin, East Godavari District, Andhra Pradesh - Environmental and CRZ Clearance - Public hearing held on 11 October 2018.

Point wise response to action taken on concerns/suggestions raised during Public Hearing

- i. Oil and Gas Development in Existing Ravva Offshore Field, PKGM-1 Block, located · off Surasniyanam (S.Yanam) in the Bay of Bengal, East Godavari District, Andhra Pradesh - Environmental Clearance issued 23rd February 2015 – Public hearing held on 05 December 2013

S. No.	Concern/Suggestions	Status of actions
1.	Sri Guru Kesava Rao requested implementation of CSR Activities recommended by the committee in the year 1997.	Vedanta Limited – Cairn Oil & Gas (Ravva JV) is implementing comprehensive CSR / Local Community Development (LCD) initiatives in S. Yanam village and nearby areas in coordination with the District Administration. The program focuses on Health, Education, Infrastructure & Beach Tourism, and Social Welfare, with an approved annual CSR/LCD budget of Rs. 6.00 Crores. Key Interventions and Achievements 1. Health (Rs. 66.60 Lakhs) - Strengthening of S. Yanam Primary Health Centre with improved infrastructure, doctor support, medicines, sanitation, and biomedical waste management. - Around 3,000 patients treated between January–November 2025. - Deployment of a trauma-care equipped ambulance for emergency referrals. Nutrition support to ~100 pregnant women. - Implementation of Aayu Bharosa Health Insurance Scheme along with medical awareness programs. 2. Education (Rs. 78.70 Lakhs)

S. No.	Concern/Suggestions	Status of actions
		- Financial support for teachers' remuneration to address staffing gaps in village schools. - Engagement of beach watchmen to support safety and continuity of school and community activities. Protsaham Scholarship Scheme benefiting Intermediate students from S. Yanam village. 3. Infrastructure & Beach Tourism Development (Rs. 3.00 Crores) - Construction and strengthening of approach roads to S. Yanam beach and restaurant areas. - Development of basic tourism-support infrastructure and allied civil works through the District Administration. - These are carry-forward projects from previous years, being completed during FY 2025–26. 4. Social Welfare & Community Support (Rs. 12–15 Lakhs) - Community safety and welfare initiatives in coordination with local administration. - Stakeholder engagement, grievance redressal awareness, and village-level consultations. Consolidated Budget Outflow (FY 2025–26) Health: Rs. 66.60 Lakhs Education: Rs. 78.70 Lakhs Infrastructure & Beach Tourism: Rs. 3.00 Crores Social Welfare & Community Support: Rs. 12–15 Lakhs Total CSR/LCD expenditure to date: approximately Rs. 4.6 Crores. Refer Annexure-2 for detailed CSR Activities.

S. No.	Concern/Suggestions	Status of actions
2	Sri Sajja Srinivasa Rao requested employment to local people and raised concerns against the pollution being caused by Cairn India Limited.	Company has given employment to local people. More than 90 % of people (>200 people) in the local by Service Contractors are from local village Service Contracts vehicle hire, civil works, greenbelt housekeeping etc., are given exclusively to contractors from local village. This helps to improve the social standards of the community residing in the village.
3	Sri Swami Naicker voiced his concerns regarding non-inclusion of land Subsidence and TOR's of MoEF in the EIA Report.	Land subsidence from Ravva operations has not been observed and the potential is extremely low since the oil reservoir is far away from shoreline. IIT- BHU Varanasi has carried out extensive study on Land subsidence at Ravva Block and conclude that subsidence near to seashore is insignificant due to extraction of soil and natural gas at offshore. No subsidence observed at Offshore where Oil being extracted.
4	Prof G Kishan Rao expressed that land subsidence occurred due to Oil and Gas exploration and asked to cancel the Public Hearing	The oil reservoir sub surface area extend is far away from shoreline, Oil reservoirs void replaced by the injection water from shore to maintain reservoir pressure and void replacement. In addition, any pressure decline within the reservoir is a localized phenomenon and its effect will be reserved within the oil reservoir. IIT- BHU Varanasi has carried out extensive study on Land subsidence at Ravva Block and conclude that subsidence near to seashore is insignificant due to extraction of soil and natural gas at offshore. No subsidence observed at Offshore where Oil being extracted. Land subsidence is being carried out annually to monitor the subsidence if any. There is no evidence to demonstrate that onshore land subsidence occurred or connected with oil extraction.
5	Sri P. Venkata Rao , Sarpanch of S. Yanam expressed his unhappiness that the existing industry/facility has not fulfilled the earlier commitments.	Vedanta Limited – Cairn Oil & Gas (Ravva JV) is implementing comprehensive CSR / Local Community Development (LCD) initiatives in S. Yanam village and nearby areas in coordination with the District Administration. The program focuses on Health, Education, Infrastructure & Beach Tourism, and Social Welfare , with an approved annual CSR/LCD budget of Rs. 6.00 Crores . Key Interventions and Achievements 1. Health (Rs. 66.60 Lakhs) - Strengthening of S. Yanam Primary Health Centre with improved infrastructure, doctor support, medicines, sanitation, and biomedical waste management. - Around 3,000 patients treated between January–November 2025. - Deployment of a trauma-care equipped ambulance for emergency referrals.

S. No.	Concern/Suggestions	Status of actions
		• Nutrition support to ~100 pregnant women. • Implementation of Aayu Bharosa Health Insurance Scheme along with medical awareness programs. 2. Education (Rs. 78.70 Lakhs) • Financial support for teachers' remuneration to address staffing gaps in village schools. • Engagement of beach watchmen to support safety and continuity of school and community activities. • Protsaham Scholarship Scheme benefiting Intermediate students from S. Yanam village. 3. Infrastructure & Beach Tourism Development (Rs. 3.00 Crores) • Construction and strengthening of approach roads to S. Yanam beach and restaurant areas. • Development of basic tourism-support infrastructure and allied civil works through the District Administration. • These are carry-forward projects from previous years, being completed during FY 2025–26. 4. Social Welfare & Community Support (Rs. 12–15 Lakhs) • Community safety and welfare initiatives in coordination with local administration. • Stakeholder engagement, grievance redressal awareness, and village-level consultations. Consolidated Budget Outflow (FY 2025–26) • Health: Rs. 66.60 Lakhs • Education: Rs. 78.70 Lakhs • Infrastructure & Beach Tourism: Rs. 3.00 Crores • Social Welfare & Community Support: Rs. 12–15 Lakhs Total CSR/LCD expenditure to date: approximately Rs. 4.6 Crores.

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		Refer Annexure-2 for detailed CSR Activities.
6	Sri P. Venkata Rao also stated that the facility is continually causing pollution and people are being affected from air pollution.	Air emissions are well below APPCB norms and regular ambient air quality monitoring is carried out around the facility. All parameters are found within the NAAQS limit.
7	Sri Nimmakayala China Rajappa raised the following concerns. a) 17 no. of villages have been suffering air pollution of the facility. b) The village of S Yanam has not been provided roads, Municipal waste disposal and safe drinking water even the operator is earning thousands of crores of rupees of production.	Air emissions are well below APPCB norms and regular ambient air quality monitoring is carried out around the facility. All parameters are found within the NAAQS limit. ➤ JV provided drinking water connection and distribution facilities. Pipelines laid on the streets were well connected to the homes. ➤ Village streets has been provided with concrete roads. Current focus is on approach roads to S. Yanam beach and restaurant area under Infrastructure & Tourism (Rs. 3.00 Cr). ➤ On the health front, doctors provide free consultation to village people everyday evening for 3-4 hours. Constructed PHC building and supporting 47 Lakhs fund every year. Services include doctor facilitation, medicines, sanitation, and waste management. Around 3,000 patients treated (Jan–Nov 2025), confirming active daily healthcare delivery. ➤ A trauma-care equipped ambulance is currently assigned to the PHC for emergency referrals. ➤ 700 toilets have been constructed to improve the hygiene of the village. ➤ Greenbelt of about 58.1% of the plant area has been developed in Ravva. Also, mangrove and Casuarina plantations have been carried out. ➤ Donated truck for Panchayat and 2 dust bins for each house under Swachh Bharat Program. Refer Point 1 related funds allocation for CSR activities

S. No.	Concern/Suggestions	Status of actions
	c) Villagers are suffering from health problems, odour nuisance and drinking water shortage problems	The emissions are well within the acceptable norms and regular health care facilities are provided by Ravva JV. The records do not indicate any such health issues.
	d) Oil and Gas exploratory units are maintaining the filling of water and chemicals in the exploratory wells which is causing land subsidence.	The exploratory wells have been capped and sealed off. Thus, there is no injection of water or chemicals in the exploratory wells.
	e) The operator has not developed green belt and not provided even free tree guards and not taken up measures in protecting the Environment and development of the area	Greenbelt of about 58.1% of the plant area has been developed in Ravva. Also, 46 acres of Casuarina plantations have been carried out at beach and 235 hac of mangrove plantation is being done at masanithippa.
8	Sri Isakepattla Raghu Babu expressed his unhappiness that twenty years back during establishment of the unit, the proponent assured that the area will be beautifully developed, but it has not happened	Greenbelt of about 58.1% of the plant area has been developed in Ravva. Also, mangrove and Casuarina plantations have been carried out. Also, saplings have been planted and distributed to the villagers.
	He also said that there was no development in respect of laying roads, supply of safe drinking water and development of green belt even though they are earning crores of rupees from the area.	➤ JV provided drinking water connection and distribution facilities. Pipelines laid on the streets were well connected to the homes. ➤ Village streets has been provided with concrete roads. Current focus is on approach roads to S. Yanam beach and restaurant area under Infrastructure & Tourism (Rs. 3.00 Cr). ➤ On the health front, doctors provide free consultation to village people everyday evening for 3-4 hours. Constructed PHC building and supporting 47 Lakhs fund every year. Services include doctor facilitation, medicines, sanitation, and waste management. Around 3,000 patients treated (Jan–Nov 2025), confirming active daily healthcare delivery. ➤ A trauma-care equipped ambulance is currently assigned to the PHC for emergency referrals. ➤ 700 toilets have been constructed to improve the hygiene of the village.

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		➤ Greenbelt of about 58.1% of the plant area has been developed in Ravva. Also, mangrove and Casuarina plantations have been carried out. ➤ Donated truck for Panchayat and 2 dust bins for each house under Swachh Bharat Program. Refer Point 1 related funds allocation for CSR activities
	The oxygen percentage in the air has decreased from 21% to 16% and the same is compensated with poisonous gases of M/s Cairn India Limited which is causing pollution	The facility is producing crude oil and natural gas, no indication or data to justify such claims. Oxygen in atmosphere is remain in between 19% to 21% at facility.
	The area is experiencing acid rains, chemical pollution of prawns and fishponds and decreasing yields of paddy and coconut crops due to pollution of M/s Cairn India Limited.	No evidence of such claims and no relevance to the Ravva Plant operations as facility is complaint to internationally best standards from last two decades.
	The fish was affected by oil slick of Cairn India Limited and compensation was issued by providing bicycles only.	There is no evidence of significant oil spill from Ravva field. However, Ravva JV assisted local administration and coast guard for cleaning operations as part for corporate responsibility.
	Compared the Green belt of M/s Cairn India limited with M/s Nagarjuna Fertilizers and chemicals limited and expressed his displeasure.	Greenbelt of about 58.1% of the plant area has been developed in Ravva. Also, mangrove and Casuarina plantations have been carried out. Cairn encouraged to plant saplings in village for to increase the green cover in the village.
	The houses abutting roads were severely damaged and mishap about 10-15 no's of people due to heavy vehicle movements of M/s Cairn India limited, but no adequate compensation was paid.	No such reports on house damage have been reported
	The people are suffering diseases of eye, respiratory, cancer and other related due to pollution of M/s Cairn India Limited.	No data or evidence to validate such claims. Cairn operations are related to Oil & natural Gas from sub surface and export to Gas lines and ships through closed circuit pipelines and no exposure to atmosphere.
	The fertility of land decreased and the salinity of water of prawn cultured ponds are increased.	There are no discharges to land or surface waters other than the sea. No evidence to validate such claims.

S. No.	Concern/Suggestions	Status of actions
	No Employment to technical and non-technical qualified persons have been provided	More than 90 % of people (>200 people) engaged by Service Contractors are from local village Service Contracts vehicle hire, civil works, greenbelt housekeeping etc are given exclusively to contractors from local village. This was an initiative by the Company towards the economy of the village. They have also given preference to local people in terms of technical positions given the fact that they meet the minimum technical competence.
	The villages are suffering with lack of adequate drinking water supply and electricity problems	Overhead tanks and pipeline connections have been provided to each individual home.
	CIL is showing empty hands-on development of village, releasing CSR funds and providing employment	Ravva has been providing funding for CSR projects in close consultation with RDO. As per the recommendations of the committee, from the year 2000-2001, annual CSR contribution raised to INR 6 crore had been deposited to District Administration of East Godavari to take up developmental infrastructure work.
	CIL is not following laws	It complies with all applicable regulatory requirements.
9	Sri Kudipudi Suryanarayana Rao unhappily asked whether AP Pollution control Board is an agent or a slave to oil companies. Today they came here to earn lakhs of crores of rupees in future and laying red carpet. The board first tell that what they are doing during the last 30 years even though the Govt is releasing thousands of crores as funds.	Not relevant to Project activities.
	Agriculture, Honeybees and Dairy were damaged by acids due to operation of 30-40 wells	The natural gas from Ravva field is sweet in nature. Air pollutants which cause acid rain (like NOx and SOx) are well inside the prescribed limits.
	There were no rains except floods, tycoons and toofans in the area.	Ravva JV cannot comment on weather patterns
	He further opined that the mouth of the areas of sea increased 4 to 5 feet and the entire area would be plunged into sea due to land subsidence in coming 20 years.	Onshore land subsidence should not relate to oil extraction from enclosed subsurface deep pockets offshore.

S. No.	Concern/Suggestions	Status of actions
	There are 5 lakh technically qualified persons in Konaseema area and the Cairn India Limited has not provided employment to the local people.	More than 90 % of people (>200 people) engaged by Service Contractors are from local village Service Contracts vehicle hire, civil works, greenbelt housekeeping etc. are given exclusively to contractors from local village.
	He and demanded the following.	
	a) The oil refinery at Tatipaka shall be upgraded.	Ravva JV cannot comment on this point
	b) Paint, Tar and Grease industry should be established.	Ravva JV cannot comment on this point
	c) M/s Cairn India Limited should provide Rs 25 lakhs of marine money for women entrepreneurs.	Refer Point 1 for details
	d) Quality education shall be provided from High school onwards by the operators of M/s Cairn India Limited	One of the key focuses of Ravva CSR is imparting education.
	e) A corporate super specialty Hospital shall be provided by M/s Cairn India Limited and to extend medical facility on free of cost.	Free primary medical treatment to villagers is provided. PHCs have been constructed. And every month around 50 pregnant women were provided free nutrients, awareness sessions and free medical checkups
	f) An amount of Rs 100 crore shall be allotted for construction of railway bridge from Mukteshwaram to Kotipalli	Not relevant to project activities, though Ravva JV contributing INR 6 crores annually.
	He further stated that the land subsidence occurred about 4 feet in General engineering field of Netherlands due to oil exploration.	There is no evidence to validate land subsidence in the region.
	He addressed the public to protest Cairn India Limited each one like a militant and the company shall vacate the area.	Observations are noted.

S. No.	Concern/Suggestions	Status of actions
10	Sri Pirisetty Narasimha Rao said that huge damage occurred to the village due to pollution by Cairn India Limited	No reference to any specific damage
	The operators took about 250 acres of land for the earlier installation	No land acquisition undertaken
	He demanded that pensions shall be provided for widows, physically handicapped people, old age people through up to 1000/-	Refer Point 1 related to the activities implementing at village
11	Sri Ithabathula Ananda Rao said that problems had been faced for last 20 years due to operating oil and gas industries in the area	No specific problems referred
	He stated that the Department of Revenue, Police and SPCB are also causing damage to the public and Environment without disclosing the information.	No comment on Government functioning
	M/s Cairn India Limited is causing pollution with the support of officials	All discharges and emissions within the prescribed limit
	He opined that there was damage due to oil exploration policy and farmers getting loss due to Government policy.	No comment on Government functioning
	During preparation of Exploration Policies, the issues of farmers getting loss due to Government policies.	No comment on Government functioning
	He questioned about the Environmental acts and economic acts drafted for general public of detailed transaction of partners.	No comment on Government functioning
	He recollected that M/s ONGC established 18 no's of wells and sold out 60% share to command petroleum Videocon and Singapore companies. He wanted to know the details	The shareholding pattern of Ravva JV not covered under the purview of this EIA report.

S. No.	Concern/Suggestions	Status of actions
	He said that CIL sold out the wells to Vedanta for extraction of profits.	Cairn has 22.5% stake in the Ravva JV
	He informed that CIL in a reply told that the RTI Act could not be applied for the unit as it is operating under private sector.	RTI is not applicable in the private sector.
	He demanded that the deal between CIL and Vedanta shall be in transparency and the paper shall be open to public.	The deal is outside the purview of this EIA.
	He further questioned about the utilization of CSR funds through the collector.	Cairn cannot comment on Government Functioning.
	He blamed SPCB of losing of farmers land, affecting diseases in the area by supporting third party analysis report generated by CIL. The reports are not revealed to the public to clear the apprehensions.	Cairn cannot comment on Government Functioning.
11	Sri M.V Suryanarayana Raju explained categorically the damage occurred and future damage in respect of land subsidence. He informed that land subsidence has already occurred in the area and would take huge amount in future for remediation. He said that issue was raised before the DGH and later approached high court of AP during the year 2011. He stressed upon that stress and knowledge had been improved and requested for modelling study.	The oil reservoir sub surface areal extend is far away from shoreline and there no evidences to validate land subsidence occurred in the area.
12	Sri Pandu , president of SC-ST community explained about the allotment of CSR funds since inception. The production started in 1993.he told that 1% of production cost shall be spent for village development and 2% of profit shall be allocated for	➤ JV provided drinking water connection and distribution facilities. Pipelines laid on the streets were well connected to the homes. ➤ Village streets has been provided with concrete roads. Current focus is on approach roads to S. Yanam beach and restaurant area under Infrastructure & Tourism (Rs. 3.00 Cr).

S. No.	Concern/Suggestions	Status of actions
	CSR activities. He demanded CIL to develop S. Yanam on priority basis.	➤ On the health front, doctors provide free consultation to village people everyday evening for 3-4 hours. Constructed PHC building and supporting 47 Lakhs fund every year. Services include doctor facilitation, medicines, sanitation, and waste management. Around 3,000 patients treated (Jan–Nov 2025), confirming active daily healthcare delivery. ➤ A trauma-care equipped ambulance is currently assigned to the PHC for emergency referrals. ➤ 700 toilets have been constructed to improve the hygiene of the village. ➤ Greenbelt of about 58.1% of the plant area has been developed in Ravva. Also, mangrove and Casuarina plantations have been carried out. ➤ Donated truck for Panchayat and 2 dust bins for each house under Swachh Bharat Program. Refer Point 1 related funds allocation for CSR activities
	CIL is giving gas to Gujrat at the rate of Rs 110 per cylinder whereas the rate in AP is excess. He further stated that the industries should be established, and development shall be on parallel basis.	Oil produced is given to Indian refineries as per yearly nomination by MoPNG.
	He further stated that there is a power generation of 10 MW in which 2.5 MW is underutilization and remaining 7.5 MW is surplus. He demanded to transmit the surplus power of 7.5 MW to villages free of cost.	Ravva JV has provision only for captive power supply and not to distribute power to community.
13	Dr ER Subrahmanyam informed that Konaseema is bestowed with rich of oil resources. This is now polluted due to blowouts of drilling activities by petroleum companies.	There have been no blow outs of wells drilled by Ravva JV in the region. Environmental baseline studies have been conducted and all parameters within norms
	As a result of drilling activities, land subsidence in the area , intrusion of saline water into agricultural fields has become common phenomenon	There is no evidence of land subsidence in the region

S. No.	Concern/Suggestions	Status of actions
14	Sri A Adiguru Kesavarao stated that the emissions increased due to flaring of gases which may cause the affected women with abortions or low weight babies and also with mentally retarded problem. He enquired about the total land allocated for greenbelt development.	Environmental baseline studies have been conducted and all parameters within norms
15	Smt P Satyavani expressed her concerns on women giving deliveries to premature babies, lung diseases and dermatological problems due to pollution problem caused by offshore and onshore operational activities. She complained that women are not given employment and for awarding contracts in the company.	Environmental baseline studies have been conducted and all parameters within norms
	She asked to impart training skills and financial assistance for establishment of cotton industries to the women entrepreneurs.	Skill training programs are provided for students from Yanam. Computer and English learning skills are provided.
	She asked to provide facilities for micro vendors	Established projects for micro vendors development
	She asked to provide nutritious food for women and children as well	Importance of nutrition is promoted through health camps
	To provide monetary benefits of Rs 50,000/- to white card holding family girls about to be married	CSR initiatives are implemented.
	Domestic gas supply at free of cost	Gas produced from the field is taken off by GAIL
	Free domestic electrical power supply.	Ravva JV is an Oil & Natural gas producer only.

- ii. Expansion of Offshore and Onshore Oil and Gas Exploration, Development & Production in Ravva Field, PKGM-1 Block of 331.26 km² located near Surasaniyanam Village (S. Yanam) in Krishna-Godavari Basin, East Godavari District, Andhra Pradesh - Environmental and CRZ Clearance - Public hearing held on 11 October 2018

S. No.	Concern/Suggestions	Status of actions
1.	Sri Nagini Nageswar Rao, ZPTC, Katrenikona - expressed his concerns that the promises made in the earlier public hearings by the project authorities such as ONGC, GSPC, Reliance & Vedanta Limited had not been implemented. - He questioned the project authorities that whether the project authorities halt the proposed project if the people oppose the same. He also expressed his concerns that the project authorities had not been implementing the promises made during the public hearing, citing the example that earlier, during the Sri G.M.C. Balayogi period, CSR fund was earmarked initially to S'Yanam Village only, latter allocation of funds extended to mandal level and further to constituency level. - He also expressed his concerns that due to exploration of oil & gas in the area, soil subsidence witnessing in the entire coast, thereby causing earthquakes in the area. - He also disagreed that no turtles existed in the area and they disappeared long back. He also expressed his concerns that due to exploration of oil & gas the sea food wealth was considerably decreased in the area. - He also opined that monthly allowance shall be provided to the entire fishermen communities and agriculturalists in this area. He also informed that earlier, they staged dharnas in front of Ravva plant for fish death in this area due to pollution and the project authorities managed the higher officials and got a report stating that fish death in this area was not due to pollution from the plant. - He also informed that the people of this area are not against the establishment of oil companies. If any proposal was established, it	Vedanta Limited – Cairn Oil & Gas (Ravva JV) is implementing comprehensive CSR / Local Community Development (LCD) initiatives in S. Yanam village and nearby areas in coordination with the District Administration. The program focuses on Health, Education, Infrastructure & Beach Tourism, and Social Welfare, with an approved annual CSR/LCD budget of Rs. 6.00 Crores. Key Interventions and Achievements 1. Health (Rs. 66.60 Lakhs) - Strengthening of S. Yanam Primary Health Centre with improved infrastructure, doctor support, medicines, sanitation, and biomedical waste management. - Around 3,000 patients treated between January–November 2025. - Deployment of a trauma-care equipped ambulance for emergency referrals. Nutrition support to ~100 pregnant women. - Implementation of Aayu Bharosa Health Insurance Scheme along with medical awareness programs. 2. Education (Rs. 78.70 Lakhs) - Financial support for teachers' remuneration to address staffing gaps in village schools. - Engagement of beach watchmen to support safety and continuity of school and community activities. Protsaham Scholarship Scheme benefiting Intermediate students from S. Yanam village.

S. No.	Concern/Suggestions	Status of actions
	would be beneficial for the development of this area citing the example of development of S'Yanam Village. - He demanded for monthly compensation, as they have been losing their wealth, similarly given by Reliance Industries @ Rs.6700/- per month and informed that GSPC announced monthly compensation to about 16000 families till the completion of drilling activities, but they have given compensation for 6 months only instead of 23 months as per agreement. - He also informed that the issue of compensation was brought to the notice of the then District Collector, East Godavari District for solving the issue, but not materialized. He also informed us that while establishing the project, the authorities informed us that there would not be any pollution problems from the proposed project and questioned that why turtles, disappeared in this area. - The project authorities drilled two wells in Gatchakayalapuram and Katrenikona, due to which the roads in this area are completely damaged. The Government sanctioned Rs.8.0 Crores for laying of roads in this area and apprehended that if the project authorities re-start their activities, again roads would be damaged. - He also alleged that due to pollution from the drilling activities, the sea food productivity in this area was completely damaged and due to this, the youth from the villages are migrating to other areas for their livelihood. - He also alleged that earlier, they got about 5Kgs of fish by each fisherman, and now they could not get even ½ kg due to pollution problem. He reiterated that due to pollution from the drilling activities, sea food productivity, agricultural productivity has been completely damaged in this area and the farmers are converting the fertile agricultural lands into ponds, as there is no other way. - He demanded again for compensation to the lands damaged due to drilling activities and suggested that the project authorities shall adopt the villages for development.	3. Infrastructure & Beach Tourism Development (Rs. 3.00 Crores) - Construction and strengthening of approach roads to S. Yanam beach and restaurant areas. - Development of basic tourism-support infrastructure and allied civil works through the District Administration. - These are carry-forward projects from previous years, being completed during FY 2025–26. 4. Social Welfare & Community Support (Rs. 12–15 Lakhs) - Community safety and welfare initiatives in coordination with local administration. - Stakeholder engagement, grievance redressal awareness, and village-level consultations. Consolidated Budget Outflow (FY 2025–26) Health: Rs. 66.60 Lakhs Education: Rs. 78.70 Lakhs Infrastructure & Beach Tourism: Rs. 3.00 Crores Social Welfare & Community Support: Rs. 12–15 Lakhs Total CSR/LCD expenditure to date: approximately Rs. 4.6 Crores. Refer Annexure-2 Corporate Social Responsibility Report No evidence of such claims and no relevance to the Ravva Plant operations as facility is complaint to internationally best standards from last two decades. Greenbelt of about 58.1% of the plant area has been developed in Ravva. Also, mangrove and Casuarina plantations have been carried out. Also, saplings have been planted and distributed to the villagers.

S. No.	Concern/Suggestions	Status of actions
	He also informed that the impact of drilling activity is not confined to this area only, the impact would be more up to 1000 of KMs in the underground and questioned the project authorities that how many tankers of oil they have been producing and re-injecting how many tankers of water into the well. He also alleged that due to drilling activity, the underground would be loosening further, which may lead to earthquakes in this area. While welcoming the project, he further demanded that a committee shall be constituted with members of Revenue, people representatives, village elders for obtaining concrete proposal for fixation of monthly compensation particularly to the fisherman community and agricultural farmers from the project authorities. He also alleged that no employment was given to locals even for security guards by the existing plants and demanded for employment and livelihood for the locals.	Cairn operations are related to Oil & natural Gas from sub surface and export to Gas lines and ships through closed circuit pipelines and no exposure to atmosphere. No data or evidence to validate such claims. More than 90 % of people (>200 people) engaged by Service Contractors are from local village Service Contracts vehicle hire, civil works, greenbelt housekeeping etc. are given exclusively to contractors from local village. This was an initiative by the Company towards the economy of the village. They have also given preference to local people in terms of technical positions given the fact that they meet the minimum technical competence.
2	Sri Isukapatla Raghu Babu, resident of Challapalli The people in this area are ready to co-operate but, the activities that are being taken up by the project authorities are not up to satisfactory level. At present, about 10 Lakh Barrels oil storage facilities exist in this area. Earlier, the village of S'Yanam is also very similar to Chirra Yanam Village with salt marshes and the lands in these villages were affected due to inundation of salt water and the authorities thinking that after establishment of Ravva field the S'Yanam Village is well developed with all facilities, which is not true. - About 2% of the profits shall be earmarked for CSR activities and accordingly, the Ravva plant should earmark at-least Rs.10.0 Crores annually. Initially, during the tenure of elders Sri Dangeti Kottayam, he also staged dharanas for CSR funds and CSR fund allocation started with Rs.1.0 Crore annually and gradually increased to Rs.5.0 – Rs.6.0 Crores at present. - He expressed his concerns that the plant operations started way back in 24 years, but no infrastructure facilities provided	Cairn Oil & Gas (Ravva JV) is implementing comprehensive CSR / Local Community Development (LCD) initiatives in S. Yanam village and nearby areas in coordination with the District Administration. The program focuses on Health, Education, Infrastructure & Beach Tourism, and Social Welfare, with an approved annual CSR/LCD budget of Rs. 6.00 Crores. Key Interventions and Achievements 1. Health (Rs. 66.60 Lakhs) - Strengthening of S. Yanam Primary Health Centre with improved infrastructure, doctor support, medicines, sanitation, and biomedical waste management. - Around 3,000 patients treated between January–November 2025. - Deployment of a trauma-care equipped ambulance for emergency referrals. Nutrition support to ~100 pregnant women.

S. No.	Concern/Suggestions	Status of actions
	in S'Yanam including Challapalli village except laying of roads in S'Yanam Village. He also expressed his concerns that the Ravva plant authorities could not even supply the drinking water in the villages till today, despite huge amounts of CSR funds allocated. People in these villages face water scarcity and during the summer it is more intensive. - He also expressed his concerns that the surrounding villages of Ravva Plant have been witnessing chemical, water and noise pollution due to operations of Ravva Plant. Whenever, the people in this area raised pollution problems due to operation of the Ravva plant, he informed that the project authorities stating no pollution problems due to their operations, monitoring the irrelevant parameters and the operations are being carried out as per the international standards. - He also expressed his concerns that due to operation of existing plant, the people in this area have been witnessing health problems such as hair fall, gastric, cancer and pregnancy problems and requested the Government authorities to enquire the people about the same. 24years back the project authorities promised for 24bedded hospital in this area, but, it was materialized in the recent past only. - The people in this area dreamed that they need not go for medical treatment either to Amalapuram or to Kakinada, after establishment of fully equipped hospital. But the facilities provided at the newly constructed hospital are not fully adequate. As per the then agreement, the project authorities should give 36% of permanent employment to the locals, but, at present, the authorities provided permanent employment to 8 Nos. of local people only, out of 105 employees working, and the project authorities stating that the employment decreased due to low production of oil & gas. At present, the project	- Implementation of Aayu Bharosa Health Insurance Scheme along with medical awareness programs. 2. Education (Rs. 78.70 Lakhs) - Financial support for teachers' remuneration to address staffing gaps in village schools. - Engagement of beach watchmen to support safety and continuity of school and community activities. Protsaham Scholarship Scheme benefiting Intermediate students from S. Yanam village. 3. Infrastructure & Beach Tourism Development (Rs. 3.00 Crores) - Construction and strengthening of approach roads to S. Yanam beach and restaurant areas. - Development of basic tourism-support infrastructure and allied civil works through the District Administration. - These are carry-forward projects from previous years, being completed during FY 2025–26. 4. Social Welfare & Community Support (Rs. 12–15 Lakhs) - Community safety and welfare initiatives in coordination with local administration. - Stakeholder engagement, grievance redressal awareness, and village-level consultations. Consolidated Budget Outflow (FY 2025–26) Health: Rs. 66.60 Lakhs Education: Rs. 78.70 Lakhs Infrastructure & Beach Tourism: Rs. 3.00 Crores Social Welfare & Community Support: Rs. 12–15 Lakhs Total CSR/LCD expenditure to date: approximately Rs. 4.6 Crores. Refer Annexure-2 Corporate Social Responsibility Report.

S. No.	Concern/Suggestions	Status of actions
	authorities recruited about 333 local people as contract employees and about 200 people recruited non-local people engaged from about 2000 Kms., of Chennai. He questioned the project authorities that why they engaged non-local people despite availability in the local area. He informed that lot of unemployed youth with fully technical qualification available in this area and requested the project authorities not to engage people from other places and recruit the local people in contract employment, as thousands of crores of wealth from this area has been taken out by the project authorities. • He also opined that the S'Yanam village was developed due to establishment of Cairn Energy and certain development activities is happening in this area but not upto the mark. At present, the wells and drilling activities are being carried out in offshore, due to discharge of sludge, oil wastes into Sea, fish breeding capacity has been decreasing. The project authorities shall adopt sage culture and shall support the fisherman community providing latest technology. • The project authorities shall also provide mechanized boats, nets to the local fisherman community, as these people depends only on fishing activity. The Konaseema area is covered with sea meshes, rivers and Sea and hundreds of fisherman families depending on them, because of oil & gas exploration in this area, the local people losing their livelihood and asked the project authorities are directly or indirectly reason for that. • He further requested the project authorities to re-think the issues raised by the public as people in this area are always co-operative for such projects. As stated by the project authorities, they are always very co-operative for development of India, exploration, production and usage of Oil & Gas locally and also to decrease the imports of Oil & Gas.	There are no discharges to land or surface waters other than the sea. No evidence to validate such claims. No data or evidence to validate such claims. Cairn operations are related to Oil & natural Gas from sub surface and export to Gas lines and ships through closed circuit pipelines and no exposure to atmosphere. On the health front, doctors provide free consultation to village people everyday evening for 3-4 hours. Constructed PHC building and supporting 47 Lakhs fund every year. Donated ambulance for S'Yanam PHC. More than 90 % of people (>200 people) engaged by Service Contractors are from local village Service Contracts vehicle hire, civil works, greenbelt housekeeping etc. are given exclusively to contractors from local village. This was an initiative by the Company towards the economy of the village. They have also given preference to local people in terms of technical positions given the fact that they meet the minimum technical competence. Greenbelt of about 58.1% of the plant area has been developed in Ravva. Also, mangrove and Casuarina plantations have been carried out. Cairn encouraged to plant saplings in the village to increase the green cover in the village. CSR Supporting projects being carried out to benefit Unemployed youth, skill development, women empowerment, and education etc.,

S. No.	Concern/Suggestions	Status of actions
	• He re-iterated that the project authorities shall solve the local problems and shall give employment to the locals. He questioned the project authorities that where the greenbelt was developed and how many acres of greenbelt developed for the past 24years. • He suggested that if, requisite land is not available for development of greenbelt, the project authorities may take land from local farmers on lease basis for development of greenbelt. He also informed that the project authorities have not been giving employment to other villagers except S'Yanam, citing that that the people of S'Yanam have not been willing to give employment to other villages. • He also informed that while explaining the project detail by the authorities stated that about 50% of the employment has been giving to local people and requested the project authorities about 30% employment may be given to S.Yanm Village and 20% to other villages. He questioned the project authorities that during the job mela conducted in the recent past, whom they have given the employment and requested for employment should be given to locals only, as people of this area are prone to accidents due to the exploration activity citing the example of Mamidikuduru accident. • Out of thousand families in the village, about 600 families are getting benefitted by way of employment, small contracts and he demanded that the project authorities shall pay the current bills, shall provide daily commodities on monthly basis to the remaining 400 un-benefited poor families as monthly package. He informed that they would support the project duly implementing the local issues pertaining to employment, pollution problems, compensation to the poor families raised in the public hearing.	

S. No.	Concern/Suggestions	Status of actions
3	Resident of S.Yanam demanded for monthly compensation of Rs.5000/- per family. He expressed his concerns that they have been facing health problems due to pollution problems from the plant and also informed that earlier, 200 woman protest for medical compensation and all the 200 women arrested during the pretest. Particularly fisherman community in this area has been losing their livelihood due to the plant operations and many people migrated for work. He also demanded that after giving monthly compensation of Rs.5000/- per family, employment and medical compensation to each family, only they would allow the proposed project, otherwise, people in this area will protest.	Ravva JV has been providing funding for CSR projects in close consultation with RDO. As per the recommendations of the committee, from the year 2000-2001, annual CSR contribution raised to INR 6 crore had been deposited to District Administration of East Godavari to take up developmental infrastructure work.
4	▪ Sri Lanke Bhimaraju, resident. of S.Yanam informed that the people of S.Yanam Village always co-operative for establishment of industries. While carrying operations, the project authorities shall also taking into consideration of loss to the local people. Fish productivity in this area has been gradually decreasing for the past 30 years due to operations of oil & gas exploration industries. ▪ Due to decrease in livelihood to fisherman community, many families migrated to other areas as casual labour and requested the environment department to study the issue in detail. Whether it is a misconception or real, the health problems of cancer and gastric increased in this area for the last 20years and requested the environment department to study the issue in detail and reasons may be found out. ▪ The project authorities of Vedanta Limited have been carrying out drilling activities in S.Yanam and Chirra Yanam villages and during operations excess gas would flared and the other wastes such as water, oil if releases in to local water sources and back waters, the lands would not be suit for agriculture and particularly the fisherman community would face inconvenience and if it happened, compensation shall be given to the land owners and	Cairn operations are related to Oil & natural Gas from sub surface and export to Gas lines and ships through closed circuit pipelines and no exposure to atmosphere. More than 90 % of people (>200 people) engaged by Service Contractors are from local village Service Contracts vehicle hire, civil works, greenbelt housekeeping etc are given exclusively to contractors from local village. This was an initiative by the Company towards economy of the village. They have also given preference to local people in terms of technical positions given the fact that they meet the minimum technical competence. There are no discharges to land or surface waters other than the sea. No evidence to validate such claims. Refer Annexure-2 Corporate Social Responsibility Report.

S. No.	Concern/Suggestions	Status of actions
	fisherman community of the area and same should be incorporated in the activities proposed. - He also informed that earlier, the project authorities encouraged education benefits to the local fisherman community, same is slow down gradually in the recent past and suggested that the project authorities shall re-start, continue and increase educational benefits to children of fisherman community of this area under the chairmanship of the District Collector. - He also informed that earlier, during the oil & gas exploration activity compensation was given in Yanam Village as well as in Gadimoga Village by the industries and in the same way the project authorities shall give compensation to all the affected villages. While welcoming the project, the project authorities shall take all the measures and shall carry their operations without causing any inconvenience to the local people.	
5	Sri A.Narasimha Murthy, Resident of Chirrayanam, Ex.Sarpanch informed that due to activities of GSPC, fish productivity has been decreasing and turtle nesting grounds, which were existing earlier, were also disappeared due to activities of ONGC. He requested the project authorities to adopt their village i.e. Chirrayanam for solving water problem and shall carryout different development activities. While welcoming the project he requested the project authorities to carry their operations without causing any convenience to the local people.	Cairn operations are related to Oil & natural Gas from sub surface and export to Gas lines and ships through closed circuit pipelines and no exposure to atmosphere. No activities have been initiated in Chirra yanam till date. Due consultation will be carried out with all stakeholders before commencing project activities.
6	Sri M.Annavaram, Resident of Chirrayanam, Ex.Sarpanch informed that earlier, the ONGC carried out its operations and promised hospital and CC roads in the village, and completed its operations for 3 – 4 years and not even allocated Rs.1000/- to their village for development.	No activities have been initiated in Cheriyanm till date. Due consultation will be carried out with all stakeholder before commencing project activities.

S. No.	Concern/Suggestions	Status of actions
	- He also informed that no development activities promoted in the village, for which they also staged protest. He also informed that development by the industry confined to the S.Yanam village only, they could not have even transport facilities during the emergency for maternity, and it would take atleast one hour time to reach nearest hospital. - He also informed that the roads in this area are completely damaged due to activities of oil & gas exploration industries and minimum three hours time is taking to reach hospital at Amalapuram by auto in the emergency. While welcoming the project, he suggested that the Government authorities shall obtain a concrete proposal from the project authorities pertaining to implementation of CSR activities in the area.	
7	Resident of Katrenikona informed that the ONGC authorities have been carrying its activities in this area since long time. During the drilling activities, the project authorities have been giving very small amount of compensation to the adjacent land owners and there is no mention about the specific amount to be given. - After completion of the drilling activity, the un-succeed bore wells are filling with soil of 3 – 4 tractors capacity only, which is in sufficient and the farmer could not carry agricultural activity immediately. - He suggested that instead of giving small amount of compensation to the land owners, a fixed amount shall be given equal to the amount lost due to unfavorable condition for agriculture per year. - He requested the project authorities that more CSR funds shall be allocated in this area towards education, establishment of play grounds and laboratories, libraries and computers, as they would be help the people. Nobody can stop the activities of oil & gas exploration in this area and these would be	No activities have been initiated in Cheriyanm till date. Due consultation will be carried out with all stakeholder before commencing project activities.

S. No.	Concern/Suggestions	Status of actions
	explored either by the present management or some other company. - He also informed that a special package should be given to each family, besides allocation of more CSR funds for development of infrastructure in this area. He also suggested that monthly package shall be given to poor families in this area. More CSR funds shall be allocated and advised the project authorities that a residential school shall be established for the merit students of Katrenikona & Uppalaguptam mandals, so that all the engineering people required for ONGC would be produced here only. - He also suggested that greenbelt shall be developed in these villages duly giving employment to the local people, so that the people in this area developed socio economically.	
8	Sri B.Suri Babu, Resident of Chirrayanam – Gachikayalapuram MPTC expressed his concerns that due to activities of ONGC, Cairn Energy, GSPC and Reliance Sea fish productivity was decreased. He and on behalf of his village opposed the proposed oil & gas exploration activity. - Earlier, they protest against the activities of oil & gas exploration due to which Sea fish productivity decreased and the oil companies promised compensation for two years to each fisherman family, but, compensation was given for only 6 months to few people only. - He expressed his concerns that they would allow the processing of public hearing only after obtaining concrete proposal from the project authorities. - He also alleged that the Government has not been taken care about the endangering of fisherman community in the area and the Government has not showing the interest like protecting wild life to the fisherman community.	No activities have been initiated in Cheriyanm till date. Due consultation will be carried out with all stakeholder before commencing project activities.

