

2074

# Lower Modi Khola Hydroelectric Project (20 MW)

Parbat District, Western Nepal  
Baisakh 2075

**Progress Report**

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## **List of abbreviation**

Amsl	Above Mean Sea Level
BOQ	Bill of Quantities
BPC	Butwal Power Company
Cumecs	Cubic metre per second
DoED	Department of Electricity Development
GoN	Government of Nepal
GWh	Giga Watt Hour
HSL	Hydro Solutions (P) Ltd.
kWh	Kilowatt hour
LMKHEP	Lower Modi Khola Hydroelectric Project
m	Meter
m <sup>2</sup>	Square metre
m <sup>3</sup> /s	Cubic metre per second
Masl	Meter Above Sea Level
Mill	Million
Mm	Millimetre
MEL	Modi Energy Pvt. Ltd
MW	Megawatt
MWh	Mega Watt Hour
NEA	Nepal Electricity Authority
(P.)	Private
PPA	Power Purchase Agreement
VAT	Value Added Tax
VDC	Village Development Committee
W	Watt
WRC	Water Resources Consult (P) Ltd.

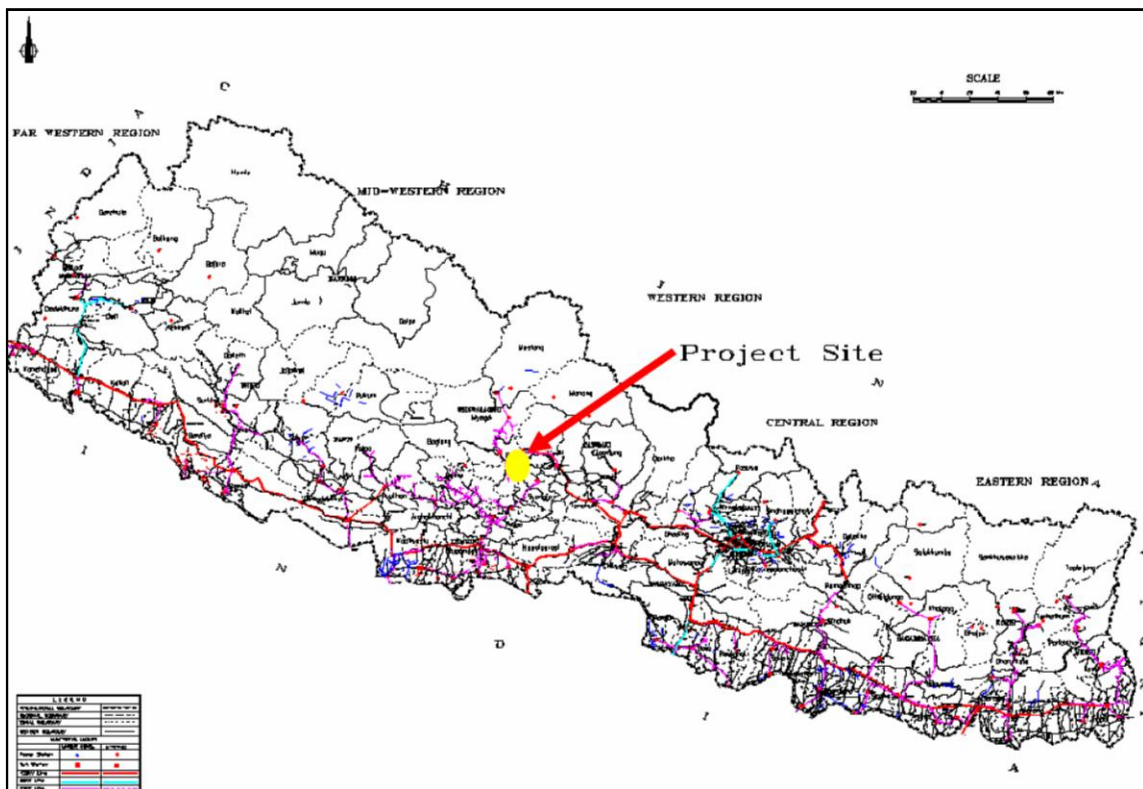
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## EXECUTIVE SUMMARY

Modi (P.) Limited (MEL), a company setup to develop Lower Modi Khola Hydroelectric Project (LMKHEP) has prepared this progress report. Hydro Solutions Group, KL Dugar Group, Murarka Group, Debenara Group, and Mr. Bhujung Gurung as individual partner promoting this project.

