

**DRUK GREEN POWER CORPORATION LIMITED
THIMPHU: BHUTAN**



**REQUEST FOR EXPRESSION OF INTEREST
FOR
IMPLEMENTATION OF 500 kW LUNANA MINI
HYDROPOWER PROJECT
CONTRACT PACKAGE 1 - CIVIL AND
HYDRO-MECHANICAL WORKS**

CO0018/2025 dated April 29, 2025



SECTION 1: SCOPE OF WORK

1 Introduction

1.1 Project Background

Lunana Gewog, located in the extreme northwest of Bhutan under Gasa Dzongkhag, spans an area of 1,716.26 square kilometres. The Gewog comprises five chiwogs encompassing thirteen villages, with a total of 197 households (excluding institutional units). As per the Population and Housing Census of Bhutan (PHCB) 2017, the total population of Lunana stands at 699.

The villages are dispersed along the Phochhu valley at elevations ranging from 3,000 meters to 4,180 meters above sea level. The entire Gewog lies within the ecologically significant Jigme Dorji National Park (JDNP), falling under both the national protected area and a designated biological corridor. Except for Ramina village, Lunana lacks road connectivity. Reaching the Gewog from the nearest road head requires over a week of travel on foot, making accessibility a major challenge.

Geographical isolation, rugged terrain, and extreme climatic conditions have contributed to the Gewog's longstanding seclusion from the rest of the country. Traditionally, the local population has depended on yak herding and small-scale seasonal agriculture for their livelihoods. According to the Land Use Planning Project (LUPP, 1995), Lunana's land cover includes:

- 0.02% agricultural land
- 15% conifer and broadleaf forests
- 13% scrub vegetation
- The remainder comprises alpine pastures, snow and glaciers, rock outcrops, and marshlands

Yaks are integral to the community's subsistence economy—providing milk and milk products, meat, manure, and serving as pack animals. Horses are similarly used to transport goods and firewood. Prior to the availability of modern clothing, yak fur was used for weaving garments and blankets. The legalization of the cordyceps collection business has recently begun to transform local livelihoods, bringing in additional income and accelerating socio-economic change.

To address the energy needs of the Gewog, the Royal Government of Bhutan (RGoB), through the erstwhile Department of Renewable Energy (DRE) under the Ministry of Economic Affairs (MoEA), provided Solar Home Lighting Systems (SHLS) to households. In addition to SHLS, households continue to rely on traditional fuels such as firewood, kerosene, and liquefied petroleum gas (LPG). Due to the absence of road access, the transportation of fuels remains prohibitively expensive, requiring airlifts or animal caravans.

Firewood remains the most vital energy source for cooking and space heating—particularly important in Lunana's harsh winters, when temperatures can drop as low as -15°C . In the summer, temperatures reach up to 18°C . In villages like Thanza, Tenchoe, and Dotag, firewood collection requires day-long or multi-day trips to distant areas, with yaks and horses used to transport the loads. Recent improvements in socio-economic conditions have led to a growing trend in house construction, resulting in increasing firewood consumption and consequent degradation of forest cover. This is of significant concern, given that Lunana lies within a protected area where forest loss can adversely affect biodiversity. Moreover, tree growth in high-altitude zones is notably slow, compounding the challenge of sustainable forest regeneration.

Given the area's remoteness, elevation (exceeding 5,000 meters in some areas), and the environmental sensitivity of the national park, extension of the national grid has been deemed technically and environmentally unfeasible.

Furthermore, the intermittent nature of solar and wind power supply limits the reliability of these renewable sources as standalone solutions for the region.

Considering these constraints, the development of a mini hydropower scheme emerged as the most viable and sustainable option. The proximity of potential hydropower sites to the settlements makes it technically feasible, and such a solution aligns well with the objective of providing reliable, renewable energy to Lunana’s highland communities while minimizing environmental impacts.

