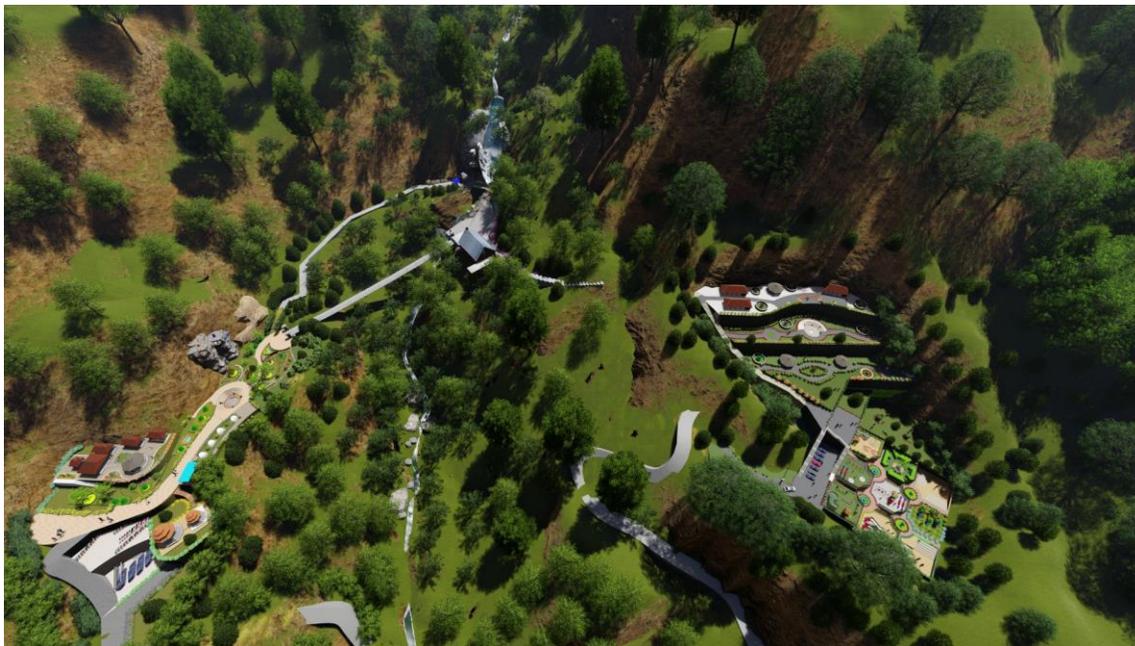




Tokha Municipality
Office of the Municipal Executive
Maijuhiti, Kathmandu
Province No. 3, Nepal

A
Final Report
On
DETAILED TOPOGRAPHIC SURVEY AND MASTER PLAN PREPARATION OF
BOUDESHWOR INCLUDING QUANTITY AND COST ESTIMATE OF ONE MAJOR
PROJECT COMPONENT



Submitted By:

Paragon Engineering Consultancy and Research Centre Pvt. Ltd.
Kupondole, Lalitpur
Phone No.: 01-5530600
Email:ourparagon2009@gmail.com

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Acknowledgement

This Final Report on **Detailed Topographic Survey and Master Plan Preparation of Boudeshwor including Quantity and Cost Estimate of One Major Project Component** has been prepared by Paragon Engineering Consultancy and Research Centre Pvt. Ltd. in accordance with the contract agreement signed between Tokha Municipality (the client) and the consultant.

We would like to convey our indebtedness to Tokha Municipality for entrusting us the responsibility to carry out the task of Detailed Topographic Survey and Master Plan Preparation of Boudeshwor including Quantity and Cost Estimate of One Major Project Component.

We would like to express deep sense of gratitude to Mr. Prakash Adhikari, Mayor, Ms, Gyan Maya Dangol, Deputy Mayor, Mr. Krishna Prasad Subedi, Chief Administrative Officer, Er. Rudra Nath Acharya, Structural Engineer and other staffs of Tokha Municipality for supporting us to carry out the assignment. Similarly, we would like to thank Mr. Shree Krishna Adhikari, President of Ward No. 1 and Mr. Krishna Adhikari for their entire support from project inception till the completion of the project.

