



**Monitoring report form  
(Version 05.1)**

*Complete this form in accordance with the Attachment "Instructions for filling out the monitoring report form" at the end of this form.*

**MONITORING REPORT**

<b>Title of the project activity</b>	Modification and retrofitting of the existing 34 MW hydropower plant at Bhandardara -2 (project activity) in Maharashtra state in India by Dodson – Lindblom Hydro Power Private Limited (DLHPPL)	
<b>UNFCCC reference number of the project activity</b>	2173	
<b>Version number of the monitoring report</b>	01	
<b>Completion date of the monitoring report</b>	31/08/2015	
<b>Monitoring period number and duration of this monitoring period</b>	Monitoring Period No: 05 01/01/2013 – 31/07/2015 (Inclusive of both the dates)	
<b>Project participant(s)</b>	Dodson –Lindblom Hydro Power Private Limited (DLHPPL)	
<b>Host Party</b>	India	
<b>Sectoral scope(s)</b>	1 : Energy industries (renewable - / non-renewable sources)	
<b>Selected methodology(ies)</b>	ACM0002 Version 6 "Consolidated methodology for grid-connected electricity generation from renewable sources"	
<b>Selected standardized baseline(s)</b>	Not Applicable	
<b>Estimated amount of GHG emission reductions or net GHG removals by sinks for this monitoring period in the registered PDD</b>	41,106 tCO <sub>2e</sub>	
<b>Total amount of GHG emission reductions or net GHG removals by sinks achieved in this monitoring period</b>	GHG emission reductions or net GHG removals by sinks reported up to 31 December 2012	GHG emission reductions or net GHG removals by sinks reported from 1 January 2013 onwards
	Not Applicable	27,475 tCO <sub>2e</sub>

## SECTION A. Description of project activity

### A.1. Purpose and general description of project activity

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The main purpose of the project activity is to generate electricity from the potential energy in the water released from Bhandardara dam and export the net electricity to the grid to reduce the demand-supply gap for energy in the state. The project activity helps to reduce the greenhouse gas (GHG) emissions produced by the grid generation mix, which is mainly dominated by fossil fuel based power plants.

The project activity, promoted by Dodson-Lindblom Hydro Power Private Limited is a modification and retrofitting of the existing 34 MW Bhandardara power house-2 (BH-2) hydropower plant. DLHPPL has completely rehabilitated and automated the plant to generate additional amount of electricity than previous. In addition, the project activity provides the ancillary benefit of improving the water management system in the region.

Bhandardara dam is one of the oldest masonry gravity dams. The water released from this dam for irrigation could be fully utilized by power houses further downstream and currently the irrigation releases are controlled from this dam. Bhandardara Power House No-1 (BH-1), draws its water from the Bhandardara reservoir, is a single hydro generating station of 12 MW. Bhandardara Power House No-2 (BH-2) is 10 km downstream from BH-1 and draws its water from a small reservoir formed by Randha Weir.

#### Brief description of the installed technology and equipment<sup>1</sup>:

The basic technology used in this project is conversion of potential energy into mechanical energy and then into electrical energy. One unit of 34,000 kW of vertical axis Francis type hydraulic turbines is installed to generate the electricity. The generated electricity is stepped up to 132 kV and exported to grid.

Due to lack of funds with the Government of Maharashtra Water Resources Department (GOMWRD) has restricted their ability to take necessary remedial steps to improve BH-2 plant performance. After that Government of Maharashtra decided to privatize the operation of the BH-2 plant on a lease, own, operate and transfer basis. It is envisaged that the funds received from this initiative would be utilized to fund the construction of the balancing storage facility that would permit the efficient utilization of scarce water resources in the region. The rehabilitation and operation of BH-2 was awarded on a lease, own, operate and transfer basis to Dodson-Lindblom Hydro Power Private Limited on December 31, 2004.

Pre-completion of Nilwande Dam - BH-2 had been operating intermittently since year 1999 and uses water discharged from both BH-1 and directly from the Bhandardara dam. BH-2 was designed to operate as a peaking station, but has essentially been operating as a base-load station at approximately 50% of its rated capacity. Severe limitations resulting from irrigation release criteria and the lack of availability of a balancing storage mechanism, BH-2 operation has significantly hampered.

Post – completion Nilwande Dam - BH-2 has been designed to operate as a peaking station i.e. 3 hours in the morning and 3 hours in the evening. The Randha Weir, which is the pick-up weir has a small reservoir having a live storage capacity of 0.87 MCM, built to supply water to the power house. In order to operate at its full load capacity of 34 MW, the turbine needs water at the rate of 77 cubic meters per second (cumecs). Also the inflow of water from BH-1 needs to be first stored in Randha weir to its maximum level and then released through the BH-2 turbine. As per the design, after the commissioning of the Nilwande dam, release from BH-1 would be about 20

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<sup>1</sup> Detail technical description is provided in section B.1 below.

cumecs and with this continuous release, BH-2 can operate for 3 hours only after every 9 hours stoppage. Thus in a day, BH-2 can operate only for 3 hours in the morning and 3 hours in the evening.

Relevant dates for the project activity

Table-01

Project Activity Start date	19/12/2006
Project Commissioning date	26/01/2007
Project Registration date at UNFCCC	18/03/2009
Crediting Period	18/03/2009 – 17/03/2019 (Fixed)

Project activity is in continuous operation since the commissioning i.e. 26/01/2007.

Emission reductions achieved in the current monitoring period

The duration of the current monitoring period considered under this monitoring report is 01/01/2013 to 31/07/2015 (inclusive of both the dates). The emission reduction achieved under this monitoring period is 27,475 tCO<sub>2</sub>e.

