Initial Environment Examination

Project Number: 40648-034
May 2015

IND: Infrastructure Development Investment Program for Tourism - Tranche 3

Submitted by

Program Management Unit, Government of Uttarakhand, Dehrdaun

Asian Development Bank

Govt. of Uttarakhand

Program Management Unit

Infrastructure Development Investment Program for Tourism

(ADB Assisted – Loan No. 2833, India)

Government of Uttarakhand

Pandit Deendyal Upadhaya Paryatan Bhawan,
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Uttarakhand
Simply Heaven!

Ref:2542/2-10-ADB IDIPT/249/2014-15 Date: 20.05.2015

To

Country Director,
Indian Resident Mission (INRM),
Plot no -4, San Martin Marg, Chanakyapuri,
New Delhi 110021, PB No-53311 (HPO)

Sub: Loan No. 3223 IND; Submission of IEE document for "Development of Tourism Infrastructure in Sem Mukhem (Tehri) sub project

Respected Madam,

Kindly refer to the IEE document for **"Development of Tourism Infrastructure in Sem Mukhem, Tehri"** sub project, contract Package No. UK/IDIPT-III/KOT/02 submitted vide this office letter dt. 24.04.15 and ADB's observations on the same communicated vide mail dt. 01.05.15.

The revised IEE document along with comments compliance matrix is enclosed for your kind perusal and approval.

Yours Sincerely

Encl.:- As above

(R.K. Joshi)
Additional Program Director

Comments Compliance Matrix- IEE Sem Mukhem (UK/IDIPT-III/KOT/02)

Comment No. and date	Comment	Response and Compliance in Revised IEE
1. Dated 01/05/15	We have reviewed the comment matrix and found the responses to be generally satisfactory. Please include a silt disposal plan in the EMP for works in the reservoir in the IEE and submit us the revised IEE for our approval and disclosure through ADB website.	Silt disposal plan for works in the reservoir has been incorporated at suitable sections in the EMP. (Table 9-12, pg 41 - 71). Revised IEE report is being submitted.

Environmental Assessment Document

Initial Environmental Examination (IEE)
Loan Number: 3223 IND
Package No: UK/IDIPT-III/KOT/02
May 2015

Infrastructure Development Investment Program for Tourism in Uttarakhand

Sub Project – Development of Tourism Infrastructure in Sem Mukhem (Tehri)

TRANCHE III

Prepared by the Government of Uttarakhand for the Asian Development Bank

ABBREVIATIONS

ADB	-	Asian Development Bank
ASI	-	Archaeological Survey of India
CPCB	–	Central Pollution Control Board
CPR	-	Common property resources
DOT	-	Department of Tourism
DSC	-	Design Supervision Consultants
EA	-	Executing Agency
EIA	-	Environmental Impact Assessment
EMP	-	Environmental Management Plan
FSI	-	Forest Survey of India
GMVN	-	Garhwal Mandal Vikas Nigam
GoI	-	Government of India
GoU	-	Government of Uttarakhand
HNB	-	Hemwati Nandan Bahuguna
IA	-	Implementing Agency
IDIPT	-	Infrastructure Development Investment Program for Tourism
IEE	-	Initial Environmental Examination
IUCN	-	International Union for Conservation of Nature
MFF	-	Multi-tranche Financing Facility
MoEF	-	Ministry of Environment and Forests
NDBR	-	Nanda Devi Biosphere Reserve
NDNP	-	Nanda Devi National Park
NP	-	National Park
OM	-	Operations Manual
PA	-	Protected area
PD	-	Program director
PIU	-	Project Implementation Unit
PMC	-	Project Management Consultant
PMU	-	Project Management Unit
PUC	-	Pollution under Control
REA	-	Rapid Environmental Assessment
SEIAA	-	State Environment Impact Assessment Authority
SLEC	-	State-level empowered committee
SPCB	-	State Pollution Control Board
SPM	-	Suspended Particulate Matter
SPS	-	Safeguard Policy Statement
THDC	-	Tehri Hydro Electric Development Corporation
UNESCO	-	United Nations Educational Scientific and Cultural Organization
UTDB	-	Uttarakhand Tourism Development Board
UUSDIP	-	Uttarakhand Urban Sector Development Investment Program
WLS	-	Wildlife Sanctuary

CURRENCY EQUIVALENTS

(as of 13th November 2013)
Currency unit – Indian rupee (Rs)
Rs1.00 = $0.015738
$1.00 = Rs 63.5400

WEIGHTS AND MEASURES

dB (A) A-weighted decibel
ha - hectare
km- kilometer
km^2- square kilometer
µg- microgram
m - meter
m^2- square meter
MW (megawatt) - megawatt

In preparing any country program or strategy, financing any project, or by making any designation of or reference to a particular territory or geographic area in this document, the Asian Development Bank does not intend to make any judgments as to the legal or other status of any territory or area.

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EXECUTIVE SUMMARY

1. Background. The Infrastructure Development Investment Program for Tourism Financing Facility (the Facility) will develop and improve basic urban infrastructure and services in the four participating states of Himachal Pradesh, Punjab, Uttarakhand and Tamil Nadu to support the tourism sector as a key driver for economic growth. It will focus on: (i) strengthening connectivity to and among key tourist destinations; (ii) improving basic urban infrastructure and services, such as water supply, road and public transport, solid waste management and environmental improvement, at existing and emerging tourist destinations to ensure urban amenities and safety for the visitors, and protect nature and culture-based attractions. Physical infrastructure investments will be accompanied by: (iii) capacity building programs for concerned sector agencies and local communities for better management of the tourist destinations and for more active participation in the tourism-related economic activities, respectively.

2. Development of Tourism Infrastructure in Sem Mukhem at Uttarakhand is one of the subprojects proposed under the program. The subproject site is located near the village Mukhem in Pratapnagar block of Tehri district, of Garhwal region in Himalaya at N 30°34'23″ latitude and E 78°26'19″ longitude. The elevation of the place is 9521 feet above MSL. The subproject site is mentioned in almost all tourist guides of Uttarakhand. It is one of the important tourist locations for tourists visiting New Tehri and Tehri reservoir. The subproject site at Sem Mukhem comprises of mainly two parts namely Fair ground near Sem Mukhem Temple and Mukhem village. Sem Mukhem temple is held in high esteem by the people of the area. People consider it as the fifth Dham after Gangotri, Yamunotri, Kedarnath and Badrinath. The famous Sem Mukhem Mela (fair) is held every alternate year in the last week of November.

3. Executing and implementing agencies. The executing agency of the sub project is Department of Tourism, Govt. of Uttarakhand, while Uttarakhand Tourism Development Board (UTDB) is the implementing agency. A team of technical, administrative and financial officials, including safeguards specialists, is being provided at the PMU of UTDB to implement, manage and monitor project implementation activities. PMU is assisted by Project Management Consultants (PMC), Project Implementation Unit (PIU) and Design Supervision Consultant (DSC). The PIUs are staffed by qualified and experienced officers and responsible for the day-to-day activities of subproject implementation in the field, and will be under the direct administrative control of the PMU. Consultant teams are responsible for subproject planning and management and assuring technical quality of design and construction; and designing the infrastructure and supervising construction; and safeguards preparation.

4. Categorization. Development of Tourism Infrastructure in Sem Mukhem sub project is classified as Environmental Category B as per the SPS, 2009 as no significant impacts are envisioned. Accordingly this Initial Environmental Examination (IEE) has been prepared and assesses the environmental impacts and provides mitigation and monitoring measures to ensure no significant impacts as a result of the subproject.

5. Subproject Scope. The main objectives of the sub-project are to, (a) Improve basic tourist infrastructure and services available around the tourist destination of Sem Mukhem Temple, Mela or fair ground and also at nearby Mukhem village, (b) Involve local communities in tourism and economic activities and generate more income, and c) Improve economic condition of local communities.

The major scope of this subproject as per DPR are: Toilet complex at fair ground, drinking water facility at fair ground, car parking area at fair ground, landscaping of fair ground, development of a small existing lake near fair ground, a dormitory type Dharamshala at fair ground, illumination of fair ground, solid waste bins and solar lamps at temple complex, canopy, handrails and finishing work on pathway between fair ground and Sem Mukhem temple, road signages on the route to Sem Mukhem Temple and development of basic infrastructure facilities in Mukhem village.

6. Description of the Environment. Major Subproject components are located at Sem Mukhem Fair ground area and the Mukhem village and there is no natural habitat at these sites. A few minor project components are also proposed in Sem Mukhem temple complex (Solar lighting provisions) and on the pathway between temple and fair ground (canopy).

7. The Sem Mukhem temple and the pathway to temple (about 2 km length from Fairground) is located in the reserved Forest. Components in the Temple Complex and pathway were removed from the scope of this subproject, since works of similar nature were undertaken by the Tourism Dept. Now only provisions of solar lighting and canopy over the pathway remain within the scope of this sub project. (Letter from State Tourism Dept. **Annex 6)** The Mela (Fair) ground is not in reserved forest. It is on revenue land. No objection certificate from revenue department is under process. There are no protected areas, wetlands, mangroves, or estuaries in or near the subproject locations.

8. Environmental Management. An environmental management plan (EMP) is included as part of this IEE, which includes (i) mitigation measures for environmental impacts during implementation; (ii) an environmental monitoring program, and the responsible entities for mitigating, monitoring, and reporting; (iii) public consultation and information disclosure; and (iv) a grievance redressal mechanism. A number of impacts and their significance have already been reduced by amending the designs. The EMP will be included in civil work bidding and contract documents.

9. Locations and siting of the proposed infrastructures were considered to further reduce impacts. The concepts considered in design of the subproject are (i) design, material and scale will be compatible to the local architectural, physical, cultural and landscaping elements; (ii) preference will be given to the use of local material and labour as best as possible; (iii) for conservation, local construction material available in the nearby region as best as possible suiting to those in existence; (iv) all painting (interior and exterior) will be with environment-friendly low volatile organic compounds paints; (v) for retaining wall repair works, random rubble masonry will be used, with locally available stone to be laid in cement mortar by local skilled labour; (vi) earth backfill, if any will be done from the site excavated material; and (vii) ensuring all planning and design interventions and decisions are made in consultation with local communities and reflecting inputs from public consultation and disclosure for site selection.

10. During the construction phase, impacts mainly arise from the need to dispose of moderate quantities of excavated soil and from the noise due to construction. These are common impacts of construction, and there are well developed methods for their mitigation. Measures such as conducting work in lean season and minimizing inconvenience by best construction methods will be employed. In the operational phase, all facilities and infrastructure will operate with routine maintenance, which should not affect the environment. Facilities will

need to be repaired from time to time, but environmental impacts will be much less than those of the construction period as the work will be infrequent, affecting small areas only.

11. Mitigation measures have been developed to reduce all negative impacts to acceptable levels. Mitigation will be assured by a program of environmental monitoring to be conducted during construction. The environmental monitoring program will ensure that all measures are implemented, and will determine whether the environment is protected as intended. It will include observations on- and off-site, document checks, and interviews with workers and beneficiaries. Any requirements for corrective action will be reported to the ADB.

12. The stakeholders were involved in developing the IEE through discussions on-site and public consultation, after which views expressed were incorporated into the IEE and in the planning and development of the subproject. The IEE will be made available at public locations in the town and will be disclosed to a wider audience via the ADB and Uttarakhand Tourism Development Board website. The consultation process will be continued and expanded during project implementation to ensure that stakeholders are fully engaged in the project and have the opportunity to participate in its development and implementation.

13. After improvement of tourist facilities, number of tourists visiting Sem Mukhem temple will increase. Increase in the number of tourists will result in more business activities / livelihood.

14. Consultation, Disclosure and Grievance Redress. Public consultations were done in the preparation of the project and IEE. On-going consultations will occur throughout the project implementation period. A grievance redress mechanism is described within the IEE to ensure any public grievances are addressed quickly.

15. Monitoring and Reporting. The PMU, PIU, PMC and DSC will be responsible for environmental monitoring. The PIU with support from the DSC will submit monthly, quarterly, semi -annual monitoring reports to the PMU. The PMU will consolidate the semi- annual report and will send it to ADB. ADB will post the environmental monitoring reports on its website.

16. Conclusions and Recommendations. The proposed subproject is unlikely to cause significant adverse impacts. The potential impacts that are associated with design, construction and operation can be mitigated to standard levels without difficulty through proper engineering design and the incorporation or application of recommended mitigation measures and procedures. Based on the findings of the IEE, there are no significant impacts and the classification of the subproject as Category “B” is confirmed. No further special study or detailed environmental impact assessment (EIA) needs to be undertaken to comply with ADB SPS, 2009 or Government of India EIA Notification, 2006.

I. INTRODUCTION

A. Background

1. The India Inclusive Tourism Infrastructure Development Project (IITIDP) envisages an environmentally and culturally sustainable and socially inclusive tourism development, in the project states of Himachal Pradesh, Punjab, Tamil Nadu and Uttarakhand. The expected Impact of the Project in the four states is sustainable and inclusive tourism development in priority State tourism sub circuits divided into marketable cluster destinations that exhibit enhanced protection and management of key natural and cultural heritage tourism sites, improved market connectivity, enhanced destination and site environment and tourist support infrastructure, and enhanced capacities for sustainable destination and site development with extensive participation by the private sector and local communities.

2. **Location:** The subproject site at Sem Mukhem is situated at a distance of about 197 km from Jolly Grant airport at Dehradun. The nearest rail head is at Rishikesh and it is 184 km away. It is well connected by roads with all the important places in Uttarakhand like Haridwar (211 km), Mussoorie (179km), Kotdwar (272km), New Delhi (416 km), Tehri (65 km), Pauri Garhwal (197 km) and Dehradun (222km). The district of Tehri Garhwal is one of the largest districts and the western most districts of Uttarakhand. The elevation of Nagraj Temple and Fair Ground is 2620 and 2210 m respectively above mean sea level. River Bhagirathi which runs through appears to divide the Tehri district into two, while the Bhilangna, Alaknanda, Ganga and Yamuna rivers border it on the east and west. Tehri's neighboring districts are Uttarkashi, Chamoli, Pauri, Rudraprayag and Dehradun. The district lies between the parallels of 30.3 and 30.53' north latitude and 77.56 and 79.04' east longitude. Uttarkashi from the north, Rudraprayag from the east, PauriGarhwal from the south and Dehradun from the west are bounding the districts. Total area of the district is 4421 sq. km. The district headquarters is located at New Tehri Town since 1.4.1989.

3. **Present Status of site:** The subproject site at Sem Mukhem comprises mainly of two major parts namely Fair ground and Mukhem village. Some minor works are proposed at Sem Mukhem temple and on the pathway between Fair Ground and Sem Mukhem Temple. The temple is held in high esteem by the people of the area. People consider it as the fifth Dham after Gangotri, Yamunotri, Kedarnath and Badrinath. The famous Sem Mukhem Mela (fair) is held every alternate year in the last week of November. The fair attracts lakhs of devotees from different parts of the State and beyond, who take blessings after offering prayers. VIPs including the Chief Minister usually attend the fair. A temporary helipad has been constructed for this purpose near Mela Ground.

4. The site of Mela (fair) ground is undulating. There is small lake or water body near fair ground. Total area covered by the lake is about 1500 sqm., while total water spread area is about 500 sqm. Water collected in the lake is from spring of nearby hill. The condition of the Nagraj temple is quite good, but the Dharamshala (guest house) in temple complex is in dilapidated condition.

5. The expected impact of the Project is sustainable and inclusive tourism development around Nagraj Temple, improved market connectivity, enhanced destination and site environment and tourist support infrastructure, and enhanced capacities for sustainable destination and site development with extensive participation by the private sector and local communities.

6. As per the ADB's Environmental Assessment Guidelines, and in line with the Environment Assessment and Review Framework (EARF) for the project, the sub-project namely 'Development of Tourism Infrastructure at Sem Mukhem' is categorized as B and an Initial Environmental Examination (IEE) is prepared. This IEE assesses the environmental impacts due to the proposed development works and specifies measures towards addressing the impacts. The IEE was based on a review of sub-project site plans and reports; field visits, and secondary data to characterize the environment and identify potential impacts; and interviews and discussions with stakeholders. Based on the findings of the IEE, an Environmental Monitoring Plan has been prepared, outlining the specific environmental measures to be adhered to during implementation of the sub-project. The REA checklist and environmental selection criteria as per EARF have been given in **Annexure-1 and Annexure-2** respectively.

B. Purpose of the IEE

7. This IEE assesses the environmental impacts due to the proposed subproject and specifies measures towards addressing the impacts. The IEE was based on a review of subproject site plans and reports; field visits, and secondary data to characterize the environment and identify potential impacts; and interviews and discussions with stakeholders. This IEE provides mitigation measures for impacts related to location and design, construction, operation, and maintenance. An EMP outlining the specific environmental measures to be adhered to during implementation of the subproject has been prepared.

C. Environmental Regulatory Compliance

8. The realm of environmental regulations and mandatory requirements for the proposed sub-project is shown in **Table 1**. The Environmental Impact Assessment (EIA) notification, 2006 by the Ministry of Environment and Forests (MoEF, GoI) specifies the mandatory environmental clearance requirements. Accordingly, all projects and activities are broadly categorized into two categories[1]- Category A and Category B, based on the spatial extent of potential impacts and

[1]All projects or activities included as Category 'A' in the Schedule, including expansion and modernization of existing projects or activities and change in product mix, will require prior environmental clearance from the Central Government in the Ministry of Environment and Forests (MoEF) on the recommendations of an Expert Appraisal Committee (EAC) to be constituted by the Central Government for the purposes of this notification; All projects or activities included as Category 'B' in the Schedule, including expansion and modernization of existing projects or activities as specified in sub paragraph (ii) of paragraph 2, or change in product mix as specified in sub paragraph (iii) of paragraph 2, but excluding those which fulfil the General Conditions (GC) stipulated in the Schedule, *will* require prior environmental clearance from the State/Union territory Environment Impact Assessment Authority (SEIAA). The SEIAA shall base its decision on the recommendations of a State or Union territory level Expert Appraisal Committee (SEAC) as to be constituted for in this notification. In addition, General Condition (GC) of the notification specifies that any project or activity specified in Category 'B' will be treated as Category A, if located in whole or in part within 10

potential impacts on human health and natural and man-made resources. Given that the sub-project is not covered in the ambit of the EIA notification, Environment clearance requirements from the GoI are not triggered.

Table 1: Environmental Regulatory Compliance

Sub-Project	Applicability of Acts/Guidelines	Compliance Criteria
Development of Tourism Infrastructure at Sem Mukhem	The EIA notification, 2006 (and its subsequent amendments in 2009) provides for categorization of projects into category A and B, based on extent of impacts.	The sub-project is not covered in the ambit of the EIA notification as this is not covered either under Category A or Category B of the notification. As a result, the categorization, and the subsequent environmental assessment and clearance requirements, either from the state or the GoI is not triggered. **Not Applicable**
	The EIA notification, 2006 (and its subsequent amendments in 2009) provides for categorization of projects into category A and B, based on extent of impacts.	The sub-project is not covered in the ambit of the EIA notification as this is not covered either under Category A or Category B of the notification. As a result, the categorization, and the subsequent environmental assessment and clearance requirements, either from the state or the GoI is not triggered. **Not Applicable**
	The Ancient Monuments and Archaeological Sites and Remains Act, 1958, and the rules, 1959 provide guidance for carrying out activities, including conservation, construction and reuse in and around the protected monuments.	The site of Sem Mukhem Temple, access path and Fair Ground are not close to any ASI protected monument. Hence no permission is needed from ASI. **Not Applicable**
	Water (Prevention and control of pollution) Act, 1974 and Air (prevention and control of pollution) Act, 1981	Consent for Establishment (CFE) and Consent for Operation (CFO) from the Uttarakhand Environment Protection and Pollution Control Board for all sub-projects requiring, setting up of hot mix plants, wet mix plants, stone crushers and diesel generators. **Applicable**
	The Wildlife Conservation Act, 1972, amended in 2003 and 2006, provides for protection and management of Protected Areas.	No wildlife protected areas nearby. **Not Applicable**
	Forest (Conservation) Act, 1980	This act provides guidelines for conservation of forests and diversion of forest land for non-forest use. The law also states guidelines on de-reservation of various categories of forests for diversion of forest land. This law describes the penalty for contravention of the provisions of the Act. Restriction on the de-

km from the boundary of: (i) Protected Areas notified under the Wild Life Protection) Act, 1972, (ii) Critically Polluted areas as notified by the Central Pollution Control Board from time to time, (iii) Notified Eco-sensitive areas, (iv) inter-State boundaries and international boundaries

Sub-Project	Applicability of Acts/Guidelines	Compliance Criteria
		reservation of forests or use of forest land for non-forest purpose. If forest land is to be acquired for the project, the Forestry Clearance needs to be taken. In the current case, Nagraj Temple is located in Forest area, The existing pathway between fair ground and Sem Mukhem Temple is also located in forest land. Works proposed in the SAR stage in the temple complex and pathway **have been eliminated from the scope of this sub project pursuant to similar project undertaken by the Tourism Dept. in the temple and pathway (Project is under execution).** Only canopy and finishing work will be done on the pathway after Tourism Dept.'s project is complete. Minor works (solar lighting and dustbins) are proposed in Sem Mukhem Temple and on the pathway under the sub project (canopy). **Correspondence with the Tourism Dept. (UTDB) Annexure 6**
	ADB's Safeguard Policy Statement, 2009	Categorization of sub-project components into A, B, C FI and developing required level of environmental assessment for each component. **Project is categorized as B(Ref: REA Checklist Annexure-1)**

9. The above Table indicates that the proposed sub-project does not need to go through a full-scale environmental assessment process; as the scale of impacts and categorization of the sub-project components will not require clearances from Competent Authorities. Therefore, any further approvals or environmental clearances from the GoI or GoUK are not envisaged.

10. The ADB guidelines, stipulate addressing environmental concerns, if any, of a proposed activity in the initial stages of Project preparation. For this, the ADB Guidelines categorizes the proposed components into categories (A, B or C) to determine the level of environmental assessment[2]required to address the potential impacts. The Rapid Environmental Assessment (REA) checklist method was followed as per ADB requirement to assess the potential impacts of the project in planning phase. The REA checklist is attached as **Annexure-1** with this report.

[2]As per SPS 2009 projects are assigned to one of the following four categories: (i) **Category A.** A proposed project is classified as category A if it is likely to have significant adverse environmental impacts that are irreversible, diverse, or unprecedented. These impacts may affect an area larger than the sites or facilities subject to physical works. An environmental impact assessment is required. (ii) **Category B.** A proposed project is classified as category B if its potential adverse environmental impacts are less adverse than those of category A projects. These impacts are site-specific, few if any of them are irreversible, and in most cases mitigation measures can be designed more readily than for category A projects. An initial environmental examination is required. (iii) **Category C.** A proposed project is classified as category C if it is likely to have minimal or no adverse environmental impacts. No environmental assessment is required although environmental implications need to be reviewed (iv) **Category FI.** A proposed project is classified as category FI if it involves investment of ADB funds to or through a FI (paras. 65-67).

The sub-project has been categorized as B. Accordingly this IEE is prepared to address the potential impacts, in line with the recommended IEE content and structure for Category B projects. The IEE was based mainly on baseline data generation on environmental parameters and secondary sources of information and field reconnaissance surveys. Stakeholder consultation was an integral part of the IEE. An Environmental management plan (EMP) outlining the specific environmental measures to be adhered to during implementation of the sub-project has been prepared.

Review and Approval Procedure

11. For Category B projects the Draft Environmental Status report is reviewed by ADB's Regional Department sector division and Environment and Social Safeguards Division, and by the Executing Agency, and additional comments may be sought from project affected people and other stakeholders. All comments are incorporated in preparing the final documents, which are reviewed by the Executing Agency and the national environmental protection agency. The EA then officially submits the IEE report to ADB for consideration by the Board of Directors. Completed report is made available worldwide by ADB, via the depository library system and the ADB website.

D. Report Structure

12. This Report contains eight (8) sections including this introductory section: (i) Introduction; (ii) Description of Project Components; (iii) Description of the Existing Environment; (iv) Environmental Impacts and Mitigation Measures; (v) Environmental Management Plan; (vi) Public consultation & Information Disclosure; (vii) Findings and Recommendations; and (viii) Conclusions.

II. DESCRIPTION OF THE PROJECT COMPONENTS

A. Components of the Subproject

13. **Table 2** provides a summary of existing conditions, need for the subproject and components of the subproject. Location of the Sem Mukhem Temple and its surroundings are shown in Figure 1A. The Subproject Components are shown in Figure 1B & 1C.

