

5th June 2020
Ref: WLCP/AA-4/1

The Principal Chief Conservator of Forest & Wildlife, (PCCF - WL),
Aranya Bhawan, Panjabari,
Guwahati, Assam- 781037

Sub: Request for the approval of Conservation Plan of two Schedule I Species – Hoolock Gibbon and Indian Elephant for the proposed "Onshore Oil & Gas Exploration, Appraisal and Early Production in AA-ONHP-2017/4 Hydrocarbon Block" in Jorhat District of Assam.

Dear Sir/ Madam,

Vedanta Limited (Div.: Cairn Oil & Gas) has been allocated the Onshore AA-ONHP-2017/4 Hydrocarbon block by MoP&NG, Govt. of India. Vedanta Limited (Div.: Cairn Oil & Gas) proposes to carry out oil & gas exploratory & appraisal well drilling and early production of crude oil and associated natural gas in the AA-ONHP-2017/4 block, Jorhat District, Assam. Relevant excerpts of the Revenue Sharing Contract (RSC) depicting block boundary along with apex coordinates is enclosed **Annexure 1** for kind reference.

As per the EIA notification, 2006 and subsequent amendments, exploration and appraisal drilling activity is categorised as Category 'B2' project which required environmental clearance from SEIAA, Assam and early production is categorised as Category 'A' project which required environmental clearance from MOEF&CC.

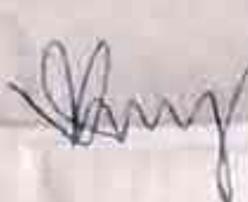
Vedanta Limited (Div.: Cairn Oil & Gas) has submitted two separate applications for the environmental clearance of exploration & appraisal drilling activity and early production in SEIAA Assam and MOEF&CC respectively. EIA report has been prepared as per the prescribed ToR issued by MoEF&CC vide letter no. IA-J-11011/93/2019-IA-II(I) dated 18th April 2019.

In order to assess the environmental impacts due to the proposed project, Environmental impact Assessment (EIA) report has been prepared and as per the studies the two Schedule I species Hoolock Gibbon (*Hoolock hoolock*) and Indian Elephant (*Elephas maximus indicus*) are located in the study area. Based on the studies, the detailed conservation plan has been prepared and copy of the same is enclosed for your kind perusal as **Annexure 2**.

We request you to kindly approve the conservation plan. For any additional information required, we will be pleased to provide the same.

Thanking You,
Yours faithfully,

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



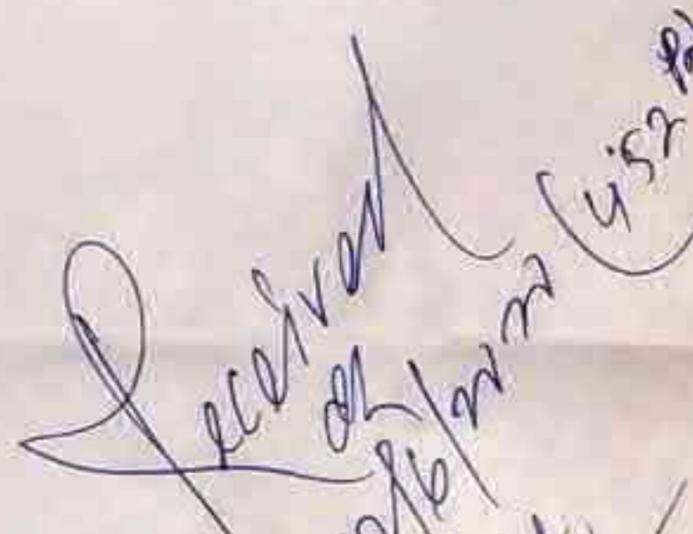

K. K. Nayak
Head - HSE & Compliance (Exploration)

Enclosure: As above

VEDANTA LIMITED
(Formerly known as Sesa Sterile Limited)

Cairn Oil & Gas : DLF Atria, Phase 2, Jacaranda Marg, DLF City, Gurugram-122002, Haryana, India
T +91-124 459 3000 F +91-124 414 5612 | www.cairnindia.com

Registered Office: Vedanta Limited, F 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


12/6/2020 (45228)



Conservation Plan for Schedule-I species Proposed project: Setting up of Early production units and Production of Oil and gas in AA-ONHP-2017/4 Block, Jorhat District, Assam

Vedanta Limited.
(Division: Cairn Oil & Gas)

June,2020

Table of Contents

1.1	Introduction	1
1.2	Project Description.....	1
1.3	Study Area	2
1.4	Project Status	2
1.5	Objective of The Study.....	3
1.6	Limitations.....	3
2.	Description of the Project	4
2.1	Objectives of Proposed Project.....	4
2.2	Benefits of the Proposed project.....	4
2.3	Block Location & Description	5
2.3.1	Location of Blocks.....	5
2.3.2	Accessibility	6
2.4	Environmental Settings.....	7
2.5	Location of Early production Unit	8
2.6	Setting Up of Early production Unit.....	8
2.7	Project Cost	10
3.	Wildlife Conservation Plan	11
3.1	Introduction	11
3.2	Scheduled Fauna in the Study Area.....	11
3.3	Conservation Plan for Hoolock Gibbon (<i>Hoolock hoolock</i>)	11
3.3.1	Physical Description.....	12
3.3.2	Habitat	12
3.3.3	Behaviour.....	12
3.3.4	Food Habits	12
3.3.5	Predation	12
3.3.6	Reproduction	12
3.3.7	Present threats for Hoolock gibbon.....	13
3.3.8	Action Plan for the Conservation of Hoolock Gibbon	13
3.4	Conservation Plan for Indian Elephant (<i>Elephas maximus indicus</i>).....	13
3.4.1	Physical Description.....	14
3.4.2	Habitat	14
3.4.3	Behaviour.....	14
3.4.4	Food Habits	15
3.4.5	Predation	15
3.4.6	Reproduction	15
3.4.7	Present threats for Elephant	15
3.4.8	Action Plan for the Conservation of Elephant	15
3.5	Budget for Conservation Activity	16
	References.....	16

Figures

Figure 1. Study area.....	2
Figure 2. Location of AA-ONHP-2017/4 Hydrocarbon Block.....	5
Figure 3. Accessibility Map of Hydrocarbon Block AA-ONHP-2017/4	7
Figure 4. Typical Lay out of Drilling pad with EPU.....	9

Tables

Table 3.1 Classification of Hoolock Gibbon (<i>Hoolock hoolock</i>).....	11
Table 3.2 Classification of Indian Elephant (<i>Elephas maximus indicus</i>).....	14
Table 3.3 Estimated Budget for Wildlife Conservation.....	16

1.1 Introduction

India is largely dependent on import of petroleum goods to meet its requirements and imports about 80% of crude oil demand every year. For the last 3 years including the last financial year of 2018-19, the production figures of crude oil in India is hovering about 35 MT against a total demand of 212 MT in the last year. In addition, the demand of petroleum products is poised to grow at an annual average rate of 4.8% till year 2022 (13th 5-year plan).

To enhance indigenous production of oil, Government of India has targeted reducing the country's dependency on import by 10% by the year 2022. As a lead-up to this intent, Government of India has awarded Block AA-ONHP-2017/4 in Assam, to Vedanta Limited (Division: Cairn Oil & Gas) for exploration, development and production of hydrocarbons.

Revenue Sharing Contract (RSC) for Block AA-ONHP-2017/4 has been signed between Vedanta Ltd. (Division: Cairn Oil & Gas) and MoP&NG, Govt of India on 1st October 2018 for the exploration & exploitation of hydrocarbons resources. Vedanta Ltd (Division: Cairn Oil & Gas) has proposed to carry out exploratory and appraisal well drilling for oil and gas in 27 locations within the above mention Hydrocarbon Block for which they have applied to State level Environmental Impact Assessment Authority (SEIAA), Assam for granting of Environmental Clearance(EC) in B2 category on 11.02.2020 based on the recent amendments published by MOEF&CC on 16th January 2020 . The application for environmental clearance (EC) is currently under consideration of SEIAA, Assam. In addition to that, Vedanta Ltd. (Division: Cairn oil and Gas) also proposes to immediately take up Early Production Unit (EPU) & carry out production of Oil & Gas after commercially viable discovery of oil & gas in the block by taking the successful exploratory/appraisal wells into production.

