

## **1.0 INTRODUCTION**

**Oil and Natural Gas Corporation Limited (ONGC)** proposes to carry out exploratory drilling in Petroleum Mining Lease (PML) areas of North Assam Shelf (NAS) block in Sivasagar district, Assam. Out of the proposed 10 exploratory drilling wells, 3 exploratory drilling wells fall in Rudrasagar PML area, 3 exploratory drilling wells fall in Lakwa PML area, 1 exploratory drilling well fall in Geleki PML area, 1 exploratory drilling well fall in Namti PML area and 2 exploratory drilling wells in Mekeypore Re-Santak Nazira PML area of Sivasagar district, Assam.

This chapter describes the purpose of the report, identification of project and proponent, brief description of nature, size, location of the project and importance to the region and country. The chapter also describes the scope of the study, details of regulatory scoping carried out as per Terms of Reference (TOR) issued by Ministry of Environment Forest and Climate Change (MoEF&CC), New Delhi.

### **1.1 Purpose of the Report**

As per Environmental Impact Assessment Notification dated 14<sup>th</sup> September, 2006 and 01.12.2009, the proposed project falls under category 'A', Schedule 1(b) and requires Environmental Clearance (EC) to be obtained from Ministry of Environment, Forest and Climate Change (MoEF&CC) before the commencement of ground activity.

In line with the said notification, TOR application was filed to MOEF&CC. Accordingly, scoping meeting was held in MoEF&CC during **30<sup>th</sup> November -1<sup>st</sup> December 2015** for determining the Terms of Reference (TOR) for the preparation of EIA report for the proposed project. Based on the TOR conditions stipulated by MoEF&CC vide letter No. J-11011/224/2015-IAII(I) dated 28.12.2015, EIA has been prepared. A copy of TOR and its compliance is given in **Annexure-I**.

Vimta Labs Limited, Hyderabad, has been retained by ONGC to undertake Environmental Impact Assessment (EIA) study and preparation of Environment Management Plan (EMP) for various environmental components, which may be affected due to the impacts arising out of the proposed project activities.

### **1.2 Identification of Project and Project Proponent**

#### **1.2.1 Project Proponent**

Oil and Natural Gas Corporation Limited (ONGC) is a Public Sector Undertaking (PSU) of the Government of India, under the administrative control of the Ministry of Petroleum and Natural Gas. It is India's largest oil and gas exploration and production company. It produces around 70% of India's crude oil (equivalent to around 25% of the country's total demand) and around 60% of its natural gas. With a market capitalization of over INR 2 trillion, it is one of India's most valuable publicly-traded companies.

ONGC has been ranked 357<sup>th</sup> in the Fortune Global 500 list of the world's biggest corporations for the year 2012. It is also among the Top 250 Global Energy Company by PLATTS. ONGC was founded on 14<sup>th</sup> August 1956 by the Indian state, which currently holds a 69.23% equity stake. It is involved in exploring hydrocarbons in 26 sedimentary basins of India and owns and operates over 11,000 kilometers of pipelines in the country. Its international subsidiary, ONGC Videsh currently has projects in 15 countries.

## 1.2.2 Identification of the Project

Oil and Natural Gas Corporation Limited (ONGC) proposes to carry out exploratory drilling of **10** wells at Rudrasagar, Geleki, Lakwa, Namti, Mekeypore-Santak-Nazira PML areas at Sivasagar District, Assam.

## 1.3 **Justification of Project**

The proposed exploratory drilling of **10** wells is highly prospective where oil and gas have been discovered and produced from a large stratigraphic column ranging from Barail Group to Tipam Group.

## 1.4 **Brief Description of the Project**

### 1.4.1 Nature of the Project

The proposed project intends to identify the presence of hydrocarbon prospects through exploratory drilling at 10 locations and to delineate and quantify hydrocarbon pools in discovered fields through exploratory drilling.

### 1.4.2 Size of the Project

ONGC has identified **10** well locations **RSAL, RSAM, RSAN, GKBU, GKBU, MKAE, MKAF, LKBC, KGAE & LKBD** which are included in present EIA study . ONGC operates in a total 1019 sq.km area of Sivasagar District, covered by different PML areas.

### 1.4.3 Project Site Details

#### 1.4.3.1 Location of the Block

ONGC has received mining lease for these areas from Ministry of Petroleum and Natural Gas (MOPNG), Govt. of India for exploring and producing hydrocarbons. ONGC proposes to drill 10 wells at Sivasagar District, Assam. The Petroleum mining lease (PML) areas with their respective validity are given below:

1. Rudrasagar PML (Area: 70.5 Sq. Km with effect from 30.05.2009 to 29.05.2029)
2. Lakwa PML (Area :172.49 Sq. Km with effect from 29.09.2008 to 28.09.2028)
3. Geleki PML ( Area: 27.94 Sq. Km with effect from 16.08.1990 to 15.08.2030)
4. Namti PML (Area: 35.55 Sq. Km with effect from 9.11.2007 to 8.11.2027)
5. Mekeypore Re-Santak-Nazira PML (Area: 77.0 sq km with effect from 30.01.2006 to 29.01.2026)



The coordinates of the PML areas proposed for environmental clearance are given in **Table-1.1**. Tentative well coordinates are given in **Table-1.2**. The well locations in PML area is given in **Table 1.3**. The environmental setting of the wells falling in NAS Block area is given in **Table-1.4** to **Table-1.13**. Index Map is shown in **Figure-1.1**. The study area map showing the PML areas and exploratory drilling well locations are shown in **Figure-1.2**. Google map showing block area with well locations is given in **Figure-1.3**.