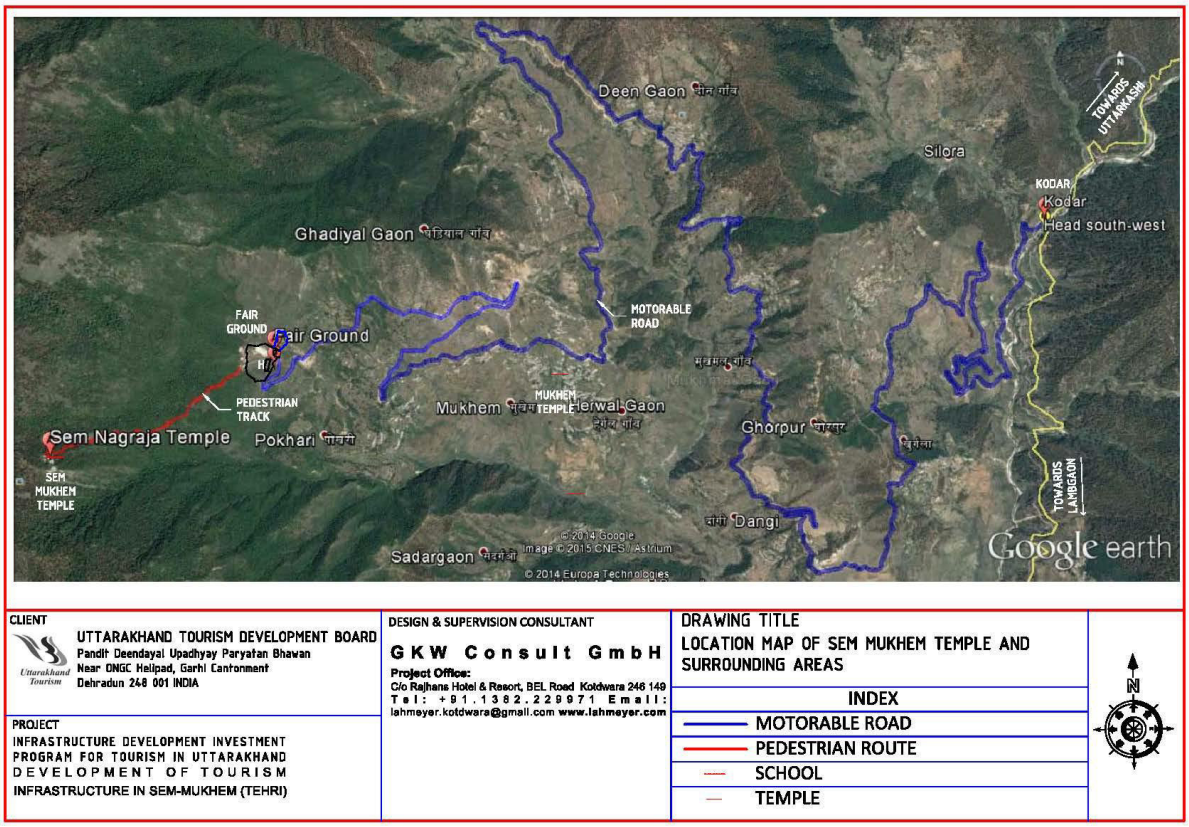


Figure 1 A

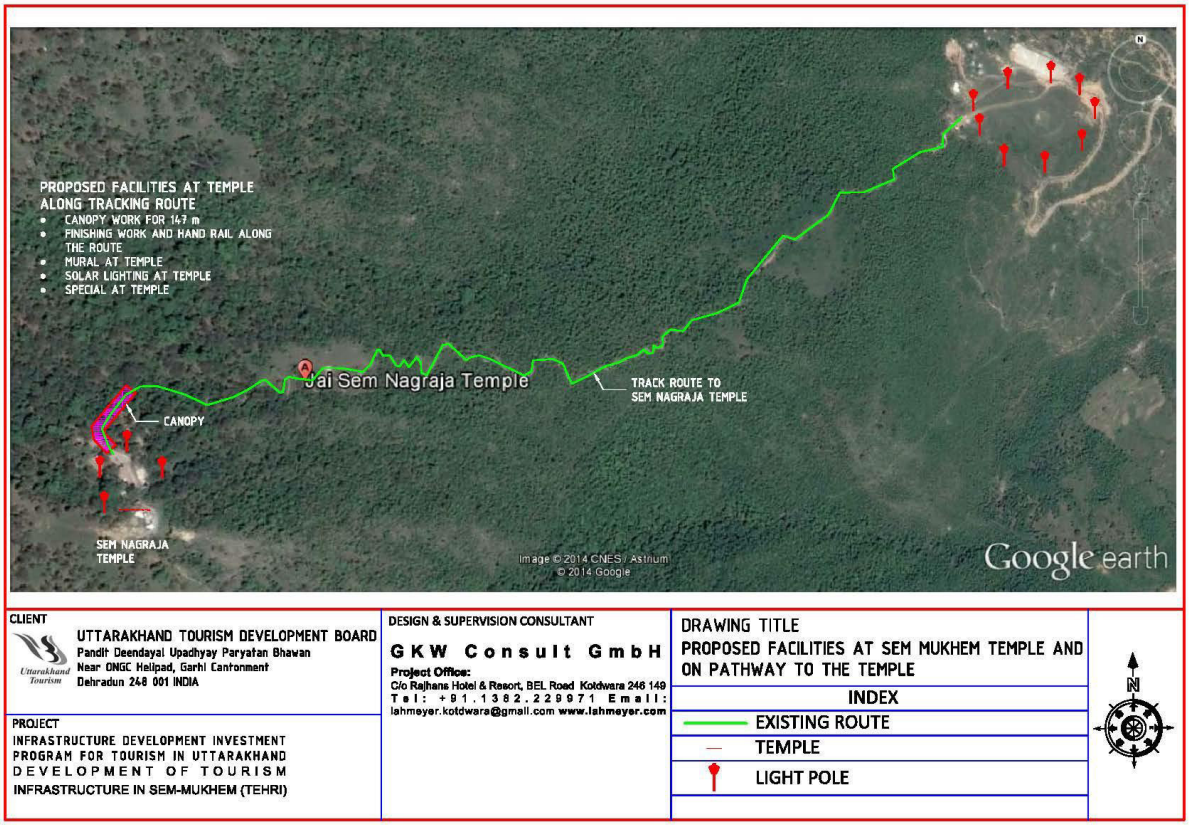

PROPOSED FACILITIES AT TEMPLE
ALONG TRACKING ROUTE
CANOPY WORK FOR 147 m
FINISHING WORK AND HAND RAIL ALONG THE ROUTE
MURAL AT TEMPLE
SOLAR LIGHTING AT TEMPLE
SPECIAL AT TEMPLE
Jai Sem Nagraja Temple
TRACK ROUTE TO SEM NAGRAJA TEMPLE
CANOPY
SEM NAGRAJA TEMPLE
Image © 2014 CNES / Astrium
© 2014 Google
Google earth
CLIENT
UTTARAKHAND TOURISM DEVELOPMENT BOARD
Pandit Deendayal Upadhyay Paryatan Bhawan
Near ONGC Helipad, Garhi Cantonment
Dehradun 248 001 INDIA
PROJECT
INFRASTRUCTURE DEVELOPMENT INVESTMENT PROGRAM FOR TOURISM IN UTTARAKHAND
DEVELOPMENT OF TOURISM INFRASTRUCTURE IN SEM-MUKHEM (TEHRI)
DESIGN & SUPERVISION CONSULTANT
GKW Consult GmbH
Project Office:
C/o Rajhans Hotel & Resort, BEL Road Kotdwara 246 149
Tel: +91.1382.229971 Email: lahmeyer.kotdwara@gmail.com www.lahmeyer.com
DRAWING TITLE
PROPOSED FACILITIES AT SEM MUKHEM TEMPLE AND ON PATHWAY TO THE TEMPLE
INDEX
EXISTING ROUTE
TEMPLE
LIGHT POLE
N

FIGURE 1 B

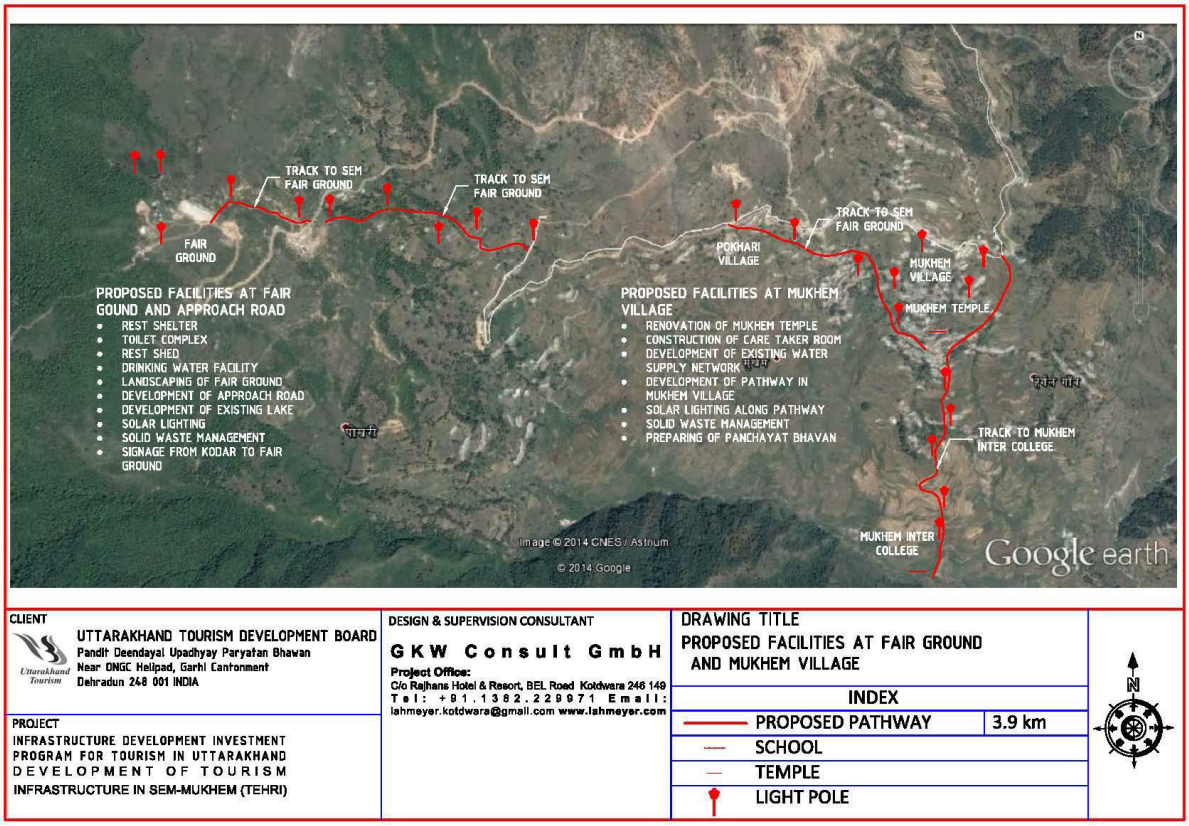

TRACK TO SEM FAIR GROUND
TRACK TO SEM FAIR GROUND
FAIR GROUND
PROPOSED FACILITIES AT FAIR GOUND AND APPROACH ROAD
REST SHELTER
TOILET COMPLEX
REST SHED
DRINKING WATER FACILITY
LANDSCAPING OF FAIR GROUND
DEVELOPMENT OF APPROACH ROAD
DEVELOPMENT OF EXISTING LAKE
SOLAR LIGHTING
SOLID WASTE MANAGEMENT
SIGNAGE FROM KODAR TO FAIR GROUND
POKHARI VILLAGE
TRACK TO SEM FAIR GROUND
MUKHEM VILLAGE
MUKHEM TEMPLE
PROPOSED FACILITIES AT MUKHEM VILLAGE
RENOVATION OF MUKHEM TEMPLE
CONSTRUCTION OF CARE TAKER ROOM
DEVELOPMENT OF EXISTING WATER SUPPLY NETWORK
DEVELOPMENT OF PATHWAY IN MUKHEM VILLAGE
SOLAR LIGHTING ALONG PATHWAY
SOLID WASTE MANAGEMENT
PREPARING OF PANCHAYAT BHAVAN
TRACK TO MUKHEM INTER COLLEGE
MUKHEM INTER COLLEGE
Image © 2014 CNES / Astrium
© 2014 Google
Google earth
CLIENT
UTTARAKHAND TOURISM DEVELOPMENT BOARD
Pandit Deendayal Upadhyay Paryatan Bhawan
Near ONGC Helipad, Garhi Cantonment
Dehradun 248 001 INDIA
PROJECT
INFRASTRUCTURE DEVELOPMENT INVESTMENT PROGRAM FOR TOURISM IN UTTARAKHAND
DEVELOPMENT OF TOURISM INFRASTRUCTURE IN SEM-MUKHEM (TEHRI)
DESIGN & SUPERVISION CONSULTANT
GKW Consult GmbH
Project Office:
C/o Rajhans Hotel & Resort, BEL Road Kotdwara 246 149
Tel: +91.1382.229971 Email: lahmeyer.kotdwara@gmail.com www.lahmeyer.com
DRAWING TITLE
PROPOSED FACILITIES AT FAIR GROUND AND MUKHEM VILLAGE
INDEX
PROPOSED PATHWAY 3.9 km
SCHOOL
TEMPLE
LIGHT POLE
N

Figure 1 C

Table 2: Description of the Subproject Components

Description	Need of the Project	Proposed Component
The district of Tehri Garhwal is one of the largest districts and the western most districts of Uttarakhand which lies from the snow covered Himalayan peaks of Thalaiya Sagar. Jonli and the Gangotri group all the way to the foothills near Rishikesh. Bhagirathi which runs through appears to divide the Tehri district into two, while the Bhilangna, Alaknanda, Ganga and Yamuna rivers border it on the east and west. In this district there many tourism destinations which if marketed properly after provisions of tourism infrastructure can provide huge employment and business potential to the local community. One such subproject has been identified as Nagraj Temple at SemMukhem. The temple is held in high esteem by the people of the area. People consider it as the fifth dham after Gangotri, Yamunotri, Kedarnath and Badrinath. The famous Sem Mukhem Mela (fair) is held once in every three years in the last week of November. The fair attracts lakhs of devotees from different parts of the State and beyond, who take blessings after offering prayers. VIPs including the Chief Minister usually attend the fair. A temporary helipad has been constructed for this purpose. Considering the above importance this site has been identified for providing tourism infrastructure.	✓ The subproject site is mentioned in almost all tourist guides of Uttarakhand It is one of the important tourist locations for tourists visiting New Tehri and Tehri reservoir. As the tourist location does not have adequate facilities and good approach road to the site, numbers of visitors to the site is less. If the approach road to the site and required tourist facilities are provided, number of tourists to the site will increase substantially. At present, daily tourist visiting to the temple is about 100. Number of daily tourists in the month of April, May is about 350. After improvement in facilities, number of tourists will increase substantially as there are other tourist destinations within the region. The proposed infrastructure will be very useful during Sem Mukhem Fair that take place once in three years. On the day of fair, several lakhs of tourists visited the temple. The main reasons of investment is summarised as below: ✓ At present, there is no tourist facility at Sem	The main sub-project components include the following: i. Dharamshala/rest shelter at fair ground. ii. Toilet complex at fair ground including septic tank with soak pit. iii. Water supply Arrangement at Fair Ground iv. Landscaping works at fair ground. Locally available materials shall be used for construction. The landscaping elements shall incorporate local foliages and flora of fairground so that the built environment is in sync with the background v. Development of pathway from main road to fair ground. vi. Solar lighting system along with normal outdoor lights is proposed at fair ground. Electricity source for illumination works is from Uttarakhand Power Corporation Limited and the same is reliable vii. Development of existing small lake near fair ground. The existing small lake

Description	Need of the Project	Proposed Component
	Mukhem temple. The location even does not have the basic toilet facility for tourists and people living in the temple premises. Condition of approach road and pathway on the hill where the temple is located is bad and needs to be improved. Adequate tourist facilities need to be provided on an urgent basis. ✓ After improvement of tourist facilities, number of tourists visiting Sem Mukhem temple will increase. Increase in the number of tourists will result in more business activities / livelihood opportunity to people living near Sem Mukhem village. ✓ Enhance the quality of natural and cultural tourist attractions. ✓ Capacity building of concerned sector agencies and local communities of planning, development, management and marketing of natural and heritage attraction: ✓ Help link local communities into the tourism supply chain thus promoting greater inclusive in the share of economic benefits derived from tourism.	covers about 1500 sqm. area, while water spread area is 500 sqm. (Site photograph of existing lake is shown in **Annexure 3.** viii. Solid waste bins and compost pits at Fair Ground. Solid wastes from Fair ground and Mandir complex will be collected in collection bins and ultimately dumped in to compost pit to be developed in the sub project. ix. Murals depicting the story of Lord Krishna at 4 locations. x. Providing solid waste bins and construction of compost pit in Mandir Complex. Solid wastes from Mandir complex will be collected in collection bins and ultimately dumped in to compost pit to be developed in the sub project. xi. Solar light at the temple complex. xii. Canopy for a length of 147 m on pathway in between fair ground and Nagraj Temple. xiii. Hand rails and finishing works on pathway between fair ground and temple complex.

Description	Need of the Project	Proposed Component
		xiv. Facilities planned at Mukhem village are: a) Renovation of existing Temple in Mukhem village. b) Renovation of existing entry gate of Mukhem village. c) Development of internal roads in Mukhem village. d) Expansion of existing pipe water supply network. e) Installation of solar lighting system, f) Solid waste management with compost pits in Mukhem village. g) Tourism Signages on the 23Km road from Kodar to Fair Ground.

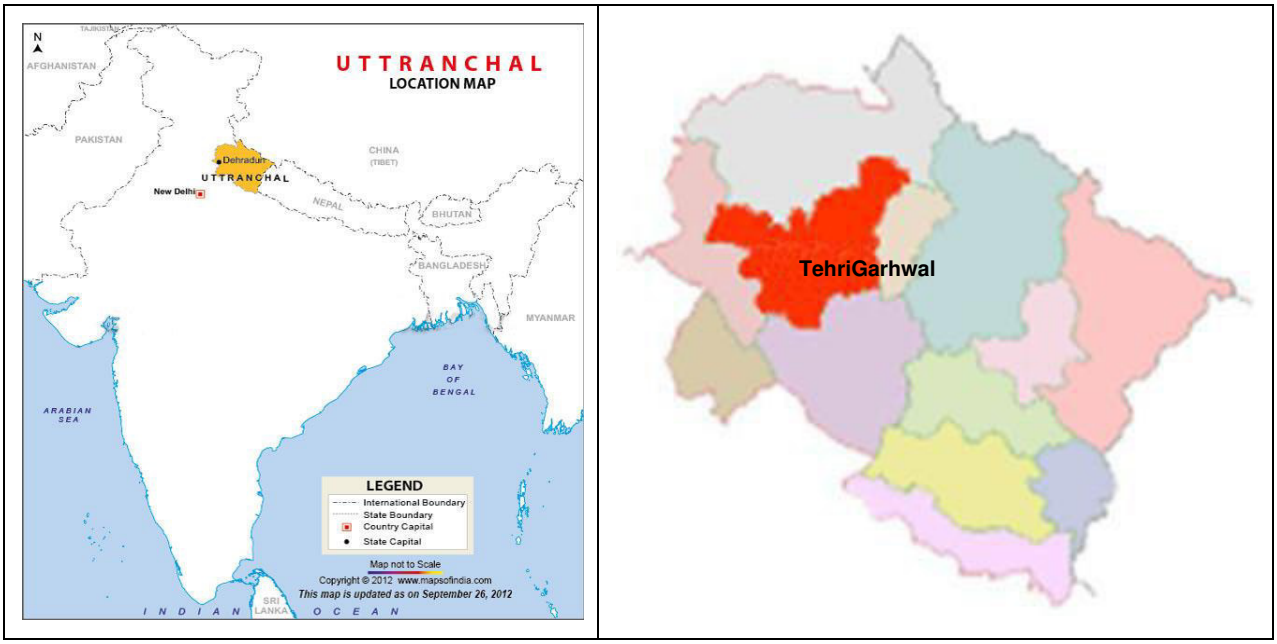
Project Category

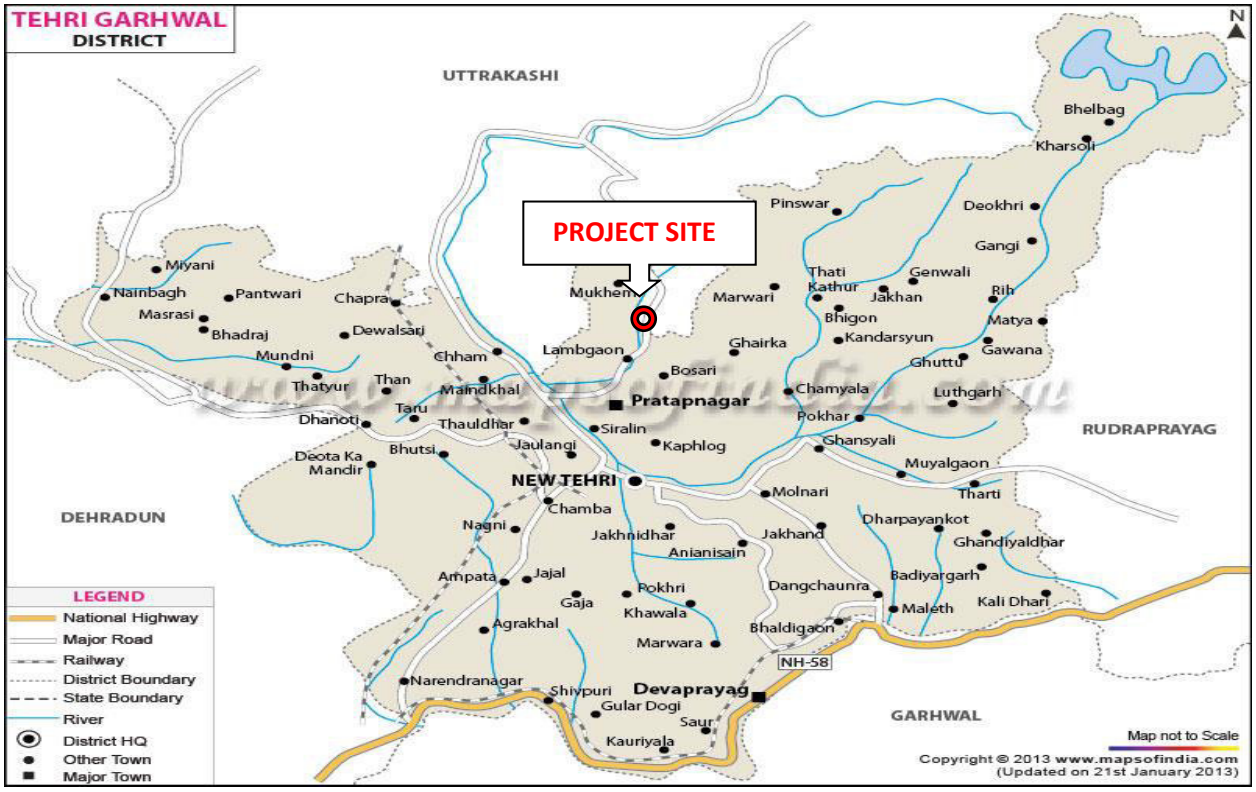
14. The subproject is unlikely to cause significant adverse impacts. The potential adverse impacts that are associated with design, construction, and operation can be mitigated to standard levels without difficulty through proper engineering design and the incorporation or application of recommended mitigation measures and procedures. Based on the findings of the IEE, the classification of the Project as Category "B" is confirmed, and no further special study or detailed EIA needs to be undertaken to comply with ADB SPS (2009) or GoI EIA Notification (2006).

Project Location

15. The project site at Sem Mukhem is located in Tehri district at a distance of about 197 km from Jolly Grant airport at Dehradun. The site is in Pratapnagar block of Tehri district. The nearest rail head is at Rishikesh and it is 184 km away. It is well connected by roads with all the important places in Uttarakhand like Hardwar (211 km), Mussoorie (179km), Kotdwar (272km), New Delhi (416 km), Tehri (65 km), Pauri Garhwal (197 km) and Dehradun (222km). The location of sub project site has been given in **Figure-2** below. Site photographs are attached in **Annexure 3.**

Figure-2: Location of Sub Project Site





B. Implementation Schedule

16. The implementation period for the proposed subproject is 24 months. Concept Plan preparation was started in January 2014 and detailed design started in October 2014. The bidding process and appointment of contractor will be completed by August, 2015.

III. DESCRIPTION OF THE EXISTING ENVIRONMENT

17. This section presents a brief description of the existing environment, including its physical resources, ecological resources, socio-economic development and social and cultural resources. Broad aspects on various environmental parameters such as geography, climate and meteorology, physiographic, geology, seismology, ecology, socio-cultural and economic development parameters that are likely to be affected by the proposed subproject are presented. Secondary information was collected from relevant government agencies like the Forest Department, State Environment Protection, and Pollution Control Board, and Meteorological Department.

A. Environmental Profile

Air and Noise Quality

18. No air pollution sources (point or non-point) have been seen in the surroundings of project influence area. The sub project site is far away from major cities such as Dehradun, Rishikesh, Hardwar and Tehri of Uttarakhand. The nearest major habitation from the site is Tehri. It was observed that the traffic on the roads connecting to the site is too low, hence insignificant vehicular emissions is expected. There are no industrial establishments at sub project area and surroundings. The ambient air quality and noise data for the sub project is not available. But the levels are expected to be well within the stipulated limits due to no major source of air and noise pollution at the site. Ambient Air quality Monitoring and noise level monitoring will be conducted by the Contractor prior to start of construction.

19. It was observed that ambient noise scenario in the study area is quite low in general. There are no industrial establishments in and around the project area. As the traffic density is very low, the noise either from point or nonpoint sources is not expected in the project area. Moreover, there will be not much rise in the noise impacts due to the proposed activities as there are no major settlements near the proposed site. There is no noise baseline data available for the sub project site. But the levels are expected to be well within the stipulated limits due to no major source of noise pollution at the site. Noise level monitoring will be conducted by the Contractor prior to start of construction.

20. **Climate:** The climate in Tehri Garhwal district varies from cold temperate, tropical to sub-tropical. The northern and north western parts of the district experiences sub-zero temperature during the winter whereas the central and southern parts are comparatively warm and humid. In the southern part, at Narendra Nagar and west of New Tehri (e.g. Chamba, Dhanolti and Surkanda Devi), the weather is very cold in winter and pleasant in summer. Snowfall is quite common during the winter in these areas. Other parts of the district experience dry, hot summer and cold winter.