## A.2. Location of project activity

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The project activity is located in Bhandardara in Akolea Taluk in Ahmednagar district in the state of Maharashtra of India. It is located on the river Pravara which is a tributary of Godavari River.

Table-02

Latitude	Longitude
19-33'15"	73-45'0"

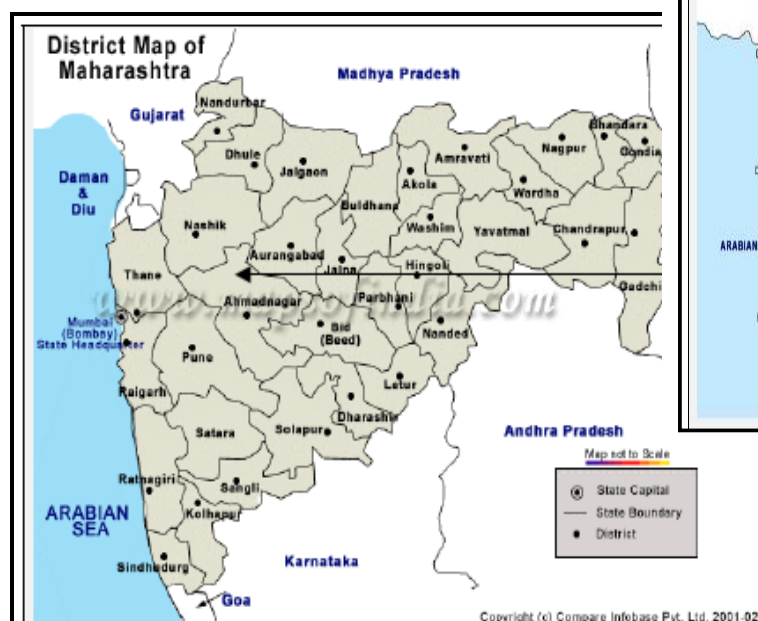
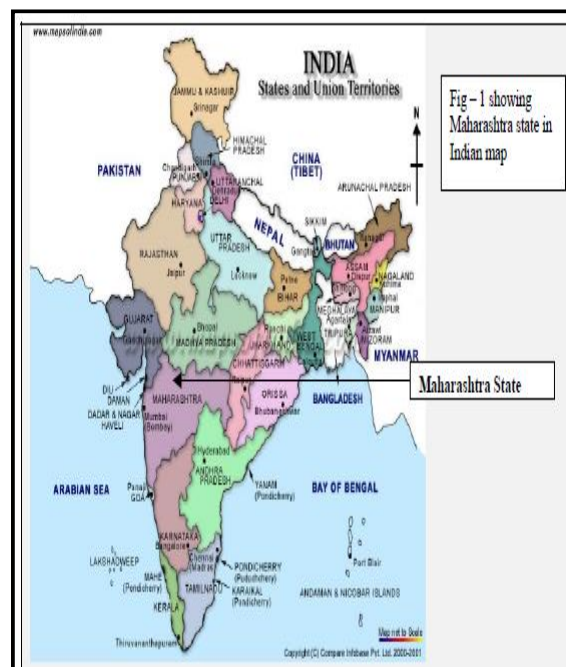
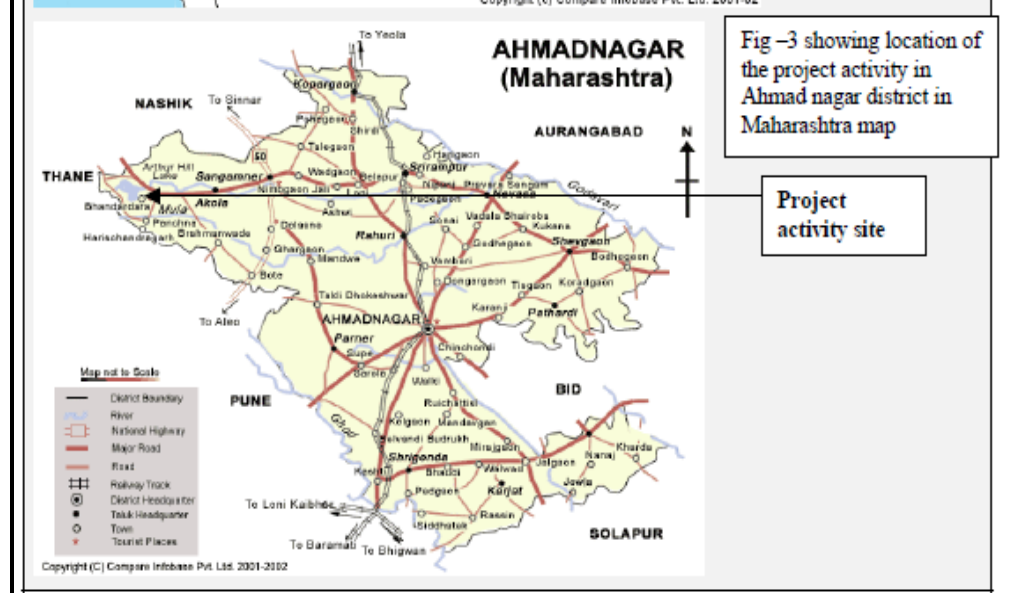


Fig -3 showing location of the project activity in Ahmad nagar district in Maharashtra map

Project activity site



**A.3. Parties and project participant(s)**

Party involved ((host) indicates a host Party)	Private and/or public entity(ies) project participants (as applicable)	Indicate whether the Party involved wishes to be considered as project participant (yes/no)
India (host)	Dodson–Lindblom Hydro Power Private Limited (DLHPPL)	No

**A.4. Reference of applied methodology and standardized baseline**

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Reference Methodology: ACM0002, Version 6 (Dated: 19/05/2006), “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”.