S. No.	Concern/Suggestions	Status of actions
	- He suggested that the project authorities shall provide boats & nets to the local fisherman community. Drinking water infrastructure facilities shall also be provided to their fisherman society. 100 Nos. of additional solar lights shall be provided, as they have facing poor visibility of roads particularly during the cyclones. Hospital facility shall also be provided each at Chirrayanam and Gatchakayalapuram panchayaths and shall provide efficient doctors. Similarly, Reliance Industries, arrangements for corporate education to every 10th passed students of this area shall be provided. Employment opportunities to the un-employed youth shall be provided. He also requested for employment to their youth at ONGC, S.Yanam. - An amount of Rs.15,000/- shall be given as additional matching grant in addition to the Government's Rs.15,000/- grant for construction of toilets. Similarly by the Reliance Industries Limited, an amount of Rs.1.0 Lakh financial support shall be given to all the fisherman community brides in this area by the project authorities. Financial assistance for daily commodities shall also be given by the project authorities to fisherman community during the declaration of cyclone emergency by the Government. Preference should be given to locals for employment while drilling wells. - He also requested that an amount of Rs.1.0 Lakh shall be given by the project authorities as additional matching grant in addition to the Government's Rs.2.0 Lakh for construction of houses for poor. He also requested that the project authorities shall give compensation of Rs.5,000/- per month each fisherman family during the ban of fish catch from April to May every year by the Government. He also requested that project authorities shall give compensation of Rs.2.0 Lakhs to fisherman family, if loose their life due to any accident. - He also requested the project authorities that CSR funds of minimum Rs.1.0 Crore shall be allocated every year to	

S. No.	Concern/Suggestions	Status of actions
	Chirrayanam and Katrenikona Villages, until completion of the proposed project.	
9	▪ Sri Jogi Arjuna Rao, Resident of S.Yanam, Ex. MPP, Uppalaguptam informed that the canals which were damaged by ONGC earlier shall be repaired by the present management. ▪ He also informed that the people in the S.Yanam village are very poor and they lost a lot of employment opportunities. He expressed his concerns that the Vedanta Limited has been releasing gas during the night time, due to which they have been facing heart problems. ▪ They have also been facing lot of health problems due to the nearby plant. He also informed that they have not even getting sufficient drinking water. The canal bund which was damaged by the ONGC authorities shall also be repaired by the present management. ▪ The present management has been carrying its operations for the past 20 – 25 years and about 90% of the people in the S.Yanam village are poor and the management has not taken any concrete proposals for development of the village. Rs.50,000/- shall be given by the project authorities to each poor family for construction of houses. He also requested that employment to the local people in any form shall be given.	➤ JV provided drinking water connection and distribution facilities. Pipelines laid on the streets were well connected to the homes. ➤ Village streets has been provided with concrete roads. Current focus is on approach roads to S. Yanam beach and restaurant area under Infrastructure & Tourism (Rs. 3.00 Cr). ➤ On the health front, doctors provide free consultation to village people everyday evening for 3-4 hours. Constructed PHC building and supporting 47 Lakhs fund every year. Services include doctor facilitation, medicines, sanitation, and waste management. Around 3,000 patients treated (Jan–Nov 2025), confirming active daily healthcare delivery. ➤ A trauma-care equipped ambulance is currently assigned to the PHC for emergency referrals. ➤ 700 toilets have been constructed to improve the hygiene of the village. ➤ Greenbelt of about 58.1% of the plant area has been developed in Ravva. Also, mangrove and Casuarina plantations have been carried out. ➤ Donated truck for Panchayat and 2 dust bins for each house under Swachh Bharat Program. Refer Annexure-2 for CSR details.
10	▪ A Woman, Resident of S.Yanam expressed her concerns that the project authorities have not been implementing any development activity for the poor in the village. She also informed that they would not allow the proposed project until implementing any developmental activity to them.	Cairn has taken various CSR initiatives in consultation with District Administration, District Collector is the chairman for committee to spend the Cairn CSR fund INR 600 Lakhs per annum. Following initiatives are carried out at S'Yanam village.

S. No.	Concern/Suggestions	Status of actions
		➤ Ravva JV provided drinking water connection and distribution facilities. Pipelines laid at streets were well connected to the homes. ➤ Village streets has been provided with concrete roads ➤ On Health front, doctors provide free consultation to village people everyday evening for 3-4 hours. Constructed PHC building and supporting 47 Lakhs fund every year. ➤ Donated ambulance for S'Yanam PHC. ➤ 700 toilets have been constructed to improve the hygiene of the village ➤ Greenbelt of about 58.1% of the plant area has been developed in Ravva. Also, mangrove and Casuarina plantations have been carried out. ➤ Donated truck for Panchayat and 2 dust bins for each house under Swachh Bharat Program. Refer Annexure-2 Corporate Social Responsibility Report.
11	▪ Smt. Satyavathi, Resident of S.Yanam while welcoming the project requested the project authorities that developmental activities such as education to their children, and other facilities shall be provided. No employment opportunities given to them till date. She also informed that they do not have even drinking water facilities. In spite of the promises made by the project authorities, they have not taking up any development activities.	➤ JV provided drinking water connection and distribution facilities. Pipelines laid on the streets were well connected to the homes. ➤ Village streets has been provided with concrete roads. Current focus is on approach roads to S. Yanam beach and restaurant area under Infrastructure & Tourism (Rs. 3.00 Cr). ➤ On the health front, doctors provide free consultation to village people everyday evening for 3-4 hours. Constructed PHC building and supporting 47 Lakhs fund every year. Services include doctor facilitation, medicines, sanitation, and waste management. Around 3,000 patients treated (Jan–Nov 2025), confirming active daily healthcare delivery. ➤ A trauma-care equipped ambulance is currently assigned to the PHC for emergency referrals.

S. No.	Concern/Suggestions	Status of actions
		➤ 700 toilets have been constructed to improve the hygiene of the village. ➤ Greenbelt of about 58.1% of the plant area has been developed in Ravva. Also, mangrove and Casuarina plantations have been carried out. ➤ Donated truck for Panchayat and 2 dust bins for each house under Swachh Bharat Program. Refer Annexure-2 for CSR details.
12	▪ Sri R.Tirupathi Rao, Resident of S'Yanam informed the public that the people in S'Yanam Village could not even get drinking water till date, though the ONGC operating unit for the past 30years. ▪ They could not even breathe fresh air, due to air and water pollution from the plant and every family in the village has been suffering with different type of diseases. The plant has not been taking any steps for control of pollution and the concerned authorities have not taken any action. ▪ He also informed that it is the responsibility of industries for the development of the local area as per re-habilitation and re-settlement act. But the management has not taken any steps for the development of the local area, even though it has been operating for the past 30 years, citing the example that the management has not even supplied drinking water to the villages till today. ▪ He also demanded for the release of white paper on the funds released for S'Yanam Village development year-wise for the past 30 years, as people of this village have lot of doubts in this regard. He also alleged that due to drilling of deep wells in this area, the entire agriculture land was contaminated with saltwater intrusion, thereby people of this area lost their livelihood. He also expressed his concerns that due to release of oily water into Sea by the	➤ JV provided drinking water connection and distribution facilities. Pipelines laid on the streets were well connected to the homes. ➤ Village streets has been provided with concrete roads. Current focus is on approach roads to S. Yanam beach and restaurant area under Infrastructure & Tourism (Rs. 3.00 Cr). ➤ On the health front, doctors provide free consultation to village people everyday evening for 3-4 hours. Constructed PHC building and supporting 47 Lakhs fund every year. Services include doctor facilitation, medicines, sanitation, and waste management. Around 3,000 patients treated (Jan–Nov 2025), confirming active daily healthcare delivery. ➤ A trauma-care equipped ambulance is currently assigned to the PHC for emergency referrals. ➤ 700 toilets have been constructed to improve the hygiene of the village. ➤ Greenbelt of about 58.1% of the plant area has been developed in Ravva. Also, mangrove and Casuarina plantations have been carried out. ➤ Donated truck for Panchayat and 2 dust bins for each house under Swachh Bharat Program. Refer Annexure-2 for CSR details.

S. No.	Concern/Suggestions	Status of actions
	industry, fish productivity completely decreased in the area, thereby fisherman community lost their livelihood. ▪ The company management has not provided employment except giving lower grade employment. He also alleged that the PHC constructed by the project authorities was handed over to the Government instead of maintaining the same. He also informed that only 14Nos. of teachers appointed and demanded for education facilities in all the villages to be provided by the project authorities from KG to PG. ▪ He suggested that the Government authorities and project authorities should consider the issues raised by the public and then only start the expansion proposal. A similar type of public hearing was presided by the Joint Collector earlier, but no action was taken against the industry on the issues raised by the public.	

ANNEXURE NO 06

Environmental Management Plan Compliance Report

Compliance to the Environmental Management Plan prepared reference to **EC No.J-11011/81/2013-I.A.II(I)** and **EIA Report dated January 2014**

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
1	Mobilization and demobilization of rig	Conflict with other marine users of the study area	1. Notice to Mariners will be issued and consultations with stake holders i.e. ports and harbors and local fishing communities will be undertaken on scheduling of rig movements, routes and exclusion zones.	Records will be kept of consultations. CIL is required to intimate the schedule for commencement of drilling operation at least one month in advance to the wild life warden having jurisdiction over the nearest coastal area so as to enable him to monitor its impacts if any on the wildlife.	Noted and being complied
			2. CIL will inform stakeholders including fishing communities of the execution plan for the Project proponents. Consulted personnel will be informed of any changes in the programme		Noted and being complied
			3. CIL will ensure that livelihood of fishermen, if any, affected by implementation of the proposed project proponents are identified and compensated through other livelihood restoration activities. Issues of livelihood disruption due to restricted movement through the exclusion zone and proposed drilling of exploratory wells as well as damage of any equipment/boat due to project activities would be captured through grievance Redress process and regular stakeholder engagement		No Drilling activities were carried out during reporting period

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
			4.A grievance redress process is in place at the Ravva Terminal/ onshore living quarters to capture any Grievance of community and local fishermen for disruption of livelihood. A designated grievance redress responsibility of CIL (CSR Manager) is in place. The redress process will be tracked.		Grievance redressal system in place, any person can lodge their grievance. Cairn being taking care of such issues to resolve and provide feedback to concern effected party. Documents are available with Stakeholder engagement officer.
			5. Community consultation plan will be prepared and rolled out prior to start of any project components.		Complied
			6. CIL will continue ongoing CSR activities		Cairn has Annual CSR programs plan around the project area, Refer Annexure-2 Corporate Social Responsibility programs
1a		Navigation	1. Ensure notification of all fishing and shipping industry representatives of the project proponents development activities prior to start of planned activities.	Inspection by Construction supervisor Inspection by HSE Manager A combine audit by HSE Manager and Senior Supervisor.	Noted and being complied, No Drilling activities were carried out during reporting period
			2. Implement all Marine Navigational measures, e.g- Notice to Mariners, radio communications etc		Noted and being complied
			3. Ensure all navigational and communication equipment is maintained in good working order, and a supply vessel and a look out on the bridge of the drilling rig is on duty at all times		Noted and being complied

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
			4 Liaise with the Maritime Board and Coast Guards, etc to apprise of the proposed activities and their locations so as to ensure a considerable reduction in risk to the structures and subsea pipelines as well as fishermen to the area.		Noted and being complied
2	Presence of Rig	Seabed disturbances due to anchoring and positioning of Rig leading to impact on Benthic Fauna	CIL will ensure positioning of rig, a survey of seabed conditions will be done.	Review seabed conditions and plan the Project components execution.	Noted for compliance, No drilling conducted during reporting period.
3	Piling for new RI Platform Laying of new pipelines Drilling of development and exploratory appraisal wells	Underwater Noise generation potential to cause pathological disturbance to marine fauna	1. Piling contractor to visually inspect the area for any presence of cetacean before start of piling activity.	Audit by CIL	RI platform work has not commenced till date.
			2. Avoid certain loud noises, such as from the moving and putting down of heavy equipment when cetaceans are observed in the region		RI platform work has not commenced till date.
			3 Maintain the vessel and all noise generating equipment in good working order.		RI platform work has not commenced till date.

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
4	Movement of Helicopter and support vessels	Disturbance to coastal Birds and marine Fauna	A> For transportation through helicopters 1. Helicopters to maintain a minimum in transit flying altitude of 500 m.	Inspection of Helideck(s) and Helipad at LQ on daily basis during drilling (on weekly basis) when sorties are being taken up Inspections during the Project components execution.	Noted and being complied
			Adhere to direct flight paths between Ravva Living Quarters (onshore) and Rig and do not hover over or circle any marine fauna or coastal areas with birds or settlements and		Complied, flight path decided based on weather conditions and wind direction for flight safety, though, reasonable precautions taking to avoid flight over settlements and sensitive areas to minimize the disturbances.
			3. All pilots and crew to be aware that deviations to flight paths are not permitted unless for technical or safety reasons		Complied
			B> For transportation through Barge, Tugs, Support	Inspections during the Project components execution	Noted and being complied
			1. Vessels, barges, tugs and support vessels to maintain a distance of 350 m from any cetacean and to keep look out to avoid collision and to provide prior warning to enable detours at a safe distance.		Noted and being complied
			2. All crew and masters of the vessels must be briefed to understand that detouring to approach cetacean is not permitted;		Noted and being complied

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
			3. No hunting or harassment of Marine fauna is allowed by on-board staff.		Noted and being complied
			Monitoring of Ambient Noise near helideck, Living Quarters, Helipad,	Noise quality monitoring for Leq hourly, Leq day and Leq night Inspection by HSE Manager A combine audit by HSE-Manager and Rig Supervisor.	Noted and being complied

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
	Drilling Waste Generation, handling and disposal	Upset of Marine waterand sediment quality, which lead to health of benthic and other Marine Fauna by: Increase of Suspended solids content in the water column Change in sediment particle size distribution and Smothering of seabed species	1. Only low toxicity WBM/SBM additives will be used in drilling fluid formulations including contingency arrangements for foreseeable emergency situations with Hg<1 mg/kg and Cd<3mg/kg. Ensure no use of Cr6+ or chrome lignosulphonate additives. 2. Cuttings will be cleaned at drilling mud system at Desander, Desilter, and Shale Shakers 3. The percentage of Drilling fluids on cuttings will be reduced as far as is practical by correct operations and maintenance of the cutting's treatment equipment. The production of excess drilling fluid requiring disposal will also be reduced through recycling of mud. 4. Ensure low toxicity of drill cuttings or drilling fluid before offshore disposal by getting bio-assay test (96 hrs LC50 value of > 30,000 mg/l as per mysid toxicity or toxicity test) conducted on locally available sensitive sea species. If otherwise both drill cuttings and used drilling mud are to be brought onshore for disposal at a secured landfill 5. Hydrocarbon residues might be present on the cuttings from the reservoir rock. Ensure drill	Inspection and audit before offshore disposal of drill cuttings and unusable drilling mud (WBM only), ensure prior laboratory composition testing or through suppliers' certificates of low toxicity contents and additives Complying to requirement of 96 hour survival for Lc sediment 50 value >30,000 ppm), thereby ensuring use of low toxicity chemical additives for preparation of drilling fluids; As per MoEF conditions, CIL is also	No drilling conducted during reporting period

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
			cutting associated with high oil content (>10g/kg) from hydrocarbon bearing formation should not be disposed offshore. These should be brought onshore for disposal at CHWTSE. 6. As required by MoEF Guidelines (GSR546) dated 30 Aug 2005) after laboratory reports showing safe for offshore disposal, used WBM/SBM and thoroughly washed drill cuttings can be discharged offshore intermittently (to avoid turbidity and reduction in transmittance) at a rate of 50 bbl/hour/well (i.e. 8m3/hr/well) for effective dispersion and dilution preferably at a location which is 5 km or beyond from shoreline. 7. For offshore disposal within 4.8 km from shoreline, prior approval from APPCB will be obtained.		

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
			1. Only low toxicity WBM/SBM additives will be used in drilling fluid formulations including contingency arrangements for foreseeable emergency situations with Hg<1 mg/kg and Cd<3mg/kg. Ensure no use of Cr6+ or chrome lignosulphonate additives. 2. Cuttings will be cleaned at drilling mud system at Desander, Desilter, and Shale Shakers 3. The percentage of Drilling fluids on cuttings will be reduced as far as is practical by correct operations and maintenance of the cutting's treatment equipment. The production of excess drilling fluid requiring disposal will also be reduced through recycling of mud. 4. Ensure low toxicity of drill cuttings or drilling fluid before offshore disposal by getting bio-assay test (96 hrs LC50 value of > 30,000 mg/l as per mysid toxicity or toxicity test) conducted on locally available sensitive sea species. If otherwise both drill cuttings and used drilling mud are to be brought onshore for disposal at a secured landfill 5. Hydrocarbon residues might be present on the cuttings from the reservoir rock. Ensure drill cutting associated with high oil		No drilling campaign carried out during reporting period

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
			content (>10g/kg) from hydrocarbon bearing formation should not be disposed offshore. These should be brought onshore for disposal at CHWTSF. 6. As required by MoEF Guidelines (GSR546 (E)) dated 30 Aug 2005) after laboratory reports showing safe for offshore disposal, used WBM/SBM and thoroughly washed drill cuttings can be discharged offshore intermittently (to avoid turbidity and reduction in transmittance) at a rate of 50 bbl/hour/well (i.e. 8m3/hr/well) for effective dispersion and dilution preferably at a location which is 5 km or beyond from shoreline. 7.		
			Monitoring of working of drilling mud system	Inspection of supervisors of working of mud system at the drill floor on-board rig.	Noted and being complied

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
			Monitoring of Drill cuttings - at storage point onboard rig, discharge location from rig	Volume of drill cuttings generated in m3. Ascertain characteristics of drill cuttings in terms of concentration of contaminants (heavy metals, toxics etc) disposal transfer details As and when disposed- records and logs of discharge to be maintained.	No drilling campaign carried out during reporting period
			Monitoring of spent mud - At storage point within rig, Discharge/transfer location from rig.	Volume of SBM/WBM generated in m3. Ascertain characteristics of spent mud in terms of concentration of contaminants (heavy metals, toxics etc) Disposal/ transfer details (qty, method)	No drilling campaign carried out during reporting period
6	Liquid discharge sanitary wastewater, wash water, bilge water, and cooling water to marine environment	Water quality resulting impact on marine fish, phytoplankton, and zooplanktons due to 1. Discharge of hydrocarbons or chemicals 2. Discharge of cooling water - change of temperature 3. Increase in BOD through high organic loading reducing dissolved oxygen level which is detrimental for marine fauna.	1. Rig and marine vessels to treat before liquid discharges are undertaken in accordance with marine water discharge standards as prescribed under the Environment (Protection) rules, 1986 and MARPOL standards. i> Oil content in machinery space bilges to be less than 15 ppm ii> For vessels >=400 gross tons, requirement of provision of oil discharge monitoring and control system and oil filtering equipment to be operating iii> For sewage discharge from an IMO, approved sewage treatment plant following standards will be complied with:	The deck drainage and water treatment systems will be inspected prior to mobilization. The performance of the oily water separator will be checked to ensure that the concentration of oil in water discharged does not exceed 15 ppm. The bunding and storage arrangements for potentially hazardous chemicals will be audited prior mobilisation to ensure that secondary containment is provided. Audit prior to and during Project activities to ensure discharges are in compliance with required standards	Complied to the requirements. No drilling campaign carried out during reporting period

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
			Suspended solids: 35mg/l above suspended solids content of ambient water used for flushig purposes - BOD : 25 mg/l - COD : 125 mg/land -pH : 6 to 8.5	mitigation measures are well in place and records are being.	
			2. For offshore discharges within 4.8 km from shore line, CIL will obtain prior approval from APPCB		Noted and being complied

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
			3. For well testing, CIL has a procedure to monitor the production and evaluate the performance of each well by providing a test separator along with associated instrumentation and piping on each platform. The test separator is a horizontal vessel designed for 3 phase separation of gas, oil and water by three phase separation. An internal weir plate provides two phase interface zone for separating water and oil. Oil flows over the weir and is withdrawn from the other side. Well fluid from the flow line of the particular well to be tested is routed to the Test Separator through the Test Header. Gas, oil and water flow is measured by the respective metering system provided on each outlet line and the three streams are then combined and routed back to the Production Header. Test Separator is one of the sources for the Instrument/ Utility gas system. A sand jet connection is provided on the Test Separator to flush the accumulated sand into the closed drain header.		Noted and being complied

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
			Rig deck and drainage system will include coamings around the main decks to contain leaks, spills and contaminated washdown water to minimise the potential for uncontrolled overboard release. A closed drain system will collect hazardous fluids from process equipment in hydrocarbon service. If the deck becomes contaminated, oily deck drainage will be contained by absorbents or collected in a pollution pan for disposal to onshore;		Noted and being complied
			Rig and marine vessels will treat oily water (e.g. from open and closed drain systems, bilges water) before discharge to sea. Contractor will ensure that all valves of bilge system remain in closed position. Also regularly check bilge sump to avoid any overflowing;		Noted and being complied
			Oil discharge monitors are used to ensure oil in water content targets are not exceeded. Records will be maintained of all discharges with oil content to verify controls in place are working effectively. Regular monitoring of drainage discharge for oil		Oil discharges monitored through random sampling and ensuring Oil content is within the specified limits

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
			content to be analysed to ensure compliance with standards		
			7. Low toxicity biodegradable detergents will be used in preference to more toxic options;		Refer Annexure 9 GSR 546(E) Compliance Report
			Staff to be suitably trained to deal with spills and discharges. Recording of spills and irregular discharges as incidents, in accordance with required incident report procedures;		Complied, mock has conducted, and sufficient equipment and manpower are on board.
			9. Provision of screen at the intake pipe of cooling water lift to prevent any entrainment of fish; and		Noted and being complied.
			10. The movement of jack up rig is required to be monitored to ensure that its movement avoids any sensitive areas en-route to the drilling location in Ravva Field		Noted and being complied.
6a			Monitoring of drilling wash wastewater quantity & quality at discharge point	Laboratory analysis of wastewater discharge for pollutant parameters (pH, solids, oil and grease, COD, BOD) (4 samples per month)	No drilling campaign carried out during reporting period

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
			Monitoring of marine water and Sediment Quality within 500 m of discharge locations	Visual inspection by supervisor Visual inspection by HSE-Manager A combine audit by HSE Manager and Drilling Supervisor to check compliance of requirements under specific conditions of environmental permits Laboratory analysis of marine water and sediment quality (4 MW + 4Sed x2 samples	No drilling campaign carried out during reporting period
			Monitoring of Aesthetics & HSE of coastal area nearby coastal and estuarine area	A combine audit by HSE-Manager and Contractor to assess any nearby estuarine water resources and take measures to minimize any adverse impacts	No drilling campaign carried out during reporting period
			Monitoring of Sewage quantity & quality at Rig	Inspection of on-board operation of STP and volume estimate for satisfactory operation of STP.	Noted and being complied
	Disposal of Solid& Hazardous Wastes	Primary impact of contamination of marine water and sediment leading to affecting health of marine fauna, Secondary impacts on air water and land leading to impact to health of biotic resources.	CIL will adhere to Waste Management Plan. Residual solid waste and rubbish generated on the drilling and support vessels (including incinerator ash) will be segregated weighed and documented in waste manifests prior to disposal at appropriate facilities onshore. No garbage would be disposed offshore. The Plan will be updated from time to time.	Facilities on board the rig will be examined for suitability prior to mobilization. An inventory of waste detailing volume and type will be kept and the onshore disposal facilities and contractors audited for	No drilling campaign carried out during reporting period

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
			Organic food wastes generated will be macerated to pass through a 25 mm mesh and discharged offshore with no floating solids or foam. For offshore discharge of food waste within 4.8 km from shore line, prior approval from APPCB will be obtained.		Noted and being complied
			Biomedical waste will be collected in specific collection bins provided with collection bags for onshore disposal as per the Biomedical Rules, 1998.		Noted and being complied
			All hazardous waste (e.g. fluorescent tubes, batteries, oily rags and spent fuel etc.) will be collected and retained on board for disposal approved facilities at Kakinada Port.		Noted and being complied
			Appropriate storage will be used in each case specifically metalliferous and general wastes will be stored in skips, covered to prevent waste escaping during transport and disposed of to an appropriate facility onshore. Oil and oily contaminated waste (including rags and absorbent materials) will be stored in sealable containers and		Noted and being complied

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
			transported to shore for appropriate disposal.		
			Training and information will be provided for operational staff responsible for waste disposal to ensure that wastes are not disposed of incorrectly.		Noted and being complied
			Monitoring of Domestic Solid Waste at • Storage point within Rig • Disposal point from Rig	Mass of waste generated in kg Disposal details (qty, method)	Records are available
			Monitoring of Food Waste for its maceration site	Food waste generated is macerated to less than 25 mm size Disposal details (qty, method)	Noted and being complied
			Monitoring of Stationery wastes at • Storage point within site • During transfer from Rig	Mass of waste generated in kg Disposal details (qty, method)	Noted and being complied

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
			Monitoring of Medical waste at • Storage point within Rig • During transfer from Rig	Mass of waste generated in kg Storage & disposal details (qty, method) at transfer point- to be recorded as per manifest system during transfer	Complied, following MARPOL regulations
			Monitoring of spent filters and cartridges at storage point within Rig	Numbers, size Storage & disposal details (qty, method)	Noted and being complied
			Monitoring of waste from Spillage containment at Storage point within Rig and During transfer from Rig	Mass generated in kg Storage & disposal details (qty, method) as and when transfened- to be recorded as per manifest system during transfer	Noted and being complied
			Monitoring of unused chemicals I materials at storage point within Rig	Mass generated in kg Storage & disposal details (qty, method) as and when transfened- to be recorded as per manifest system during transfer	Noted and being complied
			Monitoring of waste water treatment sludge at storage point within Rig	Mass generated in kg Storage & disposal details (qty, method) as and when transfened- to be recorded as per manifest system during transfer	Noted and being complied

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
			Monitoring Waste Oil and Lubricants at . Rig and During transfer from Rig	Volume of waste generated in it Storage, disposal, shipping details (qty, method) as and when transferred - to be recorded as per manifest system during transfer	Noted and being complied
			Monitoring of Used Drums with/without residues at storage point within Rig	Complied	Noted and being complied.
			Monitoring of spent batteries at storage point within Rig	Nos., size Storage & disposal details (qty, method)	Noted and being complied

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
	Air Emissions from power generation and flaring	Emission of combustion products resulting in change in pollutants in air leading to potential health issues for receptors - human and coastal birds	1. Maintenance of diesel power generators to achieve efficient combustion, fuel efficiency and therefore reduce emissions; 2. Use of low sulphur diesel oil (approx. 0.2% or less); and 3. No cold venting to be resorted during well testing. Management of the well test programme by dedicated team for prevention of trips in product supply to the flare and flame out. Many of the above measures including checking of methane emissions, which may occur during well testing, are incorporated into management of the drilling operations. The well testing procedure involves the dedicated observation of the flare and radio communication to well test manager. In the event that product pressure drops in the well test flare, diesel can be injected to maintain combustion otherwise the feed line would be shut off; 4. Other fugitive emissions from diesel fuel etc. will be reduced by appropriate storage and handling. 5. Routine maintenance and efficient operation will be undertaken to minimise emissions.	The operation of the flare during well testing will be monitored and communication maintained with the personnel in charge of the well test.	No flaring operations carried out, gas diverted to production header.

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
			6. Prior to flaring the rig management will ensure that SOPs to prevent flameout are available and understood for the critical equipment to be tested.		

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
			Monitoring of Gaseous pollutant emissions from power generators on-board Rig	Visual observation of exhaust smoke characteristics Emission rates and monitoring of PM, NOx, SOx, CO, HC) based on emission factors	Not applicable as the there is no flaring taking place.
			Monitoring of Fugitive emissions of VOCs and dust near storage and handling areas on-board rig in storage & handling areas on-board rig	Visual inspection and odour observation of dust in air of drilling and testing areas	Not applicable as the there is no flaring taking place
			Offshore and near shore ambient air quality parameters PM, NOx, SOx,CO,HC)	Inspection on-board rig Onshore area near settlements (3 to 4 locations)	Not applicable as the there is no flaring taking place
			Monitoring and Reporting of Green House Gases	Total emission estimate of Green House gases for • Drilling site RI Platform construction	Not applicable
	Ambient Noise Emissions at drilling location	Occupational a Hazards	Monitoring of Noise emission from machineries and equipment	Noise pressure level in dB(A) (Leq hourly)	Noted and being complied

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
	Lighting, Flaring and Visual Intrusion	Potential disturbance to coastal birds, turtles and human receptors at shore. Activities are proposed to be located beyond 4 km from shore, visual intrusion from shore will be minimum	Shield the lights to restrict the range of illumination and reduce the number shining directly onto the water, unless needed for technical or safety reasons; and Any birds that are injured or disoriented through collision and found on the drilling rig will be put in a dark container (egg cardboard box) in a quiet area with water, and released during daylight. CIL will inform to stakeholders including fishing communities of the execution plan for the Project components.	Inspections and checking communication to stakeholders and fishing community about the drilling activities are in place	Noted and being complied
11	Well Logging tool containing sealed radioactive material	Potential exposure to radiations leading to health hazards	Monitoring of radiation levels on the tool	Inspection of site prior to and post well logging for testing of radiation levels on the tool and the environment	Noted and being complied

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
12	Resource Consumption Energy Power Consumption	Resource optimization	Daily consumption rate in KWh at Rig	Inspection	Noted and being complied
	Total materials use		Mass of Casing, Tubing, Piping, cement, Jackets (for new RI Platform) etc. at Rig Barge, tugs and Support Vessels	Inspection	Noted and being complied
	Drilling Chemicals Additives use		Volume of mud chemicals, additives, retardants, etc at Rig	Inspection	Noted and being complied
	Fuel consumption		Volume of Diesel & Marine Fuel Oil to be used Rig	Inspection	Noted and being complied
	Lubricant use		Lubricants consumption at Rig	Inspections Barrels of lubricants used	Noted and being complied

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
	Drilling Chemicals		Storage area of drilling chemicals on-board rig and at onshore storage shed / ware house at Rig or LQ	Inspection by Senior supervisor Inspection by HSE Manager A combine audit by HSE-Manager and Contractor to assess any spillage or potential spillage and ensure storage conditions are well maintained to minimise adverse impact on land and marine resources	Noted and being complied
	Freshwater consumption		Freshwater consumption at Rig	Inspections storage areas	Noted and being complied
	House Keeping and Health safety	Unhygienic aesthetic and unsafe working conditions leads to potential health hazards and accidents	Housekeeping and Health and Safety on-board rig and support vessels	Inspection by supervisor Inspection by HSE Manager; A combine audit HSE Manager and Contractor representative at Rig and support vessels	Noted and being complied

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
	Air Emissions from Ravva Terminal (No additional equipment or capacity enhancement at Ravva Terminal is planned. Air emissions pertain to current capacity production of crude oil and gas. The proposed oil and gas development will help achieving recovery of declining production within already approved capacity)	Emission of combustion products resulting in change in pollutants in air leading to potential health issues for human and coastal birds	Mitigations measures/ controls already in place to minimize air emissions include the following: To minimize flaring related emissions, CIL has installed a third associated gas compressor and a third stage gas recovery compressor. There is also a provision of ADAM-3 advanced system for gas engines to minimize spurious trips leading gas to flare. The flares are designed as per API and EPA standards to reduce smoke and illumination. There will be no cold venting of associated gas during normal routine operations. In case of any upset or emergency condition the excess vent gas will blow through the water seal in the LP Flare KO Drum and is routed to the flare. The HP and LP flare stacks have been provided with stack height of 30m from the	Monthly emission and ambient air quality monitoring and reporting to MoEF and APPCB on six monthly bases.	Being Complied

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
			ground to ensure wider dispersion of combusted pollutants.4. Fugitive emissions are being controlled through proper preventive maintenance. CIL will ensure prevention of fugitive hydrocarbon leaks from compressor seals, valves and flanges attached to process storage tanks, mixing tanks, gas plant and crude storage tanks loading/unloading of transport links etc. through effective leak detection systems and conduction of periodic leak detection tests on fuel systems including distribution lines and tanks; 5. Natural gas is being used as fuel for captive power generation of 10 MW capacities. CIL is to ensure that high fuel efficiency is achieved all the time therefore to reduce air emissions; 6. A greenbelt has been developed in approximately 50% of		

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
			Ravva Terminal area to act as sink for air pollutants and act as barrier for noise propagation. All point sources of emissions will continue to be monitored on a monthly basis to ensure compliance with emissions standards. Emissions from individual stacks will comply with the emission standards stipulated by CPCB and Andhra Pradesh Pollution Control Board (APPCB); and 8. Periodically conduct HSE audit of Ravva Terminal to minimize air pollutants emission as part of continual improvement of environmental management.		

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
	Groundwater quantity and quality due to abstraction of saline groundwater (of TDS 25,000 to 28,000 mg/1) from deeper aquifers within Ravva Onshore Terminal for saline water re-injection into the confined aquifers.	Potential interference with other groundwater users located in the surrounding area. Potential groundwater quality issue due to onsite hydrocarbons handling and storages.	Storm water drains have been provided at the terminal. For rainwater harvesting, water ponds have been provided within Ravva Terminal. The collected rainwater is used in for horticulture and firewater needs; 2. No additional water requirement has been proposed for the oil and gas development in Ravva Field. There is no prior approval of CGW A exists with CIL as the existing bore wells were drilled prior to 1998. For the proposed oil and gas development, CIL will obtain NOC from CGWA 3. The injection water is treated in injection water treatment system to meet the required water quality of oil in water content of less than 10 ppm. 4. CIL has reported that all storage facilities have been provided with adequate containment system to prevent contamination of soil and subsurface aquifer due to potential	Monthly monitoring of quality of groundwater. Compliance of conditions of regulatory approvals (by CGW A, APPCB,	Being complied

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
			spills of lubricating oil, fuel oil and chemicals. 5. Ravva Terminal, being an old facility, CIL is ensure periodic integrity testing of areas surrounding all process and storage tank and hazardous waste storage areas, if required necessary mitigation of restoring integrity of that area on urgent basis. 6. In case of any accidental spills at the onshore Ravva Terminal, CIL is to recover any spilled crude oil/chemical or fuel oil and adequately treat the area, thus to prevent any subsurface contamination. CIL is to ensure that regular training is imparted to its staff on avoiding spillages and also to take necessary actions if any spill happens at onshore Ravva Terminal. 7. CIL is to periodically monitor the groundwater levels in the surrounding area to ascertain any impact of		

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
			groundwater withdrawal.		

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
	Wastewater generation from Ravva Terminal and its disposal	Potential impacts in case of discharge of re-unhreated sewage from Living quarters and Ravva Terminal Produced water generated during crude stabilization	CIL has been implementing mitigation measures already as part of its on-going operations at Ravva Terminal. Some of the key mitigation measures already in place include the following: 1. Provision of three stage sewage treatment plant for sewage generated from Living Quarters and Ravva Terminal; 2. Provision of Produced Water Re-injection System to effectively treat produced water before its re-injected into confined hydrocarbon aquifers; 3. Provision of API Separator for oil in water separation from produced water; 4. Provision of ETP for tertiary level treatment of produced water to ensure discharge from ETP complies with discharge standards MoEF and APPCB for discharge to marine outfall through submerged ports; and 5. Ensure the personnel the plantation and greenbelt are provided with personal	Monthly monitoring of treated sewage and produced water discharge for water re injection and treated effluent from ETP for disposal at marine outfall and reporting to MoEF and APPCB on six monthly bases. Continuous Effluent monitoring system has been commissioned at Ravva terminal integrated with ETP for real time monitoring of parameters before final marine disposal. It has also been integrated with APPCB portal as well.	Being complied

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
			protective equipment including helmet, goggles, hand gloves, apron and gum-boots. Staff to be suitably trained to ensure adequate treatment and monitoring of discharges from Ravva Terminal.		

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
	Movement of rig and support vessels	Vessel Collisions	1. CIL has in place an Oil Spill Contingency Plan (Annex H) to cover events related to vessel collision. 2. Safety equipment provided on the vessels includes lifeboats, life rafts, lifejackets, survival packs/suits and work boats. 3. The drilling vessel will have communication systems as well as trans-receivers, beacons, public address, portable radios and telephone systems. Other support and chase vessels will have VHF, UHF communication systems.	Conduct regular mock drills to ensure emergency preparedness. Conduct regular safety training to operational staff. Adopt monitoring procedures & regular audits to ensure emergency response preparedness.	Being complied

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
	Well drilling	Blow Outs	Following risk mitigation measures to prevent any blow out and related consequences: 1. Review of Well Design by a certified third party; 2. Compliance of OISD regulation and PNGSOO Rules; 3. A plan to drill relief well will be in place (HPHTwell). 4. Key crew members will have valid well control certification and adequate supervision. 5. For drilling of deep high pressure and high temperature (HPHT) well, a well control coach will be available on board the rig 6. CIL will ensure Blow-Out Preventer and ensure engaging experienced personnel for handling of such situation. To prevent any oil spill stringent precautions will be taken to control leaks and accidental spills of oil, chemical and gas. 7. CIL's Emergency Response Plan (refer to Annex I) and Oil Spill Control Plan (refer to	Conduct regular mock drills to ensure emergency preparedness. Conduct regular safety training to operational staff. Adopt monitoring procedures & regular audits to ensure emergency response preparedness.	Being complied

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
			Annex H) details the actions, which will be in place to deal with an event of an accidental oil spillage in the sea. 8. Records of all spillage will be kept and appropriate disposal of spilt chemicals will be ensured. 9. Risk awareness and training to deal with situations to be provided to personnel on board the rig and at Ravva Terminal. IO.Drill sites to have robust communication facility to convey information during critical situations. II.The schedule for commencement by the drilling operation should be intimated at least one month in advance to the Coringa Wildlife Warden having jurisdiction over the nearest coastal area so as to enable him to monitor its impacts if any on the wildlife. 12.CIL will ensure adequate infrastructural facilities near the offshore installations so that		

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
			boom skimmer chemical dispersants could be deployed immediately in case of oil leakage from the installation. Efforts will be made to curtail the oil slick within 500 m of the installation and accordingly, action plan and facilities to check the oil slick beyond 500 m should be provided. 13.Equipment maintenance is important in the prevention of blow-outs and specific procedures will be implemented. Primary well control will be achieved by the mud system and secondary well control by the BOPs		

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
	Well drilling	Potential risks and accidental oil spills	Following risk mitigation measures will be considered to prevent any accidental oil spill and minimize associated risks: - Operational procedures will be implemented to reduce the risk of accidental oil spillage. Preventive maintenance procedures will be established for critical equipment. The probability of the oil spill scenarios will be reduced by implementation of oil spill prevention procedures during loading and unloading of diesel oil (sea refuelling) and bulk drilling fluid additives from supply vessels and adequate well control. - Refuelling would be avoided during turbulent sea conditions or bad weather is anticipated. - The vessel fuel transfer hoses will be equipped with breakaway cut off valves and flotation collars. - The capacity of receiving tanks (meant	Conduct regular mock drills to ensure emergency preparedness	Being complied

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
			to collect any spilled oil) will be checked before receipt. Critical equipment i.e. hoses and gauges will be maintained. Ensure safe use of low toxicity dispersants for control of spread of any oil spill. Oil spill drills will be performed on a regular schedule. Any spill incidents or near incidents will be reported into the main reporting and remedial action database. Records of all spillage will be kept and appropriate disposal of spilt chemicals will be ensured. Risk awareness and training to deal with oil spill situations to be provided to personnel on board the rig and at Ravva Terminal. IO. Drill sites to have robust communication facility to convey information during critical situations. drilling operation should be intimated at least one month in advance to the Coringa		

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
			Wildlife Warden having jurisdiction over the nearest coastal area so as to enable him to monitor its impacts if any on the wildlife. CIL will ensure adequate infrastructural facilities near the offshore installations so that boom skimmer chemical dispersants could be deployed immediately in case of oil leakage from the installation. Efforts will be made to curtail the oil slick within 500 m of the installation and accordingly, action plan and facilities to check the oil slick beyond 500 m should be provided. 13.CIL's Emergency Response Plan (Annex I) and Oil Spill Control Plan (refer to Annex H) details the actions, which will be in place to deal with an event of an accidental oil spillage in the sea and communicated for necessary actions.		

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
		Oil spill will have impacts on water quality, marine fauna, coastal habitats and socio economic resources	CIL has considered following risk mitigation measures to prevent any oil spill: 1. Operational procedures will be implemented reduce the risk of oil spillage. Preventive maintenance procedures will be established for critical equipment. The probability of the oil spill scenarios will be reduced by implementation of oil spill prevention procedures during loading and unloading of diesel oil and bulk drilling fluid additives from supply vessels and adequate well control. 2. Records of all spillage will be kept and appropriate disposal spilt chemicals will be ensured. 3. Risk awareness and training to deal with situations to be provided to personnel on board the rig and at Ravva Terminal. The schedule for commencement by the drilling operation should be intimated at least one month in advance to the Coringa Wildlife Warden having jurisdiction over the nearest coastal area so as to enable him to monitor its impacts if any on the wildlife. CIL will ensure adequate infrastructural	Oil spill preparedness will be assessed prior to mobilisation. The awareness of CIL's Oil Spill Contingency Plan will be assessed and corrective actions identified. A record will be kept of all oil spill incidents. As per previous Environmental Clearance granted to CIL by MoEF, CIL is also required to provide adequate infrastructural facilities near the offshore installations so that boom skimmer chemical dispersants could be deployed immediately in case of oil leakage from the installation. Efforts should be made to curtail the oil slick within 500 m of the installation and accordingly, action plan and facilities to check the oil slick beyond 500 m should be provided. CIL should also monitor the petroleum hydrocarbon and heavy metal	Noted and being complied

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
			facilities near the offshore installations so that boom skimmer chemical dispersants could be deployed immediately in case of oil leakage from the installation. Efforts will be made to curtail the oil slick within 500 m the installation and accordingly, action plan and facilities to check the oil slick beyond 500 m should be provided. 4. Oil spill response as detailed in CIL's Oil Spill Contingency Plan (OSCP) will be in place and communicated for necessary actions.	concentration in the marine fish species regularly and submit the report to MoEF regularly. The schedule for commencement by the drilling operation should be intimated at least one month in advance to the wild life warden having jurisdiction over the nearest coastal area so as to enable him to monitor its impacts if any on the wildlife.	