The LMKHEP was identified by MEL as a potential hydropower project in the Western Region of Nepal between longitude 83°44'43" and 83°42'30" and latitudes 28°16'18" and 28°14'08" and". The altitude of the project area varies between 869 m and 767 m above mean sea level (masl).



Proposed site

The feasibility study of the project was undertaken by WRC and reviewed by Hydro Solutions Private Limited and BPC Hydro consult in January 2008. The project has already accomplished the financial closure with the consortium of 11 banks lead by Nepal Investment Bank Ltd and co-lead by Sunrise Bank Ltd.

## OBJECTIVE OF THE DOCUMENTS

The objective of this progress report is to present the progresses to date.

## **1. PROJECT STATUS**

The following sub-sections briefly describe the status of the project till date.

### FEASIBILITY STUDY

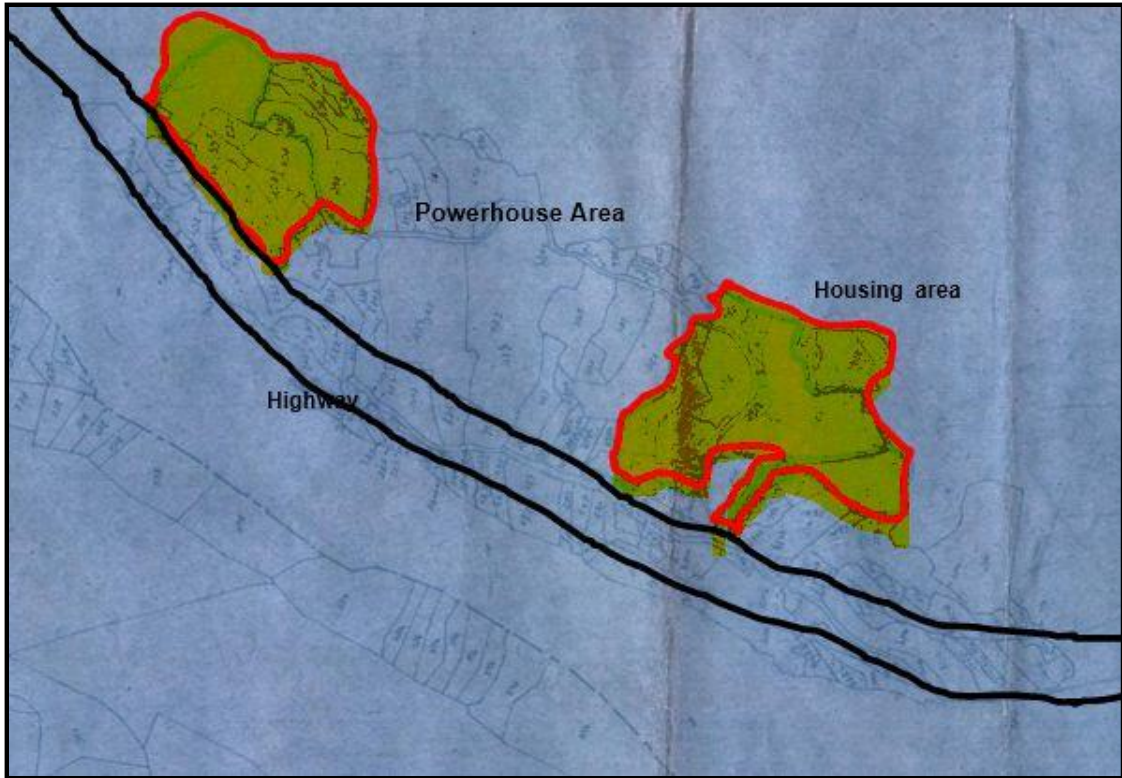
The feasibility study of the project was undertaken by WRC and reviewed by Hydro Solutions Private Limited and BPC. GoN has approved the EIA report of the project.