1.2 Project Salient Features

The salient feature of the project is as described in the table below:

A. GENERAL	
Location	
Country	Bhutan
Dzongkhag	Gasa
River	Chuzachhu
Nearest Village	Tenchoe
Location of Intake (local coordinate)	X= 41317.87 Y= 420648.07 Z= 4,235.00
Location of Powerhouse (local coordinate)	X= 42125.0920 Y= 420068.9074 Z= 4,127.00
B. HYDROLOGY	
Catchment Area	55.0 km ²
Minimum Firm Flow	0.9 m ³ /s
C. CIVIL WORKS	
Trench Weir	
Size & Shape	Rectangular
Size	8.5 m (L) x 0.6 m (B)
River Bed Level at Centre	El. 4,235.00 m
Service Gate Size	0.6 m (W) x 1.2 m (H)
Shingle Flushing Gate	0.3 m (W) x 0.3 m (H)
Feeder Channel	
Type	Open channel
Size	1.0 m (W) x 1.0 m (D)
Length	13.6 m
Desilting Basin	
Type and Number	Surface, 1 no
Size (LxWxH)	27.0 m x 2.5 m x 2.4 to 2.7 m
Desilting Outlet gate number	1 nos
Desilting Outlet Gate size (WxH)	2.2 m x 0.79 m
Silt Flushing Channel	
Total flushing discharge (15%)	0.11 m ³ /s
Sediment size to be removed	>0.2 mm
Channel – Number	1 nos
Size (WxH)	0.5 m x 0.8 m
Length	29.0 m



Number of SFC gates	1 no.
SFC Gate size (WxH)	0.5 m x 0.6 m
Transition Chamber	
Number of Chamber	1
Size (LxWxH)	0.9 m x 2.2 m x 2.84 m
Head Race Pipe	
Diameter	630.0 mm (OD)
Length	940.0 m
Material	HDPE/ GRP (PE 63 grade, PN 2.5, DN-630, average thickness 20.65 mm)/GRP
Design Discharge	0.72 m ³ /s
Inlet Invert Level	4233.0 m
Surge Tube	
Number	1 no
Type	Inclined Surge Tube
Top level	El. 4255.89 m
Bottom level	El. 4217.68 m
Surge Tube- Diameter	0.80 m
Surge Tube - Length	94.00 m
Orifice Diameter	0.30 m
Orifice Length	6.40 m
Type of Material	Steel/GRP
Penstock	
Type & Shape	MS Pipe (E250 A)
Design Discharge	0.72 m ³ /s
Number	1 No.
Main Penstock	530.0 mm diameter (ID), 178.0 m length & 10.0 mm thick
Branch Penstock	350.0 mm diameter (ID), 18.0 m length & 10.0 mm thick
Velocity	3.30 m/s
Powerhouse	
Type	Surface Powerhouse
Size	14.0 m (L) x 8.0 m (B) x 5.0 m (H), H from M/c Floor level
Center Line of Turbine	El. 4,128.50 m
Machine Floor Level	El. 4,127.70 m
Maximum Tail Water Level	El. 4,126.90 m
Tail Race Channel	
Type	Open Channel
Number	1 No.
Shape & Size	Rectangular, 1.0 m (W) x 1.0 m (H)
Length	53.0 m
Slope	1 in 300
TRC Outfall (Invert)	El. 4,126.1 m
No. of TRC gates	2
TRC Gate Size (W x H)	1.0 m x 1.0 m
D. ELECTRO MECHANICAL EQUIPMENT	
Turbine	