1.2 Project Description

The proposed project in AA-OHNP-2017/4 hydrocarbon block, includes setting up of 6 EPUs with capacity of 2000 BFPD each and production of up to 12000 BOPD crude oil and up to 2.4 MMSCFD associated natural gas by Vedanta Limited (Division: Cairn Oil and Gas), in Jorhat district of Assam.

Vedanta Ltd (Division: 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 successful exploratory & appraisal 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. As per the comprehensive project plan for AA-OHP-2017/4 hydrocarbon block, Vedanta Ltd. (Division: Cairn Oil and Gas) is planning to drill 27 exploratory and appraisal wells and setting up 6 EPUs unit for processing of wells fluids and production of 12000 BOPD crude oil and up to 2.4 MMSCFD natural gas after successful exploration and appraisal activity.

For this exploratory and appraisal drilling of wells, Vedanta Ltd. (Division: Cairn Oil and Gas) have applied to the SEIAA, Assam for granting of environmental clearance under B2 category as per recent amendments published by MOEF&CC on 16th January 2020.

In addition, this EIA report along with other documents is being submitted to MOEF&CC for granting environmental clearance for Development and Production of Oil & Gas based on the TOR issued by MoEF&CC vide File No. IA-J-11011/93/2019-IA-II(I) dated 18th April 2019. Cairn have also planned to restrict their activity only within the Jorhat District, Assam.

The copies of the ToR are attached as **Annexure 1** and Revenue Sharing contract is attached as **Annexure 2**.

1.3 Study Area

AA-ONHP-2017/4 Hydrocarbon Block is located in Jorhat district of Assam and encompasses within a total area of 839 sq. km. The coordinates of the vertices of the block is provided in Table 2.1 and is presented in Figure 1. The block area covers 26 villages of Mariani, Jorhat West, Jorhat East, Teok, and Titabar Tehsils in Jorhat district. The geographic location of the block is included as an overlay on the Survey of India's Topo-Sheet No. G46K/1, G46K/2, G46K/5, G46K/6, G46K/10. The study area is given in Figure 1.

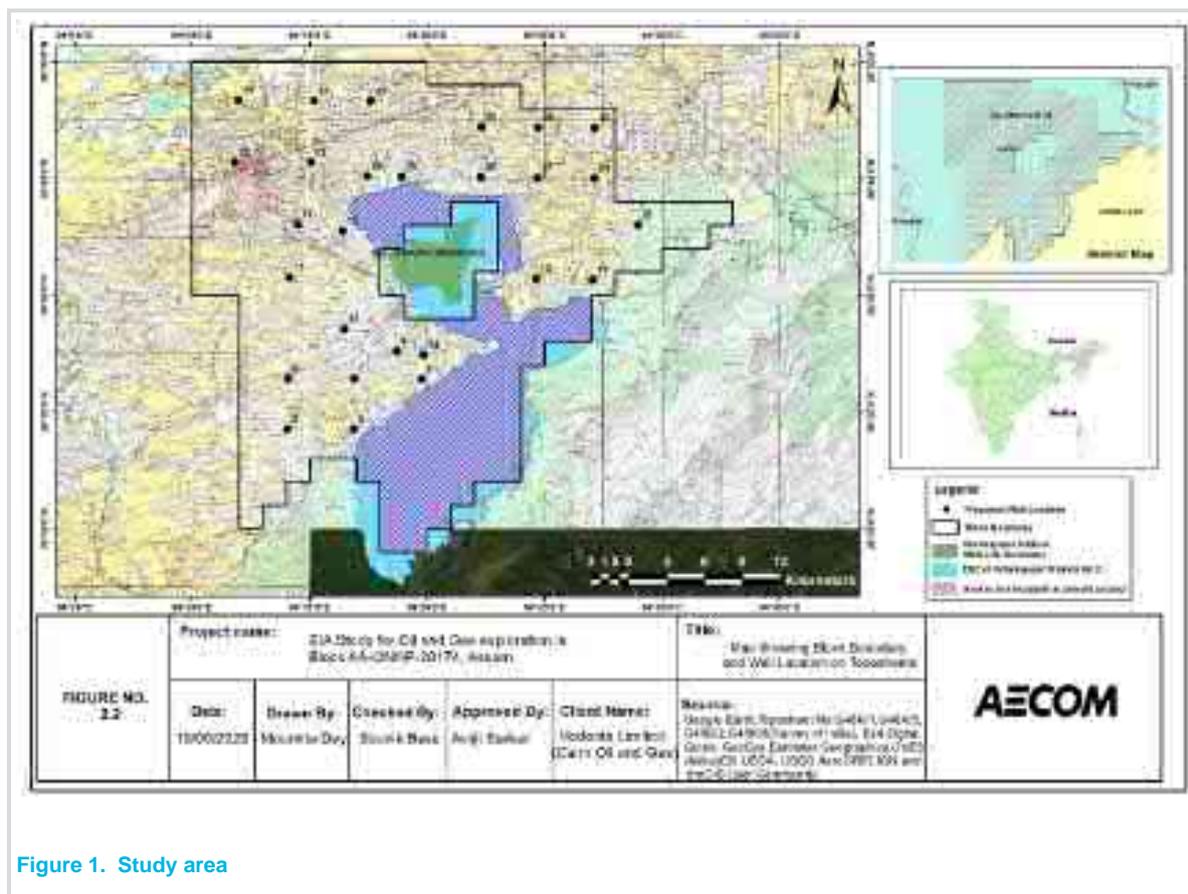


Figure 1. Study area

1.4 Project Status

Vedanta Limited (Division: Cairn Oil & Gas) had submitted Form-1 of the EIA Notification, along with a draft Terms of Reference (ToR) for scoping for entire activity comprising of onshore exploration, development and production of Oil & Gas to MoEF&CC. The Ministry of Environment and Forest and Climate Change (MoEF&CC) has issued an approved ToR vide file No. IA-J-11011/93/2019-IA-II(I) dated 18th April 2019. The approved ToR is attached as Appendix 1.1. However as per the recent amendment published by MOEF&CC on 16th January 2020, exploration activity is categorised as B2 project and need to obtain environmental clearance from State Environmental Impact Assessment Authority. Cairn has applied to SEIAA Assam for environmental clearance of drilling of exploratory & appraisal wells vide proposal no. SIA/AS/IND2/142005/2020 dated 11.02.2020 This EIA study has been carried out as per the earlier TOR issued by MOEF&CC as early production activity was already included in the Form 1 and PFR submitted for that TOR.

1.5 Objective of The Study

The assessment of faunal diversity considers the probable impacts due to proposed early production and setting up of Early production Unit on the existing faunal population in Jorhat Districts of Assam in compliance to the approved ToR provide by MoEF&CC. The scope of the faunal study includes following:

- To establish the prevailing ecological environment in the study area;
- To assess environmental impacts on faunal population arising out of the proposed onshore exploratory and appraisal activities;
- Assessment of faunal diversity in the study area with special reference to Schedule-I faunal species as per Wildlife (protection) Act, 1972.
- Recommendation of appropriate mitigation measures to eliminate impacts on existing faunal population and incorporation of the same in Environment Management Plan (EMP).
- To prepare Wildlife conservation Plan for Schedule -I species observed in the study area.

1.6 Limitations

The study is based on certain scientific principles and professional judgment to certain facts with resultant subjective interpretation. Professional judgment expressed herein is based on the available data and information.

This report has been developed based on the area need for one well pad and its approach road i.e. 4 - 9 ha area. Field survey was conducted to gathered information for the proposed Hydrocarbon block for Early production and Setting up of Early production unit. If information to the contrary is discovered, the findings in this study may need to be modified accordingly. The impact assessment for the Project is based on the project configuration as described in Section 2 on Project Description.

2. Description of the Project

The proposed project in AA-OHNP-2017/4 hydrocarbon block, includes setting up of 6 EPU's with capacity of 2000 BFPD each and production of up to 12000 BOPD crude oil and up to 2.4 MMSCFD associated natural gas by Vedanta Limited (Division: Cairn Oil and Gas), in Jorhat district of Assam.

