Draft Initial Environmental Examination

Project Number: 40648

October 2014

IND: Infrastructure Development Investment Program for Tourism (Tranche 3) Punjab – Conservation and Adaptive Refuse at Gobindgargh Fort

Prepared by the Government of Punjab 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 and 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
GoP	–	Government of Punjab
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 and Management
PHTPB	–	Punjab Heritage and Tourism Promotion Board
PIU	–	Project Implementation Unit
PMC	–	Project Management Consultants
PMU	–	Project Management Unit
PPCB	–	Punjab Pollution Control Board
REA	–	Rapid Environmental Assessment
SEAC	–	State Expert Appraisal Committee
SPM	–	Suspended Particulate Matter
SPS	–	Safeguards Policy Statement
TCP	–	Town and Country Planning
TDS	–	Total Dissolved Solids
TMP	–	Traffic Management Plan
TSS	–	Total Suspended Solids

NOTES

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

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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. Amritsar is a district headquarters, which is located at an approximate distance of 250 Km from Chandigarh city, the state capital. The city of Amritsar symbolizes the spiritual heritage of Punjab state. It is located in North West of Punjab State and is well connected with rail and road network. It is a major trade and tourist centre of Punjab state. The city has developed around the most sacred religious place for the Sikhs, namely the Golden Temple (Harmandir Sahib). The 12 gates in the city wall are entry point to a rich heritage zone, which comprises Katras, courtyard houses and bazaars. The importance of the holy city Amritsar is due to the presence of the Golden temple and Akal Takhat, one of the five Takhats of the Sikh religion.

3. **Executing and implementing agencies.** The executing agency is the Punjab Heritage and Tourism Promotion Board (PHTPB), Punjab. Project Management Unit (PMU) is set up at Chandigarh to coordinate the overall execution. Project Management Consultant (PMC) at Chandigarh provides assistance to PMU in execution. The implementing agency is Project Implementation Unit (PIU) set up at Amritsar, to be supported by Design Supervision Consultant (DSC). Department of Cultural Affairs, Archaeology and Museums is the asset owner for Gobindgarh Fort, and Tranche I works are already being implemented at the site.

4. **Categorization.** Amritsar town subproject Package PB/IDIPT/T3/08/10 is classified as Environmental Category ‘B’ as per the Safeguard Policy Statement (SPS, June 2009) as no significant impacts are envisioned. Accordingly this Initial Environmental Examination (IEE) has been prepared and assesses the environmental impacts and provides mitigation and monitoring measures to ensure no significant impacts as a result of the subproject.

5. **Subproject Scope.** The major scope of this subproject as per Summary Appraisal Report (SAR) 8 - Package PB/IDIPT/T3/08/10 to be advertised by Q3 2016 are: Conservation /Adaptive re-Use including Visitor Facilities and Interpretation Centre (Panj Pani / Craft Centre), Sikh Fauj Gallery (NW Bastion), Watch Tower & Bridges, Haveli (Magazine), Barracks, Water Tank & Squash Court, Chloronome House, Inner and Outer Moat Walls and Ravelin.

6. **Description of the Environment.** Subproject components are located in urban areas of Amritsar town. Amritsar district lies between the River Beas and River Ravi, and it is one of the inter-fluvial tracts of the Punjab Plain. The track is alluvial plain with light reddish yellow clayey soil. Bowl shaped plains cause floods in certain areas with even minimum intensity of rain. Though Amritsar district is a continuous level plain–unbroken by hills or valleys– it is not homogeneous throughout, as the terrain of the floodplains differs from that of the upland plains situated away from the rivers. The project area is having plain terrain with yellow clayey soil.

There are mostly agricultural fields in the nearby areas. 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) 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) earth backfill, if any will be done from the site excavated material; and (vi) 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 PHTPB 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, business people (organizations) and citizens of Amritsar 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 business opportunities for local communities, linked to the cultural and natural heritage tourism.

13. **Consultation, Disclosure and Grievance Redress.** Public consultations will be done in the preparation of the detail design and final 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 monthly, quarterly and Semi-annual monitoring reports to the PMU. The PMU will consolidate the Semi-annual 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. **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. The Subproject is part of Western Circuit. The Western Circuit is located in the north western segment of the state and includes the districts of Amritsar, Gurdaspur and Kapurthala. The circuit borders Pakistan in the west and the River Beas flows through the eastern portion. The project aims to enhance tourist destination urban environment and support facilities along with protection and management of natural and cultural tourism attractions in city of Amritsar in Punjab state. The city of Amritsar is identified as a Gateway destination by Ministry of Tourism, Government of India. It is the main international air gateway to Punjab, containing the State's major pilgrimage and heritage attractions, and has the largest tourism draw.

3. The district of Amritsar is part of Sikh Heritage Trail, Freedom Struggle Trail and Grand Trunk Trail which starts from Ambala in state and ends at Wagah Border. Gurdaspur district is part of Sikh Heritage Trail *(Source: As per Punjab Tourism Development Master Plan, 2008-2023; United Nations World Tourism Organization (UNWTO))*.

4. Subproject sites are located in Amritsar city which is part of Western Circuit of Punjab state. The city of Amritsar has become an important tourist destination due to iconic Golden Temple, commercial cityscape and its spiritual importance for Sikhs all around the world. The city is marked with buildings of heritage and architectural importance. Presently the heritage walk in city is very well established. To boost the tourism of historical city of Amritsar and showcase its rich socio-cultural it is essential to conserve and upgrade the existing heritage sites along the heritage walk route.

5. **Executing and Implementing Agencies.** The executing agency is the Punjab Heritage and Tourism Promotion Board (PHTDB) Punjab. Project Management Unit (PMU) is set up at Chandigarh to coordinate the overall execution. Project Management Consultant (PMC) at Chandigarh provides assistance to PMU in execution. The implementing agency is Project Implementation Unit (PIU) set up at Amritsar, to be supported by Design Supervision Consultant (DSC). Department of Cultural Affairs and Museums is the asset owner for Gobindgarh Fort.

6. **Proposed sub-project**. The objective of this subproject is to improve, conserve and manage physical and environmental image of the historical sites/route with planned interventions consistent to its historic status, revitalization of walled city along with sustainable model for citizens and tourists, to educate visitors about the historical structures, culture and the values of city, providing tourist infrastructure facilities along with protecting the heritage value of the property and to enhance tourist attractions with all facilities.

7. The major scope of this subproject as per Summary Appraisal Report (SAR) 8 - Package PB/IDIPT/T3/08/10 to be advertised by Q3 2016 are: Conservation /Adaptive re-use including Visitor Facilities and Interpretation Centre (Panj Pani / Craft Centre), Sikh Fauj Gallery (NW Bastion), Watch Tower & Bridges, Haveli (Magazine), Barracks, Water Tank & Squash Court, Chloronome House, Inner and Outer Moat Walls and Ravelin.

8. **Categorization.** As per the Asian Development Bank's (ADB) Safeguard Policy Statement 2009, and in line with the Environment Assessment & Review Framework (EARF) for the project, the sub-project "Conservation and Adaptive Reuse at Gobindgarh Fort" are categorized as 'B' and an Initial Environmental Examination (IEE) prepared. The IEE was based on a review of sub-project site plans and reports; field visits, and secondary data to characterize the environment and identify potential impacts; and interviews and discussions with stakeholders.

9. **Purpose of the IEE.** This report gives an account of the initial environmental examination (IEE) of subproject as per SAR-8 and preliminary design. The adverse environmental impacts for this contract package are primarily related to construction activities. The proposed construction activity is selected considering historical and cultural value of the city. There will be construction impacts associated with proposed civil and conservation works but these will be of limited intensity and of short duration. Therefore, as per the Asian Development Bank's (ADB) Environmental Assessment Guidelines (SPS 2009), the sub-project components are categorized as 'B' and an IEE carried out. This IEE provides mitigation measures for impacts related to location, design, construction, operation, and maintenance. The REA checklist is attached as **Annexure- 1** with this report.

II. DESCRIPTION OF THE SUB PROJECT

A. Existing Condition and Need of the Subproject

10. **Location:** The proposed project sites of Package No. PB/IDIPT/T3/08/10 to be advertised by Q3 2016 located within the urban areas of Amritsar city. Amritsar is a district headquarters, which is located at an approximate distance of 250 Km from Chandigarh city, the state capital. The city of Amritsar symbolizes the spiritual heritage of Punjab state. It is located in North West of Punjab State and is well connected with rail and road network. The Gobindgarh Fort is one of the most striking edifices in Punjab. It is located outside the walled city, at an approximate distance of 3 km from Golden Temple (Harmandir Sahib).

11. **Brief History:** The city has developed around the most sacred religious place for the Sikhs, namely the Golden Temple (Harmandir Sahib). The 12 gates in the city wall are entry point to a rich heritage zone, which comprises Katras, courtyard houses and bazaars. The importance of the holy city Amritsar is due to the presence of the Golden temple and Akal Takhat, one of the five Takhats[1] of the Sikh religion.

[1] Takht (Punjabi: ਤਖ਼ਤ) which literally means a throne or seat of authority is a result of historical growth of Sikhism. There are five Takhts and these Takhts are the five gurudwaras (religious place of Sikhs) which have a very special significance for the Sikh community. The first and the most important one was established by Guru Hargobind in 1609. It is called 'Akal Takht' (the Throne of the Timeless God) and is situated just opposite the gate of Harmandir Sahib – The Golden Temple, Amritsar.

