Draft Initial Environmental Examination

Project Number: 40648

September 2014

IND: Infrastructure Development Investment Program for Tourism (Tranche 3) State of Himachal Pradesh – Creation of Centre for Traditional Arts and Crafts at Badagran near Manali

Prepared by the Himachal Pradesh Tourism Development Board for the Asian Development Bank

CURRENCY EQUIVALENTS

(as of 7 October 2014)

Currency unit	–	Indian rupee/s (Re/Rs)
Re1.00	=	$0.0163
$1.00	=	Rs61.326

ABBREVIATIONS

ADB	–	Asian Development Bank
BPL	–	Below Poverty Line
DSC	–	Design & Supervision Consultants
EA	–	Executing Agency
EAC	–	Expert Appraisal Committee
EARF	–	Environmental Assessment Review Framework
EIA	–	Environmental Impact Assessment
EMP	–	Environmental Management Plan
GoI	–	Government of India
GoHP	–	Government of Himachal Pradesh
HPPCB	–	Himachal Pradesh Pollution Control Board
HPTDC	–	Himachal Pradesh Tourism Development Board
IDIPT	–	Infrastructure Development Investment Program for Tourism
IEE	–	Initial environmental examination
MC	–	Municipal Corporation
MLD	–	Million Litres per day
MOEF	–	Ministry of Environment and Forests
MSL	–	Mean Sea Level
NGO	–	Non-Governmental Organization
O&M	–	Operations & Management
PFR	–	Periodic Financing Request
PIU	–	Project Implementation Unit
PM	–	Particulate Matter
PMC	–	Project Management Consultants
PMU	–	Project Management Unit
REA	–	Rapid Environmental Assessment
SEAC	–	State Expert Appraisal Committee
SPM	–	Suspended Particulate Matter
SPS	–	Safeguards Policy Statement
TCP	–	Town & Country Planning
TDS	–	Total Dissolved Solids
TSS	–	Total Suspended Solids

NOTES

In this report, "$" refers to US dollars.

This initial environmental examination is a document of the borrower. The views expressed herein do not necessarily represent those of ADB's Board of Directors, Management, or staff, and may be preliminary in nature.

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

CONTENT

List of Annexures

EXECTUVE SUMMARY

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

2. Manali town subproject Package No. HPTDB/14/1 is one of the subprojects proposed under the program. The site is situated along the river Beas on one side and NH21 on the other. It is a barren land and inhibits negligible natural vegetation. The site is easily accessible from other towns and villages since it is situated near the NH 21. There are a few residential buildings to the north and some commercial activity towards the west side of the site. At the South and East side of the site agricultural land and river Beas exist respectively. The site co-ordinates are: 32° 8'20.58"N, 77° 9'17.18"E. The site is about 15 km from Manali town, 25km from Kullu, 35Km from Bhuntar Airport and 10 km from Naggar Castle.

3. **Executing and implementing agencies.** The executing agency is the Dept. of Tourism and Civil Aviation, HP. Project Management Unit (PMU) is set up at Shimla to coordinate the overall execution. Project Management Consultant (PMC) at Shimla provides assistance to PMU in execution. The implementing agency is Project Implementation Unit (PIU), to be supported by Design Supervision Consultant (DSC). The asset owner is the Himachal Pradesh Tourism Development Board (HPTDB).

4. **Categorization.** Manali town subproject Package HPTDB/14/1 is classified as Environmental Category B as per the SPS as no significant impacts are envisioned. Accordingly this Initial Environmental Examination (IEE) has been prepared and assesses the environmental impacts and provides mitigation and monitoring measures to ensure no significant impacts as a result of the subproject.

5. **Subproject Scope.** The major scope of this subproject as per Summary Concept Report (SCR) 3 - Package No. HPTDB/14/1 are: construction of Centre for Traditional Arts & Crafts comprising institutional, commercial and residential establishments along with other facilities like parking, reception room, restaurant, convention hall etc.

6. **Description of the Environment.** Subproject components are located in Manali town area or in its immediate surroundings which were converted into agricultural and urban use for many years ago and there is no natural habitat left at these sites. The subproject components will be located in government-owned sites. There are no protected areas, wetlands, mangroves, or estuaries in or near the subproject locations.

7. **Environmental Management.** An environmental management plan (EMP) is included as part of this IEE, which includes (i) mitigation measures for environmental impacts during implementation; (ii) an environmental monitoring program, and the responsible entities for mitigating, monitoring, and reporting; (iii) public consultation and information disclosure; and (iv)

a grievance redress mechanism. A number of impacts and their significance have already been reduced by amending the designs. The EMP will be included in civil work bidding and contract documents.

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

9. During the construction phase, impacts mainly arise from the need to dispose of moderate quantities of waste soil. These are common impacts of construction in urban areas, and there are well developed methods for their mitigation. Measures such as conducting work in lean season and minimizing inconvenience by best construction methods will be employed. In the operational phase, all facilities and infrastructure will operate with routine maintenance, which should not affect the environment. Facilities will need to be repaired from time to time, but environmental impacts will be much less than those of the construction period as the work will be infrequent, affecting small areas only.

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

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

12. The tourists and citizens of Manali town area will be the major beneficiaries of the project. The most noticeable net environmental benefits to the tourists and population of the town will be positive and large as the proposed subproject will improve access to reliable and adequate tourism facilities and propagate the local traditions and Cultural Heritage of the state. This subproject will also provide a common platform for local traditions and values, provide and improve opportunities for local communities, particularly women groups, linked to the cultural and natural heritage tourism

13. **Consultation, Disclosure and Grievance Redress.** Public consultations were done in the preparation of the project and IEE. On-going consultations will occur throughout the project

implementation period. A grievance redress mechanism is described within the IEE to ensure any public grievances are addressed quickly.

14. **Monitoring and Reporting.** The PMU, PIU, PMC and DSC will be responsible for environmental monitoring. The PIU with support from the DSC will submit Semi-annual monitoring reports to the PMU. The PMU will consolidate the quarterly reports in assistance of PMC and will send it to ADB. ADB will post the environmental monitoring reports on its website.

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

I. INTRODUCTION

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

2. The proposed site is situated along the river Beas on one side and NH21 on the other. It is a barren land and inhibits negligible natural vegetation. The site is easily accessible from other towns and villages as it is situated adjacent to NH 21. There are few residential buildings to the north and some commercial activity towards the west side of the site. At the South and East side of the site agricultural land and river Beas exists. The site co-ordinates are: 32° 8' 20.58"N & 77° 9' 17.18"E and about 20 km from Manali town, 25km from Kullu, 35Km from Bhuntar Airport and 10 km from Naggar Castle.

3. **Executing and implementing agencies.** The executing agency is the Dept. of Tourism and Civil Aviation, HP. Project Management Unit (PMU) is set up at Shimla to coordinate the overall execution. Project Management Consultant (PMC) at Shimla provides assistance to PMU in execution. The implementing agency is Project Implementation Unit (PIU), to be supported by Design Supervision Consultant (DSC). The asset owner is the HPTDB. 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 subproject implementation in the field, and will be under the direct administrative control of the PMU. Consultant teams are responsible for subproject planning and management and assuring technical quality of design and construction; and designing the infrastructure and supervising construction; and safeguards preparation.

4. **Proposed subproject.** The major scope of this subproject Package No. HPTDB/14/1 as per Summary Concept Report (SCR) 3 are construction of A Centre for Traditional Arts & Crafts comprising institutional, commercial and residential establishments along with other facilities like parking, reception room, restaurant, convention hall etc.

5. **Categorization.** An environmental assessment using ADB's Rapid Environmental Assessment (REA) checklist for urban development (Annex 1) was conducted. Results of the assessment as per subproject appraisal report (SAR-3) and preliminary design show Package No. HPTDB/14/1 is unlikely to cause significant adverse impacts. Thus it is classified as Environmental Category B as per ADB SPS as no significant impacts are envisioned.

6. **Purpose of the IEE.** This report gives an account of the initial environmental examination (IEE) of subproject Package No. HPTDB/14/1 as per SAR and preliminary design. It has been prepared in accordance with ADB SPS's requirements for environment Category B projects and provides measures to (i) ensure the environmental sustainability of subproject Package No. HPTDB/14/1; (ii) integrate environmental considerations into the project

preparation process; and (iii) provide for environmental management during project implementation.

II. DESCRIPTION OF THE SUBPROJECT

A. Location, Existing Condition and Need of the Subproject

7. **Location.** The proposed site is situated along the river Beas on one side and NH21 on the other. It is a barren land and inhibits negligible natural vegetation. The site is easily accessible from other towns and villages as it is situated adjacent to NH 21. There are few residential buildings to the north and some commercial activity towards the west side of the site. At the South and East side of the site agricultural land and river Beas exists. The site co-ordinates are: 32° 8' 20.58"N & 77° 9' 17.18"E and about 20 km from Manali town, 25km from Kullu, 35Km from Bhuntar Airport and 10 km from Naggar Castle.

8. The topography of the site has a gradual sloping terrain but at the same time has varying degrees of levels at different parts of the site. The level difference between the top most and lower most ground of the site is about 12 m. The area near the road lies on the top most part of the site and the level decreases as move towards river bank. The site hardly contains any vegetation but mostly of rocks and boulders which to some extent could be used for construction. The lowest part of the site towards south is a wet soil due to the part being closer to the river Beas.

9. **Existing Conditions and Need of the Subproject.** Himachal is known for its handicrafts & fine art such as Kullu & Kinnauri shawls, Kangra paintings, Chamba rumals and many others. But gradually many traditional art forms and techniques are heading towards obscurity. Connection with the outer world gives a major boon to the place and its economy but at the same time it has major effect on the culture and traditional practices of the area like, better connectivity and communication facilities provide us with a lot of opportunities, modern practices such as cheap & easily available building techniques, materials which result in ignorance for the traditional building techniques, indigenous building materials. Issues pertaining to production (non- availability of work shed; non- availability of processing facilities; absence of modern designs & designing systems) marketing (improper market feedback; limited market season; non-availability of adequate and proper transport; limited usage; absence of diversification in product) and finance (inadequate working capitals with weavers; limited marketing opportunities & non- availability of raw materials at cheaper rates) has been identified. The project has been conceived under three functional heads viz., institutional, commercial & residential following which the zoning of the site is done.

B. Proposed Subproject

10. The features of the proposed Centre for Traditional Arts and Crafts are categorized under five headings:

11. **Institutional:** Workshop areas are to be developed in response to the crafts and arts to be housed in the complex where master craftsmen would be approached and areas specific to their field would be provided to them. Therefore before designing a space the exact craft needs to be identified for which the space will be defined and created for them. This will be done after an in depth study of the arts and crafts of Himachal Pradesh, getting in touch with the related craftsmen and assuring specific fields that would require space in this complex.

12. **Commercial:** Structures for commercial purposes are as below:

- Commercial Outlets - Permanent Outlets, Temporary Outlets - showcasing and selling the products generated by the master craftsmen and his students in addition to other traditional artefacts, music and food products.
- Food Stalls (Temporary), Semi opened Seating.
- Restaurant.
- O.A.T. – Exhibitions, Cultural activities like concerts for Folk music, Traditional dance forms and Folk theatre.

13. **Residential:** Structures for residential purposes are as below-

- Dormitory for master craftsmen, learners, youths, visiting students, visitors and tourists – Convention Hall intended to be a separate entity inside the complex which will provide for both short stay for tourists and space for conventions to be held by interested the companies/agencies:

14. **Other Structures: as below-**

- Structure 1:
- It consists of Independent parking; Reception area (lobby, waiting area, toilet facilities, office area, cloak room etc.); Media interaction room; Big convention hall (Capacity min. 400 people); Small Convention Hall (Capacity max. 50 people); Restaurant and kitchen; Accommodation for artisans on the first floor (20-30 rooms) & Small restaurant on the First floor
- Structure 2:
- It consists of Health Club; Meditation Centre; Children's room and play area & Library and reading room
- Other:
- Separate parking for inmates and visitors at the entrance.
- Properly designed compound wall and entrance to the Centre;
- Viewing deck or watch tower and
- Walking Trails and landscaping

15. All sites for subproject (Package No. HPTDB/14/1) are owned by Government (HPTDB) thus no land acquisition is required. The sites are located in Manali urban area which was converted into urban use for many years ago, and there is no natural habitat left at these sites. The sites are not within or adjacent to any protected area.

16. The design, material and scale 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, 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.

17. For retaining wall repair works, random rubble masonry will be used, with locally available stone to be laid in cement mortar by local skilled labour. The earth backfill, if any will be done from the site excavated material. Stone aggregate and sand are available within 40 km

radius from sites. Also formwork and skilled labour is locally available. For brick wall construction, bricks are also available within 50 km radius from the proposed site/region.

18. Water supply during construction will be provided by HP Irrigation and Public Health (IPH) Department from their existing system or will be transported through mobile water tankers, if required. Solid waste generated at sites will be disposed at designated areas.

19. Site plans and site location plans are shown in **Figure 1 & 2**. **Annex 2** shows photo illustration of the subproject sites.

C. Implementation Schedule

20. Preliminary design of the subproject has been done by the Design and Supervision Consultant (DSC) team and will be finalized during detailed design stage. It is estimated that construction period will cover 24months.

21. The final detailed implementation schedule will be provided in the updated IEE once the detailed design phase is completed.

