

## Draft Initial Environmental Examination

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October 2014

**IND: Infrastructure Development Investment  
Program for Tourism Tranche 3– Imperial Highway  
Heritage Conservation and Visitor Facility  
Development at Western Circuit (Punjab)**

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
PHTPB-	Punjab Heritage and Tourism Promotion Board
PPCB –	Punjab Pollution Control Board
IDIPT –	Infrastructure Development Investment Program for Tourism
IEE –	Initial environmental examination
MC –	Municipal Corporation
MLD –	Million Litres per day
MOEF –	Ministry of Environment and Forests
MSL –	Mean Sea Level
NGO –	Non-Governmental Organization
O&M –	Operations and Management
PIU –	Project Implementation Unit
PMC-	Project Management Consultants
PMU –	Project Management Unit
REA –	Rapid Environmental Assessment
SEAC –	State Expert Appraisal Committee
SPM –	Suspended Particulate Matter
SPS –	Safeguards Policy Statement
TCP –	Town and Country Planning
TMP-	Traffic Management Plan
TDS –	Total Dissolved Solids
TSS –	Total Suspended Solids

### **NOTES**

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

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## EXECUTIVE SUMMARY

**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.

The sites selected for conservation and provision of visitor amenities are part of Tarn Taran district of Punjab state. The district is part of Western Circuit<sup>1</sup>. The sites identified for enhanced protection and management of natural and cultural tourism assets are located in rural environment along the Grand Trunk Road within the Tarn Taran district. These sites are important due to their historical importance and cultural settings.

**Executing and implementing agencies.** The executing agency is the Punjab Heritage and Tourism Promotion Board, 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) Amritsar, set up at Tarn Taran, to be supported by Design Supervision Consultant (DSC). Department of Cultural Affairs, Archaeology and Museums and Deputy Commissioner of Tarn Taran is the asset owner for the proposed components.

**Categorization.** Tarn Taran town subproject Package PB/IDIPT/T3/03-12/18 to be advertised Q3/2016 is classified as Environmental Category 'B' as per the SPS as no significant impacts are envisioned. Accordingly this Initial Environmental Examination (IEE) has been prepared and assesses the environmental impacts and provides mitigation and monitoring measures to ensure no significant impacts as a result of the subproject.

**Subproject Scope.** The major scope of this subproject as per Summary Appraisal Report (SAR) 12 - Package PB/IDIPT/T3/03-12/18 to be advertised Q3/2016. The scope of the work involve development of existing tank and conservation of Baradari at Gandiwind including connectivity improvement; Conservation of 8 Kos Minars, including connectivity improvement and development of local crafts specific to the villages in vicinity of all nine Kos Minars at different locations in Villages of Gandiwind, Bharowal, Naurangabad, Bachere, Baahek bagel Singh, Chabal, Chhema, Burj and Rajatal.

**Description of the Environment.** Subproject components are located in rural areas of Tarn Taran district. The western corridor is located in the north western segment of the state and includes the districts of Kapurthala, Gurdaspur and Tarn Taran. The area borders Pakistan in the west and the River Beas flows through the eastern portion. Tarn Taran

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<sup>1</sup> The Western Circuit is also a key link between Amritsar and the Western Pilgrimage Circuit in Himachal Pradesh through Pathankot helping to create part of the backbone of the Northwest Himalayan Tourism Circuit/Destination.

district is part of Sikh Heritage Trail and Grand Trunk Trail and Imperial Highway, identified under United Nations World Tourism Organization (UNWTO) Master Plan, (Source: As per Punjab Tourism Development Master Plan, 2008-2023; UNWTO).

**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.

Locations and sitting 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.

During the construction phase, impacts mainly arise from the need to dispose of moderate quantities of waste material. 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.

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.

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.

The tourists, business people (organizations) and citizens of Tarn Taran 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.

**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 (Annexure 5).

**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.

**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 Kapurthala, Gurdaspur and Tarn Taran. 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 Tarn Taran in Punjab state. Tarn Taran district is part of Sikh Heritage Trail and Grand Trunk Trail and Imperial Highway, identified under United Nations World Tourism Organization (UNWTO) Master Plan, (Source: *As per Punjab Tourism Development Master Plan, 2008-2023; UNWTO*).



3. Subproject sites are located in Tarn Taran city which is part of Western Circuit of Punjab state. The subproject sites are located along the Grand Trunk Road. Grand Trunk Road commonly known as GT Road or National Highway 1 is a significant route. It was called Uttarapath or the northern route since its inception in 3rd century B.C, then it became popular as the Badshahi Sadak during the Medieval Indian period (13th- 18th centuries). GT road since post Indian Independence has extended from Calcutta to Wagah border in the Indian Territory. Section of road about 400 km long within Punjab border, (from Raja Thal in West to Rajgarh in East) is being considered for conservation and development.
4. **Executing and Implementing Agencies.** The executing agency is the Punjab Heritage and Tourism Promotion Board, 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 and Deputy Commissioner of Tarn Taran is the asset owner for proposed components.
5. **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.
6. The major scope of this subproject as per Summary Appraisal Report (SAR) 12 - Package PB/IDIPT/T3/03-12/18 to be advertised Q3/2016 are: Development of existing tank and conservation of Baradari at Gandiwind including connectivity improvement; Conservation of 8 Kos Minars, including connectivity improvement and Development of local crafts specific to the villages in vicinity of all nine Kos Minars at different locations.
7. **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 "Imperial highway heritage conservation and visitor facility development at western circuit" 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.
8. **Purpose of the IEE.** This report gives an account of the initial environmental examination (IEE) of subproject as per SAR-12 and preliminary design. The adverse environmental impacts for this contract Package PB/IDIPT/T3/03-12/18 to be advertised Q3/2016 are primarily related to construction activities. The proposed construction activity is selected considering historical and cultural value of the district. 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**

9. **Location:** The proposed project sites of Package PB/IDIPT/T3/03-12/18 to be advertised Q3/2016 located within the rural areas of Tarn Taran district. Tarn Taran is a district headquarters, which is situated 163 km to the west of Chandigarh city. The subproject sites are located along the Grand Trunk Road. Grand Trunk Road commonly known as GT Road or National Highway 1 is a significant route. It was called Uttarapath or the northern route since its inception in 3rd century B.C, then it became popular as the Badshahi Sadak during the Medieval Indian period (13th- 18th centuries). GT road since post Indian Independence has extended from Calcutta to Wagah border in the Indian Territory. Section of road about 400 km long within Punjab border, (from Raja Thal in West to Rajgarh in East) is being considered for conservation and development.

#### **10 Brief History:**

Development of Historical Tank and Conservation of Baradari at Gandiwind including connectivity improvement

The site is part of Tarn Taran district. There is a historical tank which is important source for water collection and contributes to the ecology of area at Gandiwind. The tank is an abandoned structure along the imperial highway presently MDR 61 connecting Attari and Goindwal. Structure sits in a setting with Gurudwara on south orchards towards north direction. The presence of orchards and groves on its bank further contributes to its value. The link between the orchard grove and the tank is being eroded due to changing land-use and lack of water in the tank.

The Baradari is a Mughal recreational pavilion along the imperial route. The structure had social value being a leisure place for travelers. The stucco work and the paintings on the internal walls of the structure add to the artistic value of the structure.

- B. Conservation of 8 Kos Minars, including connectivity improvement and Development of local crafts specific to the villages in vicinity of all nine Kos Minars at different locations.

Kos Minars are mile stones built during 16th Century by Mughals when infrastructure for GT road was developed. These were markers along the route for travelers. The largest concentration of Kos Minars is found in Tarn Taran district. Most of these lie abandoned and local people do not recognize their importance. Lot of these structures is losing their importance.

GT road being a traditional route for many centuries passes through the settlements which are rich in traditional crafts. Crafts such as basket weaving, khes etc are still practiced in the villages. Due to modernization and mechanization, lots of these crafts are diminishing. It is essential to provide support for survival of these crafts.

11. **Existing Conditions:** Existing conditions of proposed components are as below-

**I. Development of Existing Tank and Conservation of Baradari at Gandiwind including connectivity improvement**

Threat of unplanned development along the Baradari and tank.

Development of cracks in tank which need to be repaired.

Many alterations in past have been done to the Baradari.

Need to improve and upgrade the connection to Gurudwara.

**II. Conservation of 8 Kos Minars, including connectivity improvement and Development of local crafts specific to the villages in vicinity of all nine Kos Minars at different locations.**

Most of the Kos Minars are located in agricultural fields and are in poor condition.

The structures are deteriorating and can lose their existence if not conserved.

Potential for developing several local crafts in Tarn Taran and surrounding villages such as hand embroidery on

Shawls, Phulkari, Khes weaving, Kandi (trowel) making, Jutti, embroidery on Chandoa and Rumala.

Inadequate road access to settlements/sites located along the route.



Kos Minar at Jabal Kalan

**B. Proposed Subproject**

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

Development of Gandiwind Tank and Conservation of Baradari at Gandiwind including connectivity improvement

Conservation of Baradari by removing unplanned interventions and restoring it into its original form.

Conservation and repair of the tank adjoining Baradari.

Providing access between Baradari, tank and Gurudwara.

Landscaping and site development, It includes:

Development of landscape areas around the tank.

Providing visitor facilities like lighting, signage of uniform design, parking etc.