12. Govindgarh Fort was previously known as Bhangian Da Kila. The fort was built in 1760, and occupied a unique place in Indian military history. The Grand Trunk Road lies on the northern side of the fort. The fort covers a total area of 42.26 acres. The ramparts of the fort are 8 m high while a moat about 5.5 m deep which surrounds it on all sites. The imposing height of the inner walls of the fort laid in concentric pattern, and the four grand bastions that surmount the four corners of the fort give it a dramatic form. Gobindgarh Fort, which was originally the fort of Gujjar Singh Bhangi, a local chieftain was consolidated and enhanced in the early 19th century, during the reign of Maharaja Ranjit Singh who renamed it Gobindgarh. The main reason for the earlier siting and the subsequent consolidation and expansion of the fort was to protect Sri Harimandir Sahib and the city of Amritsar from invaders who through the 18th century had launched series of attacks on the sacred shrine. The fort is known to have housed the Maharaja's "toshakhana", the royal treasury.

13. **Existing Conditions:** The works for the structures within the Gobindgarh Fort was divided into Phases. Few of the works for Fort were taken up during Tranche I which included works for Gates, NE Bastion, Colonial Bungalow, Toshakhana, Khas Mahal, Darbar Hall, and landscaping as well as infrastructure utility services. The balance works for the Gobindgarh Fort are proposed under Tranche 3. Existing conditions of proposed components in Govindgarh Fort are as below

- Vegetative growth on the fortification walls and buildings of fort.
- Lack of unplanned interventions such as repairs and paintings undertaken during past years.
- The walls are in dilapidated condition and need conservation.
- Need to strengthen and restore the existing roof of fort.
- Other structures inside the fort also need structural rehabilitation and other secondary works for adaptive reuse of the fort complex.

B. Proposed Subproject

14. The sub projects has been designed so that following requirements can be catered:

- Conservation of fortification walls, Bridges (2) and Archaeology for Ravelins, Barracks and Inner Moat.
- Adaptive reuse of Barracks 16-20, cells as Museum and Reuse/ Development of North West Bastion and South East Bastion as a Museum.
- Reuse of the Haveli as a restaurant on PPP basis.
- Reuse/ development of South West Bastion as Panj Pani Craft centre/ Interpretation Centre.
- Reuse of South West corner Barracks including badminton and Squash Court as public spaces for conference and meeting etc.
- Provision of adequate lighting and signage's of uniform design within the site area.
- Provision of public amenities such as drinking water and toilet facilities.

15. All sites for subproject Package No. PB/IDIPT/T3/08/10 are owned by PHTPB and Department of Cultural Affairs and Museums) thus no land acquisition is required. The sites are located in Amritsar 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 areas. Location map of proposed site is shown in **Figure-1**.

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.

18. The earth backfill, if any will be done from the site excavated material. Stone, aggregate, sand and other raw materials required are available within 50 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.

19. Water supply during construction will be provided by Municipal Corporation and its Public Health Division (IPH) 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 through Municipal Corporation.

20. Site plan for the proposed sub project area is shown in **Figure 2. Annexure 2** shows photo illustration of the project site.

C. Implementation Schedule

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

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

Figure 1: Location Map of Subproject site

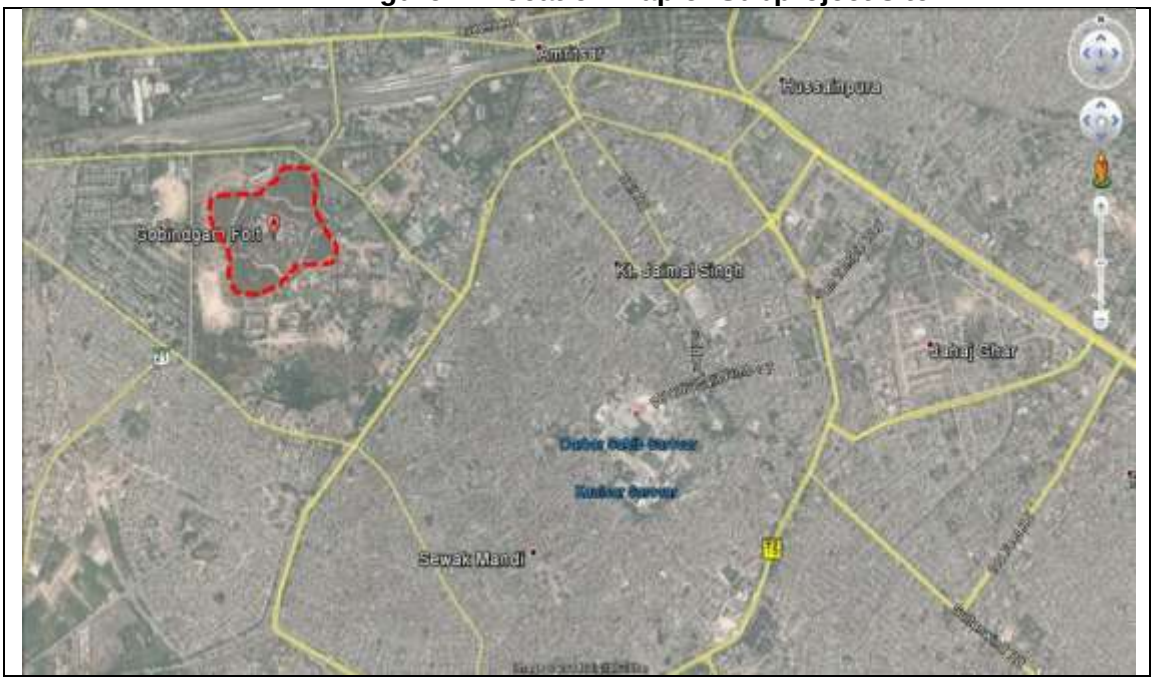
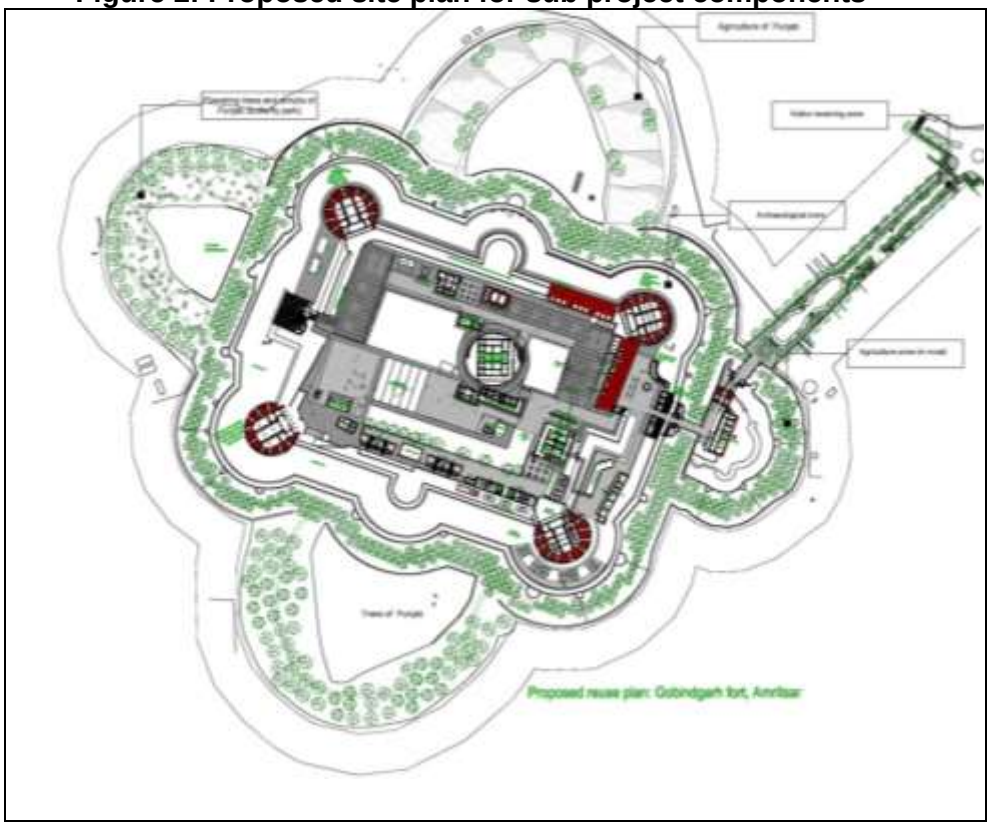


Figure 2: Proposed site plan for sub project components



III. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

A. ADB Policy.

23. 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.

24. **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:

(i.) **Category A.** Projects could have significant adverse environmental impacts. An EIA is required to address significant impacts.

(ii.) **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.

(iii.) **Category C.** Projects are unlikely to have adverse environmental impacts. No EIA or IEE is required, although environmental implications are reviewed.

(iv.) **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.

25. **Environmental Management Plan.** An EMP which addresses the potential impacts and risks identified by the environmental assessment shall be 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.

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

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

B. National and State Laws

27. 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.

28. 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[2] - 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.

[2] 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.