Figure 1: Index Map of Manali showing the proposed Subproject site (HPTDB/14/1)

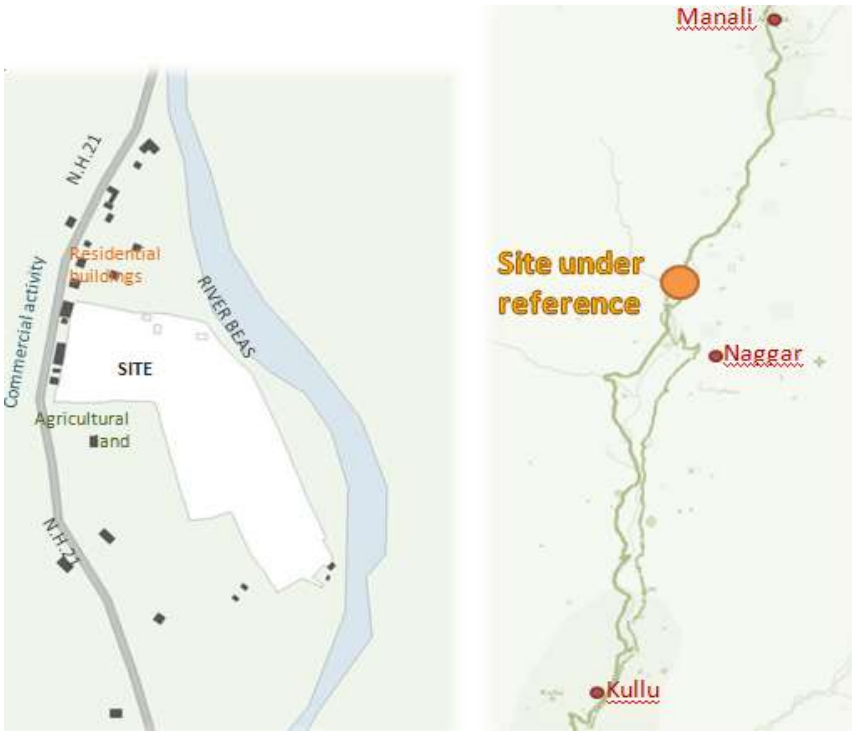
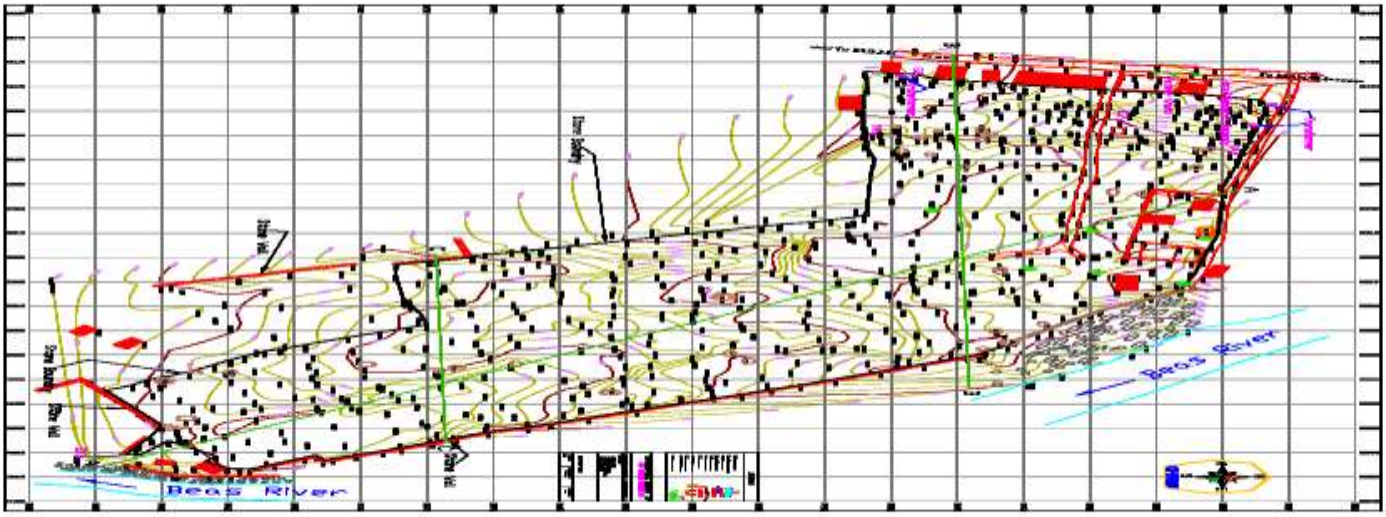


Figure 2: Proposed site plan & site location plan for sub project components at Badagran near Manali (HPTDB/14/1)



III. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

A. ADB Policy

22. ADB requires the consideration of environmental issues in all aspects of ADB's operations, and the requirements for environmental assessment are described in ADB SPS, 2009. This states that ADB requires environmental assessment of all project loans, program loans, sector loans, sector development program loans, and loans involving financial intermediaries, and private sector loans.

23. **Screening and Categorization.** The nature of the environmental assessment required for a project depends on the significance of its environmental impacts, which are related to the type and location of the project, the sensitivity, scale, nature and magnitude of its potential impacts, and the availability of cost-effective mitigation measures. Projects are screened for their expected environmental impact and are assigned to one of the following four categories:

- **Category A.** Projects could have significant adverse environmental impacts. An EIA is required to address significant impacts.
- **Category B.** Projects could have some adverse environmental impacts, but of lesser degree or significance than those in category A. An IEE is required to determine whether significant environmental impacts warranting an EIA are likely. If an EIA is not needed, the IEE is regarded as the final environmental assessment report.
- **Category C.** Projects are unlikely to have adverse environmental impacts. No EIA or IEE is required, although environmental implications are reviewed.
- **Category 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.

24. **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.

25. **Public Disclosure.** The IEE will be put in an accessible place (e.g., local government offices, libraries, community cum tourist reception centres, 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:

- For environmental category A projects, a draft EIA report at least 120 days before Board consideration;
- Final or updated EIA and/or IEE upon receipt; and
- Environmental monitoring reports submitted by the Project Management Unit (PMU) during project implementation upon receipt.

B. National and State Laws

26. Implementation of the subproject will be governed by the national and State of Himachal

Pradesh environmental acts, rules, regulations, and standards. These regulations impose restrictions on activities to minimize/mitigate likely impacts on the environment. It is the responsibility of the project executing and implementing agencies to ensure subprojects are consistent with the legal framework, whether national, state or municipal/local. Compliance is required in all stages of the subproject including design, construction, and operation and maintenance.

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

Table 1: Environmental Regulatory Compliance

Sub-Project	Applicability of Acts/Guidelines	Compliance Criteria
Creation of Centre for Traditional Arts & Crafts-Badagran, Near Manali	The Environment Protection Act, 1986under EIA notification, 2006 (& its subsequent amendments in 2009) provides for categorization of projects into category A & B, based on extent of impacts.	Project area does not fall under the ambit of the EIA Notification, 2006. Hence, no clearance is required for this project. The norms specified under the Act, 1986 shall be complied during construction activities.
	ADB's Safeguard Policy Statement 2009	Categorization of sub-project components into A, B or C, developing required level of environmental assessment for each component. The sub-project categorized as B and IEE prepared
	The Wildlife Conservation Act, 1972, amended in 2003 and 2006, provides for protection and management of Protected Areas.	Not applicable since no wildlife or protected area within 10 km radius.
	The Forest Conservation Act, 1980 and its subsequent amendments necessitate obtaining clearance from the MoEF for diversion of forest land for non-forest purposes.	The project site is 20 Km from Manali Town and the vacant land of 102.5 bigas belongs to the Tourism Dept.; H.P. Forest Clearance is not required.
	Water (Prevention and control of pollution) Act, 1974 and; Air (prevention and control of pollution)	Consent for Establishment (CFE) & Consent for Operation (CFO) from the HP PCB for setting up of diesel generators (if any) and batching plant to be obtained by the

[1] All projects or activities included as Category 'A' in the Schedule, including expansion and modernization of existing projects or activities and change in product mix, will require prior environmental clearance from the Central Government in the Ministry of Environment and Forests (MoEF) on the recommendations of an Expert Appraisal Committee (EAC) to be constituted by the Central Government for the purposes of this notification; All projects or activities included as Category 'B' in the Schedule, including expansion and modernization of existing projects or activities as specified in sub paragraph (ii) of paragraph 2, or change in product mix as specified in sub paragraph (iii) of paragraph 2, but excluding those which fulfil the General Conditions (GC) stipulated in the Schedule, *will* require prior environmental clearance from the State/Union territory Environment Impact Assessment Authority (SEIAA). The SEIAA shall base its decision on the recommendations of a State or Union territory level Expert Appraisal Committee (SEAC) as to be constituted for in this notification. In addition, General Condition (GC) of the notification specifies that any project or activity specified in Category 'B' will be treated as Category A, if located in whole or in part within 10 km from the boundary of: (i) Protected Areas notified under the Wild Life Protection) Act, 1972, (ii) Critically Polluted areas as notified by the Central Pollution Control Board from time to time, (iii) Notified Eco-sensitive areas, (iv) inter-State boundaries and international boundaries.

Sub-Project	Applicability of Acts/Guidelines	Compliance Criteria
	Act, 1981	Contractor, prior to commencement of construction works at site. Apart from this CFE & CFO is also required for stone crushers and quarry sites if exclusively setting up for this project, otherwise it has to be ensured that the construction materials is to be procured from approved quarry sites and stone crushers.
	The Ancient Monuments and Archaeological Sites and Remains Act, 1958, and the rules, 1959 provide guidance for carrying out activities, including conservation, construction and reuse in and around the protected monuments.	Not applicable as neither any such monuments or Archaeological sites present at the site nor the proposed land is under influence of such any issue.
	The Himachal Pradesh Ancient and Historical Monuments and Archaeological Sites and Remains Act, 1976;	Not applicable, however, during construction if any remains find, will bring into Govt. notice.
	Himachal Pradesh Ground Water (Regulation and Control of Development & Management) Act, 2005	Shall be adopted in case of use of GW
	Himachal Pradesh Policy on Ecotourism	Shall be adopted
	Himachal Pradesh Participatory Forest Management Regulations, 2001	Though not applicable to the project directly but shall be propagated in case of any raw material for crafts used by the local community.
	The Himachal Pradesh Non-biodegradable Garbage (Control) Act, 1995	Shall be adopted.
	The Himachal Pradesh Town and Country Planning Act, 1977	Shall be adopted.

28. The proposed subproject does not require statutory clearances from MoEF. All no objection certificates, CFEs and other clearances will be obtained prior to award of contract.

IV. DESCRIPTION OF THE ENVIRONMENT

A. Physical Environment

29. **Climate.** The climate in Manali is predominantly cold during winters and moderately cool during summers. The temperatures range from 4 °C (39 °F) to 20 °C (68 °F) over the year. The average temperature during summer is between 04 °C (39 °F) and 15 °C (59 °F), and between −15 °C (5 °F) and 05 °C (41 °F) in the winter.

30. Monthly precipitation varies between 31 mm (1.2 in) in November to 217 mm (8.5 in) in July. In average, some 45 mm (1.8 in) of precipitation is received during winter and spring months, increasing to some 115 mm (4.5 in) in summer as the monsoon approaches. The average total annual precipitation is 1,363 mm (53.7 in). Snowfall often takes place between November end to early February. The weather in Manali is not stable

31. **Geology and Soil.**The geological formation in the area is the fundamental unit of litho

stratigraphy. A formation consists of a certain number of rock strata that have a comparable lithology, facies or other similar properties. Formations are not defined on the thickness of the rock strata they consist of and the thickness of different formations can therefore vary widely.

32. The soil on the spurs is alluvial and favourable for agriculture and horticulture whereas the river-side slopes are mostly studded with large and medium sized boulders in loose and vulnerable soil strata. These conditions reduce the bearing capacity of soil.

21. **Land Use.**The total area of the land is 1152 hectares and the bifurcation of the land is as under:

Table 1: Land Use Patten in Manali (Hectares)

Land use	**Nagar Panchayat**	**Old Manali**	**Vashisht**	**Aleo**	**Prini-Shuru**	**Suinsa-Rangri**	**Area in hectare**
Residential	21.25	15.25	16.001	2200	16.50	24.00	115.00
Commercial	4.00	0.50	0.75	1.75	0.50	0.20	7.70
Tourism/Industries	6.75	1.25	1.75	2.50	2.50	3.00	17.75
Public &Semi-Public	6.37	0.75	12.00	9.50	1.00	2.00	31.62
Parks & Open	70.62	3.00	6.87	18.63	16.87	1.87	117.86
Traffic &	7.12	0.58	3.15	3.11	2.35	2.85	19.16
Agriculture	50.31	82.04	149.61	135.54	158.58	162.83	738.91
Total:	**166.42**	**103.37**	**190.13**	**193.03**	**198.30**	**196.75**	**1048.00**
Water Bodies in all Sectors							104.00
Grand Total							**1152.00**

33. **Water bodies.**Surface water is sources of water that are useful or potentially useful. Uses of water include agricultural, industrial, household, and environmental activities. The majority of human uses require fresh water. 97% of the water on the Earth is salt water and only 3% is fresh water; slightly over two thirds of this is frozen in glaciers and polar ice caps. The remaining unfrozen fresh water is found mainly as groundwater, with only a small fraction present above ground or in the air.

