

Environmental Management Plan

Project Number: 51036-002
November 2021

Pakistan: Khyber Pakhtunkhwa Cities Improvement Project

Development of Shimla Hill Sherwan Park, Abbottabad

Prepared by Project Management Unit, Local Government, Elections and Rural Development Department, Government of Khyber Pakhtunkhwa for the Asian Development Bank.

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CURRENCY EQUIVALENTS

As of 18th November, 2021

Currency Unit – Pak Rupees (Pak Rs.)

Pak Rs 1.00 = \$ 0.0057

US\$1.00 = Pak Rs. 175

CONVERSIONS

1 meter = 3.28 feet

1 hectare = 2.47 acre

1 kanal = 0.125 acre

Acronyms

ADB	Asian Development Bank
CC	Construction Contractor
COVID	Corona Virus Infectious Disease
DC	Design Consultant
EE	Environmental Engineer
EMP	Environmental Management Plan
EPA	Environmental Protection Agency
IA	Implementing Agency
ISWM	Integrated Solid Waste management
KP	Khyber Pakhtunkhwa
KPCIP	Khyber Pakhtunkhwa Cities Improvement Project
KP-EPA	Khyber Pakhtunkhwa Environmental Protection Agency
LGE&RDD	Local Government Election and Rural Development Department
NEQS	National Environmental Quality Standards
PMU	Project Management Unit
PO	Park Operator
PPE	Personal Protective Equipment
PRF	Project Readiness Facility
RE	Resident Engineer
REA	Rapid Environmental Assessment
SC	Supervision Consultant
SPS	Safeguard Policy Statement
STD	sexually-transmitted disease
STPs	Sewage Treatment Plants
UCCRTF	Urban Climate Change Resilience Trust Fund
WHO	World Health Organization

NOTE

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

SECTION 1

INTRODUCTION

1.0 Project Overview

1. The Khyber Pakhtunkhwa Cities Improvement Project (KPCIP) is being processed through the Project Readiness Finance (PRF) modality by Asian Development Bank (ADB) under Loan 6016-PAK, being executed by KP Local Government Election and Rural Development Department (LGE&RDD). The Project is focused on investments of subprojects related to water supply, sanitation and drainage, solid waste management, and urban/green spaces. The Project has the following four major components:
 - Improvement of water supply systems in five (5) cities.
 - Improvement of sewerage and drainage systems in five (5) cities, including provision of sewage treatment plants (STPs)
 - Provision of Integrated Solid Waste management (ISWM) system in five (5) cities
 - Development of Urban/Green Spaces in five cities.
2. The project will finance about USD 380 Million for sub-projects with above components in Districts Peshawar, Swat, Abbottabad, Mardan and Kohat. Project financing will be shared by ADB (USD 200 Million), AIIB (USD 150 Million), Urban Climate Change Resilience Trust Fund- UCCRTF (USD 15 Million) and KP Government (USD 15 Million).
3. The proposed sub-project is development of an urban forest and a public park at Shimla Hill, located on the western hill sides of Abbottabad city center. The 87.5 acre project site is situated west of the popular Shimla Pahari, a public area. It has a hilly terrain (ranging from 1,385 to 1,440 m above sea level) and has moderate vegetation of pine trees at site.
4. The total project site is planned to be distributed between an urban forest (46.25 acres) and a park with viewing decks (5 acres). The land use of the remaining space will remain the same and existing natural features will be conserved. Recently, the contractor of E-35 expressway/Hazara Motorway has utilized the place as camp site,

during which construction rubble and metal scrap have been piled on flat areas of the site. Location of the proposed park is provided as **Figures 1** and **2** below.

1.1 Project Need

5. Abbottabad City is built on a hilly mountainous terrain. Although rich in natural vegetation, it lacks recreational spaces within the reach of its urban population. Amongst popular parks are the Company Bagh, Cantonment Park, Jinnah Park and Shimla Pahari Park. The 87.5 acres site selected for this project is located at a 10-minute drive from the city centre and has been considered for development as a family adventure park with recreational facilities not provided elsewhere in the city. The park has been designed to complement the natural landscape.

1.2 Project Categorization

6. The sub-project screening and categorization exercise has been conducted and the endorsement of the sub-project category by ADB has been obtained. Since the overall project activities will result in impacts that will mostly be localized, short term and easily manageable through implementation of best management practices, thus this sub-project has been classified as Category 'C' as per ADB SPS, 2009. The REA Checklist is provided as **Annexure A** of this document.
7. Thus, this Environmental Management Plan (EMP) document has been prepared for implementation by the Contractor to ensure compliance with all required measures as per ADB SPS, 2009.

1.3 Objective of the Project

8. The overall objective of the project is to develop a green urban space with opportunities for recreation and a conserved natural environment. It will provide opportunities to locals and tourists to interact with nature through healthy activities and it will help purify the air, reduce the urban heat island effect and serve as a greenhouse gas absorption sink. Seasonal tourists as well as the residents of Abbottabad are expected to benefit from this project. The project will also benefit the local community in the immediate vicinity of the site through the provision of a cricket ground.

1.4 Components of the Project

9. The following activities are included in scope of the project:
- Development of a park and placement of recreational activities (Hiking/ family trails and boardwalks)
 - Hill top Café /food stall having panoramic view of Abbottabad city
 - Eco-friendly Parking Lot and Information Center
 - Lookout points, bird watching spots and Botanical garden (through enhanced plantation of pine trees)
 - Public toilets (having main connection with city sewerage system/network)
 - Electric car sightseeing service and horseback riding
 - Offering adventure sports facilities – zorbing, ziplining and rock climbing

1.5 Objective of EMP

10. The EMP provides an overall approach for managing and monitoring the potential impacts and describes the institutional framework and resource allocations to implement these measures.
11. The main objectives of EMP are to:
- Provide details of the project impacts along with the proposed mitigation measures and the corresponding implementation activities;
 - Define the role and responsibilities of the Project Proponent, Contractor, Supervisory Consultants and other role players and effectively communicate environmental issues among them;
 - Define a monitoring mechanism, reporting frequency and identify monitoring parameters to ensure that all the mitigation measures are completely and effectively implemented;
 - Identify the resources required to implement the EMP and outline the corresponding financing arrangements;
 - Keeping in view the recent COVID-19 pandemic, specific health and safety measures and work practices have been provided to ensure occupational and community health and safety as far as possible and minimize the potential risk of infection and/or its transmission.

Figure 1: Project area map of Shimla Hill Park

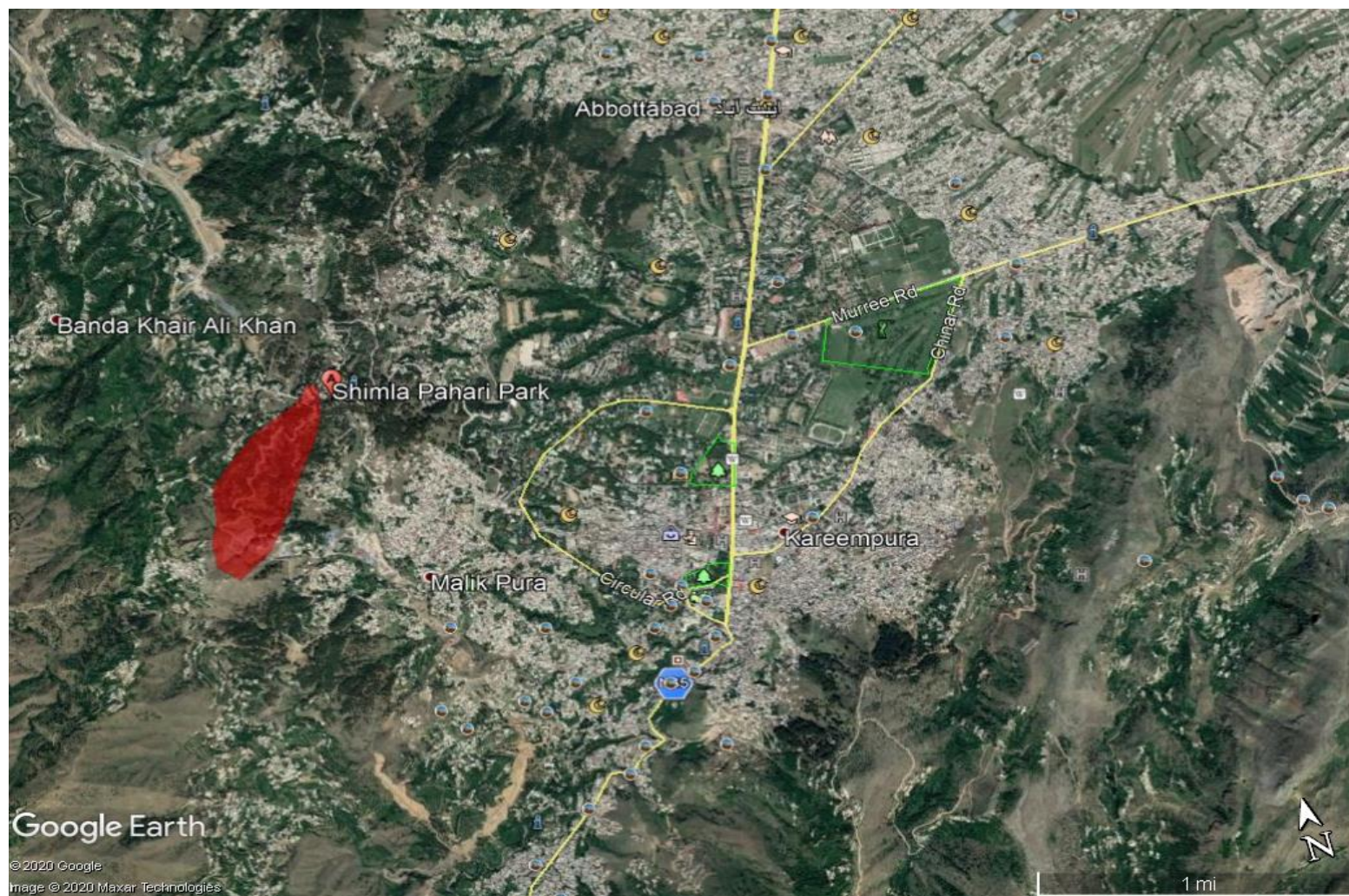
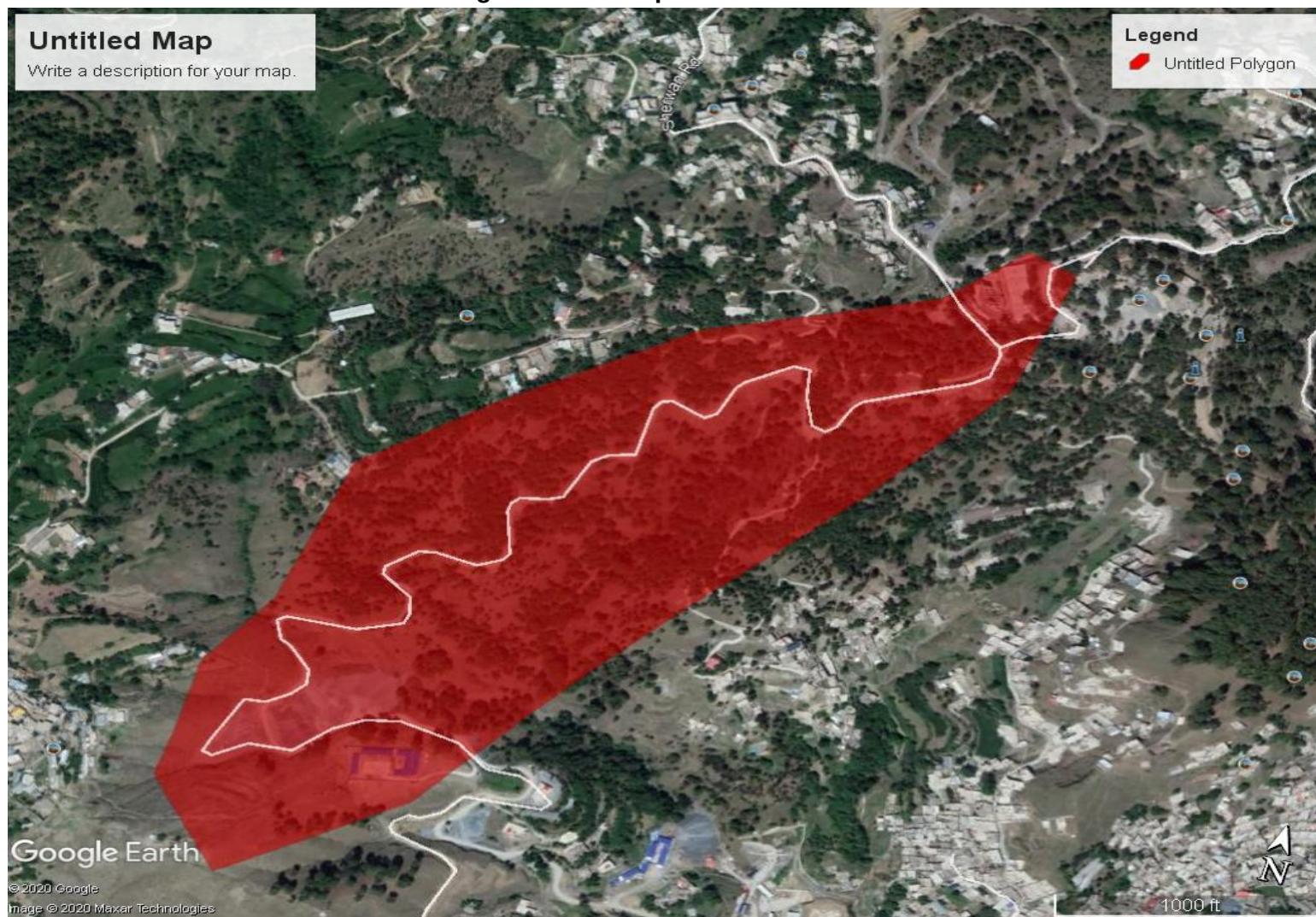


