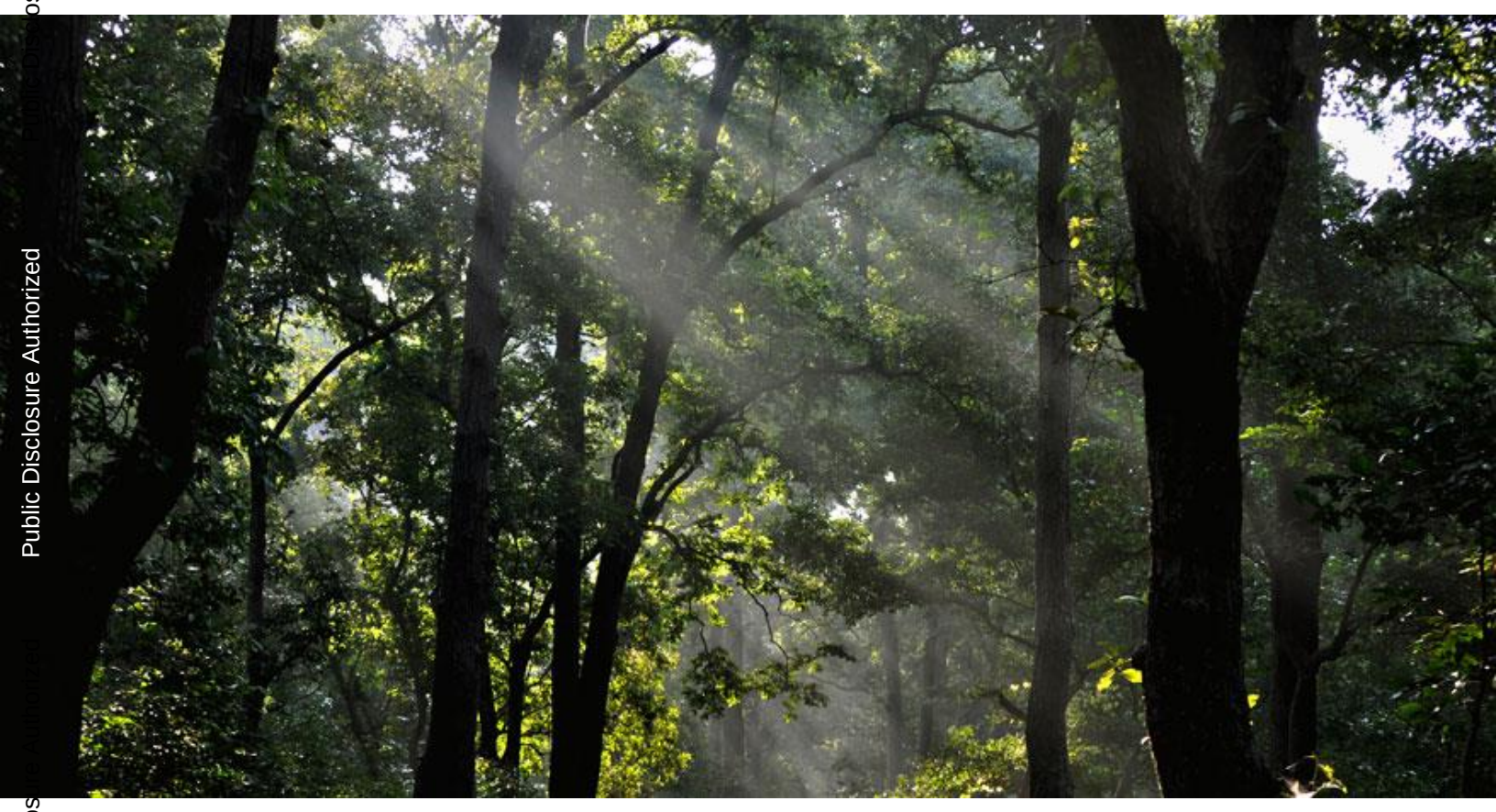

DEPARTMENT OF TOURISM

GOVERNMENT OF UTTAR PRADESH

NCB Contract Package NO. 01/Agr/Pro-Poor/UPT/W/2016

ENVIRONMENTAL ASSESSMENT REPORT FOR REVITALIZATION OF SHAHJAHAN PARK WALK WAY BETWEEN TAJ MAHAL AND AGRA FORT, AGRA

Project	**:**	**Uttar Pradesh Pro-Poor Tourism Development Project**

Owner	:	**DIRECTOR GENERAL TOURISM, Department of Tourism, GoUP** 4th Floor, Paryatan Bhawan, C-13, Vipin Khand, Gomti Nagar, Lucknow, UP 226010

LIST OF ABBREVIATIONS

ADA	Agra Development Authority
ASI	Archaeological Survey of India
CPCB	Central Pollution Control Board
DoT	Department of Tourism
DPR	Detailed Project Report
EA	Environmental Assessment
EIA	Environment Impact Assessment
EMP	Environment Management Plan
ESMF	Environment and Social Management Framework
ESMP	Environment and Social Management Plan
ESS	Environmental and Social Safeguards
GoI	Government of India
GRC	Grievance Redress Cell
ICSC	International Center for Sustainable Cities
ICT	Information, Communication and Technology
INR	Indian Rupee
NGO	Non-Government Organization
NMT	Non-Motorized Transport
NMV	Non-Motorized Vehicle
OBC	Other Backward Castes
OP	Operational Policy
PAP	Project Affected Persons
RAP	Resettlement Action Plan
SMP	Social Management Plan
SC	Scheduled Caste
SPCU	State Project Coordination Unit
ST	Scheduled Tribe
TTZ	Taj Trapezium Zone
TSS	Total Station Survey
TSU	Technical Support Units
TVC	Town Vending Committee
UP	Uttar Pradesh
UPPCB	Uttar Pradesh Pollution Control Board

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Chapter-1
Introduction

1.0 PROJECT BACKGROUND

Uttar Pradesh – India's biggest tourist draw, containing some of the country's most iconic heritage and annually attracting millions of devotees and visitors but remains one of India's most lagging states. UP is the fourth largest and most populous state with over 199 million inhabitants, and is home to the emblematic Taj Mahal, to the second ancient living city in the world – Varanasi – located on the banks of the sacred Ganges, and to two of the world's four most sacred Buddhist sites Sarnath and Kushinagar, to mention a few of its heritage assets visited and worshipped by millions annually. In 2011, the state attracted 155 million domestic and 1.8 million international visitors out of 748 million domestic and 6.2 million international tourists visiting India, who contributed a total of USD 6 billion to Uttar Pradesh's economy in the same year. Despite this unique endowment, Uttar Pradesh remains India's third most lagging state, with a 37.7 poverty rate. Currently, over 50 million people live below the poverty line. The state has one of the lowest per-capita incomes compared to the national average. It also lags most Indian states across several human development indicators, such as literacy and infant mortality. Specifically, in terms of tourism, despite its staggering numbers, most earnings have been captured by airlines, travel agencies and tour operators but poor people in touristic cities often gain very few direct benefits from tourism while bearing many of the costs.

UP Pro Poor Development Project: The UP Government envisioned Uttar Pradesh Pro Poor Tourism Development Project with the financial support of World Bank is one of the stepping stone in restructuring its tourism sector in a pro-poor manner with a view to increasing benefits to local communities and improving the management of its tourism destinations. The pro-poor approach adopted by the project also aims at catalysing the impact of key sectors in each area, such as accessibility/connectivity, environmental preservation, asset management and business development on local communities. The project will do so by promoting an integrated area-based approach in which tourist destinations and their iconic heritage assets are planned, promoted, served, stewarded and linked geographically.

Uttar Pradesh Pro- Poor Development Project focus on two main regions- Braj-Agra Corridor and the Buddhist Circuit; covering in all 12 destinations of high heritage and tourism significance. Among these, the subproject sites for 1st year has been identified along Braj – Agra corridor namely Agra and Vrindavan (Mathura); as these cities depend heavily on tourism but it has had minimal positive economic impact on the lives of the local communities, especially the poor. Almost of half of this city's population are estimated to be living in slums and low-income settlements, without access to adequate basic urban and social services or decent housing. Most of these slums/low income settlements are in the neighbourhood of protected and unprotected monuments and heritage site. The presence of heritage assets in the neighbourhood applies strict regulations for development and does not translate into any income gains or better infrastructure or services. Poor households therefore stay unconcerned about the heritage and do not contribute to their conservation. The "**Revitalization of Shahjahan park walk way between Taj Mahal and Agra Fort, Agra"** is one of the identified subproject under this project. This report focuses on Environmental Impact Assessment (EIA) associated with this sub project.

1.1. SCOPE OF THIS REPORT

"**Revitalization of Shahjahan Park Walk way between Taj Mahal and Agra Fort, Agra**" is one of the identified sub project of UP Pro-Poor Tourism Development Project. Detailed Project Report (DPR) and Social Management Plan (SMP) of this project has already been prepared and approved by the Department of UP Tourism. Therefore, scope of this report is limited to assess environmental impacts of the components proposed under the said project and to determine the specific measures to reduce, mitigate and/or offset potential adverse impacts during pre-construction, construction and operation phases of the project.

1.2 ABOUT SUB PROJECT AREA AND PROPOSED COMPONENTS

Project site "ShahJahan Park" is located at Agra City situated on the banks of the river Yamuna in the Northern state of Uttar Pradesh, India (27.10 N latitude, 77.01 E longitude). Shahjahan Park occupies a very strategic location between the two World Heritage Sites and most visited monuments Agra Fort and Taj Mahal. Agra Fort borders located at the west side of park, Taj Mahal in the east, River Yamuna and its flood plains in the north and golf course and cantonment land in the south. Agra Fort and West gate of Taj Mahal are connected by vehicular road traversing about 1.25 km through the Taj West Gate and 1.8Km through Fatheabad Road and pedestrian route along the roadside footpath. The two monuments are connected through Shahjahan Park with a walking track of 2.2 km long. Though the two monuments are connected through walkways, yet most visitors do not use it due to various reasons- a) lack of awareness, b) long uninteresting walk without any amenities c) time constraints among tourists and d) presence of traffic junctions in between. Moreover, Shahjahan Park in itself, being located at such a strategic location, is rarely visited by tourist. Therefore, overarching vision of the project is to develop Shah Jahan Park as a "Green Connector" between the two important Heritage monuments- Taj Mahal and Agra fort thereby encouraging green mobility and rejuvenate the urban park from a mere "City Park" into a leisure destination that attracts visitors.

Shahjahan Park	
Total Area	**95.93 Acres**
Zones	• **Moti Lal Nehru Park: 17 Acres** • **Central Nursery: 33.42 Acres** • **Tank 4: 29.12 Acres** • **Gulab Badi: 4.36 Acres** • **Jangi Khan & other: 12.03 Acres**

Components Proposed Under the Project:

In the Detailed Project Report (DPR) of **Revitalization of Shahjahan Park and Walk way between Taj Mahal and Agra Fort, Agra**, following components are proposed as revitalization components:

S No.	Components Proposed under DPR
1	Traffic Calming of Amar Singh, Jalkaari Baai, Purana Mandi Junctions
2	Natural Path to Agra Fort
3	Re Organisation of Circulation & Furniture on Pathway

4	Development of Pedestrian and Perimeter Pathways
5	Development of Natural Play, Lake, Forest and Meadows Loops
6	Signage, Lighting and Street Furniture

1.3 METHODOLOGY ADOPTED FOR PREPARATION OF ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

Based on the project components and in compliance with the Environmental and Social Management Framework of the UP Pro-Poor Tourism Development project, following steps were taken in to account while preparing the Environmental Management Plan for **Revitalization of Shahjahan park walk way between Taj Mahal and Agra Fort, Agra:**

I- **Reconnaissance survey**: Reconnaissance survey was conducted at the project sites of proposed components by the experts to assess the field situation and key issues that need to be addressed in EIA & EMP.

II- **Project Screening:** Screening was done in the initial stages of the project. The purpose of screening was to categorize the project and to screen out significant impacts of the project activities to obtain a broad picture of the nature, scale and magnitude of the issues, if any. Screening was done based on the Environment and Social Management Framework of the project.

III- **Review of World Bank Safeguard Policies & Indian Regulations:** During preparation of EIA and EMP, World Bank Safeguard Policies and Indian Regulations were taken into consideration to fulfill the regulatory requirements.

IV- Data Collection & Analysis: All available information and data (quantitative and qualitative) regarding the proposed project was collected mainly from the old Project Reports, consultation with stake-holders and other information sources including the water/air/noise monitoring reports of Pollution Control Board, City Development Plan, CGWB reports etc. Based on secondary information, a description and analysis of the sub-project activities along with baseline environmental profile of the influence of the project area has been established.

V- **Stakeholder Consultations**: Stakeholder consultation was carried out while preparing EIA and EMP report. The local people and stakeholders were interviewed in groups. The interviewees were asked about their awareness of the project and their response to it and were made aware of how the project will affect them during construction phase and after completion phase. They were informed about the mitigation and rehabilitation plans, were asked for suggestions for improvement and public grievances, if any towards the project. Interactions with important key stakeholders were done during formal discussions and the relevant government departments were visited to collect data and their feedback on the project activities.

VI- **Identification and Assessment of the Environmental Impacts of sub project Activities**: Based on the analysis of the data gathered from field survey, stakeholder consultations and secondary sources, issues and impacts related to the environmental sector have been identified.

The identified impacts have been compared with the existing baseline environmental condition of the project area.

VII- **Development of an Environmental Management Plan**: Based on the identified environmental issues, the EMP recommends measures needed to prevent, minimize, mitigate, or compensate for identified impacts and improve environmental performance of the project activities. The EMP also suggests for setting up an agency for management measures that need to be taken at various stages of implementation (construction and operational phase) along with Cost of EMP. Flowchart describing the steps adopted for preparation of EMP is depicted in Figure 1.1.

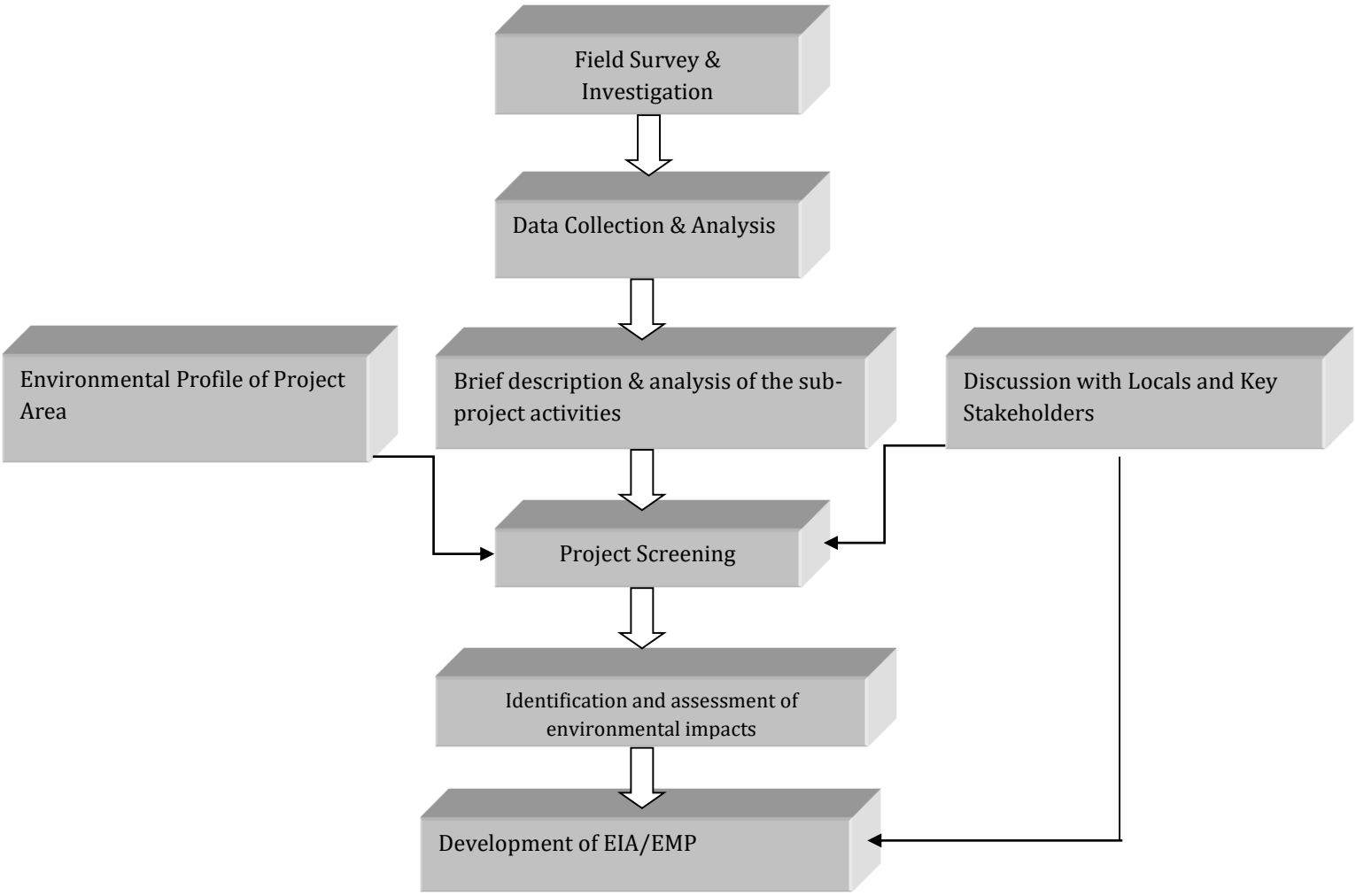


Figure 1.1: Flowchart Describing the Steps Adopted for Preparation of EIA/EMP

Chapter-2
Project Description

2.0 ABOUT THE SUB_PROJECT:

The **"Revitalization of Shahjahan Park Walk way between Taj Mahal and Agra Fort"** is one of the identified sub project of UP Pro-Poor Tourism Development Project. Prime goal of this project is to develop Shahjahan Park as a "Green Connector" between the two important Heritage monuments Taj Mahal and Agra fort thereby encouraging green mobility and rejuvenate the urban park from a mere a "City Park" to develop it into a leisure destination that attracts visitors who visit the city. Under the purview of Pro-Poor Tourism Development Project, specific development components have been taken up under the DPR based on the prioritized needs, site constraints, safeguard assessment and the existing institutional set up. Location map of sub project site is depicted in Figure 2.1.