Conservation of 8 Kos Minars, including connectivity improvement and Development of local crafts specific to the villages in vicinity of all nine Kos Minars at different locations.

Conservation and restoration of 8 Kos Minars with planned interventions.

Upgrading / improving access roads to these villages.

Providing infrastructure facilities such as signage, lighting etc.

#### Capacity Building:

Development of local crafts specific to the villages in vicinity of these Kos Minars.

Providing training to local people for sustaining these crafts.

Promoting display of traditional crafts along the cultural route, some informal shops already exists on NH1.

Human resource development: Capacity building of the local artisans for skill building, training for craft production, quality control, product design and innovation, packaging and production of marketable products to enable local communities to access livelihood resources based on tourism. The component is taken as part of Tranche I and its components will also be taken for Tranche 3 projects.

Various capacity building programs are included for livelihood enhancement covering training of women for (i) skill development in traditional crafts based on use of locally available material, ii) tourist guide; (iii) vocational courses Trainings for skill. Other than this, trainings shall include Cultural Interpretation Guide Training, Solid Waste Management Training, Cultural Group Training, Ancillary Service Provider Trainings, Communication and Marketing Training, Crowd and Disaster Management Training, First Aid and Rescue Training.

Creating tourism awareness regarding management and maintenance of sites. Emphasizing the role of the local population, especially women in income generating activities.

#### Management of sector and product development

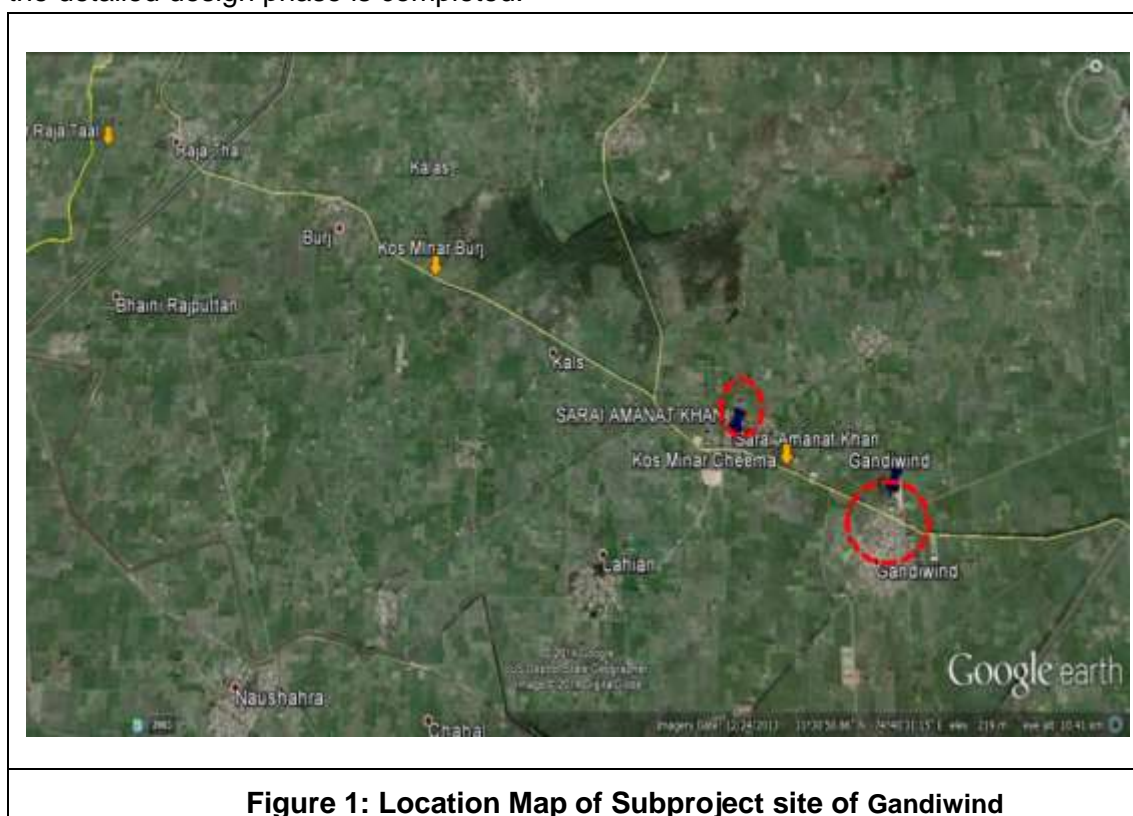
Tourism marketing by showcasing the craft produces at common facility centre. Craft centres would serve as a place of interaction between craftsmen/artists and cultural organizations.

13. 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.
14. 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.
15. No excessive usage of water during construction period is required. Water supply during construction will be provided by Municipal Corporation and its Public Health Division 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.

16. 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**

17. Preliminary design of the subproject has been done 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.
18. 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 of Gandiwind**



**Figure 2: Location Map of Kos Minars**

### **III. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK**

#### **A. ADB Policy.**

19. 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.
20. **Screening and Categorization.** The nature of the environmental assessment required for a project depends on the significance of its environmental impacts, which are related to the type and location of the project, the sensitivity, scale, nature and magnitude of its potential impacts, and the availability of cost-effective mitigation measures. Projects are screened for their expected environmental impact and are assigned to one of the following four categories:

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

Category B. Projects could have some adverse environmental impacts, but of lesser degree or significance than those in category A. An IEE is required to determine whether significant

environmental impacts warranting an EIA are likely. If an EIA is not needed, the IEE is regarded as the final environmental assessment report.

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

Category FI. Projects involve a credit line through a financial intermediary or an equity investment in a financial intermediary. The financial intermediary must apply an environmental management system, unless all Projects will result in insignificant impacts.

21. **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.
22. **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:

For environmental category A projects, a draft EIA report at least 120 days before Board consideration;

Final or updated EIA and/or IEE upon receipt; and

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

## **B. National and State Laws**

23. Implementation of the subproject will be governed by the national and State of Punjab 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.
24. 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<sup>2</sup> - Category A and Category

<sup>2</sup>

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

B, based on the spatial extent of potential impacts and potential impacts on human health and; natural and man-made resources.

**Table 1: Environmental Regulatory Compliance**

Sub-Project	Applicability of Acts/Guidelines	Compliance Criteria
Imperial highway heritage conservation and visitor facility development at western circuit:	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.
Development of existing tank and conservation of Baradari at Gandiwind including connectivity improvement;	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
Conservation of 8 Kos Minars, including connectivity improvement and development of local crafts specific to the villages in vicinity of all nine Kos Minars at different locations.	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.

from the State/Union territory Environment Impact Assessment Authority (SEIAA). The SEIAA shall base its decision on the recommendations of a State or Union territory level Expert Appraisal Committee (SEAC) as to be constituted for in this notification. In addition, General Condition (GC) of the notification specifies that any project or activity specified in Category 'B' will be treated as Category A, if located in whole or in part within 10 km from the boundary of: (i) Protected Areas notified under the Wild Life Protection) Act, 1972, (ii) Critically Polluted areas as notified by the Central Pollution Control Board from time to time, (iii) Notified Eco-sensitive areas, (iv) inter-State boundaries and international boundaries.



Sub-Project	Applicability of Acts/Guidelines	Compliance Criteria
	The Ancient Monuments and Archaeological Sites and Remains Act, 1958, and the rules, 1959 provide guidance for carrying out activities, including conservation, construction and reuse in and around the protected monuments.	The monuments proposed for conservation and revitalization are not ASI monument. Therefore, the provisions of the act do not apply.
	"The Punjab Ancient and Historical Monuments and Archaeological sites and remains Act, 1964"	The Kos Minars at Naurangabad and Bharowal are identified as protected monument under this Act and NOC has been obtained from the Department of Cultural Affairs, Archaeology and Museums and Deputy commissioner for the conservation/ restoration works, however, there are no resettlement/ ownership issues involved in the project.

25. 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 Gol 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. Location

The sub project area is located in the Tarn Taran district, which lies between 31°27'36"N 74°55'48"E. The total area of the Tarn Taran district is 2,414 sq.km. Tarn Taran district was formed in 2006 from Amritsar District. It has three tehsils, which are Patti, Khadur Sahib and Tarn Taran. The District Headquarters is headed by the Deputy Commissioner, along with a Senior Superintendent of Police, the Additional District and Sessions Judge, the Chief Judicial Magistrate, Civil Surgeon, district Education Officer, Improvement Trust and a Municipal Council. As the district is immediately adjoining Amritsar, secondary data of Amritsar has been utilized for representation wherever specific details of the district are not accessible.

#### Terrain

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.

### Climate

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.

### Soils

The soils of the 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.

### Geology

Tarn Taran 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.

### Surface Waters

Beas and Ravi rivers account for surface waters in the 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. Water quality data of major surface water resources are given in

Table 2below.

Table 2: Water quality of Beas and Ravi River

Sl.no.	Parameter	Beas River	Ravi River
	Temperature (degrees C)	16	14
	pH	7.8	7.8
	Conductivity (micro siemens/cm)	342	202
	Total N (mg/l)	1.4	0.4
	DO (mg/l)	7.8	9
	BOD.(mg/l)	4.2	0.4
	COD. (mg/l)	14.4	1.6
	Chloride (mg/l)	23	10
	Sulphate (mg/l)	16	8
	Sodium (mg/l)	14.6	1.8
	Faecal Coliforms (MPN / 100ml)	500	0
	Turbidity (NTU)	24	7
	Total Coliforms (MPN / 100ml)	5000	7
	TDS (mg/l)	302	194

Source: City Development Plan – Amritsar 2025

#### Ground water

Tube-wells form a major source of groundwater in Amritsar. All parameters comply with desirable limits under Indian Standards. Hardness measured as alkalinity, is the only parameter exceeding desirable limits, but lies within the permissible Limit. The only form of treatment is disinfection by the addition of bleaching powder at a limited number of the wells. Data available on ground water quality in Amritsar are shown in

Table 3 below.