Last, but not the least, we would like to thank all those involved directly or indirectly with the project for timely completion of the assignment.

Paragon Engineering Consultancy and Research Centre Pvt. Ltd.

Kupondole, Lalitpur

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1 INTRODUCTION

1.1 Background

Boudeshwor is a famous place located at Ward No.1 of Tokha Municipality, Province No.3, Nepal. It is about 10 Kilometers from the Ring Road. Although the place is historically, culturally and naturally important, it has not gained popularity as required due to the lack of proper information dissemination in one hand and lack of infrastructures on the other. If a proper and coordinated approach for developing the area is undertaken, then it is likely to become one of the famous touristic destinations of the Kathmandu Valley in the near future. In this background, Tokha Municipality has decided to develop a Detailed Master Plan of the Boudeshwor Area and hired Paragon Engineering Consultancy and Research Centre Pvt. Ltd. for providing consultancy services of the same.

1.2 Objectives

The general objective of hiring the consulting service is to prepare the detailed master plan of the Boudeshwor area.

The specific objective of the consulting service subject to this TOR is:

- To carry out Detailed Topographic Survey and Master Plan Preparation including Quantity and Cost Estimate of One Major Project Component

1.3 Scope of Work:

The consultant, under these terms of reference, work shall carry out the following works in consultation with Tokha Municipality Personnel:

- Detailed Topographic Survey of the project area in coordination with the municipality personnel and survey department. The municipality office shall make arrangement with the survey department.
- Detailed Master plan and Landscape design of the area.
- Assessment of Existing Structures.
- Propose New Structures and carry out detailed A/E design of one major component among the identified structures after the master plan.
- To prepare the detailed quantity and cost estimate of the proposed infrastructure.

1.4 Outputs:

The consultant has prepared a Detailed Master Plan of the Boudeshwor Area including the Quantity and Cost Estimate of Children's Park as one of the major project components.

2 METHODOLOGY

2.1 Desk Study

In this phase, the team of consultant after signing the contract agreement, collected relevant literature and topographical maps of the site (1:25000 Scale). The consultant also carried out consultation with the client's representative prior to field mobilization. This was undertaken to understand the specific needs of the community and the municipality in terms of getting optimum benefits from the project. Google earth images were also used for getting relevant information in carrying out the assignment.

2.2 Field Study

During the field study phase, the team of consultant visited the site along with the municipality personnel led by the Mayor. The team carried out consultation with the stakeholders at site to understand their perception regarding the project. The locals showed pretty much interest towards the project development. Then after, a detailed topographic survey of the proposed area was carried out using Total Station. Efforts were made to include as much details as possible. Inventory of the existing site condition was also carried out in this phase.

2.3 Needs Assessment

Based on the desk study review and field assessment including the topographic survey, the consultant carried out a need assessment regarding the project development. The suggestions of the locals, representatives from Municipality and the consultant's previous experience on similar projects supported by experts' judgement were used to finalize the needs assessment. This was later used for project planning and formulation.

2.4 Conceptual Master Plan

Once the needs assessment was completed, the conceptual Master Plan of the area was prepared including all the possible infrastructures. The conceptual Master Plan mainly contained:

- Recreational Parks
- Temple
- Rock garden
- Foot trails along the Kholsi on either bank
- Picnic Spots
- Football Ground

The conceptual Master Plan was presented to Municipality personnel to get their comments on the conceptual plan. There were no specific comments except to replace proposed football

ground with the Children's Park and to add a small reservoir on top of the present waterfall to supply continuous flow throughout the year in the waterfall.

2.5 Draft Master Plan

The comments and suggestions on the conceptual Master Plan were included to prepare the draft Master Plan. This was an updated Master Plan with greater details which was again presented to the municipality personnel to get their approval. The municipality personnel were happy with the results being presented and suggested to provide detailed estimate of the Children's Park as an annex to the report.