Tools:

“Tool to calculate the emission factor for an electricity system”, (version 2)

“Tool for demonstration and assessment of additionality” (Version 4)

Standardize Baseline: Not Applicable

**A.5. Crediting period of project activity**

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Type of Crediting Period                      Fixed crediting period (10 years) has been considered for this project Activity.

Start date of the Crediting Period            18/03/2009

Length of Crediting Period                    18/03/2009 – 17/03/2019

Current Monitoring Period                    01/01/2013 – 31/07/2015

**A.6. Contact information of responsible persons/entities**

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Dodson–Lindblom Hydro Power Private Limited (DLHPPL)  
Mumbai (India).

(Contact details are provided in Appendix 1)

## SECTION B. Implementation of project activity

### B.1. Description of implemented registered project activity

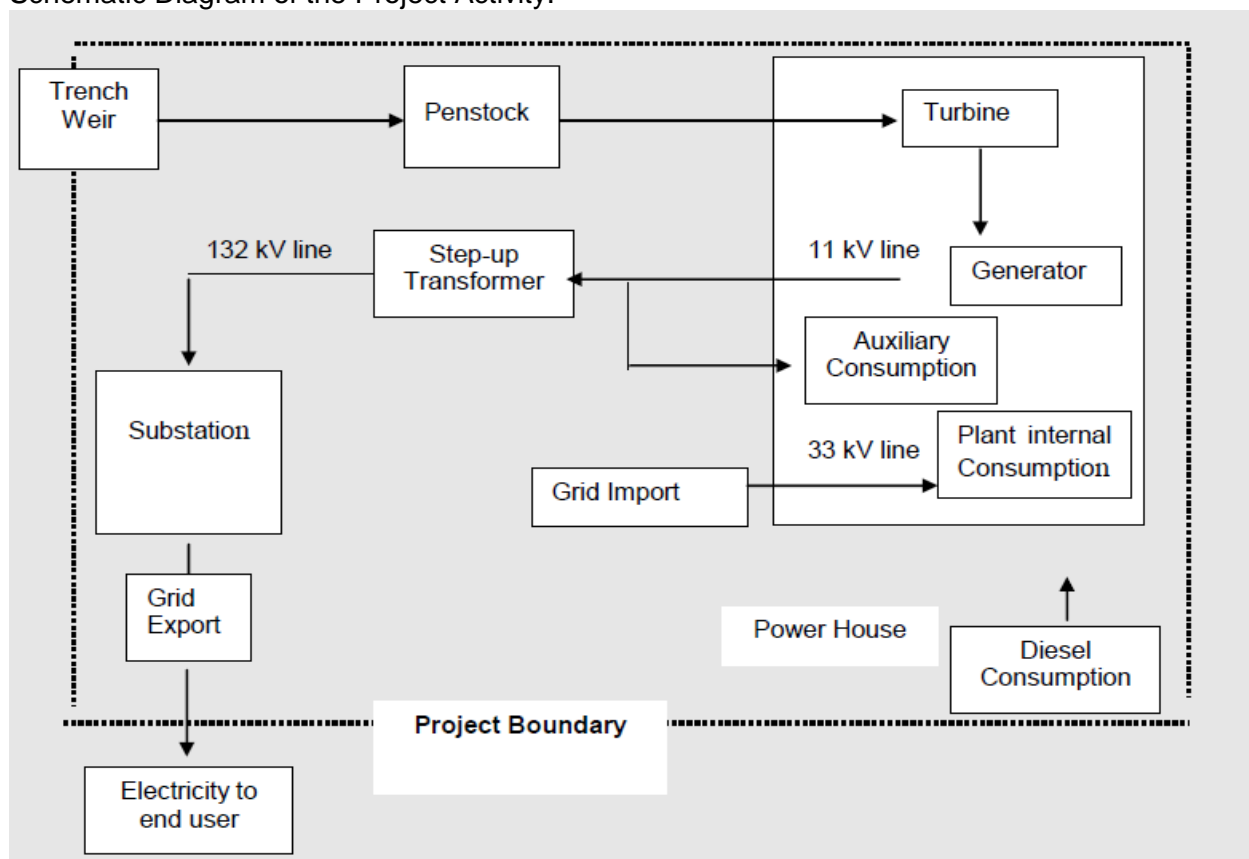
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The project activity uses one unit of 34 MW vertical axis Francis turbine for electricity generation. After rehabilitation and modification, the plant was commissioned on 26th January, 2007. No adverse situation has arisen during the monitoring period of the project which may eventually impact the applicability of the methodology and affect the additionality of the project activity. The basic technology used in this project is conversion of potential energy into mechanical energy and then into electrical energy. Water at a head of 59.5 meters is jetted on to turbines, which causes the turbines to rotate. The rotation of turbines causes rotation of connected generators, thereby producing electricity. One unit of 34,000 kW of vertical axis Francis type hydraulic turbines is installed. The generated electricity is stepped up to 132 kV and exported to grid.