Table 3: Ground Water Quality of Amritsar

Sl. No.	Parameter	Units measured	Indian Standards
1	Total dissolved solids (TDS)	675	500
2	Calcium(mg/l)	62	
3	Magnesium(mg/l)	20	30
4	Sodium (mg/l)	36	
5	Potassium(mg/l)	12	
6	Sulphate (mg/l)	40	150
7	Bicarbonate (mg/l)	320	300

8	Nitrate as NO <sub>3</sub> (mg/l)	13	45
9	Chloride (mg/l)	28	250
10	Flouride (mg/l)	0.06	- 1.2

Source: City development plan Amritsar-2025

## 7. Ambient Air quality

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

Table 4 below.

Table 4: Ambient Air Quality of Amritsar

Parameter	Amritsar	Standards		
		Residential	Commercial	Industrial
SPM (µg/m <sup>3</sup> )	296 – 586	200	100	500
SO <sub>2</sub> (µg/m <sup>3</sup> )	10 – 19	80	30	120
NO <sub>x</sub> (µg/m <sup>3</sup> )	28 – 46	80	30	120

Source: PPCB, Patiala

## 8. Ambient Noise Levels

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.

## 9. Agriculture and vegetation

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.

In terms of natural vegetation, in the Shahpur Kandi range which lies in the hilly tract, the forests are mainly of the miscellaneous hardwood species and the Chil pine. Where water facilities are available, Shisham, mulberry, eucalyptus and poplar are being planted. Besides mango and mulberry, other fruit trees cultivated in the district include orange and

Kinnow Lemon tree. Agriculture prevails in the nearby areas of the site. There are no any agriculture practices at project site and vegetation is mostly shrubs, bushes and some trees.

#### 10. Ecological Resources

The forests in Amritsar are dense forests and there are no open or scrub forests. Fairly rich soil and moderate rain fall with certainty suits for growth of varied flora in Amritsar district. Shisham (*Dalbergia sissoo*) and kikar (*Acacia arabica*) are the main timber-trees. There are no reserved forests in and around the proposed sub-project locations proposed to be taken up under the Sikh heritage route destination improvements.

Fauna of Amritsar district include nilgai and chinkara, wild hogs, Black partridges in the river-bed, black bucks, Hares, Jackals, Wild geese and ducks of various kinds, Grey partridges, snipe, common crane, demoiselle crane, black curlew, jack curlew, quail, sand grouse, green pigeons, blue rock-pigeon, the cobra, the echis, the karait, the Russell's viper, the small keel-scaled viper (*Echis carinata*) and fresh-water snakes.

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.

#### Social Profile

#### 11. Demographic profile

According to the Statistical Abstract Punjab, 2012 the total population of Tarn Taran district is 495556 and density of population per sq.km. is 464.

Table 5: Population Data of Tarn Taran District

Sl. No.	Indicator	Tarn Taran District
1.	Total population (Nos.)	495556
2.	% of Female population	47.33%
3.	% of urban population	13.46%
4.	Percentage increase of total population since 2001.	19.28
5.	Sex Ratio in 0-6 age group	819

#### 12. Industries

The secondary and tertiary industrial sector activities are pre-dominant in the district and its surrounding urban centres including Amritsar. 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.

## V. ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

26. The assessment of environmental impacts for the proposed interventions under this Package PB/IDIPT/T3/03-12/18 to be advertised Q3/2016 has been carried out during the following stages of the project planning and implementation:
- **Location impacts.** Impacts associated with site selection, including impacts on environment and resettlement or livelihood related impacts on communities
  - **Design impacts.** Impacts arising from project design, including the technology used, scale of operations etc.
  - **Construction impacts.** Impacts resulting from construction activities including site clearance, earthworks, civil works, etc.
  - **O&M impacts.** Impacts associated with the operation and maintenance of the infrastructure built in the project.
27. 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.
28. **Land Acquisition and Resettlement and cultural Impacts.** The proposed sites of proposed PB/IDIPT/T3/03-12/18 to be advertised by Q3/2016 are located within existing facilities, 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.

29. **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
30. 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.

### **Assessment of Environmental Impacts**

31. **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 (iii) quarries and borrow pits as sources of construction materials. The secondary impact areas are: (i) entire rural area outside of the delineated primary impact area; and (ii) entire Tarn Taran district in terms of over-all environmental improvement.
32. 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.

### **Pre-construction Impacts and Mitigation Measures**

33. **Consents, permits, clearances, no objection certificate (NOC), etc.** Failure to obtain necessary consents, permits, NOCs, etc. can result to design revisions and/or stoppage of works.
34. **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.



**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.

35. **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.

36. **Sites for construction work camps and areas for stockpile, storage and disposal.** The subproject site is near to residences and commercial areas, therefore construction camps are not recommended within or nearby the proposed site. The contractor will be required to meet the following criteria for the sites:

- Will not promote instability and result in destruction of property, vegetation, irrigation, and drinking water supply systems, etc.
- Residential areas will not be considered so as to protect the human environment (i.e., to curb accident risks, health risks due to air and water pollution and dust, and noise, and to prevent social conflicts, shortages of amenities, and crime).
- Disposal will not be allowed 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.

37. **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.
38. 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.
39. **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.
40. Summary of pre-construction activities is presented in **Table 6**. 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 **Annexes 3 & 4**.

**Table 6: Summary of Pre-Construction Mitigation Measures**

Parameters	Mitigation Measures
Consents, permits, clearances, no	<ul style="list-style-type: none"> <li>• Obtain all necessary consents, permits, clearance, NOCs, etc. prior to start of civil works.</li> <li>• Acknowledge in writing and provide report on compliance all obtained</li> </ul>

Parameters	Mitigation Measures
objection certificate (NOC), etc.	<p>consents, permits, clearance, NOCs, etc.</p> <ul style="list-style-type: none"> <li>• Include in detailed design drawings and documents all conditions and provisions if necessary</li> </ul>
Utilities	<ul style="list-style-type: none"> <li>• Identify and include locations and operators of these utilities in the detailed design documents to prevent unnecessary disruption of services during the construction phase.</li> <li>• Require contractors to prepare a contingency plan to include actions to be done in case of unintentional interruption of services.</li> <li>• Obtain from the PIU and/or DSC the list of affected utilities and operators;</li> <li>• Prepare a contingency plan to include actions to be done in case of unintentional interruption of services.</li> <li>• If relocations are necessary, contractor will coordinate with the providers to relocate the utility.</li> </ul>
Social and Cultural Resources	<ul style="list-style-type: none"> <li>• Consult Archaeological Survey of India or State Department of Archaeology to obtain an expert assessment of the archaeological potential of the site.</li> <li>• Consider alternatives if the site is found to be of medium or high risk.</li> <li>• 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.</li> <li>• 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.</li> </ul>
Sites for construction work camps, areas for stockpile, storage and disposal	<ul style="list-style-type: none"> <li>• Will not promote instability and result in destruction of property, vegetation, irrigation, and drinking water supply systems, etc.</li> <li>• 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).</li> <li>• Disposal will not be allowed near sensitive areas which will inconvenience the community.</li> <li>• 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.</li> </ul>
Sources of construction materials	<ul style="list-style-type: none"> <li>• Use quarry sites and sources permitted by government.</li> <li>• Verify suitability of all material sources and obtain approval from PIU/DSC.</li> <li>• If additional quarries are required after construction has started, obtain written approval from PIU/DSC.</li> <li>• Submit to DSC on a monthly basis documentation of sources of materials.</li> </ul>
Access	<ul style="list-style-type: none"> <li>• Plan transportation routes so that heavy vehicles do not use narrow local roads, except in the immediate vicinity of delivery sites.</li> </ul>

Parameters	Mitigation Measures
	<ul style="list-style-type: none"> <li>• Schedule transport and hauling activities during non-peak hours.</li> <li>• Locate entry and exit points in areas where there is low potential for traffic congestion.</li> <li>• Keep the site free from all unnecessary obstructions.</li> <li>• Drive vehicles in a considerate manner.</li> <li>• 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.</li> <li>• Notify affected sensitive receptors by providing sign boards with information about the nature and duration of construction works and contact numbers for concerns/complaints.</li> </ul>

### ***B. Anticipated Construction Impacts and Mitigation Measures***

41. 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.
42. **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.
43. 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 proposed 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.
44. 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.
45. 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.
46. **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.

47. **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.
48. **Impacts on Air Quality.** There is potential for increased dust particularly during summer/dry season due to 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" certificate from Punjab Pollution Control Board (PPCB).
  - Obtain CFE and CFO for hot mix plants, crushers, diesel generators, etc., if to be used in the project.
49. **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.<sup>3</sup>
- Ensure vehicles comply with Government of India noise limits for vehicles. The test method to be followed shall be IS:3028-1998.