Type of Turbine	Two (2) Jet Horizontal Pelton
Number of Turbine	Two (2)
Rated Head	88.62 m
Rated Output	250 kW (Per Turbine)
Rated Speed	750 rpm
Efficiency	87.92 %
Generator	
Type of Generator	Synchronous, Cylindrical rotating type
Rated Power	362 kVA
Power Factor	0.8 lagging
Generation Voltage	415 V
Number of Phases	Two (2)
Frequency	50 Hz
Type of Cooling	Air cooled
Efficiency	91.00%
E. POWER DISTRIBUTION	
Type	Overhead
Transmission Distribution Voltage	33 kV
Total Line Length	32 km
Conductor Type	Rabbit
Total no. of Villages to be Electrified	11
Total no. of Household (excluding institutions)	187
F. POWER GENERATION	
Design Discharge	0.72 m ³ /s
Gross Head	106.89 m
Head Loss	18.27 m
Design Head	88.62 m
Firm Power	500 kW
Firm Annual Energy	4.38 GWh
Annual PLF	100%
G. CONSTRUCTION SCHEDULE	
Construction Period	30 months (Three Seasons)

1.3 Project Layout Plan

The general layout plan of the project and tender-level drawings are attached at **Annexure – I**.

2 Objective of this EOI

Druk Green Power Corporation Limited (DGPC) has been entrusted by the Department of Energy, Ministry of Energy and Natural Resources (MoENR), to implement the 500 kW Lunana Mini Hydropower Project (Lunana MHP). This project is a key flagship initiative under Bhutan's 13th Five Year Plan, aimed at providing reliable and renewable grid electricity to the remote highland communities of Lunana Gewog. The project will support and enhance the economic livelihoods of these communities, promote sustainable rural development, and enable people to continue residing in their ancestral villages while preserving traditional occupations and livelihoods.

The project is financed by the Government of India under its Project Tied Assistance (PTA) framework, specifically from the Nu. 1.50 billion allocation for small hydro and solar-wind projects.

DGPC now intends to proceed with the implementation of the 500 kW Lunana Mini Hydropower Project. The project will be implemented in three contract packages as follows:

- i) **Contract Package 1 – Civil and Hydro-Mechanical Works:** This package covers all civil construction activities including intake structures, desilting basin, headrace pipe, powerhouse building, tailrace, as well as installation of hydro-mechanical components. DGPC will be the executing agency responsible for procurement, contract management, and implementation.
- ii) **Contract Package 2 – Electro-Mechanical Works:** This package includes the supply, installation, and testing of electro-mechanical equipment such as turbines, generators, control panels, and associated electrical systems. Given the small scale and limited availability of qualified suppliers, DGPC will explore direct contracting for this component.
- iii) **Contract Package 3 – Transmission and Distribution Works:** This includes the design and construction of the power evacuation system within the project scope, excluding Wachey and Isuna. Bhutan Power Corporation (BPC) will implement this package using its institutional procurement procedures, in coordination with the schedules of the civil and electro-mechanical works.

This Expression of Interest (EOI) is specifically invited for Contract Package 1 – Civil and Hydro-Mechanical Works. Through this EOI, DGPC intends to shortlist eligible and competent firms who will subsequently be invited to submit their technical and financial proposals through a limited bidding process.

3 Scope of Work

The broad scope of this contract includes, but is not limited to, all Civil and Hydro-Mechanical works required for the successful implementation of the 500 kW Lunana Mini Hydropower Project. The works are proposed to be executed under a single contract package.

The detailed scope of work under this package shall cover, among others, the following components:

- Temporary diversion arrangements
- Trench weir and intake structures
- Feeder channel
- Desilting basin
- Head Race Pipe (HRP)
- Surge tube
- Penstock
- Powerhouse building
- Tailrace channel

To expedite the bidding process and facilitate timely mobilization of manpower and equipment, DGPC intends to procure and provide certain key equipment specifically for this project. These will be made available to the selected contractor at the site.