**TABLE-1.1  
COORDINATES OF THE PML AREA**

Sr. No	PML Name & Area		Boundary Points	Latitude	Longitude
1	Rudrasagar PML (Area: 70.5 Sq. Km.)		A	26° 56' 10.00" N	94° 31' 12.50" E
			B	26° 56' 22.50" N	94° 39' 40.86" E
			C	26° 58' 31.00" N	94° 39' 38.86" E
			D	26° 59' 31.50" N	94° 36' 26.00" E
			E	26° 58' 25.00" N	94° 31' 10.10" E
2	Lakwa PML (Area: 172.49 Sq. Km.)		A	26° 59' 57.75" N	94° 43' 17.57" E
			B	27° 00' 16.00" N	94° 45' 41.00" E
			C	27° 01' 12.75" N	94° 46' 01.29" E
			D	27° 05' 00.00" N	94° 54' 33.50" E
			E	27° 05' 00.00" N	94° 56' 38.00" E
			F	27° 00' 01.25" N	94° 55' 59.86" E
			G	26° 59' 08.00" N	94° 54' 11.86" E
			H	26° 59' 04.00" N	94° 52' 42.71" E
			I	26° 58' 36.75" N	94° 52' 09.50" E
			J	26° 58' 36.50" N	94° 50' 00.00" E
			K	26° 57' 50.50" N	94° 47' 01.71" E
			L	26° 57' 13.75" N	94° 47' 01.00" E
			M	26° 57' 13.88" N	94° 43' 16.50" E
3	Geleki PML (Area: 27.94 Sq. Km.)		I	26° 49' 20.06" N	94° 44' 06.54" E
			Z	26° 49' 11.88" N	94° 41' 43.98" E
			Y	26° 47' 50.92" N	94° 40' 28.25" E
			U	26° 46' 37.32" N	94° 40' 14.88" E
			V	26° 46' 25.87" N	94° 41' 35.07" E
4	Namti PML (Area: 35.55 Sq. Km)		W	26° 46' 46.31" N	94° 44' 15.45" E
			A	26° 48' 12.18" N	94° 39' 30.33" E
			B	26° 47' 50.92" N	94° 40' 28.25" E
			C	26° 46' 37.32" N	94° 40' 14.88" E
			D	26° 44' 45.28" N	94° 35' 17.20" E
			E	26° 46' 13.16" N	94° 34' 40.67" E
5	Mekeypore Re-Santak Nazira (PML- 77.00 sq. km)	Part -A (20 sq. km)	A	26° 48' 12.18" N	94° 39' 30.33" E
			B	26° 57' 13.88" N	94° 43' 16.45" E
			C	26° 57' 13.84" N	94° 44' 30.00" E
			D	26° 53' 30.00" N	94° 43' 30.00" E
			E	26° 53' 27.46" N	94° 40' 41.61" E
			F	26° 56' 47.00" N	94° 43' 26.45" E
	Part -B (57 sq. km)	A	26° 57' 13.88" N	94° 43' 16.45" E	
		F	26° 54' 30.00" N	94° 47' 00.00" E	
		G	26° 52' 30.00" N	94° 48' 00.00" E	
		H	26° 47' 22.00" N	94° 44' 15.00" E	
		I	26° 49' 20.06" N	94° 44' 6.54" E	
		J	26° 49' 11.88" N	94° 41' 43.98" E	
		K	26° 50' 00.00" N	94° 41' 32.23" E	
F	26° 54' 30.00" N	94° 47' 00.00" E			

Source: ONGC

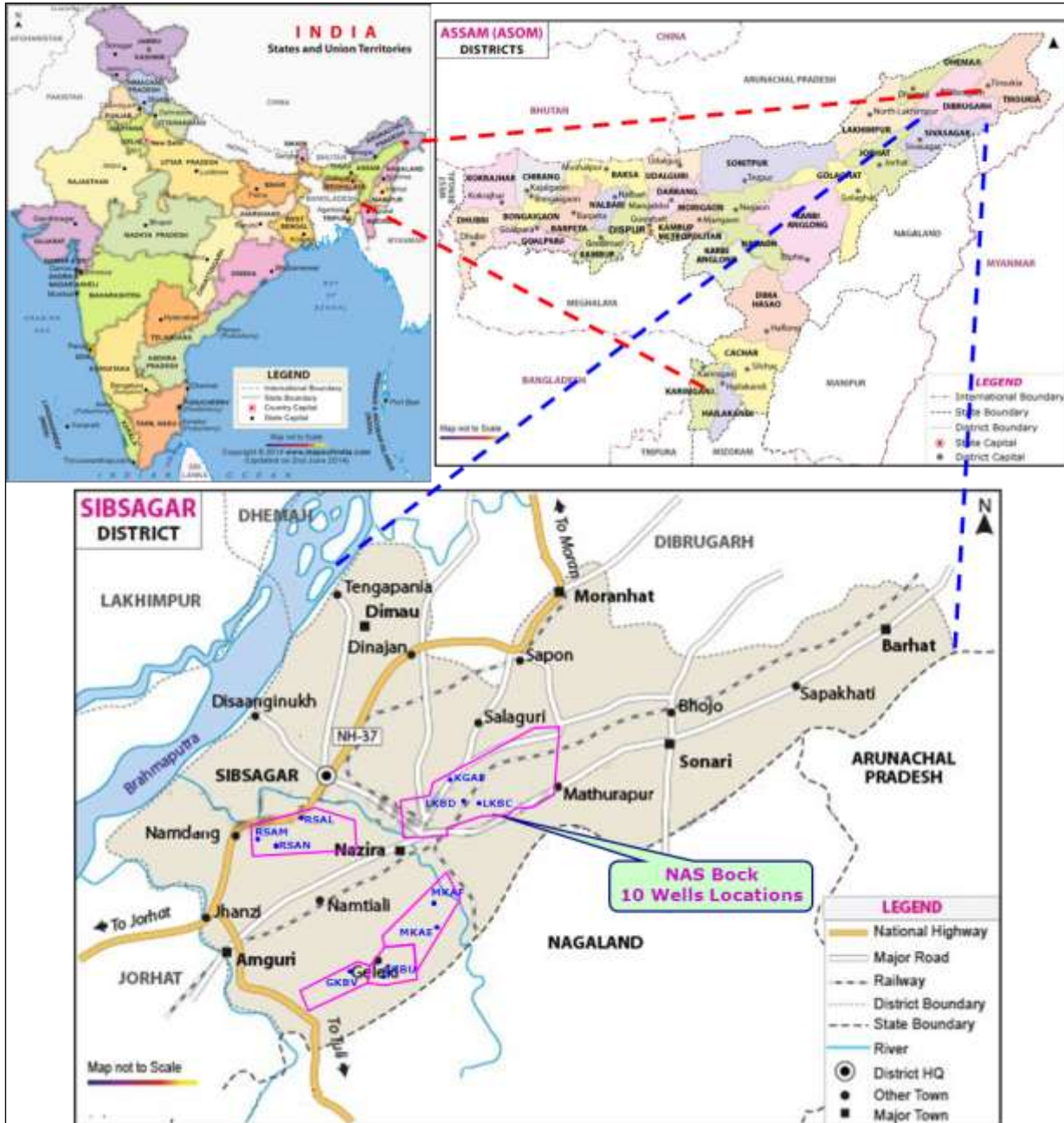
**TABLE-1.2  
TENTATIVE WELL LOCATIONS**