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
			Monitoring of accidental releases of small chemicals/small oil spills	Area of spill and Quantity spilled Characterization of spilled substances for contaminants (heavy metals, toxics, etc.) Storage & disposal details (qty, method)	No spill reported during drilling campaign
			Monitoring of Wildlife, Mangrove Resources at drilling location and in shore area	Inspection by supervisor Inspection by HSE Manager A combine audit by HSE Manager and Contractor Notice to Wildlife Warden prior to start and completion of drilling	Noted and being complied
	Socio economics	Socio- economic-Living conditions, economy, Traffic and Transport hazards and other risks, cultural resources surrounding Ravva Terminal and Living Quarters. Fishermen Grievance Monitoring	Monitoring of socioeconomic conditions and remediating concerns.	Inspection by Construction supervisor Inspection by HSE Coordinator. A combine audit by HSE Manager and Senior Supervisor.	Not applicable

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
	Land Subsidence	Potential risks to assets and socio-economic resources	Land Subsidence Monitoring by establishing benchmarks and conducting long term ground level and bathymetric studies	Review of outcome of ground levels and bathymetry monitoring by engaging government organization like NGRJ or ISM and other competent agency	Noted for compliance
	Post project monitoring	To assess marine water, sediment quality and fish tissues contamination	Detailed Periodical (annual) Environmental Monitoring of Marine Water, Sediments, Fish Tissues	Marine water, sediments and biological parameters monitoring after completion of drilling	Noted and being complied
	Decommissioning of Ravva Field at the end of Project life	The decommissioning of operations in the Ravva Field may result in impacts/risks due to removal of existing equipment and machinery related infrastructure established in offshore and onshore regions. The removal of infrastructure will have potential impacts on receptors both located within terrestrial and	At the end of the operational life of Ravva Field, Ravva JV will declare decommissioning phase and ensure proper planning to minimize and avoid adverse impacts and associated risks. A detailed decommissioning management plan will be developed prior to the culmination of the life of Ravva Field in accordance with the applicable legislations and requirements of the PSC prevailing at the time of decommissioning with necessary approvals from agencies (MoEFCC, DGH and OISD etc.) involved. Also as described in Section 3.21.16, Para 6) Ravva JV will abide by the requirements under Clause 14.9 of the PSC. Notices will be given to stakeholders including	CIL will monitor as per the requirement of the decommissioning management plan to be developed based on the applicable regulatory and PSC requirements.	Decommissioning is not planned in Ravva as per current business plans. Will be complied when decommissioning is taken up.

SN	Activity-Issue	Associated Aspect-Impact	Specific Actions	Means of verification/monitoring Review	Compliance Status
		marine components of environment.	fishing communities operating in and near Ravva Field. -----'		

ANNEXURE NO. 07

Environmental Statement of Ravva for FY 2024-25

L. No. RV/25/IM/EE/46

Date : 12.07.2025

To,
The Environmental Engineer
Regional Office-Kakinada
Andhra Pradesh Pollution Control Board
Plot No.2 IDA, Ramanayya Peta,
Kakinada, Andhra Pradesh- 533 005

Sir,

Subject: Submission of Annual Environmental Statement (Form V) as per Rule 14 of The Environment (Protection) Rules, 1986 for Ravva Operations, Vedanta Limited- Cairn Oil & Gas, Sursani Yanam village, Dr. B. R. Ambedkar Konaseema, Andhra Pradesh -533213

Please find enclosed herewith the Annual Environmental Statement (Form V) for Ravva Operations, PKGM-1 Block Andhra Pradesh for the period from 1st April 2024 to 31st March 2025.

For Vedanta Limited - Cairn Oil & Gas

JK



Installation Manager- Ravva

Enclosure:

1. "Annual Environmental Statements - Form V" for Ravva Operations for FY 2024-25.
2. Pollution abatement and conservation.
3. Corporate Social Responsibility.

VEDANTA LIMITED

Cairn Oil & Gas: Ravva Onshore Terminal, Surasani Yanam-533212, Uppalaguptam Mandal, Dr. B.R. Ambedkar Konaseema District, Andhra Pradesh, India | Mobile No.9849623600 | www.cairnindia.com

Registered Office: Vedanta Limited, 1st Floor, 'C' wing, Unit 103, Corporate Avenue, Atul Projects, Chakala, Andheri (East), Mumbai - 400093, Maharashtra, India | T +91 22 664 34500 | F +91 22 664 34530 | www.vedantalimited.com

CIN: L13209MH1965PLC291394

FORM V
(See Rule 14)
ENVIRONMENTAL STATEMENT

ENVIRONMENTAL STATEMENT FOR THE FINANCIAL YEAR ENDING 31ST MARCH 20245
FOR

RAVVA ONSHORE TERMINAL
PKGM-1 BLOCK RAVVA HYDROCARBON FIELD
VILLAGE: S'YANAM DIST: DR. B. R. AMBEDKAR KONASEEMA ANDHRA PRADESH

PART - A

- I. Name and address of the owner / occupier of the industry operation of process **Installation Manager – Ravva**
M/s Vedanta Limited, Cairn Oil & Gas
Village: Surasaniyanam, Mandal: Uppalaguptam
District: Dr. B. R. Ambedkar Konaseema, Andhra Pradesh
- II. Industry category Red Category
- III. Production capacity – Units Ravva Onshore Terminal
Crude Oil Processing Capacity 50,000 BoPD
Natural Gas-2.3 Standard Million m3/day
- IV. Year of establishment 1993
- V. Date of the last environmental statement submitted 6th September, 2023

PART - B

Water and Raw Material Consumption:

i) Water consumption m³/d

Purpose	Quantity in m ³ /d	Remarks
Process	3545.15 m3/day	Saline Borewell water abstracted to comingle with Produced water for injection purpose to maintain reservoir pressure and void replacement.
Cooling	10.83 m3/day	Cooling tower water consumption for cooling of Produced water before feeding it into Effluent Treatment Plant.
Domestic	191.11 m3/day	Water for domestic purposes is mainly consumed at the administrative buildings, sanitary purposes and green belt maintenance etc. within and surrounding Ravva Terminal. Sewage Treatment Plant (STP) at Ravva, treated sewage water used for greenbelt maintenance and Fresh water also being used for greenbelt at LQ.
Total	3747.09 m3/day	

Name of products	Process water consumption per unit of product output	
	During the previous financial year	During the current financial year
Crude Oil	1.07 m ³ of water being consumed for one Ton of Hydrocarbon production. The total ground water abstraction for injection purpose during FY 23-24 is 1016666 KL to maintain the reservoir pressure. Produced water mixed with saline groundwater.	1.39 m ³ of water being consumed for one Ton of Hydrocarbon production. The total ground water abstraction for injection purpose during FY 24-25 is 1297525 KL to maintain the reservoir pressure. Produced water mixed with saline groundwater.

(ii) Raw material consumption

Name of Raw Materials	Name of Products	Consumption of raw material per unit of output	
		During the previous financial year	During the current financial year
There are no raw materials involved in the production of Crude Oil. The well fluids consisting of oil, water and associated gas is extracted from the hydrocarbon subsurface reservoir and flows directly to the Ravva for phase separation and processing.		NA	NA
Few chemicals are used for fluid separation and raw water treatment.			

Note: For upstream industry, chemicals are consumed at various concentrations and depending on the subsurface behavior, such as to control the corrosion, emulsification, oxygen level, bacterial growth etc. Therefore, refer **Annexure – 1** for the various chemical consumption details.

PART - C

POLLUTANTS	QUANTITY OF POLLUTANTS DISCHARGED (MASS/DAY)	CONCENTRATIONS OF POLLUTANTS IN DISCHARGES (MASS / VOLUME)				PERCENTAGE OF VARIATION FROM PRESCRIBED STANDARDS WITH REASONS	
A) Treated Effluent	Average 1128.41 KL/Day Effluent being discharged to Marine outfall	Parameter	Max	Min	Prescribed Std.	Within the specified limits of APPCB.	
		TSS (mg/l)	48	29.2	100		
		BOD (mg/l)	32.5	21	30		
		Oil and Grease (mg/l)	8.45	BDL (DL: 4.0)	10		
B) Air Emissions from Gas Turbines & DG Sets	Name of Source	Quantity of Pollutant (KG/Day)			Concentration of Pollutant (mg/ Nm3)		The stack emissions are within the prescribed limits of APPCB.
		PM	SO2	NOx	PM	Stand.,	
	G 850 A	9.35	<10	25.86	115		
	G 850 B	10.11	<10	18.72			
	G 850 C	2.48	<10	3.41			
	G 850 A	13.27					
	G 850 B	14.81					
G 850 C	15.76						

PART - D

HAZARDOUS WASTE

(As specified under Hazardous & Other Wastes (Management, Handling and Transboundary Movement) Rules 2016)

Hazardous Waste	Total Quantity			
	During the previous financial year		During the current financial year	
a) From Processes	Hazardous Waste Description	Generation Quantity (Kgs/ Liters)	Hazardous Waste Description	Generation Quantity (Kgs/ Liters)
	Oily Sludge (1.3 Schedule 1)	Nil	Oily Sludge (1.3 Schedule 1)	0

Hazardous Waste	Total Quantity			
	During the previous financial year		During the current financial year	
	Waste oil (Tank bottom oil/ Sludge, oil emulsions) (3.3. Schedule 1)	Nil	Waste oil (Tank bottom oil/ Sludge, oil emulsions) (3.3. Schedule 1)	Nil
	ETP Sludge containing hazardous constituents (34.5 Schedule 1)	15430 Kgs	ETP Sludge containing hazardous constituents (34.5 Schedule 1)	3490 Kgs
	Used Oil/ Spent Oil (5.1 Schedule 1)	16130 L	Used Oil/ Spent Oil (5.1 Schedule 1)	19080 L
	Filters contaminated with oil/chemicals (3.3 Schedule 1)	1210 Kgs	Filters contaminated with oil/chemicals (3.3 Schedule 1)	630 Kgs
	Waste/Residues containing Oil (5.2 Schedule 1)	Nil	Waste/Residues containing Oil (5.2 Schedule 1)	Nil
	Waste chemical (PPD, glycol)	Nil	Waste chemical (PPD, glycol)	Nil
	Paint Sludge (21.1 Schedule 1)	450 Kgs	Paint Sludge (21.1 Schedule 1)	370 Kgs
	Spent Carbon (34.2 Schedule 1)	Nil	Spent Carbon (34.2 Schedule 1)	Nil
	Oily rags (5.2 Schedule 1)	4450 Kgs	Oily rags (5.2 Schedule 1)	4400 Kgs
	Discarded containers/ barrels/ liners contaminated with hazardous waste chemicals (33.3 Schedule 1)	Nil	Discarded containers/ barrels/ liners contaminated with hazardous waste chemicals (33.3 Schedule 1)	Nil
	Insulation wool/ thermocol/ PUF	Nil	Insulation wool/ thermocol/ PUF	Nil
	Drill Cuttings containing Oil (2.1 Schedule 1)	Nil	Drill Cuttings containing Oil (2.1 Schedule 1)	Nil
	Sludge Containing Oil (2.2 Schedule 1)	Nil	Sludge Containing Oil (2.2 Schedule 1)	Nil
	Drilling mud and Other Drilling waste (2.3 Schedule 1)	Nil	Drilling mud and Other Drilling waste (2.3 Schedule 1)	Nil
(B) From pollution control facilities	Sludge Generated from ETP Operations	15430 Kgs	Sludge Generated from ETP Operations	0 Kgs
(C) From Other sources	NIL		NIL	

PART - E

SOLID WASTE

Solid Waste	Total Quantity	
	During the previous financial year	During the current financial year
(a) From process	Mentioned in other waste category	Refer Part D for Hazardous Waste and other solid waste mentioned below
(b) From Pollution control facility (STP Sludge)	The Bio-sludge generated is used as manure for greenbelt maintenance.	The Bio-sludge generated is used as manure for greenbelt maintenance.
(C) Other wastes from Health Center, Warehouse, Living quarters and plant housekeeping etc.,	Quantity wise details of different scrap material for FY 2023-24 is given as below	
	Waste type	Quantity in Kgs
	Food waste	1980
	Metal scrap	3730
	Paper waste	1770
	Plastic waste	670
	Construction and demolition waste	0
	Glass	660
	Rubber	850
	Wood	2400
	Total	12,060 Kgs
	Quantity wise details of different scrap material for FY 2024-25 is given as below	
	Waste type	Quantity in Kgs
	Food waste	1790
	Metal scrap	3130
	Paper waste	1880
	Plastic waste	600
	Construction and demolition waste	0
	Glass	520
	Rubber	560
	Wood	2410
	Total	10890 Kgs
(1) Quantity recycled or re-utilized within the unit.	Nil	Nil
(2) Sold (Wastepaper, metal waste, plastic wastes, packaging material, wooden pallets, drinking water bottles etc. are handover to recyclers)	Nil	Nil
(3) Disposed	Segregated solid waste sold to scrap dealers through auction basis time to time.	Segregated solid waste sold to scrap dealers through auction basis time to time.

PART - F

Please specify the characterizations (in terms of composition and quantum) of Hazardous and non-hazardous wastes and indicate disposal practice adopted for both these categories of wastes.

Hazardous Waste: As per Hazardous Waste Authorization. **Refer Part D** for details.

Non-hazardous waste: Domestic waste is generated from the operation and development facilities which mostly consist of bio-degradable organic matter and recyclable wastes. The recyclable wastes are handover to scrap vendor for further recycling process. Food waste is treated in Organic Waste Convertor for composting and manure is being used in green belt development.

PART - G

Impact of the pollution abatement measures taken on conservation of natural resource:

Details of pollution abatement measures have been described in a separate document (**Refer Enclosure -1**).

Sewage Treatment Plant of capacity 175 KLD at Ravva Terminal is operational for the treatment of sewage water generated at terminal and living quarters.

Organic Waste Convertor for the treatment and conversion of food waste into bio-manure is available at Operation Base.

Water produced in crude extraction process is treated in water filtration unit and re-injected into the reservoir to aid in reservoir pressure support.

Recharge pit of capacity 35000 m³ is available at Ravva for the rainwater and ground water recharge.

Green belt development: 136 Acres of green belt developed in and around the facility to control the noise and air pollution levels generated from Ravva and associated facilities.

PART - H

Additional measures/investment proposal for environmental protection including abatement/prevention of pollution.

There are several voluntary environmental initiatives that have been taken by Cairn to promote environmental protection and prevention of pollution for operations and drilling activities. Description of these initiatives has been provided in **Enclosure-1**.

PART - I

Any other particulars for improving the quality of environment:

We have undertaken a project to increase the reinjection rate of produced water by optimizing the Induced Gas Flotation (IGF) operation, we successfully raised the reinjection rate from 90% to 91%, which has led to a substantial reduction in Wastewater disposal into the environment.

Date: 12.09.2024

Installation Manager - Ravva

ANNEXURE – 1: CHEMICAL CONSUMPTION FOR FY 24-25

Chemicals - Monthly consumption 2024-2025													
Chemical Description	UOM	Apr'24	May'24	Jun' 24	Jul'24	Aug'24	Sep'24	Oct'24	Nov'24	Dec'24	Jan'25	Feb'25	Mar'25
Demulsifier	Kgs	1341	1000	976	1647	1600	1437	1444	1403	1382	1350	1234	1349
Biocide I	Kgs	7211	4699	5938	5855	4785	4475	6596	4217	6062	4630	5322	6067
Biocide II	Kgs	2022	4360	4256	1596	4169	2341	4469	2128	2341	2128	2447	4469
Water Corrosion inhibitor	Kgs	1513	111	926	0	1830	2271	2217	1819	1854	1880	1839	1985
Water Scale Inhibitor	Kgs	6036	245	2814	8181	7297	7465	7177	6702	6500	2414	6123	6773
Oil Scale Inhibitor	Kgs	4069	0	0	2662	6020	3186	5268	4993	5178	1581	4586	3530
Oil Corrosion inhibitor	Kgs	3951	0	0	6999	5767	1801	3967	3882	3925	4170	3514	3160
Gas Corrosion Inhibitor	Kgs	0	0	0	0	0	0	0	0	0	0	0	134
Oxygen Scavenger	Kgs	0	0	0	0	0	523	330	82	63	285	528	523
H2S Scavenger	Lit												
Hydrochloric Acid	Lit	150	150	150	150	150	150	150	150	150	150	100	100
Caustic Soda	Kgs	50	50	50	50	50	50	50	50	50	50	50	50
Anti Scalent	Kgs	40	40	40	40	40	40	40	40	40	40	30	40
Dewtreat 501 (Corrosion inhibitor)	Kgs	9	9	8	9	-	-	10	7	7	6	6	6
Dewtreat 511 (Scale inhibitor)	Kgs	9	9	8	9	-	-	9	8	8	5	5	5

Dewtreat 701 (Dispersant)	Kgs	4	4	4	4	-	-	4	4	4	4	4	4
Dewtreat 704 (Non-Oxidising Biocide-1)	Kgs	2	2	2	2	-	-	2	2	2	2	2	2
Dewtreat 705 (Non-Oxidising Biocide-2)	Kgs	2	2	2	2	-	-	2	2	2	2	2	2
Soda Ash	Kgs	5	5	5	5	5	5	5	5	5	5	5	5
Urea	Kgs	750	775	750	775	775	750	775	750	775	775	710	775
DAP	Kgs	450	465	450	465	465	450	465	450	465	465	420	465
Water clarifier	Kgs	978	1073	959	938	1071	700	798	695	583	524	473	633

ANNEXURE – 2

EFFLUENT WASTEWATER QUANTITY IN KL

Months	Wastewater
	Treated Effluent (KL)
Apr-24	33003
May-24	36829
Jun-24	36773
Jul-24	46321
Aug-24	56479
Sep-24	37823
Oct-24	34983
Nov-24	33879
Dec-24	24050
Jan-25	23447
Feb-25	21836
Mar-25	26448
Total	411,871 KL

DISCHARGED WATER QUALITY

S. No	Para meter	Unit	Results (ETP Outlet)			CPCB Standard
			Maximum	Minimum	Average	
1	Total Suspended Solids	mg/l	48	29.20	30.50	100
2	BOD (3 days at 27 °C)	mg/l	32.45	21	22.66	30
3	COD	mg/l	147	161	150.91	200
4	Oil & Grease	mg/l	8.25	BDL(DL:4.0)	7.61	10

ANNEXURE – 3

BIO-MEDICAL WASTE (BMW) GENERATION RECORDS

Site name: Vedanta Limited – Cairn Oil and Gas

Reporting Period: April 2024 to March 2025

Location: Ravva Onshore Terminal, S. YANAM

S · N o	BMW Categor y	Type of Waste	U nit s	Autho rized Quan tity	Qty. of waste Generated & Disposed from OHC at Ravva Onshore Terminal 2024-25													Disposa l Method and Biomed ical waste Author ization
					A pr - 24	M ay - 24	Ju n- 24	J ul - 2 4	A ug - 24	Se p- 24	Oc t- 24	No v- 24	De c- 24	Ja n- 25	Fe b- 25	M ar - 25	Tot al (kg s)	
1	Yellow	Expire d and discard ed medi cines/ Soiled waste/ Chemic al/ Liquid waste	Kg s	6.05 Kgs/d ay	0.5 45	0.5 20	0.5 51	0.5 7	0.5 45	0.6 05	0.5 4	0.5 00	1.4 05	1.5	2.0 00	0.8 00	10. 04	All BMW generat ed are dispose d to Andhra Pradesh Pollutio n Control Board authoriz ed disposal facility: M/s EVB technol ogies Pallaka diyam, Kanava ram Rajanag aram, East Godava ri
2	Red	Conta minate d waste (recycl able)	Kg s	0.1 Kgs/d ay	-	-	-	-	0.0 09	0.0 38	0.0 21	0.0 04	0.1 2	0.2 25	0.2 70	0.1 85	0.8 72	
3	White Transl ucent	Waste sharp includi ng met als	Kg s	0.5 Kgs/d ay	-	-	-	-	0.0 05	0.0 16	0.0 12	0.0 02	0.0 05	0	0	0	0.0 35	
4	Blue	Glassw are	Kg s	0.1 Kgs/d ay	-	-	-	-	0.0 1	0.0 32	0.0 18	0.0 03	0.0 09	0.0 12	0.0 23	0.0 15	0.1 22	
	Total (kgs)				0.5 45	0.5 20	0.5 51	0.5 7	0.5 69	0.6 91	0.5 91	0.5 09	1.5 39	1.7 37	2.2 93	1.0 00	11. 074	

ANNEXURE NO. 08

Offshore Marine Monitoring Report

ENVIRONMENTAL MONITORING AROUND OFFSHORE INSTALLATIONS (RAVVA FIELD) OF CAIRN/VEDANTA INDIA LTD IN BAY OF BENGAL

A MARINE ECOLOGY STUDY

**Phase – VII
(November 2024)**

REPORT



Submitted by

**Marine Biological Laboratory
Department of Zoology
Centre for Industrial and Scientific Consultancy (CISC)
Andhra University, Waltair, Visakhapatnam 530003**

**To
Vedanta Limited- (Division – Cairn Oil and Gas)
Ravva Onshore Terminal
Surasaniyanam, Uppalaguptham Mandal
Dr. B. R. Ambedkar Konaseema District-533213, Andhra Pradesh**

30 April 2025

ENVIRONMENTAL MONITORING AROUND
OFFSHORE INSTALLATIONS (RAVVA FIELD) OF CAIRN/VEDANTA INDIA LTD IN
BAY OF BENGAL

A MARINE ECOLOGICAL STUDY

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To

**Vedanta Limited- (Division – Cairn Oil and Gas)
Ravva Onshore Terminal
Surasaniyanam
Uppalaguptham Mandal
Dr. B. R. Ambedkar Konaseema District-533213
Andhra Pradesh**

30 April 2025



ENVIRONMENTAL MONITORING A Marine Ecological Study for Ravva Field

Scientific Staff

Prof. P. Janakiram, Ph.D.
Principal Investigator
Marine Biological Laboratory, Andhra University, Visakhapatnam

Name of the scientific staff		Nature of work
1. Prof. Y. Prabhakara Rao	...	Supervision & Consultant
2. Dr. A. Lovaraju, Ph.D. Senior Res. Associate, Mar. Biol. Lab.	...	Water chemistry & Field work
3. Dr. B. Charan Kumar, Ph.D. Supervision	...	Zooplankton analysis & Technical support
4. Dr. M. Durga Bharathi, Ph.D. Supervision	...	Phytoplankton & Technical support
5. Y. Askara Junior Research Fellow, Dept. of MLR	...	Field sampling and plankton sorting
6. M. Sahithi Junior Research Fellow, Dept. of MLR	...	Plankton analysis

Supporting Staff

7. Mr. T. Polarao	...	Field and Lab Work
8. Mr. P Haribabu	...	Deck Hand



ACKNOWLEDGEMENTS

We are deeply indebted to VEDANTA Limited (Division: CAIRN Oil & Gas) for extending Andhra University an opportunity to carry out this important study. We are particularly grateful to S. Vedavathi, Adesh Mahadik, Mohd Siddiqui, Venkata Rao of Petrofac Limited, and Vishnu Vikas of Vedanta Ltd. officers for extending several courtesies. Indian Coast Guard Station, Kakinada, offered great support. We also take this opportunity to thank aboard the Mahananda extends its sincere gratitude to the Master, Chief Officer, Chief Engineer, Electrical Engineers, and all crew members for their unwavering support and cooperation, which were instrumental in the success of this cruise. We thank the Honorary Director, Andhra University Centre for Industrial and Scientific Consultancy (CISC) encouragement and support. Andhra University values this association with VEDANTA Limited (Division: CAIRN Oil & Gas), and it is our privilege to assure CAIRN VEDANTA towards continued and incredibly useful academic endeavours. This work was carried out at the Marine Biological Laboratory, Department of Zoology, Andhra University, Visakhapatnam.

(P. Janakiram)
Principal Investigator



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1. Introduction

After successfully completing Phases I to VI relating to the investigation on “Environmental monitoring around offshore installations of Ravva Oil Field” – held during February 2015, April 2016, November 2017, December 2018, January 2020, and April 2021, Andhra University undertook Phase-VII study on 11th -20th November 2024 representing the post-monsoon conditions after the culmination of inflows into the Bay of Bengal through various rivers by which time seawater salinity is expected to be low in general. While investigations held in April 2016 and April 2021 corresponded to the general seawater salinity (33-36) period, those carried out during February 2015 and January 2020 corresponded to the recovery period when the effects of freshwater through rivers opening into the Bay of Bengal following the (southwest) monsoon (June-September) remain subdued. The November 2017, December 2018, and the present investigation corresponded to post-monsoon conditions (low-saline period, 25-27.5). The investigation was conducted at 20 stations chosen earlier, which represented a wide spectrum of habitats such as shoreward, the core area, seaward, and two Reference points (RF1 and RF2), of which two are in deep water (depth 26-43m), maintaining a gradation of depths overall. The current proposal follows the structure of previous reports, as we had access to conduct sampling in the study area using a fishing trawl. However, due to restrictions on using fishing trawls in the region, we boarded a ship provided by the Operations Division of Vedanta at the study site. Unfortunately, the ship was unable to access shallow waters (<10 meters), which prevented us from conducting sampling at all planned locations. Additionally, the sampling effort was limited to 20 locations to collect water, phytoplankton, and zooplankton, owing to the ship’s logistical constraints. It is also important to note that sediment samples could not be collected, and consequently, we are unable to provide scientific information related to sediment. The observations were made for 10 days (11-20 November 2024) during daylight hrs. when the sea state was comparatively stable; wind direction was predominantly northeast, and the prevailing current was southerly. Details of study area, methodologies employed, gear used, and analytical techniques followed remained the same as with the earlier six Phases (vide Report dated 25 Sep 2015; pages 7-17) and therefore not repeated here. However, Table 1 contains the coordinates of stations visited and Figure 1 their locations in the sea.

Table 1: GPS coordinates for the collection of Seawater / biological samples

St.	Latitude, N	Longitude, E	Depth (m)	St.	Latitude, N	Longitude, E	Depth (m)
1	16°25’38.4’’	82°6’16.2’’	10.0	11	16°27’11.4’’	82°12’26.4’’	12.2
2	16°24’34.2’’	82°6’34.8’’	12.0	12	16°28’27’’	82°13’7.2’’	11.5
3	16°23’19.8’’	82°6’48.6’’	14.0	13	16°27’45.6’’	82°13’34.2’’	13.0
4	16°21’51’’	82°7’7.2’’	19.0	14	16°26’52.2’’	82°14’11.4’’	19.0
5	16°22’30’’	82°7’54’’	18.0	15	16°26’12.6’’	82°13’3.6’’	18.0
6	16°23’10.2’’	82°8’46.2’’	17.0	16	16°25’30’’	82°11’55.2’’	18.0
7	16°23’53.4’’	82°9’47.4’’	17.0	17	16°24’37.8’’	82°10’51.6’’	18.0
8	16°25’12’’	82°9’24.6’’	13.0	18	16°19’45.6’’	82°7’32.4’’	34.0
9	16°25’49.8’’	82°10’19.2’’	12.5	RF1	16°21’25.8’’	82°8’49.2’’	27.0
10	16°26’34.2’’	82°11’22.2’’	12.1	RF2	16°25’18.6’’	82°13’51.6’’	43.0

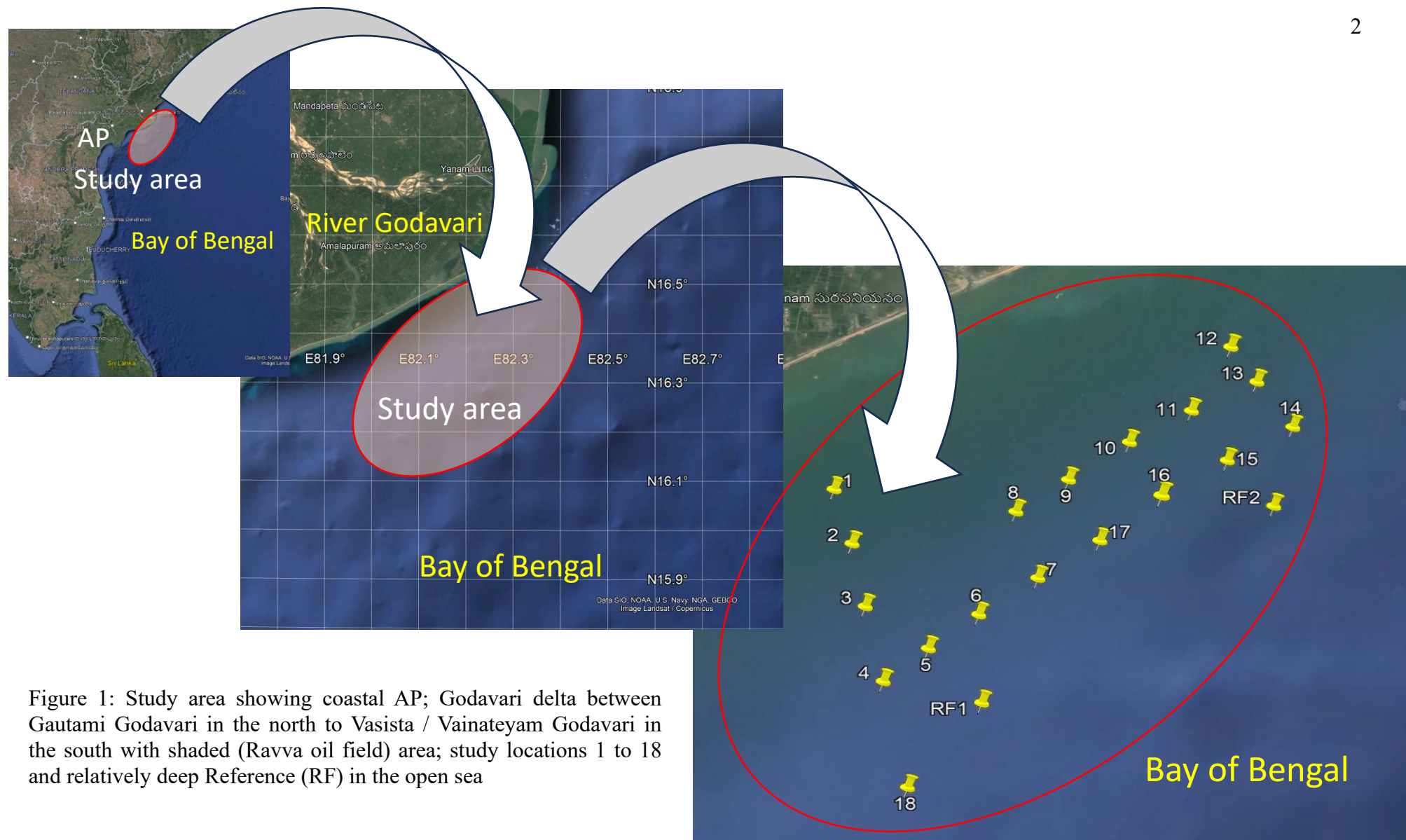


Figure 1: Study area showing coastal AP; Godavari delta between Gautami Godavari in the north to Vasista / Vainateyam Godavari in the south with shaded (Ravva oil field) area; study locations 1 to 18 and relatively deep Reference (RF) in the open sea

During the study, the work packages entailed the collection of primary data through ecological monitoring and a wide range of secondary data including hydrometeorological conditions, and water characteristics. Surface, middle, and bottom (Niskin) seawater samples were collected from selected sites during November 2024 (post-monsoon) for conventional variables such as water temperature, pH, salinity, turbidity, total suspended solids, inorganic and organic nutrients (nitrogen, phosphorus, and reactive silicate) and the same analysed following standard protocols (e.g. Grasshoff, 1999). All data were checked for quality through inter-calibration during the workshops and through online exchanges. The following is an account of the results obtained.

2. Hydrographical Conditions

Findings on water quality consisted of estimating conventional variables (e.g., depth, Secchi-disc transparency, water temperature, turbidity, total suspended solids, salinity, pH, dissolved oxygen, ammonical nitrogen, nitrite, nitrate, phosphate, silicate, total phosphorus, and total nitrogen) intended for EIA. Surface, middle, and bottom water characteristics were examined. As stated already, the hydrographical conditions in the Sea in the Krishna – Godavari (K-G) Basin are largely determined by nearshore features and ocean phenomena, namely surface currents, upwelling and sinking, and the prevailing wind patterns so unique to the Bay of Bengal. The present study was carried out during November 2024, bearing the post-monsoon conditions. Altogether, 20 locations were visited for surface, middle, and bottom sampling. Summary of the physico-chemical parameters studied is presented in Table 2.

Table 2. Summary of physico-chemical characteristics

Characteristics	Min	Max	Mean	SD
Water temp. (°C)	28.00	29.50	29.10	0.45
Conductivity (ms/cm)	38.43	41.98	40.04	0.87
Depth (m)	10.00	43.00	17.92	8.19
Secchi disc (m)	0.30	2.60	1.77	0.55
Turbidity (NTU)	0.00	2.07	0.26	0.40
TSS (mg. l ⁻¹)	14.50	20.60	16.73	1.66
pH	7.57	8.08	7.85	0.11
Salinity	24.98	27.29	26.03	0.56
Dissolved oxygen (mg. l ⁻¹)	5.58	8.76	6.94	0.70
DO saturation (%)	83.44	132.63	104.31	10.66
Nitrite (μM)	0.25	0.91	0.59	0.14
Nitrate (μM)	3.44	26.62	17.66	5.72
Ammonia (μM)	1.39	4.60	2.95	0.65
DIN (μM)	7.25	30.87	21.19	5.65
Phosphate (μM)	0.09	0.41	0.25	0.07
Silicate (μM)	7.53	16.84	11.24	1.95
Total nitrogen (μM)	50.25	107.55	64.21	11.58
Total phosphorus (μM)	0.31	1.89	0.62	0.34
DON (μM)	25.17	91.04	43.02	15.02
DOP (μM)	0.08	1.67	0.37	0.35
Chl- <i>a</i> (mg. m ⁻³)	1.25	3.64	2.03	0.64

In the study area within the Krishna Godavari basin, depth ranged from 10m to 43m, and secchi-disc transparency from 0.3m (st.18) to 2.6m (st.6). Seawater temperature was high (~29.1°C); salinity low (mean 26.03); dissolved oxygen saturation between 83.44% and 132.63% with mean dissolved oxygen (6.94 mg. l⁻¹). There was high turbidity (2.07 NTU at st.18); alkaline pH (7.85), moderate TSS loads (mean 16.73 mg. l⁻¹), total nitrogen (mean 64.21μM), phosphate (mean 0.25μM), silicate (mean 11.24μM), which together indicated impacting conditions from river inputs and the ongoing activity at the oil Field. Table 3 shows surface, middle, and bottom water quality data at the selected locations during the time of sampling. Figures 2-11 represent the overall distribution of environmental variables in the study area.

Table 3: Surface, middle, and bottom water quality characteristics at the selected location of Ravva Oil Field, November 2024

St. No		Depth	SD	WT	Tur	TSS	pH	Cond	Sali	DO	DO%	Nitrite	Nitrate	Ammonia	DIN	PO ₄	SiO ₄	TN	TP	DON	DOP
		m	m	°C	NTU	mg/l		ms/cm		mg/l		μM	μM	μM	μM	μM	μM	μM	μM	μM	μM
1	S	10.00	1.80	29.00	0.32	15.2	7.972	38.62	25.10	7.96	118.99	0.50	14.06	1.95	16.51	0.13	11.26	107.54	1.80	91.03	1.66
	M			29.00	0.21		7.906	38.62	25.10	6.77	101.14	0.41	18.37	2.52	21.30	0.31	11.54	65.67	0.66	44.37	0.34
	B			29.00	0.00		7.989	38.82	25.23	6.24	93.27	0.36	14.85	2.14	17.36	0.27	12.68	56.42	1.89	39.06	1.62
2	S	12.00	1.40	29.00	0.20	19.3	7.787	39.80	25.87	8.49	127.46	0.48	11.88	1.39	13.75	0.13	10.55	96.52	0.53	82.78	0.39
	M			29.00	0.74		7.875	40.00	26.00	7.17	107.62	0.54	21.34	2.90	24.78	0.27	11.12	63.47	0.61	38.69	0.34
	B			29.50	0.00		7.962	40.20	26.13	7.56	114.62	0.48	16.19	3.02	19.69	0.27	11.54	56.86	0.61	37.16	0.34
3	S	14.00	2.00	29.00	0.00	16.4	7.943	40.20	26.13	7.17	107.70	0.61	8.16	2.33	11.10	0.22	9.98	99.17	0.31	88.07	0.08
	M			29.00	0.48		7.949	40.20	26.13	7.70	115.68	0.57	18.45	3.34	22.36	0.22	9.60	58.62	0.53	36.26	0.30
	B			29.00	0.00		7.871	40.59	26.39	7.70	115.84	0.66	14.81	3.53	19.00	0.31	9.56	58.18	0.57	39.18	0.26
4	S	19.00	2.00	29.50	0.10	18.6	7.872	40.00	26.00	8.76	132.63	0.70	3.60	3.84	8.14	0.13	10.83	89.03	1.40	80.89	1.27
	M			29.50	0.20		7.710	40.20	26.13	7.83	118.64	0.52	22.72	3.28	26.52	0.18	9.93	59.06	0.57	32.54	0.39
	B			29.50	0.00		7.801	40.40	26.26	6.37	96.59	0.82	16.90	2.71	20.43	0.09	9.93	82.42	0.48	61.99	0.39
5	S	18.00	2.40	29.50	0.74	14.5	7.895	39.80	25.87	7.03	106.43	0.82	5.44	3.28	9.53	0.27	13.81	67.43	0.57	57.90	0.30
	M			29.50	0.06		7.918	40.00	26.00	6.90	104.49	0.61	20.80	2.14	23.55	0.36	10.45	57.30	0.48	33.75	0.12
	B			29.50	0.00		7.868	40.00	26.00	6.64	100.47	0.61	19.00	3.65	23.26	0.22	9.74	57.74	0.48	34.48	0.26
6	S	17.00	2.60	29.50	0.08	17.50	7.916	39.41	25.62	7.03	106.28	0.73	5.48	2.33	8.54	0.27	12.58	73.16	1.89	64.63	1.62
	M			29.50	0.00		7.838	39.61	25.74	7.70	116.39	0.77	21.97	2.08	24.82	0.22	11.02	63.47	0.53	38.65	0.30
	B			29.50	0.09		7.876	39.61	25.74	6.50	98.33	0.57	22.93	1.39	24.88	0.22	10.03	63.47	0.61	38.58	0.39
7	S	17.00	1.60	29.00	0.12	16.8	7.848	38.43	24.98	6.64	99.09	0.52	3.51	3.21	7.25	0.31	12.11	70.96	0.48	63.71	0.17
	M			29.00	0.50		7.854	38.82	25.23	8.63	129.00	0.66	21.51	3.40	25.57	0.31	11.21	58.18	0.66	32.61	0.34
	B			29.50	0.00		7.916	38.82	25.23	7.17	108.05	0.64	23.18	2.90	26.71	0.22	8.23	64.79	0.44	38.08	0.21
8	S	13.00	2.30	29.00	0.38	20.6	7.711	39.41	25.62	6.50	97.45	0.64	4.56	3.34	8.53	0.27	12.49	59.50	1.05	50.97	0.78
	M			29.00	0.30		7.750	39.41	25.62	6.10	91.48	0.59	20.54	2.33	23.46	0.40	10.41	52.45	0.57	28.98	0.17
	B			29.50	0.90		7.742	39.61	25.74	6.24	94.31	0.48	26.61	3.78	30.87	0.22	10.83	63.91	0.53	33.04	0.30
9	S	12.50	2.20	29.00	0.03	17.1	7.752	40.20	26.13	7.56	113.68	0.70	12.26	4.60	17.56	0.22	13.95	62.59	0.44	45.02	0.21
	M			29.50	0.57		7.711	40.40	26.26	7.03	106.65	0.52	21.09	3.53	25.14	0.27	10.08	51.13	0.70	25.99	0.43
	B			29.50	0.00		7.684	40.59	26.39	7.03	106.73	0.59	20.17	3.21	23.97	0.27	13.15	59.06	0.61	35.09	0.34
10	S	12.10	1.90	29.00	0.70	15.5	7.802	38.43	24.98	6.64	99.09	0.54	16.65	3.46	20.66	0.36	16.84	71.84	0.66	51.18	0.30
	M			29.00	0.23		7.752	38.62	25.10	5.97	89.24	0.50	22.72	3.02	26.24	0.27	11.16	57.74	0.48	31.49	0.21
	B			29.50	0.00		7.660	39.02	25.36	6.64	100.12	0.48	11.72	3.09	15.28	0.22	11.31	65.67	0.48	50.39	0.26

Table contd.