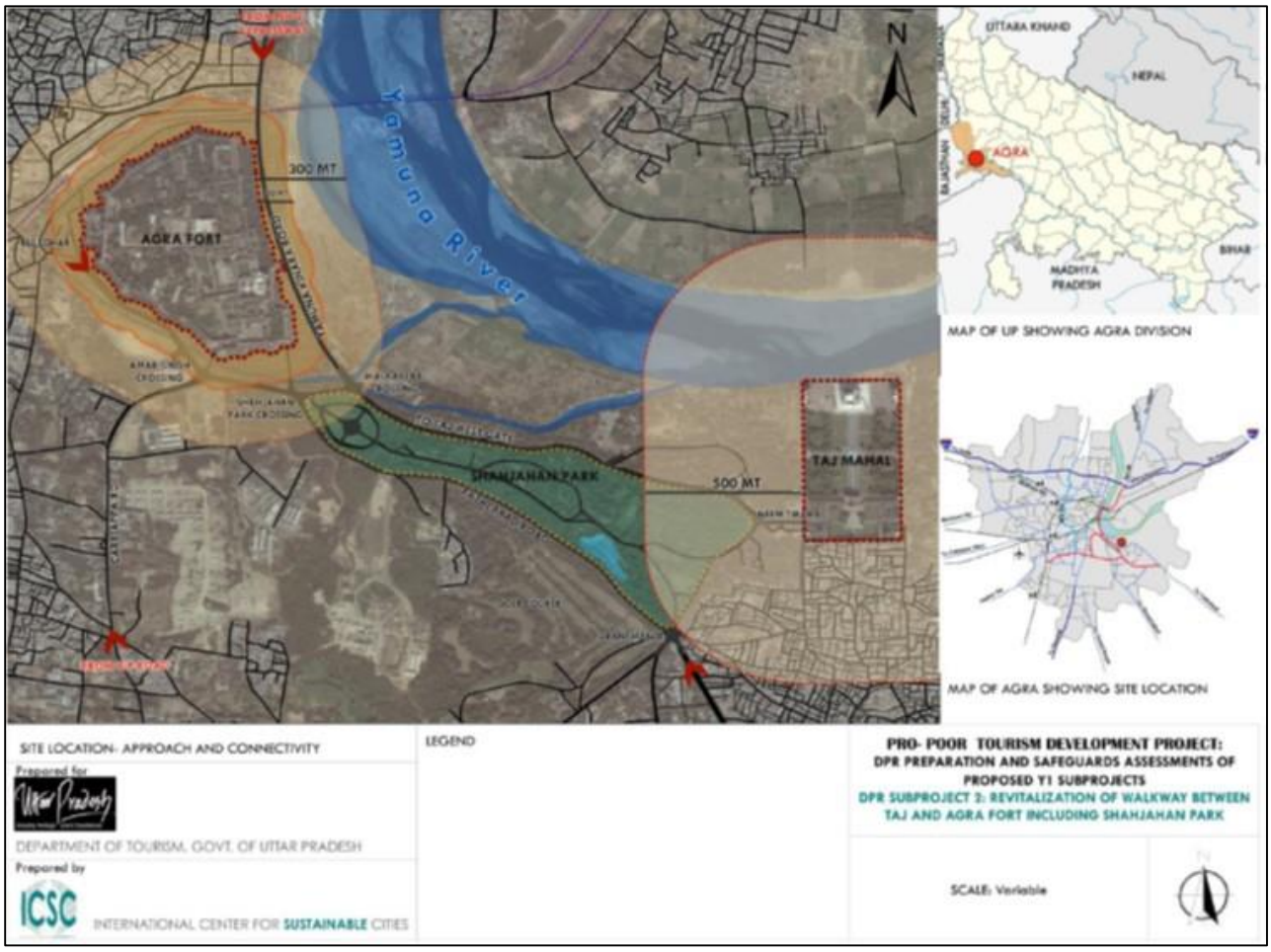
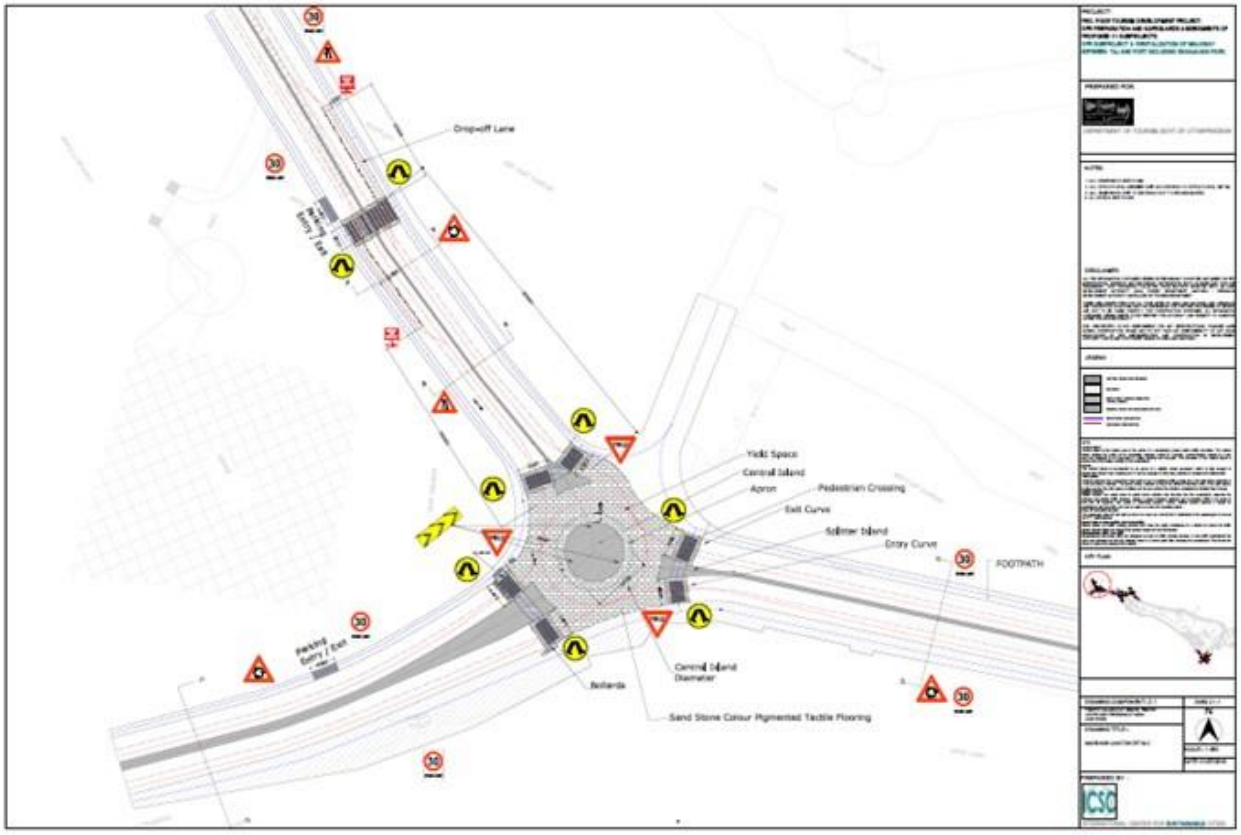


Figure 2.2: Location of the subproject site & connectivity between Taj Mahal & Agra Fort

2.1 OVER VIEW OF COMPONENTS PROPOSED UNDER SUB-PROJECT

In the proposed sub project **"Revitalization of Shahjahan Park Walk way between Taj Mahal and Agra Fort"** following components proposed as revitalization components:

COMPONENT 2.1	**TRAFFIC CALMING OF AMAR SINGH, JALKAARI BAAI, PURANI MANDI JUNCTION (Traffic Calming at Grade, Traffic Lights and Crossing at Main Junctions)** Under this component, redevelopment of 4 junctions have been undertaken to provide better traffic flow management and to promote and achieve area that is pedestrian friendly. Four junctions considered for redevelopment are: • **AMAR SINGH GATE** • **SHAHJAHAN PARK ENTRANCE CROSSING** • **JHALKARI BAI CROSSING** • **PURANI MANDI CROSSING**



Above drawing illustrates, traffic calming and junction redevelopment of one of the four junctions. The illustrations highlight some of the subcomponents of junction design that includes rotary design, pedestrian crossings, signage's and location for traffic calming elements. Some of the key benefits of the proposals are as mentioned below.

TRAFFIC MANAGEMENT

- Speed table at the intersections to reduce vehicle speeds. It is made of stamped concrete or pavers.
- Turning radius is reduced to slow down the speed of vehicles at the intersection and to avoid wrong turn movements.
- Median width is increased at the intersection to provide refuge space for the pedestrians
- Drop off zones are proposed 50m away from the intersection so that it does not interrupt the traffic flow.
- Parking and Drop off zone at Shahjahan park entrance
- Rotary is proposed since the traffic flow is less and the intersections are not signalized. In case of increased traffic, the intersections can be signalized especially on weekends and peak seasons
- Tonga/Auto/E-rickshaw drop off is proposed across the road at entrance of Green Walkway at Agra Fort.

PEDESTRIAN SAFETY

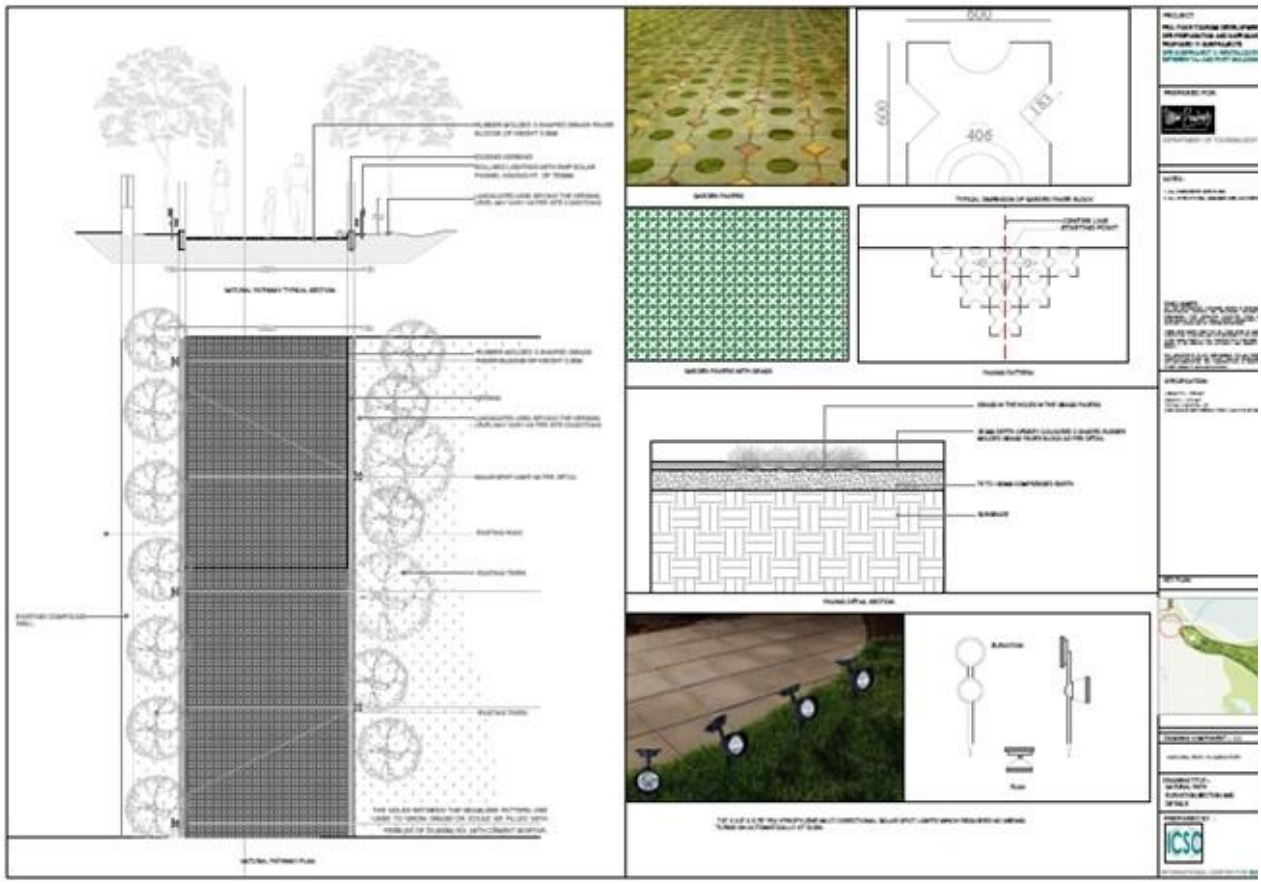
- Median width is increased at the intersection to provide refuge space for the pedestrians
- Speed table crosswalk for pedestrians at intersection and at drop off lanes
- The entry lane of Agra Fort is proposed to be paved footpath

COMPONENT 2.2	ENTRY GATES ACCESS ORGANIZATION AND HOP ON-HOP OFF
	• Overall Shahjahan Park with provision of various pedestrian movements by offering experience of natural, forest, lake trails together with Non-Motorized vehicles movements from main entry gate, Purani Mandi gate, West Gate Parking and Taj West gate entrance. • Overall Master Plan that illustrates multiple entries, pathways, NMV movements and activities.

Planning and strategies proposed under the component are:

- One unified, main entrance at the northwest corner of the park. This entrance will be the main point of connection between the park and the Agra Fort.
- A small, paved plaza area will be included just outside the main entrance that will serve as a shaded gathering space for those visiting the park.
- Paved sidewalks will connect the entrance to street parking along the access road to the Taj West Gate, as well as to auto-rickshaw drop-off locations along Fatehabad Road

COMPONENT 2.3	**NATURAL PATH TO AGRA FORT +CONNECTING BRIDGE INSIDE THE FORT BOUNDARY** • Agra fort is one of the most visited sites after the Taj Mahal. During the day, several domestic and international visitors visit both the monuments. Therefore, natural pathway development is an attempt to create a pedestrian link between Shahjahan Park and Agra fort. • A small bridge is proposed that allows pedestrians to cross Mantola drain within the fort premise.

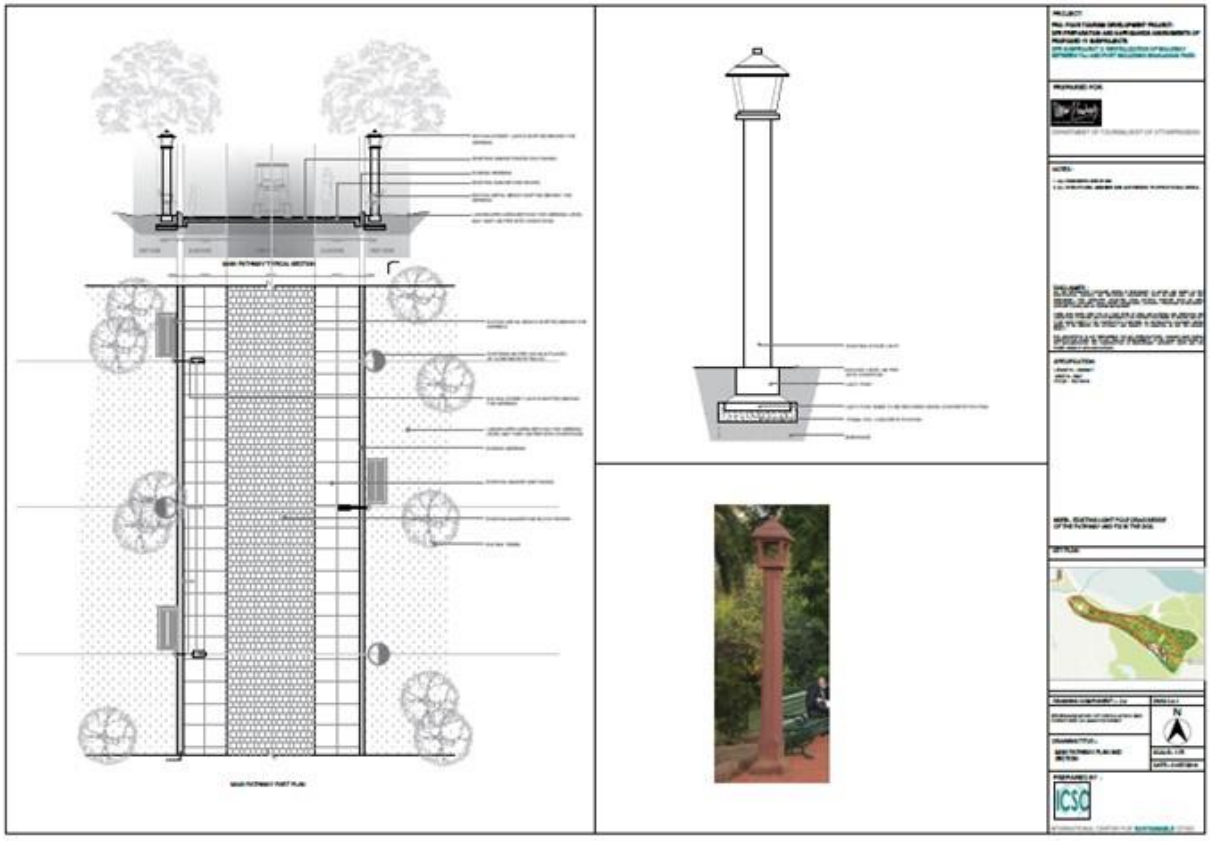


Salient Features:

- Total length: 158 m
- Natural Pathway paved by grass paver blocks with appropriate lighting
- A small bridge is proposed towards the end of the pathway to cross the natural drain to reach towards the entrance of the fort

COMPONENT 2.4	**REORGANIZATION OF CIRCULATION AND FURNITURE ON MAIN PATHWAY** • Reorganization of circulation pathway is one of the key components of the DPR. The pathway currently exists today in the park. Current pathway is 6-meter-wide surfaced with sandstone. Pathway also has traditional lights and benches that are placed at regular interval. Existing pathway is predominantly for pedestrian use and has a provision for bicycle movement. • Proposed intervention on main pathway focuses on enhanced connectivity by allowing movement of golf carts and other

similar battery operated vehicles from Taj West gate to Shahjahan crossing and Purani Mandi crossing. Proposal for re organization of main pathway also includes shifting of existing street lights and benches to the side of the pathways. The interventions will offer obstruction free movement throughout the park on main pathways and will encourage more visitors and locals to use this for pedestrian as well as bicycle movement.



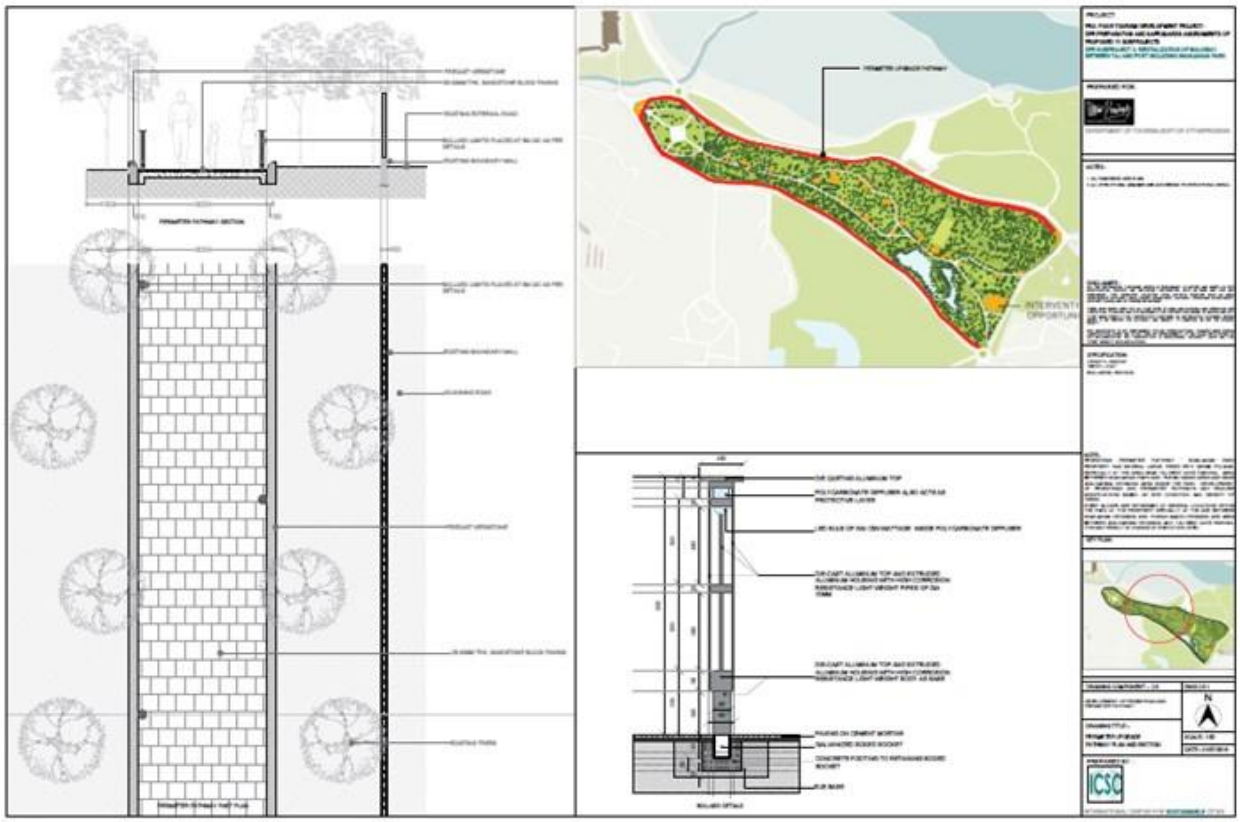
Salient Features:

- **Total length:** 2.9 km
- **Organization:** 1.25 m (slow zone) – 3 m (fast / most active zone) – 1.25 m (slow zone)
- **Material:** Sandstone Pathway – existing material
- **Lighting:** Existing lights relocated on the pathway with new bulbs at every 15m intervals and new lamp-posts to match as necessary. Bollard lights, every 5m, separate pedestrian only section
- **Benches:** Same as current relocated in park on both sides of the pathway depending on site condition, 330 benches in total, with four benches centered together in between light poles

COMPONENT 2.5	DEVELOPMENT OF PEDESTRIAN AND PERIMETER PATHWAY

Shahjahan Park is spread over 96 acres of land and currently having only one primary pathway that runs at the central part of the park and connects main entrance of Shahjahan park crossing till Purani Mandi. Shahjahan park has a vast spread and dense vegetation at different parts. Currently, the park has very few activities occur at the periphery. however, the area has many shaded areas, trees and landscaping that is visually appealing.