50. **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.
- 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.

51. **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.
- Increase the workforce in front of critical areas such as institutions, place of worship, business establishment, hospitals, and schools;
- 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.

70. **Impacts 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.

71. **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.

72. **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:

- Leave space for access between mounds of soil/construction materials.
- Provide walkways and metal sheets where required to maintain access to visitors/tourists along trenches/excavated/disturbed areas.
- Consult operating authorities/tourists regarding operating hours and factoring this in to work schedules.
- Provide sign boards for tourists/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.

73. **Summary of Mitigation Measures during Construction.** Table 7 provides summary of mitigation measures to be considered by the contractor during construction phase. The detailed mitigation measures, environmental monitoring and reporting requirements, emergency response procedures, related implementation arrangements, capacity development and training measures, implementation schedule, cost estimates, and performance indicators are provided in the EMP.

**Table 7: Summary of Mitigation Measures during Construction Phase**



Potential Impact	Mitigation Measures
Impacts on water quality	<ul style="list-style-type: none"> <li>Schedule civil works during non-monsoon season, to the maximum extent possible.</li> <li>Ensure drainages and water bodies within the construction zones are kept free of obstructions.</li> <li>Keep loose soil material and stockpiles out of drains, flow-lines and watercourses.</li> <li>Avoid stockpiling of excavated and construction materials (sand, gravel, cement, etc.) unless covered by tarpaulins or plastic sheets.</li> <li>Re-use/utilize, to maximum extent possible, excavated materials.</li> <li>Dispose any residuals at identified disposal site (PIU/DSC will identify approved sites).</li> <li>Dispose waste oil and lubricants generated as per provisions of Hazardous Waste (Management and Handling) Rules, 1989.</li> </ul>
Impacts on air quality	<ul style="list-style-type: none"> <li>Conduct regular water spraying on earth piles, trenches and sand piles.</li> <li>Conduct regular visual inspection along alignments and construction zones to ensure no excessive dust emissions.</li> <li>Spreading crushed gravel over backfilled surfaces if re-surfacing of disturbed ROWs cannot be done immediately.</li> <li>Maintain construction vehicles and obtain "pollution under control" certificate from Punjab SPCB.</li> <li>Obtain CFE and CFO for hot mix plants, crushers, diesel generators, etc., if to be used in the project.</li> </ul>
Noise and vibrations impacts	<ul style="list-style-type: none"> <li>Limit construction activities in proposed complexes and other important sites to daytime only.</li> <li>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.</li> <li>Minimize noise from construction equipment by using vehicle silencers and fitting jackhammers with noise-reducing mufflers.</li> <li>Avoid loud random noise from sirens, air compression, etc.</li> <li>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.</li> <li>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.<sup>4</sup></li> </ul>
Impacts on flora and fauna	<ul style="list-style-type: none"> <li>Conduct site induction and environmental awareness.</li> <li>Limit activities within the work area.</li> <li>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</li> </ul>

Potential Impact	Mitigation Measures
Impacts on physical resources	<ul style="list-style-type: none"> <li>• Ensure no damage to structures/properties near construction zone.</li> <li>• Provide walkways and metal sheets where required to maintain access of tourists and visitors.</li> <li>• Provide sign boards to inform nature and duration of construction works and contact numbers for concerns/complaints.</li> <li>• Implement good housekeeping. Remove wastes immediately. Prohibit stockpiling of materials that may obstruct/slow down pedestrians and/or vehicle movement.</li> <li>• Ensure workers will not use nearby/adjacent areas as toilet facility.</li> <li>• 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.</li> <li>• 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.</li> </ul>
Impacts on waste generation	<ul style="list-style-type: none"> <li>• 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.</li> <li>• Coordinate with Municipal Authorities for beneficial uses of demolished materials/silts/sediments or immediately dispose to designated areas.</li> <li>• Recover used oil and lubricants and reuse; or remove from the sites.</li> <li>• 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).</li> <li>• Prohibit disposal of any material or wastes (including human waste) into drainage, nallah, or watercourse.</li> </ul>
Impacts on occupational health and safety	<ul style="list-style-type: none"> <li>• Comply with IFC EHS Guidelines on Occupational Health and Safety</li> <li>• 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.</li> <li>• Develop comprehensive site-specific health and safety (H&amp;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.</li> <li>• Include in H&amp;S plan measures such as: (i) type of hazards during excavation works; (ii) corresponding personal protective equipment for each identified hazard; (iii) H&amp;S training for all site personnel; (iv) procedures to be followed for all site activities; and (v) documentation of work-related accidents.</li> <li>• Provide H&amp;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.</li> <li>• 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.</li> <li>• Provide medical insurance coverage for workers.</li> <li>• Secure construction zone from unauthorized intrusion and accident risks.</li> <li>• Provide supplies of potable drinking water.</li> <li>• Provide clean eating areas where workers are not exposed to hazardous or noxious substances.</li> </ul>

Potential Impact	Mitigation Measures
	<ul style="list-style-type: none"> <li>• 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.</li> <li>• Ensure the visibility of workers through their use of high visibility vests when working in or walking through heavy equipment operating areas.</li> <li>• Ensure moving equipment is outfitted with audible back-up alarms.</li> <li>• 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.</li> </ul>
Impacts on socio-economic activities	<ul style="list-style-type: none"> <li>• Leave space for access between mounds of construction materials.</li> <li>• Provide walkways and metal sheets where required to maintain access to tourists/visitors along trenches/excavated/disturbed areas.</li> <li>• Consult operating authorities and tourists regarding operating hours and factoring this in to work schedules.</li> <li>• Provide sign boards for pedestrians to inform nature and duration of construction works and contact numbers for concerns/complaints.</li> <li>• 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.</li> <li>• "Mobility Plan" has to be chalked out in consultation with the District Administration and asset owner prior to start of work.</li> </ul>

74. 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.

### C. Post-Construction Impacts and Mitigation Measures

75. 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.

#### **D. Anticipated Operations and Maintenance (O&M) Impacts and Mitigation Measures**

76. 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**

- 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.
- 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**

- During project preparation (June to September 2014), consultations have been held with the Department of Tourism, tourists of Tarn Taran and District administration, Department of Cultural Affairs, Archaeology and Museums, Deputy Commissioner (DC), 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**.

#### **C. Plan for Continued Public Participation**

- 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.
- 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.
- 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, Tarn Taran District (iv) District/Public libraries of the Chandigarh/Tarn Taran 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**

- 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.
- 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

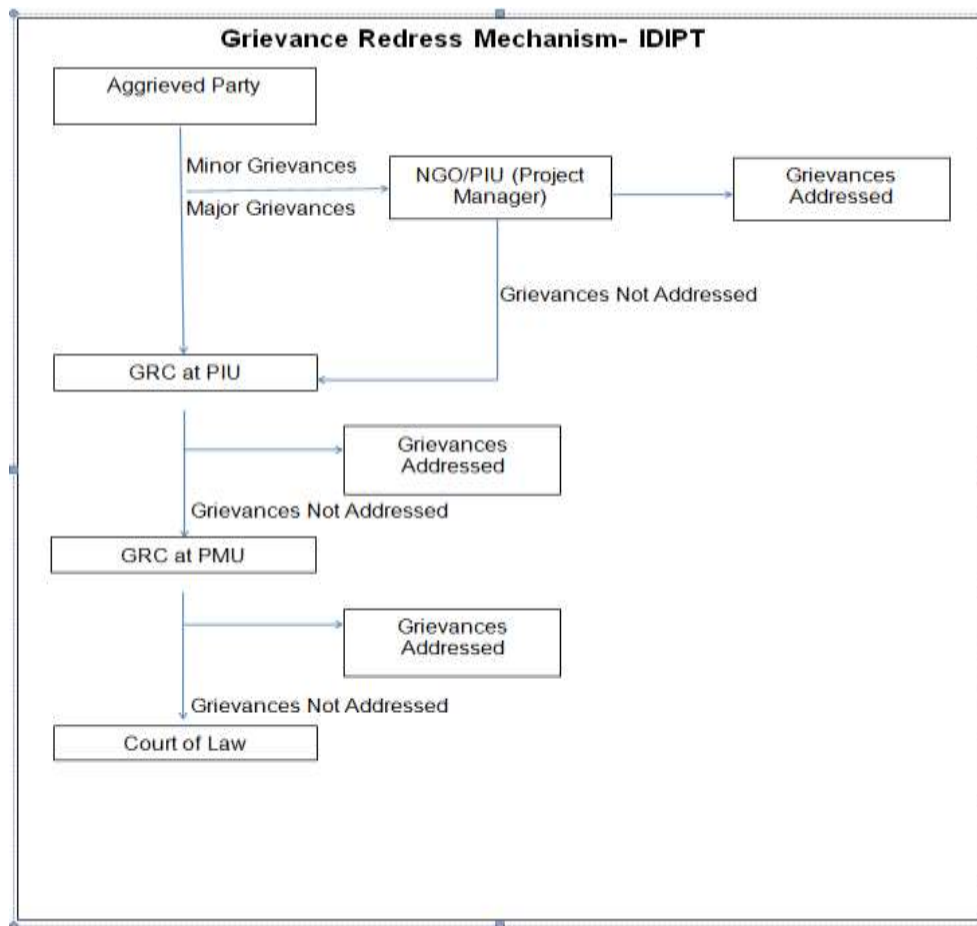
Law. The PIU shall keep records of all grievances received including contact details of complainant, date of receiving the complaint, nature of grievance, agreed corrective actions and the date these were affected and final outcome. The grievance redress process is shown below.