2.6 Final Master Plan

The Final Master Plan was prepared taking into consideration the suitability of the proposed structures with respect to local conditions, culture, topography and public acceptance. Parking facilities have been allocated at suitable locations. A sculpture of Lord Shiva (Mahadev) is proposed to be crafted in the major stone of the water fall. This is expected to add beauty to the site. Sufficient greenery is proposed for enhancing scenic beauty and also to enhance the landscape design of the area.

2.7 Final Report

The Final Report was prepared including the Final Master Plan of the area and the detailed Architectural and Engineering design and drawings of the Children's Park. Detailed quantity and cost estimate of the proposed structures at Children's Park is also included in the Final report.

3 EXISTING SITUATION OF SITE

3.1 Location and Climate

Boudeshwor lies at Ward No. 1 of Tokha Municipality in Kathmandu District, Province No. 3, Nepal. It is located in the Northern part of the Kathmandu Valley at an elevation of about 1500 masl approximately at a distance of 10 kilometers from the Ring Road (Samakhushi Chowk). The location map of the site is shown in Figure 1 and Figure 2.

While it is characterized by mild climate in general, summer temperatures can go up to 32 °C whereas the winter temperatures may fall up to 0 °C, sometimes to minus temperature as well.

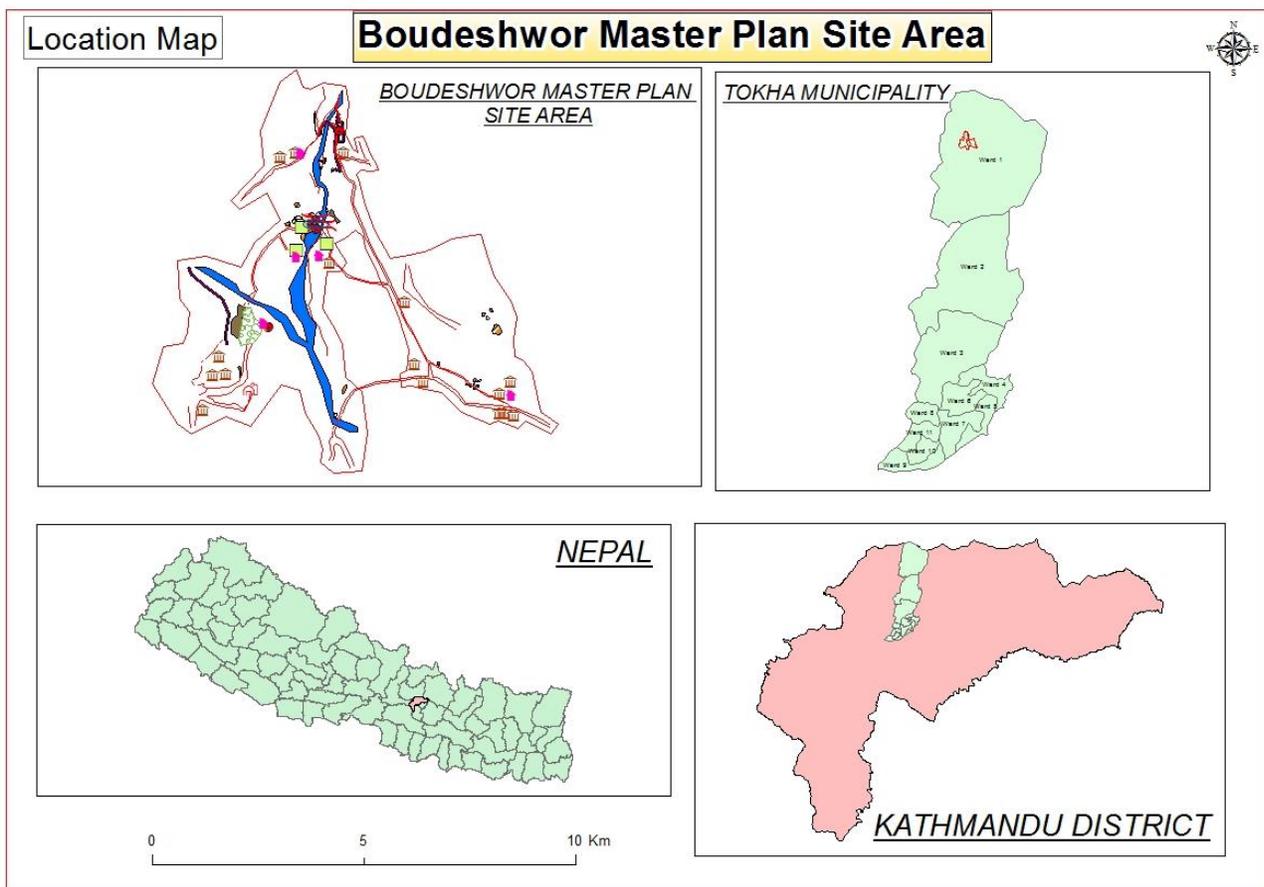


Figure 1: Location Map of the Site

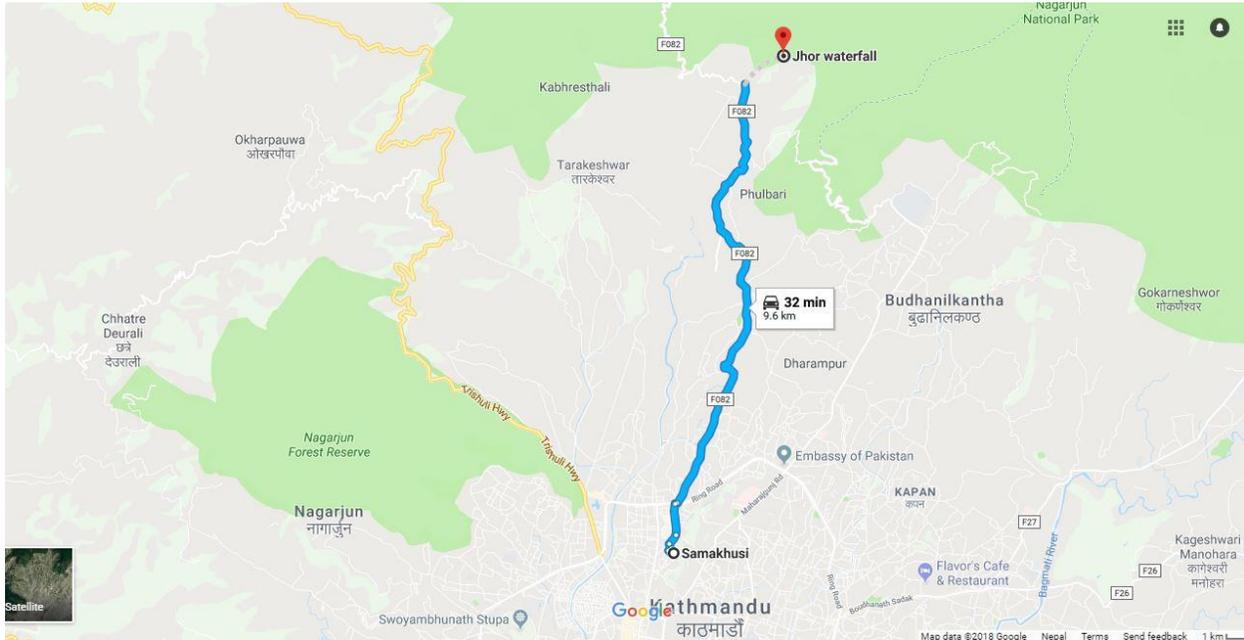


Figure 2: Location of the Site from Google Maps

3.2 Accessibility

The site is easily accessible by all weathered Tokha-Khahare Road. The Western part of the site that includes recreational park, parking lots, temple, rock climbing spot, picnic spot and suspension bridge is connected by a graveled road. On the other hand, the Children’s Park and the Picnic spots on the Eastern part of the site are also connected by a graveled road. However, both of these connecting roads from the Main road are narrow. So, widening and upgrading of these roads are required prior to further infrastructural development of the site.