Figure 2: Site map of Shimla Hill Park



SECTION 2

PROJECT DESCRIPTION

2.0 Project Location

12. The site selected for this project is located south-west of the popular Shimla Pahari tourist destination and can be accessed from Sherwan road and Old Malikpura road as shown in the **Figure 3** below.

2.1 Scope of Construction Works

13. Major construction works are construction of walking track/trails, stairs and railings, play grounds, Tuck shops/cafes, toilet block, ticketing booth, BBQ points, round benches, animal stables, watch towers, viewpoints and parking areas/sheds.
14. Tree plantation will be carried out to improve the green space in the park. The project will provide opportunities to locals and tourists to interact with nature through healthy activities. It will help purify the air, reduce the urban heat island effect and serve as a greenhouse gas absorption sink.
15. The project construction will incorporate the conservation of existing trees. Most of proposed infrastructure facilities are planned on those spots on site that contain no existing trees.

2.2 Component Wise Project Scopes and Objectives

16. The scope and objectives of the project are provided in **Table 2.1** below.

Table 2.1: Project Scope and Objectives

	Scope	Objectives
1.	Adventure sports: <ul style="list-style-type: none">▪ Rock climbing▪ Zorbing▪ Ziplining	<ul style="list-style-type: none">▪ Encourage healthy interaction with nature▪ Opportunity for engagement in physical exercise▪ Outlet for youth

2.	Food services – tuck shops and cafés	<ul style="list-style-type: none"> ▪ Source of income generation for the park and employment for locals ▪ Facilitate visitors to spend more time at the park
3.	Two parking spaces (one at each end of park)	Secure parking to attract visitors to the site
4.	Hill top BBQ points and semi-indoor and outdoor sitting areas	<ul style="list-style-type: none"> ▪ Promote healthy social interaction ▪ Outdoor entertainment
5.	Vantage Points	Enable visitors to enjoy scenic views
6.	Provision of park furniture (different types of benches, gazebos, guardrails, planters, signboards, guidance map)	<ul style="list-style-type: none"> ▪ Make it easier for visitors to explore the park and take breaks ▪ Easy and safe navigation along trails ▪ Compliment natural beauty of landscape
7.	Recycling dustbins	Encourage appropriate solid waste disposal
8.	Provision of ramps, staircases, walking tracks and trails	<ul style="list-style-type: none"> ▪ Easy access to different destinations on the site ▪ Wheelchair accessibility
9.	Family areas and play areas for children	<ul style="list-style-type: none"> ▪ Amusement for children ▪ Gathering space for families
10.	Preservation of pine forest, apple orchard and additional plantation	<ul style="list-style-type: none"> ▪ To keep intact the existing ecology of the site ▪ Beautify the landscape more with fruits trees ▪ Fruit picking activity for visitors
11.	Electric sightseeing cars	Mode of transport for the elderly within the park
12.	Horse riding	Entertaining mode of transport within the park
13.	Public washroom	For essential sanitation and hygiene requirements
14.	Cricket ground	Provide recreational space for residents of Union

		Council Lower Chamhad in the immediate vicinity of the site
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2.3 Site Description

17. The description of the proposed site based on the field observations made during visits to the site are summarized below:

1. Steep Terrain: The site is composed of over 14 hills used as a grazing ground for local livestock. The steep depressions (Picture 1) make it difficult to tread the site without secure trails.

2. Natural springs, waterfalls and small ponds: About 3 natural springs were observed on the site. Waterfalls were mostly found along the natural spring channels (Picture 2).



Picture 1. Steep depression



Picture 2. Natural spring, waterfall and pond

3. Poor Road Condition: The existing road leading into the site is not carpeted with asphalt and needs to be reconstructed as part of the project (Picture 3).

4. Potential Vantage Points: There are many points on the site that can be developed as lookout with scenic views of the Abbottabad (Picture 4).



Picture 3. Condition of road leading into the site



Picture 4. Potential vantage point

5. Hillocks with Clear Space: A large majority of the site consists of pine tree vegetation, but some hills have surfaces without vegetation. These spaces could be utilized for the development of picnic points or recreational facilities (Picture 5).

6. Flora & Fauna: Sounds of different bird species were noted and Blue Pine trees, on the verge of extinction, were observed. Watch towers could be constructed to spot birds and for special views of the hills (Picture 6).



Picture 5. Hillock for development of BBQ point



Picture 6. Scenic view from hillock

7. Platforms: Flat areas on the site were layered with slate and concrete rubble left behind from the construction of the Hazara Expressway (Picture 7). One of the platforms was in use as a cricket ground by locals (Picture 8).



Picture 7. Birds-eye view of a platform



Picture 8. Flat platform used by community for cricket

2.4 Design Features of Proposed Park

18. Based on the detailed design for the proposed park, the facilities and their respective descriptions are provided in the **Table 2.2** below.

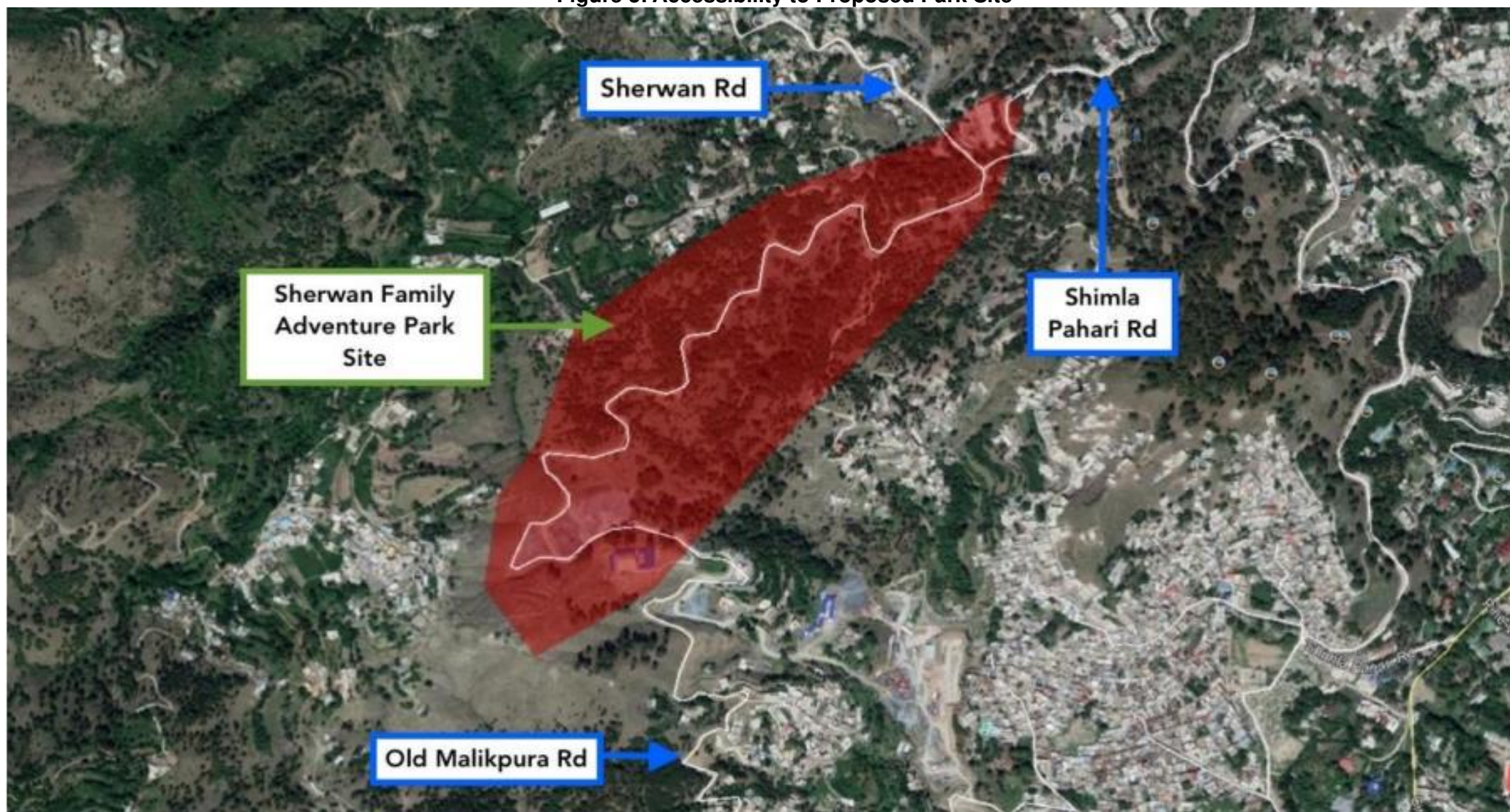
Table 2.2: Design Features of Proposed Park

	Feature	Quantity	Description
1	Walking Track	235,253 SFT	Slate Stone
2	Khyber Trail	20 X 8,681 FT	Compacted Earth
3	Stairs	Length in ft	Slate Stone
4	Trellis 1	4	Installed at Khyber Café and constructed from M.S. Pipe
5	Trellis 2	23	M.S. Pipe
6	Guardrail	4,744 FT	Along the Khyber Trail – constructed from concrete & slate stone
7	Cricket Ground	57,098 SFT	Grass surface
8	Gazebo	72	M.S. Pipe and Wood
9	Gazebo with BBQ Pit	56	Same as above but with BBQ Pit
10	2 Parking Areas	34,344 SFT & 88,135 SFT	Slate stone surface with thermoplast paint for markings. Capacity for 51 and 100 cars each.
11	Parking Shed	For 151 cars	Galvanized Iron (GI) sheet
12	Toilet Block	4	Each toilet block will have 3 regular lavatories and 1 lavatory for the physically challenged
13	Tuck Shop	3	Placed at different locations on the site
14	Ticket Booth	5	1 ticket booth for each adventure sport activity and at the main gates
15	Main Gate	2	Concrete and Ms Pipe
16	Horse Stable	1	Area for 5 number of horses, food storage space and 1 office area for the care taker
17	Electric Cars	5	Electric will have the separate parking area. Near both the gates of the park
18	Electric Charging Decks	2	Charging decks will be provided with the parking area
19	M.Bench	18	Concrete & wood