21. **Temperature:** The temperature exhibits seasonal variation with minimum during the winter and higher during the summer. April, May, June and July are the hottest months while January, February and December are the cold months. The maximum temperature rises to about 36°C and the minimum temperature falls to about -2°C. The **Table-3** below shows month wise weather in Tehri Garhwal.

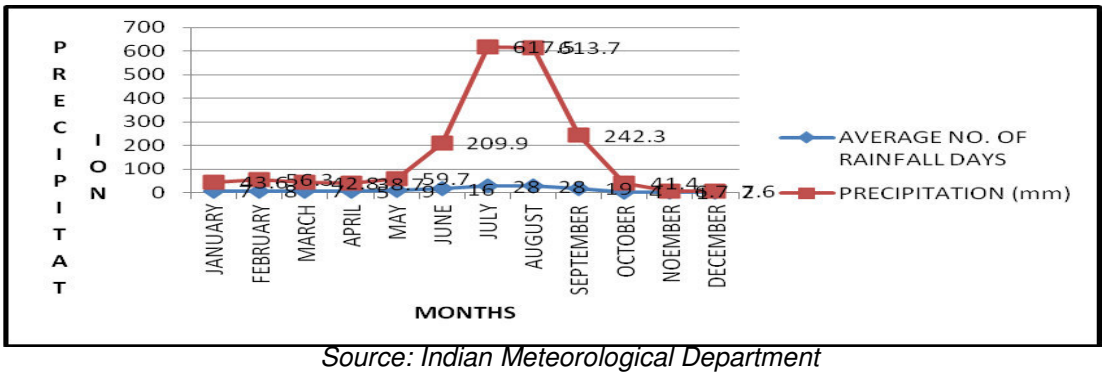
Table 3: Average maximum and minimum temperature of Tehri

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Maximum °C	20	22	26	34	36	36	34	30	26	25	24	22
Minimum °C	-2	-1	11	20	23	24	24	25	22	16	10	0

Source:http://www.uttarakhandinfo.com/Uttarakhand_Tourism/tehri_weather.php

22. Rainfall: The area experiences maximum rainfall during Monsoon season fromMay to September while as least Rainfall is received in November and December. The monthly average rainfall (in millimeters) observed in last two decades is presented in **Figure 3**.

Figure 3: Average Rainfall Record of Tehri

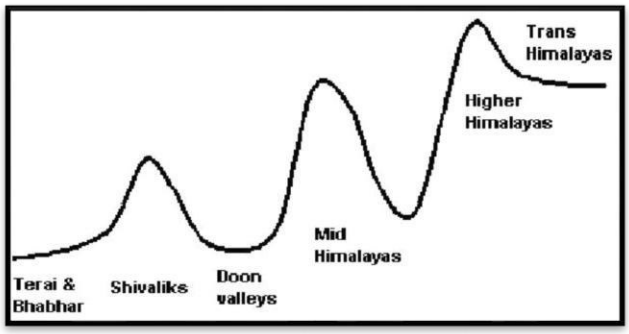


Source: Indian Meteorological Department

23. Humidity: Based on long-term climatological data of the district, it is found that Relative Humidity in the area increases rapidly with the onset of monsoon and reaches maximum (85% in the morning and 84% in the evening) during August, when peak monsoon period sets in. Relative Humidity is the minimum during the summer months (from April to June) with May being the driest month (47% in morning and 25% in evening). Skies are heavily clouded during the monsoon months and for short spells when the district is affected by Western Disturbances. Two broad wind patterns are observed in the district viz. north easterly to easterly (May to September) and south easterly to westerly (October to March). The average wind speed is minimum (0.8 km/hr) in December and maximum in July (4.1 km/hr) whereas the average annual wind speed is 2.3 km/hr.

Topography and Soils

24. The Tehri Garhwal district comprises two broad physiographic divisions viz. Central Himalayan Zone (north of the Main Central Thrust) exposed in the north eastern part and Lesser Himalayan Zone (south of the Main Central Thrust) in rest of the area. The physiography of the district is characterized by high mountain peaks, deep gorges and valleys. Major part of the area is inaccessible due to extremely rugged topography and dense forest cover.



25. The altitude of Tehri Garhwal district varies from 369 to 6672 m. The regional trend of major ridges is NNW-SSE, which is usually parallel to the strike of the country rocks. However, E-W, NW-SE and N-S trending ridges are also observed which are mainly structurally controlled.

26. The soils of Tehri Garhwal district can be broadly classified into two types, viz. soils of Central/Higher Himalaya and soils of Lesser Himalaya. The soils of Central Himalaya have been broadly classified under a) Soils of Summits, Ridge Tops and Mountain Glaciers, b) Soils of Side Slopes, c) Soils of Upper Glacio-Fluvial Valleys and d) Soils of Cliffs. Major part of the district is covered by soils of Lesser Himalaya, which may be broadly subdivided into three soil types. Soils of the first type are moderately shallow, excessively drained, thermic, fine loamy, moderately eroded and slightly stony and are known as Dystric Eutrudepts. The second type, Lithic Udorthents, is characterized by very shallow, excessively drained, severely eroded and strongly stony, thermic loamy soils exposed on steep slopes with loamy and sandy surface. TypicUdorthents, the third major soil type, is moderately shallow, excessively drained, moderately eroded and slightly stony, loamy soils on moderate slopes with loamy surface.

Surface water and Ground water

27. The main stream in project area is Bhagirathi River. In the close vicinity of sub project site small streams flow and these all meet with Bhagirathi River which is about 30 kms ahead.

28. Due to the absence of any water polluting source in the area, it is clear that all parameters of water quality are within the permissible limits. Water Quality monitoring will be conducted by the Contractor prior to start of construction works.

29. The ground water quality data is not available for the project site and surroundings. There is no ground water extraction at site or surroundings. In project construction and operation phases also there is no plan to use ground water due to difficulties in exploration. Hence ground water quality characteristics for the project area and surroundings are non-significance.

Geology / Seismology

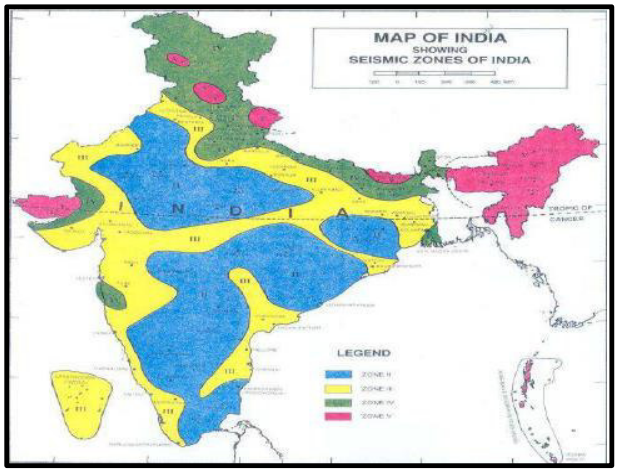
30. The Himalayan belt is visualized as compressive plate boundary zone between the Eurasian plate on the north and the Indian plate to the south. The plate conversance between the formerly separated continental masses (the plates), resulted into complete demolition of the Tethys ocean basin, which was intervening between the two plates till the Mid-Miocene. The collision of the two plates gave birth to the Himalayan orogeny. The Himalayan general strike is WNW-EWE, measuring about 2400 km long and average width about 270 km. Uttarakhand Himalaya occurring in the central part of the Himalayan folded belt has exposed rock types varying in age from Proterozoic to Late tertiary period, disposed in four major tectonic belts designated as the Foothill Siwalik belt, Lesser Himalayan belt, Central Crystalline and Tethyan belt.

31. The Himalayan tract of the Kumaon-Garhwal region exposes wide variety of rocks, ranging in age from Himalayan Pre-Cambrian to Quaternary. The Himalayan tract between the Bhagirathi and Alaknanda valleys in Garhwal is occupied by schists, schistose phyllites, granulites, migmatites, and the likes dipping north easterly with a scrap facing the Gangetic plain and intruded by gneissose granite, pegmatite. These rocks rest upon metamorphosed shales, phyllites, limestones, quartzites, etc. from where these are separated by thrust.

32. The main tectonic elements of the region include the central thrust, and boundary fault. Several NE-SW lineaments are also known from the area and these traverses across different tectonic zones. Seismically, the State constitutes one of the most active domains of the Himalayan region. Several damaging earthquakes are recorded from this region.

33. The seismic code in India divides the country into five seismic zones (I to V). Tehri and Chamoli are in zone V and Uttarkashi is in zone IV. The sub-project stretch comes under seismic zone V as defined by Urban Earthquake Vulnerability Project (UEVP) and the Atlas prepared by the Building Materials Promotion and Technology Council (BMTPC), Government of India and UNDP [IS 1893 (Part I : 2002)]. All structures will be designed considering seismic zone V. **Figure 4** shows seismic zonation map of India.

Figure 4: Seismic Zones of India

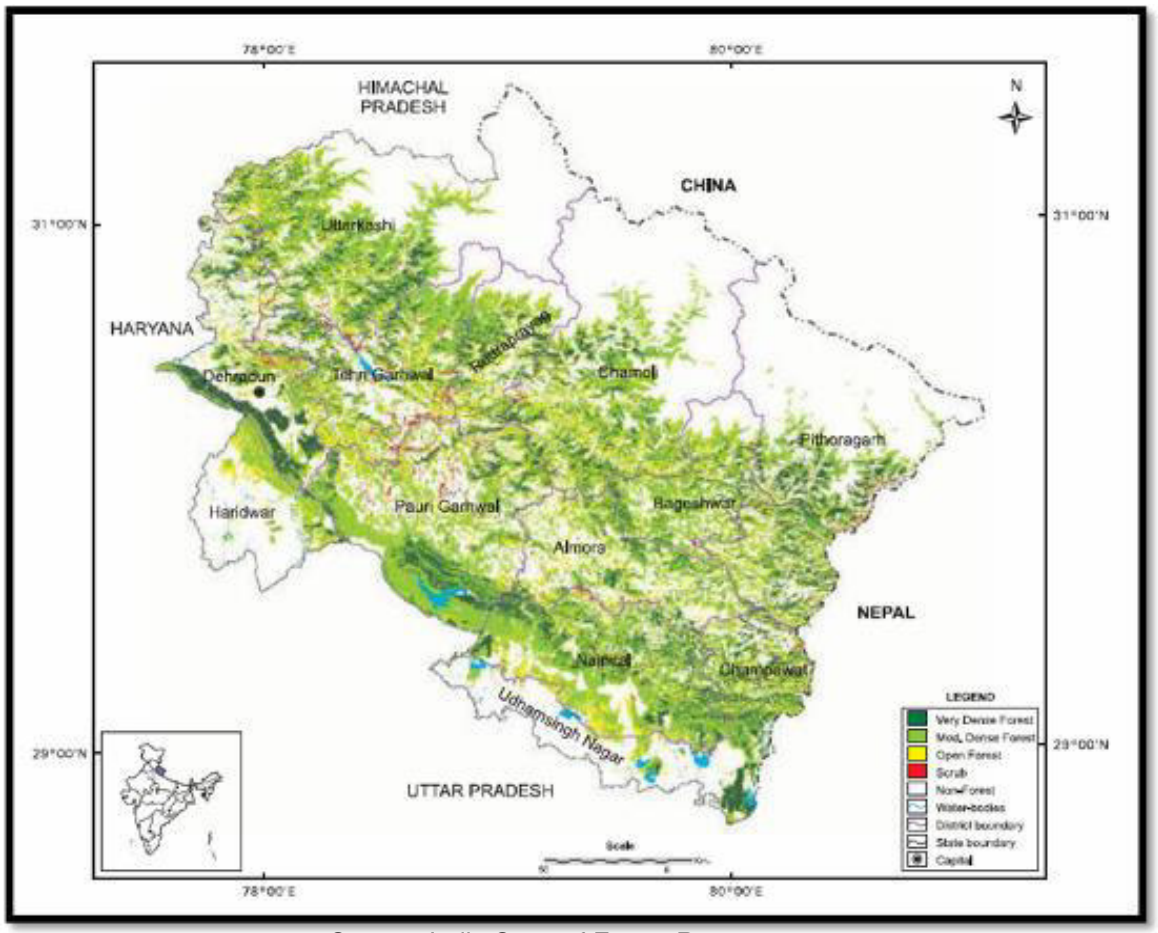


B. Ecological Resources

Forests

34. Uttarakhand has 3.47 million hectares (about 64.79 % of its geographic area) of forests (FSI, 2011) and most of it is managed by the Forest Department. The variation in the landscape has created great diversity of flora and fauna. From the snowbound peaks of the Himalayas to the moist Alpine scrub, sub Alpine forests, dry - temperate and moist- temperate forests to moist deciduous forests, the state possesses a wide biodiversity that in return nurtures a large multiplicity of floral and faunal forms. Reserve Forests constitute 71.11%, Protected Forests 28.52% and Un-classed forests constitute 0.35% of the total forest area. Tehri district has about 66.23 % of its geographic area under forests and most of it is managed by the Forest Department. The forests of the district can be classified into six main categories namely: (1) the tropical dry deciduous forests, (2) the sal forests (3) the chir forests, (4) the oak forests, (4) the deodar, fir and spruce forests, and (5) the Alpine pastures. Forest cover map is shown in **Figure 5**.

Figure 5: Forest cover Map of Uttarakhand



Source: India State of Forest Report, 2011

35. The Sem Mukhem temple is located in reserved forest and it is in Lambgaon range (Reka Beat). The approach road to temple (about 2 km length from Fairground) is also in the reserved Forest. The Mela (Fair) ground is not in reserved forest**. Works in the Forest land which were earlier in the scope of SAR are being undertaken by Tourism Dept. under state funding and subsequent to this were removed from the scope of this sub project to avoid any duplicity of works.** Now only canopy over the existing pathway for 147 m length and solar light are proposed under this subproject. Rest of the works are on revenue land.

36. The State is home to nearly 4048 species of Angiosperms and Gymnosperms belonging to 1198 genera under 192 families. Of these nearly 116 species are endemic to Uttarakhand. 161 species of flora found in Uttarakhand are recognized as rare or threatened under the categorization of the International Union for Conservation of Nature (IUCN). Out of the 223 species of Orchids reported from the North Western Himalayas, over 150 have been reported from the State.

37. The State also supports a wide variety of faunal forms which includes about 102 species of mammals, 623 species of birds, 124 species of fish, 69 species of reptiles and 19 species of amphibians. Highly endangered species like Tiger, Asian Elephant, King Cobra, etc. find suitable habitat in the forests of state. There are no protected areas (PAs) in 10 Km radius of the proposed sub project site. However there are protected areas that are far away from the proposed subproject area.

38. The water bodies of Tehri District are rich in aquatic fauna. Various species of Zooplanktons, Phytoplankton, Macro-invertebrates, Macrophytes, (submerged, rooted emergent and free floating) and amphibians are found in these water bodies.

39. The fish species found in the waters of river are Mahasheer and Goonch. Angling is carried out on some tributaries of Ganga like Bhagirathi, Bhilangana, and Alaknanda.

Protected Areas

40. The State of Uttarakhand is represented by Biogeographic Zones 2B Western Himalaya and 7B Siwaliks. About 18.7 % of the total area under the Forest Department has been earmarked for biodiversity conservation by the creation and management of 12 Protected Areas (PA) and a biosphere reserve in the State. The Nanda Devi Biosphere Reserve (NDBR) is the lone biosphere reserve in the State. The Nanda Devi National Park (NDNP) and the Valley of Flowers NP are UNESCO World Heritage Sites declared in 1988. The list of PA's (National Parks and Wildlife Sanctuaries) in the State is given in **Table 4. There is no protected area near the site.**

Table 4: National Parks and Wildlife Sanctuaries in Uttarakhand

Sl. No.	National Park	Year of Establishment	Area (sq.km)	District
1	Corbett NP	1936	521	PauriGarhwal
2	Nanda Devi NP	1982	630	Chamoli

Sl. No.	National Park	Year of Establishment	Area (sq.km)	District
3	Valley of Flower NP	1982	87	Chamoli
4	Rajaji NP	1983	820	Dehradun and Haridwar
5	Gangotri NP	1989	2390	Uttarkashi
6	Govind NP	1990	472	Uttarkashi
7	Govind WLS	1955	521	Uttarkashi
8	Kedarnath WLS	1972	957	Chamoli
9	Askot WLS	1986	600	Pithoragarh
10	Sonanadi WLS	1987	301	PauriGarhwal
11	Binsar WLS	1988	46	Almora
12	Musoorie WLS	1993	11	Dehradun

Source: Wildlife and Protected Areas, ENVIS, 2002

41. The tourist arrival data for Tehri district is given in **Tables 5**. It is noted that tourist arrival has increased gradually.

Table 5: Tourist Arrival Data for Tehri District for the Years 2007 to 2012

S. No.	Year	Indian	Foreign	Total
1	2007 (January 01, 2007 to December 31, 2007)	851237	14389	865626
2	2008 (January 01, 2008 to December 31, 2008)	867869	14793	882662
3	2009 (January 01, 2009 to December 31, 2009)	871827	15329	887156
4	2010 (January 01, 2010 to December 31, 2010)	898505	16103	914608
5	2011 (January 01, 2011 to December 31, 2011)	912909	20533	933442
6	2012 (January 01, 2012to December 31, 2012)	964380	15899	980279

Source: District Tourism Development Office, Tehri

C. Economic Resources

Industries

42. The State has very few industrial units mainly because of lack resources. In recent

years, the government is encouraging private participation in all industrial activities in the State. The New Industrial Policy announced in 2003 indicates that private resources may be tapped while promoting integrated industrial estates in Uttarakhand. The State government provides assistance in establishing small and medium sized agro parks, food parks, and the likes which in turn are expected to provide common infrastructure facilities for storage, processing, grading, and marketing.

43. Tehri has very few industries as industrial development here is still in its infancy stage. There is no large scale Industries or Public Sector undertakings in entire Tehri district. Micro and small enterprises and artisan units exit in the District the details of which are given in the **Table-6** below:

Table 6: Details of Existing Micro and Small Enterprises and Artisan Units in the District

NIC Code No	Type of Industry	Number of Units	Investment (Lakh Rs.)	Employment
20	Agro based	703	114.08	1925
22	Soda water	-	-	-
23	Cotton textile	-	-	-
24	Woolen, silk & artificial Thread based clothes.	28	45.60	84
25.	Jute & jute based	-	-	-
26.	Ready-made garments & embroidery	1883	282.29	3984
27.	Wood/wooden based furniture	323	107.10	969
28.	Paper & Paper products	07	112.10	89
29.	Leather based	09	118.05	27
31.	Chemical/Chemical based	14	122.05	44
30.	Rubber, Plastic & petro based	07	102.40	27
32.	Mineral based	09	65.00	35
33.	Metal based (Steel Fab.)	05	131.01	29
35.	Engineering units	217	98.03	651
36.	Electrical machinery and transport equipment	-	-	-
97.	Repairing & servicing	352	4389.01	1156
01.	Others	962	1921.70	3373

Source: DIC Narendra Nagar (Tehri)

Infrastructural Facilities

44. In 2006 the Ministry of Panchayati Raj named Tehri Garhwal one of the country's 250 most backward districts (out of a total of 640). It is one of the three districts in Uttarakhand currently receiving funds from the Backward Regions Grant Fund Programme (BRGF).Tehri Garhwal is one of the largest districts in the hill state of Uttarakhand, India. Its administrative headquarters is at New Tehri. The district has a population of 604,747 (2001 census), a 16.15% increase over the previous decade. It is surrounded by Rudraprayag District in the east, Dehradun District in the west, Uttarkashi District in the north, and Pauri Garhwal District in the south. New Tehri town generates about 1.75 quintals of solid waste which is disposed in dumping site managed by New Tehri Nagar Palika. Jal Sanasthan Nigam, New Tehri, Uttarakhand provide water to the area. However there is a need to improve the facilities and reach. A sewerage system and a treatment plant is existing in New Tehri

Transportation

45. Tehri Garhwal district is connected with Uttarakhand and rest of India through road network. Since sub project site is connected to Tehri, therefore, it is also well connected by air transportation and railway line with entire country. Nearest Airport and railway station is Jolly Grant and Rishikesh railway Station respectively.

Land use

46. **T**he salient land use features of Tehri Garhwal district are given below in **Table-7**:

Table: 7 Land use pattern of Tehri Garhwal

Land use	Area (In hectare)
Forest Area	322051 ha
Land under Cultivation	88461 ha
Cultivable Barren Land	5681 ha
Total Fallow Land	15707 ha
Barren and Non-cultivable Land	5844 ha
Land under Non-agricultural Use	78366 ha
Pasture and Other Grazing Land	539 ha
Land under Gardens, Bushes, Groves etc.	1372

47. A study of the figure reveals that majority of the district is under forest cover followed by land under cultivation and land under non-agricultural use. Together these three land use categories account for 94% of the total area. The cultivable barren land, total fallow land (current fallow and other fallow), pasture and other grazing land and land under gardens, bushes, groves etc. account for only 5%, which indicate that apart from the forest cover,

remaining areas are primarily utilised for agricultural use.

48. The sub project comprises of mainly two components (a) Works at Mela Ground, (b) Works at Mukhem Village. The Mela ground land belongs to Government of Uttarakhand, access path is in Reserved Forest and Temple complex is under ownership of Temple committee. The land records of Mela (Fair) ground and NOC from Temple committee are placed in **Annexure- 4.**

49. Agricultural Development: Agriculture is the main occupation of the people. However, intensive cultivation is not possible as major part of the district is mountainous. Agricultural activities are common on gentle hill slopes and in relatively plain, broad river valleys of Bhagirathi, Bhilangana and Alaknanda basins. Rice, wheat, mandua, barley, maize and sawan are the principal crops grown in the district. The salient features of agricultural statistics in the district are given below:

Gross sown area	88461 ha
Area sown under Rabi Crops	32258 ha
Area sown under Kharif Crops	56203 ha
Net sown area	56206 ha
Percentage of gross sown area against net sown area (Cropping Intensity)	157.39%
Area sown more than once	32255 ha
Production of food grains	117970 Mt

50. Wheat is the major crop grown in 26962 ha (47.97% of the net sown area) followed by sawan (17488 ha), mandua (14630 ha) and rice (12642 ha). Apart from this, other important crops sown in the district are barley (2620 ha), maize (1641 ha) and urad dal (1524 ha).

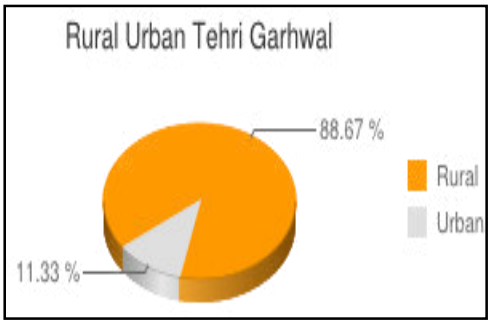
Power source

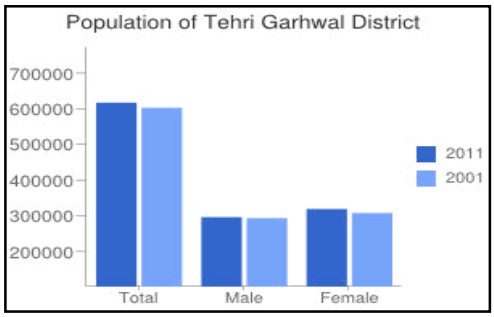
51. Uttarakhand has an estimated hydro power potential of 20,200 MW. However, only 1,130 MW has been tapped at present. Meanwhile, 4,170 MW projects are under implementation and 3,800 MW projects are allotted to Central, State, and private sectors.

D. Social and Cultural Resources

Population and Communities

52. In 2011, Tehri Garhwal had population of 618,931 of which male and female were 297,986 and 320,945 respectively.





53. Garhwal Himalaya has its own distinguished historical traditions and religious importance due to its geographical significance, cultural heritage and social background. Tehri Garhwal resembles other parts of the Himalayas where various ethnic groups live side by side Following chiefly the agrarian-pastoral way of life, native Garhwalis make their living from the hilly land the best they can Some, like the Bhotia traders, migrate far and wide, although the ancient trade routes with Tibet have been closed since 1950. Most of the indigenous people like Jaunsari, Buksha, and Tharu. and Raji are heterodox Hindus and Buddhists, while Sikh migrants from West Punjab have settled in the lowlands since 1947 A few Muslim groups are also native to the area, although most of them have settled recently. The Muslim Gujjar herders also migrate to the hills.

Health facilities

54. At Tehri Garhwal district, there are 35 allopathic hospitals with bed capacity of 468, besides 70 Ayurvedic Hospitals. 30 PHC's exist in the district which is also aided with 5 Community Health centers. There are 18 and 204 Mother &Child Welfare centers &Mother and Child Welfare Sub centers respectively in the District. Few private hospitals are also available in the District.

Education facilities

55. In the Tehri Garhwal district, there are 1474 primary schools, 410 middle schools, 185 secondary and senior secondary schools, 10 colleges, 14 technical institutions to provide quality education.

Social and Cultural Heritage

56. The district headquarter is located at New Tehri Town since April, 1, 1989. Earlier Narendra Nagar was the district headquarters. A major portion of the district is having hilly tract. The plain area is more fertile than the plateau area Bulk of the area of the district is under forests which occupy a place of importance not only in the ecology but also in the economy of the district. These forests are rich in vegetation. Wood of commercial value is produced. These forests are also famous for production of herbs and plants of medicinal value. There has been a denudation of forests in the past, resulting in impoverishment of forests wealth. Under five year plans efforts have been made to plant trees under afforestation program. Availability of soft wood has given rise to the manufacturing of wooden toys in the area. Tehri Garhwal resembles other parts of the Himalayas where various ethnic groups live side by side.