#### **A. Composition and functions of GRC**

- **Local Grievance Committee (LGC).** In this LGC has worked with NGO, SHG, Line Agency, Special invitee.
- **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.
- **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-5**

#### **B. Approach to GRC.**

- Affected person/aggrieved party can approach to GRC for redress of his/their grievances through any of the following modes:
- Web based: A separate corner will be developed at the program website so that public / community/ affected person can register their complaint in the online column.
- Telecom based: A toll free no. Will be issued by the PMU/ PIU so that general public can register their complaint through telephone / mobile phone to the PIU/PMU office.



**Figure 3: Grievance Redress Mechanism in IDIPT, 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

- 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).
- 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.
- 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.
- **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) already exists 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.

- 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-

<b>Box 1: Terms of Reference of Safeguards Specialist – PMU</b>
<p>Review the IEE document and ensure adequacy under Safeguard Policy Statement, 2009 and identify any areas for improvement.</p> <p>Ensure that the project design and specification adequately reflect the IEE, co-ordinate the obtaining of requisite environmental clearances for the project</p> <p>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.</p> <p>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</p> <p>Review and approve the Contractor's Implementation Plan for the environmental measures, as per IEE.</p> <p>Liaise with the Contractors and Consultants on the implementation of the Environmental management measures proposed in the IEE</p> <p>Liaise with the various Government agencies on environmental and other regulatory matters</p> <p>Continuously interact with the NGOs and Community groups to be involved in the project</p> <p>Establish dialogue with the affected communities and ensure that the environmental concerns and suggestions are incorporated and implemented in the project.</p> <p>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</p> <p>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</p> <p>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</p>

<b>Box 2: Terms of Reference of Safeguards Specialist (Environment) of DSC</b>
<p>Review the IEE document and ensure adequacy under ADB SPS, 2009.</p>

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

Interact on a regular basis with the sector specialists of the DSC and integrate environmentally sound practices into the detailed design of project components.

Advise PMU/PIU for compliance with statutory clearances.

Work out the site specific mitigation measures for components as required and integrate the same into contractual provisions.

Develop, organise and deliver environmental training programmes and workshops for the staff of the PIU and Contractors and in accordance to the Capacity Building Programme as specified in the IEE.

Preparation of Activity Plans as identified in IEE (these include Site Management Plans, Waste Management Plans, Sludge Management and Disposal Plans, Occupational Safety Plans etc).

Supervise the implementation of the Environmental provisions by the Contractors.

Review and approve site specific environmental enhancement/mitigation designs worked out by the Contractor. Hold regular consultation meetings with the Environmental specialist of the PMU

Review the Contractors' Environmental Implementation Plans to ensure compliance with the IEE.

Develop good practice construction guidelines to assist the contractors in implementing the provisions of IEE.

Prepare and submit regular environmental monitoring and implementation progress reports.

Assist Environmental Specialist of the PMU to prepare good practice dissemination notes based on the experience gained from site supervision.

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

Support and Advise the PMU and Consultants team in-

Best Environmental Practices for responding to environmental issues involved with implementation of the projects on a sustainable basis

Assistance and advice on institutional strengthening and capacity building at the PMU and PIU levels in regards to environmental practices.

Ensure that baseline surveys, environmental monitoring plans and programs, initial environmental examinations (IEE) as may be required are carried out.

Preparation of ADB procedure compliant environmental safeguard actions including impact assessment if any during the design stage

Management plan and mitigation measures

Oversight of implementation of environmental standards and safeguards as part of project implementation

Participate in preparation of Master Plan for additional sites and contribute to the environmental safeguards to the plan and sub components

<b>Box 3: Terms of Reference of Safeguards Specialist (Environment) of PMC</b>
Preparation of performance monitoring reports

- **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.
- **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.
- **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.**

#### **EMP Tables**

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

Table 8: Pre-Construction EMP Table

Parameters	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of monitoring	Source of Funds to Implement Mitigation Measures
Consents, permits, clearances, no objection certificate (NOC), etc.	Obtain all necessary consents, permits, clearance, NOCs, etc. prior to start of civil works.	Consents, permits, clearance, NOCs, etc.	PMU	EA to report to ADB in environmental monitoring report (EMR)	check CFEs, permits, clearance, prior to start of civil works	PMU
	Acknowledge in writing and provide report on compliance all obtained consents, permits, clearance, NOCs, etc.	Records and communications	PMU	EA to report to ADB in EMR	Acknowledge upon receipt  Send report as specified in CFE, permits, etc.	PMU
	Include in detailed design drawings and documents all conditions and provisions if necessary	Detailed design and 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	Conduct documentation of location of components, areas for construction zone (camps, staging, storage, stockpiling, etc.) and surroundings (within direct impact zones). Include photos and GPS coordinates	Records	Contractor	PMU and PMC PIU and DSC	to be included in updated IEE report	PMU
Utilities	Identify and include locations and operators of these utilities in the detailed design	List and maps showing utilities to be shifted	- DSC to prepare preliminary list	PMU and PMC PIU and DSC	to be included in updated IEE report	DSC – preliminary design

Parameters	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of monitoring	Source of Funds to Implement Mitigation Measures
	<p>documents to prevent unnecessary disruption of services during the construction phase.</p> <p>Require contractors to prepare a contingency plan to include actions to be done in case of unintentional interruption of services.</p> <p>Obtain from the PIU and/or DSC the list of affected utilities and operators;</p> <p>If relocations are necessary, contractor will coordinate with the providers to relocate the utility.</p>	Contingency plan for services disruption	and maps of utilities to be shifted - During detailed design phase, contractor to (i) prepare list and operators of utilities to be shifted; (ii) contingency plan			stage  Contractor – implementation stage
Social and Cultural Resources	<p>Consult Archaeological Survey of India (ASI) or Punjab State Archaeology Department to obtain an expert assessment of the archaeological potential of the site.</p> <p>Consider alternatives if the site</p>	Chance find protocol (Annexure 9)	<p>- PMC to consult ASI or Punjab State Archaeology Department</p> <p>- PMC to develop protocol for</p>	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
	<p>is found to be of medium or high risk.</p> <p>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.</p> <p>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.</p>		chance finds			
Sites for construction work camps, areas for stockpile, storage and disposal	<p>Will not promote instability and result in destruction of property, vegetation, irrigation, and drinking water supply systems, etc.</p> <p>Residential areas will not be</p>	<p>List of pre-approved sites for construction work camps, areas for stockpile, storage and disposal</p> <p>Waste management plan</p>	<p>- DSC to prepare list of potential sites</p> <p>DSC to inspect sites proposed by contractor if</p>	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
	<p>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).</p> <p>Disposal will not be allowed near sensitive areas which will inconvenience the community.</p> <p>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.</p>		not included in pre-approved sites			
Sources of construction materials	<p>Use quarry sites and sources permitted by government.</p> <p>Verify suitability of all material sources and obtain approval from PIU.</p>	Permits issued to quarries/sources of materials	<p>Contractor</p> <p>PMC and DSC to verify sources (including permits) if</p>	<p>PMU</p> <p>PIU</p>	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
	<p>If additional quarries are required after construction has started, obtain written approval from PIU.</p> <p>Submit to DSC on a monthly basis documentation of sources of materials.</p>		additional is requested by contractor			
Access	<p>Plan transportation routes so that heavy vehicles do not use narrow local roads, except in the immediate vicinity of delivery sites.</p> <p>Schedule transport and hauling activities during non-peak hours.</p> <p>Locate entry and exit points in areas where there is low potential for traffic congestion.</p> <p>Keep the site free from all unnecessary obstructions.</p> <p>Drive vehicles in a considerate manner.</p>	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
	<p>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.</p> <p>Notify affected sensitive receptors by providing sign boards with information about the nature and duration of construction works and contact numbers for concerns/complaints.</p> <p>Provide free access to households along the alignments of raw and clear water transmission routes during the construction phase.</p>					
Occupational health and safety	<p>Comply with IFC EHS Guidelines on Occupational Health and Safety</p> <p>Develop comprehensive site-specific health and safety</p>	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
	<p>(H&amp;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.</p> <p>Include in H&amp;S plan measures such as: (i) type of hazards in the intake wells site; (ii) corresponding personal protective equipment for each identified hazard; (iii) H&amp;S training for all site personnel; (iv) procedures to be followed for all site activities; and (v) documentation of work-related accidents.</p> <p>Provide medical insurance coverage for workers.</p>					

Parameters	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of monitoring	Source of Funds to Implement Mitigation Measures
Public consultations	Continue information dissemination, consultations, and involvement/participation of stakeholders during project implementation.	<ul style="list-style-type: none"> <li>- Disclosure records</li> <li>- Consultations</li> </ul>	PMU and PMC PIU and DSC Temple administrators Contractor	PMU and PMC	<ul style="list-style-type: none"> <li>- During updating of IEE Report</li> <li>- During preparation of site- and activity-specific plans as per EMP</li> <li>- Prior to start of construction</li> <li>- During construction</li> </ul>	PMU  Contractor to allocate funds to support