Table 1: Environmental Regulatory Compliance

Sub-Project	Applicability of Acts/Guidelines	Compliance Criteria
Conservation and Adaptive Reuse at Gobindgarh Fort	The Environment Protection Act, 1986 - under EIA notification, 2006 (and its subsequent amendments in 2009) provides for categorization of projects into category A and B, based on extent of impacts.	The sub-project is not covered in the ambit of the EIA notification as they are not covered either under Category A or Category B of the notification. As a result, the categorization, and the subsequent environmental assessment and clearance requirements, either from the State government or the GoI is not triggered.
	ADB's Safeguard Policy Statement 2009	Categorization of sub-project components into A, B or C and developing required level of environmental assessment for each component. 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. No wildlife protected area
	The Forest Conservation Act, 1980 and its subsequent amendments necessitate obtaining clearance from the MoEF for diversion of forest land for non-forest purposes.	Project site is not located within forest area. No tree felling is required
	Water (Prevention and control of pollution) Act, 1974 and; Air (prevention and control of pollution) Act, 1981	Consent for Establishment (CFE) and Consent for Operation (CFO) from the PPCB for setting up of diesel generators (if any) and batching plant to be obtained by the Contractor, prior to commencement of construction works at site. Apart from this CFE and 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 these sites and monuments are not under the ambit of this Act.

29. The above Table indicates that the proposed sub-project does not need to go through a full-scale environmental assessment process; as the scale of impacts and categorization of the sub-project components will not require consent/ clearances from Competent Authorities. Therefore, any further approvals or clearances from the GoI or GoP are not envisaged. The ADB guidelines, stipulate addressing environmental concerns, if any, of a proposed activity in

the initial stages of Project preparation. For this, the ADB Guidelines categorizes the proposed components into categories (A, B or C) to determine the level of environmental assessment required to address the potential impacts. The sub-project has been categorized as B. Accordingly this IEE is prepared to address the potential impacts, in line with the recommended IEE content and structure for Category B projects.

IV. DESCRIPTION OF ENVIRONMENT

A. Physical Environment

1. Climate

30. The climate in the project district is characterized by general dryness except in south–west monsoon season. Winter season (November to March) with temperatures ranging from 4°C to about 16°C, and a summer season (April to July) wherein temperatures reach 45°C. The average annual rainfall in Amritsar it is about 601.5mm, with 32.7 rainy days. Dust storms occur in the month of May and June. The project area also receives dust storms and experiences very hot climate in the months of summer and very cool in the months of winter.

2. Geology & Soil

31. Amritsar District is composed of Indo-Gangetic alluvium, consisting of the alluvial sand, clay and loam. Apart from the clay used for brick-making, the concretionary form of calcium carbonate, known as kankar, is found in beds at a slight depth below the surface at the upper margin of the impermeable subsoil. A portion of rather porous soil, consisting of a mixture of lime, sand and clay, is infiltrated with water retained in it by an impermeable bottom. Amritsar is an important salt petre-producing district of the Punjab.

32. The soils of the Amritsar district plains belong to the typical alluvium of the Indo-Gangetic plains. The majority of the soils are loamy or sandy loam consisting of a soil crust of varying depth. The soils have generally an alkaline reaction and are adequately supplied with phosphorus and potash, but are deficient in organic matter and nitrogen. The soil of the project area is yellow clayey soil.

3. Surface water

33. Beas and Ravi rivers account for surface waters in Amritsar district. The rivers flood during the rainy season. All through the course of River Beas, a strip of shallow alluvial soil fringes its bank which is subject to inundation during the rainy season. The main channel of the river is broad, dotted with islands and wide pools. The depth of water varies from about 1.5 metres during the dry seasons to about 4.5 metres during the rainy seasons. The Chakki Khad is the chief tributary of the Beas in Gurdaspur district. A number of tributaries join river Ravi from both sides. On its right bank, River Ravi is joined by the Ujh, the Jalalia, the Shingarwan and the Masto, all of which rise in the Jammu hills. The Kiran and the Naumuni streams, which take their origin from local depression in Gurdaspur district, are its left bank tributaries. River Beas is about 150Km and River Ravi is about 16 Km from the proposed site. There is no surface water source near the proposed site.

4. Ambient Air and Noise Quality

34. Ambient air quality measurements in Amritsar district, as monitored by the Punjab Pollution Control Board within urban areas are shown in Table 2 below.

Table 2: Ambient Air Quality of Amritsar

Parameter	Amritsar	Standards		
		Residential	Commercial	Industrial
SPM ($\mu g/m^3$)	296 – 586	200	100	500
SO_2 ($\mu g/m^3$)	10 – 19	80	30	120
NO_x ($\mu g/m^3$)	28 – 46	80	30	120

Source: *Source: PPCB, Patiala*

35. Ambient noise quality has been monitored by Punjab Pollution Control Board Pollution (PPCB) at various locations, indicating high noise levels largely from vehicles, especially near the Golden Temple. In Amritsar, maximum noise levels were 82 dB(A) at day and 68 dB(A) at night. Even in sensitive zones of Amritsar, the maximum levels were 66 dB at day and 48 dB (A) at night against the prescribed limits of 50 dB(A) at day and 40 dB(A) at night.

36. However specifically for the project site area air and noise quality monitoring will be conducted under the project during detailed design stage.

B. Ecological Environment

37. **Flora & Fauna.** Flora in the project area and nearby places are mostly agriculture and trees like shisham, kikar, neem, mango, Jamun, eucalyptus, shrubs and bushes etc and fauna in the project area and nearby places are mostly domesticated animals. No movements of wild life animals reported from the project site.

38. **Protected Areas.** There are no protected forests, wetlands, mangroves or estuaries in or near the subproject areas. Also there is no forest and wildlife reported within the project area.

C. Socio cultural and Economic Environment

1. Demographic profile

39. Population data of Amritsar district, as per census 2011 is shown in **Table 3** below:

Table 3: Population Data of Amritsar District

Sl. No.	**Indicator**	**Amritsar District**
1.	Total population (Nos.)	3096077
2.	% of Female population	46.68%
3.	% of urban population	39.51%
4.	Sex-ratio of total population	876
5.	% of population below 6 years of age	13.85%
6.	% of scheduled tribes	NIL
7.	Total Literacy Ratio (TLR)	67.25%
8.	Female Literacy Ratio (FLR)	61.26%
9.	Work Participation Rate (WPR)	35.92%

Sl. No.	Indicator	Amritsar District
10.	Female WPR	16.69%
11.	% of Main workers	84.34%
12.	% of Workers in agriculture	38.43%

2. Agriculture

40. The principal kharif crops are paddy, cotton, maize and sugarcane; subsidiary crops are kharif vegetables, such as ladyfinger, cauliflower, tomato, brinjal, cucurbits, kharif pulses and fruits. The principal rabi crops are wheat, gram, barley etc. Wheat, Maize, Rice and Bajra are the important cereals of the state. Wheat dominates the production among overall crop pattern, while cotton is the major cash crop produced. Groundnut, Sugarcane and Potatoes are other crops. The principal rabi oilseeds (sarson, toramira, alsi and toria), and winter vegetables such as peas, turnip, radish, carrots, lobia.

3. Industries profile

41. The secondary and tertiary industrial sector activities are pre-dominant in Amritsar and its surrounding urban centres. The main industries of the city are wool, cotton and textile mills as well as dairy and light engineering works. In addition to agriculture, small scale industrial manufacturing include agriculture implements, cycle and cycle parts, nuts and bolt, printing machine, sewing machine and parts, electric motors, electric fans, glass beads, cotton ginning, automobile parts, radio and amplifiers, food products such as papad, jam and murabba, Gur and khandsari, and chemicals including paints and pigments, dyes and colours, soap manufacturing, oil and perfume. People around the villages are agriculturists and farmers and are dependent on farming. There are no industries near the proposed project site.

4. Physical Infrastructure Services

42. Department of Public Health and Amritsar Municipal Corporation (SMC) are planning and implementing drinking water supply as well as sewage disposal. Public Works department is responsible for planning, construction and operation and maintenance of road network; while internal roads are maintained by AMC. AMC does solid waste disposal and management. Amritsar has the network of sewerage system with treatment plants.

V. ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

43. The assessment of environmental impacts for the proposed interventions under this package has been carried out during the following stages of the project planning and implementation:

(i.) **Location impacts.** Impacts associated with site selection, including impacts on environment and resettlement or livelihood related impacts on communities
(ii.) **Design impacts.** Impacts arising from project design, including the technology used, scale of operations etc.
(iii.) **Construction impacts.** Impacts resulting from construction activities including site clearance, earthworks, civil works, etc.
(iv.) **O&M impacts.** Impacts associated with the operation and maintenance of the infrastructure built in the project.

44. The proposal envisages medium scale construction activity in the adjoining area of existing buildings and facilities on the site. This would result in some environmental impacts typical to small construction activity even though the proposed facility is compatible with the existing activities taking place at these sites. The plot of land for development of proposed facilities is available inside the existing premises free from any encumbrances and with easy accessibility for the visitors.

- The site is located within densely populated area of city. Gaining free access and movement of workers, vehicles and other construction related machinery would be an issue that will be dealt with by obtaining requisite permissions before commencement of construction works on site. Identity cards & vehicle permits shall be provided by the contractor for all such movement to and from the site.
- Other impacts related to construction activities such as generation of dust and noise, removal of construction debris and demolition wastes etc are envisaged which shall be minimized and addressed by adopting safe engineering practices and appropriate building design. Caution will be exercised in planning for safe construction and operations phase to minimize disturbance to the adjoining existing activities.
- Provision for water for construction will be made through municipal water supply or through mobile water tankers.

45. **Land Acquisition and Resettlement and cultural Impacts.** The proposed sites of proposed Package No. PB/IDIPT/T3/08/10 are located within existing fort, and the creation of such a facility does not have any adverse cultural impact. Also, as per the resettlement framework, the proposed categorization for this project is Category C for involuntary resettlement (IR) as it do not result in any physical or economic displacement due to involuntary acquisition of land, or involuntary restrictions on land use or access to the site.

