Initial Environmental Examination

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India: Sustainable and Inclusive Tourism Development Project in Himachal Pradesh

Rafting Complex at Nadaun, District-Hamirpur, H.P. (Package No.- SITDP-HP_W07)

Prepared by Himachal Pradesh Tourism Development Board (HPTDB), Government of Himachal Pradesh for the Asian Development Bank.

CURRENCY EQUIVALENTS

(As of 5th July 2024)

Currency Unit – Indian rupee (₹)
₹ 1.00 – $ 0.012
$ 1.00 = ₹ 83.49

ABBREVIATIONS

ADB	—	Asian Development Bank
BEE	—	Bureau of Energy Efficiency
BIS	—	Bureau of Indian Standards
BMPTC	—	Building Materials & Technology Promotion Council
BoCW	—	Building and Other Construction Works
BOD	—	Biological Oxygen Demand
CPCB	—	Central Pollution Control Board
CPHEEO	—	Central Public Health and Environmental Engineering Organization
CTE	—	Consent to Establish
CTO	—	Consent to Operate
DDMA	—	District Disaster Management Authority
DO	—	Dissolved Oxygen
DPF	—	Demarcated Protected Forest
DPR	—	Detailed Project Report
EA	—	Executing Agency
EAC	—	Expert Appraisal Committee
EARF	—	Environmental Assessment Review Framework
ECBC	—	Energy Conservation Building Code
EHS	—	Environmental Health & Safety
EIA	—	Environmental Impact Assessment
EMP	—	Environmental Management Plan
ESZ	—	Eco-sensitive Zone
GEC	—	Ground Water Estimation Committee
GoI	—	Government of India
GoHP	—	Government of Himachal Pradesh
HFL	—	High Flood Level
HMV	—	Heavy Motor Vehicle
HPSPCB	—	Himachal Pradesh State Pollution Control Board
HPTDB	—	Himachal Pradesh Tourism Development Board
HPTDC	—	Himachal Pradesh Tourism Development Corporation
IBAT	—	Integrated Biodiversity Assessment Tool
IEE	—	Initial environmental examination
IFC	—	International Finance Corporation
ILO	—	International Labour Organisation
IPH	—	Irrigation and Public Health Department
IUCN	—	International Union for Conservation of Nature and Natural Resources
JSV	—	Jal Shakti Vibhag
LED	—	Light Emitting Diode
LMV	—	Light Motor Vehicle

MDR	—	Major District Roads
MoEFCC	—	Ministry of Environment, Forest & Climate Change
MSL	—	Mean Sea Level
NAC	—	Notified Area Committee
NEP	—	National Environment Policy
NGO	—	Non-Governmental Organization
O&M	—	Operations & Maintenance
PIU	—	Project Implementation Unit
PM	—	Particulate Matter
PMDSC	—	Project Management & Design Supervision Consultants
PMU	—	Project Management Unit
PUC	—	Pollution Under Control
REA	—	Rapid Environmental Assessment
RCC	—	Reinforced Cement Concrete
RHT	—	Rain Harvesting Tank
RTO	—	Regional Transport Officer
SEAC	—	State Expert Appraisal Committee
SEIAA	—	State Environment Impact Assessment Authority
SITDP	—	Sustainable and Inclusive Tourism Development Project
SPM	—	Suspended Particulate Matter
SPS	—	Safeguard Policy Statement
TCP	—	Town & Country Planning
TDS	—	Total Dissolved Solids
ToR	—	Terms of Reference
TSS	—	Total Suspended Solids
WHO	—	World Health Organization

WEIGHTS AND MEASURES

dB (A)	– 'A' Weighted decibel
ha	– hectare
HP	– Horse Power
kld	– Kilo litre per day
km	– kilometre
km2	– square kilometre
lpcd	– litre per capita per day
µg/m3	– microgram per cubic meter
m	– metre
m2	– square metre
cum	– cubic metre (m^3)
mg/l	– milligram per litre
kVA	– kilo volt ampere

NOTE

In this report, "$" refers to United States dollars.

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EXECUTIVE SUMMARY

The Sustainable and Inclusive Tourism Development Project (SITDP) will support the integration of urban and tourism development of targeted tourism zones and selected urban local bodies in Himachal Pradesh, increasing economic competitiveness and growth, thereby contributing to state-wide poverty reduction. The proposed Project will cover the districts of Hamirpur, Kangra, Kullu, Mandi, and Shimla as distinct sustainable destinations, help implement Himachal Pradesh Tourism Policy 2019, and identify future investment opportunities. The Project is aligned with the following impact: Himachal Pradesh established as a leading sustainable tourism destination for inclusive economic growth.1 The project outcome is inclusive and sustainable tourism promoted in five districts of Himachal Pradesh. The interventions will be at three levels: (i) tourist amenities at specific tourist sites spread across the districts beyond the main urban centers, thereby generating direct local employment and livelihoods, especially for women; (ii) district-level projects that integrate the proposed and past projects through improved connectivity, stronger industry ecosystems, community initiatives, and improved public sector destination management capacity; and (iii) state-level initiatives to enhance institutional capacity, improve sector governance and gender-responsive sector management.

Location: Rafting Complex at Nadaun, District-Hamirpur, Himachal Pradesh is one of the projects under SITDP. Nadaun town is situated at an altitude of about 508 meters above mean sea level on the left bank of Beas River at a distance of 28 kilometers from Hamirpur on Hamirpur Kangra road. Nadaun is the Sub Divisional Headquarter, Tehsil Headquarter and Development Block Headquarter. Beas river flows through the town. Nadaun lies midway between Jwalamukhi (12km) and Hamirpur (28 km). Nadaun shares its boundaries with districts, Kangra and Una. The coordinates of the Rafting complex is 31°47'5.36"N latitude and 76°20'27.62"E longitude.

Executing and implementing agencies: The executing agency is the Department of Tourism and Civil Aviation (DTCA), Himachal Pradesh. The implementing agency is H.P. Tourism Development Board (HPTDB). Project Management Unit (PMU) is setup at Shimla to coordinate the overall execution. Project Management Design & Supervision Consultant (PMDSC) at Shimla provides assistance to PMU in execution. Project Implementation Unit[2] (PIU) is established in Kangra, which is supported by Project Management Design and Supervision Consultant (PMDSC). A team of technical, administrative and financial officials, including safeguards specialists, is being provided at the PMU to implement, manage and monitor project implementation activities. The PIUs are staffed by qualified and experienced officers and responsible for the day-to-day activities of project implementation in the field, and will be under the direct administrative control of the PMU. Consultant teams are responsible for project planning and management and assuring technical quality of design and construction; supervising construction activities; and preparation and updating safeguard reports.

Screening and Categorization: An environmental assessment using ADB's Rapid Environmental Assessment (REA) checklist for urban development was conducted. Results of the assessment as per DPR and preliminary design of project is unlikely to cause any significant adverse impacts. Anticipated impacts are site-specific and reversible. Thus, it is classified as Environmental Category 'B' as per ADB's SPS 2009 and this IEE is prepared accordingly. As per the Government of India Environment Impact Assessment (EIA) Notification, 2006 this project does not require environmental clearance.

Project Scope: The project includes construction of Rafting complex at Nadaun.

[1] Government of Himachal Pradesh, Department of Tourism and Civil Aviation. 2019. *Himachal Pradesh Tourism Policy, 2019*. Shimla.

[2] Three PIUs are proposed at Shimla, Kangra and Kullu.

Description of the Environment: Nadaun is located in the foot hills *i.e.,* Siwalik Range of Himalayas, it is mostly plain and has a flat terrain. The climate of Nadaun is sub-tropical with monsoons in the months of July–August. The summers are between mid-May to mid-July. The hottest month is May and coldest month is January. Maximum and minimum temperatures in the summer season ranges from 20˚C to 40˚C. However, it rarely exceeds 40˚C due to its proximity with the Himalayas and Beas River. The winters are cold but sub-zero temperatures are rare. The area receives moderate rainfall, mostly during the months of July and August. The average annual rainfall in the district is 1,340.72 mm, out of which 82% occurs during June to Sept. Hamirpur district forms a part of drainage system of the Beas River in the northern and western parts, whereas in the eastern and southern parts Sutlej River system drains the areas. The drainage pattern is dendritic to sub dendritic. Drainage density is coarse to medium. The sub-humid monsoon climate is good for the vegetation growth. The coarse sandy loam soil found in the project area is very good for cultivation purposes.

Beas River is 100 m from the proposed site of Rafting Complex at Nadaun. The Kunha khad (Approx. 4 km) and Man Khad (Approx. 1 km) from the South West and East South East direction from project site.

There is no protected area (Wildlife Sanctuaries, National Park, Tiger / Elephant Reserves, Conservation reserves etc) in or near the project site. The project site does not fall within or near to any eco-sensitive areas. Nearest protected area i.e. Pong Dam Lake Wildlife Sanctuary is located about 14.81 km distance in North West direction of project site. There are no notable monuments or places of historical, archaeological, or cultural value in and around the proposed sites. Screening with Integrated Biodiversity Assessment (IBAT) report indicates presence of 01 protected area i.e. Pong Dam Lake Wildlife Sanctuary and 04 Key Biodiversity Area; Pong Dam Lake Wildlife Sanctuary, Dhauladhar Wildlife Sanctuary and Mcleadoganj, Gobind Sagar and Naina Devi Wildlife Sanctuaries and Sarah Valley, lower Dharamshala within 50km radial distance; however, none are located close to the project area. The nearest notified protected area is Pong Dam Lake Wildlife Sanctuary situated within 20km aerial distance from the project coverage area. Total 54 species of threated category found in 50 km radius as a result of IBAT analysis but not within the project area of influence (PAI). There is no Rare, Endangered or Threatened (RET) Species found in the proposed site area. Regarding the conservation status of the fauna, none of the animal species identified from the site/ study area belonged to the threatened categories identified by the International Union for Conservation of the Nature and Natural Resources (IUCN). Most of them are common and widely distributed. Significant flora and fauna has not been noticed in and around the site. There is presence of shrubs and bushes such as *Lantana camara*, *Xanthium strumarium* and *Parthenium hysterophorus* and 1 tree of Pipal (Ficus religiosa)at site. Vegetation clearance is required. No wild animal movement is observed/ reported at site. Birds such as *Acridotheres tristis* (Common Myna), *Acridotheres fuscus* (Jungle Myna), *Columba livia* (Blue Rock Pigeon), *Coracias benghalensis* (Indian roller), *Funambulus palmarum* (Indian Palm Squirrel) and *Spilopelia chinensis* (Spotted dove) etc have been reported.

Potential Environmental Impacts and Mitigation Measures: In this draft IEE, the associated environmental impacts and proposed mitigation measures are covered based on location, design, construction and operation stages of the project. Potential negative impacts have been identified in relation to pre-construction, construction and operation stages of the improved infrastructure, but no permanent environmental impacts were identified as being due to either the project design or location. The proposed site of Rafting Complex is located near the Beas River. There is no notable tree cover except 1 Pipal tree near the boundary of the project site. Potential impacts during construction are temporary and are common impacts of construction and there are well developed methods to mitigate the same. Construction activities will be confined to the selected sites and the interference with the general public is minimal. In due consideration of proximity of site to the Beas River, adequate measures of silt fencing, erosion protection will

be taken for excavation during rains, and cuts, fills and sloped surfaces will be properly stabilized to avoid erosion. Site clearance will be strictly confined to the actual work area, no clearance of top soil or vegetation will be done outside the site. Temporary containment drains, silt fence will be used to contain silt laden runoff from site. During excavation, waste will be properly disposed off as per norms of waste management at designated site and suitable measures shall be taken to avoid any impacts to the river water quality. In these works, the temporary negative impacts arise mainly from construction dust and noise, hauling of construction material, waste and equipment on local road (traffic, dust, safety etc.), occupational health and safety of aspects of workers as per the site conditions.

These are common impacts of construction in urban areas, and there are well developed methods for their mitigation. Measures such as conducting work to avoid/ minimizing inconvenience by best construction methods will be employed. Additional required quantity of soil will be procured from authorized source having valid environmental clearance certificate or with approval of asset owner. In the operational phase, all facilities and infrastructure will operate with routine maintenance, which should not affect the environment. During the construction phase, impacts also arise from the invasive nature of work at site and along the roads. However as most of the individual elements are relatively small and involve straight forward construction, the potential environmental impacts (i) will be mainly localized, temporary and not greatly significant; (ii) will not cause direct impact on flora and fauna (iii) are common impacts of construction, and there are well developed methods for their mitigation that are suggested in the EMP.

Environmental Management Plan: An Environmental Management Plan (EMP) has been developed to provide mitigation measures to reduce all negative impacts to accessible levels, along with the delegation of responsibility to appropriate agency. Various design related measures are already included in the project design. During construction, the EMP includes mitigation measures such as: (i) proper planning of construction works to minimize the public/ pilgrims/ water sports related activities inconvenience; (ii) barricading, dust suppression and noise abatement measures; (iii) traffic management measures for work along the road and for hauling activities; (iv) provision of walkway to ensure access will not be impacted; and (v) finding beneficial use of excavated materials to extent possible to reduce the disposal quantity. EMP will guide the environmentally sound construction of the project. EMP includes a monitoring program to measure the effectiveness of EMP implementation measures and include observation on and off-site document checks and interview with workers and beneficiaries. The EMP will be included in civil work bidding and contract documents and implementation shall be binding on the contractors.

The contractor will be required to submit to PIU for review and approval, a site environmental management plan (SEMP) including: (i) proposed sites/ locations for construction work camps, storage areas, hauling roads, lay down areas, disposal areas for solid and hazardous wastes; (ii) specific mitigation measures following the approved EMP; and (iii) monitoring program as per EMP. No works are allowed to commence prior to approval of SEMP by the PIU. A copy of the EMP/ approved SEMP will be kept on site during the construction period at all times.

Information Disclosure, Consultation and Participation: 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 project. During the preparation of IEE consultations were held with 14 stakeholders including 11 males and 03 females. The consultation aimed to gather insights and opinions on various topics related to proposed project development. The executive summary of IEE report in local language (Hindi) will be made available at public locations in the town and site. The IEE report will also be disclosed to a wider audience via the ADB and the DOTCA websites. The consultation process will continue during project implementation.

The sports person, tourists, business people and citizens of Nadaun & Hamirpur Town will be the major beneficiaries of the project. The benefits to the tourists and population of the

area will be positive and large as the proposed project will provide better facilities (Rafting Complex) to tourist/ sports person. Improvement in tourist related infrastructure and facilities shall result in enhanced tourism experience and help in increasing the volume and retention of tourists. By way of tourist/ visitor movement at site, local economy will improve.

Grievance Redress Mechanism: A project-specific Grievance Redress Mechanism (GRM) will be established to receive, record and redress project related grievances in a timebound and effective manner. Details of GRM is included in this IEE.

Monitoring and Reporting: The PMU, PIU, PMDSC and Contractor are responsible for environmental monitoring. The contractor shall engage environment officer for managing EHS issues. Contractor shall submit monthly monitoring reports on environmental management to PIU and PMDSC. These reports would be consolidated by PMDSC including its own observation on quarterly basis. Environment Specialist of PMDSC submits quarterly and Semi-annual Environmental Monitoring report to PMU on the basis PMU submits semi-annual reports on implementation of the EMP to ADB and facilitates ADB to field environmental review missions which will review in detail the environmental aspects of the project. ADB will post the environmental monitoring reports on its website upon acceptance. The Semi-annual Environmental Monitoring reports shall be submitted to ADB till the project completion report (PCR) is issued by ADB. Any major accidents having serious environmental consequences will be reported immediately.

The cost of environmental budget for the various environmental management measures proposed in the EMP, capacity building programs and the cost of the environmental monitoring is given in Table 24. There are few other environmental measures such as safety, signage, personal protective equipment and the cost for which have been accounted in the engineering cost. Therefore, these items have not been included in the EMP budget. Only those items not covered under the budget for construction are considered in this IEE report. Total estimated cost for implementation of EMP is 11,52,000/-.

Conclusion and Recommendations: The proposed project is unlikely to cause significant adverse impacts, and 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 project as Category “B” is confirmed. The project is not covered by the GoI EIA Notification, 2006. However, to conform with government guidelines all necessary permissions and NOCs will required from the concerned departments prior to start of construction.

The Executing Agency shall ensure that EMP is included in Bill of Quantity (BOQ) and forms part of bid document and civil works contract. The IEE will be updated by the PMU during the implementation phase to reflect any changes, amendments and the implementation of such scope due to changes, amendments would be carried out only after the updated IEE report is reviewed and approved by ADB. The revised IEE shall supersede the earlier version of IEE and shall be contractually applicable to the contractor.

I. INTRODUCTION

A. Background

1. The Sustainable and Inclusive Tourism Development Project (SITDP) will support the integration of urban and tourism development of targeted tourism zones and selected urban local bodies in Himachal Pradesh, increasing economic competitiveness and growth, thereby contributing to state-wide poverty reduction. The proposed Project will cover the districts of Hamirpur, Kangra, Kullu, Mandi, and Shimla as distinct sustainable destinations, help implement Himachal Pradesh Tourism Policy 2019, and identify future investment opportunities. The Project is aligned with the following impact: Himachal Pradesh established as a leading sustainable tourism destination for inclusive economic growth.3 The project outcome is inclusive and sustainable tourism promoted in five districts of Himachal Pradesh. The interventions will be at three levels: (i) tourist amenities at specific tourist sites spread across the districts beyond the main urban centers, thereby generating direct local employment and livelihoods, especially for women; (ii) district-level projects that integrate the proposed and past projects through improved connectivity, stronger industry ecosystems, community initiatives, and improved public sector destination management capacity; and (iii) state-level initiatives to enhance institutional capacity, improve sector governance and gender-responsive sector management. The expected outputs are summarized below:

2. **Output 1:** Tourism sites and facilities conserved and improved with integrated adaptation measures. To improve the condition of key tourist attractions across the state, the project will enhance the condition of amenities at key landmarks and sites, focusing on heritage and accessibility. It will expand and develop cultural centers in Kangnidhar (Mandi) and Deotisdh (Hamirpur) to (i) promote their heritage and historical significance; (ii) restore the historic Naggar Castle (Kullu), adhering to conservation principles; (iii) enhance public open spaces for improved recreational benefits and develop leisure facilities in Palampur and Nagrota Bagwan (Kangra); and (iv) upgrade/construct way-side amenities[1], such as Dhundi, Naduan, Kunha, in Kullu, Hamirpur, and Kangra districts, respectively. The project will incorporate green solutions and universal access, ensuring accessibility for all, especially for the elderly, women, children, and people with disabilities (EWCD).

3. **Output 2:** Green, climate-resilient and sustainable tourism facilities developed. The project will focus on the promotion of green and sustainable tourism facilities to diversify offerings and boost the local economy. The project will develop: (i) five wellness centres at Nagrota Bagwan (Kangra), Manali and Kullu town (Kullu), Nadaun (Hamirpur) and Banoti (Shimla); (ii) tourist recreation facilities at Dharamshala (Kangra), Manali (Kullu) and Shimla town (Shimla); (iii) adventure sports centre with health centre at Nadaun (Hamirpur); and (iv) water park complex at Nadaun (Hamirpur); and associated infrastructure (like equipment, jetties, etc.) in all five districts. Other initiatives for product diversification include: (i) facilities for events and conventions center for meetings, incentives, conferences, and exhibitions tourism at Dharamshala and Nagrota Bagwan (Kangra); (ii) green mobility (EV-based) hop-on hop-off bus services connecting key places of interest at all five districts with priority entry/sitting preferences for women and people with special needs to ensure safe and accessible public transport facilities; (iii) mountain terrain biking trails and services in all five districts with active engagement of women and youth; and (iv) clean energy (roof top solar) installed on buildings, resulting in reduction of greenhouse gas emissions.

4. **Output 3:** Institutional capacity, community engagement and private sector participation across tourism value-chain enhanced. To complement the infrastructure

[3] Government of Himachal Pradesh, Department of Tourism and Civil Aviation. 2019. *Himachal Pradesh Tourism Policy, 2019*. Shimla.

investments, the project will support key initiatives aimed at improving the enabling environment and government's capacity for sustainable tourism service delivery. It will (i) improve the operational capacity of HPTDB through process enhancements, data driven governance, benefit monitoring, improving financial management and preparation of long-term business plans; creation of a GESI cell, and training and upskilling of HPTDB's staff; (ii) strengthen district tourism councils with adequate representation women's representation to serve as destination management organizations, with capacity to prepare strategic and spatial destination development perspective plans, and instituting IT-enabled systems for operator registration, accreditation and certification; (iii) establish the Himachal Pradesh Conventions Bureau to promote MICE tourism; (iv) engage with the HPTDB to develop a tourism brand strategy and marketing plan, and develop and launch a portfolio of curated tourism products across the five districts; (iv) strengthen the tourism industry ecosystem and host communities through human resource development planning that includes certified training and skills development for micro, small and medium enterprises (MSMEs), including women-led enterprises; (v) mainstreaming community-based tourism and developing skilled community members in tourism services delivery with focus on promoting women-led CBT through additional support to reduce care workload; (vi) establish business linkage trust fund for women to establish/improve business; (vii) establish public-private partnerships framework and contracts to enable sustainable O&M; (viii) strengthen the Centre of Excellence for Hospitality and Tourism (CoEHT), making it a hub for training and skill development and certification; and (xi) provide training to MSMEs to adopt digital tools in tourism service provision.

5. **Proposed Project:** Rafting Complex at Nadaun district Hamirpur is proposed under Sustainable and Inclusive Tourism Development project in Himachal Pradesh.

B. Purpose of the IEE

6. As per ADB's Safeguard Policy Statement, 2009, ADB requires the consideration of environmental issues in all aspects of the Bank's operations. Using rapid environmental assessment (REA) checklist (Annexure 1), the project is unlikely to cause significant adverse impacts and classified under Category B as per ADB SPS requirements. This IEE has been conducted to examine the likely impacts from the proposed interventions and accordingly mitigation, management and monitoring measures have been developed. The document also presents the Environmental Management Plan for inclusion of the measures into the tender documents for bidding by the contractor.

7. **Extent of IEE:** The IEE is prepared based on detailed design prescribed within detailed project report (DPR), field reconnaissance survey, secondary sources of information and stakeholder consultation. Assessment is carried out for all components of environment covering ecology, air, soil, water, noise and socio-economic aspects. Stakeholder consultation was an integral part of the IEE. This IEE will be further updated during implementation if there are any changes in project scope, design or sites and updates will supersede the earlier version.

C. Report Structure

8. The report contains the following sections:

Executive Summary
(i) Introduction;
(ii) Description of the project;
(iii) Analysis of Alternatives;
(iv) Policy, Legal and Administrative Framework;
(v) Description of the Environment;
(vi) Anticipated Environmental impacts and Mitigation Measures;
(vii) Consultation, Participation & Information Disclosure,

(viii) Grievance Redress Mechanism;
(ix) Environmental Management Plan; and
(x) Conclusion & Recommendations.

II. DESCRIPTION OF THE PROJECT

A. Project Location

9. The Rafting Complex project is proposed at Nadaun, District-Hamirpur, Himachal Pradesh. Nadaun is located at 31.78°N 76.35°E. It is situated on the banks of the Beas river. Nadaun shares its boundaries with districts, Kangra and Una. The average elevation of Nadaun town is 508 metres above msl. Nadaun lies midway between Jwalamukhi (12km) and Hamirpur (28 km). The coordinates of the Rafting complex is 31°47'5.36"N latitude and 76°20'27.62"E longitude. Location map of the project is shown in Figure 1 & location on google earth is given in Figure 2 below.

Fig. 1: Location Map of the Project site at Nadaun, District-Hamirpur, H.P.

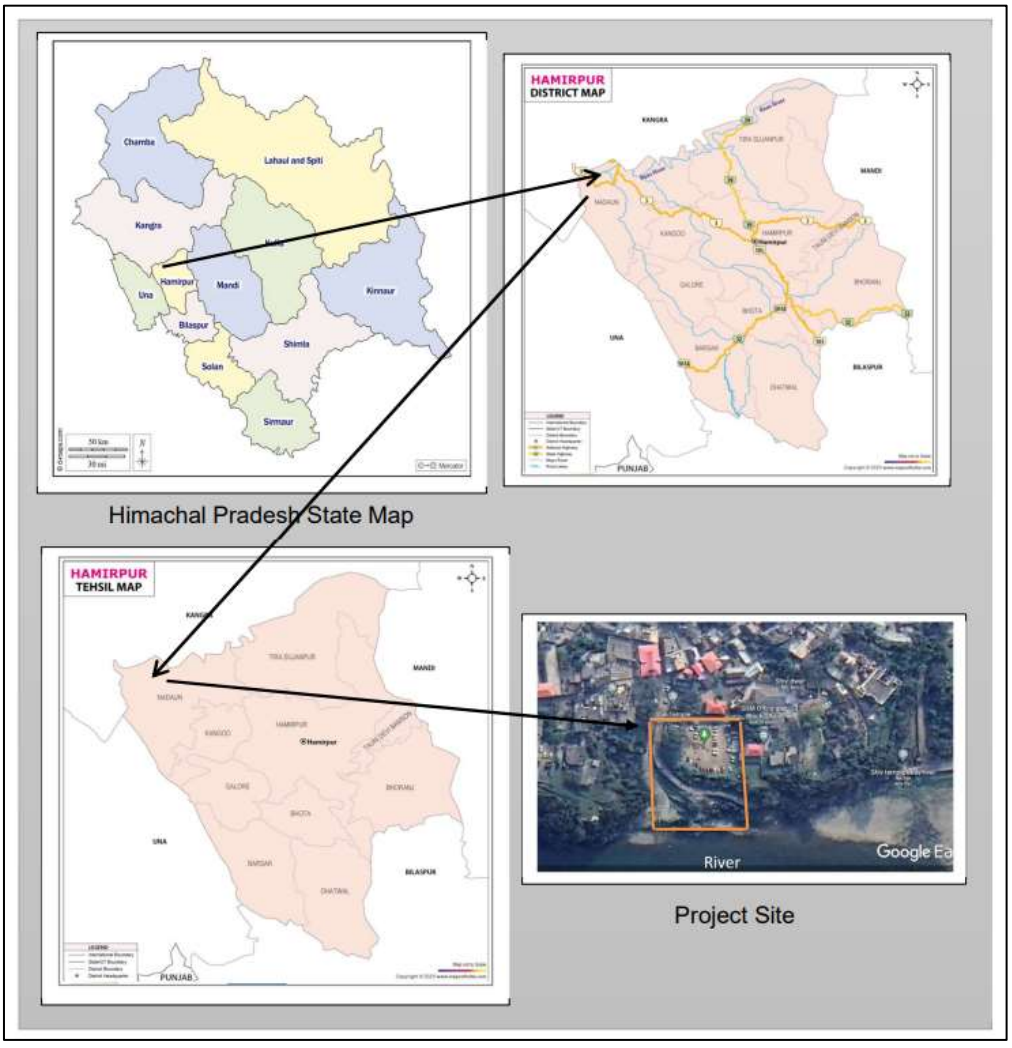


Fig 2: Location Map of the Project- Rafting Complex Site, Nadaun on Google Earth

Connectivity: Nadaun is very well connected by road from all the major cities of Himachal Pradesh and other neighboring states. Nadaun is accessible via NH-3 (Hamirpur-Bhota-Ghumarwin-Ghagus road) from Hamirpur which is located at a distance of 28 km south east of the town and via NH-303 from Jwalamukhi. The Hamirpur road (NH-3) connects Nadaun with Shimla (the state capital) and Amb, NH-3 connects Nadaun town with Chandigarh and New Delhi. There is no Airport in district Hamirpur, thus no direct air service/ flight is available to this town. The nearest Airport to Nadaun is Gaggal Airport at a distance of 55 km from Nadaun in Kangra district. There is no direct Train service to this town. The nearest Railway Stations from Nadaun are Amb (Broad Gauge Railway line) and Jwalamukhi Road (Narrow Gauge Railway line). Amb railway station is approximately 42 km away and Jwalamukhi Road Railway Station is about 40 kms.

B. Need of the Project

10. Himachal Pradesh has vast potential for river rafting as the state is blessed with rivers. The HP Tourism Policy aims to promote tourism diversification through theme-based tourism packages that will help achieve the goal of Establishing Himachal Pradesh tourism as an international brand in niche tourism. One of the identified action points is to develop tourism activities and products on 10 themes – Eco, Agro, Health and Wellness, Heritage and Culture, Adventure, Lake, Snow, Film, Pilgrimage and MICE. As a part of this strategy of promoting thematic tourism products/ experiences to cater to the national and international market segment development of Rafting complex has been conceptualized under the Sustainable and Inclusive Tourism Development Project in Himachal Pradesh. The Nadaun town located on the bank of Beas River attracts tourists for water sports activities (Rafting) in the river Beas. Nadaun is also enroute religious circuits of Kangra. However, there is a dearth of standardized tourist facilities in Nadaun. In order to boost tourism and develop Nadaun as tourist hub for domestic as well as foreign tourists, a Rafting Complex is needed in the area.

11. A Rafting Complex is proposed in the mid of city to make a tourist attraction. Site proposed by government for rafting complex is adjoining river Beas and already set up as base camp for rafting in summers as per the information gathered from local people. In order, to develop Nadaun as tourist hub and attract tourist internationally and domestic, a rafting

complex is proposed.

C. Proposed Project Components

12. Project site Rafting Complex is proposed in Nadaun. Project Rafting complex includes Rafting Museum with training halls, Cafeteria with geodesic dome, Skywalk with light and sound show with musical Fountain, Tunnel Aquarium, Space for rafting equipment and parking facility. The total Built up area of the Rafting Complex is 2616.54 sqm. There is no requirement for Environment Clearance as per the EIA notification 2006 as the Built-up area of the proposed Rafting Complex is less than 20,000 sqm.

13. The area statement and floor wise details of the Rafting Complex at Nadaun is given in Table 1.

Table 1: Proposed Project Components- Area Statement

Parking near SDM Office			
Sr.No	**DESCRIPTION OF FEATURES**	**SIZE /AREA**	**CAPACITY**
B	**Package:**		
1.	SITE AREA (Parking)	2421.14 Sq.m	
	Built-up area	34.54 Sq.m	
	Parking Area	2386.6 Sq.m	
2.	**Ground Floor Consisting: -**	**706 Sq.m**	
	Rafting Museum	130 Sq.m	
	Training Hall	130 Sq.m	
	Staircases and lift lobby-2	86.66 Sq.m	Lift capacity — 10Pax.
	Booking Office	51.43 Sq.m	
	Toilets	73.46 Sq.m	
	Lobby	273 Sq.m	
3.	**First Floor Consisting: -**	**706 Sq.m**	
	Cafeteria	222.10 Sq.m	
	Sky walk	42.22 Sq.m	
	Toilets	42.85 Sq.m	
	Kitchen	85.77 Sq.m	
	Staircase and Lift lobby	127.32 Sq.m	Lift capacity – 10Pax.
	Open Deck Area	242 Sq.m	
4.	**Lower Ground Level Consisting: -**	**706 Sq.m**	
	Tunnel Aquarium	430.27 Sq.m	
	Staircase and Lift Lobby	86.66 Sq.m	Lift capacity – 10 Pax.
	Lobby Area	191.17 Sq.m	
5.	**Lower Ground Level 1 Consisting**	**232 Sq.m**	
	Rafting Equipment Stores	63.08 Sq.m	
	Staircases and lift lobby	86.66 Sq.m	Lift capacity – 10 Pax.
	Lobby	72.17 Sq.m	
6.	**Lower Ground Level 2 Consisting**	**232 Sq.m**	
	Changing Rooms	52.43 Sq.m	
	Staircases and lift lobby	86.66 Sq.m	Lift capacity – 10Pax.
	Lobby	51Sq.m	
	Server /Control Room	43.60 SM	
7.	**Lower Ground Level 3 Consisting**	**232 Sq.m**	
	Women Shower Area	74.86 Sq.m	

	Staircases and lift lobby	86.66 Sq.m	Lift capacity – 10Pax
	Lobby	51 Sq.m	
	Rafting Equipment Store	62.26 Sq.m	
	Proposed Water Sports activity and equipment*: Canoeing and rafting Sit on Top Kayak-Single Seater Kayak- Single seater, double seater, Touring Kayak– Single and Double Touring Kayak-Paddle Rescue Inflatable motor boat (14 ft-30 HP) Safety Equipment, Anti skid floating jetty system		

(Source: Detailed Project Report) *Procurement in different package

14. **Parking Area near SDM Office:** There is an existing open Parking site already being used for car parking, scooter parking and as Ram Leela ground. It is proposed to develop this area for car parking (approximate 55 car parking) with levelling and cobble stone flooring. Renovation of existing toilet in parking is proposed. Entry to Rafting Complex building is proposed from parking area. Rafting Complex building is proposed in RCC structure and finished with ACP cladding. Building is interlinked with the lift and staircase for the easy accessibility to the upper and lower floors. It is designed in the six different floors.

15. **Rafting Complex:** It is proposed as an integrated complex plaza which meets the requirement of crowd management, universal accessibility, fire safety and necessary amenities. The main entrance to the complex is from parking area and second entrance is from the road while third entrance is from Ghat side. This large space of Ghat will help in crowd management of tourists, viewing deck for Light and sound show beneath the sky walk as well as area from where rafting can be started.

- Ground floor area comprises of service core (lifts + staircases), public toilets along with toilets for differently abled, Rafting Museum, Booking office and Training Halls for students.
- 1st floor comprises of the service core (lifts + staircases), Cafeteria with Geodesic dome. Skywalk is connected with Cafeteria building. Proper drainage and water system is provided for the maintenance.
- Lower ground floor comprises of the service core (lifts + staircases), Tunnel Aquarium, Cylindrical Aquarium where all variety of fishes will be there.
- Below the tunnel aquarium, are the stores which are connected to road in which rafting equipment can be placed for rafters.
- Service core, surveillance and control rooms, changing rooms and security is provided at the level below.

16. The entire structure is designed in RCC along with design elements to match the local architecture and landscape.

17. **Skywalk with light and sound show with musical Fountain**

18. A skywalk /glass bridge is connected with cafeteria on this floor. Below the skywalk musical fountain with light and sound show is proposed. Viewers can view light and sound show from Ghat (Ground Floor) as well as from cafeteria deck at top floor.

19. **Upgradation of Pathway:** The access pathway to the Rafting Complex is quite raw in condition and have been carved out from the mountain. These pathways need to have proper facilities of drainage and crass barriers on the edge of the road for proper safety of the cars and drainage of the surface run off.

20. Estimated cost of the project is approx. **Rs. 49.91 Crore.**

21. Site Plan, survey plan and section plan of the project site is given in Figure 3 to Figure 5 and site photographs are provided in Figure 6.

Fig 3: Site Plan of Rafting Centre, Nadaun

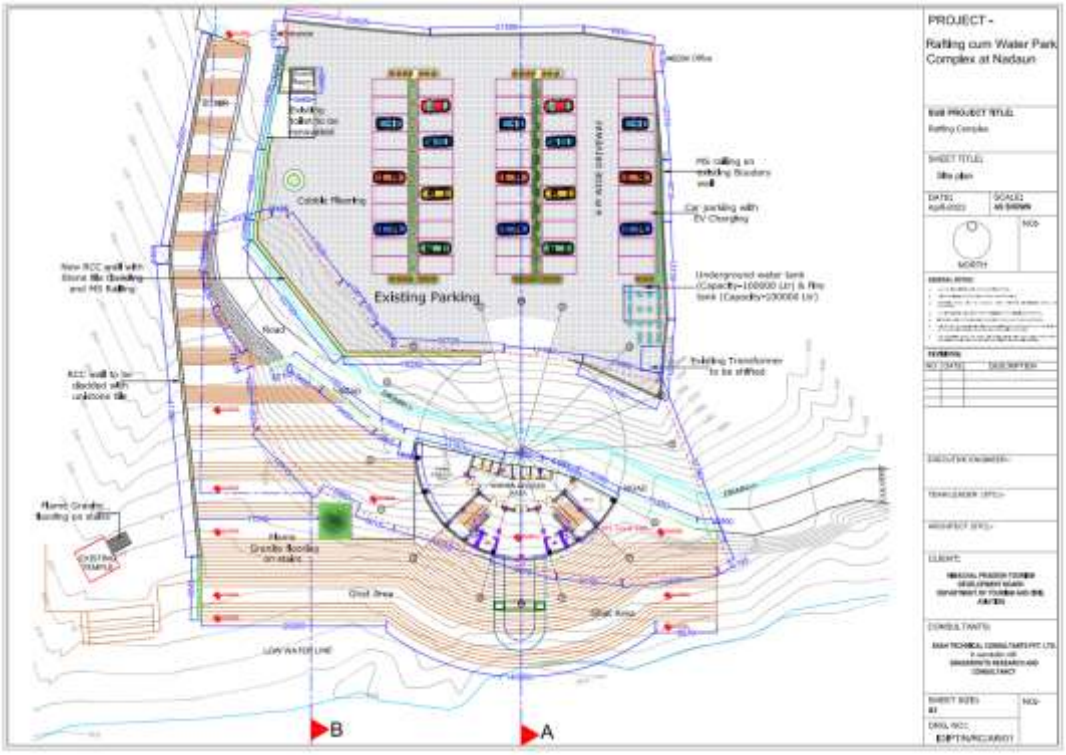


Fig 4: Survey Plan of Project site, Nadaun

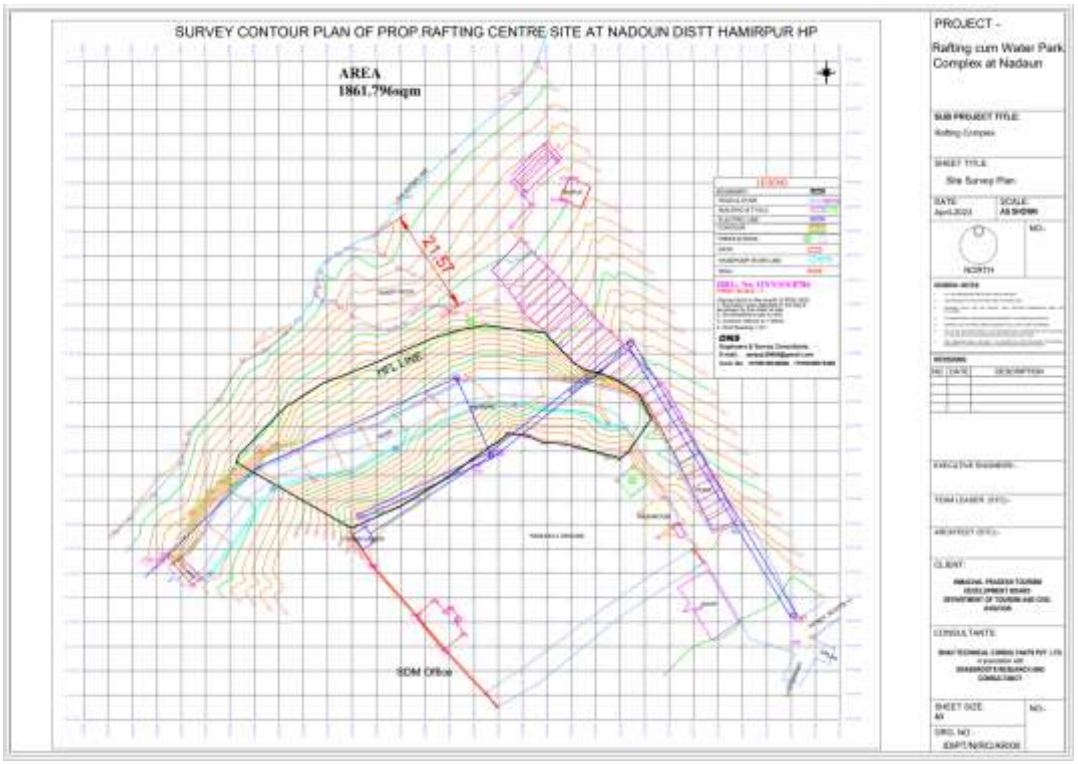


Fig. 5: Section Showing details of all floor plans

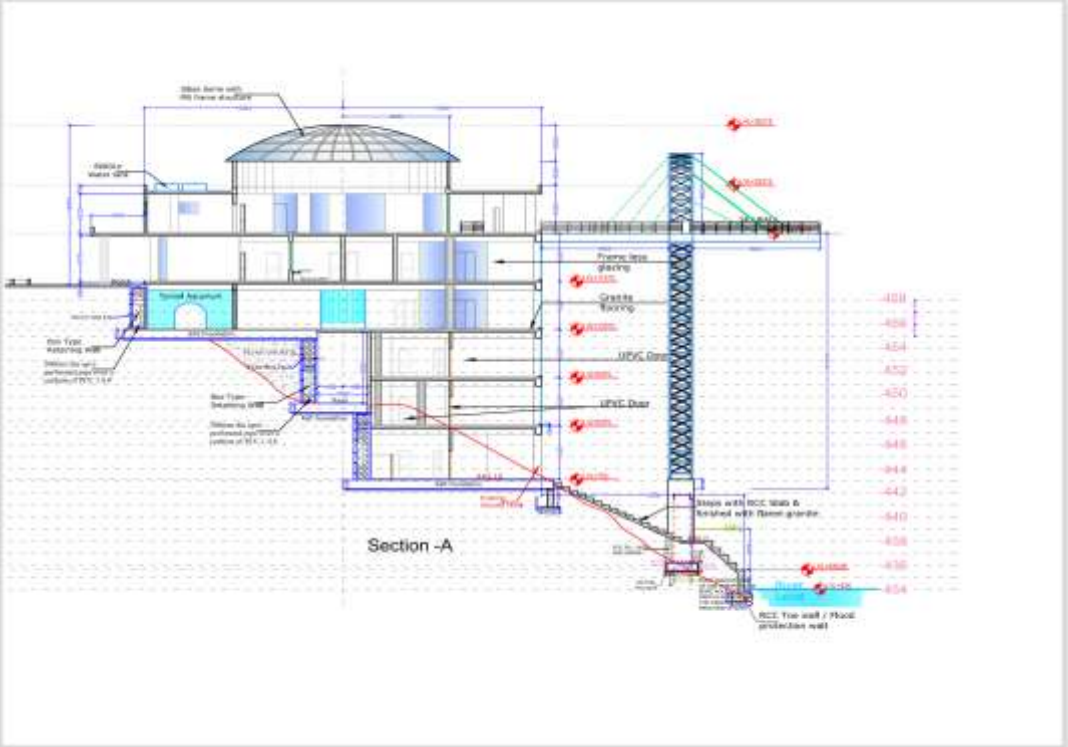


Fig. 6: Photographs of project site – Rafting Complex, Nadaun


Proposed Parking Site


River Beas flowing near site in NNE


Proposed Rafting Complex site


Parking site in view of NE direction

22. The site for the proposed project is a vacant land (khasra no.266) owned by

Department of Tourism and Civil Aviation, GoHP. The site is located in Nadaun, District-Hamirpur, H.P. The proposed site is not located within or adjacent to any protected area notified under Wildlife Protection Act, 1972 or any other Eco-sensitive zone (ESZ). Nearest protected area is Pong Dam Lake WLS is located about 14.81 km in North West direction of project site.

23. Technical design of the Rafting Complex is based on the National Building code of India, relevant Indian standards and Local Byelaws. The design considerations also include Code of practice for earthquake resistant design and construction of buildings. The physical infrastructure facilities such as water supply, sewerage, storm drainage, solid waste management, power requirements etc., are based on relevant standards and guidelines of CPHEEO. Latest BIS standard, Indian Electricity rules and requirements of the Electricity Supply Authority concerned shall be followed to design the electrical system. Designing and planning shall be done keeping in view efficient use of electricity, ease of maintenance, safety of human life and property from fire and shock, energy conservation, reliability and flexibility of the system.

