7th May, 2020
Ref: CB-ONHP-2017/2/EAC/1

The Member Secretary,
EAC Industry II,
Ministry of Environment, Forest and Climate Change,
Indira Paryavaran Bhawan,
Aliganj, Jorbag Road,
New Delhi – 110 003.

Subject: Environment Clearance for Exploration & Appraisal and Early Production in CB-ONHP-2017/2 block in Jambasur Taluk, Bharuch District, Gujarat

Reference:1) EAC, MoEF&CC Meeting dated 23.01.2020 (Agenda Item No 16, Case No. 16.7.3).
2) ToR File No. IA-J-11011/98/2019-IA-II(I) dated 20th April, 2019
3) Additional detail Sought (ADS) against Proposal No IA/GJ/IND2/99828/2019

Dear Sir,

This has reference to the subject mentioned above. We are pleased to submit the response to the additional detail Sought (ADS) against the Proposal No. IA/GJ/IND2/99828/2019 for your kind consideration and grant the environment clearance.

We hope you will find the enclosed documents in order. For any additional information or clarification required, we will be pleased to provide the same.

These hydrocarbon blocks for exploration and exploitation are important towards enhancing crude oil and natural gas production in India. Your Kind cooperation would help us to make faster progress in this regard.

Thanking You,
Yours faithfully,

For Vedanta Limited (Div: Cairn Oil & Gas)

K. K. Nayak
Head (HSE & Compliance) – Exploration

Enclosure: Response to ADS

Point Wise Reply of the Additional Details Sought against Proposal No. IA/GJ/IND2/99828/2019

Project Name: ***Onshore Oil and Gas Exploration & Appraisal and Early Production in CB-ONHP-2017/2 block in Jambasur Taluk, Bharuch District, Gujarat by M/s Vedanta Limited(Division: Cairn Oil & Gas)***

1	**The Committee mentioned that Seismic exploration is important steps to search the commercially economic subsurface deposits of crude oil, natural gas and minerals by the recording, processing, and interpretation of artificially induced shock waves in the earth. The Committee noted that PP has not still completed the Seismic Exploration Study in the allocated Block. PP has to fasten the Seismic Exploration Study to achieve the objective of this Project.**
Response:	Cairn had procured already available seismic 2D data from DGH in 16.03.2018. (Reference communication with DGH in this regard is enclosed as **Annexure-1**). The Seismic survey (2D/ 3D) has been initiated by Cairn from February 2020 for blocks in Cambay Basin region including CB-ONHP-2017/2.
2	**Justification/clarity from Director General of Hydrocarbon regarding categorization of the present project, requirement for PEL/PML for production, etc.**
Response:	The proposed project covering exploration, appraisal and early production and currently under exploration stage without any discovery till date. DGH considered the integrated application for exploration, appraisal and early production under Category A of the schedule. The detailed justification letter (Ref. No. DGH/RSC/OALP-I/03/2020-1, dated. 19.03.2020) of DGH has been attached in **Annexure-2.**
3	**Comments from Director General of Hydrocarbon on the justification submitted by the project proponent against Ministry's Notification dated 16th January, 2020 and permission for production activity in the PEL as per the Revenue Contract Agreement.**
Response:	The clarification attached in DGH letter (Ref. No.DGH/RSC/OALP-I/03/2020-1, dated. 19.03.2020) attached as **Annexure-2.**
4	**Addendum to the EIA/EMP report considering all the impacts and mitigation measures for Development and Production, in all terms, as proposed by the project proponent. The PP needs to revise the Report accordingly.**
Response:	Addendum to the EIA/EMP report has been attached as **Annexure-3** with all the requisite details of Early Production system, crude evacuation, produced water (effluent) treatment, etc. alongwith impacts and mitigation measures.
5	**All the Permission received from the concerned authorities for development and production in the PEL (i.e. from MoPNG, DGH, State Govt., etc.) needs to be submitted.**
Response:	Petroleum Exploration License (PEL) as applicable is received (Ref. No.PEL/14-2019/2496/E, dated 19 July 2019 from Govt. of Gujarat. The copy of the PEL is enclosed as **Annexure-4**.
6	**Information regarding the public consultation vis-à-vis proposed development and production and clarification from SPCB needs to be submitted.**
Response:	Clarification letter (Ref. No. GPCB/RO/BHA/BRCH-PH-3402/2020 dtd. 06/05/2020) from Gujarat Pollution Control Board (GPCB) has been attached as **Annexure-5** with reference to the proposed early production information in Draft EIA report and public hearing presentation.

7	**The Committee noted that the block has the forest area and PP has not applied for Stage I FC. In this regard, FC Division of the Ministry may be consulted regarding the requirement of forest clearance for the project due to presence of forest area in the block in view of order of Hon‟ble Supreme Court (Lafarge case).**
Response:	There is no forest area within the block CB-ONHP-2017/2, hence Forest Clearance is not required to be obtained. Toposheet of the block area is attached herewith as **Annexure-6.** The land use/ land cover map also establishes that there is no forest area in the block.

Annexure-1: Communication from DGH

DGH

हाईड्रोकार्बन महानिदेशालय

पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय
भारत सरकार

DIRECTORATE GENERAL OF HYDROCARBONS

Ministry of Petroleum & Natural Gas
Government of India

Bill of Supply

Order ID- 6101
PAN: AAAGD0218A
GSTIN: 09AAAGD0218A1Z9
STATE CODE: 09
STATE:-UTTAR PRADESH

Date of Issue: 16.03.2018

M/s VEDANTA LIMITED
CAIRN OIL AND GAS DIVISION, GURGAON
INDIA, 122002

GSTIN- 06AACCS7101B2ZZ (HARYANA)

Sl. No.	Description of Services	Data Type	HSN/ SAC Code	Qty	Unit of Qty	Unit Price (USD)	Amount Payable (USD)	Block-wise Sub Total Amount (USD)
1	HELP-I DATA PACKAGE : AA-ONHP-2017_6	Data Package	998341	1	No.	150.00	150.00	150.00
2	HELP-I DATA PACKAGE : AA-ONHP-2017_8	Data Package	998341	1	No.	266.00	266.00	266.00
3	HELP-I DATA PACKAGE : AA-ONHP-2017_9	Data Package	998341	1	No.	166.00	166.00	166.00
4	HELP-I DATA PACKAGE : AA-ONHP-2017_10	Data Package	998341	1	No.	166.00	166.00	166.00
5	HELP-I DATA PACKAGE : AA-ONHP-2017_12	Data Package	998341	1	No.	700.00	700.00	700.00
6	HELP-I DATA PACKAGE : AA-ONHP-2017_13	Data Package	998341	1	No.	166.00	166.00	166.00
7	HELP-I DATA PACKAGE : AA-ONHP-2017_16	Data Package	998341	1	No.	150.00	150.00	150.00
8	HELP-I DATA PACKAGE : AA-ONHP-2017_17	Data Package	998341	1	No.	166.00	166.00	166.00
9	HELP-I DATA PACKAGE : AA-ONHP-2017_18	Data Package	998341	1	No.	400.00	400.00	400.00
10	HELP-I DATA PACKAGE : AA-ONHP-2017_19	Data Package	998341	1	No.	400.00	400.00	400.00
11	HELP-I DATA PACKAGE : AA-ONHP-2017_20	Data Package	998341	1	No.	150.00	150.00	150.00
12	HELP-I DATA PACKAGE : CB-ONHP-2017_3	Data Package	998341	1	No.	450.00	450.00	450.00
13	HELP-I DATA PACKAGE : CB-ONHP-2017_4	Data Package	998341	1	No.	900.00	900.00	900.00
14	HELP-I DATA PACKAGE : CB-ONHP-2017_6	Data Package	998341	1	No.	266.00	266.00	266.00
15	HELP-I DATA PACKAGE : CB-ONHP-2017_11	Data Package	998341	1	No.	400.00	400.00	400.00
16	HELP-I DATA PACKAGE : CB-ONHP-2017_12	Data Package	998341	1	No.	850.00	850.00	850.00
17	HELP-I DATA PACKAGE : GK-ONHP-2017_1	Data Package	998341	1	No.	300.00	300.00	300.00
18	HELP-I DATA PACKAGE : GS-OSHP-2017_2	Data Package	998341	1	No.	600.00	600.00	600.00
19	HELP-I DATA PACKAGE : GV-ONHP-2017_1	Data Package	998341	1	No.	900.00	900.00	900.00
20	HELP-I DATA PACKAGE : HF-ONHP-2017_1	Data Package	998341	1	No.	600.00	600.00	600.00
21	HELP-I DATA PACKAGE : KG-ONHP-2017_3	Data Package	998341	1	No.	200.00	200.00	200.00
22	HELP-I DATA PACKAGE : RJ-ONHP-2017_8	Data Package	998341	1	No.	166.00	166.00	166.00
23	HELP-I DATA PACKAGE : AA_ONHP_2017_5	2D	998341	392.34	LKM	1.00	392.34	
		Reports	998341	6	No.	50.00	300.00	
		E&A Well	998341	6	No.	80.00	480.00	
		Subtotal						1,172.34
24	HELP-I DATA PACKAGE : AA-ONHP-2017_11	2D	998341	990.38	LKM	1.00	990.38	
		Reports	998341	1	No.	50.00	50.00	
		E&A Well	998341	1	No.	80.00	80.00	
		Subtotal						1,120.38
25	HELP-I DATA PACKAGE : AA-ONHP-2017-14	2D	998341	950.92	LKM	1.00	950.92	
		Reports	998341	2	No.	50.00	100.00	
		E&A Well	998341	2	No.	80.00	160.00	
		Subtotal						1,210.92

We Care

OIDB BHAWAN, TOWER-A, PLOT NO. 2, SECTOR-73, NOIDA - 201 301
दूरभाष/Phone : +91-120-2472000 फैक्स/Fax : +91-120-2472049

26	HELP-I DATA PACKAGE : AA-ONHP-2017-15	2D	998341	994.22	LKM	1.00	994.22	
		Reports	998341	1	No.	50.00	50.00	
		E&A Well	998341	1	No.	80.00	80.00	
		Subtotal						1,124.22
27	HELP-I DATA PACKAGE : CB-ONHP-2017-5	2D	998341	924.64	LKM	1.00	924.64	
		Reports	998341	4	No.	50.00	200.00	
		E&A Well	998341	4	No.	80.00	320.00	
		Subtotal						1,444.64
28	HELP-I DATA PACKAGE : CB_ONHP_2017_7	2D	998341	465.87	LKM	1.00	465.87	
		Reports	998341	7	No.	50.00	350.00	
		E&A Well	998341	3	No.	80.00	240.00	
		Subtotal						1,055.87
29	HELP-I DATA PACKAGE : CB-ONHP-2017-9	2D	998341	837.6	LKM	1.00	837.60	
		Reports	998341	2	No.	50.00	100.00	
		E&A Well	998341	2	No.	80.00	160.00	
		Subtotal						1,097.60
30	HELP-I DATA PACKAGE : CB-ONHP-2017_10	2D	998341	914.29	LKM	1.00	914.29	
		Reports	998341	1	No.	50.00	50.00	
		E&A Well	998341	2	No.	80.00	160.00	
		Subtotal						1,124.29
31	HELP-I DATA PACKAGE : CY-ONHP-2017_1	2D	998341	688.15	LKM	1.00	688.15	
		Reports	998341	5	No.	50.00	250.00	
		E&A Well	998341	5	No.	80.00	400.00	
		Subtotal						1,338.15
32	HELP-I DATA PACKAGE : CY-OSHP-2017_1	2D	998341	905.76	LKM	1.00	905.76	
		Reports	998341	3	No.	50.00	150.00	
		E&A Well	998341	3	No.	80.00	240.00	
		Subtotal						1,295.76
33	HELP-I DATA PACKAGE : CY-OSHP-2017_2	2D	998341	1052.72	LKM	1.00	1,052.72	
		Reports	998341	2	No.	50.00	100.00	
		E&A Well	998341	2	No.	80.00	160.00	
		Subtotal						1,312.72
34	HELP-I DATA PACKAGE : KG_ONHP_2017_1	2D	998341	871.73	LKM	1.00	871.73	
		Reports	998341	4	No.	50.00	200.00	
		E&A Well	998341	4	No.	80.00	320.00	
		Subtotal						1,391.73
35	HELP-I DATA PACKAGE : KG_ONHP_2017_2	2D	998341	851.07	LKM	1.00	851.07	
		Reports	998341	3	No.	50.00	150.00	
		E&A Well	998341	3	No.	80.00	240.00	
		Subtotal						1,241.07
36	HELP-I DATA PACKAGE : KG_DWHP_2017_1	2D	998341	1003.76	LKM	1.00	1,003.76	
		Reports	998341	2	No.	50.00	100.00	
		E&A Well	998341	2	No.	80.00	160.00	
		Subtotal						1,263.76
37	HELP-I DATA PACKAGE : GK-OSHP-2017_1	2D	998341	1003.3	LKM	1.00	1,003.30	
		Reports	998341	2	No.	50.00	100.00	
		E&A Well	998341	2	No.	80.00	160.00	
		Subtotal						1,263.30
38	HELP-I DATA PACKAGE : MB-OSHP-2017_1	2D	998341	1036.9	LKM	1.00	1,036.90	
		Reports	998341	2	No.	50.00	100.00	
		E&A Well	998341	2	No.	80.00	160.00	
		Subtotal						1,296.90
39	HELP-I DATA PACKAGE : MB-OSHP-2017_2	2D	998341	992.45	LKM	1.00	992.45	
		Reports	998341	5	No.	50.00	250.00	
		E&A Well	998341	5	No.	80.00	400.00	
		Subtotal						1,642.45
40	HELP-I DATA PACKAGE : RJ-ONHP-2017_7	2D	998341	710.59	LKM	1.00	710.59	
		Reports	998341	3	No.	50.00	150.00	
		E&A Well	998341	3	No.	80.00	240.00	
		Subtotal						1,100.59