46. **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

47. 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) as defined in the management plan of the area.

A. Assessment of Environmental Impacts

48. **Determination of Area of Influence.** The primary impact areas are (i) sites for proposed project components; (ii) main routes/intersections which will be traversed by

construction vehicles; and (ii) quarries and borrow pits as sources of construction materials. The secondary impact areas are: (i) entire town area outside of the delineated primary impact area; and (ii) entire Amritsar district in terms of over-all environmental improvement.

49. In the case of this subproject 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

50. **Consents, permits, clearances, no objection certificate (NOC), etc.** As Tranche I works are already being implemented as per the NoC from Department of Cultural Affairs, Archaeology and Museums.

51. **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

52. Utilities. Interruption of services (water supply, electricity, toilets 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/DSC will coordinate with the providers/line agencies to relocate the utility.

53. **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.

54. **Sites for construction work camps and areas for stockpile, storage and disposal.** The subproject site is within Govindgarh Fort premises, where there is enough vacant space for construction work camps including labour camps. However, the contractor will be required to meet the following criteria for selection of the construction 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 near sensitive areas which will 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.

55. **Sources of construction materials.** Moderate 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:

- 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.

56. It will be the construction contractor's responsibility to verify the suitability of all material sources and to obtain the approval of PIU/DSC. If additional quarries are required after construction is started, then the contractor obtains written approval of PIU.

57. **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

58. **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:

- 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.

59. Summary of pre-construction activities is presented in **Table 4.** The responsibilities, monitoring program and costs are provided in detail 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 **Annexures 3 & 4.**

Table 4: 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

Parameters	Mitigation 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.
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 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

60. The impacts during the proposed construction works are generic to the construction activities and not expected to be significant. The EMP specifies the necessary mitigation measures to be strictly followed by the contractor and supervised by the DSC. Key impacts during construction are envisaged on the following aspects: (i) transportation of materials, (ii) dust generation, air and noise pollution from construction activities, (iii) handling of construction materials at site and, (iv) adoption of safety measures during construction.

61. **Construction Schedule and Method.** As per preliminary design, construction activities will cover approximately 2 years. The exact implementation schedule will be updated during detailed design phase and will be reflected in this IEE.

62. The infrastructures will be constructed manually according to design specifications. Demolished 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 the temple complexes 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 as per prevailing conditions at the time of construction.

63. 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.

64. Although construction of these project components involves quite simple techniques of civil work, the invasive nature of restoration works 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.

65. **Erosion Hazards.** The sites are in the built up area of the town therefore risk of erosion is low, limited during construction activities and not expected to have any negative impact on the drainage and hydrology of the area. However, the contractor will be require 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 drains.
- 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

66. **Impacts on Water Quality.** There are no surface water sources near the subproject site therefore impacts on water quality is negligible. Nevertheless, the contractors will be required to:

- Schedule civil works during non-monsoon season, to the maximum extent possible.
- Ensure drainages within the construction zones are kept free of obstructions.
- Keep loose soil material and stockpiles out of drains and flow-lines.
- 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.

67. **Impacts on Air Quality.** There is potential for increased dust particularly during summer/dry season due to various construction activities including stockpiling of construction materials. Emissions from vehicles transporting workers, construction materials and debris/materials to be disposed may cause increase 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” (PUC) certificate from PSPCB.
- Obtain CFE and CFO for hot mix plants, crushers, diesel generators, etc., if to be used in the project.

68. **Noise and Vibration Impacts.** Most of the activities during proposed works shall be done manually and no big equipments are supposed to be used therefore no noise and vibration impacts are expected. Nevertheless the contractor will be required to:

- Limit construction activities near sensitive areas 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.
- 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:
- Locate stationary construction equipment as far from nearby noise-sensitive properties as possible.
- Shut off idling equipment.
- Reschedule construction operations to avoid periods of noise annoyance identified in the complaint.
- Notify nearby residents whenever extremely noisy work will be occurring.
- Follow Noise Pollution (Regulation and Control) Rules, day time ambient noise levels should not exceed 65 dB(A) in commercial areas, 55 dB(A) in residential areas, and 50 dB(A) in silence zone.3
- Ensure vehicles comply with Government of India noise limits for vehicles. The test method to be followed shall be IS:3028-1998.

69. **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 is found within project area thus no impacts on flora and fauna will be envisaged. But in general the contractor will be required to:

- Conduct site induction and environmental awareness.
- Limit activities within the work area.
- Do not remove or harm existing vegetation except required under proposed contract
- Strictly instruct workers not to cut trees for fuel wood.
- Replant trees in the area using minimum ratio of 2 new trees for every 1 tree cut,

[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 PPCB. Mixed categories of areas may be declared as one of the above mentioned categories by PPCB.

if any. Replacement species must be approved by District Forest Department.

70. **Impacts on Physical and Cultural Resources.** There may be inconvenience to tourists, residents, businesses, and other road users due to construction activities in the proposed complexes and slower flow of traffic in areas of heritage walk with narrow roads. 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 walkways and metal sheets where required to maintain access of people and vehicles.
- 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.

71. **Impact due to Waste Generation.** Demolished structures will be reused to the maximum extent possible. Construction activities will produce excess excavated soils, excess construction materials, and solid wastes (such as removed concrete, wood, 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:

- 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 Municipal Authorities for beneficial uses of demolished materials or immediately dispose to designated areas.
- Recover used oil and lubricants and reuse; or remove from the sites.
- Avoid stockpiling and remove immediately all demolished materials, excess construction materials, and solid waste (removed concrete, wood, 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.

72. **Impacts on Occupational Health and Safety.** Residential accommodation for workers is not proposed. Workers need to be mindful of occupational hazards which can arise from excavation works in high-traffic and busy areas. 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 a 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.

73. **Impacts on Socio-Economic Activities.** Manpower will be required during the 24 months construction phase. This can help generate contractual employment and increase in local revenue. Thus potential impact is positive and long-term. As per preliminary design, land acquisition and closure of roads are not required. However, construction activities may impede access of residents and customers to shops. The potential impacts are negative and moderate but short-term and temporary. The contractor will need to adopt the following mitigation measures:

- Provide sign boards for visitors to inform nature and duration of construction works and contact numbers for concerns/complaints.
- Employ at least 50% of the labor force, or to the maximum extent, local persons within the 20-km immediate area if manpower is available.

74. **Summary of Mitigation Measures during Construction. Table 5** 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 5: Summary of Mitigation Measures during Construction Phase

Potential Impact	Mitigation Measures
Impacts on water quality	• Schedule civil works during non-monsoon season, to the maximum extent possible. • Ensure drainages within the construction zones are kept free of obstructions. • Keep loose soil material and stockpiles out of drains and flow-lines. • 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.
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 areas cannot be done immediately. • Maintain construction vehicles and obtain “pollution under control” (PUC) certificate from PPCB. • 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 proposed 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.4 • 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	• Conduct site induction and environmental awareness. • Limit activities within the work area.

[4] 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 PPCB. Mixed categories of areas may be declared as one of the above mentioned categories by PPCB.

Potential Impact	Mitigation Measures
fauna	• Do not remove or harm existing vegetation except required under proposed contract • Strictly instruct workers not to cut trees for fuel wood. • 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
Impacts on physical resources	• Ensure no damage to structures/properties near construction zone. • Provide walkways and metal sheets where required to maintain access of people and vehicles. • 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 Municipal Authorities for beneficial uses of demolished materials/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 demolished materials, excess construction materials, and solid waste (removed concrete, wood, 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

Potential Impact	Mitigation Measures
	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.
Impacts on socio-economic activities	• Provide sign boards for visitors to inform nature and duration of construction works and contact numbers for concerns/complaints. • Employ at least 50% of the labor force, or to the maximum extent, local persons within the 2-km immediate area if manpower is available. • "Mobility Plan" has to be chalked out in consultation with the District Administration prior to start of work.

75. The construction related impacts due to proposed subproject components are generic to construction activities, and are typical of building and other 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

76. 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

77. Impacts on environmental conditions associated with the O&M of the subproject 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

78. 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.

79. 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

80. During project preparation (June to August 2014), consultations have been held with the Department of Tourism, tourists of Amritsar and District administration, District Municipal Administration, local community representatives, 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 Annexure-5. Topics/issues discussed with the Department of Cultural Affairs, Archaeology and Museums which have been addressed in the design of the subproject and in this IEE where applicable.

C. Plan for Continued Public Participation

81. 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, Chandigarh 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 PHTPB website.

82. 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 environmental monitoring reports.

83. For the benefit of the community, relevant information in the IEE (Executive Summary) will be translated in Hindi/Punjabi and made available at: (i) Office of the PMU; and, (ii) Office of PIU, Amritsar; (iii) Office of the District Commissioner, Amritsar District (iv) District/Public

libraries of the Chandigarh/Amritsar towns. These copies will be made available free of cost to any person 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 PHTPB 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

84. 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.

85. 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

86. **Local Grievance Committee (LGC).** In this LGC has worked with NGO, SHG, Line Agency, Special invitee.

87. **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 Punjab, 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.