24. The design and material will be compatible to the local architectural, physical, cultural and landscaping elements. Preference will also be given to the use of local material and labour as best as possible. For the conservation of natural resources, local construction material available in the nearby region as best as possible suiting to those in existence. All painting (interior and exterior) will be with environment-friendly low volatile organic compound paints.

25. **Construction Material:** Approximately 1309 tons of cement, 711 tons steel, 3492 m^3 sand, 2839m^3 stone/aggregates, 500 Tons other material will be used for the construction. Required construction material will be procured from the authorized dealers located nearer to the project site. Stone/ aggregates will be procured from the existing sites which are operating in the vicinity of the proposed project site. Material shall be procured from authorized sources (quarry/ stone crusher) having valid environmental clearance, CTE and CTO. Given the small magnitude of the project, there is no requirement for opening new sites for extraction of materials. However, if new site is required to be opened for extraction of materials, necessary licenses or approvals of environmental clearance and CTE & CTO shall be obtained from concerned agencies such as SEAC/SEIAA and State Pollution Control Board and Mining Department. For employment generation in the area, preference will be given to local people during construction work.

26. **Water Requirement and Sourcing:** There is a requirement of approx. 5304 KL of water during construction period. Approximately 1833 KL water will be required for construction and curing purpose. Approximately 1470 KL water will be required for water sprinkling for dust suppression, 134 KL water required for drinking purpose, Approx 2000 KL water will be required for domestic purposes. Water supply during construction work will be provided by IPH-Jal Shakti Vibhag, Nadaun or will be purchased through mobile water tankers by contractor.

27. **Quantity of Construction waste:** There will be generation of Construction waste from the earth work, RCC and PCC work, etc. The construction material like RCC, excavated earth, brickworks & tiles etc. will be reused as backfilling material, sub base material for parking areas and access pathways. The estimated quantity of construction waste from the project site is given in the Table 2.

Table 2: Estimated Amount of Construction waste generation and Utilization

Sr. No	Description of Item	Unit	Qty of Construction material	Unit	Quantity of Construction Waste	C&D Waste Utilization
1	Earth work in Excavation work of site development & foundation, of structures	Cum	2700	Cum	2700	i) Around 40% Material will be used in filling the foundation of structures and behind retaining Wall and balance 60% excavated material will be used in land scaping, embankment of approach path/ road.
2	Aggregates Coarse and fine in RCC and PCC Work	Cum	6000	Cum	300	The waste material may in dry or mixed condition used in RCC and PCC work will be utilized under Path way, Under floors etc.
3	UPVC	Tonne	2.5	Cum	0.125	The scrap will be handed over to local Vendors.
4	Steel work	Tonne	462.00	Tonne	14	The scrap will be handed over to local Vendors.
5	Stone work	Cum	0	Cum	0.00	The material obtained by dressing of Raw stones, will be utilized in sub base of road / filling under floors.
6	Brick work	Tonne	650	Tonne	32	The Bricks bats will be utilized in sub base of road /filling work behind retaining structures.
7	Marble Granite/Tiles	Tonne	55	Tonne	2.5	The scrap tiles will be utilized in sub base of road /filling work behind retaining structures.

28. **Quantity of Municipal Solid waste:** About 9 kg/day solid waste will be generated during construction and about 17 kg solid waste will be generated during operation phase. Solid waste generated at site will be disposed at designated area in coordination with the ULB Nadaun. Waste water generated from labor camp will be disposed in septic tank *via* soak pit. Details are given in table 3.

Table 3: Solid Waste Generation during construction

Sr. No	Description of Item	Unit	Factor	Estimated % of waste generated kg/ Capita/Day	Total Manpower at site (Nos) per day	Qty of Waste Generated/ day	Disposal of waste
1	Residential	Kg	0.30-0.60	0.3	30	9	Waste bins shall be provided at different places for dry and wet waste of adequate capacity during construction. Biodegradable

							waste will be disposed properly through composter and dry waste will send to concerned agency.

29. **Rain water Harvesting Details:** Rain water harvesting is proposed at project site at Rafting Complex. Underground rain water harvesting tank of 40,000 liter capacity is proposed. This rain water harvesting will be used for recharging ground water.

30. **Water requirement during Operation phase:** During the Operation phase water will be required for domestic purposes and landscaping of green belt proposed in the Rafting Complex. The other usage of water will be for the proposed Tunnel aquarium and Cylindrical aquarium. Approx. 600 KL water will be required for the Tunnel and Cylindrical aquarium one time and after that about 120 KL will be required once in 3 days to make up the volume of Tunnel and Cylindrical aquarium. Water will be sourced from Jal Shakti Vibhag. To reduce the water consumption, recycling of the water will be done for the Tunnel Aquarium and Cylindrical aquarium by filtration system. Details of process flow diagram of recycling after filtration of water is given in Figure 7 & 8. Details of water balance during operational phase is given in Table 4.

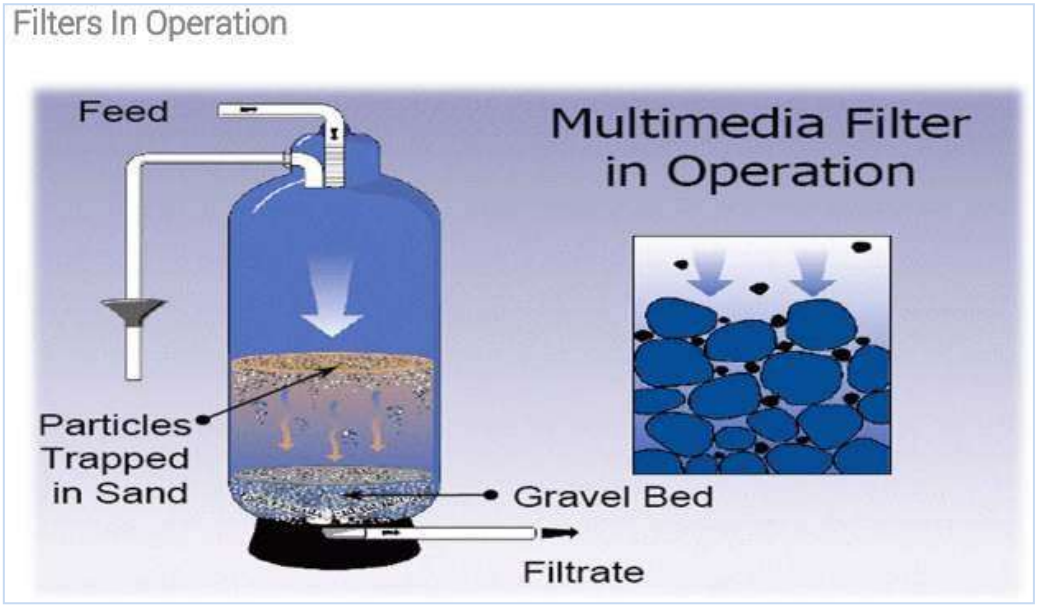
Table 4: Water Balance during Operation

Sr. No	Description of item	Qty in KL	Frequency	Source
1	Fresh water requirement	12.39	Per day	Jal Shakti Vibhag
2	From Rains storage in RHT	40		Rains
3	Fire Tank	100		Jal Shakti Vibhag
4	Tunnel Aquarium	400	One Time	Jal Shakti Vibhag
5	Cylindrical Aquarium	200	One Time	Jal Shakti Vibhag
6	Make up volume by freshwater	120	Once in 3 days	Jal Shakti Vibhag
7	Landscaping/ Gardening in dry season	3.0	Per Day	Jal Shakti Vibhag
8	Total Water Budget	892.39		
9	Domestic Use Fresh Water	12.39		
10	losses, Floor Washing 5% of D	0.38		
11	Sewage Generation 80% of S.No. 1	9.9	To be connected nearby sewerage system for final disposal	

31. **Process Description:** The water will be pumped from the existing water storage tank to Multi Media Filters. For pumping 3 Nos (2 working + 1 standby) pumps will be used.

32. Raw water is passed through an array of Multi Media Filters. The filter media is supported on gravel bed that consists of multiple layers of Anthracite, Graded quartz sand, Fine sand, Super fine white sand and pebbles of progressively larger sizes. During the filtration cycle the filter bed retains the dirt and suspended particles from the water and accumulates within the filter the water and accumulates within the filter bed. As the filtration progress the filter media gets loaded with retained suspended particles, this results in a continuous increase of pressure drop across the filter, when a predetermined pressure drop level is achieved the filter is shut down for cleaning.

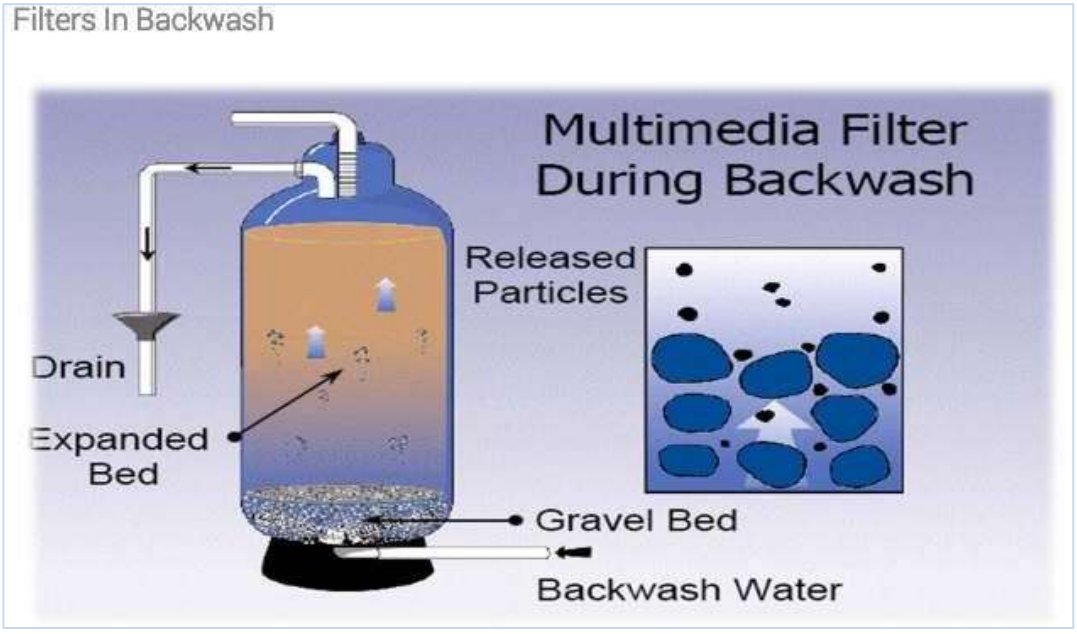
Fig. 7: Showing flow diagram of Filter in Operation



33. **Backwash**

34. As the filtration progress the filter media gets loaded with the retain the suspended particles, this results in a continuous increase of pressure drop across the filter, when a predetermined pressure drop level is achieved the filter is shut down for cleaning. The filter media is cleaned by backwash system with air and then with water. After backwashing the filter is rinsed with raw water and after the required quality of water is achieved the filter is put back into service. Depending on the filtered water quality required backwashing is either done with raw water or with filtered water.

Fig. 8: Showing flow diagram of Multimedia Filter during Backwash



35. The treated water from filters is stored in treated water tank and then used for water fountain.

36. **Energy Efficiency Measures:** The detailed designs for the project components shall comply with ECBC guidelines. Design shall ensure that environmental sustainability principles including energy efficiency, resource recycling, waste minimization, etc. are complied. Design includes determination of interior lighting power allowance (W) as per ECBC. Usage of recyclable materials like building orientation to maximize natural light, minimize heat ingress and cost for air conditioning, installation of BEE certified equipment, use of energy efficient lights (LED), Occupancy sensors/ Control devices in common areas like Lobby, Toilets, Staircase etc. (Each control device shall be activated either manually by the occupant or automatically by sensing an occupant. Use of occupancy sensors in Lobby, toilets, Staircase to have an automatic control of ON/OFF of lighting is recommended by Green Building Norms), Exterior lighting control: Lighting of all exterior applications shall be controlled by a photo sensor or astronomical time switch. Solar lights shall be used for common areas.

37. **Power Requirement:** During construction phase, temporary electric connection shall be taken by the contractor from Himachal Pradesh State Electricity Board (HPSEB). DG set will be used as standby during power cuts. The total power requirement during operation phase is 457 KW.

38. **Water Efficiency Measures:** Installation of water efficient technology such as low-flow showers and toilets will be used.

39. **Sustainable Tourism Practices:** Sustainable tourism aims to mainstream sustainability in tourism and ensure a more resilient, inclusive, resource efficient tourism while safeguarding natural and cultural resources. It entails optimal use of environmental resources and helps to conserve natural resources and biodiversity. During operation phase, all the tourist related activities shall be planned and implemented in consultation with HPTDB. Resource efficiency in the project shall be achieved by implementing resource management practices such as Improving infrastructure and maintenance (e.g. reducing leakages), encouraging installation of water efficient technology such as low-flow showers and toilets, waste management and solar PV system, energy efficiency to ensure the sustainability of local resources during implementation & operation of project.

40. **Safety of Tourists:** Increase in the number of tourists to the proposed tourist destinations also increase issues of their safety and vulnerability to disasters. The proposed project site is near river, hence consideration of high flood levels, have been taken in the design of components. Other safety features include:

- Emergency procedures to include paramedics and ambulance at the project sites.
- Increased vehicular movement along the internal roads around project sites – speed restrictions, vehicle entry restrictions, provision of appropriate road signage, pedestrians' safety etc., shall minimize impacts on safety of the tourist/ visitors.
- No night time activity shall be permitted in water park/ river areas.
- First Aid should always made available at site.
- Requisite self-illuminated signage boards (e.g. Exit/ Toilet etc.) with maintenance free battery backup shall be proposed to provide for guidance purpose in general areas, as per regulation.

41. **Fire Safety**

- Fire alarms shall be installed at strategic locations, and shall be kept in a functioning

state.

- Emergency fire response plan shall be prepared. Ensure that there a fire assemble point. All emergency numbers (Police, Fire Brigade, etc.) must be readily available and displayed.
- Ensure that adequate firefighting equipment is provided and such equipment is regularly serviced and maintained. Employees should be trained on firefighting methods and techniques. (Signage: Provide adequate fire hazard signs such as 'No Smoking' and 'Exit Direction' signs. Such signs should be clearly displayed).

D. Type of Contract & Project Implementation Schedule

42. The type of contract will be an item rate contract in which the contractor would carry out the work as per drawings and specifications. Bill of quantities (BOQ) is prepared where the quantities of items to be carried out are precisely worked out and the contractor must quote a unit price against each item of work. The cost of environmental budget for the various environmental management measures proposed in the EMP, capacity building programs and the cost of the environmental monitoring is given in this IEE report (Table 24). There are few other environmental measures such as safety, signage, personal protective equipment and the cost for these items have been accounted in the engineering cost. Therefore, these items have not been included in the EMP budget. Only those items not covered under the engineering cost are considered in this IEE report. The overall project schedule will be about 24 months out of which the total construction time will be 24 months. Commissioning and handing over process shall be after completion of construction. Detailed project report (DPR) of the same has been prepared and approved of the said project.

III. ANALYSIS OF ALTERNATIVES

43. In this chapter analysis of alternatives has been carried out for 'with' and 'without' project, location selection, project implementation scheduling and materials usage in the detailed design and construction of Rafting Complex in Nadaun.

44. The Rafting Complex at Nadaun is greenfield project. The project comprises construction of Rafting Complex. The project site for Rafting Complex is located near river Beas in Nadaun town. Environmental management measures such as provision of storm water drains, bio-composter, solar PV system, landscaping etc. are considered as part of the initiatives. Nevertheless, alternative methods technologies and designs were compared against technical, economic, social and environmental criteria for the project components in order to maximize environmental benefits and to minimize impacts. Analysis of alternatives comprised (i) consideration of "no project scenario" and (ii) alternative designs for various project components and O&M procedures for the safe collection, and disposal of solid waste and sewage.

A. No Project Scenario

45. From the year 2014-15 to 2021-22, the tourist footfall at District Hamirpur recorded 753193 (2014-15) and 206255 (2021-22). Due to pandemic COVID-19, there was a sharp decline in tourist footfalls in the years 2020 and 2021. However, with the reduction in number of active cases of COVID -19, tourist footfalls to the destination saw recovery to previous levels by the year 2022-23. Nadaun is a well-known tourist destination located on the bank of the Beas River in the District of Hamirpur, Himachal Pradesh. Hence given the increase in number of tourist arrivals, the "no project" or "do nothing" alternative is not an option.

46. With the projected increase in tourist footfall, it is necessary to improve facilities at the various tourist locations and ensure their operation with proper waste management system, water conservation to the possible extent. Compared to the Without Project alternatives, the with project alternatives will contribute towards improved recreational facilities for the tourists and environmental conditions at the site leading to improved tourism experience, which will ultimately increase tourist footfall and revenue generation for the State.

B. Rafting Complex Location Alternatives

47. Various locations for proposed project were evaluated. The considerations for the project site finalization were availability of encumbrance free government land near river bank, good natural setting of the site, good connectivity, ease of access, proximity to tourism destinations and facilities, tourist footfall and positive projections of footfall in the area, technical considerations like slope, HFL, etc., and less ecological impacts like tree cutting etc. Himachal Pradesh being a hilly state with more than 68% of forest area, it is almost inevitable to avoid forest and protected areas. However, the project planning has considered this as a key consideration and avoided project citing or locating any component near any protected/ Eco sensitive areas. Based on the above considerations, the proposed site for Rafting Complex was selected. Site is easily accessible via public transport such as taxi and buses etc.

C. Design alternatives

48. Engineering solution selected are appropriate option in terms of cost, durability, climate resilience, environmental impacts and O&M capacities of project owners. To minimize environmental footprint the design alternatives presented in Table 5 have been considered for all component of project.

Table 5: Design alternative considered in each component of project

Design element	Design alternative 1	Design alternative 2	Selected alternatives	Advantage of Considered Design
Parking area & Internal road	Cement paver blocks	Use of asphalt/ concrete	Cement paver block on sand bed	• Paver block can be used in any weather conditions. • Cost effective, not many skilled labors required. • The impact of emission from the hot mix plants can be avoided in case of block usage. • Paver block does not need special maintenance as compared to concrete or asphalt surfaces. • Paver blocks are very durable and if they are adequately interlocked. They can easily last for about 20 years. • Paver blocks can withstand hefty vehicular load as well. • Paver block is slip resistant and skid resistant.
Solid waste management	Landfilling/ open disposal in and around the site	Composting	Bio-composter	• The use of composting unit is quite helpful to further improve the ecological footprint or tourist/ visitors since organic waste can be decomposed through composting instead of littering. • Thus, composting of all organic waste at site can be used as manure.
Waste water/ sewage Disposal	Traditional septic tank via soak pit	Connected in nearby sewer line for safe disposal	Connected in nearby sewer line for safe disposal	• Ensure safe disposal of sewage in existing sewerage system.

D. Material Usage and Sustainability considerations

49. In terms of design, materials (steel bars, cement and bricks) will be appropriately selected (as per approved design specification) considering that the area is within the seismic zone V classification. There will be no use of asbestos containing sheets or pipes. Further, to conserve

natural resources, wherever applicable. To reduce the carbon foot prints, usage of solar power for lighting of open areas and garden has been planned besides energy efficient lighting and appliances.

C. Conclusion

50. The analysis of alternatives identified that for economic development and Rafting Complex infrastructural facilities, implementation of the project is essential for the region and the State in general. While there are no alternative location options for the identified tourism assets, design alternatives considered under the project addresses the issues of impact on biodiversity (due to greenfield development), climate change, waste treatment (by solid waste composting) associated with the destination. Apart from these alternatives approaches, there are several mitigation measures taken as part of the impact assessment and management measures for addressing the issues during construction and operation phases.

51. The project site found environmentally viable based on screening checklist (REA) in and compliance with the project eligibility criteria, no adverse impacts anticipated except some minor impacts which will be mitigated by adopted proposed mitigation measures during construction as given in Chapter-Anticipated Impact and Mitigation Measures and Environmental Management Plan (EMP). No environmentally sensitive areas, protected areas come within project site. Project area does not come within 300m radius of any physical cultural resources.

IV. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

A. ADB Policy

52. ADB SPS Requires that during the design, construction, and operation of the project necessary compliance to all applicable laws and international conventions / treaties along with pollution prevention and control technologies and practices consistent with international good practice, are ensured.

53. ADB uses a classification system to reflect the significance of a project's potential environmental impacts. A project's category is determined by the category of its most environmentally sensitive component, including direct, indirect, cumulative, and induced impacts in the project's area of influence. Each proposed project is scrutinized as to its type, location, scale, and sensitivity and the magnitude of its potential environmental impacts. Projects are assigned to one of the following four categories:

- **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 EIA is required to address significant impacts.
- **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.
- **Category C:** A proposed project is classified as category C if it is likely to have minimal or no adverse environmental impacts. No EIA or IEE is required, although environmental implications are reviewed.
- **Category FI:** A proposed project is classified as category FI if it involves investment of ADB funds to or through a FI. Projects involve a credit line through a financial intermediary or an equity investment in a financial intermediary. The financial intermediary must apply an environmental management system, unless all Projects will result in insignificant impacts.

54. The environmental impact of Rafting Complex at Nadaun project have been identified and assessed as part of the planning and design process. An environmental assessment using ADB's REA checklist for (Annexure 1) was conducted, and results of the assessment show that the project is unlikely to cause significant adverse impacts. Thus, this IEE has been prepared in accordance with ADB SPS's requirements for environment category B projects.

55. **Environmental Management Plan:** An EMP which addresses the potential impacts and risks identified by the environmental assessment is prepared. The level of detail and complexity of the EMP and the priority of the identified measures and actions will be commensurate with the Project's impact and risks.

56. **Public Disclosure:** The IEE will be put in an accessible place (e.g., local government offices, libraries, community centers etc.), and a summary translated into Hindi for other stakeholders. The following safeguard documents will be put up in ADB's website so that the affected people, other stakeholders, and the general public can provide meaningful inputs into the project design and implementation:

I. For environmental category A projects, a draft EIA report at least 120 days before Board consideration.
II. Final or updated EIA and or IEE upon receipt; and

III. Environmental monitoring reports submitted by the Project Management Unit (PMU) during project implementation upon receipt.

57. **Consultation and Participation:** ADB SPS, 2009 requires borrower to conduct meaningful consultation[1] with affected people and other concerned stakeholders, including civil society, and facilitate their informed participation. The consultation process and its results are to be documented and reflected in the environmental assessment report.

58. **Grievance Redress Mechanism:** ADB SPS, 2009 require borrowers to establish a mechanism to receive and facilitate resolution of affected people's concerns, complaints, and grievances about the project's performance. The grievance mechanism shall be scaled to the risks and adverse impacts of the project.

59. **Monitoring and Reporting:** Borrower shall monitor, measure and document the implementation progress of the EMP. If necessary, the borrower shall identify the necessary corrective actions, and reflect them in a corrective action plan. Borrower shall prepare and submit to ADB semi-annual environmental monitoring reports that describe progress with implementation of the EMP and compliance issues and corrective actions, if any. For projects likely to have significant adverse environmental impacts during operation, reporting will continue at the minimum on an annual basis until ADB issues a project completion report.

60. **Unanticipated Environmental Impacts:** Where unanticipated environmental impacts become apparent during project implementation, ADB SPS, 2009 requires the borrower to update the environmental assessment and EMP or prepare a new environmental assessment and EMP to assess the potential impacts, evaluate the alternatives, and outline mitigation measures and resources to address those impacts.

61. **Occupational Health and Safety:** ADB SPS, 2009 requires the borrower[2] to ensure that workers[3] are provided with a safe and healthy working environment, taking into account risks inherent to the sector and specific classes of hazards in the project work areas, including physical, chemical, biological, and radiological hazards. Borrower shall take steps to prevent accidents, injury, and disease arising from, associated with, or occurring during the course of work, including: (i) identifying and minimizing, so far as reasonably practicable, the causes of potential hazards to workers; (ii) providing preventive and protective measures, including modification, substitution, or elimination of hazardous conditions or substances; (iii) providing appropriate equipment to minimize risks and requiring and enforcing its use; (iv) training workers and providing them with appropriate incentives to use and comply with health and safety procedures and protective equipment; (v) documenting and reporting occupational accidents, diseases, and incidents; and (vi) having emergency prevention, preparedness, and response arrangements in place.

62. **Community Health and Safety:** ADB SPS, 2009 requires the borrower to identify and assess risks to, and potential impacts on, the safety of affected communities during the design, construction, operation, and decommissioning of the project, and shall establish preventive measures and plans to address them in a manner commensurate with the identified risks and impacts.

63. **Physical Cultural Resources:** Borrower is responsible for siting and designing the project to avoid significant damage to physical cultural resources. ADB SPS, 2009 requires that such resources likely to be affected by the project are identified, and qualified and experienced experts assess the project's potential impacts on these resources using field-based surveys as an integral part of the environmental assessment process. When the proposed location of a project component is in areas where physical cultural resources are expected to be found as determined during the environmental assessment process, chances finding procedures shall be included in the EMP.

64. **Core Labor Standards:** ADB is committed to due consideration of Core Labor Standards (CLS) in the design and implementation of projects. A CLS handbook[4] has been developed by ADB with cooperation of International Labor Organization (ILO). The HPTDB PMU will ensure compliance to applicable CLS of ADB-ILO during project implementation including:

i. Freedom of association and the effective recognition of the right to collective bargaining.
ii. Elimination of all forms of forced or compulsory labor.
iii. Effective abolition of child labor.
iv. Elimination of discrimination in respect of employment and occupation.

1.

B. National and State Laws

65. The implementation of the projects will be governed by Government of India and State of Himachal Pradesh and other applicable environmental acts, rules, regulations, and standards. These regulations impose restrictions on the activities to minimize or mitigate likely impacts on the environment. It is the responsibility of the project executing and implementing agencies to ensure projects are consistent with the legal framework, whether applicable international, national, state or municipal or local. Key standards include those related to drinking water quality, air quality, effluent discharge, and protected areas. Compliance is required in all stages of the projects including design, construction, and operation and maintenance.

66. **Environmental assessment:** The Government of India EIA Notification of 2006 (replacing the EIA Notification of 1994) sets out the requirement for environmental assessment in India. This states that environmental clearance is required for specified activities/projects, and this must be obtained before any construction work or land preparation (except land acquisition) may commence. Projects are categorized as A or B depending on the scale of the project and the nature of its impacts.

67. **Category A** projects requires environmental clearance from the central Ministry of Environment, Forests and Climate Change (MOEFCC). The proponent is required to provide preliminary details of the project in the prescribed manner with all requisite details, after which an Expert Appraisal Committee (EAC) of the MOEFCC prepares comprehensive terms of reference (TOR) for the EIA study. On completion of the study and review of the report by the EAC, MoEFCC considers the recommendation of the EAC and provides the environmental clearance if appropriate.

68. **Category B** projects require environmental clearance from the State Environment Impact Assessment Authority (SEIAA). The State level EAC categorizes the project as either B1 (requiring EIA study) or B2 (no EIA study) and prepares TOR for B1 projects within 60 days. On completion of the study and review of the report by the EAC, the SEIAA issues the environmental clearance based on the EAC recommendation. The Notification also provides that any project or activity classified as category B will be treated as category A, if it is located in whole or in part within 10 km from the boundary of protected areas, notified areas or inter-state or international boundaries.

69. None of the components of this project falls under the ambit of the EIA Notification 2006, and therefore EIA Study or environmental clearance is not required for the project.

[4] Core Labor Standards Handbook (adb.org)

C. Environmental Regulatory Compliance

Table *6*: Summary of Applicable Regulation

Project	Applicability of Acts/ Guidelines	Compliance criteria
Rafting Complex at Nadaun, District- Hamirpur, Himachal Pradesh	NEP is a comprehensive guiding document in India for all environmental conservation programs and legislations by Central, State and Local Government. The dominant theme of this policy is to promote betterment of livelihoods without compromising or degrading the environmental resources. The policy also advocates collaboration method of different stakeholders to harness potential resources and strengthen environmental management.	SITDP should adhere to NEP principle of "enhancing and conservation of environmental resources and abatement of pollution".
	Environmental Protect Act, 1986 To protect and improve overall environment	Applicable
	Water (Prevention and Control of Pollution) Act, 1974 and; Air (Prevention and Control of Pollution) Act, 1981	Applicable Consent to Establish (CTE) & Consent to Operate (CTO) from the HPPCB for setting up of diesel generators (if any), hot mix plant, wet mix plant, crusher plant (if exclusively for this project) to be obtained by the Contractor, prior to commencement of construction works at site. If contractor purchases the construction materials (e.g., sand, stone, gravel) from third party, they must ensure that materials are coming from approved quarry sites/ stone crushers etc.
	The Noise Pollution (Regulation and Control) Rules, 2000.	Applicable The project shall put measures for abatement of noise including noise emanating from vehicular movements, blowing of horns, and sound producing instruments and ensure that the existing noise levels do not exceed the ambient air quality standards specified under these rules.
	Hazardous Waste (Management and Handling) Rules, 1989 & amended on 2016.	Applicable Hazardous wastes like oil and lubricants generated shall be disposed as per provisions of Hazardous Waste Rules.
	The Himachal Pradesh non-biodegradable garbage (control) Act, 1995;	Applicable
	The Himachal Pradesh Town and Country Planning Act, 1977;	Applicable The Government of Himachal Pradesh, under Town and Country Planning Act has notified the 50m area is under heritage zone and all the provisions under this Act to be followed during construction and operation.
	The Himachal Pradesh River Rafting Rules, 2005	Applicable
	The Himachal Pradesh Water Sports and Allied Activities Rules, 2021.	Applicable
	The BOCW Act 1996; Employer shall- • Provide and maintain, at suitable point,	Applicable

	sufficient quantity of wholesome drinking water, such point shall be at least 6 meters away from any washing areas, urinals or toilets. • Provide sufficient urinals and latrines at convenient place, easily accessible by workers. • Provide free of charge, temporary living accommodations near to work sites with separate cooking place, bathing and lavatory facilities and restore the site as pre conditions after completing the construction works. • Provide crèche with proper accommodation, ventilation, lighting, cleanliness and sanitation if more than fifty female workers areengaged. • Provide first aid facilities in all construction sites. • For safety of workers employer shall provide- • Safe access to site and work place. • Safety in demolition works. • Safety in use of explosives. • Safety in operation of transporting equipment and appoint competent person to drive or operate such vehicles and equipment. • Safety in lifting appliance, hoist and lifting gears. • Adequate and suitable lighting to every work place and approach. • Prevention of inhalation of dust, smoke, fumes, gases during construction works and provide adequate ventilation in work place and confined space. • Safety in material handling and stacking/unstacking. • Safeguarding the machinery with fly-wheel of moving parts. • Safe handling and use of plantsoperated by compressed air. • Fire safety. • Limit of weight to be lifted by workers individually. • Safety in electric wires, apparatus,tools and equipment's. • Provide safety net, safety sheet. • Safety belts while working at height.	Contractors are required to follow all the provisions of BOCW Act.
	Motor Vehicles Act, 1988 No person will be allowed to drive a motor vehicle unless he holds a valid driving license issued to him authorizing him to drive the vehicle.	Applicable Valid and appropriate (LMV/HMV) driving license of operators and drivers is required to operate or drive vehicle and equipment at construction site.
	The Petroleum Rules 2002 All due precautions will be taken at all times to prevent escape of petroleum into any drain, sewer, and harbour, river or watercourse or over any public road or railway line.	Do not allow any escape of diesel, lubricants in to drain or any nearby water course.

	Gas Cylinder Rules 2004 These rules deal with Filling,possession, import and transport of cylinders, Safety relief devices, Marking on cylinders, Markings on valve, Identification colours, Labelling of cylinders, Restriction on delivery or Dispatch of cylinders, Repairing of cylinders, Prohibition of employment of children and intoxicated persons,Prohibition of smoking, fires, lights and dangerous substances, General precautions, Special precautions against accidents, Competent person to be incharge of operations, Handling and use, Restrictions on filling, Loading, unloading and transport of cylinders, Storage of cylinders, ownership and record keeping etc.	All the safety in storage, transportation, handling, usage, maintenance, repairing of gas cylinders and other precautions should be taken and record should be kept maintained.
	Solid Waste Management Rules, 2016 - As per this Act followingprovisions are made- **Responsibility of Solid Waste Generator** i. Segregate and store the waste generated in three separate streams namely bio-degradable, non-biodegradable and domestic. ii. hazardous wastes in suitable bins and handover segregated wastes to authorized waste pickers or waste collectors as per the direction or notification by the local authorities from time to time; iii. Store separately construction and demolition waste, as and when generated, in his own premises and shall dispose of as per the Construction and Demolition Waste Management Rules, 2016; and iv. No waste generator shall throw, burn or burry the solid waste generated by him, on streets, open public spaces outside his premises or in the drain or water bodies.	Applicable Contractor to follow all the rules during construction works.
	Construction and Demolition (C&D) Waste Management Rules, 2016- Following rules are applicable on contractor during construction works- i. Segregate construction and demolition waste and deposit at collection center or handover it to the authorized processing facilities. ii. Shall ensure that there is no littering or deposition so as to prevent obstruction to the traffic or the public or drains. iii. Large generators (who generate more than 20 tons or more in one day or 300 tons per project in a month) shall submit waste management plan and get appropriate approvals from the local authority before starting construction or demolition or remodeling work. iv. Large generators shall have environment management plan to address the likely environmental issues from construction, demolition, storage, transportation process and disposal /reuse of C & D Waste.	Applicable Contractor to follow all the rules during construction works

	v. Large generators shall segregate the waste into four streams such as concrete, soil, steel, wood and plastics, bricks and mortar, large generators shall pay relevant charges for collection, transportation, processing and disposal as notified by the concerned authorities.	
	Labor Laws The contractor shall not make employment decisions based upon personal characteristics unrelated to job requirements. The contractor shall base the employment relationship upon equal opportunity and fair treatment, and shall not discriminate with respect to aspects of the employment relationship, including recruitment and hiring, compensation(including wages and benefits), working conditions and terms of employment or retirement, and discipline. The contractor shall provide equal wages and benefits to men and women for work of equal value or type. **Contract Labour (Regulation and Abolition) Act, 1970** The Act provides for certain welfare measures to be provided by the Contractor to contract labor and in case the Contractor fails to provide, the same are required to be provided by the Principal Employer by Law. The principal employer is required to take Certificate of Registration and the Contractor is required to take a License from the designated Officer. The Act is applicable to the establishments or Contractor of principal employer if they employ 20 or more contract labor. **Workmen Compensation Act, 1923** The Act provides for compensation in case of injury by accident arising out of and during the course of employment.	Applicable Labour laws including amendments issued from time to time applicable to establishments engaged in construction of civil works.
	Inter-State Migrant Workmen's (Regulation of Employment and Conditions of Service) Act, 1979 The Act is applicable to an establishment which employs 5 or more inter-state migrant workmen through an intermediary (who has recruited workmen in one state for employment in the establishment situated in another state).The inter-state migrant workmen, in an establishment to which this Act becomes applicable, are required to be provided certain facilities such as housing, medical aid, traveling expenses from home up to the establishment and back, etc.	Applicable
	Right to Equality: Right to Equality ensures equal rights for all the citizens. The Right to Equality prohibits inequality on the basis of caste, religion, place of birth, race, or gender. It also ensures equality of opportunity in matters of public employment and prevents the State from discriminating against anyone in matters of employment on the	Applicable

	grounds only of religion, race, caste, sex, descent, place of birth, place of residence or any of them.	
	The Sexual Harassment of Women at workplace (Prevention, Prohibition and Redressal) Act, 2013 Whereas sexual harassment results in violation of the fundamental rights of a women to equality under article 14 and 15 of the Constitution of India and her right to life and to live with dignity under article 21 of the Constitution and right to practice any profession or to carry on any occupation, trade or business which includes a right to safe environment free from sexual harassment.	Applicable
	Child Labor (Prohibition and Regulation) Act, 1986 The Act prohibits employment of children below 14 years of age in certain occupations and processes and provides for regulation of employment of children in all other occupations and processes. Employment of child labor is prohibited in Building and Construction Industry.	Applicable
	Minimum Wages Act, 1948 The employer is supposed to pay not less than the Minimum Wages fixed by appropriate Government as per provisions of the Act if the employment is a scheduled employment. Construction of Buildings, Roads, and Runways are scheduled employment.	Applicable
	Payment of Wages Act, 1936 It lays down as to by what date the wages are to be paid, when it will be paid and what deductions can be made from the wages of the workers.	Applicable
	Equal Remuneration Act and Rules, 1976 The Act provides for payment of equal wages for work of equal nature to Male and Female workers and not for making discrimination against Female employees in the matters of transfers, training and promotions etc.	Applicable

70. The proposed project does not require Statutory Clearances from MoEFCC. The project requires to obtain required consents and permissions from competent authorities. All no objection certificates (NOC), CTE, CTO and other clearances will be obtained during pre-construction stage. Other permission will be required during construction period and will be taken by Contractor such as Utility Shifting i.e. water supply, sewerage pipeline, electric cables, poles, telephone lines etc. and road cutting, excavation, clearing of vegetation, construction waste disposal sites from Nagar Panchayat, pollution control board, power corporation, Traffic department, Town and country planning department etc. as required time to time. Sourcing/ procurement of construction material from authorized/ approved agencies/ vendors/ quarries having valid environmental clearance permits will be taken by contractor.

71. The specific requirements are mentioned as under for which the contractor should comply with before initiating the construction works are presented in Table 7.

Table 7: NOCs to be taken by Contractor during pre-construction and construction Phases

Sr.No.	Activity	Statutes under which clearance is required	Implementation
1	Land for project activity	Allotment and approval for specific use	PIU
2	Establishment of Construction camp/s	Allotment and approval for specific use	Contractor
3	NOC for disposal of excess earth at all the sites	Construction & Demolition Waste Management Rules, 2016	Contractor
4	Tree Cutting, if any	State Forest Department	PIU
5	Utility Shifting (e.g. Electric Power supply line, transformer etc.)	State Electricity Board H.P. (HPSEB)	Contractor/ PIU
6	Hot mix plants, Crushers, Batching plants and DG Set at site	Consent to establish and consent to operate under Air Act, 1981 from HPPCB.	Contractor
7	Storage, handling and transport of hazardous materials	Hazardous Wastes (Management and Handling) Rules. 2016 Manufacturing, Storage and Import of Hazardous Chemicals Rules, 1989 from HPPCB.	Contractor
8	New Sand mining, quarries and borrow areas	Environmental clearance under EIA Notification 2006.	Contractor/ Third Party
9	Use of vehicles and equipment	Pollution under control certificate (PUC) under Central Motor Vehicle Rules 1989	Contractor
10	NOC for installation of bore wells, if any	Notification from Ministry of Jal Shakti (Department of Water Resources, River Development and Ganga Rejuvenation), Central Ground Water Authority on 20th September 2020.	Contractor / PIU
11	Permission for use of water for construction and operation purposes	From MC/Jal Shakti Vibhag (JSV)/ Irrigation and Public Health (IPH) Department-Water Resource Department	Contractor

72. PMU will be overall responsible for supervision in getting all clearance and provide details to ADB through semi-annual report. PMU will ensure availability of all necessary regulatory clearances and approvals prior to commencement of works. Respective PIUs, with support of project consultants and contractors, are responsible for obtaining the regulatory permissions, ensuring compliance with terms & conditions stipulated therein, and timely renewals are the responsibilities of the facility owners (including contractors where the contractors own the facility)/ permits and ensuring conditions/ specifications/ provisions incorporated in the project design, cost and implantation. The PIUs shall report to PMU the status of compliances to clearances/ permits as part of the regular progress reporting.

V. DESCRIPTION OF THE ENVIRONMENT

73. This section presents a brief description of the existing environment around the Physical Environment around the Rafting Complex at Nadaun 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 project are presented. Secondary information was collected from the official websites and reports of government agencies including the Forest Department, Archaeological Survey of India (ASI), Himachal Pradesh State Pollution Control Board, Central Ground Water Board for relevant information on forest cover, location of ASI sites, surface and ground water, etc. and meteorological data from web sources.

A. Physical Environment

1. Location, Area and Connectivity

74. The project site is proposed Rafting Complex at Nadaun, District- Hamirpur, Himachal Pradesh. Coordinates of the project site is 31°47'5.36"N latitude and 76°20'27.62"E longitude. Nadaun is a historical town and Nagar Panchayat in the Hamirpur district of Himachal Pradesh, India. Nadaun is a small town located on NH-3 and NH-303 in the Shivalik range foothills. It is situated on the left bank of the river Beas. Nadaun shares its boundaries with districts, Kangra and Una. Nadaun is located at 31.78°N 76.35°E. It has an average elevation of 508 metres above mean sea level. River Beas flows through the town. Nadaun lies midway between Jwalamukhi (12 km) and Hamirpur (28 km). Total geographical area of Nadaun is 1118 km^2. There is no Airport in district Hamirpur, thus no direct Air Service / Flight is available to this town. The nearest Airport to Nadaun is Gaggal (Kangra) near Dharamshala. Gaggal Airport is about 55 KMs far. There is no direct Train service to this town. The nearest Railway Stations from Nadaun are Amb (Broad Gauge Railway line) and Jwalamukhi Road (Narrow Gauge Railway line). Amb railway station is approximately 42 km away and Jwalamukhi Road Railway Station is about 40 KMs. This place is very well connected by road from all the major cities of Himachal Pradesh and other neighboring states. Nadaun is located along the NH-3 and NH-303. The town is accessible via NH-3 (Hamirpur-Bhota-Ghumarwin-Ghagus road) from Hamirpur which is located at a distance of 28 km South East of the town. Una which is located at a distance of 72 km from Nadaun is accessible by NH-3 which connects Atari-Amritsar-Jalandhar-Hoshiarpur-Nadaun-Hamirpur-Toni Devi-Awa Devi-Mandi- Kullu-Manali. Sujanpur is accessible via MDR 36. The Hamirpur road (NH-3) connects Nadaun with Shimla (the state capital) and Amb road (NH-3) connects Nadaun town Chandigarh and New Delhi.

2. Topography, Soils and Geology

75. **Topography:** Project site has flat topography. It has an average elevation of 466 meters above mean sea level. River Beas flows through town.

76. **Geology and Soil:** The terrain of the district is mostly hilly and undulating. The surface elevation ranges from 400 m to 600 m above mean sea level along the Beas River valley and in lower reaches of Kunah Khad in the northern part of the district. In the drainage basin of Beas River, the general ground slope is towards north, while in the Sutlej River this slope is towards South. Nadaun belongs to the Middle Shiwalik Sub group. The Middle Shiwalik Sub-group comprises of large thickness of coarse micaceous sandstone along with some interbeds of early clay. It normally succeeds the Lower Shiwalik along a gradational contact. The sandstone is less sorted than those in Lower Shiwalik. Clay bands are dull coloured and silty. The general thickness is 1400 to 2000 metres. Nadaun is located in the foot hills *i.e.,* Shiwalik Range of Himalayas, it is mostly plain and has a flat terrain.

77. **Soil:** The soil in general is brown and varies in texture from loamy sand to clay loam. This type of sandy loam soil with coarse texture which enhances the nutrients and fluid

movements that is very good for plant growth and agriculture. The soil at the site consists of mixture of sand, silt and some gravels.

78. **Drainage:** Nadaun is located at the north-western side of Hamirpur district on left bank of Beas River. Beas River flow towards the north side of this area. Man Khad flows on the Western side of the Nadaun. The natural drainage consists of inlets and rivulets inside the area.

