Initial Environmental Examination

Project Number: 40648-034
January 2017

Loan 3223-IND: Infrastructure Development Investment Program for Tourism, Project 3

Submitted by

Department of Tourism, Government of Punjab

Asian Development Bank

From:	"IDIPT.PB.Office Chandigarh" <idipt.pb.office@gmail.com>
To:	vvishal <vvishal@adb.org>
Cc:	Navjot Randhawa <navjot1964@gmail.com>, xecutive Director <ed.apd.phtpb@gmail.com>, Skill development <skilldevelopment.phtpb@gmail.com>, Karamveer Singh <sss.idipt@gmail.com>, lsondjaja@adb.org, amritsharma@adb.org
Date:	12/09/2016 11:06 AM
Subject:	Re: Loan 3223-IND: IDIPT- IEE Report for Package no. PB/IDIPT/T3/01/01 (Lot-1): State-wide tourism centres, interpretation Centres (Lot-2)- Western Circuit at Kapurthala (Pushpa Gujral Science City)

Sir,

This is in reference to your trailing mail, please find attached revised IEE report along with compliance matrix as per your observations.

Regards:

Manager (IDIPT)
Chandigarh

On Tue, Nov 15, 2016 at 11:47 AM, <amritsharma@adb.org> wrote:

Dear Mr. Randhawa,
We have reviewed the IEE report of captioned sub-project and our observations are given below:

1. The scope of works for the sub-project needs to be elaborated at para 7 (page 1) and para 34 (page 8) of the report; and

2. We note that the public consultations have been carried out along the sub-project (para 98, page 24). We further note that the details (outcomes of public consultation and photographs) of these consultations have been provided in annexure 5 and annexure 10 of the report. Please provide the attendance sheets of these consultations in the report.

Please make the above mentioned corrections, and submit the revised IEE report along with compliance matrix to ADB for review and approval.

Thanks & Regards,
Amrit Ajay Sharma
(Associate Project Analyst)
(Urban Sector)
Asian Development Bank, India Resident Mission
Tel:+91- 30922291/24107291/24107200
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From: "IDIPT.PB.Office Chandigarh" <idipt.pb.office@gmail.com>
To: vvishal <vvishal@adb.org>
Cc: amritsharma@adb.org, Executive Director <ed.apd.phtpb@gmail.com>, Skill development <skilldevelopment.phtpb@gmail.com>, Karamveer Singh <sss.idipt@gmail.com>
Date: 09/11/2016 09:56 AM
Subject: Loan 3223-IND: IDIPT- IEE Report for Package no. PB/IDIPT/T3/01/01 (Lot-1): State-wide tourism centres, interpretation Centres (Lot-2)- Western Circuit at Kapurthala (Pushpa Gujral Science City)

Sir,

Please find attached IEE Report for Package no. PB/IDIPT/T3/01/01 (Lot-1): State-wide tourism centres, interpretation Centres (Lot-2)- Western Circuit at Kapurthala (Pushpa Gujral Science City)

--

Regards

Manager
from O/o Additional Project Director
Infrastructure Development Investment
Programme for Tourism (IDIPT) –Punjab
Plot No.3, Sector-38A,Chandigarh
PH. 0172-5014495[attachment "IEE Kapurthala-TIC & IC at PGSC...pdf" deleted by Amrit Ajay Sharma/INRM/ADB]

Regards

Manager
from O/o Additional Project Director
Infrastructure Development Investment
Programme for Tourism (IDIPT) –Punjab
Plot No.3, Sector-38A,Chandigarh
PH. 0172-5014495

IEE Kapurthala-TIC & IC at PGSC - revise.pdf

Compliance matrix to the Queries from ADB-PGSC-Kpt.pdf

Punjab Heritage and Tourism Promotion Board
Infrastructure Development Investment Programme for Tourism (IDIPT)
(ADB Assisted Project)
Plot No. 03, Sector 38 A, Chandigarh, Ph. 0172-2625952, 5014495
Email:idipt.pb.office@gmail.com

To

The Country Director,
India Resident Mission
Asian Development Bank,
4, San Martin Marg, Chanakyapuri,
New Delhi – 110021

No. PHTPB/IDIPT/2016/T3/3998-4005

Dated: 08/11/16

Project: Loan 3223-IND: Infrastructure Development Investment Programme for Tourism (IDIPT) - IEE Report for Package no: PB/IDIPT/T3/01/01(Lot-2): State-wide Tourism Centres, Interpretation Centres (Lot-2) - Western Circuit at Kapurthala (Pushpa Gujral Science City)

Subject: Submission of Initial Environmental Examination (IEE) Report

The Initial Environmental Examination (IEE) Report for the contract Package PB/IDIPT/T3/01/01 (Lot-2) seeking ADB's concurrence is hereby enclosed with this letter for your approval.

8.11.16

Addl. Project Director

CC:

1. PA to PD, IDIPT-PB
2. PA to APD, IDIPT-PB
3. CGM, PHTPB
4. FCS, IDIPT-PB
5. TL, PMC
6. TL, DSC
7. ESS, IDIPT-PB

Compliance matrix to the Queries from ADB

Package no. PB/IDIPT/T3/01/01 (Lot-1): State-wide tourism centres, Interpretation Centres (Lot-2)-Western Circuit at Kapurthala (Pushpa Gujral Science City)

Sl.no	Comments from ADB	Compliance from PMU
1.	**(i).** The scope of works for the sub-project needs to be elaborated at para 7 (page 1) and para 34 (page 8) of the report; and	Noted, The scope of work defined/ given in the DPR has been referred/ shared in the IEE report. In the DPR, each scope has been elaborated with project design/ drawings and hence providing the entire drawing/design aspects in the IEE would be too bulky and it would be a replica of the DPR. Hence the summarised scope as given in the DPR has been taken for discussion in the IEE Report.
	(ii). We note that the public consultations have been carried out along the sub-project (para 98, page 24). We further note that the details (outcomes of public consultation and photographs) of these consultations have been provided in annexure 5 and annexure 10 of the report. Please provide the attendance sheets of these consultations in the report.	Noted, public consultations have been conducted and attendance sheets have been placed at Annexure 10.

Initial Environmental Examination

Project Number: 40648-023
ADB loan Number:3223-IND
December 2016

Infrastructure Development Investment Program for Tourism (IDIPT) - Punjab

Subproject –Sate-wide Tourism Centres, Interpretation Centres (Lot-2) - Western Circuit at Kapurthala (Pushpa Gujral Science City)

(Package no: PB/IDIPT/T3/01/01 Lot-2)

Prepared by the Government of Punjab

ABBREVIATIONS

ADB	:	Asian Development Bank
AAQ	:	Ambient Air Quality
CTE	:	Consent to Establish
CTO	:	Consent to Operate
DSC	:	Design Supervision Consultant
DoT	:	Department of Tourism
EA	:	Executing Agency
EAC		Expert Appraisal Committee
EARF	:	Environment Assessment & Review Framework
EIA	:	Environmental Impact Assessment
EMP	:	Environmental Management Plan
GoI	:	Government of India
GoP	:	Government of Punjab
GRC	:	Grievance Redress Committee
H&S	:	Health and Safety
IC		Interpretation Centre
IEE	:	Initial Environmental Examination
IDIPT	:	Infrastructure Development Investment Programme for Tourism
LGC	:	Local Grievance Committee
NoC	:	No Objection Certificate
NGO	:	Non-Governmental Organization
MoEF&CC	:	Ministry of Environment, Forest and Climate Change
MC	:	Municipal Corporation
O&M	:	Operation and Maintenance
PIU	:	Project Implementation Unit
PHTPB	:	Punjab Heritage and Tourism Promotion Board
PMC	:	Project Management Consultant
PMU	:	Project Management Unit
PPCB		Punjab Pollution Control Board
PGSC		Pushpa Gujral Science City
REA	:	Rapid Environmental Assessment
SEAC		State Expert Appraisal Committee
SPS	:	Safeguard Policy Statement
SC	:	Schedule Caste
SLEC	:	State Level Empowered Committee
TIC	:	Tourism Information Centre
TSS	:	Total Suspended Solids
UT	:	Union Territory
UNWTO	:	United Nations World Tourism Organization

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EXECTUVE SUMMARY

1. **Background.** The Infrastructure Development Investment Program for Tourism Financing Facility (the Facility) will develop and improve the 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:

- Strengthening connectivity to and among key tourist destinations; and
- 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.

2. Physical infrastructure investments will be accompanied bycapacity 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.

3. Pushpa Gujral Science City is one of the locations identified for development of Tourist Information / Interpretation Centre. Pushpa Gujral Science City (PGSC) is located on Jalandhar Kapurthala Road 15 KMs from Jalandhar and 5 KMs from Kapurthala. The location being one of the biggest Science Parks in North India makes it the best location for developing TRC. This will help to promote tourism in Kapurthala.

4. Kanjli Wetland, a man made Wetland, which subsumes the Kanjli Lake, is located in the Kapurthala district of Punjab. This was created in 1870 by constructing the headworks across the perennial Bien River, a tributary of the Beas River to provide irrigation facilities to the hinterland near Pushpa Gujral Science city. As of now, the awareness of the wetland is negligible among the tourists in state and Pushpa Gujral Science city being the most visited site in Kapurthala which is the nearest tourist Spot for creating awareness of wetlands among the tourists.

5. **Executing and implementing agencies.** The executing agency is the Department of Tourism (DoT), Punjab. The implementing agency is Punjab Heritage and Tourism Promotion Board (PHTPB), Punjab. Project Management Unit (PMU) is set up at Chandigarh to coordinate the overall project execution and is supported by the Project Management Consultant (PMC). Project Implementation Units (PIU) is set up at Amritsar and is supported by Design Supervision Consultant (DSC). The asset owner of the proposed site at Pushpa Gujral Science City is Pushpa Gujral Science City itself which is under the Department of Science, Technology and Environment, Govt. of Punjab.

6. **Categorization.** The proposed sub-project is classified as Environmental Category “B” as per the Safeguard Policy Statement (SPS), 2009 as there are no significant impacts envisioned and accordingly this Initial Environmental Examination (IEE) has been prepared. The IEE shall assess the environmental impacts and provides mitigation and monitoring measures to ensure that there are no significant impacts as a result of the proposed subproject implementation.

7. **Subproject Scope.** The scope of work assigned for this subproject includes.

- Entrance created as wetland with water pond and boardwalk over it,
- Wooden cage designed specific for children’s area with educational games

- Children's area for Interpretation
- Creation of artificial wetland With water pond, boardwalk, birds and wild grass
- Bronze Metal Sculpture along the Boardwalk
- Spacious double height lobby
- Metal Globe preserved by birds which will present wetlands all around the globe
- Interactive kiosks
- Furniture which will represent Kanjli Species
- Interactive wetland scene on walls
- Interactive river scene on floor
- 3D Theatre
- Backyard- Eating at wetlands
- Forestry Elevation with wooden facade

8. **Description of the Environment.** Subproject components are located in Kapurthala District of Punjab. The subproject site (PGSC) is situated in the urban areas of the town.There are habitations and agricultural activities taking place near/around the site and there are no wildlife recorded near the site. There are no protected areas, forests, sensitive eco sites within or adjacent to the subproject sites.There is lush green environment in the PGSC with good landscape, plantations, cleanliness and open spaces and therefore air and noise quality is also good. There are no surface water bodies near the site, which may be impacted due to proposed construction works.

9. **Environmental Management.** An environmental management plan (EMP) is included as part of this IEE, which includes (i) mitigation measures for environmental impacts identified during the implementation stage; (ii) an environmental monitoring program, and the responsible entities for mitigating, monitoring, and reporting; (iii) public consultation and information disclosure procedure; and (iv) grievance redress mechanism. The EMP will be included in the civil work bidding and contract documents.

10. The subproject location is selected based on the screening exercises (to identify the level of environmental and social impacts) conducted in the inception stage of the subproject; therefore the anticipated impacts due to project locations will be minimum. Nevertheless, the concepts considered in design of the subproject are (i) design and material 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 far as possible; (iii) The paints having low volatile organic compounds (VOC's) shall be used for all painting (interior and exterior) work (iv) earth backfill(if any) will be done from the site excavated material; and (v) ensuring all planning and design interventions and decisions are made in consultation with concerned authorities and reflecting inputs from public consultation.

11. During the construction phase, the major impacts may arise due to increase in air and noise pollution, generation of solid waste, health and safety of workers and disturbances causedby the construction activities to the tourists/visitors and staff members of PGSC. These are common construction impacts and can be mitigated through appropriate mitigation measures such as reduction of air and noise pollution through use of appropriate modern equipment and methodologies, use of proper personal protective equipment and minimizing the inconvenience caused by adopting appropriate work plan. In the operational phase, all the infrastructure facilities will be operated efficiently by routine maintenance, which should not affect the environment. The anticipated environmental impacts during the operation period will arise mainly due to repair works and the impacts will be much less than those of the

construction period. Mitigation measures have been developed to reduce all negative impacts. Mitigation will be assured by an environmental monitoring program which will be conducted during the subproject 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 consultation with workers and beneficiaries. Any requirement for corrective action will be reported to the ADB.

12. The tourists, visitors and the local people of Kapurthala town areas 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 the conditions of natural and cultural heritage, tourism facilities and propagate the local traditions and Cultural Heritage of the state. This subproject along with other subprojects proposed in Kapurthala and other towns will also provide a common platform for local traditions and values; provide and improve business opportunities for local communities, linked to the cultural and natural heritage tourism.