St. No		Depth	SD	WT	Tur	TSS	pH	Cond	Sali	DO	DO%	Nitrite	Nitrate	Ammonia	DIN	PO ₄	SiO ₄	TN	TP	DON	DOP
		m	m	°C	NTU	mg/l		ms/cm		mg/l		µM	µM	µM	µM	µM	µM	µM	µM	µM	µM
11	S	12.20	2.25	29.50	0.35	17.2	7.666	40.40	26.26	6.37	96.59	0.61	21.51	3.15	25.27	0.22	12.77	66.99	0.88	41.72	0.65
	M			29.50	0.00		7.564	40.40	26.26	6.24	94.58	0.66	18.45	3.34	22.45	0.27	10.55	60.38	0.48	37.93	0.21
	B			29.00	0.09		7.657	40.59	26.39	5.97	89.88	0.61	21.17	2.52	24.30	0.31	15.99	70.08	0.57	45.77	0.26
12	S	11.50	0.90	29.50	0.50	14.6	7.952	39.61	25.74	7.83	118.39	0.61	22.72	3.59	26.92	0.18	14.24	63.47	0.48	36.54	0.30
	M			29.50	0.00		7.975	39.80	25.87	7.30	110.44	0.61	22.01	3.78	26.40	0.22	9.93	51.57	0.48	25.17	0.26
	B			29.50	0.09		7.799	40.00	26.00	7.17	108.51	0.91	14.90	2.71	18.51	0.27	12.11	64.79	0.53	46.28	0.26
13	S	13.00	1.70	29.50	0.02	16	7.981	39.61	25.74	7.03	106.35	0.68	21.38	2.52	24.58	0.22	15.42	63.47	0.48	38.89	0.26
	M			29.50	1.29		7.927	40.00	26.00	6.77	102.48	0.59	21.51	2.27	24.36	0.31	11.54	54.21	0.53	29.85	0.21
	B			29.50	0.15		7.848	40.20	26.13	5.84	88.48	0.75	16.99	2.83	20.57	0.31	10.41	59.06	0.57	38.49	0.26
14	S	19.00	1.40	29.50	0.10	19.4	7.946	40.99	26.64	7.17	108.90	0.61	22.76	2.71	26.08	0.22	10.93	71.84	0.35	45.76	0.13
	M			29.50	0.03		7.875	41.38	26.90	6.90	105.01	0.54	21.13	2.33	24.00	0.27	11.78	57.74	0.57	33.73	0.30
	B			29.00	0.00		7.881	41.58	27.03	6.37	96.21	0.57	16.19	3.53	20.29	0.18	10.55	58.62	0.35	38.33	0.17
15	S	18.00	1.70	29.00	0.08	16.7	7.962	40.40	26.26	7.43	111.77	0.64	21.84	3.02	25.50	0.18	11.54	71.40	0.39	45.90	0.21
	M			29.00	0.93		7.975	40.59	26.39	7.17	107.85	0.64	22.26	2.83	25.73	0.18	11.16	59.06	0.53	33.33	0.35
	B			28.50	0.09		7.787	40.59	26.39	6.90	103.00	0.34	15.40	4.41	20.15	0.27	7.76	57.74	0.57	37.59	0.30
16	S	18.00	1.80	29.00	0.00	16.2	8.016	40.59	26.39	6.64	99.86	0.64	24.48	2.02	27.13	0.22	11.02	63.91	0.83	36.78	0.61
	M			29.00	0.09		7.918	40.79	26.51	6.37	95.94	0.66	22.85	2.77	26.27	0.27	10.26	62.14	0.48	35.87	0.21
	B			28.50	0.00		7.892	41.18	26.77	6.64	99.25	0.66	16.95	3.65	21.26	0.31	9.60	52.89	0.57	31.63	0.26
17	S	18.00	1.80	28.50	0.04	15.2	7.975	40.99	26.64	7.30	109.10	0.79	21.55	2.33	24.67	0.22	11.78	70.08	0.35	45.41	0.13
	M			28.50	0.40		8.072	41.38	26.90	7.43	111.24	0.64	18.45	2.71	21.80	0.22	10.08	59.06	0.57	37.26	0.35
	B			28.50	0.00		7.838	41.38	26.90	5.57	83.43	0.64	16.69	3.59	20.92	0.27	7.52	51.57	0.48	30.65	0.21
18	S	34.00	0.30	28.00	2.07	15.3	7.907	39.41	25.62	7.30	107.58	0.45	3.43	3.53	7.41	0.18	14.62	78.01	0.44	70.60	0.26
	M			28.50	0.26		7.730	39.61	25.74	5.97	88.82	0.32	20.29	3.46	24.07	0.13	10.93	60.82	0.48	36.75	0.35
	B			28.50	0.00		7.895	39.80	25.87	6.10	90.86	0.36	16.61	2.52	19.49	0.27	9.79	76.69	0.39	57.20	0.12
RF1	S	27.00	1.10	28.00	0.08	16.10	7.754	38.82	25.23	6.37	93.69	0.61	24.18	2.65	27.44	0.40	11.12	63.47	0.48	36.02	0.08
	M			28.00	0.00		7.671	39.41	25.62	6.24	91.93	0.59	19.46	2.90	22.94	0.27	9.51	58.18	0.44	35.23	0.17
	B			28.00	1.29		7.692	39.80	25.87	5.97	88.15	0.84	17.78	2.71	21.33	0.27	16.04	52.45	0.53	31.12	0.26
RF2	S	43.00	2.10	29.50	0.34	16.4	7.987	41.18	26.77	7.70	117.05	0.29	21.42	3.02	24.74	0.22	9.03	56.42	0.48	31.67	0.26
	M			29.50	0.00		7.87	41.78	27.15	7.30	111.23	0.52	18.95	2.46	21.93	0.18	9.93	52.45	0.48	30.52	0.30
	B			29.00	0.00		7.817	41.97	27.28	6.90	104.38	0.25	14.69	2.90	17.83	0.22	8.42	50.24	0.57	32.41	0.35

In the water quality Table presented above 'S' refers to surface samples 'M' refers the middle and 'B' bottom water; SD, secchi disc transparency; W.T., water temperature; Tur, turbidity; TSS, total suspended solids; Sali, salinity; Cond, conductivity; DO, dissolved oxygen; ammo, ammonia; DIN, dissolved inorganic nitrogen; Phos, phosphate; Sili, silicate; TN, total nitrogen; TP, total phosphorus; DON, dissolved organic nitrogen; DOP, dissolved organic phosphorus.

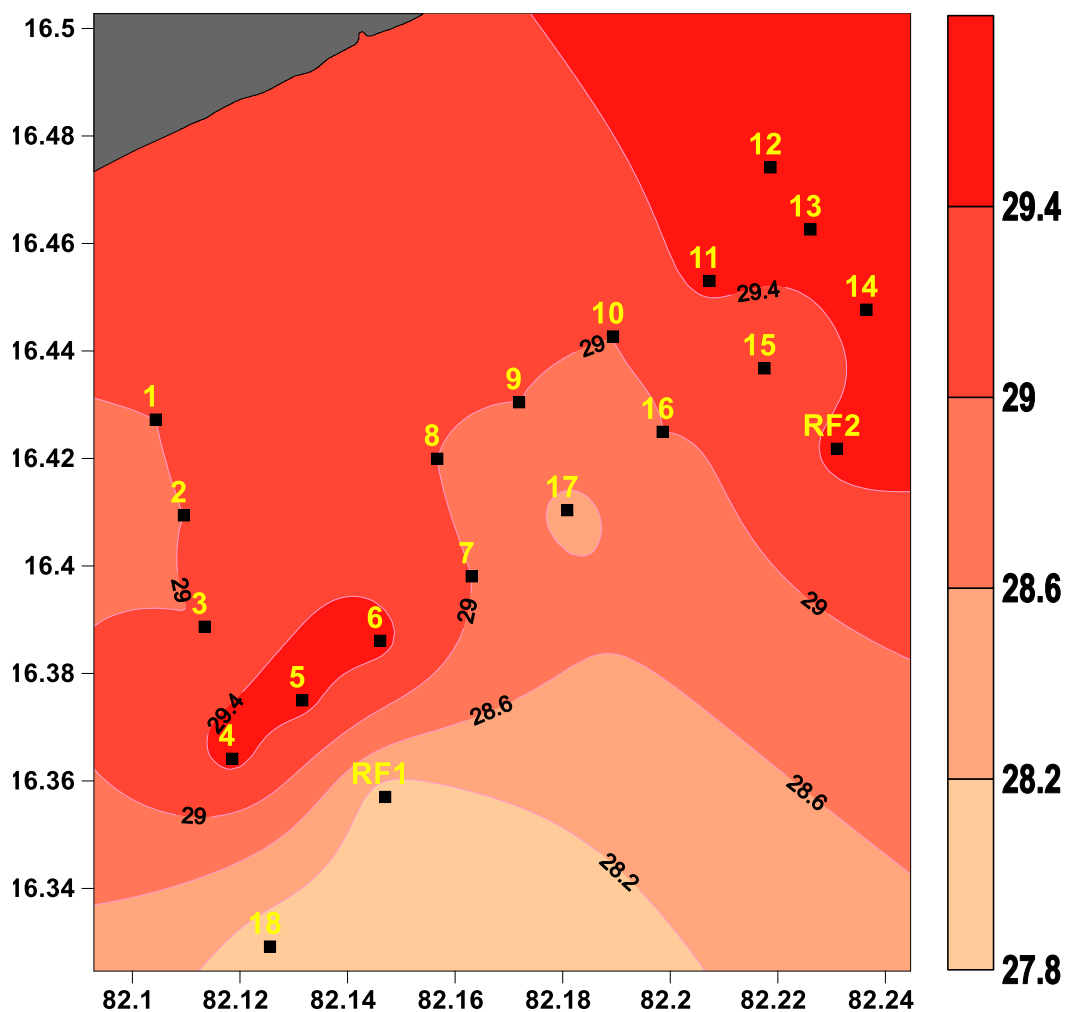


Figure 2: Distribution of water temperature ($^{\circ}\text{C}$)

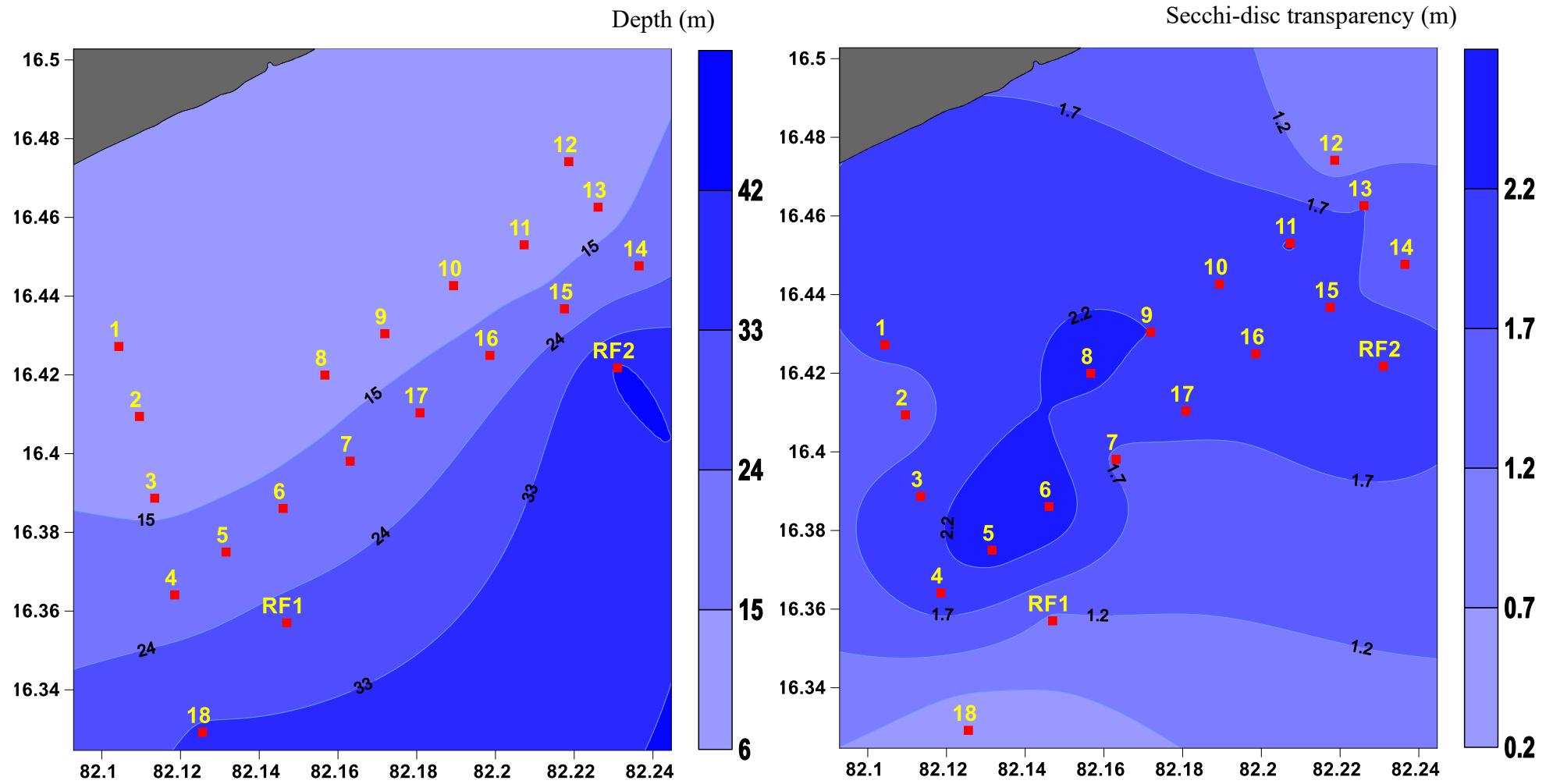


Figure 3: Distribution of depth (m) and secchi-disc transparency (m)

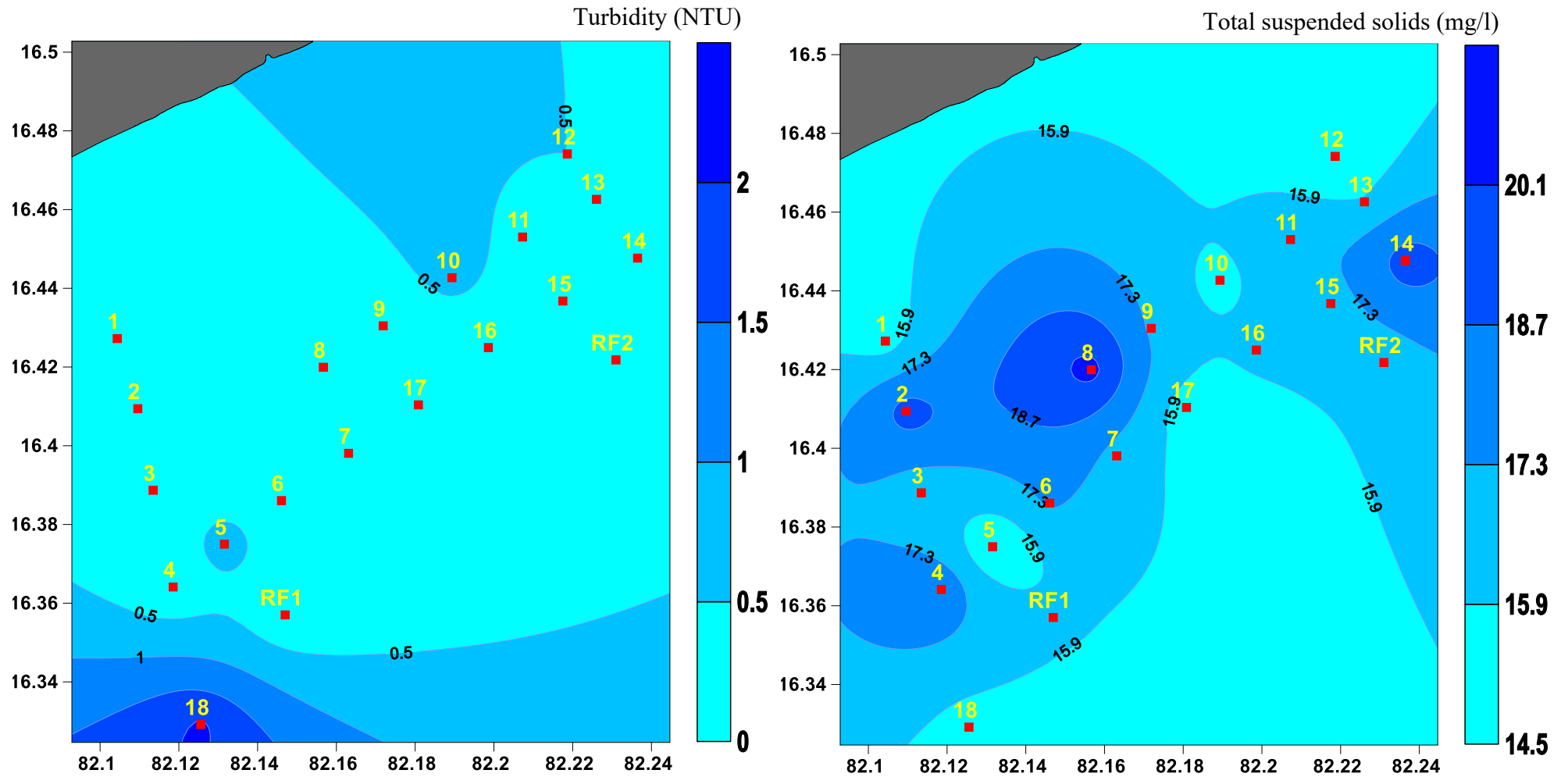


Figure 4: Distribution of turbidity (NTU) and total suspended solids (mg/l)

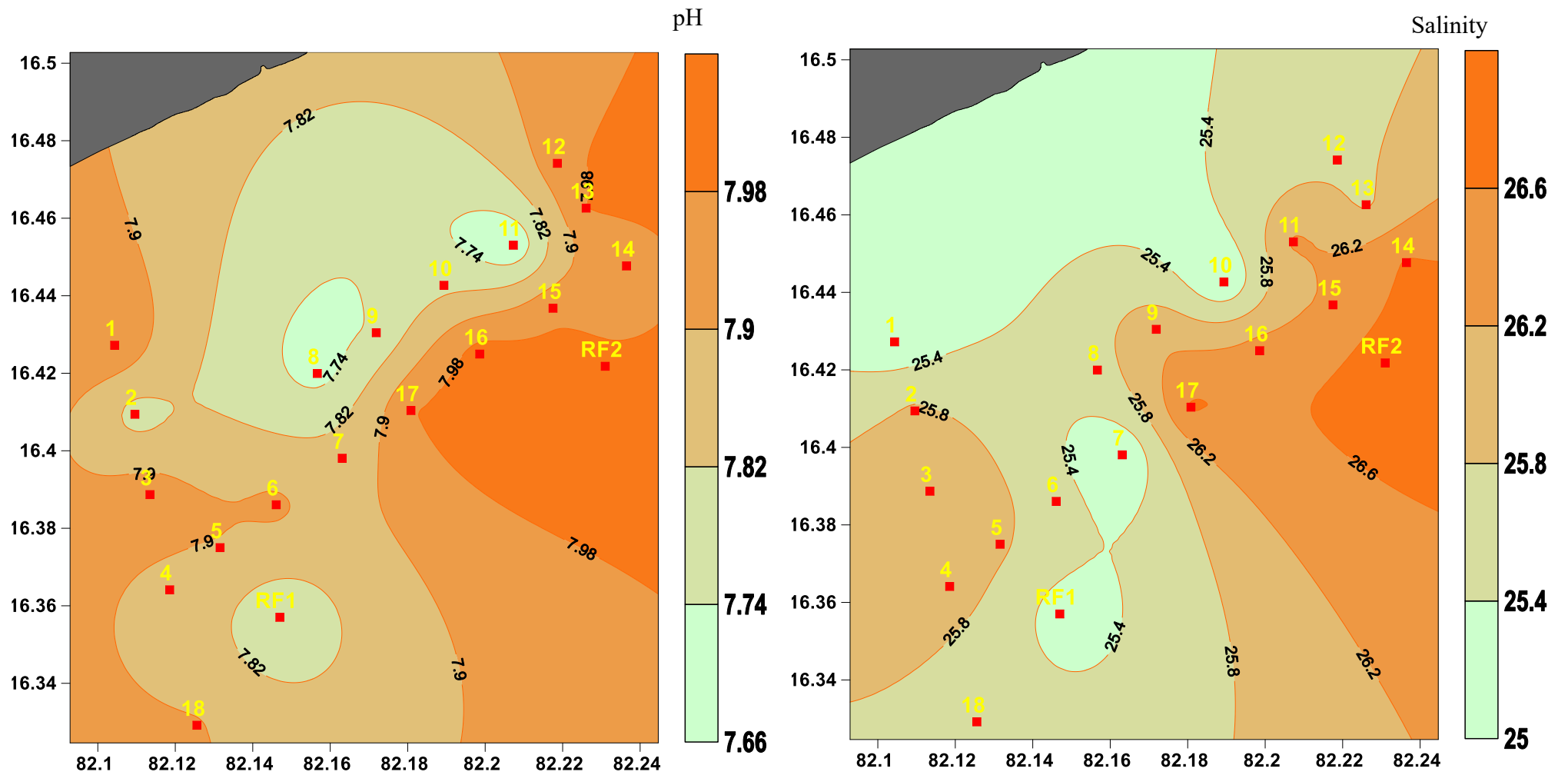


Figure 5: Distribution of pH and salinity

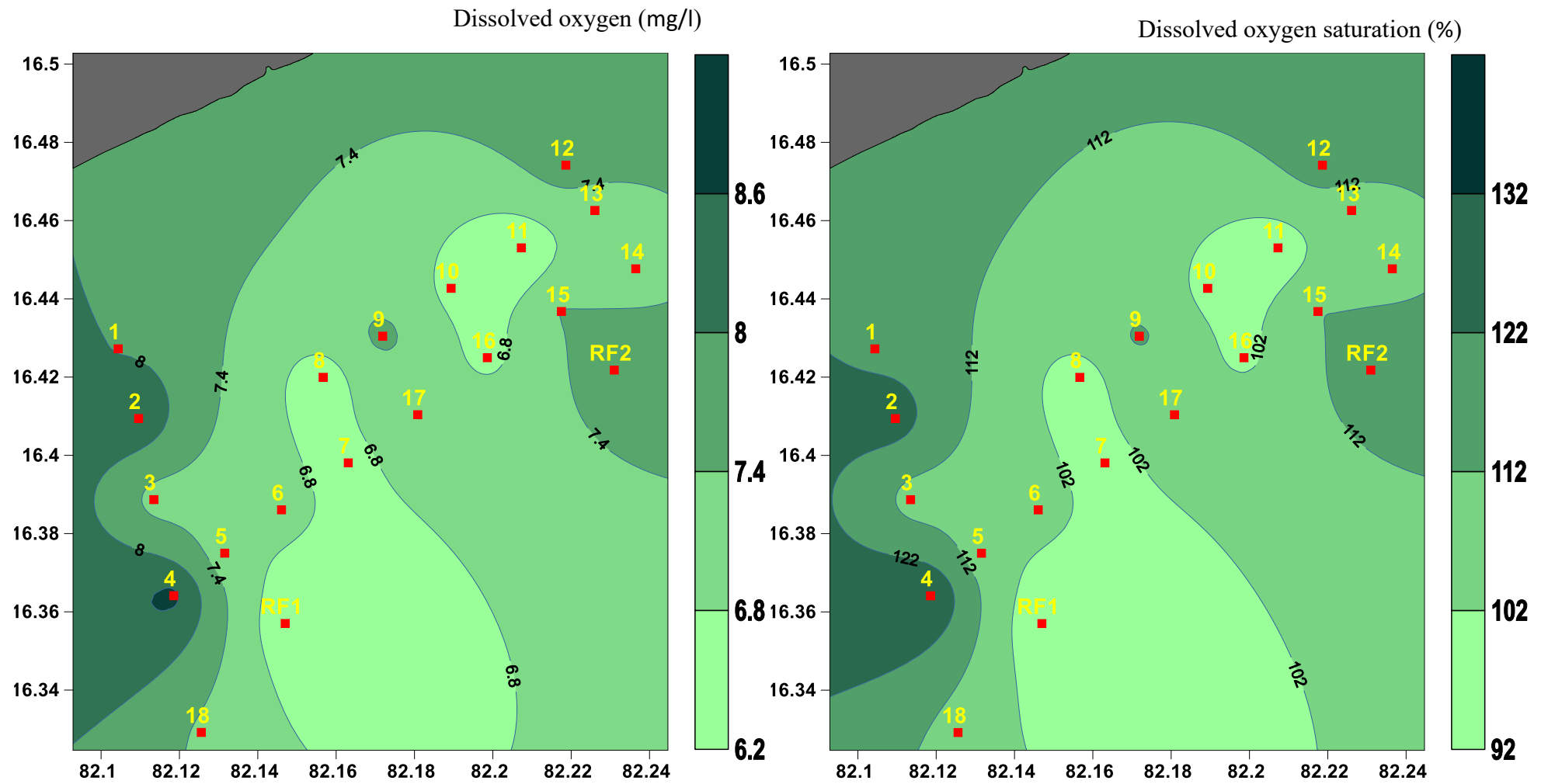


Figure 6: Distribution of dissolved oxygen (mg/l) and dissolved oxygen saturation (%)

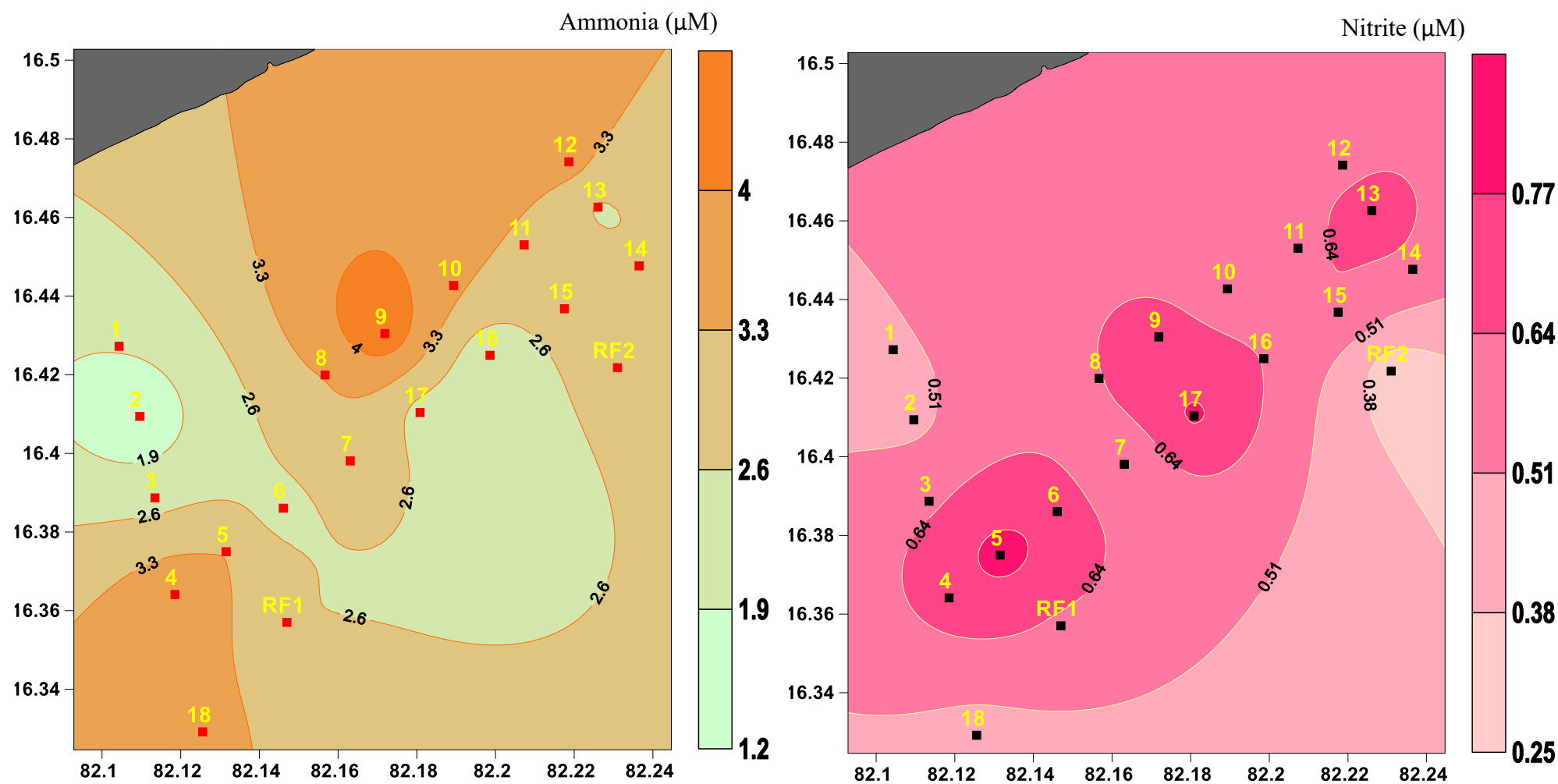


Figure 7: Distribution of ammonia (μM) and nitrite (μM)

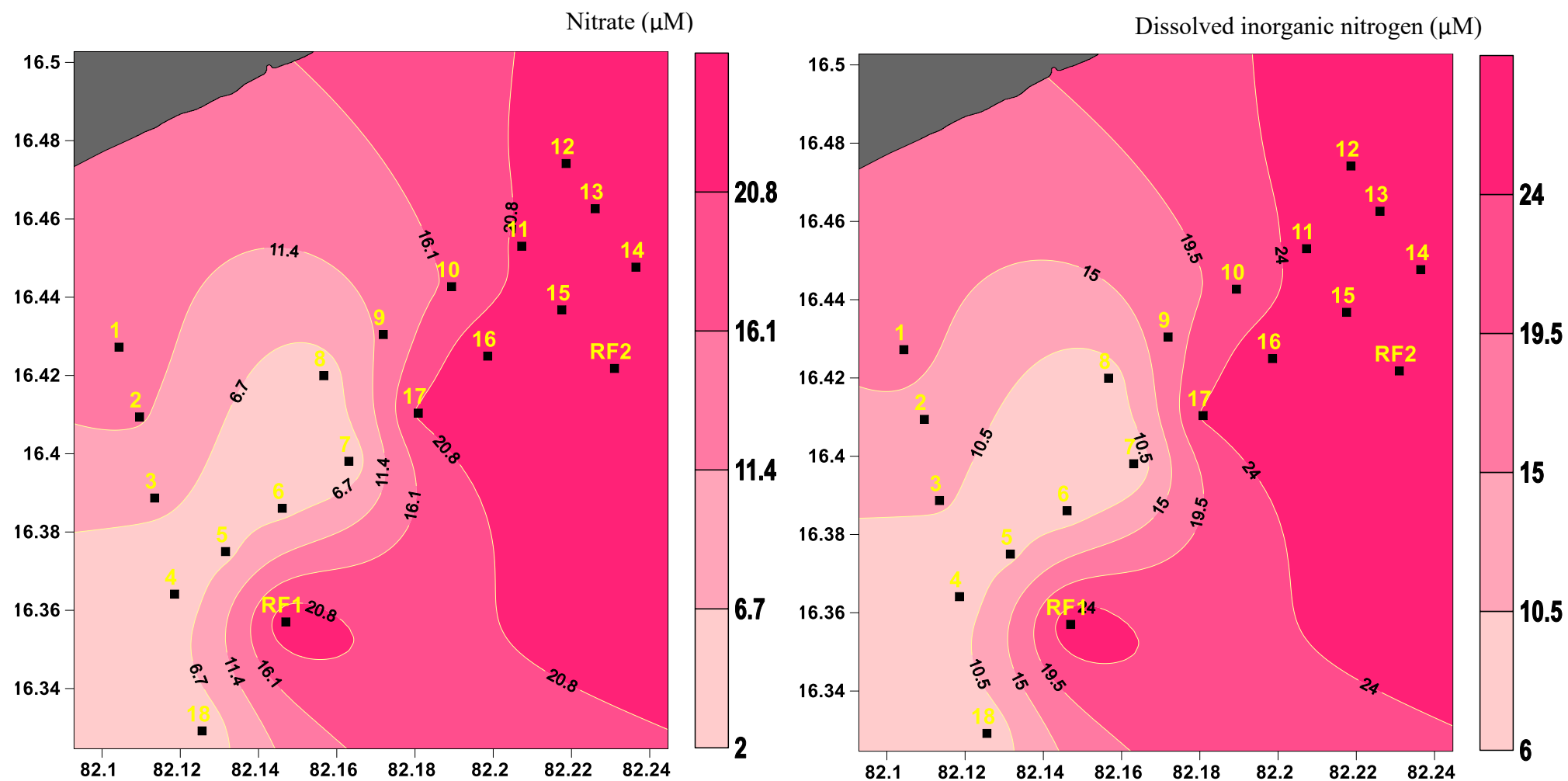


Figure 8: Distribution of nitrate (μM) and dissolved inorganic nitrogen (μM)

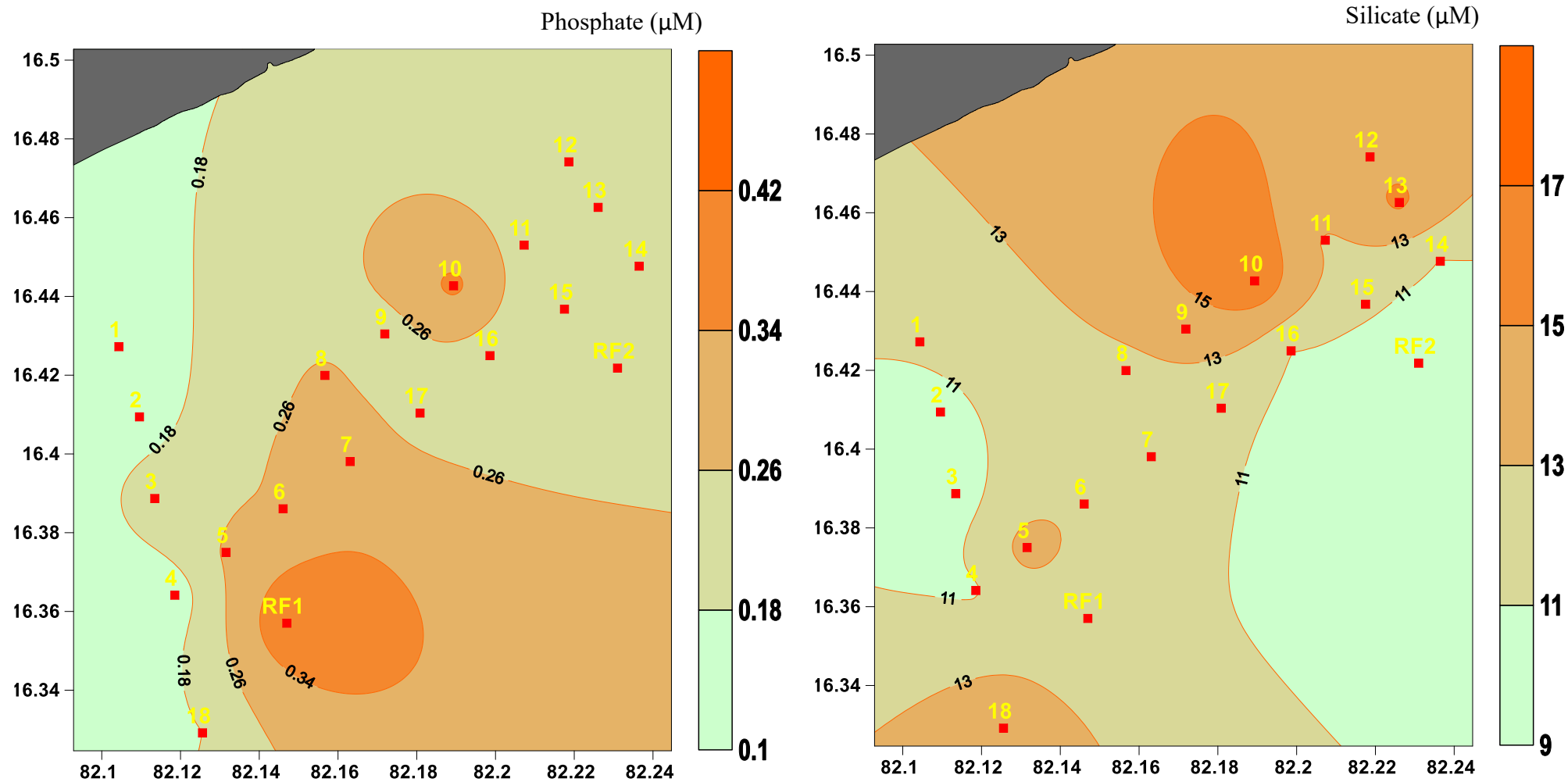


Figure 9: Distribution of phosphate (μM) and silicate (μM)

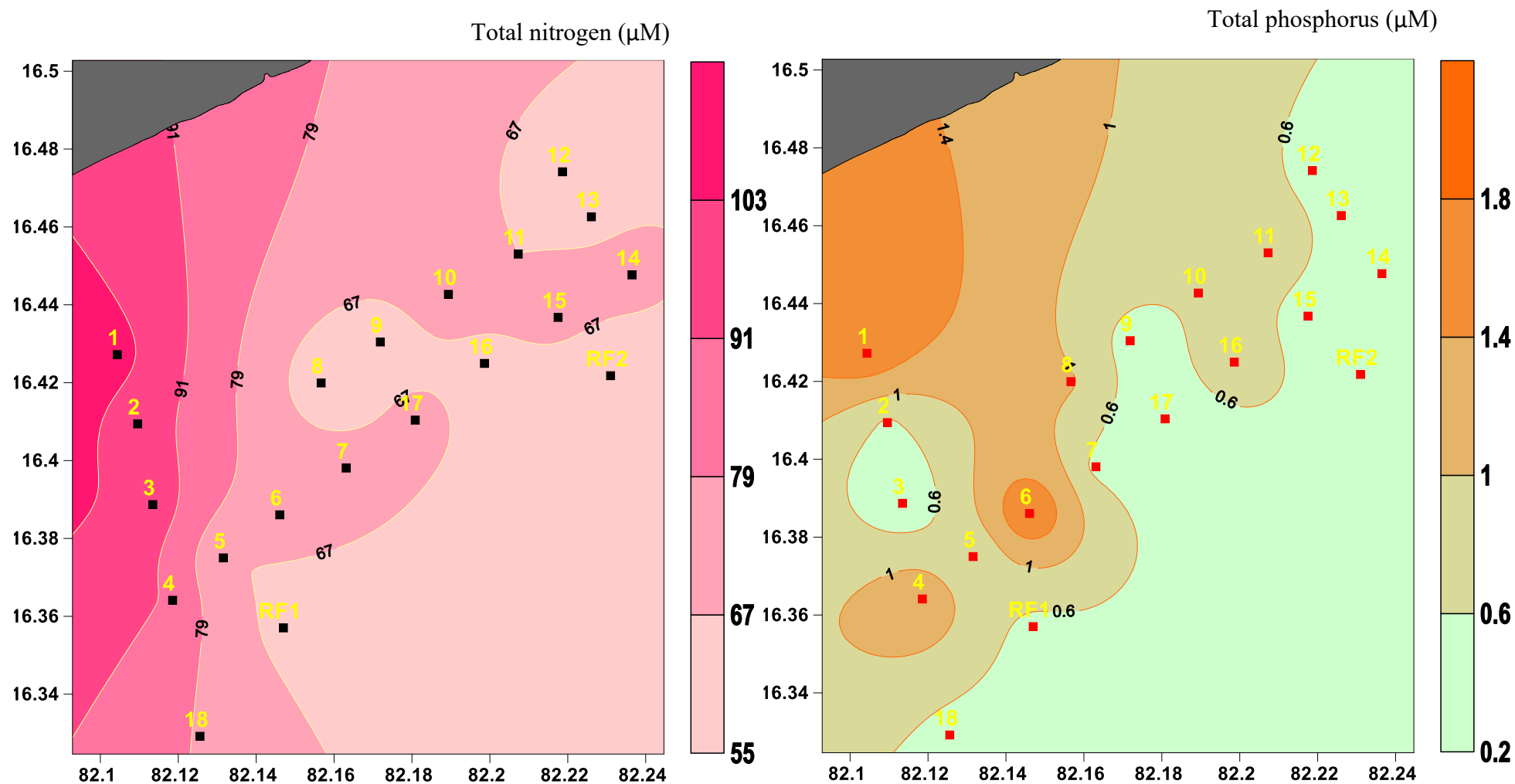


Figure 10: Distribution of total nitrogen (µM) and total phosphorus (µM)

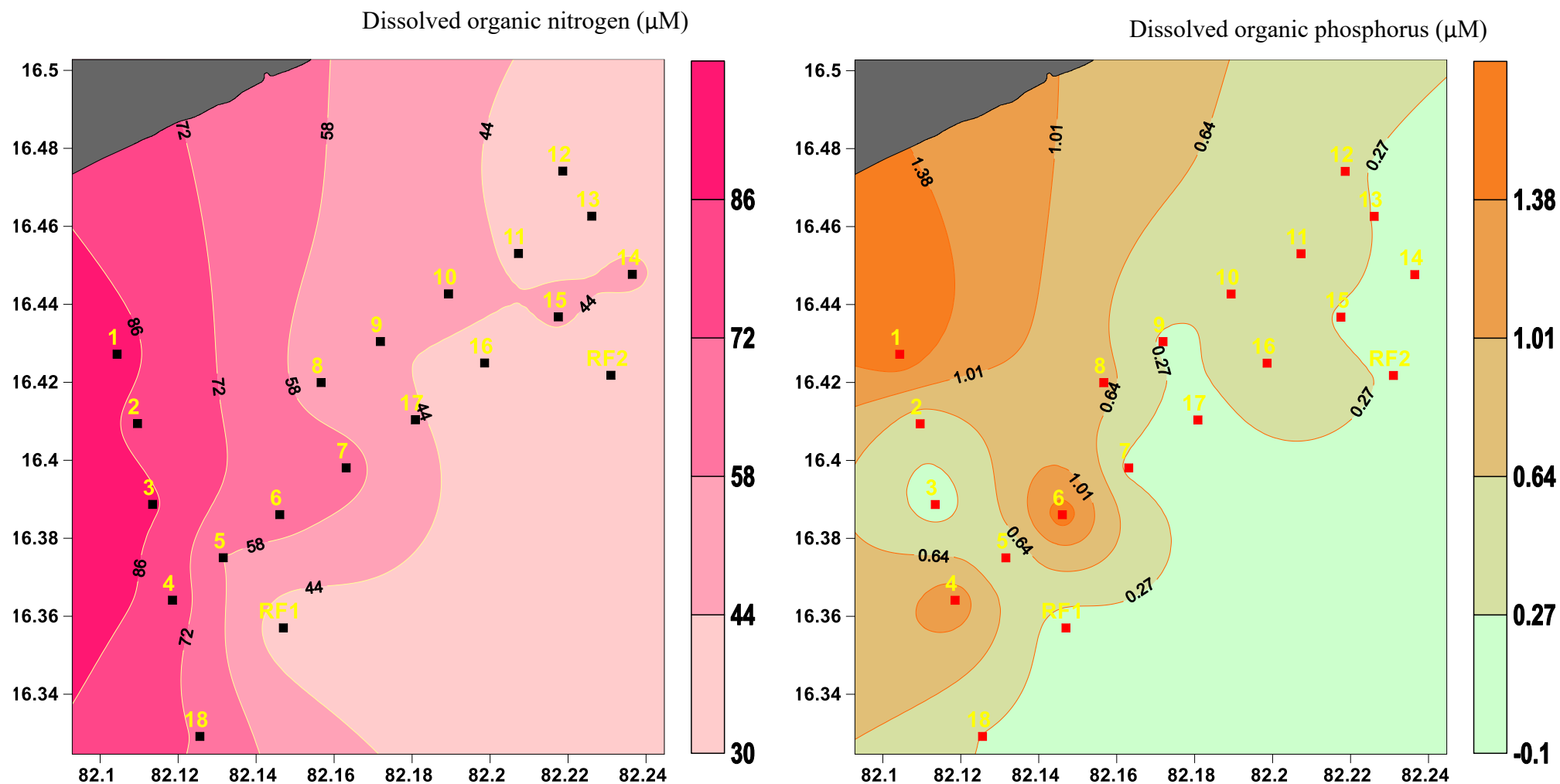


Figure 11: Distribution of dissolved organic nitrogen (μM) and dissolved organic phosphorus (μM)

Water quality-based division:

Based on the water quality data, multivariate analysis (standardisation and hierarchical clustering) was performed using PRIMER v6. The Euclidean distance-based cluster analysis) clearly showed three distinct regions: the shoreward locations 1-4, the core area 5-17, and the seaward locations 18, RF1, and RF2 (Figure 12).