34. Proposed site is situated near the Beas River, which flows through the year.

35. There is no water quality monitoring station in Manali. The quality of the rivers is expected to be good as water levels and flows are ranging from constant to turbulent. During several field visits for the preparation of this IEE, it was no observed dumping of solid wastes in the rivers. Water quality monitoring will be done for River Beas before construction and during implementation periods as per EMP.

36. **Ambient Air and Noise Quality.** Air quality is monitored in two stations at Nehru Park Manali and Hadimba Road Manali. The range monthly average values of SO2, NOX and RSPM monitored from April 2012 to March 2013 are found to be mostly within the maximum permissible limits. The results are shown in **Table-4** below:

Table- 4: Ambient Air Quality of Manali

Month	Station: Nehru Park Manali (C)						Station: Bus stand (Residential)Monthly Average					
	SO_2 µg/ m^3		NO_X µg/ m^3		RSPM µg/ m^3		SO_2 µg/ m^3		NO_X µg/ m^3		RSPM µg/ m^3	
	M.Avg	Peak	M.Avg	Peak	M. Avg	Peak	M. Avg	Peak	M.Avg	Peak	M. Avg	Peak
April 2012	2.0	2.0	13.3	29.7	178.0	448.4	2.0	2.0	6.2	17.1	67.6	121.8
May 2012	3.7	7.9	19.8	34.7	171.6	314.9	4.5	14.1	10.3	30.3	66.9	130.5
June 2012	5.9	25.5	21.3	52.7	163.0	295.6	5.8	25.8	15.1	74.2	109.0	219.5
July 2012	10.6	21.7	11.7	25.0	131.3	183.8	10.4	19.3	9.6	28.5	64.2	145.7
August 2012	4.8	15.3	9.1	28.7	31.7	80.0	6.2	21.2	8.0	58.3	17.9	45.8
Sept. 2012	4.3	15.6	9.3	19.9	32.2	104.3	3.4	11.7	7.2	19.4	21.3	77.2
October 2012	2.3	8.3	13.4	46.5	86.6	321.2	2.4	6.2	8.4	26.3	38.3	77.4
November 2012	3.1	11.5	15.9	33.1	94.4	226.6	3.4	15.4	8.2	38.2	54.2	162.0
December 2012	2.2	10.4	14.5	41.5	97.3	251.4	2.6	6.2	12.9	33.0	46.7	102.7
January 2013	2.2	5.4	11.2	28.1	64.7	137.3	2.6	8.0	8.3	48.6	59.2	152.6
February 2013	2.1	4.3	12.5	25.8	38.0	90.4	2.3	6.3	10.9	38.4	34.4	94.4
March 2013	2.3	5.9	13.3	31.1	57.4	136.3	2.4	5.6	8.7	21.6	38.4	93.5

Source: Himachal Pradesh Pollution Control Board (2014)

37. The main source of air pollution and increased noise are vehicles as Manali is along national highways. Ambient air quality and noise levels in the subproject Package No. HPTDB/14/1 site, are expected to be within Himachal Pradesh State Pollution Control Board standard. Air and noise quality monitoring will be done at proposed site before construction and during implementation periods as per EMP.

B. Ecological Environment

38. Manali is adorned with meadows and wooded hill sides laced with pine, fir, poplar, oak and deodar. All these contribute in making the serene hill station even more romantic.

39. **Flora and fauna.** Deodar (Cedrus deodara), Oak (Quercusincana), Aesculus (Aesculus indica), Fir (Abiespindrow), Spruce (Picessmithiana), Bras (Rhododendron arborium), Fig (Ficus spp), Walnut (Juglansregia), Poplar (Populusciliata), Pine (Pinus roxburghii) are some of the well-known varieties here.

40. Barking deer, Musk deer, Snow leopard, Black bear, Brown bear, Himalayan ibex, Porcupine, Eurasian Sparrowhawk, Himalayan Griffon Vulture, Black Stork Western Tragopan, Koklas, and Kingfisher are the popular residents of the place.

41. **Protected areas.** There are no protected areas (forests, wildlife sanctuaries, wetlands, mangroves, or estuaries) in or near the subproject sites. There is no wildlife sanctuary within the premises of 10 km radius of the subproject sites.

C. Socio Cultural and Economic Environment

42. **Demographic Profile.** Manali is a small town; as of the 2011 census of India, its population was 8,096[1]. In 2001, Manali had an official population of 6,265. Males constituted 64% of the population and females 36%. Manali had an average literacy rate of 74%, higher than the national average of 59.5%; male literacy was 80%& female literacy was 63%. 9% of population was under 6 years of age.

43. **Economy and Agriculture.** Employment is largely driven by the Government and tourism. Education and horticultural produce processing, comprise most of the remainder. The area at the moment is served by a Government Community Health Centre and two Hospitals namely Mission and Rawat in private sector. Banking, Police, Post Office and Communication services are available in the town serving resident as well floating tourist population of the town.

44. The British introduced apple trees and trout, the first apple orchard was set up by Britishers near patlikulh which were earlier not native to Manali flora and fauna. It is said that when apple trees were first planted the fruits were so plentiful that often branches, unable to bear the weight, would collapse. To this day, apple along with plum and pear remains the best source of income for the majority of its inhabitants.

45. **Industry.** Tourism and agriculture are the mainstays of the district economy. Agriculture is the major activity of local people in the Manali. Whereas 40.96% workers are engaged in agriculture and allied activities, business and service sector account for 29.65% and 29.39% persons, respectively. There are about 22000 to 22,000 weavers and the traditional crafts are shawls (made up of local wool, Australian Merino Wool, pashmina wool, angora wool), handlooms (including muffler, Numdha, Gudma etc.), Kullu Caps, Patti (for coats, caps and Pyjamas), cuisine etc. The total no. of registered industrial unit is 1849 and total no. of registered medium and large unit is 2 (as per the source DIC Kullu).

46. **Physical Infrastructure and Services.** The following services are availed in the Manali town:

- The department of Irrigation and Public Health (IPH) is implementing a sewerage scheme for the right bank of river Beas and cater Nagar Panchayat and other areas of the town.
- For the electricity distribution point of view the Manali Division of Himachal Pradesh State Electricity Board (HPSEB) is divided into two Zones only – Zone 1 is the area of left bank and Zone 2 is the area of the right bank of river Beas.
- Manali town is being served by continuous gravity water supply system fed on perennial surface water supply source Manalsu, a tributary of river Beas just passing through the town.
- The solid waste is handled by a mechanized system by the Nagar Panchayat and the final treatment is given by I&PH department.
- There are 15 Govt. and semi-Govt. offices located in Manali town.

V. ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

47. The assessment of environmental impacts for the proposed interventions under this package has been carried out during the preparation of the SAR. An environmental assessment using ADB's Rapid Environmental Assessment (REA) checklist for urban development (**Annex 1**) was conducted. The following are categories of impacts assessed:

- **Location impacts.** Impacts associated with site selection, including impacts on environment and resettlement or livelihood related impacts on communities
- **Design impacts.** Impacts arising from project design, including the technology used, scale of operations etc.
- **Construction impacts.** Impacts resulting from construction activities including site clearance, earthworks, civil works, etc.

- **O&M impacts.** Impacts associated with the operation and maintenance of the infrastructure built in the project.

48. **Land Acquisition and Resettlement Impacts.** The sub-project does not envisage any diversion of forest land for which all statutory and necessary formalities is required. The project site is about 20 Km from Manali Town which is a popular tourist destination. The area is administered under the Gram Panchayat. The vacant land of 102.5 bigas belongs to the Tourism Dept., H.P.

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

- Incorporation of adequate drainage provisions
- Adoption of design compatible with the natural environment and suitable selection of materials to enhance the aesthetic appeal and blend with the natural surroundings.
- Straight lines and simple geometry in the proposed landscape and architectural features.
- Use of subtle colours and simple ornamentation in the structures.
- Natural tree species in the proposed landscape.
- Use of local stone in the proposed walkways and built structures thus maintaining a rustic architectural character

50. The results of interventions are unobtrusive and will be integral part of the ambience of the site. The physical components have been proposed with minimalist design treatment emphasising use of local materials (wood, stone, etc.) as defined in the management plan of the area.

A. Assessment of Environmental Impacts

51. **Determination of Area of Influence.** The primary impact for subproject Package No. HPTDB/14/1is the proposed site available for the construction of project components.

52. In the case of this subproject Package No. HPTDB/14/1 the components will involve straight forward construction and operation, and impacts will be mainly localized, short in duration and expected only during construction period.

B. Pre-construction Impacts and Mitigation Measures

53. **Consents, permits, clearances, no objection certificate (NOC), etc.** All the consents, permits, clearances and NOCs shall be obtained during detailed design and before start of works. Failure to obtain necessary consents, permits, NOCs, etc. can result to design revisions and/or stoppage of works.

54. **Mitigation measures.** The following will be conducted during detailed design phase:

- Obtain all necessary consents, permits, clearance, NOCs, etc. prior to start of civil works.
- Acknowledge in writing and provide report on compliance all obtained consents, permits, clearance, NOCs, etc.
- Include in detailed design drawings and documents all conditions and provisions if necessary

55. **Erosion control.** Most of the impacts will occur due to excavation and earth movements during construction phase. Prior to commencement of civil works, the contractor will be required to:

- Develop an erosion control and re-vegetation plan to minimize soil loss and reduce sedimentation to protect water quality.
- Minimize the potential for erosion by balancing cuts and fills to the extent feasible.
- Identify and avoid areas with unstable slopes and local factors that can cause slope instability (groundwater conditions, precipitation, seismic activity, slope angles, and geologic structure).
- Minimize the amount of land disturbed as much as possible. Use existing roads, disturbed areas, and borrow pits and quarries when possible. Minimize vegetation removal. Stage construction to limit the exposed area at any one time.

56. **Utilities.** Interruption of services (water supply, toilets, bathing areas, etc.) will be scheduled and intermittently related to localized construction activities. To mitigate impacts, PIU/DSC will:

- Identify and include locations and operators of these utilities in the detailed design documents to prevent unnecessary disruption of services during the construction phase.
- Require contractors to prepare a contingency plan to include actions to be done in case of unintentional interruption of services.
- Require contractor to obtain from the PIU and/or DSC the list of affected utilities and operators;
- If relocations are necessary, contractor along with PIU will coordinate with the providers to relocate the utility.

57. **Social and Cultural Resources.** There is a risk that any work involving ground disturbance can uncover and damage archaeological and historical remains. Although no such sites have been identified. For this subproject, excavation will occur in and around existing sites, RoWs and specified government land so no risk is foreseen to these structures. Nevertheless, the PIU/DSC will:

- Consult Archaeological Survey of India and/or State Department of Archaeology to obtain an expert assessment of the archaeological potential of the site.
- Consider alternatives if the site is found to be of medium or high risk.
- Include state and local archaeological, cultural and historical authorities, and interest groups in consultation forums as project stakeholders so that their expertise can be made available.
- Develop a protocol for use by the construction contractors in conducting any excavation work, to ensure that any chance finds are recognized and measures are taken to ensure they are protected and conserved.

58. **Sites for construction work camps and areas for stockpile, storage and disposal.** The priority is to locate these near the subproject sites. The contractor will be required to meet the following criteria for the sites:

- Will not promote instability and result in destruction of property, vegetation, irrigation, and drinking water supply systems, etc.
- 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 in to nearby water course or any nearby sensitive areas which may pollute surface water or can inconvenience the community.
- The construction camp, storage of fuel and lubricants should be avoided at the river bank. Any construction camp site will be finalized in consultation with DSC and PIU.

59. **Sources of construction materials.** Significant amounts of gravel, sand, and cement will be required for this subproject. Extraction of materials can disrupt natural land contours and vegetation resulting in accelerated erosion, disturbance in natural drainage patterns, ponding and water logging, and water pollution. The contractor will be required to:

(i.) Use quarry sites and sources permitted by government.
(ii.) Verify suitability of all material sources and obtain approval from PIU/DSC.
(iii.) If additional quarries are required after construction has started, obtain written approval from PIU/DSC.
(iv.) Submit to PIU/DSC on a monthly basis documentation of sources of materials.

60. It will be the construction contractor's responsibility to verify the suitability of all material sources and to submit NOCs/approvals of the quarry sites and obtain the approval of PIU/DSC. If additional quarries are required after construction is started, then the contractor should obtain written approval of PIU.

61. **Access.** Hauling of construction materials and operation of equipment on-site can cause traffic problems and conflicts in ROWs. Construction traffic will access most work areas from the existing roads therefore potential impacts will be of short-duration, localized and can be mitigated. The contractor will need to adopt the following mitigation measures:

(i.) Plan transportation routes so that heavy vehicles do not use narrow local roads, except in the immediate vicinity of delivery sites.
(ii.) Schedule transport and hauling activities during non-peak hours.
(iii.) Locate entry and exit points in areas where there is low potential for traffic congestion.
(iv.) Keep the site free from all unnecessary obstructions.
(v.) Drive vehicles in a considerate manner.
(vi.) 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.
(vii.) Notify affected sensitive receptors by providing sign boards with information about the nature and duration of construction works and contact numbers for concerns/complaints.
(viii.) Provide free access to households and businesses/shops along the ROWs during the construction phase.