57. Various customs and traditions of the region are based on the Hindu religion. “Shiva” is most widely regarded and “Durga” in different forms is also worshipped throughout the area. Most of the fairs and festivals in the region are associated with the worship of the above. Religious faiths and superstitions are deep rooted amongst the people. Individual function on a new birth, marriage, death, etc., is governed by ancient customs and traditions. For everything, people depend heavily on the astrological forecast of the Brahmins for its auspiciousness.

58. Some archaeological, historical monuments and religious places were located at old Tehri which are now submerged under the water of Tehri Lake. The sub project site is not in the surroundings of any notified archaeological site.

Archaeological Resources

59. There are no heritage sites notified by Archaeological Survey of India (ASI) within the subproject area or in near vicinity. Similarly, no common property resources (CPR) such as public wells, water tanks, play grounds, common grassing grounds or pastures, market areas and community buildings will be affected by the proposed subproject.

IV. ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

A. Environmental Impacts

60. Urban development projects like tourism infrastructure development projects may cause impacts upon environment in many ways. The impacts anticipated from the proposed project may be on Physical, Biological, Socio-economic and Cultural Environment. The IEE helps to identify those negative impacts that are anticipated in the project under consideration and to suggest the mitigation measures to minimize the negative impacts. The assessment for the subproject namely "Development of Tourism Infrastructure at Sem Mukhem" has been carried out for potential impacts during the following stages of the project planning and implementation:

(i) **Location impacts:** Impacts associated with site selection, including impacts on environment and resettlement or livelihood related impacts on communities;

(ii) **Design impacts and Pre-Construction Impacts:** Impacts arising from project design, including the technology used, scale of operations, discharge standards, topographic survey, geotechnical survey, etc.;

(iii) **Construction impacts:** Impacts resulting from construction activities including site clearance, earthworks, civil works, etc.; and

(iv) **Operation and Maintenance impacts:** Impacts associated with the operation and maintenance of the infrastructure built in the subproject.

61. Impact identification, screening for significance, and recommended mitigation measures for the sub-project were guided by the use of ADB Rapid Environmental Assessment Checklist for Urban Development and standard environmental monitoring plan required for ADB Projects.

Location Impacts

62. The sub project site is mainly the fair ground near Sem Mukhem temple and Mukhem village. These all are currently in use and all improvements are planned within the available land. There are no significant ecological resources in the subproject region (protected areas or rare or important species or habitats). There are no heritage sites notified by Archaeological Survey of India (ASI) within the subproject area or in the immediate surroundings. No significant impacts can arise due to project location as the sites involving the project components do not pass through/ near any areas having importance from ecological considerations (being a hilly terrain access path is RF) or any cultural / historical areas, etc.

63. The only location impact is that sub project is located in earthquake zone V and even a small magnitude earthquake may damage infrastructure. The sub project site may not be accessible during peak winter days due to snow fall.

64. The proposed subproject location at Fairground is under the ownership of revenue authorities **(Annexure-4).** The works proposed in the Mukhem villge is under the ownership of Gram Panchayat village Mukhem and village Sem, the NOCs of which are attached **(Annexure 5)** The Nagraja temple and the access road from Mela (Fair) ground to temple is under the

ownership of forest department. But civil works proposed in the Temple and Pathway during the SAR stage were removed from the scope during DPR stage due to project being undertaken by the Tourism Dept. in the site under state funding. Now only provision of solar lights is kept in the temple and canopy for a length of 147 m and dustbins are planned to be installed on the access road. Hence, no impacts are envisaged on land acquisition or resettlement due to the proposed subproject components. The temple is managed by the Temple Committee and NOC of temple committee is placed as (**Annexure-5).** The site photographs are annexed (**Annexure-3)**.

Impacts during Design and Pre-Construction Phase

65. Impacts arising from the inappropriate designs of proposed facilities would in general include the inadequate facilities and infrastructure at temple and Mela ground, unsafe access road, etc. This will result into inconvenience to the visitors. There may be impacts on surrounding land if proper sanitation, waste water collection and treatment is not planned. The project intervention will help in addressing inadequate amenities.

66. Anticipated Environmental impacts associated with the Pre-construction phase are: loss of land, properties and livelihood due to acquisition of properties; tree cutting, impacts on forest land; etc. As the proposed subproject area is owned by the government, there is no land acquisition, impact on properties or involuntary resettlement issues. No tree cutting is anticipated except clearing of the shrubs. During pre construction stage there will be impact on account of establishment of construction camp if this is established outside sub project land.

67. Based on the environmental screening of the subproject area, there are no significant adverse environmental impacts during the design and Pre-construction phase.

Impacts during Construction Phase

68. All construction activities to be undertaken at the site will be approved by PIU. The construction stage impacts due to the proposed project components are generic to the construction activities. The EMP emphasizes on the construction impacts and necessary mitigation measures to be strictly followed by the contractor and supervised by the DSC and PIU. The Key impacts are covered in the following paragraphs.

69. Impacts due to stock piles of construction materials, Demolition waste and Hill Cut: Improper stockpiling of construction materials (for solar lighting system and compost pit at temple, canopy at access road, signage works from Kodar to Temple, road improvement in Mukhem village) can obstruct movement along access road and drainage at Mela ground and temple. Due consideration will be given for material storage on construction sites, stockpiles will be covered to protect from dust and erosion. Waste materials will be disposed at identified and approved location.

70. Disposal of construction waste: The construction waste could lead to untidy conditions at site and may find its way to local streams and siltation and obstruction to natural flow in the streams. In the proposed subproject, it shall be made mandatory for the contractor involved in construction activities for proper disposal of the construction waste at the disposal site as designated by the PIU and DSC. **Quarry/Borrow pits operations:** All the construction

materials will be procured from market as construction works are relatively of very small level. The construction activities do not require earthworks so operations of borrow areas is not anticipated. The sub project construction activities will also not require direct procurement of stone dust or sand from the quarries Hence there are no impacts on quarry and no requirement of borrow area operations.

71. Increase in noise levels: Noise levels in the immediate proximity of worksites are expected to increase during construction. However, these will be largely imperceptible as civil works will be confined in relatively small sites and the duration of this exposure will also be relatively brief. There are no habitations in the immediate vicinity of temple and Mela ground. At Mukhem village construction works will increase noise levels slightly and these will be felt by the villagers but these will be intermittent in nature. There is Sem Nagraj Seva Ashram at a distance of about 250 m from the Mela ground and about 3 km from the temple. Hence impacts of construction activities shall not be felt on other habitations. Similar to Mukhem villagers, residents at temple and construction crew will feel noise impacts of construction activities for a short period. The workers exposed will be suitably equipped with ear muffs. Construction activities shall be restricted during night time.

72. Impacts on biodiversity during construction phase: No major impacts are expected on the biodiversity during the construction phase as the sub project site is open and there are no trees that need to be cut. There will be removal of some shrubs during creation of facilities at Mela ground and along the access path to the Nagraj Temple.

73. Disturbance to traffic during construction phase: At the time of construction there will be disturbance and inconvenience for the movement of the public and vehicles due to project construction activities and signage works on road from Kodar to fair ground. These inconveniences will be temporary in nature and last for a very short duration. Sample Traffic Management plan is attached in **Annexure 7.**

74. Impacts on cultural properties: The proposed project will have no impacts on Nagraj Temple or any other structure of historical and/or cultural significance.

75. Ground water will not be used for construction purposes and the problem of ground water contamination is not anticipated during the construction phase as there will be proper disposal of the waste water.

76. Generation of dust is anticipated during transportation, excavation and construction activities. Certain volumes of dust and gaseous emissions will also be generated during the construction period from construction machineries like mixers, vehicles engaged in transportation of construction materials. Pollutants of primary concern at this stage include Respirable and Suspended Particulate Matter (SPM) and gaseous emissions (NO_X, SO_2, CO, etc). However, transportation of construction materials will be confined to adequate trips per day depending upon extent of construction activity. Therefore, impact at this stage will be temporary and restricted to the close vicinity of the construction site only.

77. All vehicles and construction equipment operating for the contractor and the consultant

3will obtain and maintain "Pollution under Control" (PUC) Certificates. To control dust emissions, vehicles deployed for borrow material, sand and aggregate haulage, shall be covered with tarpaulins to be spillage proof. Regular sprinkling of water during excavations, loading, unloading, vehicular movement and raw material transport, provisions shall be made in the construction period.

78. Periodic air quality monitoring to ensure emissions to comply with standards will be conducted. The Contractor will submit emission monitoring results as a compliance with environmental monitoring plan.

79. During construction phase, some noise will be generated from the various construction activities like equipment and vehicles engaged in transportation of construction materials. However, transportation of construction materials will be confined to the requirement per day, depending upon extent of construction activity. Further the noise associated with the equipment shall be reduced with proper maintenance of construction equipment. The increase in noise levels is expected to be between 5 - 10 % of ambient noise levels. This increase will be felt up to a distance of 500 m only. This noise will be intermittent in nature and will last only till construction phase. The increased noise impacts will be felt at Mukhem village, Sem Nagraj Seva Ashram and temple at these locations noise levels are not anticipated to exceed the stipulated limits of Residential areas. But necessary monitoring of noise levels will be taken up as part of environmental monitoring plan.

80. The construction activities are proposed in the existing sites of Mela (Fair) Ground, access path, Mukhem village, and temple. Therefore, no adverse impact on fauna and flora is anticipated due to the proposed activity.

81. Debris/solid waste will be generated due to, excavated earth material and waste generated from construction camps, and demolition of any small structures at the locations of facilities construction. Debris/excavated earth material can be reused subject to the approval of the Engineer during the construction. Waste generated from the construction camp and demolition will be disposed off as per law to the satisfaction of the Engineer.

82. The clean-up and restoration operations are to be implemented by the contractor prior to demobilization. The contractor will clear all temporary structures and dispose off all garbage from construction camp site. All construction zones used/affected by the sub-project will be left clean and tidy, at the contractor's expense as per the satisfaction the Engineer

83. The Contractor is likely to engage local labor for various construction activities. However, in case of engaging migratory labor for the purpose, the contractor has to establish properly designed labour camp with all basic amenities such as potable drinking water supply and sanitation facilities (septic tanks and soak pit) and also dust bins to be placed in adequate numbers, which will be regularly emptied and waste will be disposed off as per law. EMP envisages mitigation measures for likely adverse impacts associated with the labour camps.

B. Land Acquisition And Resettlement

84. The implementation of the sub project will not involve dislocation or involuntary

resettlement of people. Positive impact is anticipated in terms of employment opportunity as many skilled, semi-skilled and un-skilled personnel will get direct and indirect employment during construction phase. The impacts on land acquisition and resettlement have been summarized in **Table-8** below:

Table 8: Sub Project Components and its Impact on Land Acquisition & Resettlement

Description of subproject Components	Impact due to Land Acquisition and Resettlement	Temporary Impact
A. Development Works at Fair Ground • Dharamshala - 1 No, at Fair Ground including Compound wall & Gate • Toilet Complex- 1 at Fair Ground • Pathway from main road - 200 m (3.75 m wide) including 1 m wide Footpath on both side of pathway • Drainage Network 400 m long on both side of pathway • Rest shed - 5 Nos including sitting arrangements in Fair Ground. • Illumination works. • Landscaping • Development of Lake including Stone Pitching, Snan Ghat, Embankment, Pathway, Seating arrangement etc. • Furniture for Rest Shelter. • Mural – 4 Nos. **B. Sem Mukhem Temple Premises:** • Solid waste bins • Solar lamps **C. Works on Pathway from Fair Ground to Nagraja Temple** • Canopy on Pathway of Nagraja Temple-147 m long • Hand rails and finishing work of pathway. **D. Development of Mukhem Village** • Renovation of Existing Temple, Care Taker Cottage and Panchayat Hall. • Pathway 1.2 Wide and 3890 m long. • Painting Work of Existing Toran Dwar (Entry Gate)- 1 No • Development of Existing Water Supply System. • Illumination Works Solar powered lighting system at	Nil	Nil

Description of subproject Components	Impact due to Land Acquisition and Resettlement	Temporary Impact
Pathway of Mukhem Village, and Existing Temple of Mukhem Village. • Solid Waste Bins. **E. Signage works** • Special Signage for Nagraj Temple at Mukhem village and fair ground - 4 Nos. • Signage from Kodar to Fair Ground at Mukhem village - 5 Nos.		

85. It is clear from above **Table-8** that subproject will not result in any permanent land acquisition and resettlement impacts because all construction will be within the available land under the possession of Govt. of UK (Revenue Dept.), Gram Panchayat (Mukhem village), Temple Complex (Temple Committee)

Impacts during Operation Phase

86. Impacts on environmental conditions associated with the operation stage of the subproject components pertain to impacts due to enhanced tourist activities. The operation stage impacts shall be addressed through regulation of tourist movements, planning the extent of facilities and amenities in line with the carrying capacity which is taken care through Govt. of India, for the state including all potential tourist destinations.

87. No impact is anticipated on the ground water quality and surface water quality during the operation phase as there will be proper disposal of waste water. For this toilet blocks with septic tank and soak pits is being proposed at Mela(Fair) ground and temple complex. Rain water harvesting structure is proposed at Mela ground and this collected water will be used for drinking and sanitation purposes.

88. The solid waste generated at Mela ground and temple complex during operation phase will be segregated and organic waste will be used for composting. In the DPR provision for the compost pit has been made.

89. During operation phase impact on air quality will be due to vehicular movement to reach the Mukhem Mela ground. But impacts won't exceed beyond the vehicular road since the pathway is a trekking path only.

90. During the operational phase, impacts on noise environment will be due to vehicular movement and Mela activities. The rise in noise levels will not be excessively high to cause human annoyance. However, ambient noise levels will be measured during Mela and duration of peak tourist movement.

91. Safety Measures: The safety measures along access path to temple will include railings, and canopy for rains in access path and display of 'Do and Don'ts'. The other safety features are explained below:

- Safety features to be included in the buildings (rest shelter at Mela ground) are installation of fire-fighting systems with portable fire extinguishers and smoke detectors and adequately wide staircase for escape during such eventuality.
- During natural calamities, the operations will be stopped and tourists will be safely evicted as per Disaster Management plan of the state.
- Necessary first aid facilities will also be provisioned at the Mela ground.

92. Socio-Economic Impacts: Positive impact is anticipated in terms of employment opportunity as many skilled, semi-skilled and un-skilled personnel will get direct and indirect employment during construction and operation phases. Added residential developments, commercial and business facilities and increased densities are expected to develop and enhance the subproject area.

93. The major advantages of implementation of the project will be:

(i) Sem Mukhem Nagraj Temple on the Tourist map of Uttarakhand and India ;

(ii) Promotion of equity in development;

(iii) Improvement in the quality of life of the host community;

(iv) High quality of religious tourism experience to the visitors ;

(v) Building environmental and cultural awareness about site and its respect;

(vi) Positive experiences for both visitors and hosts; and

(vii) Financial benefits and empowerment for local people.

94. As the subproject location is away from any ecologically rich area (although access path is in land notified as reserved forest, with no trees or dense vegetation), no adverse impact on fauna and flora is anticipated due to the operation of the sub project.

Description of Planned Mitigation Measures

95. Screening of environmental impacts is based on the magnitude and duration of the impact. **Table 9** provides the potential environmental impacts and the mitigation measures including the responsibilities for implementing the same. The subproject site is located sufficiently away from Protected Areas (except Reserve Forest) and the components proposed will not impact any environmentally sensitive or protected areas. Interventions are proposed within available government lands and existing right-of-way.

Table 9: Summary of Environmental Impacts and Planned Mitigation Measures

Sl. No.	Potential Environmental Issues	Duration / Extent	Magnitude	Proposed Mitigation Measures	Institutional Responsibilities
1	**Location Impacts**				
1.1	Lack of sufficient planning to assure long term sustainability of the facilities and ensure protection specially from earthquake and other natural disasters	Permanent	Major	The design of all structures has been done considering earthquake coefficient of zone V and considerations are also there for sustainability of infrastructure during natural disasters. The site is not on the bank of any river or major stream.	PIU / DSC
2	**Design Impacts and Pre-construction Impacts**				
2.1	Consents, permits, clearances, no objection certificate (NOC), etc.	Permanent	Major	Obtain all necessary consents, permits, clearance, NOCs, etc. prior to start of civil works. Acknowledge in writing and provide report on compliance all obtained consents, permits, clearance, NOCs, etc. Include in detailed design drawings and documents all conditions and provisions if necessary	PIU / DSC
2.2	Layout of components to avoid impacts on the aesthetics of the site	Permanent	Major	The project components will not have any impacts on Nagraj temple. Hence no mitigation measures are warranted.	PIU / DSC
2.3	Slope stability related issues	Permanent	Minor	The access path to the temple is on slope, The designs of subproject components will include slope protection measures for uncovered slopes as pitching, vegetation, benching, etc.	PIU/DSC
2.4	Increased storm water runoff from alterations of the site's natural drainage patterns due to landscaping, excavation works, construction of parking lots, and addition of paved surface at Mela Ground	Permanent	Moderate	Design of proposed components will enable efficient drainage at Mela ground and maintain natural drainage patterns.	PIU/DSC

2.5	Integration of energy efficiency and energy conservation programs in design of sub-project components	Permanent	Moderate	Following measures have been included in design for Energy Efficiency: • Usage of recyclable materials like wood substitutes. • Installation of BEE certified equipment • Usage of energy efficient lighting fixtures (LED and solar). • Solar water heating at Dharamshala in Mela ground • Provision of P-V cells (solar lighting) on roof of Dharamshala at Mela Ground	PMU/PIU/DSC
2.6	Handling of Silt from Pond	Temporary	Moderate	Prepare silt utilisation plan as silt will be generated due to excavation of pond.	PMU/PIU/DSC
3	**Construction Impacts**				
3.1	Construction Camps - Location, Selection, Design and Layout	Temporary	Moderate	Construction camp will be located within Government land on Mela Ground and it will ensure that camp does not endanger any natural spring or local stream. Adequate sanitation facilities shall be provided at camp site and no waste water will be discharged outside.	Contractor / DSC
3.2	Circulation plan during construction in the tourist destinations	Temporary	Moderate	Prior to commencement of site activities and mobilization on ground, the Contractor will prepare and get approved by the Engineer ,a circulation plan during construction for safe passage of temple visitors during construction stage, including development of alternative access routes, traffic regulations, signages, etc., The Contractor with support of the PIU will carry out dissemination of these information and circulation plan at Mela(Fair) ground and all major access road to Mela ground.	Contractor/ DSC/PIU
3.3	Impacts on flora and fauna	Temporary	Moderate	Conduct site induction and environmental awareness. Limit activities within the work area. Replant trees in the area using minimum ratio of 3 new trees for every 1 tree cut, if any. Replacement species must be approved by forest dept.	

3.4	Site clearance activities, including delineation of construction areas	Temporary	Moderate	The commencement of site clearance activities will be undertaken with due permission from the Environment Specialist of the DSC consultant to minimize environmental impacts. All areas used for temporary construction operations will be subject to complete restoration to their former condition with appropriate rehabilitation procedures.	Contractor / DSC
3.5	Drinking water availability	Temporary	Major	Sufficient supply of potable water to be provided and maintained. If the drinking water is obtained from an intermittent public water supply then storage tanks will be provided. The water supply sources of Mukhem village will not be used for construction water.	Contractor / DSC
3.6	Waste disposal	Permanent	Major	Location of disposal sites for demolition waste and small cut generated along access path (due to erection of canopy shed) will be finalized by the Environmental Specialist of the DSC and he will confirm that: disposal of the material does not impact the water body or environmentally sensitive areas and that no endangered / rare flora is impacted by such materials.	Contractor / DSC
3.7	Stockpiling of construction materials	Temporary	Moderate	Stockpiling of construction materials does not impact obstruct the drainage and Stockpiles will be covered to protect from dust and erosion.	Contractor / DSC
3.8	Soil Erosion	Temporary	Moderate	Slope protection measures will be undertaken as per design to control soil erosion along the access path to the temple, on the temple site and at Mela (fair) ground.	Contractor / DSC
3.9	Soil and Water Pollution due to fuel and lubricants, construction waste	Temporary	Moderate	The fuel storage and vehicle cleaning area will be stationed such that water discharge does not drain into the lake. Soil and water pollution parameters will be monitored as per monitoring plan.	Contractor / DSC

3.10	Siltation of water bodies due to spillage of construction wastes	Temporary	Moderate	No disposal of construction wastes will be carried out into any stream near the subproject site. Extraneous construction wastes will be transported to the pre-identified disposal site for safe disposal.	Contractor / DSC
3.11	Generation of dust	Temporary	Moderate	The contractor will take every precaution to reduce the levels of dust at construction site. Any fill site to be properly kept wet to minimize dust generation.	Contractor / DSC
3.12	Emission from Construction Vehicles, Equipment and Machinery	Temporary	Moderate	Vehicles, equipment and machinery used for construction will conform to the relevant Standard and will be regularly maintained to ensure that pollution emission levels comply with the relevant requirements.	Contractor / DSC
3.13	Noise Pollution	Temporary	Moderate	Noise limits for construction equipment used in this project will not exceed 75 dB (A).	Contractor / DSC
3.14	Material Handling at Site	Temporary	Moderate	Workers employed on mixing cement, lime mortars, concrete etc., will be provided with protective footwear and protective goggles. Workers, who are engaged in welding works, will be provided with welder's protective eye-shields. Workers engaged in stone breaking activities will be provided with protective goggles and clothing. The use of any toxic chemical will be strictly in accordance with the manufacturer's instructions. The Engineer will be given at least 6 working days' notice of the proposed use of any chemical. A register of all toxic chemicals delivered to the site will be kept and maintained up to date by the Contractor.	Contractor / DSC
3.15	Disposal of Construction Waste / Demolition Debris	Temporary	Moderate	Safe disposal of the construction waste will be ensured in the pre-	Contractor / DSC

	/ Cut Material			identified disposal locations. In no case, any construction waste will be disposed off around the project site and especially in Mukhem village.	
3.16	Safety Measures During Construction	Temporary	Moderate	Adequate safety measures for workers during handling of materials at site will be taken up. The contractor has to comply with all regulations for the safety of workers. Precaution will be taken to prevent danger of the workers from fire, accidental injury etc. First aid treatment will be made available for all injuries likely to be sustained during the course of work. The Contractor will conform to all anti-malaria instructions given to him by the Engineer.	Contractor / DSC
3.17	Clearing of Construction of Camps and Restoration	Temporary	Major	Contractor to prepare site restoration plans for approval by the Engineer. The plan is to be implemented by the contractor prior to demobilization. On completion of the works, all temporary structures will be cleared away, all rubbish burnt, excreta or other disposal pits or trenches filled in and effectively sealed off and the site left clean and tidy, at the Contractor's expense, to the entire satisfaction of the Engineer	Contractor / DSC
3.18	Utilisation of silt generated from pond on account of excavation	Temporary	Minor	Utilise silt on side slopes stabilization, on the leveling of pathway to be devloped on pond banks, internal road development at Mukhem village and on access road from fair ground to temple. For balance if any identify a location for disposal in consultation with DSC.	Contractor /DSC
4	**Operation and Maintenance impacts**				
4.1	Environmental Conditions	Temporary	Moderate	Air, water, noise and soil quality will be monitored periodically as per the Environmental Monitoring Plan prepared.	Tourism department

4.2	Uncontrolled tourism flow	Temporary	Major	Tourism Master Plan will be implemented strictly to avoid uncontrolled tourism flow.	Tourism department
4.3	Safety risks	Temporary	Major	(i) Proper demarcation & flagging of the area towards valley side to minimize risks. (ii) On the access path to the temple necessary precaution measures to be observed by the visitors will be put up on boards.	Tourism department
4.4	Unhygienic condition due to poor maintenance of sanitation facilities and irregular solid waste collection	Temporary	Severe	Tourism department will carry out maintenance of the toilets, and carry out the regular collection and disposal of wastes to a designated waste treatment site for inorganic waste and to compost pit for organic waste. The septic tanks will be emptied regularly.	Tourism department
4.5	Regularly remove silt deposited in pond to maintain the volume	Temporary	Minor	The tourism department through the maintenance schedule will regularly remove the silt deposited through the contractor and will dispose off the silt at a suitable and safe location. The silt removal should be taken up during summer season.	Tourism department

V. ENVIRONMENT MANAGEMENT PLAN (EMP)

A. Institutional Arrangements

96. The Government of Uttarakhand through Department of Tourism (DOT) is the Executing Agency (EA). The EA (i) assumes overall responsibility for the execution of the Project and reporting; (ii) engage adequate permanent or fixed-term staff to implement the Project; (iii) setup a state-level project management unit (PMU) and project implementation units (PIU); (iv) provides overall strategic guidance on technical supervision and project execution; and (v) ensures overall compliance with the loan covenants.

97. The implementing agency (IA) is the Uttarakhand Tourism Development Board (UTDB). The IA's responsibilities include (i) project planning and budgeting; (ii) day-to-day assistance, supervision and guidance for the project implementation units and their consultants; (iii) review subprojects for due diligence requirements and approve subproject proposals; (iv) bidding, evaluation and contract award; (v) managing and disbursing funds; (vi) review compliance with loan covenants, contract specifications, work plans and quality control; and (vii) consolidate and submit progress reports, finance and accounting / audit reports, and matters requiring higher level decision to state-level empowered committee (SLEC) and ADB.

98. A State-level empowered committee (SLEC) has been established in Uttarakhand, chaired by State's Chief Secretary, with Principal Secretary/Secretary of the Department of Tourism as Member Secretary and comprised of Secretaries from relevant line departments. The SLEC have been empowered to take all decisions on behalf of the State and will (i) act as a policy making body, (ii) provide overall advice and guidance to the State's executing agency and PMU, and (iii) accord all approvals under the Project.