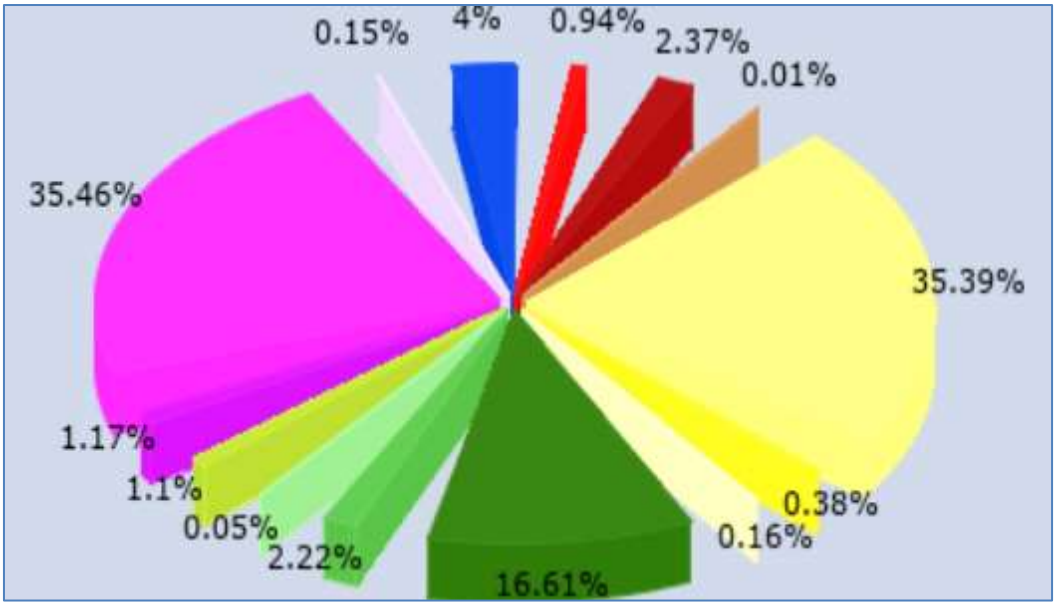
79. **Land Use/ Land Cover:** Major land use of the district is under Barren/ unculturable/ wasteland, scrub land (35.46%) followed by agriculture, crop land (35.39%), forest, evergreen /semi-evergreen (16.61%), Built-up Rural (2.37%), Forest Deciduous (2.22%), Barren/ unculturable/ wastelands, gullied/ ravinous land (1.17%) & others etc. About 4% of the area of district are water bodies/ wetlands/ river/stream/ canals. Details of the land use pattern of the district is provided in Table 8 and Figure 9.

Table 8: Land Use/Land Cover of District Hamirpur, Himachal Pradesh

LULC Class	Area (Sq.Km)	LULC Class	Area (Sq.Km)
Builtup,Urban	10.51	Builtup,Rural	26.51
Builtup,Mining	0.08	Agriculture,Crop land	395.66
Agriculture,Plantation	4.23	Agriculture,Fallow	1.81
Forest,Evergreen/ Semi evergreen	185.66	Forest,Deciduous	24.77
Forest,Scrub Forest	0.52	Grass/Grazing	12.33
Barren/unculturable/ Wastelands, Gullied/Ravinous Land	13.08	Barren/unculturable/ Wastelands, Scrub land	396.44
Barren/unculturable/ Wastelands, Sandy area	1.72	Wetlands/Water Bodies, River/Stream/canals	44.68
Wetlands/Water Bodies, Reservoir/Lakes/Ponds	0		

(Source: nrsc.gov.in)

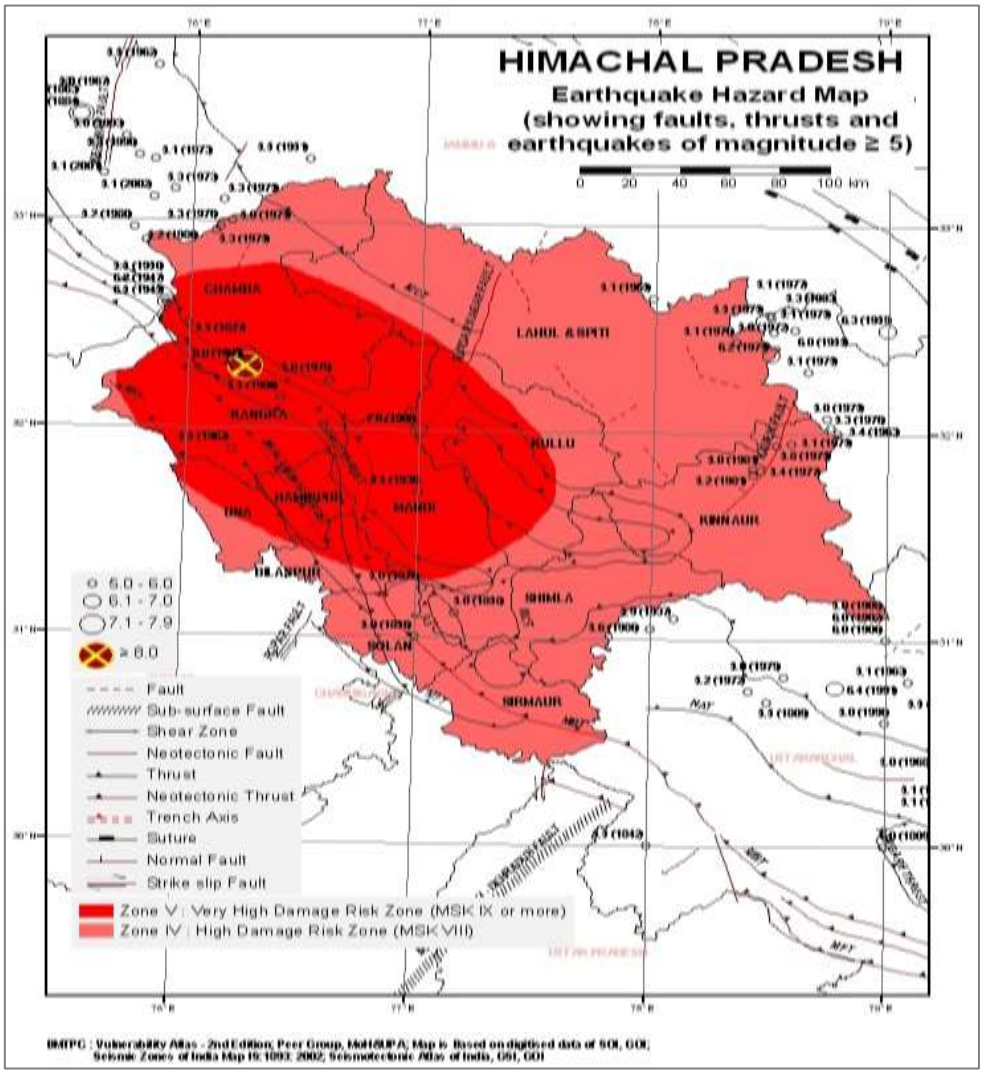
Fig. 9: Land Use/Land Cover Map of District Hamirpur, Himachal Pradesh



80. Seismology

81. From seismicity point of view, the state of Himachal Pradesh which forms a part of NW Himalayas is very sensitive. During the last century the state has been shaken by a number of micro as well as macro earthquakes. As per the earthquake hazard map of state, the areas falling in districts Chamba, Kangra, Mandi, Kullu, Hamirpur, Bilaspur are very sensitive as they fall in Very High Damage Risk Zone (MSK IX or More) *i.e.,* Zone-V, whereas the rest of the areas falls in High Damage Risk Zone (MSK VIII The project area falls in Very High Damage Risk Zone (MSK IX or More) i.e. Zone V. Earthquake hazard map of the State is provided at Figure-10.

Fig. 10: Earthquake Hazard Map of the State of Himachal Pradesh



82. **Landslides Hazard:** Another form of the natural hazards in the state is the occurrences of landslides. The hills and mountains of Himachal Pradesh are liable to suffer landslides during monsoons and also in high intensity earthquakes. The vulnerability of the geologically young and not so stable steep slopes in various Himalayan ranges, has been increasing at a rapid rate in the recent decade due to inappropriate human activity like deforestation, road cutting, terracing and changes in agriculture crops requiring more intense watering etc. The hills and mountains of Himachal Pradesh are liable to suffer landslides during monsoons and also in high intensity earthquakes. Landslides Hazard Risk map & table of landslide prone areas of the State of Himachal Pradesh is provided in Figure-11 & Table 9. Major part of the Hamirpur district is prone to High risk of landslides. However, landslide risk is not expected in the project area of Nadaun as it is a flat land. The landslide

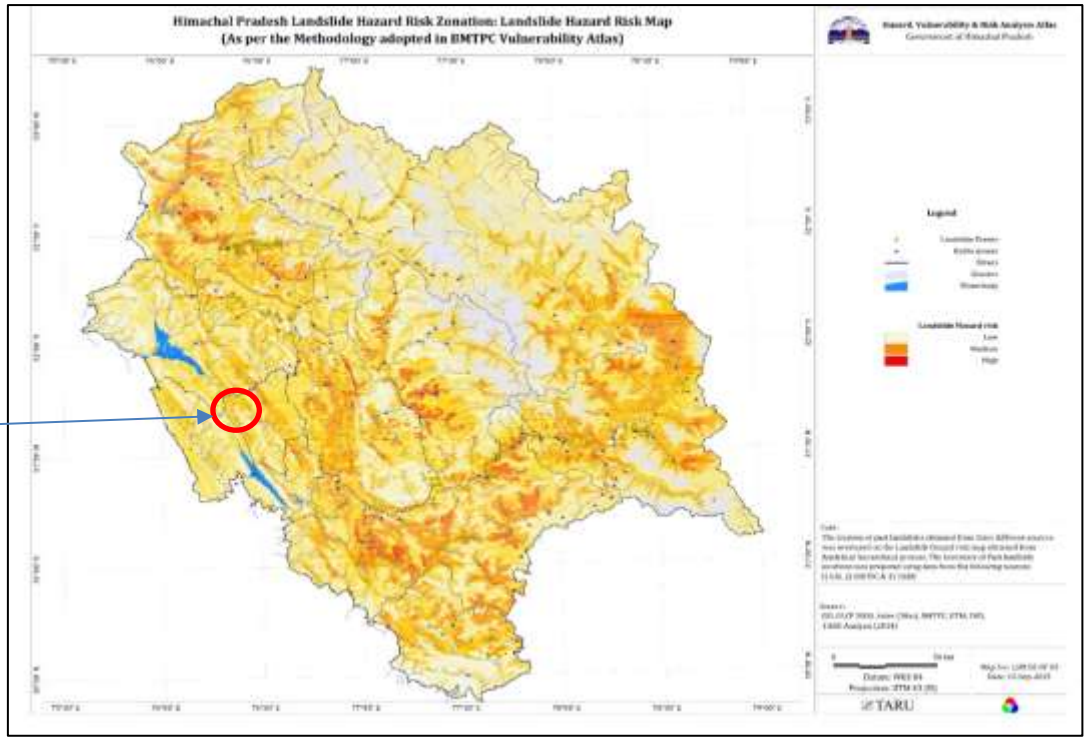
proneness of the project districts as compiled by the Building Materials and Technology Promotion Council (BMTPC) is as under:

Table-9: Landslide Prone Areas of Himachal Pradesh

District	Severe to very High	High	Moderate to Low	Unlikely	Total Area
Bilaspur	216	842	83	1	1142
Chamba	2120	3829	351	70	6370
Hamirpur	**0**	**851**	**204**	**45**	**1100**
Kangra	123	3698	1233	557	5611
Kinnaur	868	4956	498	0	6322
Kullu	1820	3512	65	3	5401
Lahaul & Spiti	127	11637	1825	2	13591
Mandi	968	1978	826	98	3870
Shimla	893	3345	767	14	5019
Sirmaur	95	1805	614	228	2742
Solan	556	1118	157	79	1910
Una	2	678	517	311	1508

Source: BMTPC, Landslide Hazard Zonation Atlas of India. *(Area in square kilometer)*

Fig. 11: Landslides Hazard Risk Map of the State of Himachal Pradesh



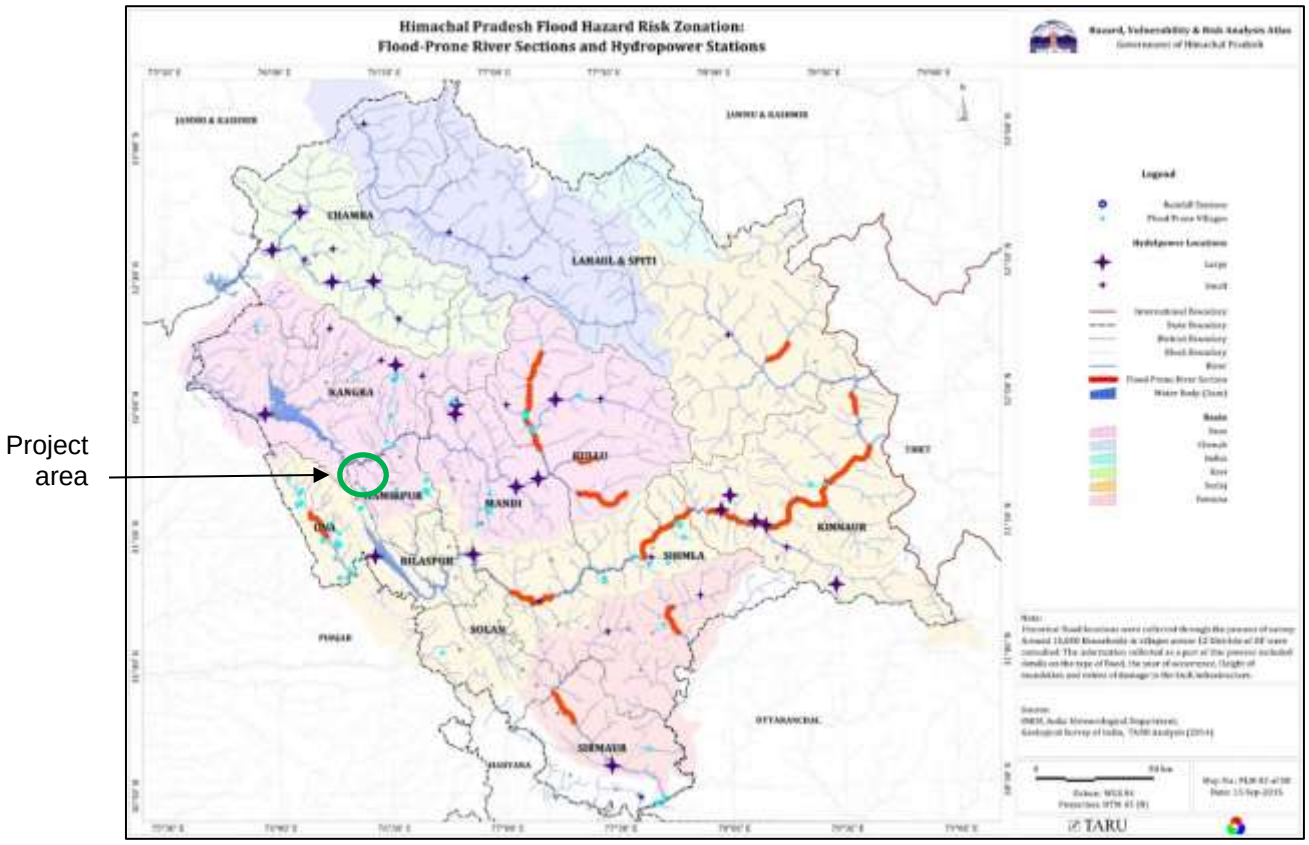
Source: https://hpsdma.nic.in

83. **Flood Hazard:** Floods are another form of natural disaster which the state experiences every year. Due to the diverse topography of the area, the flood problem in the state is largely isolated in Nature. High monsoon rains in the area of the Shiwalik and lower and mid Himalayan ranges cause extensive floods during rainy seasons. In the upper reaches of the Beas and Satluj valley the main problems are flash floods and bank erosion because of the steep slopes of rivers and high river flows due to heavy rains. Often the flash caused due to cloudbursts, glacial lake outbursts and temporary blockade of the river channels have been also observed. As a result of breaches in embankments and damage to various utilities such as irrigation/flood control schemes and houses are also observed. The rivers of importance from flood damage concern are:

- River Satluj and its tributaries like Spiti, Sangle khad, Ali khad, Gambhar khad, Sirkhad, and Swan River.
- River Beas and tributaries like Uhl and Suketi khads.
- River Ravi and its tributaries like Siul.
- River Yamuna and its tributaries like Pabbar, Giri and Bata.

84. Although, widespread floods problems do not exist in the state because of topo-graphical nature, continuing attention is necessary to reduce flood hazards in the state, more particularly the flash flood hazard the incidences of which are increasing causing large-scale damage. Flood Hazards risk map of the State of Himachal Pradesh is provided in Figure-12. The project site of Rafting Complex lies 100 m from the Beas River, however as per the Himachal Pradesh Flood Hazard Risk Zonation, the project area is not flood prone. The HFL has been considered in the design and the plinth level of the building is 4 m above the HFL. A flood protection wall is proposed along length of the property abutting Beas River.

Fig. 12: Flood Hazard Risk Map of the State of Himachal Pradesh



Source: https://hpsdma.nic.in

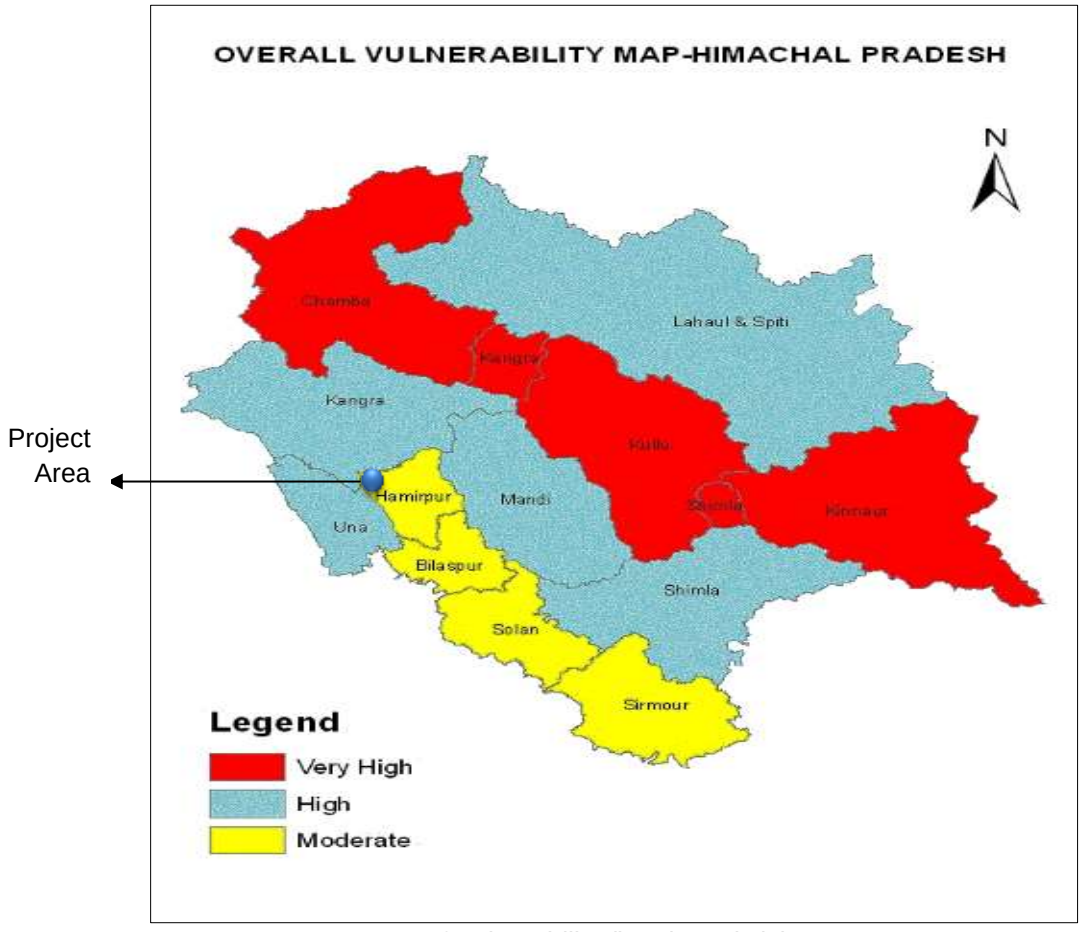
85. **Overall Hazard Vulnerability:** Hazard vulnerability status & map of the State of Himachal Pradesh is given in Figure 13 & Figure 14 respectively. The overall vulnerability of the Hamirpur district is Moderate, with High vulnerability for Earthquake and Low Risk for other hazards including Landslides, Floods, Avalanche, etc.

Fig. 13: Hazard Vulnerability of H.P.

HAZARD VULNERABILITY OF HIMACHAL PRADESH							
DISTRICTS	E.Q	LANDSLIDE	FLOODS	AVALANCHE	INDUSTRY	CONST. TYPE & DENSITY	OVERALL VULNERABILITY
Kangra	VII	M	L	--	M	VII	II
Chamba	II	II	II	M	M	II	VII
Hamirpur	VII	L	L	--	--	II	M
Mandi	VII	M	M	--	M	II	II
Kullu	II	II	II	M	II	II	VII
Bilaspur	II	M	L	--	M	VII	M
Una	M	L	II	--	II	M	II
Sirmour	M	M	L	--	II	M	M
Solan	L	L	L	--	II	M	M
Kinnaur	II	II	II	VII	II	M	VII
L&Spiti	L	M	L	VII	--	M	II
Shimla	L	M	L	--	II	M	II

Source: Current Status of Vulnerability (hpsdma.nic.in)

Fig. 14: Overall Vulnerability Map, H.P.



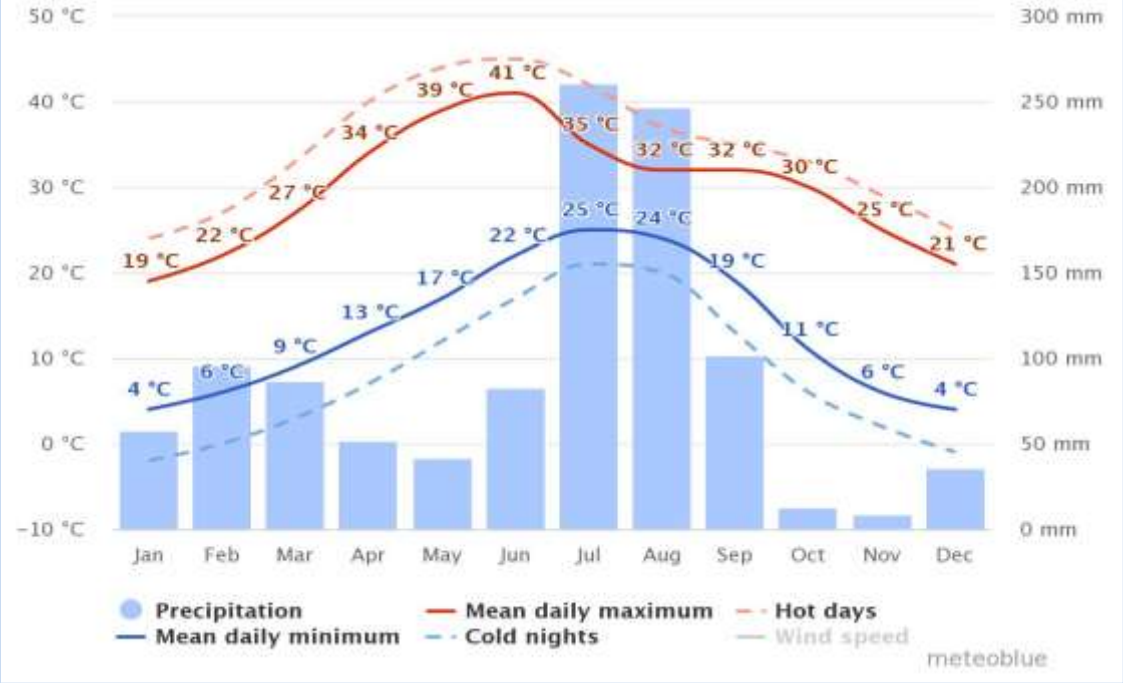
Source: Current Status of Vulnerability (hpsdma.nic.in)

86. Climatic Conditions

87. Nadaun is located in the foot hills *i.e.*, Shiwalik Range of Himalayas, it is mostly plain and has a flat terrain. The climate can broadly be divided into three broad seasons *viz.* winters from October to March, summer season from April to June and monsoon season from July to September. The climate of Nadaun is sub-tropical with monsoons in the months of July–August. The summers are between mid-May to mid-July. The hottest month is May and coldest month is January. Maximum and minimum temperatures recorded in summers ranges from 20 ºC to 40 ºC. The temperature in summers rarely exceeds 40ºC due to its proximity with the Himalayas and Beas River. The winters are cold but sub-zero temperatures are rare. The district receives moderate rainfall and bulk of it is received during the months of July and August.

88. **Rainfall:** The region receives the 1340.72mm of rains during the monsoon period. The maximum rainfall *i.e*. almost 82% occurs during July to August and minimum in the months of April and October. In all there are 124 rainy days in a year in Nadaun. Average temperature and precipitation is given in Figure 15.

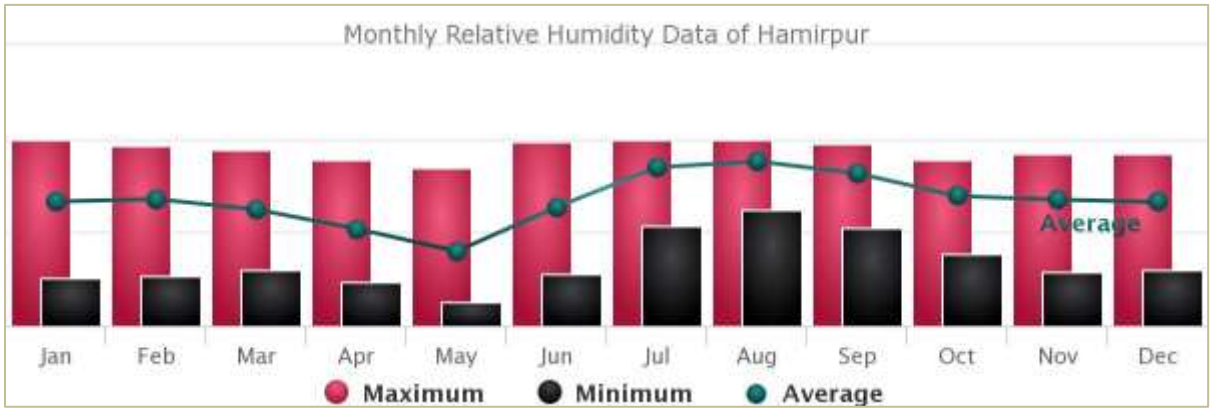
Fig. 15: Average Temperature and Precipitation of Nadaun



Source: https:// www.meteoblue.com

89. **Relative Humidity:** The average Relative Humidity of Hamirpur is around 67% although it vary from around 40% during Summer (May) to 88% during the Monsoon (August). The most humid month of the year is August with humidity varies from 62.0% to 100.0%. The least humid month is of the year is May, with humidity varies from 13.1% to 85.0%. Relative humidity (average 39.9%) of the Hamirpur is given in Figure 16.

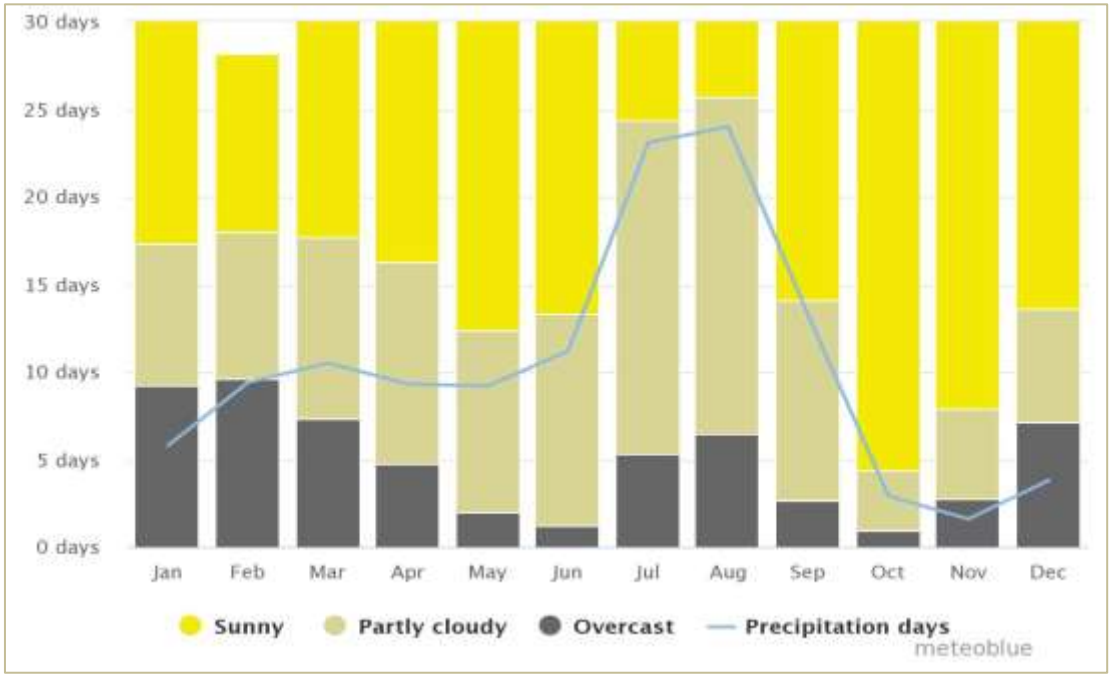
Fig. 16: Relative Humidity Data of Hamirpur



Source: https://www.indianclimate.com/relative-humidity-data

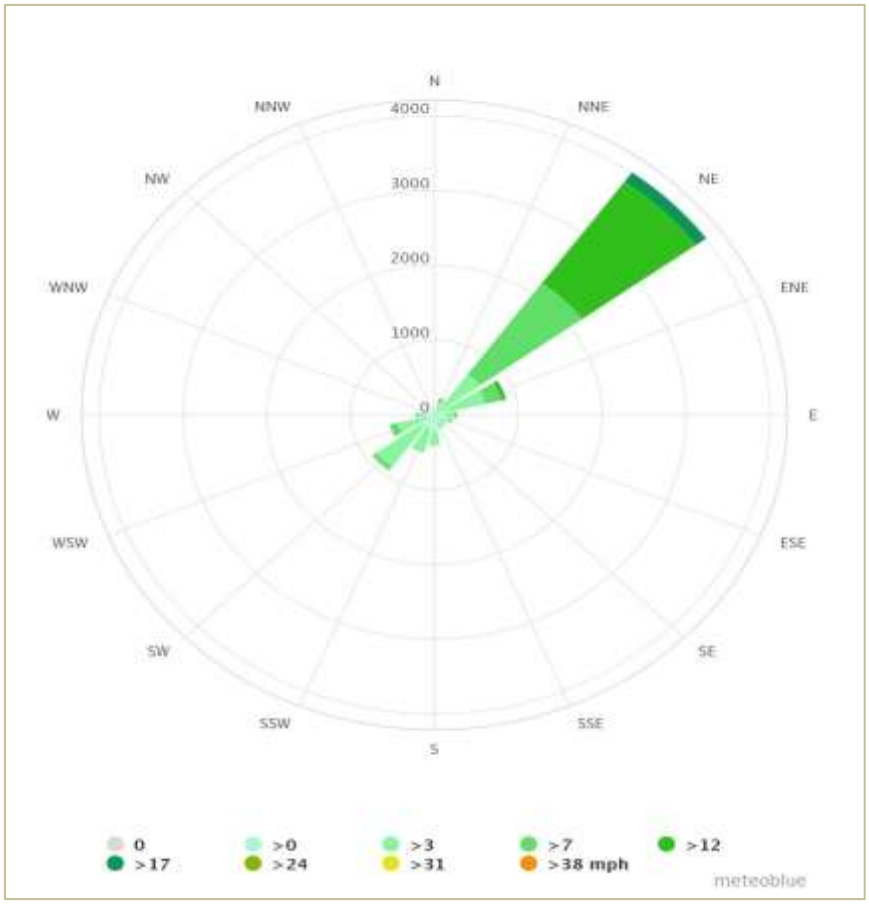
90. **Cloud Cover:** The graph shows the monthly number of sunny, partly cloudy, overcast and precipitation days. Days with less than 20% cloud cover are considered as sunny, with 20-80% cloud cover as partly cloudy and with more than 80% as overcast. The most cloudy month of the year is August. The most clear sky month is of the year is October. Monthly variation of cloud cover of Nadaun is given in Figure 17.

Fig. 17: Cloud Cover in Nadaun



91. **Wind Speed & Wind Direction:** Wind Rose diagram of Nadaun is given in Figure 15. Wind rose diagram shows that predominant wind direction is from NE to SW direction. The emissions during the construction and operation will travel towards SW direction. No dense habitation exists in SW direction of project site except few scattered habitations. Minimum distance from habitation is less than 50m. This has been considered in the site layout plan of residential units and planning of ambient air quality monitoring station. Wind rose of Nadaun is given in Figure 18.

Fig. 18: Wind Rose of Nadaun



92. **Surface Water:** Nadaun town fall within drainage basins of Beas River (which run from East to West direction in the North of Nadaun). Project site is located near River Beas. The Kunah Khad & Man Khad forms the Eastern and Western boundaries of the area. Figure 19 shows the google map of the project area and the river and khads. Site is not prone to floods. In view of safety, High Flood Level is considered in design to avoid any adverse impact on project. High flood level (HFL) is 439 m and plinth level is 443.10 m. As per survey report HFL was considered 439 m. The water quality of the Beas River upstream and downstream of Nadaun town measured by CPCB is given in table 4. Kunah is the most important tributary of the Beas River in the Hamirpur district. The Kunah Khad is 4 km & Man Khad about 1 km in the South West & East South East direction and Beas River is at a distance of 100 m from Rafting Complex project site. Water quality data of Kunah Khad has been obtained from the secondary sources and this is given in Table 11. The surface water quality of Kunah Khad if compared with CPCB criterion of various uses, fits in to class 'A'. This implies that Kunah Khad water is fit for drinking even without disinfection. Surface water quality data of Beas River of U/s and D/s of Nadaun is given in Table 10 and Kunah Khad is given in Table 11.

Fig. 19: Surface water resources (river & khads) near the project site in Nadaun

Table-10: Surface Water Quality of River Beas U/S and D/S Nadaun Town

Parameter	**River Beas U/S Nadaun Town**		**River Beas D/S Nadaun Town**		**CPCB Water Quality Criteria for A to C Classes for Surface Water**
	Min.	**Max.**	**Min.**	**Max.**	
pH	7.8	9.8	7.8	9.7	6.5-8.5
Temperature (Deg. ^{0}C)	10.2	29	10.2	29	Not Specified
Nitrate, mg/l, Max.	0.3	1.10	0.34	2.50	Not Specified
Biochemical Oxygen Demand, mg/l	1.0	1.0	1.0	1.0	<3
DO, mg/l	7.8	9.8	7.8	9.7	4-6
Conductivity(µmho/Cm)	122	307	138	326	Not Specified
Fecal Coliform (MPN/ 100 ml)	2	2	2	2	<2500 MPN/ 100 ml
Total Coliform (MPN/ 100 ml)	24	39	26	49	Not Specified

Source: Water Quality Data of Rivers Monitored Under National Water Quality Monitoring Programme (NWMP), CPCB, 2021

Table-11: Surface Water Quality (Kunah Khad) in Project Area

Sr. No.	Parameter	Value	CPCB Water Quality Criteria for A to C Classes for Surface Water	Drinking Water Standard Value (IS:10500)
1	pH	8.2	6.5-8.5	6.5 to 8.5
2	Temperature (Deg. 0C)	21.2	Not Specified	Not Specified
3	Chloride (as Cl), mg/l, Max	27	Not Specified	250
4	Nitrate, mg/l, Max.	4.9	Not Specified	45
5	Iron (as Fe), mg/l, Max.	0.14	Not Specified	0.3
6	Total Dissolved solids mg/l, Max	190	Not Specified	500
7	Total Suspended Solids mg/l, Max.	45	Not Specified	Not specified
8	Sulphate (as SO4) mg/l, max.	45	Not Specified	150
9	Oil & Grease, mg/l	0.5	Not Specified	0.5
10	Biochemical Oxygen Demand, mg/l (3 days for 27^0 C)	0.7	2-3	Not specified
11	Chemical Oxygen demand, mg/l	7.3	Not Specified	Not specified
12	Copper (as Cu), mg/l	BDL	Not Specified	0.05
13	Zinc (as Zn), mg/l. Max.	BDL	Not Specified	5
14	Mercury (as 0.001 Hg) mg/l, Max.	BDL	Not Specified	0.001
15	Cadmium (as Cd) mg/l, Max.	BDL	Not Specified	0.003
16	Arsenic (as As), mg/l, max.	BDL	Not Specified	0.01
17	Cyanide (as CN) mg/l, Max.	BDL	Not Specified	0.05
18	Lead (as Pb) mg/l, Max.	BDL	Not Specified	0.01
19	Total Chromium (as Cr), mg/l	BDL	Not Specified	0.05
20	Boron, mg/l	0.06	Not Specified	0.5
21	DO, mg/l	6.8	4-6	Not Specified
22	Total Hardness (as CaCO3), mg/l	158	Not Specified	200
23	Total Alkalinity, mg/l	142	Not Specified	200

Note: 1- Designated Best Use -Class A: Fit for Drinking Water without Conventional Treatment but after disinfection
2-Designated Best Use -Class B: Fit for Bathing (Organized)
3- Designated Best Use -Class C: Fit for Drinking Water with Conventional Treatment and disinfection

Ground water & its Quality

93. The ground water sources in the Hamirpur district are dug wells, handpumps, and tubewells. The population of the district is widely distributed and their water demands are fulfilled to larger extent, from the traditional water sources like springs, percolation well/ infiltration galleries, step-wells and streams, by piped water supplies. Major potential areas for the ground water development are the valley fill deposits, occurring along Beas River between Sachuhi and Nadaun, lower reaches of Man khad and Sir khad and central part of Kunah khad. The aquifer thickness may vary from less than 10m to about 100m. Rainfall infiltration is the principal source of ground water recharge to the aquifer system in the district. Inflow seepages from khads/ rivers also contribute to the ground water resources/ reserves. Based on the Ground water Information Booklet, the water quality data for the project region is given in Table 12. The water quality is within the permissible limit of safe drinking water set by Bureau of Indian Standard (BIS). Water quality monitoring will be conducted by the contractors prior to the start of construction works.

Table 12: Ground Water Quality in Project Area

Parameter	pH	EC µS/cm at 25°C	HCO3	Cl	SO4	NO3	F	Ca	Mg	Na	K	Total Hardness as CaCO3
Minimum	8.02	280	12	10	1	2	Tr	30	11	7.5	0.6	120
Maximum	8.17	360	153	125	85	22	0.16	48	17	14.0	5.8	165

Tr = traces. All parameters units in mg/l, except pH
Source: Ground Water Information Booklet Hamirpur District Himachal Pradesh, 2013

94. **Ambient Air Environment:** Project is located in Nadaun characterized mainly by rural/ urban areas and intermittently traversed by few semi-urban settlements in its immediate surroundings, which were converted into urban use for years ago. Sources of air pollution in the project area are mainly vehicular emission, dust emanation due to use of unpaved shoulders/ deteriorated roads by vehicles and domestic fuel burning. Air quality monitoring will be done before & during execution of the proposed project. There are no pollution sources like industrial activities etc. near the project sites except vehicular emissions & domestic fuel burning in the nearby fields/ agricultural area.

95. Ambient air quality data is not available for the site. The secondary data from EIA/ EMP report of a Sand mining project (within 10 km of the project site) is given in Table 13. The given data depicts that all the parameters of ambient air are within the prescribed limits of standards. Baseline data for Ambient Air Quality would be generated by the Contractor prior to start of work.

Table 13: Ambient Air Quality Results

Parameters	Monitoring Location	Min. (µg/m3)	Max. (µg/m3)	Avg. (µg/m3)	98% tile	NAAQS Limit
PM10	AA1	25.23	41.52	33.92	41.4	100 (µg/m3)
	AA2	32.32	40.58	35.05	40.51	
	AA3	35.26	43.23	38.66	42.92	
	AA4	36.23	43.28	39.55	43.06	
	AA5	37.1	45.63	40.11	45.62	
	AA6	32.23	45.08	41.41	45.03	
	AA7	30.52	45.62	35.28	44.65	
	AA8	34.25	57.02	44.31	56.91	
PM2.5	AA1	12.08	15.44	13.55	15.42	60 (µg/m3)
	AA2	13.55	16.51	14.56	16.41	
	AA3	13.92	18.95	15.99	18.9	
	AA4	14.4	17.9	15.42	17.15	
	AA5	15.1	21.48	17.29	21.24	
	AA6	15.45	19.1	16.93	18.88	
	AA7	18.44	26.65	20.49	24.44	
	AA8	23.48	32.28	26.52	32.23	
SO2	AA1	3.14	6.85	5.12	6.84	80 (µg/m3)
	AA2	4.2	6.67	5.34	6.6	
	AA3	4.75	7.96	5.69	7.92	
	AA4	5.5	8.82	6.8	8.8	
	AA5	5.99	8.17	6.65	7.95	
	AA6	6.24	8.74	7.38	8.7	
	AA7	5.35	7.85	6.18	7.51	
	AA8	7.15	9.32	8.26	9.18	
NOx	AA1	5.93	9.52	7.31	9.93	80 (µg/m3)
	AA2	7.25	12.63	9.45	12.52	
	AA3	8.24	12.93	9.72	12.92	
	AA4	8.53	13.2	10.35	13.11	
	AA5	9.4	12.86	10.69	12.85	

	AA6	10.2	15.52	11.81	14.83	
	AA7	8.26	12.98	9.6	12.43	
	AA8	9.35	14.63	11.01	14.47	

(Source: Draft EIA/ EMP report of Sand, Stone & Bajri near Mauza/ Mohal Salam & Hathol, Tehsil- Nadaun, District-Hamirpur, H.P., Feb. 2022)

96. **Noise Levels:** Project is located in Nadaun characterized mainly by rural/ urban areas and intermittently traversed by few semi-urban settlements in its immediate surroundings, which were converted into urban use for years ago. No point sources of noise pollution exist in the project area, except vehicular noise. Noise monitoring will be done before & during execution of the proposed project.

97. Noise level data is not available for the sites. The secondary data from EIA/EMP report of a River Sand mining project (within 10 km of the project site) is given in Table 14. The given data depicts that the noise levels are within the prescribed limits of standards. Baseline data for Noise levels would be generated by the Contractor prior to start of works.

Table 14: Noise Monitoring Results

Sr.No.	Monitoring Station	Results		Remarks
		Day Time dB (A)	Night Time dB (A)	
1	N1	58.5	41.7	Industrial
2	N2	46.2	38.0	Silence Zone
3	N3	53.7	38.5	Commercial
4	N4	44.3	36.1	Silence Zone
5	N5	51.4	35.8	Residential
6	N6	52.6	37.2	Residential
7	N7	45.8	37.2	Silence Zone
8	N8	48.3	37.2	Silence Zone

(Source: Draft EIA/ EMP report of Sand, Stone & Bajri near Mauza/ Mohal Salam & Hathol, tehsil-Nadaun, District-Hamirpur, H.P., Feb. 2022)

B. Ecological Environment

98. **Forest & Wildlife:** In Nadaun, out of the total forest area, 76% is categorized as the Demarcated Protected Forest and 24% is under open forest. The project site is not located in any type of forest land. Nearest forest is Tillu PF (approx. 920 m in SE direction) & Kuthar PF (approx. 1.6 km in South direction). The project site is mostly vacant with a Pipal tree on the boundary. An environmental setting map showing nearby forests & other features is provided in Figure-20.