88. **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

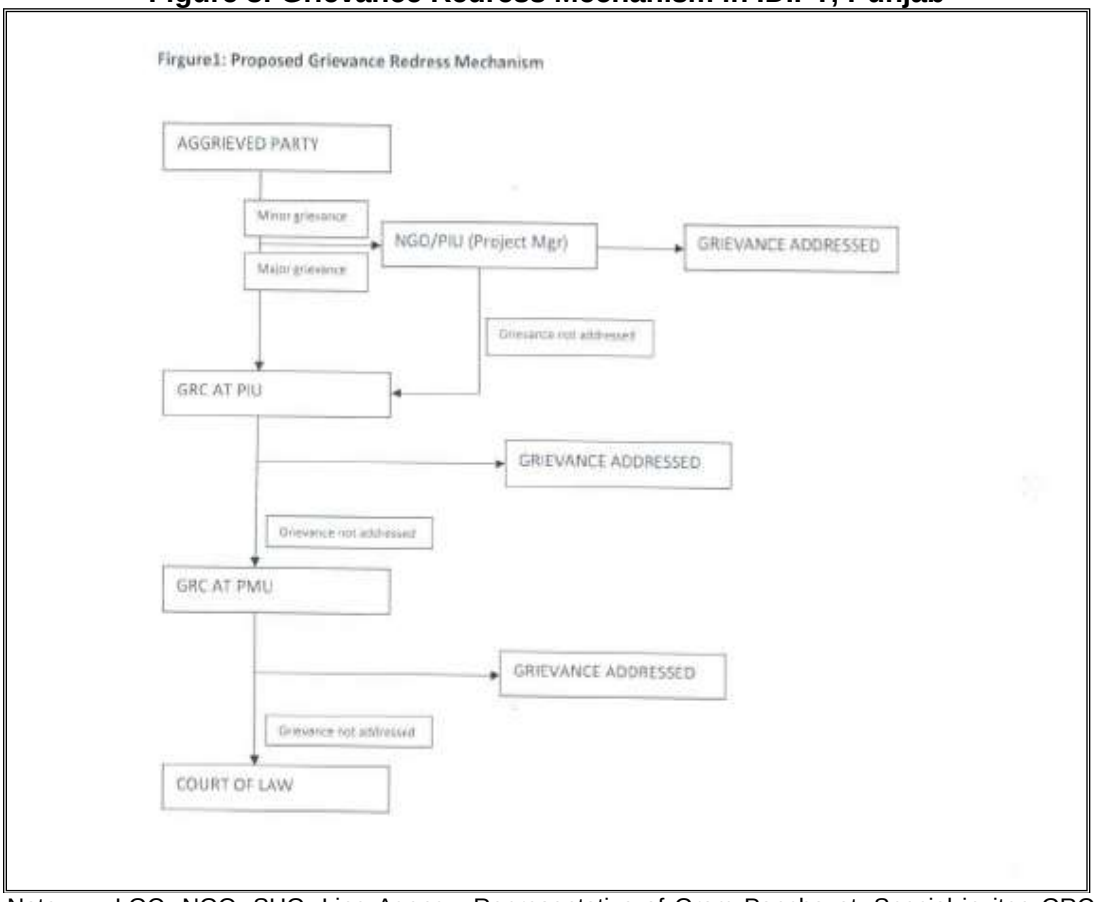
Executive Committee/State Level Empowered Committee (SLEC). Sample Grievance Redress Form is attached as **Annexure-6**

B. Approach to GRC.

89. 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, Punjab



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

90. 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 5).

91. 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.

92. 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.

93. **Responsibilities for EMP Implementation**: The following agencies will be responsible for EMP Implementation:

- Punjab Heritage and Tourism Promotion board (PHTPB). is the Executing Agency (EA) responsible for overall management, coordination, and execution of all activities funded under the loan;
- PIU, Amritsar will be the Implementing Agency (IA) responsible for coordinating procurement and construction of the project. PIU through its Project Management Unit (PMU) at Chandigarh will be implementing 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) shall be established in Amritsar. 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 Amritsar and DSC. The environmental related mitigation measures will also be implemented by the contractor.

94. 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

1. Review the IEE document and ensure adequacy under Safeguard Policy Statement, 2009 and identify any areas for improvement.
2. Ensure that the project design and specification adequately reflect the IEE, co-ordinate the obtaining of requisite environmental clearances for the project
3. 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.
4. 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
5. Review and approve the Contractor's Implementation Plan for the environmental measures, as per IEE.
6. Liaise with the Contractors and Consultants on the implementation of the Environmental management measures proposed in the IEE
7. Liaise with the various Government agencies on environmental and other regulatory matters
8. Continuously interact with the NGOs and Community groups to be involved in the project
9. Establish dialogue with the affected communities and ensure that the environmental concerns and suggestions are incorporated and implemented in the project.
10. 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
11. 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
12. 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

1. Review the IEE document and ensure adequacy under ADB SPS, 2009.
2. Interact on a regular basis with the sector specialists of the DSC and integrate environmentally sound practices into the detailed design of project components.
3. Advise PMU/PIU for compliance with statutory clearances.
4. Work out the site specific mitigation measures for components as required and integrate the same into contractual provisions.
5. 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.
6. 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).
7. Supervise the implementation of the Environmental provisions by the Contractors.
8. 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
9. Review the Contractors' Environmental Implementation Plans to ensure compliance with the IEE.

Box 2: Terms of Reference of Safeguards Specialist (Environment) of DSC
10. Develop good practice construction guidelines to assist the contractors in implementing the provisions of IEE. 11. Prepare and submit regular environmental monitoring and implementation progress reports. 12. 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
1. Support and Advice the PMU and Consultants team in- 2. Best Environmental Practices for responding to environmental issues involved with implementation of the projects on a sustainable basis 3. Assistance and advice on institutional strengthening and capacity building at the PMU and PIU levels in regards to environmental practices. 4. Ensure that baseline surveys, environmental monitoring plans and programs, initial environmental examinations (IEE) as may be required are carried out. 5. Preparation of ADB procedure compliant environmental safeguard actions including impact assessment if any during the design stage 6. Management plan and mitigation measures 7. Oversight of implementation of environmental standards and safeguards as part of project implementation 8. Participate in preparation of Master Plan for additional sites and contribute to the environmental safeguards to the plan and sub components 9. Preparation of performance monitoring reports

95. **Responsibility for updating IEE during detailed design**. DSC will be responsible for preparation of IEE and updating it time to time, when required during detailed design and implementation phase.

96. **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 Municipal Authority and Department of Tourism.

97. **Responsibility for Reporting**. PIU in coordination with DSC will submit monthly, quarterly and semi-annually monitoring report to PMU. On the basis of it PMU will submit to ADB semi-annual monitoring 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 preparation and finalization of quarterly, semi-annual and annual progress reports. The sample environmental monitoring template is attached as Annexure-7 to 9.

A. EMP Tables

98. **Tables 5 to 7** 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 6: 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.	1. Obtain all necessary consents, permits, clearance, NOCs, etc. prior to start of civil works.	2. 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
	3. Acknowledge in writing and provide report on compliance all obtained consents, permits, clearance, NOCs, etc.	4. Records and communications	PMU	EA to report to ADB in EMR	Acknowledge upon receipt Send report as specified in CFE, permits, etc.	PMU
	5. Include in detailed design drawings and documents all conditions and provisions if necessary	6. Detailed design documents and drawings	Contractor	PMU and PMC PIU and DSC	Upon submission by contractor	Contractor
Establishment of baseline environmental conditions prior to start of civil works	7. 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	8. Records	Contractor	PMU and PMC PIU and DSC	to be included in updated IEE report	PMU
Utilities	9. Identify and include locations and operators of these utilities in the detailed design	List and maps showing utilities to be shifted Contingency plan for services disruption	- DSC to prepare preliminary list and maps of utilities to be	PMU and PMC PIU and DSC	to be included in updated IEE report	DSC – preliminary 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
	documents to prevent unnecessary disruption of services during the construction phase. 10. Require contractors to prepare a contingency plan to include actions to be done in case of unintentional interruption of services. 11. Obtain from the PIU and/or DSC the list of affected utilities and operators; 12. If relocations are necessary, contractor will coordinate with the providers to relocate the utility.		shifted - During detailed design phase, contractor to (i) prepare list and operators of utilities to be shifted; (ii) contingency plan			Contractor – implementation stage
Social and Cultural Resources	13. Consult Archaeological Survey of India (ASI) or Punjab State Archaeology Department to obtain an expert assessment of the archaeological potential of the site. 14. Consider alternatives if the site is found to be of medium or high risk. 15. Include state and local	Chance find protocol (Annex 10)	- PMC to consult ASI or Punjab State Archaeology Department - PMC to develop protocol for chance finds	PMU	to be included in updated IEE report	PMC

Parameters	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of monitoring	Source of Funds to Implement Mitigation Measures
	archaeological, cultural and historical authorities, and interest groups in consultation forums as project stakeholders so that their expertise can be made available. 16. 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	17. Will not promote instability and result in destruction of property, vegetation, irrigation, and drinking water supply systems, etc. 18. Residential areas will not be considered so as to protect the human environment (i.e., to curb accident risks, health risks due to air	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	PMU PIU	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
	and water pollution and dust, and noise, and to prevent social conflicts, shortages of amenities, and crime). 19. Disposal will not be allowed near sensitive areas which will inconvenience the community. 20. The construction camp, storage of fuel and lubricants should be avoided at sensitive zones. The construction camp site should be finalized in consultation with DSC and PIU.					
Sources of construction materials	21. Use quarry sites and sources permitted by government. 22. Verify suitability of all material sources and obtain approval from PIU. 23. If additional quarries are required after construction has started, obtain written approval from PIU. 24. Submit to DSC on a	Permits issued to quarries/sources of materials	Contractor PMC and DSC to verify sources (including permits) if additional is requested by contractor	PMU PIU	Upon submission by contractor	Contractor

