



Hindustan Oil Exploration
Company Pvt. Ltd.

EIA Study of Development Drilling of
24 Drill Sites, Commissioning of two
GGs, Capacity expansion of existing
M-GPP and laying of underground
transportation Pipeline at onshore
Block AAP-ON-94/1 Tinsukia
District, Assam

Draft Report- Annexure

March 2019

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Copy of Existing Environmental Clearance

F. No. J-11011/245/2014-IA II (I)
Government of India
Ministry of Environment, Forest and Climate Change
(I.A. Division)

Indira Paryavaran Bhawan
Aliganj, Jorbagh Road
New Delhi - 110 003
E-mail: yogendra78@nic.in
Telefax: 011-24695365
Dated: 31st January, 2017

To,
Shri G Janakiraman
HSE Manager,
M/s Hindustan Oil Exploration
Company Ltd.,
HOEC House, Tandalja Road,
Off Old Padra Road,
Vadodara-390 020 Gujarat

Subject: Development drilling of six wells (DRK-1, DRK-2, DRK-4, DRK-5, DRK-6 and DRK-7), Group Gathering Station (GGS), Gas Processing Plant (GPP) Gas Pipeline (12") of 11.5 kilometers from GGS to GPP and Gas pipeline (4") of 11.5 kilometers from GGS to GPP at onshore block AAP-ON-94/1, village Dirok, Tea Estate, Tehsil Margherita, District Tinsukia, Assam by M/s Hindustan Oil Exploration Company Ltd.- Environmental Clearance reg.

Ref.: Your online proposal no. IA/AS/IND2/31891/2014; dated 10th December, 2015.

Sir,
This has reference to your online proposal no. IA/AS/IND2/31891/2014; dated 10th December, 2015 along with project documents including Form I, Terms of References, Pre-feasibility Report, EIA/EMP Report along with Public Hearing Report regarding above mentioned project.

2.0 The Ministry of Environment, Forests and Climate Change has examined the application. It is noted that proposal is for Development drilling of six wells (DRK-1, DRK-2, DRK-4, DRK-5, DRK-6 and DRK-7), Group Gathering Station (GGS), Gas Processing Plant (GPP) Gas Pipeline (12") of 11.5 kilometers from GGS to GPP and Gas pipeline (4") of 11.5 kilometers from GGS to GPP at onshore block AAP-ON-94/1, village Dirok, Tea Estate, Tehsil Margherita, District Tinsukia, Assam by M/s Hindustan Oil Exploration Company Ltd. The Block AAP-ON-94/1 of HOEC is located in Assam-Arakan Basin and falls within geologically complex Schuppen Thrust Belt. It is located in Tinsukia District of the State of Assam, NE India. This block covers approximately 305 sq. km area. The proposed project activity falls within Tinsukia district of Assam. Following activities are proposed:

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- (i) To put three existing wells into production, drill and complete three new development wells to produce hydrocarbons from Dirok field, safely without significant impact on the environment;
- (ii) To set up a new Gas Gathering Station (GGS) and a Gas Processing Plant (GPP) with handling capacity of 20 million standard cubic foot per day (mmscfd) of natural gas.
- (iii) To lay underground pipelines to transport natural gas from wells to GPP via GGS
- (iv) To lay underground pipelines to transport natural gas from GPP to an OIL (Oil India Limited) operated existing GGS at Kusijan
- (v) To lay underground pipelines to transport oil condensate from GPP to the existing IOCL refinery at Digboi

Coordinates of the proposed wells, GGS and GPP are as under:

DRK-5	95° 37' 03.74" / E; 27° 16' 12.14" / N
DRK-6	95° 37' 27.57" / E; 27° 16' 13.85" / N
DRK-7	95° 37' 48.18" / E; 27° 16' 13.85" / N
GGS	95° 37' 41.06" / E; 27° 15' 45.42" / N
GPP	95° 37' 42.99" / E; 27° 21' 49.97" / N

3.0 Well will be drilled upto depth of 2500 m. Cost of project is Rs. 550 Crore. Area of Forest land involved is 4.5 ha. Elephant Corridor – In between the Powai tea estate in south and Golai village in north lies the Golai-Powai elephant corridor. Elephant uses this corridor to move between Upper Dehing (West Block) R.F. and Upper Dehing (East Block) R.F. The pipeline crosses the elephant corridor, however, the pipeline will be buried underground. Forest & Wildlife Sanctuary– GPP to Kusijan GGS stretch of 4.5 km pipeline route is planned to pass through Digboi Reserved Forest (West Block). Also, 11.5kms length of the pipeline (connecting GGS to GPP) out of the total pipeline length is passing through ecological sensitive zone of Dehing Patkai Wildlife Sanctuary. The PP has proposed to meet water requirement from the surface water resources under which 20 m³/day peak water requirement is for drilling of each well. Besides 150 m³/day and 15 m³/day of water will be used for construction and operation of GPP respectively. Average consumption of water during drilling phase will be 45-50 m³/day. Four 670 KW of DG set will be installed for operation of rig. One 450 KVA DG set shall be used for construction and operation of GGS. With regard to GPP, 3670 KW DG set during construction and 2600 KVA captive gas generator will be installed during production.

Drill cutting will be separated from drill fluid and washed temporarily stored in an impervious HDPE lined pit. Drilling waste water will be disposed through treatment in ETP to comply with the CPCB onshore effluent discharge standard for oil and gas industry. Sewage will be treated in a combination of septic tank and soak pit. Scrap metal, waste oil surplus chemical and lead acid batteries shall be disposed to authorized waste oil/used oil recyclers.

4.0 Public Hearing / Public Consultation meeting conducted by the Assam Pollution Control Board on 3rd July, 2015. The issues raised during Public Hearing were regarding local employment, elephant corridor, compensation of land etc.

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5.0 All the projects related to offshore and onshore Oil and Gas exploration, development and production are listed in para 1(b) of schedule of EIA Notification, 2006 covered under category 'A' and appraised at central level.

7.0 The proposal was considered by the Expert Appraisal Committee (Industry) in its 6th meetings held during 30th March to 2nd April 2016. Project Proponent and the EIA Consultant namely (M/s SENES Consultant India Pvt. Ltd., have presented EIA / EMP report as per the TOR. EAC has found the EIA / EMP Report and additional information to be satisfactory and in full consonance with the presented TORs. The Committee recommended the proposal for environmental clearance.

6.0 Based on the information submitted by the project proponent, the Ministry of Environment and Forests hereby accords environmental clearance to above project under the provisions of EIA Notification dated 14th September 2006, subject to the compliance of the following Specific and General Conditions:

A. SPECIFIC CONDITIONS:

- (i) Forest clearance shall be obtained.
- (ii) Ambient air quality should be monitored near the closest human settlements as per the National Ambient Air Quality Emission Standards issued by the Ministry vide G.S.R. No. 826(E) dated 16th November, 2009 for PM10, PM2.5, SO2, NOX, CO, methane & Non-methane HC etc.
- (iii) Mercury shall also be analyzed in air, water and drill cuttings twice during drilling period.
- (iv) Approach road shall be made pucca to minimize generation of suspended dust.
- (v) The company shall make the arrangement for control of noise from the drilling activity. Acoustic enclosure shall be provided to DG sets and proper stack height should be provided as per CPCB guidelines.
- (vi) Total water requirement shall not exceed 40 m³/day and prior permission shall be obtained from the concerned agency.
- (vii) The company shall construct the garland drain all around the drilling site to prevent runoff of any oil containing waste into the nearby water bodies and land. Separate drainage system shall be created for oil contaminated and non-oil contaminated water. Effluent shall be properly treated and treated wastewater shall conform to CPCB standards.

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- (viii) Drilling wastewater including drill cuttings wash water shall be collected in disposal pit lined with HDPE lining evaporated or treated and shall comply with the notified standards for on-shore disposal. The membership of common TSDF shall be obtained for the disposal of drill cuttings and hazardous waste. Otherwise, secured land fill shall be created at the site as per the design approved by the CPCB and obtain authorization from the SPCB. Copy of authorization or membership of TSDF shall be submitted to Ministry's Regional Office at Shillong.
- (ix) Produced water shall be treated in ETP. Treated produced water shall be disposed off through injection well as per CPCB/MoEF guidelines.
- (x) Good sanitation facility shall be provided at the drilling site. Domestic sewage shall be disposed off through septic tank/ soak pit.
- (xi) Oil spillage prevention scheme shall be prepared. In case of oil spillage/contamination, action plan shall be prepared to clean the site by adopting proven technology. The recyclable waste (oily sludge) and spent oil shall be disposed of to the authorized recyclers.
- (xii) The company shall comply with the guidelines for disposal of solid waste, drill cutting and drilling fluids for onshore drilling operation notified vide GSR.546(E) dated 30th August, 2005.
- (xiii) The Company shall take necessary measures to prevent fire hazards, containing oil spill and soil remediation as needed. Possibility of using ground flare shall be explored. At the place of ground flaring, the overhead flaring stack with knockout drums shall be installed to minimize gaseous emissions during operation.
- (xiv) The company shall develop a contingency plan for H2S release including all necessary aspects from evacuation to resumption of normal operations. The workers shall be provided with personal H2S detectors in locations of high risk of exposure along with self containing breathing apparatus.
- (xv) On completion of drilling, the company have to plug the drilled wells safely and obtain certificate from environment safety angle from the concerned authority.
- (xvi) Blow Out Preventer (BOP) system shall be installed to prevent well blowouts during drilling operations. BOP measures during drilling shall focus on maintaining well bore hydrostatic pressure by proper pre-well planning and drilling fluid logging etc.
- (xvii) Emergency Response Plan (ERP) shall be based on the guidelines prepared by OISD, DGMS and Govt. of India.

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- (xviii) The company shall take measures after completion of drilling process by well plugging and secured enclosures, decommissioning of rig upon abandonment of the well and drilling site shall be restored to the original condition. In the event that no economic quantity of hydrocarbon is found a full abandonment plan shall be implemented for the drilling site in accordance with the applicable Indian Petroleum Regulations.
- (xix) Abandoned well inventory and remediation plan shall be submitted within six months from the date of issue of letter.
- (xx) Occupational health surveillance of the workers shall be carried out as per the prevailing Acts and Rules.
- (xxi) Restoration of the project site shall be carried out satisfactorily and report shall be sent to the Ministry's Regional Office at Shillong.
- (xxii) Oil content in the drill cuttings shall be monitored by some Authorized agency and report shall be sent to the Ministry's Regional Office at Shillong.
- (xxiii) Under Enterprise Social Commitment (ESC), sufficient budgetary provision shall be made for health improvement, education, water and electricity supply etc. in and around the project.
- (xxiv) An audit shall be done to ensure that the Environment Management Plan is implemented in totality and report shall be submitted to the Ministry's Regional Office.
- (xxv) All personnel including those of contractors should be trained and made fully aware of the hazards, risks and controls in place.
- (xxvi) Company shall have own Environment Management Cell having qualified persons with proper background.
- (xxvii) Company shall prepare operating manual in respect of all activities. It shall cover all safety & environment related issues and system. Measures to be taken for protection. One set of environmental manual shall be made available at the drilling site/ project site. Awareness shall be created at each level of the management. All the schedules and results of environmental monitoring shall be available at the project site office.

B. GENERAL CONDITIONS:

- i. The project authorities must strictly adhere to the stipulations made by the State Pollution Control Board (SPCB), State Government and any other statutory authority.

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G. S. A.

- ii. No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests. In case of deviations or alterations in the project proposal from those submitted to this Ministry for clearance, a fresh reference shall be made to the Ministry to assess the adequacy of conditions imposed and to add additional environmental protection measures required, if any.
- iii. The locations of ambient air quality monitoring stations shall be decided in consultation with the State Pollution Control Board (SPCB) and it shall be ensured that at least one station is installed in the upwind and downwind direction as well as where maximum ground level concentrations are anticipated.
- iv. The National Ambient Air Quality Emission Standards issued by the Ministry vide G.S.R. No. 826(E) dated 16th November, 2009 shall be followed.
- v. The overall noise levels in and around the plant area shall be kept well within the standards by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels shall conform to the standards prescribed under Environment (Protection) Act, 1986 Rules, 1989 viz. 75 dBA (day time) and 70 dBA (night time).
- vi. The Company shall harvest rainwater from the roof tops of the buildings and storm water drains to recharge the ground water and use the same water for the process activities of the project to conserve fresh water.
- vii. Training shall be imparted to all employees on safety and health aspects of chemicals handling. Pre-employment and routine periodical medical examinations for all employees shall be undertaken on regular basis. Training to all employees on handling of chemicals shall be imparted.
- viii. The company shall also comply with all the environmental protection measures and safeguards proposed in the documents submitted to the Ministry. All the recommendations made in the EIA/EMP in respect of environmental management, risk mitigation measures and public hearing relating to the project shall be implemented.
- ix. The company shall undertake all relevant measures for improving the socio-economic conditions of the surrounding area. CSR activities shall be undertaken by involving local villages and administration.
- x. The company shall undertake eco-developmental measures including community welfare measures in the project area for the overall improvement of the environment.
- xi. A separate Environmental Management Cell equipped with full fledged laboratory facilities shall be set up to carry out the Environmental Management and Monitoring functions.

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- xii. The company shall earmark sufficient funds towards capital cost and recurring cost per annum to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so earmarked for environment management/ pollution control measures shall not be diverted for any other purpose.
- xiii. A copy of the clearance letter shall be sent by the project proponent to concerned Panchayat, ZilaParisad/Municipal Corporation, Urban local Body and the local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal.
- xiv. The project proponent shall also submit six monthly reports on the status of compliance of the stipulated Environmental Clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the respective Regional Office of MoEF, the respective Zonal Office of CPCB and SPCB. A copy of Environmental Clearance and six monthly compliance status report shall be posted on the website of the company.
- xv. The environmental statement for each financial year ending 31st March in Form-V as is mandated shall be submitted to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental clearance conditions and shall also be sent to the respective Regional Offices of MoEF by e-mail.
- xvi. The project proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB/Committee and may also be seen at Website of the Ministry at <http://moef.nic.in>. This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same shall be forwarded to the concerned Regional Office of the Ministry.
- xvii. The project authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of start of the project.
- 7.0 The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.
- 8.0 The Ministry reserves the right to stipulate additional conditions, if found necessary. The company in a time bound manner will implement these conditions.
- 9.0 The above conditions will be enforced, inter-alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, Air (Prevention & Control of Water Pollution) Act, 1981, the Environment (Protection) Act, 1986, Hazardous Waste

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(Management, Handling and Trans-boundary Movement) Rules, 2008 and the Public Liability Insurance Act, 1991 along with their amendments and rules.


31.1.2017
(Yogendra Pal Singh)
Scientist 'D'

Copy to :-

1. The Principal Secretary, Department of Environment & Forest, Govt. of Assam, Guwahati, Assam.
2. The Chairman, Assam Pollution Control Board, Bahunimatram, Assam, Guwahati.
3. The Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD-cum-Office Complex, East Arjun Nagar, Delhi - 110032.
4. The Conservator of Forests (Central), Ministry of Environment, Forests and Climate Change, Regional Office (Northeast Eastern Regional Office, Uplands Road, Laitumkhrach, Shilong - 793003, Meghalaya.
5. Monitoring Cell, Ministry of Environment, Forests and Climate Change, Indira Paryavaran Bhawan, CGO Complex, New Delhi.
6. Guard File/Record File/Notice Board.


31.1.2017
(Yogendra Pal Singh)
Scientist 'D'

Annexure 1.2

Approved Terms of Reference

No.IA-J-11011/102/2018-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
23 Apr 2018

To,

M/s Hindustan Oil Exploration Company Ltd
192, St. Mary's Road Alwarpet,
Chennai-600018
Tamil Nadu

Tel.No.9144-66229000; Email:gjanakiraman@hoec.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/IND2/73526/2018
Development Drilling of 24 Drill Sites,
Commissioning of two GGS, Capacity
expansion of existing M-GPP and laying of
underground transportation Pipeline at onshore
block AAP-ON-94/1 |
| 2. Name of the Proposal: | |
| 3. Category of the Proposal: | Industrial Projects - 2 |
| 4. Project/Activity applied for: | 1(b) Offshore and onshore oil and gas
exploration, development & production
6(a) Oil & gas transportation pipe line (crude
and refinery/ petrochemical |
| 5. Date of submission for TOR: | 19 Mar 2018 |

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.
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 activematerials, other hazardous materials, etc. including its disposal options during all project phases.
24. Disposal of spent oil and lube.

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

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.

Annexure 2.1

Blow out Prevention Plan

Risk assessment and disaster management plan for independent reviews of well-designed construction etc., for prevention of blow out. Blow out preventer installation

Drilling operations in hydrocarbon exploration and production is hazardous in nature, which can pose risk to life and property in an unlikely event of sudden release of hydrocarbon due to unsafe acts and conditions.

In order to address the risks posed by these activities, policy framework has been developed to ensure that integrity of the wells are properly accounted in the design, planning and operations preventing any uncontrolled influx of formation fluid into the wellbore. The framework describes

- Well Delivery Process Manual
- Well Constructions and Operations Minimum Standards Policy
- Well Integrity management system and Well Integrity management manual

Well delivery process manual defines the entire process of well delivery. The 5 stages of the Well Delivery Process (WDP) are: Scope > Design > Plan > Operations > Closeout.

Design, planning and operations phases are critical in preventing the occurrence of well control events. A 'Statement of requirement (SOR) is prepared stating the surface drilling locations, subsurface targets along with the details of geological hazards and the data related to pore pressures and fracture pressures of the various layers in lithology. Based on the SOR, a specific well plan and design to penetrate the reservoir targets is prepared. The selection of rig, various drilling tangibles and equipment depends upon the expected pressures that need to be withstood during the entire well construction process and life cycle of the well. Risk assessment for each stage of well delivery process is carried out and risk registers are maintained.

Well construction & operations minimum standards policy outlines the minimum requirements for well construction, testing, completion, well intervention and related rig operations. The requirements set out are based on regulatory and international best practices such as:

- Oil Industry Safety Directorate (OISD) - Standards and recommended practices (as applicable);
- American Petroleum Institute (API) standards (as applicable);
- ISO standards (as applicable); and
- International Oil & Gas industry best practices and standards such as NORSOK D-010, BSEE Well Control Rule Apr 2016 etc. as applicable on case to case basis.

For the prevention of any potential well control incident, the 'Well Constructions and Operations Minimum Standards Policy' states the minimum

requirements are well barriers, primary and secondary well control, and pressure testing requirements of casings and well control equipment among other requirements. Few key elements of the policy are:

- **Well integrity barriers:** During all well construction/ well intervention operations, a minimum of 2 independently verified barriers are maintained, of at least one is a mechanical barrier for potential flow such as annular BOP, Ram BOPs, Blind/Shear ram BOPs, Casing pack-off seals, cement behind casing etc. API STD 53 & API RP 53 are followed for the BOP equipment systems.
- **Minimum overbalance requirement:** a minimum 200 psi or 0.8 ppg overbalance, whichever is lower is maintained above the formation pressure during the entire drilling process to prevent any formation fluid influx in the wellbore during the well construction process.
- **Casing design for the mechanical and pressure integrity:** Casing grades/ weights/ metallurgy are selected such that they provide complete mechanical and pressure integrity to the well during well construction using the latest design methods and HSE guidelines. As per international practices, safety factors are taken into account while selecting casings/tubings, where the mechanical and hydraulic integrities are ensured.

Collapse	1.00.....for partial evacuation
	0.85for complete evacuation
Burst	1.10
Tension	1.60
Tri-axial	1.10

- **Casing pressure tests:** All casing strings are pressure tested for mechanical and pressure integrity at pressure 500 psi + maximum anticipated load during the life of the well.

Well blowout prevention: Well blowout is uncontrolled flow of formation fluids from a well. This happens because of the failure to maintain any of the above mentioned barriers. If well blowout occurs, then it cannot be contained using previously installed barriers and require specialized services intervention. A blowout may consist of water, oil, gas or a mixture of these. Blowouts may occur during any types of well construction operations or well intervention.

Prevention of blow outs rests on control of any kick/ influx in the well bore. It is achieved by maintaining primary well control. In case the primary well control fails, then secondary well control measures are applied by closing the rams of the well control equipment called Blowout Preventer (BOP) and subsequently circulating the kick (influx) out of the wellbore.

Primary well control: This is achieved by overbalance of hydrostatic pressure of the drilling fluid over and above the pore pressure at the corresponding drilling depths.

- Conventional drilling, completion and work over activities must be carried out with a kill weight fluid column in the hole to prevent an influx of formation fluids. Kill weight is defined as providing a minimum 200 psi or 0.8 ppg overbalance, whichever is lower.
- As a minimum, the following kick detection equipment are used for operational of the wells. The includes active pit volume monitors, flow indicator equipment, gas detection at header box, Rate of penetration recorder (during drilling phase), Mud weight in and out (mud balance) and trip Tank

Secondary well control: This is implemented when primary well control has failed to prevent the influx from formation to the wellbore. Secondary well control measures are applied by closing the rams of the well control equipment called Blowout Preventer (BOP) and subsequently circulating the kick out of the wellbore.

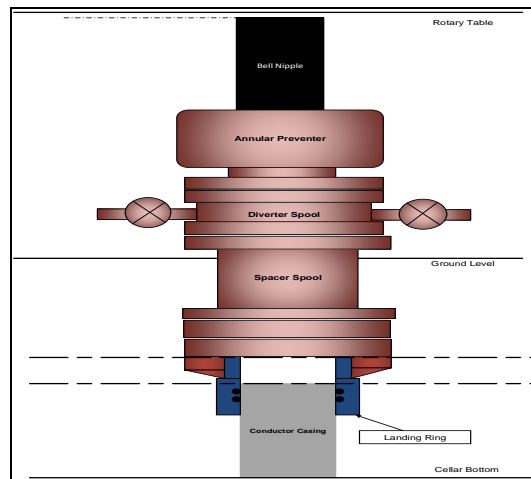
- The BOP stack and wellhead in place at any point during the course of the well must be of sufficient working pressure to contain 10% above maximum anticipated surface pressure from the total depth of the current open hole section.
- Kick detection and shut-in drills shall be held once per week with both crews.
- The Company preferred procedure for shutting-in a well is the HARD SHUT-IN (HCRs closed /Shut- in on Annular) method.
- Wells will be killed with the drill string as near to the bottom of the well as conditions dictate. The constant bottom hole circulation method will be used to kill the well.

In case of failure to maintain primary and secondary well control, which may result in a blowout, then 'Blowout contingency plan and recommended practices' are adopted. Cairn has an contract for Emergency Well Control and Firefighting with Wild Well Control Inc, a contractor of international repute to deal with any contingency situation.

Well control equipment: This includes the diverter system, BOP stack, BOP control system, wellhead, wellhead connector, Kelly cocks, drill string safety valves (inside BOPs), the kill and choke lines and manifold and all associated pipework and valves. All the well control equipment are regularly tested and inspected for its effectiveness. For onshore wells in Rajasthan, diverter for the surface hole drilling and BOP stack for the intermediate & production hole drilling, are used as the blowout prevention equipment.

Diverter equipment and minimum requirements: The diverter is used when the well cannot be shut in because of fear of formation breakdown or lost circulation due to shut in of BOP. All onshore wells, where shallow gas hazard

have been identified have a diverter system installed for the surface section drilling. The diverter is installed on a conductor casing with large diverter pipe pointing to a downwind area.



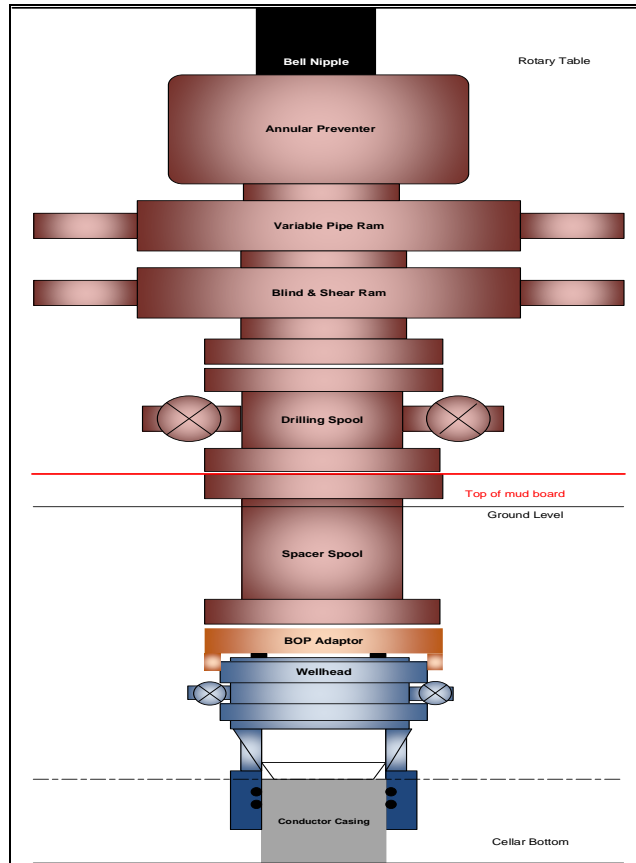
BOP and minimum equipment requirements: In a well, after the surface casing, blow-out prevention (BOP) equipment is installed and maintained before resuming drilling. A typical BOP stack contains a number of ram preventers like Annular BOP, Pipe ram, Shear ram and Blind ram etc. the configuration of the BOP stack depends upon the well depth and expected pressures.

- An annular-type blowout preventer can close around the drill string, casing or a non-cylindrical object, such as the Kelly.
- Pipe rams close around a drill pipe, restricting flow in the annulus (ring-shaped space between concentric objects) between the outside of the drill pipe and the wellbore, but do not obstruct flow within the drill pipe.
- Blind shear rams are intended to seal a wellbore, even when the bore is occupied by a drill string, by cutting through the drill string as the rams close off the well.

The minimum requirements are as follows:

- 5,000 psi or less systems Onshore: 1 x Annular and 2 x Rams (1 x pipe and 1x blind shear ram)
- 10,000 psi Onshore: 1 x Annular (5 ksi) and 3 x Rams (1 x blind and shear)
- 15,000psi systems: Onshore: 1 x Annular (10 ksi) and 3 x Rams (1 x blind and shear)

Illustrative 5 ksi BOP



Personnel Requirements

- The well site supervisor ensures that all personnel of cadre 'Driller' and above have a valid 'IWCF Well Control Certification'.
- The well site supervisor maintain a separate mud material inventory and ensures that adequate weighting up material is available on the rig site at all times for well control requirements as stated in the well construction and operations minimum standard policy.
- All the well control equipment atr inspected and certified as per OEM recommendations as well as to comply with the OISD requirements.
- The wells control equipment's are installed and tested to the required capacities duly witnessed by the Cairn representative.

Annexure 3.1

NABL certificate of Mitra S K
Private Limited



NABL

National Accreditation Board for Testing and Calibration Laboratories

(An Autonomous Body under Department of Science & Technology, Govt. of India)

CERTIFICATE OF ACCREDITATION

MITRA S. K. PRIVATE LIMITED

has been assessed and accredited in accordance with the standard

ISO/IEC 17025:2005

"General Requirements for the Competence of Testing & Calibration Laboratories"

for its facilities at

Building No. P-48, Udayan Industrial Estate, 3, Pagladanga Road, Kolkata, West Bengal

in the discipline of
CHEMICAL TESTING

(To see the scope of accreditation of this laboratory, you may also visit NABL website www.nabl-india.org)

Certificate Number T-2303
Issue Date 18/09/2016 Valid Until 17/09/2018

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the additional requirements of NABL.

Signed for and on behalf of NABL

N. Venkateswaran
Program Manager

Anil Relia
Director

Prof. S. K. Joshi
Chairman



NABL

National Accreditation Board for Testing and Calibration Laboratories

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CERTIFICATE OF ACCREDITATION

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"General Requirements for the Competence of Testing & Calibration Laboratories"

for its facilities at

Building No. P-48, Udayan Industrial Estate, 3, Pagladanga Road, Kolkata, West Bengal

in the discipline of

BIOLOGICAL TESTING

(To see the scope of accreditation of this laboratory, you may also visit NABL website www.nabl-india.org)

Certificate Number T-3130

Issue Date 18/09/2016

Valid Until 17/09/2018

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the additional requirements of NABL.

Signed for and on behalf of NABL

N. Venkateswaran
Program Manager

Anil Relia
Director

Prof. S. K. Joshi
Chairman

Annexure 3.2

Primary Meteorological Data

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
01-10-2017 19:00	278	0	26.9	88.7	0	0
01-10-2017 20:00	60	0	25.6	95	0	0
01-10-2017 21:00	60	0	25	96.1	0	0
01-10-2017 22:00	60	0	24.8	96.3	0	0
01-10-2017 23:00	135	0	24.6	96.9	0	0
02-10-2017 00:00	135	0	23.9	98.1	0	0
02-10-2017 01:00	7	0	23.8	98.4	0	0
02-10-2017 02:00	7	0	23.3	98.9	0	0
02-10-2017 03:00	310	0	23.5	98.4	0	2
02-10-2017 04:00	252	0	23.9	97.5	0	4
02-10-2017 05:00	69	0	23.6	98.5	0	5
02-10-2017 06:00	350	0	23.9	98.1	0	6
02-10-2017 07:00	355	0	24.3	97.3	0	4
02-10-2017 08:00	286	0	25.8	91.2	0	8
02-10-2017 09:00	46	1	28.4	82.3	0	7
02-10-2017 10:00	244	1	29.5	74.3	0	5
02-10-2017 11:00	343	3	29.5	78.4	0	1
02-10-2017 12:00	353	0	29.7	77.4	0	2
02-10-2017 13:00	62	1	31.1	73.5	0	0
02-10-2017 14:00	72	1	32.9	66	0	3
02-10-2017 15:00	176	0	31.5	71.4	0	5
02-10-2017 16:00	28	0	28	86.8	0	2
02-10-2017 17:00	28	0	26.9	92.8	0	2
02-10-2017 18:00	28	0	26.5	94	0	2
02-10-2017 19:00	28	2	25.8	95.7	0	3
02-10-2017 20:00	28	4	25.5	94.8	0	0
02-10-2017 21:00	28	4	25	97.4	0	0
02-10-2017 22:00	28	3	24.6	98	0	0
02-10-2017 23:00	28	0	24.2	98.9	0	0
02-10-2017 00:00	28	4	24.4	98.3	0	0
03-10-2017 01:00	28	0	24.1	98.7	0	0
03-10-2017 02:00	28	2	23.7	99.4	0	0
03-10-2017 03:00	28	5	23.5	99.7	0	0
03-10-2017 04:00	279	5	23.6	98.7	0	0
03-10-2017 05:00	299	0	24.1	96.1	0	0
03-10-2017 06:00	131	0	25.8	89.1	0	0
03-10-2017 07:00	136	0	28.2	70.8	0	0
03-10-2017 08:00	345	0	28.9	75.8	0	0
03-10-2017 09:00	299	0	32.4	64.2	0	0
03-10-2017 10:00	283	0	31.6	66.1	0	0
03-10-2017 11:00	59	0	31.6	66.9	0	0
03-10-2017 12:00	314	3	32.9	64.2	0	0
03-10-2017 13:00	326	0	33.8	63.5	0	0
03-10-2017 14:00	110	0	32.4	67.4	0	0
03-10-2017 15:00	166	0	30.7	73.6	0	0
03-10-2017 16:00	166	0	28.3	86.7	0	0
03-10-2017 17:00	166	0	27.1	92.1	0	0
03-10-2017 18:00	166	0	27.1	92.3	0	0
03-10-2017 19:00	166	0	27	93.4	0	0
03-10-2017 20:00	166	0	26.4	94	0	0

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
03-10-2017 21:00	166	0	26.1	96.7	0	0
03-10-2017 22:00	166	0	25.6	96.9	0	0
03-10-2017 23:00	242	0	25.6	96.4	0	0
04-10-2017 01:00	317	0	25.4	96.5	0	0
04-10-2017 02:00	56	0	25	97.2	0	0
04-10-2017 03:00	299	0	25.1	95.7	0	0
04-10-2017 04:00	275	3	24.8	95.2	0	0
04-10-2017 05:00	309	0	24.9	97.2	0	0
04-10-2017 06:00	345	0	24.6	93.7	0	0
04-10-2017 07:00	160	0	25.3	89.2	0	0
04-10-2017 08:00	186	0	29.5	76.5	0	0
04-10-2017 09:00	264	0	28.6	79.4	0	0
04-10-2017 10:00	285	0	29.1	76.2	0	0
04-10-2017 11:00	316	4	29.1	73.2	0	4
04-10-2017 12:00	278	0	32.1	65.7	0	5
04-10-2017 13:00	248	3	30.1	72.5	0	8
04-10-2017 14:00	272	0	29.1	74.4	0	8
04-10-2017 15:00	264	4	28	78.6	0	8
04-10-2017 16:00	276	0	27.7	81.6	0	8
04-10-2017 17:00	316	0	27.7	82.9	0	8
04-10-2017 18:00	286	0	27	85.9	0	8
04-10-2017 19:00	282	0	26.7	86.9	0	8
04-10-2017 20:00	278	1	26.5	89.5	0	8
04-10-2017 21:00	278	3	25.7	93.9	1.7	8
04-10-2017 22:00	271	3	24.3	95.4	4	8
04-10-2017 23:00	272	1	23.9	95.7	1	8
05-10-2017 00:00	280	1	23.8	95.8	0	8
05-10-2017 01:00	279	1	23.6	95.9	0.5	8
05-10-2017 02:00	279	1	23.2	96.2	3	8
05-10-2017 03:00	279	3	23.2	96.5	0.5	8
05-10-2017 04:00	300	0	23	96.9	1	8
05-10-2017 05:00	242	0	22.2	97.7	3	8
05-10-2017 06:00	296	0	21.7	98.4	6.3	8
05-10-2017 07:00	319	0	21.9	97.4	0.7	8
05-10-2017 08:00	288	0	22.4	95.7	0.5	8
05-10-2017 09:00	193	0	22.9	94.3	0	7
05-10-2017 10:00	45	0	23.2	92.9	0	8
05-10-2017 11:00	81	0	23.6	91.4	0	8
05-10-2017 12:00	110	0	23.7	92	0	8
05-10-2017 13:00	125	0	23.7	93	0	8
05-10-2017 14:00	90	0	23.4	94	0.5	8
05-10-2017 15:00	70	0	23.4	94.5	1	8
05-10-2017 16:00	96	0	23.1	96.9	2.7	8
05-10-2017 17:00	118	0	22.7	98.5	2.2	8
05-10-2017 18:00	175	0	22.5	99	0.7	8
05-10-2017 19:00	213	0	22.5	97.8	1.5	8
05-10-2017 20:00	180	0	21.8	95.8	3	8
05-10-2017 21:00	124	0	21.8	98.6	2	8
05-10-2017 22:00	83	0	21.9	99.5	3.8	8
05-10-2017 23:00	129	1	21.5	99.1	2	8

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
06-10-2017 00:00	115	0	21.5	99.5	1.5	8
06-10-2017 01:00	112	0	21.5	99.5	1.7	8
06-10-2017 02:00	105	0	21.4	99.2	1	8
06-10-2017 03:00	100	0	21.4	99.4	0.2	0
06-10-2017 04:00	97	0	21.5	99.1	0.7	8
06-10-2017 05:00	91	0	21.3	98.9	0.5	8
06-10-2017 06:00	134	0	21.2	97.9	0.2	8
06-10-2017 07:00	249	0	21.4	97.1	1.2	8
06-10-2017 08:00	328	2	21.5	98.1	4.3	8
06-10-2017 09:00	328	2	21.7	96.7	0.2	8
06-10-2017 10:00	328	5	21.5	96	0.7	8
06-10-2017 11:00	328	4	21.7	95	0.2	8
06-10-2017 12:00	328	8	22.2	94.3	0	8
06-10-2017 13:00	321	8	22.7	90.6	0	8
06-10-2017 14:00	111	0	23.1	89.2	0	8
06-10-2017 15:00	124	0	23.3	88.4	0	8
06-10-2017 16:00	224	0	23.6	89.2	0	8
06-10-2017 17:00	238	0	22.8	92.2	0	8
06-10-2017 18:00	299	0	22.6	94.3	0	8
06-10-2017 19:00	297	0	22.4	95.8	0	8
06-10-2017 20:00	297	0	22.4	95.3	0	8
06-10-2017 21:00	247	0	22.3	96.5	0.5	8
06-10-2017 22:00	135	0	21.8	99	0.2	8
06-10-2017 23:00	138	0	21.8	99.1	0	8
07-10-2017 00:00	138	0	21.9	99.4	0	8
07-10-2017 01:00	138	0	21.9	99.5	0	8
07-10-2017 02:00	138	0	21.9	99.6	0	7
07-10-2017 03:00	138	0	21.9	99.8	0.2	8
07-10-2017 04:00	138	0	21.9	99.6	0	7
07-10-2017 05:00	138	0	21.9	99.4	0	8
07-10-2017 06:00	138	0	22	99.4	0	8
07-10-2017 07:00	138	0	22.4	98.1	0	8
07-10-2017 08:00	138	0	23.2	94.9	0	8
07-10-2017 09:00	304	0	24.2	90.7	0	8
07-10-2017 10:00	279	0	25.5	85.6	0	8
07-10-2017 11:00	285	0	26.3	80.9	0	8
07-10-2017 12:00	279	1	27.2	79	0	8
07-10-2017 13:00	264	0	26.8	80.9	1.2	8
07-10-2017 14:00	186	0	25.2	92.2	0	8
07-10-2017 15:00	190	0	24.8	95.6	0.5	8
07-10-2017 16:00	204	0	24.2	96.2	2	8
07-10-2017 17:00	237	0	23.2	97.4	1	8
07-10-2017 18:00	258	1	22.6	97.8	13.9	8
07-10-2017 19:00	197	0	22.3	99.1	1.5	8
07-10-2017 20:00	160	0	22.2	99.3	0.2	8
07-10-2017 21:00	139	0	22.2	99	0	8
07-10-2017 22:00	138	0	22.2	98.6	0	8
07-10-2017 23:00	132	0	22.2	98.5	0	8
08-10-2017 00:00	138	0	22.1	98.6	0	8
08-10-2017 01:00	138	0	22	99.3	0	8

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
08-10-2017 02:00	122	0	21.9	99.6	0	8
08-10-2017 03:00	128	0	21.8	99.7	0	8
08-10-2017 04:00	135	0	21.7	99.8	0	8
08-10-2017 05:00	155	0	21.8	99.8	0	8
08-10-2017 06:00	213	0	21.9	99.7	0	8
08-10-2017 07:00	124	0	23.1	96.1	0	8
08-10-2017 08:00	213	0	24.4	91	0	8
08-10-2017 09:00	247	0	26.3	82.9	0	8
08-10-2017 10:00	224	0	27.6	79.2	0	8
08-10-2017 11:00	129	0	27.8	77.4	0	8
08-10-2017 12:00	105	1	28.7	72.1	0	8
08-10-2017 13:00	73	1	28.2	73	0	8
08-10-2017 14:00	97	1	27.5	76	0	7
08-10-2017 15:00	98	1	27.7	74.2	0	7
08-10-2017 16:00	74	1	27.1	75.6	0	7
08-10-2017 17:00	128	0	25.6	85.8	0	7
08-10-2017 18:00	146	0	24.7	89.8	0	7
08-10-2017 19:00	146	0	24.5	90.7	0	7
08-10-2017 20:00	134	0	24.2	92.9	0	7
08-10-2017 21:00	129	0	23.7	95.7	0	7
08-10-2017 22:00	129	0	23.2	97.3	0	5
08-10-2017 23:00	328	2	22.5	98.7	0	5
09-10-2017 00:00	328	2	22.4	99.1	0	5
09-10-2017 01:00	328	5	22.2	99.4	0	5
09-10-2017 02:00	328	4	22	99.6	0	5
09-10-2017 03:00	328	8	21.7	99.8	0	4
09-10-2017 04:00	321	8	21.5	99.8	0	4
09-10-2017 05:00	168	0	21.5	99.8	0	4
09-10-2017 06:00	121	0	21.6	99.7	0	4
09-10-2017 07:00	288	1	21.9	97.5	0	4
09-10-2017 08:00	279	0	22.5	94.3	0	4
09-10-2017 09:00	271	0	23.4	90.8	0	4
09-10-2017 10:00	242	0	25.5	78.7	0	4
09-10-2017 11:00	132	0	27.2	70.7	0	4
09-10-2017 12:00	153	0	28	67.6	0	4
09-10-2017 13:00	172	0	29.1	65.7	0	0
09-10-2017 14:00	187	0	28.7	64.3	0	0
09-10-2017 15:00	101	0	27.9	65.9	0	0
09-10-2017 16:00	97	0	26.3	72.7	0	0
09-10-2017 17:00	112	0	24.4	84.2	0	0
09-10-2017 18:00	112	0	23.1	91.8	0	0
09-10-2017 19:00	112	0	22.4	94.1	0	0
09-10-2017 20:00	112	0	21.8	95.3	0	0
09-10-2017 21:00	112	0	21.7	95.7	0	0
09-10-2017 22:00	112	0	21.2	97.8	0	0
09-10-2017 23:00	112	0	20.8	98	0	0
10-10-2017 00:00	112	0	20.4	97.8	0	0
10-10-2017 01:00	112	0	19.9	98	0	0
10-10-2017 02:00	112	0	19.8	98.5	0	4
10-10-2017 03:00	112	0	19.6	98.5	0	4