Fig. 20: Environmental Setting Map on Google Earth

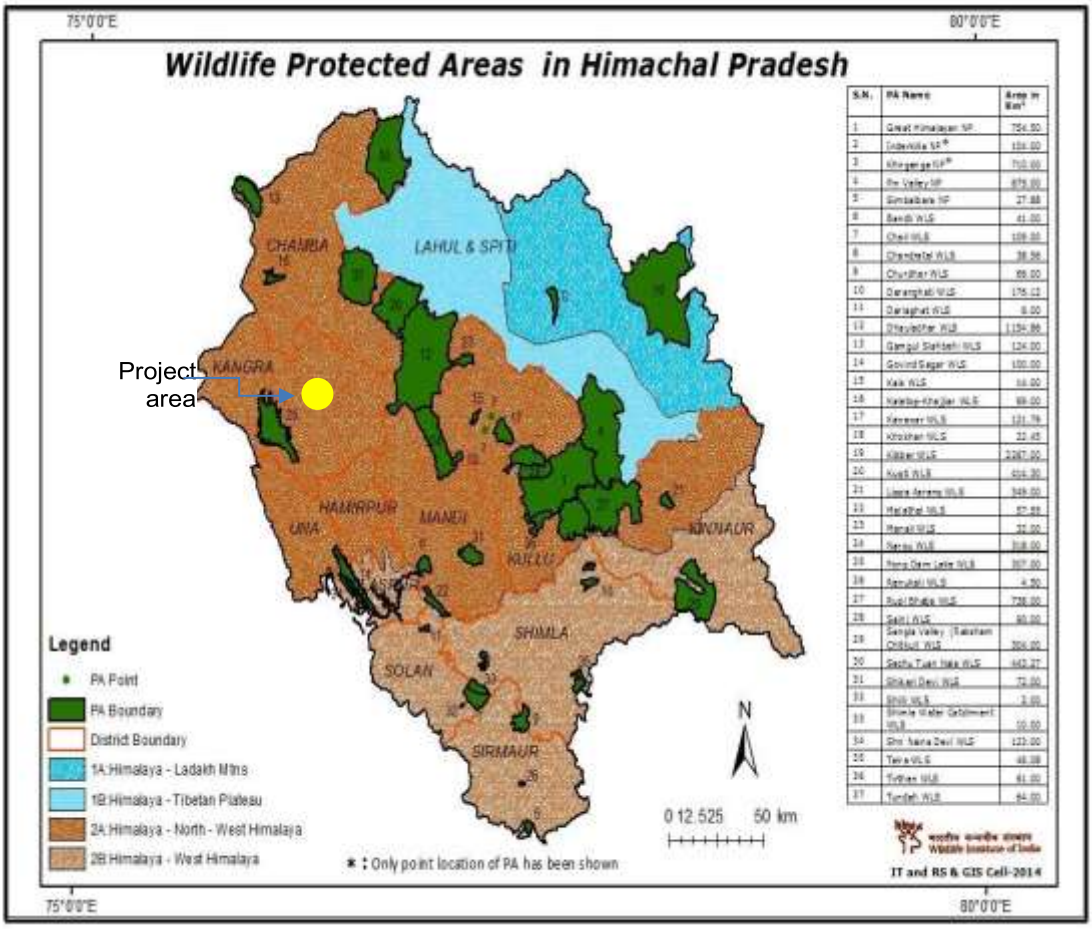
99. **Protected areas:** The list of protected areas (National Parks and Wildlife Sanctuaries) in Himachal Pradesh is given in Table 15. Map showing wildlife protected areas in the State of Himachal Pradesh is provided in Figure-21. There is no protected area (Wildlife Sanctuaries, National Parks, Tiger/ Elephant Reserves, Conservation reserves, etc.) in or near the project site. The project site does not fall within or near to any eco-sensitive areas and is not partly or fully in core or buffer zones of the above-mentioned protected areas. The nearest protected area is Pong Dam Lake Wildlife Sanctuary located about 14.81 km in North West direction of project site.

Table 15: List of Protected Areas in Himachal Pradesh

Sr. No.	Sanctuaries	District	Area (km²)
1	Bandli	Mandi	32.11
2	Chail	Solan	16
3	Chandra Tal	Lahaul & Spiti	38.56 +(11.53 for Consideration)
4	Churdhar	Sirmour	55.52
5	Daranghati	Shimla	171.50
6	Dhauladhar	Kangra	982.86
7	Gamgul-Siyabehi	Chamba	108.40
8	Kais	Kullu	12.61
9	Kalatop-Khajjiar	Chamba	17.17
10	Kanawar	Kullu	54.27
11	Khokhan	Kullu	14.94
12	Kibber	Lahaul & Spiti	2220.12
13	Kugti	Chamba	379
14	Lipa Asrang	Kinnaur	31
15	Majathal	Solan	30.86
16	Manali	Kullu	29
17	Nargu	Mandi	278
18	**Pong Dam Lake**	**Kangra**	**207.59**
19	Rakchham-Chitkul	Kinnaur	304
20	Renuka	Sirmour	4
21	Rupi-Bhaba	Kinnaur	503
22	Sechu-Tuan Nalla	Chamba	390.29
23	Sainj	Kullu	90
24	Shikari Devi	Mandi	29.94
25	Shimla Water Catchment	Shimla	10
26	Simbalbara	Sirmour	27.88

Sr. No.	Sanctuaries	District	Area (km²)
27	Talra	Shimla	46.48
28	Tirthan	Kullu	61
29	Tundah	Chamba	64
30	Water Supply Catchment	Shimla	10
National Parks			
1	Great Himalayan National Park	Kullu	765
2	Pin Valley National Park	Lahaul & Spiti	675
3	Inderkilla National Park	Kullu	104
4	Khirganga National Park	Kullu	710
5	Simbalbara National Park	Nahan	27.88
Conservation Areas			
1	Shilli Conservation Reserve	Solan	1.49
2	Shri Naina Devi Conservation Reserve	Bilaspur	17.01
3	Darlaghat Conservation Reserve	Solan	0.67

Fig. 21: Map showing Wildlife Protected Areas in the State of Himachal Pradesh



100. **General Vegetation of the Study Area.** Project site is located in Nadaun characterized mainly by rural/ urban areas and intermittently traversed by few semi-urban settlements in its immediate surroundings, which were converted into urban use for years ago, and there is no natural habitat at the proposed site. The main species of trees present in the surroundings of project site are Acacia catechu, Azadirachta indica, Acacia nilotica, Adhatoda vasica, Albizia procera, Bauhinia variegata, Cassia fistula, Delbergia sissoo,

Eucalyptus sp., Ficus benghalensis, Ficus palmata, Ficus religiosa, Pinus roxburghii, Terminalia arjuna, Terminalia bellirica etc. In herbs Achyranthus aspera, Boerhavia diffusa, Eupatorium sp., Mangifera indica, Morus alba, Solanum nigrum. In shurbs Datura stramonium, Dodonea viscosa, Euphorbia royleana, Lantana camara, Xanthium strumarium, Ziziphus mauritiana etc. At project site 1 Pipal (Ficus religiosa) tree exist along the boundary.

101. In view of faunal composition of project site some birds *Acridotheres tristis* (Common Myna), *Acridotheres fuscus* (Jungle Myna), *Columba livia* (Blue Rock Pigeon), *Coracias benghalensis* (Indian roller), *Funambulus palmarum* (Indian Palm Squirrel) and *Spilopelia chinensis* (Spotted dove) are reported. No wild animal movement observed/ reported at site. The faunae present in the study area are mainly monkey, rabbit, Indian palm squirrel etc. Among domestic animals: Cow, Goats are common.

102. **Aquatic Biodiversity:** During field visit, consultation was held with local people regarding aquatic (river) biodiversity and secondary sources of information were explored to avoid potential impacts on aquatic ecosystem. Vegetation near the bank of river comprises *Cynodon dactylon*, *Parthenium hysterophorus*, *Ricinus communis* etc. In view of faunal composition, water birds found in downstream of river such as *Microcarbo niger* (Little cormorant), *Egretta garzetta* (little egret), Ardeola *grayii* (Indian pond heron), *Ortygornis pondicerianus* (grey francolin), *Vanellus indicus* (Red wattled lapwing), *Tachybaptus ruficollis* (little grebe) etc. Fishes commonly found in upstream of river and its tributaries include *Lebeo dero* (Gid), *Labeo ealbasu* (kalbans), *Channa punctatus* (sal), *Labeo dicheilus* (Kunhi) and *Mystus seenghala* (singhara) etc. No fishing activity observed/ carried out near project site. There will be no waste discharge from the proposed rafting complex. Probability of impacts during operations is minimized as the zones for rafting will be earmarked, motor boats are not planned except for rescue purpose and compliance of Himachal Pradesh River Rafting Rules, 2005 shall be ensured.

103. Therefore, no impact on flora and fauna of river envisaged. The suggested mitigation measures during construction will be properly taken care in consideration to avoid any adverse impact on aquatic ecosystem.

104. **Screening via Integrated Biodiversity Assessment Tool (IBAT) and** biodiversity assessment report indicates presence of 01 protected area i.e. Pong Dam Lake Wildlife Sanctuary and 04 Key Biodiversity Area; Pong Dam Lake Wildlife Sanctuary, Dhauladhar Wildlife Sanctuary and Mcleadoganj, Gobind Sagar and Naina Devi Wildlife Sanctuaries and Sarah Valley, lower Dharamshala within 50km radial distance, however, none is located close to the project area. The nearest notified protected area is Pong Dam Lake Wildlife Sanctuary situated about 14.81 km in North West direction from the project site. Total 54 species of threatened category found in 50 km radius as a result of IBAT analysis but not within the project area of influence (PAI). There is no Rare, Endangered or Threatened (RET) Species found in the project area. Regarding the conservation status of the fauna, none of the animal species identified from the site/ study area belonged to the threatened categories identified by the International Union for Conservation of the Nature and Natural Resources (IUCN). Most of them are common and widely distributed. IBAT report is given as Annexure-16.

105. None of the project components are falling within protected areas and no wildlife has been reported within the proposed area. There are no eco-sensitive zones or wetlands within proposed project activity areas under this package. Therefore, the project will pose no risk or impact on biodiversity and natural resources. Figure shows the location of different Protected Areas from the project site of Rafting Complex at Nadaun.

Fig. 22: Map showing Nearest Wildlife Protected Area Pong Dam WLS

106. **Migratory Bird/ Nesting or Breeding habitat:** North India is a broad migratory flyway for birds moving between breeding grounds to the north and wintering grounds to the south. The project implementation impact will be limited to the project site and no migratory bird visiting sites in this location. Thus, the project area does not represent "Critical Habitat" for any migrant birds.

107. **Wetland:** No designated wetland is in Nadaun and no project component are falling within or near any wetland areas.

C. Economic Environment

108. **Demographic Profile:** Project site Rafting Complex is proposed at Nadaun town in Hamirpur district, Himachal Pradesh.

109. Nadaun is a sparsely populated town with a population of 4430 people in 2011 and 9,912 in the notified Planning Area. The planning area accounts for about 2.20% of the total population of Hamirpur district. According to the Census of India, 2011, Nadaun Planning Area comprises 44.69% population (4430 people) residing in Nadaun town and 55.31% population (5482 people) reside in rest of the planning area. There are 9,912 people residing in Nadaun Planning Area out of which 4970 are male (50.14%) and 4942 are female (49.86%).

110. **Population Distribution:** Apart from Nadaun town, the Planning Area comprises of 11 surrounding revenue villages. Out of these 11 villages, 7 villages have population less than 500 and one village Demarcated Protected Forest (DPF) Kuthar with no population. Two villages viz., Bharmoti Kalan and Tillu Khas have population between 500 and 1000 Out of the rural settlement Bela has the highest population of 2347 because of its close proximity to the Nadaun town. Out of the eleven mohals outside Nagar Panchayat Area, Bela has the highest population of 2347 followed by Tillu Khas (649) and Bharmoti Kalan (526). The least populated villages are Harmandir Rukwalan (population 100), Gagaal (population 251) and Tillu Pratham (population 335).

111. **Sex Ratio:** As per the Census of India 2011, there are 996 females per 1000 males in Nadaun Planning Area which is lesser than the district average i.e., 1095 females per 1000 males but more than the state average i.e., 972 in 2011. The sex ratio of the planning area has also decreased from 1018 in 2001 to 996 in 2011 in planning area.

112. **Scheduled Caste and Scheduled Tribe Population:** Out of the total population of Nadaun Planning Area, 15% of the people fall in Scheduled Caste (SC) category which is

less than the district average i.e. 24% as per Census 2011. There has been a very minimal decrease of Scheduled Caste population from 16% in 2001 to 15% in 2011, in a span of ten years. Out of the total SC population in the planning area, more than 1/3rd proportion i.e. 34% reside in the Nadaun town whereas rest 66% is distributed in the remaining areas of the Planning area. In case of Scheduled Tribe (ST) population, there are only 59 people are from ST category which accounts to 0.59% of the total population of Planning Area as per Census 2011. Out of total 59 ST people, 54 reside in the Nadaun town and rest 5 reside in Tillu Pratham.

113. **Literacy Rate:** The overall literacy rate of the Planning Area is 91% which is higher than the district average i.e. 88% in 2011. There is a sharp increase in literacy rate in planning area from 87% in 2001 to 91% in 2011.

114. **Population Density:** Nadaun Nagar Panchayat Area has a population density of 19 persons per hectare which is more than the district urban average *i.e.* 10 persons per hectare in 2011. The population density is stagnant since the last decade from 18.8 pph in 2001 to 19 pph in 2011. The population density of the Planning Area is 11 pph in 2011 which is more than the district average i.e. 4 pph. The population density has marginally increased from 10 pph in 2001 to 11 pph in 2011. According to the URDPFI Guidelines, the planning area falls under very low-density area.

115. **Occupational Profile:** Nadaun has an agricultural based economy with more emphasis on trade and commerce due to its locational and geographical advantage in the region.

116. **Main and Marginal Workers:** The total workers are distributed into main and marginal works. Increase in marginal workers in an area indicates a poor trend of economic growth. In case of Nadaun Planning Area, Nadaun town has 59% (1142) of main workers and 41% (779) marginal workers as per Census 2011 whereas the rest of the planning area have 72% (1896) of main workers and 28% (727) of marginal workers. Nadaun has a large informal sector as well which is why the town area has more of marginal workers. Marginal workers have increased from 30% in 2001 to 33% in 2011.

117. **Occupational Structure:** Out of the total worker in the planning area, maximum workers (56.64%) are engaged in tertiary activities as the town is located at the cross junction of two main highways and has prosperity in trading. After tertiary, primary sector is the next priority sector with 41.64% workers engaged in farming and forestry activities due to its predominant rural character. Negligible numbers of people (1.72%) are engaged in secondary sector, comprising of household and micro scale units.

118. **Agriculture:** Agriculture is one of the main occupations of people in Nadaun. Out of the total primary workers 85% are engaged in agricultural activities. The sub-humid sub-tropical climate along with sandy loam soil favour cultivation of any crops in the region. The main cultivated crops are maize (75%) and paddy (25%) during Kharif season and wheat during Rabi season. Farmers, having irrigated land, have also switched to cash crop farming like fruits and vegetables. The total cultivable land available in the planning area is 341 ha which accounts almost 38% of the total land of Nadaun Planning Area. The amount of cultivable land in the planning area is less than the block average (Nadaun Block) i.e. 59%. Out of 341 ha, 334 ha (98%) is under agricultural use and 6.89 ha. (2%) is under horticultural use. The total irrigated area to total cultivated area is 34% which is more than the district average. The main irrigation sources are khads and the Beas River. The agricultural lands are distributed uniformly in the entire planning area. The patches are mainly seen near Man khad and the river. The soil is loose and porous which is suitable for cultivation.

119. In terms of production and trade, maize is the main crop which is produced largely in the area and in the district as well. The maize production has been increased from 13-15 quintals per hectare in 2011 to 18-20 quintal per hectare in 2015. The growth in maize production is almost same as the district average growth. Simultaneously, the production of

wheat has also been increased from 15-16 quintal per hectare in 2011 to 20-23 quintals per hectare in 2015. Very little amount of vegetable is also produced in the area but that is for local level use only which is why the record is not available. There is no surplus remains which can be traded further. A small local level mandi functions from Nadaun town where the trading items are maize and wheat.

120. **Horticulture:** The main horticultural crop in the region is citrus fruits like oranges, lemons, amla etc. Other than the citrus fruits, mangoes and galgal are also produced in the region. Out of the total cultivable area in Nadaun Planning Area, only 2% area is under the horticultural use. Area under horticultural use in Nadaun block is 1040 ha out of which 6.89 ha (0.67%) is inside the Planning Area.

121. **Sericulture:** Sericulture is another importance sector in the economy of Nadaun. There are two major Sericulture farms in the planning area. One is located Bela village and the other just opposite Post Office. Though currently these farms are not in operation, it is proposed to revive these farms to generate employment and revenue through the interventions of Sericulture Divisional Office- Nadaun, Directorate of Industries, H.P.

122. **Secondary Sector:** Secondary sector is the least prioritized sector in Nadaun Planning Area in terms of occupational structure. In case of Nadaun, as there are no manufacturing industries only micro scale repair units and some household industries are operating at the local level whose contribution to economic development is negligible.

123. **Tertiary Sector:** Tertiary sector or the service sector is the most important sector in the planning area in terms of occupational structure. The main activities in tertiary sector in Hamirpur District are constructions (54%), trade and hotels (16%), banking facilities (11%), public administration (10%) and Transportation (7%).

124. **Trade & Commerce:** Nadaun historically has being a trading centre and has commercial-cum-mixed use within the old town. Nadaun is also known as the ‘Pattan’ town due to its specialized in trading activities. There are two markets in Nadaun. One is the old market area which is sited at the heart of the town and another one is the new market which has been set up near the bus stand. The old market area is basically a whole sale market specializing in wedding ceremony related articles/ items, clothes, shoes etc. whereas the new market deals in items related to modern day to day articles like electronics, mobiles, hardware, electrical apart from eateries and general grocery shops. Commercial activities have also spread along the major spine within the present Nadaun town as well as along the National highway. Apart from the major commercial facilities, the local shopping facilities are available within the residential areas to meet the daily needs of the people. In order to cater to the transit people arriving at the Nadaun bus stand, there are a couple of restaurants and sweet shops in bus stand area of the new market area also.

125. **Physical Infrastructure and Services:** Nadaun Planning Area utilizes both surface water and groundwater to cater to its domestic as well as agricultural demand for water supply use. Surface water is the major source of water supply for the planning area. Water is being supplied to Nadaun Planning Area from Beas River through a Lift well Water Supply Scheme (LWSS) by the Irrigation and Public Health (IPH) Department. Apart from the water supply by IPH, water supply need is also met through individual/ community bore well and hand pumps. At present, Nadaun Planning Area does not have any sewage network. The planning area being situated in a plain to hilly terrain. Sewerage system exists near the site. No drainage available near site. No storm water management available near the site. Surface runoff directly joins to river near the site (wellness centre cum adventure sports centre) as the area is low lying towards riverside (natural slope).

126. **Solid Waste Management:** Nadaun Nagar Panchayat looks after the collection and transportation of solid waste in Nadaun Town. Out of the 7 wards of Nadaun town, there is

100% door-to-door solid waste collection from Ward nos. 2 to 5 and 80% collection from Ward nos. 1 and 6 while there is only partial collection of solid waste from Wards no. 7. The primary door-to-door-collection of solid waste takes place manually through 4-wheel barrows. The areas which are not served by door-to-door collection, community bins have been provided by the Nagar Panchayat. There are 7 dumper community bins of size 4' x 6' x 5' and two small dust bins of size 1'x 1' within the urban area. Loading and unloading is done manually and waste is transported through a tractor owned by the Nagar Panchayat. There is no door-to-door collection of solid waste in the rural areas of the planning area. As per the Nadaun Nagar Panchayat, 8 to 9 quintal *i.e.,* 0.8 to 0.9 MT of solid waste is generated in Nadaun town per day for people in Nadaun town. The collected waste in Nadaun Nagar Panchayat area is currently dumped at a solid waste dumping site on the banks of Man Khad in Nagarada Village.

127. Power is supplied in Nadaun Planning Area by the Himachal Pradesh State Electricity Board Limited (HPSEBL).

128. **Health Infrastructure:** There are three dispensaries in Nadaun Nagar Panchayat Area one each at Gagaal and Bela villages. As Nadaun is the Block and Tehsil head quarter of Nadaun Block and Nadaun Tehsil, it houses the Block Hospital in the town. There is one veterinary hospital in the planning area which serves the entire Nadaun Tehsil.

129. **Education Facilities:** Nadaun has been a center of education in Hamirpur district. Until the late 1980s, it was the only place in surrounding areas where one could get high school education. GSSS Nadaun (Boys), Lala Lajpat Rai Samark established in 1863, is the oldest educational institute. There is a Kendriya Vidyalaya primarily meant for employees of the central government of India and other government and private educational institutions. Nadaun, like many other parts of the country, has seen a progressive shift to English as a medium of education in most of the privately-owned schools.

130. **Transport:** Nadaun Town is located at the North-Western side of Hamirpur district. The town is accessible by two NHs viz., NH-3 (known as Atari-Manali Highway) which connects Nadaun with Amritsar-Jalandhar-Hoshiyarpur-Hamirpur-Mandi-Kullu on the other hand, NH 303 (known as Nadaun-Nagrota Road) which connects Nadaun with Nagrota via Ranital-Jawalamukhi. Nadaun is well connected with Sujanpur, the Tehsil headquarter of the neighboring Tehsil by MDR-36. Bus is the main mode of public transport in Nadaun. The town is well-connected with important towns and centres within and outside state by the roadways. The govt. (HRTC) and private buses operate from the town. Compared to other same sized towns in Himachal Pradesh, Nadaun has a designated bus terminus. Many of the buses terminates here and go to a distance of 100 km.

131. Buses are available in every 20 to 25 minutes for the neighboring towns, located within 50km. like Hamirpur, Sujanpur, Amb, Una, Jawalamukhi, Galore, Kangra etc. Towns located within 100km, have bus connectivity in every 60 to 90 minutes. Towns sited beyond 100 km. have bus services twice or thrice from the town. Nadaun town has efficient intercity public transportation system in terms of the accessibility (catchment area) and connectivity. It can be improved by designing the bus stands in the Planning area and along the routes.

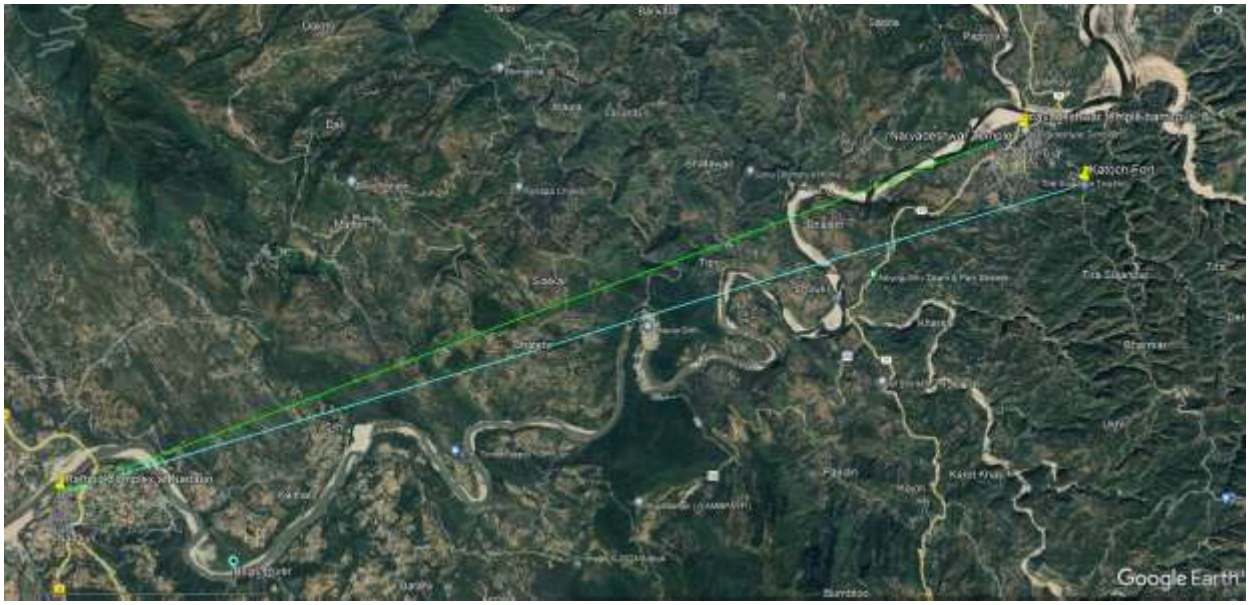
132. Though ridership of public transport is low in Nadaun as the area is too small to commute via public transport. Public transport is used for commuting to long distances like Kangra, Hamirpur, Amb-Gagret, Sujanpur, Dhera, Shimla, Chandigarh etc. The transportation within Nadaun and surrounding areas is based on private and government operated buses. Nadaun has a large bus station (at least bigger compared to towns of similar size in this area). Adjacent to it is a taxi stand where one can easily rent a taxi for commuting short or long distances.

133. Public transport such as taxi and buses available near the site (Rafting Complex) and can easily reach to the site.

D. Social and Cultural Environment

134. **Heritage & Tourism:** There is no State or Centrally protected monuments notified by Archaeological Survey of India (ASI) within or in vicinity of project site. No project component is located within 300m radius of any protected monument. Nearest ASI protected monuments are Katoch Fort located about 16.9 km in ENE direction of project site and Navadeshwar temple located about 16.5 km in east North East direction of project site. Google Map of the ASI monuments is given in Fig. 23.

Fig. 23: Google Map showing ASI Protected Monuments distance from Project site



135. **Tourist Attractions.** Nadaun is placed on the banks of Beas River. Evening walk to the Nadaun Bridge is a favorite pastime of people of Nadaun. This Bridge provides fantastic views of Beas River and of sunset. This bridge separates Hamirpur district from Kangra district. There are many restaurants which have come up in this area. Another interesting pastime is river-cruise in a small wooden boat. One can enjoy this ride the whole day. The boat is still used as a mode of transport. There is an existing base of river rafting at Nadaun & attract the tourists as well as sports person in huge number. There are few other tourist attractions in the Nadaun town including Gurudwara Shri Patshahi Dasvin, Samadhi of Dhyanu Bhagat, Lavneshwar Mahadev Temple, Shiv Temple. Peer Sai Fazal Shah Saheb Grave Jwalaji Temple (11 km) and Chaumukha temple (11 km). The Atal Bihari Vajpayee Cricket Stadium is one of the famous cricket stadiums in Himachal Pradesh which is located at the north-east edge of the Planning Area. It is one the important landmark of the Planning Area. Mostly State level cricket matches are organized in this stadium. With the establishment of Atal Bihari Vajpayee Cricket Stadium, a lot of students, cricketers, sportsmen and visitors come to Nadaun to play, watch the cricket match or for training purposes. This has resulted in a boost of sports tourism and other support activities in the town.

E. Environmental Settings of Investment Program Component Sites

136. Site environmental features of all project sites and photographs are presented in the Table 16.

Table 16: Existing Site features Rafting Complex

Project Components	Environmental Features	Photographs
Rafting Complex at Nadaun, District- Hamirpur, Himachal Pradesh	Project is a greenfield project proposed on a vacant land which is under the ownership of HP Government. (Department of Tourism and Civil Aviation, GoHP) Coordinates of Project site- Rafting Complex Latitude- 31°47'5.36"N latitude and Longitude- 76°20'27.62"E longitude Topography of the area is almost flat.	 Flat land 
	Pathway leading to the river	

	Existing road near the site. 11 kV electric line of passes through the site and existing transformer needs to be shifted before start of work. No other utility exists/ proposed on the proposed site. Surrounding land use is built up area – semi urban, waterbody etc. No ASI protected monument existing within 300m radius of project site. The main species of trees available in the near the project area are *Acacia catechu, Azadirachta indica, Acacia nilotica, Adhatoda vasica, Albizia procera, Bauhinia variegata, Cassia fistula, Delbergia sissoo, Eucalyptus sp., Ficus benghalensis, Ficus palmata, Ficus religiosa etc.* Clearing of shrubs and bushes will be required. No tree cutting proposed. In faunal species, the species of animals commonly found in the Nadaun are namely *Microcarbo niger* (Little cormorant), *Egretta garzetta* (little egret), *Coracias benghalensis* (Indian roller), Acridotheres tristis (common myna), *Turdoides striata* (jungle babbler), *Corvus spendens* (house crow), Psittacula krameri (rose ringed parakeet), *Acridotheres fusus* (jungle myna), Gallus gallus (red jungle fowl), *Spilopelia chinensis* (spotted dove), *Psiolopogon virens* (great barbet), *Columba livia* (blue rock pigeon), *Ocyceros birostris* (Indian grey hornbill), *Dicrurus macrocerus* (Black drongo), *Dicrurus leucophaeus* (Ashy drongo), *Saxicoloides fulicatus* (Indian robin), *Pycnonotus cafer* (red vented bulbul), *Vanellu etc.*	 Existing Road   Utility such as electric line and transformer exist at site.
	River Beas is 100m from the site, HFL of the river Beas is 439 m RL. Level of structure is 443.10m. Man Khad is approx. 1.0 km towards South West direction from the site.	 River Beas flowing near the proposed site

	A small temple (Hanuman Temple) is located at a distance of 100m. Govt. Sr. Sec. School, Nadaun located 170 meter in East direction.	 Hanuman Temple exists in right side of Site.

VI. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

A. Environmental Impacts

137. The environmental impacts on environmental components due to implementation of various developments proposed at Rafting Complex precincts and their surroundings has been assessed for project planning and implementation period. The anticipated impacts in the project and the mitigation/ management measures identified are presented in this chapter.

138. Screening of potential environmental impacts are categorized into four categories considering project phases: These are as follows:

- **Location impacts:** Includes impacts associated with site selection and include loss of on-site biophysical array and encroachment either directly or indirectly on adjacent environments. It also includes impacts on people who will lose their livelihood or any other structure by the development of that site.
- **Design impacts:** Includes Impacts arising from project design, including the technology used, scale of operations, waste production, discharge specification, pollution sources and ancillary services etc.
- **Preconstruction impacts:** Includes impacts which are anticipated during site preparation, material testing for identification of borrow/ quarry locations, setting up construction and worker's camps etc.
- **Construction impacts:** Includes Impacts caused by earthworks, machinery, vehicles and workers. Construction site impacts include erosion, dust, noise, traffic congestion and waste production etc.
- **O&M impacts:** Includes Impacts arising from the operation and maintenance activities of the infrastructure facility. These include routine management of operational waste streams and occupational health and safety issues etc.

B. Planning and Design Phase- Design and Location

139. The Rafting Complex project site is owned by the Department of Tourism & Civil Aviation, GoHP. There will not be any acquisition of private land. There will not be any acquisition of private land. Since project components are proposed on unencumbered land, therefore there is no acquisition of any private assets. There are no significant ecological resources in the surroundings of project sites. There are no heritage sites notified by the ASI, NMA or State Archeological Department within the plot boundary of Rafting Complex site or within the regulated distance of 300m. No significant impacts can arise due to project location as Rafting Complex will not impinge upon any area of ecological, archaeological, or historical importance.

140. Proposed site of Rafting Complex is located near river Beas; HFL of the river has been considered in design and plinth level of the building is kept 4.1 m above the HFL. Embankment protection including slope stabilization measures have been considered in design.

141. The project site is located within Seismic Zone-V (Very high damage risk zone) and even a small magnitude earthquake may damage the building of the project. The design of the building follows relevant codes (IS: 1893 (Part I)-2002: Indian Standard Criteria for Earthquake Resistance Design of Structures (5th Revision) and IS:4326-1993: Indian Standard Code of Practice for Earthquake Resistance Design and Construction of Buildings (2nd Revision) for the earthquake resilient structure. The physical infrastructure facilities in the project such as water supply, sewerage, storm drainage, solid waste management, power requirements etc., are based on relevant standards and guidelines of CPHEEO.

142. Design considerations to avoid environmental impacts. The following are design considerations to avoid environmental impacts:

- Adoption of design compatible with the natural environment and suitable selection of materials to enhance the aesthetic appeal and blend with the natural surroundings.
- The use of sustainable materials, such as low VOC paints and locally sourced materials.
- Incorporation of adequate drainage provisions and reducing stormwater runoff by efficient landscaping (grass joint pavers etc.).
- Ground water recharge through rainwater harvesting.
- Use of subtle colours and simple ornamentation in the structures.
- Use of local stone in the proposed walkways and built structures thus maintaining a rustic architectural character.

143. **Integration of EMP in bidding documents and contracts.** Lack of awareness by contractors on ADB SPS requirements may result in insufficient budget and non-integration of EMP in the design. The PMU will incorporate the costs of implementing OHS and the EMP as well as specific provisions requiring contractors to comply with all other conditions required by ADB into the bidding and contract document. Once the Contractor is selected, the PMU/PIU with support from PMDSC will inform contractors of their responsibilities in EMP implementation, in compliance with ADB and government requirements, self-monitoring and reporting procedures.

C. Impact during Pre-Construction Phase

144. The proposed project site at Rafting Complex, Nadaun is already in possession of Department of Tourism and Civil Aviation, GoHP and proposed project components are to be developed on available Government land. The proposed project site is quite at height of Highest Flood Level (HFL). As the site is quite away from river Beas, so entire area is safe from the possibilities of heavy floods in Beas River. Embankment protection including near river side such as slope stabilization measures have been considered in design. No tree cutting is required at site necessary prior permission will be required for tree cutting in case of require. Compensatory plantation shall be carried out as per the Forest Department policy. Clearing of shrubs and bushes is required at both the project locations. Based on the environmental screening of the site, there are no adverse environmental impacts during the design and pre-construction phases.

145. **Consents, Permits, clearances, no objection certificate (NOC), etc.**

- HPTDB to obtain all necessary consents, permits, clearance, NOCs, etc. prior to start of civil works.
- Contractor to obtain necessary consents, permits, license etc., required for construction, and submit copies to PIU; PIU to acknowledge in writing.
- PMU to update IEE and EMP prior to starting of works to reflect any changes in project design during design verification and detailed field survey, and submit to ADB for clearance and disclosure.
- Contractor to prepare SEMP based on the updated EMP, and approved by PIU prior to commencement of works.
- Include in detailed design drawings and documents, all the conditions and provisions stipulated in permits, consents issued by regulatory agencies, if any.
- Contractor to conduct pre-construction (baseline) environmental monitoring as indicated in EMP budget tables. The monitoring results shall be referred as baseline quality for key environmental parameters of air, water and noise.
- Continue consultation with the local communities during detailed design, and implementation and provide information in the language that is understandable to the local community regarding project activities and the anticipated impacts as part of the project information dissemination.

146. **Utilities:** Electric poles and lines within the project location may require to be shifted. To mitigate the adverse impacts due to relocation of the utilities, the contractor in collaboration with line agencies and ULB will:

- Identify the locations and operators of these utilities to prevent unnecessary disruption of services during construction phase; and
- Instruct construction contractors to prepare a contingency plan to include actions to be done in case of unintentional interruption of services.

147. **Site selection of construction work camps, stockpile areas, storage areas, and disposal areas:** Residential areas will not be considered for setting up construction camps to protect the human environment (i.e., to curb accident risks, health risks due to air and water pollution and dust and noise and to prevent social conflicts, shortages of amenities and crime). Extreme care will be taken to prevent disposals near forest areas, water bodies, khads or in areas which will cause inconvenience to the community. Construction sites, including disposal sites, will be selected by the Contractor in compliance with these conditions and the same will be reflected in Site Environmental Management Plan (SEMP) which is to be prepared by Contractor prior to start of construction and approved by PIU.

D. Impact during Construction Phase

148. All the proposed activities to be undertaken at the site will be approved by PMU. The construction phase impacts due to proposed project components are generic to the proposed development activities. The EMP emphasizes on the construction impacts and necessary mitigation measures to be strictly followed by the contactor and supervised by the PIU.

Site selection of sources of materials:

149. **Sources of materials:** Based on preliminary assessment during DPR preparation Approximately 1309 tons of cement, 711 tons steel, 3492 m^3 sand, 2839 m^3 stone/aggregates, 491 Tons other material will be required for this project of Rafting Complex. Asbestos containing materials (ACMs) will not be used in the project. The construction contractor will be required to:

- Use material sources permitted by government;
- Verify suitability of all material sources and obtain approval of PIU;
- Ensure that the loading and unloading of the materials and the transportation of the materials from source to construction site does not cause impact on health and safety of the workers and the community; and
- Submit to PIU on a monthly basis documentation of sources of materials. If contractor is purchasing ready mix concrete, asphalt/macadam and aggregates from third party, contractor will assure that all the parties/ suppliers are having CTE/CTO from HPPCB and will collect the copy of these certificates and submit to PIU/ consultants.

150. **Impact due to stock piles of construction materials. Impact due to stock piles of construction materials:** Improper stockpiling of construction materials in and around the sites could obstruct movement of vehicles along access roads. Hence, due consideration will be given for proper material storage on construction sites. Stockpiles will be covered to protect from dust and erosion. Stockpiles of material should always away from nallah/ drain at safest distance (50m) with proper cover and barricade. Waste materials will be disposed at identified/ designated and approved location or may be auctioned by department.

151. **Disposal of construction/ demolition waste:** Work is proposed on flat terrain. The construction/ demolition waste could lead to untidy conditions at site and may find its way to the river, khads, local drains/ nallah; siltation and obstruction to natural flow in these nallah/ drains. In the proposed project, it shall be mandatory for the contractor to ensure proper disposal of the construction/ demolition waste at the disposal site as designated by the PIU/

Nagar Panchayat or reuse in cutting and filling or leveling at site. Measures such as Silt traps, stone bunds, gunny bags with the local available material will be used at site to control the velocity of water and silt/ sediments. The excavated materials available from foundations of the structures will be consumed in backfilling of structures & levelling of site (to raise the plinth level above the ground level) including roads & paths. Priority will be given to use maximum at site itself filling and surplus waste will be disposed as per norms of C&D waste disposal. Sample outline of Spoil Management Plan is given as Annexure-10.

152. **Quarry and Borrow pits operations:** Since the civil works are of a small size, all construction material will be procured from local market. There will not be any need for direct procurement of stone dust and sand building material from quarries. Material will be procured from licensed quarry with valid environmental clearance certificate. In case of material purchase from stone crusher, crusher should have valid CTE & CTO from State Pollution Control Board.

153. **Ambient Air Quality:** Dust generation is anticipated during transportation/ hauling of materials, excavation and construction activities as access road of site of wellness centre cum adventure sports centre is kaccha/ unpaved. Dust and gaseous emission will also be generated during the construction period from machineries such as mixers, vehicles, engaged in transportation of construction vehicles engaged in transportation of construction materials, loading and unloading of material etc. Nearby habitation is located at distance of less than 50m from project site Rafting Complex. The road near the Rafting Complex site is metalled road so there will be less chance of dust pollution, but dust pollution and gaseous pollution will generate during loading and unloading activities, movement of vehicles and equipment etc. Pollutants of primary concern at this stage include respirable suspended particulate matter (PM_{10} & $PM_{2.5}$) and gaseous emission such as SO_2, NOx & CO etc. Based on extent of construction activities, impact at this stage will be temporary and restricted to the close vicinity of the construction site only. Monitoring of ambient air quality will be taken up as part of environmental monitoring plan of EMP. Ambient air quality standards are given in Annexure-2.

154. **Increase in noise levels:** Noise levels in the immediate proximity of project site are expected to increase somewhat during construction. However, these will be largely imperceptible as civil works will be confined to relatively small areas. There is no requirement of blasting or piling in this project. There are few houses within 50 m of proposed site of Rafting Complex, so adequate provisions of noise abatement will be taken during construction. Site will be properly barricaded during construction. The duration of construction will also be relatively brief. Transportation of construction materials will be confined to day-time, depending upon extent of construction activity. The increase in noise levels is expected <5 dB (A). This increase will be felt up to a distance of 100-200m only. This noise will be intermittent in nature, and will last only during the construction phase. It may be mentioned that construction noise will be intermittent in nature and noise levels outside boundary of project sites are not anticipated to exceed the stipulated limits of residential areas. Necessary monitoring of noise levels will be taken up as part of environmental monitoring plan of EMP. Noise standards is given as Annexure-4.

155. **Impacts on biodiversity during construction phase:** No major impacts expected on the biodiversity during the construction phase as the site of Rafting Complex is government land. There is no notable tree cover at the site. Only 1 tree of Pipal (Ficus religiosa) is at the boundary of site. There is no requirement of tree cutting during construction, in case tree cutting is required then prior permission will be obtained. Clearing of shrubs & bushes will be required. There are no Rare, Endangered and Threatened species of flora and fauna observed in or around the proposed site. River Beas is approx. 100m. from the Rafting Complex site. No impact on the aquatic fauna is envisaged due to the project as no interventions involving the river water are proposed. Proper orientation of the labour will be done prior to the construction phase to avoid using the river water for washing clothes, fishing, etc.

156. **Ground water and Soils:** Ground water will not be extracted and used for construction purpose. The contractor will arrange water from the market through water tanker. It will be supplied by the authorized vendor. In case of using ground water necessary permission is required from competent authority prior start of work. The chance of ground water contamination is not expected during the construction phase since there will be proper disposal of the waste water by providing septic and soak pit. During construction, measures will be taken to avoid any soil pollution/ contamination by way of oil leakages due to improper refueling at site or leakages from machineries and equipment deployed at site.

157. **Surface Water:** Impact on River Beas, Khad and mitigation measure. No major impact anticipated on Beas River as it is quite away approx. 100m from project sites. All the preventive measure of water pollution control such as silt fencing/ traps, stone bunds, gunny bags will be adhered at site i.e. Rafting Complex. No waste water will be discharge outside the project area or not connected to surface water drain/ river. No Khad is located in its immediate vicinity, hence no impact anticipated. As per secondary data of water quality (CPCB river water quality data, 2021[5]) of river Beas, all the parameter found within permissible limits of standards. Surface water quality monitoring of Beas River will be carried out during pre-construction and construction period. No oil and grease will be release into nearby water course. Oils and fuels should be stored and handled well away from surface water to avoid possible contamination. All the excavation related activities should be avoided during monsoon months. The construction work shall be scheduled during dry season so that silting and sedimentation can be avoided. The stockpiles, construction materials have to be kept at least 50m away from the water body. The construction camp should be located away from surface water body >500m distance in consultation with PIU.