Vedanta Ltd (Division: 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 bring the field (s) into production oil and gas immediately using one or more successful exploratory & appraisal wells by setting up of Early Production Units (EPU's) or Quick Production Units (QPU's). Early production of the Crude oil will enable the Country to reduce dependence on import of crude oil. As per the comprehensive project plan for AA-OHP-2017/4 hydrocarbon block

Vedanta Ltd. (Division: Cairn Oil and Gas) is planning to drill 27 exploratory and appraisal wells and setting up 6 EPU's unit for processing of wells fluids and production of 12000 BOPD crude oil and up to 2.4 MMSCFD natural gas after successful exploration and appraisal activity.

For this exploratory and appraisal drilling of wells, Vedanta Ltd. (Division: Cairn Oil and Gas) have applied to the SEIAA, Assam for granting of environmental clearance under B2 category as per recent amendments published by MOEF&CC on 16th January 2020.

In addition, this EIA report along with other documents is being submitted to MOEF&CC for granting environmental clearance for early production activity based on the TOR issued by MoEF&CC vide File No. IA-J-11011/93/2019-IA-II(I) dated 18th April 2019. Cairn have also planned to restrict their activity only within the Jorhat District, Assam

2.1 Objectives of Proposed Project

Specific objectives of the proposed drilling activities are summarized below:

- To develop and produce hydrocarbons safely
- To augment National Production of oil and gas

2.2 Benefits of the Proposed project

The project will ultimately cater to fulfil the energy requirement of India. The dependency of India on other countries will be lessened to an extent. Additionally, the project will benefit people living in neighbouring villages in relation to direct & indirect employment associated with various project activities and will boost the local economy. The benefits of the project are listed below;

- Provision of royalty to Assam Government and more cess to Govt. of India
- Provision of employment opportunity to local people
- Increase in business opportunity for the local people
- Energy security for the country

2.3 Block Location & Description

2.3.1 Location of Blocks

AA-ONHP-2017/4 block is located in Jorhat district of Assam and encompasses within a total area of 839 sq. km. The coordinates of the vertices of the block is provided in *Table 2.1* and is presented in *Figure 1*. The block area covers 26 villages of Mariani, Jorhat West, Jorhat East, Teok, and Titabar Tehsils in Jorhat district. The geographic location of the block is included as an overlay on the Survey of India's Topo-Sheet No. G46K/1, G46K/2, G46K/5, G46K/6, G46K/10. Location of Block is given in Figure 2.

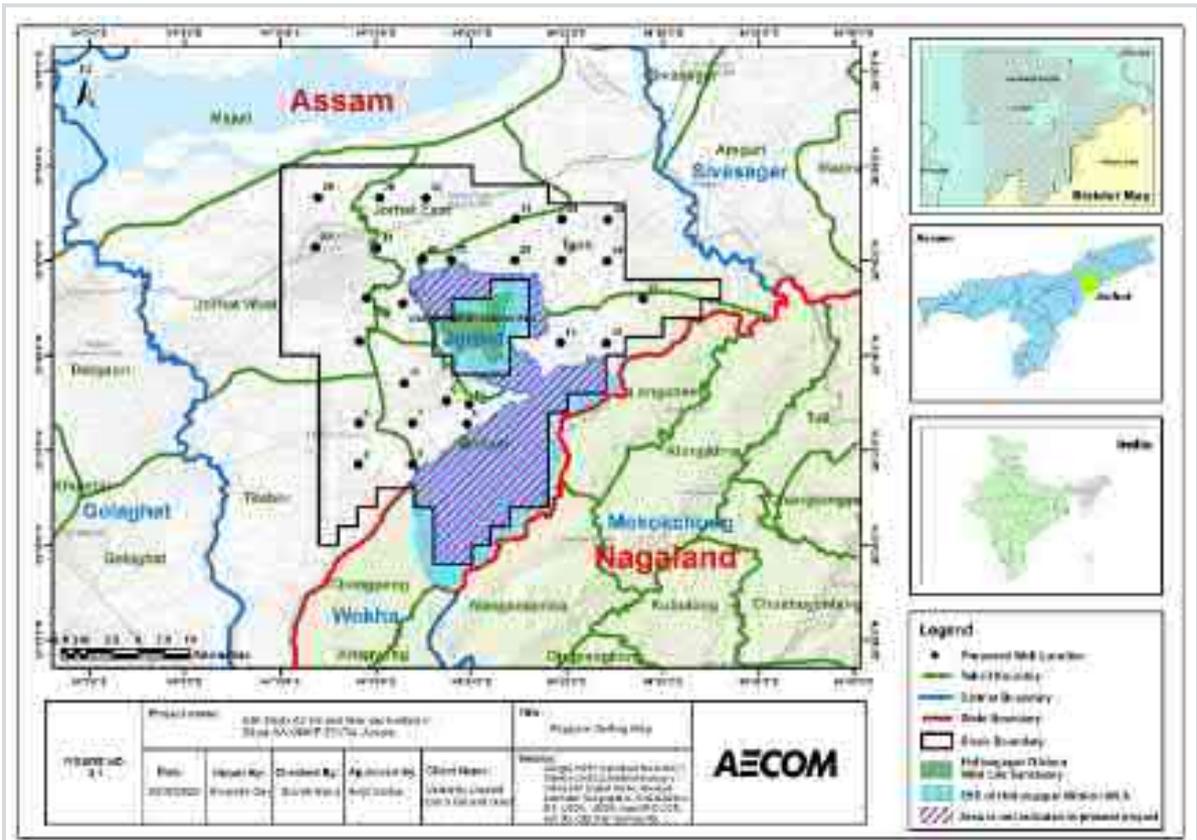


Figure 2. Location of AA-ONHP-2017/4 Hydrocarbon Block

2.3.2 Accessibility

Block area is located in the Jorhat district which consists of three sub-divisions, Jorhat (Sadar), Majuli and Titabor. Jorhat is the second largest town in Assam after Guwahati and is considered to be one of the commercial hubs of Assam. Titabor (1.27 km - E), Jorhat (within the block boundary), Mariani (170 m - N) and Teok (3.73 km - N) are the other major cities within the block boundary.

NH 715 (Assam Trunk Road and the By-Pass Road) forms the major connectivity in the block, connecting Teok, Jorhat East sub-district and Jorhat City. The State Highways SH 31 (Gar Ali Road or Jorhat to Mariani Road), SH 32 (Na Ali Road), SH 33 (KB Road) connects Jorhat City with the Southerly portion of the block area. Jorhat City is connected with Cinnamora and Mariani through SH 31 and to Titabor through SH 32. SH 31 continues to the southern part of the block forming accessibility between Mariani and Mokokchung. The state highways run parallel to each other and is connected by SH 1 (Garali Road or Dhodar Ali Road). This road passes through the Hoollongapar Gibbon WLS. The existing road network connecting Jorhat City, subsequently connects Jorhat Airport. Within the block there are motorable access roads to connect the internal areas where the proposed well sites are located.

The study area is well connected by the North-East Frontier Railway. Jorhat Town Railway Station and Mariani Junction Railway Station are the two major railway stations within the block boundary. Other rail stations forming the railway network within the field area are Cinnamara, Rowriah, Mariani, Kharikatia, Titabor, Nakachari and Lahing.

Jorhat Airport is located within the Block area, towards the south-western side of the block boundary. Accessibility map is given in Fig 3.