### **1.2** PPA AND INTERCONNECTION

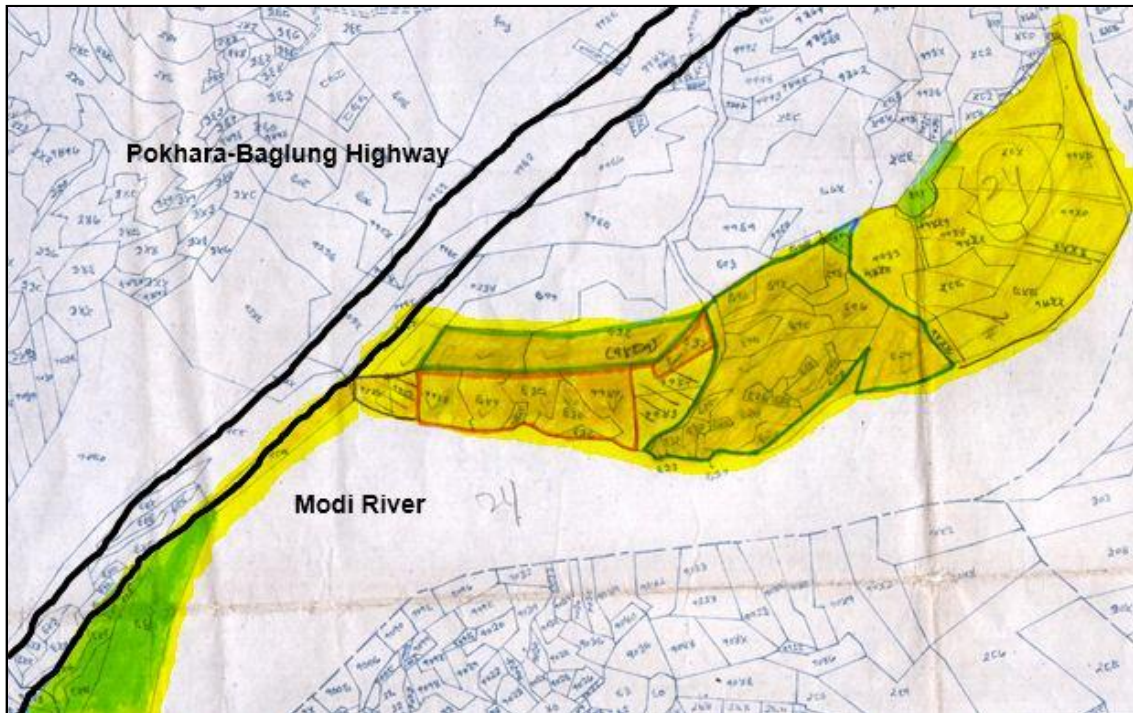
PPA was signed with NEA on Bhadra 2068. The agreed contract energy is 117.14 GWh after deducting 4% outage and loss. The connection agreement was signed on 2066/10/14.

### **1.3** LAND ACQUISITION

Land required for the construction activities has been completed. Approximately 107 ropanies of land (8.5 ropanies of the land at Powerhouse, 69.5 ropanies at Headworks, 12 ropanies for mucking disposal and 15 ropanies at Housing area) has been purchased. Figures below show the purchased land for powerhouse, housing and headwork areas. Similarly 34 ropanies of land has been leased for safe muck disposal and construction facilities.