99. DoT has established a PMU, headed by a full-time Program Director (PD), and consisting of personnel drawn from relevant line departments and market. The PMU is the nodal agency for overall management of all program activities and will be responsible for: (i) project planning and budgeting; (ii) providing day-to-day assistance, supervision and guidance for the PIUs and their consultants; (iii) reviewing subprojects to satisfy ADB's due diligence requirements and approving subproject proposals submitted by PIU and line departments; (iv) bidding, evaluation and contract award; (v) managing and disbursing funds; (vi) reviewing compliance with loan covenants, contract specifications, work plans and quality control; (vii) consolidating and submitting progress reports, finance and accounting/audit reports, and matters requiring higher-level decision, to the SLEC and ADB. The PMU will be supported by a team of consultants.

100. The sub-project will be implemented by the Project Implementation Unit (PIU) of IA, i.e. UTDB, comprising of personnel drawn from relevant line departments and outside of government and will be headed by a Project manager. The PIUs will be responsible for: (i) prioritizing and preparing subproject proposals; (ii) providing day-to-day assistance, supervision and guidance to the design and supervision consultants; (iii) conducting detailed assessments and surveys including public consultation and input from stakeholders; (iv) preparing detailed

designs, specifications, schedule of quantity, bidding documents, and related documentation; (v) implementing civil works and related activities; (vi) reporting to PMU; (vii) preparing regular progress reports for the SLEC, the executing agency and ADB through PMU; and (viii) supervising construction, conducting quality control, approving progress payments to contractors; and (ix) maintaining records and accounts on an up-to-date basis and making these available to ADB, its missions, or auditors for inspection.

101. The Project Management Consultant (PMC) has been engaged to provide support to the PMU in overall planning, risk management, implementation, monitoring and evaluation of projects under the Investment Program. The PMC will also assist the PMU and PIUs in meeting the relevant requirements of ADB, Government of Uttarakhand, and Government of India for project implementation. The PMC will report to and work under the overall guidance of the PMU. The scope of services of the PMC's will include but not necessarily be limited to: (i) planning, reporting, and communication; (ii) establishment of procedures and systems; (iii) review and preparation of plans, manuals and reports; (iv) overall Investment Program management, monitoring and implementation of PPMS; and (v) social, environmental, archaeological, occupational health and safety, community participation and gender action compliance monitoring.

102. The Design and Supervision Consultant (DSC) has been engaged to provide all necessary support to and coordination with the EA, IAs, PMU and any other consultants engaged by the authorities to achieve the desired outcomes of the Investment Program. The DSC will report to and work under the overall guidance of the PIUs. The scope of services of the DSC will include but not necessarily be limited to: (i) surveys, verification of feasibility studies and base maps; (ii) project planning and management support to the PIU; (iii) finalization of design criteria, preparation of manuals, guidelines and systems; (iv) preparation of detailed design and bid documents; (v) construction management and contract administration; (vi) environmental, social, archaeological, cultural heritage, community participation and gender action compliance monitoring; and (vii) capacity building of the service providers for operational sustainability.

103. The Environmental Management Plan (EMP) translates recommended mitigation and monitoring measures into specific actions that will be carried out by the contractor and proponent. EMP deals with the management measures and implementation procedure of the guidelines along with enhancement measures recommended to avoid, minimize and mitigate foreseen environmental impacts of the project. For each mitigation measure to be taken, its location, timeframe, implementation and overseeing/ supervising responsibilities are listed in the EMP. **Table 10** to **12** presents a generic EMP to guide the contractor in mitigating environmental impacts. In DPR stage EMP tables will be revised.

Responsibility for updating IEE during Pre Construction and Construction

104. Responsibility for monitoring. During construction, DSC's Environmental Specialist and the designated representative engineer of the PIU will monitor the contractor's environmental performance. During the operation phase, monitoring will be the responsibility of

the PMU. DSC's Environmental specialist will prepare monthly and quarterly report.

105. Responsibility for Reporting. PMU will submit to ADB semi-annual reports on implementation of the EMP and will permit ADB to field environmental review missions which will review in detail the environmental aspects of the project. Any major accidents having serious environmental consequences will be reported immediately. PMC'sEnvironment safeguard Specialist will assist PMU for finalization semi-annual and annual progress reports.

Table 10: Pre Construction Phase Environmental Management Plan

Sl. No.	Environmental Issues	Mitigation Measures	Parameter /Indicator for Compliance	Responsible for Implementation	Responsible for Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
1	Lack of sufficient planning to assure long term sustainability of the improvements and ensure protection of the assets created.	Design has included provisions for ensuring effective maintenance and protection of the assets to be created so as to ensure the long term sustainability. The long term sustainability has been ensured by taking into consideration appropriate Bureau of Indian Standards Codes (BIS) for design, Seismic Zone V coefficient, appropriate wind load factor (corresponding to 39 m/s wind speed), and detailed design after carrying geotechnical investigations and topographic survey.	Verification of design parameters	DSC	PMU/PMC	Review after completion of DPR	Part of DSC/PMC Professional Fee
2	Layout of components to avoid impacts on the aesthetics of the site	The project components siting will avoid impacts on the aesthetics of the site and to ensure minimal impacts.	Improvements plans at Mela ground, Mukhem village, Temple and Mela Ground	PIU / DSC	PMU/PMC	Review after completion of DPR	Part of DSC/PMC Professional Fee
3	Slope stability related issues	Areas vulnerable to slope failures such as access	Slope protection	PIU/DSC	PMU/PMC	Review of	Part of

Sl. No.	Environmental Issues	Mitigation Measures	Parameter /Indicator for Compliance	Responsible for Implementation	Responsible for Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		path to temple will include slope protection measures for uncovered slopes as pitching, vegetation, benching, etc.	measures along access path, Nagraj Temple, Mukkem village and Mela Ground			recommended slope protection measures	DSC/PMC Professional Fee
4	Increased storm water runoff from alterations of the site's natural drainage patterns due to landscaping, excavation works, construction of parking lots, and addition of paved surfaces	Design of proposed components enables efficient drainage of the sites and maintains natural drainage patterns. The storm water generated at Mela ground will be diverted to local drain through a properly constructed drainage system. At other sites of sub project the storm water generation issue will not be there as temple and access path is on hill.	Arrangement for proper diversion of storm water runoff at Mela ground	PIU/DSC	PMU/PMC	After mobilisation of contractor at site and during establishment of construction camp	Incidental to construction cost
5	Integration of energy efficiency and energy conservation programs in design of sub-project components	The detailed designs for the sub-project have ensured that environmental sustainability principles, including energy efficiency, resource recycling, waste minimization, etc. The design considers the following energy efficiency	Specifications of rain water harvesting structures, electrical fixtures, details of water heating system	PIU/DSC	PMU/PMC	During finalisation of DPR	Part of project cost

Sl. No.	Environmental Issues	Mitigation Measures	Parameter /Indicator for Compliance	Responsible for Implementation	Responsible for Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		measures : • Usage of recyclable materials like wood substitutes. • Installation of BEE certified equipments • Usage of energy efficient lighting fixtures (LED and solar) at Temple and Mela ground. • Provision of P-V cells on roof.					
6	Consents, permits, clearances, no objection certificate (NOC), etc.	Obtain all necessary consents, permits, clearance, NOCs, etc. prior to start of civil works. Acknowledge in writing and provide report on compliance all obtained consents, permits, clearance, NOCs, etc.	Consents, permits, clearance and NOCs Records and communications	PIU	PMU	check consent for establishment of construction camp , NOC from forest department , clearance (if required), prior to start of civil works and report to PMUin Monthly progress report	Project cost
7	Establishment of baseline environmental	Conduct documentation of location of components, areas for construction	Records and Photographs	Contractor	PIU/DSC	Once prior to construction	Contractor

Sl. No.	Environmental Issues	Mitigation Measures	Parameter /Indicator for Compliance	Responsible for Implementation	Responsible for Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
	conditions prior to start of civil works	zone (camps, staging, storage, stockpiling, etc.) and surroundings (within direct impact zones). Include photos and GPS coordinates					
8	Utilities	1-The locations and operators of utilities to be impacted have been identified and documented in DPR documents to prevent unnecessary disruption of services during the construction phase. 2-Require contractors to prepare a contingency plan to include actions to be done in case of unintentional interruption of services. 3-Obtain from the PIU and/or DSC the list of affected utilities and operators; 4-If relocations are necessary; contractor will coordinate with the providers to relocate the utility.	List and maps showing utilities to be shifted Contingency plan for services disruption	- DSC will prepare preliminary list and maps of utilities to be shifted - During detailed design phase, contractor to (i) prepare list and operators of utilities to be shifted; (ii) contingency plan	PIU/DSC	Pre Construction Phase	Contractor
9	Social and Cultural Resources	1-Consult Archaeological Survey of India (ASI) or	Chance find protocol	- PMC to consult ASI or	PMU	Prior to start of construction	PMC

Sl. No.	Environmental Issues	Mitigation Measures	Parameter /Indicator for Compliance	Responsible for Implementation	Responsible for Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		Uttarakhand State Archaeology Department to obtain an expert assessment of the archaeological potential of Sem Mukhem Temple. 2-Consider alternatives if the site is found to be of medium or high risk. Include state and local archaeological, cultural and historical authorities, and interest groups in consultation forums as project stakeholders so that their expertise can be made available. 3-Develop a protocol for use by the construction contractors in conducting any excavation work, to ensure that any chance finds are recognized and measures are taken to ensure they are protected and conserved.		Uttarakhand State Archaeology Department - PMC to develop protocol for chance finds		activities	
10	Construction Camps - Location, Selection, Design and Layout	Siting of the construction camps shall be as per the guidelines below and details of layout to be approved by DSC. The potential sites will be	Construction camps site, and locations of material storage areas, sanitation facilities	Contractor	DSC/ PIU	At the time of construction camp establishment and finalizationof	Contractor

Sl. No.	Environmental Issues	Mitigation Measures	Parameter /Indicator for Compliance	Responsible for Implementation	Responsible for Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		selected for labour camp and these shall be visited by the DSC environmental expert and one having least impacts on environment will be approved by the DSC. As far as possible construction camp will be established at Mela Ground to avoid impact on other land. Location for stockyards for construction materials shall be identified either at Mela Ground or at sites at a minimum distance of 300 m from natural springs and streams. Construction sanitation facilities shall be adequately planned,				storage areas	
11	Sources of construction materials	Use quarry sites and sources licensed by the Uttarakhand Government. Verify suitability of all material sources and obtain approval from PIU. If additional quarries are	Permits issued to quarries/sources of materials	Contractor PMC and DSC to verify sources (including permits) if additional is requested by contractor	PMU PIU	Upon submission by contractor	PMC and DSC as part of consultancy fee

Sl. No.	Environmental Issues	Mitigation Measures	Parameter /Indicator for Compliance	Responsible for Implementation	Responsible for Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		required after construction has started, obtain written approval from PIU. Submit to DSC on a monthly basis documentation of sources of materials.					
12	Access	Plan transportation routes so that heavy vehicles do not use narrow local roads, except in the immediate vicinity of sites. Schedule transport and hauling activities during non-peak hours. Locate entry and exit points in areas where there is low potential for traffic congestion. Keep the site free from all unnecessary obstructions. Drive vehicles in a considerate manner. Coordinate with the Traffic Police Department for temporary road diversions and for provision of traffic aids if transportation	Traffic management plan	Contractor	PIU and DSC	During Delivery of construction materials	Contractor

Sl. No.	Environmental Issues	Mitigation Measures	Parameter /Indicator for Compliance	Responsible for Implementation	Responsible for Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		activities cannot be avoided during peak hours.					
13	Occupational health and safety	Comply with IFC EHS Guidelines on Occupational Health and Safety Develop comprehensive site-specific health and safety (H&S) plan. The overall objective is to provide guidance to contractors on establishing a management strategy and applying practices that are intended to eliminate, or reduce, fatalities, injuries and illnesses for workers performing activities and tasks associated with the project. Include in H&S plan measures such as: (i) type of hazards in the intake wells site; (ii) corresponding personal protective equipment for each identified hazard; (iii) H&S training for all site personnel; (iv) procedures	Health and safety (H&S) plan	Contractor	PMU and PMC PIU and DSC	During construction phase	Contractor

Sl. No.	Environmental Issues	Mitigation Measures	Parameter /Indicator for Compliance	Responsible for Implementation	Responsible for Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		to be followed for all site activities; and (v) documentation of work-related accidents. Provide medical insurance coverage for workers.					
14	Public consultations	Continue information dissemination, consultations, and involvement/participation of stakeholders during project implementation.	-Disclosure records - Consultations	PMU and PMC PIU and DSC Temple committee Contractor	PMU and PMC	- During updating of IEE Report - During preparation of site- and activity-specific plans as per EMP - Prior to start of construction - During construction	PMU Contractor to allocate funds to support
15	Silt Disposal Plan for excavation works in water reservoir to be rehabilitated	Estimate quantity of excavation. and accordingly prepare utilisation plan for the excavated earth. The probable utilisation are (1) use on the side slopes of reservoir (Pond) for stablisation and vegetation growth (ii) use for leveling of pathway to be		Contractor	PMU and PMC	During preparation of site- and activity-specific plans as per EMP During construction	Contractor

Sl. No.	Environmental Issues	Mitigation Measures	Parameter /Indicator for Compliance	Responsible for Implementation	Responsible for Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		developed on pond banks and balance on the access pathway to the temple for levelling at locations of shed construction. Balance quantity if any may be transported and utilised at works of internal road development to be taken up at Mukhem village.					

Table 11: Construction Phase Environmental Management Plan

Sl. No.	Environmental Issues	Mitigation Measures	Parameter /Indicator for Compliance	Responsible Implementation	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
1	Sanitation facilities at construction camps	The contractor shall provide sanitation facilities at camp site. These facilities will include dust bins in adequate numbers for solid waste collection, and separate toilets for male and females. These toilets facilities shall be maintained and septic tanks/soakpits shall be provided at the toilets. The dust bins shall be regularly emptied and waste from camp site shall be disposed off at designated locations.	Construction camp sanitation facilities	Contractor	DSC/PIU	Regularly during construction phase	Contractor
2	Circulation plan during construction in the tourist destination	Prior to commencement of site activities and mobilization on ground, the Contractor will prepare and get approved by the Engineer, circulation plan during construction for safe passage of tourists, and villagers at Mukhem village during construction stage, including development of alternative access routes for temple	Safe movement of devotees to the temple,	Contractor	DSC/PIU	During Tourist visiting season and Mela duration at Temple and during construction activities at Mukhem Temple	Contractor

Sl. No.	Environmental Issues	Mitigation Measures	Parameter /Indicator for Compliance	Responsible Implementation	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		access, traffic regulations at Mukhem village, signages, etc., during construction. The Contractor with support of the PIU will carry out dissemination of these information and circulation plan at Mela ground and at key access road to Mela ground, Mukhem village and temple site.					
3	Site clearance activities, including delineation of construction areas	Only ground cover/shrubs that impinge directly on the permanent works or necessary temporary works shall be removed with prior approval from the Environmental Expert of DSC All areas used for temporary construction operations will be subjected to complete restoration to their former condition with appropriate rehabilitation procedures. The photographic records shall be maintained for the temporary sites used for construction. These will help in proper restoration.	Pre construction records of sites and vegetation in area of construction	Contractor	DSC / PIU	Duration of site preparation at Mela Ground, Temple and Mukhem Village	DSC/PIU

Sl. No.	Environmental Issues	Mitigation Measures	Parameter /Indicator for Compliance	Responsible Implementation	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
4	Drinking water availability at Construction camp and construction sites	Sufficient supply of cold potable water to be provided and maintained. If the drinking water is obtained from an intermittent public water supply then storage tanks will be provided. For this contractor will submit his plan how availability of drinking water shall be assured. In case it is obtained from the natural spring then permission from local authorities shall be obtained.	Water supply source and availability of water , permission of local authority if obtained from local spring	Contractor	DSC/PIU	During Construction phase regularly	Contractor
5	Waste disposal	The pre-identified disposal location shall be part of Comprehensive Waste Disposal Plan. Solid Waste Management Plan to be prepared by the Contractor in consultation with local civic authorities. The Environmental Specialist of DSC shall approve these disposal sites after conducting a joint inspection on the site with the Contractor. Contractor shall ensure that waste shall not be	Waste Disposal sites, waste management plan	Contractor	DSC/PIU	Regularly during construction phase	Contractor

Sl. No.	Environmental Issues	Mitigation Measures	Parameter /Indicator for Compliance	Responsible Implementation	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		disposed off near natural streams in the surroundings of site and along the access path.					
6	Stockpiling of construction materials	Stockpiling of construction materials will be done in such a way that it does not impact and obstructs the drainage. The stockpiles will be covered to protect from dust and erosion.	Subproject stockpiling sites	Contractor	DSC / PIU	Regularly during construction phase	Contractor
7	Arrangement for Construction Water	(i) The Contractor shall provide a list of locations and type of sources from where water for construction shall be acquired. (ii)The contractor shall use ground/surface water as a source of water for the construction with the written consent from the concerned Department. (iii)To avoid disruption/ disturbance to other water users, the Contractor shall extract water from fixed locations and consult DSC before finalizing the locations.	Water availability at identified water source locations	Contractor	DSC/PIU	Regularly during construction phase	Contractor

Sl. No.	Environmental Issues	Mitigation Measures	Parameter /Indicator for Compliance	Responsible Implementation	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
8	Soil Erosion	Slope protection measures will be undertaken as per design to control soil erosion especially on access path.	Locations of slope protection along access path	Contractor	PIU/DSC		Contractor
9	Water Pollution from Construction Wastes	The Contractor shall take all precautionary measures to prevent entering of wastewater into any local stream during construction.	Subproject sites	Contractor	PIU/DSC	Regularly during construction phase	Contractor
10	Water Pollution from Fuel and Lubricants	The Contractor shall ensure that all construction vehicle parking locations, fuel/ lubricants storage sites, vehicle, machinery and equipment maintenance and refueling sites shall be located at least 500 m away from the natural streams. Contractor shall ensure that all vehicle/machinery and equipment operation, maintenance and refueling shall be carried out in such a manner that spillage of fuels and lubricants does not contaminate the ground. Waste water from vehicle parking, fuel storage	Vehicle parking, refueling sites, Oil interceptor functioning	Contractor	PIU/DSC	Regularly during construction phase	Contractor

Sl. No.	Environmental Issues	Mitigation Measures	Parameter /Indicator for Compliance	Responsible Implementation	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		areas, workshops, wash down and refueling areas shall be treated in an oil interceptor before discharging it on land or into surface water bodies or into other treatment system.					
11	Soil Pollution due to fuel and lubricants, construction wastes	The fuel storage and vehicle cleaning area will be stationed such that spillage of fuels and lubricants does not contaminate the ground. Soil and pollution parameters will be monitored as per monitoring plan.	Vehicle maintenance and parking area, soil quality monitoring results	Contractor	PIU/DSC	Regularly during construction phase	Contractor
12	Siltation of water bodies due to spillage of construction wastes	No disposal of construction wastes will be carried out into the surface water bodies. Extraneous construction wastes will be transported to the pre-identified disposal sites for safe disposal.	Water bodies specially natural springs near sub project site,	Contractor	PIU/DSC	Regularly during construction phase	Contractor
13	Generation of dust	The contractor will take every precaution to reduce the levels of dust at construction sites.	Subproject site, air quality monitoring	Contractor	PIU/DSC	Regularly during construction phase	Contractor

Sl. No.	Environmental Issues	Mitigation Measures	Parameter /Indicator for Compliance	Responsible Implementation	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		All filling works to be protected/ covered in a manner to minimize dust generation.	results				
14	Emission from Construction Vehicles, Equipment and Machinery	All vehicles, equipment and machinery used for construction shall conform to the relevant Bureau of India Standard (BIS) norms. The discharge standards promulgated under the Environment Protection Act, 1986 shall be strictly adhered to. The silent/quiet equipment available in the market shall be used in the sub Project. The Contractor shall maintain a record of PUC for all vehicles and machinery used during the contract period which shall be produced for verification whenever required.	PUC certificates of vehicles and machinery	Contractor	PIU/DSC	Regularly during construction phase	Contractor
15	Noise Pollution	The Contractor shall confirm that all Construction equipment used in construction shall strictly conform to the MoEF/CPCB noise standards and all Vehicles	Certificates of vehicles conforming noise standards, noise monitoring	Contractor	DSC/PIU	Regularly during construction phase	Contractor

Sl. No.	Environmental Issues	Mitigation Measures	Parameter /Indicator for Compliance	Responsible Implementation	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		and equipment used in construction shall be fitted with exhaust silencers. At the construction sites noisy construction work such as crushing, operation of DG sets, use of high noise generation equipment shall be stopped during the night time between 10.00 pm to 6.00 am. Noise limits for construction equipment used in this project will not exceed 75 dB (A).	results				
16	Impacts on flora and fauna	Conduct site induction and environmental awareness Limit activities within the work area. Replant trees in the area using minimum ratio of 3 new trees for every 1 tree cut.	Records, Barricades along excavation works, Number and species approved by UK Forest Department	Contractor	DSC/PIU	Regularly during construction phase	Contractor
17	Material Handling at Site	Workers employed on mixing cement, lime mortars, concrete, etc., will be provided with protective footwear and protective	Data on available personal protective	Contractor	DSC/PIU	Regularly during construction phase	Contractor

Sl. No.	Environmental Issues	Mitigation Measures	Parameter /Indicator for Compliance	Responsible Implementation	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		goggles. Workers, who are engaged in welding works, will be provided with welder's protective eye-shields. Workers engaged in stone breaking activities will be provided with protective goggles and clothing. The use of any toxic chemical will be strictly in accordance with the manufacturer's instructions. The Engineer will be given at least 6 working day's notice of the proposed use of any chemical. A register of all toxic chemicals delivered to the site will be kept and maintained up to date by the Contractor.					
18	Disposal of Construction Waste / Debris / Cut Material	The Contractor shall confirm that Safe disposal of the construction waste will be ensured in the pre-identified disposal locations. In no case, any construction waste will be disposed off around the project site	Disposal site	Contractor	PIU/DSC	Regularly during construction phase	Contractor

Sl. No.	Environmental Issues	Mitigation Measures	Parameter /Indicator for Compliance	Responsible Implementation	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		indiscriminately.					
19	Safety Measures During Construction	Adequate safety measures for workers during handling of materials at site will be taken up. The contractor has to comply with all regulations for the safety of workers. Precaution will be taken to prevent danger of the workers from accidental injuries, fire, etc. First aid treatment will be made available for all injuries likely to be sustained during the course of work. The Contractor will conform to all anti-malaria instructions given to him by the Engineer.	Records of availability of personal protective equipment, availability of first aid kits	Contractor	PIU/DSC	Regularly during construction phase	Contractor
20	Clearing of Construction of Camps and Restoration	Contractor to prepare site restoration plans for approval by the Engineer. The plan is to be implemented by the contractor prior to demobilization. On completion of the works, all temporary structures will be cleared away, all rubbish burnt,	Restoration plan, and records of pre construction of temporary sites	Contractor	PIU/DSC	End of construction phase	Contractor

Sl. No.	Environmental Issues	Mitigation Measures	Parameter /Indicator for Compliance	Responsible Implementation	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		excreta or other disposal pits or trenches filled in and effectively sealed off and the site left clean and tidy, at the Contractor's expense, to the entire satisfaction of the Engineer					
21	Silt Utilisation/ Disposal from Reservoir	The contractor will ensure utilisation of silt excavated for side slopes stabilization, in the development of pathway on banks of pond, internal road development at Mukhem village and at points of shed construction on access road from fair ground to Sem Mukhem Temple. For this a disposal or silt utilisation plan will be prepared indicating quantities to be used at different locations and precautionary measures to be taken up during handling and transport. For balance quantity if any contractor will identify a location for disposal and this location will be approved by the DSC. ,	Silt Disposal Plan and utilisation statement	Contractor	DSC	At time of Pond excavation	Contractor

Table 12: Operation Phase Environmental Management Plan

Sl. No.	Environmental Issues	Mitigation Measures	Parameter /Indicator for Compliance	Responsible Implementation	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
1	Environmental Conditions	The periodic monitoring of the ambient air quality, noise level, surface water quality, soil quality in the subproject area as suggested in the monitoring plan through an approved monitoring agency.	Monitoring results and relevant standards	Tourism department through Pollution Monitoring Agency	PIU	As per monitoring Plan	Tourism dept./ PMU
2	Uncontrolled tourism flow	Regulation as per the Carrying Capacity Assessment.	Number of Tourist visiting	Tourism department	Temple committee and District Administration	Every year during tourist season	Tourism Department /PMU
3	Unhygienic condition due to poor maintenance of sanitation facilities and irregular solid waste collection	Tourism department will carry out maintenance of the toilets, and carry out the regular collection and disposal of wastes to a designated waste treatment site. The solid waste will be segregated and organic waste will be disposed off in compost pits and inorganic waste at the site identified by the contractor.	Maintenance schedule of facilities and infrastructure created	Temple committee	Tourism department	Every year during tourist season	Tourism Department /PMU

Sl. No.	Environmental Issues	Mitigation Measures	Parameter /Indicator for Compliance	Responsible Implementation	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
4	Demarcation and Flagging	Proper demarcation & flagging of the area towards valley side. Necessary 'Do and Don'ts' will be display on boards on the access path.	Flags and boards of 'Do and Don'ts'	Temple Committee	Tourism department	Every year during tourist season	Tourism Department /PMU
5	Natural Disasters	Necessary procedures to be followed by the visitors during the natural disasters shall be written at prominent locations.	Warnings of disasters by Meteorological Department	District Administration	Uttarakhand Government	Every year during tourist season and monsoon season	Government of Uttarakhand
6	Removal and disposal of silt from pond	Remove the deposited from the bottom of pond in every summer season so that pond volume is maintained during the project life cycle. Dispose of this silt at low lying areas or use in maintenance of access path from fair ground to Temple	Silt quantity and utilisation plan	District Administration	Uttarakhand Government	Every year during tourist season and monsoon season	Government of Uttarakhand

B. Environmental Monitoring Plan

106. Environmental monitoring will be done during construction in three levels; namely monitoring development of project performance indicators done by the DSC Environmental Specialist, monitoring implementation of mitigation measures done by the Contractor; and overall regulatory monitoring of the environmental issues done by the PMU Environmental Specialist. To ensure the effective implementation of mitigation measures and Environmental Management Plan during construction and operation phase of the sub-project, it is essential that an effective Environmental Monitoring Plan be followed as given in **Table 13**. The proposed monitoring of all relevant environmental parameters, with a description of the sampling stations, frequency of monitoring, applicable standards and responsible agencies are presented.