However, the contractor is expected to:

- Conduct an independent assessment of the adequacy of the equipment provided

- Procure and mobilize any additional equipment as required to meet the project schedule and quality standards

SN	Equipment	Quantity
1	Mini Excavator	2
2	Pionjar Machine	2
3	Mini Stone Crusher (1-3 TPH)	1
4	Concrete Mixer (Auto-230 liters)	2
5	Concrete Mixer (Manual)	1
6	Concrete Needle Vibrator (Petrol)	3
7	Wheel Barrow	15
8	Water pump (1.5 HP, 160 L/min)	2
9	Electric Welding Set (2- 10 mm weld thickness)	2
10	Power Chainsaw	2
11	Bar cutting handheld tool (6-25 mm)	3
12	Diesel Generator (10kVa & 7kVa)	2
14	Portable Hyperbaric Chamber- Safety gadget	1
15	Tractor (26 HP, 1.5 T)	1

Prospective bidders are advised to review the salient features of the project and the tender-level drawings attached to this EOI in order to make a proper assessment and prepare a responsive proposal in accordance with the requirements outlined.

Should any additional information or clarification be required, DGPC will provide the necessary data upon receiving a written request from the interested bidder.

4 Bidding Procedure

DGPC will adopt a two-stage bidding process for the selection of the Contractor for Contract Package 1 – Civil and Hydro-Mechanical Works.

4.1 Stage 1: Pre-Qualification Stage

In this stage, interested parties are invited to submit their application in accordance with the provisions of this Expression of Interest (EOI). Bidders are required to furnish all the information and documentation specified herein.

At the conclusion of this stage, DGPC will shortlist pre-qualified bidders based on the evaluation of submitted EOI responses. Only the shortlisted bidders will be eligible to proceed to the next stage.

4.2 Stage 2: Bid Stage

Pre-qualified bidders will be issued the Bidding Documents, and will be invited to submit their Technical and Financial Bids in accordance with the terms and requirements set out in the Bidding Documents.

During this stage, bidders are encouraged to thoroughly review the bidding documents. Bidders may undertake, at their own cost, any further site assessments or studies necessary to finalize their proposals.



SECTION 2: INSTRUCTIONS TO BIDDERS

1 Instructions to Bidders

1.1 Eligibility of Bidders

To be considered for pre-qualification under this EOI, the bidders must meet the following eligibility criteria:

- i) The bidder must possess a valid registration with the Construction Development Board (CDB) under the Large Category.
- ii) The bidder must participate as a single entity. Participation through joint ventures (JVs), associations or consortiums is not permitted.
- iii) Only the credentials of the bidder on a stand-alone basis shall be considered for evaluation. Credentials of the holding company, group entities or subsidiaries will not be accepted.
- iv) In the case of a bidder that has been upgraded and incorporated as a company from a previously registered medium category firm, the credentials of the predecessor firm may be considered, provided that more than 50% of the shareholding or ownership remains unchanged.

1.2 Documents Constituting the EOI

Only one bid shall be submitted per interested party against this EOI. The Bidding Documents for this Contract Package will be issued only to the shortlisted bidders, based on the evaluation of this EOI.

The EOI submitted by the interested parties shall consist of the following documents:

- i) Forwarding Letter for EOI
- ii) Power of Attorney authorizing the signatory to sign the EOI
- iii) Details of the bidder's capability, as per the prescribed form
- iv) Duly signed Integrity Pact Statement
- v) Certificate of Incorporation or Commencement of Business
- vi) Copies of Memorandum and Articles of Association
- vii) Valid and up-to-date Income Tax Clearance Certificate

Bidders must provide the information strictly in the prescribed formats, as specified in the EOI. Cross-referencing or substituting with other documents is not permitted where a specific format is prescribed.

DGPC reserves the right to:

- Verify the authenticity of the documents submitted, and
- Request additional documents or information as deemed necessary.

Furthermore, DGPC may, at its sole discretion, contact the bidder's bankers, lenders, financial institutions, or any other relevant persons to verify the information and documentation submitted.

1.3 Method of Submission

The bidder shall submit its EOI in a single closed cover envelope which should be transcript in the following way:

"Request for Expression of Interest (EOI) for Implementation of 500kW Lunana Mini Hydropower Project: Contract Package

1 for Civil and H&M Works

Due for opening on **May 14, 2025 at 1530 Hrs (BST)**

Manager
Contracts Section
Projects and Contracts Department,
Druk Green Power Corporation Limited (DGPC),
Thimphu.