Sr. No.	Proposed Location	Latitude	Longitude	District	Target Depth
1	RSAL	26° 58' 37.56" N	94° 34' 52.156" E	Sivasagar, Assam	3350 m
2	RSAM	26° 56' 54.44" N	94° 31' 07.15" E	Sivasagar, Assam	3350 m
3	RSAN	26° 56' 40.44" N	94° 32' 50.51" E	Sivasagar, Assam	3350 m
4	GKBU	26° 47' 23.87" N	94° 41' 41.86" E	Sivasagar, Assam	5010 m
5	GKBV	26°47' 46.24° N	94°39' 03.55" E	Sivasagar, Assam	3400m
6	MKAE	26°50' 54.67" N	94°45' 53.28" E	Sivasagar, Assam	3200 m
7	MKAF	26°52' 32.80" N	94°45' 35.21" E	Sivasagar, Assam	3400 m
8	LKBC	26°59' 35.44" N	94°49' 09.75" E	Sivasagar, Assam	3050m
9	LKBD	26°59' 51 66" N	94°47' 57 28" E	Sivasagar, Assam	4875 m
10	KGAE	27°01'18.35" N	94°46'51.126" E	Sivasagar, Assam	4900 m

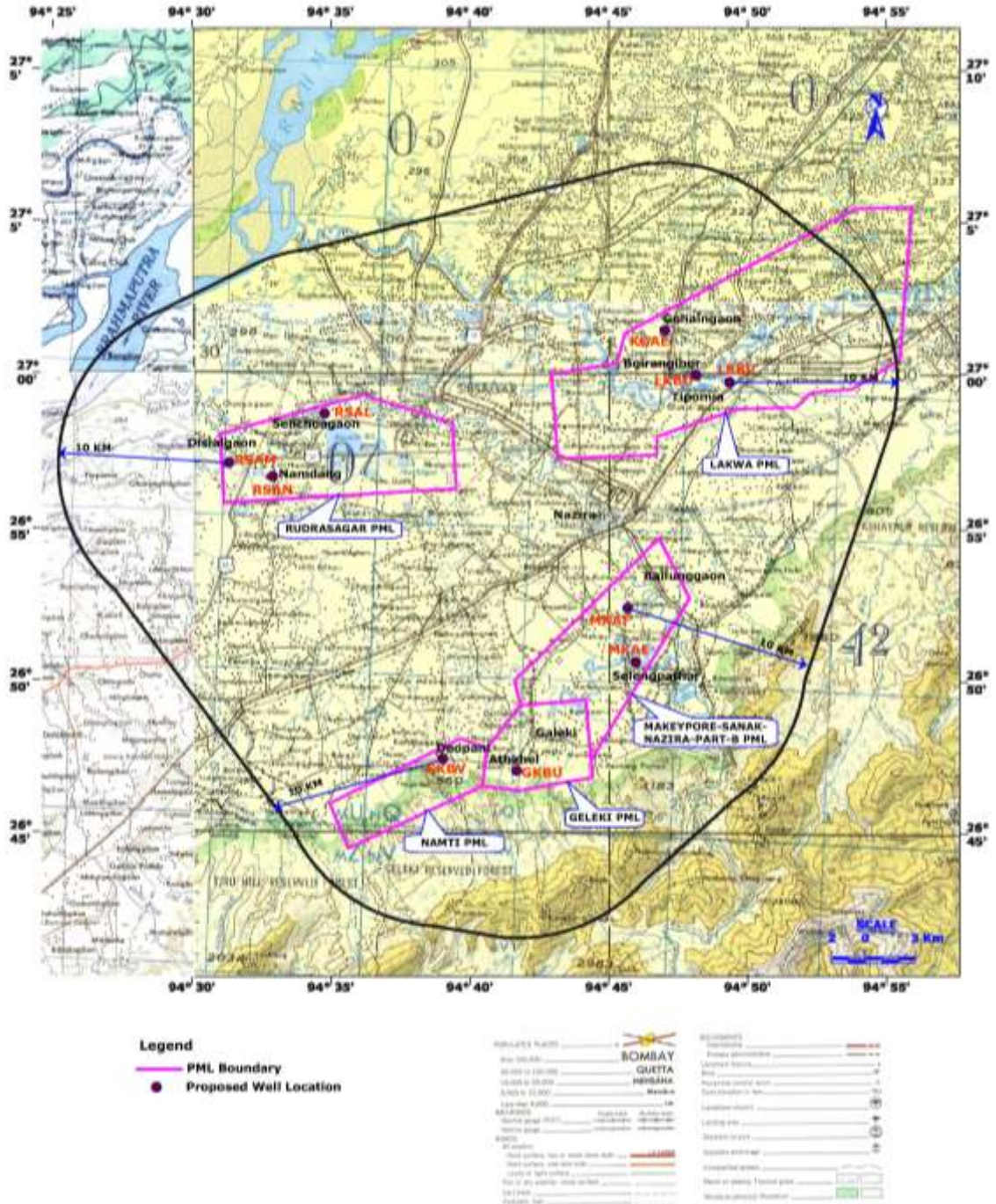
Source:

**TABLE-1.3  
WELL LOCATIONS FALLING IN PML AREA**

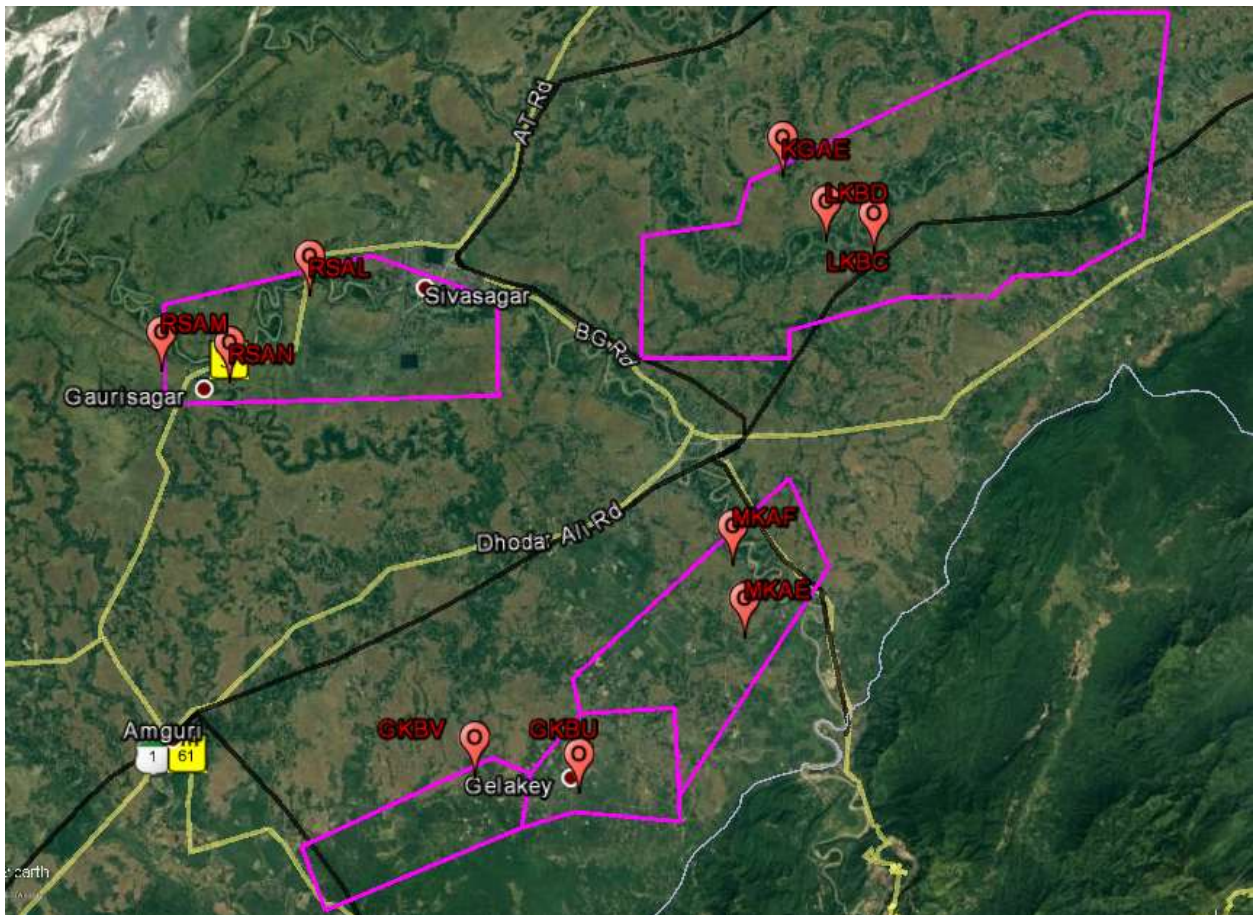
Sr. No	PML Name	Area (sq.km)	No. of Well Locations	Well Locations
1	Rudrasagar PML	70.5	3	RSAL, RSAM, RSAN
2	Lakwa PML	172.49	3	LKBC, LKBD, LKBD
3	Geleki PML	27.94	1	GKBU
4	Namti PML	35.55	1	GKBV
5	Mekeypore-Santak-Nazira	77.00	2	MKAE, MKAF
<b>Total Area</b>		<b>383.48</b>		



**FIGURE-1.1  
INDEX MAP**



**FIGURE-1.2  
TOPOGRAPHIC MAP SHOWING NAS BLOCK IN SIVASAGAR DISTRICT  
(10 KM RADIUS)**



**FIGURE-1.3  
GOOGLE MAP SHOWING WELL LOCATIONS**

**TABLE-1.4  
ENVIRONMENTAL SETTING OF RSAL WELL (10 KM RADIUS)**

Sr. No.	Particulars	Details	
1	RSAL well location		
	Village	Lahingiagaon	
	District	Sivasagar	
	State	Assam	
2	Well site Coordinates	26° 58' 37.56" N , 94° 34' 52.156" E	
3	Well Site Elevation above MSL	100m above MSL	
4	Geographical location in toposheet	83J/9	
5	Nearest representative IMD station	Dibrugarh(71.0km, NE)	
6	India Meteorological Dept. (IMD), Data	Annual Mean Max Temp	36°C
		Annual Mean Min Temp	5.5°C
		Total Rainfall	2622.9mm
		Predominant wind direction	NE
	Study Period – Site specific	Mean Max Temp	34.2°C
		Mean Min Temp	12.0°C
		Total Rainfall	490.5 mm
		Predominant wind direction	NE
7	Present land use at the site	Non forest land	
8	Nearest highway	NH-37(2.6km,S)	
9	Nearest railway station	Sivasagar R.S(6.2km, ENE)	
10	Nearest airport	Jorhat(47km,SW)	
11	Nearest river	Dikhu River(0.5km,NW)	
12	Nearest town	Sivasagar(6.0km,ENE)	
13	Nearest major town with 2,00,000 population	Nil	
14	Villages within 1 km radius	Lahingiagaon(0.7km,NE)	
15	Hills/valleys	Nil	
16	Nearest tourist place	Nil	
17	Archaeologically important places	Nil	
18	Protected areas as per Wildlife Protection Act,1972 (Tiger reserve, Elephant reserve, Biospheres, National parks, Wildlife sanctuaries, community reserves and conservation reserves)	Not falling in the eco sensitive zone of Panidhing Bird Sanctuary i.e more than 10 km away from the proposed exploratory drilling well	
19	Reserved / Protected Forests	Nil	
20	Seismicity	Zone-V as per -IS 1983(Part-1) 2002	