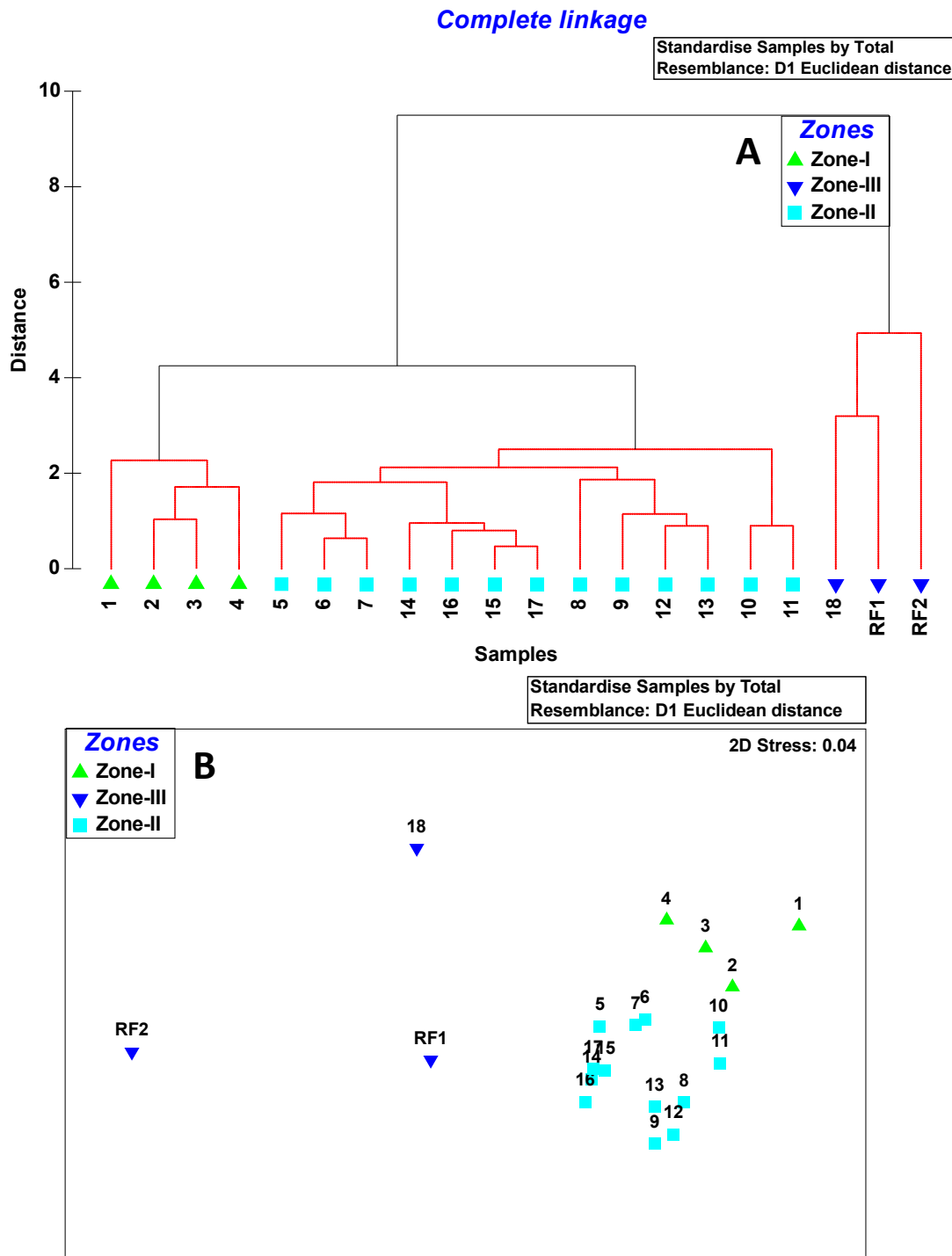


Figure 12: Standardised Euclidean distance-based classification showing three distinct regions (A) Dendrogram and (B) MDS

Principal Component Analysis (PCA) was performed on the standardised (water quality) data in respect of depth, turbidity, total suspended solids (TSS), pH, salinity, dissolved oxygen (DO), nitrite, nitrate, ammonia, phosphate, silicate, total nitrogen (TN), total phosphorus (TP) and chlorophyll-*a*. Group-wise classification of station locations in the study area was based on Euclidean cluster analysis. Figure 13 shows the superimposed groups of locations identified through cluster analysis, such as shoreward locations, i.e., 1-4, core area locations 5-17, and seaward 18, RF1, and RF2. Shoreward stations could be recognised because of the TSS, pH, DO, TN, and TP. Seaward locations could be recognised because the depth and salinity suggest the characteristic features of the open sea environment compared to the shoreward and core area. The core area is separated because of the high inorganic nutrients and chlorophyll, which may be due to the noteworthy that one of the tributaries of the River Godavari opens near the study area. Figures 13-17 show water quality variables superimposed on the PCA ordination for each location.

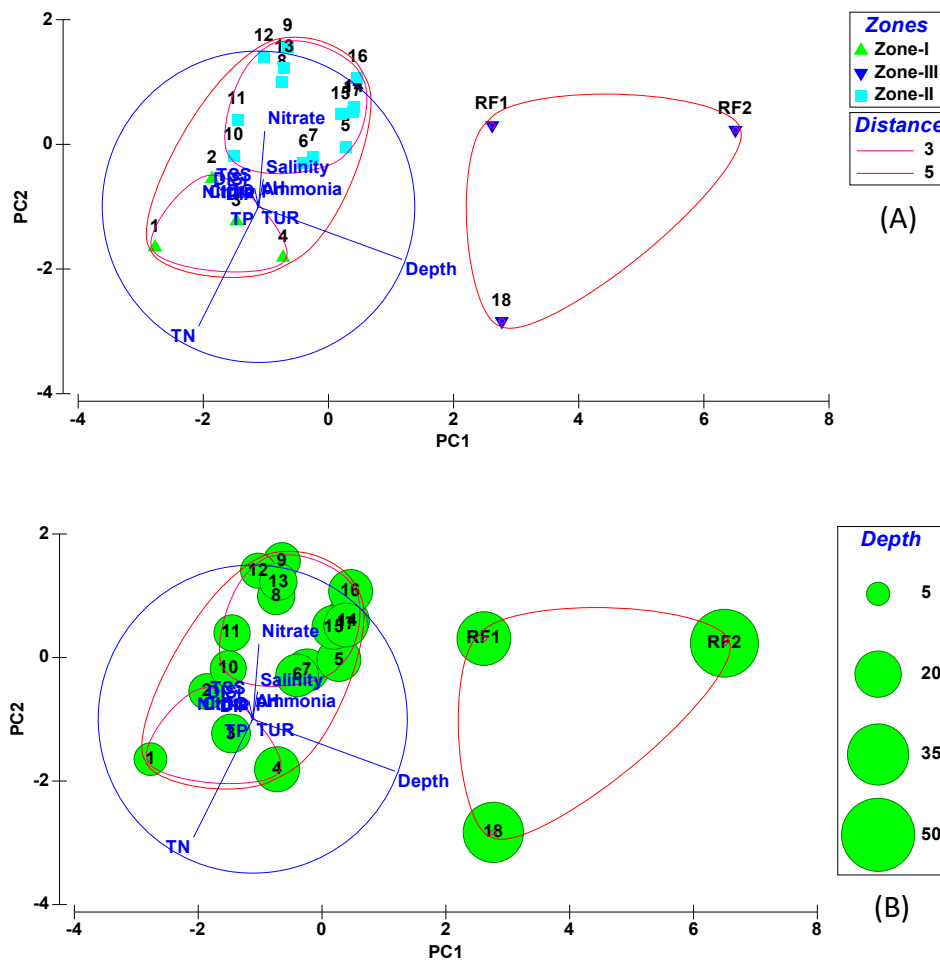


Figure 13: PCA showing superimposed (A) PCA ordination and (B) depth

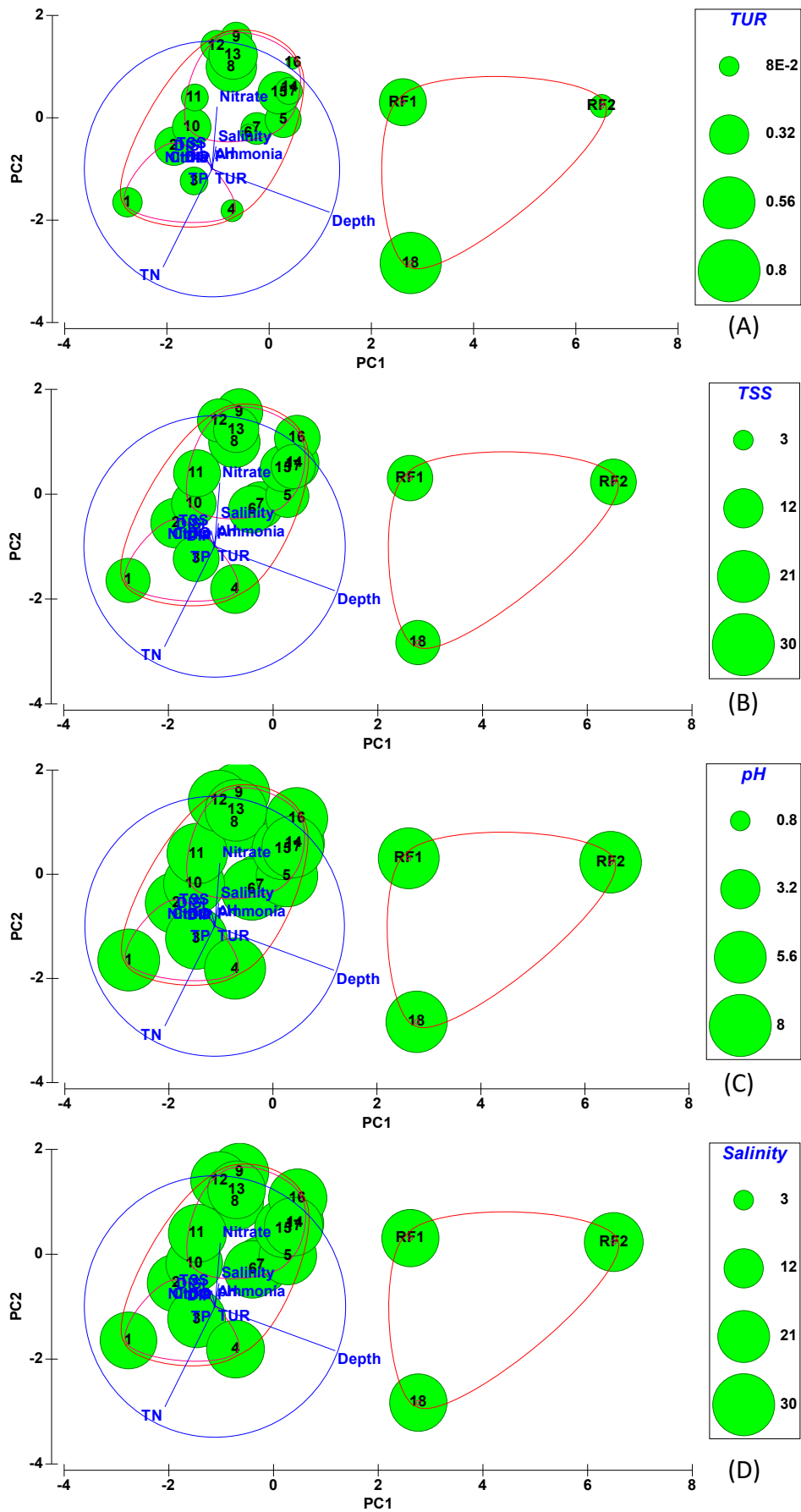


Figure 14: PCA showing superimposed (A) Turbidity, (B) TSS, (C) pH and (D) Salinity at the sampling locations

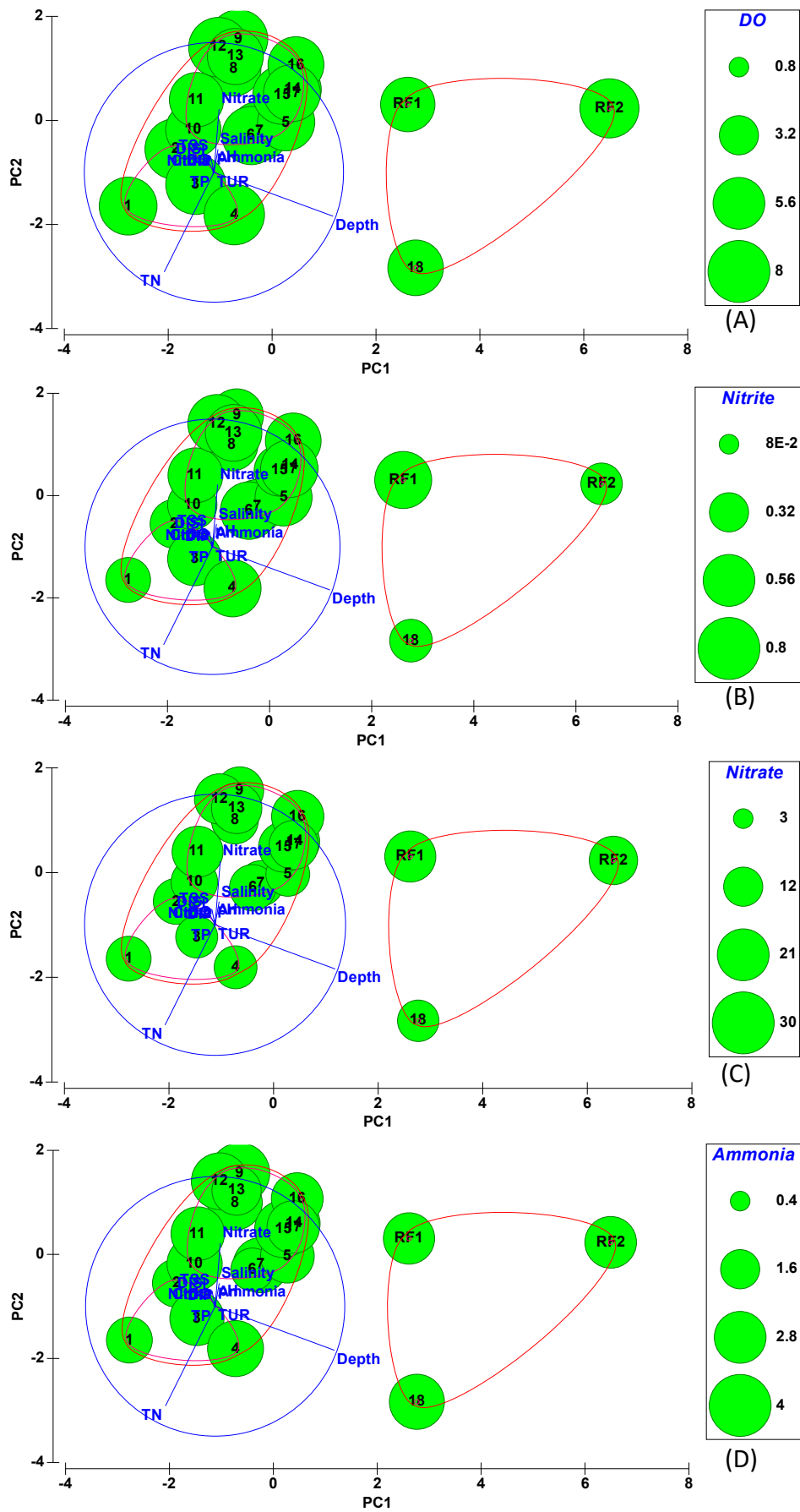


Figure 15: PCA showing superimposed (A) DO, (B) Nitrite, (C) Nitrate and (D) Ammonia at the sampling locations

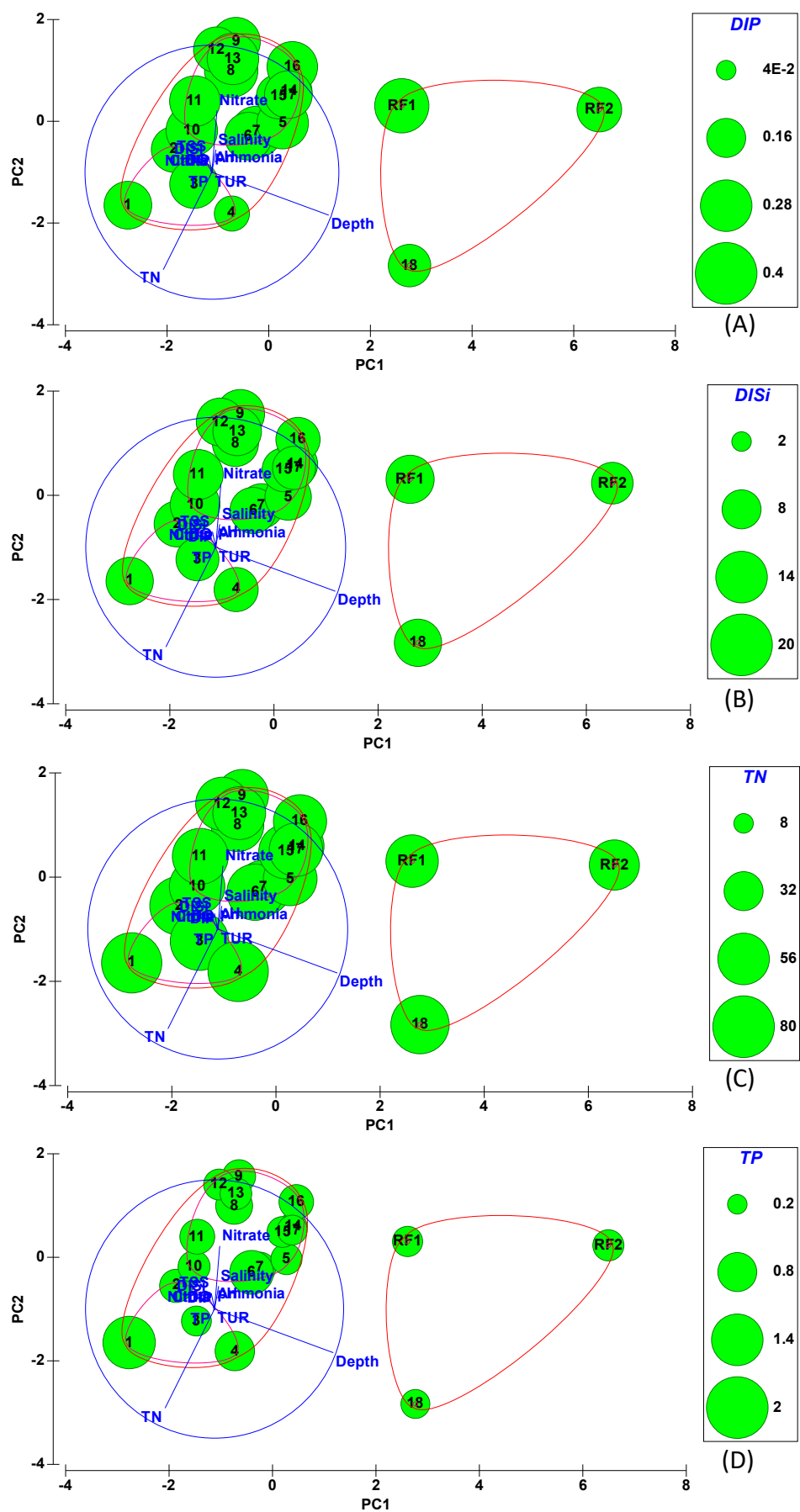


Figure 16: PCA showing superimposed (A) Phosphate, (B) Silicate, (C) TN and (D) TP at the sampling locations

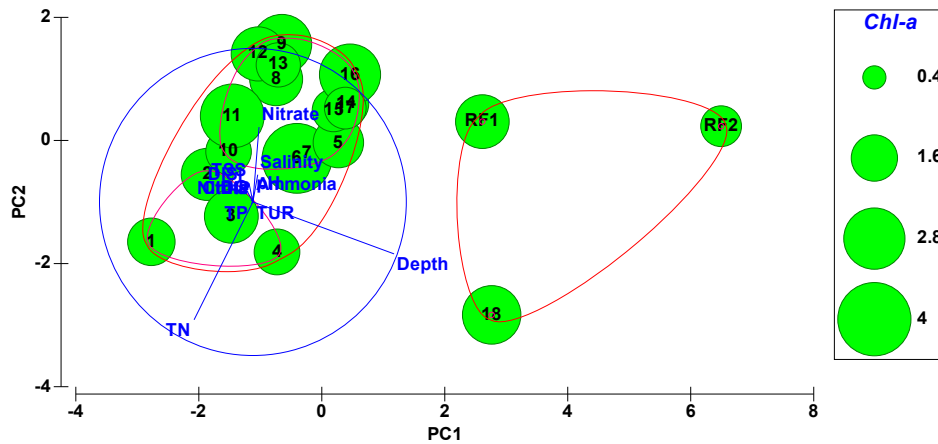


Figure 17: PCA showing superimposed Chlorophyll-*a* at the sampling locations

In order to show variations between shoreward, core area, and seaward locations identified through Euclidean distance-based cluster and Principal Component Analysis, box plots were plotted. Figures 18-21 show the mean, median and standard deviation of select variables such as water temperature, depth, secchi disc, turbidity, total suspended solids, pH, salinity, conductivity, dissolved oxygen, DO saturation, nitrite, nitrate, ammonia, dissolved inorganic nitrogen, phosphate, silicate, total nitrogen, total phosphorus, dissolved organic nitrogen, and dissolved organic phosphorus. While water temperature, depth, DO, DO saturation, nitrite, total nitrogen, total phosphorus, dissolved organic nitrogen, and dissolved organic phosphorus showed significant differences, there were no differences with respect to other variables. This is attributable to efficient mixing under open sea conditions.

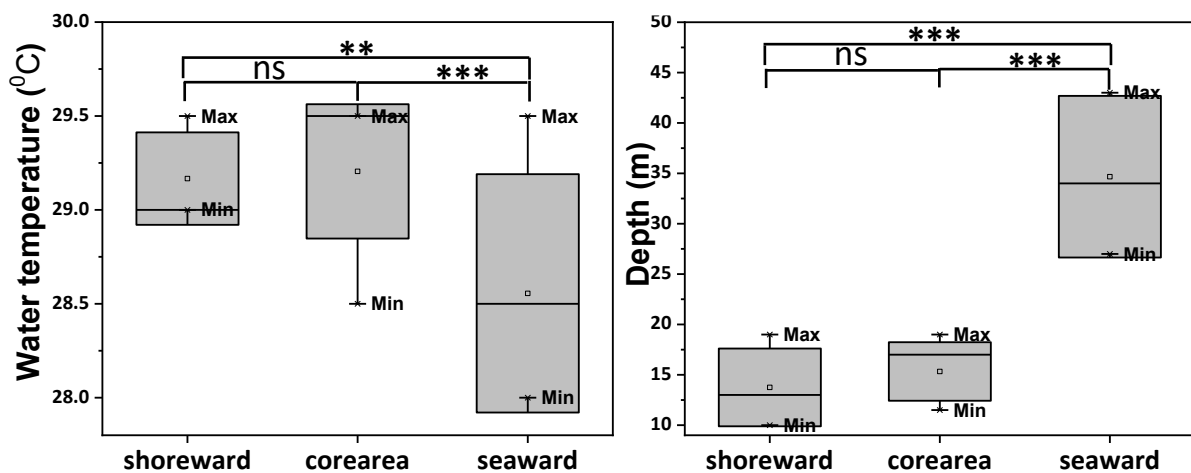


Figure 18: Box represents quartile deviation, whiskers minimum and maximum values. Dots inside the box represent mean values and horizontal line median. Differences between the three groups probed using paired t test: *** $P < 0.0001$; ** $P < 0.001$; ns= not significant

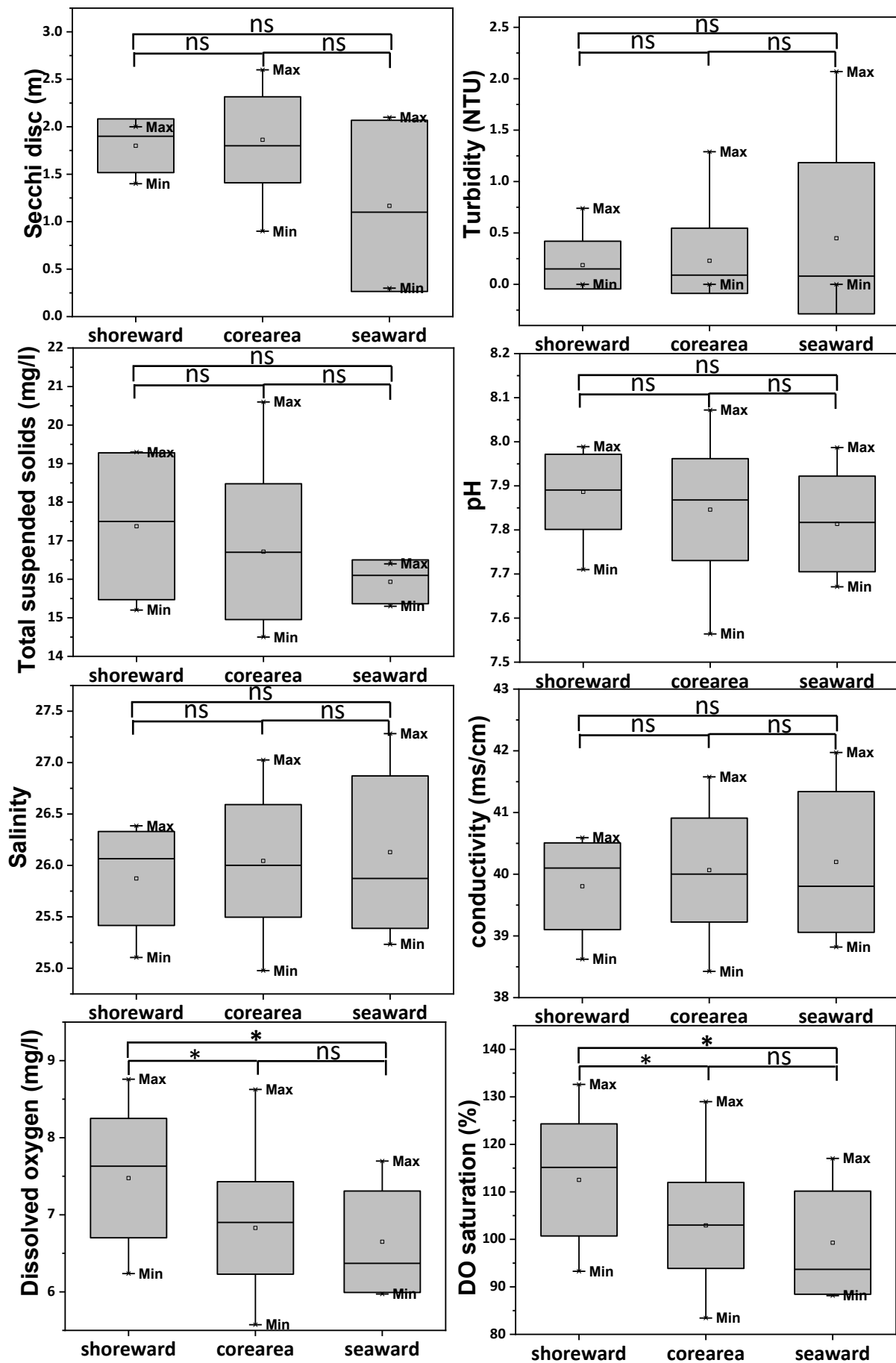


Figure 19: Box represents quartile deviation, whiskers minimum and maximum values. Dots inside the box represent mean values and horizontal line median. Differences between the three groups probed using paired t test: * $P < 0.01$; ns = not significant

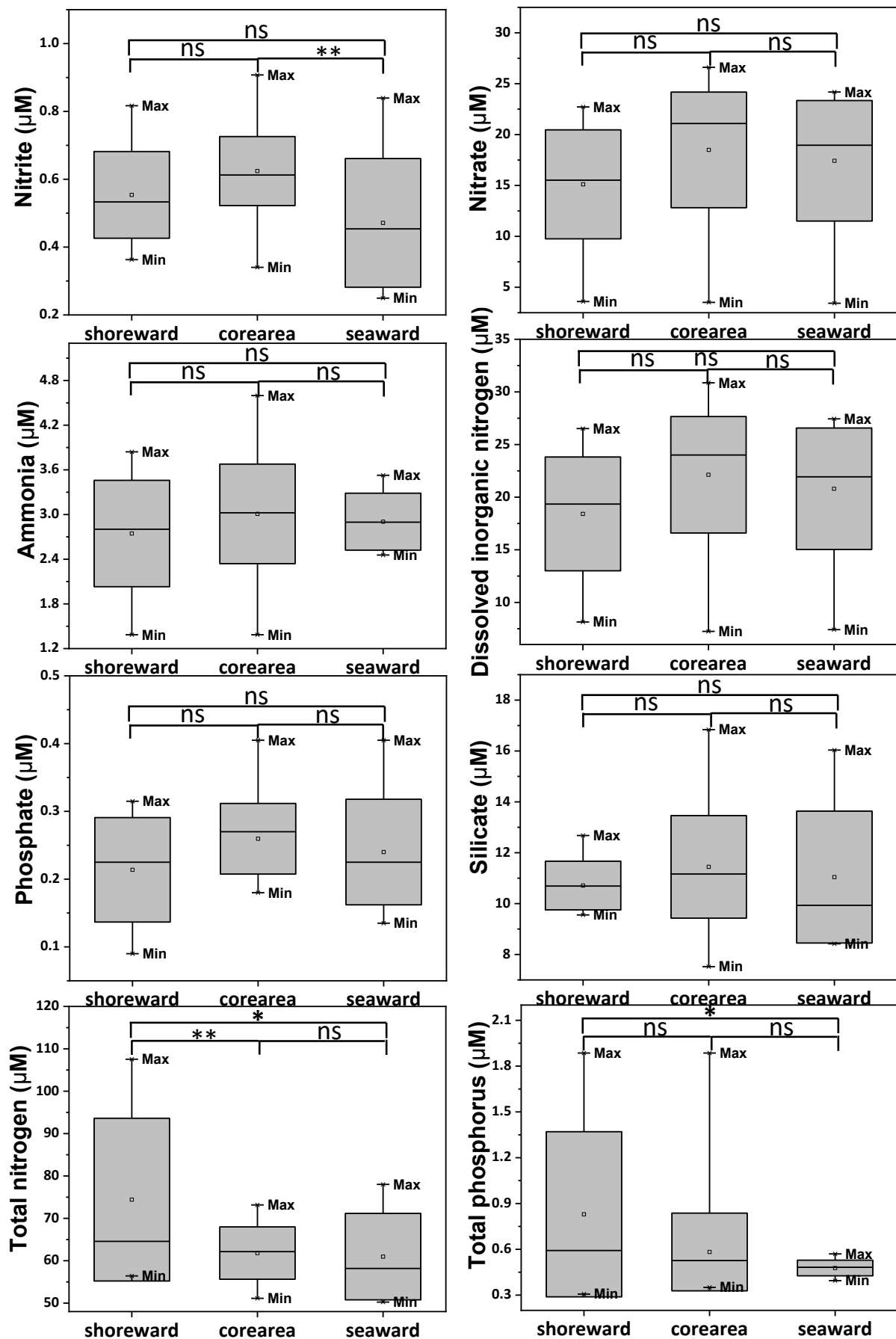


Figure 20: Box represents quartile deviation, whiskers minimum and maximum values. Dots inside the box represent mean values and horizontal line median. Differences between the three groups probed using paired t test: **P<0.001; *P<0.01; ns= not significant

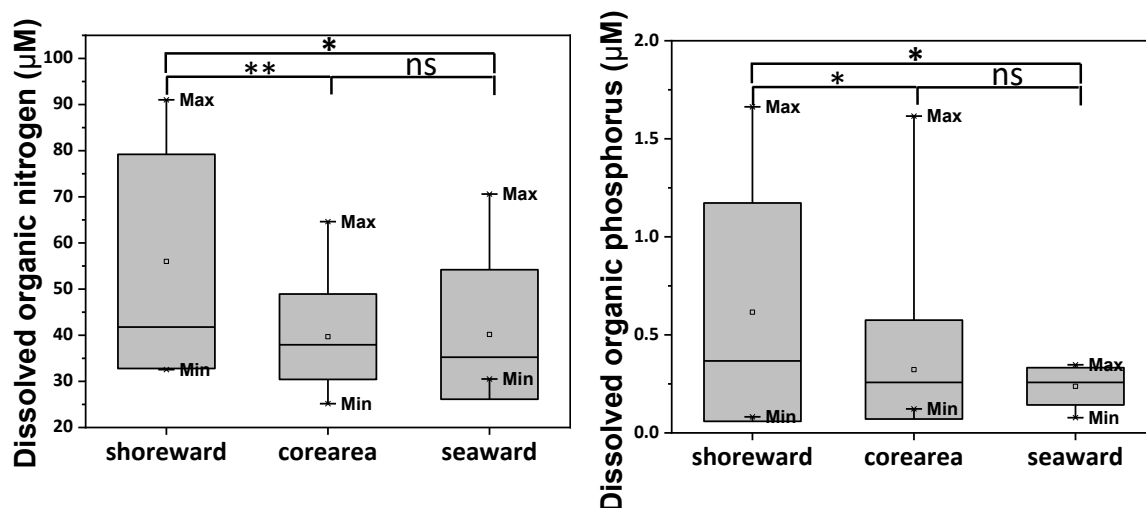


Figure 21: Box represents quartile deviation, whiskers minimum and maximum values. Dots inside the box represent mean values and horizontal line median. Differences between the three groups probed using paired t test: ** $P < 0.001$; * $P < 0.01$; ns= not significant

Conclusions:

The present study highlights an overview of the water quality of Ravva oil field locations (with respect to CAIRN India/VEDANTA) within the Krishna Godavari basin. Both Cluster and Principal Component Analysis of water quality variables presented above revealed three discrete areas representing shoreward, core area, and seaward locations. Shoreward locations could be distinguished through a set of environmental variables including TSS, pH, DO, TN, and TP. Seaward locations could be recognised because of the depth and salinity, and the core area is separated because of the high inorganic nutrients and chlorophyll values. Despite overall segregation (ANOSIM Global $R=0.843$; $P=0.1\%$), a statistically significant difference could be noticed for individual variables between the region water temperature, depth, dissolved oxygen, dissolved oxygen saturation, nitrite, total nitrogen, total phosphorus, dissolved organic nitrogen, and dissolved organic phosphorus. No statistically significant difference could be noticed for individual variables between the regions (shoreward, core area, and seaward locations) for secchi-disc, turbidity, total suspended solids, pH, salinity, conductivity, nitrate, ammonia, dissolved inorganic nitrogen, phosphate, and silicate.

3. Phytoplankton

Species composition:

To conduct a comprehensive phytoplankton analysis, 20 surface water samples were collected from the coastal waters near Ravva. This survey revealed a rich diversity of phytoplankton, with 50 distinct species identified. Specifically, the assemblage comprised 45 diatom species, divided into 31 centrales and 14 pennales, alongside 4 dinoflagellate species and 1 cyanobacterium. A detailed species list is available in Appendix 1; see also Plate 1. Furthermore, the analysis quantified the group-wise composition of phytoplankton at each sampling station.

Consequently, among the total phytoplankton population observed in the Ravva field, *Navicula* sp. emerged as the dominant species, accounting for 59.4% of the population. Following this, *Thalassionema* sp. represented 7.2%, while *Pseudonitzschia* sp. and *Thalassionema* sp2. each constituted 3.2%. Additionally, *Leptocylindrus minimus* and *Thalassionema nitzschioides* were present at 2.9% and 2.8%, respectively. Therefore, the findings demonstrate a diverse phytoplankton distribution in the coastal waters off Ravva, with diatoms as the predominant group.

The composition of the phytoplankton is represented by three groups as mentioned above, Bacillariophyceans are highly dominated with 99.4% of the total population, and the subgroups contain centrales (19%) and pennales with 80.4%. Comparatively, dinoflagellates and cyanophyceans contribution to the total population is negligible (Figure 22). Since the sampling was conducted in November 2024, the results can be expected as the prevailing conditions are stable and favourable for the growth of diatoms. However, the diversity of the phytoplankton is well represented.

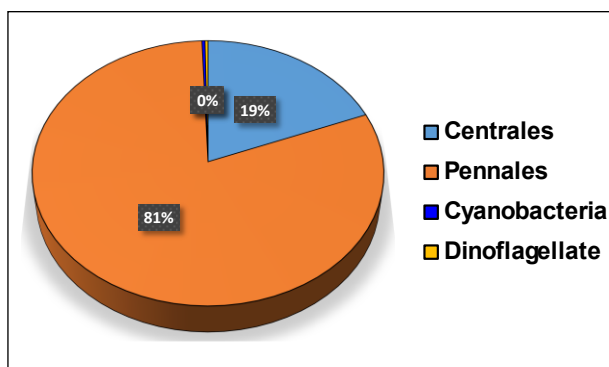


Figure 22: Phytoplankton group abundance (% composition)

Abundance:

The numerical abundance of phytoplankton was projected to perform the Bray-Curtis similarity analysis, however, the dendrogram obtained is not very explanative for the study area because of the dominance of a few species as aforementioned. Hence, the dendrogram analysis following Euclidean cluster analysis using water quality data was superimposed for phytoplankton data for a better explanation, as well as understanding the distribution of diversity between the three regions identified through the water quality study. Based on the water quality cluster analysis, three groups were identified, such as Group-I representing stations 1 to 4, suggesting the shoreward region, Group-II (St.5 to St.17), and Group-III (St.18, RF1, and RF2) as the core area and seaward, respectively.

APPENDIX-1
Classified list of phytoplankton off Ravva-2024

Phylum	Class	Order	Family	Genus	Phytoplankton species
Heterokontophyta	Bacillariophyceae	Leptocylindrales	Leptocylindraceae	<i>Leptocylindrus</i>	<i>Leptocylindrus minimus</i> <i>Leptocylindrus danicus</i>
			Chaetocerataceae	<i>Chaetoceros</i>	<i>Chaetoceros peruvians</i> <i>Chaetoceros borealis</i> <i>Chaetoceros danicus</i> <i>Chaetoceros socialis</i> <i>Chaetoceros curvisitus</i> <i>Chaetoceros</i> sp. <i>Chaetoceros diversus</i>
		Lithodesmiales	Lithodesmiaceae	<i>Bacteriastrum</i>	<i>Bacteriastrum varians</i> <i>Bacteriastrum</i> sp. <i>Bacteriastrum hyalinum</i>
				<i>Ditylum</i>	<i>Ditylum brightwellii</i> <i>Ditylum sol</i>
				<i>Lauderia</i>	<i>Lauderia</i> sp.
				<i>Guinardia</i>	<i>Guinardia flacida</i> <i>Guinardia straita</i> <i>Guinardia</i> sp.
		Coscinodiscales	Coscinodiscaceae	<i>Coscinodiscus</i>	<i>Coscinodiscus marginatus</i> <i>Coscinodiscus eccentricus</i> <i>Coscinodiscus</i> sp.
					<i>Eucampia</i> sp. <i>Rhizosolenia</i> <i>Rhizosolenia styliformis</i> <i>Rhizosolenia setigera</i> <i>Rhizosolenia stolterfothii</i> <i>Rhizosolenia</i> sp.
		Thalassiosirales	Thalassiosiraceae	<i>Dactyliosolen</i>	<i>Dactyliosolen</i> sp.
				<i>Odontella</i>	<i>Odontella mobilensis</i> <i>Odontella sinensis</i>
		Thalassiosirales	Thalassiosiraceae	<i>Thalassiosira</i>	<i>Thalassiosira decipiens</i> <i>Thalassiosira</i> sp.
				<i>Navicula</i>	<i>Navicula directa</i> <i>Navicula</i> sp. <i>Navicula</i> sp. 2.
		Naviculales	Naviculaceae	<i>Pleurosigma</i>	<i>Pleurosigma</i>
			Pleurosigmataceae		

		Thalassionematales	Thalassionemataceae	<i>Thalassionema</i>	<i>Thalassionema nitzschioides</i> <i>Thalassionema fraurendii</i> <i>Thalassionema</i> sp. <i>Thalassionema</i> sp. 2.
		Bacillariales	Bacillariaceae	<i>Pseudonitzschia</i>	<i>Pseudonitzschia seriata</i> <i>Pseudonitzschia</i> sp.
		Fragilariales	Fragilariaceae	<i>Nitzschia</i>	<i>Nitzschia</i> sp.
		Bacillariales	Bacillariaceae	<i>Bacillaria</i>	<i>Bacillaria</i> sp.
		Gonyaulacales	Ceratiaceae	<i>Asterionellopsis</i>	<i>Asterionellopsis glacialis</i>
Myxozoa	Dinophyceae			<i>Nitzschia</i>	<i>Nitzschia longissima</i>
				<i>Ceratium</i>	<i>Ceratium macroceros</i> <i>Ceratium fusus</i> <i>Ceratium furca</i>
			Pyrophacaceae	<i>Pyrophacus</i>	<i>Pyrophacus</i> sp.
	Cyanophyceae			<i>Trichodesmium</i>	<i>Trichodesmium</i> sp.
Cyanobacteria		Oscillatoriales	Microcoleaceae		

Table 4: Phytoplankton distribution (nos. L⁻¹) in the 3 different Groups of stations in the surface waters off Ravva (November 2024).

Characteristic	Group I	Group II	Group III
Stations	1-4	5-17	18, RF1, RF2
No. Species	21	41	27
Abundance Range (mean) (nos. L ⁻¹)	260-26700 (3114)	280-252800 (5179)	200-12480 (2001)
Grp. abund. (%)			
Centrales	27.3	15.04	36.2
Pennales	71.5	84.5	63.0
Dinophyceans	0.3	0.31	0.4
Cyanophyceans	0.9	0.17	0.4

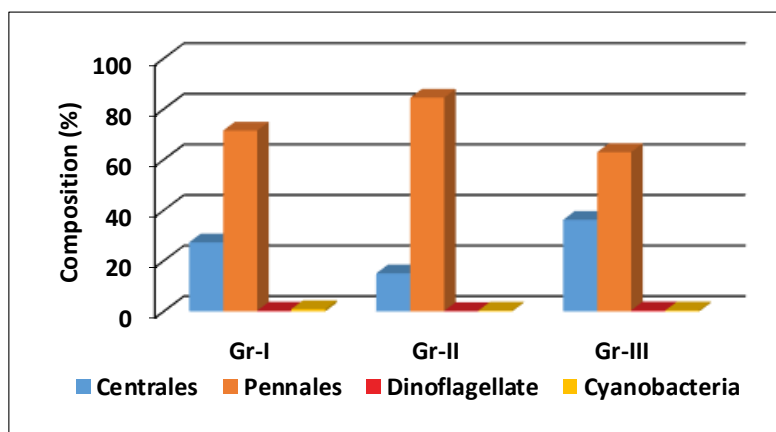


Figure 23: Group abundance (% composition) in the 3 groups of stations

Table 5: Phytoplankton dominant species distribution (%) in the 3 different Groups of stations in the surface waters off Ravva (November 2024).