Proposed development of pedestrian perimeter pathways starting from west gate parking area links to main entrance of the park and Purani Mandi area. The pathway will offer locals and visitor's alternative route and experience of walk through the park.



Salient Features:

- Total length: 3000 metes
- 3 meters sandstone pathways in accordance with the primary pathways
- Provision of adequate lighting

COMPONENT 2.6	DEVELOPMENT OF PLAY, LAKE, FOREST AND MEADOW LOOPS
	Proposed component of DPR focuses on creating trails and loops within the park that offers unique natural experience by visiting different parts of the park. Based on the contextual conditions and existing vegetation

and landscaping trail areas have been identified.

1. Gardens and Meadows

These areas occupy the largest sections of the park. Floral gardens near the existing nursery will be an attraction for tourists and residents, while the meadows will provide areas where families and visitors can picnic, rest and relax.

2. Sports and Exercise

Sports and exercise facilities will cater to residents of all ages. In addition to a full-size cricket ground, the park will be equipped with outdoor gymnasium facilities in three locations. The perimeter paths will also be ideal routes for jogging.

3. Forest Loop

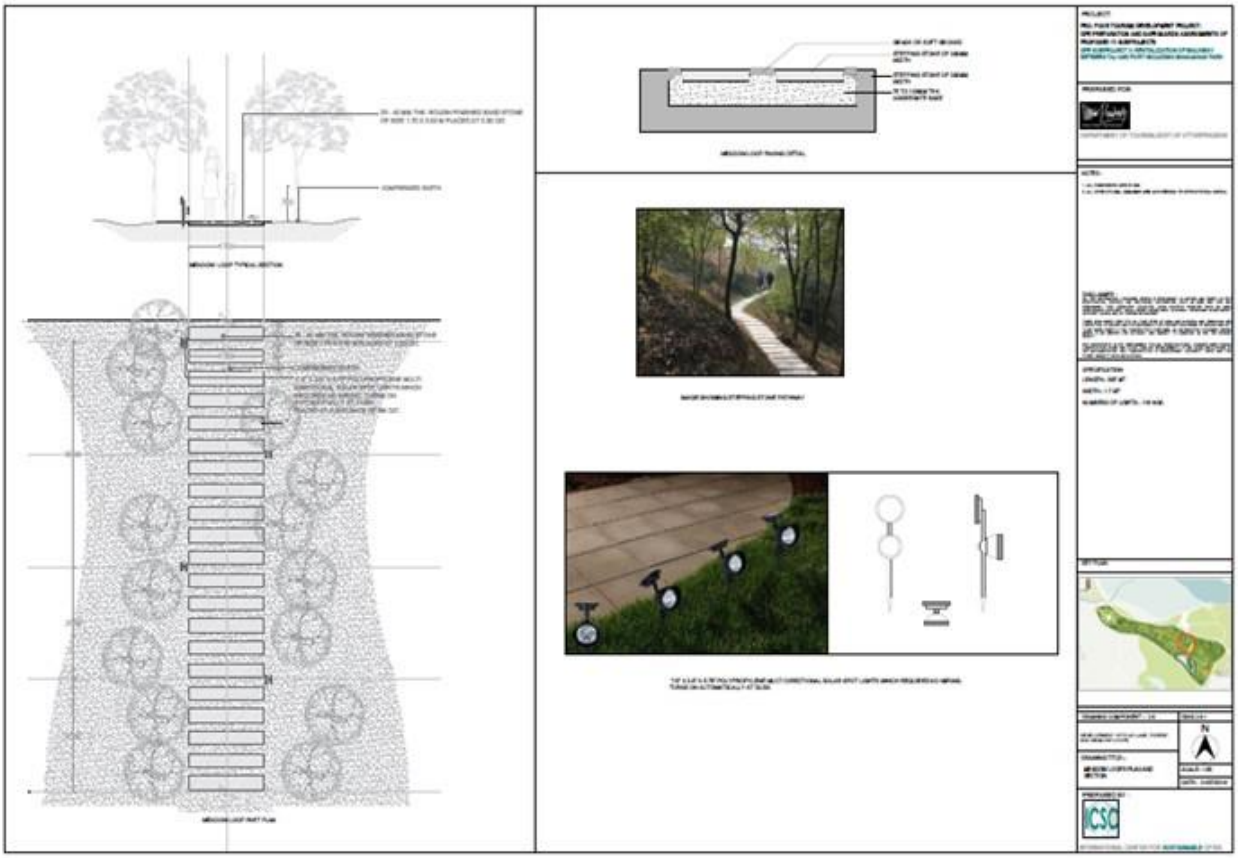
The Forest Loop is a basic path through the densely-forested part of the park to give the feeling of hiking the park's topography. It will provide a uniquely quiet and relaxing zone away from the activity of the surrounding areas.

4. Lake Loop

The Lake Loop utilizes new and existing paths around the lake to give alternative views of the area to visitors. It will also feature a dock for small rental pedal boats in the lake.

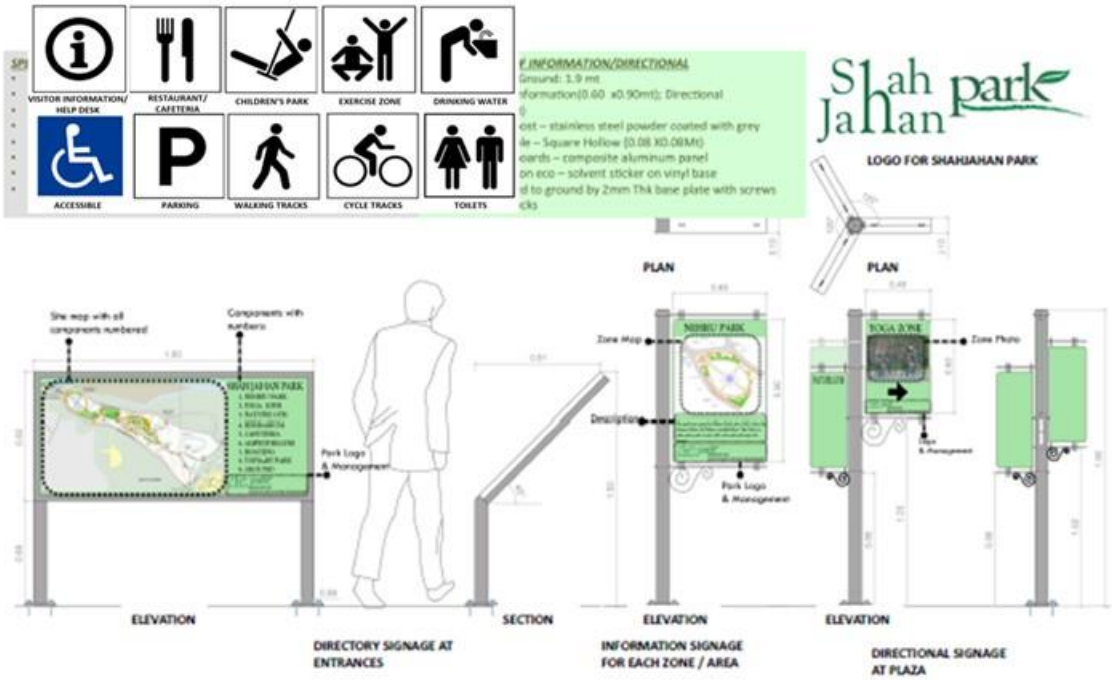
5. Playground

A playground will be located adjacent to the entrance by the Purani Mandi junction. While it is expected that it will be primarily used by residents, it could be a resting area for tourist children fatigued with the long walks.



COMPONENT 2.7	PARK SIGNAGE, LIGHTS AND STREET FURNITURE
	The subproject calls for a system to standardized park signage that can be placed at strategic locations to create awareness for nature conservation, park protection and to provide information about plant species. Careful exploration produced distinct signage typologies and graphic layout systems, while developing an appropriate structural system to address issues of sustainability and vandalism throughout the park. Therefore, four types of signage are proposed for implementation: entry, directional/nodal, trail and markers. Entry signage will be located at the park entrances, and pick-up/drop-off locations on the electric vehicle route. These will include the logo and name as well as a map of the park and highlight the unique destinations within. Directional/nodal signage will be located at intersections and trail signage along the main paths. Information will be placed on notable landmarks, intersections, or even plant species.

	Trail signage along the paths will direct visitors. Marker/advisory signage with symbols for amenities such as toilets, drinking water, cycle dock, cycle track, paths across the park.



2.2 CONSTRUCTION MATERIAL AND SOURCING

General construction activities proposed under the sub project that require Sand and Fine Aggregates, coarse aggregates, bricks and blocks, ready mix concrete (grade M10, 20, 30), TMT steel, Binding wires and cement. Most of the construction material shall be purchased from local sources. however, material such as sand, fine aggregates, bricks and concrete will only be purchased from government approved authorized dealer and vendors.

2.3 SUB PROJECT COST & IMPLEMENTATION PERIOD

Cost estimates for various DPR components are summarized below:

S No.	Particulars	Amount (Rs.)
1	Traffic Calming of Amar Singh, Jalkaari Baai, Purana Mandi Junctions	21,842,393.13
2	Natural Path to Agra Fort	2,011,144.99
3	Re Organisation of Circulation & Furniture on Pathway	23,770,735.59
4	Development of Pedestrian and Perimeter Pathways	90,399,334.40
5	Development of Natural Play, Lake, Forest and Meadows Loops	13,297,535.61
6	Signages, Lighting and Street Furniture	35,993,889.84
7	EMP Cost	30,63,000.00
	Taxes & Extra	36,171,826.38
	Total (Rs.)	**226,549,859.93**

IMPLEMENTATION PERIOD:

The overall implementation of the EMP would require three years considering 24 months' project implementation period and external evaluation.

Chapter- 3
Policy and Regulation Framework

3.0 KEY INDIAN POLICIES & REGULATIONS

The Government of India procedures on externally aided projects entail that all projects must be prepared and implemented in full compliance with the national legislation, regulations and standards governing protection and management of the cultural and natural heritage of the country, social development, and environmental management frameworks. In line with that, the Environment and Social Management Framework prepared for UP pro poor tourism development project includes the national and state level environmental laws and the operational policies of the World Bank. Specific state and local level standards and regulations also apply to the projects based on their location and nature of the proposed investments and activities. Pertaining to current subproject, some of the key national legislations and regulations related to environment that may apply for this project are summarized in Table 3.1

Table 3.1: Important National Rules and Regulations that may apply to this Project

Act/ Policy	Year	Objective	Main stipulations	Applicability to the project	Responsible Agency
Cultural Heritage – Government of India					
Ancient Monuments and Archaeological Sites and Remains Act Amended	1958 2010	Declares certain monuments/sites as being of "national importance". Stipulates conservation of cultural and historical remains found in India.	Monuments are "protected" area. 100m radius is "prohibited" area – no construction or reconstruction. Repairs allowed. 200m radius is "regulated" area (structures can be constructed by archaeological officers with due sanctions from competent authority). Protection, maintenance and conservation managed by Archaeological Survey of India (ASI)	Some of the proposed components of the sub project are located within the regulated zone of every archeologically protected monuments and would require permission from National Monuments Authority	Ministry of Culture; NMA with ASI
The Antiquities and Art Treasures Act	1972	To ensure registration of antiquarian remains in personal possession of individuals and institutions.	Registration of antiquities/remains/art is mandatory.	Possibly, if any subproject involves chance find.	Directorate of Culture, Govt. of UP.
Tourism					

National Tourism Policy	2002	To increase the number of domestic and international tourists. To diversify the Indian tourism product and substantially improve the quality of (tourism) infrastructure, marketing, visa arrangements and air-travel.	To focus on welcoming, information provision, facilitation, safety, cooperation, infrastructure development, and cleanliness.	Yes. The policy objectives are in sync with project objectives.	Ministry of Tourism, Govt. of India
Tourism Policy of Uttar Pradesh	1998	To leverage a diversified tourism sector for economic benefit of local populations.	Projects must improve and diversify the tourism product base with a focus on adventure, religion and monument-based travelers, while economically benefiting local populations and increasing employment opportunities	Yes. The objectives of the policy are in sync with project objectives.	Department of Tourism, Govt. of Uttar Pradesh
Environmental					
Environmental (Protection) Act	1986	To protect and improve the overall environment.	Prevention, control, and abatement of environmental pollution. Gives central government rights to monitor and test for environmental pollution, and if necessary penalize for infringements.	Environment (Protection) Act, popularly known as EP Act, is an umbrella legislation that supplements existing environmental regulations.	MoEF. Govt. of India; Central Pollution Control Board; UP State Pollution Control Board; Central and Regional Ground Water Boards

The Forest Conservation Act & Its Amendment The Forest (Conservation) Rules & Its Amendment	1927 1981	To check deforestation by restricting conversion of forested areas into non-forested areas.	If any forest land is proposed to be used for nonforest purposes, the user agency needs to get the clearances under the Forest (Conservation) Rules, 1981	The project doesn't pass through any kind of reserve forest and doesn't involve any diversion of reserve forest area. Additionally, no protected forest area diversion is involved.	Forest Department, Govt. of UP (for land conversion below 5 hectare & 40% density), MoEF, Regional Office and MoEF.
Wild Life (Protection) Act	1972	To protect wildlife through certain of National Parks and Sanctuaries.	The Act provides for protection of wild animals, birds and plants and related matters. The Act contains specific provisions and chapters on protection of specified plants, sanctuaries and national parks, etc.	The project does not pass through any wildlife sanctuary, or falls within 10km from either side of the project road from any wild life sanctuary/National Park/ Biosphere Reserve etc. Therefore, no such clearance is required for this project.	Chief Conservator. Wildlife, Wildlife Wing, Forest Department, Govt. of UP and National Board For Wildlife, Govt. of India
Water (Prevention and Control of Pollution) Act	1974	To control water pollution by controlling discharge of pollutants as per the prescribed standards.	Provides for the prevention and control of water pollution and the maintaining or restoring of wholesomeness of water; creates Boards and assigns functions and powers for the prevention and control of water pollution.	Implementing agency need to ensure that construction activities do not deteriorate the water quality.	UPPCB

Air (Prevention and Control of Pollution) Act	1981	To control air pollution by controlling emission of air pollutants as per the prescribed standards.	Act provides for prevention, control and abatement of air pollution and establishment of Boards for planning a comprehensive program for this task. Collect and disseminate information relating to air pollution, lay down standards for emission of air pollutants into the atmosphere from industrial plants, automobiles or other sources.	Implementing agency need to ensure that construction activities do not deteriorate the ambient air quality.	UPPCB; Transport Department.
The Noise Pollution (Regulation And Control) Rules	2000	To control noise pollution by controlling noise at sources.	Rules provides statutory norms to regulate and control noise levels to prevent their adverse effects on human health and psychological wellbeing of the people. statutory norms to regulate and control noise levels to prevent their adverse effects on human health and psychological wellbeing of the people	Implementing agency need to ensure that construction activities do not deteriorate ambient noise level	UPPCB; Transport Department.
Solid Waste Management Rules	2016	To control and management of Solid Waste	Waste generator shall segregate and store the waste generated by them in three separate streams namely bio-degradable, non-biodegradable and domestic hazardous wastes in suitable bins and handover segregated wastes to authorised waste pickers or waste collectors as per the direction or notification by the local authorities from time to time. No waste generator shall throw, burn or burry the solid waste generated by him, on streets, open public spaces outside his premises or in the drain or water bodies.	This act will be applicable for the proposed project. Applicable provisions of this act are summarized in Annexure-I.	Municipal Corporation/body

			All waste generators shall pay such user fee for solid waste management, as specified in the bye-laws of the local bodies.		
Construction And Demolition Waste Management Rules	2016	The rules shall apply to every waste resulting from construction, re-modeling, repair and demolition of any civil structure of individual or organization or authority who generates construction and demolition waste such as building materials, debris, rubble.	Every waste generator shall prima-facie be responsible for collection, segregation of concrete, soil and others and storage of construction and demolition waste generated, as directed or notified by the concerned local authority in consonance with these rules. (b) The generator shall ensure that other waste (such as solid waste) does not get mixed with this waste and is stored and disposed separately.	This act will be applicable for the proposed project. Applicable provisions of this act are summarized in Annexure-I.	Municipal Corporation/body
Central Motor Vehicle Act Central Motor Vehicle Rules and (Amendment)	1988 1989	To check vehicular air and noise pollution.	Vehicles to be used for construction and other purposes need to meet the standards and certificates prescribed as per the Rules, 1989 to control noise, pollution, etc.	Yes. All vehicles used at project road should have of valid 'Pollution under Control' (PUC) Certificates issued as per Central Motor Vehicle Act	Motor Vehicle Department

Applicable Legislations and Permission Required: As per the Government of India procedure on externally added projects and its subprojects also must be prepared and implemented in full compliance with national legislation, regulation and standards governing protection and management of cultural and natural heritage of the country, social development and environmental management. Specific state and local level standards and regulations also apply based on the project location and nature of proposed interventions. Pertaining to current subproject, some of the key national legislations and regulations related to environment that may apply for this project are summarized in Table 3.1 while proposed activities require permission and authorization prior to implementation of project are summarized in Table 3.2.

Table 3.2: Proposed activities require permission prior to implementation of Project

Activity/Permission	Applicable Rules & Regulations	Responsibility	Technical Support	Granting Authority/Executing Authority
Permission for renovation/construction/ repair in Archeologically Protected area and its 300 m regulated zone.	Monuments and Archeological sites and Remains Act, 1958 & as amended Act 2010.	State Project Coordination Unit (SPCU) UP Pro-Poor Tourism Development Project/ Agra Development Authority (ADA	Supervision Consultant	Archaeological Survey of India.
Permission under Taj Trapezium Zone (TTZ) Requirements	TTZ Notification	SPCU / ADA	Supervision Consultant	TTZ Authority
Permission for Traffic Diversion for junction improvement	Traffic Rules & Guidelines	State Project Coordination SPCU / ADA	Supervision Consultant	Department of Transport, Agra

3.1 WORLD BANK SAFEGUARD POLICIES:

Safeguard policies are cornerstone of its support to sustainable growth, environment conservation, poverty reduction and shared prosperity. The core objective of these policies is to prevent and mitigate undue harm to people, their environment and cultural assets in the development process. Safeguard policies have often not only increased the effectiveness and development impact of projects and programs supported by the World Bank, but also provided a platform for the participation of stakeholders in project design, and thus have been an important instrument for building ownership among local populations, government agencies and partner organizations.

To achieve these ends, client (in this project- UP Tourism Dept.) are required to develop two overarching documents during a given project preparation. These include:

- An Environmental and Social Management Framework (ESMF), which establishes the overarching standards that the client is to meet throughout the life of the project.

- An Environmental and Social Impact Assessment (ESIA), which establishes the specific procedures, management and mitigation measures that the client is to meet for the implementation of each identified subproject and activity to be financed under a project supported by a World Bank loan or credit.

The ESIAs and ESMF provide a practical tool for the State Department of Tourism, its partners and associated implementing entities to identify measures to reduce, mitigate and/or offset potential adverse impacts while enhancing positive impacts during the project design and implementation. They also make provisions for the State Department of Tourism, its partners and associated implementing entities to estimate and budget the costs of such measures, as well as providing information on the agencies responsible for addressing such impacts during the project implementation. Finally, given the pro-poor tourism development nature of the project as well as the distinctive features of its target areas, the ESMF and ESIAs will pay specific attention to and provide the State Tourism Department, its partners and associated implementing entities with the principles and guidelines for culturally sensitive and ecologically sound subprojects in the project target areas.

Environmental and Social Management Framework:

This Environmental and Social Management Framework (ESMF) is a project-level document for the Uttar Pradesh Pro-Poor Tourism Development Project.

It is a technical day-to-day guide for the State Department of Tourism and its partners at government, private, civil society and expert levels to identify and address the potential environmental and social and cultural concerns or adverse impacts of the project from the preparation stage to its implementation and post-implementation operation and maintenance. It provides guidance on cultural properties, environmental and social management aspects for the adequate planning, design, execution and operation of the works and investments to be financed under the project, ultimately enhancing the expected positive impacts of the project.