13. **Consultation, Disclosure and Grievance Redress.** The stakeholders were involved in developing the IEE through face to face discussions and different ways of communications, the outcome and 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.

14. A grievance redress mechanism is formed in the project for addressing any social and environmental issues during project execution which has been described within the IEE to ensure any public grievances are addressed quickly.

15. **Monitoring and Reporting.** The PIU and DSC will be responsible for performing environmental monitoring and they will be supervised by the PMU and PMC. The PIU with support from the DSC will submit 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 after approval will post the environmental monitoring reports on its website.

16. **Conclusions and Recommendations.** The proposed subproject is unlikely to cause any significant environmental impacts. The potential impacts that are associated with design, construction and operation can be mitigated through proper engineering design and the incorporation or application of recommended mitigation measures and procedures. Based on the findings of the IEE, it shall be concluded that there are no significant environmental impacts in implementing this subproject and accordingly the subproject is classified as Category “B” project (as per SPS, 2009) and further study or detailed Environmental Impact Assessment (EIA) is not required.

I. INTRODUCTION

17. **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:

- Strengthening connectivity to and among key tourist destinations; and
- 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.

18. Physical infrastructure investments will be accompanied by 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.

19. The subproject interventions proposed at Kapurthala comes under the Western circuit[1].The scope of the project is to enhance protection and management of natural and cultural tourism assets at Kapurthala. The district is a part of the Sikh Heritage Trail (Source: Punjab Tourism Development Master Plan, 2008-2023; United Nations World Tourism Organization (UNWTO)).

20. **Executing and Implementing Agencies.** The executing agency is Department of Tourism (DoT), Punjab. The implementing agency is the Punjab Heritage and Tourism Promotion Board (PHTDB) Punjab. Project Management Unit (PMU) is set up at Chandigarh to coordinate the overall project execution. Project Management Consultant (PMC) at Chandigarh provides assistance to PMU in the project execution. Project Implementation Unit (PIU) is set up at Amritsar and it is supported by Design Supervision Consultant (DSC). The asset owner of the proposed subproject site is Pushpa Gujral Science City (PGSC), which falls under the Department of Science, Technology and Environment, Govt. of Punjab.

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

[1] The Western Circuit is located in the north-western segment of the state and includes the districts of Amritsar, Gurdaspur and Kapurthala. The area borders Pakistan in the west and the River Beas flows through the eastern portion.(Source: As per Punjab Tourism Development Master Plan, 2008-2023; United Nations World Tourism Organization (UNWTO)

22. The scope of works assigned for this subproject includes-

- Entrance modelled as wetland with water pond and boardwalk over it,
- Wooden cage designed specific for children's area with educational games
- Children's area for Interpretation
- Creation of artificial wetland With water pond, boardwalk, birds and wild grass
- Bronze Metal Sculpture along the Boardwalk
- Spacious double height lobby
- Metal Globe preserved by birds which will present wetlands all around the globe
- Interactive kiosks
- Furniture which will represent Kanjli Species
- Interactive wetland scene on walls
- Interactive river scene on floor
- 3D Theatre
- Backyard- Eating at wetlands
- Forestry Elevation with wooden facade

23. **Categorization.** As per the Asian Development Bank's (ADB) Safeguard Policy Statement 2009 and in line with the Environment Assessment & Review Framework (EARF)the proposed sub-project is categorized as 'B' and accordingly an Initial Environmental Examination (IEE) has been prepared. The IEE was prepared based on the subproject site plans, reports, field visits, secondary data (to characterize the environment and identify potential impacts), interviews and discussions with the stakeholders.

24. **Purpose of the IEE.** This report gives an account of the initial environmental examination (IEE) of the subproject as per Detailed Design. The environmental impacts for this contract package are primarily related to construction activities. The proposed construction activities are selected considering the historical, cultural and natural values of the city. There will be construction impacts associated with proposed civil 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 accordingly an IEE has been 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 for the Subproject

a) Locations

25. The proposed subproject sites are located in the Kapurthala district of Punjab. The Kapurthala District is situated 163 kilometres to the west of Chandigarh city and is 21.6 km. from Jalandhar via the NH-703A.

26. Pushpa Gujral Science City (PGSC) is located in Kapurthala District on Jalandhar Kapurthala Road, 15 KMs from Jalandhar and 5 KMs from Kapurthala. The location of Science City, being one of the biggest Science Parks in North India, makes it the best location for developing TRC. This will help to promote eco-tourism in Kapurthala.

27. The Kanjli Wetland is a manmade Wetland, which subsumes the Kanjli Lake, located in the Kapurthala district of Punjab, which was created in 1870 by constructing the head works across the perennial Bien River, a tributary of the Beas River in order to provide

irrigation facilities to the hinterland near Pushpa Gujral Science city. As of now, the awareness of the wetland is negligible among the tourists in the state and since Pushpa Gujral Science city being the most visited site in Kapurthala which is the nearest tourist Spot for creating awareness of wetlands among the tourists.

28. Location map of PGSC is shown in **Figure-1** below-

Figure 1: Location map of Pushpa Gujral Science City

b) Brief History

29. **Kanjli Wetland:**

Spread over an area of 490 ha, Kanjli wetland is upstream of Harike Wetland which is located in the Beas river basin. It is an artificial wetland and has been internationally recognized by Ramsar Convention since 2002. This convention has designated Kanjli Lake in the list of few wetlands that are of international importance. It is one of the unique positioned wetlands of Punjab. As other wetlands, Kanjli wetland also comprises of the key attributes of wetlands that subsume hydrology, that is, the degree of soil saturation or flooding, wetland vegetation, that is, hydrophytes, and hydric soils.

Figure 2: Kanjli Lake and Wetland at upstream of barrage at Kali Ben River

30. **Pushpa Gujral Science City:** The foundation stone of the Science City was laid down by former Prime Minister Sh. I. K. Gujral on October 17, 1997.The first phase of Science City was inaugurated by His Excellency Lt. Gen (retd) S.F Rodrigues, Governor of Punjab on March 19, 2005. Major attractions included in the first phase were Space Theatre, Laser Theatre, 3D Theatre, Flight Simulator and Fun Science exhibits. A State level Energy Education and Awareness Park was also developed in collaboration with Punjab Energy Development Agency (PEDA).PGSC, in its second phase added several galleries namely Amazing Living Machine, Science of Sports, Virtual Reality and Cyber Space, Earthquake Simulator, convention hall and Dinosaurs Park to present memorable, entertaining, knowledge-based and excitable experience. In addition to these galleries, Panorama on Life through the various ages and a climate change show is being developed to as a further attraction.

c) Existing Conditions

31. **Proposed site at PGSC:** Pushpa Gujral Science City is a renowned, Science centre in Punjab, which creates awareness for science in the people. PGSC includes Space Theatre, Digital Planetarium, Laser Theatre, 3D Theatre, Flight Simulator, Climate Change Theatre, Earthquake Simulator, Space and Aviation Gallery, Energy Park, Health Gallery, Sports Science, Virtual Gallery, Fun Science Gallery, Dinosaurs Park, Defence gallery. There are various other facilities including Gate Complex and Public Facilities, Restaurants / Cafeterias, Boating, Souvenir Shop, Computerized Ticketing Area, Information Centre, 24 hours ATM facility, First Aid Facility, Parking Facilities for two wheelers, four wheelers, buses and drivers rest room. Apart from these, there is lush green open space in the premises of Science City and about 2000 square meter area is available and is vacant out of which 1200 square meter area is proposed for the above mentioned proposed works. **Annexure 2** shows the site photo of the subproject area.

d) Need of the Project

32. The rich biodiversity of the Kanjli Wetland comprises of aquatic , mesophytic and terrestrial flora and fauna including some important species of plants and animals which was recognized internationally by the Ramsar Convention in 2002 by designating the Kanjli Lake in the List of Wetlands of International Importance

33. As of now, the awareness of the wetland is negligible among the tourists in state, and Pushpa Gujral Science city being the most visited site in Kapurthala is nearest tourist Spot for creating awareness of wetlands among the tourists. Therefore PGSC is selected for creation of TIC and IC for Kanjli Wetlands.

B. Proposed Subproject Components

34. The proposed works (site plan in **Figure 3**) under this sub project are as follows-

- Entrance created as wetland with water pond and boardwalk over it,
- Wooden cage designed specific for children's area with educational games
- Children's area for Interpretation
- Creation of artificial wetland With water pond, boardwalk, birds and wild grass
- Bronze Metal Sculpture along the Boardwalk
- Spacious double height lobby
- Metal Globe preserved by birds which will present wetlands all around the globe
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- Furniture which will represent Kanjli Species
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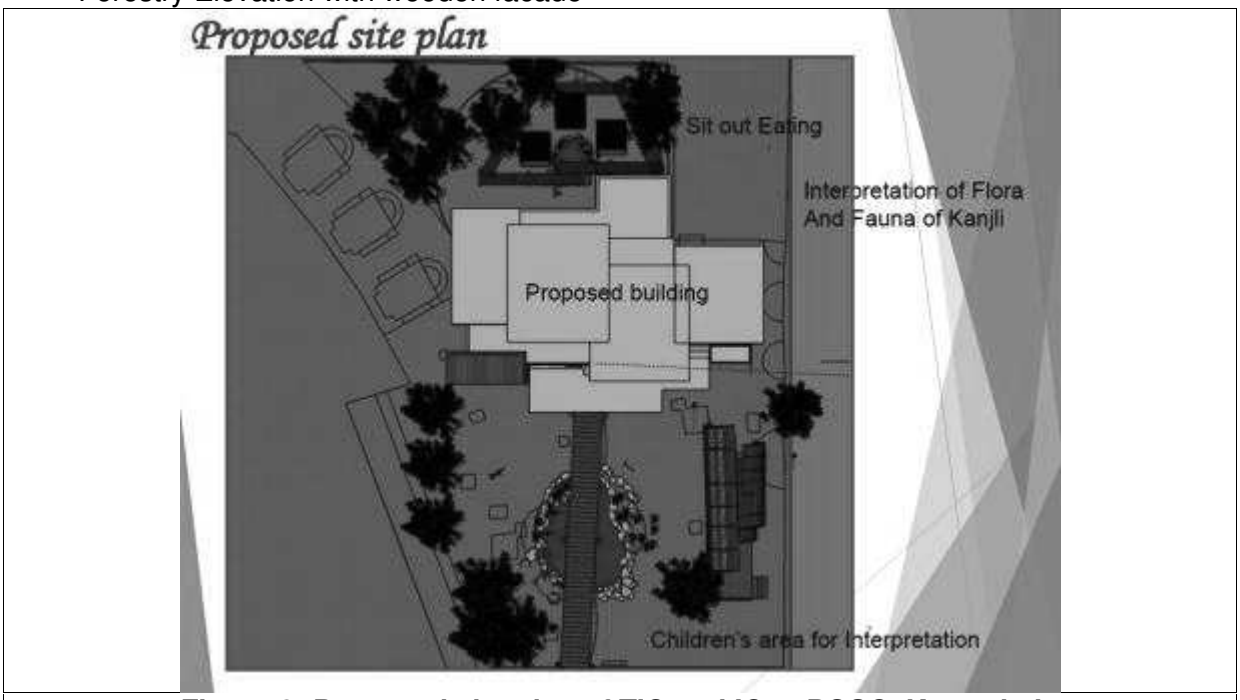

Figure 3: Proposed site plan of TIC and IC at PGSC, Kapurthala

Source: concept report

B. Implementation Schedule

35. The estimated Implementation Schedule for this subproject is worked out to be 18 months from the date of award of the contract.

III. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

A. ADB Policy

36. 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.

37. **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**.**

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

39. **Public Disclosure.** The IEE will be put in an accessible place (e.g., local government offices, libraries, community centres, 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

40. 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.

41. 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, Forest and Climate Change (MoEF& CC, GoI) specifies the mandatory environmental clearance requirements. Accordingly, projects and activities are broadly categorized in two categories[2] - Category A and Category B, based on the spatial extent of potential impacts and potential impacts on human health and; natural and man-made resources.