62. Summary of pre-construction activities is presented in **Table 5.** The responsibilities, monitoring program and costs are provided in detailed in the EMP. The contractor is required to update the information during detailed design phase. Sample waste/spoils management plan, traffic management plan, etc. are attached as **Annexes 3 & 4**. Site-specific plans will be developed as per detailed design.

Table 5: Summary of Pre-Construction Mitigation Measures

Parameters	Mitigation Measures
Consents, permits, clearances, no objection certificate (NOC), etc.	• Obtain all necessary consents, permits, clearance, NOCs, etc. prior to start of civil works. • Acknowledge in writing and provide report on compliance all obtained consents, permits, clearance, NOCs, etc. • Include in detailed design drawings and documents all conditions and provisions if necessary
Erosion control	• Develop an erosion control and re-vegetation plan to minimize soil loss and reduce sedimentation to protect water quality. • Minimize the potential for erosion by balancing cuts and fills to the extent feasible. • Identify and avoid areas with unstable slopes and local factors that can cause slope instability (groundwater conditions, precipitation, seismic activity, slope angles, and geologic structure). • Minimize the amount of land disturbed as much as possible. Use existing roads, disturbed areas, and borrow pits and quarries when possible. Minimize vegetation removal. Stage construction to limit the exposed area at any one time.
Utilities	• Identify and include locations and operators of these utilities in the detailed design documents to prevent unnecessary disruption of services during the construction phase. • Require contractors to prepare a contingency plan to include actions to be done in case of unintentional interruption of services. • Obtain from the PIU and/or DSC the list of affected utilities and operators; • Prepare a contingency plan to include actions to be done in case of unintentional interruption of services. • If relocations are necessary, contractor will coordinate with the providers to relocate the utility.
Social and Cultural Resources	• Consult Archaeological Survey of India or State Department of Archaeology to obtain an expert assessment of the archaeological potential of the site. • Consider alternatives if the site is found to be of medium or high risk. • Include state and local archaeological, cultural and historical authorities, and interest groups in consultation forums as project stakeholders so that their expertise can be made available. • Develop a protocol for use by the construction contractors in conducting any excavation work, to ensure that any chance finds are recognized and measures are taken to ensure they are protected and conserved.
Sites for construction work camps, areas for stockpile, storage and disposal	• Will not promote instability and result in destruction of property, vegetation, irrigation, and drinking water supply systems, etc. • 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 inconvenience the community. • Disposal will not be allowed in nearby river to check water pollution • The construction camp, storage of fuel and lubricants should be avoided at the

Parameters	Mitigation Measures
	river bank. The construction camp site for intake well should be finalized in consultation with DSC and PIU.
Sources of construction materials	• Use quarry sites and sources permitted by government. • Verify suitability of all material sources and obtain approval from PIU/DSC. • If additional quarries are required after construction has started, obtain written approval from PIU/DSC. • Submit to PIU/DSC on a monthly basis documentation of sources of materials.
Access	• 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 congestion. • Keep the site free from all unnecessary obstructions. • Drive vehicles in a considerate manner. • Coordinate with the Traffic Police Department for temporary road diversions and for provision of traffic aids if transportation activities cannot be avoided during peak hours. • Notify affected sensitive receptors by providing sign boards with information about the nature and duration of construction works and contact numbers for concerns/complaints. • Provide free access to households and businesses/shops along ROWs during the construction phase.

C. Anticipated Construction Impacts and Mitigation Measures

63. **Construction Schedule and Method.** As per preliminary design, construction activities will cover 24months. The exact implementation schedule will be updated during detailed design phase and will be reflected in this IEE.

64. The infrastructures will be constructed manually according to design specifications. Excavations and trenches, if required, will be dug by small backhoe diggers supplemented by manual digging where necessary. Excavated soil will be placed nearby. Excavated materials will be reused to the maximum extent possible. Materials will be brought to site by trucks and will be stored on unused areas within sites and nearby vacant areas. Any excavated road will be reinstated. The working hours will be 8 hours daily, the total duration of each stage depends on the soil condition and other local features. Night works may be considered in commercial areas and high day-time traffic.

65. There is sufficient space for a staging area, construction equipment, and stockpiling of materials. However, the contractor will need to remove all construction and demolition wastes on a daily basis.

66. Although construction of these project components involves quite simple techniques of civil work, the invasive nature of excavation and the subproject sites in built-up areas where there are a variety of human activities, will result to impacts to the environment and sensitive receptors such as residents, businesses, and the community in general. These anticipated impacts are short-term, site-specific and within relatively small areas.

67. **Erosion Hazards.** The sites is having uneven terrain therefore risk of erosion is very high but limited during construction activities and expected to have negative impact on the drainage and hydrology of the area. Runoff will produce a highly variable discharge in terms of

volume and quality. Therefore the contractor will be required to:

- Save topsoil removed during excavation and use to reclaim disturbed areas, as soon as it is possible to do so.
- Use dust abatement such as water spraying to minimize windblown erosion.
- Provide temporary stabilization of disturbed/excavated areas that are not actively under construction.
- Apply erosion controls (e.g., silt traps) along the drainage leading to the water bodies.
- Maintain vegetative cover within unused land to prevent erosion and periodically monitor the area to assess erosion.
- 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.

68. **Impacts on Water Quality.** Excavated materials may end up in drainages and water bodies adjacent to the subproject sites, particularly during monsoon season. Other risks of water pollution may be caused by: (i) poorly managed construction sediments, wastes and hazardous substances; and (ii) poor sanitation practices of construction workers. The contractor will be required to:

- Schedule civil works during non-monsoon season, to the maximum extent possible.
- Ensure drainages and water bodies within the construction zones are kept free of obstructions.
- Keep loose soil material and stockpiles out of drains, flow-lines and watercourses.
- Avoid stockpiling of excavated and construction materials (sand, gravel, cement, etc.) unless covered by tarpaulins or plastic sheets.
- Re-use/utilize, to maximum extent possible, excavated materials.
- Dispose any residuals at identified disposal site (PIU/DSC will identify approved sites).
- Dispose waste oil and lubricants generated as per provisions of Hazardous Waste (Management and Handling) Rules, 1989.
- Develop a spill prevention and containment plan, educate workers about the plan, and have the necessary materials on site prior to and during construction.
- Refuel equipment within the designated refuelling containment area away from drainages, *nallahs*, or any water body.
- Inspect all vehicles daily for fluid leaks before leaving the vehicle staging area, and repair any leaks before the vehicle resumes operation.

69. **Impacts on Air Quality.** There is potential for increased dust particularly during summer/dry season due to stockpiling of excavated materials. Emissions from vehicles transporting workers, construction materials and debris/materials to be disposed may cause increased in air pollutants within the construction zone. These are inherent impacts which are site-specific, low magnitude, short in duration and can be easily mitigated. The contractor will be required to:

- Conduct regular water spraying on earth piles, trenches and sand piles.
- Conduct regular visual inspection along alignments and construction zones to ensure no excessive dust emissions.
- Spreading crushed gravel over backfilled surfaces if re-surfacing of disturbed areas cannot be done immediately.

- Maintain construction vehicles and obtain “pollution under control” certificate from HPSPCB.
- Obtain CFE and CFO for hot mix plants, crushers, diesel generators, etc., if to be used in the project.

70. **Noise and Vibration Impacts.** Noise and vibration-emitting construction activities include earthworks, rock crushing, concrete mixing, movement and operation of construction vehicles and equipment, and loading and unloading of coarse aggregates. The significance of noise and vibration impacts will be high in areas where noise-sensitive institutions such as health care and educational facilities are situated. These impacts will be temporary, short-term, intermittent, and expected to be in the range of 80 to 100 dB (A) as per **Table 6**(typical noise levels of principal construction equipment).

Table 6: Typical Noise Levels of Principal Construction Equipment

CLEARING		STRUCTURE CONSTRUCTION	
Bulldozer	80	Crane	75-77
Front end loader	72-84	Welding generator	71-82
Jack hammer	81-98	Concrete mixer	74-88
Crane with ball	75-87	Concrete pump	81-84
		Concrete vibrator	76
EXCAVATION & EARTH MOVING		Air compressor	74-87
Bulldozer	80	Pneumatic tools	81-98
Backhoe	72-93	Bulldozer	80
Front end loader	72-84	Cement and dump trucks	83-94
Dump truck	83-94	Front end loader	72-84
Jack hammer	81-98	Dump truck	83-94
Scraper	80-93	Paver	86-88
GRADING AND COMPACTING		LANDSCAPING AND CLEAN-UP	
Grader	80-93	Bulldozer	80
Roller	73-75	Backhoe	72-93
		Truck	83-94
PAVING		Front end loader	72-84
Paver	86-88	Dump truck	83-94
Truck	83-94	Paver	86-88
Tamper	74-77	Dump truck	83-94

Source: U.S. Environmental Protection Agency. Noise from Construction Equipment and Operations. Building Equipment and Home Appliances. NJID. 300.1. December 31. 1971

71. The contractor will be required to:

- Limit construction activities in temple complexes and other important sites to daytime only.
- Plan activities in consultation with the PIU/DSC so that activities with the greatest potential to generate noise are conducted during periods of the day which will result in least disturbance.
- Minimize noise from construction equipment by using vehicle silencers and fitting jackhammers with noise-reducing mufflers.
- Avoid loud random noise from sirens, air compression, etc.
- Require drivers that horns not be used unless it is necessary to warn other road users or animals of the vehicle’s approach.
- If specific noise complaints are received during construction, the contractor may be required to implement one or more of the following noise mitigation measures, as directed by the project manager:

a) Locate stationary construction equipment as far from nearby noise-sensitive properties as possible.
b) Shut off idling equipment.
c) Reschedule construction operations to avoid periods of noise annoyance identified in the complaint.
d) 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.2
- Ensure vehicles comply with Government of India noise limits for vehicles. The test method to be followed shall be IS: 3028-1998.

72. **Impacts on Flora and Fauna.** As per preliminary design, tree-cutting is not required. This will be reassessed during detailed design phase. There are no protected areas in the direct and indirect impact zones and no diverse ecological biodiversity as vegetation and animals found in the construction zones are common in built up/urban areas. The contractor will be required to:

- Conduct site induction and environmental awareness.
- Limit activities within the work area.
- Replant trees in the area using minimum ratio of 2 new trees for every 1 tree cut, if any. Replacement species must be approved by District Forest Department.

73. **Impacts on Physical Cultural Resources.** 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. 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 DSC 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.

74. **Impact due to Waste Generation.** Construction activities will produce excess excavated soils, excess construction materials, and solid wastes (such as removed concrete, wood, trees and plants, packaging materials, empty containers, oils, lubricants, and other similar items). These impacts are negative but short-term and reversible by mitigation measures. The contractor will need to adopt the following mitigation measures:

[2] Day time shall mean from 6.00 am to 10.00 pm. Silence zone is an area comprising not less than 100 meters around hospitals, educational institutions, courts, religious places or any other area which is declared as such by HPSPCB. Mixed categories of areas may be declared as one of the above mentioned categories by HPSPCB.

- Prepare and implement a waste management plan. Manage solid waste according to the following hierarchy: reuse, recycling and disposal. Include in waste management plan designated/approved disposal areas.
- Coordinate with Local Municipal Authorities 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.

75. **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. Potential impacts are negative and long-term but reversible by mitigation measures. Overall, the contractor should comply with IFC EHS Guidelines on Occupational Health and Safety (this can be downloaded from http://www1.ifc.org/wps/wcm/connect/9aef2880488559a983acd36a6515bb18/2%2BOccupational%2BHealth%2Band%2BSafety.pdf?MOD=AJPERES). The contractor will be required to:

- Disallow worker exposure to noise level greater than 85 dBA 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. 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 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.
- 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.
- 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.

76. **Impacts on Socio-Economic Activities.** Manpower will be required during the 24months construction phase. This can help generate contractual employment and increase in local revenue. Thus potential impact is positive and long-term. As per preliminary 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 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 labour force, or to the maximum extent, local persons within the 2-km immediate area if manpower is available.

77. **Summary of Mitigation Measures during Construction. Table7** provides summary of mitigation measures to be considered by the contractor during construction phase. The detailed mitigation measures, environmental monitoring and reporting requirements, emergency response procedures, related implementation arrangements, capacity development and training measures, implementation schedule, cost estimates, and performance indicators are provided in the EMP

Table 7: Summary of Mitigation Measures during Construction Phase

Potential Impact	Mitigation Measures
Erosion hazards	• Save topsoil removed during excavation and use to reclaim disturbed areas, as soon as it is possible to do so. • Use dust abatement such as water spraying to minimize windblown erosion. • Provide temporary stabilization of disturbed/excavated areas that are not actively under construction. • Apply erosion controls (e.g., silt traps) along the drainage leading to the water bodies. • Maintain vegetative cover within road ROWs to prevent erosion and periodically monitor ROWs to assess erosion. • 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.
Impacts on water quality	• Schedule civil works during non-monsoon season, to the maximum extent possible. • Ensure drainages and water bodies within the construction zones are kept free of obstructions. • Keep loose soil material and stockpiles out of drains, flow-lines and watercourses.