“Name of the Bidder”

[Insert name of Bidder]

Bidders may submit their Expression of Interest (EOI) either by courier or by hand delivery. It must reach Druk Green Power Corporation (DGPC) by the specified Due Date. Submissions by telex, telegram, fax, or email will not be accepted under any circumstances. DGPC will not be responsible for any delays in receiving the EOI. If the EOI arrives after the Due Date, it will be returned without being opened.

All pages of the EOI, including any corrections or documents forming part of it, must be signed by the authorized signatory representing the bidder. The same person must sign every page. However, for published documents submitted along with the EOI, the authorized signatory is required to sign at least the first and last pages.

Each bidder must submit one original copy and one duplicate copy of the EOI. Both copies should be signed by the authorized signatory. The original should be clearly marked as “ORIGINAL” and the copy should be labelled as “COPY”. If there is any difference between the original and the copy, the original version will be considered final.

No changes or additional information will be accepted after the Due Date unless DGPC specifically requests it. Bidders are allowed to withdraw or modify their EOI any time before the Due Date. If a bidder decides to withdraw their EOI before the Due Date, it will be returned unopened.

The envelope containing the EOI must be properly sealed and labelled according to the instructions. If it is not closed or labelled correctly, DGPC will not be responsible if the EOI is misplaced or opened early.

1.4 Submission of EOI

Bidders must submit the required information and documents using the formats provided in Section 4 (Formats for EOI) of the document.

It is important to strictly follow the specified formats. If the bidder does not follow the formats or submits incomplete information, the EOI may be considered non-responsive and could be rejected. Each form must be properly signed and stamped by the bidder’s authorized representative.

The bidder should nominate one person to act as the official representative in all matters related to DGPC. This person should be authorized to carry out all necessary actions, such as providing information, replying to queries, and signing the EOI.



Along with the EOI, the bidder must also submit the original Power of Attorney (as per Format 4.2), authorizing the person who signs the EOI.

1.5 Disqualifications

If a bidder hides important information, makes false or misleading statements, or misrepresents facts in their EOI in any way that could influence DGPC to accept it, DGPC reserves the right to reject such EOI.

DGPC will not consider any EOI for qualification if it believes that the submission does not align with its intended objectives.

Any EOI that is incomplete, missing required attachments, or lacks authenticity will not be considered for qualification.

In addition, DGPC may disqualify a bidder and reject its EOI from further evaluation for any of the following reasons:

- Failure to provide the necessary information as required in the EOI.
- Submitting an EOI on behalf of another bidder who has already submitted an EOI.
- If DGPC later discovers information about the bidder that would have led to disqualification during the initial review, it may reject the bidder at any point.
- The bidder does not meet the eligibility or qualification criteria stated in the document.

1.6 Enquiries, Clarification and Pre-Bid Meeting

DGPC will not engage in any correspondence with the bidders, except to provide clarifications on the EOI if necessary.

Bidders may send their requests for clarification or suggestions for amendments in writing, either by letter or email. These must reach DGPC on or before **1700 Hrs of May 5, 2025** at the address or email provided below. Any queries received after this deadline will not be entertained.

While bidders may request clarifications or propose changes, DGPC is not obliged to respond or accept any suggestions or modifications.

All communication, including clarifications and submission of the EOI, must be addressed to the designated contact provided in the EOI document.

Manager
Contract Section
Projects and Contracts Department,
Druk Green Power Corporation Limited (DGPC),
Thimphu Dzongkhag.
Email: s.choden272@drukgreen.bt

DGPC may, on its own initiative, issue clarifications or interpretations if it considers them necessary. These clarifications will be shared with all bidders and will be treated as an official part of the EOI.

Any verbal explanations or information provided by DGPC staff or representatives will not be considered binding in any way.