The main objectives of the ESMF are to:

- Establish clear principles and outline all relevant legislation/regulations for the cultural, environmental and social planning, review, approval, implementation and monitoring of subprojects to be financed under the project
- Outline the procedures to be followed in order to comply with the principles, laws and regulations relevant to the project
- Specify appropriate roles and responsibilities, and outline the necessary reporting procedures, for managing and monitoring cultural, environmental and social concerns related to subprojects to be financed under the project
- Determine the training, capacity building and technical assistance needed to successfully implement the provisions of the ESMF
- Establish the project funding required to implement the ESMF requirements Provide practical information resources for implementing the ESMF

Out of the several World Bank safeguard policies which were discussed in the ESMF of UP Pro-poor tourism project, following policies as highlighted in Table 3.3 will be applicable for the

implementation of sub-project on Revitalization of Shahjahan Park Walk way between Taj Mahal and Agra Fort, Agra:

Table 3.3: Relevant World Bank Safeguard Policies

World Bank Safeguard Policies	Objective	Applicability	Safeguard Requirements
OP 4.01 Environmental Assessment	The objective of this policy is to ensure that Bank financed projects are environmentally sound and sustainable.	The environmental issues will be addressed adequately in advance. An integrated Environmental Screening and Environmental Assessment (EA) with Environmental Management Plan (EMP) will be developed to manage environmental risks and maximize environmental and social benefits wherever it is applicable	EIA and/or EMP required.
OP/BP 4.11 Physical Cultural Resources	This policy aims at assisting in the reservation of cultural property, historical, religious and unique natural value-this includes remains left by previous human inhabitants and unique environment features, as well as in the protection and enhancement of cultural properties encountered in WB financed project	This policy may be triggered by sub-projects where cultural property, historical, religious and unique natural value-this includes remains left by previous human inhabitants and unique environment features may be affected due to project.	Appropriate cultural properties management plan shall be prepared as part of the EA for the sub-project. Clearance from the Archaeological Department shall be obtained as per the regulations of GoI. .

3.2 SCREENING & CATEGORIZATION OF THE PROJECT

The project screening was carried out to understand the nature, scale and magnitude of environmental and social issues and impacts associated with the proposed project. The screening activity was conducted as per the standard guidelines and format defined in Environment and Social Management Framework (ESMF) of UP Pro Poor Tourism Development Project. Before doing the project screening, review of project components proposed under the DPR, site visit and stakeholder interaction were completed. The detail of screening is summarized below as Form 1:

Screening Form-1

Revitalization of Shahjahan Park and Improved Connectivity between Taj Mahal and Agra Fort

Uttar Pradesh Pro-Poor Tourism Development Project			
Screening Note no. 1			
Subproject Title: Revitalization of Shahjahan Park Walkway Between Taj Mahal And Agra Fort			
Subproject location (area/district/site): The subproject is located along the Yamuna Riverfront between the two World Heritage Sites- Taj Mahal and Red-fort in Agra city, U.P.			
Subproject scope of work: • Traffic Calming of Amar Singh, Jalkaari Baai, Purani Mandi Junctions • Natural Path to Agra Fort • Re Organisation of Circulation & Furniture on Pathway • Development of Pedestrian and Perimeter Pathways • Development of Natural Play, Lake, Forest and Meadows Loops • Signage, Lighting and Street Furniture			
Sub-project cost: Rs. 22.66 Cr			
Implementing Agency: Agra Development Authority			
Date of screening: 7 November 2016			
Responsible agency:			
S/No.	**Screening Criteria**	**Assessment of category**	**Explanation**
ENVIRONMENT			
1	Is the subproject in an eco-sensitive area or adjoining an eco-sensitive area or monument? (Yes/No) If Yes, which is the area? Elaborate impact accordingly.	Yes	Sub project is located at Taj Trapezium Zone (TTZ) which is a trapezoid shaped, defined area of 10,400 Sq.Km around the Taj Mahal. It is a buffer zone designed to protect this historic monument from pollution. Within the TTZ, there are over 40 protected monuments including three World Heritage Sites — the Taj Mahal, Agra Fort and Fatehpur Sikri. Present Project site is part of TTZ & comes within 300 meter Regulated Zone of Taj Mahal and Red fort but proposed project is for improving the connectivity between Taj and Agra Fort and to revitalize Shahjahan park which will work a green connecter between these

			two monuments. Thus, considering the nature of the project and proposed interventions, it is expected that it will have very limited impact on environment and no adverse impact on Taj Mahal and Agra Fort.
2	Will the subproject create significant/limited/no environmental impacts during the construction stage? • Clearance of vegetation/ tree-cover/other	Limited impact Limited	Only small hedges, shrubs will be cleared to make way for pathways
	• Direct discharge of construction run-off, improper storage and disposal of excavation spoils, wastes and other construction materials adversely affecting water quality and flow regimes	Limited	At the time of construction activities, there is limited possibility of temporary flushing away of un-managed spoils and construction wastes during rainfall via storm water drains because project activities are limited to park and adjacent area.
	• Flooding of adjacent areas	No	As there is no disturbance in drainage pattern by the project activities
	• Improper storage and handling of substances leading to contamination of soil and water	Limited	Temporary storage of construction and masonry materials will not create severe impacts on soil and water. However, in rainfall events materials such as cement, oil, fluids and greases, if not appropriately managed or in the event of an accident, there may be potential for temporary contamination of soil and water.
	• Elevated noise and dust emission	Limited	Construction is likely to increase dust and noise levels temporarily.
	• Disruption to traffic and visitor's	Limited	At the time of construction

	movements.		activity and supply of raw materials to the construction site may leads to slow down the traffic movement. Another component added in the proposed project which is calming down the traffic at some small junctions may also leads to slow down the traffic movement
	• Damage to existing infrastructure, public utilities, amenities	No	No damage expected
	• Failure to restore temporary construction sites	Limited	Construction activities proposed under project are confined in defined and limited area. However, SPCU will ensure that contractor will restore temporary construction sites.
	• Possible conflicts with and/or disruption to local community and/or visitors	Limited	Some inconvenience to the visitors is expected at the time of construction activities. However, it will be temporary and will be managed through giving proper access, putting signage and demarcation and zoning of construction activities.
	• Health risks due to unhygienic conditions at workers' camps	Limited	There might be small camps within the project area if hygienic conditions are not maintained, there may be temporary impacts on health of workers.
	• Safety hazards during construction	Limited	If not appropriately managed, there may be potential for temporary hazards such as injuries and damage to property during the construction phase

	• Other, specify.	-	-
3	Will the subproject create significant/limited/no environmental impacts during the operational stage? (Significant / limited / no impacts) • Flooding of adjacent areas • Impacts to water quality due to effluent discharge • Gas emissions • Safety hazards • Other, specify- Impact on ground water table	Limited No No No No Yes	Only the water requirement will be slightly increased due to additional plantation, which might increase the water demand.
4	Does the subproject involve any prior clearance from the MOEF or State Forest Department for either the conversion of forest land or for tree-cutting? (Yes/ No). If yes, which?	No	No such permission is required.
CULTURAL HERITAGE			
5	Will the subproject create significant/limited/no cultural properties impacts? • Involve significant excavations, demolition, movement of earth, flooding or other major environmental damages. • Is located within or in the vicinity of a recognized cultural property conservation area or heritage site. • Is designed to support the management or conservation of a cultural property. Other, specify.	Limited No Yes Yes	The construction of green walk way falls within the Regulated Zone of the Red fort.
6	Does the subproject involve any prior clearance from the MoC or State Archeology Department for either the conservation or management of heritage sites or vicinities? (Yes/ No). If yes, which?	Yes	Grant of permission/ NOC will be required from National monuments authority/ASI for construction of green walk. Application and project details have already been submitted to concerned agency for NOC and grant of permission.
SOCIAL			

7	Will the subproject create significant/limited/no social impacts? • Involuntary land taking resulting in loss of income; livelihood; sources of livelihood; loss of access to common property resources and / or private residential and/or commercial property. • Land acquisition resulting in relocation of households. • Any loss / reduction of access to traditional dependent communities (to areas where they earn for their primary or substantial livelihood). • Adverse impacts to women, including economic and safety concerns. • Other, specify.	No Impact No No No No	There will not be any significant adverse impact on social component of environment. However, it will create more avenues for livelihood due to increase in tourism growth and get aesthetically better surrounding.
Overall Assessment			
□	Subproject is declined		NA
□	Subproject is accepted		Yes
□	Subproject is classified as environmental Category A and requires an in-depth Environmental and Social Impact Assessment and an Environmental Management Plan.		NA
□	Subproject is classified as environmental Category B and requires an Environmental Management Plan.		Yes, project classified as **B Category** and an Environment management Plan need to be prepared.
□	Subproject is classified as environmental Category C and does not require an Environmental Management Plan.		NA

Outcome of Screening & Project Categorization:

Project screening was carried out as per the screening form which is described in Environment and Social Management Framework of UP pro-poor tourism development project. As results of screening, it can be clearly stated that **Revitalization of Shahjahan Park and Walk way between Taj Mahal and Agra Fort, Agra** will be classified as **Category B Sub-**Project as it would have only limited adverse impacts on environmental components. As per World Bank safeguard policies , Category B project needs to prepare Environment Management Plan to minimize and mitigate the adverse impacts on environment.

Chapter-4
Baseline Environmental Information

4.0 BACKGROUND

The baseline environmental data have been collected to determine the existing status of various environmental attributes viz., climate and atmospheric conditions, air, water, noise, soil, hydro geological, ecological and socio-economic environment, prior to setting up of the proposed sub project. This study would help to undertake corrective mitigation measures for protection of the environment because any change deviation of attributes due to activities of the proposed project. The baseline data of environmental includes inventorization of physical, chemical, and biological parameters.

This section deals with the description of existing environmental setting in the study area.

A. Project Area
B. Influenced Area

4.1 PROJECT AREA SETTING

Shahjahan Park is geographically located at 27⁰10'26"N and 78⁰01'34"E, at Agra City which is situated on the banks of the river Yamuna in the northern state of Uttar Pradesh, India. Salient features of Shahjahan Park and existing site conditions are depicted in Table 4.1 and Figure 4.0

Table-4.1 Shahjahan Park Area & Zones

1	Geo-graphical Location	27⁰10'26"N and 78⁰01'34"E
2	Total Area of Shahjanhan Park	95.93 Acres
3	Park Zones & their Area	• MotiLal Nehru Park: 17 Acres • Central Nursery: 33.42 Acres • Tank 4: 29.12 Acres • GulabBadi: 4.36 Acres • Jangi Khan & other: 12.03 Acres

Physical Settings & Land Use around the project site included in the sub project

4.1.1 LAND USES AT SHAHJAHAN PARK: Land use mapping has been done to identify existing land uses at project site. Being a park the land use is largely based on the ground coverage with type of vegetation. Larger area (33%) is covered with wilderness which considered that area where plants and trees are left to grow naturally or untidily. About 16% area is covered by woody grasslands while 9% of the park area is classified as lawn area. Details of land use classes and map are depicted in Figure 4.01.

Figure 4.0: Existing site conditions at the park

Figure 4.01: Existing Land Use Map of Shahjahan Park

4.1.2 FLORA OF SHAH JAHAN PARK:

The park zones have many varieties of common, ornamental and medicinal plants. In between year 2009 to 2015, State Horticulture Department of Uttar Pradesh completed census of available trees and plants at various zones of Shahjahan park. Based on that census, zone wise flora details at Shahjahan Park are summarized below in the Table 4.2:

Table 4.2: Zone wise Flora details at Shahjahan Park

ZONE NAME AND AREA	DESCRIPTION WITH EXISTING CONDITION	EXISTING PLANTATION-TREES/SHRUBS/HEDGE/GROUND COVER
Moti Lal Nehru Park Area (17 Acre)	The zone is located at the entrance of park from the Red Fort Side. The zone has wide circular pathways with a central statue and fountain, a covered nursery, and two secondary lawns with trees. The vegetation is scattered of large tree with hedges along the pathways and ground cover in central park in grass. There are few benches few benches along the pathway. This is one of the most maintained areas of the park and most used by the visitors. This zone also includes as covered nursery at one corner, which has plants, which are, used the garden itself. This zone has 2 natural drains which cuts across the park, which carry city waste water are camouflaged with dense over grown plantation	Total Nos. of trees/plants is 250 and has 22 varieties of plants (As per 2012-13 data). Maximum plantation in this zone includes- Sheeshum (Dalperpiasissow), Piltoforum (Pelloforumferrugenium), Eucalyptus (Eucalyptus Robusta), Mahajani, Molghi (Sweetaniamahagani), Date Palm (Phoenix ductylifera), Desi Asoka (Polyathialongofolia) and Molshree (Mimusopselengic). The ground is largely covered with grass and has hedge of putranjeeva along pathways.
Central Nursery Area (33.42 acre)	This zone is between Moti Lal Nehru and Tank 4 and has a pathway running centrally connecting the two with a large flat ground-Saiyad Teela. The zone is a comprising of Central Nursery, Saiyad Teela, Sheesh Mahal Teela and the Old *GulabBadi*. This zone has sparse plantation and is largely unkempt. It has remains of old historic colonial garden features- green house, cactus house etc.	Total Nos. of common and ornamental trees/plants are 194 and 75 different varieties of plants. (As per 2013-14 data). 68 Rose beds are also being prepared of 15 ft. x 15 ft. Major Plantation are done for Neem (Azadirachtarude), Sheeshum (Dalberiasissoo), Eucalyptus (Eucalyptus Robusta), Babool (Acacia Arabica), Bottle brush (Calestomonlanciolalus), Semal (ciebapentendra), AsokaDesi (Polyalthianlongifolia).
Gulab Badi Area (4.36 Acre)	The zone is located at the entrance from the Purani Mandi side and is among the smallest zones in the park. It includes the children's park and the Plantation trees at the northern end of the zone. The area is well maintained and used by visitors.	Total No. of common, and ornamental trees/plants is 215 and has 25 varieties. (As per 2012-13 data)
Tank 4- Area (29.12 Acre)	This is the zone located at the entrance of the park from the Purani Mandi and has 4 large natural catchment areas, which	Total Nos. of common and ornamental trees/plants are 420 and 35 variety of plants (As per 2012- 13 data). Major

	were historically fed by the canal and supported in irrigation. One of the depressions made into a boating spot, other has some water filled with algae and some plantation; one is wildly grown with trees and other has with planted with tress/shrubs and ground cover. This also house the office of the state horticulture department	Plantation- Ashoka (Polyalthialongifolia), Neem (Azadirachtarude), Sheeshum (Dalperpiasissow), Chandan, Papadi (Halopteliaintegrefolia), Eucalyptus (Eucalyptus Robusta), Jamun (Syzygiumcumini), Malethi (Melethiaovalifolia), Jungle Jalebi (Pethaculabiumdulce), Kanji, Kesia (cassia Siamia).
Jangi Khan Area	This is the zone located to the east side of the approach road to Taj West Gate. It a not maintained large green with some heritage structures.	Total Nos. of common, ornamental trees/plants are approximately in between 175-200 and 66 varieties of plants. (As per 2009-10 data).

(Source: State Horticulture Department, U.P. Data, census done 2009-2015)

Above trees numbers given in table, are for large size plants which were counted by Horticulture Dept., Govt. of UP. Apart from this, there are large no. of herbs, shrubs and grasses are also existing at the park which makes park more greener and lively.

4.1.3 VENDORS AND VISITORS PROFILE NEAR SHAHJAHAN PARK AREA:

The Shahjahan park and associated area under intervention proposed under the subproject have the two main public stakeholders- the vendors and the visitors. The profile of both such groups is presented in the sections below.

Vendor Profile

There are about 35 vendors around the sub-project site, mapped from Agra Fort to Taj Mahal, though the vendor's dependent largely on Shah Jahan Park are just 2 in number. There are 3 typologies of vendors based on the commodity they are selling – a) snack and beverages catering to the tourist; b) small low cost souvenirs and c) other services for commuters/residents. These are mostly along the small footpath around Shah Jahan Park; with high concentration around Taj West Gate Parking. The vendors depending on Shah Jahan Park Visitors include- Beverages and Juice at Shah Jahan Park Parking and a kulfi vendor inside the park.

Visitor Profile

Visitor Profiling was undertaken at Shah Jahan Garden to assess the footfall in the park, type of visitors- Residents or tourist; age group of people, and time of visitation. The survey was done on a holiday in the month of June; doing a head count of visitors entering Shah Jahan Garden from different gates in the morning and evening.

Key assessment of the Visitor Profiling:

- Total visitors to the park on a Holiday- 7797 which was counted on Sunday during primary monitoring, this number is more than Average per Day visitors to Red fort (6095 No. as per 2014) and about 46% to that visiting Taj Mahal in the same year (16636 No.).
- Highest footfall early morning till 9.30 am. These are people about living in 2.5 km radius around the park. During most part of the day, the visitors are quite less.
- Maximum visitors come from Red Fort Side entrance due to the availability of Parking spaces followed by Purani Mandi; indicating enhancement of these entrance with information about the Garden at these locations.
- 26 % (2031 No.) are tourists who visit the Park, largely during the day from 10.00 am till evening.
- As park attracts visitors of all age group, therefore, development of park and identification of different mode of transport has been proposed considering different age group of visitors.

Glimpse of vendors located around park area

4.2 BASELINE STATUS OF PROJECT & INFLUENCE AREA (Agra City)

Agra city is of historic importance and was the capital seat of Mughals in ancient times. The primary heritage of the city is linked with the Mughal dynasty but other rulers also contributed in its development. Agra was founded by Sikandar Lodi in the 16th century. Emperor Babur was the one who introduced the concept of square Persian-styled gardens in India; Emperor Akbar built the Agra Fort while Emperor Jehangir developed some of the beautiful gardens and palaces.

The city is in proud possession of "Taj Mahal" considered widely as one of the Seven Wonders of the World, and which has been declared as a World Heritage Site. The post- Mughal era of Agra saw the rule of Jats, Marathas and finally the British taking over the city. In addition to its historic importance, Agra is a center of political, economic, commercial and cultural activities in the state of UP.

4.2.1 GEOGRAPHICAL LOCATION:

Agra city is situated on the Western Bank of river Yamuna on National Highway (N.H- 2) at about 200 Kms from Delhi in the state of Uttar Pradesh. Agra is geographically located at 27°12' North latitudes and 78°12' East longitudes. It has an extremely strategic location on the confluence of three distinct geo-physical regions namely the plain of Uttar Pradesh, the plateau of Madhya Pradesh and the desert of Rajasthan. The city also falls in the center of the four-culture areas- Braj, Bundelkhand, Rajputana and western U.P.

4.2.2 GEOLOGY AND SOIL:

The soil of Agra is loose, sandy and calcareous. The river Yamuna is the only river flowing through the metropolitan city of Agra. The river enters the city on its northern boundary and takes U-shape while crossing through the heart of the city. The area is characterized by alluvium, which is an admixture of gravel, sand, silt and clay in various proportions, deposited during the Quaternary period. The study area is a part of Indo-Gangetic alluvium of quaternary age and is made up of recent unconsolidated fluviatile formations comprising sand, silt, clay and grit (kankar) with occasional beds of gravel. There are some underground rocks of quartzite and sand stone of Vindhyan-series, in the west and south west of Agra. The topsoil is coarse and angular sand with small clay fraction. The sub-soil is sandy throughout. The stabilized topsoil is reddish brown with sand and clay mixed. Minimum depth of topsoil layer is 60 cm. Sand and silts are slightly alkaline to saline in nature. The topography of the area is flat. Saline soils are generally brown. Alkaline soils are grey and get sticky on wetting and hard on drying, acquiring a clotted structure.

4.2.3 DRAINAGE:

River Yamuna forms the major drainage of the city and it flows from North to South-East of the city. There are about 13 unlined and 6 lined drains flowing across the city area. These drains were formerly natural water drainage. Now they serve as sewage disposal drains out falling into river Yamuna.

4.2.4 CLIMATIC CONDITIONS:

The study area is a characterized by semi-arid area bounded by Thar Desert on its southwest, west and northwest peripheries. The maximum temperature is attained upto 47°C in summer months (May to June) and minimum temperature as low as 3°C in winter. The average rainfall in the region is 685 mm. The city experiences extreme hot summers and extreme cold winter. The climate of the city experiences a typical extreme climate as of the plains of Uttar Pradesh. All seasonal climatic changes e.g. temperature; rainfall, wind-pattern etc. are observed throughout the year, particularly high temperature during the summer, cold weather during winters and sufficient rains in the monsoon. Apart from above climate data, detailed climatic condition of Agra City has been presented in the form of some figures that produced from a weather model **Meteoblue** which has complied global historical weather data from 1985 onwards and generated a continuous 30-year global history with hourly weather data.