Characteristic	Group I	Group II	Group III
Dominant Species (%)	<i>Navicula</i> sp. (53.3%), <i>Thalassionema</i> sp. (8.9%), <i>Leptocylindrus minimus</i> (6.4%), <i>Bacteriastrum</i> sp. (5.8%), <i>Chaetocerus borealis</i> (4.2%), <i>Thalassionema</i> sp 2. (3.8%), <i>Ditylum sol</i> (3.2%), <i>Chaetoceros Peruvians</i> (3.1%), <i>Thalassionema nitzschioides</i> (2.5%), <i>Lauderia</i> sp. (1.6%), <i>Chaetoceros curvisitus</i> (1.5%), <i>Pseudonitzschia seriata</i> (1.0)	<i>Navicula</i> sp. (65.6%), <i>Thalassionema</i> sp. (6.7%), <i>Pseudonitzschia</i> sp. (3.84%), <i>Thalassionema nitzschioides</i> (2.35%), <i>Chaetoceros</i> sp. (2.31%), <i>Chaetoceros curvisitus</i> (2.15%), <i>Leptocylindrus minimus</i> (2.11%), <i>Thalassionema</i> sp 2. (1.71%), <i>Pseudonitzschia seriata</i> (1.70%), <i>Ditylum sol</i> (1.65%), <i>Navicula directa</i> (1.53%), <i>Bacteriastrum varians</i> (1.38%), <i>Ditylum brightwellii</i> (1.10%).	<i>Navicula</i> sp. (22.53%) <i>Thalassionema</i> sp. (12.97%) <i>Thalassionema</i> sp 2. (8.58%) <i>Thalassionema nitzschioides</i> (6.53%) <i>Bacteriastrum</i> sp. (6.05%) <i>Chaetoceros curvisitus</i> (4.54%) <i>Chaetoceros Peruvians</i> (4.44%) <i>Thalassionema fraurendii</i> (4.39%) <i>Leptocylindrus minimus</i> (3.51%) <i>Pseudonitzschia</i> sp. (3.51%) <i>Ditylum brightwellii</i> (3.12%) <i>Chaetoceros danicus</i> (3.02%) <i>Chaetoceros</i> sp. (2.34%) <i>Chaetocerus borealis</i> (2.19%) <i>Navicula</i> sp. 2. (2.15%) <i>Asterionellopsis glacialis</i> (2.07%) <i>Ditylum sol</i> (2.05%) <i>Guinardia flacida</i> (1.95%) <i>Coscinodiscus</i> sp. (1.02%)
Diversity			
SRP	21	41	27
d'	1.71	3.00	2.3
H'	1.87	1.65	2.73
J'	0.61	0.44	0.83

In group-I, a total of twenty-one species were identified with an abundance ranging from 260 to 26700 nos. L⁻¹ and pennales are the most dominant species for about 71.5%. The species present in this zone are *Navicula* sp. (53.3%), *Thalassionema* sp. (8.9%), *Leptocylindrus minimus* (6.4%), *Bacteriastrum* sp. (5.8%), *Chaetocerus borealis* (4.2%), *Thalassionema* sp 2. (3.8%), *Ditylum sol* (3.2%), *Chaetoceros Peruvians* (3.1%),

Thalassionema nitzschioides (2.5%), *Lauderia* sp. (1.6%), *Chaetoceros curvisitus* (1.5%), and *Pseudonitzschia seriata* (1.0). Whereas, group-II is represented by the core area of the study with more stations together, i.e., from st.5 to st.17, which is reported with a total species of about forty-one, being more diverse than the other two areas. The abundance in group-II ranged from 280 to 252800 nos. L⁻¹ with an average of 5179 nos. L⁻¹. The phytoplankton species identified in this region are as follows *Navicula* sp. (65.6%), *Thalassionema* sp. (6.7%), *Pseudonitzschia* sp. (3.84%), *Thalassionema nitzschioides* (2.35%), *Chaetoceros* sp. (2.31%), *Chaetoceros curvisitus* (2.15%), *Leptocylindrus minimus* (2.11%), *Thalassionema* sp. 2. (1.71%), *Pseudonitzschia seriata* (1.70%), *Ditylum sol* (1.65%), *Navicula directa* (1.53%), *Bacteriastrum varians* (1.38%), and *Ditylum brightwellii* (1.10%). Similarly, group-III contains stations 18, RF1, and RF2 separated as deeper regions that represent the seaward region. A total of twenty-seven species has been identified with *Navicula* sp. as dominant (22.53%) followed by *Thalassionema* sp. (12.97%), *Thalassionema* sp. 2 (8.58%), *Thalassionema nitzschioides* (6.53%), *Bacteriastrum* sp. (6.05%), *Chaetoceros curvisitus* (4.54%), *Chaetoceros Peruvians* (4.44%), *Thalassionema fraurendii* (4.39%), *Leptocylindrus minimus* (3.51%), *Pseudonitzschia* sp. (3.51%), *Ditylum brightwellii* (3.12%), and *Chaetoceros danicus* (3.02%). The mean abundance of phytoplankton in this area 2001 nos. L⁻¹ (200-12480 nos. L⁻¹) (Tables 4 and 5).

Group-wise, diatoms remained the dominant group at all locations. While pennate diatoms, followed by centric diatoms, dynapheceans, and cyanophyceans, were dominant in Groups I, II, and III (Figure 23)

Diversity:

Phytoplankton diversity was calculated for all locations using the PRIMER protocols. Table 6 shows the indices, number of phytoplankton species (S), mean numerical abundance (N), and diversity (Margalef, d , Shannon-Wiener, H' , and Evenness J') for the 20 locations. It was observed that species richness (Margalef diversity, d) varied between 0.24 (st.7) and 1.57 (st. RF2), and the Shannon-Wiener index H' was high (2.38) at st. RF2 and low (0.16) at st.7. Overall, while species richness and diversity are more in intermediate locations (core locations), seaside locations were relatively lower in richness. However, the diversity indices were observed to be low at st.7 as the *Navicula* sp. is higher in number than other phytoplankton. Figure 24 shows the distribution of diversity indices among the three zones, such as G-I, G-II, and G-III. It was observed that the diversity from shoreward to seaward is not statistically significant.

Table 6: Phytoplankton in the coastal waters off:
Univariate diversity indices at the selected locations

St. No.	S	N	d	J'	H'(loge)
1	10	17160	0.92	0.83	1.91
2	13	41160	1.13	0.67	1.72
3	4	38400	0.28	0.55	0.77
4	11	21600	1.00	0.78	1.86
5	8	47400	0.65	0.93	1.94
6	11	21700	1.00	0.70	1.68
7	4	260480	0.24	0.11	0.16

8	6	11700	0.53	0.88	1.57
9	11	18290	1.02	0.74	1.78
10	13	43840	1.12	0.51	1.30
11	11	16800	1.03	0.73	1.75
12	9	38500	0.76	0.68	1.48
13	10	21600	0.90	0.95	2.18
14	13	67800	1.08	0.53	1.37
15	11	29680	0.97	0.77	1.84
16	10	28080	0.88	0.83	1.91
17	13	29440	1.17	0.69	1.78
18	12	26780	1.26	0.81	2.15
RF1	11	25280	0.99	0.77	1.85
RF2	17	27300	1.57	0.84	2.38
Min	4	11700	0.24	0.11	0.16
Max	17	260480	1.57	0.95	2.38
Mean	10	44650	0.9	0.7	1.67

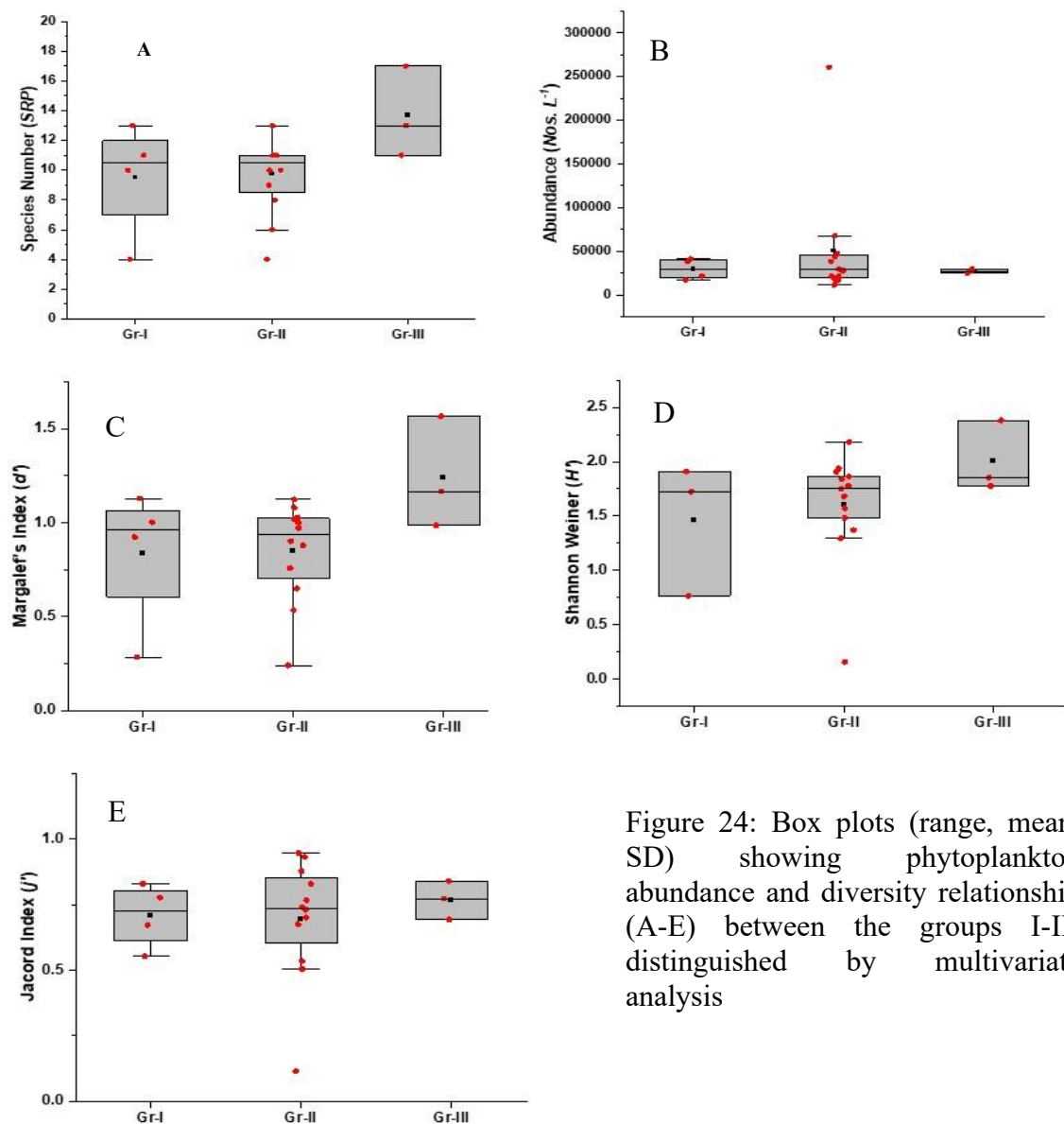
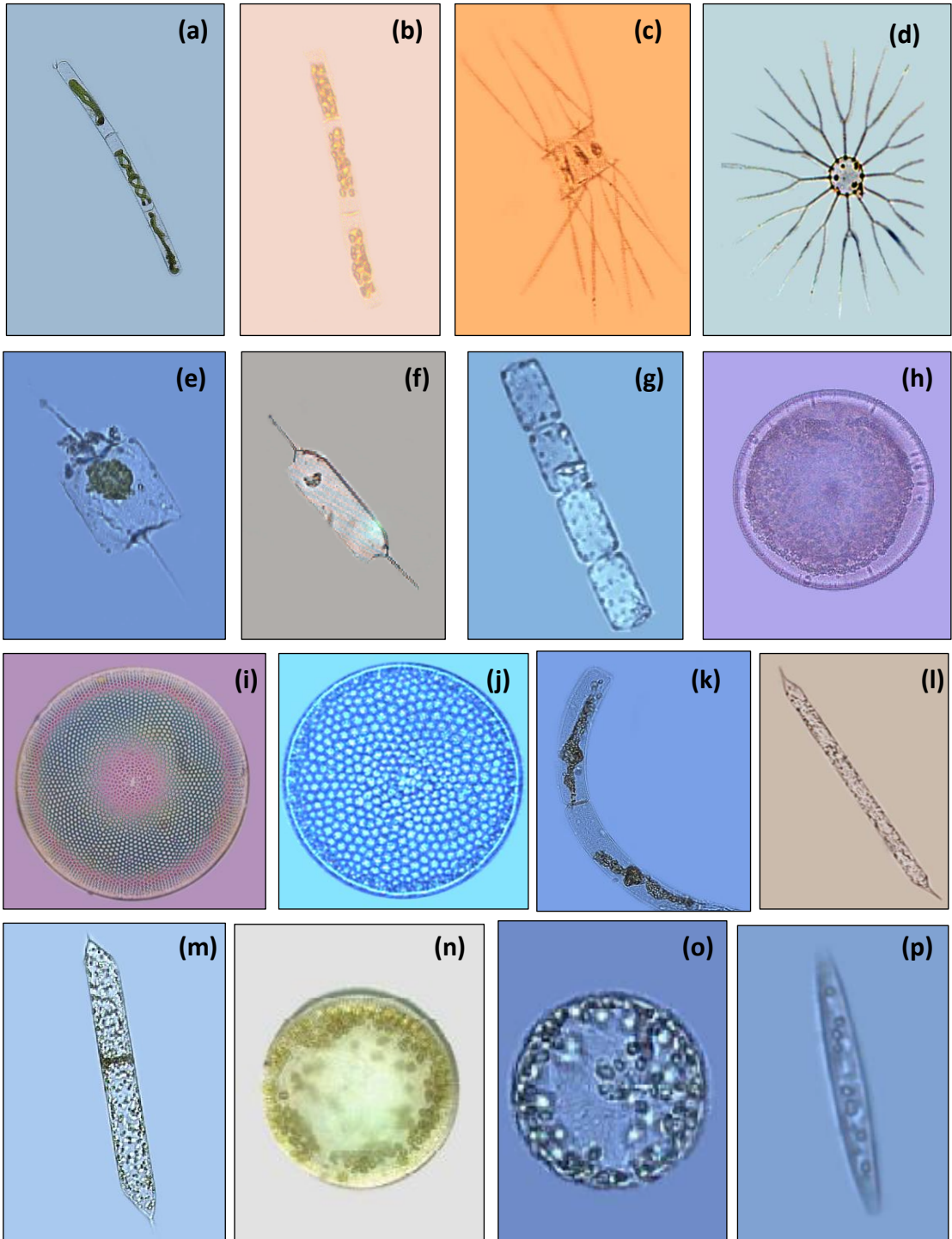


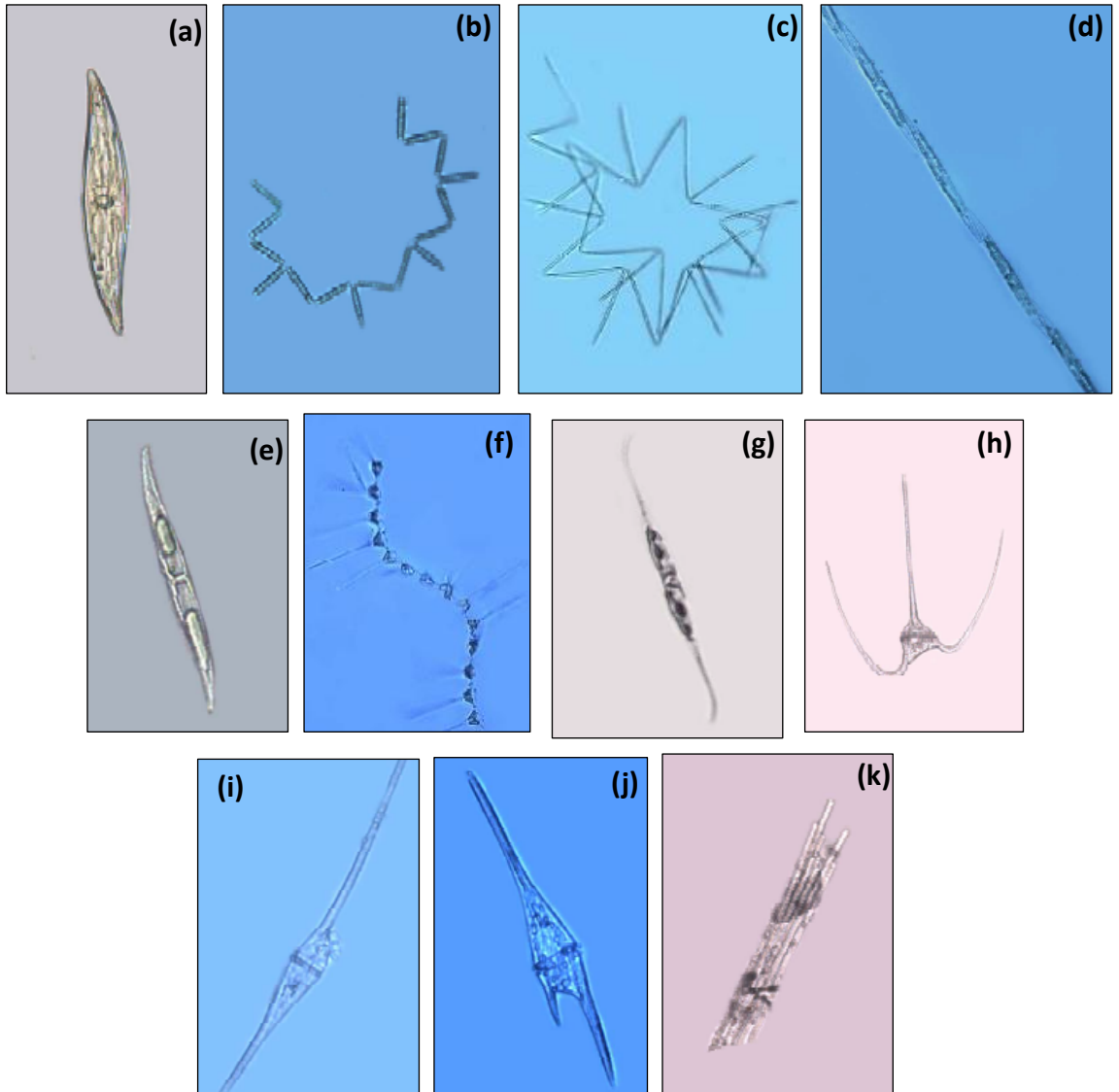
Figure 24: Box plots (range, mean, SD) showing phytoplankton abundance and diversity relationship (A-E) between the groups I-III distinguished by multivariate analysis

Plate 1 : Select Species of Phytoplankton



a) *Leptocylindricus minimus*, b) *L. danicus*, c) *Chaetoceros* sp., d) *Bacteriastrium varians*, e) *Ditylimum brightwellii*, f) *Ditylimum sol*, g) *Lauderia* sp., h) *Coscinodiscus marginatus*, i) *C. eccentricus*, j) *Coscinodiscus* sp., k) *Rhizosolenia stilterforthii*, l) *Rhizosolenia setigera*, m) *R. styliformis*, n) *Thalassiosira decipiens*, o) *Thalassiosira* sp., p) *Navicula directa*

Plate 1 (Contd.) : Select Species of Phytoplankton



a) *Pleurosigma* sp., b) *Thalassionema nitzschioides*, c) *Thalassionema fraurendii*
d) *Pseudonitzschia seriata*, e) *Nitzschia* sp., f) *Asterionellopsis glacialis* g) *Nitzschia longissima*, h) *Ceratium macroceros*, i) *Ceratium fusus*, j) *Ceratium furca*,
k) *Trichodesmium* sp.,

To sum up, the observations showed high phytoplankton abundance in surface water at Ravva during this part of the year, as is usual during post-monsoon. Decreasing diversity and abundance in the coastal locations indicate impacted conditions. Similarly, shoreward locations have shown a large number of diatom cells, namely *Navicula* sp., suggesting the occurrence of algal growth under prevailing post-monsoon conditions.

Chlorophyll:

During the study, phytoplankton standing stock in terms of Chlorophyll-*a* (Chl-*a* mg/m³) was measured at all 20 locations. Table 7 shows the data on Chl *a*, *b*, *c*, and total chlorophyll at the selected locations. Figure 25 shows the distribution of Chlorophyll-*a* and total chlorophyll in the study area.

Table 7: Column chlorophyll *a*, *b*, *c*, and total chlorophyll (mg/m³) at the selected locations

St.no	Chl-a	Chl-b	Chl-c	Total	St.no	Chl-a	Chl-b	Chl-c	Total
	mg/m ³	mg/m ³	mg/m ³	mg/m ³		mg/m ³	mg/m ³	mg/m ³	mg/m ³
1	1.68	0.34	0.27	2.30	13	1.46	0.29	0.00	1.75
2	2.02	0.34	0.64	2.99	14	1.52	1.00	0.31	2.82
3	2.16	0.10	0.45	2.70	15	1.36	0.14	0.00	1.50
4	1.56	0.40	0.29	2.25	16	2.79	2.03	1.39	6.21
5	1.90	0.44	0.16	2.51	17	1.30	0.47	0.51	2.28
6	3.63	0.21	0.18	4.02	18	2.55	0.00	0.33	2.89
7	1.70	0.13	0.35	2.18	RF1	2.15	0.22	0.00	2.36
8	2.09	0.96	0.00	3.06	RF2	1.24	0.19	0.00	1.43
9	2.64	1.16	1.06	4.86	Min	1.24	0.00	0.00	1.43
10	1.55	0.66	0.00	2.21	Max	3.63	2.03	1.39	6.21
11	3.04	0.53	0.00	3.57	Mean	2.03	0.54	0.33	2.90
12	2.18	1.22	0.72	4.12	SD	0.64	0.50	0.38	1.17

Table 8: Chlorophyll *a*, *b*, *c*, and total chlorophyll (mg.m⁻³) at different groups of stations

Groups	Chl- <i>a</i>	Chl- <i>b</i>	Chl- <i>c</i>	Total. Chl
Gr-I	1.56-2.16	0.10-0.40	0.27-0.64	2.25-2.99
(shoreward)	(1.86±0.28)	(0.29±0.13)	(0.41±0.17)	(2.56±0.35)
Gr-II	1.30-3.63	0.13-2.03	0.00-1.39	1.50-6.21
(Core area)	(2.09±0.73)	(0.71±0.55)	(0.36±0.45)	(3.16±1.35)
Gr-III	1.24-2.55	0.00-0.22	0.00-0.33	1.43-2.89
(Seaward)	(1.98±0.67)	(0.14±0.12)	(0.11±0.19)	(2.23±0.74)

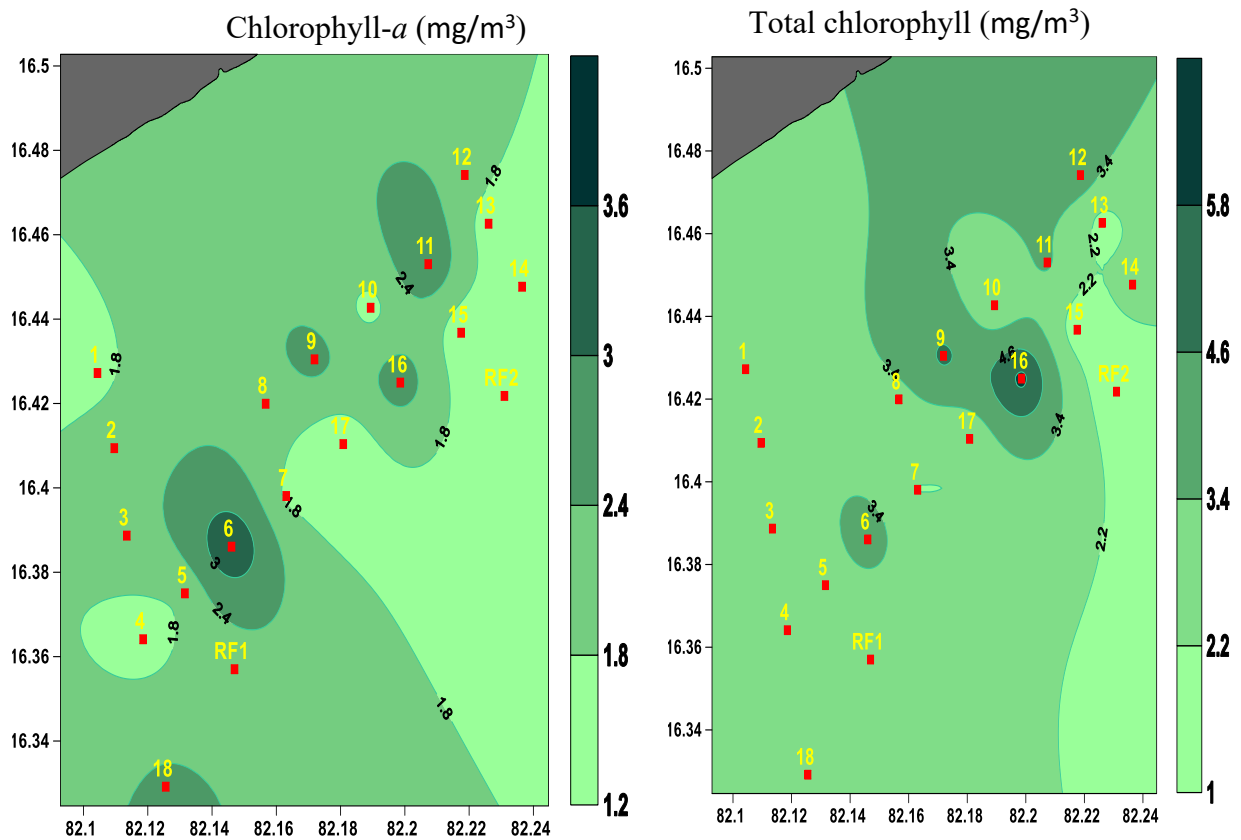


Figure 25: Distribution of chlorophyll-*a* and total chlorophyll (mg/m³)

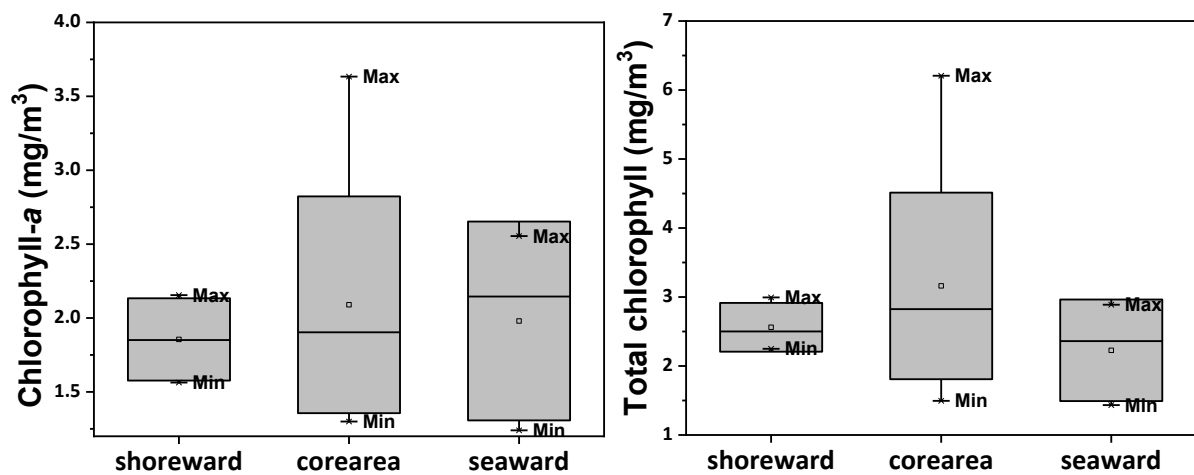


Figure 26: Box represents quartile deviation, whiskers minimum and maximum values. Dots inside the box represent mean values and horizontal line median.

Overall, chlorophyll-*a* varied between 1.24 (st. RF2) and 3.63 mg. m⁻³ (st.6), and the observed mean was 2.03 mg. m⁻³, and the highest total chlorophyll value (6.21 mg. m⁻³) was recorded at st.16, and low value (1.43 mg. m⁻³) at st. RF2. In general, chlorophyll-*a* gradually decreases in the direction of the offshore waters, however, a uniform distribution of chlorophyll was observed in this study. The high chlorophyll levels at St. 6 and St.16 are correlated with the high abundance of *Navicula* sp. This type of observation is quite common in the coastal waters during the post-monsoon season. Mean chlorophyll-*a* was 1.86 mg. m⁻³ in Group I (shoreward locations, st.1-4), 2.09 mg. m⁻³ and 1.98 mg. m⁻³ respectively in Group II and Group III (Core area and seaward, sts. 5-17 and 18, RF1, RF2) (Table 8). Box plots representing the minimum, maximum, and mean chlorophyll-*a* and total chlorophyll data of G-I to G-III showed a clear variation with high phytoplankton biomass at the core region where the tidal influence and offshore water dilution take place (Figure 26).

4. Zooplankton

Composition, abundance, and biomass:

The composition and distribution of zooplankton within the study area revealed eleven distinct groups: copepods, cladocerans, chaetognaths, appendicularians, lucifer, foraminifera, shrimp larvae, gastropod larvae, bivalve larvae, amphipods, and fish larvae. Copepods emerged as the overwhelmingly dominant group, constituting 77.3% of the total zooplankton population, with a relatively consistent distribution across shoreward (80%), core area (76%), and seaward (77%) regions. Following copepods, chaetognaths and larval forms were the next most abundant, contributing approximately 10% on average, with a slightly higher concentration observed in the seaward region (9%). Further analysis of the copepod population revealed three subgroups: calanoids, cyclopoids, and harpacticoids. Calanoid and cyclopoid copepods were the predominant subgroups, with calanoids ranging from 40% in the shoreward region to 47% in the core area, and cyclopoids displaying a distribution of 38% (Gr-I), 44% (Gr-III), and 47% (Gr-II). Notably, harpacticoids exhibited a higher dominance of 22% in Gr-I, as illustrated in the accompanying Figure 27, suggesting that localized environmental factors influence their distribution.

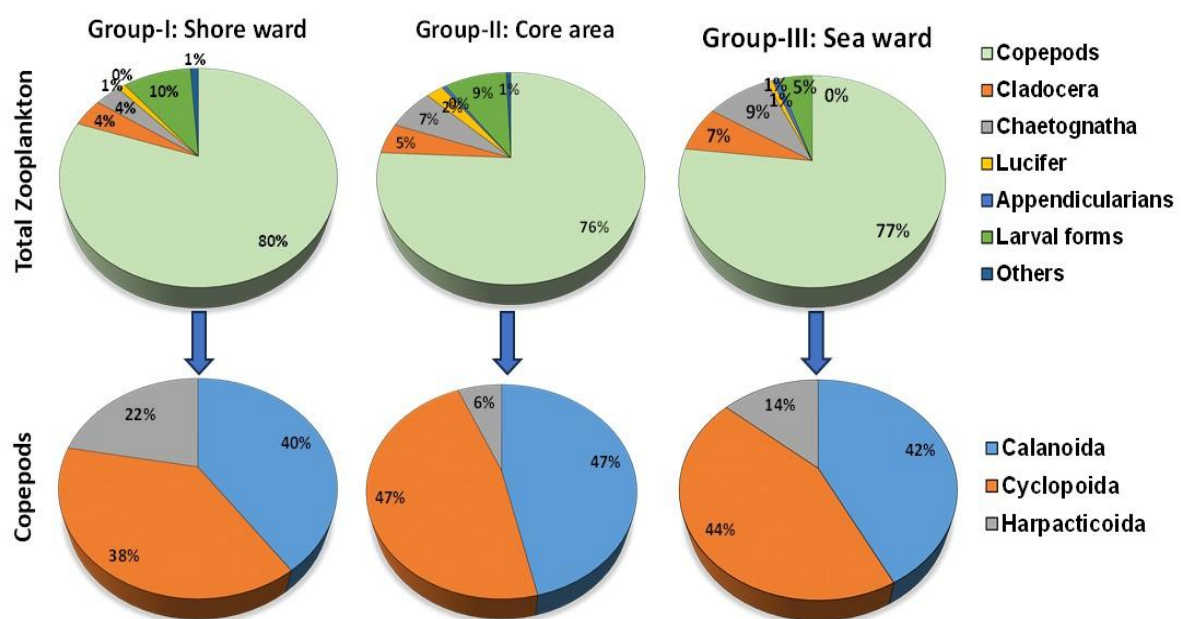


Figure 27: Zooplankton composition along the three different regions of Ravva field

Abundance:

The abundance of mesozooplankton varied from a minimum of 564 nos. m^{-3} to a maximum of 1268 nos. m^{-3} (Figure 28). The lowest was observed at Tr-4 at the shoreward region, which is located near the coastal environment, whereas the highest was recorded at RF2 at the seaward located higher dilution region. Table 9 shows the summarized information on the zooplankton community along the shoreward, core area, and seaward locations.

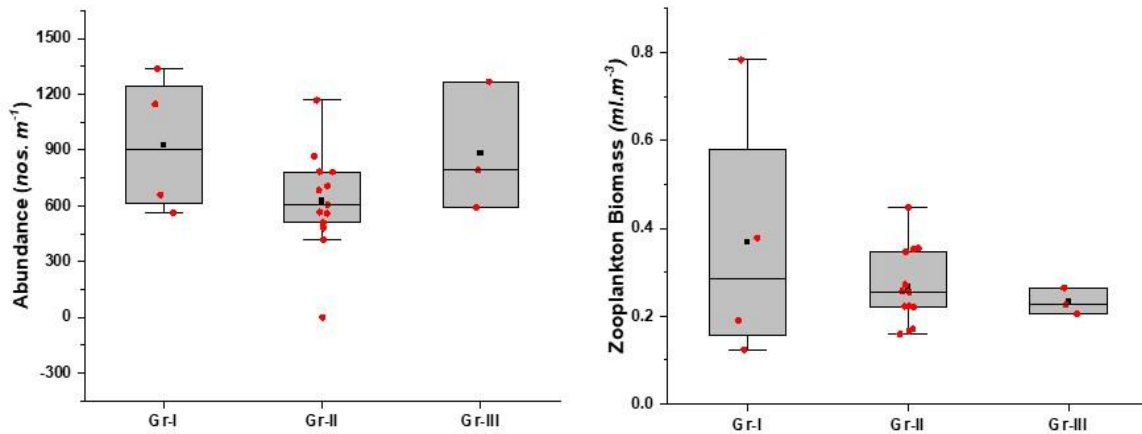


Figure 28: Zooplankton abundance and biomass at shoreward, core area and seaward

Table 9: Summarized information on the zooplankton community shoreward, core area, and seaward locations

Zooplankton Nos. m ⁻³	Gr-I: Shoreward			Gr-II: Core area			Gr-III: Seaward		
	Min	Max	Mean±SD	Min	Max	Mean±SD	Min	Max	Mean±SD
Calanoida	70	569	248±221	38	374	237±87	155	191	179±21
Cyclopoida	113	435	232±140	12	614	241±168	97	407	304±179
Harpacticoida	70	167	136±45	9	141	47±52.2	135	335	269±115
Cladocera	13	70	44±29	12	143	52±47	24	1556	536±883
Chaetognatha	40	70	55±21	10	210	58±61	94	1993	1043±1343
Lucifer	33	33	34±0	10	115	36±40	19	19	19±0
Appendicularians	0	0	0±0	10	15	13±2	19	19	19±0
Larval forms	32	209	98±97	11	198	66±67	104	2283	1193±1541
Others	35	35	35±0	60	60	60±0	0	189	95±134

Biomass:

The study revealed a notable range in zooplankton biomass, fluctuating from a low of 0.1 ml. m⁻³ at st. 2 to a peak of 0.8 ml. m⁻³ at st.3, with an overall mean of 0.4 ml. m⁻³, while regional variations showed a spread from 0.2 ml. m⁻³ to 0.8 ml. m⁻³, averaging 0.3 ml. m⁻³. Although statistical analysis indicated no significant widespread variation in zooplankton distribution across the locations, st. 3 stood out with its exceptionally high biomass, attributed to a dense concentration of copepods and fish eggs. This elevated abundance at station 3 strongly suggests it serves as a crucial area for fish breeding, as the abundant copepod population provides a vital food source for both resident and migratory fish species, thus underscoring the ecological importance of this particular location within the study area.

5. Total petroleum hydrocarbons

Total petroleum hydrocarbons are long-chain organic compounds consisting mainly of carbon and hydrogen. These are the primary constituents of crude oil, gasoline, diesel, and a variety of solvents. They consist of three major groups of organic compounds, namely alkanes, alkenes, and aromatics. Alkanes are the key components of many refined products like gasoline, diesel fuel, kerosene, jet fuel, and heating oil. They are subdivided into several classes, which include linear alkanes, branched alkanes, isoprenoids, cycloalkenes, and unresolved complex mixtures (Adeniji *et al.*, 2017). They are highly insoluble in water and hence they form a persistent layer on the surface of water, sediment, and organisms. These hydrocarbons are accidentally introduced into the marine ecosystem through anthropogenic activities like offshore oil drilling, oil spills, de-ballasting, and shipping of crude oil. The possible fate of these hydrocarbons released into the environment is volatilization, photo-oxidation, chemical oxidation, bioaccumulation and adsorption on soil particles, leaching, and microbial degradation (Harayama *et al.*, 1999).

The total amount of petroleum hydrocarbons that enter the oceans through anthropogenic activities is estimated to be 2.37×10^6 tons per year (Kennish, 1997). About 65.3% of this amount is contributed by municipal and industrial wastes, urban and river runoffs, oceanic dumping, and atmospheric fallout, which are considered to be the major part. Next to this is about 26.2%, which is due to discharges during transportation, dry docking, tanker accidents, and de-ballasting activities, and the remaining 8.5% occurs because of coastal refineries, offshore production, and marine terminals (GESAMP, 1993).

Approximately half of the spilled oil will disperse in 24 hours, and part of it can emulsify, which is a long-term process. During the emulsification process, tar balls are formed depending on the wind and turbulence of surface waters. These heavier fractions of tar sink down to the sediment, causing adverse effects to the fauna and flora. Hence, marine sediments are the potential sinks for the anthropogenic sources of oil pollution (Gurumoorthi and Venkatachalapathy, 2017). Total petroleum hydrocarbons may not be a direct hazard to humans or the environment, but their presence indicates the status of the water body for tracing the contaminants in the coastal water (Zrafi *et al.*, 2013).

Biogenic sources of hydrocarbons are produced by living organisms, and they are C23-C33 aliphatic hydrocarbons. The abundance of C16, C18, and C20 indicates oil spillage from tanks and oil pipelines for the transfer of crude oil. In anthropogenically derived hydrocarbons, the odd and even-numbered carbons are usually in the ratio of 1:1 (Sakari *et al.*, 2012). The marine environment receives approximately 10% of the crude oil from natural seeps, 27% from oil production, refining, and transportation, and the rest of 63% from urban and river runoff, atmospheric emission, and municipal and industrial discharges (Kvenvolden and Cooper, 2003).

Aromatic hydrocarbons are relatively more toxic and resistant to microbial degradation than the corresponding normal alkanes, isoalkanes, cycloalkanes, and unsaturated aliphatic hydrocarbons (Ahmed *et al.*, 2015). Moreover, microbial degradation depends on several

other factors like dissolved oxygen, pH, and microbial population in the environment. In general, the microbial population degrading petroleum hydrocarbons is less in unpolluted environments, but they may increase drastically on contact with spilled petroleum substances (Okoh, 2006). Oxygenases convert alkanes to alcohols by the process of degradation. Similarly, cycloalkanes are degraded to cyclic alcohols by oxidases and then dehydrogenated to ketones. Similarly, aromatic hydrocarbons are transformed into epoxides by the action of oxygenases. These final products are used by microorganisms for energy production and survival (Leahy and Colwell, 1990).

Petroleum hydrocarbon pollution affects the marine food chain, and concentrations as low as 0.1 ppm are toxic to larvae of some marine species (USEPA, 1986). They may result in abnormal changes in the physiology and histopathology of marine organisms, interfering with their ability to breed, reproduce, grow, and perform other vital functions, finally causing genetic mutations and death. Nevertheless, the present investigation is part of providing total petroleum hydrocarbon concentrations in the seawater samples collected from 7 locations in the Krishna-Godavari basin nearer to the oil drilling installations of Cairn India.

Estimation of total petroleum hydrocarbons:

Surface water samples were collected using amber-colored glass bottles of two-litre capacity. This water was extracted with n-hexane (50 ml) two times to transfer total petroleum hydrocarbons into the organic phase and then dried over anhydrous sodium sulphate. The fluorescence of this extract was measured at 360nm (excitation at 310nm) using UVF spectroscopy following the methodology of IOC-UNESCO (1984). The total petroleum hydrocarbon contents at different stations are presented in Table 10 and Figure 29.

Table 10: Total petroleum hydrocarbons (TPHC) in the selected locations of the study area.

St. No.	TPHC ($\mu\text{g/L}$)
Control1	1.62
Control2	1.74
Control3	1.81
1	2.19
4	2.23
6	2.2
12	2.25
14	2.22
18	2.18
RF2	2.19

In seawater, the total petroleum hydrocarbons ranged from 2.18 to 2.25 $\mu\text{g/L}$. In control (outside the oil wells), the total petroleum hydrocarbon concentration was 1.72 $\mu\text{g/L}$. Among the selected locations, a mean value of 2.21 $\mu\text{g/L}$ was observed with a minimum of 2.18 $\mu\text{g/L}$ at Station 18 and a maximum of 2.25 $\mu\text{g/L}$ at Station 12 (Table 10, Figure 29).