3.3 Topography

The site is characterized by high slopes, mostly with rocks and narrow Kholsis. There are few locations with alluvial soils and moderate slopes. There were no indications of landslides or mass movements in the vicinity of the project area. A detailed topographic survey of the project area has been carried out and a topographical map has been prepared with all the details of site boundary, access roads, electric poles, water supply networks, drainage systems and existing structures.

3.4 Existing Infrastructure

3.4.1 Existing Site Situation

The site lies in Ward No. 1 of Tokha Municipality, the plot is steep and with very undulations.

3.4.2 Infrastructure Facilities

There is existing roadway nearby the site and supply of electricity from the national grid.

3.4.3 Access

The existing site is easily accessible from all sort of transportation which is connected to the highways.

3.4.4 Water Supply

The site has facilities for drinking water from the existing sources. There is a reservoir on top of the Water Fall which is used for supplying water to the people of Tarkeshwor Municipality. This reservoir could be expanded for meeting future water demand of the area.

3.4.5 Drainage and Sewerage

The municipality has only covered drain system provided in almost all roads. So, the septic tank needs to be constructed within the master plan area of Boudeshwor. Sewer lines are proposed to be developed in the near future.

3.4.6 Waste Disposal

Solid waste management of Tokha Municipality is done by the municipality itself. A separate waste collection system has to be developed by the municipality for Boudeshwor area which will later be disposed off at a designated place identified by the municipality.

3.4.7 Electricity and Communication

The electricity is available in the project area through the 11 KVA National Grid. As for communication, it has all the modern facility for communication like Telephone, Email, Fax, Internet etc.

3.4.8 Availability of Construction Materials

Preliminary assessment for quality, quantity and availability of the local construction materials has been carried out at the project area. All the materials required for the construction is available in the near vicinity of project area. Labors both skilled and unskilled are also easily available. Since the project is within a short distance from the main city centre, construction materials can be easily transported to the site.

3.4.9 Site Analysis

3.4.9.1 Site Visit

In order to carry out initial assessment and survey work, members of the study team comprising of Team Leader, Architect, Engineer and Surveyor with survey helpers visited the site. Inspections and investigations were made along with meeting with the concerned stakeholders. Different opinions of the municipal staffs and other stakeholders including representatives of Tokha Municipality were collected about proposed Master Plan of the Boudeshwor Area. The discussion was focused on their requirement for the proposed Master Plan in terms of capacity, future requirements, open and parking space and functions, as well as current problems of the site.

3.4.9.2 Site Survey

A detailed topographical survey has been conducted to prepare the topographical maps of the project area and its immediate surroundings with total station to know the objects and their locations at site. Existing structures like buildings, roads, cultural heritages and electric poles were also surveyed as a reference points. A topographical map has been prepared with all details of site boundary, access roads, electric poles, drainage lines and existing structures. The map has been prepared in appropriate scale as shown in Annex 1.

3.4.9.3 Site Analysis

The site is very promising in terms of its suitability for landscape design and providing diversified facilities as shown in the detailed Master Plan. The natural topography, in itself, is attractive with steep cliffs, rocks, water fall and springs in the project area. Sufficient number of trees provides greenery to the site at present condition as shown in Figure 3. The natural waterfall attracts many domestic as well as international tourists during the Monsoon season. If a dam is constructed upstream of the proposed water fall site and water be stored during the rainy season, continuous flow of water in the water fall can be managed throughout the year thereby increasing its importance.



Figure 3: Greenery in the project area in the month of May

4 DESIGN CONCEPT

The Master Plan of the Boudeshwor area has been prepared taking into consideration the topography of the site, local culture and traditions, historic and cultural importance of the area and public acceptance. A number of stakeholder consultations were carried out to obtain approval from the concerned authorities and the local people. Attention has been paid to provide sufficient greenery in the parks and other built up areas. Similarly, landscape design has been carried out to incur fewer disturbances to the natural topography of the area.

On the other hand, the design of Children's Park has been carried out to provide maximum amenities to children. The details of these facilities have been provided in the Master Plan as well as in the detailed design of the Park. Sufficient entrance and exits in the park have been provided for easy movement within the park premises. Flowers, shrubs and garden have been provided to enhance beauty of the area and the greenery.