In Figure 4.1 "mean daily maximum" (solid red line) shows the maximum temperature of an average day for every month for Agra. Likewise, "mean daily minimum" (solid blue line) shows the average minimum temperature. Hot days and cold nights (dashed red and blue lines) show the average of the hottest day and coldest night of each month of the last 30 years.

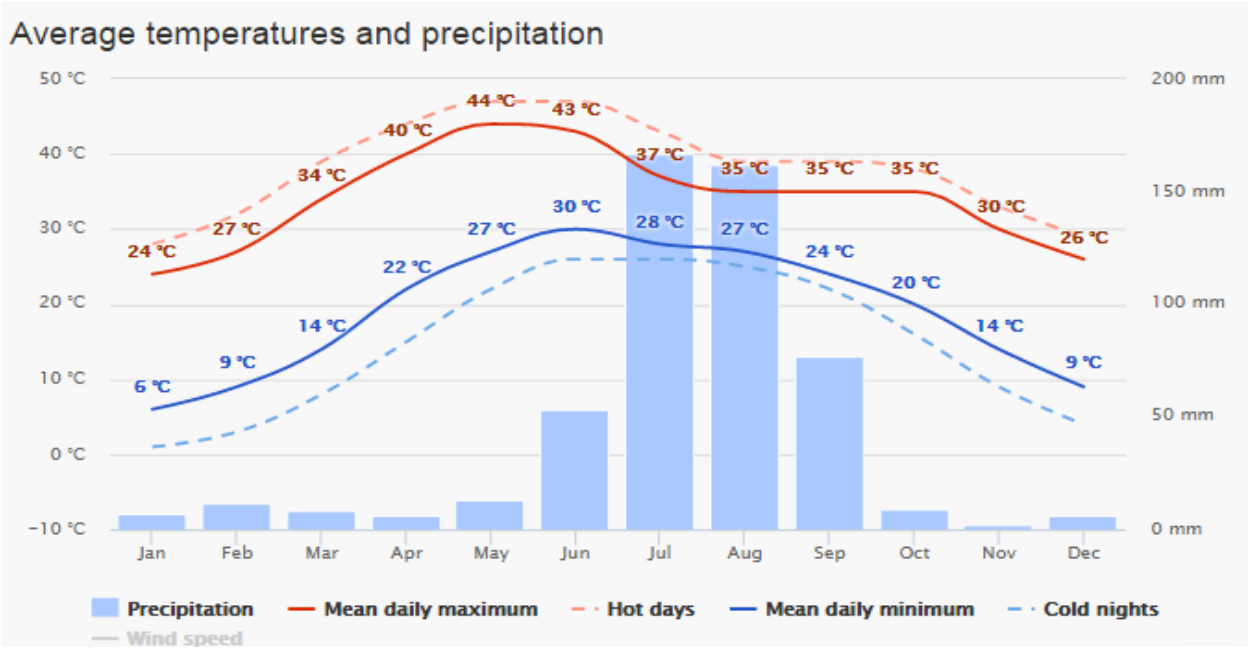


Figure 4.3: Variation in Average Temperature & Precipitation of Agra

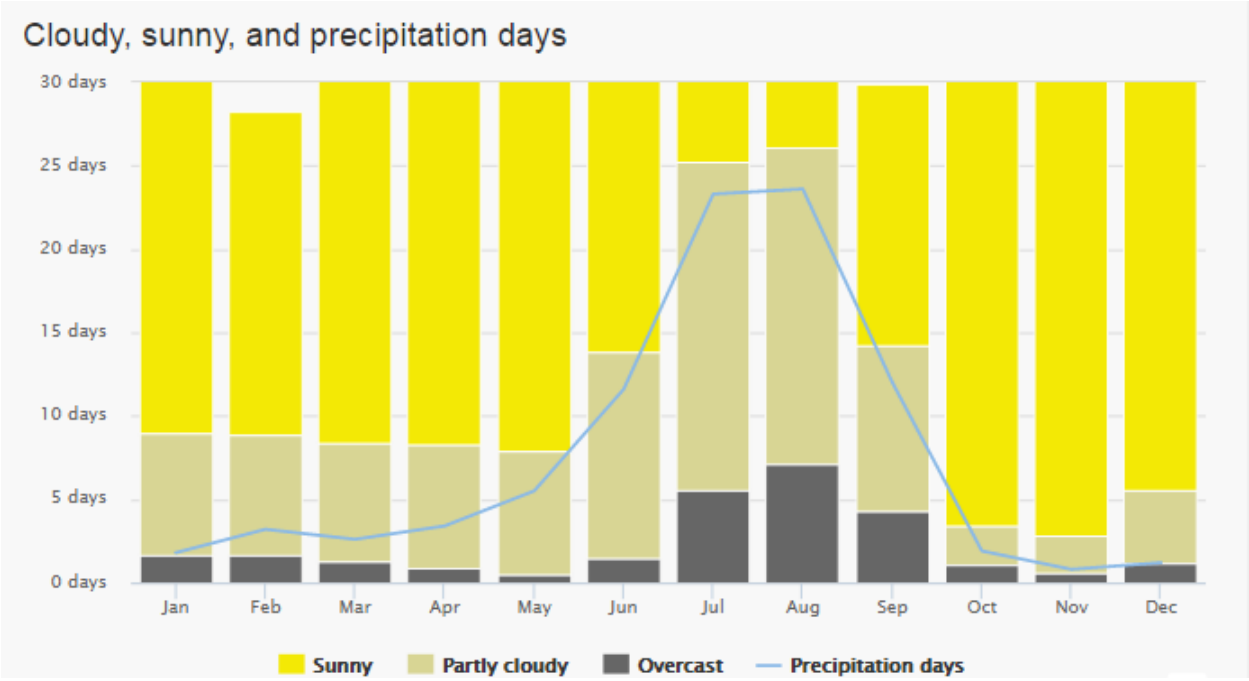


Figure 4.2: Variation in Average Cloudy Sunny and Precipitation Days of Agra

Figure 4.2 shows the monthly number of sunny, partly cloudy, overcast and precipitation days. Days with less than 20% cloud cover are considered as sunny, with 20-80% cloud cover as partly cloudy and with more than 80% as overcast.

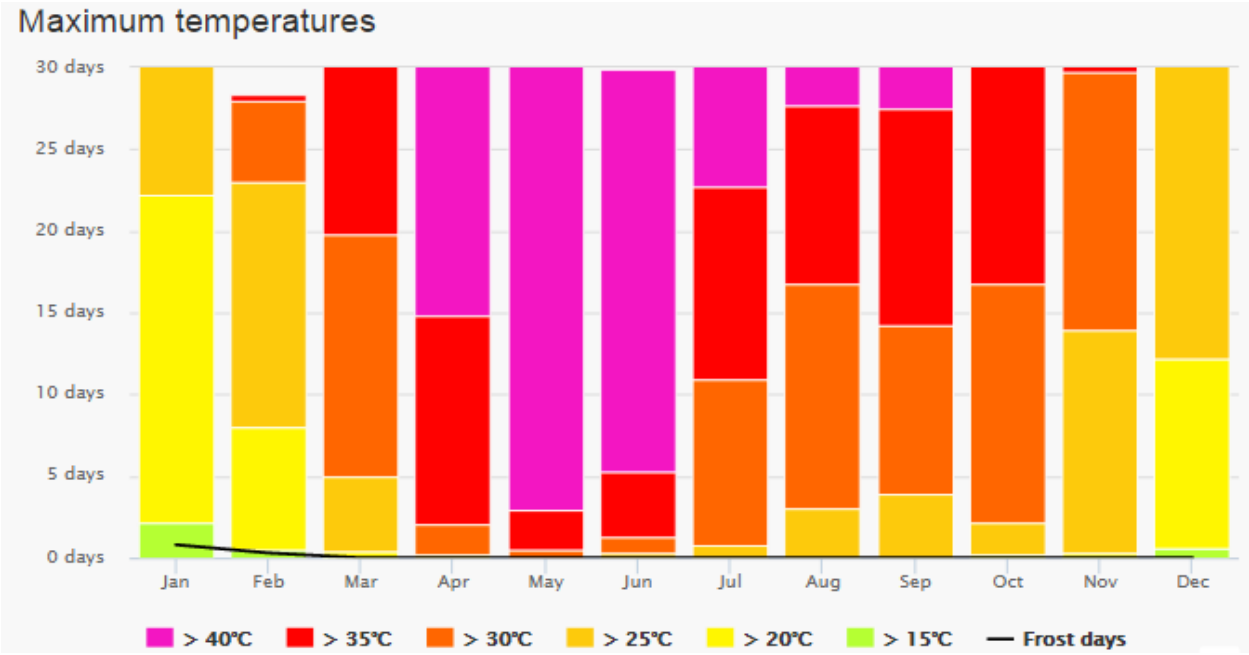


Figure 4.3: Variation in Maximum Temperature of Agra

Figure 4.3 shows; the maximum temperature diagram for Agra displays how many days per month reach certain temperatures while Figure 4.4 shows the variation in precipitation amount in Agra City.

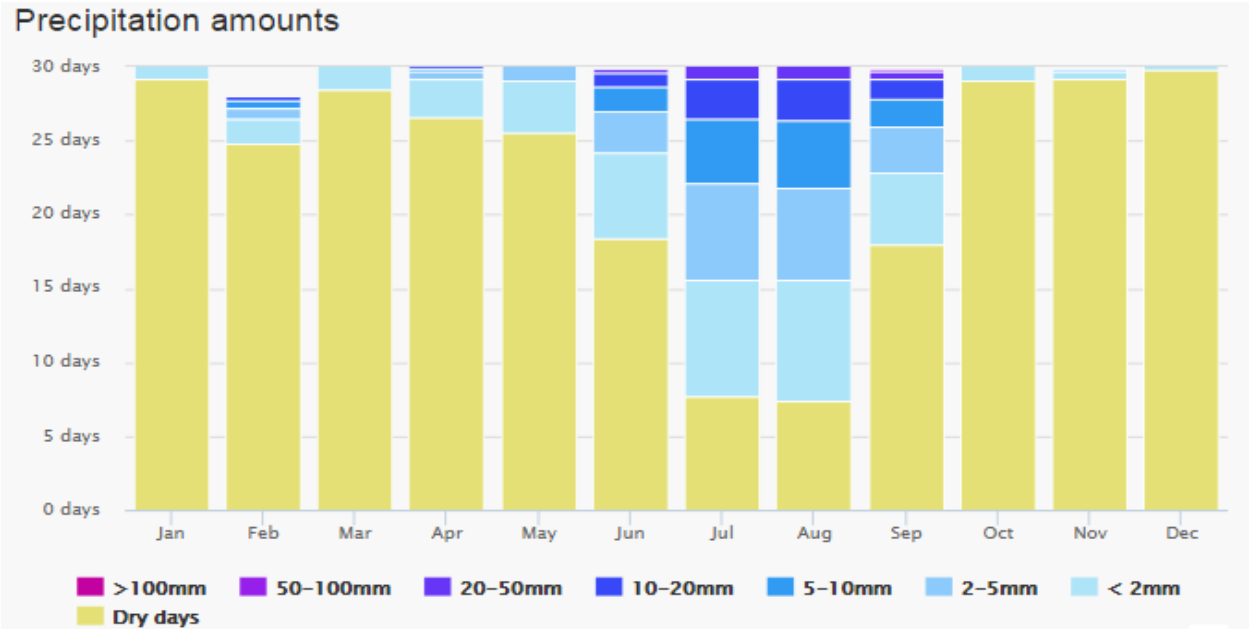


Figure 4.4: Variation in Precipitation Amount of Agra

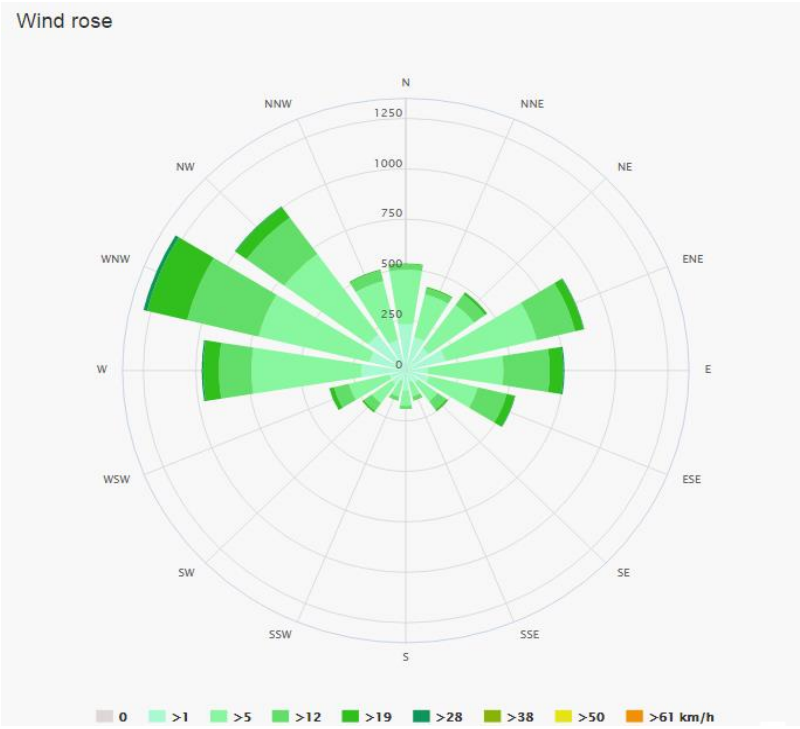


Figure 4.5: Wind Rose Diagram of Agra City

A "wind rose" diagram is the most common way of displaying wind data, and can be measured in a "speed distribution" or a "frequency distribution. Figure 4.5 represent the wind rose diagram of Agra city that indicates wind blows from NW and NE direction of Agra City.

4.2.5 DEMOGRAPHY:

According to the 2011 India census, Agra city has a population of 1,585,704, while the population of Agra cantonment is 53,053. The urban agglomeration of Agra has a population of 1,760,285. Males constitute 53% of the population and females 47%. Agra city has an average literacy rate of 73.11%, lower than the national average of 74%. Literacy rate of males is considerably higher than that of women. The sex ratio in the city was 875 females per thousand males while child sex ratio stood at 857. Agra district literacy rate is 62.56%.

4.2.6 WATER ENVIRONMENT

Groundwater:

The groundwater in unconfined conditions rests at 1 m below ground level to a maximum of 29.4 m below ground level. In general, deeper water level remains within 19.20 m below ground level. Groundwater in boreholes occurs at depths of 4.57 to 27.60 m below ground level.

In pre-monsoon, the water level ranges from 4.89 to 12.3 m below ground level. While in the post-monsoon depth of water level varied between 2.24 m to 17.82 m below ground levels. Most of the wells in Agra have saline water except immediately after the monsoons. According to the Agra Jal Sansthan, 4298 hand pumps are in operation in the town. As per the studies carried out by the University of Roorkee under the Agra Heritage Project, the Agra Heritage area has large groundwater potential. (Source: CGWB , CPCB,2007)

Ground Water Quality Issue:

High concentration of nitrate, fluoride, total hardness, chloride, TDS, calcium, Sulphate, potassium, magnesium, conductivity and Coliform organisms, whereas concentration of micro-pollutants such as toxic (heavy) metals Fe, Mn, and Cu were exceeding the permissible limit for drinking water during pre-and post-monsoon seasons and also pesticides such as α-BHC, Endosulphan and Methoxychlor were detected in some of the observation of Central Pollution Control Board

4.2.7 AIR QUALITY:

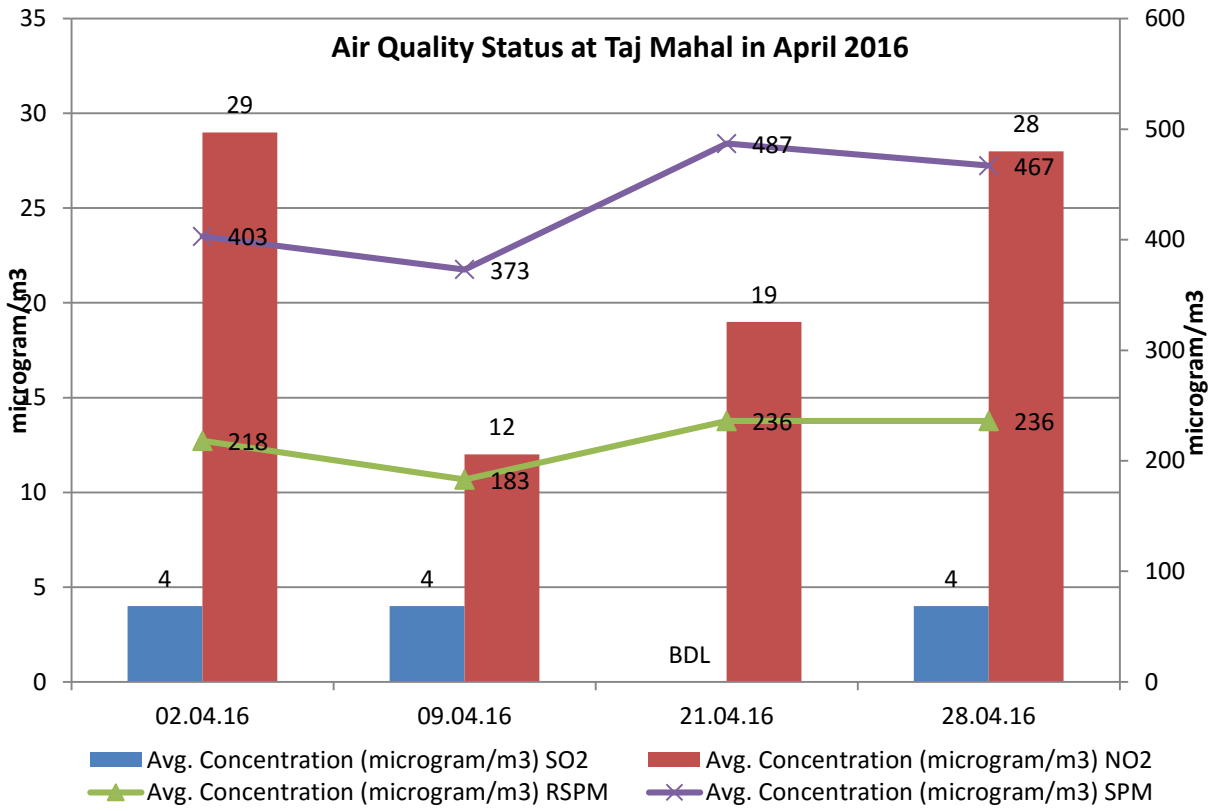
Air quality data monitored by CPCB, Agra Office from 2002 to 2015 indicate that annual average concentration levels of different pollutants at Taj Mahal Site which is nearest to our project location are in the range as, SO2: 4-9 μg/m3, NO2: 15-23 μg/m3, PM: 133-178 μg/m3 and SPM: 276-376 μg/m^3. SO2 and NO2 levels are below the applicable annual average CPCB Standard value of 20 μg/m^3 and 30 μg/m3 for the sensitive area category. However, PM and SPM concentration are always found beyond the standard limits. Station wise annual Average Air Quality Data of 4 Locations at Agra (Year 2002-2015) are summarized in Table 4.3.