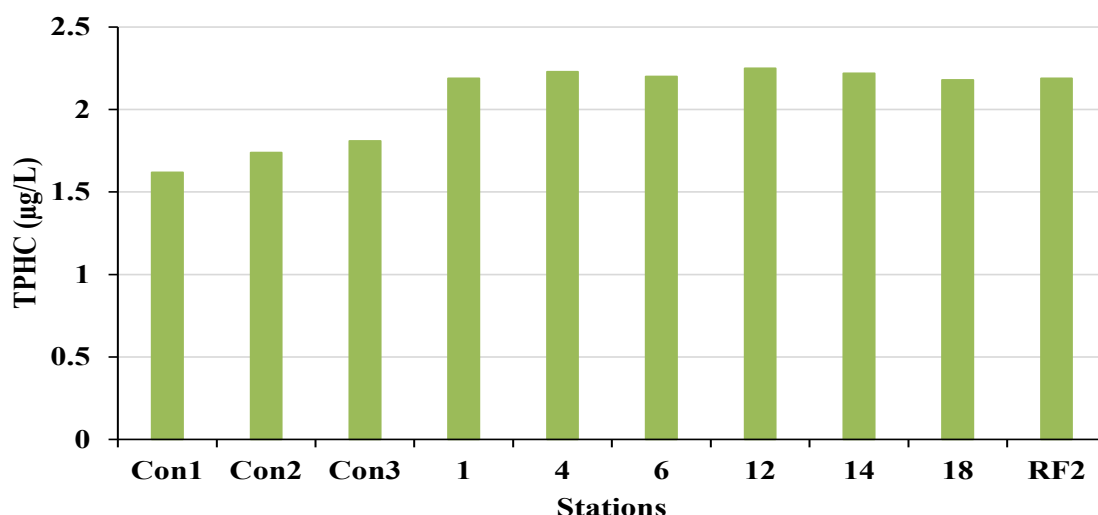


Figure 29: Total petroleum hydrocarbons in seawater at selected stations.

Table 11: Comparison of total petroleum hydrocarbons (TPHC) in seawater at different selected locations from India and abroad.

Location	TPHC (µg/L)	Source
India		
KG Basin, CAIRN	2.18 to 2.25	Present investigation
KG Basin, CAIRN	0.09 to 6.07	Previous investigation
Andhra Pradesh coast	0.81 – 45.72	Natarajan <i>et al.</i> , 2006
Arabian sea	1.6 – 11.1	Sengupta <i>et al.</i> , 1993
Chennai coast	11 – 139	Selvaraj <i>et al.</i> , 1999
Bassein–Mumbai	2.9 – 39.2	Chouksey <i>et al.</i> , 2004
Thane Creek, Mumbai	7.5 – 39.2	Chouksey <i>et al.</i> , 2004
Versova & Mahim Creek, Mumbai	8.7 -23.7	Chouksey <i>et al.</i> , 2004
Ulhas Estuary, Mumbai	3.3 -21.3	Chouksey <i>et al.</i> , 2004
Southern Bay of Bengal	34 – 165	Topgi <i>et al.</i> , 1982
Tamilnadu coast	2.28 – 14.02	Veersingam <i>et al.</i> , 2011a
Haldia port	1.60 – 20.11	Panigrahy <i>et al.</i> , 2014
Abroad		
East coast of Peninsula Malaysia	1.4 – 21.8	Tahir <i>et al.</i> , 1997
Qatar	1.2 - 428	El-Samra <i>et al.</i> , 1986
Kuwait	2.1 – 3.6	El-Samra <i>et al.</i> , 1986
Saudi Arabia	4.3 - 546	El-Samra <i>et al.</i> , 1986
Gulf of Lyons	18 - 23	Marchand <i>et al.</i> , 1988
English Channel and North Sea	2.1 – 43.7	Marchand & Caprais, 1985
Shatt Al-Arab and NW Arabian Gulf	2.7 -86.7	DouAbul, 1984
Southern Baltic Sea	2.0 - 130	Law and Andrulewicz, 1983
Tamar Estuary, England	1-50	Readman <i>et al.</i> , 1982
U.K. Marine waters, U.K	1.1 - 74	Law, 1981
Winyah Bay, USA	0.23 - 25	Bidleman <i>et al.</i> , 1990

The present values of total petroleum hydrocarbons were compared with the earlier observation of CAIRNS (Table 11). It is clear from the comparison that the total petroleum hydrocarbons in seawater of the present investigation were lower than the earlier observation, indicating less contamination.

The total petroleum hydrocarbons of seawater observed in the present investigation are compared with the concentrations at other select locations both in India and abroad (Table 11). The highest values were recorded for the Southern Bay of Bengal (34 – 165 μ g/L) and also for the Chennai coast (11 – 139 μ g/L) (Table 11). Moderate levels of total petroleum hydrocarbons were noticed for the Andhra Pradesh coast (0.81 – 45.72 μ g/L) and Mumbai coast (7.5 – 39.2 μ g/L) (Table 11). The present values of total hydrocarbons observed at all stations near the oil installation of the KG basin (2.18 to 2.25 μ g/L) are very low compared to any of these locations, indicating no toxicity. According to the Agency for Toxic Substances and Disease Registry (ATSDR, 1999), 100 μ g/L was the standard limit of toxicity in seawater for any mariculture activities. Hence, the concentrations observed are far lower than the toxic standards prescribed by ATSDR.

Among the international locations (Table 11), the highest levels of total petroleum hydrocarbons were noticed in Saudi Arabia (4.3 - 546 μ g/L) (El-Samra et al., 1986) and Qatar (1.2 - 428 μ g/L) (El-Samra et al., 1986), where oil drilling activities cause pollution. In the Southern Baltic Sea, moderate levels of petroleum hydrocarbons were also reported (2.0 - 130 μ g/L) (Law and Andruliewicz, 1983). However, all other locations, including the present observation, did not show levels of petroleum hydrocarbons beyond 100 μ g/L, which is the standard limit of toxicity according to ATSDR (1999). Hence, the observed levels of petroleum hydrocarbons in seawater are safe.

Conclusion:

The concentration of total petroleum hydrocarbons reported in seawater at selected stations of the KG basin is within the standard limits prescribed by ATSDR (1999), indicating no oil pollution or toxicity.

6. Trace Metal Concentrations

Marine pollution is a worldwide phenomenon damaging the flora and faunal species, including humans, through the food chain. Recent industrialization and urbanization have resulted in an economic revolution, but have left behind the production of untreated or semi-treated waste products that pollute the environment, including terrestrial and aquatic resources. Among the pollutants, heavy metals are the major source of threat to the coastal and marine ecosystems, which receive effluents mostly from nearby industries, municipal sewage, wastewater from oil & gas exploration platforms, and various other aquaculture activities. Most rivers also bring many agricultural and other chemical pollutants into the coastal waters (Naifer *et al.*, 2018; Al-Edresy *et al.*, 2019; Yunus *et al.*, 2020; Perumal *et al.*, 2021). All these pollutants get mixed up with seawater and settle to the bottom, causing more accumulation. Heavy metals play a crucial role because of their persistence, non-biodegradability, and capacity to accumulate in the tissues of organisms and sediments of lakes and oceans. Hence, seawater can be monitored for the presence of heavy metal toxicants.

Metals like iron, copper, zinc, nickel, and manganese are considered to be essential to the organisms for their normal physiological and biochemical reactions, but these are required in small quantities. Other metals, including barium, mercury, cadmium, and lead, are deleterious to organisms even in small quantities and thus are categorized as non-essential metals. All these metals have less solubility in water and long persistence. Most metals form complexes with sulphohydral groups of the membranes in the organisms creating hazardous health problems disturbing the enzyme activities (Selvaraj *et al.*, 2004; De Forest *et al.*, 2007; Naser, 2013; Solai *et al.*, 2013; Lakshmanasenthil *et al.*, 2013; Bo *et al.*, 2015; Jenyo-Oni and Oladele, 2016; Mortuza and Al-Misned, 2017; Ali *et al.*, 2019; Briffa *et al.*, 2020). In general, trace metal concentrations are controlled by a variety of physical, chemical, and anthropogenic factors that exist in the area. Hence, these heavy metals have to be evaluated in the coastal and marine environments through bio-monitoring so that guidelines can be prepared to mitigate the ecotoxicological and environmental hazards. Therefore, the present investigation is undertaken as a part of providing trace metal concentrations in the seawater collected from 20 Stations in the Krishna-Godavari basin around the oil drilling installations of CAIRN India. These Stations were divided into three major parts, namely shoreward (Stations 1-4), core area (Stations 5-17), and seaward (Stations 18, RF1, and RF2) locations.

Estimation of metals in seawater (ppb)

Seawater sample (one liter) was taken and filtered through a Whatman No.42 filter paper to remove any particulate matter. Concentrated HNO_3 was added to the sample, and the pH was adjusted to 2-3. Then it was subjected to analysis (Satyanarayanan *et al.*, 2007) through the use of an Inductively Coupled Plasma-Mass Spectrometer (Agilent 7700S) along with Multi Elemental calibration standard 2A (Agilent).

Tables 12, 13, and 14 represent the trace metal concentrations in seawater for the shoreward, core area, and seaward Stations. Figure 30 shows the trace metal concentrations comparatively in the three clusters. The details are given below:

Barium (ppb): The shoreward locations showed a minimum value of 60 at Station 4 and a maximum value of 240 at Station 3, with a mean value of 135 (Table 12). Among the core area locations, a mean value of 84.62 was observed with a minimum value of 40 at Stations 7, 9, and 10 and a maximum value of 140 at Stations 5 and 13 (Table 13). A mean value of 120 was observed among the seaward locations with a minimum concentration of 40 at Station RF2 and a maximum value of 260 at Station 18 (Table 14). Among all three areas, the highest value (260) was observed in the seaward location (Station 18). When a comparison was made between the mean values of shoreward, core area, and seaward locations, no significant difference was found, indicating the almost uniform distribution of the metal (Figure 30).

Table 12: Trace metal concentrations (ppb) at Shoreward locations

Shoreward locations	Ba	Cd	Cr	Cu	Fe	Hg	Mn	Ni	Pb	Zn
1	100.00	0.00	0.00	20.00	140.00	0.04	40.00	0.00	40.00	220.00
2	140.00	0.00	0.00	20.00	140.00	0.12	20.00	0.00	0.00	100.00
3	240.00	0.00	0.00	0.00	620.00	0.60	20.00	0.00	0.00	80.00
4	60.00	0.00	0.00	120.00	80.00	0.02	20.00	0.00	0.00	100.00
Min	60.00	0.00	0.00	0.00	80.00	0.020	20.00	0.00	0.00	80.00
Max	240.00	0.00	0.00	120.00	620.00	0.600	40.00	0.00	40.00	220.00
Mean	135.00	0.00	0.00	40.00	245.00	0.195	25.00	0.00	10.00	125.00
SD	77.24	0.00	0.00	54.16	251.59	0.273	10.00	0.00	20.00	64.03

Cadmium (ppb): This metal was absent in all the Stations of shoreward and seaward locations (Tables 12 and 14). All Stations of the core area locations did not show this metal except one Station, i.e., Station 6, where a concentration of 20 was noticed. However, the mean value was found to be 1.54 (Table 13). When a comparison was made between the mean values of shoreward, core area, and seaward locations, no significant difference was found, indicating the almost uniform distribution of the metal (Figure 30).

Chromium (ppb): This metal was absent in all the Stations of shoreward, core area, and seaward locations (Tables 12-14).

Copper (ppb): Among the shoreward locations, a mean value of 40 was noticed with a minimum concentration of 0 at Station 3 and a maximum concentration of 120 at Station 4 (Table 12). The core area registered a mean value of 38.46. The minimum and maximum concentrations of this location were recorded to be 0 (Station 7, 9, 10, 12, 15, and 16) and 340 (Station 11), respectively (Table 13). The seaward locations showed a mean value of 13.33 with a minimum of 0 at Stations RF1 and RF2 and a maximum of 40 at Station 18 (Table 14). The mean values of these three clusters were found to be not significantly different when compared among them, showing almost the same concentrations (Figure 30).

Iron (ppb): Among the shoreward locations, a mean value of 245 was noticed with a minimum concentration of 80 at Station 4 and a maximum concentration of 620 at Station 3 (Table 12). The core area registered a mean value of 183.08. The minimum and maximum concentrations of this location were recorded to be 40 (Station 7, 9, 10, and 12) and 700 (Station 14), respectively (Table 13). The seaward locations showed a mean value of 1033.33 with a minimum of 140 at Station RF2 and a maximum of 2740 at Station 18 (Table 14). The mean values of these three clusters were found to be not significantly different when compared among them, showing almost the same concentrations (Figure 30).

Table 13: Trace metal concentrations (ppb) at Core area locations

Core area locations	Ba	Cd	Cr	Cu	Fe	Hg	Mn	Ni	Pb	Zn
5	140.00	0.00	0.00	20.00	240.00	0.12	20.00	0.00	20.00	80.00
6	80.00	20.00	0.00	20.00	80.00	0.08	0.00	0.00	40.00	40.00
7	40.00	0.00	0.00	0.00	40.00	0.04	0.00	0.00	0.00	40.00
8	100.00	0.00	0.00	20.00	440.00	0.12	20.00	0.00	40.00	120.00
9	40.00	0.00	0.00	0.00	40.00	0.02	0.00	0.00	0.00	20.00
10	40.00	0.00	0.00	0.00	40.00	0.06	0.00	0.00	0.00	40.00
11	100.00	0.00	0.00	340.00	320.00	0.22	40.00	20.00	0.00	260.00
12	60.00	0.00	0.00	0.00	40.00	0.06	0.00	0.00	20.00	20.00
13	140.00	0.00	0.00	60.00	220.00	0.08	60.00	0.00	80.00	180.00
14	120.00	0.00	0.00	20.00	700.00	0.08	20.00	0.00	20.00	60.00
15	60.00	0.00	0.00	0.00	80.00	0.10	0.00	0.00	20.00	40.00
16	60.00	0.00	0.00	0.00	60.00	0.12	20.00	0.00	0.00	60.00
17	120.00	0.00	0.00	20.00	80.00	0.06	40.00	0.00	40.00	100.00
Min	40.00	0.00	0.00	0.00	40.00	0.020	0.00	0.00	0.00	20.00
Max	140.00	20.00	0.00	340.00	700.00	0.220	60.00	20.00	80.00	260.00
Mean	84.62	1.54	0.00	38.46	183.08	0.089	16.92	1.54	21.54	81.54
SD	37.55	5.55	0.00	92.18	201.14	0.050	19.74	5.55	23.75	69.98

Mercury (ppb): A minimum concentration of 0.02 was observed at Station 4, and a maximum concentration of 0.6 was observed at Station 3, with a mean value of 0.195 (Table 12). Among the core area locations, a mean value of 0.089 was noticed with a minimum concentration of 0.02 at Station 9 and a maximum concentration of 0.22 at Station 11 (Table 13). The seaward locations showed a mean value of 0.1 with minimum and maximum concentrations of 0.04 and 0.2 at Stations RF2 and 18, respectively (Table 14). The mean values of these three clusters were found to be not significantly different when compared among them, showing almost the same concentrations (Figure 30).

Manganese (ppb): A mean value of 25 was recorded among the shoreward locations with a minimum concentration of 20 at Stations 2, 3, and 4 and a maximum concentration of 40 at Station 1 (Table 12). There were no traces of manganese at six core area locations, namely Stations 6, 7, 9, 10, 12, and 15. A maximum concentration of 60 was observed at Station 13 with a mean value of 16.92 (Table 13). In seaward locations, Station RF2 showed a minimum concentration of 0, and Station 18 recorded a maximum concentration of 60 with a mean

value of 26.67 (Table 14). No significant difference was found among the mean values of the three clusters, indicating the almost similar distribution of this metal (Figure 30).

Table 14: Trace metal concentrations (ppb) at Seaward locations

Seaward locations	Ba	Cd	Cr	Cu	Fe	Hg	Mn	Ni	Pb	Zn
18	260.00	0.00	0.00	40.00	2740.00	0.20	60.00	0.00	0.00	380.00
RF1	60.00	0.00	0.00	0.00	220.00	0.06	20.00	0.00	40.00	40.00
RF2	40.00	0.00	0.00	0.00	140.00	0.04	0.00	0.00	40.00	60.00
Min	40.00	0.00	0.00	0.00	140.00	0.040	0.00	0.00	0.00	40.00
Max	260.00	0.00	0.00	40.00	2740.00	0.200	60.00	0.00	40.00	380.00
Mean	120.00	0.00	0.00	13.33	1033.33	0.100	26.67	0.00	26.67	160.00
SD	121.66	0.00	0.00	23.09	1478.56	0.087	30.55	0.00	23.09	190.79

Nickel (ppb): This metal was absent in all the Stations of shoreward and seaward locations (Tables 12 and 14). All Stations of the core area locations did not show this metal except one Station, i.e., Station 11, where a concentration of 20 was noticed. However, the mean value was found to be 1.54 (Table 13). When a comparison was made between the mean values of shoreward, core area, and seaward locations, no significant difference was found, indicating the almost uniform distribution of the metal (Figure 30).

Lead (ppb): All Stations of shoreward locations did not show this metal except one Station, i.e., Station 1, where a concentration of 40 was noticed. However, the mean value was found to be 10 (Table 12). There were no traces of lead at five core area locations, namely Stations 7, 9, 10, 11, and 16. A maximum concentration of 80 was observed at Station 13 with a mean value of 21.54 (Table 13). A mean value of 26.67 was recorded for seaward locations with a minimum concentration (0) at Station 18 and a maximum concentration (40) at Stations RF1 and RF2 (Table 14). A comparison of the mean values among the three clusters indicated no significant differences.

Zinc (ppb): A mean value of 125 was observed in shoreward locations with a minimum concentration of 80 at Station 3 and a maximum concentration of 220 at Station 1 (Table 12). In the core area, the minimum and maximum concentrations were 20 and 260 at Stations 9, 12, and 11, respectively. However, a mean value of 81.54 was noticed in this area (Table 13). The seaward locations showed 40 as the minimum concentration (Station RF1) and 380 as the maximum concentration (Station 18), with a mean value of 160 (Table 14). There was no significant difference among the three clusters, indicating the almost uniform distribution of this metal (Figure 30).

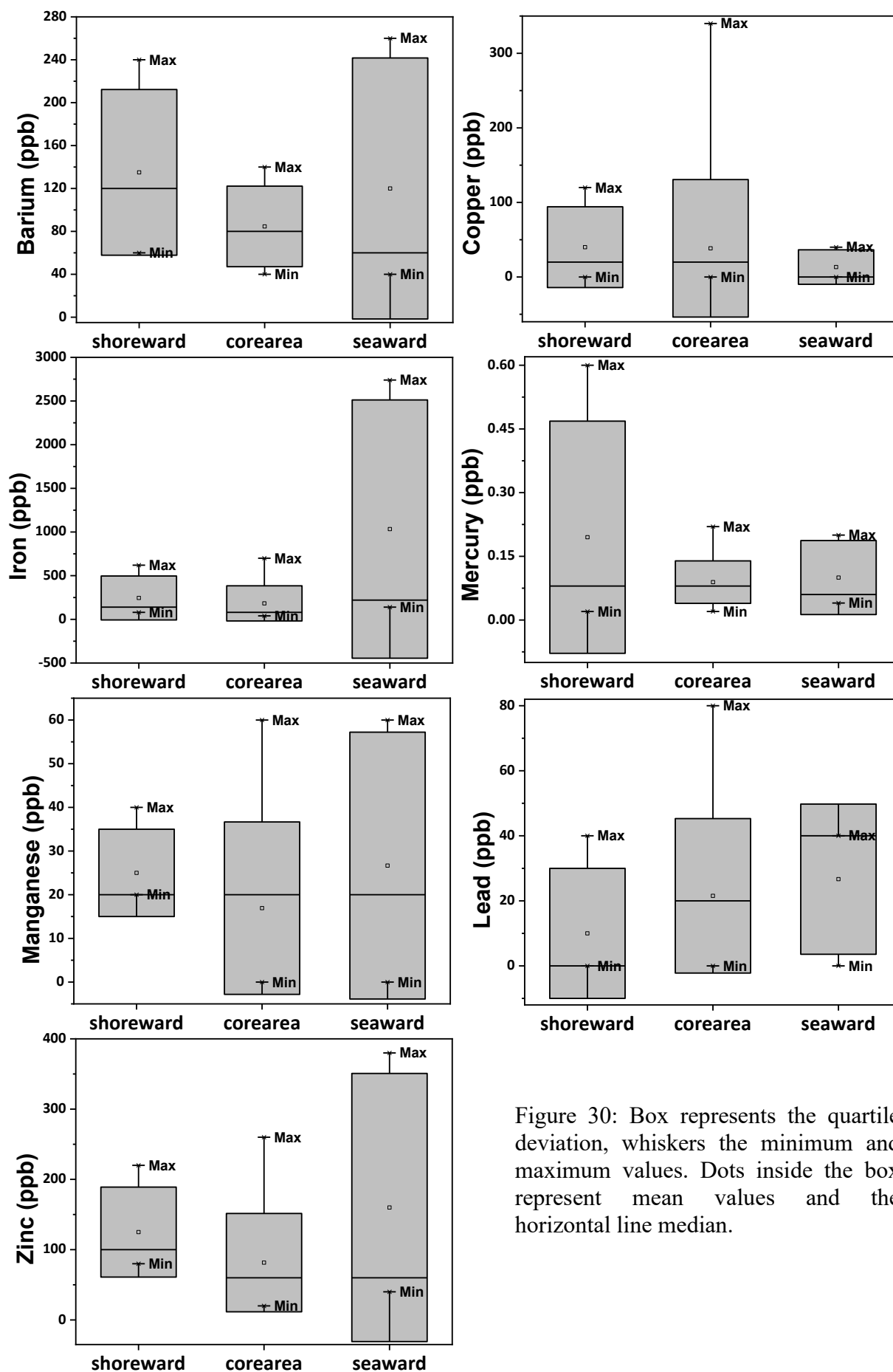


Figure 30: Box represents the quartile deviation, whiskers the minimum and maximum values. Dots inside the box represent mean values and the horizontal line median.

Observations

The data of the present investigation indicated no traces of cadmium, chromium, and nickel in the seawater of shoreward locations. Lead was also absent in most of the shoreward locations except one Station (St. 1) (Table 12). Other metals namely barium, copper, iron, mercury, manganese, and zinc were present in less quantity of shoreward locations with a mean value of 135 ppb for barium, 40 ppb for copper, 245 ppb for iron, 0.195 ppb for mercury, 25 ppb for manganese and 125 ppb for zinc (Table 12). No traces of chromium were present in all the Stations of core area locations, but cadmium and nickel concentrations were seen only at one Station, copper and manganese were noticed at seven Stations, and lead was noticed at eight stations of core area locations. Barium, iron, mercury, and zinc concentrations were recorded at all the Stations of core area locations (Table 13). However, the mean values of metals in core area locations were 84.62 ppb for barium, 38.46 ppb for copper, 183.08 ppb for iron, 0.089 ppb for mercury, 16.92 ppb for manganese, 21.54 ppb for lead, and 81.54 ppb for zinc (Table 13). No traces of cadmium, chromium, and nickel were present in all the stations of seaward locations, but copper concentrations were seen only at one station, and manganese and lead were noticed at two stations of seaward locations. Other metals, namely barium, iron, mercury, and zinc, were present in less quantities in seaward locations with a mean value of 120 ppb for barium, 1033.33 ppb for iron, 0.1 ppb for mercury, and 160 ppb for zinc (Table 14). The data collected for seawater of shoreward locations indicated high values of the mean for barium, copper, and mercury and low values for lead. The seawater of the core area showed a low mean concentration of barium, iron, mercury, manganese, and zinc. However, the mean concentrations of seawater were high for iron, manganese, lead, and zinc among seaward locations. Copper recorded low mean values in the seawater of these stations. A comparison of the mean values between the shoreward, core area, and seaward locations showed no significant difference for all the other metals, indicating almost uniform distribution among the three areas (Figure 30).

Table 15: Comparison of trace metal concentrations in seawater with Andhra Pradesh Pollution Control Board (APPCB) standards for Oil Drilling and Gas Extraction industries

S.No.	Metal (ppb)	APPCB Standards	Shoreward locations	Core area locations	Seaward locations
1	Chromium	1000	0	0	0
2	Copper	200	40 (0-120)	38.46 (0-340)	13.33 (0-40)
3	Mercury	10	0.195 (0.02-0.60)	0.089 (0.02-0.22)	0.1 (0.04-0.2)
4	Nickel	3000	0	1.54 (0-20)	0
5	Lead	100	10 (0-40)	21.54 (0-80)	26.67 (0-40)
6	Zinc	2000	125 (80-220)	81.54 (20-260)	160 (40-380)

Table 15 represents the comparison of trace metal concentrations of seawater with the standards given by the Andhra Pradesh Pollution Control Board (APPCB) for oil drilling and gas extraction industries. All the trace metal concentrations of the present investigation were

found to be far below the standards of APPCB, indicating no metal contamination in the area (Table 15).

In general, the trace metal concentrations observed in the present investigation exhibited the following order: $\text{Fe} > \text{Ba} > \text{Zn} > \text{Cu} > \text{Mn} > \text{Pb} > \text{Hg} > \text{Cd} > \text{Cr} \ \& \ \text{Ni}$ for shoreward locations, $\text{Fe} > \text{Ba} > \text{Zn} > \text{Cu} > \text{Pb} > \text{Mn} > \text{Ni} > \text{Cd} > \text{Hg} \ \& \ \text{Cr}$ for core area locations and $\text{Fe} > \text{Zn} > \text{Ba} > \text{Mn} > \text{Pb} > \text{Hg} > \text{Cd} > \text{Cr} \ \& \ \text{Ni}$ for seaward locations. A comparison of the trend in the metal concentrations of the present investigation with that of Rashid *et al.* (2015) indicates a similarity that cadmium and lead are at the end suggesting lower levels than the other metals like zinc, copper, chromium, and nickel, which are in the upper order showing more quantities. However, these upper-order metals are considered essential, but they should not be more than the suggested levels.

Conclusion:

The trace metals such as cadmium, chromium, and nickel were absent in shoreward and seaward locations, whereas core area locations also showed no traces of chromium. Except for one Station, cadmium and nickel were also absent at all the Stations of the core area, whereas shoreward locations also showed no traces of lead, except for one station. Among all the trace metals, iron concentration was high in the shoreward, core area, and seaward locations. No significant difference was found between the shoreward, core area, and seaward locations for all the metals, indicating almost uniform distribution. However, all the trace metal concentrations of the present investigation were found to be far below the standards of APPCB for oil drilling and gas extraction industries, indicating no metal contamination in the area.

Marine Ecology Study – A Synopsis

As a part of the ongoing marine environmental monitoring programme for **M/s Vedanta Limited (Division: Cairn Oil & Gas)** close to their offshore installations in the KG Basin off East Godavari District, Andhra University undertook the 7th study on the hydro-biological conditions of the near coastal and offshore waters during November 2024 coinciding with the post-monsoon period after the culmination of inflows into the Bay of Bengal through various rivers by which time seawater salinity reduced in general. The present investigation was held at 20 stations (Figure 1, see page no. 2) which represented a wide spectrum of habitats such as shoreward locations, the core area, seaward and two Reference points (RF1 and RF2) of which two are in deep water (depth 26-43m), maintaining a gradation of depths overall.

The current proposal follows the structure of previous reports, as we had access to conduct sampling in the study area using a fishing trawl. However, due to restrictions on using fishing trawls in the region, we boarded a ship provided by the Operations Division of Vedanta at the study site. Unfortunately, the ship was unable to access shallow waters (<10 meters), which prevented us from conducting sampling at all planned locations. Additionally, the sampling effort was limited to 20 locations to collect water, phytoplankton, and zooplankton, owing to the ship's logistical constraints. It is also important to note that sediment samples could not be collected, and consequently, we are unable to provide scientific information related to sediment. The observations were made for 10 days (11-20 November 2024) during daylight hrs when the sea state was comparatively stable; wind direction was predominantly northeast, and the prevailing current was southerly. Details of the study area, methodologies employed, and analytical techniques followed remained the same as with the earlier six Phases (vide Report dated 25 Sep 2015; pages 7-17). Surface, middle, and bottom (Niskin)

seawater samples were collected from 20 sites for estimating conventional variables such as water temperature, pH, salinity, turbidity, total suspended solids, inorganic and organic nutrients (nitrogen, phosphorus, and reactive silicate), and the same were analysed following standard protocols. Studies on phytoplankton and zooplankton consisted of species composition and their numerical abundance. Estimation of major, minor, and trace elements in seawater was carried out for all locations. Estimations were also made on

Table 2: Summary of physico-chemical characteristics

Characteristics	Min	Max	Mean	SD
Water temp. (°C)	28.00	29.50	29.10	0.45
Conductivity (ms/cm)	38.43	41.98	40.04	0.87
Depth (m)	10.00	43.00	17.92	8.19
Secchi disc (m)	0.30	2.60	1.77	0.55
Turbidity (NTU)	0.00	2.07	0.26	0.40
TSS (mg. l ⁻¹)	14.50	20.60	16.73	1.66
pH	7.57	8.08	7.85	0.11
Salinity	24.98	27.29	26.03	0.56
Dissolved oxygen (mg. l ⁻¹)	5.58	8.76	6.94	0.70
DO saturation (%)	83.44	132.63	104.31	10.66
Nitrite (µM)	0.25	0.91	0.59	0.14
Nitrate (µM)	3.44	26.62	17.66	5.72
Ammonia (µM)	1.39	4.60	2.95	0.65
DIN (µM)	7.25	30.87	21.19	5.65
Phosphate (µM)	0.09	0.41	0.25	0.07
Silicate (µM)	7.53	16.84	11.24	1.95
Total nitrogen (µM)	50.25	107.55	64.21	11.58
Total phosphorus (µM)	0.31	1.89	0.62	0.34
DON (µM)	25.17	91.04	43.02	15.02
DOP (µM)	0.08	1.67	0.37	0.35
Chl- <i>a</i> (mg. m ⁻³)	1.25	3.64	2.03	0.64

TPHC at selected locations for water samples. The following is a synopsis of the findings made during the study.

Hydrographical conditions: Based on water quality data (Table 2), it was concluded that the environmental conditions in the Sea off S. Yanam are characterized by a low salinity (mean 26), suggesting freshwater dilution from the Krishna-Godavari River basin. The mean salinity during the 6th survey held during April 2021 was registered as 33.7, indicating the general seawater conditions. There was no variation in the depth compared to that of the 6th survey; however, high Secchi-disc values were recorded. Comparatively, low TSS, low turbidity, moderate levels of pH, dissolved oxygen, high dissolved inorganic nitrogen and silicate, and low phosphate were characterizing the general coastal water conditions.

Based on the water quality data, the study areas were classified into three distinct regions namely shoreward locations (1-4); core area (5-17); and seaward (18, RF1 and RF2) by employing the multivariate analysis (standardisation and clustering) performed in Primer v6 software package and its PCA (principal component analysis) was allowed the data to identify the open sea locations by considering depth as principal factor (Figure 13).

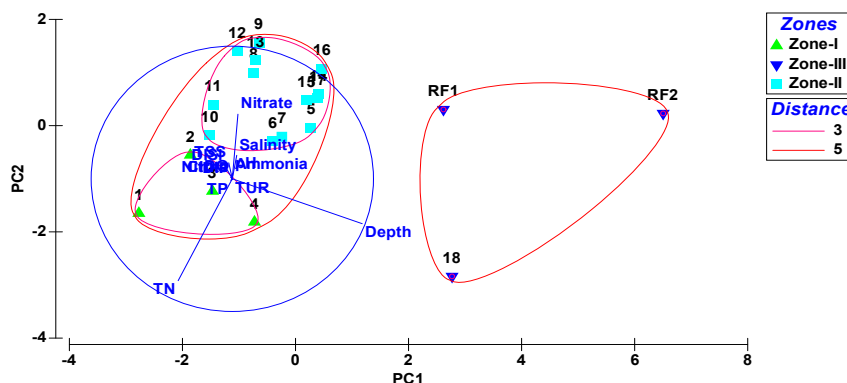


Figure 13: PCA showing superimposed PCA ordination

Phytoplankton: Altogether, 20 surface samples were examined from coastal waters near Ravva. This survey revealed a rich diversity of phytoplankton, with 50 distinct species identified. Specifically, the assemblage comprised 45 diatom species, divided into 31 centrales and 14 pennales, alongside 4 dinoflagellate species and 1 cyanobacterium. Among the total phytoplankton population observed in the Ravva field, *Navicula* sp. emerged as the dominant species, accounting for 59.4% of the population. Following this, *Thalassionema* sp. represented 7.2%, while *Pseudonitzschia* sp. and *Thalassionema* sp2. each constituted 3.2%. Additionally, *Leptocylindrus minimus* and *Thalassionema nitzschioides* were present at 2.9% and 2.8%, respectively. Therefore, the findings demonstrate a diverse phytoplankton distribution in the coastal waters off Ravva, with diatoms as the predominant group. The composition of the phytoplankton is

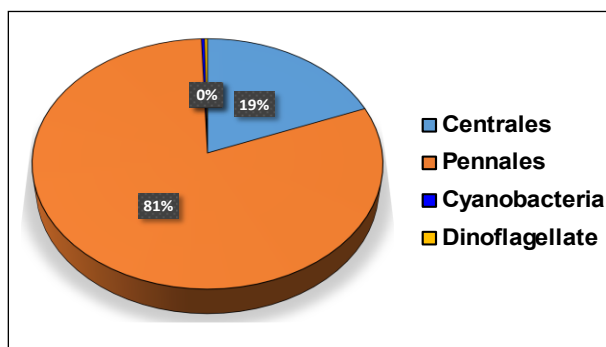


Figure 22: Phytoplankton group abundance (% composition)

represented by three, Bacillariophyceans are highly dominant, with 99.4% of the total population, and the subgroups contain centrales (19%) and pennales with 80.4% (Figure 22). Comparatively, dinoflagellates and cyanophyceans contribution to the total population is negligible. Since the sampling was conducted in November 2024, the results can be expected as the prevailing conditions are stable and favourable for the growth of diatoms. However, the diversity of the phytoplankton is well represented.

Phytoplankton standing stock (chlorophyll-*a*) varied between 1.24 (st. RF2) and 3.63 mg. m⁻³ (st.6), and the observed mean was 2.03 mg. m⁻³ and highest total chlorophyll value (6.21 mg. m⁻³) was recorded at st.16, and low value (1.43 mg. m⁻³) at st. RF2. In general, chlorophyll-*a* gradually decreases in the direction of the offshore waters, however, a uniform distribution of chlorophyll was observed in this study. The high chlorophyll levels at St. 6 and St.16 are correlated with the high abundance of *Navicula* sp. This type of observation is quite common in the coastal waters during the post-monsoon season. The data of G-I to G-III showed a clear variation with high phytoplankton biomass at the core region where the tidal influence and offshore water dilution take place.

Phytoplankton diversity indices were calculated by using the protocols in Primer 6. The results show the number of phytoplankton species (S), mean numerical abundance (N), diversity (Margalef, *d*, Shannon-Wiener, *H'* and Evenness *J'*) for the 20 locations. It was observed that species richness (Margalef diversity, *d*) varied between 0.24 (st.7) and 1.57 (st. RF2), and the Shannon-Wiener index *H'* was high (2.38) at st.RF2 and low (0.16) at st.7. Overall, while species richness and diversity are more in intermediate locations (core locations), seaside locations were relatively less in richness. However, the diversity indices were observed low at st.7 as the *Navicula* sp. is higher in number than other phytoplankton. Figure 24 (see page no. 30) shows the distribution of diversity indices among the three zones such as G-I, G-II, and G-III. It was observed that the diversity from shoreward to seaward is not statistically significant. In conclusion, the observations showed high phytoplankton abundance in surface water at Ravva during this part of the year as is usual during post-monsoon. Decreasing diversity and abundance in the coastal locations indicate impacted conditions. Similarly, shoreward locations have shown a large number of diatom cells, namely *Navicula* sp., suggesting the occurrence of algal growth on prevailing post-monsoon conditions.

Zooplankton: The composition and distribution of zooplankton within the study area revealed eleven distinct groups: copepods, cladocerans, chaetognaths, appendicularians, lucifer, foraminifera, shrimp larvae, gastropod larvae, bivalve larvae, amphipods, fish larvae. Copepods emerged as the overwhelmingly dominant group, constituting 77.3% of the total zooplankton population, with a relatively consistent distribution across shoreward (80%), core area (76%), and seaward (77%) regions. Following copepods, chaetognaths and larval forms were the next most abundant, contributing approximately 10% on average, with a slightly higher concentration observed in the seaward region (9%). Calanoid and cyclopoid copepods were the predominant subgroups, with calanoids ranging from 40% in the shoreward region to 47% in the core area, and cyclopoids displaying a distribution of 38%

(Gr-I), 44% (Gr-III), and 47% (Gr-II). Notably, harpacticoids exhibited a higher dominance of 22% in Gr-I, as illustrated in the accompanying Figure 27 (see page no. 34), suggesting localized environmental factors influencing their distribution. The abundance of mesozooplankton was varied from a minimum of 564 nos.m⁻³ to a maximum of 1268 nos.m⁻³ (Figure 28, see page no. 35). The lowest was observed at Tr-4 at the shoreward region, which is located near the coastal environment, whereas the highest was recorded at RF2 at the seaward located higher dilution region. The study revealed a notable range in zooplankton biomass, fluctuating from a low of 0.1 ml.m⁻³ at st. 2 to a peak of 0.8 ml.m⁻³ at st.3, with an overall mean of 0.4 ml.m⁻³, while regional variations showed a spread from 0.2 ml.m⁻³ to 0.8 ml.m⁻³, averaging 0.3 ml.m⁻³. Although statistical analysis indicated no significant widespread variation in zooplankton distribution across the locations, st. 3 stood out with its exceptionally high biomass, attributed to a dense concentration of copepods and fish eggs. This elevated abundance at station 3 strongly suggests it serves as a crucial area for fish breeding, as the abundant copepod population provides a vital food source for both resident and migratory fish species, thus underscoring the ecological importance of this particular location within the study area.

Total Petroleum Hydrocarbons: In the present investigation, total petroleum hydrocarbon concentrations were analysed in the seawater samples collected from 7 locations, along with 3 control locations (outside the oil wells) in the Krishna-Godavari (KG) basin. Among the selected locations, a mean value of 2.21 µg/L was observed with a minimum of 2.18 µg/L at Station 18 and a maximum of 2.25 µg/L at Station 12 (Table 10, see page no. 37, Figure 29). The present values of total petroleum hydrocarbons were compared with the earlier observation of CAIRN, other select locations both in India and abroad. It is clear from the comparison that the total petroleum hydrocarbons in seawater of the present investigation were low compared to any of these locations, indicating no toxicity. According to the Agency for Toxic Substances and Disease Registry (ATSDR, 1999), 100µg/L was the standard limit of toxicity in seawater for any mariculture activities. Hence, the concentrations observed are far lower than the toxic standards prescribed by ATSDR.

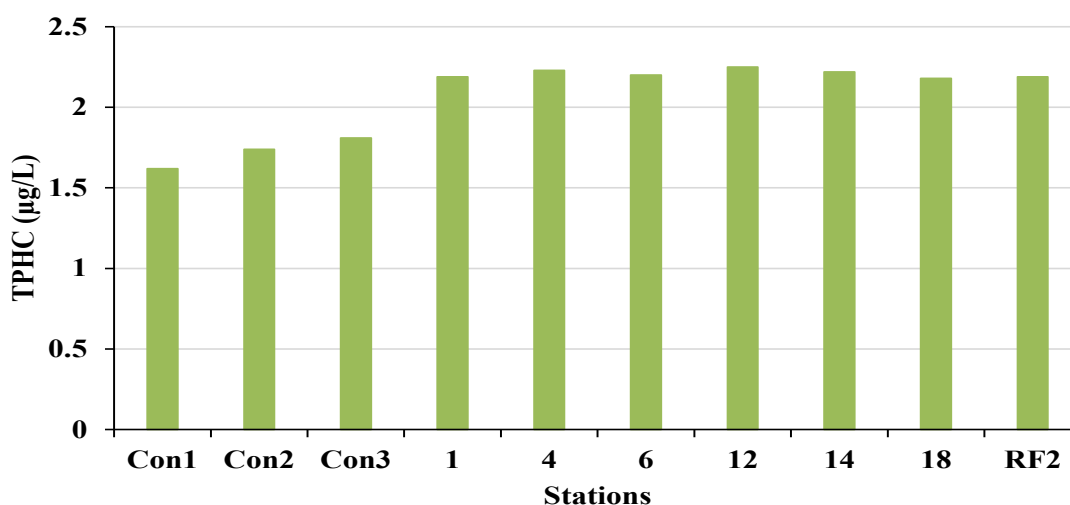


Figure 29: Total petroleum hydrocarbons in seawater at selected stations

Trace metals: During this study, trace metals such as cadmium, chromium, and nickel were absent in shoreward and seaward locations, whereas core area locations also showed no traces of chromium. Except for one Station, cadmium and nickel were also absent at all the Stations of the core area, whereas shoreward locations also showed no traces of lead, except for one station. Among all the trace metals, iron concentration was high in the shoreward, core area, and seaward locations. No significant difference was found between the shoreward, core area, and seaward locations for all the metals, indicating almost uniform distribution. However, all the trace metal concentrations of the present investigation were found to be far below the standards of APPCB for oil drilling and gas extraction industries, indicating no metal contamination in the area.

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Annexure 9: CFO and Authorization compliance report
(April 2025 – September 2025)

31st Dec 2025

To,

The Environmental Engineer,

Regional Office- Andhra Pradesh Pollution Control Board,
Plot No.2 IDA, Ramanayyapeta,
Kakinada, Andhra Pradesh - 533 005.

Sir / Madam,

Subject: Six Monthly Compliance Report of CFO & Authorization for the period Apr 2025 to Sept 2025.

Reference: Consent Order No. APPCB/VSP/RJY/546/CFO/HO/2016, valid till 31.10.2026

Enclosed condition wise compliance report of CFO & HWA Order issued to M/s Vedanta Limited, Cairn Oil & Gas, Ravva Onshore Terminal, Surasaniyanam village, Uppalaguptam mandal, Dr. B. R. Ambedkar Konaseema district, for the period of Apr 2025 to Sept 2025. Compliance status of conditions stipulated in CFO & HWA Order, Schedule A, B & C of above-mentioned Consent & Authorization Order for your information and records.