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
10-10-2017 04:00	112	0	19.4	98.9	0	5
10-10-2017 05:00	112	0	19.2	99	0	5
10-10-2017 06:00	112	0	19.1	99.8	0	5
10-10-2017 07:00	112	0	20.4	96.7	0	5
10-10-2017 08:00	108	0	23.2	86.7	0	5
10-10-2017 09:00	103	0	25	81.9	0	8
10-10-2017 10:00	197	0	26.2	77.7	0	8
10-10-2017 11:00	175	0	27.7	72.1	0	8
10-10-2017 12:00	244	0	28.3	69.3	0	8
10-10-2017 13:00	232	0	29.5	62.5	0	8
10-10-2017 14:00	249	0	29.9	61.5	0	5
10-10-2017 15:00	262	0	29.4	63.1	0	5
10-10-2017 16:00	97	0	28.2	68	0	5
10-10-2017 17:00	11	0	25.7	80.6	0	5
10-10-2017 18:00	331	0	23.9	89.5	0	5
10-10-2017 19:00	328	0	23.2	93	0	5
10-10-2017 20:00	328	0	22.4	94.9	0	5
10-10-2017 21:00	328	0	21.8	95.9	0	5
10-10-2017 22:00	328	0	21.4	97.1	0	2
10-10-2017 23:00	328	0	21.2	97.7	0	2
11-10-2017 00:00	321	0	21.3	96.6	0	2
11-10-2017 01:00	328	2	21.1	96.5	0	3
11-10-2017 02:00	328	2	20.4	98.4	0	3
11-10-2017 03:00	328	5	20.3	98.5	0	3
11-10-2017 04:00	328	4	19.9	98.9	0	3
11-10-2017 05:00	328	8	19.7	98.8	0	3
11-10-2017 06:00	321	8	19.6	99.1	0	3
11-10-2017 07:00	158	0	20.7	94.5	0	0
11-10-2017 08:00	114	0	23.3	86.2	0	0
11-10-2017 09:00	152	0	25.6	79	0	0
11-10-2017 10:00	139	0	27.4	72.4	0	0
11-10-2017 11:00	120	0	27.8	69.7	0	0
11-10-2017 12:00	127	0	28.4	65.4	0	0
11-10-2017 13:00	108	0	28.6	64.3	0	0
11-10-2017 14:00	128	0	29.1	62.4	0	0
11-10-2017 15:00	93	0	28.4	64.5	0	0
11-10-2017 16:00	81	1	27.2	71.5	0	0
11-10-2017 17:00	88	1	25.3	82.2	0	0
11-10-2017 18:00	88	1	23.7	90.4	0	0
11-10-2017 19:00	88	1	22.9	92.4	0	0
11-10-2017 20:00	88	0	22.3	93.9	0	0
11-10-2017 21:00	88	0	21.9	95.3	0	0
11-10-2017 22:00	88	0	21.6	96	0	0
11-10-2017 23:00	88	0	21.3	96.5	0	0
12-10-2017 00:00	88	0	20.9	97.5	0	0
12-10-2017 01:00	88	0	20.6	98.1	0	0
12-10-2017 02:00	88	0	20.3	98.3	0	0
12-10-2017 03:00	88	0	19.9	98.6	0	0
12-10-2017 04:00	88	0	20.1	98.5	0	0
12-10-2017 05:00	88	0	20.6	96.8	0	0

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
12-10-2017 06:00	88	0	20.7	97.2	0	0
12-10-2017 07:00	88	0	22.2	92.1	0	0
12-10-2017 08:00	70	0	24.6	81.4	0	0
12-10-2017 09:00	79	0	26.2	75.3	0	0
12-10-2017 10:00	134	0	27.5	70.9	0	0
12-10-2017 11:00	104	0	28.7	67	0	0
12-10-2017 12:00	180	0	29.2	64.2	0	0
12-10-2017 13:00	144	0	29.1	64.4	0	0
12-10-2017 14:00	107	0	29.1	64.3	0	0
12-10-2017 15:00	86	0	29	64.8	0	0
12-10-2017 16:00	98	1	28	69.8	0	0
12-10-2017 17:00	98	1	25.5	84.4	0	0
12-10-2017 18:00	98	1	24	91	0	0
12-10-2017 19:00	98	1	23.2	92.3	0	0
12-10-2017 20:00	98	0	22.7	93.3	0	0
12-10-2017 21:00	98	0	22.6	94	0	0
12-10-2017 22:00	98	0	22.2	94.8	0	0
12-10-2017 23:00	84	0	22	95.8	0	0
13-10-2017 00:00	90	0	21.5	97.3	0	0
13-10-2017 01:00	328	2	21.2	97.4	0	0
13-10-2017 02:00	328	2	21.2	96.5	0	0
13-10-2017 03:00	328	5	20.8	98.4	0	0
13-10-2017 04:00	328	4	20.8	99.1	0	0
13-10-2017 05:00	328	8	20.6	99.7	0	0
13-10-2017 06:00	321	8	20.4	99.8	0	0
13-10-2017 07:00	118	0	20.8	98.2	0	0
13-10-2017 08:00	136	0	22.2	91.2	0	0
13-10-2017 09:00	121	0	23.1	88	0	0
13-10-2017 10:00	112	0	23.8	87.4	0	0
13-10-2017 11:00	182	0	27.1	72.5	0	0
13-10-2017 12:00	114	0	27.8	66.6	0	0
13-10-2017 13:00	129	0	28.3	66.6	0	0
13-10-2017 14:00	286	0	26.8	75.2	0	0
13-10-2017 15:00	255	0	26.8	77.9	0	0
13-10-2017 16:00	141	0	25.7	82.9	0	0
13-10-2017 17:00	111	0	24.4	83.9	0	0
13-10-2017 18:00	111	0	23.4	89.2	0	0
13-10-2017 19:00	111	0	22.6	92.1	0	0
13-10-2017 20:00	111	0	22.1	92.8	0	0
13-10-2017 21:00	111	0	21.8	93.6	0	0
13-10-2017 22:00	111	0	21.9	94	0	0
13-10-2017 23:00	193	0	21.7	95.3	0	0
14-10-2017 00:00	128	0	21.4	97	0	0
14-10-2017 01:00	110	0	21.2	97.4	0	0
14-10-2017 02:00	131	0	21.3	97.7	0	0
14-10-2017 03:00	234	0	21.2	97	0	0
14-10-2017 04:00	182	0	21.1	97.1	0	0
14-10-2017 05:00	156	0	21.1	97.1	0	4
14-10-2017 06:00	114	0	21	97.4	0	4
14-10-2017 07:00	88	0	20.8	96.1	0	4

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
14-10-2017 08:00	74	0	21.1	93.3	0	4
14-10-2017 09:00	247	0	22	89	0	4
14-10-2017 10:00	278	0	23.2	83.2	0	4
14-10-2017 11:00	98	0	23.2	82.9	0	5
14-10-2017 12:00	121	0	23.4	83.2	0	7
14-10-2017 13:00	114	0	23.5	82.9	0	7
14-10-2017 14:00	179	0	23.2	85.4	0	8
14-10-2017 15:00	282	0	22.7	91	0.2	8
14-10-2017 16:00	258	0	22	93.4	1	8
14-10-2017 17:00	286	0	21.2	92.8	1	8
14-10-2017 18:00	283	0	20.9	93.8	0.7	8
14-10-2017 19:00	280	0	20.7	95.4	1.2	8
14-10-2017 20:00	135	0	23.5	98.1	0	8
14-10-2017 21:00	7	0	23.6	98.4	0	8
14-10-2017 22:00	328	2	23.8	98.9	0	8
14-10-2017 23:00	328	2	23.5	98.4	0	8
15-10-2017 00:00	328	5	23.4	97.5	0	8
15-10-2017 01:00	328	4	23.6	98.5	0	8
15-10-2017 02:00	328	8	24.2	98.1	0	8
15-10-2017 03:00	321	8	24.6	97.3	0	8
15-10-2017 04:00	286	0	25.9	91.2	0	7
15-10-2017 05:00	46	1	27.5	82.3	0	7
15-10-2017 06:00	244	1	29.6	74.3	0	7
15-10-2017 07:00	343	3	29.5	78.4	0	5
15-10-2017 08:00	353	0	29.7	77.4	0	5
15-10-2017 09:00	62	1	31.1	73.5	0	5
15-10-2017 10:00	158	1	32.3	66	0	5
15-10-2017 11:00	176	0	31.5	71.4	0	4
15-10-2017 12:00	28	5	28	86.8	0	4
15-10-2017 13:00	25	2	26.9	92.8	0	4
15-10-2017 14:00	29	6	26.5	94	0	4
15-10-2017 15:00	323	2	25.8	95.7	0	4
15-10-2017 16:00	28	3	25.5	94.8	0	2
15-10-2017 17:00	28	6	25	97.4	0	2
15-10-2017 18:00	28	6	24.6	98	0	2
15-10-2017 19:00	28	6	24.2	98.9	0	2
15-10-2017 20:00	25	0	24.4	98.3	0	2
15-10-2017 21:00	28	0	24.1	98.7	0	0
15-10-2017 22:00	29	0	23.7	99.4	0	0
15-10-2017 23:00	29	0	23.5	99.7	0	0
16-10-2017 00:00	29	0	23.6	98.7	0	0
16-10-2017 01:00	302	0	24.1	96.1	0	0
16-10-2017 02:00	152	0	25.8	89.1	0	0
16-10-2017 03:00	136	0	28.2	70.8	0	0
16-10-2017 04:00	345	0	28.9	75.8	0	0
16-10-2017 05:00	299	0	32.4	64.2	0	0
16-10-2017 06:00	328	2	31.6	66.1	0	0
16-10-2017 07:00	328	2	31.6	66.9	0	0
16-10-2017 08:00	328	5	32.9	64.2	0	0

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
16-10-2017 09:00	328	4	33.8	63.5	0	0
16-10-2017 10:00	328	8	32.4	67.4	0	0
16-10-2017 11:00	321	8	30.7	73.6	0	0
16-10-2017 12:00	166	0	28.3	86.7	0	0
16-10-2017 13:00	155	0	27.1	92.1	0	0
16-10-2017 14:00	166	0	27.1	92.3	0	0
16-10-2017 15:00	155	0	27	93.4	0	0
16-10-2017 16:00	187	0	26.4	94	0	0
16-10-2017 17:00	178	0	26.1	96.7	0	0
16-10-2017 18:00	178	0	25.6	96.9	0	0
16-10-2017 19:00	18	0	25.6	96.4	0	0
16-10-2017 20:00	212	0	25.4	96.5	0	0
16-10-2017 21:00	56	0	25	97.2	0	0
16-10-2017 22:00	58	0	25.1	95.7	0	0
16-10-2017 23:00	58	3	24.8	95.2	0	0
17-10-2017 00:00	58	0	24.9	97.2	0	0
17-10-2017 01:00	87	0	24.6	93.7	0	0
17-10-2017 02:00	85	0	25.3	89.2	0	0
17-10-2017 03:00	56	0	29.5	76.5	0	0
17-10-2017 04:00	54	0	28.6	79.4	0	0
17-10-2017 05:00	54	2	29.1	76.2	0	0
17-10-2017 06:00	54	4	29.1	73.2	0	0
17-10-2017 07:00	58	4	32.1	65.7	0	7
17-10-2017 08:00	58	3	30.1	72.5	0	7
17-10-2017 09:00	58	0	29.1	74.4	0	8
17-10-2017 10:00	58	4	28	78.6	0	8
17-10-2017 11:00	56	0	27.7	81.6	0	8
17-10-2017 12:00	57	2	27.7	82.9	0	8
17-10-2017 13:00	57	5	27	85.9	0	8
17-10-2017 14:00	59	5	26.7	86.9	0	8
17-10-2017 15:00	59	2	26.5	89.5	0	8
17-10-2017 16:00	52	4	25.7	93.9	1.7	8
17-10-2017 17:00	52	1	24.3	95.4	4	8
17-10-2017 18:00	51	2	23.9	95.7	1	8
17-10-2017 19:00	51	1	23.8	95.8	0	8
17-10-2017 20:00	52	1	23.6	95.9	0.5	8
17-10-2017 21:00	328	2	23.2	96.2	3	8
17-10-2017 22:00	328	2	23.2	96.5	0.5	8
17-10-2017 23:00	328	5	23	96.9	1	8
18-10-2017 00:00	328	4	22.2	97.7	3	8
18-10-2017 01:00	328	8	21.7	98.4	6.3	8
18-10-2017 02:00	321	8	21.9	97.4	0.7	8
18-10-2017 03:00	255	0	22.4	95.7	0.5	8
18-10-2017 04:00	188	0	22.9	94.3	0	8
18-10-2017 05:00	54	0	23.2	92.9	0	8
18-10-2017 06:00	54	0	23.6	91.4	0	8
18-10-2017 07:00	54	0	23.7	92	0	8
18-10-2017 08:00	56	0	23.7	93	0	8
18-10-2017 09:00	52	0	23.4	94	0.5	8

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
18-10-2017 10:00	56	0	23.4	94.5	1	8
18-10-2017 11:00	52	0	23.1	96.9	2.7	8
18-10-2017 12:00	52	0	22.7	98.5	2.2	8
18-10-2017 13:00	48	0	22.5	99	0.7	8
18-10-2017 14:00	48	0	22.5	97.8	1.5	8
18-10-2017 15:00	255	0	21.8	95.8	3	8
18-10-2017 17:00	124	0	21.8	98.6	2	8
18-10-2017 18:00	83	0	21.9	99.5	3.8	8
18-10-2017 19:00	129	1	21.5	99.1	2	8
18-10-2017 20:00	115	0	21.5	99.5	1.5	8
18-10-2017 21:00	112	0	21.5	99.5	1.7	8
18-10-2017 22:00	54	0	21.4	99.2	1	8
18-10-2017 23:00	54	0	21.4	99.4	0.2	8
19-10-2017 00:00	54	0	21.5	99.1	0.7	8
19-10-2017 01:00	5	4	21.3	98.9	0.5	8
19-10-2017 02:00	45	2	21.2	97.9	0.2	8
19-10-2017 03:00	54	3	21.4	97.1	1.2	8
19-10-2017 04:00	54	5	21.5	98.1	4.3	8
19-10-2017 05:00	46	4	21.7	96.7	0.2	8
19-10-2017 06:00	48	1	21.5	96	0.7	8
19-10-2017 07:00	4	1	21.7	95	0.2	8
19-10-2017 08:00	74	0	22.2	94.3	0	8
19-10-2017 09:00	8	1	22.7	90.6	0	8
19-10-2017 10:00	49	0	23.1	89.2	0	8
19-10-2017 11:00	49	0	23.3	88.4	0	8
19-10-2017 12:00	54	1	23.6	89.2	0	8
19-10-2017 13:00	54	1	22.8	92.2	0	8
19-10-2017 14:00	54	1	22.6	94.3	0	8
19-10-2017 15:00	48	0	22.4	95.8	0	8
19-10-2017 16:00	48	0	22.4	95.3	0	8
19-10-2017 17:00	48	2	22.3	96.5	0.5	7
19-10-2017 18:00	47	12	21.8	99	0.2	7
19-10-2017 19:00	54	12	21.8	99.1	0	7
19-10-2017 20:00	45	8	21.9	99.4	0	5
19-10-2017 21:00	46	4	21.9	99.5	0	5
19-10-2017 22:00	46	2	21.9	99.6	0	7
19-10-2017 23:00	45	2	21.9	99.8	0.2	7
20-10-2017 00:00	48	6	21.9	99.6	0	7
20-10-2017 01:00	122	2	21.9	99.4	0	7
20-10-2017 02:00	155	0	22	99.4	0	7
20-10-2017 03:00	144	0	22.4	98.1	0	7
20-10-2017 04:00	155	0	23.2	94.9	0	8
20-10-2017 05:00	144	0	24.2	90.7	0	8
20-10-2017 06:00	144	0	25.5	85.6	0	8
20-10-2017 07:00	144	0	26.3	80.9	0	8
20-10-2017 08:00	122	1	27.2	79	0	8
20-10-2017 09:00	122	0	26.8	80.9	1.2	8
20-10-2017 10:00	122	0	25.2	92.2	0	8
20-10-2017 11:00	12	0	24.8	95.6	0.5	8

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
20-10-2017 12:00	177	0	24.2	96.2	2	8
20-10-2017 13:00	155	0	23.2	97.4	1	8
20-10-2017 14:00	45	1	22.6	97.8	13.9	8
20-10-2017 15:00	58	0	22.3	99.1	1.5	8
20-10-2017 16:00	58	0	22.2	99.3	0.2	8
20-10-2017 17:00	56	0	22.2	99	0	8
20-10-2017 18:00	58	0	22.2	98.6	0	8
20-10-2017 19:00	5	0	22.2	98.5	0	8
20-10-2017 20:00	95	0	22.1	98.6	0	8
20-10-2017 21:00	9	2	22	99.3	0	8
20-10-2017 22:00	65	12	21.9	99.6	0	8
20-10-2017 23:00	64	12	21.8	99.7	0	8
21-10-2017 00:00	65	8	21.7	99.8	0	8
21-10-2017 01:00	54	4	21.8	99.8	0	8
21-10-2017 02:00	52	2	21.9	99.7	0	8
21-10-2017 03:00	54	2	23.1	96.1	0	8
21-10-2017 04:00	56	6	24.4	91	0	8
21-10-2017 05:00	56	2	26.3	82.9	0	8
21-10-2017 06:00	5	0	27.6	79.2	0	8
21-10-2017 07:00	65	0	27.8	77.4	0	8
21-10-2017 08:00	105	1	28.7	72.1	0	8
21-10-2017 09:00	73	0	28.2	73	0	8
21-10-2017 10:00	97	1	27.5	76	0	8
21-10-2017 11:00	98	0	27.7	74.2	0	8
21-10-2017 12:00	74	0	27.1	75.6	0	8
21-10-2017 13:00	128	0	25.6	85.8	0	8
21-10-2017 14:00	146	0	24.7	89.8	0	7
21-10-2017 15:00	146	0	24.5	90.7	0	7
21-10-2017 16:00	145	1	24.2	92.9	0	7
21-10-2017 17:00	188	1	23.7	95.7	0	7
21-10-2017 18:00	175	1	23.2	97.3	0	7
21-10-2017 19:00	142	0	22.5	98.7	0	7
21-10-2017 20:00	154	0	22.4	99.1	0	7
21-10-2017 21:00	135	0	22.2	99.4	0	7
21-10-2017 22:00	134	0	22	99.6	0	7
21-10-2017 23:00	152	0	21.7	99.8	0	5
22-10-2017 00:00	204	0	21.5	99.8	0	5
22-10-2017 01:00	254	0	21.5	99.8	0	5
22-10-2017 02:00	212	0	21.6	99.7	0	4
22-10-2017 03:00	239	1	21.9	97.5	0	5
22-10-2017 04:00	289	0	22.5	94.3	0	5
22-10-2017 05:00	275	0	23.4	90.8	0	7
22-10-2017 06:00	254	0	25.5	78.7	0	7
22-10-2017 07:00	154	0	27.2	70.7	0	8
22-10-2017 08:00	153	0	28	67.6	0	8
22-10-2017 09:00	172	0	29.1	65.7	0	8
22-10-2017 10:00	187	0	28.7	64.3	0	8
22-10-2017 11:00	101	0	27.9	65.9	0	8
22-10-2017 12:00	97	0	26.3	72.7	0	8

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
22-10-2017 13:00	112	0	24.4	84.2	0	8
22-10-2017 14:00	112	0	23.1	91.8	0	8
22-10-2017 15:00	112	0	22.4	94.1	0	8
22-10-2017 16:00	112	0	21.8	95.3	0	8
22-10-2017 17:00	112	0	21.7	95.7	0	7
22-10-2017 18:00	112	1	21.2	97.8	0	0
22-10-2017 19:00	112	1	20.8	98	0	0
22-10-2017 20:00	112	1	20.4	97.8	0	0
22-10-2017 21:00	112	0	19.9	98	0	0
22-10-2017 22:00	112	0	19.8	98.5	0	0
22-10-2017 23:00	112	0	19.6	98.5	0	0
23-10-2017 00:00	112	0	19.4	98.9	0	0
23-10-2017 01:00	112	0	19.2	99	0	0
23-10-2017 02:00	112	0	19.1	99.8	0	0
23-10-2017 03:00	112	0	20.4	96.7	0	0
23-10-2017 04:00	108	0	23.2	86.7	0	0
23-10-2017 05:00	103	0	25	81.9	0	0
23-10-2017 06:00	197	0	26.2	77.7	0	0
23-10-2017 07:00	175	0	27.7	72.1	0	0
23-10-2017 08:00	244	0	28.3	69.3	0	0
23-10-2017 09:00	232	0	29.5	62.5	0	0
23-10-2017 10:00	249	0	29.9	61.5	0	0
23-10-2017 11:00	262	0	29.4	63.1	0	0
23-10-2017 12:00	97	0	28.2	68	0	0
23-10-2017 13:00	11	0	25.7	80.6	0	0
23-10-2017 14:00	331	0	23.9	89.5	0	0
23-10-2017 15:00	328	2	23.2	93	0	0
23-10-2017 16:00	328	2	22.4	94.9	0	0
23-10-2017 17:00	328	5	21.8	95.9	0	0
23-10-2017 18:00	328	4	21.4	97.1	0	0
23-10-2017 19:00	328	8	21.2	97.7	0	0
23-10-2017 20:00	321	8	21.3	96.6	0	0
23-10-2017 21:00	306	0	21.1	96.5	0	0
23-10-2017 22:00	309	0	20.4	98.4	0	0
23-10-2017 23:00	309	1	20.3	98.5	0	0
24-10-2017 00:00	303	1	19.9	98.9	0	0
24-10-2017 01:00	278	1	19.7	98.8	0	0
24-10-2017 02:00	177	0	19.6	99.1	0	0
24-10-2017 03:00	158	0	20.7	94.5	0	0
24-10-2017 04:00	114	0	23.3	86.2	0	0
24-10-2017 05:00	152	0	25.6	79	0	0
24-10-2017 06:00	139	0	27.4	72.4	0	0
24-10-2017 07:00	120	0	27.8	69.7	0	0
24-10-2017 08:00	127	0	28.4	65.4	0	0
24-10-2017 09:00	108	0	28.6	64.3	0	0
24-10-2017 10:00	128	0	29.1	62.4	0	0
24-10-2017 11:00	93	0	28.4	64.5	0	0
24-10-2017 12:00	81	0	27.2	71.5	0	0
24-10-2017 13:00	88	0	25.3	82.2	0	0

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
24-10-2017 14:00	88	0	23.7	90.4	0	0
24-10-2017 15:00	88	0	22.9	92.4	0	0
24-10-2017 16:00	303	2	22.3	93.9	0	0
24-10-2017 17:00	303	2	21.9	95.3	0	0
24-10-2017 18:00	303	2	21.6	96	0	0
24-10-2017 19:00	240	2	21.3	96.5	0	0
24-10-2017 20:00	88	1	20.9	97.5	0	5
24-10-2017 21:00	88	1	20.6	98.1	0	5
24-10-2017 22:00	88	1	20.3	98.3	0	5
24-10-2017 23:00	88	0	19.9	98.6	0	5
25-10-2017 00:00	88	0	20.1	98.5	0	5
25-10-2017 01:00	88	0	20.6	96.8	0	5
25-10-2017 02:00	88	0	20.7	97.2	0	5
25-10-2017 03:00	88	0	22.2	92.1	0	5
25-10-2017 04:00	70	0	24.6	81.4	0	5
25-10-2017 05:00	79	0	26.2	75.3	0	5
25-10-2017 06:00	134	0	27.5	70.9	0	5
25-10-2017 07:00	104	0	28.7	67	0	5
25-10-2017 08:00	180	0	29.2	64.2	0	5
25-10-2017 09:00	144	0	29.1	64.4	0	5
25-10-2017 10:00	107	0	29.1	64.3	0	5
25-10-2017 11:00	86	0	29	64.8	0	5
25-10-2017 12:00	98	0	28	69.8	0	5
25-10-2017 13:00	98	0	25.5	84.4	0	5
25-10-2017 14:00	98	0	24	91	0	5
25-10-2017 15:00	98	0	23.2	92.3	0	5
25-10-2017 16:00	98	0	22.7	93.3	0	5
25-10-2017 17:00	98	0	22.6	94	0	5
25-10-2017 18:00	98	0	22.2	94.8	0	5
25-10-2017 19:00	84	0	22	95.8	0	5
25-10-2017 20:00	90	0	21.5	97.3	0	5
25-10-2017 21:00	149	0	21.2	97.4	0	5
25-10-2017 22:00	251	0	21.2	96.5	0	4
25-10-2017 23:00	201	0	20.8	98.4	0	5
26-10-2017 00:00	177	0	20.8	99.1	0	5
26-10-2017 01:00	117	0	20.6	99.7	0	2
26-10-2017 02:00	135	0	20.4	99.8	0	2
26-10-2017 03:00	118	0	20.8	98.2	0	2
26-10-2017 04:00	136	0	22.2	91.2	0	2
26-10-2017 05:00	75	0	23.1	88	0	2
26-10-2017 06:00	85	5	23.8	87.4	0	2
26-10-2017 07:00	54	4	27.1	72.5	0	2
26-10-2017 08:00	54	2	27.8	66.6	0	0
26-10-2017 09:00	56	12	28.3	66.6	0	0
26-10-2017 10:00	52	12	26.8	75.2	0	0
26-10-2017 11:00	54	8	26.8	77.9	0	0
26-10-2017 12:00	54	4	25.7	82.9	0	0
26-10-2017 13:00	51	2	24.4	83.9	0	0
26-10-2017 14:00	52	2	23.4	89.2	0	5

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
26-10-2017 15:00	51	6	22.6	92.1	0	4
26-10-2017 16:00	52	2	22.1	92.8	0	5
26-10-2017 17:00	51	2	21.8	93.6	0	5
26-10-2017 18:00	51	1	21.9	94	0	5
26-10-2017 19:00	52	3	21.7	95.3	0	5
26-10-2017 20:00	51	3	22.4	89.9	1.2	5
26-10-2017 21:00	52	0.5	21.7	93.1	0	5
26-10-2017 22:00	52	0	21.4	95	0	5
26-10-2017 23:00	54	0	21.2	94.5	0	5
27-10-2017 00:00	46	0	21.3	94.9	0	5
27-10-2017 01:00	46	0	21.1	95.8	0	5
27-10-2017 02:00	48	0	20.8	97.2	0	5
27-10-2017 03:00	48	0	20.4	96.9	0	4
27-10-2017 04:00	303	2	19.9	98	0	4
27-10-2017 05:00	303	2	19.6	99.1	0	2
27-10-2017 06:00	303	2	19.5	99.1	0	2
27-10-2017 07:00	240	2	19.5	98.6	0	2
27-10-2017 08:00	112	0	20.2	96.7	0	2
27-10-2017 09:00	128	0	23.4	85.3	0.2	2
27-10-2017 10:00	122	0	25.3	77.1	0	2
27-10-2017 11:00	114	0	26.6	71.7	0	0
27-10-2017 12:00	105	0	26.6	71.1	0	2
27-10-2017 13:00	193	0	27.6	67.1	0	2
27-10-2017 14:00	139	0	28.8	62.6	0	3
27-10-2017 15:00	103	0	28.8	63	0	3
27-10-2017 16:00	232	0	29.2	61.7	0	3
27-10-2017 17:00	193	0	27	70.3	0	3
27-10-2017 18:00	196	0	25.3	81.5	0	3
27-10-2017 19:00	182	0	24	88.2	0	3
27-10-2017 20:00	141	0	23.1	92	0	3
27-10-2017 21:00	131	0	22.9	92.8	0	3
27-10-2017 22:00	131	0	22.8	92.5	0	2
27-10-2017 23:00	86	0	22.6	92.6	0	2
28-10-2017 00:00	73	0	22.4	94.2	0	2
28-10-2017 01:00	73	0	21.8	95.8	0	2
28-10-2017 02:00	74	0	20.8	97.3	0	0
28-10-2017 03:00	74	0	20.4	97.5	0	0
28-10-2017 04:00	122	0	20.3	98.3	0	0
28-10-2017 05:00	245	0	20.2	99.6	0	0
28-10-2017 06:00	254	0	19.8	99.8	0	0
28-10-2017 07:00	326	5	19.7	99.7	0	0
28-10-2017 08:00	173	4	20.2	98.6	0	0
28-10-2017 09:00	224	2	22	92.7	0	0
28-10-2017 10:00	77	12	23.8	87	0	0
28-10-2017 11:00	107	0.8	26.3	78	0	0
28-10-2017 12:00	159	0.6	28.6	63.5	0	0
28-10-2017 13:00	110	0.9	29.7	61	0	0
28-10-2017 14:00	107	0.8	28.7	63.4	0	0
28-10-2017 15:00	114	0.5	29.2	61.2	0	0

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
28-10-2017 16:00	127	0.5	29.1	61	0	0
28-10-2017 17:00	170	1.2	27.9	67.6	0	0
28-10-2017 18:00	168	0	24.9	84	0	0
28-10-2017 19:00	168	0	23.4	88.6	0	0
28-10-2017 20:00	168	0	22.6	90.6	0	0
28-10-2017 21:00	168	0	22.3	91.7	0	0
28-10-2017 22:00	141	0	22.3	92.6	0	0
28-10-2017 23:00	132	0	21.8	94	0	0
29-10-2017 00:00	132	0	21.3	94.7	0	0
29-10-2017 01:00	132	0	20.6	96.9	0	0
29-10-2017 02:00	132	0	20.2	97.7	0	0
29-10-2017 03:00	132	0	19.9	97.9	0	0
29-10-2017 04:00	132	0	19.6	97.9	0	0
29-10-2017 05:00	132	0	19.8	97.8	0	0
29-10-2017 06:00	132	0	19.8	98	0	0
29-10-2017 07:00	81	0	19.6	98.4	0	0
29-10-2017 08:00	69	0	20	97	0	0
29-10-2017 09:00	156	0	22.6	87.1	0	0
29-10-2017 10:00	282	0	23.9	84.2	0	0
29-10-2017 11:00	283	0	24.8	82.2	0	0
29-10-2017 12:00	289	1	27	70.9	0	0
29-10-2017 13:00	283	0	27.8	67.5	0	0
29-10-2017 14:00	266	5	29	61.4	0	0
29-10-2017 15:00	87	4	28	64.8	0	0
29-10-2017 16:00	101	2	27.6	67.1	0	0
29-10-2017 17:00	103	12	26.3	70.7	0	0
29-10-2017 18:00	81	12	24.2	81.2	0	0
29-10-2017 19:00	81	8	22.8	88.8	0	0
29-10-2017 20:00	81	4	22	92	0	0
29-10-2017 21:00	81	0	21.3	94.1	0	0
29-10-2017 22:00	81	0	21.1	94.6	0	0
29-10-2017 23:00	81	0	20.7	95.4	0	0
30-10-2017 00:00	81	0	20.8	95.6	0	0
30-10-2017 01:00	81	0	20.1	97	0	0
30-10-2017 02:00	81	0	19.8	97.8	0	0
30-10-2017 03:00	125	0	19.8	97.7	0	0
30-10-2017 04:00	125	0	19.7	98	0	0
30-10-2017 05:00	101	0	18.8	99.1	0	0
30-10-2017 06:00	93	0	18.4	99.8	0	0
30-10-2017 07:00	105	0	18.6	99.7	0	0
30-10-2017 08:00	79	0	18.9	96.9	0	0
30-10-2017 09:00	105	0	21.3	89.1	0	0
30-10-2017 10:00	139	0	22.8	83.7	0	0
30-10-2017 11:00	58	0.5	23.9	79.6	0	0
30-10-2017 12:00	56	0	24.1	80.2	0	0
30-10-2017 13:00	65	4.5	24.6	78.5	0	0
30-10-2017 14:00	65	2.2	25.8	74	0	0
30-10-2017 15:00	65	2	26.4	70.3	0	0
30-10-2017 16:00	54	2	25.6	76.7	0	0

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
30-10-2017 17:00	52	3	24.7	81.4	0	0
30-10-2017 18:00	50	3	23	90.5	0	0
30-10-2017 19:00	54	3	22.1	94.1	0	0
30-10-2017 20:00	136	0	21.2	95.8	0	0
30-10-2017 21:00	136	0	20.4	97.2	0	0
30-10-2017 22:00	136	0	19.9	97.9	0	0
30-10-2017 23:00	136	0	19.4	98.4	0	0
31-10-2017 00:00	136	0	19	98.6	0	0
31-10-2017 01:00	136	0	18.6	99.2	0	0
31-10-2017 02:00	136	0	18.4	99.4	0	0
31-10-2017 03:00	136	0	18.1	99.7	0	0
31-10-2017 04:00	136	0	17.6	99.7	0	0
31-10-2017 05:00	136	0	17.3	99.8	0	0
31-10-2017 06:00	217	0	17.1	99.8	0.2	0
31-10-2017 07:00	258	0	16.9	99.8	0	0
31-10-2017 08:00	206	0	17.7	98.9	0	0
31-10-2017 09:00	97	0	19.2	94.7	0	0
31-10-2017 10:00	90	0	20.4	93.9	0	0
31-10-2017 11:00	103	0	22.2	88.3	0	0
31-10-2017 12:00	107	0	25.4	73.7	0	0
31-10-2017 13:00	111	0	26.9	65	0	0
31-10-2017 14:00	120	0	27.3	64.5	0	0
31-10-2017 15:00	32	0	26.1	70.3	0.2	0
31-10-2017 16:00	98	0	24.9	74.1	0	0
31-10-2017 17:00	128	0	24	78.5	0	0
31-10-2017 18:00	101	0	23	84.4	0	0
31-10-2017 19:00	88	0	22.5	87.3	0	0
31-10-2017 20:00	88	0	22.1	89.6	0	0
31-10-2017 21:00	112	0	21.8	90.3	0	0
31-10-2017 22:00	136	0	21.6	89.9	0	0
31-10-2017 23:00	151	0	21.4	90.1	0	0
01-11-2017 00:00	175	0	21.2	93.1	0	0
01-11-2017 01:00	197	0	21.3	91.7	0	0
01-11-2017 02:00	282	0	21.2	91.6	0	0
01-11-2017 03:00	108	0	20.7	93.4	0	0
01-11-2017 04:00	76	0	20.2	95	0	0
01-11-2017 05:00	74	0	19.8	96.1	0	0
01-11-2017 06:00	272	0	19.9	93.9	0	0
01-11-2017 07:00	285	0	19.8	90	0	0
01-11-2017 08:00	244	0	20.3	85.1	0	0
01-11-2017 09:00	108	0	22.4	76.1	0	0
01-11-2017 10:00	194	0	23.6	72.4	0	0
01-11-2017 11:00	175	0	25.3	68.5	0	0
01-11-2017 12:00	112	0	26.6	60.3	0	0
01-11-2017 13:00	96	0	26.9	60.8	0	0
01-11-2017 14:00	120	0	26.5	63	0	5
01-11-2017 15:00	163	0	27	63.4	0	7
01-11-2017 16:00	110	0	25.9	66.5	0	7
01-11-2017 17:00	103	0	25.2	69.1	0	7
01-11-2017 18:00	86	0	24	78.6	0	7

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
01-11-2017 19:00	86	0	23.4	82.7	0	8
01-11-2017 20:00	156	0	22.4	89.9	1.2	8
01-11-2017 21:00	183	0	21.7	93.1	0	8
01-11-2017 22:00	183	0	21.4	95	0	8
01-11-2017 23:00	183	0	21.2	94.5	0	8
02-11-2017 00:00	183	0	21.3	94.9	0	8
02-11-2017 01:00	110	0	21.1	95.8	0	8
02-11-2017 02:00	120	0	20.8	97.2	0	5
02-11-2017 03:00	58	0.5	20.4	96.9	0	5
02-11-2017 04:00	56	0	19.9	98	0	8
02-11-2017 05:00	65	4.5	19.6	99.1	0	8
02-11-2017 06:00	65	2.2	19.5	99.1	0	8
02-11-2017 07:00	65	2	19.5	98.6	0	8
02-11-2017 08:00	54	2	20.2	96.7	0	0
02-11-2017 09:00	52	3	23.4	85.3	0.2	0
02-11-2017 10:00	50	3	25.3	77.1	0	0
02-11-2017 11:00	54	3	26.6	71.7	0	0
02-11-2017 12:00	105	0	26.6	71.1	0	0
02-11-2017 13:00	193	0	27.6	67.1	0	0
02-11-2017 14:00	139	0	28.8	62.6	0	0
02-11-2017 15:00	103	0	28.8	63	0	0
02-11-2017 16:00	232	0	29.2	61.7	0	0
02-11-2017 17:00	193	0	27	70.3	0	0
02-11-2017 18:00	196	0.8	25.3	81.5	0	0
02-11-2017 19:00	182	0.6	24	88.2	0	0
02-11-2017 20:00	141	0.9	23.1	92	0	0
02-11-2017 21:00	131	0.8	22.9	92.8	0	0
02-11-2017 22:00	131	0.5	22.8	92.5	0	0
02-11-2017 23:00	86	0.5	22.6	92.6	0	0
03-11-2017 00:00	73	1.2	22.4	94.2	0	0
03-11-2017 01:00	73	0	21.8	95.8	0	0
03-11-2017 02:00	74	0	20.8	97.3	0	0
03-11-2017 03:00	74	0	20.4	97.5	0	0
03-11-2017 04:00	122	0	20.3	98.3	0	0
03-11-2017 05:00	245	0	20.2	99.6	0	0
03-11-2017 06:00	254	0	19.8	99.8	0	0
03-11-2017 07:00	326	0	19.7	99.7	0	0
03-11-2017 08:00	173	0	20.2	98.6	0	0
03-11-2017 09:00	224	0	22	92.7	0	0
03-11-2017 10:00	77	0	23.8	87	0	0
03-11-2017 11:00	107	0	26.3	78	0	0
03-11-2017 12:00	159	0	28.6	63.5	0	0
03-11-2017 13:00	110	0	29.7	61	0	0
03-11-2017 14:00	107	0	28.7	63.4	0	0
03-11-2017 15:00	114	0	29.2	61.2	0	0
03-11-2017 16:00	127	0	29.1	61	0	0
03-11-2017 17:00	170	0	27.9	67.6	0	0
03-11-2017 18:00	168	0	24.9	84	0	0
03-11-2017 19:00	168	0	23.4	88.6	0	0
03-11-2017 20:00	168	0	22.6	90.6	0	0