Table-3: Technological Details

<u>Randha pick up weir</u>	
Gross storage	1.42Mm <sup>3</sup>
Live storage for Power	0.87 Mm <sup>3</sup>
<u>Water Conductor</u>	
Number	1
Type	Tunnel excavated in rock
Design Discharge	77 m <sup>3</sup> /s
Size	6m dia
Length	112 m
Surge Shaft	Non-Spilling type
<u>Intake</u>	
Full Supply Level	668.35 m
Minimum draw down level for power	666.45 m
<u>Power House</u>	
Type	Well, excavated into rock
Size	21 m
Floor Level	Service Bay 646 m
Level of CL of Turbine	607.3 m

Capacity of OH Crane	150/30 tonnes
<u>Generation Unit</u>	
Max Gross Head	59.5 m
Net design head	50 m
Type of Generating Unit	Vertical, Francis, Umbrella
Number	1
Excitation	Static
<u>Connection to Grid</u>	
Transformer Capacity	132 kVA, 37MVA, 3 Phase, ONAN
Connection Point	BH-2 Switchyard

Schematic Diagram of the Project Activity:<sup>2</sup>

<sup>2</sup> **Auxiliary Consumption:** The difference between the gross electricity generation (E<sub>Gen</sub>) and electricity exported to the grid (E<sub>Gy</sub>) as per the JMR gives the total auxiliary consumption in the plant. Auxiliary consumption includes losses in generator, step up transformer, in cables and in excitation system, which are not actually measured.

**Plant internal Consumption:** It is the plant's inhouse electrical load/demand (e.g. plant lighting) which is met from the electricity imported from the grid.

The capacities of the project equipments are not changed during this monitoring period and no emergency incidents occurred during this period which may change the applicability of the methodology or change the emission reductions.

**B.2. Post-registration changes****B.2.1. Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline**

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Not Applicable

**B.2.2. Corrections**

&gt;&gt;

Not Applicable

**B.2.3. Changes to start date of crediting period**

&gt;&gt;

Not Applicable

**B.2.4. Inclusion of a monitoring plan to the registered PDD that was not included at registration**

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Not Applicable

**B.2.5. Permanent changes from registered monitoring plan, applied methodology or applied standardized baseline**

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Not Applicable

**B.2.6. Changes to project design of registered project activity**

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Not Applicable

**B.2.7. Types of changes specific to afforestation or reforestation project activity**

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Not Applicable



## SECTION C. Description of monitoring system

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According to the registered PDD, following parameters are being monitored in the project activity:

- ✓ Gross Electricity Generation in MWh
- ✓ Electricity Export in MWh
- ✓ Electricity Imported in MWh
- ✓ Auxiliary Consumption in MWh
- ✓ Hourly Electricity Export in kWh

The generation meter measures the units generated. The monthly Joint Meter Reading (JMR) of the generation meter is taken and signed by authorized officials of DLHPPL, MSEDCL, MSETCL and GOMWRD generally once every month. Records of the joint meter reading of energy generated shall be maintained by DLHPPL, MSEDCL, MSETCL and GOMWRD. Daily and monthly reports stating the electricity generated is also prepared by the shift in-charge and verified by the plant manager of DLHPPL which is used to cross check the generation. The generation is measured in plant premises at generator terminals and is monitored and recorded continuously through PLC. The data is directly measured and monitored at the project site. The meters installed at the generator end are checked for accuracy for every six months. If the accuracy of meter is found to be beyond permissible limit even after calibration then the meter shall be replaced with spare tested, calibrated meter. The technical specifications of the spare meter are given under section D.2 of this report.

The measurement at 132 kV side for supply to MSETCL grid gives the energy supply reading. The units exported are measured at the interconnection point. Monthly Joint Meter Reading (JMR) of main and check meters installed at the substation is taken and signed by authorized officials of DLHPPL, MSEDCL, MSETCL and GOMWRD once every month. Joint meter reading of the main meter is the basis for monthly invoice of energy exported to the grid. Records of the joint meter reading of energy exported to the grid shall be maintained by DLHPPL, MSEDCL, MSETCL and GOMWRD. Daily and monthly reports stating the electricity export is prepared by the shift in-charge and verified by the plant manager of DLHPPL. For measuring the energy exported to the grid, one main meter and one check meter are maintained. Joint meter reading of the main meter is the basis of billing and emission reduction calculations, so long as the meter is found to be within prescribed limits of accuracy during the periodic check. The Meters are checked for accuracy and calibration by the MSETCL as per the provisions in the power purchase agreement (PPA) prevailing at the time of respective accuracy check or calibration.

The energy is imported at 33 kV feeder and a separate independent energy meter is installed by MSEDCL to measure the units imported by DLHPPL. The units imported are recorded monthly and bills are issued by MSEDCL. Bills of MSEDCL shall be the source of data for electricity imported. This data is used to calculate the emissions due to the electricity imported from the grid and it is considered as part of project emissions. Import meter is under the custody of MSEDCL, and DLHPPL has no access to meter and the calibration details pertaining to the same. Hence calibration records are not maintained by DLHPPL for the import meter.

This auxiliary consumption includes losses in generator step up transformer, in cables and in excitation system, which are not actually measured. The difference between the gross electricity generation and electricity exported to the grid as per the JMR gives the total auxiliary consumption in the plant. This auxiliary consumption includes losses in generator step up transformer, in cables and in excitation system, which are not actually measured. The data is calculated using the gross electricity generation and electricity exported as per the JMRs.