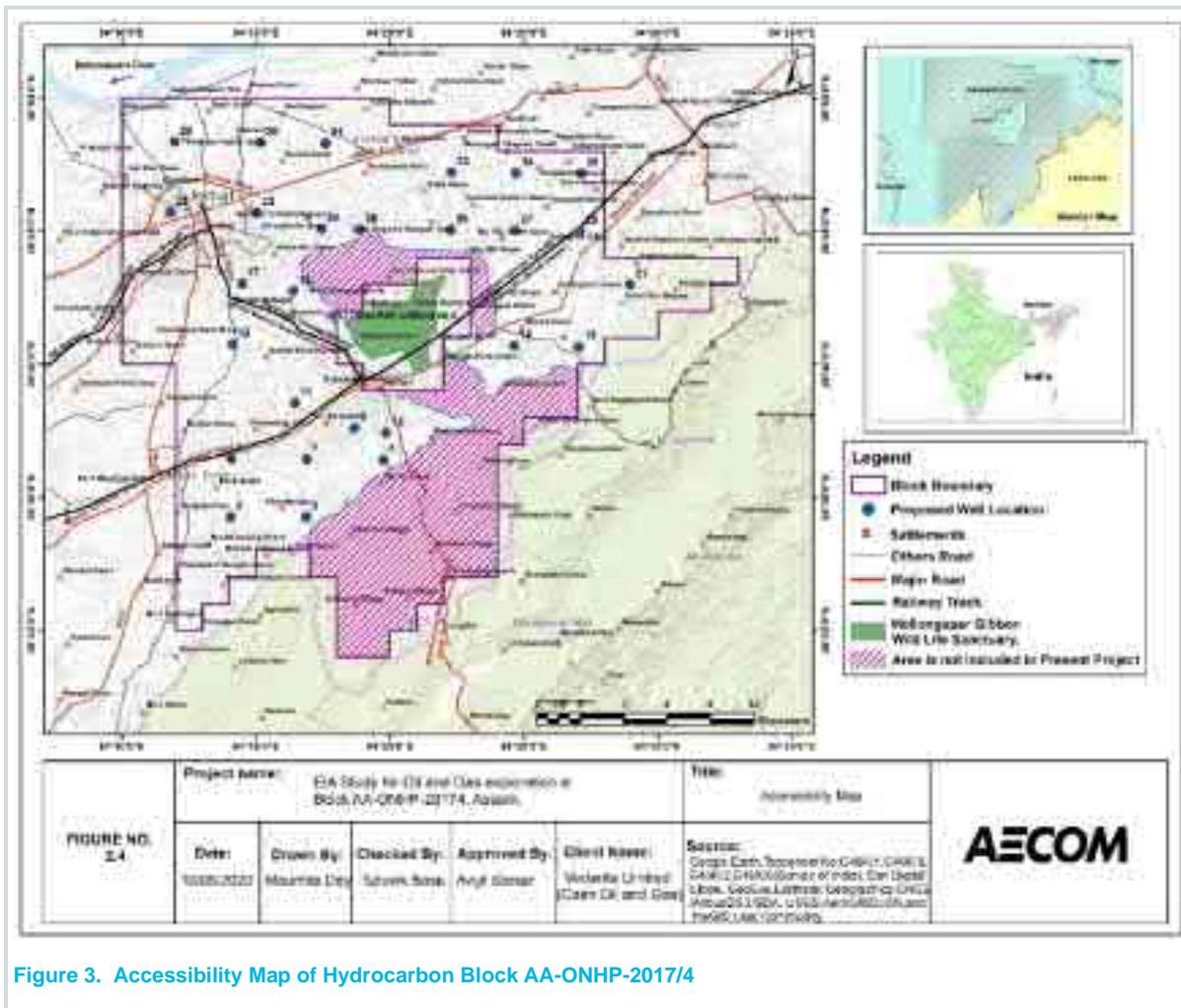


Figure 3. Accessibility Map of Hydrocarbon Block AA-ONHP-2017/4

2.4 Environmental Settings

- The Block spreads across the Mariani, Jorhat West, Jorhat East, Teok, and Titabar Tehsils in Jorhat District of Assam.
- Major settlement within AA-ONHP-2017/4 block is Jorhat; Mariani (170 m - N), Teok (3.73 km - N) and Titaabar (1.27 km - E) are outside but in close vicinity to the block boundary.
- The field area falls within the depositional plains of Brahmaputra River and its tributaries. Brahmaputra river flows immediately adjacent towards the extreme north-western corner of the block boundary.
- The Bhogdai River (also known as Desoi River) has a natural E-W course, originates from the foothills of Naga-Hills and passes through the Assam-Nagaland border. The river traverses diagonally from South-East towards the North-West, across the block area and forms the sub-tributary of the Brahmaputra River.
- Disai Valley Reserved Forest and Tiru Hill Reserved Forest are located within AA-ONHP-2017/4 block towards the South-Eastern and Eastern side of the study area respectively.
- MoP&NG, Govt. of India. No part of the block area is falling within the Hoolangapar Gibbon WLS. However, a portion of the block area is falling within the notified Eco Sensitive Zone (ESZ) around of the Hoolangapar Gibbon WLS. The part of the block area (181.31 sq. km) which is falling within the ESZ of

the Hoolangapar Gibbon WLS is not part of the proposed project and excluded from the present EC application (Refer Map).

- None of the development & production activity is planned inside the notified ESZ of Hoolangapar Gibbon WLS and within the forest area in this Hydrocarbon Block.
- The Land use comprises of tea gardens, homestead plantations, agricultural lands, forest land and settlements. Besides these, river, canal, water bodies and marshy land has been observed in the proposed Block AA-ONHP-2017/4.

2.5 Location of Early production Unit

After successful exploration and appraisal, EPU's will be set up within a planned well pad of a successful drilling location to cater a cluster of successful wells from where well fluid can be extracted. One EPU has capacity of 2000 BFPD crude oil production. Vedanta has envisaged that AA/ONHP-2017/4 block has a potential to produce 12000 BOPD crude oil and 2.4 associated natural gas. To produce 12000 BOPD crude oil total 6 EPU's would be setup within the block. However, EPU's will be set up immediately after successful discovery of Oil & Gas.

The EPU sites will be selected based on environmental considerations viz. location of sensitive ecological habitats, settlements, schools/ hospitals, water bodies etc. Care will be taken to locate EPU away from these receptors.

2.6 Setting Up of Early production Unit

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 successful exploratory & appraisal wells for the production of crude oil by setting up of Early Production Units (EPU's) or QPU's (Quick Production Units). Early production of the Crude oil will enable the Country to reduce dependence on import of crude oil. One EPU has capacity to produce 2000 BOPD crude oil. Depending on the producing potential of newly drilled exploratory and appraisal wells one EPU will be setup within a planned well pad to cater a cluster of newly drilled exploratory and appraisal wells with producing potential. A typical Layout of Drilling Pad with EPU is presented in figure 4. The construction of proposed EPU will involve the following steps:

Pre- Construction activity

No new land will be taken on lease. EPU will be installed within the existing successful exploratory wellpad premises (4 - 9 ha). Approach road to reach planned well pad will be constructed during drilling and this road will also be used as approach road for proposed EPU. Only some repairing of this road has been envisaged. The proposed EPU facility will be duly fenced to a height of about 2 m using RCC structure and brick wall to restrict unlawful entry into the site.

Construction Activity

Construction of the EPU shall be carried out in the existing area of planned E&A well pad. For proposed EPU, the construction work will entail construction of civil foundation, erection of manifolds, flow line and valve network. No building will be constructed in proposed EPU facility.

2.7 Project Cost

Vedanta Limited (Division Cairn Oil and Gas) has planned to carry out the proposed project activities in the AA-ONHP-2017/4 Block over a period of 10-12 years. Total cost of the proposed project has been estimated at about INR 264 crores.

3. Wildlife Conservation Plan

3.1 Introduction

In order to assess the impacts of the proposed Oil and gas production activities in hydrocarbon Block AA-ONHP-2017/4 in Jorhat district in Assam on the existing faunal population, a detailed study has been carried out. Government of India enacted wildlife (protection) Act, 1972 with the objective of effectively protecting the wildlife of this country and to control poaching, smuggling and illegal trade in wildlife and its derivatives. Therefore, the objective of the study was to identify the existing faunal population along with designated which are designated as Schedule-I species as per Wildlife Protection Act, 1972 and prepare conservation plan to effectively mitigate the impacts on these schedule-I species.

3.2 Scheduled Fauna in the Study Area

To, prepare the ecological report under EIA study field visits of the project area have been done within 10 km radius of the periphery of project area. From this study a detail report on floral-faunal status have been prepared. All the direct sightings were recorded at the study period. Also, we have noted the local species name after consultation with local villagers and secondary sources. As per Wildlife Protection Act, 1972 three species have been observed during study period which belongs to Schedule-I. These two species are: Hoolock Gibbon (*Hoolock hoolock*) and Indian Elephant (*Elephas maximus indicus*). The conservation plan for each animal are given below:

3.3 Conservation Plan for Hoolock Gibbon (*Hoolock hoolock*)

The Hoolock Gibbon (*Hoolock hoolock*) is found in the forested areas of eastern India, Bangladesh, Myanmar and southern China. In eastern India its range extends into seven states covering Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, and Tripura. In Assam, the natural range of gibbons extends south of Brahmaputra to east of the Dibang Rivers. Gibbons, are diurnal and arboreal, brachiating through the trees with their long arms. They live together in monogamous pairs, which stake out a territory. Their calls serve to locate family members and ward off other gibbons from their territory. Their diet consists mainly of fruits, insects and leaves. Their life expectancy in the wild is about 25 years.