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
03-11-2017 21:00	168	0	22.3	91.7	0	0
03-11-2017 22:00	141	0	22.3	92.6	0	0
03-11-2017 23:00	132	0	21.8	94	0	0
04-11-2017 00:00	132	0	21.3	94.7	0	0
04-11-2017 01:00	132	0	20.6	96.9	0	0
04-11-2017 02:00	132	0	20.2	97.7	0	0
04-11-2017 03:00	132	0	19.9	97.9	0	0
04-11-2017 04:00	132	0	19.6	97.9	0	0
04-11-2017 05:00	132	0	19.8	97.8	0	0
04-11-2017 06:00	132	0	19.8	98	0	0
04-11-2017 07:00	81	0	19.6	98.4	0	0
04-11-2017 08:00	69	0	20	97	0	0
04-11-2017 09:00	156	0	22.6	87.1	0	0
04-11-2017 10:00	282	0	23.9	84.2	0	0
04-11-2017 11:00	283	0	24.8	82.2	0	0
04-11-2017 12:00	289	1	27	70.9	0	0
04-11-2017 13:00	283	0	27.8	67.5	0	0
04-11-2017 14:00	266	0	29	61.4	0	0
04-11-2017 15:00	87	0	28	64.8	0	0
04-11-2017 16:00	101	0	27.6	67.1	0	0
04-11-2017 17:00	103	0	26.3	70.7	0	0
04-11-2017 18:00	81	0	24.2	81.2	0	0
04-11-2017 19:00	81	0	22.8	88.8	0	0
04-11-2017 20:00	81	0	22	92	0	0
04-11-2017 21:00	58	0.5	21.3	94.1	0	0
04-11-2017 22:00	56	0	21.1	94.6	0	0
04-11-2017 23:00	65	4.5	20.7	95.4	0	0
05-11-2017 00:00	65	2.2	20.8	95.6	0	0
05-11-2017 01:00	65	2	20.1	97	0	0
05-11-2017 02:00	54	2	19.8	97.8	0	0
05-11-2017 03:00	52	3	19.8	97.7	0	0
05-11-2017 04:00	50	3	19.7	98	0	0
05-11-2017 05:00	54	3	18.8	99.1	0	0
05-11-2017 06:00	93	0	18.4	99.8	0	0
05-11-2017 07:00	105	0	18.6	99.7	0	0
05-11-2017 08:00	79	0	18.9	96.9	0	0
05-11-2017 09:00	105	0	21.3	89.1	0	0
05-11-2017 10:00	139	0	22.8	83.7	0	0
05-11-2017 11:00	101	0	23.9	79.6	0	0
05-11-2017 12:00	234	0	24.1	80.2	0	0
05-11-2017 13:00	288	0	24.6	78.5	0	0
05-11-2017 14:00	290	1	25.8	74	0	0
05-11-2017 15:00	255	0	26.4	70.3	0	0
05-11-2017 16:00	295	0	25.6	76.7	0	0
05-11-2017 17:00	135	0	24.7	81.4	0	0
05-11-2017 18:00	54	0	23	90.5	0	0
05-11-2017 19:00	54	0	22.1	94.1	0	0
05-11-2017 20:00	56	0	21.2	95.8	0	0
05-11-2017 21:00	56	0.5	20.4	97.2	0	0
05-11-2017 22:00	5	4	19.9	97.9	0	0

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
05-11-2017 23:00	65	5	19.4	98.4	0	0
06-11-2017 00:00	6	4	19	98.6	0	0
06-11-2017 01:00	5	12	18.6	99.2	0	0
06-11-2017 02:00	45	10	18.4	99.4	0	0
06-11-2017 03:00	45	10	18.1	99.7	0	0
06-11-2017 04:00	8	5	17.6	99.7	0	0
06-11-2017 05:00	57	6	17.3	99.8	0	0
06-11-2017 06:00	57	6	17.1	99.8	0.2	0
06-11-2017 07:00	57	6	16.9	99.8	0	0
06-11-2017 08:00	56	0	17.7	98.9	0	0
06-11-2017 09:00	56	5	19.2	94.7	0	0
06-11-2017 10:00	54	4	20.4	93.9	0	0
06-11-2017 11:00	54	2	22.2	88.3	0	0
06-11-2017 12:00	54	12	25.4	73.7	0	0
06-11-2017 13:00	111	12	26.9	65	0	0
06-11-2017 14:00	120	8	27.3	64.5	0	0
06-11-2017 15:00	105	0	28	61.3	0	0
06-11-2017 16:00	132	0	27.1	62.9	0	0
06-11-2017 17:00	184	0.8	25.7	71.7	0	0
06-11-2017 18:00	194	0.6	22.8	87.2	0	0
06-11-2017 19:00	194	0.9	21.2	91.2	0	0
06-11-2017 20:00	194	0.8	20.2	92.9	0	0
06-11-2017 21:00	194	0.5	19.7	94.1	0	0
06-11-2017 22:00	194	0.5	19.2	95.2	0	0
06-11-2017 23:00	194	1.2	18.8	96	0	0
07-11-2017 00:00	194	0	18.6	96.6	0	0
07-11-2017 01:00	194	0	18.1	97.7	0	0
07-11-2017 02:00	194	0	17.8	98	0	0
07-11-2017 03:00	194	0	17.3	98.3	0	0
07-11-2017 04:00	194	0	17.3	98.9	0	0
07-11-2017 05:00	194	0	17.2	98.8	0	0
07-11-2017 06:00	194	0	17.1	98.5	0	0
07-11-2017 07:00	194	0	16.8	98.7	0	0
07-11-2017 08:00	172	0	17.4	95.9	0	0
07-11-2017 09:00	221	0	21.2	83.1	0	0
07-11-2017 10:00	232	0	23.3	74	0	0
07-11-2017 11:00	278	0	24.9	68.6	0	0
07-11-2017 12:00	262	0	26.2	61	0	0
07-11-2017 13:00	207	0	27.3	58.7	0	0
07-11-2017 14:00	177	0	28	56.6	0	0
07-11-2017 15:00	203	0	28.3	54.9	0	0
07-11-2017 16:00	192	0	28.4	55.2	0	0
07-11-2017 17:00	79	0	26.3	63.5	0	0
07-11-2017 18:00	48	0	22.6	82.9	0	0
07-11-2017 19:00	48	0	21.1	87.8	0	0
07-11-2017 20:00	74	0	20.2	90.9	0	0
07-11-2017 21:00	94	0	19.6	92.9	0	0
07-11-2017 22:00	94	0	19.7	94.1	0	0
07-11-2017 23:00	79	0	19.2	94.5	0	0
08-11-2017 00:00	87	0	19	94.8	0	0

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
08-11-2017 01:00	142	0	18.8	96.2	0	0
08-11-2017 02:00	80	0	18.1	97.6	0	0
08-11-2017 03:00	83	0	17.5	98.3	0	0
08-11-2017 04:00	117	0	17.1	98.4	0	0
08-11-2017 05:00	117	0	16.5	98.6	0	0
08-11-2017 06:00	125	0	16.3	99.1	0	0
08-11-2017 07:00	165	0	16.3	99.4	0	0
08-11-2017 08:00	134	0	17	95.6	0	0
08-11-2017 09:00	108	0	21.1	83	0	0
08-11-2017 10:00	128	0	23.6	75.9	0	0
08-11-2017 11:00	190	0	25.7	68.8	0	0
08-11-2017 12:00	255	0	26.8	60.6	0	0
08-11-2017 13:00	207	0	27.6	58.8	0	0
08-11-2017 14:00	184	0	28.4	54.6	0	0
08-11-2017 15:00	104	0	28.3	54.4	0	0
08-11-2017 16:00	79	0	28.1	54.5	0	0
08-11-2017 17:00	58	0.5	25.8	65.5	0	0
08-11-2017 18:00	56	0	22.7	80.4	0	0
08-11-2017 19:00	65	4.5	20.9	86.9	0	0
08-11-2017 20:00	65	2.2	19.9	89.3	0	0
08-11-2017 21:00	65	2	19.2	92	0	0
08-11-2017 22:00	54	2	18.6	93.6	0	0
08-11-2017 23:00	52	3	18.1	94.7	0	0
09-11-2017 00:00	50	3	17.3	96.1	0	0
09-11-2017 01:00	54	3	17.4	96.5	0	0
09-11-2017 02:00	105	0	17.7	95.5	0	0
09-11-2017 03:00	104	0	17.3	95.7	0	0
09-11-2017 04:00	101	0	16.9	97.3	0	0
09-11-2017 05:00	101	0	16.1	98.4	0	0
09-11-2017 06:00	101	0	16.1	98.6	0	0
09-11-2017 07:00	103	0	15.9	98.7	0	0
09-11-2017 08:00	104	0	16.7	95.9	0	0
09-11-2017 09:00	136	0	21.1	83.2	0.2	0
09-11-2017 10:00	129	0	22.8	74.5	0	0
09-11-2017 11:00	112	0	23.8	71.3	0	0
09-11-2017 12:00	132	0	25.7	64.8	0	0
09-11-2017 13:00	241	0	27.3	57	0	0
09-11-2017 14:00	279	0	27.7	54.6	0	0
09-11-2017 15:00	129	0	27.9	54.6	0	0
09-11-2017 16:00	57	0	27.3	56	0	0
09-11-2017 17:00	80	0	25.6	61.1	0	0
09-11-2017 18:00	87	0	21.9	80.1	0	0
09-11-2017 19:00	87	0	20.3	85.9	0	0
09-11-2017 20:00	87	0	19.2	88.6	0	0
09-11-2017 21:00	87	0	18.5	90.5	0	0
09-11-2017 22:00	58	0.5	18	92.7	0	0
09-11-2017 23:00	56	0	17.5	95.1	0	0
10-11-2017 00:00	65	4.5	17	95.9	0	0
10-11-2017 01:00	65	2.2	16.4	97	0	0
10-11-2017 02:00	65	2	15.9	96	0	0

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
10-11-2017 03:00	54	2	15.3	96.7	0	0
10-11-2017 04:00	52	3	15.1	98.4	0	0
10-11-2017 05:00	50	3	14.6	98.4	0	0
10-11-2017 06:00	54	3	14.2	98.9	0	0
10-11-2017 07:00	91	0.5	14.1	99.3	0	0
10-11-2017 08:00	86	1	14.7	95.9	0	0
10-11-2017 09:00	114	0.8	16.2	92.9	0.2	0
10-11-2017 10:00	103	1.2	19.2	86	0	0
10-11-2017 11:00	54	2	22.4	75.1	0	0
10-11-2017 12:00	58	0.6	24.4	66.3	0	0
10-11-2017 13:00	8	2	26.2	59.7	0	0
10-11-2017 14:00	78	2	26.8	58.3	0	0
10-11-2017 15:00	78	2	27.2	58.4	0	0
10-11-2017 16:00	7	4	26.9	60.7	0	0
10-11-2017 17:00	66	2	25.6	65.8	0	0
10-11-2017 18:00	50	1	21.7	83.6	0	0
10-11-2017 19:00	50	3	20.1	88.5	0	0
10-11-2017 20:00	88	1	19.4	90.4	0	0
10-11-2017 21:00	45	2	18.6	93.5	0	0
10-11-2017 22:00	45	0	18.3	94.1	0	0
10-11-2017 23:00	56	0	18.1	95.3	0	0
11-11-2017 00:00	56	0	18.2	95.3	0	0
11-11-2017 01:00	58	0	17.8	95.9	0	0
11-11-2017 02:00	57	0	18.2	94.1	0	0
11-11-2017 03:00	62	0	17.7	96	0	0
11-11-2017 04:00	65	0	17.3	96.5	0	0
11-11-2017 05:00	68	0	17.8	95	0	0
11-11-2017 06:00	68	1	18	92.6	0.2	0
11-11-2017 07:00	199	0	17.2	94.3	0	0
11-11-2017 08:00	128	0	17.2	94.1	0	0
11-11-2017 09:00	100	0	18.2	90.9	0	0
11-11-2017 10:00	103	0	18.9	89.6	0	0
11-11-2017 11:00	155	0	20.3	84.2	0	0
11-11-2017 12:00	153	0	21.3	78.4	0	7
11-11-2017 13:00	159	0	22.4	73.7	0	7
11-11-2017 14:00	159	0	23	72	0	7
11-11-2017 15:00	155	0	23.1	72.4	0	7
11-11-2017 16:00	54	0	22.8	73.6	0	8
11-11-2017 17:00	58	0.5	22.5	75.5	0	7
11-11-2017 18:00	56	0	20.3	86.3	0	8
11-11-2017 19:00	65	4.5	18.7	93.5	0	8
11-11-2017 20:00	65	2.2	18.1	95	0	8
11-11-2017 21:00	65	2	18.2	95	0	8
11-11-2017 22:00	54	2	18.4	94.9	0	8
11-11-2017 23:00	52	3	18.5	94.4	0	8
12-11-2017 00:00	50	3	18.4	95.7	1	8
12-11-2017 01:00	54	3	18.2	96.2	0.2	8
12-11-2017 02:00	208	3	17.8	97.5	0	8
12-11-2017 03:00	225	0	17.8	97.4	0	8
12-11-2017 04:00	187	0	17.6	98.8	0.7	8

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
12-11-2017 05:00	146	0	17.2	98.7	0	8
12-11-2017 06:00	107	0	16.4	97.9	0	8
12-11-2017 07:00	128	0	15.9	97	0	8
12-11-2017 08:00	190	0	16.4	96.2	0.2	8
12-11-2017 09:00	135	0	17.6	93.2	0	8
12-11-2017 10:00	131	0	18.4	89.9	0	8
12-11-2017 11:00	245	0	19.4	86.9	0	8
12-11-2017 12:00	285	1	19.8	86.3	0	8
12-11-2017 13:00	283	1	20.7	81.8	0	8
12-11-2017 14:00	279	0	21.8	78.7	0	8
12-11-2017 15:00	98	0	22.9	70.6	0	8
12-11-2017 16:00	83	0	21.9	71.7	0	8
12-11-2017 17:00	87	0	20.4	79.9	0	8
12-11-2017 18:00	101	0	19.1	87.9	0	8
12-11-2017 19:00	118	0	18.2	93.2	0	8
12-11-2017 20:00	54	0.5	17.9	94.3	0	8
12-11-2017 21:00	54	2	17.2	96.6	0	8
12-11-2017 22:00	54	3	16.4	98.2	0	0
12-11-2017 23:00	56	2	15.9	98.6	0	8
13-11-2017 00:00	68	7	16.2	99	0	0
13-11-2017 01:00	118	5	15.4	99.1	0	0
13-11-2017 02:00	68	5	15.4	99.7	0	0
13-11-2017 03:00	69	4	15.6	99.8	0	0
13-11-2017 04:00	69	1	15.7	99.8	0	0
13-11-2017 05:00	6	2	15.6	99.8	0	0
13-11-2017 06:00	75	3	15.1	99.8	0	0
13-11-2017 07:00	75	2	14.6	99.8	0	0
13-11-2017 08:00	74	3	15.2	99.1	0	0
13-11-2017 09:00	75	5	17.4	91.9	0	0
13-11-2017 10:00	78	0	21.1	78.3	0	0
13-11-2017 11:00	78	0	21.6	78.4	0	0
13-11-2017 12:00	216	0	23.4	68.2	0	0
13-11-2017 13:00	121	0	24.4	60.5	0	0
13-11-2017 14:00	111	0	25.2	54.9	0	0
13-11-2017 15:00	121	0	25.1	54.3	0	0
13-11-2017 16:00	80	0	24.7	55.9	0	0
13-11-2017 17:00	101	0	23.3	62.5	0	0
13-11-2017 18:00	128	0	19.9	81.5	0	0
13-11-2017 19:00	128	0	18.3	87	0	0
13-11-2017 20:00	128	0	17.2	88.2	0	0
13-11-2017 21:00	128	0	16.5	90.9	0	0
13-11-2017 22:00	128	0	16.3	92.7	0	0
13-11-2017 23:00	131	0	16	96.2	0	0
14-11-2017 00:00	91	0	15.3	96.2	0	0
14-11-2017 01:00	36	0	14.3	97.7	0	0
14-11-2017 02:00	38	0	14.2	98	0	0
14-11-2017 03:00	38	0	13.9	98	0	0
14-11-2017 04:00	38	2	13.5	98.4	0	0
14-11-2017 05:00	38	7	13.2	98.7	0	0
14-11-2017 06:00	42	5	12.9	98.7	0	0

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
14-11-2017 07:00	57	5	12.7	98.7	0	0
14-11-2017 08:00	56	4	13.9	96.5	0	0
14-11-2017 09:00	64	1	18.9	81.2	0	0
14-11-2017 10:00	266	2	21.5	72.4	0	0
14-11-2017 11:00	232	3	22.8	68.3	0	0
14-11-2017 12:00	211	2	24.2	63.5	0	0
14-11-2017 13:00	114	3	24.8	56.3	0	0
14-11-2017 14:00	189	5	25.3	55.7	0	0
14-11-2017 15:00	151	0	26.1	53	0	0
14-11-2017 16:00	101	0	25.1	55.8	0	0
14-11-2017 17:00	100	0	23.5	64.6	0	0
14-11-2017 18:00	94	0	20.3	81.4	0	0
14-11-2017 19:00	94	0	18.7	88	0	0
14-11-2017 20:00	94	0	17.7	91.1	0	0
14-11-2017 21:00	94	0	17	92.9	0	0
14-11-2017 22:00	94	0	16.5	94.4	0	0
14-11-2017 23:00	94	0	16	95.9	0	0
15-11-2017 00:00	204	0	16.3	96.7	0	0
15-11-2017 01:00	247	0	15.4	97	0	0
15-11-2017 02:00	247	0	15.4	97	0	0
15-11-2017 03:00	247	0	14.6	98.5	0	0
15-11-2017 04:00	247	0	14.2	99.3	0	0
15-11-2017 05:00	247	0	13.8	98.7	0	0
15-11-2017 06:00	247	0	13.4	99.2	0	0
15-11-2017 07:00	247	0	13.1	99.6	0	0
15-11-2017 08:00	242	0	13.3	99.7	0	0
15-11-2017 09:00	234	0	14.4	97.3	0	0
15-11-2017 10:00	45	0	17.9	86.5	0	0
15-11-2017 11:00	58	0	20.1	80.8	0	0
15-11-2017 12:00	58	1.2	22.8	71.3	0	0
15-11-2017 13:00	6	3	24.6	65.8	0	0
15-11-2017 14:00	79	0.8	24.8	63.6	0	0
15-11-2017 15:00	5	0.6	25.9	58.3	0	0
15-11-2017 16:00	94	0.9	25.8	58.1	0	0
15-11-2017 17:00	9	0.8	25.3	60.3	0	0
15-11-2017 18:00	5	0.5	24.1	65.3	0	0
15-11-2017 19:00	7	0.5	20.8	82.6	0	0
15-11-2017 20:00	87	1.2	19	89.1	0	0
15-11-2017 21:00	78	5	18.1	91.8	0	0
15-11-2017 22:00	7	4	17.4	93.3	0	0
15-11-2017 23:00	85	5	16.9	94.7	0	0
16-11-2017 00:00	121	4	16.4	95.9	0	0
16-11-2017 01:00	121	0	15.6	97	0	0
16-11-2017 02:00	121	0	14.9	97.9	0	0
16-11-2017 03:00	121	0	14.5	98.2	0	0
16-11-2017 04:00	124	0	14.2	98.9	0	0
16-11-2017 05:00	100	0	13.2	97.9	0	0
16-11-2017 06:00	94	0	12.8	98.5	0	0
16-11-2017 07:00	94	0	12.9	98.8	0.2	0
16-11-2017 08:00	94	0	12.9	98.7	0	0

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
16-11-2017 09:00	94	0	14.2	96.1	0	0
16-11-2017 10:00	90	0	17	87.2	0	0
16-11-2017 11:00	136	0	21	74.8	0	0
16-11-2017 12:00	139	0	22.9	69.1	0	0
16-11-2017 13:00	136	0	24.4	63.9	0	0
16-11-2017 14:00	254	0	25.6	58.7	0	0
16-11-2017 15:00	228	0	26.8	55.8	0	0
16-11-2017 16:00	213	0	26.7	54.5	0	0
16-11-2017 17:00	121	0	26.7	54.9	0	0
16-11-2017 18:00	83	0	24.5	63	0	0
16-11-2017 19:00	96	0	20.7	81.6	0	0
16-11-2017 20:00	96	0	18.9	86.8	0	0
16-11-2017 21:00	96	0	17.8	89.9	0	0
16-11-2017 22:00	96	0	17.1	91.9	0	0
16-11-2017 23:00	96	0	16.7	93.4	0	0
17-11-2017 00:00	96	0	16.1	95.1	0	0
17-11-2017 01:00	96	0	15.7	96.6	0	0
17-11-2017 02:00	96	0	15.4	98.4	0	0
17-11-2017 03:00	96	0	15	97.7	0	0
17-11-2017 04:00	72	0	13.6	97.4	0	0
17-11-2017 05:00	74	0	13.4	98.3	0	0
17-11-2017 06:00	74	0	13.2	97.8	0	0
17-11-2017 07:00	88	0	13.3	99.1	0	0
17-11-2017 08:00	136	2	13.2	99	0.2	0
17-11-2017 09:00	136	7	13.8	96.5	0	0
17-11-2017 10:00	118	5	18.1	83.4	0	0
17-11-2017 11:00	111	5	20.7	76.1	0	0
17-11-2017 12:00	131	4	22.6	69.3	0	0
17-11-2017 13:00	110	1	24.7	62.2	0	0
17-11-2017 14:00	168	2	26.1	56.1	0	0
17-11-2017 15:00	153	3	26.1	55.8	0	0
17-11-2017 16:00	163	2	26.2	55.1	0	0
17-11-2017 17:00	117	3	25.9	55.9	0	0
17-11-2017 18:00	70	5	24.3	62.5	0	0
17-11-2017 19:00	72	0	20.4	81.8	0	0
17-11-2017 20:00	72	0	18.8	87.1	0	0
17-11-2017 21:00	72	0	17.8	89.7	0	0
17-11-2017 22:00	72	0	17	92.9	0	0
17-11-2017 23:00	72	0	16.6	94.1	0	0
18-11-2017 00:00	72	0	16.2	95.4	0	0
18-11-2017 01:00	72	0	15.6	96.1	0	0
18-11-2017 02:00	72	0	14.9	96.7	0	0
18-11-2017 03:00	72	0	14.4	97.1	0	0
18-11-2017 04:00	72	0	13.9	98	0	0
18-11-2017 05:00	72	0	13.6	98.2	0	0
18-11-2017 06:00	72	0	13.5	98.4	0	0
18-11-2017 07:00	72	0	13.1	98.1	0	0
18-11-2017 08:00	73	0	12.4	98	0	0
18-11-2017 09:00	86	0	13.6	96.1	0	0
18-11-2017 10:00	104	0	18.2	83.4	0	0

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
18-11-2017 11:00	203	0	21.2	74	0	0
18-11-2017 12:00	207	0	23	67.1	0	0
18-11-2017 13:00	221	0	24.4	57.5	0	0
18-11-2017 14:00	225	0	25.5	52.4	0	0
18-11-2017 15:00	121	0	25.3	54.1	0	0
18-11-2017 16:00	155	0	25.9	54	0	0
18-11-2017 17:00	84	0	25.6	54.7	0	0
18-11-2017 18:00	84	0	23.5	65	0	0
18-11-2017 19:00	90	0	20.4	82.9	0	0
18-11-2017 20:00	90	0	18.7	88.2	0	0
18-11-2017 21:00	90	0	17.8	90.3	0	0
18-11-2017 22:00	90	0	17	93.3	0	0
18-11-2017 23:00	90	0	16.4	95.1	0	0
19-11-2017 00:00	90	0	15.8	96.4	0	0
19-11-2017 01:00	90	0	15.3	97.1	0	0
19-11-2017 02:00	91	0	14.8	97.8	0	0
19-11-2017 03:00	91	0	14.1	96.2	0	0
19-11-2017 04:00	91	0	13.3	96.8	0	0
19-11-2017 05:00	91	0	13.2	98.2	0	0
19-11-2017 06:00	101	0	13	98.7	0	0
19-11-2017 07:00	104	0	12.8	98.8	0	0
19-11-2017 08:00	104	0	12.4	98.4	0	0
19-11-2017 09:00	107	0	13.3	94.6	0	0
19-11-2017 10:00	131	0	17.7	84.7	0	0
19-11-2017 11:00	108	0	20.4	75.9	0	0
19-11-2017 12:00	101	0	22.4	67	0	0
19-11-2017 13:00	144	0	24.2	61.9	0	0
19-11-2017 14:00	220	2.2	25.3	54.7	0	0
19-11-2017 15:00	54	1.5	26.5	50.1	0	0
19-11-2017 16:00	54	0.8	26.7	47.9	0	0
19-11-2017 17:00	54	0.6	26.6	44.8	0	0
19-11-2017 18:00	54	0.9	24.9	51.5	0	0
19-11-2017 19:00	65	0.8	20	75.2	0	0
19-11-2017 20:00	62	0.5	18.2	82.6	0	0
19-11-2017 21:00	62	0.5	17.2	86	0	0
19-11-2017 22:00	93	1.2	16.6	90.6	0	0
19-11-2017 23:00	124	1.2	16.6	93.2	0	0
20-11-2017 00:00	80	0	15.6	94.6	0	0
20-11-2017 01:00	135	0	14.7	96.5	0	0
20-11-2017 02:00	88	0	14.3	96.8	0	0
20-11-2017 03:00	94	0	14.1	97	0	0
20-11-2017 04:00	96	0	13.6	98	0	0
20-11-2017 05:00	96	0	13.3	97.4	0	0
20-11-2017 06:00	173	0	13	98.1	0	0
20-11-2017 07:00	134	0	12.3	98.3	0	0
20-11-2017 08:00	97	0	12.2	98.7	0.2	0
20-11-2017 09:00	96	0	13.2	96.2	0	0
20-11-2017 10:00	93	0	17.6	83.9	0	0
20-11-2017 11:00	108	0	20.4	69.9	0	0
20-11-2017 12:00	96	0	22.3	63.2	0	0

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
20-11-2017 13:00	207	0	24.2	57.9	0	0
20-11-2017 14:00	117	0	25.7	51.4	0	0
20-11-2017 15:00	122	0	25.8	50.5	0	0
20-11-2017 16:00	186	0	26.6	48	0	0
20-11-2017 17:00	138	0	26.5	48.2	0	0
20-11-2017 18:00	43	2	24.4	58.8	0	0
20-11-2017 19:00	46	7	20.3	79	0	0
20-11-2017 20:00	46	5	18.7	85	0	0
20-11-2017 21:00	49	5	17.7	88.1	0	0
20-11-2017 22:00	88	0	16.8	91	0	0
20-11-2017 23:00	88	0	16.3	92.6	0	0
21-11-2017 00:00	204	0	16.2	94.2	0	0
21-11-2017 01:00	103	0	14.9	95.7	0	0
21-11-2017 02:00	93	0	14.6	96.6	0	0
21-11-2017 03:00	96	0	14.4	97.3	0	0
21-11-2017 04:00	96	0	13.4	97.1	0	0
21-11-2017 05:00	96	0	13.1	98.1	0	0
21-11-2017 06:00	96	1	13.1	98.7	0	0
21-11-2017 07:00	96	1	12.3	98	0	0
21-11-2017 08:00	96	0.8	12.1	97.8	0	0
21-11-2017 09:00	96	0.8	13.3	96.1	0	0
21-11-2017 10:00	96	0	17.4	82.1	0	0
21-11-2017 11:00	122	0	20.3	71.7	0	0
21-11-2017 12:00	134	0	22.7	62.4	0	0
21-11-2017 13:00	132	0	24.2	57.6	0	0
21-11-2017 14:00	129	0	25.1	52	0	0
21-11-2017 15:00	162	0	26.1	49.8	0	0
21-11-2017 16:00	127	0	26.3	50.7	0	0
21-11-2017 17:00	69	0	26.4	50.4	0	0
21-11-2017 18:00	36	0	24.8	56.7	0	0
21-11-2017 19:00	118	0	20	79	0	0
21-11-2017 20:00	125	0	18.4	85	0	0
21-11-2017 21:00	117	0	17.3	88.5	0	0
21-11-2017 22:00	117	0	16.8	90.6	0	0
21-11-2017 23:00	117	0	16.2	94	0	0
22-11-2017 00:00	141	0	16.6	95.7	0	0
22-11-2017 01:00	53	0	15.2	95.8	0	0
22-11-2017 02:00	91	0	14.7	97.2	0	0
22-11-2017 03:00	91	0	14.2	97.2	0	0
22-11-2017 04:00	153	0	13.9	98.2	0	0
22-11-2017 05:00	264	0	14.2	97	0	0
22-11-2017 06:00	141	0	12.9	98	0	0
22-11-2017 07:00	138	0	12.7	97.8	0	0
22-11-2017 08:00	134	0	12.3	97.6	0.2	0
22-11-2017 09:00	115	0	13.3	94.4	0	0
22-11-2017 10:00	115	1.2	16	86.7	0	0
22-11-2017 11:00	79	1.2	18.8	77.4	0	0
22-11-2017 12:00	118	2	21.8	62.2	0	0
22-11-2017 13:00	129	2	23.6	57.2	0	0
22-11-2017 14:00	112	5	24.7	55.8	0	0

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
22-11-2017 15:00	238	4	26.1	50.9	0	0
22-11-2017 16:00	114	8	26.1	50.2	0	0
22-11-2017 17:00	224	5	26.1	52	0	0
22-11-2017 18:00	60	0	23.5	64.7	0	0
22-11-2017 19:00	83	0	20.8	78.9	0	0
22-11-2017 20:00	84	0	18.9	85.7	0	0
22-11-2017 21:00	115	0	17.8	90.5	0	0
22-11-2017 22:00	115	0	16.7	92.8	0	0
22-11-2017 23:00	115	0	16.2	93.8	0	0
23-11-2017 00:00	108	0	15.6	94.8	0	0
23-11-2017 01:00	134	0	15.1	97	0	0
23-11-2017 02:00	176	0	15.6	96.9	0	0
23-11-2017 03:00	49	0	14.3	97.6	0	0
23-11-2017 04:00	153	0	14.4	98.4	0	0
23-11-2017 05:00	249	0	14.4	98.4	0	0
23-11-2017 06:00	283	0	13.8	98.7	0	0
23-11-2017 07:00	238	0	13.2	98.5	0	0
23-11-2017 08:00	204	0	12.8	98.8	0	0
23-11-2017 09:00	155	2	13.3	96.3	0	0
23-11-2017 10:00	98	0	16.9	87.4	0	0
23-11-2017 11:00	93	0	18.8	83.2	0	0
23-11-2017 12:00	105	0	20.9	74.3	0	0
23-11-2017 13:00	104	0	23.2	64.7	0	0
23-11-2017 14:00	142	0	24.6	57.2	0	0
23-11-2017 15:00	208	0	25.3	54.2	0	0
23-11-2017 16:00	135	3	25.7	53.4	0	0
23-11-2017 17:00	117	2	24.6	56.2	0	0
23-11-2017 18:00	145	3	22.4	67.5	0	0
23-11-2017 19:00	145	5	20.2	81.6	0	0
23-11-2017 20:00	145	0	18.9	84.9	0	0
23-11-2017 21:00	145	0	18	87.7	0	0
23-11-2017 22:00	145	0	17.6	89.6	0	0
23-11-2017 23:00	145	0	16.8	93	0	0
24-11-2017 00:00	144	0	16.3	95	0	0
24-11-2017 01:00	175	0	15.7	96.4	0	0
24-11-2017 02:00	214	0	15.7	97.1	0	0
24-11-2017 03:00	100	0	15.7	97.2	0	0
24-11-2017 04:00	204	0	16	98.3	0	0
24-11-2017 05:00	151	0	15.3	98.2	0	0
24-11-2017 06:00	79	0	15.3	98.5	0	0
24-11-2017 07:00	122	0	15.5	98.4	0	0
24-11-2017 08:00	117	0	15.2	98.1	0	0
24-11-2017 09:00	129	0	15.6	97.9	0	0
24-11-2017 10:00	101	0	16	96.6	0	0
24-11-2017 11:00	132	0	17.4	92.6	0	0
24-11-2017 12:00	88	0	19.1	88.1	0	0
24-11-2017 13:00	118	0	22.3	76	0	0
24-11-2017 14:00	153	0	24.9	62.9	0	0
24-11-2017 15:00	169	0	25.9	57.2	0	0
24-11-2017 16:00	142	0	25	61.6	0	0

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
24-11-2017 17:00	101	0	24.2	68	0	0
24-11-2017 18:00	97	0	23.3	72.6	0	0
24-11-2017 19:00	100	0	21.2	85	0	0
24-11-2017 20:00	100	0	20	89.5	0	0
24-11-2017 21:00	100	0	19.5	90.7	0	0
24-11-2017 22:00	100	0	18.8	92.5	0	0
24-11-2017 23:00	100	0	18.1	94.7	0	0
25-11-2017 00:00	100	0	17.4	96.2	0	0
25-11-2017 01:00	52	0	17.3	96.5	0	0
25-11-2017 02:00	49	1	17.1	97.2	0	0
25-11-2017 03:00	49	1	16.9	97.8	0	0
25-11-2017 04:00	49	1	16.6	98.2	0	0
25-11-2017 05:00	56	1	17	97.6	0	0
25-11-2017 06:00	72	4	16.9	97.8	0	0
25-11-2017 07:00	87	1	16.8	98.1	0	0
25-11-2017 08:00	94	2	16	99.1	0	0
25-11-2017 09:00	122	3	16	97	0	0
25-11-2017 10:00	93	2	19.4	84.2	0	0
25-11-2017 11:00	98	3	22.2	75.2	0	0
25-11-2017 12:00	105	5	23.8	71.4	0	0
25-11-2017 13:00	111	0	25.4	64.2	0	0
25-11-2017 14:00	149	0	26.6	58.4	0	0
25-11-2017 15:00	111	0	27.3	55.8	0	0
25-11-2017 16:00	100	0	26.9	57.4	0	0
25-11-2017 17:00	62	2	27.3	57.2	0	0
25-11-2017 18:00	42	2	25.6	62.6	0	0
25-11-2017 19:00	48	2	22.7	77	0	0
25-11-2017 20:00	56	2	21.5	83	0	0
25-11-2017 21:00	79	1	21	86	0	0
25-11-2017 22:00	87	0	21.2	85.3	0	0
25-11-2017 23:00	90	0	21.1	86.4	0	0
26-11-2017 00:00	136	0	20.8	87.5	0	0
26-11-2017 01:00	235	0	20.4	90.1	0	0
26-11-2017 02:00	101	4	19.7	94.1	0	0
26-11-2017 03:00	86	5	19.2	96.2	0.2	0
26-11-2017 04:00	38	7	18.7	97.5	0	0
26-11-2017 05:00	67	5	18.1	98.6	0	0
26-11-2017 06:00	290	5	18.2	98.6	0.2	0
26-11-2017 07:00	203	4	17.9	98.6	0	0
26-11-2017 08:00	24	1	17.7	99	0	0
26-11-2017 09:00	187	2	18.2	96.6	0	0
26-11-2017 10:00	289	3	19.3	85.6	0	0
26-11-2017 11:00	245	2	20.9	79.8	0	0
26-11-2017 12:00	289	3	22.6	72	0	0
26-11-2017 13:00	254	5	23.6	67.1	0.2	0
26-11-2017 14:00	238	0	25.6	61.4	0	0
26-11-2017 15:00	208	0	25.2	61.3	0	0
26-11-2017 16:00	238	0	25.9	57.6	0	0
26-11-2017 17:00	264	0	26.3	57.6	0	0
26-11-2017 18:00	292	0	24.4	66.5	0	0

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
26-11-2017 19:00	223	0	21.6	81.2	0.2	0
26-11-2017 20:00	223	0	20	88	0	0
26-11-2017 21:00	223	0	19.6	89.6	0	0
26-11-2017 22:00	224	0	19.6	91.7	0	0
26-11-2017 23:00	224	0	18.9	93.9	0	0
27-11-2017 00:00	224	0	18.5	95.3	0	0
27-11-2017 01:00	223	0	17.7	97.2	0	0
27-11-2017 02:00	175	0	17.1	97.8	0	0
27-11-2017 03:00	125	0	16.8	97.9	0	0
27-11-2017 04:00	115	0	16.9	98.7	0	0
27-11-2017 05:00	115	0	16.9	98.6	0	0
27-11-2017 06:00	168	0	17.2	98.2	0	0
27-11-2017 07:00	289	0	17	98.2	0	0
27-11-2017 08:00	151	0	17.1	98.6	0	0
27-11-2017 09:00	83	0	17.5	97.5	0	0
27-11-2017 10:00	94	0	19.1	92.3	0	0
27-11-2017 11:00	179	0	21.7	83.3	0	0
27-11-2017 12:00	173	0	21.9	84.5	0.2	0
27-11-2017 13:00	163	0	23	79.4	0	0
27-11-2017 14:00	207	0	23.6	75.6	0	0
27-11-2017 15:00	262	0	24.8	70.5	0	0
27-11-2017 16:00	238	0	23.9	75.8	0	0
27-11-2017 17:00	193	0	23.2	80	0	0
27-11-2017 18:00	173	0	22.5	84.8	0	0
27-11-2017 19:00	175	0	21.2	90	0	0
27-11-2017 20:00	175	0	19.7	95.8	0	0
27-11-2017 21:00	175	0	18.8	96.6	0	0
27-11-2017 22:00	175	0	18.4	96.7	0	0
27-11-2017 23:00	175	0	17.7	98.2	0	0
28-11-2017 00:00	121	0	17.3	98.8	0.2	0
28-11-2017 01:00	124	0	16.9	99.1	0	0
28-11-2017 02:00	124	0	16.3	98.9	0	0
28-11-2017 03:00	124	0	15.8	99.1	0	0
28-11-2017 04:00	124	0	15.5	99	0	0
28-11-2017 05:00	114	0	14.9	99.4	0	0
28-11-2017 06:00	111	0	14.7	99.8	0	0
28-11-2017 07:00	141	0	14.7	99.8	0	0
28-11-2017 08:00	166	0	14.3	99.8	0	0
28-11-2017 09:00	208	0	14.9	99.8	0	0
28-11-2017 10:00	158	0	16.8	95	0	0
28-11-2017 11:00	107	0	19.8	85.7	0	0
28-11-2017 12:00	210	0	22.1	77.3	0	0
28-11-2017 13:00	261	0	23.5	71.9	0	0
28-11-2017 14:00	200	0	25	66.2	0	0
28-11-2017 15:00	242	0	25.4	66	0	0
28-11-2017 16:00	98	2	24.9	68.8	0	0
28-11-2017 17:00	165	2	23.7	73.6	0	0
28-11-2017 18:00	203	2	22.6	78	0	1
28-11-2017 19:00	203	2	21.2	86	0	0
28-11-2017 20:00	203	2	19.6	93.1	0	0

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
28-11-2017 21:00	203	1	18.7	95.5	0	0
28-11-2017 22:00	203	2	18.2	96.9	0	0
28-11-2017 23:00	203	3	17.8	97.5	0	0
29-11-2017 00:00	203	2	17.6	98.5	0	1
29-11-2017 01:00	204	3	17.8	97.4	0	1
29-11-2017 02:00	204	5	17.6	97.7	0	0
29-11-2017 03:00	251	0	17.3	98.2	0	0
29-11-2017 04:00	266	0	16.8	98.5	0	0
29-11-2017 05:00	266	0	16.4	99.1	0	0
29-11-2017 06:00	264	0	16.2	99.1	0	1
29-11-2017 07:00	255	0	16.3	98.6	0	1
29-11-2017 08:00	255	0	16.4	98.2	0	3
29-11-2017 09:00	248	0	16.7	97.1	0	4
29-11-2017 10:00	230	0	17.7	92.9	0	4
29-11-2017 11:00	206	0	20.5	83.5	0	4
29-11-2017 12:00	115	0	22.3	78.5	0	4
29-11-2017 13:00	114	0	23.7	73.2	0	4
29-11-2017 14:00	293	0	24.7	69.3	0	4
29-11-2017 15:00	124	0	24.4	69.9	0	1
29-11-2017 16:00	112	0	24.6	69	0	0
29-11-2017 17:00	108	0	23.9	72	0	0
29-11-2017 18:00	122	0	22.6	78.6	0	0
29-11-2017 19:00	122	0	20.5	89.3	0	0
29-11-2017 20:00	122	0	19.3	92.6	0	0
29-11-2017 21:00	122	0	18.6	94.6	0	1
29-11-2017 22:00	122	0	17.9	96.3	0	0
29-11-2017 23:00	122	0	17.5	96.8	0	0
30-11-2017 00:00	122	0	16.9	97.5	0	0
30-11-2017 01:00	122	0	16.8	98.9	0	0
30-11-2017 02:00	122	0	16.4	99.6	0	1
30-11-2017 03:00	122	0	15.7	99.5	0	0
30-11-2017 04:00	122	0	15.6	99.5	0	0
30-11-2017 05:00	122	0	15.6	99.6	0	0
30-11-2017 06:00	228	0	15.3	99.8	0	0
30-11-2017 07:00	218	0	14.8	99.8	0	0
30-11-2017 08:00	213	0	14.3	99.8	0	1
30-11-2017 09:00	210	0	14.6	98.7	0.2	1
30-11-2017 10:00	151	0	16.1	94.3	0	0
30-11-2017 11:00	173	0	18.9	86.9	0	0
30-11-2017 12:00	256	0	21.4	80.2	0	0
30-11-2017 13:00	300	0	22.1	77.7	0	0
30-11-2017 14:00	275	0	23.4	73.4	0	1
30-11-2017 15:00	271	0	24.4	69.1	0	1
30-11-2017 16:00	180	0	24.8	67.5	0	3
30-11-2017 17:00	155	0	23.7	68.4	0	4
30-11-2017 18:00	127	0	22.6	74.4	0	4
30-11-2017 19:00	127	0	20.2	87.8	0	4
30-11-2017 20:00	127	0	18.8	92.2	0	4
30-11-2017 21:00	127	0	18	93.8	0	4
30-11-2017 22:00	127	0	17.4	95.8	0	4