Potential Impact	Mitigation Measures
	• Avoid stockpiling of excavated and construction materials (sand, gravel, cement, etc.) unless covered by tarpaulins or plastic sheets. • Re-use/utilize, to maximum extent possible, excavated materials. • Dispose any residuals at identified disposal site (PIU/DSC will identify approved sites). • Dispose waste oil and lubricants generated as per provisions of Hazardous Waste (Management and Handling) Rules, 1989. • Develop a spill prevention and containment plan, educate workers about the plan, and have the necessary materials on site prior to and during construction. • Refuel equipment within the designated refuelling containment area away from drainages, nallahs, or any water body. • Inspect all vehicles daily for fluid leaks before leaving the vehicle staging area, and repair any leaks before the vehicle resumes operation.
Impacts on air quality	• Conduct regular water spraying on earth piles, trenches and sand piles. • Conduct regular visual inspection along alignments and construction zones to ensure no excessive dust emissions. • Spreading crushed gravel over backfilled surfaces if re-surfacing of disturbed ROWs cannot be done immediately. • Maintain construction vehicles and obtain “pollution under control” certificate from HPSPCB. • Obtain CFE and CFO for hot mix plants, crushers, diesel generators, etc., if to be used in the project.
Noise and vibrations impacts	• Limit construction activities in temple complexes and other important sites to daytime only. • Plan activities in consultation with the PIU/DSC so that activities with the greatest potential to generate noise are conducted during periods of the day which will result in least disturbance. • Minimize noise from construction equipment by using vehicle silencers and fitting jackhammers with noise-reducing mufflers. • Avoid loud random noise from sirens, air compression, etc. • Require drivers that horns not be used unless it is necessary to warn other road users or animals of the vehicle’s approach. • If specific noise complaints are received during construction, the contractor may be required to implement one or more of the following noise mitigation measures, as directed by the project manager: (i) locate stationary construction equipment as far from nearby noise-sensitive properties as possible; (ii) shut off idling equipment; (iii) reschedule construction operations to avoid periods of noise annoyance identified in the complaint; and/or (iv) 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.[3] • Ensure vehicles comply with Government of India noise limits for vehicles. The test method to be followed shall be IS: 3028-1998.
Impacts on flora and fauna	• Conduct site induction and environmental awareness. • Limit activities within the work area. • Replant trees in the area using minimum ratio of 2 new trees for every 1 tree cut, if any. Replacement species must be approved by District Forest

[3] Day time shall mean from 6.00 am to 10.00 pm. Silence zone is an area comprising not less than 100 meters around hospitals, educational institutions, courts, religious places or any other area which is declared as such by BSPCB. Mixed categories of areas may be declared as one of the above mentioned categories by BSPCB.

Potential Impact	Mitigation Measures
	Department.
Impacts on physical resources	• 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. 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/DSC 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.
Impacts on waste generation	• Prepare and implement a waste management plan. Manage solid waste according to the following hierarchy: reuse, recycling and disposal. Include in waste management plan designated/approved disposal areas. • Coordinate with Town Municipal Authorities 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.
Impacts on occupational health and safety	• Comply with IFC EHS Guidelines on Occupational Health and Safety • Disallow worker exposure to noise level greater than 85 dBA 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. 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 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.

Potential Impact	Mitigation Measures
	• 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. • 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.
Impacts on socio-economic activities	• Leave space for access between mounds of soil. • 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 labour force, or to the maximum extent, local persons within the 2-km immediate area if manpower is available. • "Mobility Plan" has to be chalked out in consultation with the District Administration prior to start of work.

78. The construction related impacts due to proposed subproject components are generic to construction activities, and are typical of small-scale construction projects. The potential impacts that are associated with construction activities can be mitigated to standard levels without difficulty through incorporation or application of the recommended mitigation measures and procedures.

D. Post-Construction Impacts and Mitigation Measures

79. Site clean-up is necessary after construction activities. 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.
- 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.
- Request in writing from PIU/DSC that construction zones have been restored.

E. Anticipated Operations and Maintenance (O&M) Impacts and Mitigation Measures

80. Impacts on environmental conditions associated with the O&M of the subproject Package No. HPTDB/14/1 components pertain to impacts related to increased tourists in the areas resulting to increased vehicular movement along the roads, increased demands for services, and increased solid waste generation. These impacts can be mitigated by:

- Increased vehicular movement along the roads - speed restrictions, provision of appropriate road signage and well located rest points for pedestrians shall minimize impacts on safety of the people
- Increase demands for services – addressed through the subproject design
- Increase solid waste generation – municipal corporation to put in place solid waste management programs.

VI. INFORMATION DISCLOSURE, CONSULTATION AND PARTICIPATION

A. ADB Disclosure Policy

81. 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 and fishermen from whom information on site facts and prevailing conditions were collected.

82. As per ADB safeguard requirement, public consultation is to be carried out before and after impact identification. Public consultation was therefore carried out twice, once at the time of start of work with the key stakeholders particularly with wild life authorities and NGOs, and secondly to discuss mitigating measures and get concurrence of stakeholders.

B. Process for Consultation followed

83. During project preparation (June to August 2014), consultations have been held with the HP Department of Tourism, tourists of Manali and District administration, District Municipal Administration, local community representatives, various Self-Help-Groups/ Mahila Mandal etc., tourism officers, and tourist guides/photographers regarding issues pertaining to the selection of subprojects and identification of key issues including addressing the current gaps in provision of basic services and improvement of tourist infrastructure. Records of the consultations are provided in **Annex-5.**

C. Plan for continued public participation

84. To ensure continued public participation, stakeholder engagement at main stages of work during the project design and implementation is proposed. A grievance redress cell has been set up within the PIU/DSC 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 sub-project location, information regarding grievance redress mechanism shall be published in local newspapers. This information is also made available on Himachal Tourism website.

85. 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.

86. 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, Manali 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 at Shimla, 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.

VII. GRIEVANCE REDRESS MECHANISM

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

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

A. Composition and Functions of GRC

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

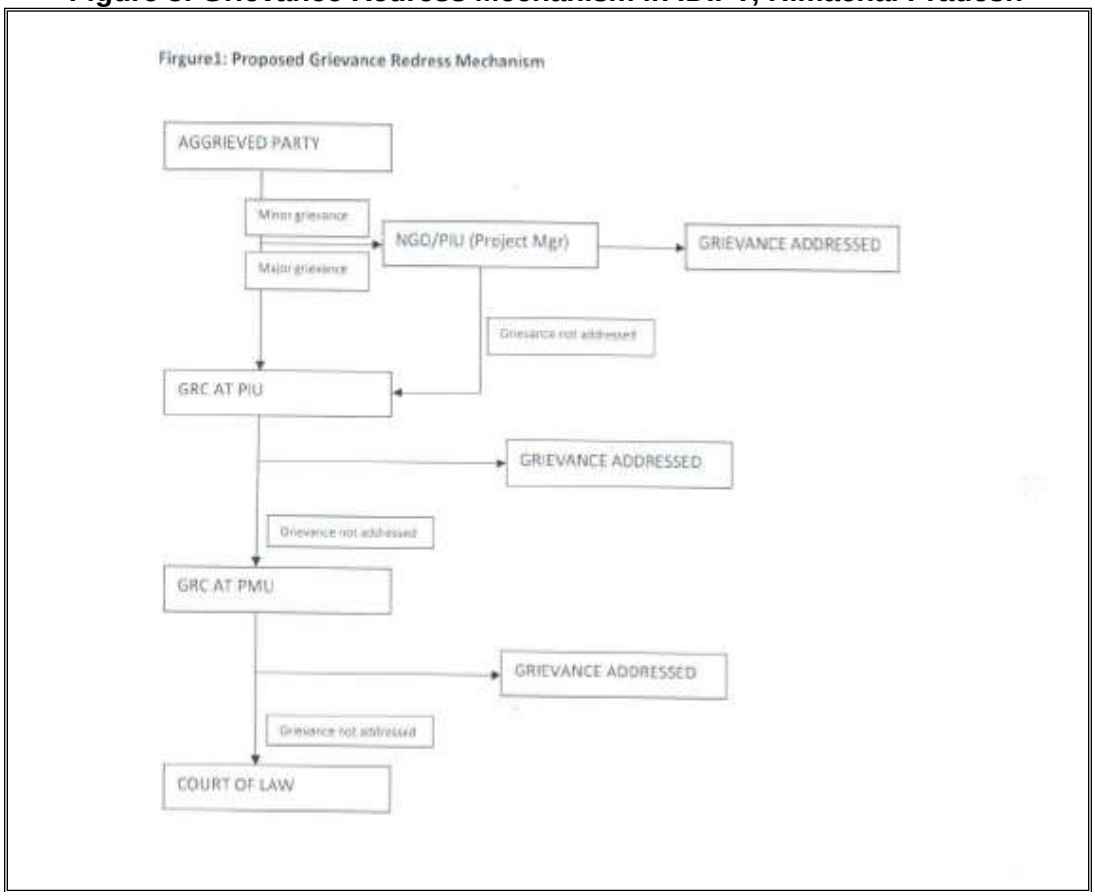
90. **Grievance Redress Committee (GRC) at PIU.** In each PIU there shall be one GRC, which will include Project Manager (PIU), District Tourist Officer of Department of Tourism of Govt. of Himachal Pradesh, Community Development Officer of PIU, nominated representative of District Magistrate and nominated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

91. **GRC within Environmental and Social Management Cell (ESMC) at PMU**. There shall be one GRC in PMU. The matters not resolved by the GRC at PIU level within one month shall come under GRC at PMU. GRC at PMU will include Community Development Expert of PMU, Safeguard Specialist of PMU and Additional Project Director (APD) of PMU. The Committee shall be headed by APD of PMU. This committee shall look the matters, which are referred to and not resolved by GRC at PIU level. If the matter is not resolved by the GRC at PMU level within one month of time, the aggrieved person/party can bring the matter to The Executive Committee/State Level Empowered Committee (SLEC). Sample Grievance Redress Form is attached as **Annex-6**

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

- Web based: A separate corner will be developed at the program website so that public / community/ affected person can register their complaint in the online column.
- Telecom based: A toll free no. Will be issued by the PMU/ PIU so that general public can register their complaint through telephone / mobile phone to the PIU/PMU office.

Figure 3: Grievance Redress Mechanism in IDIPT, Himachal Pradesh



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

VIII. ENVIRONMENTAL MANAGEMENT PLAN

93. 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 (Table 8).

94. 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.

95. 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

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

- Department of Tourist 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. Project Implementing Unit (PIU) is the Implementing Agency (IA) responsible for coordinating procurement and construction of the project.
- The Project Management Consultant (PMC) assists PMU in managing the project including procurement and assures technical quality of design and construction;
- The Design and Supervision Consultant (DSC) will prepare the DPR of the project and will carry out construction supervision during project implementation. Their responsibility will also include EMP implementation supervision;
- A Project Implementation Unit (PIU) will be established in Mandi. This PIU will look into progress and coordination of day to day construction works with the assistance of DSC; and
- The contractor will be responsible for \ execution of all construction works. The contractor will work under the guidance of the PIU Manali and DSC. The environmental related mitigation measures will also be implemented by the contractor.

97. The contractor's conformity with contract procedures and specifications during construction will be carefully monitored by the PIU. Safeguard Specialists are deputed in PMU, PMC and DSC, who will monitor the environmental performance of contractors. Terms of References of Safeguards Specialists are given in boxes below-

Box 1: Terms of Reference of Safeguards Specialist – PMU
• Review the IEE document and ensure adequacy under Safeguard Policy Statement, 2009 and identify any areas for improvement. • Ensure that the project design and specification adequately reflect the IEE, co-ordinate the obtaining of requisite environmental clearances for the project • Monitor construction activities to ensure that identified and appropriate control measures are effective and in compliance with the IEE and advise PIU for compliance with statutory requirements. • Develop training programme for the PMU/PIUs staff, the contractors and others involved in the project implementation, in collaboration with the Environmental Specialist of the PMC and DSC • Review and approve the Contractor's Implementation Plan for the environmental measures, as per IEE. • Liaise with the Contractors and Consultants on the implementation of the Environmental

Box 1: Terms of Reference of Safeguards Specialist – PMU

management measures proposed in the IEE

- Liaise with the various Government agencies on environmental and other regulatory matters
- Continuously interact with the NGOs and Community groups to be involved in the project
- Establish dialogue with the affected communities and ensure that the environmental concerns and suggestions are incorporated and implemented in the project.
- Review the environmental performance of the project through an assessment of the periodic environmental monitoring reports submitted by the DSC; provide a summary of the same to the Project Director, and initiate necessary follow-up actions
- Provide support and assistance to the Government Agencies and the Asian Development Bank to supervise the implementation of the IEE during the construction as well as operation stage of the project
- Document the good practices in the project on incorporation and integration of environmental issues into engineering design and on implementing measures in the construction, and dissemination of the same

Box 2: Terms of Reference of Safeguards Specialist (Environment) of DSC

- Review the IEE document and ensure adequacy under ADB SPS, 2009.
- Interact on a regular basis with the sector specialists of the DSC and integrate environmentally sound practices into the detailed design of project components.
- Advise PMU/PIU for compliance with statutory clearances.
- Work out the site specific mitigation measures for components as required and integrate the same into contractual provisions.
- Develop, organise and deliver environmental training programmes and workshops for the staff of the PIU and Contractors and in accordance to the Capacity Building Programme as specified in the IEE.
- Preparation of Activity Plans as identified in IEE (these include Site Management Plans, Waste Management Plans, Sludge Management and Disposal Plans, Occupational Safety Plans etc).
- Supervise the implementation of the Environmental provisions by the Contractors.
- Review and approve site specific environmental enhancement/mitigation designs worked out by the Contractor. Hold regular consultation meetings with the Environmental specialist of the PMU
- Review the Contractors' Environmental Implementation Plans to ensure compliance with the IEE.
- Develop good practice construction guidelines to assist the contractors in implementing the provisions of IEE.
- Prepare and submit regular environmental monitoring and implementation progress reports.
- Assist Environmental Specialist of the PMU to prepare good practice dissemination notes based on the experience gained from site supervision.