158. **Impact on Physical & Cultural Resources:** The proposed project will not have any impact on any religious structure or any other structure of historical and/ or cultural significance. There may be inconvenience to tourists, residents, businesses, and other road users due to construction activities in the proposed area. This potential impact is site-specific, short-term and can be mitigated. The contractor will be required to:

- Ensure no damage to structures/properties near construction zone.
- Provide sign boards to inform nature and duration of construction works and contact numbers for concerns/complaints.
- Implement good housekeeping including removal of waste immediately. Prohibit stockpiling of materials that may obstruct/ slow down pedestrians and/ or vehicular movement.
- Ensure workers will not use nearby/adjacent areas as toilet facility.
- Coordinate with Local Authority for transportation routes and schedule. Schedule transport and hauling activities during non-peak hours. Communicate road detours via visible boards, advertising, pamphlets, etc.
- Ensure heavy vehicles do not use narrow local roads, except in the immediate vicinity of delivery sites.
- Provide instructions on event of chance finds for archaeological and/or ethno- botanical resources. Works must be stopped immediately until such time chance finds are cleared by experts.
- Avoid working in peak tourist seasons and/or important religious festivals

159. **Disturbance to traffic during construction phase:** At the time of construction, there will be some temporary inconvenience due to transportation of building material. However, since the scale of works is relatively small, the inconvenience caused will be relatively minor and limited only to the construction phase. Traffic management plan will be required during construction. Sample traffic management is enclosed as Annexure-11. All vehicles and construction equipment's operating for the contractor and the consultant will obtain and

[5] WQuality_River-Data-2021.pdf (cpcb.nic.in)

maintain “Pollution Under Control” (PUC) certificates for deployed vehicles. To control noise, ensure periodic services of all vehicles engaged in construction. To control dust emission, vehicles deployed for sand and aggregates haulage, will be covered with tarpaulin to prevent spillage of material. Regular water sprinkling during excavation, loading and unloading points, vehicular movement during raw material transportation will prevent spread of dust. Periodic ambient air quality monitoring will be conducted to ensure that emission to comply with the air emission standards specified by the Government of India and ambient air quality standards specified by the CPCB. The contractor will submit ambient air quality monitoring results as a compliance of EMP.

160. **Waste during construction and renovation/ demolition:** C&D waste will be generated (earthwork in excavation work of site development & foundations of structures, aggregates, coarse and fine in RCC and PCC work and wood work, stone and brick work etc.) during construction. The construction waste could lead to untidy conditions at site and may find its way to the river, local drains/ khad, etc. The excavated earth work will be used in the construction of embankment wall, filling, internal pathways, structure foundation and landscaping etc. The chance of soil cutting is minimum as the area is flat terrain and cutting is only expected during structure foundation. All the waste will be properly disposed as per norms of C&D Waste Management Rules, 2016. Debris during construction material can be reused in the subject to the approval of the PIU Engineer during the construction. A sample outline of Spoil Management Plan is given as Annexure-10. Waste generated during construction will be disposed as per law and to the satisfaction of the Engineer. The clean-up and restoration of temporary acquires sites/operations will be implemented by the contractor prior to demobilization. The contractor will clear all temporary structures and dispose of all garbage from construction site. All construction zones used and affected by the project will be left clean and tidy, at the contractors’ expense as per the satisfaction the Engineer.

161. The contractor is likely to engage local labor for various construction activities. However, in case of migrant labor has to be engaged, the contractor will establish properly designed labor camp with all basic amenities such as potable drinking water supply, rest shelter and sanitation facilities (septic tanks and soak pit). Dust bins for wet and dry waste will be placed in adequate numbers. Labour camp will locate away from habitation and waterbody. Ensure proper disposal of waste during construction and not dump in nearby waterbody. However, the EMP lays down some measures to address likely adverse impacts associated with the labor camp.

- Prepare and implement a waste management plan. Manage solid waste according to the following hierarchy: reuse, recycle and disposal. Include in waste management plan designated/approved disposal areas. Sample outline of Spoil Management Plan is given as Annexure-10.
- Coordinate with Local Municipal Authority/ Nagar Panchayat for beneficial uses of excavated soils/silts/sediments or immediately dispose to designated areas.
- Excavated soil emerging at some sites is suitable for use at other sites under the project for levelling and filling purpose. Additional quantity of soil if required is being procured from authorized source or with approval of asset owner.
- Recover used oil and lubricants and reuse; or remove from the sites.
- Avoid stockpiling and remove immediately all excavated soils, excess construction materials, and solid waste (removed concrete, wood, trees and plants, packaging materials, empty containers, oils, lubricants, and other similar items).
- Prohibit disposal of any material or wastes (including human waste) into drainage, nallah, or watercourse.

162. **Storm water runoff:** During construction there will be chances of storm water entering into the river as the site is located on flat terrain and has gentle slope towards river side. During construction, impact on storm water during monsoon season cannot be avoided. However, the activities shall be planned in view of the monsoon season. Activities involving

excavation and stacking of loose earth will increase the chance of silt laden runoff during monsoon and might pollute the nearby water course. Such activities shall be taken up prior to monsoon season. Storm water will be managed by providing drain along the boundary to collect the storm water to avoid pollution of nearby water body and siltation by silt traps arrangement in drains.

163. **Impacts on Occupational Health and Safety:** Workers need to be mindful of occupational hazards which can arise from construction works. Exposure to work-related chemical, physical, biological and social hazard is typically intermittent and of short duration but is likely to reoccur. Slips and trips at the river (edges), the risk of falling into water and drowning, drowning related risk during rising of floodwaters etc. Potential impacts are negative and long-term but reversible by mitigation measures. Ensure COVID-19 appropriate behavior and compliance with protocols in project implementation as per the applicable government regulations and relevant guidelines published by WHO, ILO, IFC, ADB etc.

164. The contractor will be required to:

- Comply with all National, State and local labor laws.
- Follow ADB's Interim Advisory Note on Protecting the Safety and Well-Being of Workers and Communities from COVID-19 (2020).
- Follow and ensure implementation of the Standard Operating Procedure- Health and Safety Plan to Stop the SPREAD of COVID-19 prepared by Sustainable and Inclusive Tourism Development Project in Himachal Pradesh. (Annexure-13)
- Follow best practice health and safety guidelines: IFC's General EHS Guidelines[6], IFC's EHS Guidelines on Occupational Health and Safety[7] WHO Interim Guidance (and its updates) on Water, Sanitation, Hygiene and Waste management for the COVID19 virus[8].
- Disallow worker exposure to noise level greater than 85 dB(A) for duration of more than 8 hours per day without hearing protection. The use of hearing protection shall be enforced actively.
- Develop comprehensive site-specific health and safety (H&S) plan including. 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 during excavation works; (ii) corresponding personal protective equipment for each identified hazard; (iii) H&S training for all site personnel; (iv) procedures to be followed for all site activities; and (v) documentation of work-related accidents.
- Provide H&S orientation training to all new workers to ensure that they are apprised of the rules of work at the site, personal protective protection, and preventing injury to fellow workers.
- Ensure that qualified first aid can be always provided. Equipped first-aid stations shall be easily accessible throughout the site as well as at construction camps.
- Provide medical insurance coverage for workers.
- Secure construction zone from unauthorized intrusion and accident risks.
- Provide supplies of potable drinking water.
- Provide clean eating areas where workers are not exposed to hazardous or noxious substances.
- Provide visitor orientation if visitors to the site can gain access to areas where hazardous conditions or substances may be present. Ensure also that visitor/s do not enter hazard areas unescorted.
- Ensure the visibility of workers through their use of high visibility vests when working in or walking through heavy equipment operating areas.

[6] Final - General EHS Guidelines_APRIL 29.doc (ifc.org),
[7] *Final - General EHS Guidelines_APRIL 29.doc (ifc.org)
[8] WHO-2019-nCoV-IPC_WASH-2020.4-eng.pdf

- Ensure moving equipment is outfitted with audible back-up alarms.
- Mark and provide sign boards in the construction zone, and areas for storage and disposal. Signage shall be in accordance with international standards and be well known to, and easily understood by workers, visitors, and the public as appropriate.
- Reasonable personal buoyancy equipment such as life jackets should be provided by contractor in case of working near water.
- As mandatory, guard rails to prevent and safeguard falling into water are required i.e. on walkway and platform, appropriate safety footwear may be needed to minimize the risk of slipping.
- Availability and provision of lifebuoy, meeting an approved standard with an appropriate buoyant lifeline of adequate length attached, should be available within around 50m of any working position where a person could fall into the water.
- Proper training, induction/ orientation and supervision are mandatory and part of appropriate control measures.
- Health safety and environmental training by Contractor working near water.

165. **Establishment and Operation of Construction Camps and Workers Facilities:** It is likely that the contract may employ workers from outside project area, and therefore may provide temporary workers accommodation during the construction phase. Proper provision and maintenance of facilities is necessary for proper living conditions and avoid health, environment and safety issues. Workers camps may also adversely impact on surrounding communities. Operation of construction camps can cause temporary air and noise pollution from machine operation, water pollution from waste water generation. Potential impacts are negative but short-term and reversible by mitigation measures. The construction contractor will be required to:

- Consult PIU before locating project offices, sheds, and construction plants;
- Minimize removal of vegetation and disallow cutting of trees;
- Provide drinking water, water for other uses, and sanitation facilities for employees;
- Provided temporary rest and eating area at all work sites.
- Ensure conditions of livability at work camps are maintained at the highest standards possible at all times; living quarters and construction camps shall be provided with standard materials (as far as possible to use portable ready to fit-in reusable cabins with proper ventilation); thatched huts, and facilities constructed with materials like GI sheets, tarpaulins, etc., shall not be used as accommodation for workers; accommodation shall meet the IFC standards for workers accommodation[9] which include: provision of safe housing, availability of electricity, plumbing, water and sanitation, adequate fire protection and dormitory/room facilities; accommodation shall be in the range from 10 to 12.5 cubic meters (volume) or 4 to 5.5 square meters (surface) per worker, a minimum ceiling height of 2.10 meters; a reasonable number of workers are allowed to share the same room – (standards range from 2 to 8 workers); workers with accompanying families shall be provided with a proper and safe accommodation (IFC benchmark standards for workers accommodation) Prohibit employees from poaching wildlife and cutting of trees for firewood;
- Trained employees in the storage and handling of materials which can potentially cause soil contamination;
- Recover used oil and lubricants and reuse or remove from the site;
- Manage solid waste according to the following preference hierarchy: reuse, recycling and disposal to designated areas;
- Remove all wreckage, rubbish, or temporary structures which are no longer required; and
- Report in writing that the camp has been vacated and restored to pre-project conditions before acceptance of work.

[9] Workers' accommodation: processes and standards (ifc.org)

166. **Impacts on Socio-Economic Activities:** Manpower approx. 30 numbers of person will be required during the 24 months' construction phase. This can help generate contractual employment and increase in local revenue. Thus, potential impact is positive and long-term. As per detailed design, land acquisition and closure of roads are not required; therefore, no negative impact is expected. However, the contractor will need to adopt the following mitigation measures:

- Leave space for access between mounds of soil.
- Provide walkways and metal sheets where required to maintain access to shops/businesses or road side users along trenches.
- Consult businesses and institutions regarding operating hours and factoring this in to work schedules.
- Provide sign boards for pedestrians to inform nature and duration of construction works and contact numbers for concerns/complaints.
- Employ at least 50% of the labor force, or to the maximum extent, local persons within the 2-km immediate area if manpower is available.
- Avoid working in peak tourist seasons and/or important religious festivals.

167. **Community Health and Safety:** Hazards posed to the public/ pilgrims, specifically in high pedestrian areas in hilly terrain may include traffic accidents and vehicle collision with pedestrians/ pilgrims. Potential impact is negative but short-term and reversible by mitigation measures. The construction contractor will be required to:

- Plan routes to avoid times of peak-pedestrian/ vehicle movement during work in roads/ streets/ markets areas.
- Liaise with PIU in identifying risk areas on route cards/maps.
- Maintain regularly the vehicles and use of manufacturer-approved parts to minimize potentially serious accidents caused by equipment malfunction or premature failure.
- Provide road signs and flag persons to warn of on-going trenching activities.

E. Environmental Impacts during Operation Phase

168. Impacts on environmental conditions associated with the operation stage of the project components pertain to impacts due to enhanced tourist activities. The impacts pertaining to regulation of tourist movements, planning the extent of facilities and amenities in line with the carrying capacity shall enable addressing operation stage impacts, which will be taken care by the DOTCA. The impacts during the operation stage are associated with water sports activity, however since only manual boating shall be done, chances of negative impacts on water quality are minimized. 1 Motor boat shall be used for rescue and monitoring purposes.

169. There will not be any adverse environmental impact of the Rafting Complex during operation as adequate facilities have been provided in the project. The design also provides for adequate parking, accommodation and safe disposal of waste water and solid waste. Domestic waste will be segregated into wet and dry waste. Wet waste will be treated in the bio-composter at the Rafting Complex site and dried waste will be sent to concerned agency or tied up with Nagar Panchayat, Nadaun for final disposal. Existing sewerage is available near the site, generated sewerage during operation phase will be connected to existing sewerage system in the town.

170. There will not be any significant vehicular traffic increases and crowding on account of proposed intervention as adequate parking has been considered in design. 1 DG set of 500 kVA are proposed at Rafting Complex site. Provision of DG set has been kept as a standby arrangement during power failure. The generators will be silent and will comply with emission norms as stipulated by CPCB with type approval certificate. DG sets shall have adequate stack height as per HPPCB norms and acoustic enclosure arrangement.

171. **Ground water/ Surface Water:** During operational activity for use of ground water/ surface water, prior permission from concerned department shall be obtained. To minimize the pollution of river water from rafting activities and sustainable functioning of recreational water sports, following shall be ensured:

- Clear demarcation of activity areas and rafting should be carried out only in demarcated zones.
- Rafting activities must be guided by trained rafting guides. The rafting guides also must undergo training on environmental stewardship, emphasizing the importance of minimizing pollution and protecting the river ecosystem.
- **Strict No-Littering Policy:** Implement a strict no-littering policy. Provide waterproof bags for rafters to collect and carry out all their trash.
    - Trash Collection Stations: Install trash collection points at common rafting start and end points. Ensure regular collection and proper disposal of waste.
    - Biodegradable Products: Encourage the use of biodegradable products for any items taken on the raft, such as water bottles, food containers, and personal care products.
- **Equipment Maintenance:**
    - Clean Rafts and Gear: Ensure all rafts and gear are thoroughly cleaned before and after use to prevent the introduction of pollutants and invasive species into the river.
    - Environmentally Safe Cleaning Products: Use environmentally safe, biodegradable cleaning products for all equipment maintenance.
- **Monitoring and Enforcement:**
    - Compliance of Himachal Pradesh River Rafting Rules, 2005 shall be ensured.
    - Regular Patrols: Conduct regular patrols by river rangers or volunteers to monitor compliance with environmental regulations and educate rafters on-site.
    - Fines and Penalties: Implement fines and penalties for individuals and companies that violate pollution control measures. Use collected fines to fund further conservation efforts.
- **Sustainable Practices:**
    - Limit Group Sizes: Control the number of rafters on the river at any one time to reduce environmental stress and potential pollution.
    - Regularly evaluate the effectiveness of implemented measures through water quality testing, feedback from rafters and guides, and ecological impact assessments. Adjust strategies as necessary to ensure continuous improvement in reducing river water pollution from rafting activities.
- **Safety Measures:** All safety measures in Himachal Pradesh River Rafting Rules, 2005 shall be adhered.

172. **Storm water Management:** Storm water runoff will be properly considered and proposed a drain all around the site for better management of storm water. Most of the storm water produced on site will be harvested for ground water recharge. Thus, proper management to ensure that it is free from contamination. Contamination of storm water is possible from the following sources:

- Diesel and oil spills in the diesel power generators and fuel storage area.
- Waste spills in the solid and hazardous waste storage area.
- Oil spills and leakage in vehicle parking area Oil & grease interceptor will be installed in parking area to arrest oil and grease and this keep the area from free of any contamination of water and soil.
- Silts from soil erosion in garden.

Storm water management practices include:

- Regular inspection and cleaning of storm drains
- Covered waste storage areas
- Provision of silt traps in storm water drain

173. **Soil Erosion & Post Construction Cleanup:** As the site is on relatively flat terrain so there will be less chance of soil erosion but river side of site need to protect from soil erosion. Most of the impacts will occur due to excavation and earth movements during construction phase only. During post construction phase, the contractor will be required to:

- Backfill any excavation and trenches, preferably with excess excavation material generated during the construction phase.
- Use removed topsoil to reclaim disturbed areas.
- Re-establish the original grade and drainage pattern to the extent practicable.
- Stabilize all areas of disturbed vegetation using weed-free native shrubs, grasses, and trees. Planation of shrubs and grasses on downward slopes to control further soil erosion.
- Restore access roads, staging areas, and temporary work areas.
- Restore roadside vegetation.
- Remove all tools, equipment, barricades, signs, surplus materials, debris, and rubbish. Demolish buildings/structures not required for O&M. Dispose in designated disposal sites. (Sample Outline of Spoil Management Plan is given as Annexure-10).
- Monitor success of re-vegetation and tree re-planting. Replace all plants determined to be in an unhealthy condition by new ones.

174. **Safety Measures:** The design of the proposed intervention includes structural and seismic safety required by India's latest Building Codes (in Seismic Zone-V) very high damage risk zone. The other safety feature are explained below:

- The project site will be equipped with firefighting system with portable fire extinguishers and smoke detectors.
- Separate staircase proposed in case of any mishap etc.
- During natural calamities, the operation will be stopped. The staff will be safely evacuated as per the Disaster Management Plan (DMP) of Himachal Pradesh.

175. **Socio-economic impacts:** The establishment and operation of proposed intervention will have positive development impact since it will be an added facility for the tourists visiting Nadaun for tourists visiting religious destinations around Nadaun town. The youth interested in adventure sports can also get adequate training which can trigger the engagement of local youth in adventure sports operations. Thus, proposed interventions will increase tourist / sports person satisfaction, employability of local youth in the operations of facilities and improve the socio-economic condition of people residing in/ near the town.

176. **Impact on Land and Ecology:** The sustainable tourism acknowledges presence of adequate green area accompanied by healthy environment. In addition, they help to control air pollution, soil erosion as well as support local biodiversity thus improving the aesthetic value of entire project. The proposed tourism project will have positive impact on land environment. To enhance the aesthetics of the project sites, plantation of shrubs/ trees and landscaping with native species will be taken up in vacant space. No impact on the flora or fauna is envisaged on account of the operations of the site. The existing road will be used approach to the site and pathway will be maintained. However, the road within the project area will be paved.

177. **Emergency Plan for Accident and Natural Hazards:** For operation phase onsite emergency plan will be prepared by the Nagar Panchayat & Local Administration for minor accidents and fire. For natural calamities the Disaster Management Plan will be followed. The Disaster Management Plan have been prepared by the Department of GoHP as per provisions of Disaster Management Act 2005 of Govt. of India.

178. **Impact of Rafting Complex Operations:** Prevalent guidelines and rules of Himachal Pradesh Miscellaneous Adventure Activities (Amendment) Rules, 2021[10] and Water Sports & Allied Activities Rules-202111 will be strictly adhered.

179. **Guidelines for sustainable tourism practices in the project:** Guidelines of sustainable tourism in Himachal Pradesh 12. During the operation of different activities relevant rules of the GOHP; Himachal Pradesh Water Sports and Allied Activities Rules, 2021, River Rafting Rules 2005 and HP Miscellaneous Adventure Activities Rules 2017 shall be followed.

F. Description of Planned Mitigation Measures

180. Screening of environmental impacts is based on the magnitude and duration of the impact. Table-17 provides the potential environmental impacts and the mitigation measures including the institutional responsibilities for implementing the same.

[10] Microsoft Word - Misc.Adventure Rules _2_ (himachaltourism.gov.in)
[11] H.P. Water Sports Rules, 2021 (himachaltourism.gov.in)
[12] (himachaltourism.gov.in)

Table- 17: Summary of Environmental Impacts and Mitigation Measures

Sr. No.	Potential Environmental Issues	Duration or Extent	Magnitude	Proposed Mitigation Measures	Institutional Responsibilities
1	**Location Impacts**				
1.1	Lack of sufficient planning to assure long term sustainability of the site and ensure protection specially from earthquake and other natural disasters	Permanent	Major	The design of site has been taken into considering of earthquake coefficient of Zone-V. The site is located near River Beas, measures considered in view of embankment protection. HFL is considered in design. Structures is proposed above the HFL.	PMU and PIU
1.2	Extraction of Construction material	Permanent	Major	The construction materials shall be procured from the sources having environmental permits and clearance as per prevailing environmental framework.	Contractor and PIU
2	**Design and Pre-construction Impacts**				
2.1	Consents, permits, clearances, no objection certificates (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 with all obtained consents, permits, clearance, NOCs, etc. Include in detailed design drawings and documents all conditions and provisions if necessary.	PIU
2.2	Layout of components to avoid impact on the aesthetics of the site	Permanent	Major	The project components will not have any adverse impacts on aesthetics of site as these involve construction of site on building and infrastructure. Measures to protect physical, cultural and natural aesthetics of site without disturbing the surroundings.	PMU/PIU
2.3	Slope stability related issues	Permanent	Minor	The site is flat terrain. Slope stability related issues have been taken care in building design in river side.	PMU and PIU
2.4	Increased storm water runoff from alterations of the site‘s natural	Permanent	Moderate	Design of proposed intervention will allow efficient drainage at the site and maintain	PMU and PIU

	drainage patterns due to landscaping, excavation works, construction of parking lots, and addition of paved surface.			natural drainage patterns during the proposed work.	
2.5	Integration of energy efficiency and energy conservation programs in design of site	Permanent	Moderate	Following measures have been included in the design to enhance energy efficiency: Usage of recyclable materials like wood substitutes. Installation of BEE certified equipment. Usage of energy efficient lighting fixtures (LED).	PMU and PIU
3	**Construction Impacts**				
3.1	Construction Camps - Location, Selection, Design and Layouts	Temporary	Moderate	Construction camp at will be located within the site as far as possible or contractor will hire a house to accommodate construction workers. The construction camp, if established at project site will not affect the day-to-day activities of local residents in the vicinity of site. Adequate sanitation facilities shall be provided at camp site and no waste water will be discharged outside. Labour camp should not locate near any of the water body/ forest area.	Contractor and PIU
3.2	Traffic management plan during construction	Temporary	Moderate	Prior to commencement of site activities and mobilization on ground, the contractor will prepare a traffic management plan for safe passage of local traffic during construction phase. This will include alternative access routes, traffic regulations, signages, etc. The contractor will get these plans approved from the Engineer in-charge of PIU. The contractor will disseminate the traffic management plan around the project site.	Contractor and PIU
3.3	Impacts on flora and fauna	Temporary	Moderate	Following mitigation measures are planned: PMDSC will conduct site induction and environmental awareness programs at the project site. The contractor will limit activities within the work areas. Storage of construction materials will be within the project site plot. PIU will prepare site specific landscape and shrubs and tree plantation plans at the end of	Contractor and PIU

				construction period. These plans will be implemented.	
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 PIU/ PMU 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 and PIU
3.5	Drinking water availability	Temporary	Major	Sufficient supply of potable water will be provided and maintained at construction site. If the drinking water is obtained from an intermittent public water supply, then storage tanks will be provided.	Contractor and PIU
3.6	Waste disposal	Permanent	Major	Location of disposal site for construction/ demolition waste will be finalized by the Environmental Specialist of the PIU and PMU/ PMDSC. PMU will confirm that disposal of the material will not impact the water body or environmentally sensitive areas. Waste should be dump & disposed in consultation with Engineer in-charge at designated site.	Contractor and PIU
3.7	Stockpiling of construction materials	Temporary	Moderate	Stockpiling of construction materials should not impact or obstruct the local drains/ water body and stockpile will be covered to protect from rain and erosion. Site should be properly barricaded and away from the water body.	Contractor and PIU
3.8	Soil Erosion	Temporary	Moderate	There may be requirement for temporary slope protection during construction at the excavated areas. These requirements should be met. Adequate measures will be taken up at site so that there is no soil erosion causing risks in the near vicinity.	Contractor and PIU
3.9	Soil and Water Pollution due to fuel and lubricants, construction waste	Temporary	Moderate	The fuel storage and vehicle cleaning area at project site will be stationed such that water discharge does not drain into the local drain/ water body. Keep away construction waste and dump at designated site. Soil and water	Contractor and PIU

				pollution parameters will be monitored as per monitoring plan.	
3.10	Siltation of water bodies/ natural drains due to spillage of construction wastes	Temporary	Moderate	No disposal of construction wastes will be carried out into any water body/ natural drains near the project site. Extraneous construction wastes will be transported to the pre-identified disposal site for safe disposal in scientific manner. Loose construction material will be located away from any natural drains to avoid siltation.	Contractor and PIU
3.11	Generation of dust	Temporary	Moderate	The contractor will take every precaution to reduce the levels of dust at construction site. The site will be properly barricaded with prefabricated MS sheets. Measures such as water sprinkling at dust prone areas as and when required. Ambient air quality monitoring will be conducted as per monitoring plan.	Contractor and PIU
3.12	Emission from Construction Vehicles, Equipment and Machinery	Temporary	Moderate	Vehicles, equipment and machinery used for construction will conform to the relevant Standard (vehicular emission standards of Government of India and CPCB specified standards for equipment and machinery) and will be regularly maintained to ensure that pollution emission levels comply with the relevant requirements.	Contractor and PIU
3.13	Noise Pollution	Temporary	Moderate	Noise limits for construction equipment used in this project will not exceed 75 dB (A). The site will be properly barricaded with prefabricated MS sheets. Periodical maintenance of vehicle and equipment will be done to mitigate the noise level in the area. Noise level monitoring will be conducted as per monitoring plan.	Contractor and PIU
3.14	Material Handling at Site	Temporary	Moderate	Workers employed on mixing cement, lime mortars, concrete, etc., will be provided with personal protective gears/equipment's (PPEs) such as gloves, jackets, shoes, hats, goggles and ear plug etc. Workers, who are engaged in welding works, will be provided with welder's protective face/ eye-shields. Workers engaged in stone	Contractor and PIU

				breaking activities will be provided with protective goggles and clothing.	
3.15	Disposal of Construction & Demolition Waste	Temporary	Moderate	Safe disposal of the Construction & Demolition waste will be ensured in the pre-identified/ approved disposal locations. In no case, any construction waste will be disposed round the project site and especially in vacant plots in the locality.	Contractor and PIU
3.16	Safety Measures during Construction	Temporary	Moderate	Adequate safety measures for workers during handling of materials at the project site will be taken up. Community/ pedestrian health and safety will be ensuring while work on site. 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 and PIU
3.17	Clearing of Construction of Camps and Restoration	Temporary	Major	Contractor will prepare site restoration plan for approval by the Engineer. The construction camp site restoration plans are 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 and PIU
3.18	Onsite emergency plan for minor accidents and mishaps and Disaster Management Plan for Natural Calamities	Temporary	Major in case of natural calamity and minor in case of accidents or mishaps at construction site	The onsite emergency plan will be prepared by the contractor in consultation with PIU and PMDSC. For natural calamities, disaster management plan prepared by the GoHP under the provisions of Disaster Management Act 2005 will be followed.	Contractor
4	**Operation and Maintenance impacts**				

4.1	Influx of visitors/ sports person due to proposed intervention in the area	Temporary	Moderate	**Sustainable & Inclusive tourism practices:** • Promote sustainable tourism practices such as responsible tourism, that contribute to the conservation of environment and local culture. • For operation stage, all the tourist related activities to be conducted for visitors/ tourists at site shall be planned and implemented in consultation with HPTDB. • **Resource management:** Implement resource management practices such as water conservation, waste management and energy efficiency to ensure the sustainability of local resources. **Water:** • Ensure that a ground water extraction permission for the project is obtained and compliances. • Ensure that a proper surface water permission from concerned department is obtained. • Conduct water quality monitoring to ensure the quality of water. **Electricity:** • Only energy saving light, BEE certified equipment to be installed at site. • Use of solar lights in open areas.	Operation & Maintenance Agency
4.2	Water Environment and Storm Water Management	Temporary	Moderate	• Contractor shall ensure proper storm water management at site by providing covered storm water drainage network. • No sewage shall be directly led to the water bodies; project includes proper disposal of such as septic tank and soak pit arrangement. • Separate solid waste bins will be provided for organic and plastic waste	Operation & Maintenance Agency

				within the project premises & disposed at regular intervals. The organic waste will be decomposed in proposed waste composter and plastic waste will be sold to recyclers/ Nagar Panchayat waste disposal vehicles. • Covered waste storage areas. • Regular inspection and cleaning of storm drains. • Provision of silt traps in storm water drains. For preservation of River Water Quality • Implement a strict no-littering policy. Provide waterproof bags for rafters to collect and carry out all their trash. • Install trash collection points at common rafting start and end points. Ensure regular collection and proper disposal of waste. • Ensure all rafts and gear are thoroughly cleaned before and after use to prevent the introduction of pollutants and invasive species into the river. • Regular maintenance of motor boat used for rescue purposes to prevent any fuel discharge into the river. Ensure compliance of Himachal Pradesh River Rafting Rules, 2005.	
4.3	Environmental Conditions Air and noise quality etc.	Temporary	Moderate	Air, water, and noise levels will be monitored periodically as per the Environmental Monitoring Plan prepared. • The DG set should have acoustic enclosure to attenuate noise & vibration. Noise level standards for DG set is given as Annexure-5. • The stack height of the DG set should comply with the CTO conditions. Emission limit for DG set is given as Annexure-3.	Operation & Maintenance Agency

				• All the internal road should be maintained and kept in good condition to prevent dust and erosion. Any runoff from roads must be managed to avoid erosion and pollution related problems.	
4.4	Safety risks	Temporary	Major	All safety features provided as part of construction at site will be maintained.	Operation & Maintenance Agency
4.5	Solid Waste Management	Temporary	Moderate	• For waste collection, adequate capacity of bins for dry and wet waste will be available at different locations • The recyclable waste will be collected at designated site/ location and sold to recycling vendors periodically • Ensure good housekeeping at site • Awareness campaigns, hoarding and signage on clean environment, healthy lifestyle, good practices etc. shall be maintained/ displayed.	Operation & Maintenance Agency
4.6	Unhygienic conditions due to poor maintenance of sanitation facilities and irregular solid waste collection	Temporary	Major	• The implementing agencies will carry out maintenance of the toilets, and carry out the regular collection and disposal of wastes to the local disposal sites. The generated sewerage will be disposed in septic tank followed by soak pit arrangement.	Operation & maintenance Agency
4.7	Impact on Land and Ecology	Permanent	Major	• Integrate existing trees, shrubs and vegetation as far as possible into the design to avoid need to remove them; • Preference should be given to native species of plants in consultation with forest department	Operation & maintenance Agency
4.8	Onsite emergency plan for minor accidents and mishaps and Disaster Management Plan for Natural Calamities	Temporary	Major in case of natural calamity and minor in case of accidents or mishaps at construction site	The management of site will prepare on-site emergency plan for possible minor accidents and mishaps during operation phase. All safety measures as per Himachal Pradesh River Rafting Rules, 2005 shall be adhered during rafting operations. For natural calamities, the disaster management plan prepared by DDMA will be followed.	Management of Operation & maintenance State Government for Onsite Emergency Plan and DDMA, Hamirpur for Disaster Management Plan

VII. CONSULTATION, PARTICIPATION & INFORMATION DISCLOSURE

A. Overview

181. The active participation of stakeholders including local community, NGOs etc. in all stages of project preparation and implementation is essential for successful implementation of the project. It ensures that the project are designed, constructed and operated with utmost consideration to local needs, ensures community acceptance and will bring maximum benefits to the people. Public consultation and information disclosure are a must as per the ADB policy.

B. Public Consultation

182. The Public Consultation and disclosure program are a continuous process throughout the project implementation including project planning, design and construction. Public consultation was undertaken as per ADB SPS requirements. All the five principles of information dissemination, information solicitation, integration, coordination and engagement into dialogue were incorporated during the task. A framework of different environmental impacts likely from the project was prepared based on opinions of all those consulted, especially at the micro level, by setting up dialogues with the local people along with the asset owner.

183. As per ADB safeguard requirement, public consultation is to be carried out before and after impact identification.

C. Consultation during Project Preparation

184. **Consultations during Detail Design:** During project preparation, consultations have been held with the HP Department of Tourism & Civil Aviation, tourists of Nadaun and local administration, local community representatives, and local people regarding issues pertaining to the selection of projects and identification of key issues including addressing the current gaps in provision of Wellness Centre cum Adventure Sports Centre and Hostel near/ at Nadaun. Records of the consultations in planning/ design phase are provided in Annexure-15. Project components are decided through consultations with Local Authority, Tourism Development Board, Public representatives, Department of Tourism and their suggestions are incorporated in to the project design. Formal and informal discussions were held with different stakeholders. The issues pertaining to the selection of projects and identification of key issues including addressing the current gaps in provision of improvement of tourist infrastructure were discussed.

185. **Consultations during preparation of IEE:** Consultations with several stakeholders like officials of Department of Tourism, tourists/ visitors were done during preparation of IEE. The main objectives of the consultation program were to inform stakeholders on adverse environmental and social impacts, efforts to minimize and mitigate negative impacts while making people aware of the proposed project benefits. General public in the project area were also consulted during visits to the project sites. Views expressed were incorporated into the IEE and in the planning and development of the project. Attendees expressed their happiness over the proposed project. Topics discussed with these stakeholders are given below:

- Awareness about the project and scope of works
- Present status of site/project
- Requirement of any tree cutting due to project
- Present status the of traffic/pedestrian movement at site
- Whether project is beneficial for local people/ tourist in the area
- Whether project is causing any livelihood impact to someone

- Any suggestion about the project
- Any other relevant information found at site

186. Consultation was conducted with local people and staff of SDM officer near rafting complex (within 1 km from site). Details of the public consultation carried out is given in below Table 18 and given as Annexure-15.

Table 18: Consultation Record

Sr.No.	Date of Consultation	Place of Consultation	Person Consulted (Name & Address/ Designation)	Outcome of Consultation
1	21.11.2023	at / near Site, Nadaun	(List of participants attached as Annexure 15) Male- 11 Female- 03	• Local people were keen to know the start date of the project. • Locals asked if preference will be given to the locals in the Rafting complex. They were replied that preference will be given to the local labour during construction and during operation youth of Nadaun can be trained to earn livelihoods in adventure sports related activities. • Locals are ready to provide full support. • The villagers are very happy that GoHP has selected the place for development. • According to the locals, if the project will implement in the near future, livelihood opportunities will automatically increase

187. The project team explained the proposed mitigation measures to mitigate/ minimize such issues. Attention of stakeholders drawn on the EMP and explained to them how the construction phase issues be avoided, minimize or mitigation and managed.

188. It was observed that people are willing to extend their cooperation as the proposed activities are to enhance the infrastructure services by way of providing better sports infrastructure facilities for local and aesthetic of site. The public extend their concern regarding the nuisance and disturbance (dust, road closure and traffic management activities) during construction.

D. Consultation during Implementation

189. To ensure continued public participation, stakeholder engagement at main stages of work during the project design and implementation is proposed. Regular consultations will be done during construction phase and will be regularly reported through semi-annual environmental monitoring reports. A grievance redressal cell will be set up within the PIU/PMDSC at field office and PMU, Shimla office. To ensure an effective disclosure of the project proposal to the stakeholders and the community living in the vicinity of the project

location, information regarding grievance redress mechanism shall be published in local newspapers. This information will also make available on the executing agency's website.

190. The EA will submit to ADB the following documents for disclosure on ADB‟s website: (i) the final IEE; (ii) a new or updated IEE and corrective action plan prepared during project implementation, if any; and (iii) the semi-annual environmental monitoring reports.

E. Information Disclosure

191. For the benefit of the community, relevant information in the IEE (Executive Summary) will be translated in Hindi and made available at: (i) Office of the PMU; and, (ii) Office of the District Commissioner, Hamirpur District. These copies will be made available free of cost to any person seeking information on the same. Hard copies of the IEE will be available in the PMU/PIU as well as the district library and accessible to citizens as a means to disclose the document and at the same time creating wider public awareness. On demand, the person seeking information can obtain a hard copy of the complete IEE document at the cost of photocopy from the office of the PMU/PIU, on a written request and payment for the same to the Project Director. 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. 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 date and expected completion dates etc. The notice will be issued by the PMU in local newspapers one month ahead of the implementation works.

VIII. GRIEVANCE REDRESS MECHANISM

192. The Project will have a common grievance redress mechanism (GRM) to receive, evaluate, and facilitate the resolution of social, environmental, or any other project-related grievances. The GRM will aim to provide a time-bound and transparent mechanism to voice and resolve social and environmental concerns linked to the Project. The GRM has been developed in consultation with stakeholders. The public awareness campaign will generate awareness of the Project and its grievance redress procedures. The campaign will ensure that the poor, vulnerable, and others know about the GRM.

193. The GRM will provide an accessible, inclusive, gender-sensitive, and culturally appropriate platform for receiving and facilitating the resolution of affected persons' grievances related to the Project. The multi-channel and multi-tier GRM for the Project is outlined below, with each tier having time-bound schedules and responsible persons identified to facilitate and address grievances at each stage. Public awareness campaigns will ensure that awareness of grievance redress procedures is generated through the campaign.

194. Affected persons will have the flexibility of conveying grievances and/or suggestions by dropping grievance redress/suggestion forms in complaint/suggestion boxes that will be installed by project PIUs or by e-mail, by post, or by writing in complaints register or by sending a WhatsApp message on the dedicated number, e-mail to the PIU or by dialing the number of the PIU/PMU.

195. Besides the Project's grievance redress mechanism, the state also has a comprehensive online public grievance monitoring system called Samgr eSamadhan where the public can file grievances through a dedicated web portal (esamadhan.nic.in). The affected persons can also lodge their complaints through this online portal.

196. **Information to the stakeholders about the GRM.** The stakeholders, including affected persons, beneficiaries and citizens, workers engaged during construction activities under the loan will be informed about the GRM under the Project and of the state through public consultations, disclosures, and distribution of public information booklets (PIB). In the case of illiterate persons, the information will be provided verbally during meetings with them.

197. **Who can complain.** A complaint can be registered by stakeholders directly or indirectly affected by the Project. A representative can register a complaint on behalf of the affected person or group, provided that the affected person or group identifies the representative and submits evidence of the authority to act on their behalf.

198. **What the Grievance/Complaint should contain.** Any comments, complaints, queries, and suggestions pertaining to safeguard compliance - environment, involuntary resettlement, indigenous people, design/construction-related issues, compensation, service delivery, or any other issues or concerns related to the Project. The complaint must contain the complainant’s name, date, address/contact details, location of the problem area, and the problem.

199. **Where and how to file a Complaint.** The complaint can be filed online and offline. The people can submit their complaints at the contractor’s site office or at the PIU/PMU office. In addition, they can also have grievances/suggestions/queries submitted through phone or e-mails or, the state grievance portal, or social media (on a dedicated WhatsApp number). The information about the GRM will also be displayed on the HPTDB website. Contact numbers and names of the concerned staff and contractors will be posted and displayed at all construction sites.

200. **Grievance redress /Problem solving through participatory Process**. The PMU and PIUs will make efforts to resolve the problems and conflicts amicably through a participatory process with the community. In case of immediate and urgent grievances in the complainant's perception, the contractor and supervision personnel from the PIU will provide

the most easily accessible or first level of contact to resolve grievances quickly

201. **Grievance Redressal Committee**. The GOHP will establish the grievance redressal committees (GRC) at the site, PIUs, and PMU levels to provide a mechanism to resolve conflict and disputes concerning compensation payments, environmental safeguards related issues and cut down on lengthy litigation. The following will be the composition of the GRCs. The composition of the GRCs at all three levels is provided in the Table 19.

Table 19: Composition of GRC at Three Level

Site Level GRC (Level 1)	PIU level GRC (Level 2)	PMU level GRC (Level 3)
1. Assistant Engineer of the concerned project site 2. Junior Engineer, PIU 3. Safeguards and Community Organiser, PIU 4. Field Engineer of PMDSC 5. Safeguard support staff of PMDSC 6. Representative from the affected community, as and when required	Project Manager, Concerned, PIU Assistant Engineer, PIU Assistant Safeguards and Community Development Officer Social and/or Environment Safeguards Specialist, PMDSC Construction Manager, PMDSC Representative of line departments (PWD, ULB, etc), as and when required, and Representative from the affected community, as and when required	1. Project Director 2. Deputy Project Director, PMU 3. Executive Engineer, PMU 4. Environment Specialist, PMU 5. Safeguard Specialist (Social and Gender), PMU 6. Representatives from the line departments (ULB, PWD, etc) as and when required

GRC = grievance redress committee, PIU = project implementation unit, PMDSC = project management design and supervision consultant, PMU = project management unit, PWD = public works department, ULB = urban local body.

202. **Site level GRC (First Level).** The site level GRC will comprise an assistant engineer, PIU, a junior engineer. PIU, and safeguards and community organiser, PIU, a field engineer of PMDSC, safeguard support staff of PMDSC, and a representative from the affected community (as and when required). The contractor's site engineer and environment health safety cum social supervisor will jointly support in meetings, consultations, and site-level grievance resolution. The effort will be made to resolve issues on-site, in consultation with each other, and within five days of receipt of a complaint/grievance.

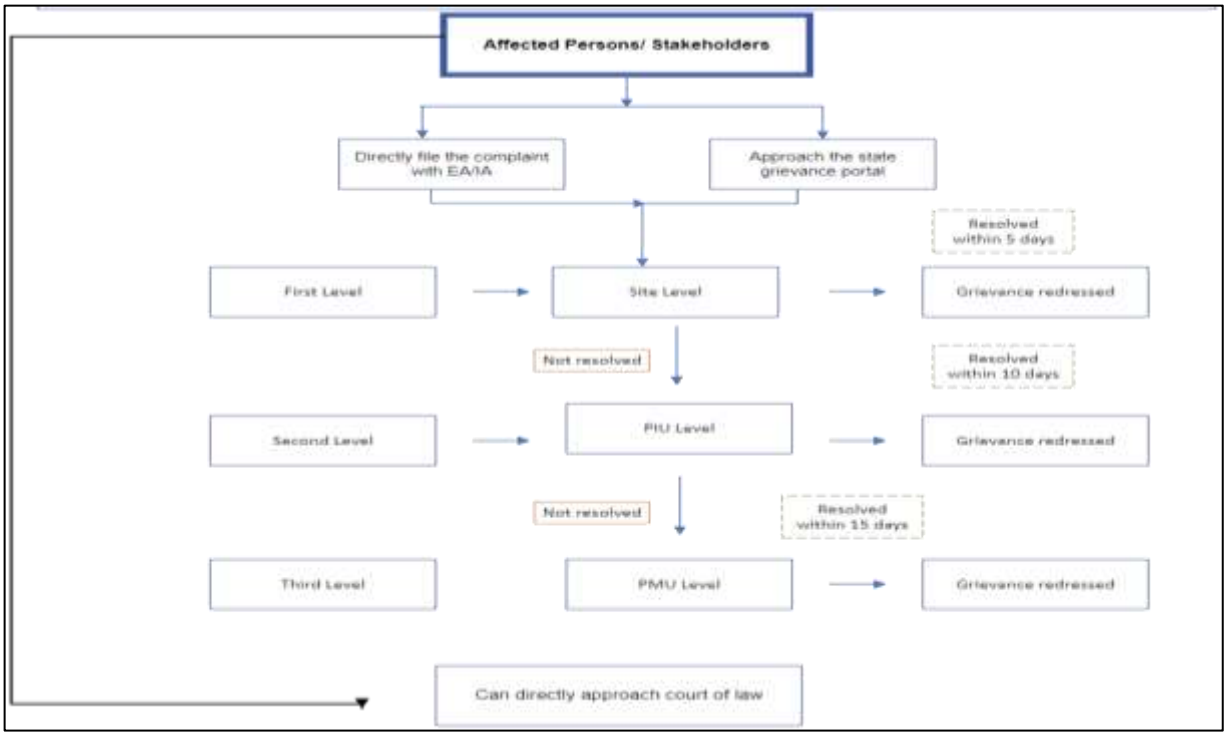
203. **PIU level GRC (Second Level).** All grievances that cannot be redressed within seven days at the first level will be brought to the notice of GRC headed by the executive engineer at the concerned PIU, and will include the assistant engineer, assistant social and community development officer, social and/or environment safeguards specialist, PMDSC, and construction manager, PMDSC The PIU level GRC will also co-opt the representative of line departments (PWD, ULB) and a representative from the affected community, as and when required. GRC will review the grievance and act appropriately to resolve it within 10 days of receipt at this level.