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
30-11-2017 23:00	127	0	16.9	97.4	0	1
30-11-2017 23:59	127	0	16.6	97.5	0	0
01-12-2017 00:00	127	0	15.8	98.5	0	0
01-12-2017 01:00	127	0	15.5	99.2	0	0
01-12-2017 02:00	45	0	15.2	99.4	0	0
01-12-2017 03:00	5	0	13.7	99.4	0	0
01-12-2017 04:00	89	0	13.6	99.8	0	1
01-12-2017 05:00	9	2	13.2	99.5	0	0
01-12-2017 06:00	9	7	13	99.4	0	0
01-12-2017 07:00	98	2	13.5	99.2	0.2	0
01-12-2017 08:00	97	1	14.7	98.3	0	0
01-12-2017 09:00	85	0	15.9	96	0	0
01-12-2017 10:00	75	0	18	88.7	0	0
01-12-2017 11:00	48	2	20.9	81.6	0	0
01-12-2017 12:00	48	3	22.1	78.1	0	0
01-12-2017 13:00	46	2	23.6	71.5	0	0
01-12-2017 14:00	48	3	24.8	66.1	0	0
01-12-2017 15:00	45	5	25.2	62.7	0	0
01-12-2017 16:00	45	0	24.9	62.9	0	0
01-12-2017 17:00	42	2	23.6	68.5	0	0
01-12-2017 18:00	45	0	21.04	85.7	0	0
01-12-2017 19:00	45	0	20.3	91.6	0	1
01-12-2017 20:00	65	0	18.03	94.3	0	0
01-12-2017 21:00	75	0	18	94.1	0	0
01-12-2017 22:00	75	0	17.89	90.9	0	0
01-12-2017 23:00	72	0	15.6	94.8	0	0
02-12-2017 00:00	72	2	15.1	97	0	0
02-12-2017 01:00	72	0	15.6	96.9	0	0
02-12-2017 02:00	75	0	14.3	97.6	0	0
02-12-2017 03:00	76	0	14.4	98.4	0	0
02-12-2017 04:00	78	0	14.4	98.4	0	0
02-12-2017 05:00	79	0	13.8	98.7	0	0
02-12-2017 06:00	89	0	13.2	98.5	0	0
02-12-2017 07:00	92	0	12.8	98.8	0	0
02-12-2017 08:00	112	0	13.3	96.3	0	0
02-12-2017 09:00	126	0	16.9	87.4	0	0
02-12-2017 10:00	86	0	20.4	69.9	0	0
02-12-2017 11:00	79	0	22.3	63.2	0	0
02-12-2017 12:00	93	0	24.2	57.9	0	0
02-12-2017 13:00	79	0	25.7	51.4	0	0
02-12-2017 14:00	85	0	25.8	50.5	0	0
02-12-2017 15:00	75	0	26.6	48	0	0
02-12-2017 16:00	81	0	26.5	48.2	0	0
02-12-2017 17:00	85	0	24.4	58.8	0	0
02-12-2017 18:00	91	0	20.3	79	0	0
02-12-2017 19:00	93	0	18.7	88.2	0	0
02-12-2017 20:00	92	0	17.8	90.3	0	0
02-12-2017 21:00	115	0	17	93.3	0	0
02-12-2017 22:00	104	0	16.4	95.1	0	0
02-12-2017 23:00	97	0	15.8	96.4	0	0

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
03-12-2017 00:00	94	0	15.3	97.1	0	0
03-12-2017 01:00	94	0	14.8	97.8	0	0
03-12-2017 02:00	94	0	14.1	96.2	0	0
03-12-2017 03:00	96	0	13.3	96.8	0	0
03-12-2017 04:00	110	0	13.2	98.2	0	0
03-12-2017 05:00	110	0	13	98.7	0	0
03-12-2017 06:00	96	0	12.8	98.8	0	0
03-12-2017 07:00	112	0	14.8	92.6	0	0
03-12-2017 08:00	112	0	16	94.6	0	0
03-12-2017 09:00	112	0	17.9	96.3	0	0
03-12-2017 10:00	89	0	20.2	56.2	0	0
03-12-2017 11:00	89	0	23.3	45.2	0	0
03-12-2017 12:00	84	0	26.3	45.5	0	0
03-12-2017 13:00	84	0	26.3	54.2	0	0
03-12-2017 14:00	89	0	26.9	67.1	0	0
03-12-2017 15:00	74	0	27.4	57.5	0	0
03-12-2017 16:00	79	0	25.1	52.4	0	0
03-12-2017 17:00	82	1	25.6	54.1	0	0
03-12-2017 18:00	81	1	21.2	54	0	0
03-12-2017 19:00	92	0	23.3	54.7	0	0
03-12-2017 20:00	94	0	20.2	65	0	0
03-12-2017 21:00	92	0	21.2	82.9	0	0
03-12-2017 22:00	92	0	20.2	86.3	0	0
03-12-2017 23:00	92	0	20.7	95.4	0	0
04-12-2017 00:00	63	0	20.8	95.6	0	2
04-12-2017 01:00	63	0	20.1	97	0	4
04-12-2017 02:00	63	0	17.5	97.8	0	5
04-12-2017 03:00	63	0	16.6	97.7	0	6
04-12-2017 04:00	59	0	16.6	98	0	4
04-12-2017 05:00	59	0	18.8	99.1	0	8
04-12-2017 06:00	59	0	18.4	99.8	0	7
04-12-2017 07:00	45	0	18.6	99.7	0	5
04-12-2017 08:00	45	0	18.9	96.9	0	1
04-12-2017 09:00	45	0	21.3	89.1	0	2
04-12-2017 10:00	45	0	22.8	83.7	0	0
04-12-2017 11:00	45	0	23.9	79.6	0	3
04-12-2017 12:00	76	0	24.1	80.2	0	5
04-12-2017 13:00	76	0	24.6	78.5	0	2
04-12-2017 14:00	76	0	25.8	74	0	2
04-12-2017 15:00	72	0	26.4	70.3	0	2
04-12-2017 16:00	79	0	25.6	76.7	0	3
04-12-2017 17:00	71	0	24.7	81.4	0	0
04-12-2017 18:00	74	0	23	90.5	0	0
04-12-2017 19:00	81	0	22.1	94.1	0	0
04-12-2017 20:00	84	0	21.2	95.8	0	0
04-12-2017 21:00	86	0	20.4	97.2	0	0
04-12-2017 22:00	89	0	19.9	97.9	0	0
04-12-2017 23:00	83	0	19.4	98.4	0	0
05-12-2017 00:00	84	0	19	98.6	0	0
05-12-2017 01:00	75	0	18.6	99.2	0	0

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
05-12-2017 02:00	71	0	18.4	99.4	0	0
05-12-2017 03:00	76	0	18.1	99.7	0	0
05-12-2017 04:00	76	0	17.6	99.7	0	0
05-12-2017 05:00	69	0	17.3	99.8	0	0
05-12-2017 06:00	65	0	17.1	99.8	0	0
05-12-2017 07:00	59	0	16.9	99.8	0	0
05-12-2017 08:00	52	0	17.7	98.9	0	0
05-12-2017 09:00	55	0	19.2	94.7	0	0
05-12-2017 10:00	56	0	20.4	93.9	0	0
05-12-2017 11:00	45	0	22.2	88.3	0	0
05-12-2017 12:00	45	0	25.4	73.7	0	0
05-12-2017 13:00	48	0	26.9	65	0	0
05-12-2017 14:00	68	0	27.3	64.5	0	0
05-12-2017 15:00	68	0	28	61.3	0	0
05-12-2017 16:00	76	0	27.1	62.9	0	0
05-12-2017 17:00	79	0	25.7	71.7	0	0
05-12-2017 18:00	72	0	22.8	87.2	0	0
05-12-2017 19:00	72	1	21.2	91.2	0	0
05-12-2017 20:00	74	1	20.2	92.9	0	0
05-12-2017 21:00	79	3	19.7	94.1	0	0
05-12-2017 22:00	82	0	19.2	95.2	0	0
05-12-2017 23:00	81	1	18.8	96	0	0
06-12-2017 00:00	92	1	17.3	98.8	0	0
06-12-2017 01:00	94	0	16.9	99.1	0	0
06-12-2017 02:00	92	0	16.3	98.9	0	0
06-12-2017 03:00	92	0	15.8	99.1	0	0
06-12-2017 04:00	92	0	15.5	99	0	0
06-12-2017 05:00	63	2	14.9	99.4	0	0
06-12-2017 06:00	63	4	14.7	99.8	0	0
06-12-2017 07:00	63	4	14.7	99.8	0	0
06-12-2017 08:00	63	3	14.3	99.8	0	0
06-12-2017 09:00	59	0	14.9	99.8	0	0
06-12-2017 10:00	110	4	16.8	95	0	0
06-12-2017 11:00	110	0	19.8	85.7	0	0
06-12-2017 12:00	96	2	22.1	77.3	0	0
06-12-2017 13:00	112	5	23.5	71.9	0	0
06-12-2017 14:00	112	5	25	66.2	0	0
06-12-2017 15:00	112	0	25.4	66	0	0
06-12-2017 16:00	89	0	24.9	68.8	0	0
06-12-2017 17:00	89	0	23.7	73.6	0	0
06-12-2017 18:00	84	0	22.6	78	0	2
06-12-2017 19:00	84	0	21.2	86	0	4
06-12-2017 20:00	89	0	19.6	93.1	0	5
06-12-2017 21:00	74	0	18.7	95.5	0	6
06-12-2017 22:00	79	3	18.2	96.9	0	4
06-12-2017 23:00	82	0	17.3	98.8	0	8
07-12-2017 00:00	81	0	16.9	99.1	0	7
07-12-2017 01:00	92	0	16.3	98.9	0	5
07-12-2017 02:00	97	0	15.8	99.1	0	1
07-12-2017 03:00	85	0	15.5	99	0	2

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
07-12-2017 04:00	75	0	14.9	99.4	0	0
07-12-2017 05:00	48	0	14.7	99.8	0	3
07-12-2017 06:00	48	0	14.7	99.8	0	5
07-12-2017 07:00	46	0	14.3	99.8	0	2
07-12-2017 08:00	48	0	14.2	99.8	0	2
07-12-2017 09:00	45	0	16.8	95	0	2
07-12-2017 10:00	74	0	19.8	85.7	0	3
07-12-2017 11:00	79	0	22.1	77.3	0	0
07-12-2017 12:00	82	0	23.5	71.9	0	0
07-12-2017 13:00	81	3	25	66.2	0	0
07-12-2017 14:00	92	0	25.4	66	0	0
07-12-2017 15:00	97	0	24.9	68.8	0	0
07-12-2017 16:00	85	0	23.7	73.6	0	0
07-12-2017 17:00	75	0	22.6	78	0	0
07-12-2017 18:00	48	0	21.2	86	0	0
07-12-2017 19:00	46	0	19.6	93.1	0	0
07-12-2017 20:00	48	4	18.7	95.5	0	0
07-12-2017 21:00	45	0	18.2	96.9	0	0
07-12-2017 22:00	74	3	14.2	97.5	0	0
07-12-2017 23:00	79	0	15.5	98.5	0	0
08-12-2017 00:00	82	4	16.6	97.4	0	0
08-12-2017 01:00	81	0	14	97.5	0	0
08-12-2017 02:00	45	0	15.5	98.5	0	0
08-12-2017 03:00	5	0	15.5	97.4	0	0
08-12-2017 04:00	89	0	15.3	98.2	0	0
08-12-2017 05:00	92	1	15.3	98.5	0	0
08-12-2017 06:00	92	3	15.5	98.4	0	0
08-12-2017 07:00	98	3	15.2	98.1	0	0
08-12-2017 08:00	97	1	15.6	97.9	0	0
08-12-2017 09:00	85	1	16	96.6	0	0
08-12-2017 10:00	75	1	17.4	92.6	0	0
08-12-2017 11:00	48	1	19.1	88.1	0	0
08-12-2017 12:00	48	3	22.3	76	0	0
08-12-2017 13:00	45	0	24.9	62.9	0	0
08-12-2017 14:00	74	0	25.9	57.2	0	0
08-12-2017 15:00	97	0	25	61.6	0	0
08-12-2017 16:00	85	0	24.2	68	0	0
08-12-2017 17:00	75	0	23.3	72.6	0	0
08-12-2017 18:00	48	0	21.2	85	0	0
08-12-2017 19:00	48	0	20	89.5	0	0
08-12-2017 20:00	45	0	19.5	90.7	0	0
08-12-2017 21:00	74	0	18.8	92.5	0	0
08-12-2017 22:00	79	0	18.1	94.7	0	0
08-12-2017 23:00	48	0	17.4	96.2	0	0
09-12-2017 00:00	48	0	17.3	96.5	0	2
09-12-2017 01:00	45	0	17.1	97.2	0	0
09-12-2017 02:00	74	0	16.9	97.8	0	0
09-12-2017 03:00	79	0	16.6	98.2	0	0
09-12-2017 04:00	60	0	17	97.6	0	0
09-12-2017 05:00	60	0	15.3	98.2	0	0

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
09-12-2017 06:00	60	0	15.3	98.5	0	2
09-12-2017 07:00	135	0	15.5	98.4	0	4
09-12-2017 08:00	135	1	15.2	98.1	0	5
09-12-2017 09:00	7	0	15.6	97.9	0	6
09-12-2017 10:00	7	0	16	96.6	0	4
09-12-2017 11:00	48	0	17.4	92.6	0	8
09-12-2017 12:00	48	0	19.1	88.1	0	7
09-12-2017 13:00	45	0	22.3	76	0	5
09-12-2017 14:00	74	0	24.9	62.9	0	1
09-12-2017 15:00	79	0	25.9	57.2	0	2
09-12-2017 16:00	60	0	25	61.6	0	0
09-12-2017 17:00	60	2	24.2	68	0	3
09-12-2017 18:00	122	2	23.3	72.6	0	5
09-12-2017 19:00	117	5	21.2	85	0	2
09-12-2017 20:00	129	4	20	89.5	0	2
09-12-2017 21:00	101	8	19.5	90.7	0	2
09-12-2017 22:00	132	8	18.8	92.5	0	3
09-12-2017 23:00	88	0	18.1	94.7	0	0
10-12-2017 00:00	118	0	17.4	96.2	0	0
10-12-2017 01:00	153	0	17.3	96.5	0	0
10-12-2017 02:00	169	0	17.1	97.2	0	0
10-12-2017 03:00	142	0	16.9	97.8	0	0
10-12-2017 04:00	101	0	16.6	98.2	0	0
10-12-2017 05:00	97	0	17	97.6	0	0
10-12-2017 06:00	100	0	15.3	98.2	0	0
10-12-2017 07:00	100	0	15.3	98.5	0	0
10-12-2017 08:00	100	0	15.5	98.4	0	0
10-12-2017 09:00	74	0	15.2	98.1	0	0
10-12-2017 10:00	79	0	15.6	97.9	0	0
10-12-2017 11:00	60	0	16	96.6	0	0
10-12-2017 12:00	60	0	17.4	92.6	0	0
10-12-2017 13:00	122	0	19.1	88.1	0	0
10-12-2017 14:00	117	0	22.3	76	0	0
10-12-2017 15:00	129	0	24.9	62.9	0	0
10-12-2017 16:00	101	0	25.9	57.2	0	0
10-12-2017 17:00	132	0	25	61.6	0	0
10-12-2017 18:00	118	0	24.2	68	0	0
10-12-2017 19:00	97	0	23.3	72.6	0	0
10-12-2017 20:00	85	0	21.2	85	0	0
10-12-2017 21:00	75	1	20	89.5	0	0
10-12-2017 22:00	48	0	15.5	90.7	0	0
10-12-2017 23:00	46	0	14	92.5	0	0
11-12-2017 00:00	124	0	12.2	94.7	0	0
11-12-2017 01:00	112	0	11.8	96.2	0	0
11-12-2017 02:00	108	6	12.7	96.5	0	0
11-12-2017 03:00	122	0	13.1	97.2	0	0
11-12-2017 04:00	122	0	13.8	97.8	0	0
11-12-2017 05:00	122	0	14.5	98.2	0	0
11-12-2017 06:00	122	0	15.3	97.6	0	0
11-12-2017 07:00	122	0	16.8	99.6	0	0

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
11-12-2017 08:00	122	0	18.1	99.8	0	0
11-12-2017 09:00	122	0	19.8	83.4	0	0
11-12-2017 10:00	122	0	20.4	74	0	0
11-12-2017 11:00	122	0	21.6	67.1	0	0
11-12-2017 12:00	132	0	22.3	57.5	0	0
11-12-2017 13:00	118	0	24.2	52.4	0	0
11-12-2017 14:00	97	0	23.1	54.1	0	0
11-12-2017 15:00	85	0	25.5	54	0	0
11-12-2017 16:00	75	0	25.3	54.7	0	0
11-12-2017 17:00	48	0	21.2	65	0	0
11-12-2017 18:00	46	0	20.1	82.9	0	0
11-12-2017 19:00	124	0	19.4	88.2	0	0
11-12-2017 20:00	112	0	17.2	89.8	0	0
11-12-2017 21:00	84	0	16.6	90.7	0	0
11-12-2017 22:00	89	0	14.2	92.9	0	0
11-12-2017 23:00	74	0	13.3	95.7	0	0
12-12-2017 00:00	79	0	13.1	97.3	0	0
12-12-2017 01:00	82	0	12.2	98.7	0	0
12-12-2017 02:00	81	0	11.4	99.1	0	0
12-12-2017 03:00	92	0	12.5	83.4	0	0
12-12-2017 04:00	94	0	13.1	85	0	0
12-12-2017 05:00	92	0	14.2	75	0	0
12-12-2017 06:00	92	0	15.1	95	0	0
12-12-2017 07:00	92	0	12.5	96	0	0
12-12-2017 08:00	63	0	15.2	85	0	2
12-12-2017 09:00	63	0	16.6	87	0	4
12-12-2017 10:00	63	0	19.3	87	0	5
12-12-2017 11:00	63	0	20.1	74	0	6
12-12-2017 12:00	79	0	21.7	67.1	0	4
12-12-2017 13:00	82	0	22.8	57.5	0	8
12-12-2017 14:00	81	1	23.3	52.4	0	7
12-12-2017 15:00	92	1	22.3	54.1	0	5
12-12-2017 16:00	94	0	22.1	54	0	1
12-12-2017 17:00	108	0	22.1	54.7	0	2
12-12-2017 18:00	122	1	20.1	65	0	0
12-12-2017 19:00	122	0	22.3	54	0	3
12-12-2017 20:00	97	0	22.1	46	0	5
12-12-2017 21:00	85	0	22.1	58	0	2
12-12-2017 22:00	75	4	20.1	58	0	2
12-12-2017 23:00	112	5	19.3	54.1	0	2
13-12-2017 00:00	112	2	18.2	54	0	3
13-12-2017 01:00	112	3	16.3	54.7	0	0
13-12-2017 02:00	108	6	14.7	65	0	0
13-12-2017 03:00	97	8	13.3	97.5	0	0
13-12-2017 04:00	85	9	12.5	94.3	0	0
13-12-2017 05:00	75	8	12.2	90.8	0	0
13-12-2017 06:00	112	0	11.7	78.7	0	0
13-12-2017 07:00	92	8	11.9	70.7	0	0
13-12-2017 08:00	94	8	12.6	85.8	0	0
13-12-2017 09:00	94	7	15.6	89.8	0	0

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
13-12-2017 10:00	96	8	16.6	90.7	0	0
13-12-2017 11:00	110	0	18.5	92.9	0	0
13-12-2017 12:00	110	0	24.2	95.7	0	0
13-12-2017 13:00	96	0	25.5	97.3	0	0
13-12-2017 14:00	97	0	26	98.7	0	0
13-12-2017 15:00	85	0	24.2	67.1	0	0
13-12-2017 16:00	75	0	23.3	57.5	0	0
13-12-2017 17:00	45	0	25.2	52.4	0	0
13-12-2017 18:00	65	0	20.2	54.1	0	0
13-12-2017 19:00	75	0	15.5	95.6	0	0
13-12-2017 20:00	75	0	16.6	96.2	0	0
13-12-2017 21:00	72	0	15.2	83.4	0	0
13-12-2017 22:00	72	0	14.1	74.0	0	0
13-12-2017 23:00	72	5	13.1	83.5	0	0
14-12-2017 00:00	75	3	12.5	81.5	0	0
14-12-2017 01:00	76	3	11.2	79.5	0	0
14-12-2017 02:00	78	6	12.7	95.7	0	0
14-12-2017 03:00	79	2	13.8	97.3	0	0
14-12-2017 04:00	89	4	14.7	98.7	0	0
14-12-2017 05:00	92	2	15.4	67.1	0	0
14-12-2017 06:00	112	3	15.8	75.0	0	0
14-12-2017 07:00	89	0	14.2	78	0	0
14-12-2017 08:00	92	0	12.3	74.0	0	0
14-12-2017 09:00	79	0	18	67.1	0	0
14-12-2017 10:00	89	0	20.2	55.5	0	0
14-12-2017 11:00	84	0	21.2	53.5	0	0
14-12-2017 12:00	89	0	23.3	51.5	0	0
14-12-2017 13:00	74	0	25.2	49.5	0	0
14-12-2017 14:00	79	0	24.5	47.5	0	0
14-12-2017 15:00	82	0	26.6	45.5	0	0
14-12-2017 16:00	81	0	24.2	43.5	0	2
14-12-2017 17:00	92	0	20.2	54.0	0	4
14-12-2017 18:00	112	0	19.9	46.0	0	5
14-12-2017 19:00	128	0	15.5	87	0	6
14-12-2017 20:00	122	0	14.2	87	0	4
14-12-2017 21:00	114	0	13.3	87	0	8
14-12-2017 22:00	105	2	15.8	78	0	7
14-12-2017 23:00	115	2	14.2	95	0	5
15-12-2017 00:00	79	5	12.3	90.8	0	1
15-12-2017 01:00	118	4	11.1	87	0	2
15-12-2017 02:00	129	8	12.3	95	0	0
15-12-2017 03:00	112	8	13.5	98	0	3
15-12-2017 04:00	100	0	14.3	97.0	0	5
15-12-2017 05:00	100	0	14.2	97	0	2
15-12-2017 06:00	100	0	14.2	87.0	0	2
15-12-2017 07:00	52	0	11.1	87.0	0	2
15-12-2017 08:00	49	0	12.3	87.0	0	3
15-12-2017 09:00	49	0	13.5	89	0	0
15-12-2017 10:00	101	0	14.3	98	0	0
15-12-2017 11:00	86	0	14.6	98.7	0	0

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
15-12-2017 12:00	38	0	15.9	67.1	0	0
15-12-2017 13:00	67	0	16.7	94.3	0	0
15-12-2017 14:00	48	0	17.1	90.8	0	0
15-12-2017 15:00	48	0	19.1	78.7	0	0
15-12-2017 16:00	46	0	21.5	70.7	0	0
15-12-2017 17:00	48	0	23.5	85.8	0	0
15-12-2017 18:00	45	0	24.2	89.8	0	0
15-12-2017 19:00	45	0	25.1	90.7	0	0
15-12-2017 20:00	42	0	25.6	92.9	0	0
15-12-2017 21:00	45	0	24.2	95.7	0	0
15-12-2017 22:00	45	0	23.1	97.3	0	0
15-12-2017 23:00	68	0	22	98.7	0	0
16-12-2017 00:00	69	0	20.3	67.1	0	0
16-12-2017 01:00	36	0	19.1	57.5	0	0
16-12-2017 02:00	49	1	17.8	52.4	0	0
16-12-2017 03:00	46	0	15.1	54.1	0	0
16-12-2017 04:00	56	0	13.5	95.6	0	0
16-12-2017 05:00	89	0	12.1	96.2	0	0
16-12-2017 06:00	89	0	11.8	97.4	0	0
16-12-2017 07:00	98	6	11.4	97.8	0	0
16-12-2017 08:00	98	0	12.9	99.1	0	0
16-12-2017 09:00	97	0	13.5	99.3	0	0
16-12-2017 10:00	112	0	14.6	99.0	0	0
16-12-2017 11:00	112	0	15.9	83.4	0	0
16-12-2017 12:00	112	0	16.7	81.2	0	0
16-12-2017 13:00	57	0	17.8	82.3	0	2
16-12-2017 14:00	57	0	19.1	83.5	0	4
16-12-2017 15:00	55	0	20.2	84.3	0	5
16-12-2017 16:00	65	0	21.3	85.0	0	6
16-12-2017 17:00	64	0	22.5	83.4	0	4
16-12-2017 18:00	64	0	22.7	80.3	0	8
16-12-2017 19:00	89	0	23.8	76.8	0	7
16-12-2017 20:00	89	0	24.2	77.0	0	5
16-12-2017 21:00	96	0	23.1	72.2	0	1
16-12-2017 22:00	127	0	22.2	78.0	0	2
16-12-2017 23:00	127	0	21.8	78.0	0	0
17-12-2017 00:00	127	0	20.4	84.0	0	3
17-12-2017 01:00	123	0	18.8	87.0	0	5
17-12-2017 02:00	123	0	18.3	97.0	0	2
17-12-2017 03:00	86	0	16.1	98.0	0	2
17-12-2017 04:00	86	0	15	91.0	0	2
17-12-2017 05:00	86	0	13.5	87.0	0	3
17-12-2017 06:00	78	0	12.4	85.0	0	0
17-12-2017 07:00	78	0	16.8	99.6	0	0
17-12-2017 08:00	62	0	18.1	99.8	0	0
17-12-2017 09:00	62	0	19.8	83.4	0	0
17-12-2017 10:00	49	0	20.4	74	0	0
17-12-2017 11:00	49	0	21.6	67.1	0	0
17-12-2017 12:00	51	0	22.3	57.5	0	0
17-12-2017 13:00	51	0	24.2	52.4	0	0

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
17-12-2017 14:00	53	0	23.1	54.1	0	0
17-12-2017 15:00	53	0	25.5	54	0	0
17-12-2017 16:00	98	0	25.3	54.7	0	0
17-12-2017 17:00	93	0	21.2	65	0	0
17-12-2017 18:00	105	0	20.1	82.9	0	0
17-12-2017 19:00	104	1	19.4	88.2	0	0
17-12-2017 20:00	142	1	17.2	89.8	0	0
17-12-2017 21:00	208	0	16.6	90.7	0	0
17-12-2017 22:00	135	0	14.2	92.9	0	0
17-12-2017 23:00	117	0	13.3	95.7	0	0
18-12-2017 00:00	145	0	13.1	97.3	0	0
18-12-2017 01:00	145	0	12.2	98.7	0	0
18-12-2017 02:00	101	0	11.4	99.1	0	0
18-12-2017 03:00	132	0	12.5	83.4	0	0
18-12-2017 04:00	88	0	13.1	85	0	0
18-12-2017 05:00	118	0	14.2	75	0	0
18-12-2017 06:00	153	0	15.1	95	0	0
18-12-2017 07:00	169	0	12.5	96	0	0
18-12-2017 08:00	160	0	15.2	85	0	0
18-12-2017 09:00	123	0	16.6	87	0	0
18-12-2017 10:00	86	0	19.3	87	0	0
18-12-2017 11:00	86	0	20.1	74	0	0
18-12-2017 12:00	92	0	21.7	67.1	0	0
18-12-2017 13:00	112	0	22.8	57.5	0	0
18-12-2017 14:00	128	0	23.3	52.4	0	0
18-12-2017 15:00	92	0	22.3	54.1	0	0
18-12-2017 16:00	79	0	22.1	54	0	0
18-12-2017 17:00	89	0	22.1	54.7	0	0
18-12-2017 18:00	84	0	20.1	65	0	0
18-12-2017 19:00	96	0	22.3	54	0	0
18-12-2017 20:00	92	1	22.1	46	0	0
18-12-2017 21:00	74	0	22.1	58	0	0
18-12-2017 22:00	74	0	20.1	58	0	0
18-12-2017 23:00	45	0	19.3	54.1	0	0
19-12-2017 00:00	5	0	18.2	54	0	0
19-12-2017 01:00	89	0	16.3	54.7	0	0
19-12-2017 02:00	9	0	14.7	65	0	0
19-12-2017 03:00	9	0	13.3	97.5	0	0
19-12-2017 04:00	98	0	12.5	94.3	0	0
19-12-2017 05:00	97	1	12.2	90.8	0	0
19-12-2017 06:00	85	0	11.7	78.7	0	0
19-12-2017 07:00	75	0	11.8	85.0	0	0
19-12-2017 08:00	48	0	15.5	75.0	0	0
19-12-2017 09:00	48	0	19.6	64.6	0	0
19-12-2017 10:00	60	0	22.1	56.4	0	0
19-12-2017 11:00	60	0	23.5	52.7	0	0
19-12-2017 12:00	60	0	24.2	50.4	0	0
19-12-2017 13:00	135	0	24.8	53.3	0	0
19-12-2017 14:00	135	1	23.1	49.9	0	0
19-12-2017 15:00	72	0	22.5	58.3	0	0

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
19-12-2017 16:00	72	0	21.3	77.4	0	0
19-12-2017 17:00	193	1	21.9	73.5	0	0
19-12-2017 18:00	45	0	15.1	66	0	0
19-12-2017 19:00	81	1	14.2	71.4	0	0
19-12-2017 20:00	110	0	13.3	86.8	0	0
19-12-2017 21:00	125	0	12.2	92.8	0	0
19-12-2017 22:00	90	0	12.2	94	0	0
19-12-2017 23:00	70	0	15.2	95.7	0	0
20-12-2017 00:00	96	0	14	94.8	0	0
20-12-2017 01:00	118	0	12.2	97.4	0	0
20-12-2017 02:00	132	0	12.2	88.0	0	0
20-12-2017 03:00	138	0	14.2	80.1	0	0
20-12-2017 04:00	138	0	15.6	70.5	0	0
20-12-2017 05:00	122	0	14.1	59.0	0	0
20-12-2017 06:00	128	0	13.4	60.3	0	0
20-12-2017 07:00	135	0	12.2	63.6	0	0
20-12-2017 08:00	155	0	14.2	64.3	0	0
20-12-2017 09:00	213	0	15.3	68.5	0	0
20-12-2017 10:00	158	0	16.8	69.2	0	0
20-12-2017 11:00	114	0	25	78.0	0	0
20-12-2017 12:00	152	0	25	84.0	0	0
20-12-2017 13:00	139	0	24.2	85.0	0	0
20-12-2017 14:00	120	0	25.5	75.0	0	0
20-12-2017 15:00	127	0	26.6	64.6	0	0
20-12-2017 16:00	108	0	23.3	56.4	0	0
20-12-2017 17:00	128	0	20.2	52.7	0	0
20-12-2017 18:00	88	0	21.2	50.4	0	0
20-12-2017 19:00	88	0	20.2	53.3	0	0
20-12-2017 20:00	88	0	18.1	49.9	0	0
20-12-2017 21:00	88	0	19.5	98.7	0	0
20-12-2017 22:00	70	0	18.5	67.1	0	0
20-12-2017 23:00	79	0	17.5	57.5	0	0
21-12-2017 00:00	134	0	19.5	52.4	0	0
21-12-2017 01:00	104	0	18.7	54.1	0	0
21-12-2017 02:00	85	0	17.1	95.6	0	0
21-12-2017 03:00	54	0	15.8	96.2	0	0
21-12-2017 04:00	54	0	14.3	97.4	0	0
21-12-2017 05:00	56	0	13.1	97.8	0	0
21-12-2017 06:00	52	0	12.5	99.1	0	0
21-12-2017 07:00	54	0	12.1	99.3	0	0
21-12-2017 08:00	54	0	13.5	99.0	0	0
21-12-2017 09:00	51	0	14.6	83.4	0	0
21-12-2017 10:00	52	0	15.9	81.2	0	0
21-12-2017 11:00	51	0	20.2	82.3	0	0
21-12-2017 12:00	52	0	25.2	83.5	0	0
21-12-2017 13:00	112	0	26.6	84.3	0	0
21-12-2017 14:00	128	0	24.2	80.3	0	0
21-12-2017 15:00	122	0	23.3	78	0	0
21-12-2017 16:00	114	0	22.4	82.9	0	0
21-12-2017 17:00	105	0	22.4	82.1	0	0

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
21-12-2017 18:00	193	3	20.3	78.9	0	0
21-12-2017 19:00	139	6	19.5	77.4	0	0
21-12-2017 20:00	103	4	17.5	81.3	0	0
21-12-2017 21:00	240	3	18.5	80.3	0	0
21-12-2017 22:00	114	5	16.6	79.3	0	0
21-12-2017 23:00	127	5	15.5	79.3	0	0
22-12-2017 00:00	170	6	14.2	88.3	0	0
22-12-2017 01:00	169	6	16.6	80.2	0	0
22-12-2017 02:00	169	1	15.5	81.2	0	0
22-12-2017 03:00	169	0	14.2	80.9	0	0
22-12-2017 04:00	168	0	15	81.2	0	0
22-12-2017 05:00	141	0	13.4	78	0	0
22-12-2017 06:00	136	0	12.3	79	0	0
22-12-2017 07:00	136	0	14.2	99.6	0	0
22-12-2017 08:00	136	0	17.5	99.8	0	0
22-12-2017 09:00	136	0	19.8	83.4	0	0
22-12-2017 10:00	136	0	20.4	74	0	0
22-12-2017 11:00	136	0	21.6	67.1	0	0
22-12-2017 12:00	217	0	22.3	57.5	0	0
22-12-2017 13:00	112	0	24.2	52.4	0	0
22-12-2017 14:00	96	0	23.1	54.1	0	0
22-12-2017 15:00	120	0	25.5	54	0	0
22-12-2017 16:00	163	0	25.3	54.7	0	0
22-12-2017 17:00	110	0	21.2	65	0	0
22-12-2017 18:00	103	1	20.1	82.9	0	0
22-12-2017 19:00	86	0	19.4	88.2	0	0
22-12-2017 20:00	96	1	17.2	89.8	0	0
22-12-2017 21:00	85	0	16.6	90.7	0	0
22-12-2017 22:00	85	0	14.2	92.9	0	0
22-12-2017 23:00	85	0	13.3	95.7	0	0
23-12-2017 00:00	42	0	13.1	97.3	0	0
23-12-2017 01:00	42	0	12.2	98.7	0	0
23-12-2017 02:00	42	0	11.4	99.1	0	0
23-12-2017 03:00	56	0	12.5	83.4	0	0
23-12-2017 04:00	54	0	13.1	85	0	0
23-12-2017 05:00	54	0	14.2	75	0	0
23-12-2017 06:00	54	0	15.1	95	0	0
23-12-2017 07:00	87	0	12.5	96	0	0
23-12-2017 08:00	87	0	15.2	85	0	0
23-12-2017 09:00	87	0	16.6	87	0	0
23-12-2017 10:00	89	0	19.3	87	0	0
23-12-2017 11:00	89	0	20.1	74	0	0
23-12-2017 12:00	89	0	24.2	67.1	0	0
23-12-2017 13:00	85	0	25.5	57.5	0	0
23-12-2017 14:00	85	0	26.6	52.4	0	0
23-12-2017 15:00	82	0	25.5	54.1	0	0
23-12-2017 16:00	57	0	22.1	54	0	0
23-12-2017 17:00	80	0	22.1	54.7	0	0
23-12-2017 18:00	87	0	20.1	65	0	0
23-12-2017 19:00	87	0	22.3	54	0	0

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
23-12-2017 20:00	87	0	21.2	46	0	0
23-12-2017 21:00	87	0	19.6	58	0	0
23-12-2017 22:00	58	0	15.5	58	0	0
23-12-2017 23:00	56	0	15.5	54.1	0	0
24-12-2017 00:00	65	0	14.5	54	0	0
24-12-2017 01:00	65	0	15.2	54.7	0	0
24-12-2017 02:00	65	0	13.3	65	0	0
24-12-2017 03:00	54	0	13.3	78.5	0	0
24-12-2017 04:00	52	0	12.5	78.5	0	0
24-12-2017 05:00	50	0	12.2	87.5	0	0
24-12-2017 06:00	54	0	11.7	78.7	0	0
24-12-2017 07:00	91	0	15.5	85.0	0	0
24-12-2017 08:00	86	0	16.6	75.0	0	0
24-12-2017 09:00	114	0	18.5	64.6	0	0
24-12-2017 10:00	103	0	21.2	56.4	0	0
24-12-2017 11:00	54	0	22.2	52.7	0	0
24-12-2017 12:00	58	0	23.3	50.4	0	0
24-12-2017 13:00	8	0	24.2	53.3	0	0
24-12-2017 14:00	78	0	25.2	49.9	0	0
24-12-2017 15:00	78	0	26.6	58.3	0	0
24-12-2017 16:00	7	0	24.2	77.4	0	0
24-12-2017 17:00	66	0	21.9	73.5	0	0
24-12-2017 18:00	50	0	22.1	66	0	0
24-12-2017 19:00	50	0	23.5	71.4	0	0
24-12-2017 20:00	88	0	21.2	86.8	0	0
24-12-2017 21:00	45	0	20.2	92.8	0	0
24-12-2017 22:00	45	0	18.5	94	0	0
24-12-2017 23:00	79	0	19.6	95.7	0	0
25-12-2017 00:00	84	0	17.5	94.8	0	0
25-12-2017 01:00	92	0	16.6	97.4	0	0
25-12-2017 02:00	111	0	15.5	88.0	0	0
25-12-2017 03:00	92	0	13.3	80.1	0	0
25-12-2017 04:00	92	0	15.6	70.5	0	0
25-12-2017 05:00	102	0	14.1	59.0	0	0
25-12-2017 06:00	106	0	16.8	99.6	0	0
25-12-2017 07:00	45	0	18.1	99.8	0	0
25-12-2017 08:00	45	0	19.8	83.4	0	0
25-12-2017 09:00	45	0	20.4	74	0	0
25-12-2017 10:00	65	0	23.3	67.1	0	0
25-12-2017 11:00	61	0	25.3	57.5	0	0
25-12-2017 12:00	61	0	24.2	52.4	0	0
25-12-2017 13:00	61	0	26.6	54.1	0	0
25-12-2017 14:00	68	0	24.5	54	0	0
25-12-2017 15:00	70	0	25.3	54.7	0	0
25-12-2017 16:00	87	0	21.2	65	0	0
25-12-2017 17:00	78	0	20.1	82.9	0	0
25-12-2017 18:00	72	0	19.4	88.2	0	0
25-12-2017 19:00	85	0	17.2	89.8	0	0
25-12-2017 20:00	90	1	16.6	90.7	0	0
25-12-2017 21:00	90	0	14.2	92.9	0	0

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
25-12-2017 22:00	90	0	13.3	95.7	0	0
25-12-2017 23:00	90	2.2	13.1	97.3	0	0
26-12-2017 00:00	85	2	12.2	98.7	0	0
26-12-2017 01:00	100	2	11.4	99.1	0	0
26-12-2017 02:00	100	3	12.5	83.4	0	0
26-12-2017 03:00	100	4	13.1	85	0	0
26-12-2017 04:00	89	5	14.2	75	0	0
26-12-2017 05:00	89	2	15.1	95	0	0
26-12-2017 06:00	87	3	12.5	96	0	0
26-12-2017 07:00	87	2	15.2	85	0	0
26-12-2017 08:00	87	1.6	16.6	87	0	0
26-12-2017 09:00	87	2	19.3	87	0	0
26-12-2017 10:00	81	2	20.1	74	0	0
26-12-2017 11:00	81	3	21.7	67.1	0	0
26-12-2017 12:00	81	5	22.8	57.5	0	0
26-12-2017 13:00	81	5	23.3	52.4	0	0
26-12-2017 14:00	66	0	24.2	54.1	0	0
26-12-2017 15:00	66	0	26.3	54	0	0
26-12-2017 16:00	74	0	24.2	54.7	0	0
26-12-2017 17:00	73	0	20.1	65	0	0
26-12-2017 18:00	73	0	22.3	54	0	0
26-12-2017 19:00	73	0	22.1	46	0	0
26-12-2017 20:00	73	0	22.1	58	0	0
26-12-2017 21:00	96	0	20.1	58	0	0
26-12-2017 22:00	96	0	19.3	54.1	0	0
26-12-2017 23:00	96	0	18.2	54	0	0
27-12-2017 00:00	101	0	16.3	54.7	0	0
27-12-2017 01:00	101	0	14.7	65	0	0
27-12-2017 02:00	111	0	13.3	97.5	0	0
27-12-2017 03:00	121	0	12.5	94.3	0	0
27-12-2017 04:00	121	0	12.2	90.8	0	0
27-12-2017 05:00	121	0	11.7	78.7	0	0
27-12-2017 06:00	82	0	11.8	85.0	0	0
27-12-2017 07:00	82	0	13.1	75.0	0	0
27-12-2017 08:00	82	0	14.2	64.6	0	0
27-12-2017 09:00	48	0	15.7	56.4	0	0
27-12-2017 10:00	48	0	16.8	52.7	0	0
27-12-2017 11:00	64	0	23.5	50.4	0	0
27-12-2017 12:00	64	0	26.6	53.3	0	0
27-12-2017 13:00	64	0	24.5	49.9	0	0
27-12-2017 14:00	64	0	24.2	58.3	0	0
27-12-2017 15:00	64	0	20.8	77.4	0	0
27-12-2017 16:00	71	0	21.9	73.5	0	0
27-12-2017 17:00	71	0	22.1	66	0	0
27-12-2017 18:00	71	0	23.5	71.4	0	0
27-12-2017 19:00	45	0	21.2	86.8	0	0
27-12-2017 20:00	45	1	21.2	92.8	0	0
27-12-2017 21:00	45	0	21.2	94	0	0
27-12-2017 22:00	48	0	20.2	95.7	0	0
27-12-2017 23:00	48	4	21.3	94.8	0	0