Table 1: Environmental Regulatory Compliance

Sub-Project	Applicability of Acts/Guidelines	Compliance Criteria
State-wide Tourism Centres, Interpretation Centres (Lot-2)-Western Circuit at Kapurthala (Pushpa Gujral Science City)	The Environment Protection Act, 1986 - under EIA notification, 2006 (and its subsequent amendments in 2009) provides for categorization of projects into category A and B, based on extent of impacts.	The sub-project is not covered in the ambit of the EIA notification as they are not covered either under Category A or Category B of the notification. As a result, the categorization, and the subsequent environmental assessment and clearance requirements, either from the State government or the GoI is not triggered.
	ADB's Safeguard Policy Statement 2009	Categorization of sub-project components into A, B or C and developing required level of environmental assessment for each component. The subproject has been Categorized as B and accordingly this IEE has been prepared
	The Wildlife Conservation Act, 1972, amended in 2003 and 2006, provides for protection and management of Protected Areas.	Not applicable. As there are no wildlife protected areas within or in the vicinity of the subproject site
	The Forest Conservation Act, 1980 and its subsequent amendments necessitate obtaining clearance from the MoEF& CC for diversion of forest land for non-forest purposes.	Not applicable, the subproject site is not located within or in the vicinity of the forest area. Felling of trees are not envisaged in this sub-project implementation and hence tree felling/ cutting permission are not required

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

Sub-Project	Applicability of Acts/Guidelines	Compliance Criteria
	Water (Prevention and control of pollution) Act, 1974 and; Air (prevention and control of pollution) Act, 1981	Consent to Establishment (CTE) and Consent to Operation (CTO) has to be obtained by the Contractor from the PPCB for setting up of diesel generators and batching plant (if any), prior to the commencement of construction works. Apart from this the CTE and CTO are also required for stone crushers (if any) and quarry sites if they are being set up exclusively for this project, otherwise it has to be ensured that the construction materials are procured from approved/ licensed quarry sites and stone crushers.
	The Ancient Monuments and Archaeological Sites and Remains Act, 1958, and the rules, 1959 provide guidance for carrying out activities, including conservation, construction and reuse in and around the protected monuments.	Not applicable as these sites and monuments are not under the ambit of this Act.
	Punjab Ancient and Historical Monuments and Archaeological Sites and Remains Act of 1964- An Act to provide for the preservation of ancient and historical monuments and archaeological sites and remains other than those of national importance, for the regulation of Archaeological excavations and for the protection of sculptures, carvings and other like objects.	Not applicable as PGSC is not a protected monument.

42. The above Table indicates that the proposed subproject does not need to go through a full-scale environmental assessment process; as the scale of impacts and categorization of the sub-project components will not require consent/ clearances from Competent Authorities. Therefore, any further approvals or clearances from the GoI or GoP are not envisaged. The ADB guidelines, stipulate addressing environmental concerns, if any, of a proposed activity in the initial stages of Project preparation. For this, the ADB Guidelines categorizes the proposed components into categories (A, B or C) to determine the level of environmental assessment required to address the potential impacts. This subproject has been categorized as B. Accordingly this IEE has been 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

a) Climate

43. The climate of the Kapurthala District may be divided into four seasons. The cold season starts from mid - November to the early March, which is followed by the hot season which lasts till the end of June. July, August and the first half of September constitute the south-west monsoon season. The period from mid-September to the middle of November may be termed as the post-monsoon or transitional period.

44. After February, there is a steady increase in temperature. June is generally the hottest month with the mean daily maximum at about 41°C and the mean daily minimum at about 27°C. Hot scorching dust-laden westerly winds blow during the summer and on individual days the day temperature may reach even about 45°C. With the onset of the south-west monsoon in the district by about the beginning of July, there is an appreciable drop in the day temperature. The nights, however, are as warm as during summer. On account of the increased moisture in the monsoon air, the weather is often sultry and uncomfortable even during the monsoon season in between the rains. After the monsoon by about the mid-September, there is a rapid drop in the temperature, especially during night. January is usually the coldest month with the mean daily maximum temperature at about 19°C and the mean daily minimum temperature at about 6°C. Cold waves affect the district in the wake of passing western disturbances in winter when the minimum temperature drops down to about a degree or so below freezing point.

b) Rainfall

45. The average annual rainfall in the district is 695.6 mm. On an annual average, there are about 33 rainy days, i.e. days with rainfall of 2.5mm or more. The rain fall generally increases from the south-west towards the north-east. About 70 percent of the annual rainfall is received during the monsoon months, i.e. July to September-July being the wettest month. There is also some rainfall during the period from December to March in association with passing western disturbances and this amount to about 12 percent of the annual rainfall.

c) Geology& Soil

46. The Kapurthala district is occupied by Indo-Gangetic alluvim. The major portion of this region lies in the river tract falling between the Beas and Black Bein (Kali Bein) and is called 'BET'. To the south of the Black Bein lies the tract known as 'Dona'. The word 'Dona' means that the soil is formed of two constituents, sand and clay, with sand predominating. The Phagwara region consists of the Sirwal, Dhak and Manjki tracts lying roughly in the NorthEast, middle and South-East of the tehsils. Sirwal possesses the characteristics of the 'BET'. The numerous hill streams coming down from Hoshiarpur District keep the soil moist all the year round. Some of these streams are silt laden and at first deposit fertile soil though their later deposits are more and more sandy. Due to the existence of these drainage channels patches and strata of hard clay are also to be found. The Major Soil types found in the district are the arid brown soils and Tropical Arid brown soils. The arid brown soils are found mostly in Southern parts of the district and Tropical Arid brown soils are found in the Northern part and Phagwara block of the district. The arid brown soils are calcareous in nature and Tropical arid brown soil is deficient in nitrogen, potassium and phosphorus.

d) Surface water

47. Beas River accounts for surface water in Kapurthala District. The river floods during the rainy season. All through the course of Beas River, 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 season to about 4.5 metres during the rainy season. The rivulet Kali Bein is the chief tributary of the Beas in Kapurthala district.

e) Ground Water

48. The district is occupied by Indo-Gangetic alluvial plain of Quaternary age. The Central Ground Water Board has drilled 9 Piezometers, in the district to delineate and determine potential aquifer zones, evaluation of aquifer characteristics etc. Drilling was conducted at four locations in the district, Kapurthala, Phagwara, Bholath and Sulthanpur Lodhi. The borehole at Bholath is the deepest with drilled depth of 303m. All the four wells are constructed as piezometers. The water table in district varies from 4.48 m bgl (below

ground level) (western part) to 22.93 m.bgl (Eastern part). In the post-monsoon period depth to water table ranged between less than 3.78m to 24.60 m bgl. Seasonal fluctuation shows an overall rise in water level due to the monsoon rains. A fall of 0.5 m is seen at Kapurthala and a rise of 3.5 m. is seen at Phagwara. The long-term (10 years) water level trend indicates that the water level decline ranges from 0.2m/yr to 1.0 m/yr. during pre-monsoon and 0.3 m/yr to 0.9 m/yr during post-monsoon. Maximum decline has been noticed in western part of Kapurthala block and the minimum decline in Bholath block. In Phagwara block the decline is 0.4 to 0.7 m/yr.

49. Chemical quality data obtained from the analysis of ground water samples representing shallow aquifers reveals that ground water is Alkaline in nature and fresh to moderately saline. Concentrations of various chemical parameters, except nitrate at Kapurthala (105 mg/l), all ground waters are within permissible limits for safe drinking water (BIS, 1991, Rev.2007). Among anions, bicarbonate is the dominant anion and among cations, Ca and Mg are dominant. Arsenic is more than the permissible limit (0.01 mg/l) at Dhilwan (0.072 mg/l). By and large, Ground water is suitable for drinking purposes. (source: Department of Soil & Water Conservation, Punjab)

f) Ambient Air and Noise Quality

50. The ambient air quality for the subproject area has been established by using the air quality monitoring information, which was conducted under IDIPT under ongoing project of Darbar Hall in Kapurthala. The monitored results are shown in the**Table 2**.

Table 2: Ambient Air and Noise Quality of Kapurthala (Under IDIPT, Punjab)

A: Ambient Air Quality of Kapurthala				
Parameters	**Darbar Hall, Kapurthala**	**Standards (as per CPCB notification 18.11.2009)**		
		Industrial, Residential, rural and other areas (24 hours basis)		
$PM_{2.5}$ (µg/m^3)	40	60		
PM_{10} (µg/m^3)	61	100		
CO (mg/ m^3)	Not Detectable	2.0 (8 hours basis)		
SO_x (µg/m^3)	12	80		
NO_x (µg/m^3)	15.5	80		
B: Ambient Noise Quality at Darbar Hall, Kapurthala				
Parameters	**Darbar Hall, Kapurthala**	**Standards (as per the Noise Pollution (Regulation and Control) Rules 2000)**		
		Residential	Commercial	Industrial
Noise level in day time dBA	62.7	55	65	75

Source: IDIPT, PIU, Amritsar

51. From the observation, it is concluded that the recorded ambient air quality is well within the limits in comparison with the NAAQM standards. The recorded noise levels are also within the stipulated limits; however, it is very close as it may exceed the noise levels of the commercial area. The increase in noise level is due to the movement of traffic in the road, which is located close to the monitored area.

B. Ecological Environment

52. **Flora.** The floral diversity consists of scattered Khair (*Acacia catechu*), Chhal (*Anogeisus latifolia*), Jhingan (*Lanea grandis*), Kikar (*Acacia nilotica*) Phalahi (*Acacia modesta*), Ber (*Zizyphus mauritiana*), Shisham (*Dalbergia sisoos*), Neem (*Azadirachta indica*), Mango (*Mangifera indica*), Dhak (*Buteamonosperma*) etc., Shrubs such as Garna (*Carissa spinarum*), Mehnder (*Dodona viscasa*), Mallah (*Zizyphus nummularia*) Gandhala (*Marraya koenigil*), Basuti (*Adathoda vasica*), jhav (*Artemesia spp*), hIns (*Capparis decidua*),

Panwar (*Cassia tara*), Phulbuti (*Lantana camara*), etc. and grasses such as (*Saccharum bengalenese*).

53. The forest strips have mostly artificially raised plantations like Shisham (Dalbergia sissoo), Eucalyptus (*Edcalyptus spp*), Siris (*Albizzia lebbek*), Mango (*Mangifera indica*) Jaman (*Syzygium communi*) Tun (*Cedrelatoona*),Neem (*Azadiachta indica*). Some of the mixed plantations are Amaltas (*Cassia fistula*) Jacranda (*Jacranda ovalifolia*), Kachnar (*Bauhinca variegata*), Bottle brush (*Callistemon vimnalis*) Gulmohar (*Delomix rigia*) Amla (*Emblica officinalis*) etc. There are no endangered floral species recorded.

54. **Fauna**. The main animals found in these areas are Blue Bull (*Bose laphustragocamelus*), Wild boar (*Sus scrofa*), Sambhar (*Cervas unicolor*), Jackal (*Canisaureus*), Common Mongoose (*Herpestes spp.*), Indian Porcupine (*Hystrix indica*) and Rhesus Monkey (*Macaca mulatta*) etc.

55. The common birds found in the district are :*Phalacrocoraxniger* (vieillot), *Butorides striatuschloriceps* (Bonaparte), *Ardeolagrayii* (sykes), *Bubulcus ibis coromandus* (Boddaert), *Egretta alba modesta* (Gray), *E. garzetta*(Linnaeus), *Anastomusoscitans* (Boddaert), *C. ciconia* (Linnaeus), *C. migra* (Linnacus), *Tadornaferruginea* (pallas), *T tadorna*(Linnaeus), *Nettapuscoromandelianus* (Gmelin), *Haliaeetus leucoryphus* (Pallas), *Coturnix coromandelica* (Gmelin), *T. stagnatili* (Bechastein), *S. Pagodrum* (Gmelin), *Chrysommasinense* (Gmelin).There are no endangered faunal species recorded.

56. **Forest and Protected Areas.** Kanjli Wetland is the only protected area situated in the Kapurthala district and it is located nearly 4km from the sub project areas. Kanjli Wetlands, on the western Bein rivulet (Kali Bein) at the outskirts of the city, has been included in under the Ramsar Convention. It is a very popular site for bird watching and boating for nature lovers. Proposed sub project are sufficiently away from Kanjli Wetland and will have no any effect on wetlands.There are no other protected areas (national parks, sanctuaries, wetland etc.) in the vicinity of the subproject site.

C. Socio Cultural and Economic Environment

g) Demographic profile

57. According to the 2011 census Kapurthala district has a population of 815,168. This gives it a ranking of 481st in India (out of a total of 640). The district has a population density of 499 inhabitants per square kilometre (1,300/sq mi). Its population growth rate over the decade 2001-2011 was 8.37%.Kapurthala has a sex ratio of 912 females for every 1000 males and a literacy rate of 80.2%.

Table 3: Population Data of Kapurthala District

Population Distribution	2001		2011	
	Punjab	Kapurthala	Punjab	Kapurthala
Area (Sq.km)	50,362	1633	50,362	1633
Avg. HH size	5.6	5.5	5.0	4.9
Total Population	24,358,999	754521	27,743,338	815168
AAGR (1991-2001-2011)	1.8	1.6	1.3	0.8
Total Urban Pop	8,262,511	246527	10,399,146	282462
Total Rural Pop	16,096,488	507994	17,344,192	532706
% of Urban Population	33.92	32.67	37.48	34.65

Source: Compiled from Census of India 2001 and 2011 (AAGR: Annual Average Growth Rate)

58. **Population density.** Population Density of Punjab is 551 per sq.km in 2011. Density of Kapurthala is 499 per sq.km in 2011, which is higher than the value of 2001 census (462 Sq.km).

59. **Literacy rate.** Average literacy rate for Kapurthala District was 80.2% as per 2011 census which is higher in comparison to the Punjab state average of 75.8%.

60. **Sex ratio.** In Kapurthala District, it was 912 females per 1000 males, which is higher than the 2001 figures (888 females per 1000 males).

61. **Employment.** Agriculture is the main occupation of people of Kapurthala in the rural areas of the district. There are some industries in urban areas where workers are employed from nearby villages and towns. As per 2011 census, the Workforce Participation Rate in the Kapurthala District is 35%, which is slightly lower than Punjab state average of 36%. Kapurthala District Workforce Participation was 34.8% in 2001 which decreased to 34% in 2011.