Classification

Table 3.1 Classification of Hoolock Gibbon (*Hoolock hoolock*)

Kingdom	Animalia
Phylum	Chordata
Class	Mammalia
Order	Primates
Family	Hylobatidae
Genus	Hoolock
Species	hoolock

3.3.1 Physical Description

Hoolock Gibbon is the second largest of the gibbons following siamangs. They reach a size of 60-90 cm and weigh between 6-8 kg and. They characterized by curved white brow streaks and faintly triangular-shaped head. This species is dichromatic that means the adult females are dark brown with black on the neck, chest, and facial areas whereas, the adult males are completely black, have a white preputial tuft and white on their chins and cheeks. Some females have lighter pelage on their hands and feet.

3.3.2 Habitat

Hoolock gibbons usually are found at elevations ranging from 152 to 1,370 m. This species prefers undisturbed forested areas like thick evergreen, mixed evergreen, and scrub forest.

3.3.3 Behaviour

The mated pair, along with their offspring (typically one or two), occupy a fiercely defended and stable territory. Occasionally, lone adults--usually sub-adults recently forced from their family group--will establish solitary territories. The loud calls of the gibbon are used to identify individuals within and outside the family group.² Calls are probably used mainly for territorial defence, and the male and female will intimidate neighbours and mark their territory by singing a duet. Unlike other gibbon species, in Hoolock gibbons, male and female vocalizations are the same, and comparatively quite simple. These calls consist of a rapid, accelerating and alternating series of low and high notes.

3.3.4 Food Habits

Generally, these animals are frugivorous and habitually they prefer ripe, pulpy fruit. However, they also feed insects, leaves, and other vegetable matter. Small vertebrates and eggs may be eaten occasionally. Generally, about 35 percent of the daily activity is spent feeding, and of that, up to 65% of the time is spent foraging for fruit.

3.3.5 Predation

Gibbons are highly arboreal, and habitually occupy higher areas of the canopy. Thus, most of the terrestrial predators never encounter them results predation of gibbon in the wild are absent. Only for their infants, snakes and predator avian species are the possible threats.

3.3.6 Reproduction

For gibbon, births typically from November to March and normally single young are born. They have 7 months gestation period. Young are weaned after 1.5 to 2 years, and they usually reach sexual maturity in 8 to 9 years, although gibbons in captivity are known to have reached maturity 2 to 3 years earlier. In the wild, gibbons typically leave their parents at the time they reach sexual maturity to form breeding pairs of their own. The typical life span in the wild may exceed 20 to 25 years. After the young is born, it clings tightly to the mother around the waist and remains there for the first few months of its life. Weaning occurs gradually, in 1.5 to 2 years. Young gibbons typically remain with their parents until they reach sexual maturity. During this extensive association, they may help with the rearing of their siblings. Males also help to raise the young.

3.3.7 Present threats for Hoolock gibbon

1. Habitat loss: Qualitative loss of habitat and fragmentation could break the continuity of the forest canopy, making Gibbon more accessible to predator as well as hunter. The qualitative habitat loss is assigned to selective logging, smuggling, joom cultivation, regeneration of scrub and bamboo in jhoom abandoned area, road and dam construction, high tension electric current transmission and monoculture plantation etc.
2. Poaching and hunting: It is a major direct threat decimating the Gibbon population and they are hunter for games and sports, medicine, ornamentation and witchcraft. Hunting of Gibbon not only kills an individual but that can lead to the loss of whole group, as Gibbons are monogamous and loss of either sex (male/female) leads to wipe out of the group.
3. Habitat fragmentation due to encroachment of forest areas for settlements.
4. Deforestation due to extraction of fuelwood, timber and bamboo for paper mills.
5. Lack of awareness among communities: Socioeconomic status of the communities living in and around the Gibbon habitat are reeling under poverty, low literacy and priority and awaits support for personal needs. Thus, they are economically and culturally depending on forest results making the wildlife related awareness are more challenging and difficulty to address.
6. Lack of alternatives for meeting the subsistence needs of the local communities such as jhoom cultivation, illegal filling and encroachment.

3.3.8 Action Plan for the Conservation of Hoolock Gibbon

The following conservation measures will be undertaken –

1. The plantation activity in the nearby villages will be undertaken under the guidance of the District Forest Department.
2. Wildlife protection display boards/signage's will be displayed along the approach road to project sides and other appropriate locations. New sign board with better nighttime vision will be installed in corridor roads.
3. Creation of awareness programme among working personnel involved in the project activity.
4. Celebration of World Environment Day, Wildlife week, World Biodiversity day etc. to aware people about the importance of Gibbon.
5. Promotional activities like- Distribution of pamphlets, booklet, , pictures and conservation message about the Gibbon..
6. Create awareness among local people, stakeholders towards the conservation of Gibbon.

3.4 Conservation Plan for Indian Elephant (*Elephas maximus indicus*)

The Indian elephant (*Elephas maximus indicus*) is one of three extant recognised subspecies of the Asian elephant and native to mainland Asia. Historically, *Elephas maximus* had a geographic range of 9 million square kilometres across a large part of Asia. This range extended as far west as current day Iraq, as far north as the Yangtze River in China, and across the Indian subcontinent and Southeast Asia, including the islands of Sri Lanka and Sumatra (Indonesia). The current geographic range is 500,000 square kilometres, which is only about 5% of the historical range. This range consists of small discontinuous areas in the Indian subcontinent and Southeast Asia. Indian elephants may spend up to 19 hours a day feeding, and they can produce about 220 pounds of dung per day while wandering over an area that can cover up to 125 square miles. This helps to disperse germinating seeds. They feed mainly on grasses, but large amounts of tree bark, roots, leaves and small stems are also eaten. Cultivated

crops such as bananas, rice and sugarcane are favoured foods as well. Since they need to drink at least once a day, these elephants are always close to a source of fresh water.

Classification

Table 3.2 Classification of Indian Elephant (*Elephas maximus indicus*)

Kingdom	Animalia
Phylum	Chordata
Class	Mammalia
Order	Proboscidea
Family	Elephantidae
Genus	Elephas
Species	maximus
Subspecies	indicus

3.4.1 Physical Description

Elephas maximus is one of the largest terrestrial organisms' however, Asian elephants are smaller than African elephants and they have the highest body point on the head. Asian elephants have grey skin that is covered with hair. In adults, this hair is sparse, while calves have thicker brown hair. The body length ranges from 550 to 640 cm. The trunk is a distinctive feature of the elephant family (Elephantidae). There is a large degree of sexual dimorphism in elephants. The males are much larger than the females. Males have a height of 240 to 300 cm with a body mass of 3,500 to 6,000 kg. Females are 195 to 240 cm in height with a body mass of 2,000 to 3,500 kg. Males have tusks which are an elongation of the second upper incisors, while females lack tusks. Asian elephants have one finger like projection at the tip of the trunk and has large flat ears. They have four hooves on the hind foot.

3.4.2 Habitat

Asian elephants live in a variety of habitats in the tropical region, including grasslands, tropical evergreen forests, moist deciduous forests, and scrub forests. They typically live in elevations from sea level to 3,000 meters, but elephants that live near the Himalaya Mountains sometimes move up higher than this range in hot weather.

3.4.3 Behaviour

Elephant is a nomadic species, can climb hills easily but are not able to jump and their fastest speed is approximately 32 km/hour. They are diurnal and nocturnal because of the amount of time needed to spend searching for food to sustain their large bodies. They spend 12 to 18 hours searching for and eating food and eat 10% of their body mass daily. Due to large body size, the elephants are heat up quickly. Thus, during the hottest hours of the day, they are less active, spend time in shady areas, bathe frequently, submerge themselves in water to cool down and use their trunk to spray water or saliva on themselves. Also, they flap their ear to get rid of excess heat and there is a positive correlation between the frequency of ear flapping and the temperature of the environment.