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
28-12-2017 00:00	48	2	20.6	97.4	0	0
28-12-2017 01:00	48	3	19.1	88.0	0	0
28-12-2017 02:00	69	2	17.2	80.1	0	0
28-12-2017 03:00	69	2	15.6	70.5	0	0
28-12-2017 04:00	69	2	14.1	59.0	0	0
28-12-2017 05:00	69	2	16.8	99.6	0	0
28-12-2017 06:00	72	2	18.1	99.8	0	0
28-12-2017 07:00	72	2	19.8	83.4	0	0
28-12-2017 08:00	70	0	20.4	74	0	0
28-12-2017 09:00	70	0	21.6	67.1	0	0
28-12-2017 10:00	70	0	22.3	57.5	0	0
28-12-2017 11:00	70	0	24.2	52.4	0	0
28-12-2017 12:00	98	0	23.1	54.1	0	0
28-12-2017 13:00	98	0	26.6	54	0	0
28-12-2017 14:00	98	0	25.3	54.7	0	0
28-12-2017 15:00	45	0	21.2	65	0	0
28-12-2017 16:00	45	0	20.1	82.9	0	0
28-12-2017 17:00	45	0	19.4	88.2	0	0
28-12-2017 18:00	45	4	17.2	89.8	0	0
28-12-2017 19:00	45	4	16.6	90.7	0	0
28-12-2017 20:00	92	3	14.2	92.9	0	0
28-12-2017 21:00	92	0	13.3	95.7	0	0
28-12-2017 22:00	98	4	13.1	97.3	0	0
28-12-2017 23:00	97	0	12.2	98.7	0	0
29-12-2017 00:00	85	2	11.4	99.1	0	0
29-12-2017 01:00	75	5	12.5	83.4	0	0
29-12-2017 02:00	48	5	13.1	85	0	0
29-12-2017 03:00	48	0	14.2	75	0	0
29-12-2017 04:00	45	0	15.1	95	0	0
29-12-2017 05:00	74	0	12.5	96	0	0
29-12-2017 06:00	97	0	15.2	85	0	0
29-12-2017 07:00	85	0	16.6	87	0	0
29-12-2017 08:00	72	0	19.3	87	0	0
29-12-2017 09:00	74	0	20.1	74	0	0
29-12-2017 10:00	74	3	21.7	67.1	0	0
29-12-2017 11:00	72	0	22.8	57.5	0	0
29-12-2017 12:00	74	0	23.3	52.4	0	0
29-12-2017 13:00	74	0	24.2	54.1	0	0
29-12-2017 14:00	88	0	25.5	54	0	0
29-12-2017 15:00	70	0	22.1	54.7	0	0
29-12-2017 16:00	70	0	20.1	65	0	0
29-12-2017 17:00	71	0	22.3	54	0	0
29-12-2017 18:00	112	0	22.1	46	0	0
29-12-2017 19:00	112	0	22.1	58	0	0
29-12-2017 20:00	111	0	20.1	58	0	0
29-12-2017 21:00	111	0	19.3	54.1	0	0
29-12-2017 22:00	111	0	18.2	54	0	0
29-12-2017 23:00	111	0	16.3	54.7	0	0
30-12-2017 00:00	111	0	14.7	65	0	0
30-12-2017 01:00	93	3	13.3	97.5	0	0

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
30-12-2017 02:00	93	0	12.5	94.3	0	0
30-12-2017 03:00	93	0	12.2	90.8	0	0
30-12-2017 04:00	84	0	11.7	78.7	0	0
30-12-2017 05:00	84	0	11.8	85.0	0	0
30-12-2017 06:00	84	0	13.1	75.0	0	0
30-12-2017 07:00	84	0	14.2	64.6	0	0
30-12-2017 08:00	55	4	15.7	56.4	0	0
30-12-2017 09:00	55	0	16.8	52.7	0	0
30-12-2017 10:00	55	3	17.2	50.4	0	0
30-12-2017 11:00	55	0	18.1	53.3	0	0
30-12-2017 12:00	65	4	24.2	49.9	0	0
30-12-2017 13:00	65	0	25.5	58.3	0	0
30-12-2017 14:00	63	0	26.6	77.4	0	0
30-12-2017 15:00	64	0	24.2	73.5	0	0
30-12-2017 16:00	64	0	22.1	66	0	0
30-12-2017 17:00	35	1	23.5	71.4	0	0
30-12-2017 18:00	35	3	21.2	86.8	0	0
30-12-2017 19:00	57	3	20.2	92.8	0	0
30-12-2017 20:00	57	1	21.2	94	0	0
30-12-2017 21:00	57	0.5	19.5	95.7	0	0
30-12-2017 22:00	49	0	19.6	94.8	0	0
30-12-2017 23:00	49	4.5	18.5	97.4	0	0
31-12-2017 00:00	90	2.2	19.1	88.0	0	0
31-12-2017 01:00	70	2	17.2	80.1	0	0
31-12-2017 02:00	96	2	15.6	70.5	0	0
31-12-2017 03:00	118	3	14.1	59.0	0	0
31-12-2017 04:00	96	3	16.8	99.6	0	0
31-12-2017 05:00	96	3	18.1	99.8	0	0
31-12-2017 06:00	96	0.5	19.8	83.4	0	0
31-12-2017 07:00	96	1	20.4	74	0	0
31-12-2017 08:00	72	0.8	21.6	67.1	0	0
31-12-2017 09:00	74	1.2	22.3	57.5	0	0
31-12-2017 10:00	74	0	24.2	52.4	0	0
31-12-2017 11:00	72	0	23.1	54.1	0	0
31-12-2017 12:00	74	0	25.5	54	0	0
31-12-2017 13:00	74	0	26.6	54.7	0	0
31-12-2017 14:00	88	0	27.5	65	0	0
31-12-2017 15:00	70	0	25.2	82.9	0	0
31-12-2017 16:00	70	0	23.3	88.2	0	0
31-12-2017 17:00	71	0	20.2	89.8	0	0
31-12-2017 18:00	71	0	16.6	90.7	0	0
31-12-2017 19:00	71	0	14.2	92.9	0	0
31-12-2017 20:00	65	0	13.3	95.7	0	0
31-12-2017 21:00	65	0	13.1	97.3	0	0
31-12-2017 22:00	75	0	12.2	98.7	0	0
31-12-2017 23:00	45	1	11.4	99.1	0	0
01-01-2018 01:00	43	1	12.5	83.4	0	0
01-01-2018 02:00	45	3	13.1	85	0	0
01-01-2018 03:00	81	0	14.2	75	0	0
01-01-2018 04:00	110	1	15.1	95	0	0

Date and Time	Wind Direction (Deg)	Wind Speed (km/h)	Temperature (°C)	Relative Humidity (%)	Rainfall (mm)	Cloud Cover (oktas)
01-01-2018 05:00	125	1	12.5	96	0	0
01-01-2018 06:00	90	0	15.2	85	0	0
01-01-2018 07:00	70	0	16.6	87	0	0
01-01-2018 08:00	96	0	19.3	87	0	0
01-01-2018 09:00	118	2	20.1	74	0	0
01-01-2018 10:00	96	0	21.7	67.1	0	0
01-01-2018 11:00	96	0	22.8	57.5	0	0
01-01-2018 12:00	96	0	23.3	52.4	0	0
01-01-2018 13:00	96	0	22.3	54.1	0	0
01-01-2018 14:00	72	0	24.2	54	0	0
01-01-2018 15:00	74	0	25.5	54.7	0	0
01-01-2018 16:00	74	0	20.1	65	0	0
01-01-2018 17:00	88	0	22.3	54	0	0
01-01-2018 18:00	70	0	22.1	46	0	0
01-01-2018 19:00	96	0	22.1	58	0	0
01-01-2018 20:00	106	4	23.3	54	0	0

Annexure 3.3

Primary Air Monitoring Data Collected for the Study

Sl. No.	Date of Monitoring	Concentration of Pollutants							
		PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	CO (mg/m ³)	Hydrocarbon (ppm)	Hydrocarbon (as Non-Methane) ppm	VOC (µg/m ³)
	AAQ-1 Agbondhagaon								
1	02.10.17	66	38	5.4	21.8	0.53	0.67	<0.5	<2.08
2	05.10.17	78	50	5.2	23.6	0.62	0.73	<0.5	<2.08
3	09.10.17	86	54	6.8	26.3	0.68	0.77	<0.5	<2.08
4	12.10.17	76	35	6.3	12.2	0.4	1.25	<0.1	<2.08
5	16.10.17	80	36	6.6	25.6	0.28	1.88	<0.5	<2.08
6	19.10.17	75	32	7.3	16.6	0.35	1.03	<0.5	<2.08
7	23.10.17	54	30	8.2	20.2	0.42	1.98	<0.5	<2.08
8	26.10.17	68	38	5.5	14.2	0.52	2.01	<0.5	<2.08
9	30.10.17	92	56	4.6	15.5	0.21	1.65	<0.5	<2.08
10	2.11.17	45	27	6.6	21.2	0.15	1.48	<0.5	<2.08
11	6.11.17	57	34	5.2	17.8	0.16	1.65	<0.5	4.6
12	9.11.17	133	65	5.6	11.2	0.21	1.32	<0.5	<2.08
13	13.11.17	78	42	4.8	13.5	0.24	1.2	<0.5	<2.08
14	16.11.17	81	50	5.2	18.5	0.23	1.08	<0.5	<2.08
15	20.11.17	98	57	6.6	24.8	0.29	2.11	<0.5	3.7
16	23.11.17	74	37	7.5	20.2	0.34	1.22	<0.5	<2.08
17	27.11.17	68	36	5.8	14.2	0.25	1.66	<0.5	<2.08
18	30.11.17	78	40	6.5	16.6	0.48	3.22	<0.5	<2.08
19	4.12.17	48	28	4.8	18.7	0.50	2.88	<0.5	<2.08
20	7.12.17	58	30	4.5	19.6	0.22	2.02	<0.5	<2.08
21	11.12.17	68	35	5.2	20.2	0.32	1.55	<0.5	4.2
22	14.12.17	135	72	4.5	15.5	0.25	2.11	<0.5	<2.08
23	18.12.17	54	26	6.5	16.6	0.54	2.55	<0.5	<2.08
24	21.12.17	49	22	4.8	10.2	0.46	18.5	<0.5	<2.08
	AQ2 Philkhana								
1	03.10.17	37	16	4.2	13.3	0.16	1.66	<0.1	<2.08
2	06.10.17	29	14	4.5	14.2	0.22	1.02	<0.1	<2.08
3	10.10.17	84	48	6.8	23.8	0.65	0.72	<0.5	<2.08

Sl. No.	Date of Monitoring	Concentration of Pollutants							
		PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	CO (mg/m ³)	Hydrocarbon (ppm)	Hydrocarbon (as Non-Methane) ppm	VOC (µg/m ³)
4	13.10.17	79	46	6.4	22.7	0.67	0.78	<0.5	<2.08
5	17.10.17	56	29	6.6	19.9	0.32	1.78	<0.5	<2.08
6	20.10.17	65	38	4.8	13.6	0.16	1.03	<0.5	<2.08
7	24.10.17	95	54	6.6	21	0.26	1.22	<0.5	<2.08
8	27.10.17	54	26	5.2	10.2	0.33	2.01	<0.5	<2.08
9	31.10.17	46	28	4.6	16.3	0.25	1.99	<0.5	<2.08
10	3.11.17	42	24	7.2	13.3	0.34	2.2	<0.5	2.3
11	7.11.17	50	28	6.5	25.2	0.21	1.36	<0.5	<2.08
12	10.11.17	44	26	4.5	26.6	0.18	1.45	<0.5	<2.08
13	14.11.17	57	29	5.5	21.2	0.24	1.58	<0.5	<2.08
14	17.11.17	123	65	8.5	26.6	0.66	1.21	<0.5	4.0
15	21.11.17	65	36	6.3	11.2	0.16	1.99	<0.5	<2.08
16	24.11.17	48	27	7.8	24.2	0.18	1.65	<0.5	<2.08
17	28.11.17	55	30	6.2	15.2	0.32	1.03	<0.5	<2.08
18	1.12.17	122	66	4.2	26.6	0.64	2.66	<0.5	4.6
19	5.12.17	55	20	5.2	13.3	0.24	1.42	<0.5	<2.08
20	8.12.17	60	31	6.6	21.2	0.16	1.36	<0.5	2.7
21	12.12.17	69	37	4.5	23.9	0.31	1.58	<0.5	<2.08
22	15.12.17	87	40	5.9	16.6	0.32	1.65	<0.5	<2.08
23	19.12.17	47	27	4.8	19.5	0.25	2.05	<0.5	<2.08
24	22.12.17	40	24	5.5	24.2	0.19	1.25	<0.5	<2.08
	AQ3 15 No. Line Dirok Tea Estate								
1	03.10.17	40	24	5.6	18.5	0.21	1.01	<0.1	<2.08
2	06.10.17	56	26	4.8	20.2	0.35	1.75	<0.1	<2.08
3	10.10.17	70	38	5.8	22.6	0.55	0.67	<0.5	<2.08
4	13.10.17	79	42	6.7	24.5	0.58	0.62	<0.5	<2.08
5	17.10.17	92	45	6.8	28.5	0.39	2.31	<0.5	<2.08
6	20.10.17	124	65	7.2	14.2	0.16	1.08	<0.5	<2.08
7	24.10.17	45	26	6.3	21.2	0.23	1.99	<0.5	<2.08

Sl. No.	Date of Monitoring	Concentration of Pollutants							
		PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	CO (mg/m ³)	Hydrocarbon (ppm)	Hydrocarbon (as Non-Methane) ppm	VOC (µg/m ³)
8	27.10.17	62	35	5.2	20.7	0.21	1.2	<0.5	<2.08
9	31.10.17	82	44	4.5	16.6	0.33	1.03	<0.5	<2.08
10	3.11.17	69	32	4.1	18.5	0.41	2.11	<0.5	<2.08
11	7.11.17	95	55	6.3	13.3	0.19	1.06	<0.5	<2.08
12	10.11.17	105	58	7.5	21.0	0.16	2.33	<0.5	2.4
13	14.11.17	54	28	5.2	20.7	0.24	2.03	<0.5	<2.08
14	17.11.17	48	26	4.6	15.5	0.12	1.66	<0.5	<2.08
15	21.11.17	132	72	6.8	21.5	0.33	1.88	<0.5	2.7
16	24.11.17	78	41	5.2	20.9	0.21	2.11	<0.5	<2.08
17	28.11.17	85	50	4.8	21.2	0.18	1.21	<0.5	<2.08
18	1.12.17	59	32	4.3	12.2	0.16	1.08	<0.5	<2.08
19	5.12.17	54	30	5.6	10.3	0.21	1.09	<0.5	<2.08
20	8.12.17	89	42	6.2	26.6	0.33	1.03	<0.5	4.1
21	12.12.17	48	25	7.2	14.2	0.33	1.01	<0.5	<2.08
22	15.12.17	67	37	5.8	15.9	0.27	1.07	<0.5	<2.08
23	19.12.17	46	28	5.2	20.2	0.33	2.01	<0.5	<2.08
24	22.12.17	69	36	4.6	17.5	0.21	1.15	<0.5	<2.08
	AQ4- Khagoripathar								
1	03.10.17	93	38	7.5	34.2	0.45	1.66	<0.1	<2.08
2	06.10.17	65	30	6.36	21.2	0.33	1.26	<0.1	<2.08
3	10.10.17	85	47	6.8	26.3	0.68	0.73	<0.5	<2.08
4	13.10.17	72	38	5.6	20.7	0.53	0.65	<0.5	<2.08
5	17.10.17	57	26	5.6	18.9	0.26	1.75	<0.5	<2.08
6	20.10.17	48	23	7.2	26.6	0.34	1.81	<0.5	<2.08
7	24.10.17	62	34	4.8	16	0.21	1.2	<0.5	<2.08
8	27.10.17	70	38	5.2	20.2	0.15	1.99	<0.5	<2.08
9	31.10.17	85	45	4.6	18.5	0.16	1.78	<0.5	<2.08
10	3.11.17	79	36	6.3	19.6	0.24	2.22	<0.5	<2.08
11	7.11.17	62	39	6.7	21.2	0.28	1.99	<0.5	<2.08

Sl. No.	Date of Monitoring	Concentration of Pollutants							
		PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	CO (mg/m ³)	Hydrocarbon (ppm)	Hydrocarbon (as Non-Methane) ppm	VOC (µg/m ³)
12	10.11.17	58	30	5.5	17.5	0.29	2.11	<0.5	<2.08
13	14.11.17	71	36	7.2	16.6	0.31	1.33	<0.5	4.2
14	17.11.17	85	42	6.3	15.0	0.36	1.09	<0.5	<2.08
15	21.11.17	91	56	5.4	14.3	0.44	1.24	<0.5	<2.08
16	24.11.17	62	32	4.2	12.3	0.28	1.02	<0.5	<2.08
17	28.11.17	45	27	5.2	19.0	0.32	2.33	<0.5	3.3
18	1.12.17	58	30	6.6	16.6	0.25	1.9	<0.5	<2.08
19	5.12.17	56	29	5.9	21.2	0.29	1.66	<0.5	<2.08
20	8.12.17	62	34	8.5	20.3	0.13	1.88	<0.5	<2.08
21	12.12.17	72	36	4.2	18.5	0.32	1.06	<0.5	<2.08
22	15.12.17	99	50	5.2	19.6	0.19	1.99	<0.5	2.3
23	19.12.17	88	46	4.6	21.2	0.21	2.06	<0.5	<2.08
24	22.12.17	54	29	4.7	16.6	0.32	1.55	<0.5	<2.08
	AQ5 Makum Kila								
1	04.10.17	32	16	4.8	21.2	0.22	1.23	<0.1	<2.08
2	07.10.17	73	34	5.5	31.2	0.65	1.11	<0.1	<2.08
3	11.10.17	72	43	7.5	26.8	0.67	0.78	<0.5	<2.08
4	14.10.17	77	45	6.8	25.7	0.63	0.74	<0.5	<2.08
5	18.10.17	76	34	6.2	24.2	0.45	1.44	<0.5	<2.08
6	21.10.17	92	54	8.2	20.2	0.66	1.66	<0.5	<2.08
7	25.10.17	65	37	5.5	15.5	0.42	2.33	<0.5	<2.08
8	28.10.17	122	69	4.6	16.6	0.46	1.66	<0.5	<2.08
9	01.11.17	65	34	4.8	21.2	0.30	2.15	<0.5	3.3
10	4.11.17	54	29	5.2	18.5	0.21	1.66	<0.5	<2.08
11	8.11.17	48	26	4.6	24.6	0.28	2.33	<0.5	<2.08
12	11.11.17	52	30	6.3	16.6	0.24	1.88	<0.5	<2.08
13	15.11.17	40	24	4.8	18.5	0.18	1.05	<0.5	<2.08
14	18.11.17	132	65	8.6	23.6	0.54	2.33	<0.5	5.2
15	22.11.17	65	31	6.6	21.2	0.13	1.11	<0.5	<2.08

Sl. No.	Date of Monitoring	Concentration of Pollutants							
		PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	CO (mg/m ³)	Hydrocarbon (ppm)	Hydrocarbon (as Non-Methane) ppm	VOC (µg/m ³)
16	25.11.17	85	45	7.5	18.5	0.18	2.01	<0.5	<2.08
17	29.11.17	79	40	8.2	19.6	0.15	1.33	<0.5	<2.08
18	2.12.17	84	46	6.6	27.5	0.24	2.22	<0.5	<2.08
19	6.12.17	62	38	7.9	18.6	0.18	1.88	<0.5	<2.08
20	9.12.17	57	30	8.1	16.6	0.16	1.66	<0.5	<2.08
21	13.12.17	98	55	5.6	20.2	0.21	1.24	<0.5	<2.08
22	16.12.17	51	27	7.6	12.2	0.31	1.22	<0.5	3.7
23	20.12.17	68	31	4.5	16.6	0.18	1.05	<0.5	<2.08
24	23.12.17	71	38	4.6	15.5	0.25	1.99	<0.5	<2.08
	AQ6 Janglu Kuruka								
1	04.10.17	35	17	5.5	19.6	0.44	1.1	<0.1	<2.08
2	07.10.17	44	20	4.8	20.2	0.16	1.3	<0.1	<2.08
3	11.10.17	75	41	6.7	21.8	0.57	0.67	<0.5	<2.08
4	14.10.17	68	39	5.8	19.7	0.52	0.58	<0.5	<2.08
5	18.10.17	60	32	5.8	26.3	0.38	2.15	<0.5	<2.08
6	21.10.17	114	56	7.5	23.8	0.45	1.92	<0.5	<2.08
7	25.10.17	57	25	6.3	15.5	0.21	2.01	<0.5	<2.08
8	28.10.17	132	68	7.5	21.0	0.26	1.58	<0.5	<2.08
9	01.11.17	87	45	8.2	16.6	0.31	1.06	<0.5	<2.08
10	4.11.17	78	43	7.9	18.6	0.34	1.33	<0.5	<2.08
11	8.11.17	62	37	6.6	19.2	0.26	2.10	<0.5	<2.08
12	11.11.17	55	29	5.2	24.2	0.18	1.66	<0.5	<2.08
13	15.11.17	118	68	4.8	15.5	0.21	1.28	<0.5	<2.08
14	18.11.17	62	36	6.2	10.2	0.26	1.24	<0.5	3.0
15	22.11.17	98	54	5.6	13.3	0.28	1.58	<0.5	<2.08
16	25.11.17	77	48	6.2	15.2	0.19	2.01	<0.5	<2.08
17	29.11.17	64	38	4.8	12.2	0.21	1.66	<0.5	<2.08
18	2.12.17	98	54	6.5	16.2	0.29	1.84	<0.5	<2.08
19	6.12.17	57	29	7.3	14.5	0.31	1.22	<0.5	4.2

Sl. No.	Date of Monitoring	Concentration of Pollutants							
		PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	CO (mg/m ³)	Hydrocarbon (ppm)	Hydrocarbon (as Non-Methane) ppm	VOC (µg/m ³)
20	9.12.17	64	36	8.2	16.3	0.13	1.32	<0.5	<2.08
21	13.12.17	87	46	5.6	18.5	0.15	1.25	<0.5	3.2
22	16.12.17	58	30	6.2	17.5	0.21	1.88	<0.5	<2.08
23	20.12.17	87	43	4.8	16.6	0.15	2.14	<0.5	<2.08
24	23.12.17	92	49	5.8	12.2	0.18	2.66	<0.5	<2.08
	AQ7 Makum Block No. 2								
1	04.10.17	86	44	7.2	20.2	0.25	1.33	<0.1	<2.08
2	07.10.17	39	18	6.5	34.2	0.22	2.22	<0.1	<2.08
3	11.10.17	77	45	6.3	22.6	0.58	0.65	<0.5	<2.08
4	14.10.17	68	37	6	23.8	0.62	0.75	<0.5	<2.08
5	18.10.17	98	58	5.8	26.6	0.58	1.88	<0.5	<2.08
6	21.10.17	46	22	4.8	17.8	0.25	1.32	<0.5	<2.08
7	25.10.17	88	51	5.5	10.2	0.15	2.22	<0.5	<2.08
8	28.10.17	46	24	9.2	15.2	0.21	2.15	<0.5	<2.08
9	01.11.17	52	28	5.5	16.0	0.26	1.55	<0.5	<2.08
10	4.11.17	34	19	4.6	25.2	0.32	1.64	<0.5	<2.08
11	8.11.17	145	75	8.2	28.5	0.62	2.4	<0.5	4.7
12	11.11.17	67	38	9.5	20.2	0.45	1.88	<0.5	<2.08
13	15.11.17	79	40	7.5	25.5	0.21	1.99	<0.5	<2.08
14	18.11.17	165	78	8.2	23.6	0.54	2.66	<0.5	4.0
15	22.11.17	45	22	4.5	12.2	0.18	3.22	<0.5	<2.08
16	25.11.17	52	30	6.2	18.5	0.22	1.88	<0.5	<2.08
17	29.11.17	68	38	4.8	24.2	0.55	2.11	<0.5	<2.08
18	2.12.17	78	41	5.5	15.5	0.26	2.45	<0.5	4.2
19	6.12.17	56	26	5.6	16.6	0.21	1.66	<0.5	<2.08
20	9.12.17	110	58	6.5	11.2	0.66	1.88	<0.5	<2.08
21	13.12.17	70	38	7.8	12.0	0.45	2.11	<0.5	<2.08
22	16.12.17	69	36	8.2	13.3	0.24	1.2	<0.5	<2.08
23	20.12.17	45	29	9.2	25.2	0.28	1.65	<0.5	<2.08

Sl. No.	Date of Monitoring	Concentration of Pollutants							
		PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	CO (mg/m ³)	Hydrocarbon (ppm)	Hydrocarbon (as Non-Methane) ppm	VOC (µg/m ³)
24	23.12.17	54	31	6.6	24.2	0.66	1.77	<0.5	<2.08
	AQ8- Golai Road								
1	02.10.17	68	43	5.3	22.5	0.44	0.57	<0.5	<2.08
2	05.10.17	59	36	5	21.8	0.37	0.48	<0.5	<2.08
3	09.10.17	79	43	6.7	24.8	0.48	0.67	<0.5	<2.08
4	12.10.17	36	14	4.5	14.2	0.33	1.45	<0.1	<2.08
5	16.10.17	66	35	7.2	16.8	0.42	1.6	<0.5	2.3
6	19.10.17	48	26	5.8	21.5	0.32	1.69	<0.5	<2.08
7	23.10.17	75	37	5.5	16.6	0.24	2.01	<0.5	<2.08
8	26.10.17	35	16	4.6	24.0	0.26	1.56	<0.5	<2.08
9	30.10.17	46	21	6.6	15.5	0.31	0.98	<0.5	<2.08
10	2.11.17	65	34	4.8	11.2	0.45	0.89	<0.5	<2.08
11	6.11.17	71	38	7.5	12.2	0.15	0.98	<0.5	<2.08
12	9.11.17	58	27	6.2	14.2	0.25	2.22	<0.5	<2.08
13	13.11.17	65	36	4.6	20.2	0.16	1.54	<0.5	<2.08
14	16.11.17	34	18	5.8	15.5	0.24	1.02	<0.5	<2.08
15	20.11.17	56	28	5.9	16.6	0.26	1.06	<0.5	<2.08
16	23.11.17	72	42	6.2	18.5	0.21	0.98	<0.5	4.2
17	27.11.17	85	46	4.8	24.2	0.24	0.78	<0.5	<2.08
18	30.11.17	65	37	5.7	25.5	0.15	2.01	<0.5	<2.08
19	4.12.17	58	27	6.4	16.0	0.18	1.33	<0.5	3.2
20	7.12.17	54	26	5.2	20.2	0.21	2.04	<0.5	<2.08
21	11.12.17	42	22	4.8	18.5	0.26	1.65	<0.5	<2.08
22	14.12.17	46	23	5.9	19.6	0.31	1.75	<0.5	<2.08
23	18.12.17	32	19	4.6	16.6	0.21	1.85	<0.5	<2.08
24	21.12.17	58	26	5.8	13.3	0.24	2.02	<0.5	<2.08

Annexure 3.4

Noise Monitoring Results

Location Code	NQ-1	NQ-2	NQ-3	NQ-4	NQ-5	NQ-6	NQ-7	NQ-8
Location Name	Likhjan Gaon	Makum 1No	Powari Mukh Gaon	Makum	Dirok Staff Colony	Dhodar Ali Rd	1no Vitor Powai Gaon	Powai Gaon
Leq dB(A) - (00.00-01.00) hrs	39.0	38.1	33.3	33.6	35.8	40.6	36.1	44.6
Leq dB(A) - (01.00-02.00) hrs	37.0	34.7	32.4	33.8	33.9	35.7	34.7	43.8
Leq dB(A) - (02.00-03.00) hrs	34.7	32.8	33.9	36.2	36.0	35.2	34.2	36.5
Leq dB(A) - (03.00-04.00) hrs	34.3	36.8	33.3	37.9	37.7	38.0	37.5	33.1
Leq dB(A) - (04.00-05.00) hrs	38.4	38.4	38.4	39.5	39.5	40.6	38.7	35.8
Leq dB(A) - (05.00-06.00) hrs	51.1	51.2	47.6	44.6	47.0	46.5	44.3	44.3
Leq dB(A) - (10.00-11.00) hrs	58.7	58.1	57.7	52.8	56.3	56.3	52.9	59.5
Leq dB(A) - (11.00-12.00) hrs	59.9	57.5	57.7	53.9	58.6	56.3	58.5	54.5
Leq dB(A) - (12.00-13.00) hrs	57.3	53.7	57.2	56.0	57.0	58.5	58.0	52.0
Leq dB(A) - (13.00-14.00) hrs	55.9	56.8	57.1	52.0	58.8	55.3	56.8	55.0
Leq dB(A) - (14.00-15.00) hrs	55.0	54.6	57.6	50.0	53.4	55.9	58.1	58.1
Leq dB(A) - (15.00-16.00) hrs	49.5	49.5	55.4	49.0	56.2	56.9	55.2	57.4
Leq dB(A) - (16.00-17.00) hrs	51.9	48.0	51.4	45.7	49.5	48.9	51.0	53.5
Leq dB(A) - (17.00-18.00) hrs	49.8	45.5	47.9	46.0	49.4	45.8	47.5	54.6
Leq dB(A) - (18.00-19.00) hrs	45.1	48.4	48.6	47.2	50.4	44.1	47.3	47.6
Leq dB(A) - (19.00-20.00) hrs	46.0	47.4	52.7	52.2	48.8	47.9	47.9	49.7
Leq dB(A) - (20.00-21.00) hrs	44.9	52.4	50.6	54.3	40.2	47.2	45.7	50.6
Leq dB(A) - (21.00-22.00) hrs	49.2	54.3	49.9	53.5	42.9	46.6	50.3	49.8
Leq dB(A) - (22.00-23.00) hrs	54.3	53.9	45.6	48.8	42.2	47.5	51.8	49.9
Leq dB(A) - (23.00-00.00) hrs	50.4	54.6	47.0	48.3	41.7	49.4	50.2	49.2
Leq dB(A) - (6.00-7.00) hrs	39.5	48.3	43.8	46.2	43.2	45.4	43.3	49.3
Leq dB(A) - (7.00-8.00) hrs	41.8	47.0	45.9	43.3	39.4	45.2	43.0	53.1
Leq dB(A) - (8.00-9.00) hrs	41.1	44.5	39.2	41.0	40.4	43.8	41.0	49.5
Leq dB(A) - (9.00-10.00) hrs	45.0	43.3	37.4	36.6	37.4	39.1	43.8	44.7

Time (In Hrs.)

Annexure 3.5

Primary Traffic Monitoring Data

LOCATION : Likhajan` UP					NON-MOTORIZED VEHICLES		
SL. NO.	TIME (Hours)	MOTORIZED VEHICLES			TOTAL	PCU	
		Heavy Motor Vehicles	Light Motor Vehicles	Two/Three Wheelers			
		(Truck, Bus, Dumper, Tanker, Trailer)	(Car, Jeep, Van, Metador, Tractor, Tempo, Mini Bus)	(Scooter, Motor Cycle, Auto, Moped)			(Bicycle, Tricycle)
1	9.00-10.00	9	21	25	17	72	101.1
2	10.00-11.00	4	18	27	13	62	77.8
3	11.00-12.00	7	25	28	15	75	104.9
4	12.00-13.00	2	19	19	12	52	66.4
5	13.00-14.00	3	17	25	11	56	70.1
6	14.00-15.00	11	21	16	16	64	100.7
7	15.00-16.00	5	20	30	20	75	89.5
8	16.00-17.00	3	27	26	26	82	95.9
9	17.00-18.00	12	15	21	15	63	94.8
10	18.00-19.00	7	16	19	17	59	78.3
11	19.00-20.00	4	11	17	6	38	53
12	20.00-21.00	9	15	11	5	40	74.3
13	21.00-22.00	2	90	9	2	103	212.6
14	22.00-23.00	1	0	6	0	7	8.3
15	23.00-00.00	0	0	0	0	0	0
16	00.00-01.00	0	0	0	0	0	0
17	01.00-02.00	0	0	0	0	0	0
18	02.00-03.00	0	0	0	0	0	0
19	03.00-04.00	0	0	0	0	0	0
20	04.00-05.00	0	0	0	0	0	0
21	05.00-06.00	0	0	0	0	0	0
22	06.00-07.00	0	6	0	0	6	13.2
23	07.00-08.00	9	9	7	9	34	58.7
24	08.00-09.00	12	27	27	21	87	127.2
Total		100	357	313	205	975	1426.8

LOCATION :Likhajan Down							
SL. NO.	TIME (Hours)	MOTORIZED VEHICLES			NON-MOTORIZED VEHICLES (Bicycle, Tricycle)	TOTAL	PCU
		Heavy Motor Vehicles	Light Motor Vehicles	Two/Three Wheelers			
		(Truck,Bus,Dumper, Tanker,Trailer)	(Car,Jeep, Van, Metador, Tractor, Tempo, Mini Bus)	(Scooter, Motor Cycle, Auto, Moped)			
1	9.00-10.00	3	18	26	15	62	73.9
2	10.00-11.00	2	21	24	12	59	74.8
3	11.00-12.00	7	26	34	17	84	112.3
4	12.00-13.00	2	11	19	10	42	48.4
5	13.00-14.00	0	20	16	14	50	59.6
6	14.00-15.00	3	19	27	19	68	77.7
7	15.00-16.00	9	17	30	23	79	97.5
8	16.00-17.00	10	23	26	21	80	110.6
9	17.00-18.00	5	22	19	11	57	83.3
10	18.00-19.00	3	17	21	2	43	65.1
11	19.00-20.00	2	27	20	1	50	82.6
12	20.00-21.00	7	16	9	0	32	66.9
13	21.00-22.00	4	9	11	0	24	42.6
14	22.00-23.00	0	11	6	0	17	29
15	23.00-00.00	0	6	2	0	8	14.8
16	00.00-01.00	0	0	0	0	0	0
17	01.00-02.00	0	0	0	0	0	0
18	02.00-03.00	0	0	0	0	0	0
19	03.00-04.00	0	0	0	0	0	0
20	04.00-05.00	0	0	0	0	0	0
21	05.00-06.00	0	0	0	0	0	0
22	06.00-07.00	1	0	0	5	6	4.5
23	07.00-08.00	5	17	7	17	46	63.9
24	08.00-09.00	11	27	35	26	99	131.1
Total		74	307	332	193	906	1238.6

LOCATION : Barua Garnt (UP)							
SL. NO.	TIME (Hours)	MOTORIZED VEHICLES			NON-MOTORIZED VEHICLES (Bicycle, Tricycle)	TOTAL	PCU
		Heavy Motor Vehicles	Light Motor Vehicles	Two/Three Wheelers			
		(Truck, Bus, Dumper, Tanker, Trailer)	(Car, Jeep, Van, Metador, Tractor, Tempo, Mini Bus)	(Scooter, Motor Cycle, Auto, Moped)			
1	9.00-10.00	6	27	30	19	82	108.2
2	10.00-11.00	5	21	29	21	76	91.1
3	11.00-12.00	12	26	26	23	87	124.6
4	12.00-13.00	7	30	20	13	70	109.1
5	13.00-14.00	4	19	19	17	59	74.4
6	14.00-15.00	3	27	27	19	76	95.3
7	15.00-16.00	10	31	30	15	86	130.2
8	16.00-17.00	13	40	35	21	109	165.7
9	17.00-18.00	11	39	37	11	98	156.1
10	18.00-19.00	14	19	21	15	69	110.6
11	19.00-20.00	7	27	23	7	64	103.7
12	20.00-21.00	6	20	17	4	47	79.4
13	21.00-22.00	5	19	13	2	39	70.1
14	22.00-23.00	4	11	6	0	21	43
15	23.00-00.00	1	6	0	0	7	16.7
16	00.00-01.00	0	0	0	0	0	0
17	01.00-02.00	0	0	0	0	0	0
18	02.00-03.00	0	0	0	0	0	0
19	03.00-04.00	0	0	0	0	0	0
20	04.00-05.00	0	0	0	0	0	0
21	05.00-06.00	0	0	0	0	0	0
22	06.00-07.00	2	2	9	0	13	18.6
23	07.00-08.00	6	17	17	9	49	73.8
24	08.00-09.00	13	20	20	19	72	109.3
Total		129	401	379	215	1124	1679.9

LOCATION :: Barua Grant (Down)							
SL. NO.	TIME (Hours)	MOTORIZED VEHICLES			NON-MOTORIZED VEHICLES (Bicycle, Tricycle)	TOTAL	PCU
		Heavy Motor Vehicles	Light Motor Vehicles	Two/Three Wheelers			
		(Truck,Bus,Dumper, Tanker,Trailer)	(Car,Jeep,Van,Metador, Tractor,Tempo,Mini Bus)	(Scooter, Motor Cycle, Auto, Moped)			
1	9.00-10.00	5	23	29	19	76	95.1
2	10.00-11.00	4	20	26	22	72	83.2
3	11.00-12.00	6	24	19	27	76	94.4
4	12.00-13.00	11	27	17	13	68	114.1
5	13.00-14.00	13	17	27	10	67	106.5
6	14.00-15.00	6	25	30	12	73	102.4
7	15.00-16.00	12	29	19	14	74	123.8
8	16.00-17.00	7	35	27	15	84	126.1
9	17.00-18.00	2	32	30	17	81	104.8
10	18.00-19.00	3	18	19	11	51	67.5
11	19.00-20.00	4	20	22	9	55	77.4
12	20.00-21.00	5	17	23	2	47	73.7
13	21.00-22.00	10	14	9	3	36	73.6
14	22.00-23.00	1	9	2	0	12	24.9
15	23.00-00.00	0	4	0	0	4	8.8
16	00.00-01.00	0	1	0	0	1	2.2
17	01.00-02.00	0	0	0	0	0	0
18	02.00-03.00	0	0	0	0	0	0
19	03.00-04.00	0	0	0	0	0	0
20	04.00-05.00	0	0	0	0	0	0
21	05.00-06.00	0	0	0	0	0	0
22	06.00-07.00	2	0	0	2	4	7.4
23	07.00-08.00	6	7	10	3	26	45
24	08.00-09.00	12	27	19	11	69	118.8
Total		109	349	328	190	976	1449.7

Annexure 3.6

CPCB Water Quality Criteria

Designated Best Use	Class of Water	Criteria
Drinking Water Source without conventional treatment but after disinfection	A	<ul style="list-style-type: none"> Total Coliforms Organism MPN/100ml shall be 50 or less pH between 6.5 and 8.5 Dissolved Oxygen 6mg/l or more Biochemical Oxygen Demand 5 days 20°C 2mg/l or less
Outdoor bathing (Organised)	B	<ul style="list-style-type: none"> Total Coliforms Organism MPN/100ml shall be 500 or less pH between 6.5 and 8.5 Dissolved Oxygen 5mg/l or more Biochemical Oxygen Demand 5 days 20°C 3mg/l or less
Drinking water source after conventional treatment and disinfection	C	<ul style="list-style-type: none"> Total Coliforms Organism MPN/100ml shall be 5000 or less pH between 6 to 9 Dissolved Oxygen 4mg/l or more Biochemical Oxygen Demand 5 days 20°C 3mg/l or less
Propagation of Wild life and Fisheries	D	<ul style="list-style-type: none"> pH between 6.5 to 8.5 Dissolved Oxygen 4mg/l or more Free Ammonia (as N) 1.2 mg/l or less
Irrigation, Industrial Cooling, Controlled Waste disposal	E	<ul style="list-style-type: none"> pH between 6.0 to 8.5 Electrical Conductivity at 25°C micro mhos/cm Max.2250 Sodium absorption Ratio Max. 26 Boron Max. 2mg/l

Annexure 3.7

Formula for Calculation of IVI

Phytosociology provides frequency, abundance, density and Important Value Index (IVI) of plant species.