62. **Agriculture.** The major portion of Kapurthala district lies between the Beas River and the Kali-Bein River and is called the 'BET' area. This area is prone to floods. Water logging and alkalinity in the soil is the major problem of the area. A flood protection bundh called 'Dhussi Bundh' has been constructed along the left bank of the Beas River, and it has saved the area from the ravages of flood. The entire district is an alluvial plain. To the south of the river Black Bein lies the tract known as 'Dona' meaning the soil formed of two constituents i.e. the sand and clay.

63. Major field crops are rice, maize, wheat, rapseed/mustard, sunflower and sesame. Apart from these field crops green vegetables, potato and onion are major cash crops. Major horticultural crops are kinnow, orange, lemon, mangoes, litchi, guava, pears, peach, plum, grapes, ber and amla.

h) Industrial profile

64. Kapurthala is home to several medium and large scale industries. Some of these are- 1. Rail Coach Factory- A Govt. Of India enterprise and premier in manufacturing of rail coaches, 2. JCT Mills Phagwara (a sub-division of Kapurthala district)- one of the most successful textile mills in India 3. SSK, one of India's oldest and biggest manufacturers of Electrical wiring accessories, founded in 1935 4. Oswal Agro (Sugar) Mills, 5. Jagatjit Industries Limited (JIL) - set up under the patronage of the Maharajah of Kapurthala in 1944, one of the largest alcoholic beverage breweries and manufacturers of dairy products in India, 6. Rehman Automobile and Works was also established here in 1935, but was moved to Lahore, Pakistan in 1947, 7. Heavy Engineering and ancillary units are coming up in the city to cater to the needs of the Rail Coach Factory, 8. Agro processing industries have been in the city from the 1950s, mainly oil extraction from oil seeds like sunflower, mustard, cottonseed and rice bran, 9. Rice mills due to proximity to the surrounding fertile agricultural lands. Kapurthala is a prominent market in Punjab for both Basmati & non-Basmati paddy and rice.

V. ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

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

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.

66. **Location impacts:** The proposal envisages small scale construction activity in the vacant open area of PGSC. This would result in some environmental impacts typical to other small construction activity of this type. Location impacts and their mitigations are-

- The subproject sites are located in the urban areas of town and the proposed sites are having easy accessibility through roads for the construction equipment, workers and visitors therefore there will be no problem for movement of construction equipment and vehicles during construction and operation phases.
- Other impacts related to construction activities such as generation of dust and noise, removal of construction debris, health and safety risks 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 operation phase to minimize disturbance to the visitors.
- Provision of water for construction will be made through municipal water supply or through mobile water tankers.

67. **Land Acquisition and Resettlement and cultural Impacts.** The asset owner for the subproject is Pushpa Gujral Science City which is under the Department of Science Technology and Environment, Govt. of Punjab. NOC for proposed works has been taken from PGSC (Refer **Annexure 4**);hence, there are no land acquisition issue. Also, as per the resettlement framework, the proposed activities are accessed for involuntary resettlement (IR) and it does 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. As per the requirement, the project sites shall be handed over to the IDIPT before start of the construction works by the PGSC.

68. **Design Considerations to Avoid Environmental Impacts.** The following are the design considerations in order to avoid environmental impacts:

- Site and spatial planning according to Kanjli Wetland features
- Adoption of design that is compatible with the natural and cultural environment and aids in suitable selection of materials to enhance the aesthetic appeal and blend with the natural and cultural surroundings.
- Use of subtle colours and simple ornamentation in the structures.

69. 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 the use of local materials (wood, stone) and crafts as defined in the detailproject report.

A. Assessment of Environmental Impacts

70. **Determination of Area of Influence.** The primary impact areas are (i) site for proposed subproject components; (ii) main routes/intersections which will be traversed by construction vehicles; and (ii) quarries and borrow pits as sources of construction materials. The secondary impact areas are: (i) entire area outside the delineated primary impact area; and (ii) entire Kapurthala districts in terms of over-all environmental improvement.

71. The implementation of the subproject components involves minor construction activities which shall have localised impacts, but shall remain for shorter duration and are expected only during construction period.

B. Pre-construction Impacts and Mitigation Measures

72. **Consents, permits, clearances, no objection certificate (NOC), etc.** For the proposed works NOC/undertakings certificates/land transfer from the concerned authorities for example, PGSC, Department of Science, Technology and Environment, Govt. of Punjab) is required before start of the construction works. NOC from PGSC for the proposed works has already been taken (attached as **Annexure 4**) in the preliminary and detailed design

stage. Failure to obtain necessary consents, permits, NOCs, etc. can result to design revisions and/or stoppage of works.

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

- Obtain all necessary consents, permits, clearance, NOCs, etc. prior to start of civil works. NoC from the PGSC (Assets owners) have been obtained and enclosed in **Annexure – 4.**
- Acknowledge in writing and provide report on compliance about all obtained consents, permits, clearance, NOCs, etc.
- Include detailed design documents as well all conditions and provisions as necessary

74. **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.
- Necessitate contractors to prepare a management plan to include actions that are to be done in case of unintentional interruption of services.
- Necessitate contractors 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 service providers/line agencies to relocate the utility.

75. **Social and Cultural Resources.** There is a risk always as any work involving ground disturbance can uncover and damage archaeological and historical remains. For this subproject, excavation work is not proposed near any historic monument as the PGSC as it is a modern facility. Hence there is no risk which is foreseen for any cultural resources.

76. **Sites for construction work camps and areas for stockpile, storage and disposal.** Within the proposed subproject sites, there are enough spaces for establishment of construction camp including labour camp, but it will require permission from PGSC authorities and in case permission is not granted for establishment of such facilities within the campus of PGSC, contractor will have to establish construction and labour camps at any other place. In such case, the contractor will be required to meet the following criteria for selection of the construction sites:

- Will not promote instability and result in destruction of property, vegetation, irrigation, 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, shortage of amenities).
- Disposal will not be allowed near sensitive areas which will cause inconvenience to the community
- The fuel and lubricants shall be stored over an impervious platform/ layer to avoid any soil and groundwater contamination.
- Any construction camp site will be finalized in consultation with DSC and PIU.

77. **Sources of construction materials.** Extraction of materials can disrupt topography / terrain of the land and vegetation resulting in accelerated erosion, disturbance in natural drainage patterns, ponding and water logging, subsequently resulting in water pollution. Therefore contractor should take following mitigation measures:

- 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 documentation of sources of materials on monthly basis to PIU/DSC

78. Summary of the pre-construction activities are presented in the **Table 4.** The contractor is required to update the information before construction starts. Sample waste/spoils management plan is attached in the **Annexure 3.**

Table 4: Summary of Pre-Construction Mitigation Measures

Parameters	Mitigation Measures
Consents, permits, clearances, no objection certificate (NOC), etc.	• Obtain all necessary permits, clearance, etc. prior to start of civil works. NoC from PGSC have been obtained (refer **Annexure 4**). • 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	• Identify and include locations and operators of these utilities in the detailed design documents to prevent unnecessary disruption of services during the construction phase. • Require contractors to prepare a contingency plan to include actions to be done in case of unintentional interruption of services. • Obtain from the PIU and/or DSC the list of affected utilities and operators; • Prepare a contingency plan to include actions to be done in case of unintentional interruption of services. • If relocations are necessary, contractor will coordinate with the providers to relocate the utility.
Sites for construction work camps, areas for stockpile, storage and disposal	• Obtain prior written permission from land owner for establish of camps • 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 and shortages of amenities). • Disposal will not be allowed near sensitive areas which will inconvenience the community. • In the construction camps, fuel and lubricants shall be stored over the impervious layer/ concrete floor to prevent any chances of soil and groundwater contamination due to the leaching of the oil and grease. Any construction camp site will be finalized in consultation with DSC and PIU.
Sources of construction materials	• Use quarry sites and sources permitted by government. • Verify suitability of all material sources and obtain approval from PIU/DSC. • If additional quarries are required after construction has started, obtain written approval from the PIU/DSC. • Submit monthly basis documentation of sources of materials to DSC

C. Anticipated Construction Impacts and Mitigation Measures

79. The proposed subproject components are limited to the small construction works in the existingcampus, area improvement, landscaping and signage. The proposed construction activities do not have major construction impacts.

80. The environmental impacts during the proposed construction works are generic to the small construction activities of this type and are not expected to be significant. The EMP specifies the necessary mitigation measures that are 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) health and safety risks to workers during construction.

81. **Construction Schedule and Method.** It is estimated that the construction activities shall take 18 months for completion from the date of award of contract.

82. The infrastructure will be constructed manually according to design specifications. Excavated soil will be reused to the maximum extent possible. Construction materials will be brought to site by trucks or hand/push cart and will be stored in the vacant and unused land near the subproject site.

83. There is sufficient space available in the vicinity of the subproject areas for stockpiling of materials and to park construction equipment's. However, the contractor has to obtain prior permission and needs to remove all construction and demolition wastes on a daily basis.

84. The proposed subproject interventions are small restoration/ conservation work having moderate civil works. Therefore there will be no major impacts on the environment but it may affect visitors/ tourists as it may result in disturbance and inconvenience. These impacts will be short term, site specific and can be mitigated easily by adopting mitigation measures as suggested.

85. **Impacts on Water Quality.** There are no natural surface water sources near or adjacent to sites. Therefore there are no impacts on water quality.

86. **Impacts on Air Quality.** There is a potential for an increase in dust particularly during summer/dry season due to the construction activities including stockpiling of construction materials. Secondary air pollution may occur due to emissions from vehicles transporting workers, construction materials and debris/materials that are to be disposed, which may cause an increase in air pollutants outside the construction zone. These are inherent impacts which are of low magnitude, short in duration and can be easily mitigated. Therefore the contractor will be required to:

- Conduct regular water spraying on earth piles and sand piles.
- Conduct regular visual inspection throughout the construction sites to ensure that there are no excessive dust emissions.
- Maintain construction vehicles and obtain "pollution under control" (PUC) certificate from PPCB.
- Obtain CTE and CTO for crushers, diesel generators, etc., if they are to be used in the subproject.
- Ambient Air Quality (AAQ) monitoring has to be performed as per the Environmental Monitoring Program.

87. **Noise and Vibration Impacts.** Most of the construction activities shall be done manually without involving heavy equipment's and hence the chances for noise and vibration impacts are not envisaged. Nevertheless the contractor will be required to:

- Limit construction activities in 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 other noise generating equipment with noise-reducing mufflers.
- Inform drivers that horns are not to 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 the following noise mitigation measures, as directed by theDSC:

- Locate stationary construction equipment as far as possible from nearby noise-sensitive properties.
- Shut off idling equipment.
- Reschedule construction operations to avoid period of noise annoyance as identified in the complaint.

- Follow Noise Pollution (Regulation and Control) Rules, the 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 silent zone[3]
- Ensure vehicles comply with Government of India noise limits. The test method to be followed shall be IS:3028-1998.
- Ambient Noise levels have to be monitored as per the Environmental Monitoring Program

88. **Impacts on Flora and Fauna.** As per detail design, tree-cutting is not required. There are no protected areas in the direct impact zones and no wild species of flora and fauna found in these areas. Therefore no impacts on flora and fauna are envisaged. Nevertheless the contractor will be required to:

- Conduct site induction and environmental awareness among all workers.
- Limit activities within the work area.
- Do not remove or harm existing vegetation except required under proposed contract
- Strictly instruct workers not to cut trees for fuel wood near construction/workers camp.
- Replant trees in the area using a minimum ratio of 2 trees for every 1 tree that are being cut, if any. Replacement species must be approved by District Forest Department.

89. **Impacts on Physical and Cultural Resources.** There may be inconvenience to tourists, residents, businesses and road users due to construction activities and vehicle operations. This potential impact is site-specific, short-term and can be mitigated.The contractor will be required to:

- Ensure no damage to structures/properties near construction zone.
- Provide sign boards to inform nature and duration of construction works and contact numbers for concerns/complaints.
- Implement good housekeeping. Remove wastes immediately. Prohibit stockpiling of materials that may obstruct/slow down pedestrians and/or vehicle movement.
- Ensure workers will not use nearby/adjacent areas as toilet facility.
- Coordinate with DSC for transportation routes and schedule. Schedule transport and hauling activities during non-peak hours.

90. **Impact due to Waste Generation.** Excavated soil will be reused to the maximum extent possible. Construction activities will produce 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 implementation of mitigation measures. The contractor will need to adopt the following mitigation measures:

- Prepare and implement a waste management plan.

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

- 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 use of excavated materials or to dispose to designated areas.
- Avoid stockpiling and remove the excavated 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.

91. **Impacts on Occupational Health and Safety.** Workers need to be awareof occupational hazards which can arise from the proposed works. The contractor should comply with IFC EHS Guidelines on Occupational Health and Safety (this can be downloaded fromhttp://www1.ifc.org/wps/wcm/connect/9aef2880488559a983acd36a6515bb18/2%2BOccupational%2BHealth%2Band%2BSafety.pdf?MOD=AJPERES). The contractor will be required to:

- Prohibit worker exposures to noise level greater than 85 dBA for duration of more than 8 hours per day without proper 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 first-aid facility is available at site. Equipped first-aid stations shall be easily accessible throughout the site as well as at construction camps.
- During construction work, provide suitable personal protective equipment (PPEs) to workers to avoid risks especially while work at height
- 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 that visitor/s do not enter hazard areas unescorted.
- 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.