20	Round Bench 1	20	Concrete
21	Round Bench 2	4	Concrete
22	Signage Type 1 (without chains)	30	Placed at different locations to help visitors navigate the site and identify landmarks
23	Signage Type 2	25	Same as above but signage hanging from chains
24	Dustbin	100	Recycling dustbins will remind users to segregate waste while discarding it
25	Zorbing	24,139 SFT	Sport involving rolling down a hill inside an orb. Trained professionals will supervise the sport
26	Ziplining	992 FT	Zipline will start from Thandiyani Top and ends at Jaglot Point. Trained professionals will supervise the sport
27	Rock Climbing	1	A 43 feet tall wall is provided for Rock Climbing as per standards and trained professionals will supervise the sport
28	Service Area	5	Service areas are provided at different locations and specially with adventure sports activates for the storage of equipment and gadgets
29	Watch Tower	6	Concrete, M.S Pipe & GI Sheet
30	Sherwan Café	56' Radius	A hexagonal shaped semi-outdoor restaurant – one of the main attraction points of the park
31	Khyber Café	1	Khyber Café is located at the south east side of the park with outdoor sitting spaces and a viewing point
32	Saif-ul-Muluk BBQ Point	17,456 SFT	BBQ pits will be provided for visitors to use at their own risk
33	Jaglot Point	18,303 SFT	Viewing point with benches
34	Naran BBQ Top	32,720 SFT	BBQ pits will be provided for visitors to use at their own risk
35	Shimla Point	9,652 SFT	Viewing point with benches
36	Children's Play Area	4,211 SFT	With swing sets and benches

19. The project design layouts are provided as **Figures 4** and **5** below.

Figure 3: Accessibility to Proposed Park Site



SECTION AT A-A

CRICKET BOUNDARY WALL

PARKING

HIMALAYA TRAIL

KHYBER TRAIL

KHYBER TRAIL

CRAVIS

EXISTING PINE FOREST

GUARD RAIL

SHERWAN CAFE

KHYBER TRAIL

WATCH TOWER

PARKING

KHYBER TRAIL

BOUNDARY WALL

1:50

1:100

0+00 1+00 2+00 3+00 4+00 5+00

320'-6" 298'-9" 306'-3" 186'-3" 255'-3" 443'-2" 584'-5" 196'-6" 73'-3" 78'-10" 107'-4" 107'-3" 358'-5" 598'

1048'-10"



1. ALL THE DIMENSIONS ARE IN FEET AND INCHES UNLESS OTHERWISE STATED.
2. TOTAL AREA OF SHERWAN PARK ABBOTTABAD IS 700.00 KANAL.
3. WALKING TRACKS ARE PROPOSED IN SHERWAN PARK ABBOTTABAD.
4. ALL MATERIALS, FABRICATION AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH TECHNICAL SPECIFICATION.
5. THE CONTRACTOR SHALL RESPECT ALL ENVIRONMENTAL, SAFETY, AND HEALTH REGULATIONS.

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Revision	Drawn	Checked	Approved	Date	Description

CLIENT



KHYBER PAKHTUNKHWA CITIES IMPROVEMENT PROJECTS GOVERNMENT
OF KHYBER PAKHTUNKHWA

CONSULTANT: JOINT VENTURE OF



CREATIVE ENGINEERING CONSULTANTS **MINCONSULT**
CREATIVE HOUSE PHASE-3 CHOWK, MINCONSULT SDN BHD (59035-P)
HAFSABAD PESHAWAR PAKISTAN Tel: +91 LOT 4, JALAN 514/223, 40100 PETALING JAYA,
5941553 SELANGOR, MALAYSIA

PROJECT

GREEN URBAN SPACE
SHERWAN PARK

TITLE

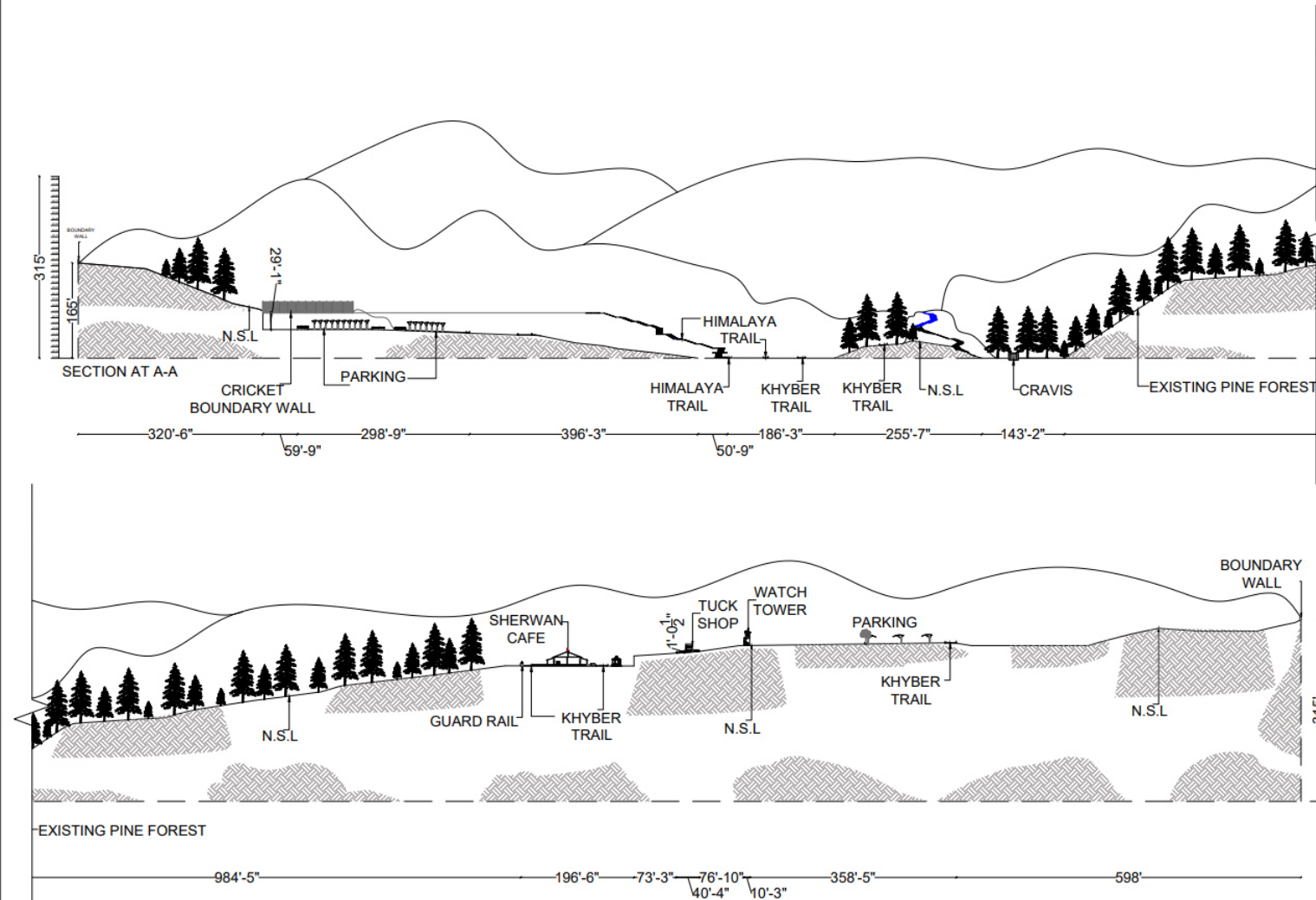
SECTION A-A
SECTION B-B

Drawn by:	FAZAL WAHAB	SEP 2020
Checked by:	ARSALAN JABBAR	SEP 2020
Approved by:	SAJID KHAN	SEP 2020
DRAWING No.		Revision
CEC-GS-ABT-0408		01

Drawing Scale: N.T.S.

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Figure 5: Project Layout 2



NOTES:

1. ALL THE DIMENSIONS ARE IN FEET AND INCHES UNLESS OTHERWISE STATED.
2. TOTAL AREA OF SHERWAN PARK ABBOTTABAD IS 700.00 KANAL.
3. WALKING TRACKS ARE PROPOSED IN SHERWAN PARK ABBOTTABAD.
4. ALL MATERIALS, FABRICATION AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH TECHNICAL SPECIFICATION.
5. THE CONTRACTOR SHALL RESPECT ALL ENVIRONMENTAL, SAFETY, AND HEALTH REGULATIONS.

DO	F.W	AJ	SK	10.09.020	DRAFT
Revision	Drawn	Checked/Approved	Date	Description	

CLIENT



KHYBER PAKHTUNKHWA CITIES IMPROVEMENT PROJECTS GOVERNMENT
OF KHYBER PAKHTUNKHWA

CONSULTANTS: JOINT VENTURE OF



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SHARAD

PROJECT

GREEN URBAN SPACE
SHERWAN PARK

TITLE

SECTION A-A
CALLOUT SHEET

2.5 Stakeholder Consultations

20. Several consultative sessions were held between the Abbottabad city management and the KPCIP team including the Project Director (PMU-KPCIP), Project Officer (PMU-KPCIP), Architects and Planners from EDCM-KPCIP to define the scope of work for the project.
21. Focus Group Discussions (FGD) with residents of Abbottabad were carried out. Keeping in view the cultural dynamics of the area, separate consultations were conducted with male and female groups within community. The views, concerns and suggestions of participants have been summarized below:
- There shall be colorful flowers for beautification. Plant a variety of beautiful and colorful flowers to enhance the beauty of the complex.
 - Walking and running tracks are already being made.
 - Most of the local school children come to play in this ground, the seating capacity shall be increased, and shade shall be provided, so that the children can sit comfortably in the shade and enjoy watching the game
 - Sprinkle water system is required for the grounds, so that the ground can be easily irrigated with water and the lawn will remain green and lush.
 - Tuck shop is required.
 - Public washroom shall be provided.

2.6 Climate Change Risks

22. The different features of Shimla Park are designed in line with the natural contour without disturbing the topography of the site. In the design, no storm water pumping system has been proposed. For rain water drainage, the drainage system is based on the “nature-based solution”, concreted lined drains are provided to carry away the excess water. Also, spaces in depression areas are planned to be kept as they are to act as spaces for the ponding of rainwater to stay for a day or more and enable groundwater recharge. There is no rainwater flooding expected in the park.
23. There are no cyclones observed and projected in the project area, however, infrastructure will be constructed to withstand high speed winds (if any).

SECTION 3

INSTITUTIONAL ARRANGEMENTS AND CAPACITY BUILDING

3.0 General

24. The main purpose of the EMP is to provide a strategy for environmental protection. According to EMP, all the activities associated with the project will be controlled and monitored during the design, construction and operation phase. EMP will propose a plan of actions that will indicate responsibilities and required measures to prevent or minimize the potential environmental impacts.

3.1 Organizational Set-up for Implementation of EMP

25. The following functionaries will be involved in the implementation of EMP;

- Program Management Unit (PMU);
- Supervision Consultant's Environmental Engineer;
- Contractor's Site Environmental Engineer; and
- KPK EPA (Regulatory Authority)

Organizational set-up for implementation of EMP is shown in **Figure 3.1** below.

26. The PMU will be overall responsible for implementation of this EMP and for the environmental management and supervisory affairs during the construction phase of the proposed project. For effective environmental management, the PMU will assign the necessary responsibilities through Project Director, to an Environmental Expert and a Social Expert in implementing the mitigation measures proposed in EMP.
27. The Contractor will be responsible for the implementation of EMP under the Supervision Consultant. The Contractor shall be bound to follow the provisions of the Contract documents, especially about environmental protection and apply good construction techniques and methodology without damaging the environment. Obligation of the Contractor is to safeguard, mitigate adverse impacts and rehabilitate the environment shall be addressed through environmental provisions in the Contract document and through adequate implementation at site. Regulatory Authority will be responsible for compliance of implementation of EMP.