Importance value Index- IVI

The following formula was used to estimate the IVI

Frequency: Frequency of a species is determined as the number of individuals per sample plot.

$$\text{Frequency} = \frac{\text{Total number of individual of each species}}{\text{Number of plots in which the species occurred}}$$

Density: Density is defined as the number of individuals of a species in a unit area and is an expression of the numerical strength of a species in a community. The density was calculated from the data sampled using the formula.

$$\text{Density} = \frac{\text{Total number of individuals}}{\text{Total number of quadrates studied}}$$

Dominance: It was calculated using Girth at Breast Height (GBH) in the following standard equation:

$$\text{Dominance/ Basal Area} = 0.00007854 \times \text{DBH}^2$$

Relative Density: Relative density (RD) is the study of numerical strength of a species in relation to total number of all species and is calculated as:

$$\text{Relative Density} = \frac{\text{Number of individuals of each species}}{\text{Total number of individuals of all species}} \times 100$$

Relative Dominance: The relative basal area was calculated using the following formula:

$$\text{Relative Dominance} = \frac{\text{Basal area of each species}}{\text{Total basal area of all species}} \times 100$$

Annexure 3.8

List of Plant Species Present in Study
Area

Sl. No.	Scientific Name	Common Name
	Trees	
1.	<i>Actinodaphne angustifolia</i>	
2.	<i>Adina polycephala</i>	
3.	<i>Aegle marmelos</i>	
4.	<i>Ailanthus grandis</i>	
5.	<i>Alangium chinensie</i>	Chikamorolia
6.	<i>Albizia chinensis</i>	
7.	<i>Albizia lebeck</i>	
8.	<i>Albizia procera</i>	Boga koro
9.	<i>Aleurites fordii</i>	Tang
10.	<i>Alstonia scholaris</i>	Chotiona
11.	<i>Altingia excelsa</i>	Jutuli tenga
12.	<i>Aquilaria malaccensis</i>	Sasi
13.	<i>Ardisia depressa</i>	
14.	<i>Areca catechu</i>	
15.	<i>Artocarpus chaplasha</i>	Cham kothal
16.	<i>Artocarpus heterophyllus</i>	
17.	<i>Azadirachta indica</i>	
18.	<i>Baccaurea sapida</i>	Leteku
19.	<i>Bischofia javanica</i>	
20.	<i>Bombax ceiba</i>	
21.	<i>Bridelia pubescens</i>	
22.	<i>Canarium bengalense</i>	Dhuna
23.	<i>Caryota urens</i>	
24.	<i>Castanopsis indica</i>	Hingori
25.	<i>Cinamomum obtusifolium</i>	Noga Dalchini
26.	<i>Cocos nucifera</i>	
27.	<i>Crypteronia paniculata</i>	
28.	<i>Cryptocarya floribunda</i>	
29.	<i>Dendrocalamus alliarium</i>	Gendheli Poma
30.	<i>Dendrocalamus procerum</i>	Lali amari
31.	<i>Dendrocalamus variegata</i>	Koliori
32.	<i>Dendrocalamus hamiltonii</i>	Kako Bah
33.	<i>Dillenia indica</i>	
34.	<i>Diospyros lanceaefolia</i>	Kendu Gach
35.	<i>Dipterocarpus retusus</i>	Holong
36.	<i>Drimycarpus recemosus</i>	Amsia
37.	<i>Duabanga grandiflora</i>	
38.	<i>Dysoxylum binectiferum</i>	Bandardima

Sl. No.	Scientific Name	Common Name
39.	<i>Eleocarpus ganitus</i>	Rudraksha
40.	<i>Eucalyptus sp.</i>	
41.	<i>Ficus fistulosa</i>	
42.	<i>Ficus glaberrima</i>	
43.	<i>Ficus hispida</i>	
44.	<i>Ficus religiosa</i>	
45.	<i>Garcinia lanceafolia</i>	Rupohi Thekera
46.	<i>Garcinia xanthochymus</i>	Tepor tenga
47.	<i>Garcinia cowa</i>	Thekera
48.	<i>Gmelina arborea</i>	
49.	<i>Juglans regia</i>	Kathbadam
50.	<i>Lagerstroemia elongata</i>	Petari chua
51.	<i>Lagerstroemia lanuginosa</i>	
52.	<i>Lagerstroemia reticulata</i>	
53.	<i>Lagerstroemia sabifera</i>	Baghnola
54.	<i>Lagerstroemia thomsonii</i>	
55.	<i>Lagerstroemia speciosa</i>	Ajar
56.	<i>Lannea grandis</i>	
57.	<i>Litchi chinensis</i>	
58.	<i>Litsea citrata</i>	Mezankori
59.	<i>Livistona jenkinsiana</i>	
60.	<i>Michelia manii</i>	Kothal chopra
61.	<i>Michelia. montana</i>	
62.	<i>Michelia oblonga</i>	Ful chopra,
63.	<i>Maesa indica</i>	Machpora
64.	<i>Magnolia sphenocarpa</i>	Doloi Chopra
65.	<i>Mallotus alba</i>	Morolia gach
66.	<i>Mangifera indica</i>	Aam
67.	<i>Mangifera sylvatica</i>	
68.	<i>Mecaranga denticulatum</i>	
69.	<i>Melia azedarach</i>	
70.	<i>Mesua ferrea</i>	Nahor
71.	<i>Michelia champaca</i>	Tita chopra
72.	<i>Michelia hodgsonii</i>	Borhmothuri
73.	<i>Millettia cinerea</i>	Bokol Bih
74.	<i>Moringa oleifera</i>	
75.	<i>Musa sp.</i>	
76.	<i>Neolamarckia cadamba</i>	
77.	<i>Olea dioica</i>	
78.	<i>Ormosia robusta</i>	

Sl. No.	Scientific Name	Common Name
79.	<i>Oroxylum indicum</i>	
80.	<i>Peltophorum pterocarpum</i>	
81.	<i>Phoebe lanceolata</i>	Bon chom
82.	<i>Phyllanthus emblica</i>	
83.	<i>Polyathea jenkinsii</i>	Titasachi
84.	<i>Pongamia pinnata</i>	
85.	<i>Premna bengalensis</i>	Gohora
86.	<i>Pterospermum chelonides</i>	
87.	<i>Randia griffithii</i>	
88.	<i>Sapium baccatum</i>	Borkora
89.	<i>Saprosma ternatum</i>	
90.	<i>Sepium baccatum</i>	
91.	<i>Shorea assamica</i>	Mekai
92.	<i>Sterculia balanghuas</i>	Hijol
93.	<i>Stereospermum chelonides</i>	
94.	<i>Syzigium cumini</i>	Borjamuk
95.	<i>Syzigium reticulatum</i>	
96.	<i>Syzygium oblatum</i>	
97.	<i>Talauma pleocarpa</i>	Khorokia chopo
98.	<i>Teinostachyum dullooa</i>	Dolo Bah
99.	<i>Terminalia bellerica</i>	Bhumura guti
100.	<i>Terminalia myriocarpa</i>	Holokh
101.	<i>Terminalia chebula</i>	Hilikha
102.	<i>Vatica lanceafolia</i>	Morsal.
103.	<i>Ziziphus mauritiana</i>	
	Shrubs	
1.	<i>Allophylus zeylanicus</i>	
2.	<i>Blastus cochinchinensis</i>	Futkola
3.	<i>Boehmeria nivea</i>	Riha
4.	<i>Breynia patens</i>	
5.	<i>Calamus jenkinsiana</i>	Raidang bet
6.	<i>Calamus tenuis</i>	Jatibet
7.	<i>Callicarpa arborea</i>	Bonmola
8.	<i>Callicarpa longifolia</i>	
9.	<i>Camellia sinensis</i>	
10.	<i>Camellia sinensis</i>	Tea
11.	<i>Casearia veraca</i>	Bon kecheru
12.	<i>Chasalia curviflora</i>	
13.	<i>Citrus aurantium</i>	Jora tenga
14.	<i>Clerodendron colebrookianum</i>	Nefafu

Sl. No.	Scientific Name	Common Name
15.	<i>Croton caudatus</i>	Lota mahudi
16.	<i>Eranthemum album</i>	
17.	<i>Euphorbia sp.</i>	
18.	<i>Ficus clavata</i>	Dimoru
19.	<i>Fissistigma wallichii</i>	
20.	<i>Garcinia cowa</i>	Thekera
21.	<i>Goniothalamus sesquipedalis</i>	
22.	<i>Helicia nilgirica</i>	
23.	<i>Hibiscus rosa-sinensis</i>	
24.	<i>Ixora acuminata</i>	
25.	<i>Ixora villosa</i>	
26.	<i>Laportea crenulata</i>	Churat gach
27.	<i>Lasianthus lucidus</i>	
28.	<i>Leea indica</i>	Kukurathengia
29.	<i>Litsea lancifolia</i>	
30.	<i>Livistona jnkensiana</i>	Tokou goch
31.	<i>Melastoma malabethricum</i>	Ronga Phutukola
32.	<i>Mimosa himalayana</i>	Kauri kiat
33.	<i>Morinda angustifolia</i>	Akalbih
34.	<i>Myrioneuron nutans</i>	
35.	<i>Nerium indicum</i>	Korobi
36.	<i>Pericampylus incanus</i>	Garo lota
37.	<i>Phlogacanthus guttatus</i>	
38.	<i>Phlogacanthus sp.</i>	
39.	<i>Phyllanthus glauca</i>	Kola bahok
40.	<i>Pinanga gracilis</i>	Ram tamul
41.	<i>Roydsia suaviolense</i>	Modhumola
42.	<i>Schizostachyum polymorphm</i>	Bajal Banh
43.	<i>Solanum khasianum</i>	Bor vekruri
44.	<i>Spiradiclis cylindrica</i>	
45.	<i>Zallacca secunda</i>	Jengoo pat
46.	<i>Zizyphus rugosa</i>	Bon Bogori
	Herbs and Grasses	
1.	<i>Acanthus leucostachyus</i>	
2.	<i>Achyranthes aspera</i>	
3.	<i>Ageratum conyzoids</i>	
4.	<i>Alocasia forniculata</i>	
5.	<i>Alpinea bracteata</i>	
6.	<i>Amaranthus spinosa</i>	
7.	<i>Andropogon aciculatus</i>	

Sl. No.	Scientific Name	Common Name
8.	<i>Apostasia nuda</i>	
9.	<i>Aristida fusca</i>	
10.	<i>Arundinella leptochloa</i>	
11.	<i>Azolla pinnata</i>	
12.	<i>Bambusa balcooa</i>	
13.	<i>Bambusa tulda</i>	
14.	<i>Barleria cristata</i>	
15.	<i>Begonia roxburghii</i>	
16.	<i>Brassica oleracea</i>	
17.	<i>Canscora andrographiodes</i>	
18.	<i>Centella asiatica</i>	
19.	<i>Chloranthus officinalis</i>	
20.	<i>Cleome hassleriana</i>	
21.	<i>Codonacanthus pauciflorus</i>	
22.	<i>Colocasia affinis</i>	
23.	<i>Colocasia esculenta</i>	
24.	<i>Commelina obliqua</i>	
25.	<i>Costus speciosus</i>	
26.	<i>Crotalaria spectabilis</i>	
27.	<i>Curculigo orchioides</i>	
28.	<i>Cymbidium flexus</i>	
29.	<i>Diplazium esculentum</i>	
30.	<i>Dracaena petiolata</i>	
31.	<i>Dryopteris filix-mas</i>	
32.	<i>Duchesnea indica</i>	
33.	<i>Ebermaiena stacerogyne</i>	
34.	<i>Eichhornia crassipes</i>	
35.	<i>Elatostema accuminatum</i>	
36.	<i>Eupatorium odoratum</i>	
37.	<i>Evolvulus nummularius</i>	
38.	<i>Globba multiflora</i>	
39.	<i>Hedyotis costata</i>	
40.	<i>Hemizymnia fusua</i>	
41.	<i>Homalomena aromatic</i>	
42.	<i>Hypopolytrum nemorum</i>	
43.	<i>Ipomoea fistulosa</i>	
44.	<i>Laportea crenulata</i>	
45.	<i>Lasia spinosa</i>	
46.	<i>Leucas asperra</i>	
47.	<i>Ludwigia parviflora</i>	

Sl. No.	Scientific Name	Common Name
48.	<i>Malocanna baccifera</i>	
49.	<i>Marsilea minuta</i>	
50.	<i>Mimosa pudica</i>	
51.	<i>Ocimum canum</i>	
52.	<i>Oenanthes javanica</i>	
53.	<i>Panicum brevifolium</i>	
54.	<i>Panicum montanum</i>	
55.	<i>Peliosanthes violacca</i>	
56.	<i>Phrynium capitatum</i>	
57.	<i>Phrynium pubescence</i>	
58.	<i>Pistia stratiotes</i>	
59.	<i>Polygonum serrulatum</i>	
60.	<i>Ranunculus sceleratus</i>	
61.	<i>Rhopalephora scaberrima</i>	
62.	<i>Saccharum officinarum</i>	
63.	<i>Sarcopyramis nepalensis</i>	
64.	<i>Scoparia dulcis</i>	
65.	<i>Sida rhombifolia</i>	
66.	<i>Solanum indicum</i>	
67.	<i>Solanum xanthocarpum</i>	
68.	<i>Spilanthes acmella</i>	
69.	<i>Stenochlaena palustris</i>	
70.	<i>Strobilanthus flaccidifolius</i>	
71.	<i>Thyzenolena maxima</i>	
72.	<i>Xanthium strumarium</i>	
	Climbers and Woody Climbers	
1.	<i>Ampelopsis nerrifolia</i>	
2.	<i>Ampelopsis rubifolia</i>	
3.	<i>Cissampelos Pereira</i>	
4.	<i>Cyclea bicristata</i>	
5.	<i>Dalbergia pinnata</i>	
6.	<i>Derris ferruginea</i>	
7.	<i>Dioscorea bulbifera</i>	
8.	<i>Ficus villosa</i>	
9.	<i>Fissistigma wallichii</i>	
10.	<i>Gnetum scandens</i>	
11.	<i>Hoya longifolia</i>	
12.	<i>Jesminum anastomosans</i>	
13.	<i>Marsdenia tinctoria</i>	
14.	<i>Mikania micrantha</i>	

Sl. No.	Scientific Name	Common Name
15.	<i>Mimosa himalayana</i>	
16.	<i>Modecca trilobata</i>	
17.	<i>Myrioneuron smilacifolia</i>	
18.	<i>Myxopyrum smilacifolium</i>	
19.	<i>Oxymitra fornicata</i>	
20.	<i>Pericampylus glaucus</i>	
21.	<i>Piper attenuatum</i>	
22.	<i>Polygonum chinense</i>	
23.	<i>Pothos cathcartii</i>	
24.	<i>Rapidophora hookari</i>	
25.	<i>Rourea caudata</i>	
26.	<i>Rubus hamiltoni</i>	
27.	<i>Sabia limoniaceae</i>	
28.	<i>Smilax lancaefolia</i>	
29.	<i>Stemona tuberosa</i>	
30.	<i>Stephania glandulifera</i>	
31.	<i>Tetracera sarmentosa</i>	
32.	<i>Tetrastigma planicaulata</i>	
33.	<i>Thunbergia coccinea</i>	
34.	<i>Vitis capriolata</i>	

Annexure 3.9

Checklist of Reptilian Species

Sl. No.	Common Name	Scientific Name	Wildlife Schedule	IUCN Status (ver 2017-3)
1.	Common gecko	<i>Gecko gecko</i>		LC
2.	House wall lizard	<i>Hemidactylus fluviiviridis</i>		LC
3.	Common skink	<i>Mabuya carinata</i>		LC
4.	Common garden lizard	<i>Calotes versicolor</i>		LC
5.	Diard's Blind Snake	<i>Typhlops diardii</i>	IV	LC
6.	Burmese Rock Python	<i>Python molurus bivittatus</i>	I	VU
7.	Indian rock python	<i>Python molurus</i>	I	NT
8.	Buff striped keelback	<i>Amphiesma stolatum</i>	IV	LC
9.	Monocled Cobra	<i>Naja kaouthia</i>	II	LC
10.	King Cobra	<i>Ophiophagus hannah</i>	II	VU
11.	Banded krait	<i>Bungarus fassiiatus</i>	IV	LC
12.	Greater Black Kraits	<i>Bungarus niger</i>	IV	LC
13.	Spot Tailed Pit Viper	<i>Trimeresurus erythrurus</i>	IV	LC
14.	Blotched Pit Viper	<i>Ovophis monticola</i>	IV	LC
15.	Copper-headed Trinket Snake	<i>Coelognathus radiatus</i>	IV	LC
16.	Red Necked Keelback	<i>Rhabdophis subminiatus</i>	IV	LC
17.	Rat snake	<i>Ptyas mucosus</i>	II	LC
18.	Cat snake	<i>Boiga gokool</i>	IV	NE
19.	Tree snake	<i>Dendrelaphis tristis</i>	IV	LC
20.	Oriental Vine Snake	<i>Ahetulla prasinus</i>	IV	LC
21.	Common green whip snake	<i>Ahaetulla nasutus</i>	IV	LC
22.	Common Indian monitor	<i>Varanus bengalensis</i>	I	LC
23.	Common pond snake	<i>Xenochrophis piscator</i>	II	LC
24.	Assam Roofed Turtle	<i>Pangshura sylhetensis</i>	IV	EN
26.	Southeast Asian Box Turtle	<i>Cuora amboinensis</i>	IV	VU
28.	Asian Brown Tortoise	<i>Manouria emys</i>	IV	EN

Source: Forest Working Plan, Discussion with locals

Schedule – I-IV (Indian Wildlife Protection Act -1972); LC-Least Concern, NT-Near Threatened, VU-Vulnerable; EN- Endangered; NE- Not Evaluated (IUCN Version 2017-3)

Annexure 3.10

Checklist of Mammalian Species

Sl. No.	Scientific Name	Common Name	Wildlife Schedule	IUCN Category (Ver. 2017-3)
1.	<i>Hylobates hoolock</i>	Hoolock Gibbon	I	EN
2.	<i>Hystrix indica</i>	Indian Porcupine	III	LC
3.	<i>Manis crassicaudata</i>	Indian Pangolin	I	EN
4.	<i>Muntiacus muntjak</i>	Barking Deer	III	LC
5.	<i>Neofelis nebulosa</i>	Clouded Leopard	I	EN
6.	<i>Nycticebus coucang</i>	Slow Loris	I	VU
7.	<i>Panthera pardus</i>	Leopard	I	VU
8.	<i>Panthera tigris</i>	Tiger	I	EN
9.	<i>Ratufa biclour</i>	Malayan Giant Squirrel	II	NT
10.	<i>Trachypithecus pileatus</i>	Capped Langur	I	VU
11.	<i>Bandicota bengalensis</i>	Indian Mole Rat	V	NE
12.	<i>Funambulus palmuram</i>	Three-Striped Palm Squirrel		NE
13.	<i>Mus musculus</i>	House Mouse	V	LC
14.	<i>Oryctolagus coniculus</i>	Rabbit		LC
15.	<i>Pteropus giganteus</i>	Indian Flying Fox	V	LC
16.	<i>Ratus ratus</i>	Rat	V	NE
17.	<i>Elephas maximus</i>	Elephant	I	EN
18.	<i>Felis bengalensis</i>	Leopard Cat	I	NE
19.	<i>Canis aureus</i>	Golden Jackal	II	LC
20.	<i>Felis chaus</i>	Jungle Cat	II	LC
21.	<i>Macaca assamensis</i>	Assamese Macaque	II	NT
22.	<i>Macaca mulatta</i>	Rhesus Macaque	II	LC
23.	<i>Viverra zibetha</i>	Large Indian Civet	II	LC
24.	<i>Viverricula indica</i>	Small Indian Civet	II	LC
25.	<i>Vulpes bengalensis</i>	Indian Fox	II	LC
26.	<i>Herpestes auro-punctatus</i>	Small Indian Mongoose	III	LC
27.	<i>Herpestes edwardsi</i>	Common Mongoose	III	LC
28.	<i>Sus scrofa</i>	Wild Boar	III	LC

Source: Forest Working Plan, Discussion with locals

Schedule – I-IV (Indian Wildlife Protection Act -1972); NE- Not Evaluated; LC-Least Concern, NT-Near Threatened, VU-Vulnerable, EN-Endangered (IUCN Version 2017-3)

Annexure 3.11

Checklist of Fishes in the Study Area

S No.	Scientific Name	IUCN Status (ver 2017-3)
1.	<i>Ailia coila</i>	NT
2.	<i>Amblypharyngodon mola</i>	LC
3.	<i>Anabas testudineus</i>	DD
4.	<i>Aspidoparia morar</i>	LC
5.	<i>Barilius barila</i>	LC
6.	<i>Botia dari</i>	LC
7.	<i>Channa punctata</i>	LC
8.	<i>Channa striata</i>	LC
9.	<i>Canthophrys gongota</i>	LC
10.	<i>Chanda nama</i>	LC
11.	<i>Channa gachua</i>	LC
12.	<i>Cirrhinus reba</i>	LC
13.	<i>Clarias batrachus</i>	LC
14.	<i>Danio rerio</i>	LC
15.	<i>Devario devario</i>	LC
16.	<i>Esomus danrica</i>	LC
17.	<i>Eutropiichthys vacha</i>	LC
18.	<i>Gibeliond catla</i>	LC
19.	<i>Glossogobius giuris</i>	LC
20.	<i>Heteropneustes fossilis</i>	LC
21.	<i>Labeo gonius</i>	LC
22.	<i>Labeo rohita</i>	LC
23.	<i>Labeo bata</i>	LC
24.	<i>Macrognathus dibrugarensis</i>	LC
25.	<i>Macrognathus pancalus</i>	LC
26.	<i>Macrognathus vittatus</i>	LC
27.	<i>Macrognathus aral</i>	LC
28.	<i>Mastacembelus armatus</i>	LC
29.	<i>Monopterusuchia</i>	LC
30.	<i>Mystus tengara</i>	LC
31.	<i>Nandus nandus</i>	LC
32.	<i>Notopterus notopterus</i>	LC
33.	<i>Ompok pabda</i>	NT
34.	<i>Ompok pabo</i>	NT
35.	<i>Ompok bimaculatus</i>	NT
36.	<i>Osteobrama cotio cotio</i>	NE
37.	<i>Puntius sarana</i>	LC
38.	<i>Puntius ticto</i>	LC
39.	<i>Parluciosoma daniconius</i>	LC
40.	<i>Puntius sophore</i>	LC
41.	<i>Rita rita</i>	LC
42.	<i>Sperata seenghala</i>	LC
43.	<i>Sperata aor</i>	LC
44.	<i>Tetraodon labiosa</i>	NE

S No.	Scientific Name	IUCN Status (ver 2017-3)
45.	<i>Tetraodon lalius</i>	LC
46.	<i>Tetraodon sota</i>	NE
47.	<i>Tetraodon cutcutia</i>	LC
48.	<i>Trichogaster fasciata</i>	LC
49.	<i>Wallago attu</i>	NT
50.	<i>Xenentodon cancila</i>	LC

Source: Dibya Jyoti Deori, Santoshkumar Abujam and Shyama Prasad Biswas (2015). Fish diversity and habitat ecology of Dihing river - A tributary of Brahmaputra River. *International Journal of Fisheries and Aquatic Studies* 2015; 2(4): 190-197

NE- Not Evaluated; LC-Least Concern, NT-Near Threatened, VU-Vulnerable, EN-Endangered (IUCN Version 2017-3)

Annexure 3.12

Demographic Profile of the Study Area Villages

Sl No.	Villages	No. of Household	Total Population	Household Size	% of Male Population	% of Female Population	Sex Ratio	% SC Population	% of ST Population
1	Agbandha Bangali	236	1059	4.49	49.86	50.14	1006	0.00	0.38
2	Golai Gaon No.5	223	1014	4.55	54.14	45.86	847	0.59	0.99
3	Golai Gaon No.3	160	743	4.64	51.55	48.45	940	0.27	0.27
4	Golai Gaon No.2	358	1814	5.07	50.00	50.00	1000	0.28	0.72
5	Makum Block No.2	66	305	4.62	47.87	52.13	1089	0.00	0.00
6	Niz Makum Gaon	91	432	4.75	50.69	49.31	973	0.00	6.25
7	Makum Block No.1	74	354	4.78	50.00	50.00	1000	0.00	1.13
8	Makum Block No.5	147	773	5.26	51.23	48.77	952	0.00	0.65
9	Vitor Powai No.1	212	1052	4.96	49.43	50.57	1023	0.00	20.53
10	Vitor Powai No.2	75	436	5.81	52.98	47.02	887	0.00	17.43
11	Borkuruka	77	367	4.77	52.86	47.14	892	0.00	16.35
12	Powai Mukh No.2	171	851	4.98	52.41	47.59	908	20.92	0.00
13	Likhajan Grant No.21	218	1031	4.73	53.64	46.36	864	0.00	3.01
14	Dirak No.1	827	3996	4.83	49.95	50.05	1002	0.10	0.00
15	Lama Gaon	160	708	4.43	50.85	49.15	967	7.06	0.00
16	112/109/Nla Grant 2 Makum Tea Co.	701	3333	4.75	49.77	50.23	1009	0.75	0.03
17	112/109/Nla Grant.1 Makum Tea Co.	467	2335	5.00	48.01	51.99	1083	0.00	0.00

Annexure 3.13

Literacy Profile of the Study Area Villages

Sl No.	Villages	Total Population	% Literate	% Male Literate	% Female Literate
1	Agbandha Bangali	1059	61.12	72.41	50.00
2	Golai Gaon No.5	1014	51.01	58.72	41.67
3	Golai Gaon No.3	743	55.71	62.65	48.37
4	Golai Gaon No.2	1814	77.70	82.61	72.80
5	Makum Block No.2	305	76.49	83.08	70.29
6	Niz Makum Gaon	432	89.46	93.37	85.49
7	Makum Block No.1	354	79.94	89.17	70.99
8	Makum Block No.5	773	83.58	90.06	76.42
9	Vitor Powai No.1	1052	81.79	90.47	73.19
10	Vitor Powai No.2	436	90.03	94.03	85.56
11	Borkuruka	367	92.72	92.86	92.57
12	Powai Mukh No.2	851	67.71	75.38	58.89
13	Likhajan Grant No.21	1031	45.29	54.11	35.01
14	Dirak No.1	3996	44.66	56.34	33.43
15	Lama Gaon	708	67.22	75.41	58.70
16	112/109/Nla Grant 2 Makum Tea Co.	3333	42.10	51.56	32.61
17	112/109/Nla Grant.1 Makum Tea Co.	2335	44.92	52.42	37.88

Annexure 3.14

Workforce Participation in the Study Area Villages

Sl No.	Villages	Total Population	Total worker Population	% Cultivator	% Agricultural Labor	% Household industry worker	% other worker
1	Agbandha Bangali	1059	44.38	18.30	18.09	2.13	61.49
2	Golai Gaon No.5	1014	46.45	5.31	24.84	7.64	62.21
3	Golai Gaon No.3	743	53.30	4.29	1.26	3.28	91.16
4	Golai Gaon No.2	1814	32.30	4.44	5.29	1.71	88.57
5	Makum Block No.2	305	26.89	25.61	0.00	0.00	74.39
6	Niz Makum Gaon	432	58.10	10.76	3.19	54.18	31.87
7	Makum Block No.1	354	44.07	45.51	26.28	1.92	26.28
8	Makum Block No.5	773	54.20	94.75	2.15	0.24	2.86
9	Vitor Powai No.1	1052	57.32	51.24	36.65	1.16	10.95
10	Vitor Powai No.2	436	30.96	68.15	11.11	4.44	16.30
11	Borkuruka	367	52.32	93.23	1.04	0.00	5.73
12	Powai Mukh No.2	851	54.76	60.73	34.76	3.65	0.86
13	Likhajan Grant No.21	1031	42.58	44.42	2.05	0.23	53.30
14	Dirak No.1	3996	45.32	5.47	0.55	0.44	93.54
15	Lama Gaon	708	46.19	26.91	2.75	4.89	65.44
16	112/109/Nla Grant 2 Makum Tea Co.	3333	48.81	0.49	0.92	0.43	98.16
17	112/109/Nla Grant.1 Makum Tea Co.	2335	45.18	0.95	0.47	0.95	97.63

Annexure 4.1

Impact Assessment Methodology

IMPACT IDENTIFICATION AND ASSESSMENT

Impact identification and assessment starts with scoping and continues through the remainder of the impact assessment process (IAP). The principal impact assessment (IA) steps are summarized below:

- **Impact prediction:** to determine what could potentially happen to resources/receptors as a consequence of the Project and its associated activities.
- **Impact evaluation:** to evaluate the significance of the predicted impacts by considering their magnitude and likelihood of occurrence, and the sensitivity, value and/or importance of the affected resource/receptor.
- **Mitigation and enhancement:** to identify appropriate and justified measures to mitigate negative impacts and enhance positive impacts.
- **Residual impact evaluation:** to evaluate the significance of impacts assuming effective implementation of mitigation and enhancement

Prediction of Impacts

Prediction of impacts is essentially an objective exercise to determine what could potentially happen to the environment as a consequence of the project and its associated activities. This is essentially a repeat of the process undertaken in scoping, whereby the potential interactions between the project and the baseline environment are identified. From these potential interactions, the potential impacts to the various resources/receptors are identified, and are elaborated to the extent possible. The diverse range of potential impacts considered in the IA process typically results in a wide range of prediction methods being used including quantitative, semi-quantitative and qualitative techniques. The nature and types of impacts that has been addressed in this EIA is defined in the **Box 1** below.

Box 1

Nature and types impacts considered for impact assessment

-
- **Negative**, when impact is considered to represent adverse change from the baseline or to have introduced a new undesirable factor; and
 - **Positive or beneficial**, when impact is considered to represent improvement to baseline or to have introduced a new desirable factor.
 - **Direct**, impacts that result from a direct interaction between the project and a resource/ receptor
 - **Indirect**, impacts that follow on from the direct interactions between the project and its environment as a result of subsequent interactions within the environment; and
 - **Induced**, impacts that result from other activities (which are not part of the project) that happen as a consequence of the project
-

Evaluation of Impacts

In assessing the significance of impact, the following impact characteristics are taken into consideration:

Determining Magnitude of an impact

Magnitude, i.e. severity of an impact or degree of change caused by a project activity is a function of one or more of the following characteristics:

- *Scale*: Degree of damage that may be caused to the environmental components concerned.
- *Extent*: The extent refers to spatial or geographical extent of impact due to proposed project and related activities.
- *Duration*: The temporal scale of the impact in terms of how long it is expected to last.

Criteria have been defined for each of these key elements and classified based on the level of impacts (low, medium and high) on the environmental component, presented in *Table 1* below:

Table 1 *Magnitude Prediction Criteria*

Impact Elements	Criteria	Ranking
Scale	<ul style="list-style-type: none"> • Irreversible damage to natural environment and/or difficult or may not to revert back to earlier stage with mitigation; • Major changes in comparison to baseline conditions and / or likely to regularly or continually exceed the standard; 	High
	<ul style="list-style-type: none"> • Reversible damage to natural environment but likely to easily revert back to earlier stage with mitigation; • Perceptible change from baseline conditions but well within acceptable norms. 	Medium
	<ul style="list-style-type: none"> • Effect is within the normal range of natural variation; • Effect will be insignificant with proper embedded control • No perceptible or readily measurable change from baseline conditions; 	Low
Extent	• Project site and beyond 5.0 km from project site	National
	• Project site and 5.0 km study area	Regional
	• Project site and its immediate vicinity (0.5 km from site)	Local
Duration	• Spread along entire lifecycle of the project and beyond at all times	Long term
	• Spread across the entire drilling phase of the project	Medium term
	• Spread across the entire pre-drilling and decommissioning phases of the project	Medium term
	• Spread across at entire life cycle of the project intermittently	Short term
	• Spread across intermittently at a single phase of the project	Short term

Magnitude essentially describes the intensity of the change that is predicted to occur in the resource/receptor as a result of the impact. The magnitude combines the impact characteristics of Extent, Duration and Scale and is a multiplicative factor of these three criteria set. Based on the above understanding magnitude of impact is assessed as per the *Table 2*.

Table 2 *Assessing Magnitude of Impact*

Extent	Duration	Scale	Magnitude
Local	Short Term	Low	Negligible
Regional	Short Term	Low	Small
Local	Medium term	Low	Small

Extent	Duration	Scale	Magnitude
Local	Short Term	Medium	Small
National	Short Term	Low	Small
Local	Long term	Low	Small
Local	Short Term	High	Small
Regional	Medium term	Low	Small
Regional	Short Term	Medium	Small
Local	Medium term	Medium	Small
National	Medium term	Low	Medium
National	Short Term	Medium	Medium
Regional	Long term	Low	Medium
Regional	Short Term	High	Medium
Local	Long term	Medium	Medium
Local	Medium term	High	Medium
Regional	Medium term	Medium	Medium
National	Long term	Low	Medium
National	Short Term	High	Medium
Local	Long term	High	Medium
National	Medium term	Medium	Large
Regional	Long term	Medium	Large
Regional	Medium term	High	Large
National	Long term	Medium	Large
National	Medium term	High	Large
Regional	Long term	High	Large
National	Long term	High	Large

Determining Sensitivity/ Importance/ Vulnerability of Receptor

In addition to characterising the magnitude of impact, the other principal step necessary to assign significance for an impact is to define the sensitivity/ vulnerability/ importance of the impacted resources/ receptor. Sensitivity of the receptor is based on the relationship between the respective project and present baseline environment (the receptor). It is assessed based on vulnerability of the receptor. These receptors include the surrounding population and environment. As the effect of an impact is more readily absorbed and easily mitigated it becomes less sensitive; on the other hand, as an impact is more challenging to mitigate and cannot be absorbed by the population or the environment it becomes more sensitive and requires an extensive management plan. The sensitivity of the receptor is assessed as (*Table 3*).

Table 3 *Sensitivity/Importance/Vulnerability Criteria*

Sensitivity Criteria	Contributing Criteria
High	<ul style="list-style-type: none"> Existing physical environment quality is already under stress; Ecologically sensitive/ protected area, provides habitat for globally protected species; Profound or multiple levels of vulnerability that undermine the ability to adapt to changes brought by the project. Human receptors/ vulnerable community are located within the project footprint and directly affected by the project
Medium	<ul style="list-style-type: none"> Existing physical environment quality shows some sign of stress; which is sensitive to change in quality or physical disturbance; Natural habitat provides habitat for wildlife, which are protected under National regulations; Some, but few areas of vulnerability; still retaining an ability to at least in part adapt to change brought by the project. Human receptors/ vulnerable community are located adjacent the project site and likely to be affected by the project
Low	<ul style="list-style-type: none"> Existing physical environment quality is good; Modified habitat provides habitat for common species; Human receptors are located away and are not likely to be affected due to the project related activities

Evaluating Significance of Impacts

Once magnitude of impact and sensitivity/ vulnerability/ importance of resource/ receptor have been characterized, the significance was assigned for each impact. Impact significance is designated using the matrix shown in *Figure 1*.

Figure 1 *Assessing Significance of Impact due to Proposed Project*

		Sensitivity /Vulnerability / Important Resource / Receptor		
		Low	Medium	High
Magnitude of Impact	Negligible	Negligible	Negligible	Negligible
	Small	Negligible	Minor	Moderate
	Medium	Minor	Moderate	Major
	Large	Moderate	Major	Major

The matrix applies universally to all resources/receptors, and all impacts to these resources/receptors, as the resource/receptor-specific considerations are factored into the assignment of magnitude and sensitivity/vulnerability/ importance designations that enter into the matrix. **Box 2** provides a context for what the various impact significance ratings signify.

An impact of **negligible** significance is one where a resource/receptor (including people) will essentially not be affected in any way by a particular activity or the predicted effect is deemed to be 'imperceptible' or is indistinguishable from natural background variations.

An impact of **minor** significance is one where a resource/receptor will experience a noticeable effect, but the impact magnitude is sufficiently small (with or without mitigation) and/or the resource/receptor is of low sensitivity/ vulnerability/ importance. In either case, the magnitude should be well within applicable standards.

An impact of **moderate** significance has an impact magnitude that is within applicable standards, but falls somewhere in the range from a threshold below which the impact is minor, up to a level that might be just short of breaching a legal limit. Clearly, to design an activity so that its effects only just avoid breaking a law and/or cause a major impact is not best practice. The emphasis for moderate impacts is therefore on demonstrating that the impact has been reduced to a level that is as low as reasonably practicable (ALARP). This does not necessarily mean that impacts of moderate significance have to be reduced to minor, but that moderate impacts are being managed effectively and efficiently.

An impact of **major** significance is one where an accepted limit or standard may be exceeded, or large magnitude impacts occur to highly valued/sensitive resource/receptors. An aim of IA is to get to a position where the Project does not have any major residual impacts, certainly not ones that would endure into the long-term or extend over a large area. However, for some aspects there may be major residual impacts after all practicable mitigation options have been exhausted (i.e. ALARP has been applied). An example might be the visual impact of a facility. It is then the function of regulators and stakeholders to weigh such negative factors against the positive ones, such as employment, in coming to a decision on the Project.

Identification

Identification of Mitigation and Enhancement Measures

Once the significance of an impact has been characterized, the next step is to evaluate what mitigation and enhancement measures are warranted. For the purposes of this IA, ERM has adopted the following Mitigation Hierarchy:

- **Avoid at Source;** Reduce at Source: avoiding or reducing at source through the design of the project.
- **Abate on Site:** add something to the design to abate the impact.
- **Abate at Receptor:** if an impact cannot be abated on-site then control measures can be implemented off-site.
- **Repair or Remedy:** some impacts involve unavoidable damage to a resource and these impacts can be addressed through repair, restoration or reinstatement measures.
- **Compensate in Kind, compensate through other means:** where other mitigation approaches are not possible or fully effective, then compensation for loss, damage and disturbance might be appropriate.

The priority in mitigation is to first apply mitigation measures to the source of the impact (i.e., to avoid or reduce the magnitude of the impact from the associated Project activity), and then to address the resultant effect to the resource/receptor via abatement or compensatory measures or offsets (i.e., to reduce the significance of the

effect once all reasonably practicable mitigations have been applied to reduce the impact magnitude).

Residual Impact Evaluation

Once mitigation and enhancement measures are declared, the next step in the IA Process is to assign residual impact significance. This is essentially a repeat of the impact assessment steps discussed above, considering the assumed implementation of the additional declared mitigation and enhancement measures.

Annexure 7.1

Community Consultation in the Study Area Villages

A	<i>Project Title:</i>		EIA/EMP Study of the Dirok Gas Field
B	<i>Stakeholder Title:</i>		Discussion with the resident villagers
<p><i>Note: This document provides a working summary of the main facts captured during the consultation/ key informant interview held and should not be treated as formal minutes. It is therefore deliberately not exhaustive or chronological. Its purpose is to record significant information/ feedback and not intended for official review or approval.</i></p>			
C	<i>Basic details:</i>		
	Location:	Village- Golai Gaon No 2 District: Tinsukia	
	Date	21/11/2017	
D	<i>Attended By</i>		
	Sr.	Name	Designation
	1.	Souvik Basu	ERM
	2.	Abhishek Roy Goswami	ERM
3.	Local Villagers	Golai Gaon No 2	
E	<i>Purpose of Consultation</i>		
	<ul style="list-style-type: none"> • Collection of information regarding baseline socio-economic condition. 		
F	<p>Key Points Inferred:</p> <ul style="list-style-type: none"> • Most people of this belongs to Assamese community. Apart from that tea tribe and Nepali people are also residing in this village. • Majority of the population belongs to Hindu community, few practices Islam and Christianity. A large portion of the community is engaged as daily labour, tea garden worker. Few people are also involved in Government jobs • Agriculture in this area is entirely dependent on monsoon rain. No irrigation facility is available. Paddy is the main crop. • LP, ME school is present within the village. • Primary drinking water source of the villagers is from Tube well. • Community reported occurrence of vector borne diseases. Primary health care facility is available in the village. • Power supply facilities are available in the village. Durga Puja and Christmas is being celebrated by the villagers as part of cultural activities. 		