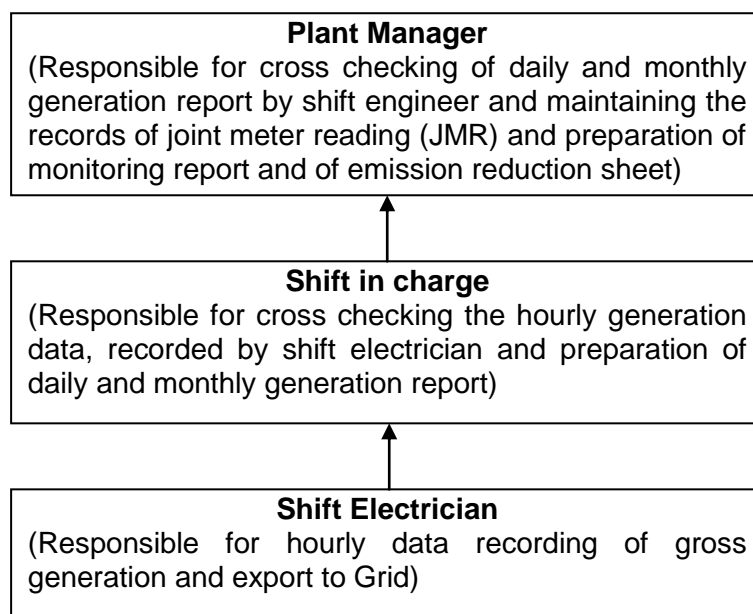
Hourly electricity exported to the grid by the project activity as recorded at the main meter and check meter. This parameter is relevant to conditions/ circumstances (those days) where the dates of Joint Meter Readings (JMRs) pertaining to the project activity do not match the individual verification periods. For measuring the hourly energy exported to the grid, one main meter and one

check meter are maintained. So long as the main meter is found to be within prescribed limits of accuracy during the periodic check, the hourly meter reading of the main meter will be the basis of emission reduction calculations. Hourly meter reading of the check meters would be used for cross checking. This monitoring period completely matches with the initial and final JMR dates. Hence, this parameter is not applicable to this monitoring period. DLHPPL has archived and preserved all the JMRs pertaining to the energy generated and exported by the project activity and also archived the complete metering data at generation end and export data on paper and all the data would be preserved for at least two years after end of the crediting period.

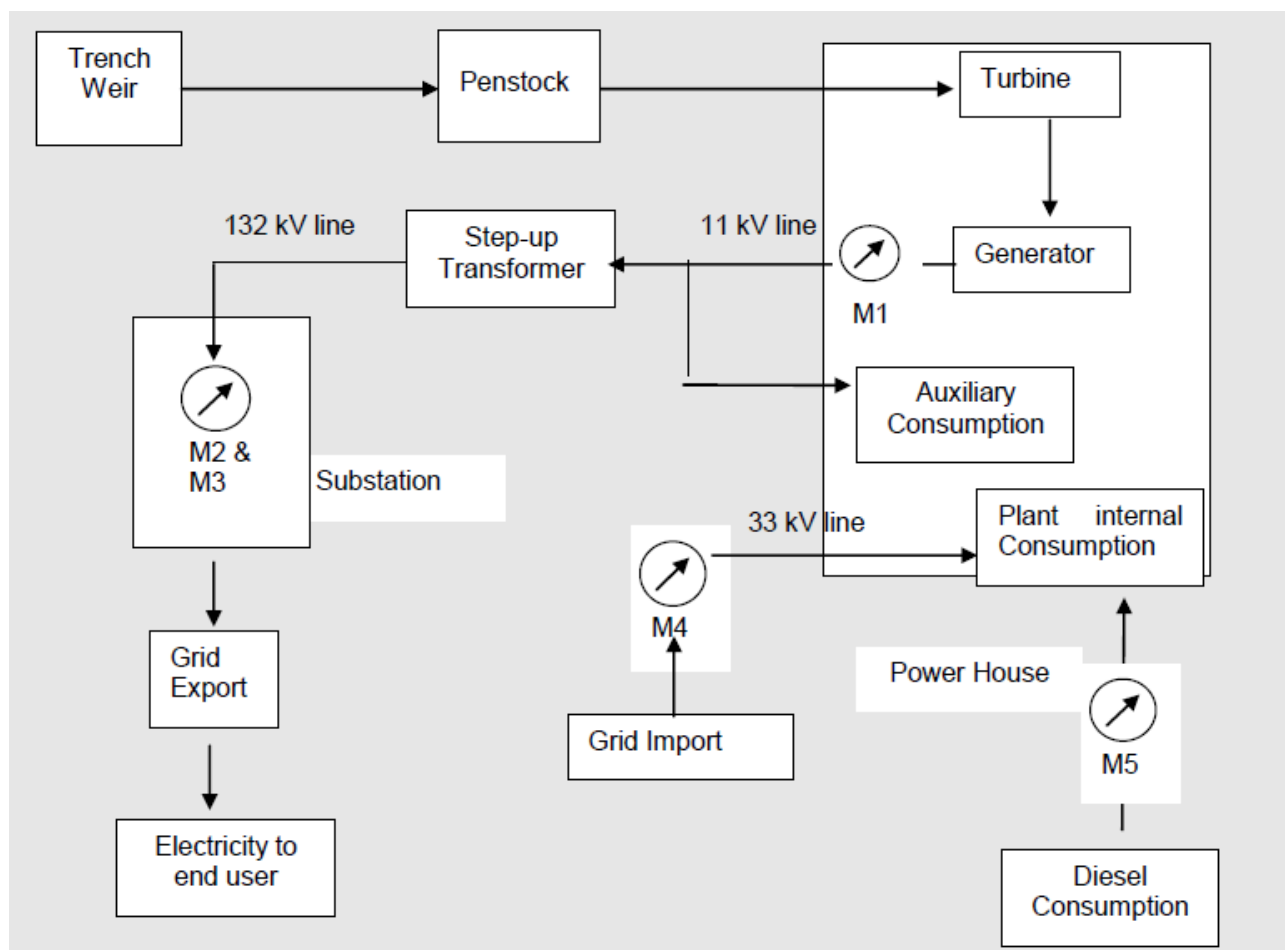
Operational and Management structure for this project activity:

Hourly data recording of the generation and export to the grid will be made by the respective electrician of that shift and verified by the shift engineer of DLHPPL. Daily and monthly reports stating the generation and electricity export are prepared by the shift in-charge and verified by the plant manager of DLHPPL. Records of joint meter reading would be maintained by plant manager of DLHPPL at site. He is also responsible for preparation of monitoring report and of emission reduction sheet. MSEDCL (MSEB) also maintains the records of joint meter readings at their office. Monthly invoices are prepared based on Joint Meter Readings (JMR). The plant manager is a qualified engineer with considerable experience in power industry. All the shift engineers are qualified engineers and have undergone related training including plant operations, data monitoring, report generation etc.