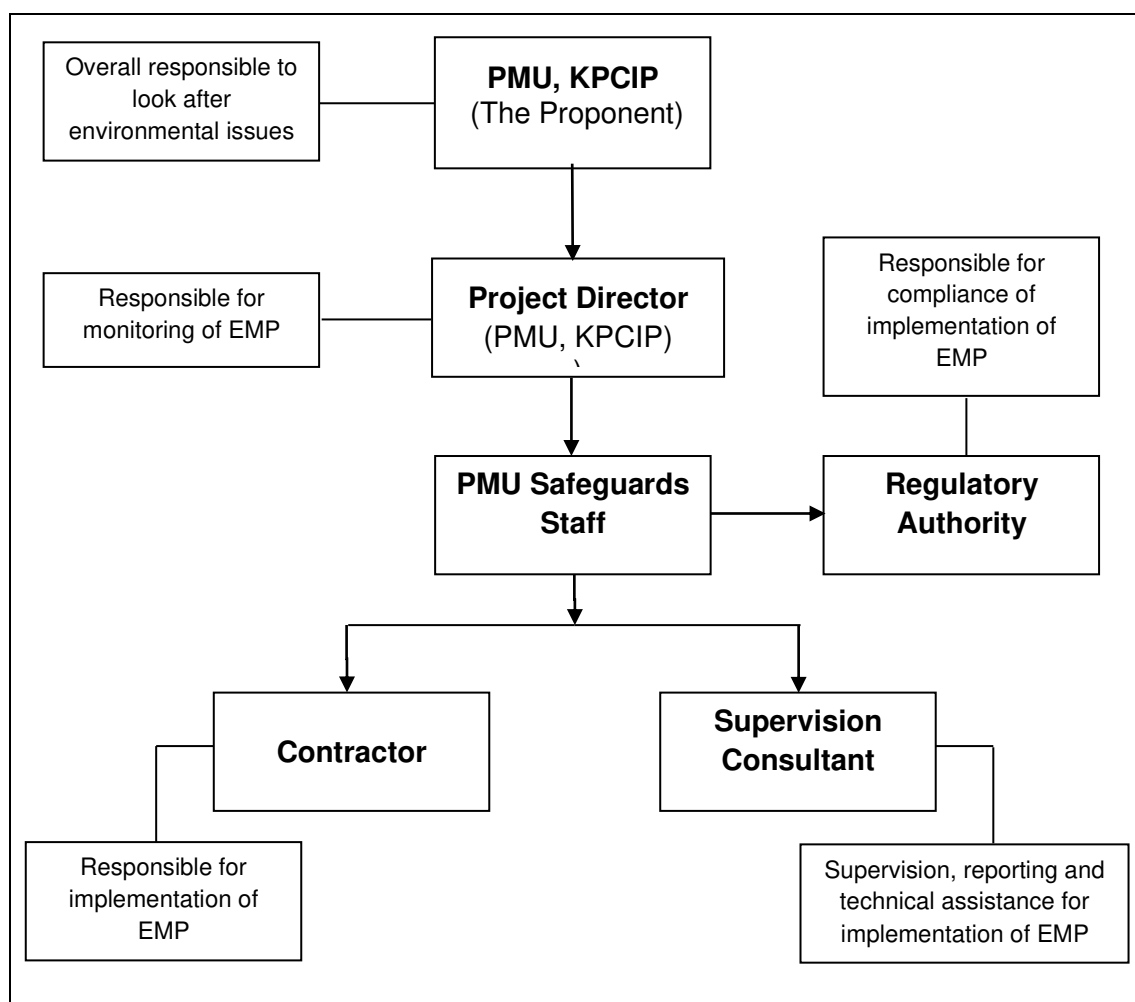


Figure 3.1 Organizational Setup for Implementation of EMP

3.2 Role and Responsibilities of PMU

3.2.1 Program Management Unit (PMU)

28. Design and Construction of the project is the core responsibility of PMU, KPCIP. The major role and responsibilities related to environment and social tasks are as follows:

- To ensure that the Project design and specifications adequately reflected in the EMP.
- To ensure the Project compliance with the environmental regulations and donor requirements;
- To ensure that the TOR for the Supervisory Consultants adequately cover the environmental and social issues; and

3.2.2 Project Director (PD)

29. The specific responsibilities of Project Director are as follows:

- Setting up systems for environmental management;

- Ensuring that the Contractor(s) develop and carry out environmental implementation Plans that are consistent with the EMP;

3.2.3 Responsibilities of Environmental Engineer of Supervision Consultant

30. The Environmental Engineer (EE) of the Supervision Consultant (SC) will oversee the performance of Contractor through periodic monitoring to make sure that the Contractor is carrying out the work in accordance with EMP.

31. The EE of SC will provide guidance to the Contractor's Environmental Engineer for implementing each of the activities as given in the EMP. The EE of SC will be responsible for record keeping providing instruction through the Resident Engineer (RE) for corrective actions and will ensure the compliance of various statutory and legislative requirements. The EE will maintain close coordination with the Contractor and PMU for successful implementation with environmental safeguard measures. However, overall responsibilities of EE of SC are as follows:

- Directly reporting to the RE;
- Discussing various environmental issues and environmental mitigation, enhancement and monitoring actions with all concerned directly or indirectly;
- Inspect, supervise and monitor all the construction and allied activities related to the EMP for the project;
- Assist the RE to ensure the environmental sound engineering practices;
- Assisting contractor and PMU in all matters related to public contacts including public consultation pertaining to environmental and community health & safety issues;
- Assisting PMU Safeguards staff to carry out environmental monitoring;
- Organizing training to the EE of Contractor and field staff; and
- Preparing and submitting monthly and quarterly environmental progress/ compliance reports to the PMU.

3.4 Responsibilities of Site Environmental Engineer of Construction Contractor

32. The Site Environmental Engineer of Construction Contractor will carry out the implementation of mitigation measures at construction site. Construction Contractor will be bound through Contract documents to appoint the Site Environmental Engineer with relevant educational background and experience. Responsibilities of EE of Contractor are as follows:

- Preparing sub plans including monitoring plan, traffic control/diversion plan, site rehabilitation plans etc. and will submit all the plans to the EE of SC.

- Implementation of EMP and to take effective measures against corrective actions plan;
- Preparing the compliance reports as per schedule and will submit it to the SC;
- Providing proper Personal Protective Equipment (PPEs) to the workers and train them for their proper use; and
- Providing environmental and health & safety trainings to the workers /labor.

3.5 Non-Compliance of the EMP

33. The implementation of the proposed EMP involves inputs from various functionaries as discussed earlier. The Contractor will be primarily responsible for ensuring implementation of the mitigation measures proposed in the EMP, which will be part of the Contract documents. The provision of the environmental mitigation cost will be made in the total cost of project, for which Contractor will be paid on the basis of monthly compliance reports. The Contractor will not be allowed to proceed further until the mitigation measures as proposed in the EMP are taken and approved by Supervision Consultant.

3.6 Environmental Technical Assistance and Training Plan

34. In order to raise the level of professional and managerial staff, there is a need to upgrade their knowledge in the related areas. The SC will play a key role in this respect and supervise the arrangements of trainings.
35. Contractor's environmental awareness and appropriate knowledge of environmental protection is critical to the successful implementation of the EMP as without appropriate environmental awareness, knowledge and skills required for the implementation of the mitigation measures, it would be difficult for the Contractor(s) workforce to implement effective environmental protection measures. A suitable training program is proposed to train the Contractor(s) staff who will be involved in the Construction Phase and the professional staff from the client involved at the operational stage of the project.
36. The PMU, KPCIP will engage consultants to manage the environmental training program. The objective of engaging these consultants will be to help in establishment of appropriate systems, and to train senior project staff and Environmental Expert responsible for managing environment, operations, and planning. The details of this training program are presented in **Table-3.1**.

Table-3.1: Personnel Training Program

Provided by	Contents	Trainees/Events	Duration
Consultants/ organizations specializing in environmental management and monitoring	Short seminar and a course on: Environmental laws and regulations, daily monitoring and supervision	One seminar for PMU and contractor project staff	1 day
Consultants/ organizations specializing in social management and monitoring	Short seminar and course on: Social awareness	One seminar for project staff dealing in Social/land matters	1 day
Consultants/ organizations specializing in Occupational, health and safety issues	Short lecture relating to Occupational Safety and Health	One seminar for contractor's staff	2 days

SECTION 4

ENVIRONMENTAL MANAGEMENT PLAN

4.0 General

37. The Environmental Management Plan (EMP) provides the framework for the implementation of the mitigating measures and environmental management and monitoring during the construction and operation phases of the proposed project. The proper implementation of the EMP will ensure that any adverse environmental impacts are adequately mitigated, either totally prevented or minimized to an acceptable level and required actions to achieve those objectives are successfully taken by the concerned institutions or regulatory agencies. The implementation of EMP will be carefully coordinated with the design, construction and operation programs of the project to ensure that relevant mitigation measures are implemented at the appropriate stage and adequate resources are properly allocated to achieve the desired results.
38. The **Table 4.1** depicts impacts, targets, mitigations and the responsible authorities for the implementation of the mitigation measures during design, construction and operational phases.

Table-4.1: Environmental Management Plan

Sr. No.	Parameters	Target	Mitigation	Responsibility
Design/pre-construction Phase				
1	Design & Layout Planning	Intended to enhance the park aesthetic and focused on certain project structures	<ul style="list-style-type: none"> All structural, layout and engineering designing of project shall be strict in accordance with the applicable by laws and engineering parameters. 	PMU, KPCIP
2	Drainage	To prevent flooding and pooling	<ul style="list-style-type: none"> Provision of appropriate drainage structures and stormwater pumping station; and Proper slopes shall be incorporated in design feature to avoid the formation of the water layer on road surfaces in rainy seasons. 	PMU, KPCIP
3	Public Utilities	To avoid disturbance to the public.	<ul style="list-style-type: none"> The design engineer shall consider the adjustments of the proposed plans, where feasible and within acceptable design standards, to avoid relocation or adjustment of major or costly utilities without changing the scope of the project. The design engineer shall consider the feasibility and possible choices of electrical works and installation of lights keeping in view health and safety of workers and general public. 	PMU, KPCIP
4	Seismic Hazard	To minimize the structural damage	<ul style="list-style-type: none"> The proposed building and structures will be designed and constructed to withstand 	PMU, KPCIP

Sr. No.	Parameters	Target	Mitigation	Responsibility
			low to moderate earthquakes. For seismic hazard analysis, updated structural and seismic evaluations will be consulted.	
5	Traffic Management	To minimize traffic problems in the project area	<ul style="list-style-type: none"> Proper traffic management plan shall be formulated and announced before construction to avoid traffic jams/public inconvenience; Plan the timing for movement of construction materials carrying vehicles to reduce traffic load and avoid inconvenience to the local residents. Means of communication of recommended alternative routes shall be planned to avoid inconvenience and traffic blockades during construction 	PMU, KPCIP
6	Health and Safety	To minimize health risks	<ul style="list-style-type: none"> Preparation of health and safety plan to minimize health risks; and An emergency response plan shall be formulated which emphasizes line of action for rescue, medical emergencies, natural disasters and firefighting operations. 	PMU, KPCIP

Sr. No.	Parameters	Target	Mitigation	Responsibility
7	Solid Waste Management	To manage (i.e. collect and dispose) the solid waste safely at appropriate sites.	<ul style="list-style-type: none"> ▪ Incorporate technical design features for refuse collection at sites that would minimize burning impacts; and ▪ Devise plan(s) for safe handling, storage and disposal of harmful materials 	PMU, KPCIP
Construction Phase				
1	Topography	To make ensure minimum changes in topography of the project area.	<ul style="list-style-type: none"> ▪ Excavations shall be kept confined to the specified location as per the approved engineering drawings and unnecessary excavations shall be avoided. 	CC, SC
2	Soil	To minimize soil erosion and contamination.	<ul style="list-style-type: none"> ▪ All spoils shall be disposed off as desired and the site will be restored back to its original conditions; ▪ Unnecessary excavations shall be avoided; ▪ Septic tanks of adequate capacities will be constructed for receiving and treating wastewater from all temporary worksite toilets and at the temporary container offices, if any. The toilet wastewater shall not be discharged untreated onto the adjacent lands/sewers/disposal station; and ▪ Washout from washing of equipment and gadgets will be drained into either a septic tank or a sand-gravel bed for removal of 	CC, SC

Sr. No.	Parameters	Target	Mitigation	Responsibility
			the grit and contaminants.	
3	Camp Site	To minimize loss of assets and vegetation due to labor movement and to prevent degradation of environment due to construction camps.	<ul style="list-style-type: none"> Preparation of Waste Management Plan addressing the classification, storage and disposal of all solid wastes and the training of employees for handling the hazardous materials. Training will be provided to all staff members on camp management rules and overall discipline and cultural awareness. 	CC, SC
4	Health and safety of workers and associated communities	To minimize health risks	<ul style="list-style-type: none"> Obligatory insurance against accidents for laborers/workers shall be ensured; Basic medical training shall be imparted to specified work staff and basic medical service and supplies to workers; Layout plan for camp site, indicating safety measures taken by the contractor, e.g. fire fighting equipment, safe storage of hazardous material, first aid, security, fencing, and contingency measures in case of accidents; Work safety measures and good workmanship practices are to be followed by the contractor to ensure no health risks for laborers; Protection devices (ear muffs) shall be provided to the workers doing job in the vicinity of high noise generating machines; Provision of protective clothing for 	CC, SC