**Table 9: EMP Table During Construction Phase**

Potential Impact	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of Monitoring	Source of Funds
Impacts on water quality	Schedule construction activities during non-monsoon season, to the maximum extent possible.	Work schedule	Contractor	PIU and DSC  PIU to submit EMP monitoring report to PMU	<ul style="list-style-type: none"> <li>- daily inspection by contractor supervisor and/or environment specialist</li> <li>- weekly visual inspection by DSC (more frequent during monsoon season and if corrective action is required)</li> <li>- random inspection by PMU, PIU, PMC and/or DSC</li> </ul>	
	Ensure drainages and water bodies within the construction zones are kept free of obstructions.	Visual inspection				
	Keep loose soil material and stockpiles out of drains and flow-lines.	Visual inspection				
	Avoid stockpiling of excavated and construction materials (sand, gravel,	Visual inspection				

Potential Impact	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of Monitoring	Source of Funds
	cement, etc.) unless covered by tarpaulins or plastic sheets.					
	Re-use/utilize, to maximum extent possible, excavated materials.	condition in waste management plan				
	Dispose any residuals at identified disposal site (PIU/DSC will identify approved sites).	condition in waste management plan				
	Dispose waste oil and lubricants generated as per provisions of Hazardous Waste (Management and Handling) Rules, 1989.	condition in waste management plan				
	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				
Impacts on air quality	Conduct regular water spraying on stockpiles.	- Visual inspection - No complaints from sensitive receptors - Records	Contractor	PIU and DSC	- daily inspection by contractor supervisor and/or environment specialist - weekly visual inspection by DSC (more frequent during dry season and if corrective action is	Contractor
	Conduct regular visual inspection in the construction zones to ensure no excessive dust emissions.	Visual inspection				

Potential Impact	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of Monitoring	Source of Funds
	Maintain construction vehicles and obtain "pollution under control" certificate from BSPCB.	PUC certificates			required) - random inspection by PMU, PIU, PMC and/or DSC	
	Obtain CFE and CFO for hot mix plants, crushers, diesel generators, etc., if to be used in the project.	CTE and CTO				
Noise and vibrations impacts	Limit construction activities in proposed complexes and other important areas to daytime only.  Plan activities in consultation with PIU/DSC so that activities with the greatest potential to generate noise are conducted during periods of the day which will result in least disturbance.	Work schedule	Contractor	PIU and DSC	- daily inspection by contractor supervisor and/or environment specialist - weekly visual inspection by DSC (more frequent during noise-generating activities and if corrective action is required) - random inspection by PMU, PIU, PMC and/or DSC	Contractors
	Minimize noise from construction equipment by using vehicle silencers and fitting jackhammers with noise-reducing mufflers.	Report on ambient noise level monitoring within direct impact zones				
	Avoid loud random noise from sirens, air compression, etc.	zero incidence				
	Require drivers that horns not be used unless it is necessary to warn other road users or animals of the	feedback from receptors within direct and direct impact zone				

Potential Impact	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of Monitoring	Source of Funds
	<p>vehicle's approach.</p> <p>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:</p> <p>Locate stationary construction equipment as far from nearby noise-sensitive properties, such as the hospital, as possible.</p> <p>Shut off idling equipment.</p> <p>Reschedule construction operations to avoid periods of noise annoyance identified in the complaint.</p> <p>Notify nearby residents whenever extremely noisy work will be occurring.</p>	<ul style="list-style-type: none"> <li>- Complaints addressed satisfactory</li> <li>- GRM records</li> </ul>				
Impacts on flora and fauna	Conduct site induction and environmental awareness.	Records	Contractor	PIU and DSC	<ul style="list-style-type: none"> <li>- daily inspection by contractor supervisor and/or environment specialist</li> <li>- weekly visual inspection by DSC (more frequent if corrective action is</li> </ul>	Contractor
	Limit activities within the work area.	Barricades along excavation works				
	Replant trees in the area using minimum ratio of 2 new trees for	-Number and species approved by				

Potential Impact	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of Monitoring	Source of Funds
	every 1 tree cut. Replacement species must be approved by district Forest Department.	Punjab State Forest Department			required) - random inspection by PMU, PIU, PMC and/or DSC	
Impacts on physical cultural resources	Ensure no damage to structures/properties adjacent to construction zone.	- Visual inspection - any impact should be addressed by project resettlement plan	Contractor  In coordination with PIU and DSC for any structures within 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 inspection by PMU, PIU, PMC and/or DSC	Contractor
	Provide sign boards to inform nature and duration of construction works and contact numbers for concerns/complaints.	- no complaints received - photo-documentation				
	Increase the workforce in WTP components near the hospital and other sensitive receptors.	- Records of workers deployment - Work schedule				
	Implement good housekeeping. Remove wastes immediately.	- Visual inspection - No stockpiled/stored wastes				
	Ensure workers will not use nearby/adjacent areas as toilet facility.	- No complaints received - Sanitation facilities for use of workers				

Potential Impact	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of Monitoring	Source of Funds
	<p>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.</p> <p>Ensure heavy vehicles do not use narrow local roads, except in the immediate vicinity of delivery sites.</p>	- Approved routes in traffic management plan				
	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 (Annexure 9)				
Impact due to waste generation	<p>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.</p> <p>Coordinate with PIU/DSC for beneficial uses of excavated soils or immediately dispose to designated</p>	Condition in waste management plan	Contractor	PIU and DSC	<ul style="list-style-type: none"> <li>- daily inspection by contractor supervisor and/or environment specialist</li> <li>- weekly visual inspection by DSC (more frequent if corrective action is required)</li> <li>- random inspection by PMU, PIU, PMC and/or DSC</li> </ul>	Contractor



Potential Impact	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of Monitoring	Source of Funds
	<p>areas.</p> <p>Recover used oil and lubricants and reuse; or remove from the site.</p> <p>Avoid stockpiling and remove immediately all excavated soils, excess construction materials, and solid waste (removed concrete, wood, trees and plants, packaging materials, empty containers, oils, lubricants, and other similar items).</p> <p>Prohibit disposal of any material or wastes (including human waste) into drainage, nallah, or watercourse.</p>					
Impacts on occupational health and safety	Comply with IFC EHS Guidelines on Occupational Health and Safety	<ul style="list-style-type: none"> <li>- Visual inspection</li> <li>- Records</li> </ul>	Contractor	PIU and DSC	<ul style="list-style-type: none"> <li>- daily inspection by contractor supervisor and/or environment specialist</li> <li>- weekly visual inspection by DSC (more frequent if corrective action is required)</li> <li>- random inspection by PMU, PIU, PMC and/or DSC</li> </ul>	Contractor
	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.	<ul style="list-style-type: none"> <li>- Visual inspection</li> <li>- Work schedule</li> <li>- Noise level monitoring in work area</li> </ul>				
	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,	<ul style="list-style-type: none"> <li>- Records</li> <li>- Condition in H&amp;S plan</li> </ul>				

Potential Impact	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of Monitoring	Source of Funds
	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.	- Visible first aid equipment and medical supplies - Condition in H&S plan				
	Provide medical insurance coverage for workers.	Records				
	Secure construction zone from unauthorized intrusion and accident risks.	- Area secured - Trenches barricaded				
	Provide supplies of potable drinking water.	- Supply of water				
	Provide clean eating areas where workers are not exposed to hazardous or noxious substances.	- Workers area				
	Provide visitor orientation if visitors to the site can gain access to areas where hazardous conditions or substances may be present. Ensure also that visitor/s do not enter hazard areas unescorted.	- Records - Condition in H&S plan				
	Ensure the visibility of workers	- Visual inspection				

Potential Impact	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of Monitoring	Source of Funds
	through their use of high visibility vests when working in or walking through heavy equipment operating areas.	- Condition in H&S plan				
	Ensure moving equipment is outfitted with audible back-up alarms.	- Construction vehicles - Condition in H&S plan				
	Mark and provide sign boards in the construction zone, and areas for storage and disposal. Signage shall be in accordance with international standards and be well known to, and easily understood by workers, visitors, and the general public as appropriate.	- Visible and understandable sign boards in construction zone - H&S plan includes appropriate signs for each hazard present				
Impacts on socio-economic activities	Provide sign boards for pedestrians to inform nature and duration of construction works and contact numbers for concerns/complaints.	Visible and understandable sign boards in construction zone	Contractor	PIU and DSC	<ul style="list-style-type: none"> <li>- daily inspection by contractor supervisor</li> <li>- weekly visual inspection by DSC (more frequent if corrective action is required)</li> <li>- random inspection by PMU, PIU, PMC</li> </ul>	Contractor
	Employ at least 50% of the labor force, or to the maximum extent, local persons within the 2-km immediate area if manpower is available.	Employment records				

**Table 10: EMP Table During Post-Construction Phase**

Potential Impact	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of Monitoring	Source of Funds
Solid waste (debris, excavated soils, etc.)	<p>Backfill any excavation and trenches, preferably with excess excavation material generated during the construction phase.</p> <p>Use removed topsoil to reclaim disturbed areas.</p> <p>Re-establish the original grade and drainage pattern to the extent practicable.</p> <p>Stabilize all areas of disturbed vegetation using weed-free native shrubs, grasses, and trees.</p> <p>Restore access roads, staging areas, and temporary work areas.</p> <p>Restore roadside vegetation, if removed</p> <p>Remove all tools, equipment, barricades, signs, surplus materials, debris, and rubbish. Demolish buildings/structures not required for O&amp;M. Dispose in designated disposal sites.</p>	<p>Pre-existing condition</p> <p>Construction zone has been restored</p>	Contractor	<p>PIU and DSC</p> <p>PIU to submit EMP monitoring report to PMU</p>	- 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 Monitoring	Source of Funds
	<p>Monitor success of re-vegetation and tree re-planting. Replace all plants determined to be in an unhealthy condition.</p> <p>Request in writing from PIU/DSC that construction zones have been restored.</p>					

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

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

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

To be Prepared During	Specific Plan/Program	Purpose	Responsible for Preparation	Responsible for Implementation
Detailed Design Phase	Environmental monitoring program as per detailed design	Indicate sampling locations, methodology and parameters	PMC/DSC	Contractor
Detailed Design Phase	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	H&S plan	Occupational health and safety	Contractor	Contractor

### Environmental Monitoring Program

2. 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.
3. **Table 12** provides the indicative environmental monitoring program which includes relevant environmental parameters, with a description of the sampling stations, frequency of monitoring, applicable standards, and responsibility. This will be updated during detailed design to ensure EMP and monitoring program is commensurate to the impacts of the subproject.