Table 13: Monitoring Plan for Sem Mukhem Subproject (Preconstruction and Construction Phase)

Sl. No.	Field (Environmental Attribute)	Phase	Parameters to be Monitored	Locations	Frequency	Responsibility	Cost (INR/US $)
1	Air Quality	During pre construction phase	CO, NOx, PM_{10}, $PM_{2.5}$, and SO_2	Mela Ground, access path, Mukhem village and Temple site	Once in pre Construction phase to establish baseline	Contractor, DSC/ Tourism department through approved Monitoring Agency	As per envt. budget
		During Construction Phase			Once in every three months (except monsoon season) during construction and operation stages		
		Operation Phase			Once in season except monsoon season for initial 2 years		
2	Water quality	During pre construction phase	TDS, TSS, pH, Hardness, BOD, Faecal Coli form	Mela Ground, Mukhem village, access path and Temple site	Once in pre Construction phase to establish baseline	Contractor, DSC/ Tourism department through approved Monitoring Agency	As per envt. budget
		During Construction Phase			Once in every three months (except monsoon season) during construction and operation stages		
		Operation Phase			Once in season except monsoon season for initial 2 years		
3	Noise Levels	During pre construction phase	Noise quality as per National Ambient Noise Standards on db (A) scale	Mela Ground, access path, Mukhem village and Temple site	Once in pre Construction phase to establish baseline	Contractor, DSC/ Tourism department through approved Monitoring Agency	As per envt. budget
		During Construction Phase			Once in every three months (except monsoon season) during construction and operation stages		

Sl. No.	Field (Environmental Attribute)	Phase	Parameters to be Monitored	Locations	Frequency	Responsibility	Cost (INR/US $)
		Operation Phase			Once in season except monsoon season for initial 2 years		

Summary of Site- and Activity-Specific Plans as per EMP

Table- 14 summarizes site- and activity-specific plans to be prepared as per EMP tables.

Table 14: Site- and Activity-Specific Plans/Programs as per EMP

To be Prepared During	Specific Plan/Program	Purpose	Responsible for Preparation	Responsible for Implementation
Detailed Design Phase	Environmental monitoring program as per detailed design	Indicate sampling locations, methodology and parameters	PMU/PIU and PMC/DSC	Contractor
Detailed Design Phase	Erosion control and re-vegetation plan	Mitigate impacts due to erosion	Contractor	Contractor
Detailed Design Phase	List and maps showing utilities to be shifted	Utilities shifting	DSC during preliminary stage Contractor as per detailed design	Contractor
Detailed Design Phase	Contingency plan	Mitigate impacts due to interruption of services during utilities shifting	Contractor	Contractor
Detailed Design Phase	Chance find protocol	Address archaeological or historical finds	PMC	Contractor
Detailed Design Phase	List of pre-approved sites	Location/s for work camps, areas for stockpile, storage and disposal	PIU and DSC	Contractor
Detailed Design Phase	Waste/Spoil management plan	Mitigate impacts due to waste generation	Contractor	Contractor
Detailed Design Phase	Traffic management plan	Mitigate impacts due to transport of materials and pipe laying works	Contractor	Contractor
Detailed Design Phase	H&S plan	Occupational health and safety	Contractor	Contractor
Detailed Design Phase	Spill prevention and containment plan	Mitigate impacts of accidental spills of oil, lubricants, fuels, concrete, and other hazardous materials	Contractor	Contractor

107. Traffic Management Plan is attached in **Annexure 7.**

C. Capacity Building

108. In addition to the primary objective of promoting and providing facilities for tourism at Sem Mukhem Nagraj temple and Mukhem village, the current project has the scope for raising awareness about environmental conservation amongst tourists and local communities. Local knowledge about the topography and familiarity with the area may be further enhanced through training for skill up gradation of local communities enabling them to actively participate in the activities of sub project. The project proposes to involve interested local people who will be gainfully employed in various capacities during Mela and season of visitors. This would go a long way in protecting the richly endowed but fragile natural environment of the area and act as the harbinger for sustainable and balanced socio-economic development and environmental regeneration in the area.

109. The Environmental Specialist of the DSC and PMC will provide the basic training required for environmental awareness. Specific modules customized for the available skill set will be devised after assessing the capabilities of the members of the Training Program and the requirements of the project. The training would cover basic principles of environmental assessment and management; mitigation plans and programs, implementation techniques, monitoring methods and tools. The proposed training program along with the frequency of sessions is presented in **Table 15**below.

Table 15: Training Modules for Environmental Management

Program	Description	Participants	Duration	Training Conducting Agency
A. Pre-Construction Stage				
Sensitization Workshop	Introduction to Environment: Basic Concept of environment Environmental Regulations and Statutory requirements as per Government of India and ADB	Tourism / Forest Department Officials, Environmental Specialist (ES) of the DSC/PMU/PIU	½ Working Day	Environmental Specialist of the PMC
Session 1	Introduction to Environment: Basic Concept of environment Safeguards Regulations and Statutory requirements as per Govt. of India and ADB Guidelines on Environmental considerations in planning, design and implementing projects	PMU/PIU (including the ES) and Engineering staff of the implementing agencies	¼ Working Day	Safeguards Specialist of the PMC
Session 2	Environmental components impacted in construction and operation stages Activities causing pollution during construction and operation stages Environmental Management, Environmental Provisions,	PMU/PIU (including the ES) and Engineering staff of Tourism dept	¼ Working Day	Safeguards Specialist of the PMC

Program	Description	Participants	Duration	Training Conducting Agency
	Implementation Arrangements, Methodology of Assessment Good engineering practices to be integrated into contract documents			
B. Construction Stage				
Session 3	Role during Construction- Roles and Responsibilities of officials / contractors / consultants towards protection of environment Implementation. Arrangements Monitoring mechanisms	Engineers and staff of line departments of the Government of Uttarakhand, and PMU/PIU (including the ES)	¼ Working Day	Safeguards Specialist of the DSC
Session 4	Monitoring and Reporting System	Engineers and staff of implementing agencies , and PMU/PIU (including the ES)	¼ Working Day	Safeguards Specialist of the DSC
C. Operation Stage				
Session 5	Dealing with tourists, Interpretational skills, micro-planning, management of self-help groups, procedures for safe evacuation of tourists during natural disasters, etc.	Youth in the villages in and around sub project site at SemMukhem, and other NGOs in the district	2 days	Tourism department

Notes: PMU = Project Management Unit; PIU = Project Implementation Unit; PMC = Project Management Consultant; DSC = Design and Supervision Consultant; ES = Environment Specialist; NGO – nongovernment organization

D. Environmental Budget

110. Most of the mitigation measures require the contractors to adopt good site practices, which should be part of their normal procedures already, so there are unlikely to be major costs associated with compliance. Only those items not covered under budgets for construction are included in the IEE budget. The IEE costs include mitigation, monitoring and capacity building costs. The summary budget for the environmental management costs for the subproject is presented in **Table 16.**

Table 16: Environmental Management and Monitoring costs (INR)

Monitoring Component	Rate	Amount (INR)	Source of Fund
Construction Phase			
Air Quality -3 locations(Mela Ground, Mukhem village, along access path), Thrice a year; 21samples)	7500	157,000	Contractor
Water Quality (2locations (Mela Ground, Mukhem village/Temple site), Thrice a year; 14 samples)	7500	105,500	Contractor
Noise Quality {3locations(Mela Ground, Mukhem village, along access path), Thrice a year; 21 samples}	2500	52,500	Contractor
Training for Capacity Building of stakeholders	Covered in the consultancy cost of DSC/PMC		
Total Construction Phase Monitoring Cost		**315,000**	**Contractor**
O & M Phase			
Air Quality (2 locations(Mela Ground, Mukhem village/along access path), Twice a year; pre and during mela8samples) for initial 2 years	7500	60,000	PMU
Water Quality (2locations (Mela Ground, Mukhem village), Twice a year; pre and during mela8samples) for initial 2 years	7500	60,000	PMU
Noise Quality (3locations(Mela Ground,along access path and at temple site), Twice a year; pre and during mela12samples) for initial 2 years	2500	40,000	PMU
Capacity Building Expenses (5 Sessions)	90000	450000	PMU
Total O&M Phase Monitoring Cost		**600,000.00**	**PMU**
Total Cost		**915,000.00**	
Contingencies @ 5 %		**45750.00**	
Total Budgeted Cost		**960,750.00**	

E. Environmental Monitoring and Reporting

111. The PMU will monitor and measure the progress of EMP implementation. PIU will undertake site inspections and document review to verify compliance with the EMP and progress toward the final outcome. DSC will submit monthly monitoring and implementation reports to PIU, who will take follow-up actions, if necessary. PIU will submit quarterly monitoring and implementation reports to PMU. The PMU will submit semi-annual monitoring reports to ADB. Monitoring reports will be posted in a location accessible to the public.

112. ADB will review project performance against the EA's commitments as agreed in the legal documents. The extent of ADB's monitoring and supervision activities will be commensurate with the Project's risks and impacts. Monitoring and supervising of social and environmental safeguards will be integrated into the project performance management system. ADB will monitor projects on an ongoing basis until a project completion report is issued.

VI. PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

A. Process For Consultations Followed

113. This subproject does not involve any elements, which could have an adverse impact on the community. There is no deprivation of any sort for the residents or displacement of any groups. Particularly, with regard to environmental impacts the subproject can be characterized as innocuous.

114. In view of this, the need for holding a public hearing is not perceived at this stage. However in compliance with the ADB's guidelines, focused public consultations were undertaken during the site visits in the sub project areas. Residents of the area were informed about the proposed sub-project and their views were obtained. During the preparation of this IEE, consultations have been held with the officials of Uttarakhand Tourism Department, Garhwal Mandal Vikas Nigam (GMVN), Forest Department, Police Department, and other Stakeholders and agencies in Tehri Garhwal district. Minutes of meeting with Forest Dept. and UTDB officials **Annexure 6.**

115. The Team Leader DSC and Environmental Expert of DSC also had consultations with the Tehri District Tourism Development Officer on November 08, 2013 for his comments and suggestions for the successful implementation of this project. He suggested that solid waste and waste water should be taken care. The project designs also have adequate provisions for drinking water supply.

116. The process of consultations was taken up as an integral part of the sub-project in accordance with ADB Guidelines and following objectives:

- To educate the general public, specially potentially impacted or benefited communities / individuals and stakeholders about the proposed sub project activities;
- To familiarize the people with technical and environmental issues of the sub project for better understanding;
- To solicit the opinion of the communities / individuals on environmental issues and assess the significance of impacts due to the proposed development;
- To foster co-operation among officers of PIU, the community and the stakeholders to achieve a cordial working relationship for smooth implementation of the sub project;
- To identify the environmental issues relating to the proposed activity.

117. During the consultations local residents and other stakeholders of subproject area opined that there are limited tourism infrastructures in the region and the tourist inflow is minimal. The subproject implementation will help improvement in infrastructures and publicity about the region. They demanded fast implementation of the subproject. The dates of consultations and stakeholders consulted have been summarised below in **Table-17**. The views, comments and suggestions of stakeholders and their incorporation in project design are

presented in **Table-17.** The records of consultations (list of participants with signatures) and consultation photographs are given in **Annexure 8.**

Table-17: Dates and Stakeholders Consulted

S. No.	Stakeholders Consulted	Dates of Consultations
1	Tehri District Tourism Development Officer	November 08, 2013
2	Nagraj Temple Committee, Sem Mukhem Villagers	December 17, 2013
3	Sem Mukhem Villagers, and Temple Committee	August 21, 2014
4	Meeting with Forest Dept. and UTDB officials*	September 29, 2014

*Changes in the scope in the DPR were made pursuant to this meeting, where components undertaken by the Tourism Dept. (UTDB) in Sem Mukhem temple and access path under state funding were eliminated from the scope of this sub project and major works were focused in the Fairground area and Mukhem village.

118. It is clear that most of the suggestions of stakeholders have been taken care in the project design.

Table 18: Views, Comments and Suggestions of Stakeholders and Addressed in Project Design

S.N	Place	Date	with whom	Issues Discussed	Suggestions and Views	Consideration in Project Design
1	Tehri	08-11-2013	Tehri District Tourism Development Officer	1-Sem Mukhem site development potential. 2- Type of facilities to be created at Sem Mukhem site. 3- Environmental and social issues.	1- Suggested drinking water facilities at Mela and Temple site 2- Suggested for adequate sanitation facilities at Mela Ground, along access path and Temple site 3- Requested for details requirements to be discussed with Temple committee 4- Requested for safety issues of visitors along access path	1-Drinking water facilities planned and temple and Mela ground 2- Toilet blocks with Septic tank and soak pits planned at temple and Mela ground 3- Temple committee consulted accordingly sanitation facilities planned at temple and a new rest shed also planned at Mela ground
2	Nagraj Temple and Mukhem Village	VII. 17/12/2013,22/01/2013 and 21/08/2014	With local villagers, members of temple committee and Priest of temple.	1-Sub project details, 2-Project benefits, 3- Current difficulties faced 4- Major problems on access path and accessibility	1-The local people and members of temple committee were happy to note that such facilities are proposed in and around the areas of temple. 2-The villagers were happy to note that the project will provide some infrastructure facilities in the surroundings 3- Temple committee indicated that at present there is no toilet facilities for	1- Drinking water and sanitation facilities planned at temple. 2- Shelters in the form of canopy for rain planned along access path and benches also planned. 3- Electricity supply infrastructure will be augmented -

S.N	Place	Date	with whom	Issues Discussed	Suggestions and Views	Consideration in Project Design
					ladies at temple site. There is problem of drinking water and electricity also. 4- The access path is unsafe as there are no sheds and visitors during sudden rain face difficulties 5- Some benches on path should also be provided so that elderly people can rest while tracking. 6- Committee requested for quick implementation of project	

A. Future Consultation And Information Disclosure

119. To ensure continued public and stakeholder participation in project life cycle regular consultation is proposed. A grievance reddressal cell will be set up within the PIU to register grievances of the people regarding technical, social and environmental aspects. This participatory process will ensure that all views of the people are adequately reviewed and suitably incorporated in the design and implementation process. Further, to ensure an effective disclosure of the project proposals to the stakeholders and the communities in the vicinity of the subproject location, an extensive project awareness campaigns will be carried out.

Information disclosure

120. Electronic version of the IEE will be placed in the official website of the Tourism Department and the website of ADB after approval of the documents by Government and ADB. On demand, any person seeking information can obtain a hard copy of the complete IEE document by paying cost of photocopy from the office of the PMU/PIU, on a written request.

121. The PMU will issue notification on the disclosure mechanism in local newspapers, ahead of the initiation of implementation of the project, providing information on the project, as well as the start dates, etc. The notice will be issued by the PMU in local newspapers one month ahead of the implementation works. This will create awareness of the project implementation among the public.

B. Grievance Redress Mechanism

122. The affected person/aggrieved party can give their grievance verbally or in written to the local grievances committee. Grievances of affected person will first be brought to the attention of the implementing NGO who can resolve the issue at site level. If the matter is not solved within 7 days period by the NGO or PIU, it will be brought to the Grievance Redress Committee constituted for the purpose in PIU. This GRC shall discuss the issue in its monthly meeting and resolve the issues within one month of time after receiving the grievance. If the matter is not resolved by GRC at PIU level within stipulated time, it shall be referred to GRC at PMU level by Executive Engineer of PIU.

123. GRC at PMU shall discuss the issue and try to resolve it and inform the PIU accordingly. If the matter is not resolved by the GRC at PMU level within one month of time, the aggrieved person/party can bring the matter to The Court of Law. The PIU shall keep records of all grievances received including contact details of complainant, date of receiving the complaint, nature of grievance, agreed corrective actions and the date these were affected and final outcome. The grievance redress process is shown below.

Composition and functions of GRC

124. Local Grievance Committee (LGC) – In this LGC has worked with NGO, SHG, Line Agency, representative of Gram Panchayat ,Special invitee.

125. Grievance Redress Committee (GRC) at PIU- In each PIU there shall be one GRC, which will include Project Manager (PIU), District Tourist Officer of Department of Tourism of Govt. Of

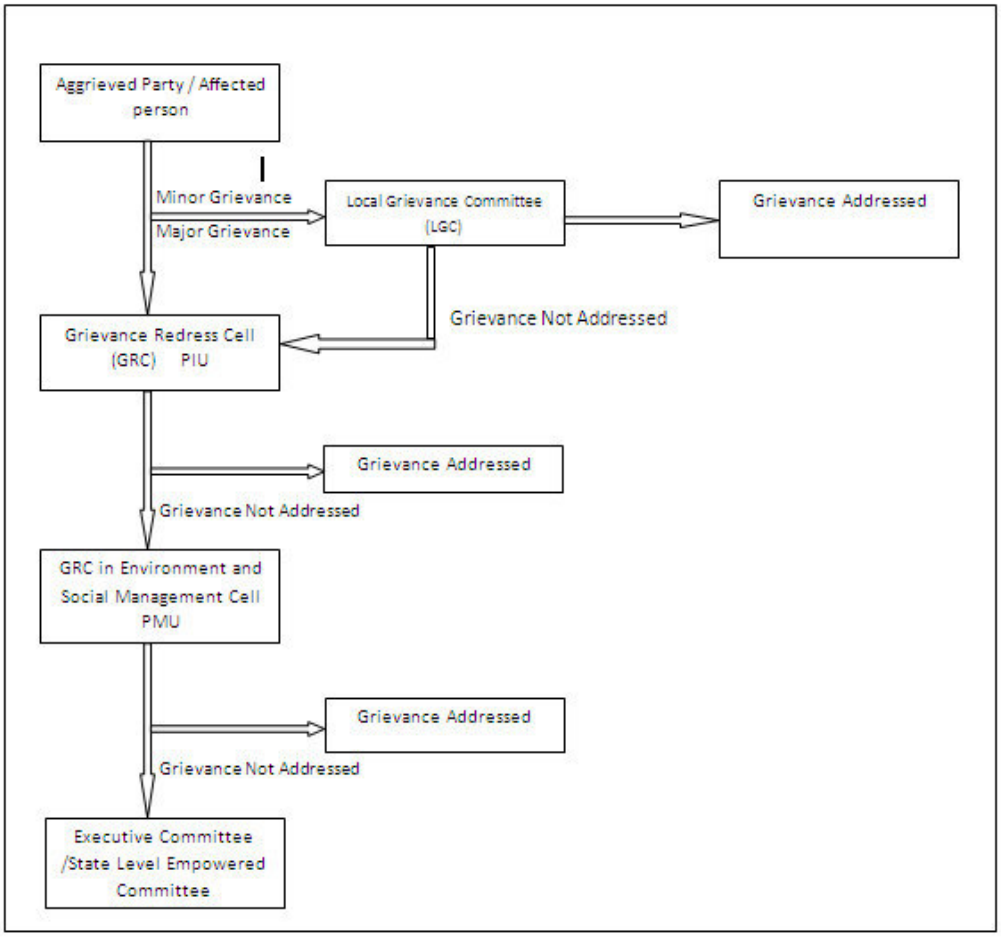
Uttarakhand, Community Development Officer of PIU, nominated representative of District Magistrate and nominated representative committee shall be headed by Project Manager (PIU). The committee will meet at least once in every month. Agenda of meeting shall be circulated to all the members and affected persons/aggrieved party along with venue, date and time; informed in written at least 7 days in advance of meeting. The matters shall remain with GRC at PIU level for one month and if grievance is not resolved within this time period, the matter shall be referred to GRC at PMU.

126. GRC within Environmental and Social Management Cell (ESMC) at PMU-There shall be one GRC in PMU. The matters not resolved by the GRC at PIU level within one month shall come under GRC at PMU. GRC at PMU will include Community Development Expert of PMU, Safeguard Specialist of PMU and Additional Project Director (APD) of PMU. The Committee shall be headed by APD of PMU. This committee shall look the matters, which are referred to and not resolved by GRC at PIU level. If the matter is not resolved by the GRC at PMU level within one month of time, the aggrieved person/party can bring the matter to The Executive Committee/ State Level Empowered Committee (SLEC).

127. *Approach to GRC.* Affected person/aggrieved party can approach to GRC for redress of his/their grievances through any of the following modes-

- Web based: A separate corner will be developed at the program website so that public /community/ affected person can register their complaint in the online column.
- Telecom based: A toll free no. Will be issued by the PMU/ PIU so that general public can register their complaint through telephone / mobile phone to the PIU/PMU office.
- Through implementing NGO: The local representative of the NGO appointed for the purpose will collect the problems & issues of the community or affected person and pass on the same to PIU / PMU.

GRIEVANCE REDRESS MECHANISM (IDIPT-Uttarakhand)



Note:

1. LGC - NGO, SHG, Line Agency, Representative of Gram Panchayat, Special invitee
2. GRC – PM, CDO, Engineer, DFO, DTO, SDM
3. GRC in Environment and Social Management Cell (ESMC) – PMU (APD, SS, CDS, FS), PMC (EE, CDE)

VII. FINDINGS AND RECOMMENDATIONS

128. The proposed subproject components do not involve any interventions in and around the natural and cultural heritage destinations and have less significant (direct/indirect) environmental impacts. It is expected that the proposed subproject will enhance economic growth and provision of livelihood opportunities for local communities through tourism infrastructure development with a focus on preservation and development of natural and cultural heritage and incidental services. The proposed Project under the Facility is provided to support the State of Uttarakhand, to enhance and develop the tourism sector as a key driver for economic growth.

129. This IEE has identified minor likely impacts on water, air and noise during construction and operation period and has defined mitigation measures. Those mitigation measures will be implemented and monitored during the sub-project execution. Further, the provision of environmental infrastructure, including solar light provisions in the temple, canopy over access path, Dharamshala in the Fair ground, infrastructure provisions in Mukhem village will make better environmental conditions and improve the aesthetic beauty of the site.

130. The specific management measures laid down in the IEE will effectively address any adverse environmental impacts due to the subproject. The effective implementation of the measures proposed will be ensured through the building up of capacity towards environmental management within the PMU supplemented with the technical expertise of a Safeguards Specialist as part of the PMC and DSC Consultants. Further, the environmental monitoring plans provide adequate opportunities towards course correction to address any residual impacts during construction or operation stages.

VIII. CONCLUSIONS

131. On the basis of the IEE It is expected that the proposed project components have only minor, negative, localized, temporary and less significant environmental impacts. These impacts can be easily mitigated through adequate mitigation measures and regular monitoring during the Design, Construction and Post Construction Phase of the project. It is recommended that UTDB should have monitoring responsibility in environmental issues of all program components during operational phase to ensure the environmental sustenance.

132. In conclusion, the sub-project will have overall beneficial impacts after completion in terms of tourism development. Negative impacts on water, air quality and noise levels during civil works & operation phase, which will be appropriately monitored and adequately mitigated. This report has not identified any comprehensive, broad, diverse or irreversible adverse impacts caused by the sub project. It is recommended that project can be implemented with proper mitigation measures to protect the environment.

133. Based on the findings of the IEE, the classification of the subproject as Category “B” is confirmed, and no further special study or detailed EIA needs to be undertaken to comply with ADB SPS (2009).

Annexure-1

Rapid Environmental Assessment (REA) Checklist

Instructions:

(i) The project team completes this checklist to support the environmental classification of a project. It is to be attached to the environmental categorization form and submitted to the Environment and Safeguards Division (RSES) for endorsement by Director, RSES and for approval by the Chief Compliance Officer.

(ii) This checklist focuses on environmental issues and concerns. To ensure that social dimensions are adequately considered, refer also to ADB's (a) checklists on involuntary resettlement and Indigenous Peoples; (b) poverty reduction handbook; (c) staff guide to consultation and participation; and (d) gender checklists.

(iii) Answer the questions assuming the "without mitigation" case. The purpose is to identify potential impacts. Use the "remarks" section to discuss any anticipated mitigation measures.