41	HELP-I DATA PACKAGE : RJ_ONHP_2017_9	2D	998341	664.7	LKM	1.00	664.70	
		Reports	998341	3	No.	50.00	150.00	
		E&A Well	998341	3	No.	80.00	240.00	
		Subtotal						1,054.70
42	HELP-I DATA PACKAGE : GS-OSHP-2017_1	2D	998341	1160.19	LKM	1.00	1,160.19	
		Reports	998341	1	No.	50.00	50.00	
		E&A Well	998341	1	No.	80.00	80.00	
		Subtotal						1,290.19
43	Media Charges	HDD	998341	1	Unit	100.00	100.00	100.00
44	Total Cost payable in USD							**33,453.58**
	Total Cost payable in INR (converted at RBI Reference Rate as on 15/03/2018)							**Rs 21,72,362.00**

Remittance Instructions:

a) Direct payment transfer in US dollars:

State Bank of India, New York, USA
Swift No: SBINUS33
CHIPS ABA: 0914
FED ABA: 026009140
Account No: 77600125220002
Of State Bank of India
For Further Credit to:
Account No: 37025158455
Of Directorate General of Hydrocarbons, OIDB Bhawan, Tower A, Plot No 2, Sector 73, Noida 201301
Bank Name: State Bank of India
Bank Address: Shastri Bhawan, New Delhi, India
Swift No: SBININBBP24
IFS Code: SBIN0050203

b) Telegraphic Transfer in Indian Rupees:

The Indian customer may pay in Indian Rupees, by converting US$ at the Reference Rate of RBI, prevailing on the previous working day of the date of invoice. For RBI Reference Rate, you may use link - https://www.rbi.org.in/scripts/ReferenceRateArchive.aspx

State Bank of India
Shastri Bhawan, Dr Rajendra Prasad Road
New Delhi 110 001
Account No: 37025158455
Swift No: SBININBBP24
IFS Code: SBIN0050203

c) Payment Gateway

HOD (NDR)

Note:

1) U/s 196 of the Income Tax Act, no TDS is required to be deducted while making payment to DGH against this invoice.

2) Goods and Service Tax is to be paid by service recipient as per serial no.6 of the list of services approved by the Government of India, Ministry of Finance vide, Notification No. 10/2017 - integrated tax(Rate) dated 28.06.2017.

Annexure-2: Clarification letter from DGH

DGH

हाईड्रोकार्बन महानिदेशालय

पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय
भारत सरकार

DIRECTORATE GENERAL OF HYDROCARBONS

Ministry of Petroleum & Natural Gas
Government of India

DGH/RSC/ OALP-I/03/2020-1

Dated :19.03.2020

Vedanta Limited
DLF Atria | Phase2 | Jacaranda Marg | DLF City
Gurugram - 122002 | Haryana | India
M: +91 9810111614
D: +91 124 677 3767
F: +91 124 414 5613

Sub. Response to MoEF&CC's Expert Appraisal Committee (EAC) Observations

This is with reference to the letter no. RJ-CB-AA/2017/EC/DGH/01 dated 14.02.2020 submitted by M/s. Vedanta Ltd. The Operator, in respect of eight (8) blocks namely RJ-ONHP-2017/1, RJ-ONHP-2017/2, RJ-ONHP-2017/4, RJ-ONHP-2017/5, RJ-ONHP-2017/6, RJ-ONHP-2017/7, CB-ONHP-2017/2 and CB-ONHP-2017/3 has submitted applications for Environment Clearance to MoEF&CC. M/s Vedanta in their above referenced letter has requested to submit DGH response on the observations made by Expert Appraisal Committee (EAC) during its 16th EAC meeting held on 21st January, 2020.

Point wise EAC observations and their response is as follows:

1. ***Justification / clarity from DGH regarding categorization of the present project, requirement of PEL/PML for production.***
   The Project Proponent (PP) intends to have an integrated Environment Clearance covering the Exploration, Appraisal and early Production. Although the Project is currently under Exploration Stage without any discovery till date, DGH has no objection to the Project Proponent's application for integrated application for Environment Clearance for Exploration, Appraisal and early Production under Category A.
   The PP already has obtained PEL for block(s) under consideration. DGH is of the view that before commencement of production, PP must have a valid PML from relevant State Government. In this endeavour DGH would encourage and extend necessary support to the operators in getting early PML, after discovery is made, for ensuing continuity of operations in the block and for fast tracking production.
2. ***Comments from DGH on the justification submitted by the project proponent against Ministry's notification dated 16th January, 2020 and production activity in PEL as per RSC.***
   The justification is already provided in the answer to query (i) above. Even though production in the exploratory phase is permitted under RSC but it can only be started after grant of PML by relevant Government as per Rule no. 4 of PNG Rules which is reproduced below:

Quote:

No prospecting or mining except under a license or a lease – No person shall prospect for petroleum except in pursuance of a petroleum exploration license (herein under referred to as a license) granted under these rules, and no person shall mine petroleum except in pursuance of a petroleum mining lease (hereinafter referred to as a lease) granted under these rules. Every holder of a license and every holder of a lease shall in these rules be referred to as the licensee and the lessee, respectively.

Unquote

3. ***All the permissions received from the concerned authorities for development and production in PEL (i.e. MoPNG, DGH, state Government etc.) needs to be submitted.***
   All the necessary documents related to the permissions obtained from the concerned authorities have to be provided by the PP.

In addition to above operator is asked to comply with the observations of EAC which were discussed in the 21.01.2020 meeting:

I. EAC has observed that there are other deficiencies in EIA reports and in conduct of public hearing which is reported to be inconclusive.
II. EAC has also observed that there is a requirement of submission of addendum to the EIA/EMP reports considering all impacts and mitigation measures for development and production.
III. EAC also noted that the project proponent has not applied for Stage-I FC for blocks having forest area which is a requirement for grant of Environment Clearance

This is for necessary action at your end.

Vikesh Jain

Vikesh Jain
GM(P)-HELP

Annexure-3: Final Addendum to EIA/EMP for Early Production system

Proposal No.	**IA/GJ/IND2/99828/2019**
Proposal for	**Addendum to Final Environmental Impact Assessment Report for proposed Onshore Oil and Gas Exploration and Appraisal in CB-ONHP-2017/2 block in Jambasur Taluk, Bharuch District, Gujarat**
Date	**25.01.2020**

Submitted by

Vedanta Limited (Division: Cairn Oil & Gas)

CONTENTS

1.0 INTRODUCTION 3

1.1 Preamble 3
1.2 Brief Details of The Project 3
1.3 Location of Block 4

2.0 DESCRIPTION OF EPUS/QPUS SYSTEMS 6

2.1 Introduction 6
2.2 Drilling of Exploration and Appraisal Well 7
2.3 Description of EPU/QPU 9
2.4 Crude Oil Handling and Dispatch 14
2.5 Proposed Infrastructure 14
2.5.1 Power Requirement 14
2.5.2 Water Requirements 14
2.5.3 Wastewater Treatment & Disposal for EPU/QPUs 15
2.5.4 Wastes treatment and disposal for EPU/QPUs 17

3.0 IMPACT & MITIGATION MEASURES OF EPU/QPU OPERATION 18

3.1 Introduction 18
3.2 Impact on Topography 20
3.3 Impact on Air Environment (refer section No.4.7 in EIA report 20
3.3 Impact on Noise Environment 22
3.4 Impact on Road & Traffic 23
3.5 Impact on Water Environment 23
3.6 Impact on Soil environment 24
3.7 Biological Environment 25
3.8 Impact on Occupational Health and Safety 25

4.0 ENVIRONMENTAL MANAGEMENT PLAN OF EPU/QPU OPERATION 26

1.0 INTRODUCTION

1.1 PREAMBLE

Vedanta Limited (Division: Cairn Oil & Gas) has been allocated the CB-ONHP-2017/2 hydrocarbon block under the OALP (Open Acreage Licensing Policy) by MoP&NG, Govt. of India. RSC (Revenue Sharing Contract) has been signed between Vedanta Limited and MoP&NG on 1st October, 2018.

Vedanta Limited (Division: Cairn Oil & Gas) proposes to carry out exploratory and appraisal well drilling and early production of oil and gas in the block. In case of a discovery (ies), the exploratory and appraisal well(s) will be tested for extended duration by flowing hydrocarbons to ascertain the reservoir parameters and assess the quality and commercial viability.

Moreover, in case of commercially viable discovery(s) of hydrocarbons in the block and having established the size of the hydrocarbon field(s), field will be immediately brought into early production of crude oil and associated gas using some of the successful exploratory/appraisal wells by setting up of temporary and mobile Early Production Units (EPUs)/Quick Production Units (QPUs) for the processing of produced well fluids.

1.2 BRIEF DETAILS OF THE PROJECT

CB-ONHP-2017/2 block is located in Jambasur Taluk, Bharuch district of Gujarat. Vedanta Limited (Division: Cairn Oil & Gas) proposes to carry out:

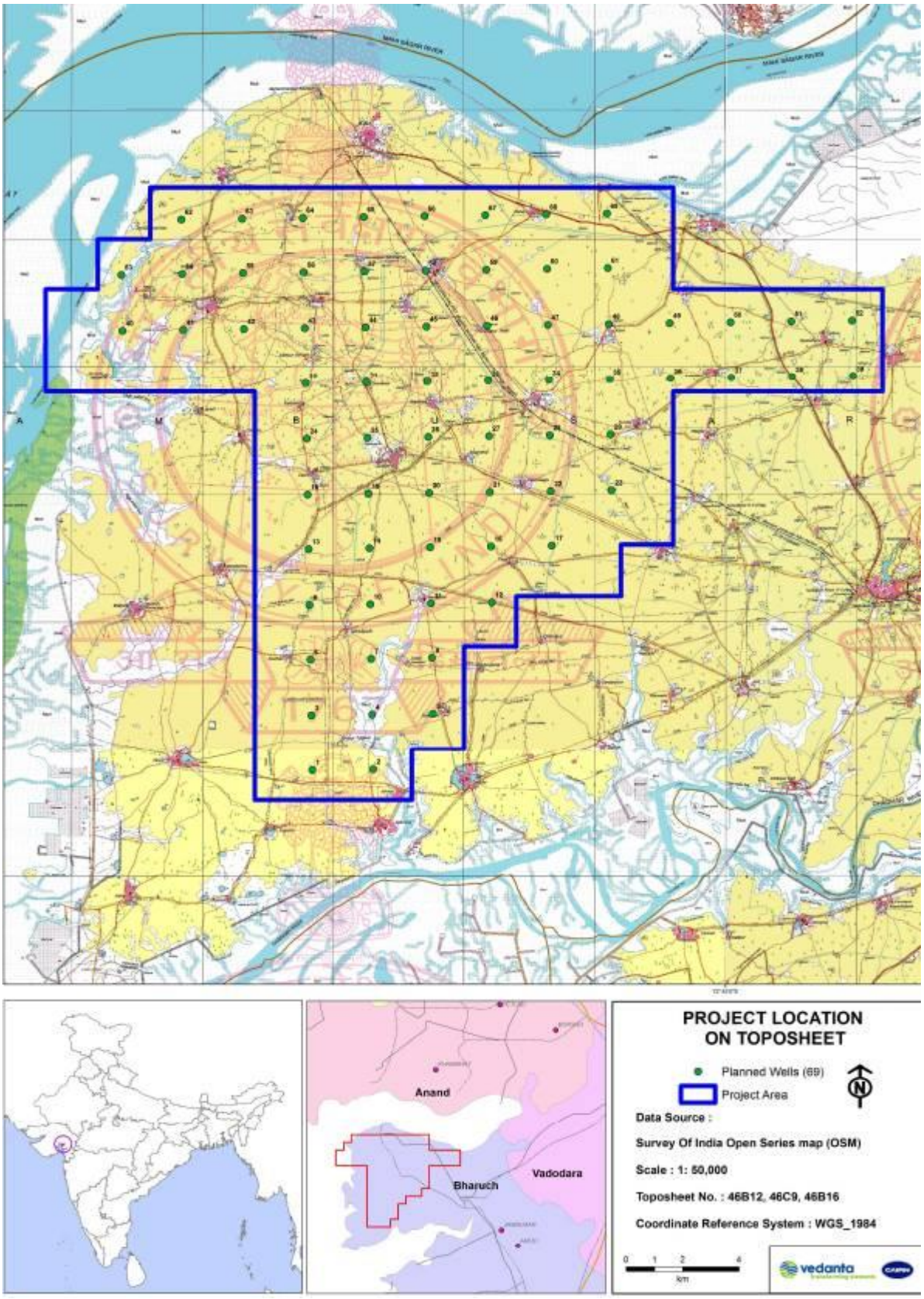
1. *Drilling of 69 exploratory (including appraisal) wells and development (Production) and well testing*
2. *Setting up of Early Production Units (EPUs)/Quick Production Units (QPUs) for produced well fluid processing and production of upto 28000 BOPD of crude oil and up to 4.2 MMSCFD of associated natural gas.(Ref section No.2.4,Page No. 43 in EIA report)*