Note : All distances mentioned above are aerial  
Source: Topo sheet No: 83 J/9, Google image and field visits

**TABLE-1.5  
ENVIRONMENTAL SETTING OF RSAM WELL (10 KM RADIUS)**

Sr. No.	Particulars	Details	
1	RSAM well location		
	Village	Gaurisagargaon	
	District	Sivasagar	
	State	Assam	
2	Well site Coordinates	26° 56' 54.44" N 94° 31' 07.15" E	
3	Well Site Elevation above MSL	100m above MSL	
4	Geographical location in toposheet	83J/9	
5	Nearest representative IMD station	Dibrugarh(77.2km,NE)	
6	India Meteorological Dept. (IMD), Data	Annual Mean Max Temp	36°C
		Annual Mean Min Temp	5.5°C
		Total Rainfall	2622.9mm
		Predominant wind direction	NE
	Study Period – Site specific	Annual Mean Max Temp	34.2°C
		Annual Mean Min Temp	12.0°C
		Total Rainfall	490.5 mm
		Predominant wind direction	NE
7	Present land use at the site	Non forest land	
8	Nearest highway	NH-37(1.0 km,SE)	
9	Nearest railway station	Sivasagar R.S(13.2km, ENE)	
10	Nearest airport	Jorhat(40.4km,SW)	
11	Nearest river	Dikhu River(1.0km,NE)	
12	Nearest town	Sivasagar(13.0km,ENE)	
13	Nearest major town with 2,00,000 population	Nil	
14	Villages within 1 km radius	Gaurisagargaon(0.9km, ENE)	
15	Hills/valleys	Nil	
16	Nearest tourist place	Nil	
17	Archaeologically important places	Nil	
18	Protected areas as per Wildlife Protection Act,1972 (Tiger reserve, Elephant reserve, Biospheres, National parks, Wildlife sanctuaries, community reserves and conservation reserves)	No Eco –Sensitive zone is falling in the study area of 10km	
19	Reserved / Protected Forests	Nil	
20	Seismicity	Zone-V as per –IS 1983(Part-1) 2002	

Note : All distances mentioned above are aerial

Source: Topo sheet No: 83 J/9, Google image and field visits

**TABLE-1.6  
ENVIRONMENTAL SETTING OF RSAN WELL (10 KM RADIUS)**

Sr. No.	Particulars	Details	
1	RSAN well location		
	Village	Pabajan	
	District	Sivasagar	
	State	Assam	
2	Well site Coordinates	26° 56' 40.44" N 94° 32' 50.51" E	
3	Well Site Elevation above MSL	100m above MSL	
4	Geographical location in toposheet	83J/9	
5	Nearest representative IMD station	Dibrugarh(75.7km,NE)	
6	India Meteorological Dept. (IMD), Data	Annual Mean Max Temp	36°C
		Annual Mean Min Temp	5.5°C
		Total Rainfall	2622.9mm
		Predominant wind direction	NE
	Study Period – Site specific	Annual Mean Max Temp	34.2°C
		Annual Mean Min Temp	12.0°C
		Total Rainfall	490.5 mm
		Predominant wind direction	NE
7	Present land use at the site	Non forest land	
8	Nearest highway	NH-37(0.7 km,NNW)	
9	Nearest railway station	Sivasagar R.S(10.7km, NE)	
10	Nearest airport	Jorhat(42km,SW)	
11	Nearest river	Dikhu River(1.1km,NNW)	
12	Nearest town	Sivasagar(10.0km,NE)	
13	Nearest major town with 2,00,000 population	Nil	
14	Villages within 1 km radius	Pabajan(05km,SE) Bejgaon(0.8km,SW) Namdang(0.6km,NNW)	
15	Hills/valleys	Nil	
16	Nearest tourist place	Nil	
17	Archaeologically important places	Nil	
18	Protected areas as per Wildlife Protection Act,1972 (Tiger reserve, Elephant reserve, Biospheres, National parks, Wildlife sanctuaries, community reserves and conservation reserves)	No Eco -Sensitive zone is falling in the study area of 10km	
19	Reserved / Protected Forests	Nil	
20	Seismicity	Zone-V as per -IS 1983(Part-1) 2002	

Note : All distances mentioned above are aerial  
Source: Topo sheet No: 83 J/9, Google image and field visits

**TABLE-1.7  
ENVIRONMENTAL SETTING OF GKBU WELL (10 KM RADIUS)**

Sr. No.	Particulars	Details	
1	GKBU well location		
	Village	Geleki	
	District	Sivasagar	
	State	Assam	
2	Well site Coordinates	26° 47' 23.87" N 94° 41' 41.86" E	
3	Well Site Elevation above MSL	100m above MSL	
4	Geographical location in toposheet	83J/9	
5	Nearest representative IMD station	Dibrugarh(83.2km,NNE)	
6	India Meteorological Dept. (IMD), Data	Annual Mean Max Temp	36°C
		Annual Mean Min Temp	5.5°C
		Total Rainfall	2622.9mm
		Predominant wind direction	NE
	Study Period – Site specific	Annual Mean Max Temp	34.2°C
		Annual Mean Min Temp	12.0°C
		Total Rainfall	490.5 mm
		Predominant wind direction	NE
7	Present land use at the site	Non forest land	
8	Nearest highway	NH-61(10.2 km,SW) SH-1(11.1km,NW)	
9	Nearest railway station	Namtiali R.S(9.9km, NW)	
10	Nearest airport	Jorhat(52km,SW)	
11	Nearest river	Barjan (0.7km,NW)	
12	Nearest town	Sivasagar(22.0km,NNW)	
13	Nearest major town with 2,00,000 population	Nil	
14	Villages within 1 km radius	Geleki (0.8km, NE)	
15	Hills/valleys	Nil	
16	Nearest tourist place	Nil	
17	Archaeologically important places	Nil	
18	Protected areas as per Wildlife Protection Act,1972 (Tiger reserve, Elephant reserve, Biospheres, National parks, Wildlife sanctuaries, community reserves and conservation reserves)	No Eco –Sensitive zone is falling in the study area of 10km	
19	Reserved / Protected Forests	Geleki R.F(1.8km, SW)	
20	Seismicity	Zone-V as per –IS 1983(Part-1) 2002	