A	<i>Project Title:</i>	EIA/EMP Study of the Dirok Gas Field	
B	<i>Stakeholder Title:</i>	Discussion with the resident villagers	
<p><i>Note: This document provides a working summary of the main facts captured during the consultation/ key informant interview held and should not be treated as formal minutes. It is therefore deliberately not exhaustive or chronological. Its purpose is to record significant information/ feedback and not intended for official review or approval.</i></p>			
C	<i>Basic details:</i>		
	Location:	Village- Golai Gaon 3 District: Tinsukia	
	Date	21/11/2017	
D	<i>Attended By</i>		
	Sr.	Name	Designation
	1.	Souvik Basu	ERM
	2.	Abhishek Roy Goswami	ERM
	3.	Local Villagers	Golai Gaon 3
E	<i>Purpose of Consultation</i>		
	<ul style="list-style-type: none"> • Collection of information regarding baseline socio-economic condition. 		
F	<p>Key Points Inferred:</p> <ul style="list-style-type: none"> • Most people of this belongs to Assamis community. Apart from that few SC, ST and Nepali people are also residing here. • Hindu people are main community in village but some people also practice Islam • Majority of the people are working in Tea garden. Other than that people also earn livelihood from agriculture and Betel nut farming. • Agriculture in this area is entirely dependent on monsoon rain. No irrigation facility is available. Paddy is the main crop. • LP and high school is present with in the village. • Primary drinking water source of the villagers is from Tube well and dug well. • A primary health facility is locates in the village. As per the community problem of wild elephant is very common in this village. • Power supply facilities are available in the village. • As per the community problem of wild elephant is very common in this village. 		

A	<i>Project Title:</i>	EIA/EMP Study of the Dirok Gas Field	
B	<i>Stakeholder Title:</i>	Discussion with the resident villagers	
<p><i>Note: This document provides a working summary of the main facts captured during the consultation/ key informant interview held and should not be treated as formal minutes. It is therefore deliberately not exhaustive or chronological. Its purpose is to record significant information/ feedback and not intended for official review or approval.</i></p>			
C	<i>Basic details:</i>		
	Location:	Village- Vitor Powai No.1 District: Tinsukia	
	Date	21/11/2017	
D	<i>Attended By</i>		
	Sr.	Name	Designation
	1.	Souvik Basu	ERM
	2.	Salil Das	ERM
3.	Local Villagers	Vitor Powai No.1	
E	<i>Purpose of Consultation</i>		
	<ul style="list-style-type: none"> • Collection of information regarding baseline socio-economic condition. 		
F	<p><i>Key Points Inferred:</i></p> <ul style="list-style-type: none"> • All the people of this village belongs to Assamese community. • Majority of the villagers are Hindu. • People are earning their livelihood form agricultural activity. Paddy is main crop in this area. • Agriculture in this area is entirely dependent on monsoon rain. No irrigation facility is available. Paddy is the main crop. • LP and ME school is present within village. Junior college is present in Margarita. • Health sub center is not present in the village. Nearest hospital is located in Margarita. • Primary drinking water source of the villagers is from Tube well and dug well. • Majority the houses in the village have electric connection; however, frequent power failures were also reported. 		

A	<i>Project Title:</i>	EIA/EMP Study of the Dirok Gas Field	
B	<i>Stakeholder Title:</i>	Discussion with the resident villagers	
<p><i>Note: This document provides a working summary of the main facts captured during the consultation/ key informant interview held and should not be treated as formal minutes. It is therefore deliberately not exhaustive or chronological. Its purpose is to record significant information/ feedback and not intended for official review or approval.</i></p>			
C	<i>Basic details:</i>		
	Location:	Village- Makum Tea Estate Labour Colony District: Tinsukia	
	Date	21/11/2017	
D	<i>Attended By</i>		
	Sr.	Name	Designation
	1.	Souvik Basu	ERM
	2.	Salil Das	ERM
3.	Local Villagers	Makum Tea Estate Labour Colony	
E	<i>Purpose of Consultation</i>		
	<ul style="list-style-type: none"> • Collection of information regarding baseline socio-economic condition. 		
F	<p>Key Points Inferred:</p> <ul style="list-style-type: none"> • Most people of this belongs to Tea tribe group. • All the People are mainly involved in tea Garden. • LP school is present with in village. ME and high school is present in Margarita • Health sub center is not present in the tea garden. Nearest hospital is located in Margarita • Primary drinking water source of the villagers is from Tube well and dug well. • Power supply facilities are available in the village. • Consultation also reveal that Oil India has some CSR intervention in this village like • It was reported that no major disease outbreak occurs, but a large part of community suffers from stomach pain. Community gets primary health facility from tea garden hospital. 		

A	<i>Project Title:</i>		EIA/EMP Study of the Dirok Gas Filed
B	<i>Stakeholder Title:</i>		Discussion with the resident villagers
<p><i>Note: This document provides a working summary of the main facts captured during the consultation/ key informant interview held and should not be treated as formal minutes. It is therefore deliberately not exhaustive or chronological. Its purpose is to record significant information/ feedback and not intended for official review or approval.</i></p>			
C	<i>Basic details:</i>		
	Location:	Village- Lama Gaon District: Tinsukia	
	Date	21/11/2017	
D	<i>Attended By</i>		
	Sr.	Name	Designation
	1.	Souvik Basu	ERM
	2.	Abhishek Roy Goswami	ERM
	3.	Local Villagers	Lama Gaon
E	<i>Purpose of Consultation</i>		
	<ul style="list-style-type: none"> • Collection of information regarding baseline socio-economic condition. 		
F	<i>Key Points Inferred:</i>		
	<ul style="list-style-type: none"> • All the people of this belongs to Tea tribe. • People are mainly involved in tea Garden. • LP school is present with in village. ME , High school and Junior college is present in Margarita • Health sub center is not present in the village. Nearest hospital is located in Margarita. • Availability of drinking water is very big problem in this area. Community get water from handpump during monsoon but during dry season they have travel long distance to fetch water as all the hand become dry. • Power supply facilities are available in the village. 		

A	<i>Project Title:</i>	EIA/EMP Study of the Dirok Gas Field	
B	<i>Stakeholder Title:</i>	Discussion with the resident villagers	
<p><i>Note: This document provides a working summary of the main facts captured during the consultation/ key informant interview held and should not be treated as formal minutes. It is therefore deliberately not exhaustive or chronological. Its purpose is to record significant information/ feedback and not intended for official review or approval.</i></p>			
C	<i>Basic details:</i>		
	Location:	Village- Powai Mukh No.2 District: Tinsukia	
	Date	21/11/2017	
D	<i>Attended By</i>		
	Sr.	Name	Designation
	1.	Souvik Basu	ERM
	2.	Abhishek Roy Goswami	ERM
3.	Local Villagers	Powai Mukh No 2	
E	<i>Purpose of Consultation</i>		
	<ul style="list-style-type: none"> • Collection of information regarding baseline socio-economic condition. 		
F	<p><i>Key Points Inferred:</i></p> <ul style="list-style-type: none"> • Most people of this belongs to Assamese community. Other than that few Bengali people and tea tribe are also residing here. • Majority of the people are mainly dependent on agricultural activity. Apart from that people are also involved in tea garden. • Agriculture in this area is entirely dependent on monsoon rain. No irrigation facility is available. Paddy is the main crop. • LP school is present within village. ME and High school is present in Margarita. • Primary health center is located in Tea gaeden. Apart from that people also go to margarita for availing hospital facility. • Primary drinking water source of the villagers is from Tube well and dug well. • Power supply facilities are available in the village. 		

A	<i>Project Title:</i>	EIA/EMP Study of the Dirok Gas Field	
B	<i>Stakeholder Title:</i>	Discussion with the resident villagers	
<p><i>Note: This document provides a working summary of the main facts captured during the consultation/ key informant interview held and should not be treated as formal minutes. It is therefore deliberately not exhaustive or chronological. Its purpose is to record significant information/ feedback and not intended for official review or approval.</i></p>			
C	<i>Basic details:</i>		
	Location:	Village- Dirok Tea Estate Labour Colony District: Tinsukia	
	Date	21/11/2017	
D	<i>Attended By</i>		
	Sr.	Name	Designation
	1.	Souvik Basu	ERM
	2.	Abhishek Roy Goswami	ERM
3.	Local Villagers	Dirok Tea Estate Labour Colony	
E	<i>Purpose of Consultation</i>		
	<ul style="list-style-type: none"> • Collection of information regarding baseline socio-economic condition. 		
F	<p>Key Points Inferred:</p> <ul style="list-style-type: none"> • It is a Tea Garden Labour Colony. Most of the people belong to Tribal community. • Majority of the people are Hindu, a few Christian households are also present • Both primary and secondary educational facilities are located close to the settlement • Primary health center is located in Tea gaeden. Apart from that people also go to margarita for availing hospital facility. • Primary drinking water source of the villagers is from Tube well and dug well. • Power supply facilities are available in the village. • It was reported that no major disease outbreak occurs, but a large part of community suffers from stomach pain. Community gets primary health facility from tea garden hospital. 		

Annex 10.1

Environmental Compliance Report



Hindustan Oil Exploration Company Limited

'Lakshmi Chambers', 192, St. Mary's Road, Alwarpet, Chennai - 600 018. INDIA.
C : 91 (044) 66229000 • Fax: 91 (044) 66229011 / 66229012
E-mail: contact@hoec.com • Website: www.hoec.com CIN: L11100GJ1996PLC029880

Ref: HOEC/MoEF/AAP/2018/04/09

Date: 18th April 2018

To

Shri Dr.H.Tynsong
Scientist 'D'

Ministry of Environment, Forest and Climate Change
North Eastern Regional Office
Shillong -793021

Sub : Submission of Compliance Status of Environment Management Plan and six-monthly compliance report for the period October 2017 to March 2018

Ref: Environmental Clearance File No. J-11011/245/2014-IA II (I) dated 19th July 2017

Sir

Hindustan Oil Exploration Company Limited (HOEC) along with Consortium Partners Oil India Limited and Indian Oil Corporation Limited had proposed for development of Dirok field in onshore Block AAP-ON-94/1, Tinsukia District of Assam and the Ministry have accorded Environment Clearance for the development phase.

As per the project plan HOEC on behalf of the Consortium have begun development phase of the Block and completed drilling of wells Drk-1/2 & Drk-4, DRK-5, Dirok -6 and commissioned a Gas Gathering Station in the Block. Ministry of Environment and Forest and Climate Change (MoEF & CC) have accorded Environmental Clearance via MoEF letter No. J-11011/245/2014-IA II (I) Dated 19th July 2017

As informed in the General Condition of the Environmental Clearance hereby we are submitting the six-monthly compliance report for the period October 2017 to April 2018 and compliance report of the Environment Management Plan.

Thanking You

For **Hindustan Oil Exploration Company**

G. Janakiraman
Head - HSE



Copy to:

- ✓ The Director, Ministry of Environment, Forest & CC, New Delhi
- Regional Executive Engineer, Regional office, Pollution Control Board Assam, Dibrugarh 786001. Assam.

Registered Office: 'HOEC HOUSE', Tandajla Road, Off Old Padra Road, Vadodara - 390 020. INDIA.
C : 91 (0265) 2330766, 2333565
E-mail: contact@hoec.com • Website: www.hoec.com

Documents Enclosed:

1.	Six monthly Compliance Report as Annexure -1
2.	Copy of the Forest Clearance as Annexure -2
3.	Copy of wildlife clearance as Annexure -3
4.	Environment Management Plan Compliance Report as Annexure -4
5.	Copy of advertisement of EC made in local newspaper as Annexure -5
6.	Copy of the Environmental Clearance as Annexure – 6
7.	Environmental Monitoring Report as Annexure-7

**Compliance Report for Environmental Clearance File No.
J-11011/245/2014-IA II (I) dated 31st January 2017 and 19th
July 2017 for the period October 2017 to March 2018**

A. Sl. No	SPECIFIC CONDITIONS: Condition of Environment Clearance	Compliance Status
(i)	The Forest clearance to be obtained. Work on non-forest land may only be executed upto such point (to be selected by the user agency) on either side of the forest land if it is explicitly certified by the user agency that in case approval under the forest (conservation) Act,1980 for diversion of the land is declined, it is technically feasible to execute the project along an alternate alignment without involving diversion of forest land will not confer any right on the user agency with regard to grant of approval under the forest conservation act,1986.	Forest Clearance obtained for the underground pipeline segment passing through the forest land and copy of the same is attached as annexure -2
(ii)	The environmental clearance is subjected to obtaining prior clearance from forestry and wildlife angle including clearance from the Standing Committee of the National Board for Wildlife as applicable. Grant of Environmental Clearance does not necessarily implies that Forestry and Wildlife Clearance shall be granted to the project and that their proposals for forestry and wildlife clearance will considered by the respective authorities on their merits and decision taken. The investment made in the project, if any, based on environmental clearance so granted in anticipation of the clearance from wildlife angle shall be entirely at the cost and risk of the project proponent and Ministry of Environment, Forest and Climate Change shall not be responsible in this regard in any manner.	Wildlife Clearance for the project obtained from Standing Committee of the National Board for Wildlife and copy of the same is attached as annexure -3
(iii)	Ambient Air quality should be monitored near the closest human settlements as per the National Ambient Air Quality Emission Standards issued by the Ministry vide G.S.R No.826 (E) dated 16 th November 2009 for PM10, PM 2.5, SO ₂ , NO _x , CO, Methane and Non Methane HC etc	Ambient Air quality monitored as per the prescribed condition and reports of the same is attached as annexure 7
(iv)	Mercury shall also be analyzed in air, water and drill cuttings twice during the drilling Period.	Not applicable as there is no drilling activities during October 2017 to March 2018.
(v)	Approach Road shall be made pucca to minimize generation of suspended dust.	Approach road made pucca and water tanker deployed to spray water every week to prevent dust generation
(vi)	The company shall make the arrangement for the control of noise from the drilling activity. Acoustic Enclosure shall be provided to DG sets and proper stack height should be provided as per CPCB guidelines	Acoustic Enclosure provided to DG sets and proper stack height provided as per CPCB guidelines.
(vii)	Total water requirement shall not exceed 40 m ³ /day and prior permission shall be obtained from the concerned agency	Noted and complied with condition.
(viii)	The company shall construct the garland drain all around the drilling site to prevent runoff of any oil containing waste into the nearby water bodies and land. Separate drainage system shall be created for oil contaminated and non-oil contaminated water. Effluent shall be properly treated and treated wastewater shall conform	Noted and complied with condition during the drilling campaign.



	to CPCB standards.	
(ix)	Drilling waste water including drill cuttings wash water shall be collected in disposal pit lined with HDPE lining evaporated or treated and shall comply with the notified standards for onshore disposal. The membership of common TSDF shall be obtained for the disposal of drill cuttings and hazardous waste. Otherwise, secured land fill shall be created at the site as per the design approved by the CPCB and obtain authorization from the SPCB. Copy of authorization or membership of TSDF shall be submitted to Ministry's Regional office at shillong.	Noted and complied with condition during the drilling campaign.
(x)	Produced water shall be treated in ETP. Treated produced water shall be disposed off through the injection well as per CPCB/MOEF guidelines.	Noted and complied with condition during the drilling campaign.
(xi)	Good sanitation facility shall be provided at the drilling site. Domestic sewage shall be disposed off through Septic tank/Soak pit.	Noted and complied with condition.
(xii)	Oil spillage prevention scheme shall be prepared. In case of oil spillage / contamination, action plan shall be prepared to clean the site by adopting proven technology. The recyclable waste (Oily sludge) and spent oil shall be disposed off to the authorized recyclers.	Noted and complied with condition.
(xiii)	The company shall comply with guidelines for disposal of solid waste, drill cutting and drilling fluids for onshore drilling operation notified vide GSR.546 (E) dated 30 th August 2005.	Noted and complied with condition.
(xiv)	The company shall take necessary measures to prevent fire hazards containing oil spill and soil remediated as needed. Possibility of using ground flare shall be explored. At the place of ground flaring, the overhead flaring stack with knock out drums shall be installed to minimize gaseous emission during operation.	Noted and complied with condition
(xv)	The company shall develop a contingency plan for H2S release including all necessary aspects form evacuation to resumption of normal operations. The workers shall be provided with Personal H2S detectors in locations of high risk of exposure along with self-containing breathing apparatus.	Not applicable as H2S is not anticipated from the wells.
(xvi)	On completion of drilling the company have to plug the drilled wells safely and obtain certificate from environment safety angle form the concerned authority.	All the wells drilled are hooked up for production and therefore it is not required to plug the well.
(xvii)	Blow out preventer (BOP) system shall be installed to prevent well blowouts during drilling operations. BOP measures during drilling shall focus on maintaining well bore hydrostatic pressure by proper pre-well planning and drilling fluid logging etc.	Noted and complied with condition.
(xviii)	Emergency Response plan (ERP) shall be based on the guidelines prepared by OISD, DGMS and Govt.of india.	Noted and complied with condition.
(xix)	The company shall take measures after completion of drilling process by well plugging and secured enclosures, decommissioning of rig upon abandonment of the well and drilling site shall be restored to the original condition. In the event that no economic quantity of hydrocarbon is found a full abandonment plan shall be implemented for the drilling site in accordance with the applicable Indian Petroleum Regulations.	Noted and complied with condition.
(xx)	Abandoned well inventory and remediation plan shall be submitted within six months from the date of issue of	No well abandoned hence the condition not applicable.



	letter.	
(xxi)	Occupational health surveillance of the worker shall be carried out as per the prevailing Acts and Rules.	Noted and complied with condition.
(xxii)	Restoration of the project site shall be carried out satisfactorily and report shall be sent to the Ministry's Regional office at Shillong.	Complied with and the details are shared in the Environment Management Plan compliance report as a separate annexure (Annexure -4)
(xxiii)	Oil content in the drill cuttings shall be monitored by some authorized agency and report shall be sent to the Ministry's Regional office at Shillong.	Not Applicable as there no drilling activities during October 2017 to March 2018
(xxiv)	Under the Enterprise social commitment (ESC) sufficient budgetary provision shall be made for health improvement, education, water and electricity supply etc. in and around the project.	Noted and complied with condition.
(xxv)	An audit shall be done to ensure that the Environment Management Plan is implemented in totality and report shall be submitted to the Ministry's Regional Office.	Environment Management Plan implemented and the compliance report enclosed as a separate annexure (Annexure -4)
(xxvi)	All personnel including those of contractors should be trained and made fully aware of the hazards, risks and controls in place.	HSE induction training conducted to all and mock drills conducted periodically
(xxvii)	Company shall have Environment Management Cell having qualified persons with proper background.	Noted and complied with the condition
(xxviii)	Company shall prepare operating manual in respect of all activities. It shall cover all safety and environment related issues and system. Measures to be taken for protection. One set of environmental manual shall be made available at the drilling site / project site. Awareness shall be created at each level of the management. All the schedules and results of environmental monitoring shall be available at the project site office.	Noted and complied with the condition.
B. GENERAL CONDITIONS:		
Sl. No	Condition of Environment Clearance	Compliance Status
(i)	The project authorities must strictly adhere to the stipulations made by the State Pollution Control Board (SPCB) State Government and any other statutory authority.	Noted and complied with the condition.
(ii)	No further expansion or modification in the plant shall be carried out without prior approval of the Ministry of Environment and Forests. In case of deviations or alterations in the project proposal from those submitted to this Ministry for clearance, a fresh reference shall be made to the Ministry to assess the adequacy of conditions imposed and to add additional environmental protection measures required, if any.	Noted and complied with condition.
(iii)	The locations of ambient air quality monitoring stations shall be decided in consultation with the State Pollution Control Board and it shall be ensured that at least one stations is installed in the upwind and downwind direction as well as where maximum ground level concentrations are anticipated.	Ambient Air quality monitored as per the prescribed condition and reports are attached as annexure 7
(iv)	The National Ambient Air Quality Emission Standards issued by Ministry vide GSR No 826 (E) dated 16 th November 2009 shall be followed.	Noted and complied with condition.



	be submitted to concerned state pollution control board as prescribed under the environment (Protection) Rules , 1986 as amended subsequently shall also be put on the website of the company along with the status of compliance of the environmental clearance conditions and shall also be sent to the respective regional offices of MoEF by Email.	
(xvi)	The project proponent shall inform the public that the project has been accorded environment clearance by the ministry and copies of the clearance letter are available with the SPCB committee and may also be seen at website of the ministry at http://moef.nic.in . This shall be advertised within seven days of issuance of clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same shall be forwarded to the concerned Regional office of the ministry.	Advertisement in the local newspaper in vernacular language published and copy of the advertisement made is attached as annexure -4
(xvii)	The project authorities shall inform the regional office as well as the ministry the date of financial closure and final approval of the project by the concerned authorities and date of the start of the project.	Noted and will be complied.





GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE
NORTH EASTERN REGIONAL OFFICE
LAWUSIB, LUMBAINGEN
SHILLONG-793021
PHONE NO. 0364 2537600
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Email: moefro.shillong@gov.in

Amexuce-2
P. Barmunday
P. Choudhury
S. A. A.
A. Paul
14/7

E.No. 3-AS B 061/2016-SH/1182-88

13th July, 2017

To

✓ The Secretary,
Environment & Forest Department,
Government of Assam,
Rehabari, Guwahati

Sub: Proposal for diversion of 4.8444 ha. of forest land in Digboi Reserve Forest & Upper Dehing Reserve Forest for laying of underground gas pipe line from Dirok Field Development under Digboi Division in Tinsukia District, Assam.

Sir,

This has reference to the State Govt letter No.FRS.149/2016/132 dated 30.11.2016 and No.FRS.149/2016/184 dated 30.06.2017 on the subject mentioned above, seeking prior approval of the Central Government in accordance with Section 2 of the FCA, 1980.

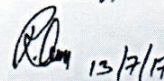
After careful consideration of the proposal, In-Principle Approval was granted vide this office letter of even number dated 17.01.2017 subject to fulfillment of certain conditions. The State Government has furnished compliance report in respect of the conditions stipulated in the In-Principle Approval and has requested the Central Government to grant final approval.

In this connection and on the basis of the compliance report furnished by the State Government letter No.FRS.149/2016/184 dated 30.06.2017 of Govt of Assam and confirmation of Ad-hoc CAMPA, New Delhi letter No 1-4/2014-CAMPA dated 05.07.2016, 'Final Approval' of the Central Government is hereby granted under Section-2 of the Forest (Conservation) Act, 1980 for diversion of 4.8444 ha. of Forest land in Digboi Reserve Forest & Upper Dehing Reserve Forest for laying of underground gas pipe line from Dirok Field Development under Digboi Division subject to the following conditions:

- (i) The legal status of the forest land shall remain unchanged.
- (ii) The compensatory afforestation shall be raised by the State Forest Department over 10.0 ha of degraded forest land identified at 1st Addition of Dirak Reserve Forest and by the South West side of Namdang in the Magherita West Range of Digboi Forest Division as per the fund deposited by the User Agency & scheme furnished by the State Govt. Compensatory afforestation shall be raised comprising of indigenous species with 20 % of medicinal Plant/ herbs and shrubs by the State Forest Department as per the fund deposited by the User Agency & scheme furnished by the State Govt.
- (iii) Permanent demarcation of forest land proposed for diversion shall be done on the ground at project cost before handing over the forest land to the User Agency.

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- (iv) State Govt not to hand over the land without demarcation & erection of pillars.
 - (v) The forest land shall not be used for any purpose other than that specified in the proposal.
 - (vi) The User Agency shall not expand its occupation or use surrounding forest/forest land in any manner otherwise expressed in this clearance.
 - (vii) The land so diverted shall revert back to the Forest Department in case it is not needed for the above use after due restoration to its original status (as far as possible and to the satisfaction of state Forest Deptt.).
 - (viii) The User Agency shall take all possible precautions & care all the time not to impact adversely the surrounding forests and forest land by their actions/activities.
 - (ix) Tree felling shall be done only when absolutely unavoidable and such removal, if any, shall be done under the supervision of the Forest Department.
 - (x) The user agency will undertake comprehensive soil and water conservation measures at the project cost.
 - (xi) Wherever possible and technically feasible, the user agency shall undertake afforestation measures along the road within the area diverted under this approval, in consultation with the State Forest Department at the project cost.
 - (xii) The proposal will be implemented under the overall supervision of the concerned Divisional Forest Officer.
 - (xiii) No damage to the flora fauna of the area shall be caused.
 - (xiv) No labour camp shall be established inside the forest area.
 - (xv) In case of any violation of the stipulated conditions immediate action is to be taken by the Forest Department as per Ministry's letter No 5-5/86/FC dated 07.12.1999 and this office letter No 2-1-51/2004/RONE/Vol II/3181-02 dated 28.12.2006.
 - (xvi) The layout plan shall not be changed without the prior approval of the Central Government.
 - (xvii) All other clearances / NOCs under different rules / regulations / local laws and under Forest Dwellers (Recognition of Forest Rights) Act, 2006 as required vide MoEF, New Delhi guideline No. 11-9/1998-FC(Pt) dated 03.08.2009 shall be complied with.
 - (xviii) Any other conditions as may be found appropriate in future for the betterment of environment & wildlife, may be imposed by Addl. PCCF (C), North Eastern Regional Office.

Yours faithfully,




(R.L. Sanga)

Conservator of Forests(C)

Copy to:

1. The Principal Chief Conservator of Forest & HoFF, Government of Assam, Rehabari, Guwahati.


Conservator of Forests(C)



Government of India
Ministry of Environment, Forest and Climate Change
(Wildlife Division)

6th Floor, Vayu Wing
Indira Paryavaran Bhawan
Jor Bag Road, Aliganj
New Delhi 110 003

Date: 21st July 2017

F.No. 6-119/2107 WL

To

All Members
Standing Committee of NBWL

Sub: Minutes of 43rd Minutes of Standing Committee of NBWL

Sir/Madam,

Kindly find enclosed copy of the Minutes of 43rd Meeting of the Standing Committee of National board for Wildlife held on **27th June 2017 at 12.00 PM in Teesta Conference Hall, I Floor, Vayu Block, Indira Paryavarn Bhavan**, New Delhi under the chairmanship of Hon'ble Union Minister of Environment, Forest and Climate Change.

Yours faithfully,

(Dr. Pasupala Ravi)
Scientist C

E-mail: ddwlmef@gmail.com

Encl: As above

Distribution

- (1) Secretary, MoEF&CC
- (2) DGF&SS, MoEF&CC
- (3) Member Secretary, NTCA
- (4) ADGF(FC), MoEF&CC
- (5) ADGF(WL), MoEF&CC
- (6) Director, WII, Dehradun
- (7) Director, GEER Foundation, Gandhinagar, Gujarat
- (8) Dr. R.Sukumar, Member, NBWL
- (9) Dr. H.S. Singh, Member, NBWL
- (10) Pr. Secretary (Forests), Govt. of Andhra Pradesh

Copy to

- (1) PS to Hon'ble MoEF&CC
- (2) PPS to DGF&SS, MoEF&CC
- (3) PPS to Addl.DGF(WL), Member Secretary, NBWL
- (4) PPS to IGF(WL)/PS to DIG(WL)/PS to JD(WL)

43.2.12 Obtain NOC for Sand, Bajri & Boulder mining on Aasan River bed (32.709 ha) at Village Sahaspur, District Dehradun, Uttarakhand

The IGF(WL) briefed the Committee on the proposal and stated that the proposal is for the collection of river bed materials from Asan Wetland Conservation Reserve. He added that the CWLW has recommended the proposal subject to the following conditions specified by the Divisional Forest Officer of Chakrata Forest Division:

The project is essential to prevent widening of the river bed due to deposition of sediments which if not mined out will cause flooding, damage to the adjoining areas, destruction of life and property. This will also enhance revenue and greater employment opportunities for the local people. Moreover there is no adverse impact on the flora and fauna. The proposed project has public interest.

After discussions, the Standing Committee decided to recommend the proposal along with the mitigation measures prescribed by the Chief Wildlife Warden.

43.3 ADDITIONAL AGENDA ITEMS

- 42.4.2.1 Proposal for Dirok Field Development Phase I & II for re-entry and completion of existing well, commissioning of Gas Gathering Station (GGS) and Gas processing plant (GPP) and laying of underground gas pipeline in the Dirok field in onshore block AAP-ON-94/1, Tinsukia District, Assam by the Hindustan Oil Exploration Company Ltd.**
- 42.4.2.2 Proposal for Dirok Field Development Phase III for drilling wells, development exploratory wells, commissioning of Gas Gathering Station (GGS) and Gas Processing Plant (GPP) and laying of underground gas pipeline in the Dirok Field in onshore block AAP-94/1, Tinsukia District, Assam by Hindustan Oil Exploration Company Ltd.**

The IGF(WL) briefed the Committee on the proposal and stated that these proposals were recommended by the Standing Committee of NBWL in its 42nd meeting held on 15th May 2017.

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It was recommended that the existing wells located within 1 km distance from the boundary of the sanctuary shall be plugged permanently and no oil/gas shall be extracted from such wells. He added user agency requested to waive the condition of plugging permanently the wells located within 1 km imposed by the Standing Committee as oil exploration/drilling is different from mining activity.

IGF(WL) further mentioned that opinion of Impact assessment Division was obtained. The IA Division has opined that oil drilling is different from mining activity as per EIA notification. He read out the opinion furnished by the Sr. Consultant (Legal), MoEF&CC which confirms the views of the IA Division.

After discussions, based on the opinion of IA Division and legal opinion of Sr. Consultant (Legal), MoEF&CC, the Standing Committee came to conclusion that oil drilling activity is a separate activity from mining as per EIA notification and agreed to the waiver of the condition of plugging permanently the wells located within 1 km distance from the boundary of the sanctuary. Other condition imposed in the 42nd Standing Committee of NBWL will be followed.

AGENDA ITEM No. 4

NO ITEMS WERE TAKEN UP BEFORE THE STANDING COMMITTEE WITH THE PERMISSION OF THE CHAIR.



Government of India
Ministry of Environment, Forest and Climate Change
(Wildlife Division)

Indira Paryavaran Bhawan
Jor Bagh Road, Aliganj
New Delhi 110 003

F.No.6-69/2017 WL(42nd Meeting)

Dated:30th May 2017

To
All Members,
Standing Committee of NBWL.

Sub: Minutes of 42nd Meeting of Standing Committee of NBWL.

Sir/Madam,

Kindly find enclosed copy of the minutes of the 42nd Meeting of the Standing Committee of National Board for Wildlife held on **15th May 2017 at 3.00 PM in "Brahmaputra Conference Hall, 1 Floor, Vayu Block, Indira Paryavaran Bhawan, Jor Bagh, New Delhi** under the chairmanship of Hon'ble Minister of State (Independent Charge) for Environment, Forest and Climate Change.

Yours faithfully,

(S. P. Vashishth)

Deputy Inspector General (Wildlife)

[Email:vashsatya@gmail.com](mailto:vashsatya@gmail.com)

Encl: As above

Distribution:

1. Secretary, MoEF & CC
2. Director General of Forests & Special Secretary, MoEF & CC.
3. Member Secretary, NTCA, New Delhi.
4. Additional Director General of Forests (FC), MoEF&CC.
5. Additional Director General of Forests (WL), MoEF&CC.
6. Director, Wildlife Institute of India, Dehradun.
7. Director, GEER Foundation, Gandhinagar, Gujarat.
8. Prof. R.Sukumar, Central for Ecological Sciences, Indian Institute of Science, Bangalore.
9. Dr. H.S. Singh, Gandhi Nagar, Gujarat.
10. Pr. Secretary (Forests), Government of Andhra Pradesh, Hyderabad.

Copy to:

1. PS to Hon'ble MOS (I/C) E&F.
2. PPS to Addl.DGF(WL) and Member Secretary, Standing Committee (NBWL).
3. PPS to IGF(WL)/PS to DIG(WL)/PS to JD(WL).

(viii) The State Govt. shall charge the Net Present Value of the forest land proposed for diversion from the user agency as per Hon'ble Supreme Court of India's order numbers IA 826 and 566 (dated 28.03.2008 and 09.05.2008) related to a Writ Petition (Civil) No 202/1995.

Dr. H. S. Singh and Prof. R. Sukumar suggested for conducting a detailed impact study of the proposed project on the aforesaid Tiger Reserve.

After discussions, the Committee decided that a committee comprising of Dr. R. Sukumar, member, one representative of NTCA and one representative from GEER Foundation would visit the project sites and submit a report to the Ministry for further consideration within June 2017.

42.4.2. PROPOSALS WITHIN 10 KM FROM THE BOUNDARIES OF PROTECTED AREAS

42.4.2.1 Proposal for Dirok Field Development Phase I & II for re-entry and completion of existing well, commissioning of Gas Gathering Station (GGS) and Gas procession plant (GPP) and laying of underground gas pipeline in the Dirok field in onshore block AAP-ON-94/1, Tinsukia District, Assam by the Hindustan Oil Exploration Company Ltd.

The IGF(WL) briefed the Committee on the proposal and stated that the proposal is for re-entry and completion of existing well, commissioning of Gas Gathering Station and Gas procession plant and laying of underground gas pipeline in the Dirok field of Dehing Patkai Wildlife Sanctuary. He added that two existing wells are located within 1 km distance of the boundary of the aforesaid Sanctuary. He added that CWLW has recommended the except for Gas Processing Plant (GPP) at Golai with the following conditions:

- (1) Effective measures against noise and light pollution,
- (2) Effective management of effluent, solid and liquid waste and organic waste material generated.
- (3) Reclamation of ground cleared, ponds/ditches/drains and leveling of land.

- (4) Capping of wells.
- (5) Establishment of GPP at Golai is not recommended as the site may infringe elephant corridor. It needs mention that animal corridor is loosely defined area and cannot be exactly demarcated on ground. The Golai elephant corridor is already, fragmented due to human settlement. Industrial intrusion and coming up of other socio-economic activities that may result may aggravate the problem to irreversible proportion. Since these activities are long term activities and area located close to the Dehing Patkai WLS within its ESZ, impact of activities on wildlife needs to be analyzed by an expert group.
- (6) The Expert Committee formed by SBWL members visited the site along with Divisional Forest Officer, Digboi Division who is also the in-charge of Dehing Patkai WLS and Conservator of Forests, Eastern Assam Circle of Jorhat and opined that the proposed activity will not have any major impact on wildlife habitats and surrounding environment. The Chief Wildlife Warden, Assam has also agreed with their view and recommended the proposal subject to the conditions and mitigation measures stipulated by the Expert Committee and Divisional Forest Officer, Digboi Division.

After discussions, the Standing Committee decided to recommend the proposal along with the conditions prescribed by the State Chief Wildlife Warden. However, the existing exploratory wells located within 1 km distance from the boundary of the sanctuary shall be plugged permanently and no oil/gas shall be extracted from such wells. The Chief Wildlife Warden shall ensure compliance of same.

42.4.2.2. Proposal for Dirok Field Development Phase-III for drilling wells, development exploratory wells, commissioning of Gas Gathering Station (GGS) and Gas Processing Plant (GPP) and laying of underground gas pipeline in the Dirok Field in onshore block AAP-94/1, Tinsukia District, Assam by Hindustan Oil Exploration Company Ltd.

The IGF(WL) briefed the Committee on the proposal and stated that the proposal involves re-entry and completion of existing well, commissioning of Gas Gathering Station and Gas procession plant and laying of underground gas pipeline in the Dirok field of Dehing Patkai

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Wildlife Sanctuary. He added that two exploratory well and two development wells are located within 1 km distance from the boundary of the aforesaid Sanctuary. He added that CWLW has recommended the project with the following mitigation measures and conditions:

- (1) Effective measures against noise and light pollution.
- (2) Effective management of effluent, solid and liquid waste and organic waste material generated.
- (3) Reclamation of ground cleared, ponds/ditches/drains and leveling of land.
- (4) Capping off wells.
- (5) Taking into consideration the project activities in all the three phases, their cumulative impact on wildlife needs to be analyzed as development wells, gas gathering station and gas processing plant are long term activities. Thus an expert group may be constituted for the purpose consisting of experts from WII, Dehradun, expert from Assam and one NGO besides two officers from Forest Department. The group will analyze likely impact and recommend mitigation measures.

After discussions, the Standing Committee decided to recommend the proposal along with the conditions prescribed by the State Chief Wildlife Warden. However, the existing wells (two exploratory well and two development wells) located within 1 km distance from the boundary of the sanctuary shall be plugged permanently and no oil/gas shall be extracted from such wells. The Chief Wildlife Warden shall ensure compliance of same.



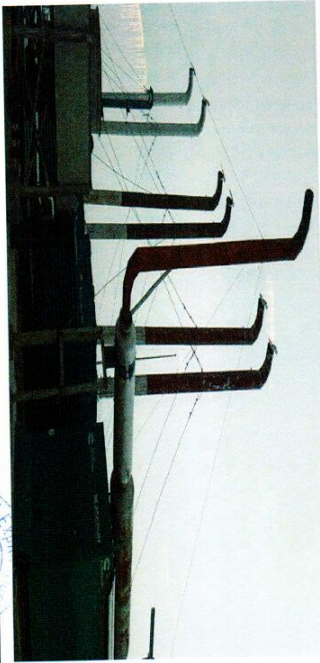
42.4.2.3. Four laning work from km 0 to km 17.3 of NH-37A in the State of Assam

The IGF(WL) briefed the Committee on the proposal and stated that the proposal involves the diversion of 6 ha of Bhomoraguri Reserve Forest for widening of existing road to 4-lane road from km 0 to 17.3 km of NH-37A. He added that CWLW has recommended the project with the following and condition:



- (1) The Sonitput District specially the area through which the proposed four lane road is passing highly prone to elephant depredation. The 6th Addition to the Kaziranga National Park is in the east and Burhachapori/Laokhowa Wildlife Sanctuary is the west of the

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Annexure - 4


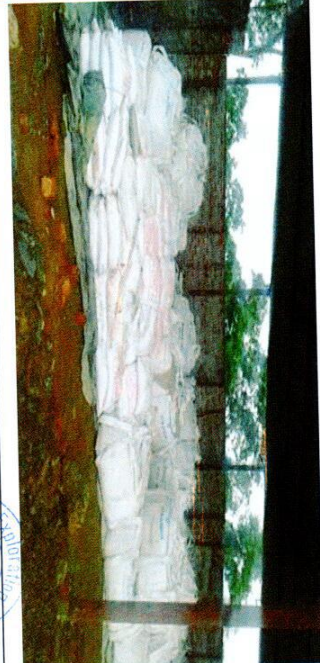
 ENVIRONMENT MANAGEMENT PLAN COMPLIANCE REPORT			
S.No	Environment Management Plan parameters	Mitigation measures	Compliance Status with photographic evidence
1	Air Quality Management Plan	Periodic ambient air quality monitoring conducted in accordance with the Environment Monitoring Program	
2		Adequate DG set stack height for effective dispersion of air pollutants, to meet the standard criteria set by the regulations (by CPCB) in terms of minimum stack height and emission concentrations.	




S.No	Environment Management Plan parameters	Mitigation measures	Compliance Status with photographic evidence
3	Air Quality Management Plan	Covering of Vehicles delivering raw materials like fine aggregates to prevent fugitive emissions.	
4	Air Quality Management Plan	Sprinkling of water on earthworks, material haulage and transportation routes on a regular basis during construction of the site.	






S.No	Environment Management Plan parameters	Mitigation measures	Compliance Status with photographic evidence
5	Noise Management Plan	Generator set are protected with acoustic enclosure system to suppress noise generation and to ensure compliance with generator noise limits specified by CPCB	
6	Soil Quality Management Plan	All chemicals are stored in designated area. Chemical storage areas are paved and properly bunded.	



S.No	Environment Management Plan parameters	Mitigation measures	Compliance Status with photographic evidence
7	Soil Quality Management Plan	Bund wall erected around Condensate oil storage tank to prevent soil contamination and spillage	
8	Segregation of materials	Cleaned up the site and removed all waste materials. The unused materials are dumped in the designated area as per the guidelines of local pollution control board.	



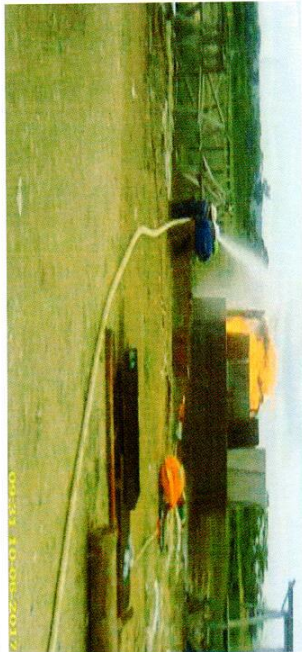

S.No	Environment Management Plan parameters	Mitigation measures	Compliance Status with photographic evidence
8	<p align="center">Site restoration Plan</p>	<p>Site restoration : The drill site surface are levelled and laid properly after the drilling activity and before the production phase.</p>	






S.No	Environment Management Plan parameters	Mitigation measures	Compliance Status with photographic evidence
11	Effluent Treatment Plant	Waste water generated from the drilling activity are treated through ETP, part of the treated water are utilized in drilling activity and rest of treated water are discharged into the local stream, conforming to CPCB Inland Water Discharge Standards	
12	Surface Water Quality Management Plan	Regular monitoring of surface water quality carried out and the results are found within the prescribed limits as per the standard. The reports of surface water analysis was submitted earlier in our previous compliance report.	 