Rest rooms and other facilities for visitors have also been provided in the design of the park. Picnic spots have been designed above the children park so as to accommodate adults and other visitors in the park. Further, rocks climbing facilities, continuous water fall and recreational parks have been provided to attract visitors in the project area.

Sufficient open space and greenery have been proposed as the key concept in the overall master plan preparation of the area which was also requested by a larger audience during the draft report presentation. Environmental Enhancement and Protection Measures shall be recommended during the overall project implementation.

5 COST ESTIMATION

As the Master Plan includes different components which have to be studied in detailed design phase for more accurate Quantity and Cost Estimation, the cost estimation provided in this report is preliminary and needs to be assessed accordingly. However, the cost estimate of the Children's Park has been prepared after detailed design of the every components included in the Master Plan and Detailed Architectural Design of the Park. The cost estimate of overall Master Plan Implementation is given in Table 1 and detailed Cost Estimate of Children's Park is provided in Table 2.

Table 1: Cost Estimate of Overall Master Plan Implementation

S.N.	Description of Works	Estimated Amount	Remarks
1	Access Road Widening and Upgrading	Rs. 30,000,000.00	Approximate Only
2	Dam and Reservoir Construction Upstream of the Present Water Fall Site for Storing Water	Rs. 10,000,000.00	Approximate Only
3	Construction of Recreational Parks, Picnic Spots, Rock Climbing, Amphitheater etc.	Rs. 50,000,000.00	Approximate Only
4	Construction of Suspension Bridge	Rs. 30,000,000.00	Approximate Only
5	Construction of Foot trails along both the banks of Kholsis including support structures	Rs. 30,000,000.00	Approximate Only
6	Construction of Picnic Spots along with other support structures near the Children's Park	Rs. 25,000,000.00	Approximate Only
7	Construction of Children's Park including landscaping and toilet blocks	Rs. 33,000,000.00	
	Sub-Total	Rs. 208,000,000.00	
	Contingencies @5%	Rs. 10,400,000.00	
	Total with Contingencies	Rs. 218,400,000.00	
	VAT @ 13%	Rs. 28,392,000.00	
	Grand Total	Rs. 246,792,000.00	

Table 2: Cost Estimate of Children's Park

S.N.	Description of Work	Amount	Remark
1	Landscaping works in Children park area	28,872,766.07	
2	Toilet block	3,632,801.78	
	Sub total	32,505,567.85	
3	Insurance Premium Provisional sum	213,025.17	
4	laboratory test Provisional Sum	50,000.00	
5	Preparation of as built drawing Provisional sum	50,000.00	
	Total Amount	32,818,593.02	
	<u>Contingencies@5%</u>	1,640,929.65	
	Vat @ 13%	4,266,417.09	
	Total with VAT and Contengencies	38,725,939.76	

6 CONCLUSION AND RECOMMENDATION

The initiative taken by the Tokha Municipality for preparation of Detailed Master Plan of Boudeshwor Area is a great step for developing the area as a tourist destination. Construction of basic infrastructures along with landscape design is an important task in the Master Plan. Open space and greenery are important components of modern parks and they have been highly prioritized in this Master Plan. All the features proposed in the Master Plan are based on recent infrastructure needed for well managed recreational and children parks. The overall cost of infrastructural development identified in the Master Plan is approximately NRs. 250 million out of which the cost of construction of Children's Park alone is NRs. 39 million. The expected duration of Project completion is 5 years.

Based on the analysis of the project area, the consultant would like to recommend:

- For Constructing all the building and related infrastructures as per Building Norms and Regulations
- Constructing other infrastructures based on the Master Plan
- Phase wise implementation of the project: Children's Park in the First Year, Picnic Spots in the Second Year, Recreational Parks in the Third Year, Suspension Bridge and Rock Climbing in the Fourth Year and Remaining Services in the Fifth Year.