The females and offspring live together in a group, while the males live in smaller groups or alone. A clan consists of related females and their offspring with strong social bonds and is usually between 5 and 20 individuals in size. Larger groups are formed when clans loosely join. These groups form and break apart depending on the season, habitat, and other conditions. After males reach sexual maturity, they leave the group to live solitary or in small

groups with other males with loose social bonds. Males are found with the larger groups when they are trying to mate with a female. There is combat and a dominance hierarchy for males that affects their ability to mate.

3.4.4 Food Habits

Asian elephants are herbivores. Their diet consists of different plants, including bamboo, sugarcane, crops, roots of trees, flowers, fruit, seeds, grains, and the bark of trees. The trunk is important for the diversity of food habits in the elephant because it allows the elephant to grasp many types of food.

3.4.5 Predation

The only predators of *Elephas maximus* are Bengal tigers (*Panthera tigris*), which attack calves. Adult elephants are very large and have tusks making it dangerous for predators to attack. To avoid predation, younger elephants stay towards the centre of a group, which provides protection.

3.4.6 Reproduction

Asian elephants are polygynous, and males are competing for female selection, so not all sexually mature males will be able to breed. A female in estrus is fertile and receptive to mating with males in musth. Females use auditory, visual, and chemical signals to indicate to males that they are in estrus. Musth is yearly and asynchronous, occurring at varying times of the year for different males. They breed every 4 to 5 years. Normally a female gives birth to one offspring each breeding season. The gestation period is usually 18 to 23 weeks. The average birth mass is 100 kg. The typical age of independence is 5 years. Females usually become sexually mature at 10 to 15 years old, but this can vary greatly depending on the environment. In general, well-nourished individuals become sexually active at an earlier age. Males become sexually active at around the same age as females, 10 to 15 years old.

3.4.7 Present threats for Elephant

1. Habitat fragmentation and habitat degradation due to encroachment of forest areas for settlements (Village: Madhupur, Lakhipur, Rampur, Katonibari, Pukhurai, Velleoguri, Afolamukh, and Kaliagaonand), which increase man-elephant conflict.
2. The Hoollongapar Gibbon Wildlife Sanctuary does not have a permanent source of water.
3. Habitat loss/ alteration of forest area due to increase of agricultural activities and tea garden namely Katonibari, Murmurai, Chenijan, Koliapani, Meleng, Kakojan, Dihavelleoguri, Dihingapar, Kothalguri, Dissoi and Hoolonguri, which has hindered elephant movement.
4. Expansion and development of the existing road networks increases number as well as average speed of the vehicles which ultimately endanger the movement of elephant.
5. Existence of a railway line which divides the sanctuary into two parts. This railway line serves as a death trap for the animals.

3.4.8 Action Plan for the Conservation of Elephant

1. The plantation activity in the in the nearby villages will be undertaken under the guidance of the District Forest Department.
2. Fencing will be developed around the well pad and camp site to stop any encounter with wild elephant.
3. Installation of road signage along the roadside depicting the maximum speed limit near the project site.
4. Creation of awareness programme among working personnel involved in the project activity.

5. Conduction of awareness programme for project personnel associated with transportation, to ensure that he follows the rules properly and drive slowly in the Elephant corridor and forest area particularly during night-time.
6. Celebration of World Environment Day, Wildlife week, World Biodiversity day etc. to aware people about the importance of Elephant.
7. Distribution of pamphlets, booklet, pictures and conservation message about the Elephant.
8. Create awareness among local people, stakeholders towards the conservation of Elephant.

3.5 Budget for Conservation Activity

A budgetary estimate of Rs. 10 lacks for a period of 10 years has been proposed for Wildlife Conservation Plan under following heads:

Table 3.3 Estimated Budget for Wildlife Conservation

Sr. No.	Conservation Activities	Expected Expenditure (Lump Sum) (in lacs.)
1.	Public awareness programme.	10.00

References

1. Wolfheim, J. 1983. Primates of the World. Seattle, WA: University of Washington Press
2. Chivers, D., S. Gitins. 1978. Diagnostic features of gibbon species. International Zoo Yearbook, 18: 157-173.
3. Chivers, D. 1977. The lesser apes. Pp. 539-598 in Prince Rainier, G Bourne, eds. Primate Conservation. New York: Academic Press.
4. Nowak, R. 1999. Walker's Mammals of the World, Sixth Edition. Baltimore and London: The Johns Hopkins University Press.
5. Krebs, M. 2000. "Bunopithecus hoolock" (On-line), Animal Diversity Web.
6. Karkala, N. 2016. "Elephas maximus" (On-line), Animal Diversity Web.
7. Sukumar, R. 2003. *The Living Elephants: Evolutionary Ecology, Behavior, and Conservation*. New York: Oxford University Press.
8. Sukumar, R. 2006. A brief review of the status, distribution and biology of wild Asian elephants. *International Zoo Yearbook*, 40: 1-8
9. Daniel, J. 1998. *The Asian Elephant : A Natural History*. New Delhi: Natraj Publish.
10. Kurt, F., M. Garai. 2007. *The Asian Elephant in Captivity: A Field Study*. New Delhi: Cambridge University Press India

No.IA-J-11011/93/2019-IA-II(I)
Government of India
Minister of Environment, Forest and Climate Change
Impact Assessment Division

Indira Paryavaran Bhavan,
Vayu Wing, 3rd Floor, Aliganj,
Jor Bagh Road, New Delhi-110003
18 Apr 2019

To,

M/s Cairn India Limited
Cairn Oil & Gas, Vedanta Limited, DLF Atria, DLF Phase-2, DLF City, Gurgaon, Haryana -
122002 Gurgaon,
Gurgaon-122002
Haryana

Tel.No.124-4594176; Email:dilipkumar.bera@cairnindia.com

Sir/Madam,

This has reference to the proposal submitted in the Ministry of Environment, Forest and Climate Change to prescribe the Terms of Reference (TOR) for undertaking detailed EIA study for the purpose of obtaining Environmental Clearance in accordance with the provisions of the EIA Notification, 2006. For this purpose, the proponent had submitted online information in the prescribed format (Form-1) along with a Pre-feasibility Report. The details of the proposal are given below:

- | | |
|---|---|
| 1. Proposal No.: | IA/AS/IND2/99398/2019 |
| 2. Name of the Proposal: | Onshore Oil and Gas Exploration and Appraisal in AA-ONHP-2017/4 block in Jorhat District, Assam, Wokha & Mokokchung Districts, Nagaland |
| 3. Category of the Proposal: | Industrial Projects - 2 |
| 4. Project/Activity applied for: | 1(b) Offshore and onshore oil and gas exploration, development & production |
| 5. Date of submission for TOR: | 15 Mar 2019 |

In this regard, under the provisions of the EIA Notification 2006 as amended, the Standard TOR for the purpose of preparing environment impact assessment report and environment management plan for obtaining prior environment clearance is prescribed with public consultation as follows:

**STANDARD TERMS OF REFERENCE (TOR) FOR EIA/EMP REPORT FOR
PROJECTS/ACTIVITIES REQUIRING ENVIRONMENT CLEARANCE**

**1(b):STANDARD TERMS OF REFERENCE FOR CONDUCTING
ENVIRONMENT IMPACT ASSESSMENT STUDY FOR OFFSHORE
AND ONSHORE OIL AND GAS EXPLORATION, DEVELOPMENT
AND PRODUCTION PROJECTS AND INFORMATION TO BE
INCLUDED IN EIA/EMP REPORT**

**B. STANDARD TOR FOR ONSHORE OIL AND GAS EXPLORATION, DEVELOPMENT
& PRODUCTION**

1. Executive summary of a project.
2. Project description, project objectives and project benefits.
3. Cost of project and period of completion.
4. Site details within 1 km of the each proposed well, any habitation, any other installation/activity, flora and fauna, approachability to site, other activities including agriculture/land, satellite imagery for 10 km area. All the geological details shall be mentioned in the Topo sheet of 1:40000 scale, superimposing the well locations and other structures of the projects. Topography of the project site.
5. Details of sensitive areas such as National Park, Wildlife sanctuary and any other eco-sensitive area alongwith map indicating distance.
6. Approval for the forest land from the State/Central Govt. under Forest (Conservation) Act, 1980, if applicable.
7. Recommendation of SCZMA/CRZ clearance as per CRZ Notification dated 6th January, 2011 (if applicable).
8. Distance from nearby critically/severely polluted area as per Notification, if applicable. Status of moratorium imposed on the area.
9. Does proposal involve rehabilitation and resettlement? If yes, details thereof.
10. Environmental considerations in the selection of the drilling locations for which environmental clearance is being sought. Present any analysis suggested for minimizing the foot print giving details of drilling and development options considered.
11. Baseline data collection for air, water and soil for one season leaving the monsoon season in an area of 10 km radius with centre of Oil Field as its centre covering the area of all proposed drilling wells.
12. Climatology and Meteorology including wind speed, wind direction, temperature rainfall relative humidity etc.
13. Details of Ambient Air Quality monitoring at 8 locations for PM2.5, PM10, SO2, NOx, CO, VOCs, Methane and non-methane HC.
14. Soil sample analysis (physical and chemical properties) at the areas located at 5 locations.
15. Ground and surface water quality in the vicinity of the proposed wells site.