92. **Impacts on Socio-Economic Activities.** Manpower will be required during the 18 month construction phase. This can help to generate contractual employment and increase local revenue. As per detailed design, land acquisition and closure of roads are not required. However, construction activities may impede access of tourists and visitors. The potential impacts are negative and moderate but short-term and temporary. The contractor will need

to adopt the following mitigation measures:

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

93. **Table 5** provides summary of mitigation measures that are to be considered by the contractor during construction phase. The detailed mitigation measures, environmental monitoring and reporting requirements, emergency response procedures, related implementation arrangements, capacity development and training measures, implementation schedule, cost estimates, and performance indicators are provided in the EMP.

Table 5: Summary of Mitigation Measures during Construction Phase

Potential Impact	Mitigation Measures
Impacts on air quality	• Conduct regular water spraying on earth piles/sand piles. • Conduct regular visual inspection throughout the construction siteto ensure no excessive dust emissions. • Maintain construction vehicles and obtain "pollution under control" (PUC) certificate from PPCB. • Obtain CTE and CTO for crushers, diesel generators, etc., if to be used in the project.
Noise and vibrations impacts	• Limit construction activities to the daytime only. • Plan activities in consultation with the PIU/DSC so that activities that 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 noise producing equipment 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 the following noise mitigation measures, as directed by the DSC: (i) locate stationary construction equipment as far from nearby noise-sensitive properties as possible; (ii) shut off idling equipment; (iii) reschedule construction operations to avoid periods of noise annoyance identified in the complaint; and/or (iv) notify nearby residents whenever extremely noisy work will be occurring. • Follow Noise Pollution (Regulation and Control) Rules, day time ambient noise levels should not exceed 65 dB(A) in commercial areas, 55 dB(A) in residential areas, and 50 dB(A) in silence zone.[4] • Ensure vehicles comply with Government of India noise limits for vehicles. The test method to be followed shall be IS:3028-1998.
Impacts on physical resources	• Ensure no damage to structures/properties near construction zone. • Provide sign boards to inform nature and duration of construction works and contact numbers for concerns/complaints. • Implement good housekeeping. Remove wastes immediately. Prohibit stockpiling of materials that may obstruct/slow down pedestrians and/or vehicle movement. • Ensure workers will not use nearby/adjacent areas as toilet facility.
Impacts on waste generation	• Prepare and implement a waste management plan. Manage solid waste according to the following hierarchy: reuse, recycling and disposal. Include in waste management plan designated/approved disposal areas. • Coordinate with Municipal Authorities for beneficial uses of

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

Potential Impact	Mitigation Measures
	excavatedmaterials/silts/sediments or immediately dispose to designated areas. • Avoid stockpiling and remove immediately all excavated 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 or nallah.
Impacts on occupational health and safety	• Comply with IFC EHS Guidelines on Occupational Health and Safety • Disallow worker exposure to noise level greater than 85 dBA for duration of more than 8 hours per day without hearing protection. The use of hearing protection shall be enforced actively. • Develop comprehensive site-specific health and safety (H&S) plan. The overall objective is to provide guidance to contractors on establishing a management strategy and applying practices that are intended to eliminate, or reduce, fatalities, injuries and illnesses for workers performing activities and tasks associated with the project. • Include in H&S plan measures such as: (i) type of hazards during excavation works; (ii) corresponding personal protective equipment for each identified hazard; (iii) H&S training for all site personnel; (iv) procedures to be followed for all site activities; and (v) documentation of work-related accidents. • Provide H&S orientation training to all new workers to ensure that they are apprised of the rules of work at the site, personal protective protection, and preventing injury to fellow workers. • Ensure that adequate first-aid facilities are available at the site. Equipped first-aid stations should be easily accessible throughout the site as well as at construction camps. • Provide suitable personal protective equipment (PPEs) to avoid risks of workers safety during construction works specially during work at height • 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. • Mark and provide sign boards in the construction zone, and areas for storage and disposal. Signage shall be in accordance with international standards and be well known to, and easily understood by workers, visitors, and the general public as appropriate.
Impacts on socio-economic activities	• Provide sign boards for visitors to inform nature and duration of construction works and contact numbers for concerns/complaints. • Employ at least 50% of the labor force, or to the maximum extent, local persons within the 2-km immediate area if manpower is available.

D. Post-Construction Impacts and Mitigation Measures

94. Site clean-up is necessary after construction activities. The contractor will be required to:

- Restore access roads, staging areas, and temporary work areas.
- Remove all tools, equipment, barricades, signs, surplus materials, debris, and rubbish and Dispose in designated disposal sites after completion of construction.
- Monitor survival of all plantations, re-vegetation and tree re-planting.
- Request in writing from PIU/DSC that construction zones have been restored.

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

95. Impacts on environmental conditions associated with the O&M of the subproject components pertaining to impacts related to increased tourists in the areas resulting an 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 –implementation of speed restrictions, provision of appropriate road signage and maintenance of access roads- Shall be addressed by O&M authority.
- Increase demands for services – Shall be addressed by the O&M authority
- Increase solid waste generation – O&M authority/Municipal Corporation to put in place solid waste management programs.

VI. INFORMATION DISCLOSURE, CONSULTATION AND PARTICIPATION

A. ADB Disclosure Policy

96. 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 subproject was prepared based on opinions of all those consulted, especially at the micro level, by setting up dialogues with the local people and stakeholders from whom information on site facts and prevailing conditions were collected.

97. 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 preliminary design work with the key stakeholders particularly with asset owners/facility users and visitors, and secondly to discuss mitigating measures and get concurrence of stakeholders.

B. Process for Consultation followed

98. During the project preparation, consultations have been held with the Department of Science, Technology and Environment, PGSC officers, District administration, Municipal Administration, local community representatives and nearby shopkeepers 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**. Public consultations are also being conducted at the site using formal and informal approach. The outcome of the consultation has been recorded and enclosed in **Annexure 10**.

C. Plan for Continued Public Participation

99. To ensure continued public participation, stakeholder engagement 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 and/or displayed at site. This information is also made available on PHTPB website.

100. The Executing Agency (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.

101. 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, Kapurthala District (iv) District/Public libraries of the Kapurthala 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

102. 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.

103. 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

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

105. **First Level 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). PIU can associate NGO as per his decision. 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.

106. **Second Level Grievance Redress Committee (GRC) 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. GRC at PMU will resolve the issue within one month.

107. **Third Level Grievance Redress Committee (GRC) at SLEC.** 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).

B. Approach to GRC.

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

- Through Grievance Redress Form: Aggrieved person/party can give their grievance in Grievance Redress Form available at PIU and PMU. Sample Grievance Redress Form is attached as **Annexure 6.**
- 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.

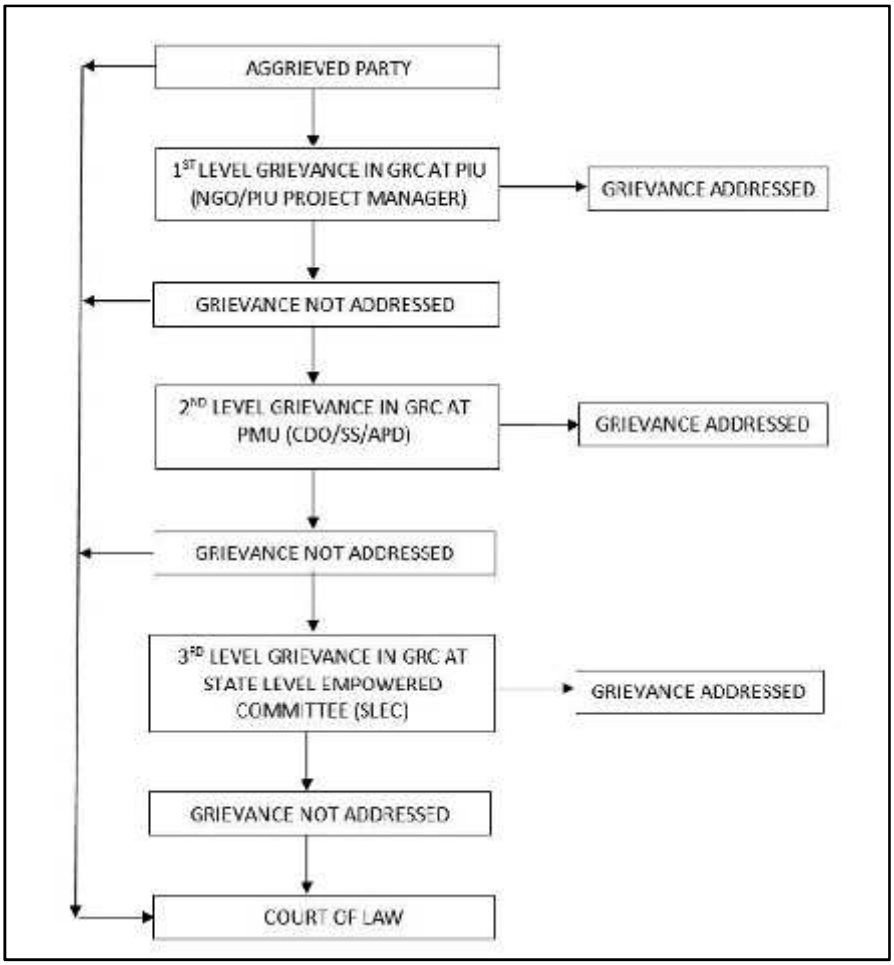

Figure 4: Grievance Redress Mechanism in IDIPT, Punjab

Note: LGC -NGO, SHG, Line Agency, 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

109. 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.

110. A copy of the EMP must be kept on work sites at all times. This EMP will be included in the bid documents under appropriate contract clauses and will be further reviewed and updated during implementation. Non-compliance with, or any deviation from, the conditions set out in this document constitutes a failure in compliance.

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

A. Responsibilities for EMP Implementation:

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

- Department of Tourism, Govt. of Punjab is the Executing Agency (EA) responsible for overall management, coordination, and execution of all activities funded under the loan;
- Punjab Heritage and Tourism Promotion board (PHTPB) including PIUs, 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;
- Project Implementation Unit (PIU) has been established in Amritsar. This PIU will look into progress and coordination of day to day construction works with the assistance of DSC; and
- The Contractor will be responsible for execution of all construction works. The contractor will work under the guidance and supervision of the PIU and DSC. The environmental related mitigation measures will also be implemented by the contractor.

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

Box 1: Terms of Reference of Safeguards Specialist – PMU
• Review the IEE document and ensure adequacy under Safeguard Policy Statement, 2009 and identify any areas for improvement. • Ensure that the project design and specification adequately reflect the IEE, co-ordinate the obtaining of requisite environmental clearances for the project • Monitor construction activities to ensure that identified and appropriate control measures are effective and in compliance with the IEE and advise PIU for compliance

Box 1: Terms of Reference of Safeguards Specialist – PMU

with statutory requirements.

- Develop training programme for the PMU/PIUs staff, the contractors and others involved in the project implementation, in collaboration with the Environmental Specialist of the PMC and DSC
- Review and approve the Contractor's Implementation Plan for the environmental measures, as per IEE.
- Liaise with the Contractors and Consultants on the implementation of the Environmental management measures proposed in the IEE
- Liaise with the various Government agencies on environmental and other regulatory matters
- Continuously interact with the NGOs and Community groups to be involved in the project
- Establish dialogue with the affected communities and ensure that the environmental concerns and suggestions are incorporated and implemented in the project.
- Review the environmental performance of the project through an assessment of the periodic environmental monitoring reports submitted by the DSC; provide a summary of the same to the Project Director, and initiate necessary follow-up actions
- Provide support and assistance to the Government Agencies and the Asian Development Bank to supervise the implementation of the IEE during the construction as well as operation stage of the project
- Document the good practices in the project on incorporation and integration of environmental issues into engineering design and on implementing measures in the construction, and dissemination of the same

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

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

Box 3: Terms of Reference of Safeguards Specialist (Environment) of PMC
• Support and advice the PMU and Consultants team in finalizing the IEE reports as per the safeguard requirement • 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 • Oversight of implementation of environmental standards and safeguards as part of project implementation • Participate in preparation of Master Plan for additional sites and contribute to the environmental safeguards to the plan and sub components • Preparation of performance monitoring reports

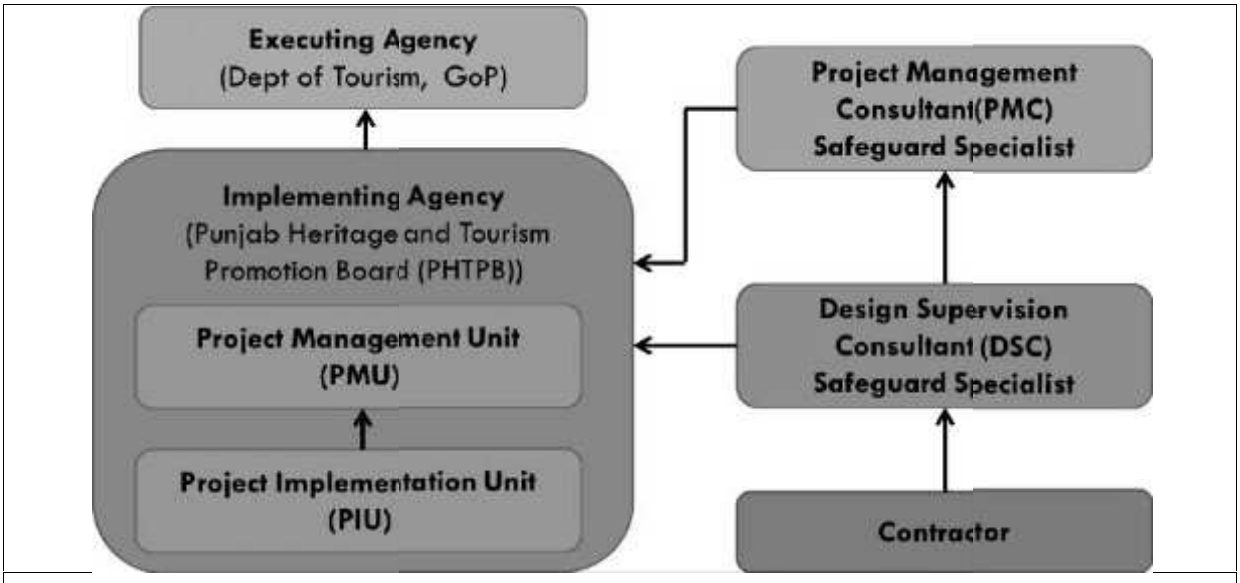

Figure 5: EMP Implementation Arrangement For IDIPT

114. **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.