Parameters	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of monitoring	Source of Funds to Implement Mitigation Measures
	monthly basis documentation of sources of materials.					
Access	25. Plan transportation routes so that heavy vehicles do not use narrow local roads, except in the immediate vicinity of delivery sites. 26. Schedule transport and hauling activities during non-peak hours. 27. Locate entry and exit points in areas where there is low potential for traffic congestion. 28. Keep the site free from all unnecessary obstructions. 29. Drive vehicles in a considerate manner. 30. 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. 31. Notify affected sensitive	Traffic management plan	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
	receptors by providing sign boards with information about the nature and duration of construction works and contact numbers for concerns/complaints.					
Occupational health and safety	32. Comply with IFC EHS Guidelines on Occupational Health and Safety 33. 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. 34. Include in H&S plan measures such as: (i) type of hazards in the construction site; (ii)	Health and safety (H&S) plan	Contractor	PMU and PMC 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
	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. 35. Provide medical insurance coverage for workers.					
Public consultations	36. Continue information dissemination, consultations, and involvement/participation of stakeholders during project implementation.	- Disclosure records - Consultations	PMU and PMC PIU and DSC Temple administrators Contractor	PMU and PMC	- During updating of IEE Report - During preparation of site- and activity-specific plans as per EMP - Prior to start of construction - During construction	PMU Contractor to allocate funds to support

Table 7: 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
Impacts on water quality	37. 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	
	38. Ensure drainages within the construction zones are	Visual inspection				

Potential Impact	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of Monitoring	Source of Funds
	kept free of obstructions.				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	
	39. Keep loose soil material and stockpiles out of drains and flow-lines.	Visual inspection				
	40. Avoid stockpiling of excavated and construction materials (sand, gravel, cement, etc.) unless covered by tarpaulins or plastic sheets.	Visual inspection				
	41. Re-use/utilize, to maximum extent possible, excavated materials.	condition in waste management plan				
	42. Dispose any residuals at identified disposal site (PIU/DSC will identify approved sites).	condition in waste management plan				
	43. Dispose waste oil and lubricants generated as per provisions of Hazardous Waste (Management and Handling) Rules, 1989.	condition in waste management plan				
	44. 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	45. 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
	46. Conduct regular visual inspection in the construction zones to ensure no excessive dust emissions.	Visual inspection				
	47. Maintain construction vehicles and obtain “pollution under control” certificate from PPCB.	PUC certificates				
	48. 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	49. Limit construction activities in proposed complexes and other important areas to daytime only. 50. 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	Contractors
	51. Minimize noise from construction equipment by	Report on ambient noise				

Potential Impact	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of Monitoring	Source of Funds
	using vehicle silencers and fitting jackhammers with noise-reducing mufflers.	level monitoring within direct impact zones			action is required) - random inspection by PMU, PIU, PMC and/or DSC	
	52. Avoid loud random noise from sirens, air compression, etc.	zero incidence				
	53. 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				
	54. 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: 55. Locate stationary construction equipment as far from nearby noise-sensitive properties, such as the hospital, as possible. 56. Shut off idling equipment. 57. Reschedule construction operations to avoid periods of noise annoyance identified in the complaint. 58. Notify nearby residents whenever extremely noisy	- Complaints addressed satisfactory - GRM records				

Potential Impact	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of Monitoring	Source of Funds
	work will be occurring.					
Impacts on flora and fauna	59. Conduct site induction and environmental awareness. 60. Strictly instruct workers not to cut trees for fuel wood 61. Do not harm existing vegetation in the area except indicated in site plan	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
	62. Limit activities within the work area.	Barricades along excavation works				
	63. 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. 64.	-Number and species approved by Himachal State Forest Department				
Impacts on physical cultural resources	65. 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 WTP 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	Contractor
	66. Provide sign boards to inform nature and duration of construction works and contact numbers for concerns/complaints.	- no complaints received - photo-documentation				
	67. Implement good	- Visual				

Potential Impact	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of Monitoring	Source of Funds
	housekeeping. Remove wastes immediately.	inspection - No stockpiled/ stored wastes			inspection by PMU, PIU, PMC and/or DSC	
	68. Ensure workers will not use nearby/adjacent areas as toilet facility.	- No complaints received - Sanitation facilities for use of workers				
	69. 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. 70. Ensure heavy vehicles do not use narrow local roads, except in the immediate vicinity of delivery sites.	- Approved routes in traffic management plan				
	71. 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 (Annex 10)				
Impact due to waste generation	72. Prepare and implement a waste management plan. Manage solid waste according to the following	condition in waste management plan	Contractor	PIU and DSC	- daily inspection by contractor supervisor	Contractor

Potential Impact	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of Monitoring	Source of Funds
	hierarchy: reuse, recycling and disposal. Include in waste management plan designated/approved disposal areas. 73. Coordinate with PIU/DSC for beneficial uses of excavated soils or immediately dispose to designated areas. 74. Recover used oil and lubricants and reuse; or remove from the site. 75. Avoid stockpiling and remove immediately all excavated soils, excess construction materials, and solid waste (remove concrete, wood, packaging materials, empty containers, oils, lubricants, and other similar items). 76. Prohibit disposal of any material or wastes (including human waste) into drainage, nallah, or watercourse.				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	
Impacts on occupational health and safety	77. 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	Contractor
	78. Disallow worker exposure to noise level greater than	- Visual inspection - Work				

Potential Impact	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of Monitoring	Source of Funds
	85 dBA for a duration of more than 8 hours per day without hearing protection. The use of hearing protection shall be enforced actively.	schedule - Noise level monitoring in work area			- weekly visual inspection by DSC (more frequent if corrective action is required) - random inspection by PMU, PIU, PMC and/or DSC	
	79. 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 equipment, and preventing injury to fellow workers.	- Records - Condition in H&S plan				
	80. 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				
	81. Provide medical insurance coverage for workers.	Records				
	82. Secure construction zone from unauthorized intrusion and accident risks.	- Area secured - Trenches barricaded				
	83. Provide supplies of potable drinking water.	- Supply of water				
	84. Provide clean eating areas where workers are not exposed to hazardous or noxious substances.	- Workers area				

Potential Impact	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of Monitoring	Source of Funds
	85. 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				
	86. 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				
	87. Ensure moving equipment is outfitted with audible back-up alarms.	- Construction vehicles - Condition in H&S plan				
	88. 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	89. Provide sign boards for pedestrians to inform nature and duration of construction works and	Visible and understandable sign boards in construction	Contractor	PIU and DSC	- daily inspection by contractor supervisor -	Contractor

Potential Impact	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of Monitoring	Source of Funds
	contact numbers for concerns/complaints.	zone			weekly visual inspection by DSC (more frequent if corrective action is required) - random inspection by PMU, PIU, PMC	
	90. Employ at least 50% of the labor force, or to the maximum extent, local persons within the 20-km immediate area if manpower is available.	Employment records				

Table 8: 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.)	91. Backfill any excavation and trenches, preferably with excess excavation material generated during the construction phase. 92. Use removed topsoil to reclaim disturbed areas. 93. Re-establish the original grade and drainage pattern to the extent practicable. 94. Stabilize all areas of disturbed vegetation using weed-free native shrubs, grasses, and trees. 95. Restore access roads, staging areas, and	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

Potential Impact	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of Monitoring	Source of Funds
	temporary work areas. 96. Restore roadside vegetation, if removed 97. Remove all tools, equipment, barricades, signs, surplus materials, debris, and rubbish. Demolish buildings/structures not required for O&M. Dispose in designated disposal sites. 98. Monitor success of re-vegetation and tree re-planting. Replace all plants determined to be in an unhealthy condition. *99.* Request in writing from PIU/DSC that construction zones have been restored.					

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

99. **Table 8** summarizes site and activity-specific plans to be prepared as per EMP tables.

Table 8: 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	IPIU/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	PMU and PMC	Contractor
Detailed Design Phase	List of pre-approved sites	Location/s for work camps, areas for stockpile, storage and disposal	PIU and DSC	Contractor
Detailed Design Phase	Waste 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

C. Environmental Monitoring Program

100. 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.

101. **Table 9** 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 9: Indicative Environmental Monitoring Program

	Field	Phase	Parameters	Location	Frequency	Responsibility
1.	Air quality	Detailed design phase to establish baseline	Particulate matter	Govindgarh Fort	24 hours (once)	PMU
		Construction	Particulate matter	Govindgarh Fort	24 hours (six monthly except monsoon season)	Contractor
2.	Noise	Detailed design phase to establish baseline	Day time dB(A)	Govindgarh Fort	Once before construction	Contractor
		Construction	Day time dB(A)	Govindgarh Fort	During noise-generating activities	Contractor

D. Capacity Building

102. 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 would 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 10 below. This training program is intended for the entire destination and is not just specific to this package.

Table 10: 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	• Engineers and staff of line depts. of GoPunjab, and PMU/PIU (including the ES)	• Lecture / Interactive Sessions	• ½ Working Day	• Safeguards Specialist of the PMC and DSC

Program	Description	Participants	Form of Training	Duration/ Location	Training Conducting Agency
	• Implementation Arrangements				
• 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

E. EMP Implementation Cost

103. 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.

104. 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.

105. 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 11** below.