Schematic diagram for the monitoring data flow at plant



### Locations of Monitoring Instruments in the Plant



M 1 : Gross Energy Meter

M 2 and M 3: Main Energy Export Meter and Check Energy Export Meter

M 4 : Electricity Import Meter

M 5 : Diesel consumption

## SECTION D. Data and parameters

### D.1. Data and parameters fixed ex ante or at renewal of crediting period

<b>Data/parameter:</b>	<b>EF</b>
Unit	tCO <sub>2</sub> /MWh
Description	Combined Margin-Western Grid
Source of data	CO <sub>2</sub> baseline database, version 3–Central Electricity Authority (CEA), Ministry of Power
Value(s) applied)	0.79
Choice of data or measurement methods and procedures	CEA has estimated the simple operating margin and build margin emission factor for the regional grid. For calculating the CO <sub>2</sub> emission factor as per combined margin method for the renewable power generation project activities
Purpose of data	Calculation of baseline emission & project emission.
Additional comments	This value is fixed for entire crediting period

<b>Data/parameter:</b>	<b>EG<sub>Baseline</sub></b>
Unit	MWh
Description	Baseline Power Generation
Source of data	Average Power Generation from BH-2 during 2002 & 2003
Value(s) applied)	29863.924 <sup>3</sup>
Choice of data or measurement methods and procedures	The power generation from BH-2 during 2002 to 2006 were collated and the average value of the data collected is considered as the baseline power generation.
Purpose of data	Calculation of baseline emission
Additional comments	-

### D.2. Data and parameters monitored

<b>Data/parameter:</b>	<b>Electricity Exported(EG<sub>y</sub>)</b>
Unit	MWh
Description	Electricity exported to the grid by the power plant during the year, y
Measured/calculated/default	Measured
Source of data	Joint Meter Reading (JMRs) taken and signed by authorized officials of MSEDCL
Value(s) of monitored parameter	112,346

<sup>3</sup> The current monitoring period is for 31 months only hence EG<sub>Baseline</sub> for the current monitoring period has been calculated for 31 months i.e. = 29863.924 x 31/ 12 = 77,148 MWh

Monitoring equipment	<p>Main energy meter and check energy meters are used for net energy export monitoring.</p> <p>Main Energy Meter Details:            Make : ELSTER            Accuracy Class : 0.2            Serial Number : 04880896            Calibration Frequency : once in a year</p> <p>Main Energy Meter Details:            Make : ELSTER            Accuracy Class : 0.2            Serial Number : 04880895            Calibration Frequency : once in a year</p>
Measuring/reading/recording frequency:	This data is recorded continually and recorded monthly.
Calculation method (if applicable):	The measurement of 132kV side for supply to MSETCL grid gives the electricity export readings. The units exported to the grid are measured at the interconnection point. Monthly JMR of main & check meters installed at the substation are taken and signed by authorized officials of DLHPPL, MSEDCL, MSETCL and GOMWRD generally once in every month. Joint Meter Readings of the main meter are the basis for monthly invoice of energy exported to the grid.
QA/QC procedures:	The meters are checked for accuracy and calibration by the MSETCL as per the provisions in the Power Purchase Agreement (PPA) prevailing at the time of respective accuracy check or calibration.
Purpose of data:	Calculation of baseline emission
Additional comments:	-

<b>Data/parameter:</b>	<b>Electricity Imported (L,y)</b>
Unit	MWh
Description	Electricity Imported from the grid by the project activity.
Measured/calculated/default	Measured
Source of data	Monthly billing records of MSEDCL
Value(s) of monitored parameter	420
Monitoring equipment	<p>Electricity Import Meter Details:            Make: ABB            Accuracy Class: 0.5            Serial Number: 02167136</p>
Measuring/reading/recording frequency:	This data is recorded continually and recorded monthly.
Calculation method (if applicable):	The electricity imported by 33 kV feeder and a separate independent energy meter is installed by MSEDCL to measure the units imported by DLHPPL. The units imported are recorded monthly and bills are issued by MSEDCL. Bills of MSEDCL are the source of data for electricity imported.
QA/QC procedures:	Import meter is under the custody of MSEDCL and DLHPPL has no access to meter and the calibration details pertaining to the same. Hence calibration records are not maintained DLHPPL for the import meter.
Purpose of data:	Calculation of Project Emission
Additional comments:	-