In case of a discovery(ies), the exploratory and appraisal well(s) will be tested for extended duration by flowing hydrocarbons to ascertain the reservoir parameters and assess the quality and commercial viability. Moreover, in case of commercially viable discovery(ies) of hydrocarbons in the block and having established the size of the hydrocarbon field(s), field will be immediately brought into early production of crude oil

and associated gas using some of the successful exploratory/ appraisal wells by setting up of temporary and mobile EPU/QPU for the processing of produced well fluids.

1.3 LOCATION OF BLOCK

The block CB-ONHP-2017/2 is located in Jambasur Taluk, Bharuch district of Gujarat. It encloses an area of 317 Sq.Km.



Source: Vedanta Limited (Division: Cairn Oil & Gas)

Figure 1.1: Location map of Project site

2.0 DESCRIPTION OF EPUS/QPUS SYSTEMS

2.1 INTRODUCTION

The project includes Vedanta Limited (Division: Cairn Oil & Gas) proposed drilling of 23 onshore exploratory and appraisal wells and 46 nos. of development (production) wells and Setting up of Early Production Units (EPUs)/ Quick Production Units (QPUs) for produced well fluid processing and early production of up to 28000 BOPD crude oil and up to 4.2 MMSCFD associated natural gas in CB-ONHP-2017/2 block located in Bharuch district of Gujarat.

In case of a discovery(ies), the exploratory and appraisal well(s) will be tested for extended duration by flowing hydrocarbons to ascertain the reservoir parameters and assess the quality and commercial viability. Moreover, in case of commercially viable discovery(ies) of hydrocarbons in the block and having established the size of the hydrocarbon field(s), field will be immediately brought into early production of crude oil and associated gas using some of the successful exploratory/ appraisal wells and /or by drilling development (production) wells by setting up of temporary and mobile EPU/QPU for the processing of produced well fluids.

Vedanta Ltd (Cairn Oil & Gas), as an interim plan, in case of commercially viable discovery (s) of hydrocarbons in the block and having established the size of the hydrocarbon field (s), proposes to immediately bring the field (s) into production using one or more of the appraisal wells and or by drilling developmental (production) wells for the production of crude oil by setting up of Early Production Units (EPUs) or QPUs (Quick Production Units. Early production of the Crude oil will enable the Country to reduce dependence on import of crude oil.

Here, it may be noted that after the commercially viable discovery (s) of the hydrocarbon field(s), following the typical life cycle of Oil & Gas Exploration & Production sector, full-fledged (large scale) field development plan including development well drilling, establishing crude oil & natural gas processing facilities, laying of intra-field & cross country pipelines and other associated physical and social infrastructures will be taken up and prior development EC and other approval will be obtained as applicable. The lead time for entire process is about 3 – 4 years for the production of crude oil and natural gas. Once the full-fledged field development comes up, the Early Production Unit (s) will suitable be integrated (with large scale facilities) and/ or phased out.

Table 2.1: Salient Features of the proposed project

Particulars	Details
Name of block	CB-ONHP-2017/2
Land required	For well site during drilling will be 9.0 ha, including site facilities and for camp site
Depth of well	1750-4500m (Approx)
Duration of Drilling	60-90 Days per Well (approx.)
Spent /Residual drilling mud	250-500 tons/well
Quantity of drill cutting	Drill cuttings associated with WBM - 250-750 tons/well Drill cuttings associated with SBM - 500-1500 tons/well
Drilling mud composition	Water Base Mud (WBM) will be used as drilling fluid for initial, shallower sections where massive shale not encountered. The deeper and difficult to drill geological formations will be drilled using Synthetic Base Mud (SBM) as drilling fluid
Setting up of EPU	14 X 2000 BFPD
Early Production	28000 BOPD crude oil and 4.2 MMSCFD associated natural gas
Estimated project cost	INR 1461.334 Crore
Manpower Requirement	Total Manpower: 30-35 (Site preparation Phase), 80-100 (during drilling & early production)
Seismic zone	The proposed block area falls in Seismic Zone III as per IS 1893:2002 (Part-1), which is a Moderately sensitive seismic zone.

Source: Vedanta Limited (Division: Cairn Oil & Gas)

2.2 DRILLING OF EXPLORATION & APPRAISAL AND DEVELOPMENT (PRODUCTION) WELLS

Vedanta Limited (Division: Cairn Oil & Gas) proposes to drill 69 exploration & appraisal wells within the block boundary of CB-ONHP-2017/2.

The basic objective of the exploratory drilling will be as follows:-

- *To determine the presence of potential hydrocarbon*
- *To appraise discovered oil & gas*

The lifecycle of drilling activities involve well site selection, site and access road preparation and its maintenance, construction of drilling well, drilling activities, well testing and decommissioning and closure of wells, if not proved economically viable for production of oil and gas. The following are the commonly used terms in an oil and gas project.

Exploration Wells:

An Exploration Well is a hole drilled deep into the earth's surface; the hole is thought to contain hydrocarbon deposits. Areas that are inferred to contain oil or natural gas undergo a gravity survey, magnetic survey, seismic survey to discover the features of sub-surface geology. After a prospective area is detected, identified and evaluated, an Exploration Well is drilled to confirm the availability of oil or natural gas.

Appraisal Wells:

When, exploratory drilling is successful and a discovery is made, more wells (termed as Appraisal wells) will be drilled to determine the size and the extent of the field. Wells drilled to quantify the hydrocarbon reserves found are called as 'appraisal' wells. This is an intermediate step between exploration and development which is necessary to confirm the reserve size and field deliverability to an acceptable degree of accuracy. This may be in order to determine whether the discovery is commercial, or to establish the parameters necessary to define the optimal development scheme for the field. Appraisal may consist of additional seismic, further drilling or extended testing of an existing well. Any or all of these types of operations may be deemed desirable or necessary. The technical procedures and activities in appraisal drilling will be the same as those employed for exploration wells. A number of wells may be drilled from a single well pad/ drill site. Deviated or directional drilling at an angle from a site adjacent to the original discovery well may be used to appraise other parts of the reservoir, in order to reduce the land requirement. Any or all of these types of operations may be deemed desirable or necessary.

Production (Development Well)

Development (production) wells will be drilled to extract the hydrocarbons from reserve.

Well Testing:

During the exploration and appraisal drilling, where a hydrocarbon formation is found, initial well tests (about one month of duration) will be carried out to establish flow rates, formation pressure and other parameters. During the well testing, crude oil, natural gas and produced water could be generated and will be treated/disposed appropriately. Hydrocarbons will be flared. Efficient test flare burner will be used to minimize incomplete combustion. As an alternative option, if feasible, crude oil/ slop oil will be transferred to nearby refinery for processing or will be sent to authorized recyclers.

The project lifecycle has been classified into four phases:

- **Pre-drilling activity**
  - ✓ Site selection
  - ✓ Land procurement
  - ✓ Site Preparation

- ✓ Site access road and drill site construction
- ✓ Pre-drilling activities, mobilization and Rigging up

❑ **Drilling activity**

- ✓ Drilling of wells
- ✓ Testing of wells

❑ **Early Production- When, exploratory drilling is successful**

- ✓ Drilling of Appraisal wells to quantify the hydrocarbon reserves
- ✓ Setting up of Early Production Units (EPUs)/Quick Production Units (QPUs)

❑ **Well decommissioning**

- ✓ Well abandonment
- ✓ Site closure and decommissioning
- ✓ Site Restoration

2.3 DESCRIPTION OF EPU/QPU

Early Production Units (EPUs) or Quick Production Units (QPUs) will be installed for the processing of produced well fluid. An EPU/QPU will be a packaged/modular mobile unit and will mainly consists of a heater-treater separator or a production heater followed with a three phase separator, electrostatic coalescer, oil storage tanks, oil tanker loading system, produced water separation and disposal system, power generation (GEG or DG), test separator skid, utility systems such as fuel gas, flare, Inst. Air package, diesel storage, firefighting equipment, etc. An EPU/QPU will be designed for a capacity of 2,000 BLPD (Barrels of liquid per Day) with water cut variation from 0 – 50 vol%.

Produced well fluid from one or more successful exploratory/ appraisal wells will be gathered & sent to heater-treater separator skid for primary separation & heating purpose. Gathered produced fluid will be heated & degassed in heater-treater separator skid operating at ~2.5 – 3 Barg and ~70 – 80°C and separated in to gas, oil and water streams. The separated produced (associated) gas will be either routed to fuel gas system or to flare depending on the quantity of produced (associated) gas. In case of sufficient quantity of produced gas, a part of the produced gas will be used for power generation (using GEG), for firing in heater-treater separator skid and for blanketing & purging purpose. The surplus gas post internal consumption (if any) will be routed to flare for safe disposal purpose.

Separated oil from heater-treater separator skid will be sent to electrostatic coalescer separator (if needed, based on oil properties) to separate the residual water and achieve BS&W specifications. The treated crude oil from electrostatic coalescer separator will be sent to oil storage tanks. From oil storage tanks, oil will be pumped &loaded in to road tanker using the tanker loading facility for evacuation of crude oil to the nearby available facilities like terminals/depots of consumers.

Separated produced water (PW) from heater-treater separator skid will be sent to degasser vessel operating at low pressure. The evolved HC gases from degasser vessel will be routed to flare for safe disposal and the degassed water sent to PW treatment package.

The PW treatment package will consists of a compact flotation unit or other equivalent gas floatation based de-oiling (oil removal) system and a filtration system. The treated water from PW treated skid will be stored in PW storage tanks. The produced water will be treated to achieve MoEF&CC/CPCB/GPCB specifications (discharge standards) and will be disposed off. The treated effluent (i.e. produced water) will be disposed-off using either a nearby down hole disposal well (by reinjection in abandoned well) or other available and suitable onshore disposal medium or solar/ mechanical evaporators depending on the quantity and feasibility.

The power requirement will be met through either state electricity grid and/ or installation of Diesel/Gas Engine Generator(s) using produced gas. If produced gas is sufficient quantity then power generation using produced gas will be preferred.