Country/Project Title: INDIA/IDIPT

Sector Division: **SAUD**

Screening Questions	Yes	No	Remarks
A. Project Siting Is the project area adjacent to or within any of the following areas:			
Underground utilities		No	There are no underground utilities in the surroundings of Nagraj temple, access path, Mukhem village and Mela Ground at SemMukhem

Screening Questions	Yes	No	Remarks
Cultural heritage site		No	The temple, access path, and Mela Ground, Mukhem village and surroundings are not adjacent to or close to cultural heritage sites
Protected Area		No	The Nagraj Temple, access path, Mukhem Village and Mela ground are not adjacent to Notified Protected Areas such as Wild Life Park, National Parks, but access path to temple passes through notified Reserved Forest. The path is devoid of vegetation and tree plantation because it is in use since a very long time. In the village along the roads there are no trees due to hilly region.
Wetland		No	There is no wet land adjacent to or close to the Nagraj Temple, access path, Mukhem village and Mela ground
Mangrove		No	Not Applicable
Estuarine		No	Not applicable

Screening Questions	Yes	No	Remarks
Buffer zone of protected area		No	The Temple, access path, Mukhem village and Melaground are not in buffer zone of any Notified protected area such as Wild Life park, National Park, Bird sanctuary. However, Temple, access path to temple passes through Reserved forest land devoid of dense tree, plantation and vegetation.
Special area for protecting biodiversity		No	The Nagraj Temple, access path ,Mela ground and Mukhem village are not close to or adjacent to area protecting for biodiversity.
Bay		No	Not Applicable
B. Potential Environmental Impacts Will the Project cause.			
Encroachment on historical/cultural areas?		No	Project will not cause encroachment on any historical or cultural areas. The temple itself is old and historical.
Encroachment on precious ecology (e.g. sensitive or protected areas)?		No	The temple, Mela ground, access road and Mukhem village are not located in any national park /wild life park or bird sanctuary. However, access path to temple passes through Reserved forest land devoid of dense tree, plantation and vegetation.

Screening Questions	Yes	No	Remarks
Impacts on the sustainability of associated sanitation and solid waste disposal systems?	Yes		Marginal impact during Mela days and tourist season (April to June) which will be addressed as part of project component. Proper solid waste collection, handling and disposal has been addressed as part of DPR preparation. Sanitation facilities at temple and Mela ground have also been planned.
Dislocation or involuntary resettlement of people?		No	No involuntary resettlement of people required as temple, access path and Mela ground are away from habitation and in open area. The infrastructure planned in Mukhem village does not require any involuntary resettlement.
Disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?		No	There will be no adverse impact on poor, women, children or vulnerable group. There will be positive impact as locals will have business opportunity to sell local items during Mela days and during tourist visit season (April to June).
Accident risks associated with increased vehicular traffic, leading to loss of life?		No	Traffic will be managed during the Mela. Access to temple is through access path. Hence vehicular traffic and related accidents is not an issue in the project.

Screening Questions	Yes	No	Remarks
Increased noise and air pollution resulting from increased traffic volume?		No	The vehicles will stop much before the temple and Mela ground and people visiting the temple have to trek. Hence no increased air or noise pollution is anticipated.
Occupational and community health and safety risks?		No	Sanitation facilities have been planned at Mela ground and at Nagraj temple. This will avoid community health problem. .
Risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during project construction and operation?		No	During construction necessary protection measures will be taken up to avoid occupational safety and health risks to the construction workers. During the operation phase planned sanitation facilities and safety measures along the pathway will avoid health and safety risks to the pilgrims.
Generation of dust in sensitive areas during construction?		No	Dust and Noise during construction will be minimized using appropriate technology and construction will be allowed only during day. There will be regular water spray at construction sites and at location of construction material storages (such as sand
Requirements for disposal of fill, excavation, and/or spoil materials?		No	

Screening Questions	Yes	No	Remarks
Noise and vibration due to blasting and other civil works?		No	and earth). No blasting is required Excess earth will be disposed off at designated land fill area. There will be monitoring of noise levels at construction sites. The construction workers will be provided ear plugs.
Temporary silt runoff due to construction		No	Large excavations are not expected during the construction phase. The construction sites and construction camp will be provided with proper drainage arrangements. If necessary temporary sedimentation tanks will be provided for settlement of silt.
Long-term impacts on groundwater flows as result of needing to drain the project site prior to construction?		No	There will be no impacts on ground water flows as all features are planned on a rocky and hill area. There is no requirement for draining of area.
Long-term impacts on local hydrology as a result of building hard surfaces in or near the building?		No	No impacts on local hydrology are anticipated as all project related constructions will be taken up on a hard surface area. No big size buildings are planned as part of project components construction.

Screening Questions	Yes	No	Remarks
Large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?		No	No large influx of population during the construction is anticipated as project works to be taken up are small in nature. Contractors will employ local work force available. During the operation phase there will be large influx of population during Mela days (every alternate year) and during the tourist season (April to June) every year. For these durations adequate arrangements will be made by the district administration for water supply and sanitation along pathway, Mela ground and temple. These arrangements are being planned as part of the current project.
Social conflicts if workers from other regions or countries are hired?		No	Social conflicts are not anticipated as works to be executed are of small nature and contractor will employ locally available work force. No work force from other countries is required.
Risks to community safety caused by fire, electric shock, or failure of the buildings safety features during operation?		No	The risks will be minimised through proper earthing during the construction. There will be only lighting at location ofMela ground, temple and pathway. Solar panel are planned to be used. This will avoid electric short circuiting.

Screening Questions	Yes	No	Remarks
Risks to community health and safety caused by management and disposal of waste?		No	The project plans provisions for collection, handling and disposal of solid waste at location of Mela ground, pathway and temple. This waste will be disposed off as per provisions of Municipal Waste (Management and Handling) Rules 2000.
Community safety risks due to both accidental and natural hazards, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning?		No	The project related structures to be constructed are small in nature. Accidental hazards will be handled as part of management of Mela by the district administration. The natural hazards such as earthquake or heavy rainfall, floods, etc. will be handled as part of Disaster management Plan preparedness.

Checklist for Preliminary Climate Risk Screening

Country/Project Title: IITIDP: Uttarakhand, Development of tourism infrastructure for at Nagraj Temple Sem Mukhem

Sector: Tourism

Division/Department: SAUW (South Asia Urban Development and Water Division)

Screening Questions		Score	Remarks[3]
Location and Design of project	Is siting and/or routing of the project (or its components) likely to be affected by climate conditions including extreme weather related events such as floods, droughts, storms, landslides?	0	No as improvements are planned at already existing sites in use of community
	Would the project design (e.g. the clearance for bridges) need to consider any hydro-meteorological parameters (e.g., sea-level, peak river flow, reliable water level, peak wind speed etc)?	0	No major structures planned
Materials and Maintenance	Would weather, current and likely future climate conditions (e.g. prevailing humidity level, temperature contrast between hot summer days and cold winter days, exposure to wind and humidity hydro-meteorological parameters likely affect the selection of project inputs over the life of project outputs (e.g. construction material)?	0	No climatic conditions are not likely to affect selection of project inputs
	Would weather, current and likely future climate conditions, and related extreme events likely affect the maintenance (scheduling and cost) of project output(s) ?	1	The extreme weather conditions will affect maintenance scheduling
Performance of project outputs	Would weather/climate conditions and related extreme events likely affect the performance (e.g. annual power production) of project output(s) (e.g. hydro-power generation facilities) throughout their design life time?	0	Not applicable

Options for answers and corresponding score are provided below :

[3] If possible, provide details on the sensitivity of project components to climate conditions, such as how climate parameters are considered in design standards for infrastructure components, how changes in key climate parameters and sea level might affect the siting/routing of project, the selection of construction material and/or scheduling, performances and/or the maintenance cost/scheduling of project outputs.

Response	Score
Not Likely	**0**
Likely	**1**
Very Likely	**2**

Responses when added that provide a score of 0 will be considered low risk project. If adding all responses will result to a score of 1-4 and that no score of 2 was given to any single response, the project will be assigned a medium risk category. A total score of 5 or more (which include providing a score of 1 in all responses) or a 2 in any single response, will be categorized as high risk project.

Result of Initial Screening (Low, Medium, High): Medium

Other Comments: **None**

Annexure-2

Environmental Selection Criteria (as per EARF table 6)

Component	Criteria	Remarks
Overall selection criteria	1. Will be fully consistent with management plans or master plans for the area	No specific Management plan for the area. But, project site (Nagraj Temple) is regarded as fifth Dham and there is Mela alternate year, therefore has tremendous potential for eco-tourism. Keeping religious sentiments in mind the sub project has been selected for provision of infrastructure facilities for the convenience of visitors and to promote tourism in the region.
	2. Will avoid resettlement/relocation. If unavoidable the extent of resettlement will be minimized.	No such impact anticipated (Due diligence report on social impacts prepared as part of DPR)
	3. Will not result in destruction of or encroachment onto protected areas, including National Parks. Sanctuaries, Conservation Reserves and Community Reserves, environmentally sensitive zones and Biosphere reserves.	No environmentally sensitive zones in the vicinity, therefore, no destruction or encroachment onto the notified protected areas such as wild life parks, National parks, or Bird sanctuary. The access path to temple from Mela ground (about 2 km) passes through reserved forest. The path is devoid of dense tree plantation and vegetation. Mukhem village is also out of forest area.
	4. Will be in line with the Conservation Plan/management plan for the conservation and management of the Protected areas	*NA*
	5. Will promote tourism related activities in protected areas, in the zones earmarked for tourism development, the scale and extent of which shall be in line with the provisions in the Management Plan	The sub project will not promote tourism related activities in the notified protected areas such as wild life parks, National parks, or Bird sanctuary. The activity area of sub project will be Mela ground, access path and Mukhem village and all these are not part of any notified protected area (National Park, Wild life Sanctuary or Bird sanctuary)
	6. Will not result in destruction of or encroachment onto archaeological monuments/heritage sites and will be in line with the master plan proposals for the	The Sem Mukhem Nagraj Temple, access path, Mukhem village and Mela ground are not close to any Archaeological site

	conservation and preservation of the site/monuments	notified by State Archaeology Department or Archaeological Survey of India (ASI).
	7. Will not involve major civil works within the prohibited and regulated areas, as defined in the ASI refutations, to minimize any potential impacts on safety to the structures/ monuments	
	8. Will reflect inputs from public consultation and disclosure for site selection	Meaningful public consultations have been done from planning phase and inputs have been considered in the project design
	9. Will not introduce any elements or components that are invasive upon the sanctity and significance of the cultural heritage site, including large scale commercial activities or creation of new land uses with potential to trigger induced development and land use changes around the sites	The sub project will not introduce any element or components that are invasive upon sanctity of cultural heritage site.
	10. Will introduce landscaping and other tourist infrastructure in line with the environmental quality of the tourist destinations, such as landscaping in harmony with the natural vegetation and diversity and not encourage introduction of species that are invasive	No new/alien species shall be introduced. Landscaping plan along the access path includes only native species.
	11. Will not result in development of physical infrastructure/ tourism amenities that would impair the environmental conditions due to lack of management capacities or high O&M costs	Provisions for O&M has been made in the EMP and responsibility entrusted to the executing department to ensure environment management sustainability. The temple committee will take care of O&M after the construction phase in close association with UTDB.
	12. Will reflect inputs from public consultation and disclosure for site selection	Inputs from major stakeholders like District Authorities, Nagraj Temple Committee, state forest department, and local population residing close to subproject site have been incorporated in the designs and planning.
Conservation measures and excavation measures-in and around Cultural properties and protected Monuments/ Structures.	13 Will observe the principle of not altering the historic condition and shall involve treatment of damage caused by natural processes and human actions and prevention of further deterioration, using both technical and management measures.	The construction works will not alter any portion of Nagraj Temple, and old temple at Mukhem village. Both temples are ancient temples. At temple site in the Mukhem village only plumbing works in the temple and caretaker cottage and existing Toilet Block are planned while in the Nagraja temple, only illumination works/ solar powered

		lighting system are included.
	14 Will promote in situ conservation and only in the face of uncontrollable natural threats and relocation is the sole means of saving elements of a site may they be moved in their historic condition.	No protected Monument/ cultural heritage site in vicinity, therefore, this is not applicable
	15 Will ensure that intervention be minimal. Every intervention proposed shall have clear objectives and use tried and proven methods and materials.	The sub project works are not close to any protected monuments/structures. Designs are in sync with the architectural character of the surroundings.
	16 Will ensure that physical remains are conserved in their historic condition without loss of evidence. Respect for the significance of the physical emails must guide any restoration. Technical interventions should not compromise subsequent treatment of the original fabric. The results of intervention should be unobtrusive when compared to the original fabric or to previous treatments, but still should be distinguishable	Not applicable because the Nagraj Temple Sem Mukhem, access path, Mukhem village and Mela Ground are not close to any ASI Protected monument/ remains site.
	17. Will ensure that the adaptive reuse of any particular building of monuments/structures does not intrude or induce impacts on other areas of the monument	Not applicable
Component	Criteria	
	18. Will ensure preservation of traditional technology and craftsmanship. New materials and techniques may only be used after they have been tried and proven, and should in no way cause damage to site.	Project designs are based on guidelines conforming to Uttarakhand architecture. The construction and operation of Tourism facilities at SemMukhem area including Mukhem village will not have any impact traditional technology and craftsmanship. On the contrary will promote sale of the articles made by the local people.
	19. Will ensure that the setting of a heritage site be conserved. Natural and cultural landscapes that form part of a sites setting contribute to its significance and should be integrated with its conservation	Not Applicable
	20. Will ensure that during archaeological excavation care be taken to conserve the physical remains. A practical plan for the conservation of a site-both during and after excavation-should be submitted for all site programmed for excavation	Not Applicable
	21. Will ensure that treatment of the cultural heritage site and its environs is a comprehensive measure to prevent damage	Not Applicable

	from natural processes and human actions, to reveal the historic condition of a site, and to allow its rational use. Service building should be as far as possible from the principal area of the site. Landscaping should aim to restore the site to its historic state and should not adversely affect the site: contemporary gardening and landscape concepts and designs should not be introduced.	
Conservation and habitat protection measures- in and around the natural heritage assets and protected areas.	22. Will observe the principle of not adversely impacting the habitat quality of the protected area and shall involve treatment of damage caused by natural processes and human actions and prevention of further deterioration, using both technical and management measures.	Not Applicable Not near protected area and no significant biodiversity noticed in and around the sites of subproject.
	23. Will ensure that intervention, in form of additional civil works within the protected areas, be minimal. Every intervention proposed shall have clear objectives and use tried and proven methods and materials.	Not applicable The sub project sites are not close to any protected areas
	24. Will not open up new areas of tourist movement, including opening up of new routes for boating in wetlands etc, especially in areas identified as core or zone identified for conservation in the management plan for the protected area.	No new areas shall be opened and the inadequacies in the existing system are addressed through project intervention which shall result in improved environment management of the site. The Fair ground and Mukhem village are not in core or buffer zone of any notified protected area such as wild life parks, National parks, or Bird sanctuary. However, the existing access path to temple from Mela ground passes through reserved forest. The path is devoid of dense tree plantation and vegetation. The works proposed in the trek are only canopy installation over the pathway, (pathway works are undertaken by the Tourism Dept. from state funding.
	25. Will ensure that the areas of significant habitat diversity habitats are conserved in their natural condition.	Not Applicable
	26. The results of intervention should be unobtrusive when compared to the original fabric or to previous treatments, but still should be distinguishable	Not Applicable.

	27. New materials and techniques may only be used after they have been tried and proven, and should in no way cause damage to the site.	No new materials and techniques are proposed to be used.
	28. Service buildings should be as far as possible from the principal area of the site.	Not Applicable
Water supply	29. Will be taken up from existing potable treatment systems nearby, unless no such systems are available in the vicinity.	Water requirement of the project is around 10 KLD during Mela time and peak tourist season. This will be met from natural streams and springs in the vicinity. In addition to this a rain water harvesting structure is also planned at Mela Ground. The water collected will be used for the needs. There will be necessary testing for the water quality and if needed local treatment for water supply shall be provided.
	30. Will not result in excessive abstraction of ground water or result in excessive groundwater pumping impairing ground water quality	Not envisaged as water requirements are to be met from surface water and rain water harvesting sources.
	31. Will ensure adequate protection from pollution of intake points	No new intake point or water supply infrastructure is to be created as part of this sub project.
	32. Will not result in unsatisfactory raw water supply (e.g. supply with excessive pathogens or mineral constituents)	The sub project activities shall strengthen the existing water supply system. During construction phase safe drinking water availability shall be ensured by the Contractor as per EMP provisions.
	33. Will ensure proper and adequate treatment and disposal facilitates for increased volumes of wastewater generation	Not much waste water generation envisaged. Septic tanks/sock pits of sufficient capacity are proposed at toilet blocks planned at Mela Ground.
Sanitation and toilet facilities	34. Will ensure that the site selection for the septic tank/ or any/ or any other treatment method proposed is not close to water intake or water usage points, or areas prone to flooding or water logging	The locations of Septic tank at sub project site will be finalised at lower level. The design of the septic tanks has been done to ensure that there is a difference of at least 1.5m between the bottom bed of the septic tank and the maximum ground water level, to avoid any contamination of ground water. The sub project site being on hill has a very low ground water potential.
	35. Will ensure that sanitation improvements proposed do not result in pollution of groundwater.	The design of the septic tanks has been done to ensure that there is a difference of at least

		1.5m between the bottom bed of the septic tank and the maximum ground water level, to avoid any contamination of ground water. Further, Environmental Management and Monitoring Plan (EMMP) have been prepared and these will ensure no impact on ground water quality.
	36. Will not interfere with other utilities and block access to buildings, cause nuisance to neighbouring areas due to noise, smell, and influx of insects, rodents, etc.	Will be ensured and since it is a tourism project, no such nuisance envisaged during the construction and operation phases of the sub project.
	37. Will not impair downstream water quality due to inadequate sewage treatment or release of untreated sewage,	Not envisaged as septic tank/sock pits of adequate capacity have been designed. During construction phase also adequate sanitation facilities with septic tank/soak pits will be provided at construction camp.
	38. Will not cause overflows and flooding of surroundings, especially around the heritage sites with raw sewage.	Proposed septic tanks/ sock pits are of adequate capacity, overflow and flooding not anticipated. The septic tank will be emptied every quarter through a vacuum sludge truck. The responsibility of septic tank cleaning lies with the Temple Committee. If the sub project is to be managed through Temple Committee then PIU will ensure that the septic tanks are cleaned every quarter. For the septic tank cleaning arrangement will be made with the local municipal authorities at Tehri/Uttarkashi. The sludge from the vacuum truck will be disposed off at the location identified by the PIU in consultation with local municipal authorities.
Solid waste management	39. Will ensure that the disposal of solid wastes will not result in degradation of aesthetics in the vicinity of the proposed tourist areas	There is provision of waste segregation at source through separate Bio-degradable and Non- Biodegradable Waste bins and suitable disposal arrangements. The organic waste will be used for compost production. The inorganic waste will be disposed off in consultations with local civic authorities.

	40. Will ensure buffer of greenbelt and earth works around the site to avoid nuisance to neighboring areas due to foul odor and influx of insects, rodents, etc.	During construction phase suitable buffer will be provided as per EMMP. Project also has provisions for landscaping with native species.
	41. Will ensure that for composting pits for protected areas, the locations are devoid of any wildlife population, especially wild boars, porcupines	Not Applicable
	42. Will ensure any on site waste management done in compliance with government regulations and in coordination with municipal authorities.	It will be ensured
Roads	43. Will ensure minimal clearing of vegetation	Site is devoid of any vegetation hence clearing of vegetation not envisaged. The roads circulation plan planned to be integrated with the local road network. In the Mukhem village also there are no trees along the village roads.
	44. Will ensure on dislocation and involuntary resettlement of people living in right of way.	No dislocation and involuntary resettlement envisaged.
	45. Will not lead to alteration of surface water hydrology of streams/waterways that may result in increased sediment load due to erosion form construction sites.	Erosion from construction sites will be controlled as per EMMP provisions. No road construction is planned as part of project.
Drainage and flood protection	46. Will ensure improvements are identified to cater to the watershed or drainage zones and not individual drains.	No alterations to the existing drainage patterns are expected due to project interventions
	47. Will ensure adequacy of outfall of proposed drainage works, to avoid any impacts associated with flooding in downstream areas, or areas not covered	Not Applicable
	48. Will ensure effective drainage of the monument area, and provide for improved structural stability of the monuments	Not Applicable
Development of parking and other tourist infrastructure amenities	49. Will ensure no deterioration of surrounding environmental conditions due to uncontrolled growth around these facilities, increased traffic and increased waste generation resulting from improved infrastructure facilities	Any new growth or expansion will be within the regulations of Uttrakhand Tourism Development Board and local Civic authorities/ Temple Committee. The parking facilities for the sub project have been planned within the Land of MelaGround. Hence there will be no impact on existing traffic on account of operation of subproject. The sub project will have a well-planned solid waste collection and disposal system.
	50. Will not create structures or buildings that are physically or visually intrusive, in terms of	Not envisaged. Project shall add to the aesthetic beauty of the site

	size, scale, location that shall have an adverse impact on the aesthetic quality or the site, through careful designs in terms of built form, construction materials etc.	and enhance the visitor experience.

Annexure 3

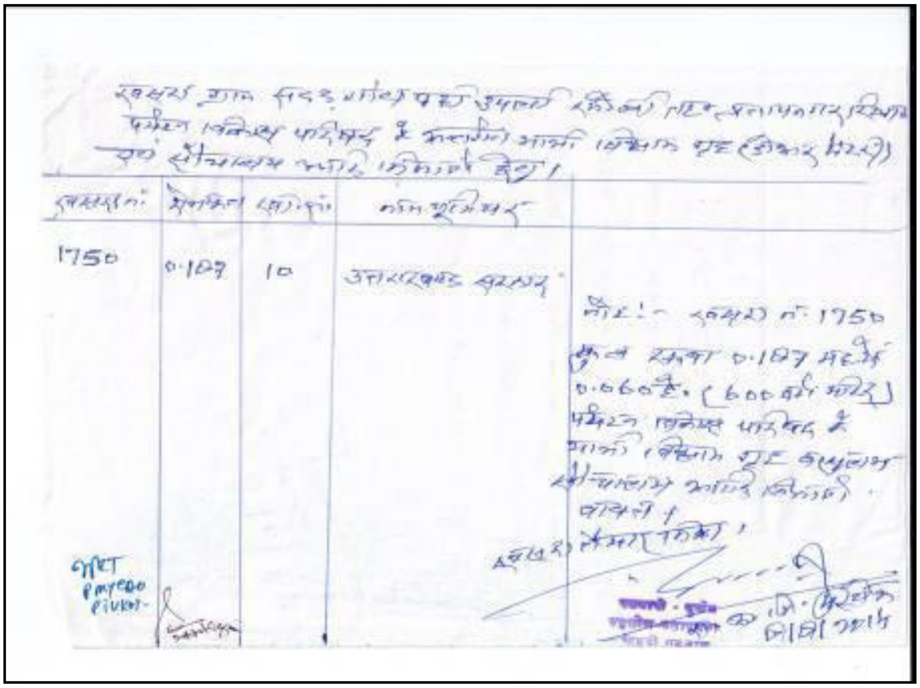
Site Photographs

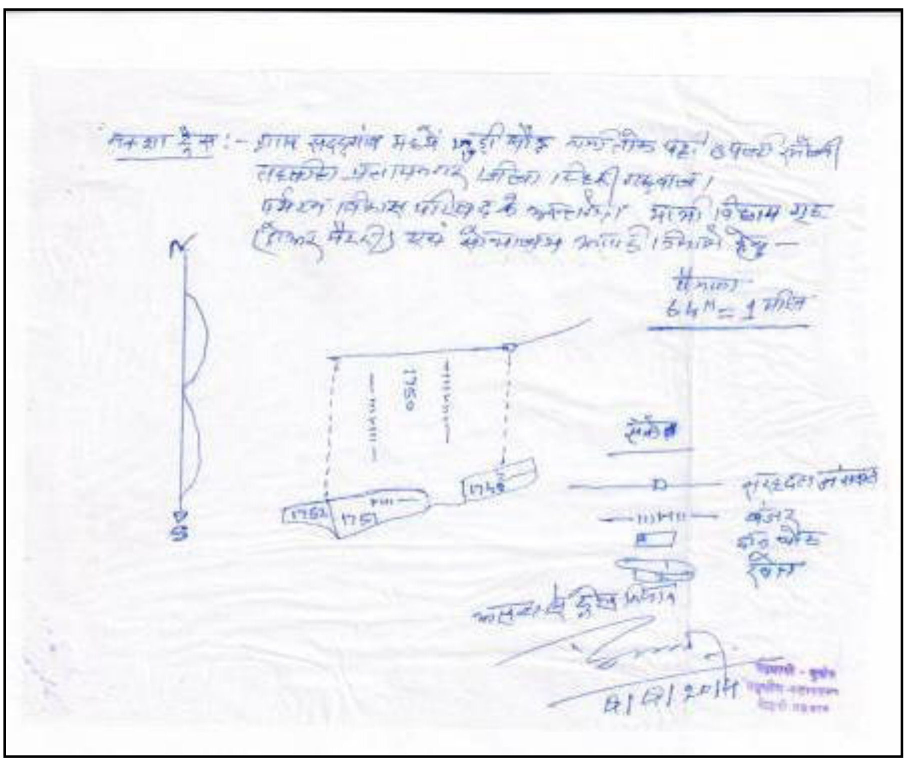
<table>
<tr><td>  </td><td>  </td></tr>
<tr><td>Existing Fair Ground</td><td>Existing Dharamasala(Night Resting Place)</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>Existing pathway</td><td>Existing Water facility</td></tr>
<tr><td colspan="2">  </td></tr>
<tr><td colspan="2">Sem Mukhem Temple</td></tr>
</table>

Existing Lake or Water Body Near Fair Ground

Annexure 4

Land Records Certified by the Revenue Department Officials Showing GOUK Ownership





Annexure 5

NOC from the Temple Committee

श्री सेम नागराजाय नमः

कार्यालय प्रबन्धक/सचिव

श्री सेम नागराजा मन्दिर समिति सेम-मुखेम मुकाम व पत्रालय मुखेम, क्षेत्र प्रतापनगर, टिहरी गढ़वाल, (उत्तराखण्ड)

पत्रांक 01   "अनापत्ति प्रमाण-पत्र"   दिनांक 9-8-2014

हम नागराजा मन्दिर समिति सेम मुखेम पो० मुखेम ब्लाक प्रतापनगर तहसील प्रतापनगर [illegible] नई टिहरी जिला टिहरी गढ़वाल उत्तराखण्ड के समस्त सदस्य घोषणा करते है कि इन्फ्रास्ट्रक्चर डवलपमेन्ट इनवेस्टमेन्ट प्रोग्राम फोर टूरिज्म (उत्तराखण्ड पर्यटन विकास परिषद) के द्वारा प्रस्तावित कार्यों, मन्दिर परिसर सेम, मेला मैदान, मेला मैदान से सेम मन्दिर तक पैदल मार्ग, एवं मुखेम गाँव के अन्तर्गत नागराजा मन्दिर मुखेम एवं अन्य कार्यों के क्रियान्वयन में कोई आपत्ति नहीं है। अतः हम उक्त प्रस्तावित कार्यों के लिये अपना पूर्ण सहयोग के साथ सहमत है।

9/8/2014
प्रबन्धक/सचिव
श्री नागराजा मन्दिर
सेम-मुखेम टि०ग०

1. [illegible]
2. [illegible] मो० 9568802693
3. [illegible]
4. [illegible]

भगवान सेम नागराजा की कृपा आप पर सदैव बनी रहे

No objection from the Temple Committee for proposed works in the Sem Mukhem Nagraja temple and Committee shall provide full cooperation.