204. **PMU Level GRC (Third Level).** In case the grievances are not addressed at the PIU level within 10 days of receipt, the same shall be brought to the notice of the PMU-level GRC. The PMU-level GRC will be comprised of the project director as chairperson, deputy project director, executive engineer, environment specialist, safeguards specialist (gender and social), and a representative from the line department (ULB, PWD, etc). The community shall have at least one female member. GRC will resolve grievances within 15 days.

205. The complainant will be informed in writing about the resolution of their complaint or the decision of the grievance redress committees. The complainants are free to approach the court of law at any time of their own will at any stage, and accessing the country's legal system can run parallel to accessing the GRM and is not dependent on the negative outcome of the GRM. GRM will continue to function throughout the Project. The grievance redress

process is shown in the figure 24.

Fig. 24: Grievance Redress Mechanism in SITDP, Himachal Pradesh



EA= executing agency; IA = implementation agency

Source: Asian Development Bank.

206. **ADB Accountability Mechanism.** The Accountability Mechanism provides an independent forum and process whereby people adversely affected by ADB-assisted projects can voice, and seek a resolution of their problems, as well as report alleged violations of ADB's operational policies and procedures. In the event that the established GRM is not in a position to resolve the issue, the affected person also can use the ADB Accountability Mechanism through directly contacting (in writing) the complaint receiving officer (CRO) at ADB headquarters. Before submitting a complaint to the Accountability Mechanism, affected people should make an effort in good faith to solve their problems by working with the concerned ADB operations department (ADB India Resident Mission in this case). The complaint can be submitted in any of the official languages of ADB's developing member countries. The ADB Accountability Mechanism information will be included in the project-relevant information to be distributed to the affected communities as part of the Project GRM.13

207. **Documentation.** PMU, with the support of PIUs, will be responsible for the timely registration of grievances, related disclosure, and communication with the aggrieved party. PMU will also ensure that all the details from submission to resolution are well recorded and documented. The environmental and social safeguard specialists of PMU will be responsible for maintaining the records and coordinating with the affected persons regarding complaints related to their respective domain areas. The chair of each GRC will be responsible for informing the complainant in writing about the resolution of their complaint or the decision of the GRC.

208. **Record keeping.** PIUs will keep records of grievances received, including contact details of the complainant, the date the complaint was received, the nature of the grievance, agreed corrective actions, the date these were affected, and the final outcome. The number of grievances recorded and resolved and the outcomes will be displayed/disclosed in the

[13] http://www.adb.org/Accountability-Mechanism/default.asp.

PMU and PIU offices, and reported in monitoring reports submitted to ADB on a semi-annual basis.

209. **Perioding review and documentation of lessons learned.** The project director, PMU, will periodically review the functioning of the GRM in each site and record information on the effectiveness of the mechanism, especially on the Project's ability to prevent and address grievances.

210. **Cost.** All costs related to the resolution of grievances (meetings, consultations, communication, and reporting/ information dissemination, as well as costs incurred by affected persons to attend GRC meetings, if any) will be borne by PMU.

IX. ENVIRONMENTAL MANAGEMENT PLAN

211. The purpose of the environmental management plan (EMP) is to ensure that the activities are undertaken in a responsible, non-detrimental manner with the objectives of: (i) providing a proactive, feasible, and practical working tool to enable the measurement and

monitoring of environmental performance on-site; (ii) guiding and controlling the implementation of findings and recommendations of the environmental assessment conducted for the project; (iii) detailing specific actions deemed necessary to assist in mitigating the environmental impact of the project; and (iv) ensuring that safety recommendations are complied with.

212. A copy of the EMP must be kept on work sites at all times. This EMP will be included in the bid documents and will be further reviewed and updated during implementation. The EMP will be made binding on all contractors operating on the site and will be included in the contractual clauses. Non-compliance with, or any deviation from, the conditions set out in this document constitutes a failure in compliance.

213. The contractor will be required to (i) establish an operational system for managing environmental impacts (ii) carry out all of the monitoring and mitigation measures set forth in the EMP; and (iii) implement any corrective or preventative actions set out in safeguards monitoring reports that PMU and PIU will prepare from time to time to monitor implementation of this IEE and EMP. The contractor shall allocate a budget for compliance with these EMP measures, requirements and actions.

A. Responsibilities for EMP Implementation

214. The following agencies will be responsible for EMP Implementation:

- Department of Tourism and Civil Aviation, Government of H.P. is the Executing Agency (EA) responsible for overall management, coordination, and execution of all activities funded under the loan. Himachal Pradesh Tourism Development Board (HPTDB) is the Implementing Agency (IA) responsible for coordinating procurement and construction of the project.
- The Project Management Design & Supervision Consultant (PMDSC) assists PMU in managing the project including procurement and assures technical quality of design and construction;
- A Project Implementation Unit (PIU) will be established in Kangra. This PIU will look into progress and coordination of day-to-day construction works with the assistance of PMDSC;
- The Project Management & Design Supervision Consultant (PMDSC) will review the DPR of the project. The PMDSC will carry out construction supervision during project implementation. Their responsibility will also include EMP implementation supervision;
- The contractor will be responsible for execution of all construction works. The contractor will work under the guidance of the PIU Kangra and PMDSC. The environmental related mitigation measures will also be implemented by the contractor.
- Contractor will appoint a qualified environmental engineer to implement the mitigation measures as per the EMP.

215. The contractor's conformity with contract procedures and specifications during construction will be carefully monitored by the PIU. Safeguard Specialists will be deputed in PMU and PMDSC, who will monitor the environmental performance of contractors.

216. **Responsibility for preparation/ updating IEE:** PMDSC is responsible for preparation of IEE and updating it, if required and submit to PMU for final review before submission to ADB. PMDSC will assist and coordinate to PMU.

217. **Responsibility for Monitoring:** During construction, PMDSC's Environmental Specialist and the designated representative engineer of the PIU will monitor the contractor's environmental performance on day-to-day basis while PMDSC expert will randomly monitor the performance for corrective measures if required. During the operation phase, monitoring will be the responsibility of the EA.

218. **Responsibility for Reporting:** Environmental Specialist of PMDSC in coordination

with PIU will prepare and submit quarterly and semi-annual environmental monitoring report to PMU. A sample of SEMR is given as Annexure-8. PMU will review these reports with assistance of PMDSC Environmental Specialist and submit to ADB semi-annual reports on implementation of the EMP. This will facilitate 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. PMDSC environmental expert will help in preparing quarterly, semi-annual and annual progress reports.

219. **Environmental Management Plan (EMP):** Table-20 shows the potential adverse environmental impacts, proposed mitigation measures, monitoring parameters, frequencies, responsible parties and implementation arrangements during pre-construction, construction, post construction & operation phase of the project. This EMP will be included in the bid documents & contract agreement. Same will be further reviewed and updated during project implementation.

Table 20: Environmental Management Plan (EMP)

Parameters	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of monitoring	Source of Funds
Location Impacts						
Lack of sufficient planning to assure long term sustainability of the site and ensure protection especially from earthquake and other natural disasters.	The design of site has been taken into considering of earthquake coefficient of Zone-V. The site is located near River Beas, measures considered in view of embankment protection. HFL is considered in design. Structures are proposed above the HFL.		PMU and PIU	PMDSC	Prior to start of civil work and Continuous during construction.	PMU
Extraction of Construction material.	The construction materials shall be procured from the sources having environmental permits and clearance as per prevailing environmental framework.		Contractor	PMDSC	Prior to start of civil work and Continuous during construction.	Contractor
Pre-Construction Phase						
Site Specific Environmental Protection measures.	• Preparation of site specific EMP by the contractor. • Same shall be approved by PMDSC/ PMU.	Approved Site Specific EMP	Contractor	PMDSC	Prior to start of civil work and Continuous during construction.	Contractor/ PMDSC
Consents, permits, clearances, No objection certificate (NOC), etc.	• Secure all necessary consents, permits, clearance, NOCs, etc. prior to start of civil works.	Consents, permits, clearance, NOCs, etc.	PIU/ Contractor	PMDSC	EA to report to ADB in Six monthly Environmental Monitoring Report (EMR).	Contractor/ PMU
Establishment of baseline environmental conditions prior to start of civil works	• Prior to start of civil works ambient air quality, ambient noise level, water & soil quality data will be generated.	Records	PMDSC/ Contractor	PIU & PMDSC	Baseline data will be generated prior to start of civil work.	Contractor/ PMDSC

Parameters	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of monitoring	Source of Funds
Utility Shifting	• Identify the utilities and prepare a utility shifting plan	Approved Utility Shifting Plan	PMDSC/ Contractor	PIU & PMDSC	Prior to start of civil work.	PMU/ Contractor
Sites for construction camps, areas for stockpile, Storage and disposal.	• Residential areas will not be considered so as to protect the human environment (i.e., to curb accident risks, health risks due to air and water pollution and dust, and noise, and to prevent social conflicts, shortages of amenities, and crime). • Disposal will not be allowed near sensitive areas which will inconveniencethe community. • The construction camp, storage of fuel and lubricants should be avoided near the water bodies.	List of pre-approved sites for construction work camps, areas for stockpile, storage and disposal Waste management plan.	PMDSC to prepare list of potential sites DSC to inspect sites proposed by contractor if not included in pre-approved sites.	PIU/PMDSC	Monthly	Contractor
Sources of construction materials	• Use quarry sites and sources permitted by government. • Verify suitability of all material sources and obtain approval from PIU. • If additional quarries are required after construction has started, obtain written approval from PIU. • Submit to PMDSC on a monthly basis documentation of sources of materials.	Permits issued to quarries/ sources of materials	Contractor PIU & PMDSC is to verify sources (including permits) if additional is requested by contractor.	PMU/PMDSC	Upon submission by contractor, monthly	Contractor
Traffic Management	• Plan transportation routes so that heavy vehicles do not use narrow local roads, except in the immediate vicinity of delivery sites. • Schedule transport and hauling activities during non-peak hours. • Locate entry and exit points in areas where there is low potential for	Traffic Management Plan	Contractor	PIU and PMDSC	Prior to start of civil work. Continuous during construction.	Contractor

Parameters	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of monitoring	Source of Funds
	traffic congestion. • Keep the site free from all unnecessary obstructions. • Coordinate with the Traffic Police Department for temporary road diversions and for provision of traffic aids if transportation activities cannot be avoided during peak hours. • Notify affected sensitive receptors by providing sign boards.					
Occupational Health and Safety	• Comply with IFC EHS Guidelines and National/ State Occupational Health and Safety regulations. • Develop comprehensive site- • Specific Health and Safety. • (H&S) Management Plan & works near river.	Health and Safety (H&S) Management Plan.	Contractor	PIU and PMDSC	Prior to start of civil work. Continuous during construction	Contractor
Public Consultations	• Continue information dissemination, consultations, and involvement/participation of stakeholders during project implementation.	- Disclosure records - Consultations	PMDSC/ Contractor	PMU and PMDSC	Prior to start of civil work. Continuous during project implementation	PMDSC/ Contractor
Construction Phase						
Soil erosion and surface runoff	• Save top soil removed during excavation and use to reclaim disturbed areas, as soon as it is possible to do so. • Use dust abatement measures such as water spraying to minimize wind-blown erosion. • Provide temporary stabilization of disturbed/ excavated areas that are not actively under construction.	Erosion control and re-vegetation plan	Contractor	PMDSC	• Daily visual inspection by contractor supervisor and/or environment specialist • Weekly visual inspection by PMDSC (more frequent during monsoon)	Contractor

Parameters	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of monitoring	Source of Funds
	• Apply erosion controls (e.g., silt traps) along the drainage leading to the water bodies. • Clean and maintain catch basins, drainage ditches, and culverts regularly. • Conduct routine site inspections to assess the effectiveness of and the maintenance requirements for erosion and sediment control systems.				• Random inspection by PMU, PIU, and/or PMDSC	
Public inconvenience due to disturbance to public utility services-Water & Power supply, sanitation, etc.	• Approval /implementation of utility shifting by concerned department. • Advance notice to the public about the time and the duration of the utility disruption. • Use of well trained and experienced machinery operators to reduce accidental damage to the public utilities – pipelines. • Restore the utilities immediately to overcome public inconvenience.	Approved Utility Shifting Plan. Disruption to other commercial and public activities / public complaints	PIU/ Contractor	PMDSC	Throughout construction period	PMU/ Contractor
Noise and Vibrations	• Selection of construction techniques and machinery to minimize ground disturbance. • Construction equipment to be well maintained. • Construction techniques and Machinery selection to minimize ground disturbance. • Proper maintenance and turning off plants not in use • Limit construction activities during day time. • Minimize noise from construction equipment by using vehicle	Construction techniques and machinery. Noise & Vibration Testing (Quarterly). Work schedule	Contractor	PMDSC	Throughout construction period (Noise & Vibration Testing as per Environmental Monitoring Plan)	Contractor

Parameters	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of monitoring	Source of Funds
	silencers and fitting jackhammers with noise-reducing mufflers. • Avoid loud random noise from sirens, air compression, etc. • Locate stationary construction equipment as far from nearby noise-sensitive properties, such as the hospital, as possible. • Shut off idling equipment. • Reschedule construction operations to avoid periods of noise annoyance identified in the complaint. • Notify nearby residents whenever extremely noisy work will be occurring. • Follow Noise Pollution (Regulation and Control) Rules, day time ambient noise levels should not exceed 65 dB(A) in commercial areas, 55 dB(A) in residential areas, and 50 dB(A) in silence zone					
Impact on Air Quality	• Conduct regular water sprinkling at dust generation sites e.g., haul roads, stockpiles, etc. • Maintain construction vehicles and obtain “pollution under control” certificate. • Obtain CTE and CTO for hot mix plants, crushers, diesel generators, etc. • Construction materials should be stored in covered areas to avoid dust emissions and such materials should be transported in covered trucks.	Valid PUC, CTE & CTO. Ambient Air Quality Testing (Quarterly). Visual inspections	Contractor	PMDSC	Throughout construction period (Ambient Air Quality Testing as per Environmental Monitoring Plan)	Contractor

Parameters	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of monitoring	Source of Funds
Impact on Water Quality	• Ensure drainages and water bodies within the construction zones are kept free of obstructions. • Keep loose soil material and stockpiles out of drains and water bodies. • Minimize construction activities involving significant ground disturbance during the monsoon season. Provide drains and retention ponds if required. • Dispose waste oil and lubricants generated as per provisions of Hazardous Waste (Management and Handling) Rules, 2016. • Implementation of Waste Management Plan	Water Quality Testing (Quarterly). Visual inspections. Waste Management Plan	Contractor	PMDSC	Throughout construction period (Water Quality Testing as per Environmental Monitoring Plan)	Contractor
Impact on Flora and Fauna	• Construction workers prohibited from harvesting wood in the project area during their employment. • No tree cutting without permission of competent authority. • Replant trees in the area using minimum ratio of 3 new trees for every 1 tree cut. Replacement species must be approved by District Forest Department. • Conduct site induction and environmental awareness. • Limit activities within the work area.	Illegal wood/ vegetation harvesting (area in m2, number of incidents reported). Tree Cutting permission. Number and species approved by District Forest Department	Contractor	PMDSC	Throughout construction period	Contractor
Impacts on Physical & Cultural Resources	• Ensure no damage to structures/properties near construction zone. • Provide sign boards to inform nature and duration of construction	Visual inspection No complaints received. Photographs	Contractor	PMDSC	Throughout construction period	Contractor

Parameters	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of monitoring	Source of Funds
	works and contact numbers for concerns/complaints. • Implement good housekeeping. Remove wastes immediately. Prohibit stockpiling of materials that may obstruct/slow down pedestrians and/or vehicle movement. • Ensure workers will not use nearby/adjacent areas as toilet facility. • Coordinate with PIU/PMDSC for transportation routes and schedule. Schedule transport and hauling activities during non-peak hours. Communicate road detours via visible boards, advertising, pamphlets, etc. • Ensure heavy vehicles do not use narrow local roads, except in the immediate vicinity of delivery sites. • Provide instructions on event of chance finds for archaeological and/ or ethno-botanical resources. Works must be stopped immediately until such time chance finds are cleared by experts. • Avoid working in peak tourist seasons and/ or important religious festivals.					
Impacts due to Waste generation	• Prepare and implement a waste management plan. Manage solid waste according to the following hierarchy: reuse, recycling and disposal. Include in waste	Waste Management Plan. Visual inspection Photographs	Contractor	PMDSC	Throughout construction period	Contractor

Parameters	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of monitoring	Source of Funds
	management plan designated/ approved disposal areas. • Excavated soil emerging at some sites is suitable for use at other sites under the project for levelling and filling purpose. Additional quantity of soil if required is being procured from authorized source or with approval of asset owner. • Coordinate with Town Municipal Authority for beneficial uses of excavated soils/ silts/ sediments or immediately dispose to designated areas. • Recover used oil and lubricants and reuse; or remove from the sites. • Avoid stockpiling and remove immediately all excavated soils, excess construction materials, and solid waste (removed concrete, wood, trees and plants, packaging materials, empty containers, oils, lubricants, and other similar items). • Prohibit disposal of any material or wastes (including human waste) into drainage, nallah, or watercourse. • Consider prohibition on Spreading/throwing garbage in open place, therefore proper solid waste collection and disposal plan should be made and strictly followed by contractor during construction phase.					

Parameters	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of monitoring	Source of Funds
Impacts on occupational Health and Safety	• Comply with IFC & National/ State EHS Guidelines on occupational Health and Safety. • Disallow worker exposure to noise level greater than 85 dB(A) for duration of more than 8 hours per day without hearing protection. The use of hearing protection shall be enforced actively. • Develop comprehensive site-specific health and safety (H&S) plan. • Provide H&S orientation training to all new workers to ensure that they are apprised of the rules of work at the site, personal protective protection, and preventing injury to fellow workers. • Ensure that qualified first-aid can be provided at all times. Equipped first-aid stations shall be easily accessible throughout the site as well as at construction camps. • Provide medical insurance coverage for workers. • Secure construction zone from unauthorized intrusion and accident risks. • Provide supplies of potable drinking water. • Provide clean eating areas where workers are not exposed to hazardous or noxious substances. • Ensure the visibility of workers through their use of high visibility vests when working in or walking	Site-specific health and safety (H&S) plan. Records. Visual inspection. Noise exposure monitoring in work area. Visible first aid equipment and medical supplies.	Contractor	PMDSC	Throughout construction period	Contractor

Parameters	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of monitoring	Source of Funds
	through heavy equipment operating areas. • Ensure moving equipment is outfitted with audible back-up alarms. • Mark and provide sign boards in the construction zone, and areas for storage and disposal. Signage shall be in accordance with international standards and be well known to, and easily understood by workers, visitors, and the general public as appropriate. • Health Awareness camps & Medical Checkup camps for workers.					
Impacts on Socio-economic Activities	• Provide signboards for pedestrians to inform nature and duration of construction works. • Display contact numbers for concerns & grievances. • Preference to local employment as far as feasible. • Continuous Public Consultation. • Awareness camps & training to workers for dealing with local people.	Records. Visual inspection Consultation Records	Contractor	PMDSC	Throughout construction period	Contractor
Post-Construction & Operation Phase						
Site Cleanup & Restoration	• Backfill any excavation and trenches, preferably with excess excavation material generated during the construction phase. • Use removed topsoil to reclaim disturbed areas.	Visual inspection. Pre-existing condition. Construction zone has been restored.	Contractor	PMDSC	Post construction period	Contractor

Parameters	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of monitoring	Source of Funds
	• Re-establish the original grade and drainage pattern to the extent practicable. • Stabilize all areas of disturbed vegetation using weed-free native shrubs, grasses, and trees. • Restore access roads, staging areas, and temporary work areas. • Restore roadside vegetation. • Remove all tools, equipment, barricades, signs, surplus materials, debris, and rubbish. Demolish buildings/structures not required for O&M. Dispose in designated disposal sites. • Monitor success of re-vegetation and tree re-planting. Replace all plants determined to be in an unhealthy condition.	Construction zone vegetation has been enhanced				
Influx of visitors/ sports person due to proposed intervention in the area	**Sustainable tourism practices:** • Promote sustainable tourism practices such as responsible tourism, that contribute to the conservation of environment and local culture. • For operation stage, all the tourist related activities to be conducted for visitors/ tourists at site shall be planned and implemented in consultation with HPTDB. • **Resource management:** Implement resource management practices such as water conservation, waste management and energy efficiency to ensure the sustainability of local resources.	Energy efficient equipment, Waste segregation, proper disposal, permissions for usage of ground water and surface water, if applicable.	Operation & Maintenance Agency	PMU		Contractor up to Defect Liability Period and thereafter PMU

Parameters	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of monitoring	Source of Funds
	Water: • Ensure that a ground water extraction permission for the project is obtained and compliances. • Ensure that a proper surface water permission from concerned department is obtained. • Conduct water quality monitoring to ensure the quality of water. **Electricity:** • Only energy saving light, equipment to be installed at site. • Consider the use of solar energy as far as possible.					
Environmental conditions	• Monitoring of Ambient Air, Noise, Soil, Ground & Surface Water Quality.	Monitoring results and relevant standards Water- IS:10500 & CPCB Water Use Criteria	Contractor up to Defect Liability Period and thereafter PMU/ PIU	PMU	Quarterly. Post Construction & Operation Phase	Contractor up to Defect Liability Period and thereafter PMU
Water Environment and Storm Water Management	• Contractor shall ensure proper storm water management at site by providing covered storm water drainage network. • No sewage shall be directly led to the water bodies; project includes proper disposal of such as septic tank and soak pit arrangement. • Separate solid waste bins will be provided for organic and	Storm water drains	Operation & Maintenance Agency	PMU		Contractor up to Defect Liability Period and thereafter PMU

Parameters	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of monitoring	Source of Funds
	plastic waste within the project premises & disposed at regular intervals. The organic waste will be decomposed in nearby/ proposed waste composter and plastic waste will be sold to recyclers/ Nagar Panchayat waste disposal vehicles. • Covered waste storage areas • Regular inspection and cleaning of storm drains. • Provision of silt traps in storm water drains. • Implement a strict no-littering policy. Provide waterproof bags for rafters to collect and carry out all their trash. • Install trash collection points at common rafting start and end points. Ensure regular collection and proper disposal of waste. • Ensure all rafts and gear are thoroughly cleaned before and after use to prevent the introduction of pollutants and invasive species into the river. • Regular maintenance of motor boat used for rescue purposes to prevent any fuel discharge into the river. • Ensure compliance of Himachal Pradesh River Rafting Rules, 2005					
Safety risks	• All safety features provided as part of construction at site will be maintained.		Operation & Maintenance Agency	PMU		Contractor up to Defect Liability Period

Parameters	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of monitoring	Source of Funds
						and thereafter PMU
Solid Waste Management	• For waste collection, adequate capacity of bins for dry and wet waste will be available at different locations • The recyclable waste will be collected at designated site/ location and sold to recycling vendors periodically. • Ensure good housekeeping at site. • Awareness campaigns, hoarding and signage on clean environment, healthy lifestyle, good practices etc. shall be maintained/ displayed.	Waste segregation, display of suitable signages	Operation & Maintenance Agency	PMU		Contractor up to Defect Liability Period and thereafter PMU
Unhygienic conditions due to poor maintenance of sanitation facilities and irregular solid waste collection	• The implementing agencies will carry out maintenance of the toilets, and carry out the regular collection and disposal of wastes to the local disposal sites. The generated sewerage will be disposed in septic tank followed by soak pit arrangement.	Maintenance schedule of Buildings	Operation & Maintenance Agency	PMU		Contractor up to Defect Liability Period and thereafter PMU
Impact on Land and Ecology	• Integrate existing trees, shrubs and vegetation as far as possible into the design to avoid need to remove them. • Preference should be given to native species of plants in consultation with forest department.	Landscaping Plan	Operation & Maintenance Agency	PMU		Contractor up to Defect Liability Period and thereafter PMU
Impact of adventure sports operations	• Safety of tourist, guidelines and rules of Himachal Pradesh Miscellaneous Adventure Activities (Amendment) Rules, 2021 and Water Sports & Allied Activities Rules-2021 will be strictly adhered.	Health & Safety Plans	Operating Agency	PMU		Operating Agency

Parameters	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of monitoring	Source of Funds
Onsite emergency plan for minor accidents and mishaps and Disaster Management Plan for Natural Calamities	The management of site will prepare on-site emergency plan for possible minor accidents and mishaps during operation phase. For natural calamities, the disaster management plan prepared by DDMA will be followed.	Health & Safety Plans	Operating Agency	PMU		Operating Agency

B. Environmental Monitoring & Reporting

220. Through integration of mitigation measures in project design, impacts are mostly insignificant, temporary in nature and can be properly avoided or mitigated. The objectives of environmental monitoring are: ensure effective implementation of EMP; comply with all applicable environmental, safety, labour and local legislation; ensure that public opinions and obligations are taken in to account and respected to the required satisfaction level; and modify the mitigation measures or implementing additional measures if required. The environmental monitoring plan contains:

- All performance indicators
- Environmental monitoring programme
- Necessary budgetary provisions

221. **Performance Indicators:** The physical, biological and social components identified to be particularly significant in affecting the environment at critical locations have been suggested as Performance Indicators. The Performance Indicators shall be evaluated under three heads as:

- Environmental condition indicators to determine efficiency of environmental management measures in control of air, noise and water pollution.
- Environmental management indicators to determine compliance with the suggested environmental management measures.
- Performance indicators that have been devised to determine efficiency and utility of the proposed mitigation measures.

222. The Performance Indicators and monitoring plans prepared are presented in the Table 21.

Table-21: The Performance Indicators and Monitoring Plan

Performance Indicators	Target	Achievement in Semi-annually and annually
Budget	Environmental Budget (EMP Budget)	Expenditure till date
Performance Indicators of Monitoring Plan		
Ambient Air Quality	Total Number of samples as per Environmental Monitoring Plan	Total Number of samples collected
Noise Level	Total Number of samples as per Environmental Monitoring Plan	Total Number of samples collected
Water Quality	Total Number of samples as per Environmental Monitoring Plan	Total Number of samples collected
Soil	Total Number of samples as per Environmental Monitoring Plan	Total Number of samples collected
Safety of Workers	List of PPE as per the number of labour	List of PPEs actually provided in the project
Performance Indicators of Environmental Management Plan		
Permissions / NoCs/ Consent requirement	Target timeline to obtain the permit/NoC/ consents and its validity	List of Permission and NoCs/ consents obtained till date and status of its validity.
Public Consultation	Total Number of planned Public Consultation with timeline and coverage of people.	Number of public consultations conducted till date and actual coverage of the people.
Grievance redressal	Total number of complaints received, its timeline to response and resolution.	Actual number of complaints resolved in percentage, response time.
Issues raised in public consultation	Target to attend the issues raised in the Public Consultation.	Status of compliance to the issues of public consultation.
Information disclosure	List of information and locations where information to be disclosed.	Actual locations where information has been disclosed.

Education of site staff on Environmental training	Total Number of staffs to be trained.	No of staff actually.
Capacity Building	Total number of sessions to be covered Total Number of contractors, PIUs and PMDSCs to be covered.	Number of Sessions completed and Number of contractors, PIUs and PMDSCs.
Implementation of EMP mitigation Measures	All items of Environmental Management Plan with timeline.	Implementation status of EMP items till date.
Reporting	List and number of Report to be submitted.	List and number of reports submitted

223. Progress of implementation of the EMP shall be monitored through a measurable set of indicators for performance assessment and parameters for environmental quality. During the progress of implementation, the monitoring provides information on any corrective action required for achieving the performance requirements as envisaged in the EMP. Regular reporting of the environmental indicators and their performance will be carried out at all stages of project pre-construction, construction and operation stage during the loan period. Annual/ semi-annual reporting of the environmental performance will be carried out to fulfil the ADB requirements which need a description of progress with implementation of the EMP and compliance issues and corrective actions, if any. The environmental monitoring programme has been detailed out in Table 22. Monitoring of environmental monitoring components such as air, noise, soil and water are required for successful implementation of the environmental monitoring program and is contingent to the following:

- Contractor has to submit a proposed schedule of subsequent periodic test to be carried out for approval;
- Monitoring by the environmental officers of supervision consultant of all the environmental monitoring tests and subsequent analysis of results.
- Where indicated by testing results and any other relevant on-site conditions, supervision consultant to instruct the contractor to;
- Verify testing result with additional testing as/ if required;
- Require recalibration of equipments etc. as necessary; and
- Request the contractor to stop, modify or defer specific construction equipment, processes etc. as necessary, that are deemed to have contributed significantly to monitoring readings in excess of permissible environmentally “safe” levels.
- All issues related to negative environmental impacts of the contractor’s facilities, plant and equipments are to be controlled through:
- The contractor’s self-imposed quality assurance plan.
- Regular/ periodic inspection of contractor’s plant and equipments;
- Monthly appraisal of the contractor.
- Other environmental impacts are to be regularly identified and noted on the monthly appraisal inspection made to review all aspects of the contractor’s operation. The officer is to review all monthly appraisal reports and through the team leader is to instruct the contractor to rectify all significant negative environmental impacts.

224. Table-22 provides the indicative environmental monitoring program which includes relevant environmental parameters, with a description of the sampling stations, frequency of monitoring, applicable standards, and responsibility.

Table-22: Environmental Monitoring Plan

Environmental component	Project stage	Parameters to be monitored	Location	Frequency	Standards	Implementation	Supervision
1.Air Quality	A. Pre-construction stage (The project once assigned to contractor)	PM10, PM2.5, SO2, NOx, CO	Project Site and nearby receptor areas in downwind, upwind & cross wind directions.	One time	National Air quality standards of CPCB	Contractor by CPCB/ NABL/ HPPCB approved laboratory	DSC/ PMU
	B. Construction Stage	PM10, PM2.5, SO2, NOx, CO	Project Site and nearby receptor areas in downwind, upwind & cross wind directions.	Quarterly except monsoon	National Air quality standards of CPCB	Contractor by CPCB/NABL/ HPPCB approved laboratory	DSC/ PMU
	C. Operation Stage	PM10, PM2.5, SO2, NOx, CO	Project Site and nearby receptor areas in downwind, upwind & cross wind directions.	Six monthly	National Air quality standards of CPCB	Contractor by CPCB/NABL/ HPPCB approved laboratory	PMU
2.Water Quality	A. Pre-construction stage (The project once assigned to contractor)	Surface water Quality (CPCB), Drinking water (BIS:10500)	Drinking water samples from the project site & nearby areas, Surface water from U/s and D/s the water courses of nearby areas.	One time	National water quality standards of CPCB	Contractor by CPCB/NABL/ HPPCB approved laboratory	DSC/ PMU
	B. Construction Stage	Surface water Quality (CPCB), Drinking water (BIS:10500)	Drinking water samples from the labour camps & nearby areas, Surface water from U/s and D/s the water courses of nearby areas.	Quarterly	National water quality standards of CPCB	Contractor by CPCB/NABL/ HPPCB approved laboratory	DSC/ PMU
	C. Operation Stage	Surface water Quality (CPCB), Drinking water (BIS:10500)	Drinking water samples from the project site & nearby areas, Surface water from U/s and D/s the water courses of nearby areas.	Six monthly	National water quality standards of CPCB	Contractor by CPCB/NABL/ HPPCB approved laboratory	PMU
3.Noise/ Vibration	A. Pre-construction stage (The project once assigned to contractor)	Noise level in dB (A)	Project Site and nearby sensitive receptors.	A single time	CPCB standards for Noise and vibrations	Contractor by CPCB/NABL/ HPPCB approved laboratory	DSC/ PMU
	B. Construction Stage	Noise level in dB (A)	Project Site and nearby sensitive receptors.	Quarterly	CPCB standards for	Contractor by CPCB/NABL/	DSC/ PMU

Environmental component	Project stage	Parameters to be monitored	Location	Frequency	Standards	Implementation	Supervision
					Noise and vibrations	HPPCB approved laboratory	
	C. Operation Stage	Noise level in dB (A)	Project Site and nearby sensitive receptors.	Six monthly	CPCB standards for Noise and vibrations	Contractor by CPCB/ HPPCB approved laboratory	PMU
4. Soil	A. Pre-construction stage (The project after assign to contractor)	pH, Texture, Nitrogen, Phosphorus, Potassium, Sodium, Chloride, Organic Carbon, Lead, Moisture Content, Water Holding Capacity, etc.	Project Site, nearby productive agricultural lands & forest areas/ near river.	A single time	Indian Standards (IS 2720)	Contractor by CPCB/NABL/ HPPCB approved laboratory	DSC/ PMU
	B. Construction Stage	pH, Texture, Nitrogen, Phosphorus, Potassium, Sodium, Chloride, Organic Carbon, Lead, Moisture Content, Water Holding Capacity, etc.	Project Site, Batching/ Crushing plant site, nearby productive agricultural lands & forest areas/ near river.	Quarterly	Indian Standards (IS 2720)	Contractor by CPCB/NABL/ HPPCB approved laboratory	DSC/ PMU
	C. Operation Stage	pH, Texture, Nitrogen, Phosphorus, Potassium, Sodium, Chloride, Organic Carbon, Lead, Moisture Content, Water Holding Capacity, etc.	Project Site, nearby productive agricultural lands & forest areas/ near river.	Six monthly	Indian Standards (IS 2720)	Contractor by CPCB/ NABL/ HPPCB approved laboratory	PMU

C. Institutional Arrangements

225. Department of Tourism and Civil Aviation, Government of Himachal Pradesh is the executing agency and the implementing agency are HPTDB. A Project Management Unit (PMU) will be established with the Himachal Pradesh Tourism Development Board (HPTDB), Department of Tourism and Civil Aviation as the Project Director and Principal Secretary, Department of Tourism and Civil Aviation, GoHP.

226. At PMU, the project coordinator will be the nodal officer for environmental, social safeguards and gender and will be responsible for ensuring compliance with ADB's Safeguards Policy Statement (SPS), 2009 during the project implementation, including the monitoring and reporting. PMU will engage a qualified and experienced consultant, designated as Environmental Safeguard officer to support project coordinator in environmental safeguards tasks. Project manager or Assistant Project Manager of PIU will be designated as safeguards focal in each PIU. PMDSC team will include an Environmental Safeguard Specialist and other support staff located in PIUs and will provide all necessary support and expert guidance to PMU and PIUs. Contractor will appoint an Environmental Health and Safety officer.

227. **Project Management Unit (PMU):** The PMU will be responsible for planning management, coordination, supervision and progress monitoring. The PMU has the responsibility of fulfilling environmental requirements of the government and ensuring effective implementation of the environmental management provisions in the IEEs, EMPs and civil works contracts. The following are key environmental safeguard task and responsibility of the Environmental Safeguard Officer at the PMU:

- Ensure project compliance with the statutory environmental requirements, ADB SPS, 2009 and loan covenants.
- Ensure that draft IEEs prepared based on preliminary design are updated to reflect the final project detailed designs and are approved by ADB and disclosed prior to bid invitation (for works contracts).
- Ensure that IEEs including EMPs are included in the bidding documents and contracts.
- Ensure that baseline monitoring as suggested in the EMPs are conducted and baseline data/ values established prior to commencement of works.
- Coordinate with design engineer to avoid potential environmental impacts.
- Ensure that SEMPs are submitted by contractor and cleared by PIU prior to commencement of works.
- Ensure that construction works are not commenced until all applicable government clearances, permits (including those required by Construction Contractor) are obtained;
- Oversee and ensure that contractors comply with labour laws and rules.
- Ensure that the IEEs including EMPs are updated in case of any change in project scope design or location during implementation.
- Confirm compliance with all measures and requirements set forth in the IEEs, the EMPs and any corrective or preventive actions set forth in safeguard monitoring reports;
- Finalize environmental sections quarterly progress report and environmental monitoring reports for submission to ADB.
- Ensure availability of budget for safeguards activities.
- Ensure adequate awareness campaigns, information disclosure among affected communities and timely disclosure of final IEEs/ EMPs and SEMRs, including corrective action plans, if any in project website and in a form accessible to the public;
- Assist in setting up of grievance redress mechanism (GRM), identifying grievance redressal committee (GRC) member and developing capacity of GRC members, PIUs, consultants and contractors in addressing environmental safeguard-related issues/ concern/ complaints.
- Ensure any grievance brought about through GRM are redressed in a timely manner.

- Organize periodic capacity building and training programs on safeguards for PMU, PIU and contractor.

228. **Project Implementation Unit (PIU):** The PIU will be responsible for the day-to-day activities of project implementation in the field and will have direct supervision of contractor. PIU will oversee and monitor the day-to-day progress and implementation including environmental safeguards. The following are the key environmental safeguards tasks and responsibilities of the PIU with the PMDSC:

- Promptly report to PMU on any changes in project design/location/scope during the design verification and implementation phase and coordinate with PMDSC to update the IEEs and EMPs.
- Liaise with local offices of regulatory agencies and ensure that clearances/ approvals are obtained timely;
- Review and approve contractor SEMP;
- Oversee implementation of SEMP by contractor;
- Ensure that contractor comply with labour legislation and standards; ensure that workers are accommodated, paid and treated according to the requirements;
- Ensure strict implementation of occupational health and safety requirements;
- Review monthly reports from contractors on EMP implementation, and support PMU in preparing quarterly progress reports and SEMR.
- Ensure continuous public consultation and awareness.
- Coordinate grievance redress process and ensure timely actions by all parties; and
- Support all other environmental safeguards related activities and tasks of the PMU as may be needed;
- Recommend issuance of construction work completion certificate to the contractor upon verification of satisfactory post construction clean up.

229. **Project Management Design & Supervision Consultant (PMDSC):** The PMU and PIU will be supported by PMDSC environmental specialist. Key task of will include, but limited to, the following;

- Assist in preparing, updating, reviewing, implementing, monitoring, and reporting of all tasks related to environmental safeguards as required;
- Monitoring of EMP implementation, regulatory compliance, grievance redress reporting etc.
- Provide all necessary support and expert guidance to environmental officer in managing environmental safeguards tasks.
- Update the IEE and EMP as needed to reflect detailed design, change in design verification and / or implementation of projects
- Assist in public consultation, feedback and reporting.
- Ensure that relevant provision of EMPs including cost of implementing the EMPs are fully included in bid and contract documents, particularly in the bill of quantities and cost line items;
- Identify statutory clearance/ permission/approvals required and assist in obtaining them;
- Assist in including standards/ conditions of regulatory clearances and consents, if any in the project design;
- Conduct training, capacity building activities for PMU, PIU and Contractor.
- Ensure compliances with ADBs disclosure requirements as the SPS;
- Assist PMU/ PIU in reviewing and approving contractor SEMP and other associated plans;
- Carry out site verification, and monitor EMP implementation and ensure compliance by the contractor.
- Ensure that contractor comply with labour legislation; ensure that workers are paid and treated according to the labour legislation.
- Identify any non-compliances or unanticipated impacts and recommend corrective actions.

- Prepare environmental safeguard sections in quarterly reports.
- Prepare semi-annual environmental monitoring reports.
- Assist in operating GRM effectively.
- Advise contractor on appropriate actions on grievances, ensure timely resolution and proper documentation; and
- Support all other environmental safeguards related activities and task of the PMU and PIU as may be needed.

230. **Contractor:** The approved draft IEE and EMP are to be included in bidding and contract documents. The PMU and PIU will ensure that bidding and contract document include specific provisions requiring contractors to comply with (i) all applicable laws and regulations relating to environmental, health and safety; (ii) all applicable labour laws and core labour standards on (a) prohibition of child labour as defined in national legislation, international treaties for construction and maintenance activities; (b) equal pay for equal work of equal value regardless of gender, ethnicity or caste; (c) no discrimination in respect of employment and occupation; (d) allow freedom of association and effective recognize the right to collective bargaining, and (e) elimination of forced labour; and (iii) the requirement to disseminate information on sexually transmitted diseases including HIV/ AIDS, to employees and local communities surroundings the project sites. The contractor will be required to appoint a full time Environmental Health and Safety officer on site to implement the EMP and will assist contractor in the following:

- Prepare SEMP and submit to PMU/ PIU for approval prior to start of construction (A sample monthly reporting format for safeguard officer is given as Annexure-7).
- Comply with the measures forth in the IEE, the EMP and SEMR
- Ensure implantation of SEMP and report to PIU/ PMDSC on any new or unanticipated impacts.
- Ensure that necessary pre-construction and construction permits are obtained.
- Ensure to adequately record the site condition and other infrastructure prior to starting to transport materials and construction; and
- Conduct orientation, daily briefing session, tool box talks to workers on environmental, health and safety.
- Provide appropriate workers facilities at the workplace and labour camp as per the requirements and contractual provisions.
- Carry out site inspections on a regular basis and prepare site inspection checklist/ reports. A sample site inspection checklist is given as Annexure-7.
- Record EHS incidents and undertake remedial actions.
- Conduct environmental monitoring (air, noise etc.) as per the monitoring plan.
- Prepare monthly EMP monthly reports and submit to PIU.
- Comply with labour legislations and ensure implement labour legislations requirements (Applicable labour laws is given in Annexure-9 & Table 2).
- Work closely with PIU and PMDSC to ensure communities are aware of project related impacts, mitigation measures and GRM; and
- Receive, record, and redress grievances in an effective and timely manner.
- Provide PIU/ PMU with a written notice of any unanticipated environmental impact that arise during construction, implementation or operation of the project that were not considered in the IEE, the EMP;
- Site clearance and restoration after the completion of works.

D. Capacity Building and Training

231. Safeguard focal of PIU will be trained by Environmental Safeguard Specialist by PMDSC on safeguard issues related to the project, EMP, SEMP and GRM. The Environmental Specialist of the PMDSC will provide the basic training required for environmental awareness followed by specific aspects of infrastructure improvement

Projects along with Environmental implications for projects. Specific modules customized for the available skill set will be devised after assessing the capabilities of the members of the training programme and the requirements of the project. The entire training will cover basic principles of environmental assessment and management; mitigation plans and programme, implementation techniques, monitoring methods and tools. The estimated cost is Rs. 2,00,000/- (excluding training of contractor which is a part of EMP) implementation cost during construction) to be covered by the project capacity building program. The details cost and specific module are being customized for the available skill set after assessing the capabilities of the target participants and the requirements of the project by the Environmental Safeguard Specialist of PMDSC. Details of capacity building program on EMP implementation is given in Table 23.

Table 23: Outline Capacity Building Program on EMP implementation

Description	Total Participants and Venue	Estimate (Rs.)	Cost and Source of Funds
1. Introduction and Sensitization to Environmental Issues (1 day) -ADB Safeguard Policy Statement. -Government of India and GoHP state applicable laws, regulations and policies including but not limited to core labour standards, OHS etc. -Incorporation of EMP into the project design and contracts - Monitoring, reporting and corrective action planning. -Environmental best practices for Rafting operations.	All staff and consultants involved in the project At PIU-PMU (Combined for all projects)	1,00,000	Included in the overall project cost
2. EMP Implementation (1/2 day) -EMP mitigation and monitoring measures -roles and responsibilities. -public relations-consultation. -grievances redress. -Monitoring and corrective action planning. -Reporting and disclosure. -Construction site standard .operating procedures (SOP) -Health & safety, especially health risk from COVID-19. -Chance finds (archaeological) protocol. -Traffic Management Plan. -Waste management plan. -Site clean-up and restoration.	PIU staff, Contractor staff and consultant involved in the project At PIU office	1,00,000	Included in the project cost estimates
3. Contractor orientation to workers (1/2 day) -Environmental, Health and Safety in project construction -Safety measures for working	Once before start of work and thereafter regular training every month once.	50,000	Contractor's cost Included in EMP budgetary table

near river -Health impact and protection from COVID-19 and other such infectious diseases.	Daily briefing/ toolbox talk on safety prior to start of work All workers (including unskilled workers)		

E. Monitoring and Reporting

232. Immediately after mobilization and prior to commencement of the works, the contractor is to submit a compliance report of PIU that all identified pre-construction mitigation measures as detailed in the EMP will be undertaken. Contractor should confirm that the staff for EMP implementation (EHS officer) is mobilized. PIU is required to review, and approve the report and permit commencement of works.