Sr. No.	Parameters	Target	Mitigation	Responsibility
			<p>laborers handling hazardous materials, e.g. helmet, adequate footwear for bituminous pavement works, protective goggles and gloves etc;</p> <ul style="list-style-type: none"> ▪ Ensure strict use of wearing these protective clothing during work activities; ▪ Emergency number shall be placed at worksites; ▪ Elaboration of contingency planning in case of major accidents; ▪ Instruct construction supervisor to strictly enforce the keeping out of non-working persons, visitors, particularly children, off work sites; and ▪ Adequate signage, lightning devices, barriers, yellow tape and persons with flags during construction to manage traffic at construction sites, haulage and access roads. ▪ There shall be proper control on construction activities and oil spillage leakage of vehicles; ▪ The labor staff with any transmittable diseases shall be restricted within the construction site; ▪ Efforts will be made to create awareness about road safety among the drivers operating construction vehicles; ▪ Timely public notification on planned construction works; ▪ Provision of proper safety and diversion 	

Sr. No.	Parameters	Target	Mitigation	Responsibility
			<p>signage, particularly at sensitive/accident-prone spots;</p> <ul style="list-style-type: none"> ▪ Setting up speed limits in close consultation with the local stakeholders; ▪ The communicable disease of most concern during construction phase, like sexually-transmitted disease (STDs) such as HIV/AIDS, shall be prevented by successful initiative typically involving health awareness; education initiatives; training of workers in disease treatment; immunization program and providing health service; and ▪ Reducing the impacts of vector borne diseases on long-term health effect of workers shall be accomplished through implementation of diverse interventions aimed at eliminating the factors that lead to disease, which includes Prevention of larval and adult propagation of vectors through sanitary improvements and elimination of breeding habitat close to human settlements and by eliminating any unusable impounding of water. 	
5	Air Pollution	To minimize air pollution	<ul style="list-style-type: none"> ▪ All excavation work will be sprinkled with water to control dust; ▪ The excavated material shall be covered and shall not be stored for long intervals; ▪ All vehicles, machinery, equipment and 	CC, SC

Sr. No.	Parameters	Target	Mitigation	Responsibility
			<p>generators used during construction activities shall be kept in good working condition and be properly tuned and maintained in order to minimize the exhaust emissions;</p> <ul style="list-style-type: none"> ▪ All vehicles, machinery and equipment used for the construction shall be plugged off or switched off immediately after completion of their work to avoid idling condition; ▪ Filter shall be installed at the point sources (machinery or equipment) of air emissions and shall be replaced regularly; ▪ Emissions from power generators and construction machinery are important point sources at the construction sites. Proper maintenance and repair is needed to minimize the hazardous emissions; ▪ Open burning of solid waste from the Contractor's camps shall be strictly banned; ▪ Preventive measures against dust shall be adopted for on-site mixing and unloading operations. Regular water sprinkling of the site shall be carried out to suppress excessive dust emission(s); ▪ Construction workers shall be provided with masks for protection against the inhalation of dust; and ▪ PEQS applicable to gaseous emissions generated by construction vehicles, 	

Sr. No.	Parameters	Target	Mitigation	Responsibility
			equipment and machinery shall be enforced during construction works.	
6	Noise and Vibration	To minimize noise pollution	<ul style="list-style-type: none"> ▪ Selection of up-to-date and well-maintained plant or equipment with reduced noise levels ensured by suitable in-built damping techniques or appropriate muffling devices; ▪ Confining excessively noisy work to normal working hours in the day, as far as possible; ▪ Providing the construction workers with suitable hearing protection like ear cap, or earmuffs and training them in their use; ▪ Preferably, restricting construction vehicles movement during night time; ▪ Avoid use of heavy drill machines to avoid the vibration effect on the historical buildings. ▪ Vehicles and equipment used shall be fitted, as applicable, with silencers and properly maintained; ▪ Use of low noise machinery, or machinery with noise shielding and absorption; ▪ Contractors shall comply with submitted work schedule, keeping noisy operations away from sensitive points; implement regular maintenance and repairs; and employ strict implementation of operation 	CC, SC

Sr. No.	Parameters	Target	Mitigation	Responsibility
			procedures	
7	Construction Waste and Hazardous Waste	To minimize the construction and hazardous waste	<ul style="list-style-type: none"> Wastewater effluent from contractor's workshop and equipment washing yards would be passed through gravel/ sand beds to remove oil/ grease contaminants before discharging it into natural streams; Training of working force in the storage and handling of materials and chemicals that can potentially cause soil contamination; Solid waste generated during construction and camp sites will be safely disposed in demarcated waste disposal sites and the contractor will provide a proper waste management plan; Burning of waste will be prohibited; Proper labelling of containers, including the identification and quantity of the contents, hazard contact information etc.; Training employees involved in the transportation of hazardous material regarding emergency procedures; Providing the necessary means for emergency response on call 24 hours/day; The sewage system for camps will be properly designed (pit latrines or, as required, septic tanks) to receive all sanitary wastewaters; and 	CC, SC

Sr. No.	Parameters	Target	Mitigation	Responsibility
			<ul style="list-style-type: none"> Lined wash areas will be constructed at site, for the receipt of wash waters from construction machinery. Covering material during heavy rainfall; Locating stockpiles to minimize potential visual impact, and Minimizing land intake of stockpiles areas as far as possible. 	
8	Resource Conservation	Sustainable use of energy resources	<ul style="list-style-type: none"> Wastage of water shall be controlled through providing proper valves and through controlling pressure of the water; Water jets and sprays shall be used for watering surfaces rather than using overflow system; Source of water shall be carefully selected. Water use shall not disturb the existing community water supplies; Reuse of construction waste materials; Unnecessary equipment washings shall be avoided; A good camp design and an efficient worksite management plan can help the contractor to reduce the water demand to the lowest levels 	CC, SC
9	Energy Efficiency	To minimize energy efficiency	<ul style="list-style-type: none"> Ensure adequate insulation to reduce heat loss through batching plants; Regularly monitor CO and CO₂ content of the flue gases to verify that combustion 	CC, SC

Sr. No.	Parameters	Target	Mitigation	Responsibility
			<p>systems are using practical excess air volumes;</p> <ul style="list-style-type: none"> ▪ Maintain clean heat transfer surfaces in asphalt batching plant; 	
10	Surface and Groundwater	To protect the ground and surface water resources from any kind of pollution due to project	<ul style="list-style-type: none"> ▪ Protection of surface and groundwater reserves from any source of contamination such as the construction and oily waste that will degrade its potable quality; ▪ Wastewater effluent from contractor's workshop and equipment washing yards shall be passed through gravel/ sand beds to remove oil/ grease contaminants before discharging it into natural streams ▪ The solid waste will be disposed off in designated landfill sites to sustain the water quality for domestic requirements; ▪ water required for construction is obtained in such a way that the water availability and supply to nearby communities remain unaffected; ▪ For construction purposes, water shall be drawn from surface water bodies on priority and as available; ▪ Regular water quality monitoring according to determined sampling schedule; ▪ The contractor shall ensure that construction debris do not find their way 	CC, SC

Sr. No.	Parameters	Target	Mitigation	Responsibility
			<p>into the drainage network, which may get clogged;</p> <ul style="list-style-type: none"> ▪ To maintain the surface water flow/drainage, proper mitigation measures will be taken, like drainage structures ▪ Prohibit washing of machinery and vehicles in surface waters, provide sealed washing basins and collect wastewater in sedimentation/retention pond; ▪ Construction work close to the streams or other water bodies will be avoided, especially during monsoon period; ▪ Take precautions construct temporary or permanent devices to prevent water pollution due to increased siltation; and ▪ Waste must not be disposed off into any surface water body. 	
11	Flora and fauna	To minimize the impact on flora and fauna	<ul style="list-style-type: none"> ▪ The Contractor's staff and labor will be strictly directed not to damage any vegetation such as trees or bushes; and ▪ Contractor will provide gas cylinders at the camps for cooking purposes and cutting of trees/bushes for fuel will not be allowed. ▪ Hunting, poaching and harassing of animals will be strictly prohibited and Contractor will warn their labor accordingly; ▪ The camps will be properly fenced and gated to check the entry of animals in 	CC, SC

Sr. No.	Parameters	Target	Mitigation	Responsibility
			<p>search of eatable goods. Similarly, waste of the camps will be properly disposed off to prevent the chances of eating by animals, which may become hazardous to them;</p> <ul style="list-style-type: none"> Special measures will be adopted to minimize impacts on the birds, such as avoiding noise generating activities during critical periods of breeding; Staff working on the project shall be given clear orders, not to shoot, snare or trap any bird. 	
12	Public Utilities/ Infrastructure	To minimize the disturbance to public utilities and infrastructure	<ul style="list-style-type: none"> All public utilities likely to be affected by the proposed project need to be relocated well ahead of the commencement of construction work; Unnecessary excavation shall be avoided; and Excavations shall be carried out carefully to avoid damaging infrastructure in the surroundings of the project area. 	CC, SC
13	Traffic Management	To minimize traffic problems in the project area	<ul style="list-style-type: none"> Proper traffic management plan will be needed to avoid traffic jams/public inconvenience; Movement of vehicles carrying construction materials shall be restricted during the daytime to reduce traffic load and inconvenience to the local residents; 	CC, SC and Traffic Police

Sr. No.	Parameters	Target	Mitigation	Responsibility
			<ul style="list-style-type: none"> ▪ Availability of continuous services of the Traffic Wardens in the diversion and control of traffic; and; ▪ The executing agency is required to maintain liaison between the Traffic Police, local residents/visitors, travelers and the contractor to facilitate traffic movement during construction stage. 	
14	Communicable diseases	To minimize the spread of corona virus	COVID-19 specific measures <ul style="list-style-type: none"> ▪ All workers must perform complete sanitization at the site as per SOPs/guidelines issued by WHO. ▪ All workers must wear a mask as soon as they arrive at site and must keep wearing it at all times while present at the work site/hospital premises. ▪ As soon as workers arrive at work site, their body temperature must be checked and in case any worker is assessed to be running a fever or suffering from a flu or cough, he must be informed to leave immediately and self-isolate for a two-week period and not report for work until this two-week mandatory period has been completed. ▪ At the work site(s), social distancing measures must be strictly implemented and gathering of workers 	CC

Sr. No.	Parameters	Target	Mitigation	Responsibility
			<p>at any location at the work site(s) must be strictly forbidden. In case of workers not taking this measure seriously, strict penalties must be imposed to ensure implementation.</p> <ul style="list-style-type: none"> ▪ The work tasks must be divided into shifts, as far as possible, to reduce the workforce present at the work site(s) at any one moment and improve the working speed/efficiency. ▪ All workers will be strictly advised to wash their hands as frequently as practicable and not to touch their face during work. ▪ A supply of safe drinking water will be made available and maintained at the project site(s). ▪ COVID awareness sign boards must be installed at the clinic premises and at the work site(s). ▪ Contact details of all workers will be kept in a register on site in order to efficiently trace and manage any possible workers that might experience symptoms of COVID-19. ▪ Prohibition of entry for local community/any unauthorized persons at work sites. ▪ Proper hygiene practices in the toilets and washrooms will be implemented with proper and adequate use of 	

Sr. No.	Parameters	Target	Mitigation	Responsibility
			<p>soaps and disinfectant spray.</p> <ul style="list-style-type: none"> Social distancing must be maintained during the pick-up and dropping off of workers from their residences to and from the work site(s). <p>COVID-19 specific measures GOP</p> <p>Advice for Site Managers:</p> <ul style="list-style-type: none"> Every construction project shall make proper arrangements for uninterrupted building services including but not restricted to, electricity, fuel, water supply, water disposal and sanitation, communication links, washrooms with hand hygiene and shower facility and with proper and adequate supply of soaps and disinfectants. Workers shall not use biometric attendance machines or crowd during attendance, entry or exit to the premises of the construction site. Ensure the availability of the thermal gun at the entry and exit of the construction site and no worker shall be allowed without getting his/her temperature checked. Site manager must maintain a register of all contact details with NID number and addresses of all present at the site in case a follow up or tracing and tracking of contacts is required at a 	