Box 3: Terms of Reference of Safeguards Specialist (Environment) of PMC

Support and Advice the PMU and Consultants team in-

- Best Environmental Practices for responding to environmental issues involved with implementation of the projects on a sustainable basis
- Assistance and advice on institutional strengthening and capacity building at the PMU and PIU levels in regards to environmental practices.
- Ensure that baseline surveys, environmental monitoring plans and programs, initial environmental examinations (IEE) as may be required are carried out.
- Preparation of ADB procedure compliant environmental safeguard actions including impact assessment if any during the design stage
- Management plan and mitigation measures
- Oversight of implementation of environmental standards and safeguards as part of project implementation
- Participate in preparation of Master Plan for additional sites and contribute to the environmental safeguards to the plan and sub components
- Preparation of performance monitoring reports

98. **Responsibility for updating IEE during detailed design.** DSC will update this IEE during detailed design and submit to PMU for final review before submission to ADB. PMC will assist PMU and coordinate with DSC.

99. **Responsibility for monitoring.** During construction, DSC's Environmental Specialist and the designated representative engineer of the PIU will monitor the contractor's environmental performance on day to day basis while PMC expert will randomly monitor the performance for corrective measures if required. During the operation phase, monitoring will be the responsibility of the Town Municipal Authority.

100. **Responsibility for reporting.** PIU in coordination with DSC will submit monthly monitoring report to PMU on the basis PMU will submit to ADB semi-annual reports on implementation of the EMP and will permit ADB to field environmental review missions which will review in detail the environmental aspects of the project. Any major accidents having serious environmental consequences will be reported immediately. PMC environmental expert will help in preparing quarterly, semi-annual and annual progress reports. The sample environmental monitoring template is attached as **Annexure-7 to 9**.

B. EMP Tables

101. **Table 8 to 10** show the potential adverse environmental impacts, proposed mitigation measures, responsible parties, and cost of implementation. This EMP will be included in the bid documents and will be further reviewed and updated during implementation.

Table 8: Pre-Construction EMP Table

Parameters	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of monitoring	Source of Funds to Implement Mitigation Measures
Consents, permits, clearances, no objection certificate (NOC), etc.	• Obtain all necessary consents, permits, clearance, NOCs, etc. prior to start of civil works.	Consents, permits, clearance, NOCs, etc.	PMU	EA to report to ADB in environmental monitoring report (EMR)	check CFEs, permits, clearance, prior to start of civil works	PMU
	• Acknowledge in writing and provide report on compliance of all obtained consents, permits, clearance, NOCs, etc.	Records and communications	PMU	EA to report to ADB in EMR	Acknowledge upon receipt Send report as specified in CFE, permits, etc.	PMU
	• Include in detailed design drawings and documents all conditions and provisions if necessary	Detailed design documents and drawings	Contractor	PMU and PMC PIU and DSC	Upon submission by contractor	PMU
Establishment of baseline environmental conditions prior to start of civil works	• Conduct documentation of location of components, areas for construction zone (camps, staging, storage, stockpiling, etc.) and surroundings (within direct impact zones). Include photos and GPS coordinates	Records	PMU	PIU and DSC	to be included in updated IEE report	PMU
Erosion control	• Develop an erosion control and re-vegetation plan to minimize soil loss and reduce sedimentation to protect water quality. • Minimize the potential for erosion by balancing cuts and fills to the extent feasible.	Erosion control and re-vegetation plan covering construction phase	Contractor	PIU and DSC	to be included in updated IEE report	Contractor

Parameters	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of monitoring	Source of Funds to Implement Mitigation Measures
	• Identify and avoid areas with unstable slopes and local factors that can cause slope instability (groundwater conditions, precipitation, seismic activity, slope angles, and geologic structure). • Minimize the amount of land disturbed as much as possible. Use existing roads, disturbed areas, and borrow pits and quarries when possible. Minimize vegetation removal. Stage construction to limit the exposed area at any one time. Minimize the amount of land disturbed as much as possible. Use existing roads, disturbed areas, and borrow pits and quarries when possible. Minimize vegetation removal. Stage construction to limit the exposed area at any one time.					
Utilities	• Identify and include locations and operators of these utilities in the detailed design documents to prevent unnecessary disruption of services during the construction phase.	List and maps showing utilities to be shifted Contingency plan for services disruption	- DSC to prepare preliminary list and maps of utilities to be shifted - During detailed design phase, contractor to (i) prepare list and operators of utilities to	PIU and DSC	to be included in updated IEE report	DSC – preliminary design stage Contractor – detailed design stage

Parameters	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of monitoring	Source of Funds to Implement Mitigation Measures
	• Require contractors to prepare a contingency plan to include actions to be done in case of unintentional interruption of services. • Obtain from the PIU and/or DSC the list of affected utilities and operators; • If relocations are necessary, contractor will coordinate with the providers to relocate the utility.		be shifted; (ii) contingency plan			
Social and Cultural Resources	• Consult Archaeological Survey of India (ASI) or HP State Archaeology Department to obtain an expert assessment of the archaeological potential of the site. • Consider alternatives if the site is found to be of medium or high risk. • Include state and local archaeological, cultural and historical authorities, and interest groups in consultation forums as project stakeholders so that their expertise can be made available. • Develop a protocol for use by the construction contractors in conducting	Chance find protocol	- PMC to consult ASI or HP State Archaeology Department - PMC to develop protocol for chance finds	PMU	to be included in updated IEE report	PMU

Parameters	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of monitoring	Source of Funds to Implement Mitigation Measures
	any excavation work, to ensure that any chance finds are recognized and measures are taken to ensure they are protected and conserved.					
Sites for construction work camps, areas for stockpile, storage and disposal	• Will not promote instability and result in destruction of property, vegetation, irrigation, and drinking water supply systems, etc. • 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 inconvenience the community. • The construction camp, storage of fuel and lubricants should be avoided at the river bank. The construction camp site for intake well should be finalized in consultation with DSC and PIU.	List of pre-approved sites for construction work camps, areas for stockpile, storage and disposal Waste management plan	- DSC to prepare list of potential sites DSC to inspect sites proposed by contractor if not included in pre-approved sites	PIU/DSC	Monthly	DSC
Sources of construction	• Use quarry sites and sources permitted by	Permits issued to quarries/sources of	Contractor	PMU/PIU	Upon submission by	PMC and DSC

Parameters	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of monitoring	Source of Funds to Implement Mitigation Measures
materials	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 DSC on a monthly basis documentation of sources of materials.	materials	PMC and DSC to verify sources (including permits) if additional is requested by contractor		contractor, monthly	
Access	• 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 congestion. • Keep the site free from all unnecessary obstructions. • Drive vehicles in a considerate manner. • Coordinate with the Traffic Police Department for temporary road diversions and for provision of traffic aids if transportation activities cannot be avoided during peak hours.	Traffic management plan	Contractor	PIU and DSC	Continuous during construction	Contractor

Parameters	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of monitoring	Source of Funds to Implement Mitigation Measures
	• Notify affected sensitive receptors by providing sign boards with information about the nature and duration of construction works and contact numbers for concerns/complaints. • Provide free access to households along the alignments of raw and clear water transmission routes during the construction phase.					
Occupational health and safety	• Comply with IFC EHS Guidelines on Occupational Health and Safety • Develop comprehensive site-specific health and safety (H&S) plan. The overall objective is to provide guidance to contractors on establishing a management strategy and applying practices that are intended to eliminate, or reduce, fatalities, injuries and illnesses for workers performing activities and tasks associated with the project. • Include in H&S plan measures such as: (i) type of hazards in the intake wells site; (ii) corresponding	Health and safety (H&S) plan	Contractor	PIU and DSC	Continuous during construction	Contractor

Parameters	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of monitoring	Source of Funds to Implement Mitigation Measures
	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 medical insurance coverage for workers.					
Public consultations	• Continue information dissemination, consultations, and involvement/participation of stakeholders during project implementation.	- Disclosure records - Consultations	PMC and DSC	PMU and PMC	- During updating of IEE Report - During preparation of site- and activity-specific plans as per EMP - Prior to start of construction - During construction	PMU/PMC/DSC

Table 9: EMP Table During Construction Phase

Potential Impact	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of Monitoring	Source of Funds
Erosion hazards	• Save topsoil removed during excavation and use to reclaim disturbed areas, as soon as it is possible to do so. • Use dust abatement such as water spraying to minimize windblown erosion. • Provide temporary stabilization of disturbed/excavated areas that are not actively under construction. • Apply erosion controls (e.g., silt traps) along the drainage leading to the water bodies. • Maintain vegetative cover within road ROWs to prevent erosion and periodically monitor ROWs to assess erosion. • 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.	Erosion control and re-vegetation plan	Contractor	PIU and DSC PIU to submit EMP monitoring report to PMU	- daily visual inspection by contractor supervisor and/or environment specialist - weekly visual inspection by DSC (more frequent during monsoon season and if corrective action is required) - random inspection by PMU, PIU, PMC and/or DSC	Contractor
Impacts on water quality	• Schedule construction activities during non-monsoon season, to the maximum extent possible.	Work schedule	Contractor	PIU and DSC PIU to submit EMP monitoring report to PMU	- daily inspection by contractor supervisor and/or environment specialist - weekly visual inspection by DSC (more	
	• Ensure drainages and water bodies within the construction zones are kept free of obstructions.	Visual inspection				
	• Keep loose soil material and	Visual inspection				

Potential Impact	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of Monitoring	Source of Funds
	stockpiles out of drains and flow-lines.				frequent during monsoon season and if corrective action is required) - random inspection by PMU, PIU, PMC and/or DSC	
	• Avoid stockpiling of excavated and construction materials (sand, gravel, cement, etc.) unless covered by tarpaulins or plastic sheets.	Visual inspection				
	• Re-use/utilize, to maximum extent possible, excavated materials.	condition in waste management plan				
	• Dispose any residuals at identified disposal site (PIU/DSC will identify approved sites).	condition in waste management plan				
	• Dispose waste oil and lubricants generated as per provisions of Hazardous Waste (Management and Handling) Rules, 1989.	condition in waste management plan				
	• Refuel equipment within the designated refueling containment area away from drainages, *nallahs*, or water body.	condition in list of pre-approved sites for construction work camps, areas for stockpile, storage and disposal				
	• Inspect all vehicles daily for fluid leaks before leaving the vehicle staging area, and repair any leaks before the vehicle resumes operation.	Vehicle inspection report				

Potential Impact	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of Monitoring	Source of Funds
Impacts on air quality	• Conduct regular water spraying on stockpiles.	- Visual inspection - No complaints from sensitive receptors - Records	Contractor	PIU and DSC	- daily inspection by contractor supervisor and/or environment specialist - weekly visual inspection by DSC (more frequent during dry season and if corrective action is required) - random inspection by PMU, PIU, PMC and/or DSC	Contractor
	• Conduct regular visual inspection in the construction zones to ensure no excessive dust emissions.	Visual inspection				
	• Maintain construction vehicles and obtain “pollution under control” certificate from HPSPCB.	PUC certificates				
	• Obtain CFE and CFO for hot mix plants, crushers, diesel generators, etc., if to be used in the project.	CTE and CTO				
Noise and vibrations impacts	• Limit construction activities in temple complexes and other important areas to daytime only. • Plan activities in consultation with PIU/DSC so that activities with the greatest potential to generate noise are conducted during periods of the day which will result in least disturbance.	Work schedule	Contractor	PIU and DSC	- daily inspection by contractor supervisor and/or environment specialist - weekly visual inspection by DSC (more frequent during noise-generating activities and if corrective action is required) - random inspection by PMU, PIU, PMC and/or DSC	Contractors
	• Minimize noise from construction equipment by using vehicle silencers and fitting jackhammers with noise-reducing mufflers.	Report on ambient noise level monitoring within direct impact zones				
	• Avoid loud random noise from sirens, air compression, etc.	zero incidence				

Potential Impact	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of Monitoring	Source of Funds
	• Require drivers that horns not be used unless it is necessary to warn other road users or animals of the vehicle's approach.	feedback from receptors within direct and direct impact zone				
	• If specific noise complaints are received during construction, the contractor may be required to implement one or more of the following noise mitigation measures, as directed by the project manager: • 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.	- Complaints addressed satisfactory - GRM records				
Impacts on flora and fauna	• Conduct site induction and environmental awareness.	Records	Contractor	PIU and DSC	- daily inspection by contractor supervisor and/or environment specialist - weekly visual inspection by DSC (more frequent if corrective action is required)	Contractor
	• Limit activities within the work area.	Barricades along excavation works				
	• Replant trees in the area using minimum ratio of 2 new trees for every 1 tree cut. Replacement species must be approved by District Forest Department.	Number and species approved by District Forest Department				