233. During construction, results from internal monitoring by the contractor is to be reflected in their monthly EMP/ SEMP implementation reports to the PIU. PMDSC is required to review and advise to contractor for corrective actions if necessary. Quarterly report summarizing compliance and corrective measures taken is to be prepared by PMDSC team at PIU and to be submitted to PMU. During operation, the contractor is required to conduct management and monitoring actions as per the operation stage EMP and submit to PIU a quarterly report on EMP implementation and compliance.

234. Based on the monthly and quarterly reports and measurements, PMU/PIU (assisted by PMDSC) is required to submit semi-annual environmental monitoring report (SEMR). Sample Semi Annual Environment monitoring report format is enclosed as Annexure-8. Once concurrence from the ADB is received the report will be disclosed on the PMU website.

235. ADB will review project performance against the SITDP-GoHP commitments as agreed in the legal documents. The extent of ADBs monitoring and supervision activities will be commensurate with the project's risk and impacts. Monitoring and supervising of social and environmental safeguards will be integrated into the project performance system.

236. ADB monitoring and supervision activities will be carried out on an on-going basis until a Project completion report is issued. ADB issues a PCR within 1-2 years after the project is physically completed and in operation.

F. Environmental Management Plan (EMP) Budget

237. As part of good engineering practices in the project, there have been several measures as safety, signage, dust suppression, procurement of personal protective equipment, provision of drains, etc. and the costs for which will be included in the design costs of specific projects. Therefore, these items of costs have not been included in the EMP budget. Only those items not covered under budgets for construction are considered in the EMP budget.

238. This is a small construction project, and it is not expected to cause much significant air, water and noise pollution. The main EMP cost will arise from monitoring of environmental parameters (air, water, soil and noise), Public Consultations, awareness camps and trainings. The estimated cost for implementation of EMP is Rs. 11,52,000/-. Detailed EMP budget is provided below in Table 24.

Table 24: Estimated EMP Budget

Sr. No	Description	Quantity	Unit	Rate (in Rs)	Amount (in Rs)	Responsibility
A.	Legislation, permits and Agreements (Consents to Establish and Operate for plants and machinery of the contractor)					These consents are to be obtained by contractor on own cost
B.	Public consultations and information disclosure (Construction phases)		Lump sum	100,000	100,000	PIU
C. Environmental Monitoring (Pre-construction Stage)						
1	Air Quality	4	No	10,000	40,000	Contractor
2	Water Quality	4	No	5000	20,000	
3	Noise Levels	4	No	2500	10,000	
4	Soil	2	No	8000	16,000	
Total Cost					**86,000**	
D. Environmental Monitoring (Construction Stage)						
1	Air Quality	24	No	10,000	2,40,000	Contractor
2	Water Quality	32	No	5000	1,60,000	
3	Noise Levels	32	No	2500	80,000	
4	Soil	8	No	8000	64,000	
Total Cost					**5,44,000**	
E. Environmental Monitoring (Operation Stage)						
1	Air Quality	8	No	10,000	80,000	PIU
2	Water Quality	8	No	5000	40,000	
3	Noise Levels	8	No	2500	20,000	
4	Soil	4	No	8000	32,000	
Total Cost					**1,72,000**	
F.	EHS Awareness Camps	Lump sum			**1,00,000**	Contractor
Total Cost					**1,00,000**	
G. Training/ Workshops						
1	EMP Training at site	2		25,000	**50,000**	Contractor
2	Training on Implementation of EMP for Field PIU and Engineers	2		50,000	**1,00,000**	PMDSC/PIU
Total Cost					**1,50,000**	
Grand Total (A+B+C+D+E+F+G)					**11,52,000**	

X. CONCLUSION AND RECOMMENDATIONS

239. The proposed project has been categorized as Category “B” based on environmental screening and assessment of likely impacts.

240. There are no environmentally, historically or archeologically sensitive or protected areas within or adjoining the project sites. Screening with integrated biodiversity assessment (IBAT) indicates that nearest notified protected area is Pong Dam WLS which is about 14.81 km away from the project area.

241. The project sites located at Nadaun, District-Hamirpur, Himachal Pradesh. All the precautions shall be taken care during planning & construction phase to avoid any adverse impact on the local flora and fauna, river water quality due to the project activities. Any non-forestry use of forest land and tree cutting if required shall be done only after taking permission from competent authority.

242. The initial environmental examination ascertains that the project is unlikely to cause any significant environmental impacts and the classification of the project 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).

243. Few impacts were identified attributable to the proposed projects. Proper mitigation measures have been suggested and incorporated in the Environmental Management Plan to avoid/ minimize these anticipated impacts.

244. Total estimated cost for implementation of EMP is Rs. 11,52,000/-.

245. The Executing Agency shall ensure that EMP is included in Bill of Quantity (BOQ) and forms part of bid document and civil works contract. The same shall be revised if necessary, during project implementation or if there is any change in the project design and with approval of ADB.

246. The tourists and citizens/ sports person of Nadaun & Hamirpur town will be the major beneficiaries of the project. The benefits to the tourists and population of the area will be positive and large as the proposed project will provide better infrastructure facilities for tourists, better livelihood opportunities for the locals and enhance the revenue generation.

247. **Recommendations:** The following are recommendations applicable to the project to ensure no significant impacts:

i. Obtain all NOC/ permission including Water resource department (TCP, Jal Shakti Vibhag- IPH, HPSPCB) at the earliest time possible and ensure conditions/ provisions are incorporated in the detailed design.
ii. Include this IEE in bid and contract documents.
iii. Commitment from PMU, PIU, Project Consultants and Contractor to protect the environment and people from any impact during project implementation.
iv. Compliance of safety guidelines for water sports activity during operations.
v. Update/ revise this IEE based prior to start of construction and/ or there are unanticipated impacts, change in scope, alignment or location.
vi. Identify tree species and landscaping plants in consultation with forest department.
vii. Conduct safeguard induction to the contractor upon award of contract.
viii. Ensure contractor appointed qualified environment, health and safety (EHS) officer prior to start of works.
ix. Timely disclosure of information and establishment of GRM.
x. Strictly supervise EMP implementation.
xi. Conduct consultation with stakeholders throughout the implementation period.
xii. Document and report on a regular basis as indicated in the IEE.

ANNEXURES

Annexure 1: Rapid Environmental Assessment (REA) Checklist

Project: Rafting Complex at Nadaun, District-Hamirpur, H.P.

Country/ Project Title: India/Sustainable and Inclusive Tourism Development Project (SITDP-HP)

Sector Division: Urban Development

Screening Questions	Yes	No	Remarks
A. PROJECT SITING IS THE PROJECT AREA…			
▪ DENSELY POPULATED?		✓	The proposed site for Rafting Complex lies in residential area with sparse settlements. The area is not densely populated.
▪ HEAVY WITH DEVELOPMENT ACTIVITIES?		✓	Not much development activities have been observed in the project area
▪ ADJACENT TO OR WITHIN ANY ENVIRONMENTALLY SENSITIVE AREAS?		✓	The project area is not adjacent to or within any environmentally sensitive areas.
• CULTURAL HERITAGE SITE		✓	No. There are no international/national/ state notified cultural heritage sites located within or adjacent to the proposed project site.
• PROTECTED AREA		✓	Project site is not located in or near any Protected area. The nearest notified Protected area is Pong Dam WLS which is about 14.81 km away from the project area.
• WETLAND		✓	There is no wetland within or near the project sites.
• NMANGROVE		✓	Not applicable as the proposed site is far away from marine or estuarine ecosystem.
• ESTUARINE		✓	Not applicable as the proposed site is far away from marine or estuarine ecosystem.
• BUFFER ZONE OF PROTECTED AREA		✓	The project sites do not fall under the buffer zone of any Protected area.
• SPECIAL AREA FOR PROTECTING BIODIVERSITY		✓	The project sites do not fall under special area for protection biodiversity.The nearest notified Protected area is Pong Dam WLS which is about 14.81 km away from the project area.
• BAY		✓	Not applicable as the proposed site is far away from marine ecosystem.
B. POTENTIAL ENVIRONMENTAL IMPACTS WILL THE PROJECT CAUSE…			
▪ Impacts on the sustainability of associated sanitation and solid waste disposal systems and their interactions with other urban services.		✓	Not envisaged as magnitude of the project is low and during the operation phase STP has been planned for disposal of waste water with provisions for treated water reuse at the site.
▪ Deterioration of surrounding environmental conditions due to rapid urban population growth, commercial and industrial activity, and increased waste generation to the point that both manmade and natural systems are overloaded and the capacities to manage these systems are overwhelmed?	✓		Though the magnitude of project is low, increase in tourist footfall for rafting activities is anticipated during operation phase which may deteriorate the water quality, if suitable safeguard measures are not taken.
▪ Degradation of land and ecosystems (e.g. loss of wetlands and wild lands, coastal zones, watersheds and forests)?		✓	No such impact on (land/eco-degradation) envisaged.

Screening Questions	Yes	No	Remarks
▪ Dislocation or involuntary resettlement of people?		✓	Not required as no land acquisition involved and all the project activities are planned on vacant Government land.
▪ Disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable group?		✓	No such group exists at the sites and no impacts anticipated. The project will generate more employment opportunity to such groups.
▪ Degradation of cultural property, and loss of cultural heritage and tourism revenues?		✓	No such effects envisaged. No cultural heritage sites in vicinity. Improvement in tourism revenues is anticipated due to project interventions.
▪ Occupation of low-lying lands, floodplains and steep hillsides by squatters and low-income groups, and their exposure to increased health hazards and risks due to pollutive industries?		✓	No such impacts envisaged
▪ Water resource problems (e.g. depletion/degradation of available water supply, deterioration for surface and ground water quality, and pollution of receiving waters?	✓		Improper waste management and poor material handing during construction phase may deteriorate surface water quality of river Beas. Also surface runoff may add to the siltation. This will be prevented through implementation of effective mitigation measures included in the EMP such as preparation of solid waste management plan, citing of labour camp away from the river and sanitation arrangements at the labour camp, storage and handling of chemicals such as paints and solvents as per material safety data sheets and storing on impervious surface. During the Operation phase there will be usage of water for the proposed Aquarium which shall be met from IPH supply. The water in Aquariums shall be recycled after filtration. The sewage from the rafting complex shall be disposed in the existing sewerage line.
▪ Air pollution due to urban emissions?	✓		This is anticipated during construction phase primarily. The sources of dust and air emission anticipated during site preparation (excavation-leveling-earthwork) activities, movement of trucks transporting materials to the site, machinery use, DG Sets etc. But these vehicles/machineries are required to undergo emission tests in compliance with regulatory norms. During operation phase, occasional emission from usage of DG set is envisaged. DG set is a stand by arrangement in case of power cuts. Vehicles coming to the parking facility for taking up rafting activities shall add to the emissions. Measures listed in the EMP shall mitigate gaseous emission and dust generation.
▪ Risks and vulnerabilities related to occupational health and safety due to physical, chemical and biological hazards during project construction and operation?	✓		This is anticipated during the construction phase. During construction phase, it is envisaged that Occupational health and safety (OHS) risks will primarily be associated with various mechanical activities and improper management of waste which may create unhygienic environment for the workers. Workers may face occupational health and safety related issues if personal protection measures are not used properly. Therefore, adequate mitigation measures will be necessary to mitigate OHS risks. Contractor is required to adopt safety measures such as use of personal protective wear, cautionary signage and proper material storage. These measures have been detailed in the EMP. No radiological hazards are anticipated at the site during the construction or operation phases.

Screening Questions	Yes	No	Remarks
▪ Road blocking and temporary flooding due to land excavation during rainy season?		✓	No road blocking anticipated. Temporary flooding is not expected as per scope and magnitude of works and location of sites Excavation activities shall be avoided during the rainy season.
▪ Noise and dust from construction activities?	✓		Minor increase in noise levels & dust generation from construction activities is anticipated but shall be temporary in nature coinciding only with the duration of construction activities and will be of site specific. Shall be minimized by adopting suitable mitigation measures during implementation
▪ Traffic disturbances due to construction material transport and wastes?	✓		The proposed site is located in a residential area with less vehicular movement presently. But traffic management plan is needed to avoid any disturbance to traffic movement due to construction vehicles and machinery.
▪ Temporary silt runoff due to construction?	✓		Soil erosion and surface runoff may occur during construction phase; however the impact is likely to be short term. Temporary silt runs off possible, coinciding with rainy season. Majority works shall be carried out during dry periods to avoid such impacts. To avoid silt flow in drain during rainy seasons, silt barrier will be provided at the sides of the drains. Appropriate material storage will help mitigate temporary silt run-off.
▪ Hazards to public health due to ambient, household and occupational pollution, thermal inversion, and smog formation?		✓	Not foreseen due to the nature of works involved
▪ Water depletion and/or degradation?	✓		Water depletion is not envisaged. Improper waste management and poor material handing during construction phase may deteriorate surface water quality of river Beas. Also surface runoff may add to the siltation. This will be prevented through implementation of effective mitigation measures included in the EMP such as preparation of solid waste management plan, citing of labour camp away from the river and sanitation arrangements at the labour camp, storage and handling of chemicals such as paints and solvents as per material safety data sheets and storing on impervious surface. During the Operation phase there will be usage of water for the proposed Aquarium which shall be met from IPH supply. The water in Aquariums shall be recycled after filtration. The sewage from the rafting complex shall be disposed in the existing sewerage line.
▪ Overpaying of ground water, leading to land subsidence, lowered ground water table, and salinization?		✓	No such risks envisaged as the water requirement will be met through IPH supply during operation phase. There is provision of recycling of water used in aquariums after filtration to decrease the water demand which will reduce the fresh water usage.

Screening Questions	Yes	No	Remarks
▪ Contamination of surface and ground waters due to improper waste disposal?	✓		This is anticipated during the construction and operation phases of the project. Wastewater (mainly sewage) generated from labor camp may contaminate project surrounding area if not managed/ treated/ disposed properly. There is also possibility of contamination of surface and ground water from improper material handling and storage such as paints and fuels. Appropriate material storage and handling and measures as listed in the EMP shall help mitigate this risk. Wastewater during operation phase is envisaged in the form of sewage. This shall be disposed in the existing sewerage network.
▪ Pollution of receiving waters resulting in amenity losses, fisheries and marine resource depletion, and health problems?	✓		River water pollution may happen if more use of motor boats, etc. will be done and littering is done by rafters. Proper safeguards measures in the EMP shall address this.
▪ Large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?		✓	Owing to the magnitude of works, large population influx is not anticipated during the construction and Operation phase. During the Operation phase there will be increase in influx of tourists but the number is not very high and adequate sanitation arrangements have been included in the design. Hence increased burden on social infrastructure and services is not envisaged.
▪ Social conflicts if workers from other regions or countries are hired?		✓	Not applicable as most of the labor will be local and considering the magnitude of project labor demand is not very high. Although the project may recruit a limited number of migrant workers, in this case contractor shall provide water supply, source of cooking fuels, accommodation and adequate access to proper hygiene and sanitation condition. Therefore, this project might not cause significant burden to the infrastructure such as the water supply and sanitation during construction phase. During the operation phase the social infrastructure and services are less likely to be impacted as this is a planned development and provisions to meet the excess demand of social and physical infrastructure has been considered in the project design.
▪ Risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during operation and construction?		✓	Fuel, paints and other chemicals normally used in building works will be used during construction phase. In addition to that, gaseous emission-dust generation-increased noise level due to various construction activities and material transportation, accidental spill of material/oil etc. may expose the community to risk. These risks shall be minimized by adopting site specific mitigation measures. During the Operation phase, improper management of waste and effluent may also expose the local community to health and safety risks. The mitigation measures to reduce these risks have been considered in the EMP. No explosives are planned to be used during construction or operation.

Screening Questions	Yes	No	Remarks
▪ 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?	✓		The project is located in Seismic Zone-V. The site is near Beas River. Design considerations include HFL considerations and earthquake resistant structures. But safety risks due to accidents and natural causes cannot be ruled out and can become a major hazard if the project execution is not carried out as per design. All safety measures as per the prevalent River Rafting rules of GOHP needs to be ensured during commencement of rafting activities.

PRELIMINARY CLIMATE RISK SCREENING CHECKLIST FOR PROJECT

Screening Questions		Score	Remarks
Location and Design of project	Is siting and/or routing of the project(or its components) likely to be affectedby climate conditions including extreme weather-related events such as floods, droughts, storms, landslides?	1	Being in flat terrain, Nadaun is prone to landslides, floods though the proposed sites are not affected from landslides & floods.
	Will 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)?	1	The proposed project design needs to consider the HFL of Beas river.
Materials and Maintenance	Will 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, and hydro- meteorological parameters) affect the selection of project inputs over the life of project outputs (e.g. construction material)?	0	No such impact envisaged on Materials due to future climatic conditions.
	Will weather, current and likely future climate conditions, and related extreme events likely affect the maintenance (scheduling and cost) of project output(s)?	0	Maintenance activities may not be affected due to extreme weather conditions like heavy rainfall etc.
Performance of project outputs	Will 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	Water sports activities are not undertaken during monsoon season. No other risks envisaged.

Options for answers and corresponding score are provided below:

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

ASBESTOS SCREENING TOOL

Screening Questions	Yes*	Maybe*	No	Remarks *For those with answers of **YES** and **MAYBE,** document the potential likelihood of asbestos being encountered.
Does the proposed project involve, or potentially involve, any of the following activities that are commonly associated with asbestos use:				
• Construction/commissioning of a new asset?			✓	
• Refurbishment / demolition of an existing asset?			✓	
• Post-disaster response, involving reconstruction, repair, or removal of damaged asset?			✓	
• Maritime activities?			✓	
• Water supply, water sanitation, wastewater, sewerage, or water hygiene initiatives?			✓	
• Earthworks, remedial activities, or solid waste management?			✓	
• Power, telecommunications, or energy supply infrastructure?			✓	
• Maintenance, demolition, transportation, or disposal of wastes associated with the above activities?			✓	

Annexure 2: Ambient Air Quality, and Vehicle Emissions Standards

Table 1: Ambient Air Quality Standards

Parameter	Location [a]	India Ambient Air Quality Standard ($\mu g/m^3$)[b]	WHO Air Quality Guidelines ($\mu g/m^3$)		Applicable Per ADB SPS[e] ($\mu g/m^3$)
			Global Update [c] 2005	Second Edition 2000	
PM_{10}	Industrial Residential, Rural and Other Areas	60 (Annual) 100 (24-hr)	20 (Annual) 50 (24-hr)	-	20 (Annual) 50 (24-hr)
	Sensitive Area	60 (Annual) 100 (24-hr)	20 (Annual) 50 (24-hr)	-	20 (Annual) 50 (24-hr)
PM_{25}	Industrial Residential, Rural and Other Areas	40 (Annual) 60 (24-hr)	10 (Annual) 25 (24-hr)	-	10 (Annual) 25 (24-hr)
	Sensitive Area	40 (Annual) 60 (24-hr)	10 (Annual) 25 (24-hr)		10 (Annual) 25 (24-hr)
SO_2	Industrial Residential, Rural and Other Areas	50 (Annual) 80 (24-hr)	20 (24-hr) 500 (10-min)	-	50 (Annual) 20 (24-hr) 500 (10-min)
	Sensitive Area	20 (Annual) 80 (24-hr)	20 (24-hr) 500 (10-min)	-	20 (Annual) 20 (24-hr) 500 (10-min)
NO_2	Industrial Residential, Rural and Other Areas	40 (Annual) 80 (24-hr)	40 (Annual) 200 (1-hr)	-	40 (Annual) 80 (24-hr) 200 (1-hr)
	Sensitive Area	30 (Annual) 80 (24-hr)	40 (Annual) 200 (1-hr)	-	30 (Annual) 80 (24-hr) 200 (1-hr)
CO	Industrial Residential, Rural and Other Areas	2,000 (8-hr) 4,000 (1-hr)	-	10,000 (8-hr) 100,000 (15-min)	2,000 (8-hr) 4,000 (1-hr) 100,000 (15-min)
	Sensitive Area	2,000 (8-hr) 4,000 (1-hr)	-	10,000 (8-hr) 100,000 (15-min)	2,000 (8-hr) 4,000 (1-hr) 100,000 (15-min)
Ozone (O_3)	Industrial Residential, Rural and Other Areas	100 (8-hr) 180 (1-hr)	100 (8-hr)		100 (8-hr) 180 (1-hr)
	Sensitive Area	100 (8-hr) 180 (1-hr)	100 (8-hr)		100 (8-hr) 180 (1-hr)
Lead (Pb)	Industrial, Residential, Rural and Other Areas	0.5 (Annual) 1.0 (24-hr)		0.5 (Annual)	0.5 (Annual) 1.0 (24-hr)
	Sensitive Area	0.5 (Annual) 1.0 (24-hr)		0.5 (Annual)	0.5 (Annual) 1.0 (24-hr)
Ammonia (NH_3)	Industrial Residential, Rural and Other Areas	100 (Annual) 400 (24-hr)			100 (Annual) 400 (24-hr)
	Sensitive Area	100 (Annual) 400 (24-hr)			100 (Annual) 400 (24-hr)

Parameter	Location [a]	India Ambient Air Quality Standard ($\mu g/m^3$)[b]	WHO Air Quality Guidelines ($\mu g/m^3$)		Applicable Per ADB SPS[e] ($\mu g/m^3$)
			Global Update [c] 2005	Second Edition 2000	
Benzene (C_6H_6)	Industrial Residential, Rural and Other Areas	5 (Annual)			5 (Annual)
	Sensitive Area	5 (Annual)			5 (Annual)
Benzo(o)pyrene (BaP) particulate phase only	Industrial Residential, Rural and Other Areas	0.001 (Annual)			0.001 (Annual)
	Sensitive Area	0.001 (Annual)			0.001 (Annual)
Arsenic (As)	Industrial Residential, Rural and Other Areas	0.006 (Annual)			0.006 (Annual)
	Sensitive Area	0.006 (Annual)			0.006 (Annual)
Nickel (Ni)	Industrial Residential, Rural and Other Areas	0.02 (Annual)			0.02 (Annual)
	Sensitive Area	0.02 (Annual)			0.02 (Annual)

[a] Sensitive area refers to such areas notified by the India Central Government.

[b] Notification by Ministry of Environment and Forests, Government of India Environment (Protection) Seventh Amendment Rules, 2009

[c] WHO Air quality guidelines for particulate matter, ozone, nitrogen dioxide and sulfur dioxide. Global update 2005. WHO. 2006

[d] Air Quality Guidelines for Europe Second Edition. WHO 2000.

[e] Per ADB SPS, the government shall achieve whichever of the ambient air quality standards is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, the executing agency of the government will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in ADB SPS

Table 2: Vehicle Exhaust Emission Norms

1. Passenger Cars

Norms	CO (g/km)	HC+ NOx (g/km)
1991Norms	14.3-27.1	2.0 (Only HC)
1996 Norms	8.68-12.40	3.00-4.36
1998Norms	4.34-6.20	1.50-2.18
India stage 2000 norms	2.72	0.97
Bharat stage-II	2.2	0.5
Bharat Stage-III	2.3	0.35 (combined)
Bharat Stage-IV	1.0	0.18 (combined)
Bharat Stage-VI (Petrol)	1.0	0.16 (Combined)

2. Heavy Diesel Vehicles

Norms	CO(g/kmhr)	HC (g/kmhr)	NOx (g/kmhr)	PM(g/kmhr)
1991Norms	14	3.5	18	-
1996 Norms	11.2	2.4	14.4	-
India stage 2000 norms	4.5	1.1	8.0	0.36
Bharat stage-II	4.0	1.1	7.0	0.15
Bharat Stage-III	2.1	1.6	5.0	0.10
Bharat Stage-IV	1.5	0.96	3.5	0.02
Bharat Stage-VI (Diesel)	0.5	0.17 (HC + NOx)		0.0045

Source: Central Pollution Control Board

CO = Carbon Monoxide; g/km hr = grams per kilometer-hour; HC= Hydrocarbons; NOx= oxides of nitrogen; PM = Particulates Matter

Annexure-3: Emission Limits for new DG Sets upto 800 KW

(As per Environment (Protection) (Third Amendments) (Rules 2013)

TABLE

Power Category	Emission Limits (g/kW-hr)			Smoke Limit (light absorption coefficient, m^{-1})
	NOx +HC	CO	PM	
Upto 19 KW	≤7.5	≤3.5	≤0.3	≤0.7
More than 19 KW upto 75 KW	≤4.7	≤3.5	≤0.3	≤0.7
More than 75 KW upto 800 KW	≤4.0	≤3.5	≤0.2	≤0.7

Note:

1. The abbreviations used in the Table shall mean as under: NO_x – Oxides of Nitrogen; HC – Hydrocarbon; CO – Carbon Monoxide; and PM – Particulate Matter.
2. Smoke shall not exceed above value throughout the operating load points of the test cycle.
3. The testing shall be done as per D2 – 5 mode cycle of ISO: 8178- Part 4.
4. The above mentioned emission limits shall be applicable for Type Approval and Conformity of Production (COP) carried out by authorised agencies.
5. Every manufacturer, importer or, assembler (hereinafter referred to as manufacturer) of the diesel engine (hereinafter referred to as 'engine') for genset application manufactured or imported into India or, diesel genset (hereinafter referred to as 'product'), assembled or imported into India shall obtain Type Approval and comply with COP of their product(s) for the emission limits which shall be valid for the next COP year or, the date of implementation of the revised norms specified above, whichever earlier.

   Explanation.- The term 'COP year' means the period from 1st April to 31st March.
6. Stack height (in metres), for genset shall be governed as per Central Pollution Control Board (CPCB) guidelines.

Stack Height requirement of DG Set

DIESEL GENERATOR SETS : STACK HEIGHT

The minimum height of stack to be provided with each generator set can be worked out using the following formula :

H = h+0.2x ÖKVA
H = Total height of stack in metre
h = Height of the building in metres where the generator set is installed
KVA = Total generator capacity of the set in KVA
Based on the above formula the minimum stack height to be provided with different range of generator sets may be categorised as follows:

For Generator Sets	Total Height of stack in metre
50 KVA	Ht. of the building + 1.5 metre
50-100 KVA	Ht. of the building + 2.0 metre
100-150 KVA	Ht. of the building + 2.5 metre
150-200 KVA	Ht. of the building + 3.0 metre
200-250 KVA	Ht. of the building + 3.5 metre
250-300 KVA	Ht. of the building + 3.5 metre

Similarly for higher KVA ratings a stack height can be worked out using the above formula.

Source : Evolved By CPCB
[Emission Regulations Part IV:COINDS/26/1986-87]

Environmental Standards (hspcb.org.in)

Annexure -4: Ambient Noise Standards

Receptor/ Source	India National Noise Level Standards[a] (dBA)		WHO Guidelines Value For Noise Levels Measured Out of Doors[b] (One Hour LA_q in dBA)		Applicable Per ADB SPS[c] (dBA)	
	Day	**Night**	**07:00 – 22:00**	**22:00 – 07:00**	Day time	Night time
Industrial area	75	70	70	70	70	70
Commercial area	65	55	70	70	65	55
Residential Area	55	45	55	45	55	45
Silent Zone	50	40	55	45	50	40

[a] Noise Pollution (Regulation and Control) Rules, 2002 as amended up to 2010.

[b] Guidelines for Community Noise. WHO. 1999

[c] Per ADB SPS, the government shall achieve whichever of the ambient air quality standards is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, the executing agency of the government will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in ADB SPS.

Annexure -5: Noise Limits for DG Set

(Noise Limit for Generator Sets run with Diesel were notified by Environment (Protection) second Amendment Rules vide GSR 371(E), dated 17th May 2002 at serial no.94 and its amendments vide GSR No 520(E) dated 1st July 2003; GSR 448(E), dated 12th July 2004; GSR 315(E) dated 16th May 2005; GSR 464(E) dated 7th August 2006; GSR 566(E) dated 29th August 2007 and GSR 752(E) dated 24th October 2008; G.S.R. 215 (E), dated 15th March, 2011 under the Environment (Protection) Act, 1986)

Noise Limit for Generator Sets run with Diesel

1. Noise limit for diesel generator sets (upto 1000 KVA) manufactured on or after the 1st January, 2005

The maximum permissible sound pressure level for new diesel generator (DG) sets with rated capacity upto 1000 KVA, manufactured on or after the 1st January, 2005 shall be 75 dB(A) at 1 metre from the enclosure surface.

The diesel generator sets should be provided with integral acoustic enclosure at the manufacturing stage itself.

The implementation of noise limit for these diesel generator sets shall be regulated as given in paragraph 3 below.

2. Noise limit for DG sets not covered by paragraph 1.

Noise limits for diesel generator sets not covered by paragraph 1, shall be as follows:-

2.1 Noise from DG set shall be controlled by providing an acoustic enclosure or by treating the room acoustically, at the users end.

2.2 The acoustic enclosure or acoustic treatment of the room shall be designed for minimum 25 dB (A) insertion loss or for meeting the ambient noise standards, whichever is on the higher side (if the actual ambient noise is on the higher side, it may not be possible to check the performance of the acoustic enclosure/acoustic treatment. Under such circumstances the performance may be checked for noise reduction upto actual ambient noise level, preferably, in the night time). The measurement for Insertion Loss may be done at different points at 0.5 m from the acoustic enclosure/ room, then averaged.

2.4 These limits shall be regulated by the State Pollution Control Boards and the State Pollution Control Committees.

2.5 Guidelines for the manufacturers/ users of Diesel Generator sets shall be as under:-

01. The manufacturer shall offer to the user a standard acoustic enclosure of 25 dB (A) insertion loss and also a suitable exhaust muffler with insertion loss of 25 dB(A).
02. The user shall make efforts to bring down the noise levels due to the DG set, outside his premises, within the ambient noise requirements by proper citing and control measures.
03. Installation of DG set must be strictly in compliance with the recommendations of the DG set manufacturer.
04. A proper routine and preventive maintenance procedure for the DG set should be set and followed in consultation with the DG set manufacturer which would help prevent noise levels of the DG set from deteriorating with use.

3.0 Limits of Noise for DG Sets (upto 1000 KVA) Manufactured on or after the 1st January, 2005

3.1 Applicability

01. These rules apply to DG sets upto 1000 KVA rated output, manufactured or imported in India, on or after 1st January, 2005.

02. These rules shall not apply to –

a) DG sets manufactured or imported for the purpose of exports outside India; and

b) DG sets intended for the purpose of sample and not for sale in India.

3.2 Requirement of Certification

Every manufacturer or assembler or importer (hereinafter referred to as the "manufacturer") of DG set (hereinafter referred to as "product") to which these regulations apply must have valid certificates of Type Approval and also valid certificates of Conformity of Production for each year, for all the product models being manufactured or assembled or imported from 1st January, 2005 with the noise limit specified in paragraph 1.

3.3 Sale, import or use of DG sets not complying with the rules prohibited

No person shall sell, import or use of a product model, which is not having a valid Type Approval Certificate and Conformity of Production certificate.

Annexure - 6: Drinking Water Standards

Group	National Standards for Drinking Water[a]			WHO Guidelines for Drinking-Water Quality, 4th Edition, 2011[b]	Applicable Per ADB SPS [c, d]
	Parameter	Unit	Max. Concentration Limits[d]		
Physical	Turbidity	NTU	1 (5)	-	1 (5)
	pH		6.5 – 8.5	none	6.5 – 8.5
	Color	Hazen units	5 (15)	none	5 (15)
	Taste and Odor		Agreeable	-	Agreeable
	TDS	mg/l	500 (2,000)	-	500 (2,000)
	Iron	mg/l	0.3	-	0.3
	Manganese	mg/l	0.1 (0.3)	-	0.1 (0.3)
	Arsenic	mg/l	0.01 (0.05)	0.01	0.01
	Cadmium	mg/l	0.003	0.003	0.003
	Chromium	mg/l	0.05	0.05	0.05
	Cyanide	mg/l	0.05	none	0.05
	Fluoride	mg/l	1 (1.5)	1.5	1 (1.5)
	Lead	mg/l	0.01	0.01	0.01
	Ammonia	mg/l	0.5	none established	0.5
Chemical	Chloride	mg/l	250 (1,000)	none established	250 (1,000)
	Sulphate	mg/l	200 (400)	none	200 (400)
	Nitrate	mg/l	45	50	45
	Copper	mg/l	0.05 (1.5)	2	0.05 (1.5)
	Total Hardness	mg/l	200 (600)	-	200 (600)
	Calcium	mg/l	75 (200)	-	75 (200)
	Zinc	mg/l	5 (15)	none established	5 (15)
	Mercury	mg/l	0.001	0.006	0.001
	Aluminum	mg/l	0.1 (0.3)	none established	0.1 (0.3)
	Residual Chlorine	mg/l	0.2	5	0.2
Micro Germs	E-coli	MPN/100ml	Must not be detectable in any 100 ml sample	Must not be detectable in any 100 ml sample	Must not be detectable in any 100 ml sample
	Total Coliform	MPN/100ml			

[a] Bureau of India Standard 10500: 2012.

[b] Health-based guideline values.

[c] Per ADB SPS, the government shall achieve whichever of the ambient air quality standards is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, the executing agency of the government will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in ADB SPS.

[d] Figures in parenthesis are maximum limits allowed in the absence of alternate source.

Annexure -7: Sample Environmental Site Inspection Report

Project Name
Contract Number

NAME: _____ DATE: _____
TITLE: _____ DMA: _____
LOCATION: _____ GROUP: _____

WEATHER:
_____

Project Activity Stage	Survey	
	Design	
	Implementation	
	Pre-Commissioning	
	Guarantee Period	

Monitoring Items	**Compliance**
Compliance marked as Yes / No / Not applicable (NA) / Partially Implemented (PI)	
EHS supervisor appointed by contractor and available on site	
Construction site management plan (spoils, safety, schedule, equipment etc.,) prepared	
Traffic management plan prepared	
Dust is under control	
Excavated soil properly placed within minimum space	
Construction area is confined; no traffic/pedestrian entry observed	
Surplus soil/debris/waste is disposed without delay	
Construction material (sand/gravel/aggregate) brought to site as & when required only	
Tarpaulins used to cover sand & other loose material when transported by vehicles	
After unloading, wheels & undercarriage of vehicles cleaned prior to leaving the site	
No chance finds encountered during excavation	
Work is planned in consultation with traffic police	
Work is not being conducted during heavy traffic	
Work at a stretch is completed within a day (excavation, pipe laying & backfilling)	
Pipe trenches are not kept open unduly	
Road is not completely closed; work is conducted on edge; at least one line is kept open	
Road is closed; alternative route provided & public informed, information board provided	
Pedestrian access to houses is not blocked due to pipe laying	
Spaces left in between trenches for access	
Wooden planks/metal sheets provided across trench for pedestrian	
No public/unauthorized entry observed in work site	
Children safety measures (barricades, security) in place at works in residential areas	
Prior public information provided about the work, schedule and disturbances	
Caution/warning board provided on site	
Guards with red flag provided during work at busy roads	
Workers using appropriate PPE (boots, gloves, helmets, ear muffs etc)	
Workers conducting or near heavy noise work is provided with ear muffs	
Contractor is following standard & safe construction practices	

Deep excavation is conducted with land slip/protection measures	
First aid facilities are available on site and workers informed	
Drinking water provided at the site	
Monitoring Items	**Compliance**
Toilet facility provided at the site	
Separate toilet facility is provided for women workers	
Workers camps are maintained cleanly	
Adequate toilet & bath facilities provided	
Contractor employed local workers as far as possible	
Worker's camp set up with the permission of PIU	
Adequate housing provided	
Sufficient water provided for drinking/washing/bath	
No noisy work is conducted in the nights	
Local people informed of noisy work	
No blasting activity conducted	
Pneumatic drills or other equipment creating vibration is not used near old/risky buildings	

Signature

_____

Sign off

_____ _____

Name **Name**
Position **Position**

Annexure -8: Semi Annual Environmental Monitoring Report Format

I. INTRODUCTION

- Overall project description and objectives
- Environmental category as per ADB Safeguard Policy Statement, 2009
- Environmental category of each project as per national laws and regulations
- Project Safeguards Team

Name	Designation/Office	Email Address	Contact Number
1. PMU			
2. PIUs			
3. Consultants			

- Overall project and project progress and status
- Description of projects (package-wise) and status of implementation (preliminary, detailed design, on-going construction, completed, and/or O&M stage)

Package Number	Components/ List of Works	Status of Implementation (Preliminary Design/ Detailed Design/ On-going Construction/ Completed/ O&M)[a]	Contract Status (specify if under bidding or contract awarded)	If On-going Construction	
				%Physical Progress	Expected Completion Date

[a] If on-going construction, include %physical progress and expected date of completion.

II. COMPLIANCE STATUS WITH NATIONAL/STATE/LOCAL STATUTORY ENVIRONMENTAL REQUIREMENTS[a]

Package No.	Project Name	Statutory Environmental Requirements[b]	Status of Compliance[c]	Validity if obtained	Action Required	Specific Conditions that will require environmental

						monitoring as per Environment Clearance, Consent/Permit to Establish[d]

[a] All statutory clearance/s, no-objection certificates, permit/s, etc. should be obtained prior to award of contract/s. Attach as appendix all clearance obtained during the reporting period. If already reported, specify in the "remarks" column.

[b] Specify (environmental clearance? Permit/consent to establish? Forest clearance? Etc.)

[c] Specify if obtained, submitted and awaiting approval, application not yet submitted.

[d] *Example: Environmental Clearance requires ambient air quality monitoring, Forest Clearance/Tree-cutting Permit requires 3 trees for every tree, etc.*

III. COMPLIANCE STATUS WITH ENVIRONMENTAL LOAN COVENANTS

No. (List schedule and paragraph number of Loan Agreement)	**Covenant**	**Status of Compliance**	**Action Required**

IV. COMPLIANCE STATUS WITH THE ENVIRONMENTAL MANAGEMENT PLAN (REFER TO EMP TABLES IN APPROVED IEE/S)

- Confirm if IEE/s require contractors to submit site-specific EMP/construction EMPs. If not, describe the methodology of monitoring each package under implementation.

Package-wise Implementation Status

Package Number	**Components**	**Design Status (Preliminary Design Stage/Detailed Design Completed)**	**Final IEE based on Detailed Design**				**Site-specific EMP (or Construction EMP) approved by Project Director? (Yes/No)**	**Remarks**
			Not yet due (detailed design not yet completed)	**Submitted to ADB (Provide Date of Submission)**	**Disclosed on project website (Provide Link)**	**Final IEE provided to Contractor/s (Yes/No)**		

- Identify the role/s of Safeguards Team including schedule of on-site verification of reports submitted by consultants and contractors.

- For each package, provide name/s and contact details of contractor/s' nodal person/s for environmental safeguards.
- Include as appendix all supporting documents including signed monthly environmental site inspection reports prepared by consultants and/or contractors.
- With reference to approved EMP/site-specific EMP/construction EMP, complete the table below
- Provide the monitoring results as per the parameters outlined in the approved EMP (or site-specific EMP/construction EMP when applicable).
- In addition to the table on EMP implementation, the main text of the report should discuss in details the following items:

(i) **Grievance Redress Mechanism.** Provide information on establishment of grievance redress mechanism and capacity of grievance redress committee to address project-related issues/complaints. Include as appendix Notification of the GRM (town-wise if applicable).

(ii) **Complaints Received during the Reporting Period.** Provide information on number, nature, and resolution of complaints received during reporting period. Attach records as per GRM in the approved IEE. Identify safeguards team member/s involved in the GRM process. Attach minutes of meetings (ensure English translation is provided).

- Confirm if any dust was noted to escape the site boundaries and identify dust suppression techniques followed for site/s.
- Identify muddy water was escaping site boundaries or muddy tracks were seen on adjacent roads.
- Identify type of erosion and sediment control measures installed on site/s, condition of erosion and sediment control measures including if these were intact following heavy rain;
- Identify designated areas for concrete works, chemical storage, construction materials, and refueling. Attach photographs of each area.
- Confirm spill kits on site and site procedure for handling emergencies.
- Identify any chemical stored on site and provide information on storage condition. Attach photograph.
- Describe management of stockpiles (construction materials, excavated soils, spoils, etc.). Provide photographs.
- Describe management of solid and liquid wastes on-site (quantity generated, transport, storage and disposal). Provide photographs.
- Provide information on barricades, signages, and on-site boards. Provide photographs.
- Provide information on
- Checking if there are any activities being under taken out of working hours and how that is being managed.

Summary of Environmental Monitoring Activities (for the Reporting Period)[a]

Impacts (List from IEE)	Mitigation Measures (List from IEE)	Parameters Monitored (As a minimum those identified in the IEE should be monitored)	Method of Monitoring	Location of Monitoring	Date of Monitoring Conducted	Name of Person Who Conducted the Monitoring
Design Phase						
Pre-Construction Phase						
Construction Phase						
Operational Phase						

[a] Attach Laboratory Results and Sampling Map/Locations

Overall Compliance with CEMP/EMP

No.	Project Name	EMP/ CEMP Part of Contract Documents (Y/N)	CEMP/ EMP Being Implemented (Y/N)	Status of Implementation (Excellent/ Satisfactory/ Partially Satisfactory/ Below Satisfactory)	Action Proposed and Additional Measures Required

V. APPROACH AND METHODOLOGY FOR ENVIRONMENTAL MONITORING OF THE PROJECT

- Brief description on the approach and methodology used for environmental monitoring of each project

VI. MONITORING OF ENVIRONMENTAL IMPACTS ON PROJECT SURROUNDINGS (ambient air, water quality and noise levels)

- Brief discussion on the basis for monitoring
- Indicate type and location of environmental parameters to be monitored
- Indicate the method of monitoring and equipment to be used
- Provide monitoring results and an analysis of results in relation to baseline data and statutory requirements

As a minimum the results should be presented as per the tables below:

Ambient Air Quality Results

Site No.	Date of Testing	Site Location	Parameters (Monitoring Results)			
			PM10 $\mu g/m^3$	PM2.5 $\mu g/m^3$	SO2 $\mu g/m^3$	NO2 $\mu g/m^3$

Noise Quality Results

Site No.	Date of Testing	Site Location	LA_{eq} (dBA) (Monitoring Results)	
			Day Time	Night Time

Surface Water Quality Results

S.No.	Parameters	Results		
		Location-1 (Name)	Location-2 (Name)	Location-3 (Name)
1.	pH			
2.	Turbidity			
3.	Total Hardness			
4.	DO			
5.	BOD			
6.	COD			
7.	Chloride			
8.	Iron			
9.	TSS			

10.	Arsenic			
11.	Cadmium			
12.	Fluoride			
13.	Potassium			
14.	Sodium			
15.	Calcium			
16.	Zn			
17.	Cr^{+6}			
18.	Magnesium			
19.	Copper			
20.	Manganese			
21.	Sulphate			
22.	Cyanide			
23.	Nitrate			
24.	Lead			
25.	Boron			
26.	Selenium			
27.	Aluminium			
28.	Total residual Chlorine			

Ground Water Quality Results

S.No.	Parameters	Results		
		Location-1 (Name)	Location-2 (Name)	Location-3 (Name)
1.	pH			
2.	Total Alkalinity			
3.	Total Hardness			
4.	Chloride			
5.	Iron			
6.	TDS			
7.	Arsenic			
8.	Fluoride			
9.	Zn			
10.	Cr+6			
11.	Copper			
12.	Manganese			
13.	Sulphate			
14.	Phosphate			
15.	Nitrate			
16.	Lead			
17.	Phenolic Compound			

VIII. SUMMARY OF KEY ISSUES AND REMEDIAL ACTIONS

- Summary of follow up time-bound actions to be taken within a set timeframe.