115. **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 Department of Tourism or the asset owners.

116. **Responsibility for Reporting**. PIU in coordination with DSC will submit 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,

summary monitoring table and sample environmental site inspection report format is attached as **Annexure 7 to 9**.

B. EMP Tables

117. **Tables 6 to 8** show the potential adverse environmental impacts, proposed mitigation measures, responsible parties, and cost of implementation. This EMP will be included in the bid documents.

Table 6: Pre-Construction EMP Table

Parameters	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of monitoring	Source of Funds
Consents, permits, clearances, no objection certificate (NOC), etc. (If applicable)	Obtain all necessary consents, permits, clearance, NOCs, etc. prior to start of civil works. (NoC from the asset owner (PGSC) have been obtained and enclosed as **Annexure 4**)	Consents, permits, clearance, NOCs, etc.	PMU	DSC and PIU	once prior to start of construction activities	PMU
	Acknowledge in writing and provide report on compliance all obtained consents, permits, clearance, NOCs, etc.	Records and communications	PMU	DSC and PMU	once prior to start of construction activities	PMU
	Include in detailed design drawings and documents all conditions and provisions if necessary	Detailed design documents and drawings	Contractor	PIU and DSC supported by PMU and PMC	Upon submission of work plan 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), locations of environmental monitoring Include photos and GPS coordinates	Baseline environmental profile including ambient air, noise, water quality as per the standards	Contractor	PIU and DSC supported by PMU and PMC	Once during detailed design by DSC	PMU, Contractor
Utilities	Identify and include locations and operators of these utilities in the detailed design documents to prevent unnecessary disruption of services during the construction phase. Require contractors to prepare a management plan to include actions to be done in case of unintentional interruption of services. Obtain from the PIU and/or DSC the list of affected utilities and operators; If relocations are necessary, contractor will coordinate with the providers to relocate the utility.	List showing utilities to be shifted Contingency plan for services disruption	DSC to prepare preliminary list and maps of utilities to be shifted During detailed design phase, contractor to prepare list and operators of utilities to be shifted; contingency plan	PIU and DSC supported by PMU and PMC	Once during detailed design by DSC	DSC – preliminary design stage Contractor – implementation stage

Parameters	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of monitoring	Source of Funds
Sites for construction work camps, areas for stockpile, storage and disposal	Will not promote instability and result in destruction of property, vegetation, irrigation, and drinking water supply systems, etc. Residential areas will not be considered so as to protect the human environment (i.e., to curb accident risks, health risks due to air and water pollution and dust, and noise, and to prevent social conflicts, shortages of amenities, and crime). Disposal will not be allowed near sensitive areas which will inconvenience the community. The construction camp, storage of fuel and lubricants should be avoided at sensitive zones. The construction camp site should be finalized in consultation with DSC and PIU.	List of pre-approved sites for construction work camps, areas for stockpile, storage and disposal Waste management plan	DSC to prepare list of potential sites DSC to inspect sites proposed by contractor if not included in pre-approved sites	PIU and DSC	Once during detailed design by DSC	Contractor
Sources of construction materials	Use quarry sites and sources permitted by government. Verify suitability of all material sources and obtain approval from PIU. If additional quarries are required after construction has started, obtain written approval from PIU. Submit to DSC on a monthly basis documentation of sources of materials.	Permits issued to quarries/sources of materials	Contractor DSC to verify sources (including permits) if additional is requested by contractor	PIU and DSC	Upon submission of work plan by contractor	Contractor
Occupational health and safety	Comply with IFC EHS Guidelines on Occupational Health and Safety Develop comprehensive site-specific health and safety (H&S) plan. The overall objective is to provide guidance to contractors on establishing a management strategy and applying practices that are intended to eliminate, or reduce, fatalities, injuries	Health and safety (H&S) plan	Contractor	PIU and DSC supported by PMU and PMC	Once during detailed design by DSC	Contractor

Parameters	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of monitoring	Source of Funds
	and illnesses for workers performing activities and tasks associated with the project. Include in H&S plan measures such as: (i) type of hazards in the construction site; (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 (vi) provision of personal protective equipment for safety of workers Provide medical insurance coverage for workers.					
Public consultations	Continue information dissemination, consultations, and involvement/participation of stakeholders during project implementation.	Disclosure records Consultations records	PIU and DSC	PMU	During preparation of IEE	PIU

Table 7: EMP Table during Construction Phase

Potential Impact	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of Monitoring	Source of Funds
Impacts on water quality	Schedule construction activities during non-monsoon season, to the maximum extent possible.	Work schedule	Contractor	PIU and DSC PIU and DSC to submit EMP monitoring report to PMU	Daily inspection by contractor supervisor and/or environment specialist Weekly visual inspection by DSC (more frequent during monsoon season and if corrective action is required)	Contractor on his own expense
	Ensure drainages 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, cement, etc.) unless covered by	Visual inspection				

Potential Impact	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of Monitoring	Source of Funds
	tarpaulins or plastic sheets.					
	Re-use/utilize, to maximum extent possible, excavated materials.	condition in waste management plan			Random inspection by PMU, PIU, PMC and/or DSC	
	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				
	Strictly prohibit open defecation by workers in nearby areas	condition in waste management plan				
		H&S plan				
Impacts on air quality	Conduct regular water spraying on stockpiles.	Visual inspection Records of complaints	Contractor	PIU and DSC	Daily inspection by contractor supervisor and/or environment specialist	Contractor
	Conduct regular visual inspection in the construction zones to ensure no excessive dust emissions.	Visual inspection			weekly visual inspection by DSC (more frequent during dry season and if corrective action is required)	
	Ambient Air Quality monitoring has to be performed as per the Environmental Monitoring Program	Particulate matter (PM_{10} & $PM_{2.5}$), SOx, NOx, CO			Random inspection by PMU, PIU, PMC and/or DSC	
	Maintain construction vehicles and obtain "pollution under control" certificate from PPCB.	PUC certificates				
Noise and vibrations impacts	Limit construction activities to the daytime only. Plan activities in consultation with PIU/DSC so that activities with the	Work schedule	Contractor	PIU and DSC	Daily inspection by contractor supervisor and/or environment specialist	Contractor

Potential Impact	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of Monitoring	Source of Funds
	greatest potential to generate noise are conducted during periods of the day which will result in least disturbance.				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	
	Minimize noise from construction equipment by using vehicle silencers and fitting noise producing equipment with noise-reducing mufflers.	Direct Observation and feedback from receptors within direct and direct impact zone				
	Avoid loud random noise from sirens, air compression, etc.	Direct Observation and feedback from receptors within direct and direct impact zone				
	Require drivers that horns not be used unless it is necessary to warn other road users or animals of the vehicle's approach.	feedback from receptors within direct and direct impact zone				
	Ambient Noise levels have to be monitored as per the Environmental Monitoring Program	Day time dB(A)				
	If specific noise complaints are received during construction, the contractor may be required to implement one or more of the following noise mitigation measures, as directed by the project manager: • Locate stationary construction equipment as far from nearby noise-sensitive properties, such as the hospital, as possible. • Shut off idling equipment. • Reschedule construction operations to avoid periods of noise annoyance identified in the complaint. • Notify nearby residents whenever	Direct Observation and 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
	extremely noisy work will be occurring.					
Impacts on flora and fauna (at construction site, construction camps and labour camps	Conduct site induction and environmental awareness. Strictly instruct workers not to cut trees for fuel wood Do not harm existing vegetation in the area except indicated in site plan	IEE baseline information for flora and fauna for the subproject area	Contractor	PIU and DSC	Daily inspection by contractor supervisor and/or environment specialist weekly visual inspection by DSC (more frequent if corrective action is required) random inspection by PMU, PIU, PMC and/or DSC	Contractor
	Limit activities within the work area. Strictly prohibit poaching of birds and animals in the vicinity of work sites	Barricades along existing works. Sign boards for awareness among workers. Training records				
	Replant trees in the area using minimum ratio of 2 new trees for every tree cut. Replacement species must be approved by district Forest Department.	Number and species approved by Punjab State Forest Department				
Impacts on physical cultural resources	Ensure no damage to structures/properties adjacent to construction zone or works camps/labour camps	Visual inspection	Contractor In coordination with PIU and DSC for any structures within proposed site and construction zone	PIU and DSC	Daily inspection by contractor supervisor and/or environment specialist weekly visual inspection by DSC (more frequent if corrective action is required) random inspection by PMU, PIU, PMC and/or DSC	Contractor
	Provide sign boards to inform nature and duration of construction works and contact numbers for concerns/complaints.	Sign board at site photo-documentation				
	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				
Impact due to waste generation	Prepare and implement a waste management plan. Manage solid waste according to the following hierarchy:	condition in waste management plan	Contractor	PIU and DSC	Daily inspection by contractor supervisor and/or environment	Contractor

Potential Impact	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of Monitoring	Source of Funds
	reuse, recycling and disposal. Include in waste management plan designated/approved disposal areas. Coordinate with PIU/DSC for beneficial use of excavated soils or immediately dispose to designated areas. Avoid stockpiling and remove immediately all excavated soils, excess construction materials, and solid waste (remove concrete, wood, packaging materials, empty containers, oils, lubricants, and other similar items). Prohibit disposal of any material or wastes (including human waste) into drainage/nallah.				specialist weekly visual inspection by DSC (more frequent if corrective action is required) random inspection by PMU, PIU, PMC and/or DSC	
Impacts on occupational health and safety	Comply with all the legal requirements on Occupational Health and Safety	Visual inspection H&S Plan	Contractor	PIU and DSC	Daily inspection by contractor supervisor and/or environment specialist weekly visual inspection by DSC (more frequent if corrective action is required) random inspection by PMU, PIU, PMC and/or DSC	Contractor
	Disallow worker exposure to noise level greater than 85 dBA for duration of more than 8 hours per day without hearing protection. The use of hearing protection shall be enforced actively.	Visual inspection Work schedule Noise level monitoring in work area				
	Provide H&S orientation training to all new workers to ensure that they are apprised of the rules of work at the site, personal protective equipment, and preventing injury to fellow workers.	Records of H&S trainings Condition in H&S plan				
	Ensure that qualified first-aid can be provided at all times. Equipped first-aid stations shall be easily accessible throughout the site as well as at construction camps.	Visible first aid equipment and medical supplies Condition in H&S plan				
	Provide medical insurance coverage for workers.	Records of medical insurance				
	Secure construction zone from unauthorized intrusion and accident risks.	Area secured Trenches barricaded				

Potential Impact	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of Monitoring	Source of Funds
	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.	Condition in H&S plan Visual inspection				
	Provide appropriate Personal Protective equipment (PPEs) to all workers especially during work at height to ensure workers safety	Visual inspection for use of PPEs Records of PPEs 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 visitors/tourists to inform nature and duration of construction works and contact numbers for concerns/complaints.	Visible and understandable sign boards in construction zone	Contractor	PIU and DSC	Daily inspection by contractor supervisor weekly visual inspection by DSC (more frequent if corrective action is required) random inspection by PMU, PIU, PMC	Contractor
	Employ at least 50% of the labor force, or to the maximum extent, local persons within the 20-km immediate area if manpower is available.	Employment records				

Table 8: EMP Table during Post-Construction Phase

Potential Impact	Mitigation Measures	Parameter/ Indicator of Compliance	Responsible for Implementation	Responsible for Supervision	Frequency of Monitoring	Source of Funds
Solid waste (debris, excavated soils, etc.)	Re-establish the original grade and drainage pattern to the extent practicable. Restore access roads, staging areas, and temporary work areas. Remove all tools, equipment, barricades, signs, surplus materials, debris, and rubbish. Demolish buildings/structures not required for O&M. Dispose in designated disposal sites. Request in writing from PIU/DSC that construction zones have been restored.	Pre-existing condition Construction zone has been restored	Contractor	PIU and DSC PIU and DSC to submit EMP monitoring report to PMU	visual inspection by contractor supervisor and/or environment specialist	Contractor

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

118. **Table 9** summarizes site and activity-specific plans to be prepared as per EMP tables.