Potential Impact	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of Monitoring	Source of Funds
					- random inspection by PMU, PIU, PMC and/or DSC	
Impacts on physical and cultural resources	• Ensure no damage to structures/properties adjacent to construction zone.	- Visual inspection - any impact should be addressed by project resettlement plan	Contractor In coordination with PIU and DSC for any structures within proposed site and construction zone	PIU and DSC	- daily inspection by contractor supervisor and/or environment specialist - weekly visual inspection by DSC (more frequent if corrective action is required) - random inspection by PMU, PIU, PMC and/or DSC	Contractor
	• Provide sign boards to inform nature and duration of construction works and contact numbers for concerns/complaints.	- no complaints received - photo-documentation				
	• Increase the workforce near the school and other sensitive receptors.	- Records of workers deployment - Work schedule				
	• Implement good housekeeping. Remove wastes immediately.	- Visual inspection - No stockpiled/ stored wastes				
	• Ensure workers will not use nearby/adjacent areas as toilet facility.	- No complaints received - Sanitation facilities for use of workers				
	• Coordinate with PIU/DSC 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.	- Approved routes in traffic management plan				

Potential Impact	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of Monitoring	Source of Funds
	• 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.	condition in chance find protocol				
Impact 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 management plan designated/approved disposal areas. • Coordinate with PIU/DSC for beneficial uses of excavated soils or immediately disposal to designated areas. • Recover used oil and lubricants and reuse; or remove from the site. • 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	condition in waste management plan	Contractor	PIU and DSC	- daily inspection by contractor supervisor and/or environment specialist - weekly visual inspection by DSC (more frequent if corrective action is required) - random inspection by PMU, PIU, PMC and/or DSC	Contractor

Potential Impact	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of Monitoring	Source of Funds
	waste) into drainage, *nallah*, or watercourse.					
Impacts on occupational health and safety	• Comply with IFC EHS Guidelines on Occupational Health and Safety	- Visual inspection - Records	Contractor	PIU and DSC	- daily inspection by contractor supervisor and/or environment specialist - weekly visual inspection by DSC (more frequent if corrective action is required) - random inspection by PMU, PIU, PMC and/or DSC	Contractor
	• Disallow worker exposure to noise level greater than 85 dBA for duration of more than 8 hours per day without hearing protection. The use of hearing protection shall be enforced actively.	- Visual inspection - Work schedule - Noise level monitoring in work area				
	• 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.	- Records - Condition in H&S plan				
	• 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.	- Visible first aid equipment and medical supplies - Condition in H&S plan				
	• Provide medical insurance coverage for workers.	Records				
	• Secure construction zone from unauthorized intrusion and accident risks.	- Area secured - Trenches barricaded				
	• Provide supplies of potable drinking water.	- Supply of water				
	• Provide clean eating areas	- Workers area				

Potential Impact	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of Monitoring	Source of Funds
	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.	- Records - Condition in H&S plan				
	• Ensure the visibility of workers through their use of high visibility vests when working in or walking through heavy equipment operating areas.	- Visual inspection - Condition in H&S plan				
	• Ensure moving equipment is outfitted with audible back-up alarms.	- Construction vehicles - Condition in H&S plan				
	• 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.	- Visible and understandable sign boards in construction zone - H&S plan includes appropriate signs for each hazard present				
Impacts on socio-economic activities	• Provide sign boards for pedestrians to inform nature and duration of construction works and contact numbers for concerns/complaints.	Visible and understandable sign boards in construction zone	Contractor	PIU and DSC	- daily inspection by contractor supervisor and/or environment specialist	Contractor

Potential Impact	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of Monitoring	Source of Funds
	• 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.	Employment records			- weekly visual inspection by DSC (more frequent if corrective action is required) - random inspection by PMU, PIU, PMC and/or DSC	

Table 10: EMP Table During Post-Construction Phase

Potential Impact	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of Monitoring	Source of Funds
Solid waste (debris, excavated soils, etc.)	• 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. • Restore access roads, staging areas, and temporary work areas. • Restore roadside vegetation, if removed • 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. • Request in writing from PIU/DSC that construction zones have been restored.	Pre-existing condition Construction zone has been restored	Contractor	PIU and DSC PIU to submit EMP monitoring report to PMU	- visual inspection by contractor supervisor and/or environment specialist	Contractor

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

102. **Table 11** summarizes site and activity-specific plans to be prepared as per EMP tables.

Table 11: Site- and Activity-Specific Plans/Programs as per EMP

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

D. Environmental Monitoring Program

103. Through integration of mitigation measures in project design, impacts are mostly insignificant, temporary in nature and can be properly avoided or mitigated by following proposed mitigation measures given in the EMP of this IEE report.

104. **Table 12** 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. This will be updated during detailed design to ensure EMP and monitoring program is commensurate to the impacts of the subproject.

Table 12: Indicative Environmental Monitoring Program

	Field	Phase	Parameters	Location	Frequency	Responsibility	Cost (INR)
A. Site-specific (At the proposed land)							
1.	Air quality	Detailed design phase to establish baseline	Particulate matter	Proposed site	24 hours (once) before construction	PMU	As per table 13
		Construction	Particulate matter	Proposed site	24 hours (six monthly except monsoon season)	Contractor	As per table 13
2.	Noise	Detailed design phase to establish baseline	Day time dB(A)	Proposed site	Once	PMU	As per table 13
		Construction	Day time dB(A)	Proposed site	During noise-generating activities	Contractor	As per table 13

E. Capacity Building

105. The Environmental Specialist of the DSC 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 programmes, implementation techniques, monitoring methods and tools. The proposed training program along with the frequency of sessions is presented in **Table 1**3 below. This training program is intended for the entire destination and is not just specific to this package.

Table 13: Training Modules for Environmental Management (Common for Entire Project)

Program	Description	Participants	Form of Training	Duration/ Location	Training Conducting Agency
A. Pre-Construction Stage					
Sensitization Workshop	Introduction to Environment: Basic Concept of environment Environmental Regulations and Statutory requirements as per Govt. of India and ADB	Tourism / Forest / Roads / Culture Department Officials, Project Director (PD) and Environmental Specialist (ES) of the PMU/PIU	Workshop	½ Working Day	Environmental Specialist of the PMC and DSC
B. Construction Stage					
Module 1	Roles and Responsibilities of officials / contractors / consultants towards protection of environment Implementation Arrangements	Engineers and staff of line depts. of GoHP, and PMU/PIU (including the ES)	Lecture / Interactive Sessions	½ Working Day	Safeguards Specialist of the PMC and DSC
Module 2	Monitoring and Reporting System	Engineers and staff of implementing agencies and PMU/ PIU (including ES)	Lecture / Interactive Sessions	½ Working Day	Safeguards Specialist of the PMC and DSC

F. EMP Implementation Cost

106. 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 subprojects. Therefore, these items of costs have not been included in the IEE budget. Only those items not covered under budgets for construction are considered in the IEE budget.

107. 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 and noise) and training.

108. The costs of water sprinkling for dust suppression and providing personal protective equipment's to construction workers shall borne by contractor as part of conditions of contract. In addition the sources of funds for Mitigation measures during construction stage including monitoring during construction stage are also to be borne by the contractor. These are deemed to be included as part of the contract price amount quoted by the contractor for the works. The costs of components for monitoring in operation stage and the capacity building costs are to be funded by the PMU. The EMP cost is given in the **Table 1**4 below.

Table 14: Indicative EMP Budget

S.N.	Particulars	Stages	Unit	Total number	Rate (INR)	Cost (INR)	Source of fund
A. Monitoring Measures							
	Air quality monitoring	Detailed Design Phase	Per sample	1	10,000	10,000	PMU
	Noise Levels Day time	Detailed Design Phase	Per location	1	4,000	4,000	PMU
1	Air quality monitoring	Construction	Per sample	4	10,000	40,000	Contractor budget
2	Noise Levels – silence zones	Construction	Per location	8	4,000	32,000	Contractor budget
Sub- Total (A)						**86000**	
B.	**Capacity Building – Training cost**						
1	Sensitization Workshop	Pre-Construction	L.S			1,50,000	PMU
2	Training Session I	Construction	L.S			1,50,000	PMU
3	Training Session II	Construction	L.S			1,50,000	PMU
Sub -Total (B)						**4,50,000**	
Total (A+B) INR						**5,36,000**	

IX. FINDINGS AND RECOMMENDATIONS

109. The proposed components as part of the package are in line with the sub-project selection criteria for the program. The subproject conforms to all GoI and ADB regulations, policies, and standards including all necessary government permits and clearances

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

X. CONCLUSIONS

111. The IEE carried out for the sub-project show that the proposed sub-components will result in net environmental benefits, and that any adverse environmental impact can be addressed through proper location, planning and design of the proposed sub-project; control of construction activity and mitigation measures. The EMP provides for mitigation of all identified impacts and the Contract clauses for the environmental provisions will be part of the civil works contracts. Further, the proposed designs have been consulted with the stakeholders and no significant issues requiring redress in terms of environmental safeguards are known to exist at present.

112. Based on the findings of the IEE, there are no significant impacts and the classification of the subproject as Category “B” is confirmed. No further special study or detailed environmental impact assessment (EIA) needs to be undertaken to comply with ADB SPS (2009).

Annexure 1

Rapid Environmental Assessment (REA) Checklist

Instructions:
(i) The project team completes this checklist to support the environmental classification of a project. It is to be attached to the environmental categorization form and submitted to the Environment and Safeguards Division (RSES) for endorsement by the Director, RSES and for approval by the Chief Compliance Officer.
(ii) This checklist focuses on environmental issues and concerns. To ensure that social dimensions are adequately considered, refer also to ADB's (a) checklists on involuntary resettlement and Indigenous Peoples; (b) poverty reduction handbook; (c) staff guide to consultation and participation and (d) gender checklists.
(iii) Answer the questions assuming the "without mitigation" case. The purpose is to identify potential impacts. Use the "remarks" section to discuss any anticipated mitigation measures.

Subproject: Creation of Centre for Traditional Arts and Crafts at Badagran near Manali.
Country/Project Title: India/Infrastructure development Investment program (IDIPT-HP)
Sector Division: Urban Development.

Screening Questions	Yes	No	Remarks
A. Project Siting Is the project area…			
▪ Densely populated?		✓	It is a tiny village on the National High way between Manali and Kullu. The project site is located near Beas river bank. Scattered habitation only.
▪ Heavy with development activities?		✓	No developmental activities seen as on date.
▪ Adjacent to or within any environmentally sensitive areas?			
• Cultural heritage site		✓	No. The project site is 20 Km from Manali Town which is a popular tourist destination. The area is administered under the Gram Panchayat. Its vicinity will attract more tourists towards itself on the way to Manali/Kullu.
• Protected Area			Not declared as protected area.
• Wetland		✓	Open barren land. There is no cultivation or such activities in the propose site.
• Mangrove		✓	Open barren land. Cultivation is not practical at the proposed site.
• Estuarine		✓	Site is on a hilly area
• Buffer zone of protected area		✓	Not a buffer zone.
• Special area for protecting biodiversity		✓	Not declared.
• Bay		✓	No bay. Site is on a hilly area.
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.		✓	Temporary. Minor impact is anticipated during construction Phase and operational phase for which adequate arrangements envisaged in the proposals.
▪ 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?		✓	Minor impacts cannot be ruled out. However, adequate measures will be proposed and cost included in DPR for handling the issues.

Screening Questions	Yes	No	Remarks
▪ Degradation of land and ecosystems (e.g. loss of wetlands and wild lands, coastal zones, watersheds and forests)?		✓	The proposed site is an open barren land, no chance for cultivation, not a watershed area, not been declared as forest land and still in the village domination. No such impact (land/eco degradation) envisaged. Not a coastal zone or a forest area.
▪ Dislocation or involuntary resettlement of people?		✓	Not required as no land acquisition involved and all the project activities are restricted within the available land in large quantity
▪ Disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable group?		✓	No such impacts are anticipated. No such indigenous people exist in the area.
▪ Degradation of cultural property, and loss of cultural heritage and tourism revenues?		✓	On completion of the subproject the cultural heritage value will enhance and thereby influx of tourists will increase and tourism revenue will grow.
▪ 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 cases noticed as the site seen with scattered tiny habitations and more over the project has no pollutive industrial activities. .
▪ Water resource problems (e.g. depletion/ degradation of available water supply, deterioration for surface and ground water quality , and pollution of receiving waters?	✓		The project site lies in close vicinity of river Beas. Water for construction will be managed and prior permission will be taken up from the authorities during the construction phase. Minor and negligible water resource problems such as deterioration of surface water and ground water quality and pollution of nearby water course may emerge due to the volume of construction activity in operational phase for which adequate measures will be included in the proposals such as solid waste management and waste water management with treatment systems.
▪ Air pollution due to urban emissions?		✓	Though not directly, but during the construction phase anticipated if any, will be addressed properly by adopting suitable mitigation measures during implementation.
▪ Risks and vulnerabilities related to occupational health and safety due to physical, chemical and biological hazards during project construction and operation?	✓		During execution stage, workers may face occupational health and safety related issues if personal protection measures are not used properly. No such impacts are anticipated during the operation stage. Contractor will be required to adopt safety measures such as use of personal protective wear, cautionary signage and proper material storage.
▪ Road blocking and temporary flooding due to land excavation during rainy season?		✓	The proposed site is approx. 200 meters off the main road and there will not be any road blockage during construction phase as lot of open space available adjacent to site. However caution shall need to be exercised for taking up construction activity during extreme weather conditions (like rain or snow) or due to high level of water in river Beas to avoid accidents and injury either to the general public or workers on site.