Table 4.3: Station wise annual Average Air Quality Data of 4 Locations at Agra (Year 2002-2015)
(Source: CPCB 2015)

Station wise annual average AAQM Data of pollutants at 04 CPCB Monitoring Stations in AGRA								
Monitoring Stations→	Tajmahal				Etmad-ud-daulah			
Parameters→ Years↓	SO_2	NO_2	PM10	SPM	SO_2	NO_2	PM10	SPM
2002	5	22	147	376	5	25	174	483
2003	4	22	145	352	5	27	192	457
2004	5	18	133	309	6	26	179	519
2005	9	22	147	306	10	25	186	417
2006	6	22	133	316	7	24	214	401
2007	6	23	167	296	5	27	203	377
2008	7	22	167	304	7	29	213	381
2009	6	20	157	334	5	25	186	428
2010	5	20	167	333	4	23	183	419
2011	4	20	149	290	4	24	166	413
2012	5	18	178	332	4	22	183	422
2013	4	17	153	275	4	23	174	352
2014	4	15	152	277	4	21	190	340
2015	4	16	166	298	4	25	186	348
Monitoring Stations→	Rambagh				Nunhai			
Parameters→ Years↓	SO_2	NO_2	PM10	SPM	SO_2	NO_2	PM10	SPM
2002	5	27	175	467	5	33	234	675
2003	4	22	184	468	4	34	267	614
2004	6	23	198	541	6	34	279	675
2005	8	25	185	390	11	34	268	607
2006	7	25	278	431	7	34	306	637
2007	5	25	203	439	5	37	274	584
2008	5	25	173	407	6	38	216	514
2009	5	25	160	427	5	36	255	662
2010	4	25	157	398	5	34	246	530
2011	4	25	160	374	5	34	205	501
2012	4	25	180	416	5	34	238	554
2013	4	25	181	338	5	35	227	472
2014	5	24	175	341	5	33	212	441
2015	4	26	167	339	4	34	212	434

Air Quality Status at Taj Mahal in April 2016

Air Quality Status at Taj Mahal Site monitored by Central Pollution Control Board in April 2016 indicates that RSPM and SPM concentration varied in between 183-236 µg/m³ and 373-487 µg/m³ respectively which were recorded higher to the National Ambient Air Quality standards for sensitive area. Shahjanha Park is situated South West direction from Taj Mahal and wind rose data indicates that mostly, wind blows from North West and North East direction hence dispersion of Air Pollutants if any (generated during construction and operational phase) will not be in the direction of Taj Mahal located at North East direction of the city.



(Source: CPCB 2016)

Figure 4.6: Air Quality Status at Taj Mahal in April 2016

Chapter-5
Stakeholder Consultation

5.0 STAKEHOLDER CONSULTATION

Consultation is a process in the project cycle in which an attempt is made to involve the public as stakeholders in project preparation through consultations and focus group discussion meetings. Stakeholders' participation and consultation have been viewed as a continual course of action, which promote public understanding and help eradicate hurdles in the way of the project. Consultation during project preparation is an integral part of the environmental and social assessment process that not only minimizes the risks but also removes the gap between the community and the project formulators, which leads to timely completion of the project and making it people friendly.

Public consultations and community participation was an integral part of this project preparation. Consultation sessions were carried out with different stakeholder groups at the local, regional and district levels, so as to incorporate their concerns and needs

To ensure the effectiveness of the consultations and the full participation of all stakeholders in the project, all relevant information was shared with stakeholders in a timely manner prior to the consultation and in a form and language that could be understood and accessed by all groups.

Consultations with these groups were carried out on two occasions:

a. Shortly after environmental and social screening; and
b. Once after draft ESMP was prepared. Such groups were also consulted throughout project implementation as necessary to address ESMP related issues relevant to them, allowing relevant stakeholders the opportunity to share their concerns during both the implementation phases of the project.

5.1 OBJECTIVE OF PUBLIC CONSULTATIONS

Keeping in mind the objective of minimizing adverse impact and the need of the stakeholders' participation for the smooth implementation of the project, consultation with the members of different sections of society and local communities of the project area were carried out. The consultation with people is to be made with the aim of building awareness among them.

The type of consultations undertaken are individual interviews, field level observations, community consultations and meetings. The main objective of undertaking these consultations are as stated under:

- Dissemination of information to build awareness among stakeholders and inform them about the objective of the project.
- To inform stakeholders about the adverse and positive impacts of the project
- To inform stakeholders about the design aspects
- Discuss about the training requirements to enhance their skills & livelihood options

The primary and secondary stakeholders included (i) community having their shops & residence in the project area, (ii) Street vendors, (iii) visitors, and (iv) project officials. These

consultations provided inputs on environmental and social issues and in identification of the needs of the communities.

In deciding the target groups for consultation, all section of stakeholder's viz. govt. officials, vendors, park users, private tourist agents, parking contractor etc. were considered for consultation. These consultations provided inputs on social issues and in identification of the felt needs of the communities. The consultations included stakeholders from government institutions, private sector, park users and the vendors in the Shahjahan Park.

Consultations were conducted with two major objectives:

a. Identifying specific issues in the project, and
b. Securing participation of people in project activities.

5.2 TOOLS APPLIED FOR PUBLIC CONSULTATION & ITS OUTCOMES

Different tools were employed in such interviews and discussions ranged from informal and undirected to formal and directed. Focus Group Discussions, Interviews and Public Consultations were the three tools largely used; the latter being the most important of them. The entire process of public consultation was completed through a series of actions starting from giving out a public information notice in the newspapers and culminating in acquiring feedback from the participants.

Focus Group Discussion

Public consultation is a continual process. In order to document the issues raised by the people potentially affected, Focus Group Discussions were conducted with the identified groups. This gave an opportunity for some of the affected people to express their views about the proposed project.

Interviews

A series of questionnaire-based interviews were also conducted to elicit public response to some specific questions regarding the perception of the public about the project as well as their willingness for partnership in the implementation of the same. Simultaneously with the filling of the interview schedules, people were engaged in informal, unstructured discussion about the general objective and design of the project.

At every consultation meeting, women were encouraged to participate and their views and opinions were heard. The Table 5.1 below presents the discussions during the consultations with all stakeholder groups:

Table 5.1: Summary of Stakeholder consultations

Sr. No.	Stakeholder / Organizations	Key Discussion Points	Interventions in ESMP / Intervention To Address The Issues Raised
GOVERNMENT INSTITUTIONS			
1	Tourism Police Agra- Mr. Sushant Gaur	• Showed and shared the issue of parking and traffic at Taj Mahal west gate, Red fort and	The connectivity between the Taj Mahal and Agra fort has been addressed in the DPR by

		things around Shahjahan Park. • Revitalization of Shahjahan Park and the Walk way should include developing a multi-level parking avoid traffic congestion, Underpass to connect Shahjahan park with Red fort, Walkway inside the Red fort along the wall to avoid issues of snatching and harassment of the visitors, Tourist Police booth, allocated spaces for mayuri/Tonga etc. plying on the route.	provision of walkway. The proposed intervention also proposes pathways connecting the two monuments- Taj Mahal and Agra fort through the Shahjahan Park. Provision of street furniture and junction redesign has also been considered in the proposed intervention.
2	Traffic Police – AGRA- Mr. Abhishek Singh- SP Traffic	• Discussed the existing traffic Management system of the city. • The things around Shahjahan Park are not much problematic from the traffic point of view. • In accidents, most pedestrian die being hit by vehicles- so connectivity between Agra fort and Shahjahan Park should be well thought. • The battery-operated rickshaws number is growing at a fast pace and have no system of registration. • The city should have CCTV Surveillance system being such an important tourist destination	The proposed intervention includes pathways connecting the two monuments- Taj Mahal and Agra fort through the Shahjahan Park. Provision of street furniture and junction redesign has also been considered in the proposed intervention.
PRIVATE SECTOR			
3	Tourism Guild- Secretary and	• His tourist walk from	The proposed

	Sanskriti Tours Owner- Rajeev Saxena	the Purani Mandi to Taj Mahal and feel that Shahjahan Park provides an amazing opportunity and connectivity for tourist through the park. • Nature Guide should be trained and available for Shahjahan Walk. • A skywalk should be created at the crossing junction for connecting Shahjahan Park with Red Fort as none of the tourist would be interested to walk if they need to cross a traffic junction like this.	intervention includes pathways connecting the two monuments- Taj Mahal and Agra fort through the Shahjahan Park. Provision of street furniture and junction redesign has also been considered in the proposed intervention.
4	Parking Contractors- Red fort, Taj Mahal West Gate and Shahjahan Park	• Details about each of the Parking- Area, capacity, fee etc. • All feel that the capacity is very less and creates problem in peak season and holidays. • A lot of people also park the vehicles on road to safe the parking charge, so strict enforcement should be there.	Provision of street furniture and junction redesign has also been considered in the proposed intervention.
	PARK USERS		
5	Park Users- Local Residents 	• They were residents of Taj Ganj, Puranimandi and have a business of dairy and milk shop. • They come to the park every day for the fresh air and walk for about 3km. • The garden does not have good management system and do not have security guard. • Safe only till evening.	The redevlopment of park includes development of excercising areas, children play areas, yoga areas etc. The intervention also includes provision of boundary wall and security in the park.

		• Additional components which can be added to the park- fountains, zoo, swings etc. specially for children; shaded spaces- gazebos, huts in sun and rain; • They are willing to pay a minimal entry fee for the park and are ready for Green card system of entry.	
6	Park Users- Women 	• They live in TajGanja and come to the garden every day in the morning and evening for walk. They take 5-6 rounds of the garden and in the morning come as early as 5.45am especially in this season. They feel the park is safe for women and girls to come in the morning and evenings • The garden lack- drinking water facility, toilets, lighting in evening, Security guard. • Additional components to improve the park- Children's park should be developed. • They are willing to pay Rs. 120 monthly if they get a pass and the facilities are provided.	Basic amenities and provision of refreshment areas is included in the proposed intervention of Shahjahan Park redevelopment. The redevlopment of park includes development of excercising areas, children play areas, yoga areas etc. The intervention also includes provision of boundary wall, ligting and security in the park.
7	Park User- Family 	• They live near TDI mall and come to the park in 15-20 days as it provides an open space for children to play and fresh air. The feel that the garden is safe for families to come	Basic amenities and provision of refreshment areas is included in the proposed intervention of Shahjahan Park redevelopment.

		anytime. • The park lacks benches/seating areas, swings for children, toilet and drinking facility. • The park can be developed and used even at night with good lighting and organization of cultural events. • They are ready to pay an entry fee for the park.	
8	Group of youth using the park (different age group)- **Focused Group Discussion** 	• They were all friends and lived either in TajGanj or Belanganj. • The park lack shaded spaces, Drinking water with filter, lack for parking facility. • Vehicles should be restricted into the park. The cycle track should be separate from the walking pathway. In the present situation, the cycles clash with the walkers, in the morning when there many people in the park. • The charge of the parking is high- Rs. 10 as a result a lot of people parks their vehicles along the road. The parking charge for regular comers should be minimal or green pass be issued. • There should be green passes for local residents who come to the park regularly. • They fell that the park is not very safe to come	Basic amenities and provision of refreshment areas is included in the proposed intervention of Shahjahan Park redevelopment. The intervention also includes provision of boundary wall, ligting and security in the park. The proposed intervention also includes provision of separate cycle tracks.

		in the evenings as there are no lights. • The park should have food plazas, lighting, fountains etc.	
9	School girls - Age group 15 – 18 years **Focused Group Discussion**	• Mostly they come to park during their school breaks or vacations • Sometimes they come by two-wheeler or walking • park needs recreational zones, food joints and drinking water facilities • Sport facilities like badminton court, cricket field etc. would be great to have in the park • Boating and other similar activities need to be revive and more such activities can be planned • Picnic zones will be a great addition to the park for families and kids • Park is quite safe for women and girls	The redevlopment of park includes development of excercising areas, children play areas, yoga areas etc. Basic amenities and provision of refreshment areas is included in the proposed intervention of Shahjahan Park redevelopment.
10	Mali (gardener in Mote Lal Nehru Unit)- Rajesh 	• He lives in Dhandhupura near Shilgram. • The park has about 400 staff and his has 20-22 staff. • The main problem is of the water and lack of staff to maintain such a large area.	The proposed intervention includes provision of water for gardening.
VENDORS			
11	Ice Cream Vendor on PuraniMandi Road	• Sells his ice-cream daily, but at time the police	The vendors would be suitably rehabilitated

		tell them to move away from there. • Once the Taj Mega Project get complete they would not be allowed to sell their products. • He wants a permanent location for his cart along this route.	and given vending spaces in the refreshments area of the park.
12	Kulfi Vendor In Shah Jahan Park	• He sells kulfi daily inside the park in the evening; there is no restriction to sell inside. • If the park is developed and entry is restricted, he will have a problem to sell his kulfi inside. • He would be happy to get a permanent cart in the garden, though he cannot pay rent of it as he does not earn so much.	The vendors would be suitably rehabilitated and given vending spaces in the refreshments area of the park.

5.3 SUMMARY OF ISSUES RAISED AND ACTIONS DESIGNED

The Table 5.2 below presents the summary of key issues raised and the actions designed in this ESMP and the intervention to mitigate any impact faced because of the implementation of the proposed interventions.

Table 1.2: Key issues and actions designed

Sr. No.	Key Issues	Actions Designed
1	Traffic Congestion movement of tourists between Shah Jahan Park	The connectivity between the Taj Mahal and Agra fort has been addressed in the DPR by provision of walkway. The proposed intervention also proposes pathways connecting the two monuments- Taj Mahal and Agra fort through the Shahjahan Park. Provision of street furniture and junction redesign has also been considered in the proposed intervention.
2	Provision of amenities, recreational facilities and safety in the park ***(for future provision)***	The redevlopment of park includes development of excercising areas, children play areas, yoga areas etc. Basic amenities and provision of refreshment areas

	is included in the proposed intervention of Shahjahan Park redevelopment. The intervention also includes provision of boundary wall, ligting and security in the park.

5.3 MECHANISM FOR CONTINUED CONSULTATIONS

During the construction phase, periodic consultations will be held with the institutional as well as the non-institutional stakeholders by the supervision consultant with the civil contractor as additional stakeholder. The purpose of these consultations will be to apprise the various stakeholders of the progress of the project and to ascertain and assure that the work is being done as per the approved design and Social Management Plan of the sub-project.

The following set of activities will be pursued for effective implementation of project:

- Involvement of women and other vulnerable groups during the project implementation process to ensure their participation and addressable of their needs.
- The Local Representatives involved in the implementation of project will organize Public meetings, and appraise the communities about the progress in the implementation of project works.
- Involve community in project progress monitoring.

Chapter-6
Anticipated Environmental Impacts

6.0 BACKGROUND

This section of the chapter will identify and discusses both positive and negative impacts associated with the proposed project components. The assessment would be done for nature, types and magnitude of the potential impacts likely to be caused by various project activities which may affect various environmental components. A wide variety of direct and indirect positive and negative impacts have been identified. Thus, it is found that the project will improve the bio-physical and socio-economic environment components, if proper mitigation measures will be adopted in the design, construction and operation phases of proposed Project.

6.1 IMPACT IDENTIFICATION & PREDICTION:

The general impacts have been assessed from base line information and primary data collected during surveys and investigation. The possible impacts at various stages of the project such as prior initiation, during implementation and post project period will be assessed and mitigation measures will be suggested. The following elements are proposed to be analyzed:

- Natural Environment
  - Topography (Soil, forests, Land-use, Landscape)
  - Geological
  - Hydrological
  - Water Quality- Surface/Ground water
  - Air Quality (Noise & Meteorology)
  - Biodiversity- Flora/fauna]
- Social Environment
  - Resettlement & Land acquisition issues (if any)
  - Livelihood and local economy
  - Public health

Environmental impacts of proposed components are analyzed and predicted for construction and operation phases. Table 6.1 represents activity impact identification matrix and inter-action of project activities and environmental components while details of identified impacts are described in section 6.2.

Table 6.1: Activity Impact Identification Matrix & Inter-action of Project Activities & Environmental components

Project Components		Potential Impacts on Environmental Components by Project Activities										
	Land	Air		Water		Biodiversity		Social & Aesthetic				
		Air Quality	Noise	Surface Water	Ground Water	Flora	Fauna	Livelihood	traffic	Resettlement Displacement	Health and Safety	Any damage to Public & sensitive property
Traffic Calming of Amar Singh, Jalkaari Baai, Purani Mandi Junctions	✓	✓	✓	X	X	✓	✓	✓	✓	X	✓	X
Natural Path to Agra Fort	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	✓	X
Re Organisation of Circulation & Furniture on Pathway	X	X	X	X	X	X	X	X	X	X	X	X
Development of Pedestrian and Perimeter Pathways	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	✓	X
Development of Natural Play, Lake, Forest and Meadows Loops	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	✓	X
Signage, Lighting and Street Furniture	✓	X	X	X	X	X	X	X	X	X	X	X

6.2 ANTICIPATED ENVIRONMENTAL IMPACTS:

The qualitative /quantitative impacts have been taken in to consideration based on following parameters:

- Types: Positive (+) or Negative (-)
- Magnitude: Long term and Short Term
- Duration: Permanent impacts, Temporary impacts
- Reversibility: Reversible, Irreversible

The environmental impacts caused due to the development of the project can be categorized as primary (direct) and secondary (indirect) impacts. Primary impacts are those which are induced directly by the project whereas the secondary impacts are those which are indirectly induced and typically include the associated investment and changing patterns of social and economic activities due to the proposed action. Interaction of the project activities with environmental attributes is presented as Activity-Impact matrix in Table. Environmental impacts due to the proposed project have been taken in to account following project activities:

- impact identification during construction
- Impact identification during operation

Impacts Due to Project Location, Layout & Design:

Impact on Public and Sensitive Property

Project site is located near ASI protected monuments such as Taj Mahal and Agra fort and there are some project components that fall within the 300m ASI protected zone. However, no major construction and demolition work is involved is this proposed project which may cause any damage to ASI protected monuments. However, no objection certificate will be taken prior to any construction work.

Impact Identification during Construction

The impact during construction will be localized and short term with reversible changes. Impact will be primarily related to the civil works and less intensive impact is expected during erection of the equipment and operation. Construction works generally involve site clearance, excavation, filling of earth materials, dumping of unusable debris materials, transportation of materials from production site to construction site, and other constructional activities and associated works like mobilization of constructional equipment, setting up of different construction plant, setting up of workforce camp, quarrying, transportation of material, material storage, etc. These activities have certain impacts of varying magnitudes on different components of environment. A proper care is essential to minimize the adverse impacts to the extent possible and to facilitate least effect on the environment, and this has been discussed under following sub-heads:

Impact on Land and Soil Environment:

- Clearing and excavation of the land

- Generation, storage and disposal of spoils and debris due to construction activities
- Loss of aesthetic features
- Contamination of project land due to leakage or spillage of fuel and lubricants, waste water discharge from labor camps

Impact on Air Environment

I- Dust Emissions

During the construction phase, dust emissions in unpopulated areas will be emitted and deposited on the leaves of trees and other vegetation which may affect the growth of the trees and other vegetation. Certain amount of dust and gaseous emissions will generate during the construction phase from excavation machine and road construction machines. Pollutants of primary concern include respirable particulate matters. However, suspended dust particles matter may be coarse and will be settled within a short distance of construction area. Therefore, impact will be temporary and restricted within the closed vicinity of the construction activities only.

Generation of Exhaust Gases

Generation of exhaust gases is likely due to movement and operation of heavy machinery for construction. Toxic gases are released through the heating process during bitumen production. Although the impact will be much localized, it can spread downwind direction depending upon the wind speeds. Increase in air pollution level from mobile and stationary sources during construction phase will be a short-term impact on the air quality which is not expected to be significant as the commissioning phase will be in staggered and intermittent in activity.

Impact of Noise

During the construction phase, the major sources of noise pollution are vehicles transporting the construction material to the construction yard and the noise generating activities at the yard itself. Mixing, casting and material movement are primary noise generating activities in the yard and will be uniformly distributed over the entire construction period. Construction activities are anticipated to produce noise levels in the range of 80 - 95 dB(A). The construction equipment will have high noise levels, which can affect the personnel operating the machines. Use of proper Personal Protective Equipment (PPE) such as earmuffs will mitigate any adverse impact of the noise generated by such equipment. The noise likely to be generated during excavation, loading and transportation of material will be in the range of 90 to 105 dB(A) and this will occur only when all the equipment operates together and simultaneously. This is however a remote possibility.

The workers in general are likely to be exposed to an equivalent noise level of 80 to 90 dB (A) in an 8-hour shift, for which all statutory precautions should be taken into consideration. However, careful planning of machinery selection (not to operate more than 15-year-old), operations and scheduling of operations can reduce these levels.

Impact on Water Environment

Short term demand of water may increase as it will be required primarily at the construction activities and for domestic purposes in the labor camps. The contamination of ground water due to leakage or spillage of fuel and lubricants from machineries and waste water discharge from labor

camps may be a possible impact on water environment. However, considering the nature of work and workers to be involved, contamination of water seems a remote possibility.

Impact of Flora and Fauna:

There are no ecologically sensitive areas like national parks or wildlife sanctuaries and reserved forests within the 10-km radius of proposed site. However following impacts may affect the flora and fauna found near project site:

- Loss of small shrubs & herbs at the time of dumping of debris and construction waste
- Disturbance to fauna due vibration & noise generated during construction activities

Impact on Public and Sensitive Monuments

Project is located near to ASI protection zone therefore, special attention is required during construction activities as heavy construction, noise and vibration etc. may affect the ASI monuments. However, considering proposed interventions impacts on public and sensitive monuments will be remote possibility.