Sr. No.	Parameters	Target	Mitigation	Responsibility
			<p>later stage.</p> <ul style="list-style-type: none"> ▪ Develop the employee roster to decrease the number of people on the site very day. Split the shifts of the workers in morning and evening with limit of each shift to 8 working hours. ▪ Every worker must change into standard working attire at the time of commencement of duty and change back to their regular dress after taking shower when their duty hours' end. ▪ In addition to all other internationally recognized safety precaution for construction workers and other staff, every individual must be provided with a face mask. It must be ensured that everyone during his or her presence at the site continues to wear the mask. Face mask shall be replaced as and when soiled or otherwise removed. Outer surface of face mask must not be touched with hands. ▪ Non-essential work trainings must be postponed avoiding gathering of people. ▪ Ensure the physical distance by creating more than one route of entry and exit to the site. ▪ Instruct the workers to inform the construction manager (or authorities) if ▪ They develop any symptoms of cough, 	

Sr. No.	Parameters	Target	Mitigation	Responsibility
			<p>flu or fever.</p> <ul style="list-style-type: none"> ▪ They have been exposed to someone suspected or confirmed with COVID 19. ▪ They have met someone who has a travel history of COVID 19 endemic country. They have travelled in last couple of days or plan to travel soon. ▪ All incidences of appearance of the symptoms of COVID-19 shall be immediately documented and maintained at the site and information regarding which shall be immediately communicated through e-mail or else, to the designated health facility, and the sick worker shall be transported to the health facility for further advice and action. The site manager must establish a link with a nearby healthcare facility with arrangements for quick transportation of workers in case of an emergency. ▪ Persuade the workers to inform the authorities for their safety and of other if they observe any signs and symptoms in a colleague. ▪ Do not allow any worker at the construction site who has the symptoms ▪ Display the awareness banners about hand hygiene and physical distancing, 	

Sr. No.	Parameters	Target	Mitigation	Responsibility
			<p>where you can, around the work site.</p> <ul style="list-style-type: none"> Everyone on the construction site must observe sneezing and coughing etiquettes. Workers shall be requested and required to wash their hands as frequently as practicable and shall also be advised not to touch their face with their hands during work. Workers must maintain no less than two arm lengths between them before, during after work at all the times. They shall not make physical contact and shall be required to maintain separate personal gears and assets which must be clearly labelled and stored without intermixing. Only sanitizable dinning surfaces shall be used, which must be cleaned before each service. The lunch breaks and stretch breaks of the workers must be staggered to avoid the clustering of workers. Workers must not sit at less than 2 meters' distance while having meals and while any other activity requiring interpersonal communications. Adequate ventilation shall be provided in dining areas, resting places and sleeping areas. In the wake of current restrictions on transportations site managers will 	

Sr. No.	Parameters	Target	Mitigation	Responsibility
			<p>ensure safe transport arrangements for worker which shall not be crowded and shall have social distancing in place during the entire process from pickups till drops at destination.</p> <ul style="list-style-type: none"> ▪ In case of workers sleeping in at the site of construction, a safe distance of 2 meters must be ensured in the sleeping rooms in a well ventilated area. ▪ A supply of safe drinking water must be made available at the project site and maintained. <p>Advice for Construction Workers:</p> <ul style="list-style-type: none"> ▪ All possible and prescribed measures shall be taken to ensure your and others health. Enter your contact details in the register maintained at the site, in case a follow up or tracing and tracking of contacts is required at a later stage. ▪ Follow hygiene practices at washrooms and shower facility with proper and adequate use of soaps and disinfectants. ▪ Every worker must change into standard working attire at the time of commencement of duty and change back to their regular dress after taking shower when their duty hours' end. 	

Sr. No.	Parameters	Target	Mitigation	Responsibility
			<ul style="list-style-type: none"> ▪ In addition to all other internationally recognized safety precaution for construction workers and other staff, every individual must use face mask. Face mask shall be replaced as and when soiled or otherwise removed. Outer surface of face mask must not be touched with hands. ▪ Workers shall wash their hands as frequently as practicable and shall not to touch their face with their hands during work. ▪ Everyone on the construction site must observe sneezing and coughing etiquettes. ▪ Workers must maintain no less than two arm lengths between them before, during after work at all the times. They shall not make physical contact and shall be required to maintain separate personal gears and assets which must be clearly labelled and stored without intermix. ▪ Sick worker shall immediately inform the site manager and must get medical advice from nearby health Centre. ▪ Only sanitizable dining surfaces shall be used. ▪ Do not sit at less than 2 meters' distance while having meals and while 	

Sr. No.	Parameters	Target	Mitigation	Responsibility
			<p>any other activity requiring interpersonal communications.</p> <ul style="list-style-type: none"> Do not use biometric attendance machines or crowd during attendance, entry or exit to the premises of the construction site. Use safe transport arrangements which shall not be crowded and shall have social distancing in place during the entire process from pickups till drops at destination. In case sleeping in at the site of construction, a safe distance of 2 meters must be ensured in the sleeping rooms in a well ventilated area <p>Deliveries or Other Contractors Visiting the Site:</p> <ul style="list-style-type: none"> Non-essential visits to the construction sites shall be cancelled or postponed. Delivery workers or other contractors who need to visit the construction site must go through temperature check before entering and shall be given clear instructions for precautions to be taken while on site. Designate the workers, with protective gears or at least gloved and mask, to attend to the deliveries and contractors. 	

Sr. No.	Parameters	Target	Mitigation	Responsibility
			<ul style="list-style-type: none"> Make alcohol-based hand sanitizer (at least 70%) available for the workers handling deliveries. Instruct the visiting truck drivers to remain in their vehicles and whenever possible make use of contactless methods, such as mobile phones, to communicate with your workers 	
Operational Phase				
1	Natural Hazard	To minimize the risk of structural collapse and flooding in park	<ul style="list-style-type: none"> Ensure that the new structures can withstand earthquake impacts; Inspections shall be conducted at appropriate intervals by qualified personnel to ensure integrity of structures; and Develop an emergency response plan for the rainwater flooding in park. 	PO
2	Waste	To minimize and to store the solid waste	<ul style="list-style-type: none"> Proper waste management system including provision of waste bins, regular sweeping and collection of waste will be adopted during operational phase. 	PO
3	Drainage	To prevent flooding and pooling	<ul style="list-style-type: none"> Routine inspection and maintenance of the drainage system shall be scheduled and implemented. 	PO

Sr. No.	Parameters	Target	Mitigation	Responsibility
4	Flora	To maintain flora in the park properly	<ul style="list-style-type: none"> ▪ Routine inspection will be carried out to check the maintenance of the park; ▪ Weeds will be monitored weekly and removed no less than every two weeks; ▪ Any tree that poses a concern to public safety will be immediately barricaded and evaluated by ecologist. Issues of immediate concern would be trees or branches that are leaning or broken that may fall onto an area of pedestrian or vehicular activity; ▪ Use of fertilizers shall be strictly monitored in order to avoid any incident. Natural nutrients shall rather be preferred. 	PO
5.	Use of Pesticides	To avoid harmful impact of using pesticides	<ul style="list-style-type: none"> ▪ Make sure birds, pets and children are not near before mixing and applying pesticides. ▪ Select pesticides which are not much harmful for environment. Certain pesticides may cause injury to crops. Before application, take into account the stage of plant development, the soil type, conditions, temperature, moisture etc. ▪ Use PPEs while using pesticide. ▪ Mix pesticides in well ventilated areas and mix only the amount what is needed for immediate use. Apply only recommended dose and dilution. While spraying, avoid windy conditions. 	PO

Sr. No.	Parameters	Target	Mitigation	Responsibility
			<ul style="list-style-type: none"> ▪ Dispose off empty containers carefully. Never reuse them. Make sure containers are not accessible to children or animals. ▪ Never eat, smoke, drink or chew while using pesticides. ▪ Emergency medical care in advance shall be arranged. ▪ Do not expose pesticides to sun light or rain water and do not transfer pesticides into other container and never store weedicides with other pesticides. ▪ Use right kind of equipment and avoid leaky defective equipment. ▪ Select right type of nozzle. 	
6	Health Hazard (Respiratory illness caused by COVID-19 Infection that may lead to fatality)	Avoid Spread of Corona Virus	<ul style="list-style-type: none"> ▪ Reporting employees who are showing symptoms such as fever or high body temperature, coughing, difficulty of breathing or chest pain. Sending them to clinic or nearest hospital immediately. ▪ Body temperature monitoring through Thermal Scanner or other devices to monitor the body temperature of each employee entering/leaving the site or at camp. ▪ Awareness and implementation of Quarantine Procedure for all employees who came back from vacation. ▪ No Handshake Policy and ensure at least 1 meter distance at workplace. 	PO

Sr. No.	Parameters	Target	Mitigation	Responsibility
			<ul style="list-style-type: none"> Conduct regular housekeeping and sanitation for all access/egress points as well as Log-in/Log-out devices. If possible, deactivate Log-in/Log-out devices such as biometrics. Conduct awareness on how to protect yourself against the infection of COVID-19 through campaign (posters, distribution of brochure). Communicating and implementing COVID-19 Guidelines Ensure Disinfection of offices and machinery periodically, temperature screening at project entrances, provision of hand sanitizers to office and labor staff, provision of surgical face masks, instruction boards and signage at different locations for COVID-19 awareness 	

DC Design Consultant
 CC Construction Contractor
 SC Supervision Consultant
 PO Park Operator

SECTION 5

ENVIRONMENTAL MONITORING

5.0 General

39. Environmental Monitoring is undertaken during both the construction and operational phases to ensure the effectiveness of the proposed mitigation measures. Certain environmental parameters are selected and quantitative & qualitative analyses are carried out. The results of analysis are compared with the guidelines; standards and pre-project condition to investigate whether the EMP and its implementation are effective for the mitigation of impacts or not.
40. Parameters to be analyzed during construction & operation of the project, responsibilities for monitoring & reporting and monitoring cost have been discussed in this section.

5.1 Environmental Monitoring during Pre-Construction Phase, Construction and Operation Phases

41. The respective monitoring to be conducted during the three project development phases is provided in **Tables 5.1 to 5.3** below.

5.3 Responsibilities for Monitoring and Reporting

42. The PMU will be responsible for environmental monitoring and reporting throughout the construction and operation phases. A monitoring report will be prepared on quarterly basis and one comprehensive report will be prepared on bi-annual basis for submission to ADB.

5.4 Cost of Environmental Monitoring

43. The **Table 5.4** below provides cost estimates for 'Pre-Construction phase' monitoring while **Tables 5.5** and **5.6** provides cost estimates for 'Construction phase' and 'Operation phase' monitoring of key environmental parameters.

Table-5.1: 'Pre-Construction' Monitoring Plan for Baseline Development

Parameter to be measured	Objective of Monitoring	Parameters to be Monitored	Measurements	Location*	Frequency	Responsibility
Ambient Air Quality	To establish baseline air quality levels	CO, NO ₂ , SO ₂ , O ₃ & PM ₁₀ (particulate matter smaller than 10 microns) concentration at receptor level	1-hr and 24-hr concentration levels	At three random receptor locations in the project area	Once	SC
Ambient Noise	To establish baseline noise levels	Ambient noise level near receptors in project area	A-weighted noise levels – 24 hours, readings taken at 15 s intervals over 15 min. every hour, and then averaged	At three random receptor locations in the project area	Once	SC
Groundwater Quality	To establish groundwater quality in project area	Groundwater quality in project area	Water samples for comparison against NEQS parameters	At two locations around the site in the project area	Once	SC
Surface water quality	To establish surface quality in project area	Surface water quality in project area	Water samples for comparison against NEQS parameters	At two locations around the site in the project area	Once	SC

* Monitoring Locations to be finalized jointly between PMU Safeguards staff and Supervision Consultant (SC).