STANDARD TERMS OF REFERENCE (TOR) FOR EIA/EMP REPORT FOR PROJECTS/ ACTIVITIES REQUIRING ENVIRONMENT CLEARANCE

16. Measurement of Noise levels within 1 km radius of the proposed wells.
17. Vegetation and land use; flora/fauna in the block area with details of endangered species, if any.
18. Incremental GLC as a result of DG set operation, flaring etc.
19. Potential environmental impact envisaged during various stages of project activities such as site activation, development, operation/ maintenance and decommissioning.
20. Actual source of water and 'Permission' for the drawl of water from the Competent Authority. Detailed water balance, wastewater generation and discharge.
21. Noise abatement measures and measures to minimize disturbance due to light and visual intrusions.
22. Details on wastewater generation, treatment and utilization /discharge for produced water/ formation water, cooling waters, other wastewaters, etc. during all project phases.
23. Details on solid waste management for drill cuttings, drilling mud and oil sludge, produced sand, radio active materials, other hazardous materials, etc. including its disposal options during all project phases.
24. Disposal of spent oil and lube.
25. Storage of chemicals and diesel at site. Hazardous material usage, storage and accounting.
26. Commitment for the use of water based mud (WBM) only
27. Oil spill emergency plans for recovery/ reclamation.
28. H2S emissions control.
29. Produced oil/gas handling, processing and storage/transportation.
30. Details of control of air, water and noise pollution during production phase.
31. Measures to protect ground water and shallow aquifers from contamination.
32. Whether any burn pits being utilised for well test operations.
33. Risk assessment and disaster management plan for independent reviews of well designed construction etc. for prevention of blow out. Blowout preventer installation.
34. Environmental management plan.
35. Total capital and recurring cost for environmental control measures.
36. Emergency preparedness plan.
37. Decommissioning and restoration plans.
38. Documentary proof of membership of common disposal facilities, if any.
39. Details of environmental and safety related documentation within the company including documentation and proposed occupational health and safety Surveillance Safety Programme for all personnel at site. This shall also include monitoring programme for the environmental.
40. A copy of Corporate Environment Policy of the company as per the Ministry's O.M. No. J-11013/41/2006-IA.II(I) dated 26th April, 2011 available on the Ministry's website.
41. Any litigation pending against the project and or any direction/order passed by any court of law against the project. If so details thereof.

REVENUE SHARING CONTRACT

BETWEEN

THE GOVERNMENT OF INDIA

AND

VEDANTA LIMITED

UNDER

HYDROCARBON EXPLORATION AND LICENSING
POLICY

WITH RESPECT TO CONTRACT AREA IDENTIFIED

AS BLOCK

AA-ONHP-2017/4

*K.K. Asokan
US (E.O.)
MoP&N*

*Atul Gupta
(Atul Gupta)
DEP*

*Sushir
(Sushir Mathur)
vedanta limited*

TABLE OF CONTENTS

Article	Contents	Page No.
1	Definitions	5
2	Participating Interests	16
3	License and Exploration Period	17
4	Relinquishment	20
5	Work Programme	22
6	Management Committee	25
7	Operatorship, Joint Operating Agreement and Operating Committee	28
8	General Rights and Obligations of the Parties	30
9	Government Assistance	33
10	Discovery, Development and Production	34
11	Petroleum Exploration License and Lease	41
12	Unit Development	43
13	Measurement of Petroleum	45
14	Protection of the Environment	47
15	Revenue Share	51
16	Taxes, Royalties, Rentals, Duties Etc.	53
17	Domestic Supply, Sale, Disposal and Export of Natural Gas, Crude Oil and Condensate	54
18	Joint Development of Common Infrastructure	56
19	Valuation of Petroleum	57
20	Employment, Training and Transfer of Technology	58
21	Local Goods and Services	59
22	Insurance and Indemnification	60
23	Records, Reports, Accounts and Audit	62
24	Information, Data, Confidentiality, Inspection and Security	63
25	Title to Petroleum Data and Assets	67
26	Assignment of Participating Interest	68
27	Guarantees	71
28	Term and Termination of the Contract	74
29	Force Majeure	77
30	Applicable Law and Language of the Contract	79
31	Sole Expert, Conciliation and Arbitration	80
32	Change of Status of Members	82
33	Entire Agreement, Amendments, Waiver and Miscellaneous	83
34	Certificates	84
35	Notices	85
36	Survival	86
37	Severance of Invalid Provisions	87

Su

Abul

[Signature]

APPENDICES

Appendix A	Description of the Contract Area	89
Appendix B	Map of the Contract Area	90
Appendix C	Revenue Computation	91
Appendix D	Contents of Field Development Plan	92
Appendix E	Form of Parent Company Financial and Performance Guarantee	94
Appendix F	Form of Company Financial and Performance Guarantee	96
Appendix G	Proforma of Bank Guarantee to be Provided Pursuant to Article 27	98
Appendix H	Specific provisions for Petroleum operations relating to CBM	100
Appendix I	Liquidated Damages	104
Appendix J	List of Applicable Acts and Rules	105
Appendix K	Royalty rates	106
Appendix L	Exploration Period timelines	107
Appendix M	Estimated expenditure against Work Programme	108
Appendix N	Format for Notification of Discovery	109
Appendix O	List of Basins in which provision for two extensions in exploration period is available	110

Sw

Alm

SH

REVENUE SHARING CONTRACT FOR ONLAND AREAS

This Contract made on this 1st October, Two thousand and Eighteen between:
The President of India, acting through the Joint Secretary (E), Ministry of Petroleum
and Natural Gas (hereinafter referred to as "the Government") of the FIRST PART;

AND

Vedanta Limited, a company incorporated under the laws of India (hereinafter referred to as "Vedanta" or "Contractor") having its registered office at 1st Floor, C wing, Unit 103, Corporate Avenue Atul Projects, Chakala, Andheri (East) Mumbai, Mumbai City Maharashtra-400093 India which expression shall include its successors and such assigns as are permitted under Article 26 hereof, of the SECOND PART;

WITNESSETH:

WHEREAS

- (1) The Oilfields (Regulation and Development) Act, 1948 (53 of 1948) (hereinafter referred to as "the Act") and the Petroleum and Natural Gas Rules, 1959, made there under (hereinafter referred to as "the Rules") make provisions, inter alia, for the regulation of Petroleum Operations and grant of Licenses and Leases for exploration, development and production of Petroleum in India;
- (2) The Rules provide for the grant of Licenses and Leases in respect of land vested in a State Government by that State Government with the previous approval of the Central Government;
- (3) Rule 5 of the Rules provides for an agreement between the Government and the Licensee or Lessee containing additional terms and conditions with respect to the License or Lease;
- (4) The Government desires that all types of Petroleum resources which may exist in India, whether within territorial waters (ultra-deep, deep or shallow water), exclusive economic zone, the continental shelf of India, or Onland, be discovered and exploited in accordance with Good International Petroleum Industry Practices (GIPIP) with utmost expedition in the overall interests of India;
- (5) The Government has formulated and approved a new exploration and licensing policy named 'Hydrocarbon Exploration and Licensing Policy' ("HELP") vide Resolution dated 30.03.2016, whereby it has been determined to provide a uniform license to enable E&P operators to explore and extract all hydrocarbon resources including conventional and unconventional oil and gas resources including CBM, Shale Gas/Oil, Tight Gas, Gas Hydrates and any other resource to be identified in future which fall within the definition of "Petroleum" and "Natural Gas" under the Rules;

- (6) The Government, pursuant to HELP, invited companies to submit competitive bids to obtain the right to undertake exploration, discovery and commercial production of Petroleum resources within India, which would also be governed by Applicable Laws governing Petroleum Operations within India formulated by the Government;
- (7) Vedanta has committed that it has, or will acquire and make available, the necessary financial and technical resources and the technical and industrial competence and experience necessary for proper discharge and / or performance of all obligations required to be performed under this Contract in accordance with Good International Petroleum Industry Practices (GIPIP) and will provide guarantees as required in Article 27 for the due performance of its obligations hereunder; and
- (8) As a result of discussions between representatives of the Government and Vedanta on the bid submitted by Vedanta, the Government has agreed to enter into this Contract with Vedanta with respect to the Contract Area identified as Block AA-ONHP-2017/4 and detailed in Appendix A and Appendix B (hereinafter referred to as "the Block") on the terms and conditions herein set forth.