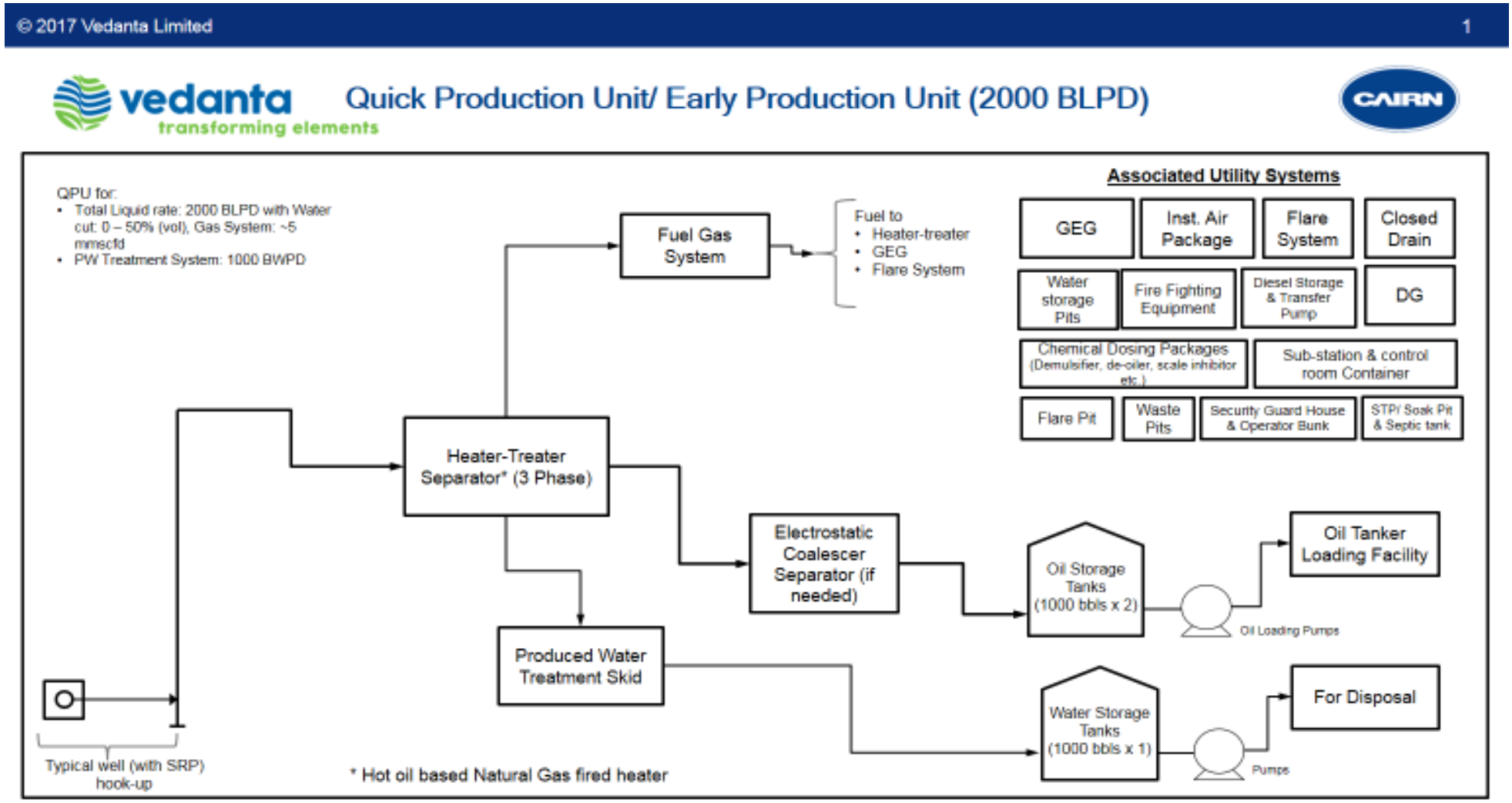
Along with above processing facility, a well test separator skid will be installed at pad. It will be used for well testing purpose. Well under testing will be routed to test separator skid. The separated gas, oil & water will be sent back to inlet of heater-treater separator skid for further processing.

Quick production set-up will have following utility systems & infrastructure for supporting the operations.

- Wells with selected artificial lift and flow lines
- Fuel gas system consisting of filters & a super-heater
- Instrument Air package or Instrument as system
- Chemical dosing packages i.e. corrosion inhibitor, de-mulsifier & scale inhibitor etc.

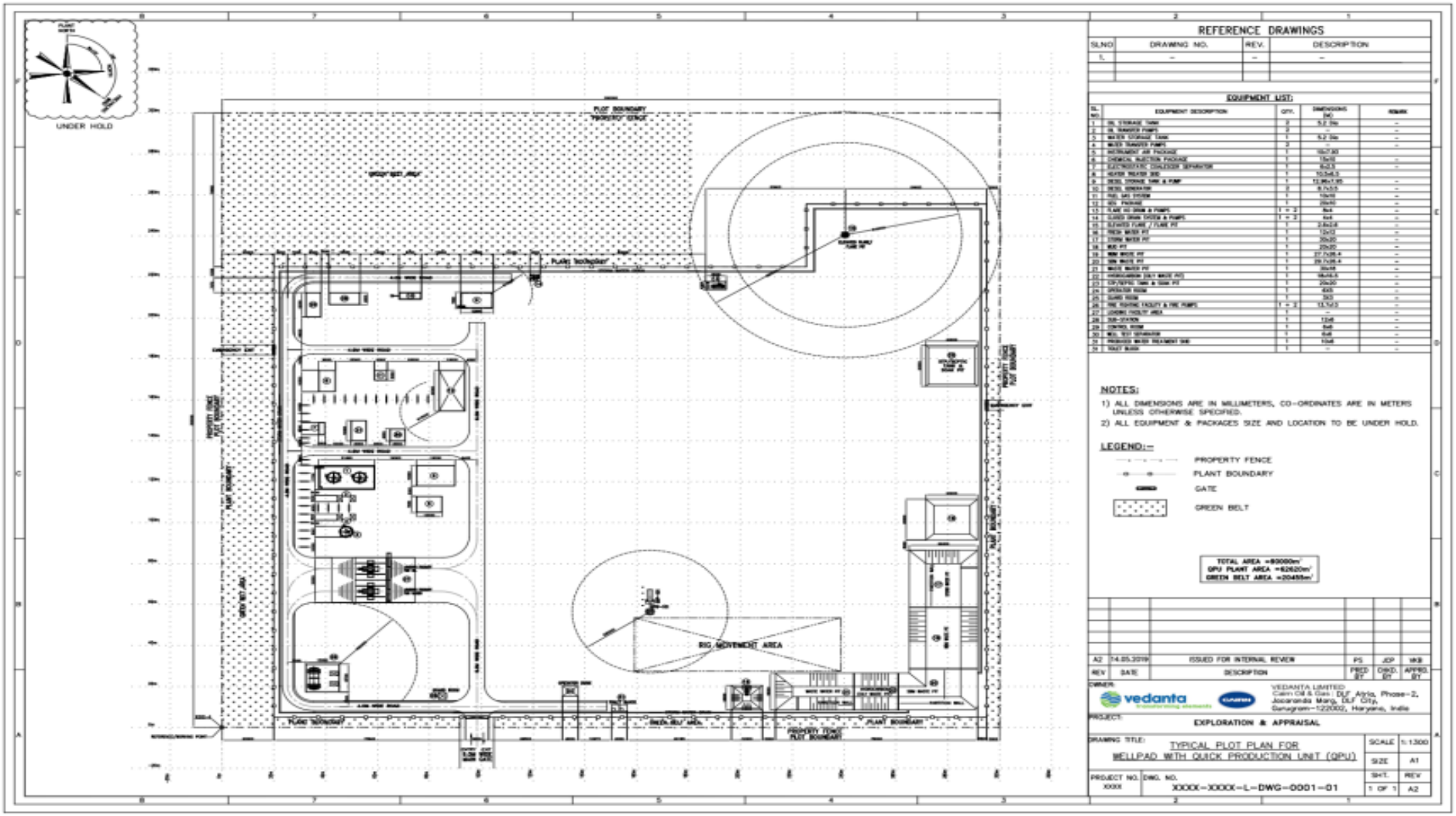
- Elevated flare system or enclosed ground flare or ground flare
- Closed drain system, storm water drain system
- Fresh water storage
- Diesel storage
- Power generation (GEG and/or DG)
- Firefighting equipment
- Domestic sewage treatment facility (Mobile STP or septic tank & soak pit system);

Sensitivity: Internal (C3)



Source: Vedanta Limited (Division: Cairn Oil & Gas)

Figure 2.2: Quick Production Unit/ Early Production Unit (2000 BLPD)



Source: Vedanta Limited (Division: Cairn Oil & Gas)

Figure 2.3: Layout of Wellpad including EPU/QPU

2.4 CRUDE OIL HANDLING AND DISPATCH

Crude oil from the Early Production Units (EPUs)/ Quick Production Units (QPUs) at the Well pads will be transported through road tankers to the existing facilities of Vedanta Ltd (Division: Cairn Oil & Gas) i.e. Viramgam Terminal (VGT) at Viramgam, Dist. Ahmedabad and/ or Suvali Onshore Terminal at Village. Suvali, Hazira, Dist. Surat. Based on commercial/ operational feasibility in future, Vedanta Ltd. (Division: Cairn Oil & Gas) will enter into MoU/ agreement with nearby facilities as per RSC.

Viramgam Terminal (VGT) has Crude Oil storage tanks of 60,000 barrels capacity and pumping station of 2,00,000 BOPD for further dispatch to Oil crude intake facilities of Indian Refineries. The VGT is located at approx. 210 km and approx. 240 km from Jambusar and Amode Talukas respectively in CB-ONHP-2017/2 block.

Suvali Onshore Terminal has Crude Oil storage tanks of 40,000 barrels capacity and pumping station of 15,000 BOPD for further dispatch to Oil crude intake facility of Indian Refineries. Suvali Onshore Terminal is located at approx. 150 km and approx. 140 km from Jambusar and Amode Talukas respectively in CB-ONHP-2017/2 block.

2.5 PROPOSED INFRASTRUCTURE

2.5.1 POWER REQUIREMENT

The power requirement in the drilling site and the campsites will be provided through diesel generator (DG) sets. The rated capacity of the DG sets required for onshore drilling site is provided in following table.

Table 2.2: Details of DG sets of Onshore Drilling Activity

Location	DG Capacity	Fuel Requirement (KLD)	Stack Height (m)	Stack dia (m)
EPU Requirement	**1X500 KVA (Emergency Backup), GEG 1 MW**	**HSD- 3-4 KLD** **NG- 283.16 m^3/hr**	**9** **10**	**0.15** **0.305**

Source: Vedanta Limited (Division: Cairn Oil & Gas)

**Depending on the rig capacity and availability during exploration and appraisal drilling phase*

2.5.2 WATER REQUIREMENTS

Water requirement for each Early Production Unit/ Quick Production Unit will be about 15-18 KLD.

The water requirement for all the project activities will be sourced locally through approved/authorized sources of surface water and/or ground water (e.g. PHD bore wells, privately owned bore wells, Irrigation Dept./Water Resources Dept. of State Govt.). In

case, required water could not be sourced from locally available approved sources, ground water will be extracted after obtaining permission from CGWA/State Govt.

2.5.3 WASTEWATER TREATMENT & DISPOSAL FOR EPU/QPUS

Wastewater Generation	**Quantity (m^3/well/day)**	**Treatment**
Wastewater (Produced water) during Early Production	225*	Will be treated in Mobile ETP (consisting of physicochemical treatment, Ultra filtration (UF) & RO (if needed) of 250 KLD capacity and the treated water would be used for dust suppression, green belt, etc. Treated effluent will be used for drilling mud preparation, housekeeping, dust suppression and other misc. Use.

Source: Vedanta Limited (Division: Cairn Oil & Gas)

** Considering upto 70% water cut in well fluid produced.*

Sensitivity: Internal (C3)