Table-5.2: Construction Phase Monitoring Requirements

Project Activity and Potential Impact	Objective of Monitoring	Parameters to be Monitored	Measurements	Location	Frequency	Responsibility
Noise Disturbance due to noise from construction activity	To determine the effectiveness of noise abatement measures on sound pressure levels	Ambient noise level at different locations in project area	A-weighted noise levels – 24 hours, readings taken at 15 s intervals over 15 min. every hour at 15 m from receptors, and then averaged	At three random receptor locations in project area	Quarterly basis on a typical working day	Contractor's Environmental officer, SC
Air Quality Dust emissions from construction vehicles and equipment	To determine the effectiveness of dust control program on dust at receptor level	CO, NO ₂ , SO ₂ , O ₃ & PM ₁₀ (particulate matter smaller than 10 microns) concentration at receptor level	1-hr and 24-hr concentration levels	At three random receptor locations in project area	Quarterly basis on a typical working day	Contractor's Environmental officer, SC
		Visible dust	Visual observation of size of dust clouds, their dispersion and the direction of dispersion	Construction site	Once daily during peak construction period	Contractor's Environmental officer, SC
Groundwater Quality	To establish groundwater quality in project area	Groundwater quality in project area	Water samples for comparison against NEQS parameters	At two locations around the site in the project area	Quarterly	Contractor's Environmental officer, SC
Surface water Quality	To establish surface quality in project area	Surface water quality in project area	Water samples for comparison against NEQS parameters	At two locations around the site in the project area	Quarterly	Contractor's Environmental officer, SC

Project Activity and Potential Impact	Objective of Monitoring	Parameters to be Monitored	Measurements	Location	Frequency	Responsibility
Safety precautions by workers	To prevent accidents for workers and general public	Number of near miss events and accidents taking place	Visual inspections	Construction site	Once Daily	Contractor's Environmental officer, SC
Soil Contamination	To prevent contamination of soil from oil and toxic chemical spills and leakages	Incidents of oil and toxic chemical spills	Visual inspections	At construction site and at vehicle and machinery refuelling & maintenance areas	Once a month	Contractor's Environmental officer, SC
Solid Waste & Effluent disposal Insufficient procedures for waste collection, storage, transportation and disposal	To check the availability of waste management system and implementation	Inspection of solid and liquid effluent generation, collection, segregation, storage, recycling and disposal will be undertaken at all work sites in project area	Visual inspections	At work sites in project area	Once daily.	Contractor's Environmental officer, SC

* Monitoring Locations to be finalized jointly between PMU Safeguards staff and Supervision Consultant (SC).

Table-5.3: 'Operation Phase' Environmental Monitoring Plan

Parameter to be measured	Objective of Monitoring	Parameters to be Monitored	Measurements	Location	Frequency	Responsibility
Solid Waste Management	To assess that solid waste generated from park operation is managed as per EMP requirements	All waste being generated is being managed and disposed off as per international good practices	Solid waste inventory audit	Park premises	Bi-Annual	Park Operator (PO)

Table 5.4: Annual Cost Estimates for 'Pre-Construction Phase' Environmental Monitoring¹

Monitoring Component	Parameters	Quantity	Amount PKR	Details
Air Quality	CO, NO ₂ , SO ₂ , O ₃ PM ₁₀	3 (Once only at 3 locations)	90,000	3 readings @ PKR 30,000 per sample
Noise Levels	dB(A)	3 (Once only at 3 locations)	90,000	3 readings @ PKR 30,000 per reading
Ground Water Quality	NEQS	2 (Once only at 2 locations)	60,000	2 readings @ PKR 30,000 per sample

¹ For air quality monitoring: 'Passive samplers' such as test tubes can be used or 'Active samplers' with sorbent tubes can also be used.

²²For noise monitoring: sampling equipment with duration greater than 1 hour can be used.

Surface Water Quality	NEQS	2 (Once only at 2 locations)	60,000	2 readings @ PKR 30,000 per sample
Contingencies			15,000	5% of monitoring cost
Total (PKR)			315,000	

Table 5.5: Annual Cost Estimates for ‘Construction Phase’ Environmental Monitoring²

Monitoring Component	Parameters	Quantity	Amount PKR	Details
Air Quality	CO, NO ₂ , SO ₂ , O ₃ PM ₁₀	12 (Quarterly basis at 3 locations)	360,000	12 readings @ PKR 30,000 per sample
Noise Levels	dB(A)	12 (Quarterly basis at 3 locations)	360,000	12 readings @ PKR 30,000 per reading
Ground Water Quality	NEQS	8 (Quarterly basis at 2 locations)	240,000	8 readings @ PKR 30,000 per sample
Surface Water Quality	NEQS	8 (Quarterly basis at 2 locations)	240,000	8 readings @ PKR 30,000 per sample
Contingencies			60,000	5% of monitoring cost

Total (PKR)	1,260,000
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Table 5.6: Annual Cost Estimates for 'Operation Phase' Environmental Monitoring³

Monitoring Component	Parameters	Quantity	Amount PKR	Details
Waste Management	Solid Waste	Bi-Annual	100,000	Twice @ PKR 50,000
Total (PKR)			100,000	

SECTION 6

ENVIRONMENTAL MITIGATION AND MONITORING COST

6.0 General

44. The cost required to effectively implement the mitigation measures is important for the sustainability of the Project, both in the construction and operational phases.
45. Cost for Environmental Monitoring of air, noise, drinking & wastewater is already given in the previous section. Other relevant cost for mitigation of adverse environmental impacts of the proposed project are summarized in **Table 6.1** below.

Table-6.1: Environmental Mitigation Cost

Sr. No.	Activity	Basis	Cost (Rs.)
1	Medical screening for workers	Rs. 1200 per employee and for 100 employees	120,000
2	Material Storage, handling and use	Three (03) No. of tarpaulins of Rs. 20,000 each	60,000
3	Handling/ transportation of hazardous material	Rs. 12,000/month for a period of 12 months will be required for transportation of material	144,000
4	Handling of solid waste	Rs.10,000 per month (two trips per month) for a period of 12 months, which includes the cost of collection, transportation and disposal to the designated site	120,000
5	Cost of Personal Protective Equipment (PPE)*	For 100 employees for the provision of dust masks, safety shoes, gloves, first aid box, ear plugs	402,000
6	Cost of environmental training	Lump sum	200,000
7	Covid Management Cost	Lump sum	300,000
Grand Total			1,346,000

46. Detail of PPE cost is given in **Table 6.2** below.

Table-6.2: Break-up for PPEs Cost

Items	Quantity	Cost / Item (Rs.)	Total Cost (Rs.)
Personal Protective Equipment PPE			
Dust masks	4800	20	96,000
Safety Shoes	200	1200	24,000
Gloves	1200	200	240,000
First Aid Box	3	2000	6,000
Ear Plugs	1200	30	36,000
Total			402,000
Time required for Construction = 12 months			
No. of labours required during construction = 100			
Detail of Personal Protective Equipment PPE			
Dust mask	1 dust mask to be used in a week by each laborer		
Safety Shoes	1 safety shoe for six months for each laborer		
Gloves	2 pair of gloves for each laborer for a month		
First Aid Box	1 first aid box in each park		
Ear Plug	1 set of ear plug to be used for 1 month for each laborer		

ANNEXURE: A

REA Checklist

RAPID ENVIRONMENTAL ASSESSMENT (REA) CHECKLIST

Instructions:

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

Country/Project Title:

Pakistan/Khyber Pakhtunkhwa Cities Improvement Project (KPCIP)

Sector Division:

Green Urban Spaces - Shimla Hill Urban Forest and Park

Screening Questions	Yes	No	Remarks
A. Project Sitting Is the project area ?			
▪ Densely populated?		✓	The site is not densely populated. There is scattered low-density of settlements around the proposed site area.
▪ Heavy with development activities?		✓	No heavy development activities are there around the proposed site.
▪ Adjacent to or within any environmentally sensitive areas?		✓	No environmental sensitive area (national park/protected areas, estuarine etc.) is present adjacent to, near or within the project area.
• Cultural heritage site		✓	No heritage site within or near the project area.
• Protected Area		✓	No protected area/s within or around the project site.
• Wetland		✓	No wetland within or around the project site is available.
• Mangrove		✓	No mangroves available within or around the project area.
• Estuarine		✓	No, estuarine located within or around the project site.
• Buffer zone of protected area		✓	The project site does not enclose any buffer zones of protected areas.
• Special area for protecting biodiversity.		✓	The project site is not located in any special area for protecting biodiversity.
• Bay		✓	There is no bay on the site.
B. Potential Environmental Impacts Will the Project cause			

Screening Questions	Yes	No	Remarks
▪ Impacts on the sustainability of urban green spaces and their interactions with other urban services.		✓	The project aims to enhance urban green space and create recreational opportunities to the public and local communities. There will be negligible adverse impacts and project will cause more sustainability of the area.
▪ Degradation of land and ecosystems (e.g. loss of wetlands and wild lands, coastal zones, watersheds and forests)?		✓	The existing natural forest and its associated wildlife will be conserved in the proposed project.
▪ Dislocation or involuntary resettlement of people?		✓	The site does not have any settlements so there will be no dislocation and or involuntary resettlement issues.
▪ Disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable group?		✓	No disproportionate impacts will be caused by this project. Residents in the immediate vicinity of site, residents of Abbottabad and other tourists will all benefit equally from the project.
▪ Degradation of cultural property, and loss of cultural heritage and tourism revenues?		✓	At present, the site under consideration for the project is not used for tourism, however, has great potential as hot spot for commercial tourism. The project will increase tourism and help to generate revenue.
▪ Occupation of low-lying lands, floodplains and steep hillsides by squatters and low-income groups, and their exposure to increased health hazards and risks due to pollutive industries?		✓	Although, the site is in hilly train, however, no potential community impacts are anticipated. The project will not cause the risk of health hazards to low-income and squatter groups.
▪ Water resource problems (e.g. depletion/degradation of available water supply, deterioration for surface and ground water quality, and pollution of receiving waters ?		✓	No potential impacts are anticipated on water resources. Since the toilet effluent (sewerage water) will be channeled to main sewerage trunk of the area. Thus, chances of water resources contamination are not anticipated.
▪ Air pollution due to urban emissions?		✓	Since, the huge fuel burning are not anticipated (in cafes only LPG will be used which is comparatively a green fuel), therefore, negligible urban emissions are anticipated.
▪ Risks and vulnerabilities related to occupational health and safety due to physical, chemical and biological hazards during project construction and operation?		✓	Negligible physical, chemical and biological hazards during project construction and operation are anticipated. Appropriate occupational health and safety practices will be implemented to avoid any physical, chemical or biological hazards during construction.
▪ Road blocking and temporary flooding due to land excavation during rainy season?		✓	The project site is located along a cul-de-sac on the outskirts of residential settlements. Road blocking and temporary flooding will not occur.
▪ Noise and dust from construction activities?	✓		Negligible noise and dust will be generated from landscaping interventions, the installation of viewing decks and boardwalks, construction of a parking lot and light-weight structure for a semi-outdoor restaurant.

Screening Questions	Yes	No	Remarks
▪ Traffic disturbances due to construction material transport and wastes?		✓	By adopting best construction management techniques and practices, potential disturbances during construction will be minimized. Since the project site is located on the outskirts of Abbottabad, traffic in the main city will not be disturbed. Low-traffic hours will also be selected for the transportation of materials.
▪ Temporary silt runoff due to construction?	✓		The removal of existing rubble and rocks and their use for the construction of a parking lot or features such as retaining walls and a road may cause silt runoff. Best management practices will be adopted to minimize the runoff.
▪ Hazards to public health due to ambient, household and occupational pollution, thermal inversion, and smog formation?		✓	Construction and operation phases will not cause pollution, thermal inversion, or smog.
▪ Water depletion and/or degradation?		✓	Minimal and efficient use of water will be made during construction and operation phases, thereby mitigating the issue of water depletion or degradation.
▪ Overpaying of ground water, leading to land subsidence, lowered ground water table, and salinization?		✓	Construction and operation phases will not make use of groundwater - natural springs and rainwater will be used instead.
▪ Contamination of surface and ground waters due to improper waste disposal?		✓	An appropriate waste collection system will be developed for the proposed project at the site.
▪ Pollution of receiving waters resulting in amenity losses, fisheries and marine resource depletion, and health problems?		✓	No, health problems arising from pollution of water will not occur since the projects site does not have any fisheries or marine resources.
▪ Large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?		✓	The development process will be limited in spatial and temporal terms, and not likely to place any burden on existing social infrastructure or services. No migration will occur.
▪ Social conflicts if workers from other regions or countries are hired?		✓	To avoid social conflicts, the hiring of local laborers and construction firms will be given preference over the hiring of workers from other regions.
▪ Risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during operation and construction?	✓		Best management practices will be adopted to minimize the risk of exposure to hazardous substances during transport, storage and disposal.
▪ Community safety risks due to both accidental and natural hazards, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning?		✓	Safety measures will be implemented to prevent communities from getting exposed to any hazards during the construction phase. No considerable natural hazards are expected once the construction phase is over. Structural components will be constructed according to the standards of natural hazard safety factors.