7 ANNEXES

Annex :

- 1. Detail Topographical Map of the Site**
- 2. Detailed Master Plan**
- 3. Detailed Architectural Design And Drawings of Recreational Park , Picnic Spot and Children Park**
- 4. 3Ds of site**
- 5. Quantity and Cost Estimate of Children Park**
- 6. Photographs of site**

ANNEX 1. DETAIL TOPOGRAPHICAL MAP OF SITE

ANNEX 2. DETAILED MASTER PLAN

**ANNEX 3. DETAILED ARCHITECTURAL DESIGN AND
DRAWINGS OF RECREATIONAL PARK , PICNIC SPOT
AND CHILDREN PARK**

ANNEX 4. 3Ds of site

ANNEX 5. QUANTITY AND COST ESTIMATE OF CHILDREN

PARK

ANNEX 6. PHOTOGRAPHS OF SITE



Existing water source as a potential site for dam



View Upstream of the Water Fall Site



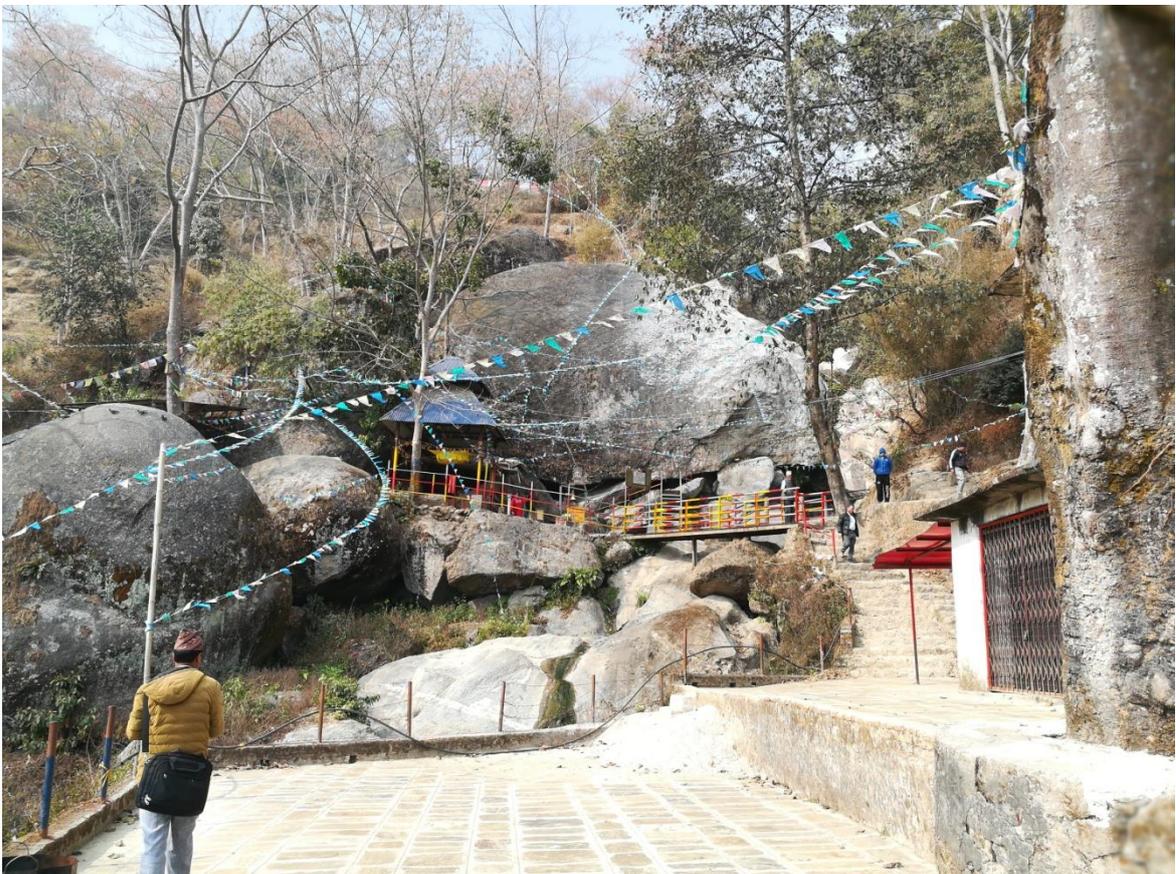
Proposed Park in Site



Team member of the consultant during site visit showing source of water



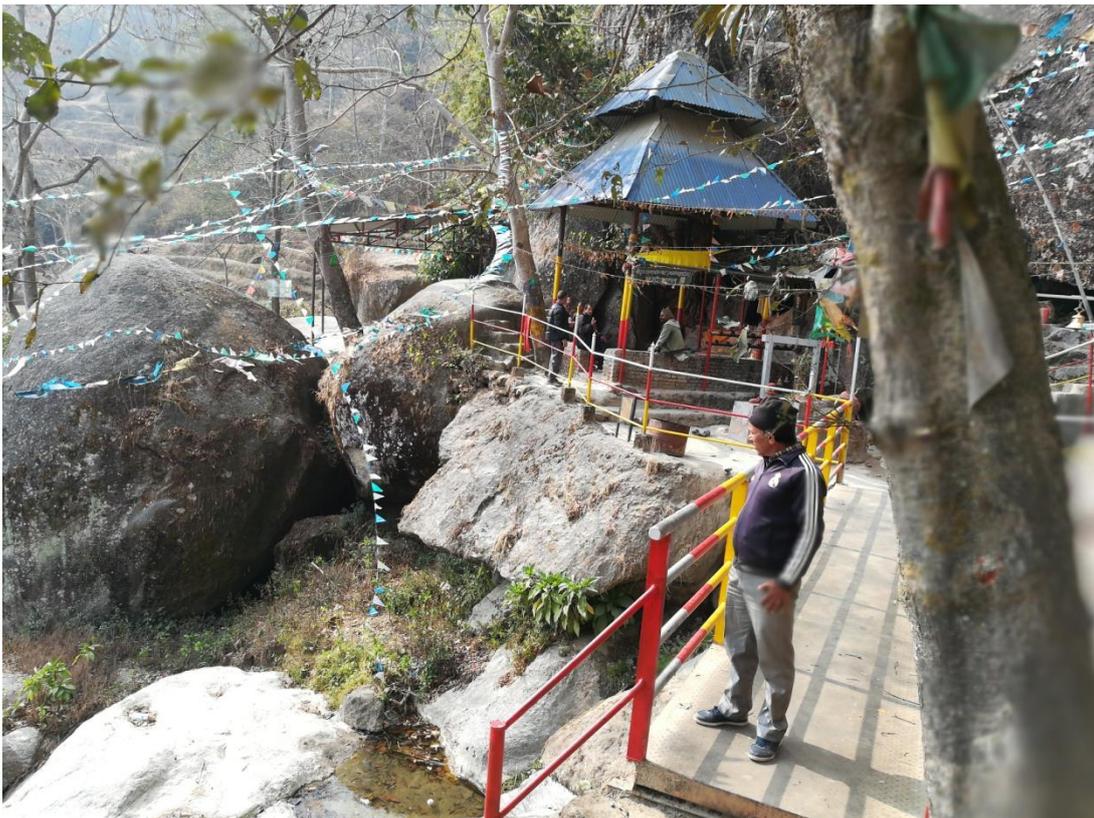
Downstream View from the Water fall site



Overall view of Temple, Cave and Waterfall



Study team along with local people studying the trace of the area to locate the project boundary



View of Boudeshwor Temple and surrounding



Bird's eye view of Master Plan Boudeshwor



View from south of main Jhor Stone "carving of Lord Shiva"



South west view from recreational park to Jhor stone connecting suspension bridge



View from suspension bridge to recreational park and picnic spot towards west



Parking area at south west of recreational park and picnic spot



Parking , temple area and picnic spot level difference (south west view)



View from south west to east children park and picnic spot



View from southeast to the children park and picnic spot at north east



Children park amphitheater/playing area details



Children park view



Picnic spot at east



Picnic spot and children park view from north



Children park view