Note : All distances mentioned above are aerial

Source: Topo sheet No: 83 J/9, Google image and field visits

**TABLE-1.8  
ENVIRONMENTAL SETTING OF GKBV WELL (10 KM RADIUS)**

Sr. No.	Particulars	Details	
1	GKBV well location		
	Village	Deopani	
	District	Sivasagar	
	State	Assam	
2	Well site Coordinates	26°47' 46.24° N 94°39' 03.55" E	
3	Well Site Elevation above MSL	100m above MSL	
4	Geographical location in toposheet	83J/9	
5	Nearest representative IMD station	Dibrugarh(84.3km,NNE)	
6	India Meteorological Dept. (IMD), Data	Annual Mean Max Temp	36°C
		Annual Mean Min Temp	5.5°C
		Total Rainfall	2622.9mm
		Predominant wind direction	NE
	Study Period – Site specific	Annual Mean Max Temp	34.2°C
		Annual Mean Min Temp	12.0°C
		Total Rainfall	490.5 mm
		Predominant wind direction	NE
7	Present land use at the site	Non forest land	
8	Nearest highway	NH-61(7.6 km,SSW)	
9	Nearest railway station	Namti -Ali R.S(7.0km, NNW)	
10	Nearest airport	Jorhat(46 km,WSW)	
11	Nearest river	Deopani Nadi (0.2km,NE)	
12	Nearest town	Sivasagar(21.4 km,N)	
13	Nearest major town with 2,00,000 population	Nil	
14	Villages within 1 km radius	Deopani( 0.2km, W)	
15	Hills/valleys	Nil	
16	Nearest tourist place	Nil	
17	Archaeologically important places	Nil	
18	Protected areas as per Wildlife Protection Act,1972 (Tiger reserve, Elephant reserve, Biospheres, National parks, Wildlife sanctuaries, community reserves and conservation reserves)	No Eco -Sensitive zone is falling in the study area of 10km	
19	Reserved / Protected Forests	Geleki R.F(2.3km, SSE)	
20	Seismicity	Zone-V as per -IS 1983(Part-1) 2002	

Note : All distances mentioned above are aerial

Source: Topo sheet No: 83 J/9, Google image and field visits

**TABLE-1.9  
ENVIRONMENTAL SETTING OF MKAE WELL (10 KM RADIUS)**

Sr. No.	Particulars	Details	
1	MKAE well location		
	Village	Selengpathar	
	District	Sivasagar	
	State	Assam	
2	Well site Coordinates	26°50' 54.67" N 94°45' 53.28" E	
3	Well Site Elevation above MSL	100m above MSL	
4	Geographical location in toposheet	83J/13	
5	Nearest representative IMD station	Dibrugarh(74.6km,NNE)	
6	India Meteorological Dept. (IMD), Data	Annual Mean Max Temp	36°C
		Annual Mean Min Temp	5.5°C
		Total Rainfall	2622.9mm
		Predominant wind direction	NE
	Study Period – Site specific	Annual Mean Max Temp	34.2°C
		Annual Mean Min Temp	12.0°C
		Total Rainfall	490.5 mm
		Predominant wind direction	NE
7	Present land use at the site	Non forest land	
8	Nearest highway	SH-1(7.4 km,NW)	
9	Nearest railway station	Bihubar R.S(3.5km, ESE)	
10	Nearest airport	Jorhat(59 km,WSW)	
11	Nearest river	Dikhu river (2.4km,NE)	
12	Nearest town	Sivasagar(19.8 km,NW)	
13	Nearest major town with 2,00,000 population	Nil	
14	Villages within 1 km radius	Phuloni Bari(1.0km, NW) Selengpathar(0.6km, N)	
15	Hills/valleys	Nil	
16	Nearest tourist place	Nil	
17	Archaeologically important places	Nil	
18	Protected areas as per Wildlife Protection Act,1972 (Tiger reserve, Elephant reserve, Biospheres, National parks, Wildlife sanctuaries, community reserves and conservation reserves)	No Eco –Sensitive zone is falling in the study area of 10km	
19	Reserved / Protected Forests	Nil	
20	Seismicity	Zone-V as per –IS 1983(Part-1) 2002	

Note : All distances mentioned above are aerial

Source: Topo sheet No: 83 J/9, Google image and field visits

**TABLE-1.10  
ENVIRONMENTAL SETTING OF MKAF WELL (10 KM RADIUS)**

Sr. No.	Particulars	Details	
1	MKAF well location		
	Village	Gohain Methon Chowa	
	District	Sivasagar	
	State	Assam	
2	Well site Coordinates	26°52' 32.80" N 94°45' 35.21" E	
3	Well Site Elevation above MSL	100m above MSL	
4	Geographical location in toposheet	83J/13	
5	Nearest representative IMD station	Dibrugarh( 72km,NNE)	
6	India Meteorological Dept. (IMD), Data	Annual Mean Max Temp	36°C
		Annual Mean Min Temp	5.5°C
		Total Rainfall	2622.9mm
		Predominant wind direction	NE
	Study Period – Site specific	Annual Mean Max Temp	34.2°C
		Annual Mean Min Temp	12.0°C
		Total Rainfall	490.5 mm
		Predominant wind direction	NE
7	Present land use at the site	Non forest land	
8	Nearest highway	SH-1(4.8 km, NW)	
9	Nearest railway station	Santak R.S(2.4km, ESE)	
10	Nearest airport	Jorhat(58.6 km,WSW)	
11	Nearest river	Dikhu river (0.7km,NE)	
12	Nearest town	Sivasagar(17.0 km, NNW)	
13	Nearest major town with 2,00,000 population	Nil	
14	Villages within 1 km radius	Gohain Methon Chowa(0.5km,NNW)	
15	Hills/valleys	Nil	
16	Nearest tourist place	Nil	
17	Archaeologically important places	Nil	
18	Protected areas as per Wildlife Protection Act,1972 (Tiger reserve, Elephant reserve, Biospheres, National parks, Wildlife sanctuaries, community reserves and conservation reserves)	No Eco -Sensitive zone is falling in the study area of 10km	
19	Reserved / Protected Forests	Nil	
20	Seismicity	Zone-V as per –IS 1983(Part-1) 2002	