Screening Questions	Yes	No	Remarks
▪ Noise and dust from construction activities?	✓		Minor increase in noise levels and 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 area has normal vehicular movement except during the tourist seasons hence not much disturbance to traffic is expected. However, traffic diversion plan, if need arise, will be prepared by contractor in consultation with Engineer to avoid traffic disturbances
▪ Temporary silt runoff due to construction?	✓		Temporary silt run 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. Other project components such as landscaping shall also help minimize silt run-off in the long term.
▪ 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?		✓	Though minor & negligible, precautions will be included in the Environmental monitoring & planning schedule
▪ Overpaying of ground water, leading to land subsidence, lowered ground water table, and salinization?		✓	No ground water exploitation envisaged. Water for construction phase will be managed from the river with line agencies consent.
▪ Contamination of surface and ground waters due to improper waste disposal?	✓		Contamination of surface and ground water cannot be ruled out. as improper material handling and storage such as paints and fuels. Appropriate material storage and handling practice can help mitigate this risk for which instructions shall be caused to the Contractor. Besides adequate measures have been proposed like treatment facilities for waste water & solid waste disposal.
▪ Pollution of receiving waters resulting in amenity losses, fisheries and marine resource depletion, and health problems?		✓	No effective pollution predicted. There is no fishery or marine resource in the vicinity of the site. No disposal to receiving waters as waste water treatment and disposal system is proposed based on zero discharge principles.
▪ Large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?		✓	Negligible quantum only and measures included in project proposal and in the EMP
▪ Social conflicts if workers from other regions or countries are hired?		✓	Not applicable as the demand for labour category is much high.

Screening Questions	Yes	No	Remarks
▪ 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?		✓	The construction activity needs to be well planned & executed in a phased manner so as to minimize community health and safety risks especially with respect to seasonal challenges, mobility issues and impact on local businesses.
▪ 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 subproject is located in seismic zone IV. Due to the natural topography of hilly terrain landslides are a common phenomenon. In addition, the project site is located near the bank of river Beas which is tourist accessible. 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 in a well-planned and phased manner. Proper measures will be included in the EMP.

PRELIMINARY CLIMATE RISK SCREENING CHECKLIST FOR SAMPLE SUBPROJECT TOWNS

Screening Questions		Score	Remarks[4]
Location and Design of project	Is siting and/or routing of the project (or its components) likely to be affected by climate conditions including extreme weather related events such as floods, droughts, storms, landslides?	1	Extreme cold conditions is experienced in Manali during winters and Manali is also prone to landslides, though the proposed sites are not affected from landslides
	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)?	0	Works proposed on the bank of River Beas but site do not inundated during high rise of river water
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	Works proposed on the bank of River Beas but site do not inundated during high rise of river water
	Will weather, current and likely future climate conditions, and related extreme events likely affect the maintenance (scheduling and cost) of project output(s)?	0	No problem is envisaged in future which likely affect the maintenance
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	0	No problem is envisaged in future which likely affect the performance of

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

Screening Questions		Score	Remarks[4]
	life time?		project output

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): Low

Other Comments: None

Annexure 2

Photo Illustration

Photographs of proposed site at Badagran, Manali for package no. HPTDB/14/1

Annexure 3

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 spoil management hierarchy
- Mange onsite spoil handling to minimize environmental impacts on resident and other receivers
- 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/DSC for their review and approval.

Annexure-4:

Sample Traffic Management Plan (TMP)

A. Principles

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

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

B. Operating Policies for TMP

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

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

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

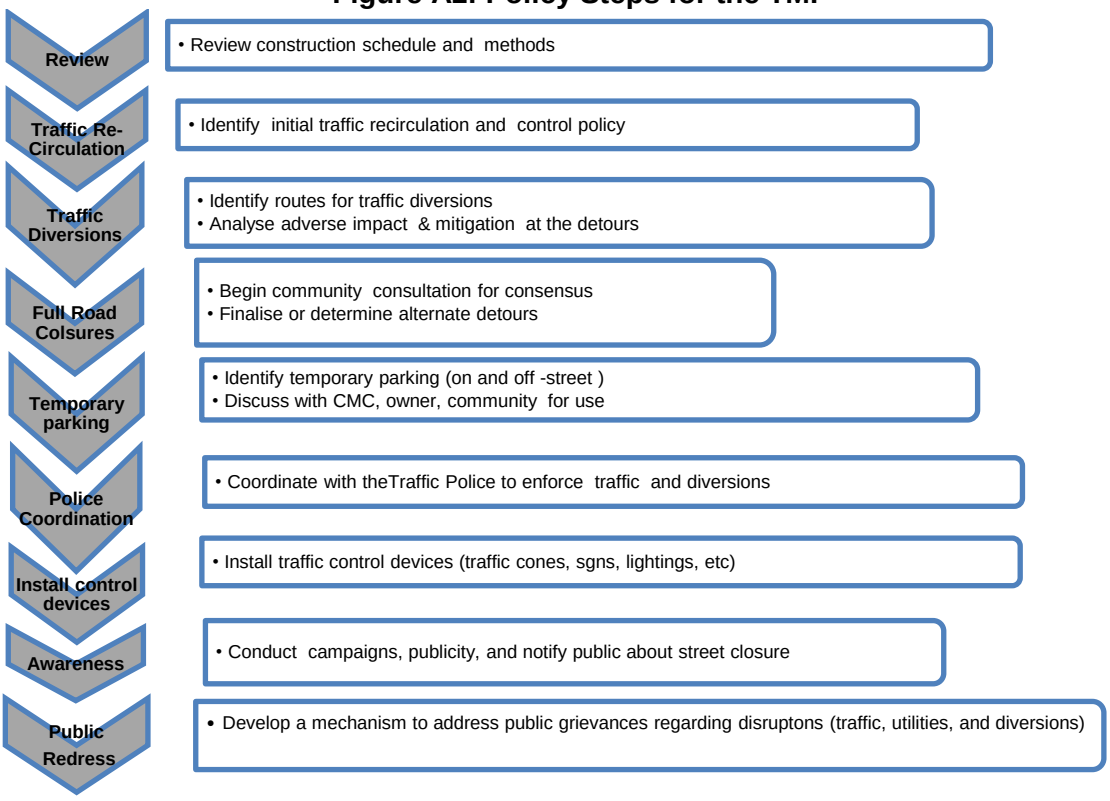
3. Apart from the capacity analysis, a final decision to close a particular street and divert the traffic should involve the following steps:

(i) approval from the PIU, local administration to use the local streets as detours;
(ii) consultation with businesses, community members, traffic police, PWD, etc, regarding the mitigation measures necessary at the detours where the road is diverted during the construction;
(iii) determining of the maximum number of days allowed for road closure, and incorporation of such provisions into the contract documents;

(iv) determining if additional traffic control or temporary improvements are needed along the detour route;
(v) considering how access will be provided to the worksite;
(vi) contacting emergency service, school officials, and transit authorities to determine if there are impacts to their operations; and
(vii) developing a notification program to the public so that the closure is not a surprise. As part of this program, the public should be advised of alternate routes that commuters can take or will have to take as result of the traffic diversion.

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

Figure A1: Policy Steps for the TMP



D. Public awareness and notifications

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

6. The awareness campaign and the prior notification for the public will be a continuous activity which the project will carry out to compensate for the above delays and minimize public

claims as result of these problems. These activities will take place sufficiently in advance of the time when the roadblocks or traffic diversions take place at the particular streets. The reason for this is to allow sufficient time for the public and residents to understand the changes to their travel plans. The project will notify the public about the roadblocks and traffic diversion through public notices, ward level meetings and city level meeting with the elected representatives.

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

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

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

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

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

E. Vehicle Maintenance and Safety

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

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

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

10. The purpose of installing traffic control devices at the work zones is to delineate these areas to warn, inform, and direct the road users about a hazard ahead, and to protect them as well as the workers. As proper delineation is a key to achieve the above objective, it is important to install good traffic signs at the work zones. The following traffic control devices are used in work zones:

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

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

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

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

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

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

Annexure 5

Public Consultations

Public consultations shall be done during detailed design phase.

Annexure 6

Sample Grievance Redress Form

(To be available in Local Language and English)

The _____Project welcomes complaints, suggestions, queries and comments regarding project implementation. We encourage persons with grievance to provide their name and contact information to enable us to get in touch with you for clarification and feedback. Should you choose to include your personal details but want that information to remain confidential, please inform us by writing/typing *(CONFIDENTIAL)* above your name. 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 7

Sample Semi-Annual Environmental Monitoring Report Template

This template must be included as an Annex in the EIA/IEE that will be prepared for the project. It can be adapted to the specific project as necessary.

INTRODUCTION

- Overall project description and objectives
- Description of sub-projects
- Environmental category of the sub-projects
- Details of site personnel and/or consultants responsible for environmental monitoring
- Overall project and sub-project progress and status

No.	Sub-Project Name	Status of Sub-Project				List of Works	Progress of Works
		Design	Pre-Construction	Construction	Operational		
		☐	☐	☐	☐		
		☐	☐	☐	☐		
		☐	☐	☐	☐		

COMPLIANCE STATUS WITH NATIONAL/STATE/LOCAL STATUTORY ENVIRONMENTAL REQUIREMENTS

No.	Sub-Project Name	Statutory Environmental Requirements	Status of Compliance	Action Required

COMPLIANCE STATUS WITH ENVIRONMENTAL LOAN COVENANTS

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

COMPLIANCE STATUS WITH THE ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN

- Provide the monitoring results as per the parameters outlined in the EMP. Append supporting documents where applicable, including Environmental Site Inspection Reports.
- There should be Reporting on the following items which can be incorporated in the checklist of routine Environmental Site Inspection Report followed with a summary in the semi-annual Report send to ADB. Visual assessment and review of relevant site documentation during routine site inspection needs to note and record the following:
    - What are the dust suppression techniques followed for site and if any dust was noted to escape the site boundaries;

- If muddy water was escaping site boundaries or muddy tracks were seen on adjacent roads;
- adequacy of type of erosion and sediment control measures installed on site, condition of erosion and sediment control measures including if these were intact following heavy rain;
- Are their designated areas for concrete works, and refuelling;
- Are their spill kits on site and if there are site procedure for handling emergencies;
- Is there any chemical stored on site and what is the storage condition?
- Is there any dewatering activities if yes, where is the water being discharged;
- How are the stockpiles being managed;
- How is solid and liquid waste being handled on site;
- Review of the complaint management system;
- Checking if there are any activities being under taken out of working hours and how that is being managed.

Annexure 8

Summary Monitoring Table

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						

Overall Compliance with CEMP/EMP

No.	Sub-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 & Additional Measures Required

APPROACH AND METHODOLOGY FOR ENVIRONMENTAL MONITORING OF THE PROJECT

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

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.

Air Quality Results

Site No.	Date of Testing	Site Location	Parameters (Government Standards)		
			PM10 (µg/m3)	SO2 (µg/m3)	NO2 (µg/m3)

Site No.	Date of Testing	Site Location	Parameters (Monitoring Results)		
			PM10 (µg/m3)	SO2 (µg/m3)	NO2 (µg/m3)

Water Quality Results

Site No.	Date of Sampling	Site Location	Parameters (Government Standards)					
			pH	Conductivity (µS/cm)	BOD (mg/L)	TSS (mg/L	TN (mg/L)	TP (mg/L)

Site No.	Date of Sampling	Site Location	Parameters (Government Standards)					
			pH	Conductivity (µS/cm)	BOD (mg/L)	TSS (mg/L	TN (mg/L)	TP (mg/L)

Noise Quality Results

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

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

SUMMARY OF KEY ISSUES AND REMEDIAL ACTIONS

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

Annexes

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

Annexure 9

SAMPLE ENVIRONMENTAL SITE INSPECTION REPORT

Project Name
Contract Number

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

WEATHER CONDITION:
_____

INITIAL SITE CONDITION:
_____

CONCLUDING SITE CONDITION:

Satisfactory _____ Unsatisfactory_____ Incident_____ Resolved _____ Unresolved _____

INCIDENT:
Nature of incident:
_____

Intervention Steps:
_____

Incident Issues

Resolution

Project Activity Stage	Survey	
	Design	
	Implementation	
	Pre-Commissioning	
	Guarantee Period	

Inspection

Emissions	Waste Minimization
Air Quality	Reuse and Recycling
Noise pollution	Dust and Litter Control
Hazardous Substances	Trees and Vegetation

Site Restored to Original Condition Yes No

Signature
_____

Sign off

_____ _____

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

MoU

MOU for Operation & Maintenance

(Undertaking from Assets Owner)

I, Director Tourism & Civil Aviation, HP, agrees to undertake the operation and maintenance for the assets which will be constructed, renovated, restored and etc. by the HPTDB under Tranche 3 of the IDIPT program together with other assets currently maintained by us. All works to be constructed i.e. **Creation of Centre for Traditional Arts & Crafts at Badagran near Manali, Kullu Distt** on the Tourism Department land under Tranche 3 including but not limited to landscape works, pathways, railings, toilets, car parking and etc. will be maintained by us, with our own funds generated from operations or received from various sources.

We have no objection for any work being taken up by HPTDB under Tranche 3 of the IDIPT program within the boundary premises and pathway, access to the premises from main road and etc. We assure you that the operation and maintenance of the assets will be done by us from our own resources.

Director,
Tourism & Civil Aviation,
Himachal Pradesh, Shimla-9.