Impact of Traffic Congestion

During raw material transportation and proposed traffic calming measures may cause slight traffic congestion that may cause inconvenience to the road users. Slight traffic disruption is also envisaged at providing connectivity between Taj Mahal and Agra fort through Shahjahan Park as some portion of proposed walk way is located outside the park and a road need to be crossed to reach Agra fort.

Impact on Public health and Safety

- Dust, gaseous pollutant and noise generation within the congested area during the construction works may affect the health of people residing nearby.
- Unhygienic condition and health hazard due to discharge of wastewater from labour camps
- Poor sanitation and accumulated garbage/ waste generated from labor camp may cause increase in communicable diseases
- Safety risks to construction workers

Impact Identification during Operation

During operation stage, major impacts anticipated may be highlighted as follows:

Impact on Air Quality and Ambient Noise

- Slight increase in PM10, PM2.5 and gaseous pollutant levels and gaseous project in ambient air due to large number of vehicles and congestion at proposed traffic calming spots
- Increase Noise level due to movement of vehicles

Impact on Water Environment

- The proposed project may increase the water demand of the area because some public facilities are proposed viz. toilets, drinking water taps, etc. to be developed to facilitate the visitors.

Impact of Refuse Disposal and Sanitation

- Generation of solid waste could result in odor and pollution if not managed properly
- Aesthetic problem and nuisance to commuters
- Un-hygienic conditions in surroundings may trigger diseases

Impact on Public Safety

- Medical emergencies
- Unhygienic conditions due to unsafe disposal of waste

6.3 MITIGATION MEASURES:

Environmental impacts of proposed components are analyzed and predicted for construction and operation phases. The assessment results confirm that negative impacts are temporary and short term in nature. However, measures to minimize and mitigate the negative impacts identified under sub project activities are summarized in Chapter 7 in Table 7.1 and 7.2.

6.4 ANTICIPATED SOCIAL IMPACTS & MITIGATION MEASURES

The project report of the proposed sub-project for Revitalization of Shahjahan Park Walkway between Taj Mahal and Agra Fort after social impact assessment concludes that the project falls in 'low impact' category and has overall positive impacts on the life and environment of the people. There will be no private land acquisition and the project will be developed on government land.

There are about 35 vendors around the DPR site, mapped from Agra Fort to Taj Mahal, though the vendors dependent largely on Shah Jahan Park are just 2 in number. The vendors depending on Shah Jahan Park Visitors include- beverages and juice vendor at Shah Jahan Park Parking and a kulfi vendor inside the park. These vendors are being relocated and resettled within the Park.

Traffic disruption is envisaged during construction of two project activities- construction and installation of traffic calming measures and construction of walkway from Taj Mahal to Shahjahan Park. The details are available in the Generic Environmental and Social Management Plan.

Chapter-7
Environmental Management and Monitoring Plan

7.0 BACKGROUND:

Environmental Assessment study carried out for the proposed Revitalization of Shahjahan Park Walk way between Taj Mahal and Agra Fort, Agra and as an outcome of the study Environmental Management Plan (EMP) to minimize and mitigate the impact of activities proposed under this sub project. The Environment Management Plan (EMP) outlines the environmental management system that will be implemented during construction and operational stage of the project. The proposed management plan comprises following components:

1. Environmental Management Plan
2. Environmental Monitoring plan
3. Reporting Requirement
4. Institutional Arrangement
5. Framework for Monitoring and Evaluation
6. Grievance Redress Mechanism
7. Information Disclosure
8. Capacity Building and Technical support
9. EMP Budget

7.1 ENVIRONMENT MANAGEMENT PLAN:

The proposed sub project **Revitalization of Shahjahan Park Walk way between Taj Mahal and Agra Fort, Agra** shall implement a sound Environment Management Plan (EMP), which will make environment protection an essential requirement. Prediction of the potential environmental impact arising due to development activities are considered as the heart of EIA process. An equally essential element of this process is to develop measure to eliminate, offset or reduce adverse impacts to acceptable levels and enhance the beneficial ones during implementation and operation of the projects. The integration of the project planning is done by clearly defining the environment requirements within an Environment Management Plan (EMP). Table 7.1 summarizes the Generic Environmental Management Plan which is common to all sub-components of the project while Table 7.2 indicates specific impacts and mitigation measures for the sub-components of the Project.

Table 7.1: Generic Environmental Management Plan: Common to all sub-components of the project

Environmental Component/ Issue	Mitigation Measures	BOQ Reference	Implementing Agency	Supervision Agency
I. Air Environment				
1. Emissions from Construction Equipment and movement of vehicles.	▪ All vehicles used at project road should have valid 'Pollution under Control' (PUC) Certificates. ▪ All construction Equipment should be operated only through CNG. ▪ All material shall be covered during transportation and storage.	Item I/1	Contractor	Supervision Consultant ADA/SPCU
2. Dust Generation during earthworks.	Dust Suppression measures such as sprinkling of water (to wet the dust prone area/construction site) will be done at regular intervals to control fugitive dust emissions during construction activities.	Item J/21	Contractor	Supervision Consultant ADA/SPCU
3. Fugitive dust generation due to wind from stock piling of earth/sand or other loose construction material.	▪ Stock piling of construction material shall be done at designated and approved places away from habitations and water bodies/ drains. ▪ Regular sprinkling of water and covering stack piles should be done to prevent wind-blown dust. ▪ Temporary barriers (berms, silt fence or sandbag) shall be erected to prevent spreading of construction material.	Item I/1	Contractor	Supervision Consultant ADA/SPCU
4. Disruption of traffic due to construction activities, movement of vehicles leading to congestion and air pollution.	▪ Specific Traffic management and diversion plans shall be prepared by the Contractor and approved by the	Item I/1	Contractor	Supervision Consultant ADA/SPCU

Environmental Component/ Issue	Mitigation Measures	BOQ Reference	Implementing Agency	Supervision Agency
	Engineer–in-charge prior to commencement to works on any section of the street / road. ▪ The plan shall contain details of temporary diversions, traffic safety arrangements, safety signs, temporary barriers and flagmen around the exposed construction site to warn the public and ensure smooth traffic flow.			
II. Water Environment				
5. Depletion of water resources due to use of water for construction.	▪ Authorization for use of ground water or other source of water, should be obtained. ▪ In case tanker water is used, the source of shall have necessary authorizations. ▪ All efforts shall be made to reuse/ recycle water during construction.	Item I/1	Contractor	Supervision Consultant ADA/SPCU
6. Contamination of park area and stagnation of water due to construction waste, vehicle washing, cleaning, other activities.	▪ No cleaning, washing or maintenance shall be undertaken in the park or its influence area and near any water body. ▪ All equipment and vehicle shall be serviced/ washed in vehicle workshop. ▪ Adequate water supply and sanitation (toilets with adequate collection and treatment) facilities shall be provided to the construction labor at construction sites and other project facilities. ▪ All waste generated by the project	Item I/1	Contractor	Supervision Consultant ADA/SPCU

Environmental Component/ Issue	Mitigation Measures	BOQ Reference	Implementing Agency	Supervision Agency
	shall be managed complying with Construction and Demolition Waste Management Rules, 2016 & Solid Waste Management Rules 2016 and guidelines annexed to this EMP. ▪ All waste shall be reused for the project activities to the extent feasible. ▪ Waste and construction activities shall be managed, to avoid spillage in the nearby drains waterbodies.			
III. Noise Pollution				
7. Vehicles and Construction machinery movement & operation.	▪ All plant and equipment used in construction shall strictly conform to the prescribed noise standards of Central Pollution Control Board. ▪ No construction should be carried out during the night. ▪ Construction near habitations/ education institutes/ hospitals (health centers) should be carried out with barricades. ▪ All construction personal should be provided with ear plugs and other personal protective equipment.	Item I/1	Contractor	Supervision Consultant ADA/SPCU
IV. Land Pollution				
8. Soil contamination from spillage of fuel, oils / lubricants from construction equipment and storage areas.	▪ No fuel/ lubricant shall be stored at the site. All oils/lubricants shall be procured from authorized agencies/ suppliers. ▪ Construction vehicles should be well maintained with periodic inspection to avoid leakages / spillage.	Item I/1	Contractor	Supervision Consultant ADA/SPCU

Environmental Component/ Issue	Mitigation Measures	BOQ Reference	Implementing Agency	Supervision Agency
	▪ Bitumen waste / scrap (if any) should be disposed in authorized disposal sites with approval from the engineer in-charge.			
9. Damage to vegetation due to Temporary use of land for construction material storage.	▪ No construction material should be stored in within the park. ▪ Temporary storage of construction material shall be done with the consent of the park authorities and the Engineer-in-Charge and with adequate barricading and protection.	Item I/1	Contractor	Supervision Consultant ADA/SPCU
10. Land pollution due to Disposal of Construction and Demolition Waste.	▪ All Construction and demolition waste should be disposed as per the Construction and Demolition Waste Management Rules, 2016 of Government of India. ▪ Efforts should be made to reuse the waste generated during excavation of the road. Some measures include, (i) the sub-grade of the existing pavement may be used as embankment filling material. (ii) The existing sub base material may be recycled as sub base of any haul road or access road. (iii) existing bitumen surface may be utilized for paving of access roads and paving construction sites and campus, temporary traffic diversions, haulage routes etc. ▪ excess construction waste shall be disposed at a suitable site in	Item I/1	Contractor	Supervision Consultant ADA/SPCU

Environmental Component/ Issue	Mitigation Measures	BOQ Reference	Implementing Agency	Supervision Agency
	compliance to the Construction and Demolition Waste Management Rules, 2016, with necessary authorizations and approval from Engineer in charge. ▪ All arrangements for transportation during construction including provision, maintenance, dismantling and clearing debris shall be considered incidental to the works and shall be planned and implemented by Contactor. ▪ Debris / waste generated from other construction activities shall be disposed such that it does not spill into surface water bodies or drains in the area. ▪ Debris/waste shall not be stored in project area for more than 24 hours.			
11. Occupational health and safety hazards to construction personnel.	▪ Shall comply with the safety protocols, Building and Other Construction Workers Regulations of GoI and Environment, Health and Safety (EHS) Guidelines of World Bank Group. ▪ Shall provide suitable safety barricading at all construction sites. ▪ Shall provide and ensure use of Personal Protective Equipment, such as Helmets, Mask, gum boots, gloves, Ear plug, etc. ▪ All vehicle and equipment shall use safety gear (safety belt, reverse horn,	Item I/1	Contractor	Supervision Consultant ADA/SPCU

Environmental Component/ Issue	Mitigation Measures	BOQ Reference	Implementing Agency	Supervision Agency
	etc.) ▪ All electrical connections shall be provided earth link circuit breaker (ELCB) and earthing. ▪ Shall provide appropriate and adequate safety signage in local language (Hindi) and English at all project areas. ▪ Shall deploy Health & Safety Officers at the construction sites. ▪ Shall provide facilities for first aid and medical support on call at project sites. ▪ Shall monitor and analyze all safety incidents/accidents and take appropriate preventive/ mitigative actions.			
12. "Chance of Find" of items / materials of cultural and / or archeological importance during construction the execution of the project.	▪ Report to relevant authorities, comply with World Bank's safeguard policy on Physical and Cultural Resources and Monuments and Archaeological Sites and Remains Act, 1958 & as amended Act 2010 of GoI. ▪ Prepare cultural properties management plan (if needed)	Item I/1	Contractor	ADA/SPCU

Table 7.2: Specific Impacts and Mitigation Measures for the sub-components of the Project

Potential Environmental Impacts	Mitigation Measures	BOQ Reference	Responsible Agency	Supervision
Component 1: Traffic Calming at Grade, Signals and Crossings				
During Construction Stage				
1. Traffic Congestion during junction improvement works	▪ Complete barricading shall be erected around the project site to avoid hazards, construction nuisance and dust pollution to the traffic. ▪ Specific Traffic management plans shall be prepared and approved by the Engineer–in-charge prior to commencement to works. The plan shall contain details of temporary diversions, traffic safety arrangements, safety signs, and flagmen around exposed construction sites to warn the public and ensure smooth traffic flow. ▪ The plan should also contain appropriate arrangements during peak hours. ▪ Necessary permissions for the traffic management plan and the implementation plan shall be obtained from Transport Department and local administration.	Item I/1	Contractor	ADA/SPCU
2. Construction waste and other waste disposal in the park and other sensitive locations.	▪ All Construction and demolition waste shall be disposed as per the Construction and Demolition Waste Management Rules, 2016	Item I/1	Contractor	ADA/SPCU

Potential Environmental Impacts	Mitigation Measures	BOQ Reference	Responsible Agency	Supervision
	of Government of India. (Refer annexure I). ▪ Efforts should be made to reuse the waste generated. ▪ Hazardous substances such as bitumen, waste oil, etc. shall be collected, stored and disposed in line with the Hazardous Waste Management Rules of GoI.			
During Operational Phase				
Traffic congestion	• Proper operation of proposed traffic lights and duty of traffic police shall be ensured to provide smooth traffic movement	-	O&M agency	ADA
Component 2: Component 2: Organization of Entry Gate and Hop –On- Hop - Off				
During Operational Stage				
1. Issues of Traffic Safety and Traffic Congestions due to movement, stoppage and parking of Non-Motorized Vehicles (NMV) and Hop-On-Hop-Off	▪ NMVs and Hop-On-Hop-Off services shall be planned based on the design capacity of the road network. ▪ Adequate signage, demarcation for stoppage and movement of NMVs and traffic education shall be implemented to minimize traffic safety issues ▪ Adequate monitoring and supervision of traffic movement including NMVs shall be ensured by traffic police and local authorities.	Item I/1	Contractor	ADA/SPCU
Component 3: Natural Path to Agra Fort and Connecting Bridge inside the Fort Boundary				
During Construction Phase				

Potential Environmental Impacts	Mitigation Measures	BOQ Reference	Responsible Agency	Supervision
1. Blockage / reduction of flow in Mantola drain due to the dumping of debris and construction material.	▪ No debris / construction waste shall be dumped or disposed such that it does not flow into the Mantola drain/ surface water bodies or form mud puddles in the area. ▪ No debris will be stored / staged on road or culvert/bridges and in the park. ▪ All Construction and demolition waste shall be disposed as per the Construction and Demolition Waste Management Rules, 2016 of Government of India. (Refer annexure I). ▪ Efforts should be made to reuse the waste generated.	Item I/1	Contractor	ADA/SPCU
2. Blockage of storm water runoff by paving of natural path.	Adequate arrangements for free flow of storm water shall be provided.	Item I/1	Contractor	ADA/SPCU
3. Soil erosion due to storm water run off	Adequate plantation shall be done in both sides of paved pathway and Lawn to prevent soil erosion and improve environment conditions.	Item I/1	Contractor	ADA/SPCU
During Operational Phase				
Increase in footfalls beyond its carrying capacity	Existing visitor profile of Shahjahan Park is very low However, entry may be regulated to keep park within carrying capacity	-	O&M agency	ADA
Unorganized parking and poor management may lead to congestion and nuisance in the area	Unorganized parking and poor management shall be avoided by concerned authority for smooth function of project resources.	-	O&M agency	ADA

Potential Environmental Impacts	Mitigation Measures	BOQ Reference	Responsible Agency	Supervision
Components 4,5,6,7: Rejuvenation of Shahjahan Park				
During Construction Phase				
1. Blockage of storm water runoff by paving of natural path	Adequate arrangements for free flow of storm water shall be provided.	Item I/1	Contractor	ADA/SPCU
2. Deteriorating Aesthetic environment and land pollution due to littering of solid wastes on the park and pathway	▪ Adequate solid waste collection arrangements shall be provided in the park and along the path way. ▪ Collected solid waste shall be collected at least thrice a day shall be disposed at the municipal waste disposal facility	Operation Phase Issue	ADA	SPCU
3. Possibility of soil erosion due to storm water runoff	▪ Adequate arrangements for free flow of storm water shall be provided. ▪ Adequate plantation shall be done in both sides of paved pathway and Lawn to prevent soil erosion and improve environment conditions.	Item I/1	Contractor	ADA/SPCU
4. Risk of electrocution and electric safety issues due to lighting and other electrical systems.	▪ Earth link circuit breaker (ELCB) shall be provided for all electrical systems. ▪ Adequate safety signs at critical electrical systems shall be provided. ▪ First aid facilities and information on health care facilities shall be provided at prominent locations of the park	Item I/1	Contractor	ADA/SPCU
During Operational Phase				
Water logging/ flash flooding due to blockage of storm water/rainwater runoff passage Anti-social activities	Maintenance and cleaning of drainage passage/pipes shall be ensured by maintenance agency to avoid water logging.	-	O&M agency	ADA

7.2 ENVIRONMENTAL MONITORING

Monitoring is an important tool in establishing the success or failure of a project with regard to compliance to environmental safeguards. The purpose of the monitoring programme is to ensure that the intended environmental measures are achieved and result in desired benefits to the target population. To ensure proper implementation of the Environment Monitoring Plan it is essential that an effective monitoring programme is designed and carried out.

The broad objectives of the environment monitoring program are:

- ✓ To monitor impacts on the surrounding environment and the effectiveness of mitigation measures during the construction and operation.
- ✓ To ensure that the environmental control systems installed at the plant are operating satisfactorily.
- ✓ To suggest ongoing improvements in management plan, if required, for subsequent effective monitoring
- ✓ To satisfy the requirements of environmental regulatory framework and community obligations

The environmental monitoring cost is estimated based on the length of implementation (24 months) and existing environmental scenario of the proposed project. Environmental monitoring cost of **Rs. 2,80,000/-** has been allocated for construction and operation stages of project. The details are provided below in the Table 7.3:

Table 7.3: Environmental Monitoring Program

Env. Component	Project Stage	Location/frequency	Quantity	Unit Rate (INR)	Total Cost (INR)
Ambient Air Monitoring - PM_{10}, $PM_{2.5}$, SO_2, NO_2, CO	Construction	3 locations (park, entry gate and fort junction) every quarter till the end of construction	18	6000	1,08,000.00
	Operational	once at all 3 sites after project completion	3	6000	18,000.00
Water Quality Monitoring - Parameters as per IS 10500;2012)	Construction	2 samples from each at bi-monthly till end of construction	12	4500	54,000.00
	Operational	-	-	-	-
Noise Monitoring	Construction	5 sites including traffic junctions and park, every month till end of construction	90	1000	90,000.00

	Operational	Twice at 5 sites after construction	10	1000	10000.00
Cost of Environmental Monitoring (INR)					**2,80,000/-**

7.3 REPORTING REQUIREMENT

Monthly compliance report to the above environmental management plan and monitoring plan shall be submitted by the contractor to DSC / TSU. On the basis of monthly compliance report from contractor and supervision on site, DSC will prepare quarterly progress report and submit to SPCU/TSU.

7.4 INSTITUTIONAL ARRANGEMENTS FOR SAFEGUARDS MONITORING

The State Project Coordination Unit (SPCU) in Lucknow is located in the Department of Tourism and is supported by existing agencies (the Development Authorities in each core target area) and competitively selected decentralized teams (Technical Support Units – TSUs) based in each of the project core target areas, in principle in Agra, Mathura, Sarnath and Kushinagar. The TSUs will support the respective Development Authorities, the project implementing entities, in the day-to-day the execution of respective subprojects.

Social, heritage management and environment specialists are hired by the SPCU to coordinate, review, support and monitor all respective safeguards aspects of the project. The specialists will also train and strengthen the capacities of specialists in the TSUs and in the implementing entities. The project may hire qualified civil society organizations for the implementation of a ESMP. The SPCU and the decentralized TSUs may also be supported by competitively recruited experts in highly specialized areas, as needed.

Agra Development Authority will be primarily responsible for implementation of the project ESMP. ADA will be assisted by SPCU through its Environment Specialist and Social specialist and TSU in implementation. ADA will designate one of its official as Social Officer. The implementing team will comprise of the following:

- Social Officer of ADA
- Environmental Officer at ADA
- Social Specialist of SPCU
- Environment Specialist of SPCU
- Representative of local NGO
- Local people representatives

The roles and responsibility of these officials will be given in Table 7.4:

Table 7.4: Roles and responsibilities of implementing team

Players	ROLES and RESPONSIBILITIES
SPCU Social Specialist	• Provide guidance to Social Officer of ADA; • Monitoring implementation activities and make budgetary provisions • Participate in meetings; • Monitor physical and financial progress on implementation.