Table 11: Indicative EMP Budget[5]

S.N.	Particulars	Stages	Unit	Total number	Rate (INR)	Cost (INR)	Source of fund
A. Monitoring Measures							
1	Air quality monitoring	Detailed design	Per sample	1	10,000	10,000	PMU
2	Noise Levels	Detailed design	Per location	1	4,000	4,000	PMU
3	Ambient Air Quality	Construction	Per Sample	4	10,000	40,000	Contractor budget
4	Ambient Noise Quality	Construction	Per Sample	4	4,000	16,000	Contractor budget
				Sub- Total (A)		**70,000**	
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	Construction	L.S			1,50,000	PMU

[5] O&M is not expected to cause significant air, water and noise pollution there monitoring will be conducted through visual inspection and costs will be included as part of O&M activities of asset owner.

S.N.	Particulars	Stages	Unit	Total number	Rate (INR)	Cost (INR)	Source of fund
	II						
					Sub -Total (B)	**4,50,000**	
					Total (A+B) INR	**5,20,000**	

IX. FINDINGS AND RECOMMENDATIONS

106. 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

107. 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

108. 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.

109.

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

Country/Project Title: **IDIPT – Punjab:** Conservation and Adaptive Reuse at Gobindgarh Fort

Sector Division: **SARD (Urban Development and Water Division)**

Screening Questions	Yes	No	Remarks
A. Project siting Is the project area.			
▪ Densely populated?		√	Presently the Gobindgarh Fort is not having any population/habitation
▪ Heavy with development activities?		√	There are not any developmental activities inside the Fort.
▪ Adjacent to or within any environmentally sensitive areas?			
• Cultural heritage site	√		The sub-project envisages interventions in and around Gobindgarh Fort Complex (a cultural heritage monument)
• Protected area		√	The project is not in a protected area.
• Wetland		√	The project sites are not in wetland area.
• Mangrove		√	The project site is not in a mangrove area.
• Estuarine		√	The project site is not in an estuarine.
• Buffer zone of protected area		√	The project area is not in any buffer zone of protected area.
• Special area for protecting biodiversity		√	The project is not in any special area for protecting biodiversity.
• Bay		√	The project site is not in any bay.
B. POTENTIAL ENVIRONMENTAL			

Screening Questions	Yes	No	Remarks
IMPACTS Will the project cause…			
▪ **Impacts on the sustainability of associated sanitation and solid waste disposal systems and their interactions with other urban services.**	√		During construction only demolition waste and excavated soil is expected as solid waste which shall be disposed as per approved management plan.
▪ **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?**		√	This project will involve development within the fort complex and therefore no significant interference with existing environmental conditions of the area is anticipated.
▪ Degradation of land and ecosystems (e.g. loss of wetlands and wild lands, coastal zones, watersheds and forests)?		√	The fort is not in ecologically sensitive area.
▪ Dislocation or involuntary resettlement of people?		√	No settlements are existing inside the fort premises, thus no dislocation and involuntary resettlement of people arise.
▪ Disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable group?		√	Poor, women and children, Indigenous Peoples or other vulnerable groups do not exist inside the fort premises, thus there are no disproportionate impacts are caused.
▪ Degradation of cultural property, and loss of cultural heritage and tourism revenues?		√	The interventions in and around the cultural destinations (fort) shall result in an improved environment in and around the cultural heritage sites, through improved infrastructural services, and better tourist amenities. The other a like projects in the fort include provisions for conservation and management of the cultural assets, which would enable arrest of the present degradation of these structures, due to lack of appropriate mechanisms for managing such assets.
▪ 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?		√	There are no low-lying lands, floodplains and steep hillsides by squatters and low-income groups in the project site, hence there is no chance of their exposure to increased health hazards and risks due to pollution causing industries.
▪ Water resource problems (e.g. depletion/degradation of available water supply, deterioration for surface and ground water quality, and pollution of receiving waters?		√	The ground water through tube wells shall be used for construction works, for which detail study has been done and found feasible for this project, therefore no water pollution is expected from the proposed project. Groundwater monitoring has

Screening Questions	Yes	No	Remarks
			already been conducted from a certified monitoring agency and incidents of groundwater pollution have been observed.
▪ Air pollution due to urban emissions?		√	During construction phase only dust may arise which should be mitigated through water sprinkling, no other significant emission is expected during construction.
▪ Risks and vulnerabilities related to occupational health and safety due to physical, chemical and biological hazards during project construction and operation?	√		Only physical hazards to workers due to accidents may come across during construction for which safety of workers should be taken in priority.
▪ Road blocking and temporary flooding due to land excavation during rainy season?		√	The project activities will not cause any Road blocking and temporary flooding due to land excavation during rainy season.
▪ Noise and dust from construction activities?		√	Restoration works do not involve major noise and dust problem.
▪ Traffic disturbances due to construction material transport and wastes?		√	No huge transport of construction material and wastes is expected in the project
▪ Temporary silt runoff due to construction?		√	There will be no major silt run off during construction, all minor impacts will be managed through Environment Mitigation Plan (EMP).
▪ **Hazards to public health due to ambient, household and occupational pollution, thermal inversion, and smog formation?**		√	No significant ambient, household and occupational pollution is expected.
▪ Water depletion and/or degradation?		√	Prior study of ground water resources is done, which permits the use of underground water as source of water
▪ Overpaying of ground water, leading to land subsidence, lowered ground water table, and salinization?		√	Prior study of ground water resources is done, which permits the use of underground water as source of water
▪ Contamination of surface and ground waters due to improper waste disposal?		√	Waste generated is construction debris related. Disposal shall be done in legitimate manner and will not cause water pollution
▪ Pollution of receiving waters resulting in amenity losses, fisheries and marine resource depletion, and health problems?		√	No waste water generation is expected in this project
▪ Large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?		√	Only small number of workers shall execute the construction works, therefore no burden on social infrastructure and services is expected. No major influx of population due to this project during operation is anticipated
▪ Social conflicts if workers from other regions or countries are hired?		√	No social conflicts is expected due to workers

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?		√	All the works shall be carried out within the fort premises therefore no risk to community health and safety is expected
▪ 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?		√	All the works shall be carried out within the fort premises therefore no risk to community health and safety is expected

A CHECKLIST FOR PRELIMINARY CLIMATE RISK SCREENING

Country/Project Title: IDIPT – Punjab: IDIPT – Punjab: Conservation and Adaptive Reuse at Gobindgarh Fort

Sector: SARD (Urban Development and Water Division)

Subsector:

Division/Department:

Screening Questions		Score	Remarks[6]
Location and Design of project	Is siting and/or routing of the project (or its components) likely to be affected by climate conditions including extreme weather related events such as floods, droughts, storms, landslides?	0	The proposed subproject is planned in the area available within the Gobindgarh Fort and proposed interventions are limited to the improvement of the existing facilities and development of additional platforms for dissemination of information on the history, art and culture of the monument for enriching the experience of tourist/visitors, hence no negative impacts related with Climate change are anticipated.
	Would the project design (e.g. the clearance for bridges) need to consider any hydro-meteorological parameters (e.g., sea-level, peak river flow, reliable water level, peak wind speed etc)?	0	Does not arise
Materials and Maintenance	Would weather, current and likely future climate conditions (e.g. prevailing humidity level, temperature contrast between hot summer days and cold winter days, exposure to wind and humidity hydro-meteorological	0	The construction materials used for this project are as per the original architecture and indigenous practices. Only site specific conservation works/ and construction of the building will be done which

[6] 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.

	parameters likely affect the selection of project inputs over the life of project outputs (e.g. construction material)?		shall not have any impact on the climate change on the regional scale.
	Would weather, current and likely future climate conditions, and related extreme events likely affect the maintenance (scheduling and cost) of project output(s)?	0	Does not arise
Performance of project outputs	Would weather/climate conditions and related extreme events likely affect the performance (e.g. annual power production) of project output(s) (e.g. hydro-power generation facilities) throughout their design life time?	0	Does not arise

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: The proposed subproject is to provide improvements and additional facilities to the existing infrastructure available in the Kanjli and Harike wetland. The proposed interventions include interpretation centres, bird watch towers, camping sites, vehicle parking areas, public amenities etc. The proposed construction, operation and maintenance of the project do not have any impact on the climatic condition.

Prepared by: Department of Tourism, Punjab

Annexure 2

Photo Illustration

Existing conditions of building in Govindgarh fort

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:

111. The objectives of SMP are:
112. To minimize spoil generation where possible
113. Maximize beneficial reuse of spoil from construction works in accordance with spoil management hierarchy
114. Mange onsite spoil handling to minimize environmental impacts on resident and other receivers
115. Minimize any further site contamination of land, water, soil
116. 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.

117. Consideration of likely spoil characteristics
118. Identification of possible reuse sites
119. Screening of possible reuse opportunities
120.

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:

121. the safety of pedestrians, bicyclists, and motorists travelling through the construction zone;
122. protection of work crews from hazards associated with moving traffic;
123. mitigation of the adverse impact on road capacity and delays to the road users;
124. maintenance of access to adjoining properties
125. Avoid hazards in
126. 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.