S.No	Environment Management Plan parameters	Mitigation measures	Compliance Status with photographic evidence
13	<p>Impermeable liner to prevent contamination soil and groundwater</p>	<p>Protection of the surrounding environment of a drilling waste (cutting & spent mud) storage and disposal site are effectively achieved by using an impermeable liner on the base and sides to prevent contamination soil and groundwater.</p>	
14	<p>Waste Management Plan</p>	<p>Proper storage and disposal of waste generated during the project</p>	



S.No	Environment Management Plan parameters	Mitigation measures	Compliance Status with photographic evidence
15	Flare & Illumination Management Plan	Duration of flaring minimized and safer method of enclosed ground flaring method adopted. The Flare pit was sprayed with water as a precautionary measure to control heat generation. The enclosed ground flare has decreased the amount of smoke and noise compared to the elevated flare.	
16	Spill Management	No oil or chemical spill happened during the project however spill containment materials are procured and spill management plan are in place	



S.No	Environment Management Plan parameters	Mitigation measures	Compliance Status with photographic evidence
17	Greenbelt Management Plan	Greenbelt being developed in accordance to "Green Belt Development Plan" along boundary of GGS and GPP to prevent any offsite dispersion of air pollutants.	
18		Beautification of the site compound wall by art painting on environmental awareness and wild life protection in progress	



NDRF programme under 'Beti Bachao Beti Padhao'

STAFF REPORTER

GUWAHATI, Feb 6: The 1st Battalion of the National Disaster Response Force (NDRF) yesterday organised a Beti Bachao Beti Padhao awareness programme in coordination with NDRF Wives Welfare Association in Guwahati.

Essays and drawing competitions were organised as part of the programme, along with cultural items and drama. Dr. B. Sastri, president of the NDRF Wives Welfare Association, 1st BN NDRF, distributed gifts to children who participated in the competitions. Altogether 120 NDRF wives and 65 girls participated in the programme.



Former president of Assam Sahitya Sabha Lakshmi Nandana addressing media persons on the apex literary fest ensuring centenary celebrations, in Guwahati on Monday. Photos

Governor calls for fight against rhino poaching

STAFF REPORTER

GUWAHATI, Feb 6: Governor urged everybody to be alert to spread the message of rhino poaching and to take up the fight against it. He also called for a society to be developed around the rhino. He said that poaching is a crime and should be treated as such. He said that poaching is a crime and should be treated as such. He said that poaching is a crime and should be treated as such.

Opp slams Govt... Superspeciality hospital to open tomorrow

GUWAHATI, Feb 6: The 272-bed Ayurandra Superspeciality Hospital will open officially on February 9 at Chokuk under the leadership of Dr. J. B. Das. The hospital is part of the Ayurandra Healthcare Pvt. Ltd. Addressing a press conference here today, the Minister said that the hospital is the first of its kind in Assam. It will also provide the most modern facilities for radiology and pathology.

28,182 foreigners...

GUWAHATI, Feb 6: The Ministry of Labour has reported that 28,182 foreigners are working in Assam. This includes 14,500 in the tea sector and 13,682 in other sectors. The government is taking steps to regulate foreign labor in the state.

Dr. Sri Lata Bora to...

GUWAHATI, Feb 6: Dr. Sri Lata Bora, Minister for Health, will be addressing the 100th anniversary of the birth of Mahatma Gandhi. She will be speaking about the role of women in the freedom struggle.

NE-Myanmar trade...

GUWAHATI, Feb 6: India-Myanmar-Thailand Trilateral Highway will be the link between the Indian subcontinent and the Malay Archipelago. This will boost trade and economic growth in the region.

Art exhibition

GUWAHATI, Feb 6: Rangoni Assam, a voluntary NGO formed with the aim of promoting fraternity, dedication and spirit of voluntary service amongst the members working together for the holistic development of the individual, society and aiming at happiness of the individual as well as the community as an integral one, is holding 'Art-Teach-2017' exhibition of art paintings and sculptures from February 11 to 17 at the AC Art Gallery of the Srimanta Sankaradeva Kalasahithya Bhawan.

HOPE! HINDUSTAN OIL EXPLORATION COMPANY LIMITED

ASSAM INDUSTRIAL DEVELOPMENT CORPORATION LIMITED

ASSAM POWER GENERATION CORPORATION LTD. CANCELLATION NOTICE

Table with 3 columns: Sl. No., Name of the Work, Estimated Value (Rs. Lakhs)

Oil India Limited INVITATION FOR BID NATIONAL COMPETITIVE BID

Table with 3 columns: E-TENDER NO., OPENING DATE, Item & Qty

BOARD OF SECONDARY EDUCATION, ASSAM, BARMUHAMUDAI, GUWAHATI-21

ADVERTISEMENTS FOR THE POST OF ASSISTANT ACADEMIC OFFICERS. The following posts are lying vacant in the Board of Secondary Education, Assam, Barmuhamudai, Guwahati-21. Interested candidates may apply in the prescribed form.

INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI

ASSAM POWER GENERATION CORPORATION LTD. CANCELLATION NOTICE

INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI

ABBREVIATED TENDER NOTICE table with 3 columns: Sl. No., Name of Work, Period of Downloading

Oil and Natural Gas Corporation Ltd.

NOTICE INVITING TENDERS



All BTC Minority Students' Union activists staging demonstration on various demands, at Dispur Last Night Guwahati on Monday. - AT photo



ग्रीन टेक एनवायर्नमेंटल इंजीनियर और कंसल्टेंट्स

GREEN TECH ENVIRONMENTAL ENGINEER & CONSULTANTS

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Report No:GEEC/STK/2018/02/25		Date	10/03/2018
Name of the Industry	Hindustan Oil Exploration Company Ltd.	Lab Id	GEEC/STK/2018/02/25
Address	Bungalow No. 906, Opp. IOCL-AOD General office, Digboi, Tinsukia-786171	Date of Sampling	23-02-2018
		Date of Receipt	24-02-2018
		Test Start Date	24-02-2018
		Test End Date	26-02-2018
STACK MONITORING REPORT			
Stack Details:	DG Set - 62.5 KVA Location: Area 10 HMGPP, Agbandha DG Set Make: Cummins Jackson	Stack Height (GL) Feet	6
Fuel Used	HSD	Stack Diameter, m	0.05
Sample Porthole Height (GL) Feet	6	Area in m ²	0.002
Flow Characteristics			
Ambient Temp, °C	25.4	Velocity in m/s	4.6
Stack Temp, °C	126	Flow rate m ³ /s	0.01
Emission Details			
Parameter	Results	CPCB General Standards	
Sulphur Dioxide, (SO ₂) in ppm	5	75	
Oxides of Nitrogen, (NO ₂) in ppm	42	710	
HC in ppm	<1	-	
H ₂ S in mg/m ³	-	-	
VOC in ppm	<1	-	
HOC in ppm	<1	-	
RSPM in mg/m ³	-	-	
SPM in mg/m ³	-	-	
Flue Gas Flow in scm/day	-	-	
Sampling and analysis is carried out as per IS:11255 (Part-1, 2, 3 & 7) 1985, IS:13270:1992 (Reaffirmed 1999)			
Equipment Details:	Stack Monitoring Kit: SMS-4 Make: Polltech Pvt.Ltd. & Orsat Apparatus		
Monitored by:	Mr. Surajpan Baruah		
Remarks:	All Values are within the limit as per CPCB/MoEF Norms.		
			Authorised by: Lab -in-Charge <i>Belinda</i> (Dr. Belinda Lahon)

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 TeleFax: 0361 2300278



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Report No:GEEC/SLM/2018/02/37/01	Date:	10/03/2018			
Name of the Industry	Hindustan Oil Exploration Company Ltd.				
Address	Bungalow No. 906, Opp. IOCL-AOD General Office, Digboi, Tinsukia-786171				
Noise Level Report					
Monitoring Location	Camp Hollong Modular Gas Processing Plant, Agbandha	Date of Monitoring 23/02/2016			
Sound Level Meter Model	SL-4023 SD	Sl.No. 1.301282			
Calibration certificate No:	PCL/14849/16-17	Calibration valid upto: 17-03-2018			
Measurement Results					
Sl.No.	Location	Time Duration	Sound Parameters (dBA)		
			Leq	Limit	
				Day time	Night Time
1	EIT & HOEC Office Area	Day Time	62.4	75	70
		Night Time	47.5		
2	Area-40 (GEG)	Day Time	72.3		
		Night Time	63.1		
3	Area-30	Day Time	73.8		
		Night Time	53.4		
4	Area-70 (Bath Heater)	Day Time	70.3		
		Night Time	61.9		
Remark :	Noise Level recorded are complied with the CPCB Limit				
Authorised by: Lab -in-Charge <i>Belinda Lahon</i> (Dr. Belinda Lahon)					

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Report No:GEEC/SLM/2018/02/37/02		Date:	10/03/2018
Name of the Industry	Hindustan Oil Exploration Company Ltd.		
Address	Bunglow No. 906, Opp. IOCL-AOD General Office, Digboi, Tinsukia-786171		
Sound Level Report			
Monitoring Location	DG Set-62.5 KVA Location: Camp Hollong Modular Gas Processing Plant, Agbandha, Make: Cummins Jackson	Date of Monitoring	23/02/2016
		Model	SL-4023 SD
Monitored by	Mr.Surajpan Baruah	Sl.No.	1.301282
Calibration certificate No:	PCL/14849/16-17	Calibration valid upto:	17-03-2018
Measurement Results			
Sl.No.	Location	Leq (dBA)	
		At Source	1 m from Accoustic Enclosure
1	DG set_62.5 KVA	98.8	73.4
Remark :	Sound Level recorded are complied with the CPCB Limit Leq <75 dBA 1 m from the Accoustic Enclosure		
Authorised by: Lab -in-Charge <i>Belinda</i> (Dr. Belinda Lahon)			

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TEST REPORT

Test Report No	GEEC/AAQM/2018/02/40	Date of Reporting	10/03/2018	
Customer Name & Address	Hindustan Oil Exploration Company Ltd. Bunglow No. 906, Opp. IOCL-AOD General office, Digboi, Tinsukia-786171	Lab. ID No.	GEEC/AA/2018/02/43	
		Date of Sampling	22/02/2018 & 23/02/2018	
Sampling Location	EIT & HOECL Office Site HMGPP, Agbandha	Ambient Temperature	Max.	Min.
Wind Direction/ Weather Condition	Calm and Clear		26.4°C	16.6°C
Sampling Condition	In GF/A, PTFE Filter Paper & Plastic Bottle	Date of Sample Receipt	26/02/2018	
Monitored By	Mr. S Baruah	Test Start Date	26/02/2018	
Equipments Details	RDS Sampler & ADS PM Sampler	Test End Date	09/03/2018	

AMBIENT AIR QUALITY

Sampling and Analysis carried out as per GEEC/SOP/01

Sl. No.	Parameters	Unit	Results	Limits	Test Method
1	Particulate Matter (PM ₁₀)	µg/m ³	84	100	IS 5182(23)
2	Particulate Matter (PM _{2.5})	µg/m ³	42	60	CPCB Guidelines
3	Sulphur Dioxide (SO ₂)	µg/m ³	7	80	IS 5182(2)
4	Nitrogen Dioxide (NO ₂)	µg/m ³	12	80	IS 5182(VI)
5	Carbon Monoxide (CO)	mg/m ³	<1	2	IS 5182(22)
6	Lead (Pb)	µg/m ³	<0.01	1	IS 5182(22)
7	Ozone (O ₃)	µg/m ³	15	180	CPCB Guidelines
8	Benzene (C ₆ H ₆) µg/m ³	µg/m ³	BDL	5	CPCB Guidelines
9	Benzo(a)Pyrene (BaP)- Particulate Phase only	µg/m ³	BDL	1	CPCB Guidelines
10	Arsenic (As)	ng/m ³	BDL	6	CPCB Guidelines
11	Nickel (Ni)	ng/m ³	BDL	20	CPCB Guidelines
12	Ammonia (NH ₃)	µg/m ³	BDL	400	CPCB Guidelines

***** End of Report*****

Authorised by: Lab -in-Charge

Blahon

(Dr. Belinda Lahon)

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TEST REPORT

Test Report No	GEEC/AAQM/2018/02/41	Date of Reporting	10/03/2018	
Customer Name & Address	Hindustan Oil Exploration Company Ltd. Bungalow No. 906, Opp. IOCL-AOD General office, Digboi, Tinsukia-786171	Lab. ID No.	GEEC/AA/2018/02/41	
		Date of Sampling	22/02/2018 & 23/02/2018	
Sampling Location	Area 10, Near (Area-80 (Middle Gate) HMGPP, Agbandha	Ambient Temperature	Max.	Min.
Wind Direction/	Calm and Clear		26.4°C	16.6°C
Sampling Condition	In GF/A, PTFE Filter Paper & Plastic Bottle	Date of Sample Receipt	26/02/2018	
Monitored By	Mr. S Baruah	Test Start Date	26/02/2018	
Equipments Details	RDS Sampler & ADS PM Sampler	Test End Date	09/03/2018	

AMBIENT AIR QUALITY

Sampling and Analysis carried out as per GEEC/SOP/01

Sl. No.	Parameters	Unit	Results	Limits	Test Method
1	Particulate Matter (PM ₁₀)	µg/m ³	88	100	IS 5182(23)
2	Particulate Matter (PM _{2.5})	µg/m ³	34	60	CPCB Guidelines
3	Sulphur Dioxide (SO ₂)	µg/m ³	7	80	IS 5182(2)
4	Nitrogen Dioxide (NO ₂)	µg/m ³	14	80	IS 5182(VI)
5	Carbon Monoxide (CO)	mg/m ³	<1	2	IS 5182(22)
6	Lead (Pb)	µg/m ³	<0.01	1	IS 5182(22)
7	Ozone (O ₃)	µg/m ³	5	180	CPCB Guidelines
8	Benzene (C ₆ H ₆) µg/m ³	µg/m ³	BDL	5	CPCB Guidelines
9	Benzo(a)Pyrene (BaP)- Particulate Phase only	µg/m ³	BDL	1	CPCB Guidelines
10	Arsenic (As)	ng/m ³	BDL	6	CPCB Guidelines
11	Nickel (Ni)	ng/m ³	BDL	20	CPCB Guidelines
12	Ammonia (NH ₃)	µg/m ³	BDL	400	CPCB Guidelines

***** End of Report*****

Authorised by: Lab -in-Charge

Belinda
(Dr. Belinda Lahon)

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TEST REPORT

Test Report No	GEEC/AAQM/2018/02/42	Date of Reporting	10/03/2018	
Customer Name & Address	Hindustan Oil Exploration Company Ltd. Bunglow No. 906, Opp. IOCL-AOD General office, Digbol, Tinsukia-786171	Lab. ID No.	GEEC/AA/2018/02/42	
		Date of Sampling	23/02/2018 & 24/02/2018	
Sampling Location	Area-20 (Slug Catcher) HMGPP, Agbandha	Ambient Temperature	Max.	Min.
Wind Direction/	Calm and Clear		27.1°C	16.2°C
Sampling Condition	In GF/A, PTFE Filter Paper & Plastic Bottle	Date of Sample Receipt	26/02/2018	
Monitored By	Mr. S Baruah	Test Start Date	26/02/2018	
Equipments Details	RDS Sampler & ADS PM Sampler	Test End Date	09/03/2018	

AMBIENT AIR QUALITY

Sampling and Analysis carried out as per GEEC/SOP/01

Sl. No.	Parameters	Unit	Results	Limits	Test Method
1	Particulate Matter (PM ₁₀)	µg/m ³	78	100	IS 5182(23)
2	Particulate Matter (PM _{2.5})	µg/m ³	32	60	CPCB Guidelines
3	Sulphur Dioxide (SO ₂)	µg/m ³	<5	80	IS 5182(2)
4	Nitrogen Dioxide (NO ₂)	µg/m ³	16	80	IS 5182(VI)
5	Carbon Monoxide (CO)	mg/m ³	<1	2	IS 5182(22)
6	Lead (Pb)	µg/m ³	<0.01	1	IS 5182(22)
7	Ozone (O ₃)	µg/m ³	20	180	CPCB Guidelines
8	Benzene (C ₆ H ₆) µg/m ³	µg/m ³	BDL	5	CPCB Guidelines
9	Benzo(a)Pyrene (BaP)- Particulate Phase only	µg/m ³	BDL	1	CPCB Guidelines
10	Arsenic (As)	ng/m ³	BDL	6	CPCB Guidelines
11	Nickel (Ni)	ng/m ³	BDL	20	CPCB Guidelines
12	Ammonia (NH ₃)	µg/m ³	BDL	400	CPCB Guidelines

***** End of Report*****

Authorised by: Lab -in-Charge

Belinda Lahon
(Dr. Belinda Lahon)

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TEST REPORT

Test Report No	GEEC/AAQM/2018/02/43	Date of Reporting	10/03/2018	
Customer Name & Address	Hindustan Oil Exploration Company Ltd. Bungalow No. 906, Opp. IOCL-AOD General office, Digboi, Tinsukia-786171	Lab. ID No.	GEEC/AA/2018/02/43	
		Date of Sampling	23/02/2018 & 24/02/2018	
Sampling Location	EXPRO Office Site ,(Area 40) HMGPP, Agbandha	Ambient Temperature	Max.	Min.
Wind Direction/	Calm and Clear		27.1°C	16.2°C
Sampling Condition	In GF/A, PTFE Filter Paper & Plastic Bottle	Date of Sample Receipt	26/02/2018	
Monitored By	Mr. S Baruah	Test Start Date	26/02/2018	
Equipments Details	RDS Sampler & ADS PM Sampler	Test End Date	09/03/2018	

AMBIENT AIR QUALITY

Sampling and Analysis carried out as per GEEC/SOP/01

Sl. No.	Parameters	Unit	Results	Limits	Test Method
1	Particulate Matter (PM ₁₀)	µg/m ³	86	100	IS 5182(23)
2	Particulate Matter (PM _{2.5})	µg/m ³	40	60	CPCB Guidelines
3	Sulphur Dioxide (SO ₂)	µg/m ³	<5	80	IS 5182(2)
4	Nitrogen Dioxide (NO ₂)	µg/m ³	12	80	IS 5182(VI)
5	Carbon Monoxide (CO)	mg/m ³	<1	2	IS 5182(22)
6	Lead (Pb)	µg/m ³	<0.01	1	IS 5182(22)
7	Ozone (O ₃)	µg/m ³	10	180	CPCB Guidelines
8	Benzene (C ₆ H ₆)	µg/m ³	BDL	5	CPCB Guidelines
9	Benzo(a)Pyrene (BaP)- Particulate Phase only	µg/m ³	BDL	1	CPCB Guidelines
10	Arsenic (As)	ng/m ³	BDL	6	CPCB Guidelines
11	Nickel (Ni)	ng/m ³	BDL	20	CPCB Guidelines
12	Ammonia (NH ₃)	µg/m ³	BDL	400	CPCB Guidelines

***** End of Report*****

Authorised by: Lab -in-Charge

Blahon
(Dr. Belinda Lahon)

The parameters tested on the specific date are found to be within the NATIONAL AMBIENT AIR QUALITY STANDARDS, CPCB NOTIFICATION DATED 18TH NOVEMBER, 2009.

- * The results relate only to the item tested.
- * The test report shall not be reproduced except in full, without written approval of the laboratory.
- * The report cannot be used as an evidence in a court of law without prior written approval of the laboratory.

Page 01/01

मुख्य कार्यालय: बीपी चालिहा रोड, मेलचकर, शिवसागर, असम-785640
Head Office: B. P. Chaliha Road, Melachakar, Sivasagar, Assam-785640
TeleFax: 0361 2300278

Annex 10.2

Minutes of Standing Committee of NBWL



Government of India
Ministry of Environment, Forest and Climate Change
(Wildlife Division)

Indira Paryavaran Bhawan
Jor Bagh Road, Aliganj
New Delhi 110 003

F.No.6-69/2017 WL(42nd Meeting)

Dated:30th May 2017

To
All Members,
Standing Committee of NBWL.

Sub: Minutes of 42nd Meeting of Standing Committee of NBWL.

Sir/Madam,

Kindly find enclosed copy of the minutes of the 42nd Meeting of the Standing Committee of National Board for Wildlife held on 15th May 2017 at 3.00 PM in "Brahmaputra Conference Hall, 1 Floor, Vayu Block, Indira Paryavaran Bhawan, Jor Bagh, New Delhi under the chairmanship of Hon'ble Minister of State (Independent Charge) for Environment, Forest and Climate Change.

Yours faithfully,

(S. P. Vashishth)

Deputy Inspector General (Wildlife)

[Email:vashsatya@gmail.com](mailto:vashsatya@gmail.com)

Encl: As above

Distribution:

1. Secretary, MoEF & CC
2. Director General of Forests & Special Secretary, MoEF & CC.
3. Member Secretary, NTCA, New Delhi.
4. Additional Director General of Forests (FC), MoEF&CC.
5. Additional Director General of Forests (WL), MoEF&CC.
6. Director, Wildlife Institute of India, Dehradun.
7. Director, GEER Foundation, Gandhinagar, Gujarat.
8. Prof. R.Sukumar, Central for Ecological Sciences, Indian Institute of Science, Bangalore.
9. Dr. H.S. Singh, Gandhi Nagar, Gujarat.
10. Pr. Secretary (Forests), Government of Andhra Pradesh, Hyderabad.

Copy to:

1. PS to Hon'ble MOS (I/C) E&F.
2. PPS to Addl.DGF(WL) and Member Secretary, Standing Committee (NBWL).
3. PPS to IGF(WL)/PS to DIG(WL)/PS to JD(WL).

(viii) The State Govt. shall charge the Net Present Value of the forest land proposed for diversion from the user agency as per Hon`ble Supreme Court of India's order numbers IA 826 and 566 (dated 28.03.2008 and 09.05.2008) related to a Writ Petition (Civil) No 202/1995.

Dr. H. S. Singh and Prof. R. Sukumar suggested for conducting a detailed impact study of the proposed project on the aforesaid Tiger Reserve.

After discussions, the Committee decided that a committee comprising of Dr. R. Sukumar, member, one representative of NTCA and one representative from GEER Foundation would visit the project sites and submit a report to the Ministry for further consideration within June 2017.

42.4.2. PROPOSALS WITHIN 10 KM FROM THE BOUNDARIES OF PROTECTED AREAS

42.4.2.1 Proposal for Dirok Field Development Phase I & II for re-entry and completion of existing well, commissioning of Gas Gathering Station (GGS) and Gas procession plant (GPP) and laying of underground gas pipeline in the Dirok field in onshore block AAP-ON-94/1, Tinsukia District, Assam by the Hindustan Oil Exploration Company Ltd.

The IGF(WL) briefed the Committee on the proposal and stated that the proposal is for re-entry and completion of existing well, commissioning of Gas Gathering Station and Gas procession plant and laying of underground gas pipeline in the Dirok field of Dehing Patkai Wildlife Sanctuary. He added that two existing wells are located within 1 km distance of the boundary of the aforesaid Sanctuary. He added that CWLW has recommended the except for Gas Processing Plant (GPP) at Golai with the following conditions:

- (1) Effective measures against noise and light pollution,
- (2) Effective management of effluent, solid and liquid waste and organic waste material generated.
- (3) Reclamation of ground cleared, ponds/ditches/drains and leveling of land.

- (4) Capping of wells.
- (5) Establishment of GPP at Golai is not recommended as the site may infringe elephant corridor. It needs mention that animal corridor is loosely defined area and cannot be exactly demarcated on ground. The Golai elephant corridor is already, fragmented due to human settlement. Industrial intrusion and coming up of other socio-economic activities that may result may aggravate the problem to irreversible proportion. Since these activities are long term activities and area located close to the Dehing Patkai WLS within its ESZ, impact of activities on wildlife needs to be analyzed by an expert group.
- (6) The Expert Committee formed by SBWL members visited the site along with Divisional Forest Officer, Digboi Division who is also the in-charge of Dehing Patkai WLS and Conservator of Forests, Eastern Assam Circle of Jorhat and opined that the proposed activity will not have any major impact on wildlife habitats and surrounding environment. The Chief Wildlife Warden, Assam has also agreed with their view and recommended the proposal subject to the conditions and mitigation measures stipulated by the Expert Committee and Divisional Forest Officer, Digboi Division.

After discussions, the Standing Committee decided to recommend the proposal along with the conditions prescribed by the State Chief Wildlife Warden. However, the existing exploratory wells located within 1 km distance from the boundary of the sanctuary shall be plugged permanently and no oil/gas shall be extracted from such wells. The Chief Wildlife Warden shall ensure compliance of same.

42.4.2.2. Proposal for Dirok Field Development Phase-III for drilling wells, development exploratory wells, commissioning of Gas Gathering Station (GGS) and Gas Processing Plant (GPP) and laying of underground gas pipeline in the Dirok Field in onshore block AAP-94/1, Tinsukia District, Assam by Hindustan Oil Exploration Company Ltd.

The IGF(WL) briefed the Committee on the proposal and stated that the proposal involves re-entry and completion of existing well, commissioning of Gas Gathering Station and Gas procession plant and laying of underground gas pipeline in the Dirok field of Dehing Patkai

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Wildlife Sanctuary. He added that two exploratory well and two development wells are located within 1 km distance from the boundary of the aforesaid Sanctuary. He added that CWLW has recommended the project with the following mitigation measures and conditions:

- (1) Effective measures against noise and light pollution.
- (2) Effective management of effluent, solid and liquid waste and organic waste material generated.
- (3) Reclamation of ground cleared, ponds/ditches/drains and leveling of land.
- (4) Capping off wells.
- (5) Taking into consideration the project activities in all the three phases, their cumulative impact on wildlife needs to be analyzed as development wells, gas gathering station and gas processing plant are long term activities. Thus an expert group may be constituted for the purpose consisting of experts from WII, Dehradun, expert from Assam and one NGO besides two officers from Forest Department. The group will analyze likely impact and recommend mitigation measures.

After discussions, the Standing Committee decided to recommend the proposal along with the conditions prescribed by the State Chief Wildlife Warden. However, the existing wells (two exploratory well and two development wells) located within 1 km distance from the boundary of the sanctuary shall be plugged permanently and no oil/gas shall be extracted from such wells. The Chief Wildlife Warden shall ensure compliance of same.

42.4.2.3. Four laning work from km 0 to km 17.3 of NH-37A in the State of Assam

The IGF(WL) briefed the Committee on the proposal and stated that the proposal involves the diversion of 6 ha of Bhomoraguri Reserve Forest for widening of existing road to 4-lane road from km 0 to 17.3 km of NH-37A. He added that CWLW has recommended the project with the following and condition:

- (1) The Sonitput District specially the area through which the proposed four lane road is passing highly prone to elephant depredation. The 6th Addition to the Kaziranga National Park is in the east and Burhachapori/Laokhowa Wildlife Sanctuary is the west of the

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Government of India
Ministry of Environment, Forest and Climate Change
(Wildlife Division)

6th Floor, Vayu Wing
Indira Paryavaran Bhawan
Jor Bag Road, Aliganj
New Delhi 110 003

F.No. 6-119/2107 WL

Date: 21st July 2017

To

All Members
Standing Committee of NBWL

Sub: Minutes of 43rd Minutes of Standing Committee of NBWL

Sir/Madam,

Kindly find enclosed copy of the Minutes of 43rd Meeting of the Standing Committee of National board for Wildlife held on 27th June 2017 at 12.00 PM in Teesta Conference Hall, I Floor, Vayu Block, Indira Paryavarn Bhavan, New Delhi under the chairmanship of Hon`ble Union Minister of Environment, Forest and Climate Change.

Yours faithfully,

(Dr. Pasupala Ravi)
Scientist C

E-mail: ddwlmef@gmail.com

Encl: As above

Distribution

- (1) Secretary, MoEF&CC
- (2) DGF&SS, MoEF&CC
- (3) Member Secretary, NTCA
- (4) ADGF(FC), MoEF&CC
- (5) ADGF(WL), MoEF&CC
- (6) Director, WII, Dehradun
- (7) Director, GEER Foundation, Gandhinagar, Gujarat
- (8) Dr. R.Sukumar, Member, NBWL
- (9) Dr. H.S. Singh, Member, NBWL
- (10) Pr. Secretary (Forests), Govt. of Andhra Pradesh

Copy to

- (1) PS to Hon`ble MoEF&CC
- (2) PPS to DGF&SS, MoEF&CC
- (3) PPS to Addl.DGF(WL), Member Secretary, NBWL
- (4) PPS to IGF(WL)/PS to DIG(WL)/PS to JD(WL)

43.2.12 Obtain NOC for Sand, Bajri & Boulder mining on Aasan River bed (32.709 ha) at Village Sahaspur, District Dehradun, Uttarakhand

The IGF(WL) briefed the Committee on the proposal and stated that the proposal is for the collection of river bed materials from Aasan Wetland Conservation Reserve. He added that the CWLW has recommended the proposal subject to the following conditions specified by the Divisional Forest Officer of Chakrata Forest Division:

The project is essential to prevent widening of the river bed due to deposition of sediments which if not mined out will cause flooding, damage to the adjoining areas, destruction of life and property. This will also enhance revenue and greater employment opportunities for the local people. Moreover there is no adverse impact on the flora and fauna. The proposed project has public interest.

After discussions, the Standing Committee decided to recommend the proposal along with the mitigation measures prescribed by the Chief Wildlife Warden.

43.3 ADDITIONAL AGENDA ITEMS

- 42.4.2.1 Proposal for Dirok Field Development Phase I & II for re-entry and completion of existing well, commissioning of Gas Gathering Station (GGS) and Gas procession plant (GPP) and laying of underground gas pipeline in the Dirok field in onshore block AAP-ON-94/1, Tinsukia District, Assam by the Hindustan Oil Exploration Company Ltd.**
- 42.4.2.2 Proposal for Dirok Field Development Phase III for drilling wells, development exploratory wells, commissioning of Gas Gathering Station (GGS) and Gas Processing Plant (GPP) and laying of underground gas pipeline in the Dirok Field in onshore block AAP-94/1, Tinsukia District, Assam by Hindustan Oil Exploration Company Ltd.**

The IGF(WL) briefed the Committee on the proposal and stated that these proposals were recommended by the Standing Committee of NBWL in its 42nd meeting held on 15th May 2017.

It was recommended that the existing wells located within 1 km distance from the boundary of the sanctuary shall be plugged permanently and no oil/gas shall be extracted from such wells. He added user agency requested to waive the condition of plugging permanently the wells located within 1 km imposed by the Standing Committee as oil exploration/drilling is different from mining activity.

IGF(WL) further mentioned that opinion of Impact assessment Division was obtained. The IA Division has opined that oil drilling is different from mining activity as per EIA notification. He read out the opinion furnished by the Sr. Consultant (Legal), MoEF&CC which confirms the views of the IA Division.

After discussions, based on the opinion of IA Division and legal opinion of Sr. Consultant (Legal), MoEF&CC, the Standing Committee came to conclusion that oil drilling activity is a separate activity from mining as per EIA notification and agreed to the waiver of the condition of plugging permanently the wells located within 1 km distance from the boundary of the sanctuary. Other condition imposed in the 42nd Standing Committee of NBWL will be followed.

AGENDA ITEM No. 4

NO ITEMS WERE TAKEN UP BEFORE THE STANDING COMMITTEE WITH THE PERMISSION OF THE CHAIR.

Annex 10.3

Forest Clearance for Pipeline



GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT, FORESTS & CLIMATE CHANGE
NORTH EASTERN REGIONAL OFFICE
LAW-U.SB, LUMBATINGEN
NEAR M.T.C. WORKSHOP, SHILLONG-793021
PHONE NO. 0364-2537609
FAX NO. 0364-2536041
Email: moefshill_09@rediffmail.com

F.No. 3-AS B 061/2016-SHI 4581-52

17th January, 2017

To

The Secretary,
Environment & Forest Department,
Government of Assam, D/S/PAU
Rehabari, Guwahati - 6

Sub: Proposal for diversion of 4.8444 ha. of Forest land in Digboi Reserve Forest & Upper Dehing Reserve Forest for laying of underground gas pipe line from Dirak Field Development under Digboi Division.

Sir,

This has reference to the State Govt letter No.FRS.149/2016/132 dated 30.11.2016 on the subject mentioned above, seeking prior approval of the Central Government in accordance with Section 2 of the FCA, 1980.

After careful consideration of the proposal of the State Government, I am directed to inform that the Central Government hereby conveys its "In Principle Approval" for diversion of 4.8444 ha. of Forest land in Digboi Reserve Forest & Upper Dehing Reserve Forest for laying of underground gas pipe line from Dirak Field Development under Digboi Division subject to the following conditions:

- (i) The User agency shall transfer the cost of compensatory afforestation as estimated by State Forest Department over 10.0 ha of degraded forest land identified at 1st Addition to Dirak Reserve Forest and by the South West side of the Namding in the Margherita West Range of Digboi Forest Division to Adhoc CAMPA through State Forest Department.
- (ii) The State Govt shall charge the Net Present Value of the forest land diverted under this proposal from the User Agency as per the Judgment of the Hon'ble Supreme Court of India dated 28.03.2008 & 09.05.2008 in IA No.566 in WP (C) No.202/1995 and as per the guideline issued by this Ministry vide letter No. 5-3/2001-FC dated 05.02.2009 in this regard.
- (iii) The User Agency shall furnish an undertaking to pay the additional amount of the Net Present Value (NPV) of the diverted forest land, if any, becoming due after finalization/revision of the same by Hon'ble Supreme Court of India.
- (iv) All the above funds received from the User Agency under the project shall be transferred preferably through RTGS in the newly opened State -specific saving Bank Account of the Ad-hoc CAMPA Fund (CAF) in New SB Account No CA SB01025200 of Corporation Bank, CGO Complex, Phase-I, Lodhi Road, New Delhi - 110 003 or Union Bank of India, Sunder Nagar Branch, New Delhi, 110003 (New SB A/c No. 344902010105 409).
- (v) The User Agency shall bear and deposit the amount of the cost of demarcation of the land proposed for diversion directly to the concerned Divisional Forest Officer. The concerned Divisional Forest Officer shall demarcate the land proposed for diversion on the ground by erecting at least 4' high cement-concrete pillars duly numbered,

- forward and backward bearing and distance from pillar to pillar written on the pillars and DGPS co-ordinates to be inscribed on the pillars. The competent authority shall verify and issue a certificate to this effect. Photographs showing permanent boundary pillars with GPS co-ordinates to be submitted.
- (vi) The charges for felling, logging and transportation of project affected trees should be collected from the User Agency at the rates approved by the State Govt and deposited with the DFO concerned for utilization immediately following the diversion of forest land.
 - (vii) The certificates for the payment in respect to Sl. No. (v) and (vi) shall be furnished to this office by the user agency.
 - (viii) The forest land shall not be used for any purpose other than that specified in the proposal and under no circumstances be transferred to any other agency, department or person.
 - (ix) The felling of numbers of trees on the forest land being diverted is to be reduced to the bare minimum if feasible, and the trees should be felled under strict supervision of State Forest Department.
 - (x) All other clearance/NOCs under different applicable rules/regulations /local laws and under Forest Dwellers (Recognition of Forest Rights)Act, 2006 as required vide MoEF, New Delhi guideline No.11-9/1998-FC(pt) dated 03.08.2009 shall be complied with.

After receipt of the compliance report from the State Government on fulfillment of the conditions mentioned above, final approval will be issued in this regard. Formal transfer of forest land shall not be effected by the State Govt till final approval orders approving the diversion of forest land are issued by the Central Government.

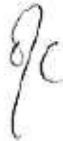
Yours faithfully,



(R.L. Sanga)
Conservator of Forests(C)

Copy to:

- (i) The Principal Chief Conservator of Forests & HoFF, Government of Assam, Environment & Forests Department, Aranya Bhawan, Rop Konwar Jyoti Prasad Agarwal Path, Near Srimanta Sankardev Kalakhetra, Panjabari, Guwahati -781037.



(R.L. Sanga)
Conservator of Forests(C)



GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE
NORTH EASTERN REGIONAL OFFICE
LAWU SHILLONG
SHILLONG-793021
PHONE NO. 0364 2537699
FAX NO. 0364 2536041
Email: noreg@shillong.gov.in

P. Bannu
P. Bannu
S. A. S.
A. Paul

E.No. 3-AS B 061/2016-SIII / 1182-58

13th July, 2017

To

The Secretary,
Environment & Forest Department,
Government of Assam,
Rehbari, Guwahati

Sub: Proposal for diversion of 4.8444 ha. of forest land in Digboi Reserve Forest & Upper Dehing Reserve Forest for laying of underground gas pipe line from Dirak Field Development under Digboi Division in Tinsukia District, Assam.

Sir,

This has reference to the State Govt letter No.FRS.149/2016/132 dated 30.11.2016 and No.FRS.149/2016/184 dated 30.06.2017 on the subject mentioned above, seeking prior approval of the Central Government in accordance with Section 2 of the FCA, 1980.

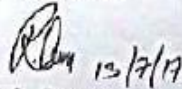
After careful consideration of the proposal, In-Principle Approval was granted vide this office letter of even number dated 17.01.2017 subject to fulfillment of certain conditions. The State Government has furnished compliance report in respect of the conditions stipulated in the In-Principle Approval and has requested the Central Government to grant final approval.

In this connection and on the basis of the compliance report furnished by the State Government letter No.FRS.149/2016/184 dated 30.06.2017 of Govt of Assam and confirmation of Ad-hoc CAMPA, New Delhi letter No 1-4/2014-CAMPA dated 05.07.2016, 'Final Approval' of the Central Government is hereby granted under Section-2 of the Forest (Conservation) Act, 1980 for diversion of 4.8444 ha. of Forest land in Digboi Reserve Forest & Upper Dehing Reserve Forest for laying of underground gas pipe line from Dirak Field Development under Digboi Division subject to the following conditions:

- (i) The legal status of the forest land shall remain unchanged.
- (ii) The compensatory afforestation shall be raised by the State Forest Department over 10.0 ha of degraded forest land identified at 1st Addition of Dirak Reserve Forest and by the South West side of Namdang in the Magherita West Range of Digboi Forest Division as per the fund deposited by the User Agency & scheme furnished by the State Govt. Compensatory afforestation shall be raised comprising of indigenous species with 20 % of medicinal Plant/ herbs and shrubs by the State Forest Department as per the fund deposited by the User Agency & scheme furnished by the State Govt.
- (iii) Permanent demarcation of forest land proposed for diversion shall be done on the ground at project cost before handing over the forest land to the User Agency.


- (iv) State Govt not to hand over the land without demarcation & erection of pillars.
- (v) The forest land shall not be used for any purpose other than that specified in the proposal.
- (vi) The User Agency shall not expand its occupation or use surrounding forest/forest land in any manner otherwise expressed in this clearance.
- (vii) The land so diverted shall revert back to the Forest Department in case it is not needed for the above use after due restoration to its original status (as far as possible and to the satisfaction of state Forest Deptt.).
- (viii) The User Agency shall take all possible precautions & care all the time not to impact adversely the surrounding forests and forest land by their actions/activities.
- (ix) Tree felling shall be done only when absolutely unavoidable and such removal, if any, shall be done under the supervision of the Forest Department.
- (x) The user agency will undertake comprehensive soil and water conservation measures at the project cost.
- (xi) Wherever possible and technically feasible, the user agency shall undertake afforestation measures along the road within the area diverted under this approval, in consultation with the State Forest Department at the project cost.
- (xii) The proposal will be implemented under the overall supervision of the concerned Divisional Forest Officer.
- (xiii) No damage to the flora fauna of the area shall be caused.
- (xiv) No labour camp shall be established inside the forest area.
- (xv) In case of any violation of the stipulated conditions immediate action is to be taken by the Forest Department as per Ministry's letter No 5-5/86/FC dated 07.12.1999 and this office letter No 2-1-51/2004/RONE/Vol II/3181-02 dated 28.12.2006.
- (xvi) The layout plan shall not be changed without the prior approval of the Central Government.
- (xvii) All other clearances / NOCs under different rules / regulations / local laws and under Forest Dwellers (Recognition of Forest Rights) Act, 2006 as required vide MoEF, New Delhi guideline No. 11-9/1998-FC(Pt) dated 03.08.2009 shall be complied with.
- (xviii) Any other conditions as may be found appropriate in future for the betterment of environment & wildlife, may be imposed by Addl. PCCF (C), North Eastern Regional Office.

Yours faithfully,


(R.L. Sanga)
Conservator of Forests(C)

Copy to:

1. The Principal Chief Conservator of Forest & HoFF, Government of Assam, Rehabari, Guwahati.


Conservator of Forests(C)