**Table 12: Indicative Environmental Monitoring Program**

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

### Capacity Building

4. 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 13 below. This training program is intended for the entire destination and is not just specific to this package.

**Table 13: Training Modules for Environmental Management (common for entire project)**

Program	Description	Participants	Form of Training	Duration/ Location	Training Conducting Agency
<b>A. Pre-Construction Stage</b>					
• Sensitization Workshop	<ul style="list-style-type: none"> <li>• Introduction to Environment:</li> <li>• Basic Concept of environment</li> <li>• Environmental Regulations and Statutory requirements as per Govt. of India and ADB</li> </ul>	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

Program	Description	Participants	Form of Training	Duration/ Location	Training Conducting Agency
B. Construction Stage					
• Module 1	<ul style="list-style-type: none"> <li>Roles and Responsibilities of officials / contractors / consultants towards protection of environment</li> <li>Implementation Arrangements</li> </ul>	Engineers and staff of line depts. of Government of Punjab, and PMU/PIU (including the ES)	Lecture / Interactive Sessions	½ Working Day	Safeguards Specialist of the PMC and DSC
• Module 2	• Monitoring and Reporting System	Engineers and staff of implementing agencies and PMU/PIU (including ES)	Lecture / Interactive Sessions	½ Working Day	Safeguards Specialist of the PMC and DSC

### EMP Implementation Cost

- 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.
- 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.
- 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 14** below.

**Table 14: Indicative EMP Budget**

S.N.	Particulars	Stages	Unit	Total number	Rate (INR)	Cost (INR)	Source of fund
<b>A. Monitoring Measures</b>							
1	Air quality monitoring	Detailed design	Per sample	1	10,000	10,000	PMU
2	Noise Levels – silence zones	Detailed design	Per location	2	4,000	8,000	PMU
3	Ambient Air	Construction	Per	4	10,000	40,000	Contractor



S.N.	Particulars	Stages	Unit	Total number	Rate (INR)	Cost (INR)	Source of fund
	Quality		Sample				budget
4	Ambient Noise Quality	Construction	Per Sample	4	4,000	16,000	Contractor budget
<b>Sub- Total (A)</b>						<b>74,000</b>	
<b>B.</b>	<b>Capacity Building – Training cost</b>						
1	Sensitization Workshop	Pre-Construction	L.S			1,50,000	PMU
2	Training Session I	Construction	L.S			1,50,000	PMU
3	Training Session II	Construction	L.S			1,50,000	PMU
<b>Sub -Total (B)</b>						<b>4,50,000</b>	
<b>Total (A+B) INR</b>						<b>5,24,000</b>	

## IX. FINDINGS and RECOMMENDATIONS

8. The proposed components as part of the Package PB/IDIPT/T3/03-12/18 to be advertised Q3/2016 are in line with the sub-project selection criteria for the program. The subproject conforms to all Gol and ADB regulations, policies, and standards including all necessary government permits and clearances
9. 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

10. 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.
11. 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).

## Appendix 1: RAPID ENVIRONMENTAL ASSESSMENT (REA) CHECKLIST

### Instructions:

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

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

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

**Country/Project Title:** IDIPT – Punjab: Imperial highway heritage conservation and visitor facility development at western circuit

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

Screening Questions	Yes	No	Remarks
A. Project siting ▪ Is the project area adjacent to or within any of the following areas:			As the subproject is involved in the Conservation of Monuments and development of Craftsmanship of the existing village along the Grand Trunk road, it is located in the culturally rich heritage sites, including.
▪ Underground utilities		✓	
▪ Cultural heritage site	✓		As the subproject is involved in the Conservation of Monuments and development of Craftsmanship of the existing village along the Grand Trunk road, it is located in the culturally rich heritage sites.
▪ Protected area	✓		Two Kos Minars of village Naurangabad and village Bharowal are state protected and hence required NoC from DC, needed to be obtained, which is already attached in annexure 6.
▪ Wetland		✓	The project sites are not in wetland area.

Screening Questions	Yes	No	Remarks
▪ 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>B. POTENTIAL ENVIRONMENTAL IMPACTS WILL THE PROJECT CAUSE...</b>			
▪ Encroachment on historical/cultural areas?		✓	The proposed interventions are planned in the existing land under the ownership of PWD, Punjab Heritage and Tourism Promotion Board (PHTPB) or the Forest Dept. for which required NOCs and undertakings will be obtained; hence no encroachment issues are anticipated.
▪ Encroachment on precious ecology (e.g. sensitive or protected areas)?			The proposed interventions are planned to be developed in the existing buildings only after detailed stakeholder consultations, hence no encroachment issues on precious ecology are involved.
▪ Impacts on the sustainability of associated sanitation and solid waste disposal systems?		✓	There is no additional impact on the sustainability existing sanitation and solid waste disposal systems, as the proposed works involve only
▪ Dislocation or involuntary resettlement of people?		✓	Dislocation or involuntary resettlement of people is involved as sites are free from any encumbrances.
▪ Disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?		✓	There are disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups, the soft component in the project will ensure to provide training to the community women.
▪ Accident risks associated with increased vehicular traffic, leading to loss of life?		✓	There are no accident risks associated with this proposed improvements.
▪ Increased noise and air pollution resulting from increased traffic volume?		✓	Does not arise

Screening Questions	Yes	No	Remarks
▪ Occupational and community health and safety risks?	✓		During the project construction, safety risk may arise. However, by adopting the proposed EMP, the same shall be mitigated effectively.
▪ Risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during project construction and operation?		✓	There are no Risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during project construction and operation, as only conservation/ restoration works are involved.
▪ <b>Generation of dust in sensitive areas during construction?</b>		✓	The proposed construction activity is site specific and does not have any impact to the surroundings as a detailed EMP will be implemented.
▪ <b>Requirements for disposal of fill, excavation, and/or spoil materials?</b>		✓	The proposed improvement consists of minor construction works. Hence only minimal disposal of spoil materials are anticipated.
▪ <b>Noise and vibration due to blasting and other civil works?</b>		✓	No major noise and vibration issues are involved as civil works do not involve any blasting activity.
▪ Long-term impacts on groundwater flows as result of needing to drain the project site prior to construction?		✓	No Long-term impacts on groundwater flows are predicted, due to site specific conservation works involved.
▪ Long-term impacts on local hydrology as a result of building hard surfaces in or near the building?		✓	There are no Long-term impacts on local hydrology are perceived due to 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)?		✓	The proposed construction works will require very minimal laborers and hence local labourer's shall be employed to the extent.
▪ Social conflicts if workers from other regions or countries are hired?		✓	The proposed renovation work will require very minimal labourer and hence local labourer's shall be employed to the maximum extent.
▪ Risks to community safety caused by fire, electric shock, or failure of the buildings safety features during operation?		✓	No risks to community safety are involved due to nature of the conservation/ restoration works.
▪ Risks to community health and safety caused by management and disposal of waste?		✓	

Screening Questions	Yes	No	Remarks
<ul style="list-style-type: none"> <li>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?</li> </ul>		✓	

## A Checklist for Preliminary Climate Risk Screening

**Country/Project Title:** IDIPT – Punjab: Imperial highway heritage conservation and visitor facility development at western circuit.

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

**Subsector:**

**Division/Department:**

Screening Questions		Score	Remarks <sup>5</sup>
<b>Location and Design of project</b>	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 Conservation of Monuments along the Grand Trunk road and improved access to Villages specifically in the Western end of this route in Tarn Taran district where it enters Pakistan. This includes Gandiwind tank, Baradari and development of local crafts along 9 Kos Minars within the district. All proposed interventions are limited to site-specific construction and minor conservation works hence no climatic impacts 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
<b>Materials and Maintenance</b>	Would weather, current and likely future climate conditions (e.g. prevailing humidity level, temperature contrast between hot summer days and cold winter days, exposure to wind and humidity hydro-meteorological parameters likely affect the selection of project inputs over the life of project outputs (e.g. construction material)?	0	The construction materials used for this project shall not have any impact on the climate change. All efforts will be made to utilize Environment friendly construction materials.
	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
<b>Performance</b>	Would weather/climate conditions and related	0	Does not arise

<sup>5</sup> 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.