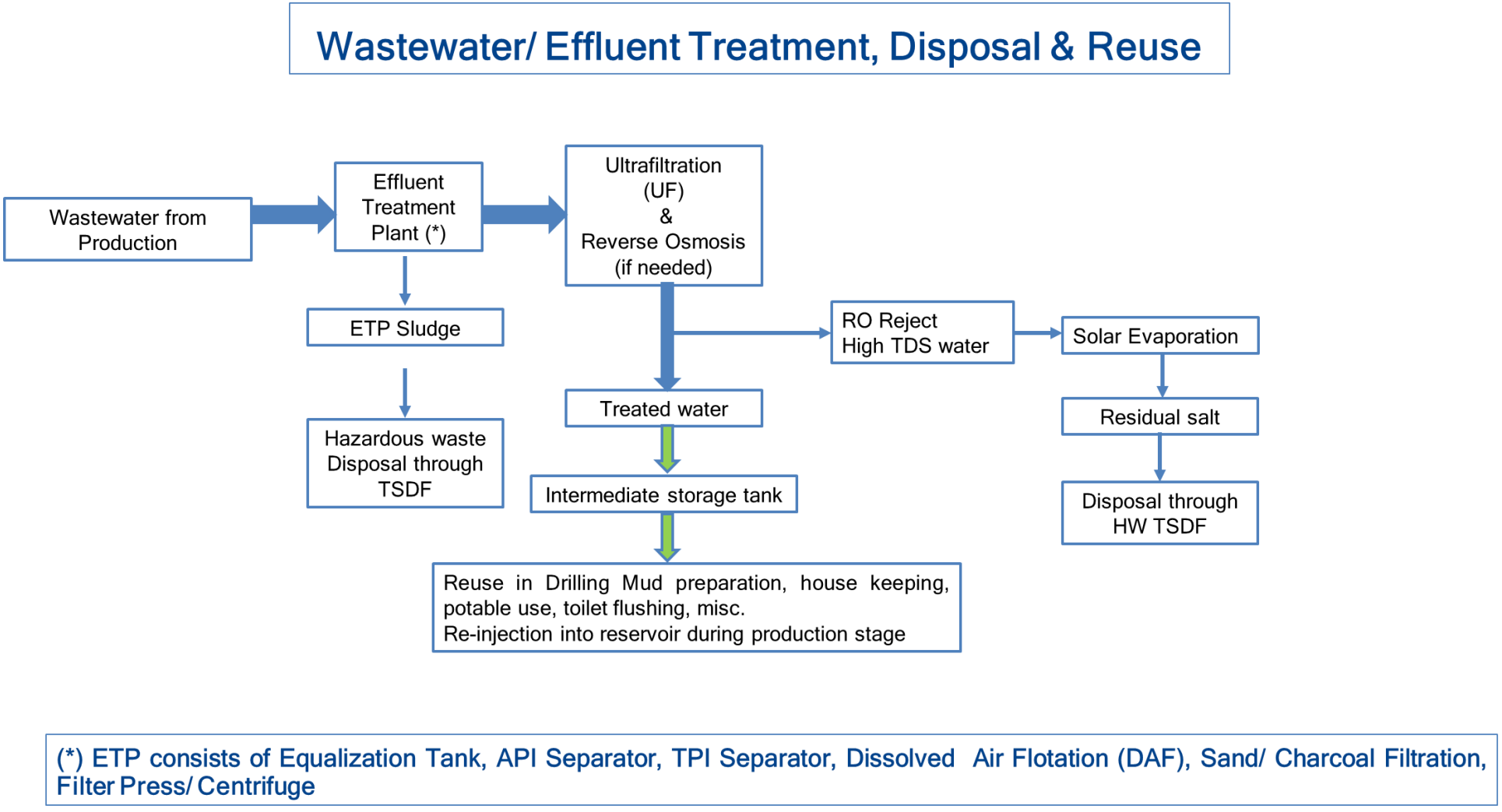


Figure 2.4: Wastewater/ Effluent Treatment, Disposal & Reuse during Operation of EPU/QPU

No Discharge to the Surface. In principle ZLD concept will be implemented.

2.5.4 WASTES TREATMENT AND DISPOSAL FOR EPU/QPUS

The expected waste generation from EPUs/QPUs will be as below:

Sl. No	Nature of waste	Quantity during Drilling Activities	Mode of Disposal
A	**Hazardous Waste**		
1	Used Lubricating oil,	1 ton/ EPU/QPU	Used oil will be sent CPCB authorized recyclers. The oil contaminated sludge will disposed as per Hazardous Waste Rules, 2016
B	**Non Hazardous Waste**		
2	Scrap metals, chemicals, painting wastes.	100 kg per EPU/QPU	To be disposed of their registered vendors on periodic basis.

Source: Vedanta Limited (Division: Cairn Oil & Gas)

Sensitivity: Internal (C3)

3.0 IMPACT & MITIGATION MEASURES OF EPU/QPU OPERATION

3.1 INTRODUCTION

The anticipated impacts of the proposed project activities on the environment have been evaluated and predicted based on the information collected at the site and the information provided by the Vedanta Limited (Division: Cairn Oil & Gas).

Actual and foreseeable events, including operation of Early Production Units/Quick Production Units (EPUs/QPUs) and typical events are discussed in this section.

It is however important to remember that operations related to Exploration and Appraisal well drilling, testing and early production activities also include positive socioeconomic impacts in terms of increase in local business opportunities and on a larger perspective, by providing potential energy security at a national level. During drilling and during operation of EPU/QPU, the well site shall be unmanned and cordoned off adequately. Security shall be stationed to ensure restricted entry. Impacts on various aspects are described below.

Table 3.1: Impact Prediction Matrix for proposed project activities

Activities	Air	Noise	Traffic	Topography & Drainage	Land use	Surface Water	Ground Water	Soil	Ecology & Biodiversity	Disruption on infrastructure	Job Opportunities	Common Property Resources	Loss of crop/agriculture	Population influx	Occupational Health & Safety	Community Health & Safety	Aesthetics
Operation of EPU/QPU																	
GEG/ DG set emission	✓	✓															
Flaring of Gas	✓	✓													✓		
Produced Water						✓		✓									

Source: ABC techno Labs India Pvt. Ltd.

3.2 IMPACT ON TOPOGRAPHY

Impacts	The major impacts arising out of site preparation and set up of EPU/QPU is alteration of local topography. The raising of the height of the construction site above the surrounding land may lead to water logging of the adjacent land or disrupt the existing drainage pattern. A storm water drain will be built at the periphery of the EPU/QPU to contain the site drainage during excessive rain.
Mitigation	✓ Provision of drainage system will be made for surface run-off.

3.3 IMPACT ON AIR ENVIRONMENT (REFER SECTION NO.4.7 IN EIA REPORT

Operation of EPU/QPU facilities

- ✓ Emission from DG setsand GEG
- ✓ Emission from flare stacks

Table 3.2: Source and Emission Characteristics for Dispersion Modeling

Emission Sources	Stack Height (m)	Stack dia (m)	Stack Gas Temp. (K)	Stack Gas Velocity m/s	Emission rate (g/s)		
					NO_2	SO_2	PM_{10}
Scenario 2 (During operation of EPU/QPU)							
EPU Flare	30	0.3	1273	71	2.52	-	0.52
1 MW- GEG	10	0.305	573.15	283.16	2.52	-	0.52

**Emission for flare is calculated using Emission Factors as described in US EPA AP42, fifth edition, January 1995.*

Source: ABC Techno Labs India Pvt. Ltd.

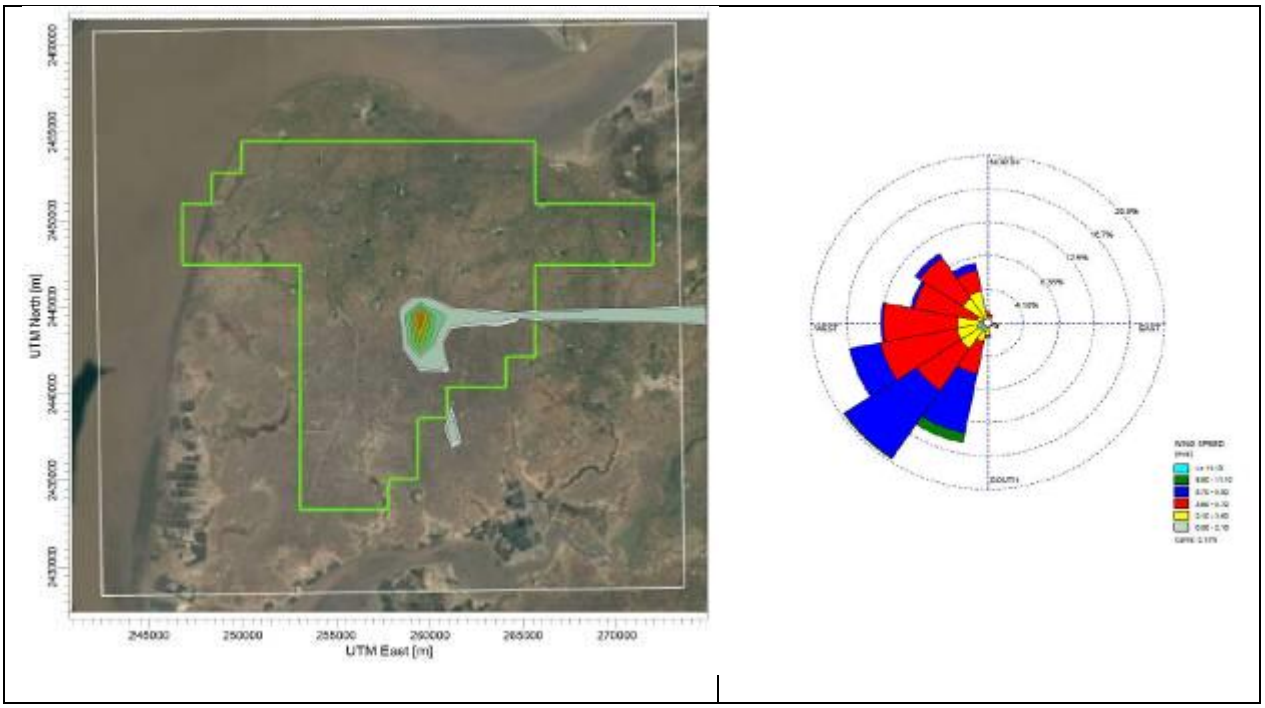
Table 3.3: Resultant Concentrations in Air Quality monitoring locations (S-2)

Receptor	PM10µg/m³			NOx, µg/m³			SO_2, µg/m³		
	Baseline	Predicted	Resultant	Baseline	Predicted	Resultant	Baseline	Predicted	Resultant
AQ1	78.6	0.08	78.68	19.9	1.48	21.38	78.6	0.08	78.68
AQ2	78.6	0.08	78.68	19.9	1.48	21.38	78.6	0.08	78.68
AQ3	78.6	0.08	78.68	19.9	1.48	21.38	78.6	0.08	78.68
AQ4	78.6	0.08	78.68	19.9	1.48	21.38	78.6	0.08	78.68
AQ5	78.6	0.08	78.68	19.9	1.48	21.38	78.6	0.08	78.68
AQ6	78.6	0.08	78.68	19.9	1.48	21.38	78.6	0.08	78.68
AQ7	78.6	0.08	78.68	19.9	1.48	21.38	78.6	0.08	78.68
AQ8	78.6	0.08	78.68	19.9	1.48	21.38	78.6	0.08	78.68
Max	78.6	0.08	78.68	19.9	1.48	21.38	78.6	0.08	78.68
NAAQ Standard	**100 µg/m3**			**80 µg/m3**			**80 µg/m3**		

Source: ABC Techno Labs India Pvt. Ltd.

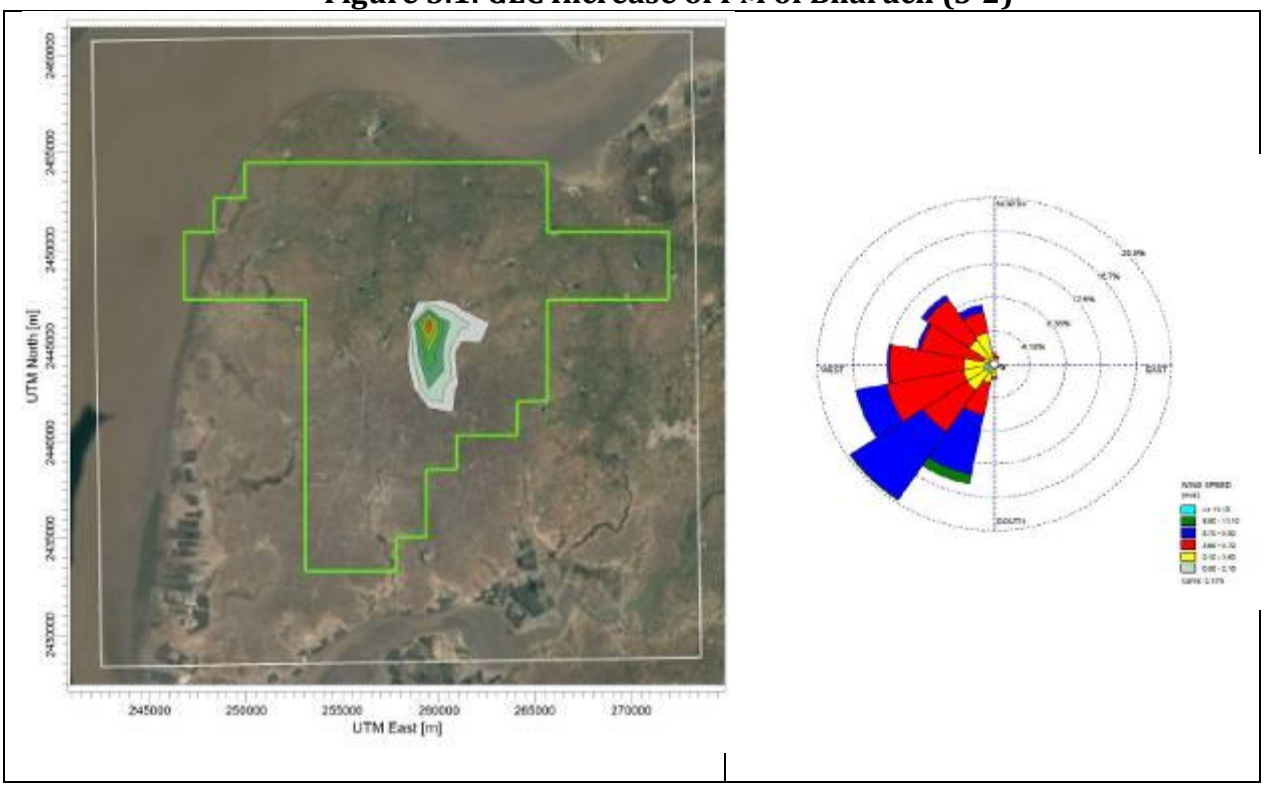
Sensitivity: Internal (C3)

A. Isopleths for Scenario 2 (During QPU Operation)



Source: ABC Techno Labs India Pvt. Ltd.