<b>Data/parameter:</b>	<b>Gross Electricity Generation</b>
Unit	MWh

Description	Gross Electricity generated by the project activity
Measured/calculated/default	Measured
Source of data	Joint Meter Reading (JMRs) taken and signed by authorized officials of MSEDCL
Value(s) of monitored parameter	114,079
Monitoring equipment	Gross energy meter is used for gross energy generation by the plant  Main Energy Meter Details: Make : ELSTER Accuracy Class : 0.2 Serial Number : 04863007 Calibration Frequency : once in a year  Spare Energy Meter Details: Make : ELSTER Accuracy Class : 0.2 Serial Number : 05125171 Calibration Frequency : once in a year
Measuring/reading/recording frequency:	This data is recorded continually and recorded monthly.
Calculation method (if applicable):	The generation is measured at plant premises at generator terminals and monitored and recorded continuously. The generation meter measures the units generated by the project activity. The monthly JMR of the generation meter are taken and signed by authorized officials of DLHPPL, MSEDCL, MSETCL and GOMWRD once every month.
QA/QC procedures:	The data are directly measured & monitored at project site. The meter installed at the generator end was checked for accuracy for every six months and the calibration was done once in year. If the accuracy of meter is found to be beyond permissible limit even after calibration then the meter shall be replaced with spare tested calibrated meter. DLHPPL archived all the JMRs and the complete metering data at generation end on paper and all the data would be preserved for at least two years after end of the crediting period.
Purpose of data:	This value is not used for emission reduction calculation.
Additional comments:	-

<b>Data/parameter:</b>	<b>Auxiliary Consumptions</b>
Unit	MWh
Description	Unit consumed by the Plant
Measured/calculated/default	Calculated
Source of data	Plant Record
Value(s) of monitored parameter	1,732
Monitoring equipment	The difference between the gross electricity generation ( $E_{gen}$ ) and electricity exported to the grid ( $EG_y$ ) as per the JMR gives the total auxiliary consumption in the plant. Auxiliary consumption includes losses in generator, step up transformer, in cables and in excitation system which are not actually measured.
Measuring/reading/recording frequency:	This data is calculated once in a month.
Calculation method (if applicable):	The difference between the gross electricity generation ( $E_{gen}$ ) and electricity exported to the grid ( $EG_y$ ) as per the JMR gives the total auxiliary consumption in the plant.

QA/QC procedures:	The data would be calculated based on gross electricity generation and electricity exported as per the JMRs. This data are also used in calculating electricity export in the event of simultaneously failure and/or defect in accuracy of both the main meters and check meters.
Purpose of data:	This value is not used for emission reduction calculation.
Additional comments:	-

<b>Data/parameter:</b>	<b>Hourly Electricity Export (HEE<sub>main_meter</sub>)</b>
Unit	kWh
Description	Hourly electricity exported to the grid by the project activity as recorded at the main meter and check meter. This Parameter is relevant to conditions/circumstances (those days) where the dates of Joint Meter Readings (JMRs) pertaining to the project activity do not match the individual verification periods.
Measured/calculated/default	This data is recorded on an hourly basis by DLHPPL based on data recorded at the main meter.
Source of data	Log Book Records for the main meter.
Value(s) of monitored parameter	This parameter is not applicable to this monitoring period.
Monitoring equipment	<p>Main energy meter and check energy meters are used for net energy export monitoring.</p> <p>Main Energy Meter Details:            Make : ELSTER            Accuracy Class : 0.2            Serial Number : 04880896            Calibration Frequency : once in a year</p> <p>Main Energy Meter Details:            Make : ELSTER            Accuracy Class : 0.2            Serial Number : 04880895            Calibration Frequency : once in a year</p>
Measuring/reading/recording frequency:	This Parameter is relevant to conditions/circumstances (those days) where the dates of JMRs pertaining to the project activity do not match with the individual monitoring periods. This data is measured continually and recorded hourly.
Calculation method (if applicable):	This data is directly measured.
QA/QC procedures:	<p>For measuring the hourly energy exported to the grid, one main meter &amp; one check meter are maintained. The hourly meter reading of the main meter is the basis of emission reduction calculation, so long as the meter is found to be within the prescribed limit of accuracy during the periodic check. Hourly meter reading of the check meters would be used for cross checking.</p> <p>The meters are checked for accuracy and calibration by the MSETCL as per the provisions in the PPA prevailing at the time of respective accuracy check or calibration.</p>
Purpose of data:	This value is not used for emission reduction calculation.
Additional comments:	-

### D.3. Implementation of sampling plan

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Not Applicable

## SECTION E. Calculation of emission reductions or GHG removals by sinks

### E.1. Calculation of baseline emissions or baseline net GHG removals by sinks

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As per ACM0002/version 06, baseline emissions for this project are the product of the baseline emissions factor and the difference of the electricity supplied by the project activity to the grid and the baseline electricity supplied to the grid.

In order to calculate  $EG_{\text{Baseline}}$ , the annual historical generation at BH-2 from 2002 to 2006 was collated and furnished in the registered PDD. The below table shows the historical electricity generation by BH-2 and the  $EG_{\text{baseline}}$  is calculated to be 29.863924 GWh.

Parameter	Year				
	2002	2003	2004	2005	2006
Annual Generation (kWh)	35,070,970	35,170,690	27,051,820	25,783,160	26,242,980
Average historical generation for 5 Years (kWh)	29,863,924				

Combined margin emission factor of Western Grid is considered as the baseline emission factor for this project. The same is referred from CO<sub>2</sub> baseline database, version-3. CO<sub>2</sub> baseline database, version-3 was published by Central Electricity Authority (CEA), Ministry of Power, Govt. of India. This value has been estimated at the beginning of the crediting period and is kept fixed for the entire crediting period.

Carbon Emission Factor of Grid as per Operating Margin is 1.000 tCO<sub>2e</sub> /MWh electricity generation.

Carbon Emission Factor of Grid as per Build Margin is 0.59 tCO<sub>2e</sub> /MWh electricity generation.

Net Carbon Emission Factor Grid as per combined margin = OM\*50% + BM\*50% = **0.79 tCO<sub>2e</sub>/MWh** generation respectively.