<b>of project outputs</b>	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?		
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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 Tourist Reception Centre facilities at the strategic tourists reception locations wide dissemination on the culturally, historically, ecologically and architecturally significant sites of Punjab State to be visited. The proposed construction, operation and maintenance of the project do not have any impact on the climatic condition.

Photo Illustration



Tank at Gandiwind



Baradari at Gandiwind





**Kos Minar**

## Sample Outline of Spoil Management Plan (SMP)

### 1.0 Purpose and application:

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

### 2.0 Objectives of SMP:

The objectives of SMP are:

To minimize spoil generation where possible

Maximize beneficial reuse of spoil from construction works in accordance with spoil management hierarchy

Manage onsite spoil handling to minimize environmental impacts on resident and other receivers

Minimize any further site contamination of land, water, soil

Manage the transportation of spoil with consideration of traffic impacts and transport related emissions

### 3.0 Structure of SMP:

Section 1: Introduction of SMP

Section 2: Legal and other requirements

Section 3: Roles and responsibilities

Section 4: Identification and assessment of spoil aspects and impacts

Section 5: Spoil volumes, characteristics and minimization

Section 6: Spoil reuses opportunities, identification and assessment

Section 7: On site spoil management approach

Section 8: Spoil transportation methodology

Section 9: Monitoring, Reporting, Review, and Improvements

### 4.0 Aspects and Potential Impacts

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

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

## **5.0 Spoil volumes, characteristics and minimization**

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

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

5.3 Adopt Spoil Reduce, Reuse Opportunities

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

Consideration of likely spoil characteristics

Identification of possible reuse sites

Screening of possible reuse opportunities

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

5.5 Storage and stock piling

5.6 Transportation and haulage route

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

### Public Consultations

Public Consultations shall be done during detailed design phase and included in final IEE report (Please insert if consultations done for this project)

S.No.	Date of Site Visit	Location	Sites Visited	Name of the officials met	Issues Discussed
6	01.02.14	Taran Tarn & Tarn Taran	Kos Minars and Gandiwind Tank	DFO & Staff, DC and Health Department, Punjab.	<p>Ownership of the assets under the site and accessibility to the sites.</p> <p>Development activities required at the site for its enhancement/ or adaptive reuse.</p> <p>Responsible agencies for the O &amp; M of the site.</p> <p>Confirmation and consensus for the required interventions through the agencies.</p> <p>Key gender issues and requirements of the local women groups in the area.</p> <p>Income generating activities which can be taken up by the local community, tourists guides, Solid waste</p>
11	28.05.14	Tarn Taran	Kos Minars and Gandiwind Tank	Patwari PA to SDM	
12	29.05.14	Taran Tarn Tarn Taran	Kos Minars and Gandiwind Tank	DC, local community people, tourists, stakeholders and line agency departments.	
13	16.07.14	Tarn Taran	Sub Project Sites of Tranche-2	DC, local community people, tourists, stakeholders and line agency departments. DFO & Staff and Health Department, Punjab.	

					<p>management and community involvement.</p> <p>Expected benefits of the project by the local community and the stakeholders.</p> <p>NoC and undertakings required for development of the site.</p>
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**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.

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

**FOR OFFICIAL USE ONLY**

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

### Sample Semi-Annual Environmental Monitoring Report Template

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

#### INTRODUCTION

Overall project description and objectives

Description of sub-projects

Environmental category of the sub-projects

Details of site personnel and/or consultants responsible for environmental monitoring

Overall project and sub-project progress and status

No.	Sub-Project Name	Status of Sub-Project				List of Works	Progress of Works
		Design	Pre-Construction	Construction	Operational		
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

#### COMPLIANCE STATUS WITH NATIONAL/STATE/LOCAL STATUTORY ENVIRONMENTAL REQUIREMENTS

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

#### COMPLIANCE STATUS WITH ENVIRONMENTAL LOAN COVENANTS

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

#### COMPLIANCE STATUS WITH THE ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN

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

There should be Reporting on the following items which can be incorporated in the checklist of routine Environmental Site Inspection Report followed with a summary in the semi-annual Report send to ADB. Visual assessment and review of relevant site documentation during routine site inspection needs to note and record the following:

What are the dust suppression techniques followed for site and if any dust was noted to escape the site boundaries;

If muddy water was escaping site boundaries or muddy tracks were seen on adjacent roads;

adequacy of type of erosion and sediment control measures installed on site, condition of erosion and sediment control measures including if these were intact following heavy rain;

Are their designated areas for concrete works, and refuelling;

Are their spill kits on site and if there are site procedure for handling emergencies;

Is there any chemical stored on site and what is the storage condition?

Is there any dewatering activities if yes, where is the water being discharged;

How are the stockpiles being managed;

How is solid and liquid waste being handled on site;

Review of the complaint management system;

Checking if there are any activities being under taken out of working hours and how that is being managed.



**Annexure-7****Summary Monitoring Table**

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

### Overall Compliance with CEMP/EMP

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

### APPROACH AND METHODOLOGY FOR ENVIRONMENTAL MONITORING OF THE PROJECT

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

### MONITORING OF ENVIRONMENTAL IMPACTS ON PROJECT SURROUNDINGS (AMBIENT AIR, WATER QUALITY AND NOISE LEVELS)

Brief discussion on the basis for monitoring

Indicate type and location of environmental parameters to be monitored

Indicate the method of monitoring and equipment to be used

Provide monitoring results and an analysis of results in relation to baseline data and statutory requirements

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

#### Air Quality Results

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

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

#### Water Quality Results

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

## IEE: Conservation and Adaptive Reuse of Colonial Heritage in Tarn Taran

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 <sub>eq</sub> (dBA) (Government Standard)	
			Day Time	Night Time

Site No.	Date of Testing	Site Location	LA <sub>eq</sub> (dBA) (Government Standard)	
			Day Time	Night Time

### SUMMARY OF KEY ISSUES AND REMEDIAL ACTIONS

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

### Annexes

Photos

Summary of consultations

Copies of environmental clearances and permits

Sample of environmental site inspection Report

Other

**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 9: 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.

General location record – measuring its position and orientation within the fort / in relation to surrounding structures

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.

## Annexure 10: NO OBJECTION CERTIFICATES AND UNDERTAKINGS

### Tank and Baradari at Gandiwind

Department of Cultural Affairs, Archaeology & Museum, Punjab  
Plot No. 3, Sector 38-A, Chandigarh.

DCAM/ACRH/No. 1140 Dated: 27/09/14

**Subject:-** No Objection Certificate and undertaking for Baradari at Gandiwind Distt. Taran Tarn by PHTPB.

It is certified that there is no objection if the proposed project conservation and development of Tank and Baradari at Gandiwind Distt. Taran Tarn is executed by PHTPB, Department of Tourism (Punjab) as per the guide lines of Govt. of India and ADB loan funded project under the IDIPT project. This site is under the protection of Punjab Govt. under "THE PUNJAB ANCIENT AND HISTORICAL MONUMENTS AND ARCHAEOLOGICAL SITES AND REMAINS ACT, 1964." The conservation should be done as per archaeological principals. The Department of Cultural Affairs undertakes that:-

1. There is no encroachment and no resettlement/displacement/rehabilitation of people involved in the above Proposed Project area/building/land.
2. The proposed project is not partially/fully part of any other project funded under any other scheme/programme of the State/Central Govt. or any external funding.
3. The assets created as a result of the execution of above stated project will be taken over for operation and maintenance by Department of Cultural Affairs, Archaeology & Museums, Punjab.

A management plan of the monument/building may please also be made.

Place: Chandigarh  
Date: 27/09/14

*only for district  
Tarn Taran*

*cks*  
Deputy Commissioner,  
Tarn Taran.

*Director*  
Director  
ਡਾਇਰੈਕਟਰ ਸੱਭਿਅਤਾਵਾਂ ਅਤੇ  
ਪੁਰਾਤੱਤਵ ਅਤੇ ਆਰਕਿਓਲੋਜੀ, ਪੰਜਾਬ

Kos Minars

Department of Cultural Affairs, Archaeology & Museum, Punjab  
Plot No. 3, Sector 38-A, Chandigarh.

DCAM/ACRH/No. 1141 Dated: 27/09/14

Subject:- No Objection Certificate and undertaking for Kos Minars on Old Badshahi Road in Punjab State by PHTPB.

It is certified that there is no objection if the proposed project conservation/development of the Kos Minars on Old Badshahi Road in Punjab State is executed by PHTPB, Department of Tourism (Punjab) as per the guide lines of Govt. of India and ADB loan funded project under the IDIPT project. These sites are under the protection of Punjab Govt. under "THE PUNJAB ANCIENT AND HISTORICAL MONUMENTS AND ARCHAEOLOGICAL SITES AND REMAINS ACT, 1964." The conservation should be done as per archaeological principals. The Department of Cultural Affairs undertakes that:-

1. There is no encroachment and no resettlement/displacement/rehabilitation of people involved in the above Proposed Project area/building/land.
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A management plan of the monument/building may please also be made.

Place: Chandigarh  
Date: 27/09/14

*only for district  
Tarn Taran*

*[Signature]*  
Deputy Commissioner,  
Tarn Taran.

*[Signature]*  
Director  
ਭਾਰਤੀ ਪੁਰਾਤੱਤਵ ਅਤੇ ਮਿਥਿਹਾਸ ਵਿਭਾਗ, ਪੰਜਾਬ।