Thanking You,
Yours faithfully,

For Vedanta Ltd. (Div.: Cairn Oil & Gas)

Dr BR Digitally
Jat signed by
Dr BR Jat

Dr. Bhoma Ram Jat
Chief Environment Officer

Enclosures:

1. CFO Six monthly compliance report for the period Apr 2025 to Sept 2025.
2. PLI 2025-26

VEDANTA LIMITED

Cairn Oil & Gas: Ravva Onshore Terminal, Surasani Yanam-533212, Uppalaguptam Mandal, Dr. B.R. Ambedkar Konaseema District, Andhra Pradesh, India | Mobile No.9849623600 | www.cairnindia.com

Registered Office: Vedanta Limited, 1st Floor, 'C' wing, Unit 103, Corporate Avenue, Atul Projects, Chakala, Andheri (East), Mumbai – 400093, Maharashtra, India | T +91 22 664 34500 | F +91 22 664 34530 | www.vedantalimited.com

CIN: L13209MH1965PLC291394

Consent & Authorization Compliance Report -: Oil and Gas Development in existing Ravva Operations including Booster as Compression station located at Surasaniyanam (S. Yanam) Uppalaguptam Mandal, Dr. B. R. Ambedkar Konaseema District, Andhra Pradesh by M/s. Vedanta Limited - Cairn Oil & Gas

Consent Order no: APPCB/VSP/RJY/546/CFO/HO/2016 Dated 22.07.2016 and Renewed on 19.01.2025 Valid till 31.10.2026 granted under Section 25/26 of The Water (Prevention & Control of Pollution) Act 1974 and under Section 21 of The Air (Prevention & Control of Pollution) Act 1981 and amendments thereof and Authorization under Rule 6 of the Hazardous & Other Wastes (Management and Transboundary, Movement) 2016 and the rules and orders made there under (Hereinafter referred to as 'the Acts')

Period of Compliance Report: Progressive Consent and Authorization **Compliance Reporting period for Apr-2025 to Sep-2025**

Applicant Authorizing to operate the industrial plant to discharge the effluents from the outlets and quantity of emissions per hour from the chimneys as detailed below:

(i) Outlets for discharge of effluents:

Outlet No.	Outlet Description	Max. Daily Discharge KLD	Point of Disposal	Average Discharge during Apr'25 – Sept'25
1	Produced water from hydrocarbon production operations after treatment	9,302	Re-injection into the reservoir through PWRI system.	3384 KLD Produced water reinjection after treatment through PWRI
2	Treated process wastewater from tank drainage cooling makeup etc., operations, including produced water (excess of produced water)	3,000	Into sea through marine outfall	1514 KLD Treated wastewater discharged to Marine.
3	Domestic Effluent in STP	120	Reused for greenbelt development	50 KLD STP treated water being used for Greenbelt maintenance

The industry is permitted for abstraction and re-injection of deep ground saline water 10,413 m3/day up to August 2025: Average Ground water abstraction during Apr'25-sept'25 ~ 3336 KLD.

(ii) Emissions from Chimneys:

Chimney No.	Description of Chimney	Emission Standards	Remarks
1	Attached to 4 x 2.5 MW Power generations Gas Turbines	115 mg/Nm ³	Stack monitoring is being carried out monthly by NABL accredited third party laboratory. No exceedance in the mentioned period
2	Attached to LP Flare Stack	-	
3	Attached to HP Flare Stack	-	
4	Attached to Hot oil Heater-1 No.	-	
5	Attached AGC A engine	-	
6	Attached AGC B engine	-	
7	Attached AGC C engine	-	
8	Attached AGC D engine	-	
9	Attached to RSGDP A/B engine	-	
10	Attached to TSGR 1 engine	-	
11	Attached to TSGR 2 engine	-	
12	Attached to Export pump engines (A/B)	-	
13	Attached to fire pump engines (Pump House 1)	-	
14	Attached to fire pump engines (Pump House 2)	-	
15	Attached to fire pump engines (Pump House 3)	-	
16	Attached to HP flare II	-	

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17	Attached to MEG Re-Booster – 2Nos. (Oil heater)	-	
18	Attached to Gas Lift Booster Compressor Station (A)	-	
19	Attached to Gas Lift Booster Compressor Station (B)	-	
20	Attached to 1010 KVA DG Set	-	

(iii) Hazardous Waste Authorization (Form-II) [See rule 6 (2)]

M/s Cairn India Limited Ravva Operations, S' Yanam, Uppalaguptam Mandal, Dr. B. R. Ambedkar Konaseema District is hereby granted an authorization to operate a facility for collection, reception, storage, treatment and disposal of Hazardous waste namely:

Hazardous Waste Disposal/ Recycling Option

S. No	Name of the Waste	Stream	Quantity	Disposal Option	Actual Quantities disposed Apr-25 – Sept-25
1	Oily Sludge	1.3 Schedule 1	400 MT/ Year	Disposed to APPCB approved/ authorized vendors for co-processing in cement kilns/ TSDF/Recycling.	Nil
2	Waste oil (Tank bottom oil/ Sludge, oil emulsions)	3.3. Schedule 1	600 MT Once in 10 years	Disposed to the APPCB approved/ authorized vendors for co-processing in cement kilns/ TSDF / recycling	Nil
3	ETP Sludge containing hazardous constituents	34.5 Schedule 1	70 MT/year	Disposed to the APPCB approved/ authorized vendors for co-processing in cement kilns/ TSDF	Nil
4	Used Oil/ Spent Oil	5.1 Schedule 1	25 KL/Year	Recycled in the process by mixing with the crude oil in own premises	Nil
5	Filters contaminated with oil/chemicals	3.3 Schedule 1	4 Ton/ Year	APPCB approved TSDF/ Authorized vendors	Nil
6	Waste/Residues containing Oil	5.2 Schedule 1	10 KL/ Well	Disposed to the APPCB approved/ authorized vendors for co-processing in cement kilns/ TSDF / recycling	Nil
7	Waste chemical (PPD, glycol)	-	15 MT/ Year	Disposed to the APPCB approved/ authorized vendors for co-processing in cement kilns/ TSDF/ Recycling	Nil
8	Paint Sludge	21.1 Schedule 1	2 MT/ Year	Disposed to the APPCB approved/ authorized vendors for co-processing in cement kilns/ TSDF	Nil
9	Spent Carbon	34.2 Schedule 1	80 MT/Year	Disposed to the APPCB approved/ authorized vendors for co-processing in cement kilns/ TSDF	Nil
10	Oily rags	5.2 Schedule 1	15 MT/year	Disposed to the APPCB approved/ authorized vendors for co-processing in cement kilns/ TSDF	Nil
11	Discarded containers/ barrels/ liners	33.3 Schedule 1	200 Nos/ year	Disposed to the traders after decontamination.	Nil

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	contaminated with hazardous waste chemicals				
12	Insulation wool / Thermocol / PUF	-	10 MT/Year	Disposed to the APPCB approved TSDF/ authorized vendors	Nil
13	Contaminated Copper slag	2.1 of Schedule-I	100 MT/Year	TSDF/APPCB authorized vendors/recyclers	Nil
14	Contaminated oily sand	2.3 of Schedule-I	100 MT/Year	TSDF/APPCB authorized vendors/recyclers	Nil
15	Waste Tube lights/ CFL lamp waste	-	1 MT/Year	TSDF/APPCB authorized vendors/recyclers	Nil
During Drilling					
16	Drill Cuttings containing Oil	2.1 Schedule 1	220 m3/well	Offshore disposal as per MoEF Guidelines	Nil
17	Sludge Contains oil	2.2 Schedule 1	20 KL/well	Offshore disposal as per MoEF Guidelines	Nil
18	Drilling mud and other drilling waste	2.3 Schedule 1	150 m3/ well	Disposal as per MoEF Guidelines	Nil

This consent is valid for the following products along with quantities indicated only.

S. No	Product	Quantity	Average Production Apr'25 – Sept'25
1	Natural Gas	23,20,000 Standard Cubic Meter / Day	1,42,000 Standard cubic Meter/ Day
2	Crude Oil	50,000 Barrels/ Day	7800 Barrels/Day

This Combined order of consent & Hazardous Waste Authorization shall be valid for a period of Five Years from the date of 31.10.2016 i.e., 31.10.2021 as per the Renewal of Consent Hazardous Waste Authorization Order issued on 16.11.2016.

Note: CFO renewal issue was being pursued with APPCB and Andhra Pradesh Government and was finally granted on 19.01.2025 valid till 31.10.2026.

Consent & Authorization Renewal Conditions		
S. No	Conditions stipulated in Consent & Authorization	Compliance Status
1	All other conditions mentioned in schedule A, B&C of the combined CFO &HWA order issued by the board vide order APPCB/VSP/RJY/546/CFO/HO/2016 dated 22.07.2016 will remain the same	Information Noted.
2	The industry shall comply with the standards issued by MoEF &CC/CPCB from time to time	Noted for Compliance
3	The facility shall submit the compliance report to all the stipulated conditions for consent for operation for every six months in January and July of every year.	This report complies with this requirement. In addition, Six-monthly compliance Copies submitted to APPCB. The last report was submitted on 2 nd June 2025 to EE APPCB Kakinada office through soft copy by mail & hard copy by courier.
4	The facility shall ensure the dedicated fund is allotted towards environment relief fund (ERF) in the public liability insurance policy and submit a copy of the policy at the regional office, Kakinada, every year.	Ravva Onshore Terminal (Cairn Oil & Gas) has valid PLI including the funds allocated for ERF insured with the National Insurance Company Ltd on valid till 31/03/2026. Copy of PLI attached to this compliance report as Enclosure 1.
5	The industry shall comply with the SOPs issued by the Board w.r.t. marine outfalls.	Compliance implementation is in progress as per the SOPs issued by the Board.
6	As per the SOPs issued by the Board w.r.t. marine outfalls, the facility shall install CEQMS & Auto Shutoff valve.	Installation of CEQMS and Auto Shutoff valve is done. The same has been integrated with APPCB portal.

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Consent & Authorization Renewal Conditions		
S. No	Conditions stipulated in Consent & Authorization	Compliance Status
7	VOC meters with real-time data transmission facility through the Internet of Things (IoT) shall be installed in the facility and shall link to the servers of APPCB and CPCB, within three months.	Procurement and installation planning of VOC meters with IoT connectivity is done. Integration with APPCB and CPCB servers has also been completed.
Schedule A Conditions Compliance		
1	Any up-set condition in any industrial plant / activity of the industry, which result in, increased effluent / emission discharge and/ or violation of standards stipulated in this order shall be informed to this Board, under intimation to the Collector and District Magistrate and take immediate action to bring down the discharge / emission below the limits.	Noted for Compliance, No such occurrence during reporting period
2	The industry should carryout analysis of wastewater discharges or emissions through chimneys for the parameters mentioned in this order on quarterly basis and submit to the Board.	Environmental Monitoring being carried out by NABL accredited laboratory same being submitted to APPCB.
3	All the rules & regulations notified by Ministry of Law and Justice, Government of India regarding Public Liability insurance Act, 1991. Should be followed as applicable.	Noted for Compliance
4	The industry should put up two sign boards (6x ft. each) at publicly visible places at the main gate indicating the products, effluent discharge standards, air emission standards, hazardous waste quantities and validity of CFO and exhibit the CFO order at a prominent place in the factory premises.	Complied, Sign boards displayed at Terminal Main gate covering Haz Waste quantities, CFO validity Effluent details and emission details.
5	Notwithstanding anything contained in this consent order, the Board hereby reserves the right and powers to review / revoke any and/or all the conditions imposed herein above and to make such variations as deemed fit for the purpose of the Acts by the Board.	Noted
6	The industry shall file the water Cess returns in Form-I as required under section (5) of Water (Prevention and Control of Pollution) Cess Act, 1977 on or before the 5th of every calendar month, showing the quantity of water consumed in the previous month along with water meter readings. The industry shall remit water Cess as per the assessment orders as and when issued by Board.	Water Cess was abolished by Central Govt in lieu of GST implementation. Hence, this point is not applicable at the current scenario.
7	The applicant shall submit Environment statement in Form V before 30th September every year as per Rule No.14 Of E P Rules, 1996 & amendments thereof.	Form V submitted for the year 2024-25 submitted to APPCB Letter no RV/25/IM/EE/46 dtd 12.07.2025
8	The applicant should make applications through Online for renewal of Consent (under Water and Air Acts) and Authorization under HWM Rules at least 120 days before the date of expiry of this order, along with prescribed fee under Water and Air Acts and detailed compliance of CFO conditions for obtaining Consent & HW Authorization of the Board. The industry should immediately submit the revised application for consent to this Board in the event of any change in the raw material used, processes employed, quantity of trade effluents & quantity of emissions. Any change in the management shall be informed to the Board' The person authorized should not let out the premises / lend/ sell /transfer their industrial premises without obtaining prior permission of the State pollution Control Board.	Noted for Compliance
9	Any person aggrieved by an order made by the State Board under Section 25, Section 27 of Water Act., 1974 or Section 21 of Air Act, 1981 may within thirty days from the date on which the order is communicated to him, prefer an appeal as per Andhra Pradesh Water Rules, 1976 and Air Rules 1982, to Appellate authority constituted under Section 28 of the Water (Prevention and Control of Pollution) Act, 1974 and Section 31 of the Air (Prevention and Control of pollution) Act, 1991.	Noted for Compliance

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Consent & Authorization Renewal Conditions				
S. No	Conditions stipulated in Consent & Authorization		Compliance Status	
Schedule B Conditions Compliance				
1	The effluent discharged shall not contain constituents more than the tolerance limits mentioned below		ETP Treated water is being monitored daily by our laboratory and monthly monitoring is carried out by NABL accredited Laboratory, so far, no occurrence of ETP treated parameters exceeding the prescribed limits mentioned in this Consent. Monthly Environmental Monitoring reports being submitted to APPCB.	
	Parameter No.	limiting Standards		
	pH	5.50 -9.00		
	Oil and Grease	10 mg/l		
	Suspended Solids	100 mg/l		
	BOD 27°C for 3 days	30 mg/l		
	Chromium as Cr	0.10 mg/l		
	Copper as Cu	0.05 mg/l		
	Cyanide as CN	0.005 mg/l		
	Fluoride as F	1.50 mg/l		
	Leas as Pb	0.05 mg/l		
	Mercury as Hg	0.01 mg/l		
	Nickel Ni	0.10 mg/l		
Zinc as Zn	0.10 mg / l			
2	The source of water is borewell/irrigation canal. The following is the permitted water consumption.		Saline ground water treated through RO for industrial and domestic consumption at Plant well within the specified limits. Separate flow meters are installed, and logbook being maintained. Since, water Cess was abolished by Central Govt. Not applicable to this point.	
	Purpose	Quantity KLD		
	Industrial Cooling, boiler feed	24		
	Domestic purposes	140		
	Total	164 KLD		
Separate meters with necessary pipeline shall be maintained for assessing the quantity of water used for each of the purposes mentioned above for Cess assessment purpose.				
3	The emissions shall not contain constituents more than the prescribed limits mentioned below:		Stack monitoring for GEG's being carried out by NABL Accredited third party laboratories. No Occurrence of Exceeding the emissions prescribed in Consent.	
	Chimney No	Parameter		Emission Standards
	1	Particulate matter		115 mg/Nm3
4	The industry shall comply with ambient air quality standards of PM10 (Particulate Matter size less than 10pm) - 100 µg/ m3; PM2.5 (Particulate Matter size less than 2.5 pm) - 60 µg/ m3 ; SO2 - 80 µg/ m3; NOx - 80 µg/ m3, outside the factory premises at the periphery of the industry. Standards for other parameters as mentioned in the National Ambient Air Quality Standards CPCB Notification No. B-29016/ 20/90/PCI-1, dated 18.11.2009. Noise Levels: Day time (5 AM to 10 PM) - 75 dB (A) Nighttime (10 PM to 6 AM)- 70 dB (A)		Ambient Air Noise monitoring conducted at Upstream and downstream of the premises and surrounding villages for Ambient monitoring locations in and Ravva terminal. Monitoring Carried out by NABL Accredited third party laboratories. Environmental Monitoring analysis reports being submitted along with Six monthly compliance reports.	
5	The industry shall comply with emission limits for DG sets of capacity up to 800 KW as per the Notification G.S.R.520 (E), dated 01.07.2003 and G.S.R.448(E), dated L2.07.2004 under the Environment (Protection) Act Rules. In case of DG sets of capacity more than 800 KW shall comply with emission limits as per the Notification G.S.R.489 (E), dated 09.07.2002 at serial no.96, under the Environment (Protection) Act, 1986.		Complied. We are monitoring GEG & EDG sets Stack and the Monitoring Carried out by NABL Accredited third party laboratories. No Occurrence of Exceeding the emissions as prescribed in Consent.	
General Conditions				
1	The industry shall handover the original Consent order No. APPCB/VSP/RJY/546/CFO/HO12015-1180, dated 21.01.2015, having validity up to 28.02.2017 to the RO, Kakinada after receipt of this order and the same stands cancelled from the date of receipt of this order.		Complied	
2	The industry shall operate ETP and STP and maintain records.		ETP and STP being operated as the industry best practices, all records of Operation and Maintenance available at	

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Consent & Authorization Renewal Conditions		
S. No	Conditions stipulated in Consent & Authorization	Compliance Status
		Facility. Cairn Ravva Terminal Certified for ISO 14001 Standard and adhered to the industry best practices.
3	The industry shall maintain separate digital water flow meters with totalizers for the following: i. Produced water generation from hydrocarbon production operations. ii. Saline water drains from deep ground reservoir. iii. Produced water re-injected through PWRI system. iv. Treated wastewater inlet to ETP and at outlet. v. Marine discharge before outfall.	Complied, All the prescribed streams are fitted with the Digital Flow meters with Totalizers and connected to the main Control room. All the flow details being submitted to APPCB, MoEF as part of the Six-monthly Compliance report.
4	The industry shall ensure no burning of effluents in the pits shall not be carried out at any stage.	Noted for Compliance, Effluents being treated in ETP and disposal as Marine outfall.
5	The industry shall ensure that the gas does not contain Sulfide / sulfur compounds.	Natural Gas and Associated Gas produced during extraction Hydrocarbon from Sub surface, Produced Gas has mixture of contaminants like solids, water and other impurities will be treated through a Gas processing system and transfer for the Sale. Treatment of Gas to ensure control the impurities by Chemical Treatment like H ₂ S Scavenger, Biocides, and Inhibitors etc.,
6	The power mains, switches shall be such that the power to the facility be shut without affecting power for emergency utilities, control room, sprinkler systems, ROVs, emergency material transfer pumps, telephones, etc.	Noted for Compliance, Emergency Facilities having UPS back up during Blackout. Emergency DG sets available cater power requirement during emergency.
7	The Disaster Management Plan (DMP) shall be updated every year considering changes in the installation, other in the proximity facilities which may materially affect the installation.	Noted for Compliance, Cairn periodically reviews and amends the DMP.
8	Proof of having insured the facility under the Public Liability insurance Act shall be submitted to the Board annually.	Ravva Onshore Terminal (Cairn Oil & Gas) has valid PLI including the funds allocated for ERF insured with the National Insurance Company Ltd on valid till 31/03/2026. Copy of PLI attached to this compliance report as Enclosure 1 .
9	The industry shall comply with the guidelines for disposal of Solid Waste, Drill Cutting and Drilling Fluids for Onshore Drilling operations as stipulated in the MoEF Notification G.S.R.546 (E), dated 30.08.2005 and other Notifications. Rules made under EP Act.	Noted for Compliance, no drilling campaign carried out in reporting period
10	Existing Greenbelt shall not be disturbed in the proposed activity. Greenbelt of adequate width and density shall be developed along the boundary of the industry with minimum area of 33% of total area 90.25 Ha.	Complied, Total Developed Green belt coverage at Ravva Terminal is ~58.1 % 136.1 acres of the total plant area (234 acres).
Schedule C Conditions Compliance		
1	All the rules and regulations notified by Ministry of Environment and Forests, Government of India under the E P Act, 1986 in respect of management, handling, transportation and storage of the Hazardous wastes should be followed.	Noted for Compliance
2	The industry shall not store hazardous waste for more than 90 days as per the Hazardous & Other Wastes (Management and Transboundary Movement) Rules, 2016 and amendments thereof.	Hazardous Wastes disposed within 90 days of Generation.
3	The industry shall store Used / Waste Oil and Used Lead Acid Batteries in a secured way in their premises till its disposal to the manufacturers dealers on buyback basis.	Used/ Waste oil being collected and recycled through Oil processing system. Used lead acid batteries store in secure place post acid. Acid being neutralized with the Hypo and diluted

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Consent & Authorization Renewal Conditions		
S. No	Conditions stipulated in Consent & Authorization	Compliance Status
		and transfer through API further to ETP for treatment
4	The industry shall maintain 6 copy manifest system for transportation of waste generated. and a copy shall be submitted to concerned Regional Office of APPCB. The driver who transports Hazardous Waste should be well acquainted about the procedure to be followed in case of an emergency during transit. The transporter should carry a Transport Emergency (TREM) Card.	Complied to the HWA rules manifest system. Online APPCB manifest system being adhered, Hazardous waste disposal tracking system. Form 8 Hazardous waste Label and Form 9 TREM card is mandatory before releasing Hazardous waste carrying vehicle from our premises.
5	The industry shall maintain proper records for Hazardous & other wastes stated in Authorization in FORM-3 i.e., quantity of incinerable waste, land disposal waste, recyclable waste etc., and file annual returns in Form- 4 as per Rule 6 (5) of the Hazardous & Other Wastes (Management & Transboundary Movement) Rules, 2016 and amendments thereof.	Hazardous waste record maintained in Form-3. Annual returns in Form- 4 are submitted annually. Latest Form 4 was submitted through letter no RV/24/IM/PSB/20 dated 17 th June 2024 sent through speed post to your office.
6	The industry shall submit the condition wise compliance report of the conditions stipulated in Schedule A, B & C of this Order on half yearly basis to Board Office, Hyderabad and concerned Regional Office.	May refer to this report as to comply with the condition. In addition, the above Six-monthly Compliance report is being submitted to Member Secretary APPCB. The latest report was submitted on 30 th Nov 2025 to APPCB Kakinada RO office through speed post.

Annexure 10: Public liability insurance copy of Ravva

Date: 30/04/2026

VEDANTA LIMITED CAIRN OIL AND GAS
ASF CENTER (TOWER A), 362-363, JWALA MILL ROAD,
UDYOG VIHAR IV, GURGAON
GURGAON - 122016
GURGAON
HARYANA
INDIA
06AACCS7101B2ZZ(GSTIN Number)

Policy No : 0304013845

Renewal : 01

Endorsement : 00

Dear Sir / Madam,

We thank you for choosing **Tata AIG General Insurance Company Ltd.** as your preferred insurer. Your Policy No. Is 0304013845 01 00.

We are glad that you have chosen our product **PUBLIC LIABILITY ACT** and given us an opportunity to be your risk carrier for this Product.

'Casualty Line' caters to most of the Enterprises / Industries in India, whether Large, Medium or Small. As one of the India's most established insurance companies, we understand these unique needs of coverage. At Tata AIG we care for you and would strive to offer convenience coupled with a range of products that cater continuously to your ever increasing needs.

Enclosed please find your policy docket based on the information furnished by you in the Proposal.

We look forward to a long and mutually beneficial relationship and providing you wider range of benefits in the years to come.

Yours Sincerely,

For Tata AIG General Insurance Company Limited

Digitally Signed by: Malpa Devi Maharana

Date: 30/04/2026

Location: Mumbai

**PUBLIC LIABILITY ACT POLICY
POLICY SCHEDULE**

Agent/Broker Name -MARSH INDIA INSURANCE BROKERS PVT LTD

Agent/Broker License Code - 120:Agent/Broker :Contact No - 022-66512947 (mobile or landline)

Attaching to and forming part of Policy No. 0304013845 01 00
Name of Insured Owner: Vedanta Limited Cairn Oil and Gas
Business: Oil and Gas exploration and production company
Address: ASF CENTER (TOWER A), 362-363, JWALA MILL ROAD,
UDYOG VIHAR IV, GURGAON
GURGAON - 122016
GURGAON
HARYANA
INDIA
06AACCS7101B2ZZ(GSTIN Number)
Place of supply -HARYANA
State code -06

Territorial limits: Anywhere in India

Policy Period: **From:** 01/04/2026 12:00 AM/ PM
To Midnight of: 31/03/2027 12:00 AM/ PM

Indemnity limit:Rs 2,500,000,000.00(AOA Limit) in respect of any one accident and not exceeding Rs 5,000,000,000.00(AOY Limit) in the aggregate during the policy period.

Service Tax Registration No:
Premium ₹ 900,000.00
IGST @18 % ₹ 162,000.00

**Contribution to the
Environment Relief Fund:₹ 900,000.00**

Date of Proposal and declaration:30/04/2026

In witness whereof the undersigned being duly authorized by the company and on behalf of the company has hereto set his hand at MUMBAI on 30/04/2026

The stamp duty of 0.25 paid in cash or demand draft or by pay order,vide Receipt/Challan no: LOA/ENF-1/CSD/174/2026 dated the 25/03/2026

For Tata AIG General Insurance Company Limited
Digitally Signed By: Malpa Devi Maharana
Date: 30/04/2026
Location: Mumbai

Date :30/04/2026
Place :MUMBAI

**Policy Servicing Office
Tata AIG General Insurance Company Limited**

BUILDING NO. 28,GROUND AND MEZZANINE FLOOR, DR. ERNEST BORGES ROAD, PAREL EAST, OPP. SHIRODKAR HIGH,MUMBAI,MAHARASHTRA,MUMBAI-400012
Tel No:22-22-62606600

RECEIPT

Receipt No. : 102001134072446

Receipt Date : 01/04/2026

Policy No : 0304013845 01 00

Received with thanks from VEDANTA LIMITED CAIRN OIL AND GAS a sum of ₹ **19,62,000.00** (Rupees Nineteen Lakhs Sixty Two Thousand And Paise Zero Only)

Sr. No.	Policy Number	Total Premium (₹)	Utilized from the receipt for policy (₹)	Balance (₹)
1	0304013845 01 00	19,62,000.00	19,62,000.00	0.00

Note:

1. This is a computer generated receipt and does not require a signature.
2. Upon issuance of this Receipt, all previously issued temporary receipts, if any, related to this Policy shall be considered null and void.
3. Amounts received by cheque shall be subject to realisation.
4. Any amount received in excess of the Premium is being/shall be refunded by the Company.

GSTIN : 27AABCT3518Q1ZW - MAHARASHTRA Service Accounting Code : 997139

Insurance is the subject matter of the solicitation. For more details on risk factors, terms and conditions, please read sales brochure carefully before concluding a sale.
TATA AIG General Insurance Company Ltd. Regd. Office: 15th floor, Tower A, Peninsula Business Park, Ganpatrao Kadam Marg, Off Senapati Bapat Marg, Lower Parel, Mumbai- 400 013.

IRDA Registration No.108, CIN No : U85110MH2000PLC128425, PAN : AABCT3518Q
Website: www.tataaig.com 24*7 Customer Support Number 022 6489 8282 E-mail: customersupport@tataaig.com

LIABILITY INSURANCE POLICY (UNDER PUBLIC LIABILITY INSURANCE ACT 1991)

1. OPERATIVE CLAUSE

Whereas the Insured Owner named in the schedule hereto and carrying on business described in the said schedule has applied to the Tata AIG General Insurance Company Limited (hereinafter called the Company) for the indemnity hereinafter contained and has made a written proposal and declaration which shall be the basis of this contract and is deemed to be incorporated herein and has paid the premium and statutory contribution towards the Environment Relief Fund as per the provisions of the Public Liability Insurance Act and the rules framed thereunder.

NOW THIS POLICY WITNESSETH that subject to the terms, exceptions and conditions contained herein or endorsed hereon, the company will indemnify the insured owner against the statutory liability arising out of accidents occurring during the currency of the policy due to handling hazardous substances as provided for in the said Act and the Rules framed thereunder.

2. DEFINITIONS:

- a) "ACT" unless otherwise specifically mentioned shall mean the Public Liability Insurance Act 1991 as amended from time to time;
- b) "Accident" means an accident involving a fortuitous, sudden or unintentional occurrence while handling any hazardous substance resulting in continuous, intermittent or repeated exposure to death of, or injury to any person or damage to any property but does not include an accident by reason only of war or radioactivity;
- c) "Handling" in relation to any hazardous substance means the manufacture, processing, treatment, package, storage, transportation by vehicle, use, collection, destruction, conversion, offering for sale, transfer or the like of such hazardous substance;
- d) "Hazardous Substance" means any substance or preparation which is defined as hazardous substance under the Environment (Protection) Act, 1986, and exceeding such quantity as may be specified, by notification, by the Central Government;
- e) "Owner" means a person who owns, or has control over handling any hazardous substance at the time of accident and includes:
 - i) in the case of a firm any of its partners;
 - ii) in the case of an association, any of its members, and
 - iii) in the case of a company, any of its directors, managers, secretaries or other officers who is/are directly in charge of, and is/are responsible to the company for the conduct of the business of the company;
- f) "Turnover" shall mean
 - i) Manufacturing units-Annual Gross Sales of all goods including all levies and taxes
 - ii) Godowns/ warehouse owners-Total Annual rental receipts.
 - iii) Transport Operators-Total Annual freight receipts.
 - iv) Others-Total Annual gross receipts.

3. EXCLUSIONS:

- (1) arising out of wilful or intentional non-compliance of any Statutory provisions.
- (2) in respect of fines, penalties, punitive and/or exemplary damages.
- (3) arising under any other legislation except in so far as provided for in Section 8 Sub Section (1) and (2) of the Act.
- (4) in respect of damage to property owned, leased or hired or under hire purchase or on loan to the Insured or otherwise in the Insured Owner's control, care or custody.
- (5) directly or indirectly occasioned by, happening through or in consequence of war, invasion, act of foreign enemy, hostilities (whether war be declared or not), civil war, rebellion, revolution, insurrection or military or usurped power;
- (6) directly or indirectly caused by or contributed to by.
 - (a) ionising radiation or contamination by radioactivity from any nuclear fuel or from any nuclear waste from the combustion of nuclear fuel
 - (b) the radioactive, toxic, explosive or other hazardous properties of any explosive nuclear assembly or nuclear component thereof.

4. CONDITIONS:

The Insured owner shall give written notice to the Company as soon as reasonably practicable of any claim made against the Insured Owner or of any specific event or (1) circumstance that may give rise to a claim. The Insured Owner shall immediately give to the Company copies of notice of applications forwarded by the Collector and all

such additional information and or assistance that the company may require.

- (2) No admission, offer, promise or payments shall be made or given by or on behalf of the Insured owner under this policy without the written consent of the Company.
 - (3) The Company shall not be liable for any claim for relief made after five years from the date of occurrence of the accident.
 - (4) The Insured Owner shall keep record of annual turnover, and at the time of renewal of insurance declare such turnover and all other details as may be required by the Company. The Company shall at all reasonable times have full rights to call for and examine such records.
 - (5) If at the time of happening of any accident resulting in a claim under this policy there be any other insurance covering the same liability, then the Company shall not be liable to pay or contribute more than its ratable proportion of such liability.
 - (6) This policy may be cancelled by the Insured Owner by giving 30 days notice in writing to the company in which event the Company will retain premium at short period scale subject to there not having occurred an accident during the policy period which may give rise to a claims(s), failing which no refund of premium shall be allowable.
 - (7) This Policy may also be cancelled by the Insurer by giving 30 days notice in writing to the Insured Owner in which event the Company shall be liable to repay on demand a ratable proportion of the premium for the unexpired term from the date of cancellation.
- If the Company shall disclaim liability to the Insured Owner for any claim hereunder and such claim shall not within 12 calendar months from the date of such disclaimer
- (8) have been made the subject matter of a suit in a competent court of law, then the claim for the practical purposes shall be deemed to have been abandoned and shall not thereafter be recoverable hereunder or be made the subject matter of any suit.
- The Company shall not be liable to make any payment in respect of any claim if such claim shall be in any manner fraudulent or supported, by any person on behalf of the
- (9) Insured Owner and/or if the insurance has been continued in consequence of any material misstatement or non-disclosure of any material information by or on behalf of the Insured Owner. In such a case if the Company pays any amount to the claimant due to any statutory provision such amount shall be recoverable from the Insured Owner.
- (10) The Policy and the Schedule shall be read together as one contract and any word or expression to which a specific meaning has been assigned in the Act and the Rules framed thereunder or in this Policy shall bear such specific meaning.
 - (11) Any dispute regarding interpretation of the terms, conditions and exclusions of this Policy shall be determined in accordance with the law and practice of a court of competent jurisdiction within India.

GRIEVANCE REDRESSAL POLICY

Grievance Lodgment Stage

The Company is committed to extend the best possible services to its customers. However, if you are not satisfied with our services and wish to lodge a complaint, please feel free to contact us through below channels:

Call us 24*7 Customer Support Number 022 6489 8282

Email us at customersupport@tataaig.com

Write to us at : Customer Support, Tata AIG General Insurance Company Limited

A-501 Building No.4 IT Infinity Park, Dindoshi, Malad (E), Mumbai - 400097

Visit the Servicing Branch mentioned in the policy document

Nodal Officer

Please visit our website at www.tataaig.com to know the contact details of the Nodal Officer for your servicing branch.

After investigating the grievance internally and subsequent closure, we will send our response within a period of 10 days from the date of receipt of the complaint by the Company or its office in Mumbai. In case the resolution is likely to take longer time, we will inform you of the same through an interim reply.

Escalation Level 1

For lack of a response or if the resolution still does not meet your expectations, you can write to manager.customersupport@tataaig.com. After investigating the matter internally and subsequent closure, we will send our response within a period of 8 days from the date of receipt of your complaint.

Escalation Level 2

For lack of a response or if the resolution still does not meet your expectations, you can write to the Head-Customer Services at head.customerservices@tataaig.com. After examining the matter, we will send you our response within a period of 7 days from the date of receipt of your complaint. Within 30 days of lodging a complaint with us, if you do not get a satisfactory response from us and you wish to pursue other avenues for redressal of grievances, you may approach Insurance Ombudsman appointed by IRDA under the Insurance Ombudsman Scheme. Given below are details of the Insurance Ombudsman located at various centers.

List of Insurance Ombudsman Offices

Office of the Ombudsman	Address & Contact details	Jurisdiction of Office Union Territory, District
AHMEDABAD	Office of the Insurance Ombudsman, Jeevan Prakash Building, 6th Floor, Tilak Marg, Relief Road, Ahmedabad - 380 001. Tel.: 079 - 25501201/02/05/06 Email: bimalokpal.ahmedabad@ecoi.co.in	Gujarat, Dadra & Nagar Haveli, Daman and Diu.
BENGALURU	Office of the Insurance Ombudsman, Jeevan Soudha Building, PID No. 57-27-N-19 Ground Floor, 19/19, 24th Main Road, JP Nagar, Ist Phase, Bengaluru - 560 078. Tel.: 080 - 26652048 / 26652049 Email: bimalokpal.bengaluru@ecoi.co.in	Karnataka
BHOPAL	Office of the Insurance Ombudsman, Janak Vihar Complex, 2nd Floor, 6, Malviya Nagar, Opp. Airtel Office, Near New Market, Bhopal - 462 003. Tel.: 0755 - 2769201 / 2769202 Fax: 0755 - 2769203 Email: bimalokpal.bhopal@ecoi.co.in	Madhya Pradesh Chattisgarh
BHUBANESHWAR	Office of the Insurance Ombudsman, 62, Forest park, Bhubneshwar - 751 009. Tel.: 0674 - 2596461 /2596455 Fax: 0674 - 2596429 Email: bimalokpal.bhubaneswar@ecoi.co.in	Orissa
CHANDIGARH	Office of the Insurance Ombudsman, S.C.O. No. 101, 102 & 103, 2nd Floor, Batra Building, Sector 17 - D, Chandigarh - 160 017. Tel.: 0172 - 2706196 / 2706468 Fax: 0172 - 2708274 Email : bimalokpal.chandigarh@ecoi.co.in	Punjab, Haryana, Himachal Pradesh, Jammu & Kashmir, Chandigarh
CHENNAI	Office of the Insurance Ombudsman, Fatima Akhtar Court, 4th Floor, 453, Anna Salai, Teynampet, CHENNAI - 600 018. Tel.: 044 - 24333668 / 24335284 Fax: 044 - 24333664 Email : bimalokpal.chennai@ecoi.co.in	Tamil Nadu, Pondicherry Town and Karaikal (which are part of Pondicherry).
DELHI	Office of the Insurance Ombudsman, 2/2 A, Universal Insurance Building, Asaf Ali Road, New Delhi - 110 002. Tel.: 011 - 23239633 / 23237532 Fax: 011 - 23230858 Email: bimalokpal.delhi@ecoi.co.in	Delhi
GUWAHATI	Office of the Insurance Ombudsman, Jeevan Nivesh, 5th Floor, Nr. Panbazar over bridge, S.S. Road, Guwahati - 781001(ASSAM). Tel.: 0361 - 2132204 / 2132205 Fax: 0361 - 2732937 Email : bimalokpal.guwahati@ecoi.co.in	Assam, Meghalaya, Manipur, Mizoram, Arunachal Pradesh, Nagaland and Tripura
HYDERABAD	Office of the Insurance Ombudsman, 6-2-46, 1st floor, "Moin Court", Lane Opp. Saleem Function Palace, A. C. Guards, Lakdi-Ka-Pool, Hyderabad - 500 004. Tel.: 040 - 65504123 / 23312122 Fax: 040 - 23376599 Email : bimalokpal.hyderabad@ecoi.co.in	Andhra Pradesh, Telangana, Yanam and part of Territory of Pondicherry.
JAIPUR	Office of the Insurance Ombudsman, Jeevan Nidhi - II Bldg., Gr. Floor, Bhawani Singh Marg, Jaipur-302 005. Tel.: 0141 - 2740363 Email: Bimalokpal.jaipur@ecoi.co.in	Rajasthan
ERNAKULAM	Office of the Insurance Ombudsman, 2nd Floor, Pulinat Bldg., Opp. Cochin Shipyard, M. G. Road, Ernakulam - 682 015. Tel.: 0484 - 2358759 / 2359338 Fax: 0484 - 2359336 Email : bimalokpal.ernakulam@ecoi.co.in	Kerala, Lakshadweep, Mahe-a part of Pondicherry
KOLKATA	Office of the Insurance Ombudsman, Hindustan Bldg. Annexe, 4th Floor, 4, C.R. Avenue, KOLKATA-700 072. Tel.: 033 - 22124339 / 22124340 Fax : 033 - 22124341 Email: bimalokpal.kolkata@ecoi.co.in	West Bengal, Sikkim, Andaman & Nicobar Islands
LUCKNOW	Office of the Insurance Ombudsman, 6th Floor, Jeevan Bhawan, Phase-II, Nawal Kishore Road, Hazratganj, Lucknow - 226 001. Tel.: 0522 - 2231330 / 2231331 Fax: 0522 - 2231310 Email : bimalokpal.lucknow@ecoi.co.in	Districts of Uttar Pradesh : Laitpur, Jhasi, Mahoba, Hamirpur, Banda, Chitrakoot, Allahabad, Mirzapur, Sonbhadra, Fatehpur, Pratapgarh, Jaunpur, Varanasi, Gazipur, Jalaun, Kanpur, Lucknow, Unnao, Sitapur, Lakhimpur, Bahraich, Barabanki, Raebareli, Sravasti, Gonda, Faizabad, Amethi, Kaushambi, Balrampur, Basti, Ambedkarnagar, Sultanpur, Maharajgang, Santkabirnagar, Azamgarh, Kushinagar, Gorkhpur, Deoria, Mau, Ghazipur, Chandauli, Ballia, Sidharathnagar

Insurance is the subject matter of the solicitation. For more details on risk factors, terms and conditions, please read sales brochure carefully before concluding a sale.

TATA AIG General Insurance Company Ltd. Regd. Office: 15th floor, Tower A, Peninsula Business Park, Ganpatrao Kadam Marg, Off Senapati Bapat Marg, Lower Parcel, Mumbai- 400 013.

IRDA Registration No.108, CIN No : U85110MH2000PLC128425, PAN : AABCT3518Q, UIN No : IRDAN108CP0058V01201819

Website: www.tataaig.com Customer Support Number 022 6489 8282 E-mail: customersupport@tataaig.com

MUMBAI	Office of the Insurance Ombudsman, 3rd Floor, Jeevan Seva Annexe, S. V. Road, Santacruz (W), Mumbai - 400 054. Tel.: 022 - 26106552 / 26106960 Fax: 022 - 26106052 Email : bimalokpal.mumbai@ecoi.co.in	Goa, Mumbai Metropolitan Region excluding Navi Mumbai & Thane
NOIDA	Office of the Insurance Ombudsman, Bhagwan Sahai Palace, 4th Floor, Main Road, Naya Bans, Sector 15, Distt: Gautam Buddh Nagar, U.P-201301. Tel.: 0120-2514250 / 2514252 / 2514253 Email : bimalokpal.noida@ecoi.co.in	State of Uttaranchal and the following Districts of Uttar Pradesh : Agra, Aligarh, Bagpat, Bareilly, Bijnor, Budaun, Bulandshehar, Etah, Kanooj, Mainpuri, Mathura, Meerut, Moradabad, Muzaffarnagar, Orailya, Pilibhit, Etawah, Farrukhabad, Firozbad, Gautambodhanagar, Ghazaiabad, Hardoi, Shahjahanpur, Hapur, Shamli, Rampur, Kashganj, Sambhal, Amroha, Hathras, Kanshiramnagar, Saharanpur
PATNA	Office of the Insurance Ombudsman, 1st Floor, Kalpana Arcade Building, Bazar Samiti Road, Bahadurpur, Patna 800 006. Tel.: 0612-2680952 Email: bimalokpal.patna@ecoi.co.in	Bihar, Jharkhand
PUNE	Bhagwan Sahai Palace , 4th Floor, Main Road, Naya Bans, Sector 15, G.B. Nagar, Noida. NOIDA – 201301 Tel: 0120-2514250/51/53 Email: bimalokpal.noida@gbic.co.in	Maharashtra, Area of Navi Mumbai and Thane excluding Mumbai Metropolitan Region