Table 9: 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	DSC	Contractor under the supervision of the DSC
Detailed Design Phase	List showing utilities to be shifted	Utilities shifting	PIU/DSC during preliminary stage Contractor as per detailed design	Contractor under the supervision of the DSC
Detailed Design Phase	Contingency plan	Mitigate impacts due to interruption of services during utilities shifting	Contractor	Contractor under the supervision of the DSC
Detailed Design Phase	List of pre-approved sites	Location/s for work camps, areas for stockpile, storage and disposal	PIU and DSC	Contractor under the supervision of the DSC
Detailed Design Phase	Waste management plan	Mitigate impacts due to waste generation	Contractor	Contractor under the supervision of the DSC
Detailed Design Phase	H&S plan	Occupational health and safety	Contractor to prepare or follow the EMP in IEE	Contractor under the supervision of the DSC

IX. ENVIRONMENTAL MONITORING PROGRAM

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

120. **Table 10,** 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 as and when required to ensure EMP and monitoring program is commensurate to the impacts of the subproject.

Table 10: Indicative Environmental Monitoring Program

S.no	Field	Phase	Parameters	Locations	Frequency	Responsibility
1.	Air quality	Pre-construction (before commencement of civil works)	Particulate matter (PM_{10}& $PM_{2.5}$), SOx, NOx, CO	Pushpa Gujral Science City, Kapurthala (2 nos)	24 hours (Once before start of the construction)	PIU
		Construction	Particulate matter (PM_{10}& $PM_{2.5}$), SOx, NOx, CO	Pushpa Gujral Science City, Kapurthala (2 nos)	24 hours (quarterly except monsoon season)	Contractor

S.no	Field	Phase	Parameters	Locations	Frequency	Responsibility
2.	Noise	Pre-construction (before commencement of civil works)	Day time dB(A)	Pushpa Gujral Science City, Kapurthala (2 nos)	24 hours Once before start of the construction	PIU
		Construction	Day time dB(A)	Pushpa Gujral Science City, Kapurthala (2 nos)	24 hours (quarterly except monsoon season)	Contractor

X. CAPACITY BUILDING

121. 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 11** below. This training program is intended for the entire destination and is not just specific to this package.

Table 11: Training Modules for Environmental Management (common for entire project)

Programme	Description	Participants	Form of Training	Duration/ Location	Training Conducting Agency
A. Pre-Construction Stage					
Sensitization Workshop	Introduction to Environment: Basic Concept of environment Environmental Regulations and Statutory requirements as per Government of India and ADB	Tourism / Forest / Roads / Culture Department Officials, Project Director (PD) and Environmental Specialist (ES) of the PMU/PIU	Workshop	½ Working Day	Safeguard Specialist of the PMC
Session I					
Module I	Introduction to Environment: Basic Concept of environment Safeguards Regulations and Statutory requirements as per Government of India and ADB Guidelines on cultural resources, Environmental considerations in planning, design and implementing projects	PMU/PIU (including the ES) and Engineering staff of the implementing agencies	Lecture	1Working Day	Safeguards Specialist of the PMC

Programme	Description	Participants	Form of Training	Duration/ Location	Training Conducting Agency
Module II	Environmental components impacted in construction and operation stages Activities causing pollution during construction and operation stages Environmental Management Environmental Provisions Implementation Arrangements Methodology of Assessment Good engineering practices to be integrated into contract documents	PMU/PIU (including the ES) and Engineering staff of Tourism dept.	Workshop	¼ Working Day	Safeguards Specialist of the PMC
Module III	Environmental considerations in planning, designing and implementing heritage buildings and conservation projects	PMU/PIU (including the ES) and Engineering staff of Tourism dept.	Lecture / Interactive Sessions and site visits	2 working days	Safeguards specialist of the PMC with support from the International Conservation specialist of the PMC
Module IV	Improved Co-ordination with other Departments: Statutory Permissions – Procedural Requirements Co-operation & Co-ordination with other Departments.	PMU/PIU (including the ES) and Engineering staff of Tourism dept.	Lecture / Interactive Sessions	1Working Day	Safeguards Specialist of the PMC
B. Construction Stage					
Session II					
Module V	Role during Construction Roles and Responsibilities of officials/ contractors/ consultants towards protection of environment Implementation Arrangements Monitoring mechanisms	Engineers and staff of line depts. of GoP, and PMU/PIU (including the ES)	Lecture / Interactive Sessions	½ Working Day	Safeguards Specialist of the PMC
Module VI	Monitoring and Reporting System	Engineers and staff of implementing agencies , and PMU/PIU (including the ES)	Lecture / Interactive Sessions	½ Working Day	Safeguards Specialist of the PMC

XI. EMP IMPLEMENTATION COST

122. 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.

123. From the construction activities point of view, it is relatively a small construction project and hence it is not expected to cause significant air, water and noise pollution. However as per the environmental monitoring plan suggested for this subproject area, provisions had been given in the EMP budget for conducting ambient air and noise quality monitoring.

124. 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/line agencies. The EMP cost is given in the **Table 12** below.

Table 12: Indicative EMP Budget

S.N.	Particulars	Stages	Unit	Total number	Rate (INR)	Cost (INR)	Source of fund
A. Monitoring Measures							
1	Air Quality Monitoring	Pre-Construction	Per sample	2	10,000	20,000	PMU
2	Noise Monitoring	Pre-Construction	Per location	2	4,000	8,000	PMU
3	Air Quality Monitoring	Construction	Per Sample	10	10,000	100,000	Contractor budget
4	Noise Monitoring	Construction	Per Sample	10	4,000	40,000	Contractor budget
				Sub- Total (A)		**168,000**	
B.	**Capacity Building – Training cost**						
1	Sensitization Workshop	Pre-Construction	Lump sum			1,50,000	PMU
2	Training Session I	Construction	Lump sum			1,50,000	PMU
3	Training Session II	Construction	Lump sum			1,50,000	PMU
					Sub -Total (B)	**4,50,000**	
					Total (A+B) INR	**6,18,000**	

XII. FINDINGS AND RECOMMENDATIONS

125. The potential impacts that are likely to arise due the proposed subproject interventions have been assessed and suitable mitigation measures have been suggested. Being a small construction work, significant adverse environmental impacts are not anticipated, however, construction related minimal impacts like dust pollution during several operations, fugitive emissions during painting work, usage of chemical as treatment agents, noise pollution during equipment operation etc., will have an impact to the surrounding which resulting in an impact to the labours (causing health hazard) and visitors. Accordingly the EMP has been provided with mitigation measures to take care of the labourer's safety during construction.

126. The EMP has been designed to address the impacts that are likely to arise during the pre-construction, construction and post construction stages of the project with appropriate mitigation and monitoring mechanism assigned with responsibilities. The effective

implementation of the proposed environmental management measures will be ensured through capacity building within the PMU/PIU.

127. Mitigation will be implemented with the help of environmental monitoring program during construction to ensure that all measures are implemented, and to determine whether the environment is protected as intended. This will include observations on and off-site, document checks, and interviews with workers and beneficiaries, and any requirements for remedial action will be reported to the PMU.

128. The implementation of the subproject will have some positive impacts to the people during the project construction stage bygenerating employment opportunity for skilled and unskilled labourers for short time (construction stage) and during operation stage. There are potential for shops/ souvenir shops that are to be benefited through business generated due to the arrival of more/ increased tourists thus it will have direct positive impact in the livelihood of the local people.

129. Stakeholder consultations have been conducted throughout the IEE process and their views have been examined and included in the project design/ planning and development of the project. The prepared IEE will be made available at public locations in the town and will be disclosed to a wider audience via the ADB website. The consultation process will be continued and expanded during project implementation to ensure that stakeholders are fully engaged in the project and have the opportunity to participate in its development and implementation.

XIII. CONCLUSIONS

130. The IEE carried out for the sub-project shows that the proposed interventions/ components will result in net environmental benefits and that any likely environmental impact can be addressed through proper planning and design of the proposed sub-project; control of construction activity and mitigation measures. The EMP provides 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 redressal in terms of environmental safeguards are known to exist at present.

131. 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 study or detailed Environmental Impact Assessment (EIA) needs to be undertaken to comply with ADB SPS (2009).

Annexure 1

Rapid Environmental Assessment (REA) Checklist

URBAN DEVELOPMENT

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.

Subproject: State-wide Tourism Centers, Interpretation Centers (Lot-2) Western Circuit at Kapurthala (Pushpa Gujral Science City)

Country/Project Title: India/Infrastructure development Investment program (IDIPT-Punjab)

Sector Division: Urban Development.

Screening Questions	Yes	No	Remarks
A. Project Siting It is Project area adjacent to or within any of the following environmentally sensitive areas?			
▪ Cultural heritage site		✓	The proposed sites of Pushpa Gujral Science City is not a cultural heritage site
▪ Protected Area		✓	
▪ Wetland		✓	
▪ Mangrove		✓	
▪ Estuarine		✓	
▪ Buffer zone of protected area		✓	
▪ Special area for protecting biodiversity		✓	
B. Potential Environmental Impacts Will the Project cause...			
▪ Encroachment on historical/cultural areas; disfiguration of landscape by road embankments, cuts, fills, and quarries?		✓	No such impacts envisaged
▪ Encroachment on precious ecology (e.g. sensitive or protected areas)?		✓	Not envisaged as there are no protected or sensitive areas within or near the proposed sites
▪ Alteration of surface water hydrology of waterways crossed by roads, resulting in increased sediment in streams affected by increased soil erosion at construction site?		✓	Not envisaged as there are no natural surface water source near the proposed sites
▪ Deterioration of surface water quality due to silt runoff and sanitary wastes from worker-based camps and chemicals used in construction?		✓	Not envisaged as there are no surface water source near the proposed sites which can be affected due to proposed works
▪ Increased local air pollution due to rock crushing, cutting and filling works, and chemicals from asphalt processing?		✓	No such works are proposed
▪ Risks and vulnerabilities related to	✓		Occupational health and safety

Screening Questions	Yes	No	Remarks
occupational health and safety due to physical, chemical, biological, and radiological hazards during project construction and operation?			issue may arise during construction stage
▪ Noise and vibration due to blasting and other civil works?		✓	Blasting operations are not required
▪ Dislocation or involuntary resettlement of people?		✓	Not envisaged
▪ Dislocation and compulsory resettlement of people living in right-of- way?		✓	Not envisaged
▪ Disproportionate impacts on the poor, women and children indigenous peoples or other vulnerable groups?		✓	No such impacts may arise
▪ Other social concerns relating to inconveniences in living conditions in the project areas that may trigger cases of upper respiratory problems and stress?		✓	No such impacts may arise
▪ Hazardous driving condition where construction interferes with pre-existing roads?		✓	No such impacts may arise
▪ Poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases (such as STI's and HIV/AIDS) from workers to local populations?	✓		The MSW generated in the construction camps and work site can create problems if not properly managed. IEC materials shall be displayed for HIV/ AIDS prevention.
▪ Creation of temporary breeding habitats for disease such as those transmitted by mosquitoes and rodents?		✓	No such impacts may arise
▪ Accident risks associated with increased vehicular traffic, leading to accidental spills of toxic materials?		✓	Not envisaged
▪ Increase noise and air pollution resulting from traffic volume?		✓	Not envisaged
▪ Increase risk of water pollution from oil, grease and fuel spills, and other materials from vehicles using the road?		✓	Not envisaged
▪ Social conflicts if workers from other region of countries are hired?		✓	No such impacts may arise. It is proposed to engage local labours for construction works to the maximum extent
▪ Large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?		✓	No such impacts may arise as the labour requirement is minimal
▪ Risks to community health and safety due to the transport, storage, and use and /or disposal of materials such as explosives, fuel and other chemicals during construction and operation?		✓	No such materials are required which may create community health and safety risks
▪ Community safety risks due to both accidental and natural causes, especially where the structural elements or components of the project are accessible to members of the affected community or where the failure could result in injury to the community throughout project construction, operation and decommissioning.		✓	No such impacts may arise

PRELIMINARY CLIMATE RISK SCREENING CHECKLIST FOR SAMPLE SUBPROJECT TOWNS

Screening Questions		Score	Remarks[5]
Location and Design of project	Is siting and/or routing of the project (or its components) likely to be affected by climate conditions including extreme weather related events such as floods, droughts, storms, landslides?	0	No such impacts are envisaged
	Will the project design (e.g. the clearance for bridges) need to consider any hydro-meteorological parameters (e.g., sea-level, peak river flow, reliable water level, peak wind speed etc)?	0	No such impacts are envisaged
Materials and Maintenance	Will weather, current and likely future climate conditions (e.g. prevailing humidity level, temperature contrast between hot summer days and cold winter days, exposure to wind and humidity, and hydro-meteorological parameters) affect the selection of project inputs over the life of project outputs (e.g. construction material)?	0	No such issue may affect the project
	Will weather, current and likely future climate conditions, and related extreme events likely affect the maintenance (scheduling and cost) of project output(s)?	0	No such issue may affect the project
Performance of project outputs	Will weather/climate conditions and related extreme events likely affect the performance (e.g. annual power production) of project output(s) (e.g. hydro-power generation facilities) throughout their design life time?	0	No problem is envisaged in future which are likely to affect the performance of project output

Options for answers and corresponding score are provided below:

Response	Score
Not Likely	0
Likely	1
Very Likely	2

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

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

Other Comments: The proposed subproject activity involves small construction works which includesconstruction of new structure, lighting, sitting arrangement, landscaping, interpretative materials etc.Hence, the anticipated environmental impacts are very marginal and the construction activities do not impose any threat to the existing climatic conditions.