Detail of Land at Powerhouse and site camp area



Detail of Land at Headworks area





Land purchased for settling basin



Land purchased for power house area

## 1.4 ENGINEERING AND DETAIL DESIGN

Hydro Solutions Engineering & Consultancy Private Limited has undertaken the detail engineering design of the project. The consultant has created a team of engineers and geologist for providing design and construction management services for the project. All the required investigations for underground and surface works have been completed. Till date the consultant has already submitted the Detailed Project Report (DPR), tender documents for civil construction and hydro-mechanical fabrication and construction drawing of Headworks and underground works. MEL has also engaged Australian based Indian consultant, Entura Hydro Tasmania to check and verify the design of LMKHEP.

The monitoring of the construction works at site by the Consultant is being done through regular site visits. Other experts have also been engaged to provide specialized services to enable to foresee and deal with potential problems that can impact work progress.

## 2. CIVIL CONSTRUCTION.

The overall civil works has been divided into two parts viz. **1. Surface works** and **2. Underground works.**

### 2.1 Surface Works:

Asish-Fewa-Nayabato JV has been contracted to accomplish the surface works of the project. The percentage progress of each component is represented by table and pictures below.

S.N	Components	Percentage Progress
1	Construction of labour camp and site office	100 %
2	Installation of crusher and batching plant	100 %
3	Headworks	98 %
4	Gravel Trap	100 %
5	Approach Canal	100%
6	Settling Basin	98 %
7	Anchor block and saddle supports along the penstock	80%



8	Diversion road along the tailrace	100 %
9	Tailrace	100 %
10	Power House	90%



Headworks from upstream





Settling basin



Power House

## 2.2 Underground Works

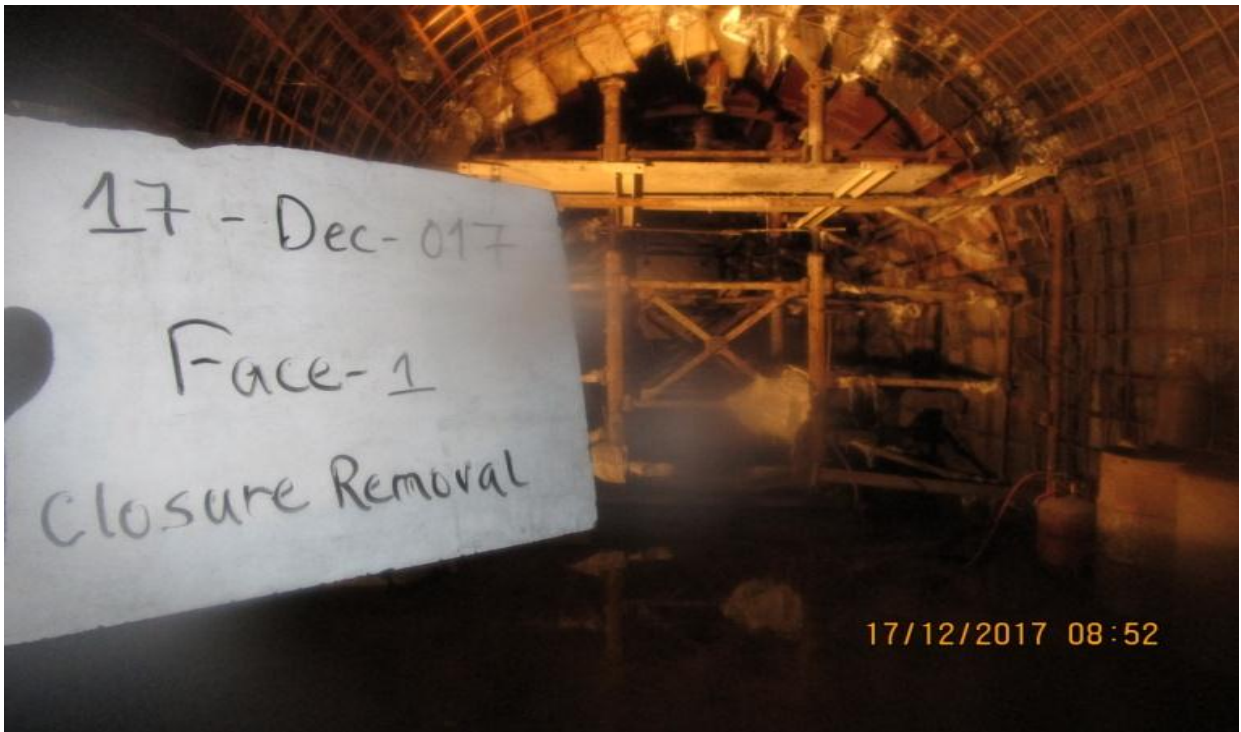
South Asian Infrastructure Pvt Ltd (SAIPL) has been contracted to construct the underground works which mainly consists of Adits, Headrace Tunnel, and Surge shaft and ventilation tunnel. More than 90 % of works has been completed so far. The percentage completion of each section is shown in table below along with the progress photographs.