Figure 3.1: GLC Increase of PM of Bharuch (S-2)



Source: ABC Techno Labs India Pvt. Ltd.

Figure 3.2: GLC Increase of NOx of Bharuch (S-2)

To minimise the adverse impacts of flaring the following measures should be adopted:

- ✓ Proper engineering controls to ensure complete combustion of gas;

- ✓ No cold venting will be resorted instead flaring will be done with combustion efficient elevated flare tip; and
- ✓ Location of flare stacks to be chosen considering the sensitive receptors adjoining the site.

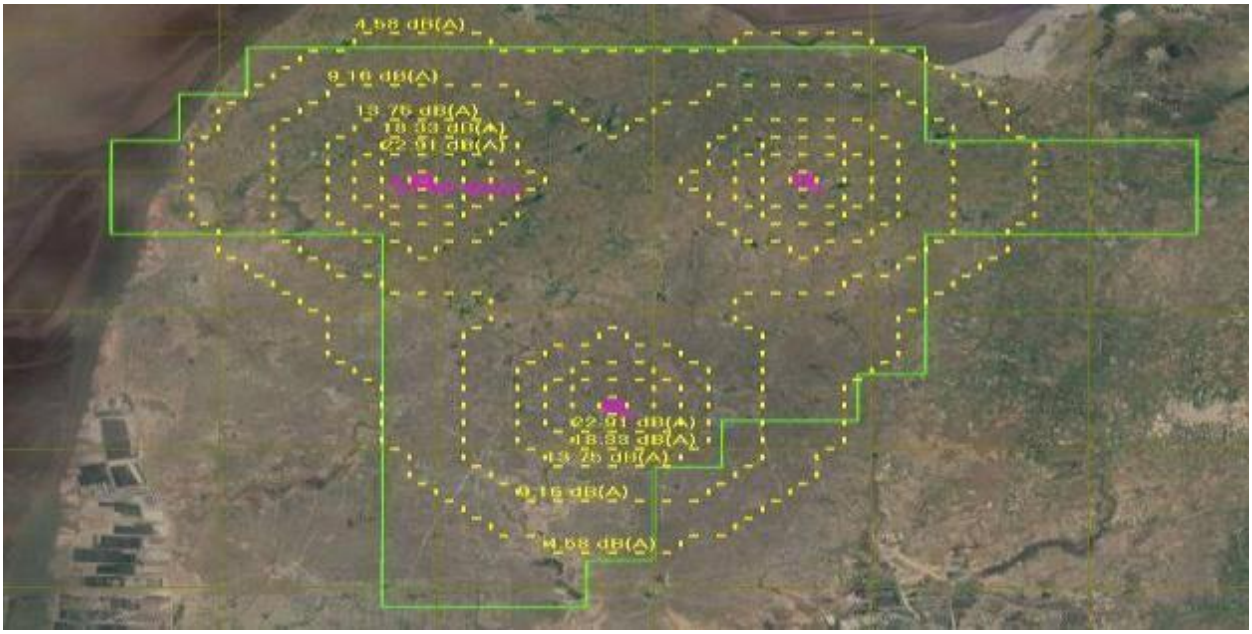
3.3 IMPACT ON NOISE ENVIRONMENT

Operation of EPU/QPU:

- ✓ Flaring of the Gas
- ✓ GEG, DG set

Noise modeling for the project site from DG sets(s):

In the proposed project, 3 X 1000 (2 W+1 S) DG sets or 2 X 1850 KVA (1W+1S)) each at drilling site and during early production phase will be GEG 1MW output and 500 KVA D.G. set (emergency backup) has been proposed to meet the power requirement. As per the primary baseline study conducted at the site, average temperature is 30°C and relative humidity is 60%, same has been considered in the noise modeling. Figure showing noise modeling for the project site from DG sets(s) is given in Figure 3.3.



Source: ABC Techno Labs India Pvt. Ltd.

Figure 3.3: Noise Model Showing Noise levels from the DG Set(s)

From the noise modeling the Hydrocarbon Block is expected to receive a noise level of around 27.49 dB (A). This noise modeling has been carried out considering worst conditions, in actual; the noise level is expected to be very less than the calculated value.

Mitigation Measures

- ✓ Installation of adequate engineering control on equipment and machinery (like mufflers & noise enclosures for DG sets and PC pumps) to reduce noise emission levels at source, carrying out proper maintenance and subjecting them to rigid noise control procedures.
- ✓ Providing Personnel Protective Equipments (PPEs) like ear plugs/muffs to workers at site.
- ✓ Undertaking periodic maintenance of vehicles and machinery to reduce noise levels.

3.4 IMPACT ON ROAD & TRAFFIC

Operation of EPU/QPU:

- ✓ Transport of produced Oil to nearest location.

Impacts

It has been estimated that maximum output of each EPU/QPU system will be about 2000 BOPD or 318 KL of Oil. The produced oil will be transported through tankers of each capacity of 29 KL. Hence, total number of tankers required for transportation will be about 11 Tankers per day from each EPU/QPU site. Hence, the scale of impact of traffic movement due to the proposed project is considered to be minimum. The potential impact on road and traffic due to operational traffic is assessed to be minimum.

Vedanta Limited (Division: Cairn Oil & Gas) will ensure that traffic management plan is implemented so that proper vehicular movement is done with minimal disturbance to nearby communities. The impacts will be for limited duration. Thus, the impacts are temporary in nature and limited mostly within the production site.

Mitigation Measures

- ✓ Speed limits will be maintained of vehicles involved in transportation
- ✓ Entry of vehicles into the production site area is prohibited except for material movement.
- ✓ Adequate parking will be provided outside the production location.

3.5 IMPACT ON WATER ENVIRONMENT

Operation of EPU/QPU:

- ✓ Any produced water and liquid hydrocarbon fractions collected in the test separator during well testing.

Sensitivity: Internal (C3)

Impacts

It is estimated that the concretization of the EPU/QPU site will be completed within a very short duration. This will reduce the probability of surface wash-out of silty material if there is no rain within the construction period. Further the surface run off from the site after it is concretized will be collected in a storm water drain that will have requisite silt trap and oil trap. The filtered water of the storm water drain will further be discharged after compliance with the CPCB Inland Water Discharge Standards.

During Early production, produced water (wastewater) of 225 KLD (considering upto 70% water cut in well fluid produced) will be generated and will be treated in mobile ETP and will be adequately disposed after meeting the GSR 546 Rules. As the surface run off will hardly have any silt or oil and grease load that will impact the adjoining area or contaminate the natural drainage, the significance of impact will be low.

Mitigation Measures

- ✓ Drainage and sediment control systems at the well site will be efficiently designed;
- ✓ Proper treatment of all wastewater will be made to ensure that they comply with criteria set by the regulatory body (MoEF&CC and GPCB);
- ✓ All chemical and fuel storage areas, process areas will have proper bunds so that contaminated run-off cannot escape into the storm-water drainage system.

3.6 IMPACT ON SOIL ENVIRONMENT

Operation of EPU/QPU:

- ✓ Spillage of chemical, spent mud, hazardous waste, etc.;
- ✓ Surface runoff from waste storage area and spillage area.

Mitigation Measures

- ✓ The top soil will be stored properly;
- ✓ Manage spill of contaminants on soil using spill kits;
- ✓ Storage of Solid Waste in designated areas within well pad.

Embedded controls have been considered in the project design to reduce the impact on soil. Also, most of these impacts on the soil fertility are reversible as the drill sites would be reinstated after the drilling. The contamination of soil due to spillage of chemical and fuel is likely to happen only in case of accidents.

3.7 BIOLOGICAL ENVIRONMENT

Impact on the ecology will be mainly confined to drilling site and approach road and will vary with the proximity from the drilling locations.

There are no significant impacts envisaged on the ecological environment during operation of EPUs/QPUs.

Mitigation Measures

The mitigative measures pertain to surface run-off from well site, wastewater discharges from EPUs/QPUs, solid waste disposal etc;

- ✓ The working area will always be kept minimum
- ✓ For felling of trees prior approval from concerned Department shall be obtained;
- ✓ Fencing would be done on the camp site to avoid any unfortunate encounter with faunal species.
- ✓ Appropriate shading of lights would be ensured to prevent unwanted scattering;

3.8 IMPACT ON OCCUPATIONAL HEALTH AND SAFETY

Vedanta Limited (Division: Cairn Oil & Gas) will adopt necessary control measures through implementation of mitigation measures and provision of proper PPEs to workers operating in aforesaid area to prevent and/or mitigate adverse health related impacts. Hence any possible occupational health impact from exposure to such fugitive dust is not likely to be of major significance.

Mitigation Measures

- ✓ Periodic onsite surveillance to be conducted so that the workers use the designated PPEs all the time;
- ✓ Health surveillance would be conducted of personnel working in the aforesaid areas;
- ✓ Regular health and safety training to be provided to workers.

Sensitivity: Internal (C3)

4.0 Environmental Management Plan of EPU/QPU operation

Environmental management plan (EMP) includes action to protect environment by using instruments, adoption of industrial best practices, surveillance and statutory norms. To mitigate the adverse impacts, if any, caused due to proposed operation of EPUs/QPUsat CB-ONHP-2017/2 block area, the EMP has been formulated. The EMP has prescribed environmental monitoring and implementation of environmental protection measures during all phases of the proposed activities. The environmental and socio-economic aspects are dealt with likely environmental control measures are suggested as under:

Environmental Attributes	Phase	Mitigation Measures
Air Quality Management	EPU/QPU operations	✓ Periodic maintenance of GEG/DG sets will be undertaken
Noise Quality Management	EPU/QPU operations	✓ Periodic maintenance of GEG/DG sets will be undertaken
Surface Water Quality	EPU/QPU operations	✓ No impacts predicted as No Discharge to any Surface bodies. ✓ In principle ZLD concept will be implemented.
Ground Water Quality	EPU/QPU operations	✓ No significant impacts to ground water quality can be associated with activities duringEPU/QPU operations
Waste Management	EPU/QPU operations	✓ Hazardous waste (waste and used oil) would be managed in accordance with Hazardous Waste (Management, Handling & Transboundary Movement) Rules, 2008. ✓ The oil will be sent to authorized recyclers. ✓ Proper segregation and storage of recyclable waste in designated bins.
Soil Quality Management	EPU/QPU operations	✓ Spill kits would be made available at all fuel and chemical storage areas. All spills/leaks contained, reported and cleaned up immediately. ✓ Used/spent oil to be collected and stored properly

Sensitivity: Internal (C3)

vedanta
transforming elements

CAIRN

28th January, 2020
Ref: CB-ONHP-2017/2/MOEF/1

The Member Secretary,
EAC Industry II,
Ministry of Environment, Forest and Climate Change,
Indira Paryavaran Bhawan,
Aliganj, Jorbag Road,
New Delhi – 110 003.

28/01/2020

Subject: Environmental Clearance for Exploration, Appraisal and Early Production of oil and gas in CB-ONHP-2017/2 block in Jambusar Taluk, Bharuch Dist., Gujarat.

Reference: Ref: 1) EAC, MoEF&CC Meeting dated 23-01-2020 (Agenda No.16,Case 16.7.3)
2) ToR- File No. IA-J-11011/98/2019-IA-II(I) dated 20th April 2019
3) Proposal No. IA/GJ/IND2/99828/2019 dated 19th March 2019

Dear Sir,

This has reference to the subject-mentioned EAC meeting held on 23rd Jan 2020, for obtaining environmental clearance. Based on the discussion we had in the EAC meeting and as advised by the Chairman and Member Secretary, we have prepared the Addendum to final EIA Report for CB-ONHP-2017/2 block with regard to the setting up of early production units and production of crude oil and associated natural gas.

The Addendum to the EIA report highlights the early production system /process, handling /evacuation of crude oil, treatment and disposal of produced water and other associated environmental impacts and mitigation measures.

Please find enclosed the addendum for your kind consideration and perusal.

Thanking You,

Yours faithfully,

For **Vedanta Limited (Div: Cairn Oil & Gas)**

Cairn oil & Gas

Dilip Kumar Bera
DGM-Environment

Enclosure: As above

Annexure-4: Petroleum Exploration License (PEL)

Grant of Petroleum Exploration License for the Block CB-ONHP-2017/2 (OALP), are measuring 317.00 Sq. km in Bharuch District.