127. Make traffic safety and temporary traffic control an integral and high-priority element of every project from planning through design, construction, and maintenance.
128. Inhibit traffic movement as little as possible.
129. Provide clear and positive guidance to drivers, bicyclists, and pedestrians as they approach and travel through the temporary traffic control zone.
130. Inspect traffic control elements routinely, both day and night, and make modifications when necessary.
131. Pay increased attention to roadside safety in the vicinity of temporary traffic control zones.
132. Train all persons that select, place, and maintain temporary traffic control devices.
133. Keep the public well informed.
134. 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

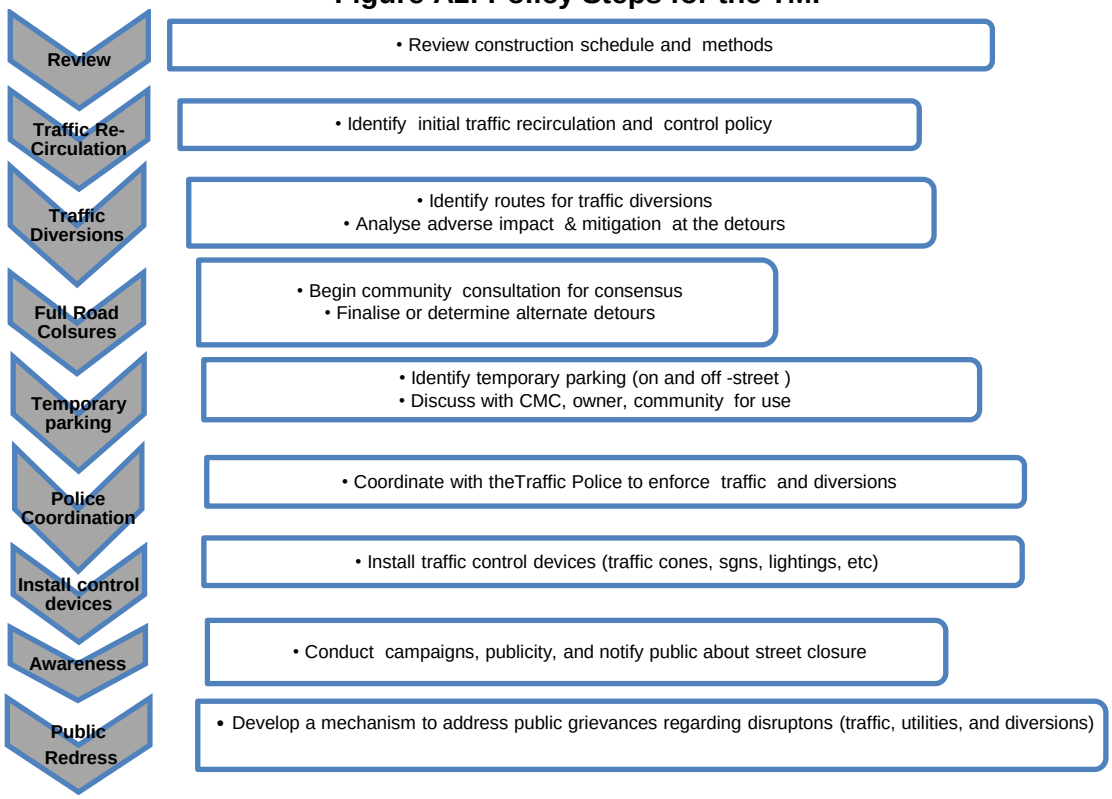
3. Apart from the capacity analysis, a final decision to close a particular street and divert the traffic should involve the following steps:

135. approval from the PIU, local administration to use the local streets as detours;
136. 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;
137. determining of the maximum number of days allowed for road closure, and incorporation of such provisions into the contract documents;
138. determining if additional traffic control or temporary improvements are needed along the detour route;
139. considering how access will be provided to the worksite;

140. contacting emergency service, school officials, and transit authorities to determine if there are impacts to their operations; and
141. 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 centers. In addition, the project will publish a brochure for public information. These brochures will be widely circulated around the area and will also be available at the PIU, and the contractor's site office. The text of the brochure should be concise to be effective, with a lot of graphics. It will serve the following purpose:

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

E. Vehicle Maintenance and Safety

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

   142. Driver will follow the special code of conduct and road safety rules of Government of Nepal.
   143. Drivers to ensure that all loads are covered and secured drivers to ensure operation equipment can’t leak materials hauled
   144. 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:

145. Signs
146. Pavement Markings
147. Channelizing Devices
148. Arrow Panels
149. Warning Lights

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

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

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

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

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

Annexure-5

Public Consultations

Public Consultations shall be done during detailed design phase and included in final IEE report

S. No.	Date of Site Visit	Sites Visited	Name of the officials met	Issues Discussed
	05.11.13	All Sub Project Sites of Tranche III	Owners of the site, SDM, DC office, stakeholders, community people, Panchayat members, women groups around the site.	a) Ownership of the assets under the site and accessibility to the sites. b) Development activities required at the site for its enhancement/ or adaptive reuse. c) Responsible agencies for the O & M of the site. d) Confirmation and consensus for the required interventions through the agencies. e) Key gender issues and requirements of the local women groups in the area. f) Income generating activities which can be taken up by the local community. g) Expected benefits of the project by the local community and the stakeholders. h) NoC and undertakings required for development of the site.
	19.11.13	All Sub Project Sites of Tranche III	Regarding NoCs and undertakings	
	20.11.13	All Sub roject Sites of Tranche III	Regarding NoCs and undertakings	
	28.13.13	All Sub Project Sites of Tranche III	Regarding NoCs and undertakings	

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

150. Overall project description and objectives
151. Description of sub-projects
152. Environmental category of the sub-projects
153. Details of site personnel and/or consultants responsible for environmental monitoring
154. 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

155. Provide the monitoring results as per the parameters outlined in the EMP. Append supporting documents where applicable, including Environmental Site Inspection Reports.
156. 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:

157. What are the dust suppression techniques followed for site and if any dust was noted to escape the site boundaries;
158. If muddy water was escaping site boundaries or muddy tracks were seen on adjacent roads;
159. 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;
160. Are their designated areas for concrete works, and refuelling;
161. Are their spill kits on site and if there are site procedure for handling emergencies;
162. Is there any chemical stored on site and what is the storage condition?
163. Is there any dewatering activities if yes, where is the water being discharged;
164. How are the stockpiles being managed;
165. How is solid and liquid waste being handled on site;
166. Review of the complaint management system;
167. 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

168. 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)

169. Brief discussion on the basis for monitoring
170. Indicate type and location of environmental parameters to be monitored
171. Indicate the method of monitoring and equipment to be used
172. 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

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

Annexes

174. Photos
175. Summary of consultations
176. Copies of environmental clearances and permits
177. Sample of environmental site inspection Report
178. 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
_____

_____ _____
Name **Position**

Annexure 10:

Archaeological Monitoring and Chance Encounter Protocol
Protocol for Design and Supervision Consultants (DSC)
RECORDING WHEN HISTORIC FEATURES ARE REVEALED DURING EXCAVATIONS IN ARCHEOLOGICALLY SIGNIFICANT BUILDINGS AND STRUCTURES.

PREPARED BY CULTURAL HERITAGE CONSERVATION SPECIALIST (CHCS) INTL. PMC,
THOMAS ADDYMAN (SIMPSON AND BROWN ARCHITECTS, EDINBURG.

1.1 Introduction

When historic features such as walls, brick constructions and other features are encountered during excavation the excavation must be stopped immediately and the DSC must be informed immediately.

1.2 Cleaning

When a feature is discovered it must be defined by careful cleaning. Roots must be removed and dirt must be carefully cleaned away and brickwork revealed and carefully scraped clean. The section or trench base should also be cleaned back for a little distance around the feature.

1.3 Record photography

When the feature is clean good photography should be taken – vertical and face-on shots and a few general shots of the feature, also showing its position in relation to surrounding features, buildings, etc. The red and white photographic scale should be in each photograph. The scale should be parallel to the top and bottom of each camera shot. The photographic scale should be kept in the store room in the northern bastion on site when not in use [ADD EXAMPLE PHOTOS].

When test excavations / investigations are made at the fort (to examine historic floor levels, etc) these should also be recorded photographically. The photographic scale should be used.

The photographed should be catalogued (date, location, direction of shot)

1.4 Drawn record

When features are revealed a drawn record should also be made.

e. General location record – measuring its position and orientation within the fort / in relation to surrounding structures
f. Record drawings – detail drawings made in plan and section/profile. The extent (edges) of the feature should be drawn and the level of the existing ground surface and the top and base of the feature should be recorded. These levels should be marked on the drawings. The drawings should include detail of the construction of the feature. Perspective sketches could also be made if necessary. Explanatory notes can also be put on the drawings.

1.5 Reporting finds

When finds are made these should be reported to PMC (for the attention of Tom Addyman). Photographs and record drawings should be sent.

1.6 Discovery of historic objects

When clearance and excavation takes place artefacts and historic objects are sometimes found. These should be recovered and kept in a safe place. The place of discovery should be recorded and each find given a number and tag tied to the find with

the same number on it. A list of the finds should be kept (with the find No. And place of discovery and date of discovery recorded). Tom Addyman will inspect the finds in the store when he does site inspections to decide which are important and should be kept.

1.7 Contractors' instruction: mechanical excavation of services trenches at Gobindgarh Fort

Contractors working at Gobindgarh Fort must take additional care not to destroy or damage historic features during excavations. There are many buried historic features inside the fort – wells, ancient drains, remains of buildings, other walls, grain pits, etc. Every care must be made not to destroy these during excavations.

Excavator drivers need to be instructed to be aware of hitting buried features and that they must be investigated before continuing work.

When features are encountered during mechanical excavation work should stop and the DSC must be informed immediately so that they can be inspected at the first opportunity.