NOW, THEREFORE, in consideration of the premises and covenants and conditions herein contained, IT IS HERE BY AGREED between the Parties as follows

4

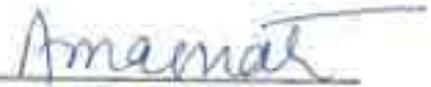
Sim

Atish

AK

IN WITNESS WHEREOF, the representatives of the Parties to this Contract being duly authorized have hereunto set their hands and have executed these presents this 1st October Two thousand and Eighteen.

Signed for and on behalf of the President of India

By: 
अमर नाथ / AMAR NATH
संयुक्त सचिव/Joint Secretary
केन्द्रीय तेल एवं प्राकृतिक गैस विभाग
Ministry of Petroleum & Natural Gas
भारत सरकार/Govt. of India
नई दिल्ली/New Delhi

In presence of 
सरकारी अधिकारी / SANJAY KUMAR JAIN
डायरेक्टर / Director
केन्द्रीय तेल एवं प्राकृतिक गैस विभाग
Ministry of Petroleum & Natural Gas
भारत सरकार - Govt. of India
नई दिल्ली / New Delhi

Signed for and on behalf of Vedanta Limited

By: 

In presence of 

APPENDIX A
DESCRIPTION OF THE CONTRACT AREA

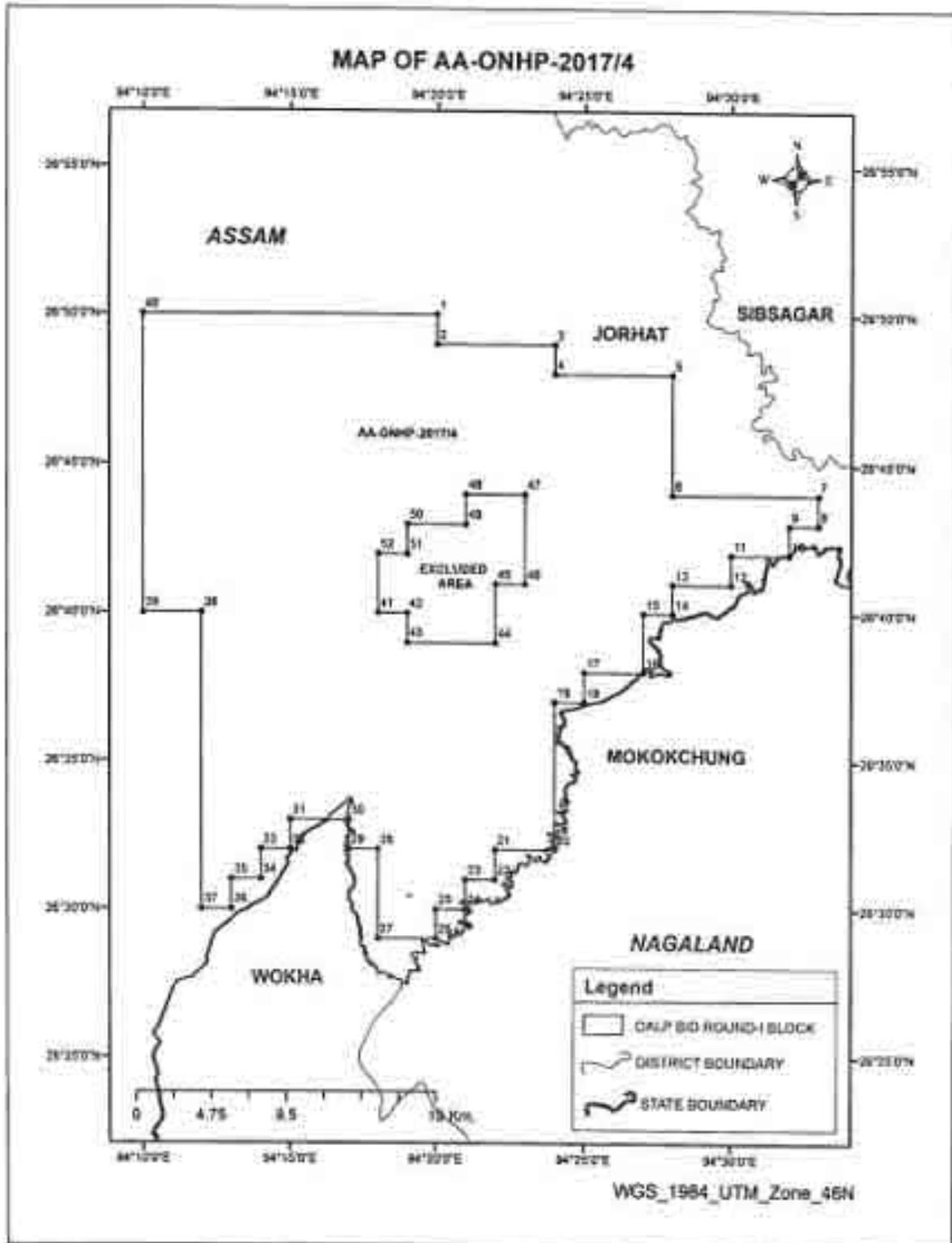
The area comprising approximately 839 Sq. km. onshore/offshore India identified as block AA-ONHP-2017/4 described herein and shown on the map attached as Appendix B ("Map of the Contract Area"), Longitude and latitude measurements commence at points 1, 2, 3...52 are given below:

Points	Longitude	Latitude	Points	Longitude	Latitude	EXCLUDED AREA		
						Points	Longitude	Latitude
1	94° 20'	26° 50'	21	94° 22'	26° 32'	41	94° 18'	26° 40'
2	94° 20'	26° 49'	22	94° 22'	26° 31'	42	94° 19'	26° 40'
3	94° 24'	26° 49'	23	94° 21'	26° 31'	43	94° 19'	26° 39'
4	94° 24'	26° 48'	24	94° 21'	26° 30'	44	94° 22'	26° 39'
5	94° 28'	26° 48'	25	94° 20'	26° 30'	45	94° 22'	26° 41'
6	94° 28'	26° 44'	26	94° 20'	26° 29'	46	94° 23'	26° 41'
7	94° 33'	26° 44'	27	94° 18'	26° 29'	47	94° 23'	26° 44'
8	94° 33'	26° 43'	28	94° 18'	26° 32'	48	94° 21'	26° 44'
9	94° 32'	26° 43'	29	94° 17'	26° 32'	49	94° 21'	26° 43'
10	94° 32'	26° 42'	30	94° 17'	26° 33'	50	94° 19'	26° 43'
11	94° 30'	26° 42'	31	94° 15'	26° 33'	51	94° 19'	26° 42'
12	94° 30'	26° 41'	32	94° 15'	26° 32'	52	94° 18'	26° 42'
13	94° 28'	26° 41'	33	94° 14'	26° 32'			
14	94° 28'	26° 40'	34	94° 14'	26° 31'			
15	94° 27'	26° 40'	35	94° 13'	26° 31'			
16	94° 27'	26° 38'	36	94° 13'	26° 30'			
17	94° 25'	26° 38'	37	94° 12'	26° 30'			
18	94° 25'	26° 37'	38	94° 12'	26° 40'			
19	94° 24'	26° 37'	39	94° 10'	26° 40'			
20	94° 24'	26° 32'	40	94° 10'	26° 50'			

Sun Atul



APPENDIX B
MAP OF THE CONTRACT AREA



Atul
Sharma