No extension of the EOI submission deadline will be granted on the grounds that DGPC did not respond to a question or provide a clarification.

1.7 Acknowledgement by Bidder

By submitting the EOI, the bidder is considered to have:

- i) Carefully and fully reviewed the contents of the EOI
- ii) Received all the necessary information from DGPC that was requested
- iii) Accepted the risk of any errors, omissions, or inaccuracies in the information provided in the EOI or by DGPC
- iv) Agreed to be bound by the terms and commitments stated in the EOI submission.

DGPC will not be held responsible for any errors, omissions, or mistakes related to the EOI, the qualification stage, or any data or information provided. This includes any consequences arising from such issues.

1.8 Other Terms and Conditions

Bidders must ensure that the EOI document downloaded by them is complete in all respects. If there is any discrepancy, it must be reported to DGPC at the address mentioned in ITB Clause 1.6 of the EOI. If DGPC does not receive any such notification within twelve (12) days from the date of issue of the EOI, it will be assumed that the bidder has received a complete and correct document.

The EOI must be prepared in the English language only.

Bidders must clearly mention the name of the contact person and their complete address in the cover letter, as per Form 4.1 titled “Forwarding Letter for EOI.”

Each bidder must conduct its own enquiries and satisfy itself regarding all relevant information, conditions, and factors that may affect the preparation and submission of the EOI.

Once submitted within the deadline, the EOI becomes the property of DGPC and will not be returned.

All costs related to preparing the EOI, participating in discussions, and attending any pre-EOI meetings must be borne by the bidder. DGPC will not be responsible for any of these costs, regardless of the outcome of the qualification process.

After the submission deadline, DGPC may, at its sole discretion, ask for additional documents or seek clarifications from a bidder to address any inconsistencies or missing information in the EOI.

Failure to submit required data or submitting incomplete information will not be seen as DGPC waiving its right to request such data, unless such waiver is issued in writing.

DGPC may verify the bidder’s financial information by contacting banks, lenders, or any other relevant institution.

DGPC reserves the right to interpret the EOI based on the provisions of the document and to make its own decisions on the meaning of any part of the submission. No bidder will have any claim or recourse against DGPC regarding the evaluation or shortlisting process. DGPC will evaluate all EOIs using the method described in Section 3, and its decision will be final and binding.

DGPC reserves the right to:

- i) Reject any EOI;
- ii) Cancel the entire bidding process; or
- iii) Reject all submissions at any stage,

without any obligation to accept, explain, or provide reasons for its decision. DGPC will not be liable for any consequences arising from such actions.

The entire bidding process will be governed by the laws of the Kingdom of Bhutan. Any disputes will fall under the exclusive jurisdiction of the Royal Court of Justice in Thimphu.

1.9 Deadline for Submission & Opening of EOI

The bidders should submit the EOI so as to reach the address specified below on or before **1500 Hours (BST)** on **May 14, 2025**.

Manager
Contract Section
Projects and Contracts Department,
Druk Green Power Corporation Limited (DGPC),
Thimphu Dzongkhag.
Email: s.choden272@drukgreen.bt

The EOI shall be opened at **1530 Hours (BST)** on **May 14, 2025** at **Corporate Office, DGPC, Thimphu**.

1.10 Fraud and Corruption

All bidders and their respective officers, employees, agents, and advisers must maintain the highest standard of ethics throughout the bidding process.

DGPC reserves the right to reject any EOI if it determines that the bidder either directly, indirectly, or through an agent - has engaged in any of the following during the bidding process:

- Corrupt practices
- Fraudulent practices
- Coercive practices
- Undesirable practices
- Restrictive practice

This decision can be made by DGPC without being held liable in any way to the bidder.

In addition, if a bidder is found to have been involved in any of the unethical practices listed above - either during the bidding process or after the Letter of Intent (LOI) has been issued - DGPC will disqualify the bidder from participating in any future tenders or Requests for Proposals (RFPs) issued by DGPC for a period of two