Note : All distances mentioned above are aerial

Source: Topo sheet No: 83 J/9, Google image and field visits

**TABLE-1.11  
ENVIRONMENTAL SETTING OF LKBC WELL (10 KM RADIUS)**

Sr. No.	Particulars	Details	
1	LKBC well location		
	Village	Tipomia	
	District	Sivasagar	
	State	Assam	
2	Well site Coordinates	26°59' 35.44" N 94°49' 09.75" E	
3	Well Site Elevation above MSL	100m	
4	Geographical location in toposheet	83I/16	
5	Nearest representative IMD station	Dibrugarh( 57.6 km, NNE)	
6	India Meteorological Dept. (IMD), Data	Annual Mean Max Temp	36°C
		Annual Mean Min Temp	5.5°C
		Total Rainfall	2622.9mm
		Predominant wind direction	NE
	Study Period – Site specific	Annual Mean Max Temp	34.2°C
		Annual Mean Min Temp	12.0°C
		Total Rainfall	490.5 mm
		Predominant wind direction	NE
7	Present land use at the site	Non forest land	
8	Nearest highway	SH-1(6.8 km,SE)	
9	Nearest railway station	Lakwa R.S(2.8km,NE)	
10	Nearest airport	Jorhat(69.0 km,WSW)	
11	Nearest river	Disang river (0.8km,NW)	
12	Nearest town	Sivasagar(17.5 km,W)	
13	Nearest major town with 2,00,000 population	Nil	
14	Villages within 1 km radius	Tipomia(0.4km, NW) Didghal Pachi(0.7km,SSE)	
15	Hills/valleys	Nil	
16	Nearest tourist place	Nil	
17	Archaeologically important places	Nil	
18	Protected areas as per Wildlife Protection Act,1972 (Tiger reserve, Elephant reserve, Biospheres, National parks, Wildlife sanctuaries, community reserves and conservation reserves)	No Eco –Sensitive zone is falling in the study area of 10km	
19	Reserved / Protected Forests	Nil	
20	Seismicity	Zone-V as per –IS 1983(Part-1) 2002	

Note : All distances mentioned above are aerial

Source: Topo sheet No: 83 J/9, Google image and field visits

**TABLE-1.12  
ENVIRONMENTAL SETTING OF LKBD WELL (10 KM RADIUS)**

Sr. No.	Particulars	Details	
1	LKBD well location		
	Village	Boiragibor	
	District	Sivasagar	
	State	Assam	
2	Well site Coordinates	26°59' 51 66" N 94°47' 57 28" E	
3	Well Site Elevation above MSL	100m	
4	Geographical location in toposheet	83I/16	
5	Nearest representative IMD station	Dibrugarh( 57.9 km,NNE)	
6	India Meteorological Dept. (IMD), Data	Annual Mean Max Temp	36°C
		Annual Mean Min Temp	5.5°C
		Total Rainfall	2622.9mm
		Predominant wind direction	NE
	Study Period – Site specific	Annual Mean Max Temp	34.2°C
		Annual Mean Min Temp	12.0°C
		Total Rainfall	490.5 mm
		Predominant wind direction	NE
7	Present land use at the site	Non forest land	
8	Nearest highway	SH-1(8.4 km,SE)	
9	Nearest railway station	Lakwa R.S(4.5km,NE)	
10	Nearest airport	Jorhat(67.0 km,WSW)	
11	Nearest river	Disang river (0.2km,E)	
12	Nearest town	Sivasagar(15.5 km,W)	
13	Nearest major town with 2,00,000 population	Nil	
14	Villages within 1 km radius	Boiragibor(0.8km, NW)	
15	Hills/valleys	Nil	
16	Nearest tourist place	Nil	
17	Archaeologically important places	Nil	
18	Protected areas as per Wildlife Protection Act,1972 (Tiger reserve, Elephant reserve, Biospheres, National parks, Wildlife sanctuaries, community reserves and conservation reserves)	No Eco -Sensitive zone is falling in the study area of 10km	
19	Reserved / Protected Forests	Nil	
20	Seismicity	Zone-V as per –IS 1983(Part-1) 2002	

Note : All distances mentioned above are aerial

Source: Topo sheet No: 83 J/9, Google image and field visits

**TABLE-1.13  
ENVIRONMENTAL SETTING OF KGAE WELL (10 KM RADIUS)**

Sr. No.	Particulars	Details	
1	KGAE well location		
	Village	Gohaingaon	
	District	Sivasagar	
	State	Assam	
2	Well site Coordinates	27°01'18.35" N 94°46'51.126" E	
3	Well Site Elevation above MSL	100m	
4	Geographical location in toposheet	83I/16	
5	Nearest representative IMD station	Dibrugarh( 56.2 km,NNE)	
6	India Meteorological Dept. (IMD), Data	Annual Mean Max Temp	36°C
		Annual Mean Min Temp	5.5°C
		Total Rainfall	2622.9mm
		Predominant wind direction	NE
	Study Period – Site specific	Annual Mean Max Temp	34.2°C
		Annual Mean Min Temp	12.0°C
		Total Rainfall	490.5 mm
		Predominant wind direction	NE
7	Present land use at the site	Non forest land	
8	Nearest highway	SH-1(11.7km, SE) ,NH-37(10.6km, NW)	
9	Nearest railway station	Lakwa R.S(6.5km,ESE)	
10	Nearest airport	Jorhat(66.7 km,SW)	
11	Nearest river	Disang river (2.4km,SSE)	
12	Nearest town	Sivasagar(14.0 km,WSW)	
13	Nearest major town with 2,00,000 population	Nil	
14	Villages within 1 km radius	Gohaingaon(0.3km,E)	
15	Hills/valleys	Nil	
16	Nearest tourist place	Nil	
17	Archaeologically important places	Nil	
18	Protected areas as per Wildlife Protection Act,1972 (Tiger reserve, Elephant reserve, Biospheres, National parks, Wildlife sanctuaries, community reserves and conservation reserves)	No Eco –Sensitive zone is falling in the study area of 10km	
19	Reserved / Protected Forests	Nil	
20	Seismicity	Zone-V as per –IS 1983(Part-1) 2002	