Government of Gujarat
Energy & Petrochemicals Department
No. PEL/14-2019/2496/E
Sachivalaya, Gandhinagar.
Date: - .../07/2019
19 JUL 2019

Read:-

1) Vedanta Limited letter dated 22nd October, 2018.
2) Ministry of Petroleum & Natural Gas No. O-12017(11)/25/2018-ONG-II, dated 4th December, 2018.

ORDER: -

In exercise of the powers conferred by Rule 5(1) (ii) of the Petroleum and Natural Gas Rules, 1959, the Government of Gujarat is pleased to grant a Petroleum Exploration License to the Vedanta Limited as an operator for a period of 8 years (eight years) to prospect for petroleum with effect from the date of issue of the order in the area admeasuring 317.00 Sq.km for the Block CB-ONHP-2017/2 (OALP) in Bharuch District.

The grant of the lease is subject to the terms and conditions mentioned below:

(a) The licenses shall be respect of Crude Oil and Natural Gas / CBM / Shale Gas etc.
(b) The grant of license shall be valid for a period of 8 (Eight) years from the date of issue.
(c) The licenses shall be subject to the provision of Oil field (Regulations and Development) Act, 1948, (53 of 1948) and the Petroleum & Natural Gas Rules, 1959 made there under as amended from time to time.
(d) No existing infrastructure public or private underground utility and human beings to be harmed.
(e) The licensee have to submit the report of activities carried out in the said PEL area to the Director of Petroleum every month.
(f) If any minerals are found during the exploration work, the Vedanta Limited should bring them to the notice of State Government with full particulars available with them.

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(g) The Vedanta Limited has deposited security deposit prescribed in Rule 13 of the Petroleum & Natural Gas Rules, 1959. The Vedanta Limited has also paid the necessary amounts as an application fee and preliminary expenses as detailed below:

Sr.	Nature of Payment	Challan Date	Amount Rs.	Head of Account	Name of the Treasury
1.	Security Deposit	26/10/2018	Rs. 4,00,000/-	8443-00-103-00 – Civil Deposit	Gandhinagar
2.	Application fee & Preliminary Expenses	24/10/2018	Rs. 1,63,400/-	0853-00-102-03	Gandhinagar

(h) The Vedanta Limited shall immediately an demand submit to the State Government and the Director of Petroleum confidentially a full report of the Geological data of all the minerals found during the exploration of oil and/or gas.

(i) The Vedanta Limited shall take preventive measures against the hazard of fire underground and/or on the surface and shall keep such equipment, supplies and means to extinguish the fire at all times and shall pay such compensation to the third party and/or Government as may be determined in case damage due to fire.

OTHER TERMS AND CONDITIONS

(1) Immediately on demand or upon determination or relinquishment of any area covered by this lease, the lessee shall furnish to the Central Government / DGH, through the State Government confidentially, the complete records of data as specified in Rule 19 (c) of the P&NG Rules, 1959. The lessee shall submit to Central Government without fail, every six months the results of all operations, boring and test production.

(2) All army Cantonments, stations, depots, establishments, field firing ranges and ordnance factories within the exploration block are excluded from exploration, survey and digging activities.

(3) For development of new roads and tracts related to exploration activities in the border belt prior sanction of Ministry of Defense shall be obtained.

(4) For work in close proximity of Army cantonments / Stations, depots, rangers, ordnance factories and visits to these installations, if any, specific permission of Army authorities shall be taken.

(5) Necessary approval from the Competent Authority should be obtained for the Reserve Forest Area (if any) falling in the licensed area.

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(6) If international companies or foreigners are entrusted with the task, the Licensee may get security vetting of these companies through the appropriate Government agencies. The lessee shall also seek prior clearance from the Ministry of Home Affairs and Ministry of Defense with the full particulars of the foreigner employees.

(7) The exploration activities shall not interfere with the safety / security of any civil VA/VP covered in this area.

(8) The Licensee shall issue identity card to each of the employees. The system of checking identity cards of personnel will have to be strictly enforced.

(9) Security to its employees both at the project sites and en-route in insurgency-effected areas will be the responsibility of the Licensee.

(10) The Licensee shall allow Government, authorities to enter and inspect area for security check-up, if necessary.

(11) Licensee shall not employ any foreign national surreptitiously in the area along the border.

(12) No ground / aerial survey of the Defense Vas /VPs is permitted. Aerial survey, if any would be governed by the provisions of Ministry of Defense Letter No. 18(8)/82-D (GS 111) dated January 31, 1989.

(13) Air Force area falling within the zones embarked for delineation should be avoided.

(14) For works in close vicinity of Indian Air Force units / installations and visit to these installations, if any, specific permission of Air Headquarters should be obtained.

(15) Any work within 500m of the perimeter of Air Force Station should be intimated to Air Force authority at least 10 days before commencement of the activities.

(16) No obstruction shall be erected higher than 15 mtrs, within 5 kms. radius of Air Force, Air Fields and construction of any high mast / towers shall be carried out in consultation with the Air Force Authority.

(17) Planned use of explosives on or below the surface shall be intimated to Air Force Authority at least 48 hours in advance.

(18) The licensee shall take permission under relevant rules, regulations, orders etc of concerned Government Authorities or any other agency as the case may be for carrying out PEL activities.

(19) No drilling work or installation of pipeline shall be carried out in and around Village Lake or residential area.

(20) If work has to be carried out in the land owned by Gram Panchayat permission of appropriate authority shall be taken before beginning the work.

(21) If work has to be carried out in the land owned by Privates individuals permission there of shall be taken before beginning the work.

(22) No damages to the Major or Minor Minerals should be done.

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(23) All approach roads and natural drainage should be kept clear, open and intact.
(24) No work shall be carried out as to damage public interest in any form.
(25) No existing infrastructure public or private underground utility and human beings to be harmed.
(26) Licensee shall execute a separate lease deed in respect of such other covenants, terms and conditions as per the prescribed format.
(27) Infringement of any one or more of the conditions enumerated above shall automatically render this PEL null and void ab-intio.

By order and in the name of the Governor of Gujarat,

(Ronak Modi)
Section Officer
Energy & Petrochemicals Department

To,

- Shri Pinakadhar Mohapatra, Director Exploration, Vedanta Limited, 1st Floor, "C" wing, Unit 103, Corporate Avenue, Atul Projects, Chakala, Andheri (E), Mumbai 400093.

Copy to:-

- The District Collector, Bharuch.
- The Director, Office of the Director of Petroleum, Udyog Bhavan, Gandhinagar.
- The Accountant General, Ahmedabad.
- The Addl. Accountant General, Rajkot.
- The Superintendent of Stamps, Gandhinagar.
- Shri K. K. Asokan, Under Secretary to Government of India, Ministry of Petroleum & Natural Gas, Shastri Bhavan, New Delhi.
- Select file – 2019.

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Annexure-5: Letter from GPCB reference to the proposed early production information in Draft EIA report and public hearing presentation

REGIONAL OFFICE

GUJARAT POLLUTION CONTROL BOARD

PLOT NO:C-1/119/3, GIDC, PHASE-2, NARMADA NAGAR
BHARUCH-392015
PHONE: 246333 FAX: 246345

No. GPCB/RO-BHA/BRCH-PH-88 / 3402 /2020 Date: 06/05/2020

To,
M/s Vedanta Limited (Division Cairn Oil & Gas),
First Floor, C Wing, Unit-103,
Corporate Avenue, Atul Projects,
Chakala, Andheri (East),
Mumbai- 400093

Sub: Clarification on Project detail for the proposed project Onshore oil & gas exploration and appraisal in CB-ONHP-2017/2 block of M/s Vedanta Limited (Division Cairn Oil & Gas) located in Jambusar Taluka, District- Bharuch

Ref: (1) Your letter dated 19.02.2020
(2) Minutes of the 16th meeting of the Expert Appraisal Committee (Industry-2 sector) held during 21st to 23rd January 2020.

Sir,

With ref to above cited Subject & reference, it is clarified that the Public Hearing for the above mentioned proposed project is conducted on 18.10.2019 at 11:00 hrs at Prant Office, Jambusar, Kavi Kamboi Road, Tal- Jambusar, District Bharuch and this proposed project includes Drilling of 69 Onshore exploratory (including appraisal) wells and Setting up of Early Production Units (EPUs)/ Quick Production Units (QPUs) for produced well fluid processing and production of up to 28000 BOPD crude oil and up to 4.2 MMSCFD associated natural gas in CB-ONHP-2017/2 block located in Jambusar Taluka, Bharuch District of Gujarat which is already mentioned in the draft EIA Report submitted by the project proponent. The above project detail was also mentioned in the presentation made by the representative of the project proponent during the public hearing.

This is for further necessary action.