॥ श्री सेम नागराजा विजयते ॥

नरेन्द्र चमोली
प्रधान
ग्राम–पंचायत, सदड़गांव (सेम)
महामंत्री प्रधान संगठन प्रतापनगर

निवास/कार्यालयः-
ग्राम पंचायत सदड़ गांव
सेम मुखेम पट्टी-उपली रमाली
पो0-मुखेम, विकास खण्ड-प्रतापनगर
जिला-टिहरी गढ़वाल (उत्तराखण्ड)
मो0-9557199821

दिनांक 12/10/14 पत्रांक 11

सेवा में,
श्रीमान अपर परियोजना निदेशक
उत्तराखण्ड पर्यटन बोर्ड दे.दून
उत्तराखण्ड शासन

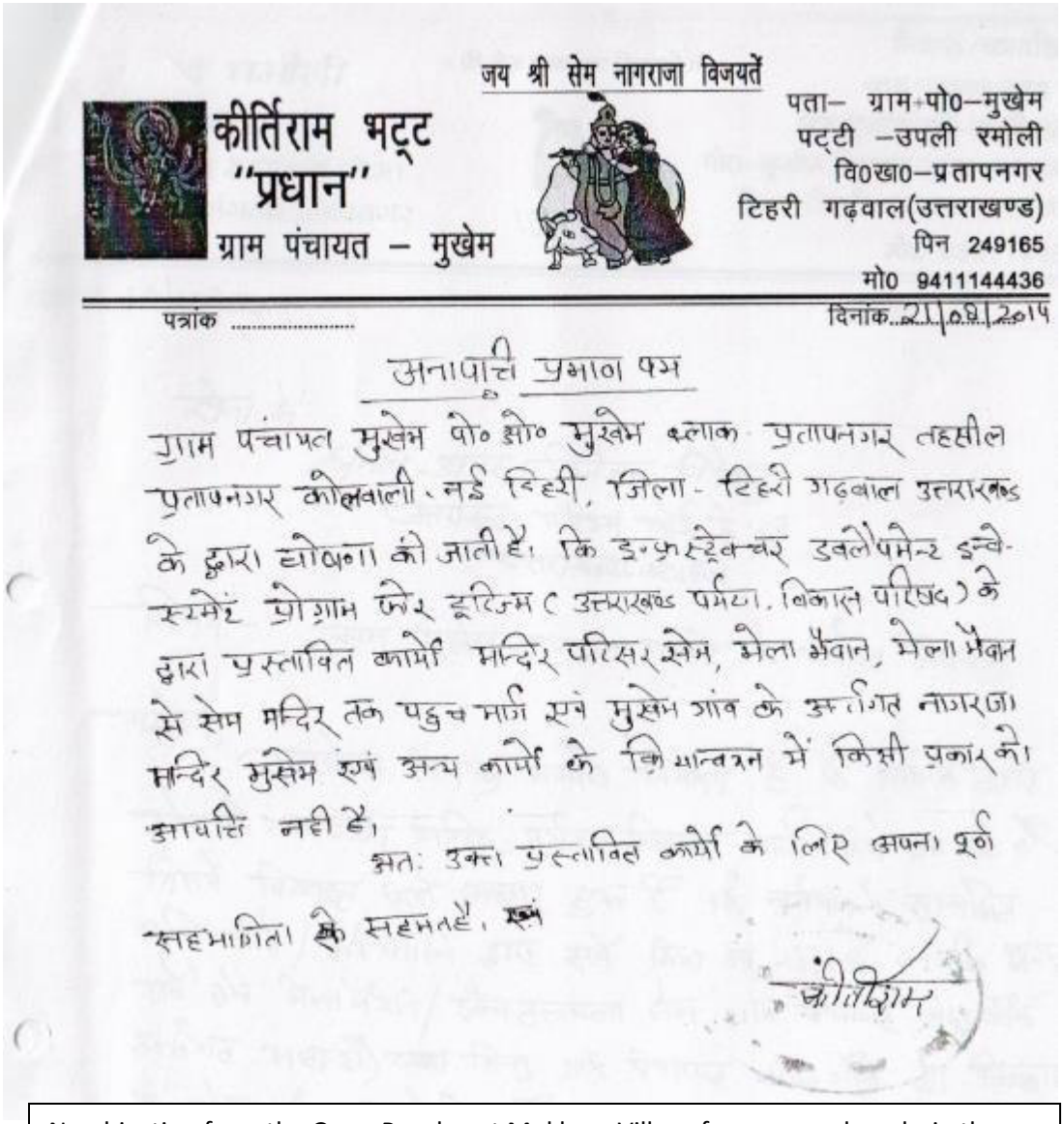
विषय – सेम मुखेम नागराजा मन्दिर में पर्यटन विषयक

महोदय,
उपरोक्त विषयक आपसे निवेदन है कि आपके द्वारा सेम के नागराजा मन्दिर पर्यटन विकास कार्य किये जा रहे हैं जिसमें विकास कार्य प्रारम्भ हुआ है कि वर्तमान में सम्बन्धित अधिकारियों / कर्मचारियों द्वारा सर्वे किया जा रहा है जबकि उक्त सर्वे क्षेत्र मेला मैदान / झील तलवला सेम ग्राम पंचायत सदड़गाँव अन्तर्गत आता है, किन्तु ग्राम पंचायत सदड़गाँव को विश्वास में लेना भी न्यायोचित है।

अतः उक्त कार्यों के कुशल निष्पादन हेतु ग्राम पंचायत सदड़गाँव के अन्तर्गत भी मन्दिर एवं गाँव को भी जोड़ने हेतु आवश्यक कार्यवाही करने की कृपा की जाय। ग्राम पंचायत सदड़गाँव सदैव आपको सहयोग देने हेतु तत्पर।

[illegible signature and stamp]

No objection from the Gram Panchayat Sem Village for proposed works in the Fair ground and pond. Gram Panchayat assures to provide full cooperation



जय श्री सेम नागराजा विजयतें

कीर्तिराम भट्ट
"प्रधान"
ग्राम पंचायत – मुखेम

पता– ग्राम+पो0–मुखेम
पट्टी –उपली रमोली
वि0ख0–प्रतापनगर
टिहरी गढ़वाल(उत्तराखण्ड)
पिन 249165
मो0 9411144436

पत्रांक .....

दिनांक 21/09/2015

अनापत्ति प्रमाण पत्र

ग्राम पंचायत मुखेम पो० झो० मुखेम ब्लाक प्रतापनगर तहसील प्रतापनगर कोतवाली - नई टिहरी, जिला - टिहरी गढ़वाल उत्तराखंड के द्वारा घोषणा की जाती है। कि इन्फ्रास्ट्रेक्चर डवलोपमेन्ट इन्वेस्टमेंट प्रोग्राम फोर टूरिज्म (उत्तराखंड पर्यटन विकास परिषद) के द्वारा प्रस्तावित कार्यो मन्दिर परिसर सेम, मेला मैदान, मेला मैदान से सेम मन्दिर तक पहुच मार्ग एवं मुखेम गांव के अन्तर्गत नागराजा मन्दिर मुखेम एवं अन्य कार्यो के क्रियान्वयन में किसी प्रकार की आपत्ति नही है।

अतः उक्त प्रस्तावित कार्यो के लिए अपना पूर्ण सहभागिता के सहमत है, एवं

कीर्तिराम

No objection from the Gram Panchayat Mukhem Village for proposed works in the Mukhem village, fair ground, access path

Annexure 6

Minutes of Meeting on Tourism Infrastructure in Sem Mukhem sub project

Date: 29th Sep 2014

Venue: UTDB Conference Hall

Chaired by: Program Director, IDIPT

Attended by: Representatives of PMU, Concerned Forest Division, DSC and UTDB **(list enclosed)**

Background: Meeting was called to discuss the components to be taken under IDIPT in the proposed "Tourism Infrastructure in Sem Mukhem" sub project, since works in the same area are also proposed to be undertaken by UTDB. As the sub project location falls in Reserve Forest, hence forest clearance related issues were also to be discussed.

Minutes of Meeting:

The outcome & decisions of the meeting are as follows:

1. A presentation on proposed components in the "Tourism Infrastructure in Sem Mukhem" sub project under IDIPT was made by the Team Leader DSC Kotdwar, wherein the components were shown as below:
   - Proposed Infrastructure at Temple Premises
   - Rehabilitation of Pathway to Temple
   - Proposed Infrastructure at Fair Ground including Development of existing lake
   - Proposed Infrastructure at Mukhem Village

2. It was presented by the DTDO, Tehri that following works are proposed to be executed by UTDB in and around Sem Mukhem Temple:
   - Dharamshala with Canteen
   - Toilet block (2 nos.), Bathroom (3 nos. W.C.) and Washbasin (4 nos.) in the passage
   - Benches in tracking path – 40 nos.
   - Yatri shed in tracking path – 18 nos.
   - Development of tracking path – 1850 mtr.

3. After detailed discussion on the sub project components the DSC was directed to change the scope as below to avoid any duplicity of efforts

   Following was suggested to be avoided from IDIPT
   - Development of tracking path
   - Provision of benches
   - Repair and renovation of Dharamshala
   - Infrastructure works in the temple premises
   - Construction of Dharmsala – Dormitory type with rest shelter at fair ground.

Following was suggested and agreed to be undertaken

- Canopy on the entire pathway to Nagraj Temple
- Provision of signages from Kodar to the temple
- Water supply
- Development of Existing Lake
- Provision of solar powered Lighting System
- Development of Murals
- Development of solid waste management system
- Works in the Mukhem village as proposed by the DSC in consultation with DTDO

Program Director directed the DSC to finalize the same in due consultation with the DTDO and the DTDO was also instructed to cooperate with the DSC and provide necessary guidance and support to the DSC in view of the timelines of the project.

The meeting ended with thanks to the chair.

Ref.:173/2-10-ADB/IDIPT/151/2013-14 **Date: 29.09.2014**

(R.K. Joshi)
Additional Program Director

CC to the following for information and necessary action:-

1. DFO Tehri Division, Uttarakhand Forest Department with request to provide NOC for the said works and necessary guidance
2. DTDO Tehri to provide coordination and guidance
3. Project Manager, PIU, Kotdwar for information and necessary action
4. Team Leader, PMC for information
5. Team Leader, DSC Kotdwar for information and necessary action
6. All Experts PMU, for information

(R.K. Joshi)
Additional Program Director

उत्तराखण्ड पर्यटन विकास परिषद्

पं दीन दयाल उपाध्याय पर्यटन भवन,
निकट–ओ0एन0जी0सी0 हेलीपैड, नींबूवाला गढ़ीकैन्ट, देहरादून
फोन नं0–0135–2559898 फैक्स–2559988।

संख्या– 137 **/2––6–889/2014–15** **दिनांक** 21 **अप्रैल, 2015**

सेवा में,

अपर कार्यक्रम निदेशक,
आई0डी0आई0पी0टी0 (ए0डी0बी0),
गढ़ी–कैन्ट देहरादून।

विषयः– सेममुखेम का पर्यटन विकास के सम्बन्ध में।

महोदय,

उपरोक्त विषयक अपने पत्र संख्या 203/2–10/ADB/ दिनांक 22–01–2015 का अवलोकन करने का कष्ट करें। इस सम्बन्ध में अवगत कराना है कि पर्यटन विभाग द्वारा वित्तीय वर्ष 2014–15

Transcript

To

Addl. Program Director
IDIPT (ADB)
Garhi Cantt Dehradun
Sub: Tourism Development of Sem Mukhem reg

Sir,

In reference to your letter no. 203/2-10/ADB/dt. 22-01-15, it is informed that financial sanction for Rs. 50.00 lacs has been accorded for tourism development works in Sem Mukhem temple against the administrative approval of Rs. 107.39 lacs in the financial year 2014-15. The Executing Agency for the above is Uttarakhand Peyjal Sansadhan Vikas Evam Nirman Nigam (Govt. of UK undertaking), New Tehri. Under the above scheme Dharamshala, Canteen, Toilet and Track route upgradation and sheds on the track route will be undertaken. Above works are related to improvement of already constructed and existing works. The Dept. is maintaining already existing facilities on the available land.

The District Tourism Development Officer has apprised on phone that tender formalities have been completed by Uttarakhand Peyjal Nigam and works will start by next week. This is for info and necessary action. Sincerely

आई0डी0आई0पी0टी0, ए0डी0बी0
गढ़ी कैन्ट देहरादून
पत्र प्राप्ति संख्या 7344
दिनांक 21/4/2015

(पूनम चंद)
उप निदेशक पर्यटन।

Annexure 7

Sample Traffic Management Plan (TMP)

A. Principles

1. One of the prime objectives of this TMP is to ensure the safety of all the road users along the work zone, and to address the following issues:

(i) the safety of pedestrians, bicyclists, and motorists travelling through the construction zone;
(ii) protection of work crews from hazards associated with moving traffic;
(iii) mitigation of the adverse impact on road capacity and delays to the road users;
(iv) maintenance of access to adjoining properties
(v) Avoid hazards in addressing issues that may delay the project.

B. Operating Policies for TMP

2. The following principles will help promote safe and efficient movement for all road users (motorists, bicyclists, and pedestrians, including persons with disabilities) through and around work zones while reasonably protecting workers and equipment.

(i) Make traffic safety and temporary traffic control an integral and high-priority element of every project from planning through design, construction, and maintenance.
(ii) Inhibit traffic movement as little as possible.
(iii) Provide clear and positive guidance to drivers, bicyclists, and pedestrians as they approach and travel through the temporary traffic control zone.
(iv) Inspect traffic control elements routinely, both day and night, and make modifications when necessary.
(v) Pay increased attention to roadside safety in the vicinity of temporary traffic control zones.
(vi) Train all persons that select, place, and maintain temporary traffic control devices.
(vii) Keep the public well informed.
(viii) Make appropriate accommodation for abutting property owners, residents, businesses, emergency services, railroads, commercial vehicles, and transit operations.

C. Analyze the impact due to street closure, if required

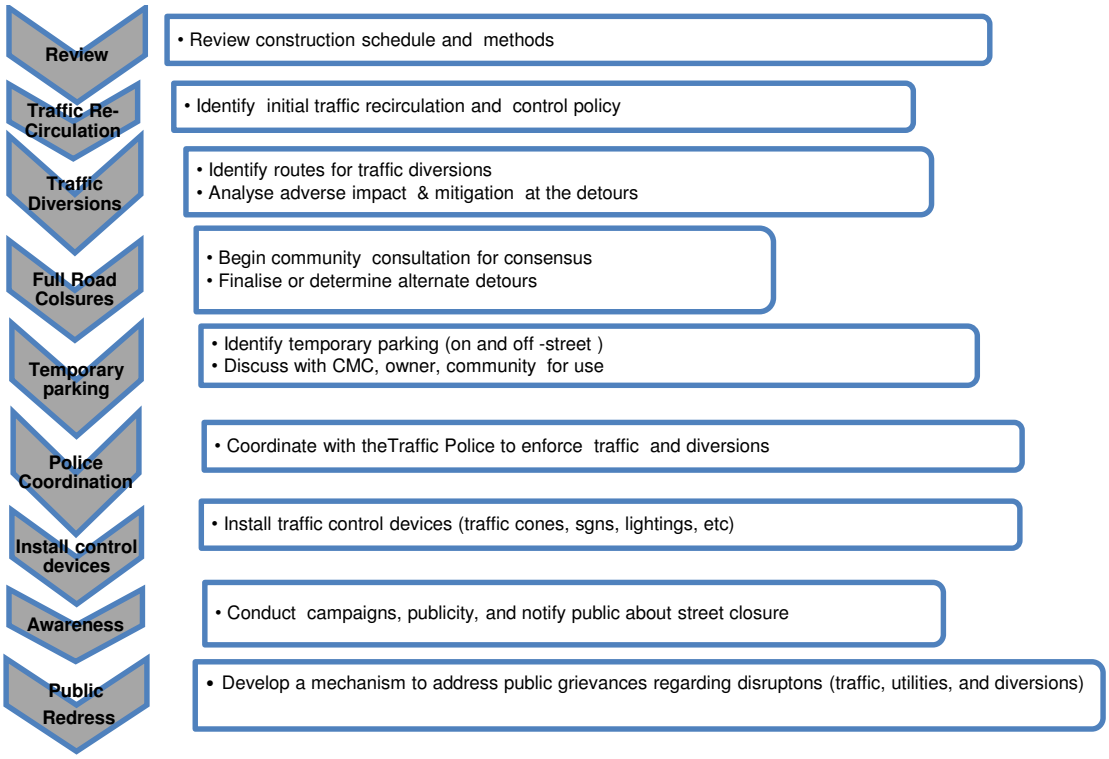
3. Apart from the capacity analysis, a final decision to close a particular street and divert the traffic should involve the following steps:

(i) approval from the PIU, local administration to use the local streets as detours;
(ii) consultation with businesses, community members, traffic police, PWD, etc, regarding the mitigation measures necessary at the detours where the road is diverted during the construction;
(iii) determining of the maximum number of days allowed for road closure, and incorporation of such provisions into the contract documents;
(iv) determining if additional traffic control or temporary improvements are needed along the detour route;
(v) considering how access will be provided to the worksite;
(vi) contacting emergency service, school officials, and transit authorities to determine if there are impacts to their operations; and

(vii) developing a notification program to the public so that the closure is not a surprise. As part of this program, the public should be advised of alternate routes that commuters can take or will have to take as result of the traffic diversion.

4. If full road-closure of certain streets within the area is not feasible due to inadequate capacity of the Detour Street or public opposition, the full closure can be restricted to weekends with the construction commencing on Saturday night and ending on Monday morning prior to the morning peak period.

Figure: Policy Steps for the TMP



D. Public awareness and notifications

5. As per discussions in the previous sections, there will be travel delays during the constructions, as is the case with most construction projects, albeit on a reduced scale if utilities and traffic management are properly coordinated. There are additional grounds for travel delays in the area, as most of the streets lack sufficient capacity to accommodate additional traffic from diverted traffic as a result of street closures to accommodate the works.

6. The awareness campaign and the prior notification for the public will be a continuous activity which the project will carry out to compensate for the above delays and minimize public claims as result of these problems. These activities will take place sufficiently in advance of the time when the roadblocks or traffic diversions take place at the particular streets. The reason for this is to allow sufficient time for the public and residents to understand the changes to their

travel plans. The project will notify the public about the roadblocks and traffic diversion through public notices, ward level meetings and city level meeting with the elected representatives.

7. The PIU will also conduct an awareness campaign to educate the public about the following issues:

(i) traffic control devices in place at the work zones (signs, traffic cones, barriers, etc.);
(ii) defensive driving behaviour along the work zones; and
(iii) reduced speeds enforced at the work zones and traffic diversions.

8. It may be necessary to conduct the awareness programs/campaigns on road safety during construction.

9. The campaign will cater to all types of target groups i.e. children, adults, and drivers. Therefore, these campaigns will be conducted in schools and community centers. In addition, the project will publish a brochure for public information. These brochures will be widely circulated around the area and will also be available at the PIU, and the contractor's site office. The text of the brochure should be concise to be effective, with a lot of graphics. It will serve the following purpose:

(i) explain why the brochure was prepared, along with a brief description of the project;
(ii) advise the public to expect the unexpected;
(iii) educate the public about the various traffic control devices and safety measures adopted at the work zones;
(iv) educate the public about the safe road user behaviour to emulate at the work zones;
(v) tell the public how to stay informed or where to inquire about road safety issues at the work zones (name, telephone, mobile number of the contact person; and
(vi) indicate the office hours of relevant offices.

E. Vehicle Maintenance and Safety

10. A vehicle maintenance and safety program shall be implemented by the construction contractor. The contractor should ensure that all the vehicles are in proper running condition and it comply with roadworthy and meet certification standards of GoUK. All vehicles to be used shall be in perfect condition meeting pollution standards of GoUK. The vehicle operator requires a pre state of shift checklist. Additional safety precautions will include the requirement for:

- Driver will follow the special code of conduct and road safety rules of Government of UK.
- Drivers to ensure that all loads are covered and secured drivers to ensure operation equipment can't leak materials hauled
- Vehicles will be cleaned and maintained in designed places.

F. Install traffic control devices at the work zones and traffic diversion routes

10. The purpose of installing traffic control devices at the work zones is to delineate these areas to warn, inform, and direct the road users about a hazard ahead, and to protect them as

well as the workers. As proper delineation is a key to achieve the above objective, it is important to install good traffic signs at the work zones. The following traffic control devices are used in work zones:

- Signs
- Pavement Markings
- Channelizing Devices
- Arrow Panels
- Warning Lights

11. Procedures for installing traffic control devices at any work zone vary, depending on road configuration, location of the work, construction activity, duration, traffic speed and volume, and pedestrian traffic. Work will take place along major roads, and the minor internal roads. As such, the traffic volume and road geometry vary. The main roads carry considerable traffic; internal roads in the new city areas are wide but in old city roads very narrow and carry considerable traffic. However, regardless of where the construction takes place, all the work zones should be cordoned off, and traffic shifted away at least with traffic cones, barricades, and temporary signs (temporary "STOP" and "GO").

12. The work zone should take into consideration the space required for a buffer zone between the workers and the traffic (lateral and longitudinal) and the transition space required for delineation, as applicable. For the works, a 30 cm clearance between the traffic and the temporary STOP and GO signs should be provided. In addition, at least 60 cm is necessary to install the temporary traffic signs and cones.

13. Traffic police should regulate traffic away from the work zone and enforce the traffic diversion result from full street closure in certain areas during construction. Flaggers/ personnel should be equipped with reflective jackets at all times and have traffic control batons (preferably the LED type) for regulating the traffic during night time.

14 In addition to the delineation devices, all the construction workers should wear fluorescent safety vests and helmets in order to be visible to the motorists at all times. There should be provision for lighting beacons and illumination for night constructions.

15. The PIU and contractor will coordinate with the local administration and traffic police regarding the traffic signs, detour, and any other matters related to traffic. The contractor will prepare the traffic management plan in detail and submit it along with the EMP for the final approval.

Annexure 8

Photographs and Attendance Sheets of consultations

Place Of Consultation :- Mukhem (Tehri Garhwal)
Date :- 21.08.2014

Signature Sheet of Attendees of Consultations

Sl No.	Name	Occupation	Signature/Thumb Impression	Telephone Number
1	Shanti Bhushan Bhatt	G.R.S	[illegible]	9690768974
2	Ravindra Thapliyal	P.T.C	[illegible]	7535051941
3	Vinay Kumar Thapliyal	Pandit	विनय [illegible]	9927206357
4	Mukesh Bhatt	business	[illegible]	9883740947
5	नरेन्द्र सिंह रावत	वार्ड न. 8 सदस्य	[illegible]	7500916629
(6)	Suresh Pal Rawat	Ship Business	[illegible]	9837530947
7	सुन्दर सिंह [illegible]	किसान	[illegible]	9917789907
8	कीर्तिराम भट्ट	प्रधान	कीर्तिराम	9411144436
9	राजेन्द्र प्रसाद बडोनी	ग्राम सदस्य	राजेन्द्र प्रसाद	9927204977
10	अनिल मटियाल	ग्राम मुखिया	[illegible]	8126297883
11	सन्तोष सेमवाल	ग्राम [illegible]	[illegible]	9758259887
12	Dr. L. S. Bist	mukhem	[illegible]	9927213592
13	कलम सिंह	[illegible]	कलम सिंह	
14	बालम सिंह	बागान	बालम सिंह	8692456865
15	रमेश चन्द्र सेमवाल	[illegible]	[illegible]	
16	विजयपाल शाह	किसान	Vijaypal	8126101412
17	संदीप शाह	विद्यार्थी	Sunil	9568091436
18	अनिल शाह	विद्यार्थी	[illegible]	9837706770

Signature Sheet of Attendees of Consultations

S.No.	Name	Occupation	Signature/Thumb Impression	Telephone Number
19	वीरेन्द्र सिंह भण्डारी	दुकानदार	V.S.Bhandari	9634893168
20	कृपाल शाह	दुकानदार	कृपाल शाह	9450029502
21	अवतार सिंह विष्ट	दुकानदार	[illegible]	9690884165
22	सत्ये सिंह रावत	खेती	सत्य सिंह	
23	जितेन्द्र कुमार सेमवाल	अध्यापक	[illegible]	7837106707
24	अमर सिंह भण्डारी	दुकानदार	[illegible]	9927199428
25	कुलवीर सिंह चौहान	दुकानदार	कुलवीर सिंह	7830099452