SPCU Environment Specialist	• Dedicated Environment Safeguard Specialist shall be deployed at SPCU for regular monitoring of environmental management plan • Provide guidance to Environmental Officer of ADA; • Monitoring implementation EMP activities through regular visits to the sub- project sites • Participate in meetings; • Monitor progress on EMP implementation.
IE/TSU Officer	• Co-ordinate with district administration for implementation • Translation of ESMP in local language and ensure dissemination at community level – prepare pamphlets on policy for information dissemination; • Provide training for skill enhancement • Liaison with district administration for dovetailing of government schemes for provision of basic services. • Report on physical, financial and EMP progress of implementation • Participate in the project level meetings; • Report progress, highlighting issues not addressed, to provide for mid-course correction;
Contractor	• Designated Environment Safeguard Specialist shall be deployed for Environmental Management during implementation of project. • Monthly compliance report to the above environmental management plan and monitoring plan shall be submitted by the contractor to DSC / TSU.
NGO Representative	• Represent interest of stakeholders during the implementation of ESMP and gender actions. • Provide information to stakeholders and local community and conduct awareness programs • Be part of grievance mechanism

7.5 FRAMEWORK FOR MONITORING AND EVALUATION

The project authority will be responsible for carrying out M&E. Internal monitoring will be carried out by the Environmental and Social Officers of ADA with assistance from Social Specialist and Environment Specialist of SPCU and local representatives. This will help monitor project activities closely. Regular monitoring by undertaking site visits will help identify potential difficulties and problems faced in the project implementation and subsequently help take timely corrective measures including deviations, if needed.

Monitoring will start as soon as the project implementation begins and Social Officer and local representatives are appointed / nominated at site for implementation of ESMP. Components of monitoring will include performance monitoring i.e., physical progress of the work such and impact monitoring and external evaluation. Indicators that would be monitored related to performance are provided in the following sections. However, if during the project implementation some other indicators are found relevant those shall be included. NGO with appropriate expertise will be hired for external evaluation of ESMP implementation or DPR components.

A quarterly report of internal monitoring will be prepared by Social Officer of ADA. The monitoring will also provide feedback on community concerns, grievances and requests. Monitoring will focus and ensure the followings:

- Verification that there are no outstanding or unresolved issues with respect to the project
- Information campaign, discrimination and consultation with affected persons,

- Effective operation of the Grievance Redress Committees detailing out number of complaints received and those resolved; reasons for not being able to resolve the grievance and status of unresolved grievances.

Framework of monitoring is summarized in the Table 7.5.

Table 7.5: Framework for Monitoring

Type	Indicators	Issues	Procedure	Timing	Responsibility
Process level monitoring\	Project/ ESMP Implementation	Employment of local labor including women	Site observation, attendance record, interaction with laborers and contractors	Monthly	ADA / NGO
		Campsite management including lodging arrangement and campsite facilities	Site observation, interaction with laborers, contractors	Monthly	ADA /SPCU/ Local Representatives/ NGO
		EMP Implementation	As prescribed in the ESA Report	All times during construction	Contractor/SPCU /ADA
		Use of health and safety measures	Site observation, interaction with laborers, contractors	Quarterly	ADA / SPCU./ Local Representatives/ NGO
		Temporary leasing of land and house, if any	Site observation, contractors, check contract agreement	Monthly	ADA / Local Representatives/ NGO
		Discrimination of wage rate between male and female workers	Interaction with laborers, labor survey, record of wage payment	Monthly	ADA / SPCU.
		Incidence of communicable diseases	Discuss with local people, health workers/ health post/ center records	Annually	ADA / SPCU/NGO
Impact Level	Change in Forest Cover/ Vegetation Types if any	Changes in vegetation	Consultation with forest department/ local representatives	Annually	ADA / SPCU
	Social safety	State of social harmony and social security	Police records, consultation with stakeholders.	Annually	ADA / SPCU
Note:-No Change in forest cover /vegetation is proposed under this Sub Project					

7.6 GRIEVANCE REDRESSAL MECHANISM

An Grievance Redressal Mechanism (GRM) based on use of ICT shall be established, with necessary officials and systems, at the state as well as subproject levels. Grievances if any, may be submitted through various mediums, including in person, in written form to a noted address, through a toll free phone line or through direct calls to concerned officials, and online. All local contact

information and options for complaint submission will be available on site on local information boards. Moreover, they will be in addition to the Public Information Officers to be appointed under the Right to Information (RTI) Act. A half yearly report on Grievance Redressal by the project will be prepared. The project will abide by the RTI Act of 2005; it will commit itself for proactive disclosure and sharing of information with the key stakeholders, including the communities/beneficiaries. The project will have a communication strategy focusing on efficient and effective usage of print and electronic media, bill boards, posters, wall writing, and adoption of any other method suiting local context, logistics, human and financial resources.

The project however will have a project level Grievance Redressal Mechanism (GRM) to address the grievances of the stakeholders related to project implementation and project impacts if any.

Members of Grievance Redressal Mechanism (GRM):

The GRM will be constituted under the chairmanship of District Magistrate (DM), Agra. The GRM will have local representatives and other opinion leaders who will look into the grievance of the people. It will be chaired by a retried officer, who served as principal/judges/ DM/Additional DM, etc. The suitability of the Chairperson will be decided by the DM in consultation with ADA. Apart from the nominated persons, the cell will have representative from ADA as convener.

GRM will have representatives of the village residents' including, farmers, youth groups and woman self-help groups together with representative of city administration. Total of 12 – 15 members will be part of the GRM.

Functions of the Grievance Redressal Mechanism:

The GRM will conduct a meeting in the first week of every month to hear the grievances from the stakeholders. All the complaints will be forwarded to the concerned department/officials within 15 days from the date of receiving the complaints. The issues resolved/addressed by concerned officials within 45 days from the receipt of the complaints. All the grievances received shall be discussed by the Chairperson of the cell with DM for the necessary action.

The compliance to all the petitions shall be reviewed in each of the meeting by the chairman and the DM. In case of the grievances not addressed by the GRM, it will be escalated to the office of District Magistrate by the Chairperson / ADA. The stakeholders can also approach judiciary if their grievances are not addressed at any of these levels. The GRM shall submit a monthly report to the ADA for the reference regarding the issues received and the cases disposed and forwarded to higher level.

7.7 INFORMATION DISCLOSURE:

The ESMP will be translated in local language and will be shared with the affected community. The English and translated version of ESMP will be disclosed on the website of Department of Tourism. Hard copies in English and Hindi will be placed at following offices:

- Agra Development Authority
- Office of District Magistrate, Agra

Through public meetings, attempt would be made to ensure that vulnerable groups such as SC households understand the process of project preparation and their needs are addressed in the best manner possible.

7.8 CAPACITY BUILDING AND TECHNICAL SUPPORT

Given that Department of Tourism is implementing a World Bank-financed project for the first time, the capacity to address social, cultural and environmental issues as per the World Bank safeguards policies is limited. The Department of Tourism project staff will require training in the management of safeguards issues. The training program is to be coordinated and anchored by the Department of Tourism with support from agencies/individuals experienced in safeguard aspects for developing courses on conducting training programs.

The course contents will focus on this ESMF, concept, regulatory requirements, environment and social priority issues, project cycle of investments, outline of the ESIAs, management plans and report formats. It will also focus on the resettlement and rehabilitation and heritage policies and procedures, land acquisition process, identification of project affected people, social entitlement frameworks, social assessment, risk assessment and management skills.

As part of the capacity building program, the Department of Tourism would also aim to develop decentralized local capacity on managing environmental, social and cultural properties issues associated with various investments. In order to achieve this objective, the specialists will develop a network of technical man power resources such as staff from universities/research institutions, civil society organizations, etc. These persons will be trained during the course of the project, so that they can provide support to the project agencies in conducting the required impact assessments and later in implementing all applicable management plans (including Resettlement Action Plan, Gender Action Plan, as relevant) and also offer support on an on-going basis.

The capacity building at the local level for ESMP implementation agency as well as for the monitoring and redressal committee would be done through the tourism department.

In addition to the above, DoT program will continue to mainstream the environmental, cultural and social issues within the training programs of State Project Coordination unit and the implementing entities. The program will be structured in such a way that it clearly brings out the value addition and enhancement benefits of proper management of environmental and social issues. Proposed capacity building plan is given in Table No. 7.6.

Table 7.6: Capacity Strengthening Plan

MODULES	CONTENT	DURATION
ESMF	• Project Concept • ESMF Concept • Regulatory Requirements • E&S Priority Issues • Subproject types • ESIA • Process Outline • Reporting	Half a day To be repeated every alternative year
Environmental Assessment Process	• Environmental Laws & Regulations • EIA process • Identification of Environmental Impacts • Impact Identification Methods	Full day class room training. Half a day field training.

	• Identification Mitigation Measures • Formulation of Environmental Management Plan • Implementation and Monitoring • Institutional Mechanism	
Social Assessment Process	• Social Assessment process • Description of project; RPF, gender frameworks; and National regulatory frameworks • LA process • Necessity for RAP/ ARAP, Gender plan and its preparation process • Implementation and Monitoring • Institutional Mechanism • Grievance Mechanism	Half a day class room training. Half a day field training.
Cultural Properties Assessment Process	• Cultural Properties Assessment process • Description of project and national regulatory frameworks • Necessity for PCRMP and its preparation process • Implementation and Monitoring • Institutional Mechanism	Half a day class room training. Half a day field training.

7.9 EMP- BUDGET FOR THE IMPLEMENTATION OF SAFEGUARD MITIGATION MEASURES

The budget for the implementation (as highlighted in Table 7.7) of various mitigation measures is an important aspect of the safeguard management activities of the project. This section outlines the budget for implementation of the ESMP provisions and has been based on the proposed actions.

Table 7.7: Budget for ESMP implementation

Sr No.	Description	Particulars of EMP Cost				
		Quantity	Unit	Rate (Rs.)	Amount (Rs.)	Remarks
1	**Sprinkling of water For Dust Control**					
A-	Sprinkling of water For Dust Control at all the construction points including sites of material storage at every 2 hr interval as dust suppression measures during construction activities. Rate include labour cost, transportation, materials,	720.0	KL	500.00	3,60,000.00	Considering 5 tanks (2KL capacity) per week for 18 months' construction period

Sr No.	Description	Particulars of EMP Cost				
		Quantity	Unit	Rate (Rs.)	Amount (Rs.)	Remarks
	equipment's and works required to execute the job.					
2	**Development of Material Storage Sites 2 in. No.**					
A	Separate storage areas with three side covering with temporary barricading of 2 m Hight is provided for course and fine aggregate material to minimize dust expansion. Land of material storage (base of storage sites) sites shall be protected with required thickness plastic sheets. Loose course and fine aggregate Material should also be covered by required thickness plastic sheets to prevent dust expansion. Rate include labour cost, transportation, materials, equipment's and works required to execute the job during entire construction period	2.0	No.	100000.00	2,00,000.00	Market Rate
3	**Provision of Sanitation facilities at Labour camp**					
	A-Water Supply Considering 5 tanks (2KL capacity) per week for 18 months	720.0	KL	500.00	3,60,000.00	Considering 5 tanks (2KL capacity) tanks per week for 18 months
	B-Solid wastes management by providing bins of 100 Litres capacity at 15 points	10.0	No.	1500.00	15,000.00	Market Rate
	C-Mobile Toilet with anaerobic treatment facility (10 seated) for 18 months on rental basis	18.0	month	10000.00	1,80,000.00	Market Rate
4	**Traffic measures during construction**					
	A- appointment of two traffic marshals for 18 months	36.0	Month	8000.00	2,88,000.00	-
	B-Diversion materials & Safety Signage cost	LS	-	-	50,000	-

Sr No.	Description	Particulars of EMP Cost				
		Quantity	Unit	Rate (Rs.)	Amount (Rs.)	Remarks
5	**Noise Control Measures by Providing barriers or sheets**					
A-	Noise Control Measures by providing acoustic barriers or sheets that to be used at high noise producing construction activities such as cutting of stones, drilling etc.	100.0	Sheets	3000.00	300000	Market Rate
6	**Provision of PPEs (Personal Protective Equipment) i.e. Helmet, Mask, gum boots, gloves, Ear plugs etc.), first-aid kits and safety signage's**					
	A- Providing 25 Sets of PPEs (Personal Protective Equipment) i.e. Helmet, Mask, gum boots, gloves, Earplugs etc)	25	No.	4000	1,00,000.00	Market Rate
	B- 3 Sets of First Aid kits for 25 People that includes following items Kit Includes: (10) Alcohol Wipes (1) Scissors (1) Tweezers (1) First Aid Guide (4) Nitrile Exam Gloves (1) Triangular Sling/Bandage, 40" x 40" x 56" (1) Cold Compress, 4" x 5" (1) Conforming Gauze Roll, 4" x 5 m (6) Gauze Dressing Pads, 4" x 4" (1) First Aid Tape, ½" x 5m (60) Plastic Bandages, 1" x 3" (2) Sunscreen Lotion Packets, SPF 30 (2) Trauma Pad, 5" x 9" (5) 2 Eyewash, 1oz, with 2 Eye Pads and 2 Strips (1) CPR Mask with One Way Valve (1) Burn Dressing, 4" x 4" (6) Hand Sanitizer Packets, 0.9g (4) Insect Sting Relief Wipes (10) First Aid/Burn Cream Packets, 0.9g (10) Triple Antibiotic Ointment Packets	2	No.	10000	20,000.00	Market Rate

Sr No.	Description	Particulars of EMP Cost				
		Quantity	Unit	Rate (Rs.)	Amount (Rs.)	Remarks
	C- Safety Signage 42 in No. to use for construction sites, diversion and for other safety message- Manufacturing, supplying and fixing retro reflective sign boards made up 2 mm thick aluminium sheet, face to be fully covered with high intensity encapsulated type heat activated retro reflective sheeting conforming to type - IV of ASTM-D 4956-01 in blue and silver white or other colour combination including subject matter, message (bi-lingual), symbols and borders etc. as per IRC ; 67:2001, pasted on substrate by an adhesive backing which shall be activated by applying heat and pressure conforming to class -2 of ASTM-D-4956-01 and fixing the same in following sizes at suitable sites or decided by the Engineer-in charge				-	
	A- Small -3X2 Feet	20	No.	5000	1,00,000.00	Market Rate
	B-Medium-5X3 Feet	10	No.	8000	80,000.00	Market Rate
	c- Large-7X4 Feet	2	No.	15000	30,000.00	Market Rate
7	**Environment Monitoring**					
	A- Air Quality monitoring at 3 sites park, entry gate and fort junction) every quarter till the end of construction (parameters-PM2.5, PM 10, SO2, NO2, CO)	18 (Construction Phase)	No.	6000	1,08,000.00	Market Rate
		3 (Operational Phase)	No.	6000	18,00,0.00	

Sr No.	Description	Particulars of EMP Cost				
		Quantity	Unit	Rate (Rs.)	Amount (Rs.)	Remarks
	B -Water Quality Monitoring - Parameters as per IS 10500;2012- 2 samples (construction waste and storm water drain) every quarter till end of construction	12 (Construction Phase)	No.	4500	54,000.00	
	B- Noise Monitoring (24 Hr)- 5 sites including traffic junctions and park, every month till end of construction	90	No.	1000	90,000.00	Market Rate
		10	No.	1000	10,000.00	
8	**Training & Capacity Building**					
A	Training & Capacity Building on ESMP (as per capacity building plan described in chapter & given in ESMF)	LS	-	-	2,00,000.00	Rs. 100000/- considered for each year for two-year construction period that includes trainer cost and logistic arrangements cost
9	**External Evaluation**					
A	External Evaluation – Evaluation needs to done carried out by an independent agency either a Design, Management and Review agency or hired NGO who would undertake the work. This will be independent of DPR implementation agency	LS	-	-	500000/-	ToR for evaluation will be prepared by the subject expert. Cost of ToR preparation is considered Rs. 50000/-. Apart from above cost, Rs. 4.5 lacs will also be estimated for evaluation of external evaluation of ESMP implementation

Sr No.	Description	Particulars of EMP Cost				
		Quantity	Unit	Rate (Rs.)	Amount (Rs.)	Remarks
	Grand Total of EMP Cost:				Rs. 30,63,000.00 /-	
	Grand Total (in Words): Thirty Lacs Sixty Three Thousand Rupees Only					

Chapter-8
Conclusion

The UP Government envisioned Uttar Pradesh Pro Poor Tourism Development Project with the financial support of World Bank is one of the stepping stone in restructuring its tourism sector in a pro-poor manner with a view to increasing benefits to local communities and improving the management of its tourism destinations. Revitalization of Shahjahan Park Walk way between Taj Mahal and Agra Fort, Agra is one of the identified sub project proposed under UP Pro-Poor Tourism Development Project.

Detailed Project Report for proposed sub project has been prepared and approved by the Department of UP Tourism Therefore, scope of this report is limited to assess environmental impacts of the components proposed under the said project and to determine the specific measures to reduce, mitigate and/or offset potential adverse impacts during pre-construction, construction and operation phases of the project. Project screening was carried out as per the screening criteria described in the Environment and Social Management Framework of UP pro-poor tourism development project that conclude that proposed sub project falls in 'category – B' with minimal impact and have overall positive benefits on the life and environment of the people. There has been no reported land acquisition or livelihood losses to be caused under this sub project. As per environmental and social management framework guidelines of Uttar Pradesh Pro Poor Tourism Development Project; Environment impact assessment was conducted for addressing possible issues/ concerns arising from proposed project. Impacts of activities identified during the assessment under categories of Construction and Operation phase. Although no such permanently negative or adverse environmental or social impacts were identified, there were certain temporary impacts, for which appropriate mitigation plans have also been suggested. The environmental management plan ensures to suggest appropriate mitigation measure against the issues/ concerns identified during the environmental and social analysis study. All the social and environmental issues were appropriately studied and have been substantiated using appropriate evidences, to ascertain the magnitude of their impacts. Even the issues of public grievances and public notice have been taken care in the report to confirm transparency during the project implementation. Report also ensures that well defined institutional mechanism is in place to monitor and evaluate the progress of the project during construction, implementation and operation phases.

Annexure-I

Guidelines for Construction and Demolition Waste Management & Solid Waste Management (as per Demolition Waste Management Rules, 2016 & Solid Waste Management Rules 2015)

(i) Every waste generator shall segregate construction and demolition waste and deposit at collection centre or handover it to the authorized processing facilities

(ii) Waste generator shall ensure that there is no littering or deposition of waste so as to prevent obstruction to the traffic or the public or drains.

(iii) Large generators (who generate more than 20 tons or more in one day or 300 tons per project in a month) shall submit waste management plan and get appropriate approvals from the local authority before starting construction or demolition or remodeling work,

(iv) Large generators shall have environment management plan to address the likely environmental issues from construction, demolition, storage, transportation process and disposal / reuse of C & D Waste.

(v) Large generators shall segregate the waste into four streams such as concrete, soil, steel, wood and plastics, bricks and mortar,

(vi) Large generators shall pay relevant charges for collection, transportation, processing and disposal as notified by the concerned authorities;

(vii) Segregate and store the waste generated in three separate streams namely bio-degradable, non bio-degradable and domestic hazardous wastes in suitable bins and handover segregated wastes to authorized waste pickers or waste collectors as per the direction or notification by the local authorities from time to time;

(viii) Wrap securely the used sanitary waste like diapers, sanitary pads etc., in the pouches provided by the manufacturers or brand owners of these products or in a suitable wrapping material as instructed by the local authorities and shall place the same in the bin meant for dry waste or non- bio-degradable waste;

(ix) Store separately construction and demolition waste, as and when generated, in his own premises and shall dispose off as per the Construction and Demolition Waste Management Rules, 2016; and

(x) Store horticulture waste and garden waste generated from his premises separately at site and dispose of as per the directions of the local body from time to time.

(xi) No waste generator shall throw, burn or burry the solid waste generated by him, on streets, open public spaces outside his premises or in the drain or water bodies.

(xii) All waste generators shall pay such user fee for solid waste management, as specified in the bye-laws of the local bodies.

(xiii) No person shall organize an event or gathering of more than one hundred persons at any unlicensed place without intimating the local body, at least three working days in advance and such person or the organizer of such event shall ensure segregation of waste at source and handing over of segregated waste to waste collector or agency as specified by the local body.