Thanking you,

Yours sincerely,

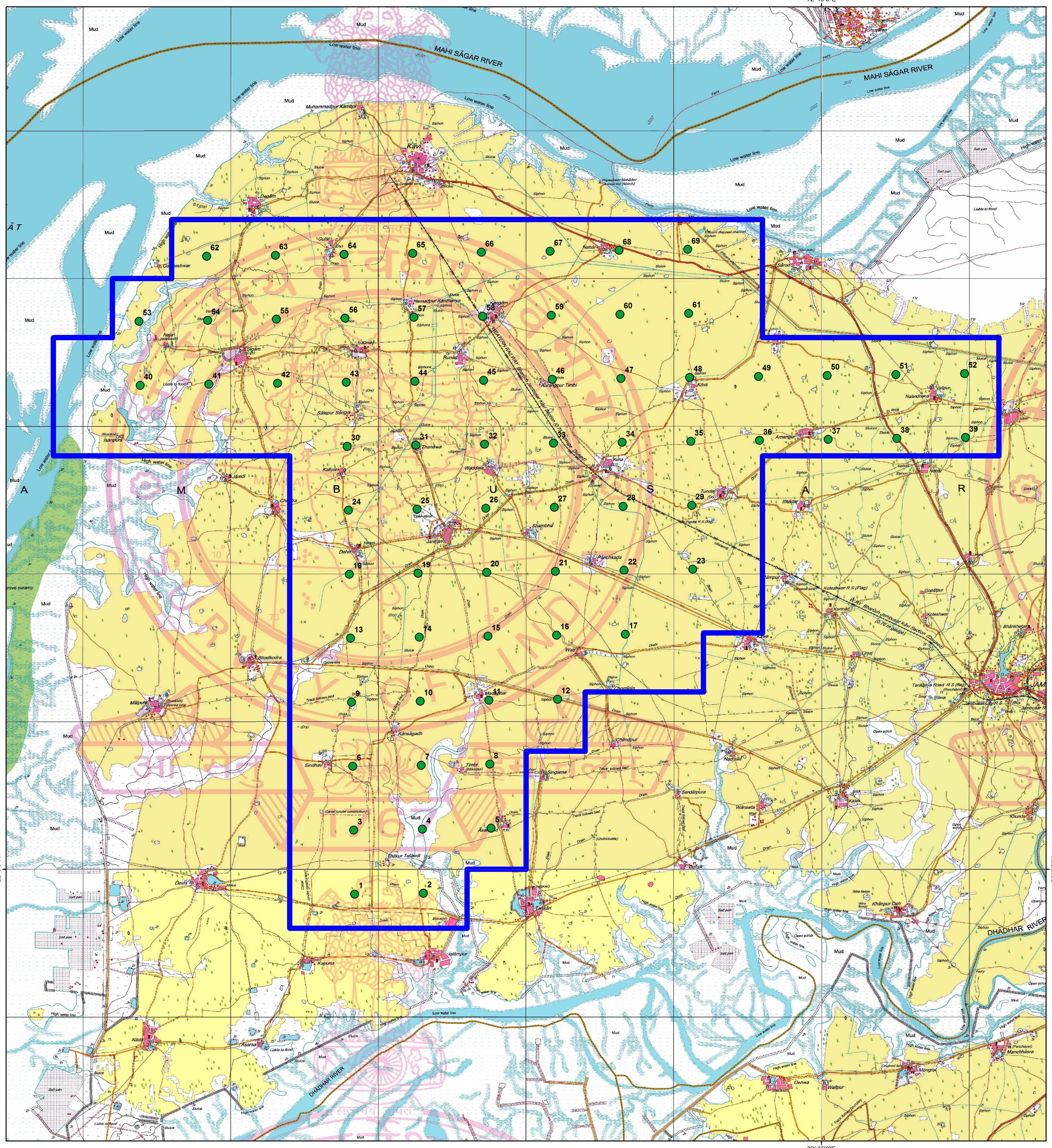
(F.M. Modi)
Regional Officer

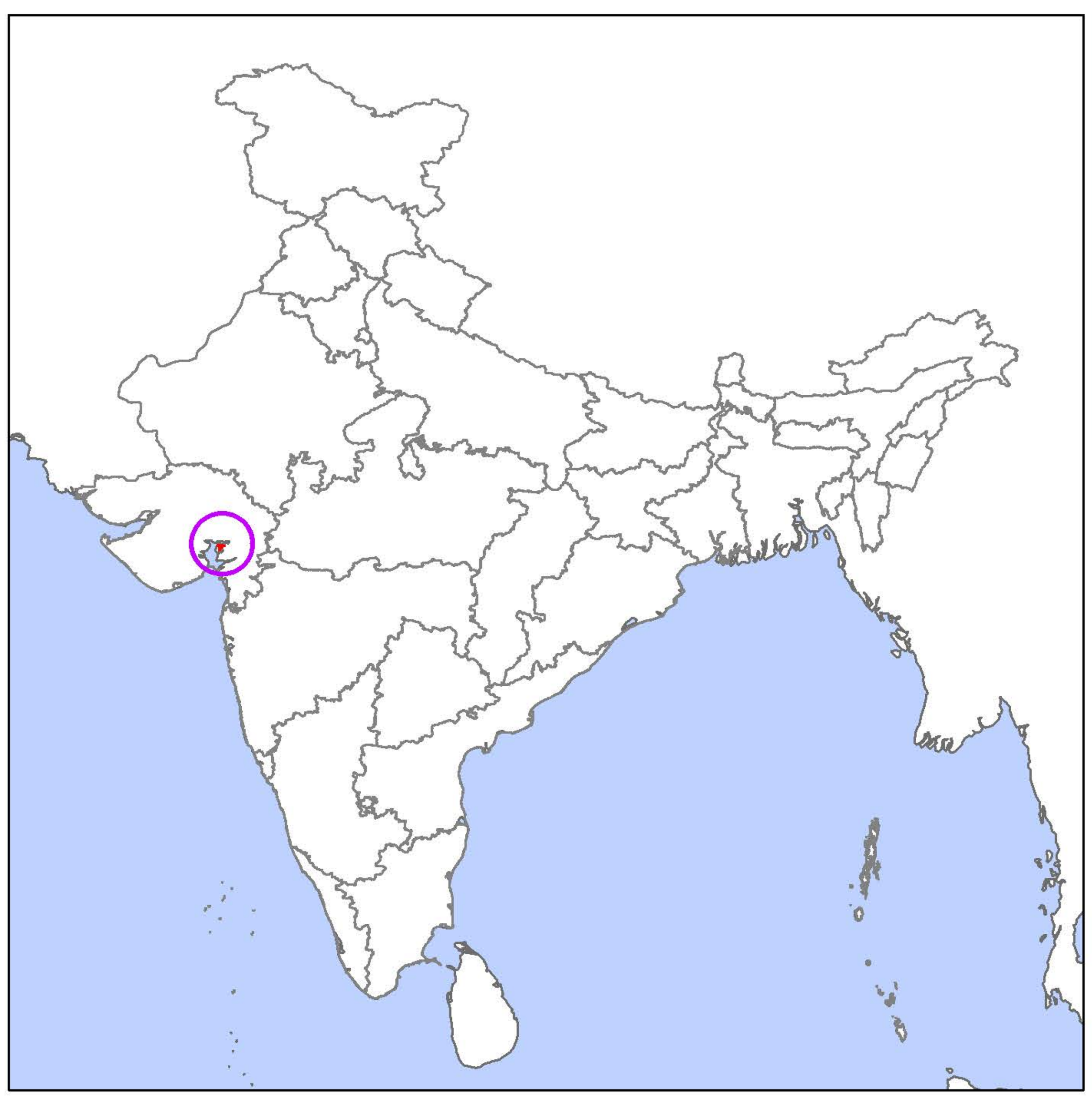
Copy to:

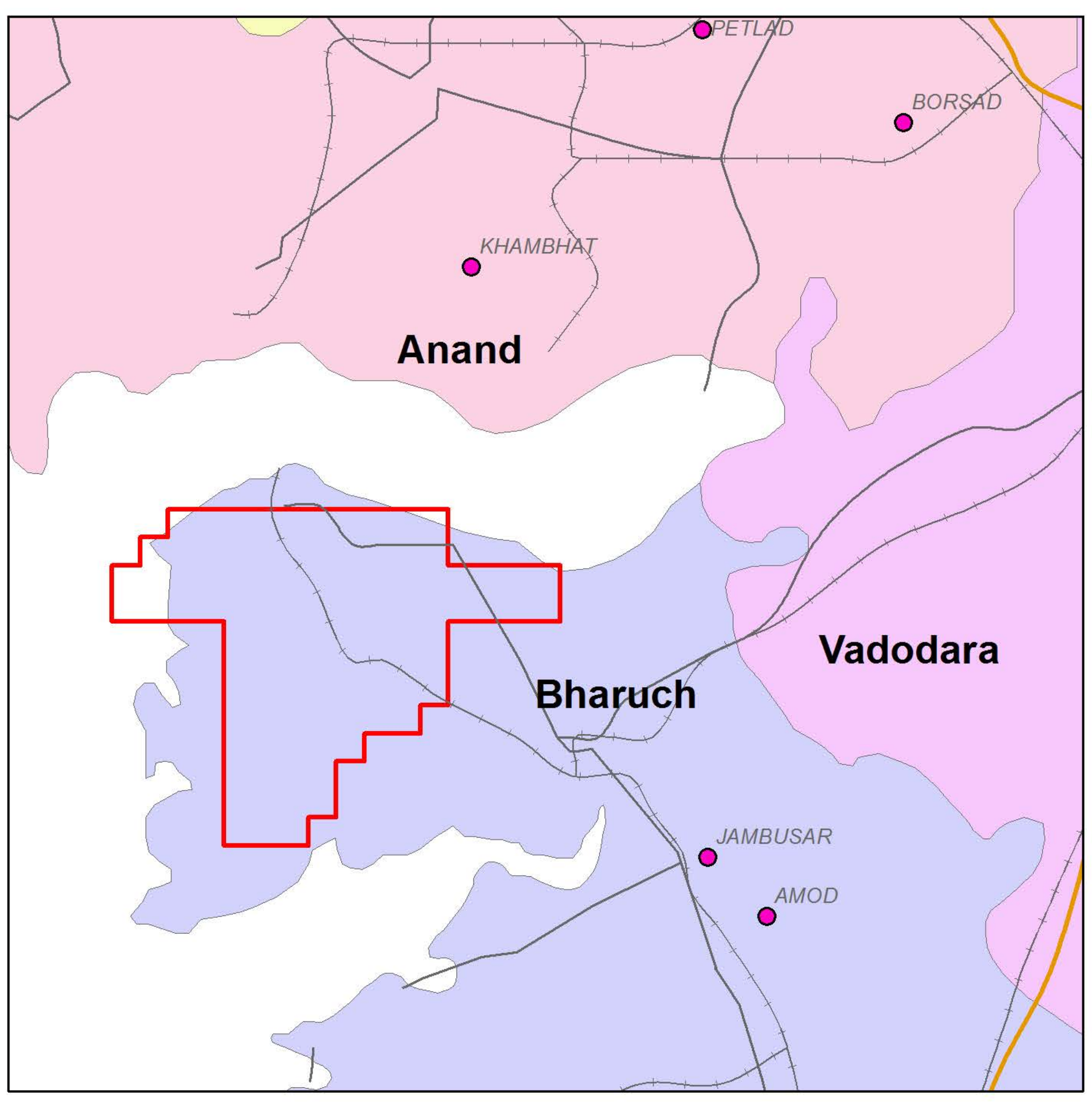
(1) Expert Appraisal Committee (Industry-2 sector),
Ministry of Environment , Forest & Climate Change,
Indira Paryavaran Bhavan, Jor Baug Road,
New Delhi- 110003: For information & further necessary action please.

(2) Member Secretary, GPCB, Gandhinagar: For information please

Annexure-6: Topo sheet and Land-Use map







PROJECT LOCATION ON TOPOSHEET

● Planned Wells (69)

▭ Project Area

N

Data Source :

Survey Of India Open Series map (OSM)

Scale : 1: 50,000

Toposheet No. : 46B12, 46C9, 46B16

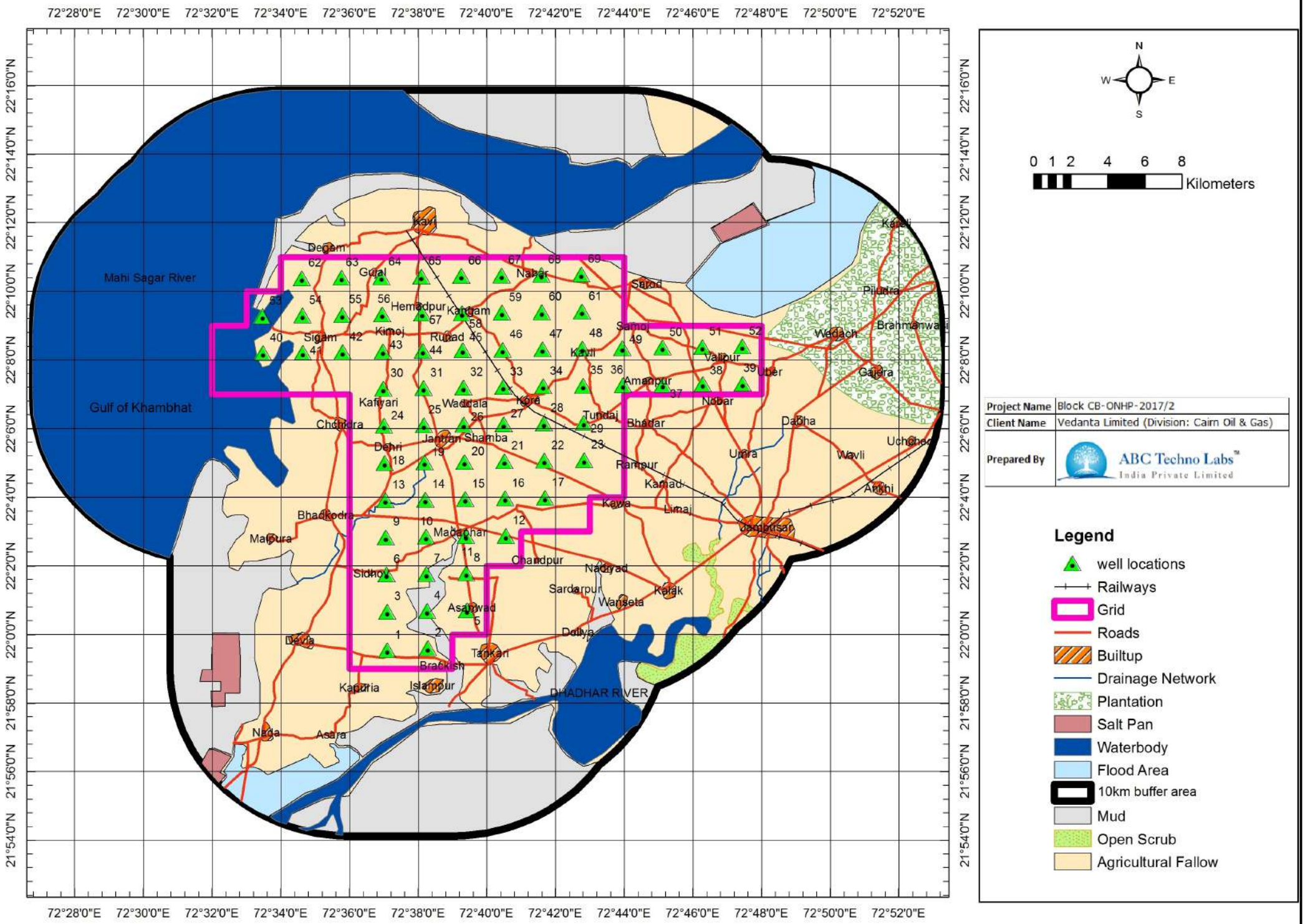
Coordinate Reference System : WGS_1984

0 1 2 4
km

vedanta transforming elements

CAIRN

MAP SHOWING LAND USE WITH SITE LOCATION IN 10KM RADIUS - Vedanta Limited (Division: Cairn Oil & Gas)



Project Name	Block CB-ONHP-2017/2
Client Name	Vedanta Limited (Division: Cairn Oil & Gas)
Prepared By	ABC Techno Labs™ India Private Limited

Legend

- well locations
- Railways
- Grid
- Roads
- Builtup
- Drainage Network
- Plantation
- Salt Pan
- Waterbody
- Flood Area
- 10km buffer area
- Mud
- Open Scrub
- Agricultural Fallow