Note : All distances mentioned above are aerial  
Source: Topo sheet No: 83 J/9, Google image and field visits

#### 1.4.4 Importance of the Project

Total crude oil import for FY 2014-15 was 189.43 MMT almost same as the imports during FY 2013-14 (189.24 MMT; increase of 0.1%). However, import of petroleum products (20.28 MMT) increased by 21 percent, mainly on account of increase in import of LPG (26%), MS (58%), HSD (35%), Bitumen (80%), and other products like - Aviation gas, Pet Coke (33%) etc.

Petroleum products export declined for the first time in last 15 years; registering a decline of 6.2 percent mainly on account of decline in export of Naphtha, Fuel oil, Bitumen, etc.

With total import (crude and petroleum products) combined with total products export of 63.66 MMT translates to net import volume of 146 MMT for FY 2014-15. Net import bill for crude oil during FY 2014-15 was 6,873.50 billion (US\$ 112.75 billion) against 8,648.75 billion (US\$ 142.96 billion) during FY 2013-14 – a decrease of 20.5 per cent in terms of the Indian Rupee and decrease of 21.13 per cent in dollar value mainly on account of lower crude oil prices in the international market.

Energy security has become one of the top three goals of the Indian Government. The Indian Government is encouraging exploration and production of oil and gas to a great extent. This would primarily allow India to tap its own resources there by reducing its import bill.

Discovery of viable hydrocarbon reserves in the state can boost the state's economic development to a great extent. It would also catalyse influx of industries in the state. The proposed exploration project is thus of immense significance for the country.

ONGC is engaged in the exploration of oil & gas in the NAS Block. Discovery of hydrocarbons in this block will substantially improve the socio-economic conditions of the region. The proposed exploration will also help to discover the geological past to create the economic future for the region as well as to the country.

## **1.5 Scope of the Study**

The Environmental Impact Assessment report is prepared covering general study area of 10 km radius around the PML and a detailed study was conducted around 1-km from each well.

The scope of study broadly includes:

- To undertake environmental monitoring so as to establish the baseline environmental status of the study area;
- To identify various existing pollution activities in the ambient levels;
- Establishing the relevant features of the proposed exploratory drilling that are likely to have an impact on the environment;
- Predicting the impacts on the environment due to exploratory drilling;
- To evaluate the predicted impacts on the various environmental attributes in the study area by using scientifically developed and widely accepted environmental impact assessment methodologies;
- To prepare a Disaster Management Plan (DMP) based on Risk Assessment, studies;
- To prepare an Environment Management Plan (EMP) outlining the measures for improving the environmental quality and scope for future drilling activities and Occupational Health and Safety for environmentally sustainable development; and
- To identify critical environmental attributes required to be monitored.

## 1.6 Methodology of the Study

Vimta Labs Limited, Hyderabad had conducted a reconnaissance survey and sampling locations were identified on the basis of:

- Predominant wind directions in the study area as recorded by India Meteorological Department (IMD);
- Existing topography, location of surface water bodies like ponds, canals and rivers;
- Location of villages/towns/sensitive areas;
- Accessibility, power availability and security of monitoring equipment, pollution pockets in the area;
- Areas which represent baseline conditions; and
- Collection, collation and analysis of baseline data for various environmental attributes.

Field studies have been conducted for a period of three months (**1<sup>st</sup> September 2016 to 30<sup>th</sup> November 2016**) representing post monsoon season to determine existing conditions of various environmental attributes as outlined in **Table-1.14**. The applicable environmental standards for the project are given in **Annexure-II** and the methodology of monitoring and analysis is given in **Annexure-III**.

**TABLE-1.14**  
**ENVIRONMENTAL ATTRIBUTES AND FREQUENCY OF MONITORING**

Sr. No.	Environmental Component	Sampling Locations	Sampling Parameters	Total Sampling Period	Sampling Frequency
1	Meteorology	One central location	Temperature, Wind Speed, Wind Direction, Relative Humidity, Cloud Cover, Rainfall	one non monsoon season (Three months)	Continuous hourly recording
2	Ambient Air Quality	10 Locations	PM <sub>2.5</sub> , PM <sub>10</sub> , SO <sub>2</sub> , NO <sub>x</sub> , VOC, THC, CH <sub>4</sub> -HC, non CH <sub>4</sub> -HC and CO	Two consecutive days per week for one non - monsoon season	24 hourly samples
3	Water Quality	5 Locations of surface water & 8 locations of Ground water	As per IS: 10500	Grab sampling	Once during study period
4	Noise Monitoring	10 Locations	Sound Pressure Levels	Continuously for 24 hours	Once during study period
5	Soil Analysis	10 Locations in Existing ecological resources within study area	Soil profile, Chemical constituents	Composite sample	Once during study period
6	Ecology	5 Terrestrial Ecological	Flora and fauna	Field observations	Once in study period



**Environmental Impact Assessment Report for Proposed Exploratory Drilling of 10 wells at Rudrasagar, Geleki, Lakwa, Namti, Mekeypore-Santak-Nazira PML Areas at Sivasagar District, Assam**

**Chapter-1  
Introduction**

Sr. No.	Environmental Component	Sampling Locations	Sampling Parameters	Total Sampling Period	Sampling Frequency
		Locations & 3 Aquatic location within Existing ecological resources within study area		and secondary sources	
7	Demography and Socio-economic aspects	Total block area	Demographic profile	Based on District Census Handbook (2011)	
8	Land Use	Total block area	Trend of land use change for different categories	Based on District Census Handbook (2001) and satellite images	
9	Geology	-	Geological history	Data collected from primary sources	
10	Hydrology	-	Drainage area and pattern, nature of streams, aquifer characteristics, recharge and discharge rates.	Based on data collected from secondary sources	