APPENDIXES

- Photos
- Summary of consultations
- Copies of environmental clearances and permits
- Sample of environmental site inspection report
- Other

Annexure-9: Applicable Laws for Establishments engaged in Construction of Civil Works

Contractor is required to comply all the provisions stipulated in various Laws, Acts, Rules/Regulations and guidelines applicable with construction sectors. Contractual requirements to follow these Laws, Acts, Rules/ Regulations and guidelines. Contract shall be governed by the law of Union of India and State of Himachal Pradesh. In case of conflict, the Laws of Union of India will prevail. Contractor should "Be familiar with governing Laws and regulations in order to undertake studies and construction activities under the Contract. Major laws applicable to contractor are given below-

(i) Workmen Compensation Act, 1923 - The Act provides for compensation in case of injury by accident arising out of and during the course of employment.

(ii) Payment of Gratuity Act, 1972 - Gratuity is payable to an employee under the Act on satisfaction of certain conditions on separation if an employee has completed 5 years' service or more or on death at the rate of 15 days wages for every completed year of service. The Act is applicable to all establishments employing 10 or more employees.

(iii) Employees' PF and Miscellaneous Provisions Act, 1952 - The Act provides for monthly contributions by the employer plus workers @10 % or 8.33 %. The benefits payable under the Act are: (a) Pension or family pension on retirement or death as the case may be; (b) deposit linked insurance on the death in harness of the worker; (c) payment of PF accumulation on retirement/death etc.

(iv) Maternity Benefit Act, 1951 - The Act provides for leave and some other benefits to women employees in case of confinement or miscarriage etc.

(v) Contract Labour (Regulation and Abolition) Act, 1970 - The Act provides for certain welfare measures to be provided by the Contractor to contract labor and in case the Contractor fails to provide, the same are required to be provided by the Principal Employer by Law. The principal employer is required to take Certificate of Registration and the Contractor is required to take a License from the designated Officer. The Act is applicable to the establishments or Contractor of principal employer if they employ 20 or more contract labor.

(vi) Minimum Wages Act, 1948 - The employer is supposed to pay not less than the Minimum Wages fixed by appropriate Government as per provisions of the Act if the employment is a scheduled employment. Construction of Buildings, Roads, Runways are scheduled employment.

(vii) Payment of Wages Act, 1936 - It lays down as to by what date the wages are to be paid, when it will be paid and what deductions can be made from the wages of the workers.

(viii) Equal Remuneration Act, 1979 - The Act provides for payment of equal wages for work of equal nature to Male and Female workers and not for making discrimination against Female employees in the matters of transfers, training and promotions etc.

(ix) Payment of Bonus Act, 1965 - The Act is applicable to all establishments employing 20 or more workmen. The Act provides for payments of annual bonus subject to a minimum of 8.33% of wages and maximum of 20 % of wages to employees drawing Rs. 3,500/- per month or less. The bonus to be paid to employees getting Rs. 2,500/- per month or above up to Rs.3,500/- per month shall be worked out by taking wages as Rs.2,500/- per month only. The Act does not apply to certain establishments. The newly set up establishments are exempted for five years in certain circumstances. Some of the State Governments have reduced the employment size from 20 to 10 for the purpose of applicability of the Act.

(x) Industrial Disputes Act, 1947 - The Act lays down the machinery and procedure for resolution of industrial disputes, in what situations a strike or lock-out becomes illegal and what are the requirements for laying off or retrenching the employees or closing down the establishment.

xi) Industrial Employment (Standing Orders) Act, 1946 -It is applicable to all establishments employing 100 or more workmen (employment size reduced by some of the States and Central Government to 50). The Act provides for laying down rules governing the conditions of employment by the employer on matters provided in the Act and get the same certified by the designated Authority.

(xii) Trade Unions Act, 1926 - The Act lays down the procedure for registration of trade unions of workmen and employees. The trade unions registered under the Act have been given certain immunities from civil and criminal liabilities.

(xiii) Child Labor (Prohibition and Regulation) Act, 1986 - The Act prohibits employment of children below 14 years of age in certain occupations and processes and provides for regulation of employment of children in all other occupations and processes. Employment of child labor is prohibited in Building and Construction Industry.

(xiv) Inter-State Migrant Workmen's (Regulation of Employment and Conditions of Service) Act, 1979 - The Act is applicable to an establishment which employs 5 or more inter-state migrant workmen through an intermediary (who has recruited workmen in one state for employment in the establishment situated in another state). The inter-state migrant workmen, in an establishment to which this Act becomes applicable, are required to be provided certain facilities such as housing, medical aid, traveling expenses from home up to the establishment and back, etc.

Annexure-10: Sample Outline of Spoil Management Plan (SMP)

1.0 Purpose and application:

SMP is to describe how the project will manage the spoil generated and reuse related to design and construction works. This is an integral part of EMP. The objective of SMP is to reuse of spoil from works in accordance with the spoil management hierarchy outlined in this document.

2.0 Objectives of SMP:

The objectives of SMP are:

- To minimize spoil generation where possible
- Maximize beneficial reuse of spoil from construction works in accordance with spoilmanagement hierarchy
- Mange onsite spoil handling to minimize environmental impacts on resident and otherreceivers
- Minimize any further site contamination of land, water, soil
- Manage the transportation of spoil with consideration of traffic impacts and transport related emissions

3.0 Structure of SMP:

Section 1: Introduction of SMP
Section 2: Legal and other requirements
Section 3: Roles and responsibilities
Section 4: Identification and assessment of spoil aspects and impacts
Section 5: Spoil volumes, characteristics and minimization
Section 6: Spoil reuses opportunities, identification and assessment
Section 7: On site spoil management approach
Section 8: Spoil transportation methodology
Section 9: Monitoring, Reporting, Review, and Improvements

4.0 Aspects and Potential Impacts

The key aspects of potential impacts in relation to SMP are listed in table below

Aspects	Potential Impacts
Air Quality	Potential for high winds generating airborne dust from the stock piles
Sedimentation	Potential for sediment laden site runoff from spoil stockpiles and potential for spillage of spoil from truck on roads
Surface and Groundwater	Contamination of water (surface and ground water)
Noise	Associated with spoil handling and haulage and storage
Traffic	Impacts associated with spoil haulage
Land Use	Potential for spoil to be transported to a receivable site that doesn't have permission for storage/disposal
Design specifications	Limitations on opportunities to minimize spoil generation
Sustainability	Limited sites for storage, reuse opportunities

5.0 Spoil volumes, characteristics and minimization

5.1 Spoil volume calculations: Estimate the volumes of spoils produced from each of the construction sites.

5.2 Characterization of spoil: Based on the type of spoil; characterization is done (sand stone, mud mix materials, reusable materials

5.3 Adopt Spoil Reduce, Reuse Opportunities

An overview of the assessment methodology to be used is mentioned below.

- Consideration of likely spoil characteristics
- Identification of possible reuse sites
- Screening of possible reuse opportunities

5.4 Identification of possible safe disposal sites for spoil: Those spoils which can't be reuse shall be properly disposed in designated areas, such disposal areas should be identified in project locations. Such disposal areas should be safe from environmental aspects and there should be any legal and resettlement related issues. Such areas need to be identified and prior cliental approval should be obtained to use it as spoil disposal area. The local administration must be consulted and if required permission should be obtained from them.

5.5 Storage and stock piling

5.6 Transportation and haulage route

6.0 Based on the above, the contractor will prepare a SMP as an integral part of EMP and submit it to the PIU/PMDSC for their review and approval.

Annexure- 11: SAMPLE TRAFFIC MANAGEMENT PLAN

A. Principles

1. Since the scale of construction work at the project site is relatively small, there will not be any major or prolonged disruption of local traffic. Nevertheless, it is good to prepare a traffic management plan (TMP) to minimize and avoid public inconvenience to the extent feasible. This indicative TMP will ensure the safety of all the road users along the work zone and minimize public inconvenience. It addresses 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) Avoiding traffic congestion and
(iv) Maintenance of access to adjoining properties.

B. Operating Policies for TMP

2. The following principles will help to 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) Keep the public well informed.
(vii) 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

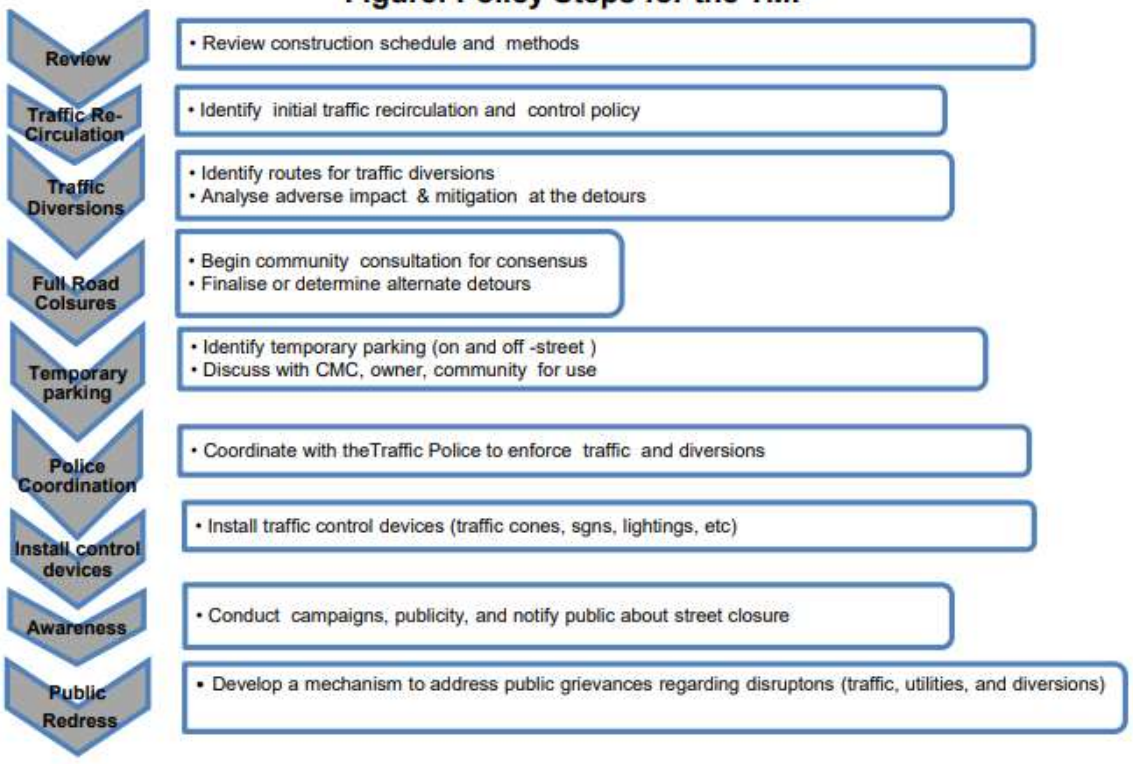
3. A final decision to close a particular street and divert the traffic should involve the following steps:

(i) approval from the PIU and local administration to use alternative local streets as detours;
(ii) (ii) consultation with businesses, community members, traffic police, MC, 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;

(i) contacting emergency service, school officials, and transit authorities to determine if there is any effect on their operations; and
(ii) Developing a notification program to keep the public informed. 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 streets or public opposition, then full closure can be restricted to weekends with the construction commencing on Saturday night and ending on Monday morning prior to the morning rush hour traffic.

Figure: Policy Steps for the TMP



D. Public awareness and notifications

5. The contractor will issue timely notifications to inform the public about the following issues:

(i) Road blockages and alternative routes along with the duration (as applicable)
(ii) Traffic control devices placed around the construction zones (signs, traffic cones, barriers, etc.);
(iii) Reduced speed limits to be enforced at the work zones and traffic diversions.

6. It may be necessary to conduct an awareness campaign on road safety during construction. It will target relevant 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 contractors' 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

7. 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 comply with roadworthy and meet certification standards of GoHP. All vehicles should be in good condition and meet the pollution standards of Government of India and GoHP. The drivers will follow the special code of conduct and road safety rules of GoHP. They will ensure that all loads are covered and secured. Vehicles will be cleaned and maintained in designed places.

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

8. 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 key for achieving the above objective, it is important to install good traffic signs at the work zones. The following traffic control devices will be used in work zones:

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

9. 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. 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 ‖).

10. 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 30cm 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.

11. 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 or

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.

12. 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. 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 - 12: Grievance Registration Format

(to be translated and made available in local language/s)

The _____Project welcomes complaints, suggestions, queries and comments regarding project implementation.

Aggravated persons may provide grievance with their name and contact information to enable us to get in touch for clarification and feedback.

In case, someone chooses not to include personal details and wants that the information provided to remain confidential, please indicate by writing/typing *(CONFIDENTIAL)* above Grievance Format.

Thank you.

Date		**Place of registration**			
Contact Information/Personal Details					
Name		**Gender**	*Male *Female	**Age**	
Home Address					
Place					
Phone no.					
E-mail					
Complaint/Suggestion/Comment/Question Please provide the details (who, what, where and how) of your grievance below: If included as attachment/note/letter, please tick here:					
How do you want us to reach you for feedback or update on your comment/grievance?					

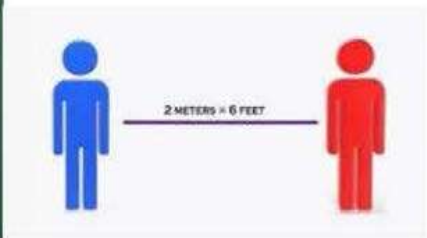
FOR OFFICIAL USE ONLY

Registered by: (Name of Official registering grievance)	
Mode of communication: Note/Letter E-mail Verbal/Telephonic	
Reviewed by: (Names/Positions of Official(s) reviewing grievance)	
Action Taken:	
Whether Action Taken Disclosed:	Yes No
Means of Disclosure:	

Annexure-13: Standard Operating Procedure – Health & Safety Plan to Stop the Spread of COVID-19

SOP-Health and Safety Plan

Stop the **SPREAD of** COVID-19



BY
SUSTAINABLE AND INCLUSIVE TOURISM
DEVELOPMENT PROJECT
IN HIMACHAL PRADESH

HIMACHAL
TOURISM

Contents

1. INTRODUCTION

- This document is intended to supplement formal Health and Safety (H&S)policies, procedures and plans that the contractor has in place for its employees and staff working on Sustainable and Inclusive Tourism Development Project in Himachal Pradesh (SITDP-HP) projects. Hence, this document is not intended to replace any formalized procedures currently in place for the Contractor. Where this guideline does not meet or exceed the standards put forth by the Contractor, the Contractor shall abide by the most stringent procedure available.
- This approved project specific Health and Safety Plan (H&SP) shall be modified to have a COVID-19 Officer[1] at the Contractor's worksite (appointed by Contractor and agreed by PIU) submit a written daily report to the Client's Representative (Project Manager, PIU). The COVID-19 Officer shall certify that the Contractor and all subcontractors are in full compliance with these guidelines.
- The COVID-19 officer should be present on site at all times.
- Any issue of non-compliance with these guidelines shall be a basis for the suspension of work. The Contractor will be required to submit a corrective action plan (on the next day or immediately as per the nature of issue) detailing each issue of non-conformance and a plan to rectify the issue(s). The Contractor will not be allowed to resume work until the plan is approved by the Client (PMU). Any additional issues of non- conformance may be subject to action against the Contractor's as health & safety/safeguard clauses of the contract.
- Construction sites operating during the Covid-19 pandemic need to ensure they are protecting their WORKFORCE and minimising the risk of spread of infection.
- This guidance is intended to introduce consistent measures on sites of all scale in conformity with the Government's recommendations on social distancing.
- These are exceptional circumstances and the industry must remain abreast of and comply with the latest Government advice on COVID-19 at all times.
- The health and safety requirements of any construction activity must also not be compromised at this time. If an activity cannot be undertaken safely due to a lack of suitably qualified personnel being available or social distancing being implemented, it should not take place. However, prior approval of PIU/PMU shall be mandatory in such a case.
- It is to be noted that emergency services are also under great pressure and may not be in a position to respond as quickly as usual.
- Sites should remind the workforce at every opportunity about the Worksite Procedures which are aimed at protecting them, their colleagues, their families and the Himachal population.
- If a worksite is not consistently implementing the measures in this document, it may be required to shut down.

2. PRINCIPLES OF WORKER PROTECTION

- Consistently practice social distancing
- Cover coughs and sneezes
- Maintain hand hygiene
- Clean surfaces (e.g. desks, tables and door handles) and objects (e.g. telephone, keyboards,

[1] The existing safeguard officer or health & safety officer or Supervisor of the contractor can be designated as COVID-19 Officer by undergoing the training available at :-

(a) https://www.who.int/emergencies/diseases/novel-coronavirus-2019/training/online-training

(b) https://openwho.org/courses/eprotect-acute-respiratory-infections

(c) https://openwho.org/courses/COVID-19-IPC-EN

mobiles) with disinfectant frequently

3. MAXIMUM PRECAUTION FOR PERSONS/LABOURERS REPORTING TO WORK

- IF SICK, STAY HOME!
- IF SICK, GO HOME!
- IF SOMEONE SICK, SEND THEM HOME!

Contractor to provide face masks (three layered medical mask for use to protect persons from COVID-19) to all persons working in or visiting the worksite.This along with procedures set out in this document is for maximum precaution to protect all persons/labourers at all times.

4. COVID-19 TYPICAL SYMPTOMS

- Fever
- Cough
- Shortness of Breath
- Sore Throat

  All persons at the worksite should have their temperature screened by COVID-19 officer with Infrared Thermometer (handheld non-contact)

5. SELF-ATTESTATION BY PERSONS/LABOUR PRIOR TO WORK

Prior to starting a work (on daily basis), each labour /worker will self-attest to the supervisor:

- No signs of COVID-19 symptoms within the past 24 hours.
- No contact with an individual diagnosed with COVID-19. (contact means living with a positive person, being within 6 ft. of positive person OR sharing things with positive person)
- Not undergone quarantine or isolation (in case of any labourer /worker who has been quarantined or isolated previously, the engagement shall be only after quarantine period has been completed)

The engagement of workers falling in the high-risk category such as workers over the age of 55 years, with underlying medical conditions or health issues, etc. should be done only after obtaining the requisite clearance from trained and registered medical practitioners.

The self-attestation would be verified in collaboration with trained and registered medical practitioners available at site and through discussions with laborers /workers and/or preliminary checks such as temperature checks, etc. prior to their engagement at site.

In addition, the Contractor shall mandatorily follow all medical test requirements for the workers prior to their engagement and/or mobilization at site as per the guidelines issued by the Central and State government agencies and WHO from time to time.

Persons/Labourers showing COVID-19 symptoms or not providing self attestation shall be directed to leave the work site and report to the nearest Dedicated Covid Care Centres (DCCC), Dedicated Covid Health Centre (DCHC) and Dedicated Covid Hospital (DCH) as notified vide Office Order NO. HFW-H(COVID-19) DCCC, DCHC & DCH dated 04 May 2020 of Health& Family Welfare Deptt,Govt. of Himachal Pradesh /quarantine centre immediately. Labour not to return to the work site until cleared by the DCCC/DCHC/DCH /quarantine centre.

6. GENERAL DIRECTIONS

- No handshake, Only Namaste
- Non-essential physical work that requires close contact between workers should not be carried out
- Work requiring physical contact should not be carried out
- Plan all other work so as to minimise contact between workers
- Wash hands often (every 1-2 hrs or frequently as possible) with soap for at least 20 seconds
- Use hand sanitizer
- No person should enter the work site other than the authorized persons mentioned by supervisor during working hours
- All must implement social distancing by maintaining a minimum distance of 6-feet from others [2] at all times to eliminate the potential of cross contamination.
- Avoid face to face meetings – critical situations requiring in-person discussion must follow social distancing i.e., 6 ft from others.
- Conduct all meetings via conference calls, if possible. Do not convene meetings of more than 10 people. Recommend use of cell phones, texting, web meeting sites and conference calls for project discussion
- All individual work group meetings/ talks should follow social distancing
- At each job briefing /toolbox talk, employees are asked if they are experiencing any symptoms, and are sent home if they are
- Each worksite should have laminated COVID-19 safety guidelines and handwashing instructions
- All restroom /toilet facilities should be cleaned (minimum twice a day), and handwashing facility must be provided with soap, hand sanitizer and paper towels
- All surfaces should be regularly cleaned, including mobiles, tabletops /surfaces, door handles, laptops, records, etc.
- All common areas and meeting areas are to be regularly cleaned (minimum twice a day) and disinfected at least twice a day
- All persons to maintain their own water bottle, and should not be shared.
- To avoid external contamination, it is recommended everyone brings food from home
- Please maintain Social Distancing during breaks and lunch.
- Cover coughing or sneezing with a tissue, then throw the tissue in the trash and wash hands. If no tissue is available then cough/sneeze into your upper sleeves or flex elbow. Do not cough or sneeze into your hands.
- Clean your hands after coughing or sneezing thoroughly by using
- soap and water (minimum for 20 seconds). If soap and water are not available, please use a hand sanitizer. The Contractor shall ensure adequate quantities of sanitizer and soap are made available at all locations including site offices, meeting rooms, corridors, washrooms /toilets, etc. as appropriate.
- Avoid touching eyes, nose, and mouth with your hands
- To avoid sharing germs, please clean up after yourself. Do not make others responsible for moving, unpacking and packing up your personal belongings
- If you or a family member is feeling ill, stay home[3]

[2] Social distancing may not be practical for undertaking certain specific activities within the workplace. It is, therefore, important to review the work method statements for these types of activities to assess impact and how to find safe ways of doing it in line with best available guidance.

[3] The workers with no sick-leave would be supported with additional leave while affected by

- Work schedules are adjusted to provide time for proper cleaning and disinfecting as required.
- Most importantly, the employees/ workers may be advised not to spread/believe in rumours or create panic. They may also be advised not to spit in working areas or public places.

PREVENTION PRACTICES

(a) At Work-site

- At the start of each shift, confirm with all employees that they are healthy and fit to resume their work.
- Outside person(s) should be strictly prohibited at worksite
- All construction workers will be required to wear cut-resistant gloves or its equivalent.
- Use of eye protection (reusable safety goggles/face shields) is recommended. The supply of eye protection equipment to the workers is considered as a standard part of PPE during construction works.
- In work conditions where social distancing is impossible to achieve, the employees shall be supplied with standard face mask, gloves, and eye protection.
- All employees shall drive to work site in a single occupant vehicle. Staff shall not ride together in the same vehicle
- When entering a machine or vehicle which you are not sure you were the last person to enter, make sure that you wipe down the interior and door handles with disinfectant (with 1% sodium hypochlorite solution daily) prior to entry. Adequate quantity of the disinfectant shall be provided by the Contractor at all such site-specific locations.
- Workers should maintain separation of 6' ft. from each other.
- Multi person activities will be limited where feasible (two persons lifting activities)
- Gathering places on the site such as sheds and/or break areas will be eliminated, and instead small break areas will be used with seating limited to ensure social distancing.
- Contact the cleaning person of the worksite and ensure proper COVID-19 sanitation processes. Increase cleaning/disinfection visits to at least 2 times a day. Cleaning person(s) to be provided with gloves, gown and face mask for each cycle of cleaning. The Contractor shall make available adequate supply of cleaning material and disinfectant chemicals while the threat of COVID-19 continues.
- Clean all high contact surfaces a minimum of twice a day in order to minimize the spread of germs in areas that people touch frequently. This includes but is not limited to furniture, electrical, electronic equipment's and vehicles, etc. All the employees be encouraged to maintain good health by getting adequate sleep; eating a balanced and healthy diet, avoiding alcohol and by consuming plenty of fluids.
- Continuation of works in construction project with workers available on.
- The site offices shall have adequate ventilation. The air conditioning or ventilation systems installed at the site offices should have high-efficiency air filters to reduce the risk of infection. The frequency of air changes may be increased for areas where close personal proximity cannot be fully prevented such as control rooms, elevators, waiting rooms, etc.
- The Contractor shall carry out contactless temperature checks of the workers prior to entering the site, during working hours and after site

Works to identify persons showing signs of being unwell with the COVID-19 symptoms.

- The Contractor shall also ensure that the Project sites situated in the border areas of Himachal Pradesh, the employees and workers do not commute from the neighboring States without requisite permission from relevant authorities.

COVID-19 by the Contractor. The workers who have to stay home because of COVID-19 affected family member(s), the Contractor shall pay for the days for staying away from the work.

(b) Washing Facility

- All worksites should have access to toilet and hand washing facility.
- Providing hand cleaning facilities at entrances and exits. There should be soap and water wherever possible or hand sanitizer if water is not available.
- Washing facility with hot water, and soap at other water sources to be used for frequent hand washing for all onsite employees
- All onsite workers must help to maintain and keep their working sites clean.
- If a worker notices soap or towels are running low or out, he/she should immediately notify supervisor(s). Proactively supervisor should make sure that shortage situation never occurs.
- Garbage bins will be placed next to the hand wash facility for discarding used tissues/towels with regular removal and disposal facility (at the end of each day)

(c) Cleaning Procedures

- Increase cleaning/disinfection at least two times a day. Persons engaged in cleaning be provided with gloves, gown and face mask for each cycle of cleaning.
- Each worksite including sheds, gates, equipment, vehicles, etc. should have enhanced cleaning and disinfection procedures that are posted and shared. These shall be posted at all entry points to the sites, and throughout the project site. These include common areas and high touch points like
- Taps and washing facilities
- Toilet flush and seats
- Door handles and push plates
- Handrails on staircases and corridors
- Lift and hoist controls
- Machinery and equipment controls
- Food preparation and eating surfaces
- Telephone equipment / mobiles
- Electrical and electronic equipment's
- Keyboards, photocopiers and other office equipment
- Re-usable PPE should be thoroughly cleaned after use and not shared amongst the workers.

7. LABOUR CAMPS

Contractor shall follow a zero-tolerance policy on wearing of masks. Masks to be provided to all the persons/labourers for use at the camp site as well as at the worksite. Increase cleaning/disinfection visits to at least 2 times a day. Persons engaged in cleaning to be provided with disposable gloves, gown and face mask for each cycle of cleaning.

8.1 Toilet Facility

- Restrict the number of people using toilet facility at any one time e.g. appoint one welfare attendant among the labourers.
- Wash hands before and after using the common facilities
- Enhance the cleaning regimes for toilet facilities particularly door handles, locks and the toilet flush
- Portable toilets should be avoided wherever possible, but where in use these should be cleaned and emptied more frequently
- Provide suitable and sufficient trash bins for hand towels with regular removal and disposal.

8.2 Eating/Snacks Arrangements

- With eateries having been closed (restricted) across Himachal, providing permanent (till society is safe from COVID-19) on-camp/off-camp cook/helpers can be implemented. Make sure that the "Guidelines for food handling, preparation and distribution during COVID-19" and its regular updates are being followed.
- Whilst there is a requirement for construction camps to provide a means of heating food and making hot water, these are exceptional circumstances and where it is not possible to introduce a means of keeping equipment clean between use, etc. must be removed from use.
- Dedicated eating areas should be identified at campsites to reduce food waste and contamination.
- Break times should be staggered to reduce contact, congestion at all times.
- Hand cleaning facilities or hand sanitizer should be available at the
- entrance of the room where people eat and it should be used by workers when entering and leaving the area.
- Workers should sit 2 metres apart from each other whilst eating and should avoid all contact
- Where catering is provided at camp site, it should provide pre-prepared and wrapped food only
- Payments should be taken by contactless options wherever possible
- Crockery, eating utensils, cups, etc. should be avoided wherever possible
- Taps for drinking water should be provided with such mechanism that contact of had is minimised (taps with long handle.
- Eating tables should be cleaned between each use.
- All rubbish should be put straight in the bin and not left for someone else to clear up; only covered pedal operated bins should be used and the bins should be cleaned regularly, with strict adherence to safety protocols for disposal and of maintenance hygiene (including proper PPE's such as gloves, mask and apron worn by the waste handler/cleaner and disposal at a designated place);
- All areas used for eating must be thoroughly cleaned at the end of each break and shift, including chairs, door handles, etc.

8.3 Changing Facilities, Showers and Drying Areas

- Introduce staggered start and finish times to reduce contact, congestion at all times.
- Introduce enhanced cleaning of all facilities throughout the day and at the end of each day.
- Consider increasing the number or size of facilities available on camp if possible
- Based on the size of each facility, determine how many people can use it at any one time to maintain a distance of two metres.
- Provide suitable and sufficient garbage bins in these areas with regular removal and disposal.
- Visitor log book with record of thermal screening should be strictly maintained at the labour camps.

COVID-19 officer will ensure compliance of preventive measures at the labour camps at all times.

8. UPDATES ON COVID-19

- The Contractor shall be in touch with the Department of Health & Family Welfare and Labour Department to identify any potential worksite exposures relating to COVID-19, including:
- Strictly follow the guidelines issued by Ministry of health, Govt. of India.
- Workers, vendors, inspectors, or visitors to the worksite with close contact to the individual.
- Labour Camps / Work areas such as designated workstations or rooms /sheds
- Work tools and equipment
- Common areas such as break rooms, tables and sanitary facilities

Also refer the following websites from time to time for regular updates.

https://www.mohfw.gov.in/

https://covidportal.hp.gov.in

This document can be updated from time to time based on the advisories or directions of the Govt.

9. TRAINING

- The representative of PMU/PIU to ensure all workers get training on above requirements before start of any construction activity
- During construction period frequent visual and verbal reminders to workers can improve compliance with hand hygiene practices and thus reduce rates of infection. Handwashing posters should also be displayed at work site and labour camps.

10. EMERGENCY CONTACT

- Provide emergency contact number(s) at work site and labour camp for reporting COVID-19 symptoms

Annexure-14: Photo Illustration

Site visit with ADB Experts

Annexure-15: Consultation Record

Community Consultation

Project:-Sustainable and Inclusive Tourism Development Project in Himachal Pradesh (Tranche-1

Date 21/11/2023

Place/Venue Bathing Ghat Road at Nadaun Near old SDM office

Point Discussed:- Discussions were held with local community on different aspects related to the project objective and its benefits like the gaps in basic services and improvement of tourist infrastructure.Community agreed and assured full support to the project, suggested to minimize inconvenience as much as possible during construction and timely completion of the project.

Participants Name	Mob No-	Signature/ Thumb impression	Gender
Anju Thakur	9418091101	Anju	F
Yash Pal	9816479666	Yash	M
Vinay Kumar	82193 49961	Vinay Kumar	M
Sunita Kumari	96256 02034	Sunita Kumari	F
Jitender Kumar	95997 [illegible] 61	Jitender	M
Ashwani Kumar	9736771288		M
Ashok Kumar	70185 40524	Ashok	M
Nagesh Kumar	75597 12963	Nagesh	M
Anil Sharma	9015005102	Anil	M
Kishan Chand	9816028717	Kishan	M
Akash Kumar	96259 85685	Akash	M

Community Consultation

Project:-Sustainable and Inclusive Tourism Development Project in Himachal Pradesh (Tranche-1

Date 21/11/2023

Place/Venue Rafting Complex at Nagaun Near old SDM office

Point Discussed:- Discussions were held with local community on different aspects related to the project objective and its benefits like the gaps in basic services and improvement of tourist infrastructure.Community agreed and assured full support to the project, suggested to minimize inconvenience as much as possible during construction and timely completion of the project.

Participants Name	Mob No-	Signature/ Thumb impression	Gender
Nitche Chauhan	7018956149		M
Sumit Kumar	9219348442		M
Vine Devi	8278827807		F

Annexure-16: IBAT Report

IBAT

Integrated Biodiversity Assessment Tool

PROXIMITY REPORT
RAFTING COMPLEX AT NADAUN.

Country: India

Location: [31.8, 76.3]

Date of analysis: 18 April 2024 (GMT)

Buffers applied: 10 km | 20 km | 50 km

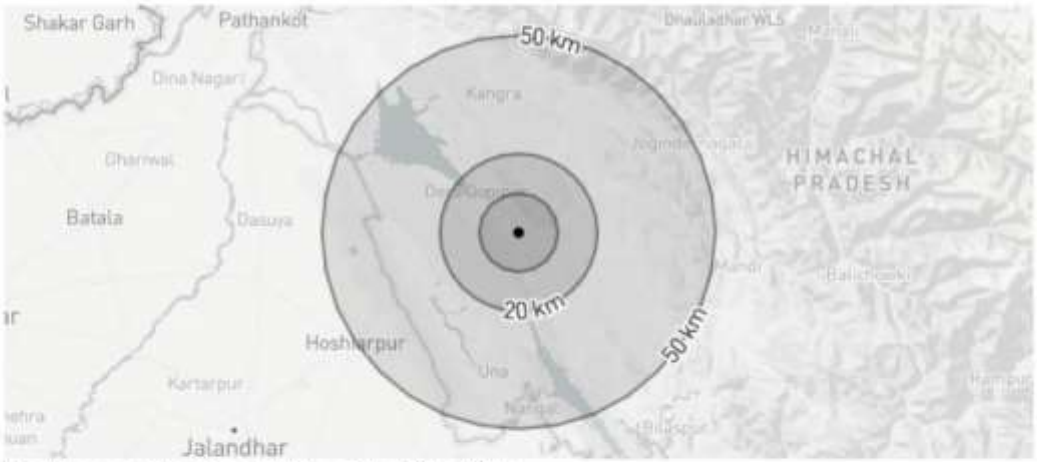
IUCN Red List Biomes: Terrestrial, Freshwater

Generated by: Anjali Semwal

Organisation: ADB

Overlaps with:

Protected Areas	1
Key Biodiversity Areas	4
IUCN Red List	54



Displaying project location and buffers: 10 km, 20 km, 50 km

About this report

This report presents the results of [27783-62569] proximity analysis to identify the biodiversity features and species which are located within the following buffers: 10 km, 20 km, 50 km.

This report is one part of a package generated by IBAT on 18 April 2024 (GMT) that includes full list of all species, protected areas, Key Biodiversity Areas in CSV format, maps showing the area of interest in relation to these features, and a 'How to read IBAT reports' document.

WARNING: IBAT aims to provide the most up-to-date and accurate information available at the time of analysis. There is however a possibility of incomplete, incorrect or out-of-date information. All findings in this report must be supported by further desktop review, consultation with experts and/or on-the-ground field assessment. Please consult IBAT for any additional disclaimers or recommendations applicable to the information used to generate this report.

Please note, sensitive species data are currently not included in IBAT reports in line with the Sensitive Data Access Restrictions Policy for the IUCN Red List. This relates to sensitive Threatened species and KBAs triggered by sensitive species.

Data used to generate this report

- UNEP-WCMC and IUCN, 2024. Protected Planet: The World Database on Protected Areas (WDPA)[On-line], Cambridge, UK: UNEP-WCMC and IUCN. Available at: www.protectedplanet.net - April 2024.
- BirdLife International (on behalf of the KBA Partnership), 2023. Key Biodiversity Areas - October 2023.
- IUCN, 2024. IUCN Red List of Threatened Species - January 2024.
- IUCN. The IUCN Red List of Threatened Species. Version 2019-3. (2019). https://www.iucnredlist.org
- IUCN. Threats Classification Scheme (Version 3.2). (2019)
- Strassburg, B.B.N., Iribarrem, A., Beyer, H.L. et al. Global priority areas for ecosystem restoration. Nature 586, 724–729 (2020). https://doi.org/10.1038/s41586-020-2784-9

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Protected Areas

The following protected areas are found within 10 km, 20 km, 50 km of the area of interest.
For further details please refer to the associated csv file in the report folder.

Area name	Within buffer of
Pong Dam Lake	50 km

Key Biodiversity Areas

The following key biodiversity areas are found within 10 km, 20 km, 50 km of the area of interest.
For further details please refer to the associated csv file in the report folder.

Area name	Distance
Pong Dam Lake Wildlife Sanctuary	20 km
Dhauludhar Wildlife Sanctuary and McLeod Gunj	50 km
Gobind Sagar and Naina Devi Wildlife Sanctuaries	50 km
Sarah Valley, Lower Dharamshala	50 km

IUCN Red List of Threatened Species

The following threatened species are potentially found within 50km of the area of interest.

For the full IUCN Red List please refer to the associated csv in the report folder.

Species Name	Common Name	Taxonomic Group	IUCN Category	Population Trend	Biome
Vanellus gregarius	Sociable Lapwing	AVES	CR	Decreasing	Terrestrial
Gyps bengalensis	White-rumped Vulture	AVES	CR	Decreasing	Terrestrial

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Species Name	Common Name	Taxonomic Group	IUCN Category	Population Trend	Biome
Sarcogyps calvus	Red-headed Vulture	AVES	CR	Decreasing	Terrestrial
Emberiza aureola	Yellow-breasted Bunting	AVES	CR	Decreasing	Terrestrial, Freshwater
Gyps tenuirostris	Slender-billed Vulture	AVES	CR	Decreasing	Terrestrial
Nardostachys jatamansi	Indian Nard	MAGNOLIOPSIDA	CR	Decreasing	Terrestrial
Geoclemys hamiltonii	Spotted Pond Turtle	REPTILIA	EN	Decreasing	Terrestrial, Freshwater
Hardella thurjii	Crowned River Turtle	REPTILIA	EN	Decreasing	Terrestrial, Freshwater
Manis crassicaudata	Indian Pangolin	MAMMALIA	EN	Decreasing	Terrestrial
Moschus leucogaster	Himalayan Muskdeer	MAMMALIA	EN	Decreasing	Terrestrial
Panthera tigris	Tiger	MAMMALIA	EN	Decreasing	Terrestrial
Varanus flavescens	Yellow Monitor	REPTILIA	EN	Decreasing	Terrestrial
Nilssonia gangetica	Indian Softshell Turtle	REPTILIA	EN	Decreasing	Terrestrial, Freshwater
Nilssonia hurum	Indian Peacock Softshell Turtle	REPTILIA	EN	Decreasing	Terrestrial, Freshwater

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Species Name	Common Name	Taxonomic Group	IUCN Category	Population Trend	Biome
Oxyura leucocephala	White-headed Duck	AVES	EN	Decreasing	Terrestrial, Freshwater
Rynchops albicollis	Indian Skimmer	AVES	EN	Decreasing	Terrestrial, Freshwater
Sterna acuticauda	Black-bellied Tern	AVES	EN	Decreasing	Terrestrial, Freshwater
Haliaeetus leucoryphus	Pallas's Fish-eagle	AVES	EN	Decreasing	Terrestrial, Freshwater
Neophron percnopterus	Egyptian Vulture	AVES	EN	Decreasing	Terrestrial, Freshwater
Aquila nipalensis	Steppe Eagle	AVES	EN	Decreasing	Terrestrial
Falco cherrug	Saker Falcon	AVES	EN	Decreasing	Terrestrial, Marine, Freshwater
Picrorhiza kurroa	Picrorrhiza	MAGNOLIOPSIDA	EN	Decreasing	Terrestrial
Trillium govanianum	Himalayan Trillium	LILIOPSIDA	EN	Decreasing	Terrestrial
Dactylorhiza hatagirea	Salamparija	LILIOPSIDA	EN	Decreasing	Terrestrial
Amblyceps arunchalensis		ACTINOPTERYGII	EN	Unknown	Freshwater
Puntius nangalensis		ACTINOPTERYGII	EN	Unknown	Freshwater
Tor putitora		ACTINOPTERYGII	EN	Decreasing	Freshwater
Glyptothorax punjabensis		ACTINOPTERYGII	EN	Decreasing	Freshwater

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Species Name	Common Name	Taxonomic Group	IUCN Category	Population Trend	Biome
Crocodylus palustris	Mugger	REPTILIA	VU	Stable	Terrestrial, Freshwater
Panthera pardus	Leopard	MAMMALIA	VU	Decreasing	Terrestrial
Panthera uncia	Snow Leopard	MAMMALIA	VU	Decreasing	Terrestrial
Ursus thibetanus	Asiatic Black Bear	MAMMALIA	VU	Decreasing	Terrestrial
Rusa unicolor	Sambar	MAMMALIA	VU	Decreasing	Terrestrial
Aonyx cinereus	Asian Small-clawed Otter	MAMMALIA	VU	Decreasing	Terrestrial, Marine, Freshwater
Pangshura tecta	Indian Roofed Turtle	REPTILIA	VU	Decreasing	Terrestrial, Freshwater
Saara hardwickii	Indian Spiny-tailed Lizard	REPTILIA	VU	Decreasing	Terrestrial
Catreus wallichii	Cheer Pheasant	AVES	VU	Decreasing	Terrestrial
Aythya ferina	Common Pochard	AVES	VU	Decreasing	Terrestrial, Marine, Freshwater
Grus antigone	Sarus Crane	AVES	VU	Decreasing	Terrestrial, Freshwater
Gallinago nemoricola	Wood Snipe	AVES	VU	Decreasing	Terrestrial, Freshwater
Sterna aurantia	River Tern	AVES	VU	Decreasing	Terrestrial, Marine, Freshwater

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Species Name	Common Name	Taxonomic Group	IUCN Category	Population Trend	Biome
Clanga clanga	Greater Spotted Eagle	AVES	VU	Decreasing	Terrestrial, Freshwater
Aquila heliaca	Eastern Imperial Eagle	AVES	VU	Decreasing	Terrestrial, Freshwater
Schoenicola striatus	Bristled Grassbird	AVES	VU	Decreasing	Terrestrial, Freshwater
Clanga hastata	Indian Spotted Eagle	AVES	VU	Decreasing	Terrestrial
Oryza malampuzhaensis		LILIOPSIDA	VU	Decreasing	Terrestrial
Lissemys punctata	Indian Flapshell Turtle	REPTILIA	VU	Decreasing	Terrestrial, Freshwater
Bovista paludosa	Fen Puffball	AGARICOMYCETES	VU	Decreasing	Terrestrial
Capricornis sumatraensis	Mainland Serow	MAMMALIA	VU	Decreasing	Terrestrial
Paris polyphylla	Love Apple	LILIOPSIDA	VU	Decreasing	Terrestrial
Fritillaria cirrhosa	Yellow Himalayan Fritillary	LILIOPSIDA	VU	Decreasing	Terrestrial
Wallago attu		ACTINOPTERYGII	VU	Decreasing	Freshwater
Schizothorax plagiostomus	Snow Trout	ACTINOPTERYGII	VU	Decreasing	Freshwater
Bagarius bagarius		ACTINOPTERYGII	VU	Decreasing	Freshwater

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Recommended citation

IBAT Proximity Report. Generated under licence 27783-62569 from the Integrated Biodiversity Assessment Tool on 18 April 2024 (GMT). www.ibat-alliance.org

How to use this report

This report provides an indication of the potential biodiversity-related features - protected areas, key biodiversity areas and species - close to the specified location. It provides an early indication of potential biodiversity concerns, and can provide valuable guidance in making decisions. For example, this information can be helpful when assessing the potential environmental risk and impact of a site, categorising investments/projects, preparing the terms of reference for an impact assessment, focusing attention on key species of conservation concern and sites of known conservation value, and reviewing the results of an impact assessment.

The report does not provide details of potential indirect, downstream or cumulative impacts. Furthermore, the report should be regarded as a "first-step", providing a set of conservation values sourced from global data sets, and is not a substitute for further investigation and due diligence, especially concerning national and/or local conservation priorities.