[5] 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.

Annexure - 2

Photo Illustration

Proposed site for IC and TIC at PGSC

Proposed site for IC and TIC at PGSC

Existing TIC at Kanjli Wetland is not operational

Kanjli Lake and wetland

Existing cafeteria at PGSC

Existing shop at PGSC

Existing boating facility at PGSC

Existing ticket counter and office at PGSC

Annexure - 3

Sample Outline of Spoil Management Plan (SMP)

1.0 Purpose and application:

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

2.0 Objectives of SMP:

The objectives of SMP are:

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

3.0 Structure of SMP:

Section 1: Introduction of SMP

Section 2: Legal and other requirements

Section 3: Roles and responsibilities

Section 4: Identification and assessment of spoil aspects and impacts

Section 5: Spoil volumes, characteristics and minimization

Section 6: Spoil reuses opportunities, identification and assessment

Section 7: On site spoil management approach

Section 8: Spoil transportation methodology

Section 9: Monitoring, Reporting, Review, and Improvements

4.0 Aspects and Potential Impacts

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

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

5.0 Spoil volumes, characteristics and minimization

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

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

5.3 Adopt Spoil Reduce, Reuse Opportunities

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

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

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

5.5 Storage and stock piling

5.6 Transportation and haulage route

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

Annexure-4

NOC from PGSC

PUSHPA GUJRAL
SCIENCE CITY
(A JOINT PROJECT OF GOVT. OF INDIA & PUNJAB GOVT.)

Headquarters : S.C.O. No. 60-61, 3rd Floor
Sector 34-A, Chandigarh-160022
Phones : EPABX : 0172-5077072/73, 2603183

Fax : 0172-2612914
Email : sciencecity@hotmail.com
Website : www.pgsciencecity.org

Ref No. PGSC/.....

Date : 27/9/14

Annexure - II

CERTIFICATE AND UNDERTAKING

It is certified that:-

1. The Pushpa Gujral Science City, Jalandhar-Kapurthala Road, Kapurthala Where the Interpretation Center and Visitor facilities such as Food Court, Tourist Reception Centre, Signage and Guide Map project is proposed, for execution by PHTPB of the Tourism Department (Punjab), is under the ownership of Pushpa Gujral Science City and is under the possession of Pushpa Gujral Science City.
2. There is NO encroachment and No resettlement / displacement / rehabilitation of people involved in the above Proposed Project area / building / land.
3. 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.
4. The assets created as a result of the execution of above stated project will be taken over for operation and maintenance by Pushpa Gujral Science City.

Place: Chandigarh

Signature Neelima Sarin

Date: 27/9/14

Countersigned
Deputy Commissioner.
Kapurthala

Director General

(Official Stamp)

Science City Complex :- Jalandhar-Kapurthala Road, Kapurthala-144601, Punjab.
Phone:- 01822-501963/64 *Fax*:-01822-501966.

Annexure-5

Stakeholder Consultations

Some consultations were conducted with stakeholders in form of formal communications during preliminary design. Some of the consultations were also conducted at Kanjli Wetland and Pushpa Gujral Science City during preliminary survey. Report on these consultations is given below-

1. Public Consultations at Kanjli Wetlands

Consultations at Kanjli wetlands were done to understand the existing facilities and tourist inflow at wetlands and to access the project need.

Venue: Kanjli Wetlands, Kapurthala

Attendees: Mr. Tarseem Lal, tea and snacks shopkeeper near Kanjli wetland

Ms. Teju Chahar, villager, Kanjlivill.

Ms. Santosh, villager, Kanjli vill.

Points of Discussion and outcome:

Discussed matters related to the tourist inflow and facilities at site for tourists.

Villagers informed that, there are several facilities developed at wetland site by forest department and Kanjli wetland society like boat club, rest house, training centre, interpretation centre, water and toilet facilities, which were operational upto 2-3 years back and also, attracted some tourists but now all the facilities are closed and very few visitors visit this place. They were of the opinion that there is lack of information to tourists and visitors and only students and bird lovers visit this place. They also were in favour of the proposed IC and TIC at Pushpa Gujral Science City and said that many visitors visit PGSC daily and if TIC and IC is developed there, most of them will come to this site.

PHOTOGRAPHS OF CONSULTATIONS

Consultation with villagers near Kanjli wetland

Consultation with shopkeeper near Kanjli wetland

Annexure-6

Sample Grievance Redress Form

(To be available in Local Language and English)

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

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

FOR OFFICIAL USE ONLY

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

Annexure-7

Sample Semi-Annual Environmental Monitoring Report Template

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

INTRODUCTION

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

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

COMPLIANCE STATUS WITH NATIONAL/STATE/LOCAL STATUTORY ENVIRONMENTAL REQUIREMENTS

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

COMPLIANCE STATUS WITH ENVIRONMENTAL LOAN COVENANTS

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

COMPLIANCE STATUS WITH THE ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN

- Provide the monitoring results as per the parameters outlined in the EMP. Append supporting documents where applicable, including Environmental Site Inspection Reports.
- There should be Reporting on the following items which can be incorporated in the checklist of routine Environmental Site Inspection Report followed with a summary in the semi-annual Report send to ADB. Visual assessment and review of relevant site documentation during routine site inspection needs to note and record the following:
- What are the dust suppression techniques followed for site and if any dust was noted to escape the site boundaries;
- If muddy water was escaping site boundaries or muddy tracks were seen on adjacent roads;
- adequacy of type of erosion and sediment control measures installed on site, condition of erosion and sediment control measures including if these were intact following heavy rain;
- Are their designated areas for concrete works, and refuelling;
- Are their spill kits on site and if there are site procedure for handling emergencies;
- Is there any chemical stored on site and what is the storage condition?
- Is there any dewatering activities if yes, where is the water being discharged;
- How are the stockpiles being managed;
- How is solid and liquid waste being handled on site;
- Review of the complaint management system;
- Checking if there are anyactivities being under taken out of working hours and how that is being managed.

Annexure-8

Summary Monitoring Table

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

Operational Phase						

Overall Compliance with CEMP/EMP

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

APPROACH AND METHODOLOGY FOR ENVIRONMENTAL MONITORING OF THE PROJECT

i) 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)

j) Brief discussion on the basis for monitoring
k) Indicate type and location of environmental parameters to be monitored
l) Indicate the method of monitoring and equipment to be used
m) 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)		
			PM_{10} ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)

Site No.	Date of Testing	Site Location	Parameters (Monitoring Results)		
			PM_{10} ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)

Water Quality Results

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

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

Noise Quality Results

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

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

SUMMARY OF KEY ISSUES AND REMEDIAL ACTIONS

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

ANNEXES

o) Photos
p) Summary of consultations
q) Copies of environmental clearances and permits
r) Sample of environmental site inspection Report
s) Other

Annexure-9

Sample Environmental Site Inspection Report

Project Name

Contract Number

NAME: _____ DATE: _____

TITLE: _____ DMA: _____

LOCATION:_____ GROUP: _____

WEATHER CONDITION:

_____

INITIAL SITE CONDITION:

_____

CONCLUDING SITE CONDITION:

Satisfactory _____ Unsatisfactory_____ Incident_____ Resolved _____ Unresolved _____

INCIDENT:

Nature of incident:

_____

Intervention Steps:

_____

Incident Issues

Resolution

Project Activity Stage	Survey	
	Design	
	Implementation	
	Pre-Commissioning	
	Guarantee Period	

Inspection

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

Site Restored to Original Condition Yes No

Signature

_____

_____ _____

Name **Position**

Annexure-10

Public Consultations at PGSC

1. During the project preparation, consultations have been held by the PMU safeguards team with the Department of Tourism, Punjab Heritage and Tourism Promotion Board, authorities of Pushpa Gujral Science City and also with tourists on issues pertaining to the implementation of the proposed subprojects. The key issues highlighted during the discussion include the project detail.
2. The main outcomes of the Public Consultations are as under:
    a) Local Visitors: They are aware about the main tourist destinations but have less information on its importance, past history etc. In general, information about location is obtained from visitor friends and relatives.
    b) Visitors outside Punjab: Information about the site was obtained from websites, friends and relatives. Visitors were happy to know about proposed tourist information centre proposal and informed that it will help visitors to plan their day schedule and visit tourist destinations of social and religious importance.
    c) Pushpa Gujral Science City representatives: The following are the main outcome of the discussions
        - Aware about proposed tourist information centre proposal and informed that, the Science city is open 365 days and visitors from Punjab, Delhi, and other parts of the country also attend. In general, annually approx. 5 lacs visitors come to see science city. Tourist Information will provide them required relevant information to all visitors at one common platform and will also help them to plan their visits accordingly.
        - It was informed that, main electricity, water and sewer lines are passing underground through the proposed site. It was further informed that, administration will take care of underground electricity cable wire so that there are no disruptions in their on-going daily shows/exhibition gallery that are open for visitors. However, it was requested to take care of other cable and water supply lines during construction work so that, basic facilities are not disrupted.
3. The below table reflects the consultations done and issues discussed.

Table 1: Consultations during Preliminary and Detail Design at PGSC

Sl. No.	Date of Site Visit	Place of Site	Participants & No.	Issues Discussed
1.	7th April 2016	Pushpa Gujral Science City, Kapurthala	DSC experts	Site visit to understand social and environmental issues regarding proposed location for tourist information centre
2.	9th July 2016	Pushpa Gujral Science City, Kapurthala	DSC experts and CDO, PIU	Same as above
3.	13th August 2016	Pushpa Gujral Science City, Kapurthala	Visitors and Scientist Cum Estate Officer	Issues related to proposed site, awareness about proposed site, benefits of proposed site, source of information about Punjab Tourism and suggestions etc.

Photographs of Public Consultations

Interaction with visitors of PushpaGujral Science City

Meeting with Scientist Cum Estate Officer, PushpaGujral Science City

Interaction with visitors of PushpaGujral Science City

Interaction with School teachers and students at PushpaGujral Science City

Interaction with visitors at Pushpa Gujral Science City

Interaction with tour guides at PushpaGujral Science City

Attendance Sheet

PUBLIC CONSULTATION at PUSHPA GUJRAL SCIENCE CITY

(KAPURTHALA)

ATTENDANCE SHEET

e of Consultation (Project Design/ Implementation):

ect and Package: Interpretation Center at Kapurthala at PGSC (PB/IDIPT/T3/01/01)

e of the person who made consultation: Vidushi Sharma ESS, PMU & Raghubir Singh .SSS

Name of the person	Designation of the person consulted	Address	Issues Discussed	Signature	Contact no.
Davinder Singh	Teacher	Moga	Proposed	[illegible]	
Raspal Singh	Teacher	Moga	Scope of work	Raspal Singh	
Deepak	Business	Agra	at Pushpa	Deepak	
Manjit Kaur	Teacher	Moga	Gujral Science	Manjit Kaur	
Gauri Agrawal	House wife	Agra	City, Benefits	Gauri Agrawal	
Satnam Singh	Punjab Roadways	M.S.P	& awareness	Satnam Singh	
Ranjit Singh	Punjab Roadways	M.S.P	of the proposed	[illegible]	
Rupa Rani	House wife	M.S.P	site & information	Rupa Rani	
Gurpreet Singh	Science City	KPT	about Tourist	[illegible]	
Ankit	Shopkeeper	Kpt	Information	[illegible]	
Rakesh Kumar	Sr. [illegible]	Fatehabad	Centre.	[illegible]	94163-42481
Ugar Sain	Headmaster	"		Ugar Sain	9416215755
HANS RAJ	[illegible] master	"		Hans Raj	93550 87202 93555 08202

PUBLIC CONSULTATION at PUSHPA GUJRAL SCIENCE CITY

(KAPURTHALA)

ATTENDANCE SHEET

: of Consultation (Project Design/ Implementation): (PB/IDIPT/T3

:ct and Package: Interpretation Centres, Tourism Centres at Kapurthala (PGSC) - Lot 2

e of the person who made consultation: Vidushi Sharma ESS, PMU & Raghuvir Singh SSS,

ame of the person	Designation of the person consulted	Address	Issues Discussed	Signature	Contact no.
Neelam Sharma	Teacher	SMS Ludhiana	Proposed scope	[illegible]	0161230003
[illegible]	Teacher	SMS Ludhiana	work at	[illegible]	
[illegible]	Teacher	SMS Ludhiana	Pushpa Gujral	[illegible]	
Deepti [illegible]	Lecturer	205/5 [illegible] Jalandhar	Science City, its	Deepti	9041611925
Monika Rani	Lecturer	Jalandhar	museum &	[illegible]	8699226743
[illegible]	Teacher	Jalandhar	benefits of	P [illegible]	9217707887
Ravinder	Lecturer	Jalandhar	the proposed	[illegible]	
Sheenam	Lecturer	Jalandhar	site & [illegible]	Sheenam	
Jagdeep Singh	Teacher	Ropar	about Tourist	[illegible]	9464520574
Jagtar Singh	Teacher	Ropar	Information Centre.	[illegible]	94845-55875
Manpreet Kaur	Manager	Kapurthala		Kaur	94789-21565
Amil [illegible]	[illegible]	Pathankot		[illegible]	98151-63270
D. S. [illegible]	[illegible]	Kapurthala		[illegible]	9903519786