S.N	Section	Total length (m)	% progress
1	Adit-1	110	100 %
2	Adit-2	181	100 %
3	Headrace Tunnel	4019	100 %
4	Ventilation tunnel & Surge shaft		100 %

Since tunnel excavation has been completed. But due to poor geology condition and huge water ingress in the tunnel we have to do about half of the tunnel concrete lining which is not anticipated in design. Currently, we are in the process of lining of tunnel at invert, wall and crown.

S.N	Section	Total length (m)	% progress
1	Concrete lining in invert	4020	100 %
2	Concrete lining in wall and crown	2063	95 %
3	Concreting Lining in Surge shaft	36	100%

After finishing the concreting, we will start the grouting and shotcrete works for finalisation of the tunnel works which will complete upto mid of Jestha 2075.



Wall and crown concreting in tunnel (Reinforcement works)

### **3. HYDRO-MECHANICAL**

Contract has been done with Machhapuchhre Metals and Machinery Works Pvt Ltd (3MW) for the design, fabrication, supply, install and commissioning of Hydro-Mechanical components. All the component of Hydromechanical parts has finished in fabrication. Stop log and radial gate installation has been finished in the undersluice area and work is going in the intake area. Among 470m length of penstock pipe about 300 m was installed upto yet with all vertical and horizontal bend except Anchor block 2 which will start in the end of baikh 2075. All penstock works will complete in the end of the Jestha 2075.





Penstock From the Outlet Portal



Penstock From U/S of CAB-3





Penstock From the D/S of CAB-3



Anchor Block 4





Penstock From D/S From CAB-4

#### **4. ELECTRO-MECHANICAL**

Contract has been done with B Fouress Pvt Ltd for the supply, installation and commissioning of electro-mechanical equipment. Major heavy equipment like turbine, generator, transformer, valves, cranes etc has been arrived at site. Most of electromechanical equipments has arrived at the site till Mangsir. Installation of spiral case, butterfly valve has been finished and draft tube & generator will be fit in the end of Baisakh 2075. In addition switchyard work is going on parallel with the installation of turbine.



## INSTALLATION OF ELECTROMECHANICAL WORKS

### 5. TRANSMISSION LINE

Since, it was seen that, new modi substation, which is the delivery point for evacuating power generated is not start to construct upto yet. So, we are going to evacuate the power through united modi transmission line by doing the pi connection. So the mutual understanding to use the modi transmission line was done by signing the agreement

between two parties. Soil test has been completed at the foundation of transmission line. Design of the foundation and transmission tower is completed.

Currently, we are on the process of land acquisition by indentification process for the tower which will be finised by 20<sup>th</sup> of Baisakh 2075. After that we start the foundation works of tower and finished the tower at the end of the Jestha 2075.

## **6. MITIGATION AND ENVIRONMENT**

MEL has involved various local employees for the construction works as an enhancement of local skills. Beside supports for various organization to conduct awareness program has been done. MEL has provided significant support in construction and upgrading of local rural roads, water supply and sanitation. MEL is has conducted various training programs too. Till date more than twenty million amount has been expended in social infrastructure development and mitigation works.