According to ACM0002/version 06, the baseline emissions calculation for the modified or retrofit project is done using the below mentioned formula:

$$BE_y = (EG_y - EG_{\text{baseline}}) * EF_y$$

Where

$BE_y$  = Baseline emission due to project activity for the year y  
 $EG_y$  = Electricity supplied to the Grid for the year y  
 $EG_{\text{baseline}}$  = Baseline electricity supplied to the grid  
 $EF_y$  = Emission factor of the Grid

During this monitoring period net amount of electricity exported to grid from the project is 1,12,346.00 MWh and the baseline export to grid for thirty-one (31) months is 77,148.00 MWh

$$\begin{aligned} \text{Hence, } BE_y &= (1,12,346.00 - 77,148.00) \text{ MWh} * 0.79 \text{ tCO}_{2e} / \text{MWh} \\ &= \mathbf{27,807.00 \text{ tCO}_{2e}} \end{aligned}$$

### E.2. Calculation of project emissions or actual net GHG removals by sinks

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Project emissions are calculated using the following formula

$$PE_y = L_y * EF_y$$



Where,

$L_y$  = Electricity import from Grid

$EF_y$  = Grid Emission factor

During this monitoring period the plant has imported 420 MWh of electricity from grid.

Hence,

$$PE_y = 420 \text{ MWh} * 0.79 \text{ tCO}_2\text{e} / \text{MWh} \\ = \mathbf{332 \text{ tCO}_2\text{e}}$$

### E.3. Calculation of leakage

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The leakage emission from the project activity is considered as zero.

**E.4. Summary of calculation of emission reductions or net GHG removals by sinks**

Item	Baseline emissions or baseline net GHG removals by sinks (t CO <sub>2</sub> e)	Project emissions or actual net GHG removals by sinks (t CO <sub>2</sub> e)	Leakage (t CO <sub>2</sub> e)	GHG emission reductions or net GHG removals by sinks (t CO <sub>2</sub> e) achieved in the monitoring period		
				Up to 31/12/2012	From 01/01/2013	Total amount
<b>Total</b>	27,807.00	332.00	0	NA	27,475.00	27,475.00

**E.5. Comparison of actual emission reductions or net GHG removals by sinks with estimates in registered PDD**

Item	Values estimated in ex ante calculation of registered PDD	Actual values achieved during this monitoring period
Emission reductions or GHG removals by sinks (t CO <sub>2</sub> e)	41,106.00 <sup>4</sup>	27,475.00

**E.6. Remarks on difference from estimated value in registered PDD**

&gt;&gt;

There is no increase in the emission reductions during the current monitoring period relative to the estimation in the registered CDM-PDD. However, there is around 33.16% lesser emission reduction relative to estimation in the registered CDM- PDD for the equivalent duration of the monitoring period. This is envisaged mainly due to the lower PLF because of no-generation months prevailed during the monitoring period.

<sup>4</sup> The emission reductions have been extrapolated for 31months as this monitoring period is of the duration 01/01/2013 to 31/07/2015 that counts 912 days. Calculation for the same has been provided in ER sheet.

## Appendix 1. Contact information of project participants and responsible persons/entities

Project participant and/or responsible person/ entity	<input checked="" type="checkbox"/> Project participant <input checked="" type="checkbox"/> Responsible person/ entity for application of the selected methodology (ies) and, where applicable, the selected standardized baselines to the project activity
Organization name	Dodson-Lindblom Hydro Power Private Limited
Street/P.O. Box	Tejpal Scheme Road 5, Vile Parle
Building	6, Shiv Vastu,
City	Mumbai
State/Region	Maharashtra
Postcode	400 057
Country	India
Telephone	+91 Ph: 022 26826819
Fax	+91 20 25885234
E-mail	<a href="mailto:dlhppl@dlz.com">dlhppl@dlz.com</a>
Website	
Contact person	
Title	Director (Maharashtra Projects)
Salutation	Mr.
Last name	Paunikar
Middle name	S.
First name	Prem
Department	
Mobile	+91 98206 11688
Direct fax	
Direct tel.	
Personal e-mail	<a href="mailto:dlhppl@dlz.com">dlhppl@dlz.com</a>

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**Document information**

<i>Version</i>	<i>Date</i>	<i>Description</i>
05.1	4 May 2015	Editorial revision to correct version numbering.
05.0	1 April 2015	Revisions to: <ul style="list-style-type: none"> <li>• Include provisions related to delayed submission of a monitoring plan;</li> <li>• Provisions related to the Host Party;</li> <li>• Remove reference to programme of activities;</li> <li>• Overall editorial improvement.</li> </ul>
04.0	25 June 2014	Revisions to: <ul style="list-style-type: none"> <li>• Include the Attachment: Instructions for filling out the monitoring report form (these instructions supersede the "Guideline: Completing the monitoring report form" (Version 04.0));</li> <li>• Include provisions related to standardized baselines;</li> <li>• Add contact information on a responsible person(s)/ entity(ies) for completing the CDM-MR-FORM in A.6 and Appendix 1;</li> <li>• Change the reference number from <i>F-CDM-MR</i> to <i>CDM-MR-FORM</i>;</li> <li>• Editorial improvement.</li> </ul>
03.2	5 November 2013	Editorial revision to correct table in page 1.
03.1	2 January 2013	Editorial revision to correct table in section E.5.
03.0	3 December 2012	Revision required to introduce a provision on reporting actual emission reductions or net GHG removals by sinks for the period up to 31 December 2012 and the period from 1 January 2013 onwards (EB70, Annex 11).
02.0	13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the monitoring report form" (EB 66, Annex 20).
01	28 May 2010	EB 54, Annex 34. Initial adoption.
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