PMU KPCIP Response:

Project fall in category: (A)____(B)____(C)____✓____(F)_____

ANNEXURE: B

WHO advice on Use of Masks for the COVID-19 Virus

Advice on the use of masks in the context of COVID-19

Interim guidance

6 April 2020



Background

This document provides advice on the use of masks in communities, during home care, and in health care settings in areas that have reported cases of COVID-19. It is intended for individuals in the community, public health and infection prevention and control (IPC) professionals, health care managers, health care workers (HCWs), and community health workers. It will be revised as more data become available.

Current information suggests that the two main routes of transmission of the COVID-19 virus are respiratory droplets and contact. Respiratory droplets are generated when an infected person coughs or sneezes. Any person who is in close contact (within 1 m) with someone who has respiratory symptoms (coughing, sneezing) is at risk of being exposed to potentially infective respiratory droplets. Droplets may also land on surfaces where the virus could remain viable; thus, the immediate environment of an infected individual can serve as a source of transmission (contact transmission).¹

WHO has recently summarized reports of transmission of the COVID-19 virus and provided a brief overview of current evidence on transmission from symptomatic, pre-symptomatic, and asymptomatic^a people infected with COVID-19 (full details are provided in WHO COVID-19 Sitrep79).²

Current evidence suggests that most disease is transmitted by symptomatic laboratory confirmed cases. The incubation period for COVID-19, which is the time between exposure to the virus and symptom onset, is on average 5-6 days, but can be as long as 14 days. During this period, also known as the "pre-symptomatic" period, some infected persons can be contagious and therefore transmit the virus to others.³⁻⁸ In a small number of reports, pre-symptomatic transmission has been documented through contact tracing efforts and enhanced investigation of clusters of confirmed cases.³⁻⁸ This is supported by data suggesting that some people can test positive for COVID-19 from 1-3 days before they develop symptoms.^{9,10}

Thus, it is possible that people infected with COVID-19 could transmit the virus before symptoms develop. It is important to recognize that pre-symptomatic transmission still requires the virus to be spread via infectious droplets or through

touching contaminated surfaces. WHO regularly monitors all emerging evidence about this critical topic and will provide updates as more information becomes available.

In this document medical masks are defined as surgical or procedure masks that are flat or pleated (some are shaped like cups); they are affixed to the head with straps. They are tested according to a set of standardized test methods (ASTM F2100, EN 14683, or equivalent) that aim to balance high filtration, adequate breathability and optionally, fluid penetration resistance. This document does not focus on respirators; for guidance on use of respirators see IPC guidance during health care when COVID-19 infection is suspected.¹¹

Wearing a medical mask is one of the prevention measures that can limit the spread of certain respiratory viral diseases, including COVID-19. **However, the use of a mask alone is insufficient to provide an adequate level of protection, and other measures should also be adopted.** Whether or not masks are used, maximum compliance with hand hygiene and other IPC measures is critical to prevent human-to-human transmission of COVID-19. WHO has developed guidance on IPC strategies for home care¹² and health care settings¹¹ for use when COVID-19 is suspected.

Community settings

Studies of influenza, influenza-like illness, and human coronaviruses provide evidence that the use of a medical mask can prevent the spread of infectious droplets from an infected person to someone else and potential contamination of the environment by these droplets.¹³ There is limited evidence that wearing a medical mask by healthy individuals in the households or among contacts of a sick patient, or among attendees of mass gatherings may be beneficial as a preventive measure.¹⁴⁻²³ However, there is currently no evidence that wearing a mask (whether medical or other types) by healthy persons in the wider community setting, including universal community masking, can prevent them from infection with respiratory viruses, including COVID-19.

Medical masks should be reserved for health care workers.

The use of medical masks in the community may create a false sense of security, with neglect of other essential measures, such as hand hygiene practices and physical distancing, and may lead to touching the face under the masks and under the eyes, result in unnecessary costs, and take

^a An asymptomatic laboratory-confirmed case is a person infected with COVID-19 who does not develop symptoms. Asymptomatic transmission refers to transmission of the virus from a person, who does not develop

symptoms. The true extent of asymptomatic infections will be determined from serologic studies.

masks away from those in health care who need them most, especially when masks are in short supply.

Persons with symptoms should:

- wear a medical mask, self-isolate, and seek medical advice as soon as they start to feel unwell. Symptoms can include fever, fatigue, cough, sore throat, and difficulty breathing. It is important to note that early symptoms for some people infected with COVID-19 may be very mild;
- follow instructions on how to put on, take off, and dispose of medical masks;
- follow all additional preventive measures, in particular, hand hygiene and maintaining physical distance from other persons.

All persons should:

- avoid groups of people and enclosed, crowded spaces;
- maintain physical distance of at least 1 m from other persons, in particular from those with respiratory symptoms (e.g., coughing, sneezing);
- perform hand hygiene frequently, using an alcohol-based hand rub if hands are not visibly dirty or soap and water when hands are visibly dirty;
- cover their nose and mouth with a bent elbow or paper tissue when coughing or sneezing, dispose of the tissue immediately after use, and perform hand hygiene;
- refrain from touching their mouth, nose, and eyes.

In some countries masks are worn in accordance with local customs or in accordance with advice by national authorities in the context of COVID-19. In these situations, best practices should be followed about how to wear, remove, and dispose of them, and for hand hygiene after removal.

Advice to decision makers on the use of masks for healthy people in community settings

As described above, the wide use of masks by healthy people in the community setting is not supported by current evidence and carries uncertainties and critical risks. WHO offers the following advice to decision makers so they apply a risk-based approach.

Decision makers should consider the following:

1. **Purpose** of mask use: the rationale and reason for mask use should be clear— whether it is to be used for source control (used by infected persons) or prevention of COVID-19 (used by healthy persons)
2. Risk of **exposure** to the COVID-19 virus in the local context:
 - The population: current epidemiology about how widely the virus is circulating (e.g., clusters of cases versus community transmission), as well as local surveillance and testing capacity (e.g., contact tracing and follow up, ability to carry out testing).
 - The individual: working in close contact with public (e.g., community health worker, cashier)
3. **Vulnerability** of the person/population to develop severe disease or be at higher risk of death, e.g. people with comorbidities, such as cardiovascular disease or diabetes mellitus, and older people

4. **Setting** in which the population lives in terms of population density, the ability to carry out physical distancing (e.g. on a crowded bus), and risk of rapid spread (e.g. closed settings, slums, camps/camp-like settings).
5. **Feasibility**: availability and costs of the mask, and tolerability by individuals
6. **Type** of mask: medical mask versus nonmedical mask (see below)

In addition to these factors, potential advantages of the use of mask by healthy people in the community setting include reducing potential exposure risk from infected person during the “pre-symptomatic” period and stigmatization of individuals wearing mask for source control.

However, the following potential risks should be carefully taken into account in any decision-making process:

- self-contamination that can occur by touching and reusing contaminated mask
- depending on type of mask used, potential breathing difficulties
- false sense of security, leading to potentially less adherence to other preventive measures such as physical distancing and hand hygiene
- diversion of mask supplies and consequent shortage of mask for health care workers
- diversion of resources from effective public health measures, such as hand hygiene

Whatever approach is taken, it is important to develop a strong communication strategy to explain to the population the circumstances, criteria, and reasons for decisions. The population should receive clear instructions on what masks to wear, when and how (see mask management section), and on the importance of continuing to strictly follow all other IPC measures (e.g., hand hygiene, physical distancing, and others).

Type of Mask

WHO stresses that it is critical that medical masks and respirators be prioritized for health care workers.

The use of masks made of other materials (e.g., cotton fabric), also known as nonmedical masks, in the community setting has not been well evaluated. There is no current evidence to make a recommendation for or against their use in this setting.

WHO is collaborating with research and development partners to better understand the effectiveness and efficiency of nonmedical masks. WHO is also strongly encouraging countries that issue recommendations for the use of masks in healthy people in the community to conduct research on this critical topic. WHO will update its guidance when new evidence becomes available.

In the interim, decision makers may be moving ahead with advising the use of nonmedical masks. Where this is the case, the following features related to nonmedical masks should be taken into consideration:

- Numbers of layers of fabric/tissue
- Breathability of material used
- Water repellence/hydrophobic qualities
- Shape of mask
- Fit of mask

Home care

For COVID-19 patients with mild illness, hospitalization may not be required. All patients cared for outside hospital (i.e. at home or non-traditional settings) should be instructed to follow local/regional public health protocols for home isolation and return to designated COVID-19 hospital if they develop any worsening of illness.⁷

Home care may also be considered when inpatient care is unavailable or unsafe (e.g. capacity is limited, and resources are unable to meet the demand for health care services). Specific IPC guidance for home care should be followed.³

Persons with suspected COVID-19 or mild symptoms should:

- Self-isolate if isolation in a medical facility is not indicated or not possible
- Perform hand hygiene frequently, using an alcohol-based hand rub if hands are not visibly dirty or soap and water when hands are visibly dirty;
- Keep a distance of at least 1 m from other people;
- Wear a medical mask as much as possible; the mask should be changed at least once daily. Persons who cannot tolerate a medical mask should rigorously apply respiratory hygiene (i.e. cover mouth and nose with a disposable paper tissue when coughing or sneezing and dispose of it immediately after use or use a bent elbow procedure and then perform hand hygiene.)
- Avoid contaminating surfaces with saliva, phlegm, or respiratory secretions.
- Improve airflow and ventilation in their living space by opening windows and doors as much as possible.

Caregivers or those sharing living space with persons suspected of COVID-19 or with mild symptoms should:

- Perform hand hygiene frequently, using an alcohol-based hand rub if hands are not visibly dirty or soap and water when hands are visibly dirty;
- Keep a distance of at least 1 meter from the affected person when possible;
- Wear a medical mask when in the same room as the affected person;
- Dispose of any material contaminated with respiratory secretions (disposable tissues) immediately after use and then perform hand hygiene.
- Improve airflow and ventilation in the living space by opening windows as much as possible.

Health care settings

WHO provides guidance for the use of PPE, including masks, by health care workers in the guidance document: Rational use of PPE in the context of COVID-19.²⁴ Here we provide advice for people visiting a health care setting:

Symptomatic people visiting a health care setting should:

- Wear a medical mask while waiting in triage or other areas and during transportation within the facility;
- Not wear a medical mask when isolated in a single room, but cover their mouth and nose when coughing or sneezing with disposable paper tissues. Tissues must be disposed of appropriately, and hand hygiene should be performed immediately afterwards.

Health care workers should:

- Wear a medical mask when entering a room where patients with suspected or confirmed COVID-19 are admitted.
- Use a particulate respirator at least as protective as a US National Institute for Occupational Safety and Health-certified N95, European Union standard FFP2, or equivalent, when performing or working in settings where aerosol-generating procedures, such as tracheal intubation, non-invasive ventilation, tracheotomy, cardiopulmonary resuscitation, manual ventilation before intubation, and bronchoscopy are performed.
- Full infection prevention and control guidance for health care workers is provided [here](#).

One study that evaluated the use of cloth masks in a health care facility found that health care workers using cotton cloth masks were at increased risk of infection compared with those who wore medical masks.²⁵ Therefore, cotton cloth masks are not considered appropriate for health care workers. As for other PPE items, if production of cloth masks for use in health care settings is proposed locally in situations of shortage or stock out, a local authority should assess the proposed PPE according to specific minimum standards and technical specifications.

Mask management

For any type of mask, appropriate use and disposal are essential to ensure that they are effective and to avoid any increase in transmission.

The following information on the correct use of masks is derived from practices in health care settings:

- Place the mask carefully, ensuring it covers the mouth and nose, and tie it securely to minimize any gaps between the face and the mask.
- Avoid touching the mask while wearing it.
- Remove the mask using the appropriate technique: do not touch the front of the mask but untie it from behind.
- After removal or whenever a used mask is inadvertently touched, clean hands using an alcohol-based hand rub or soap and water if hands are visibly dirty.
- Replace masks as soon as they become damp with a new clean, dry mask.
- Do not re-use single-use masks.
- Discard single-use masks after each use and dispose of them immediately upon removal.

WHO continues to monitor the situation closely for any changes that may affect this interim guidance. Should any factors change, WHO will issue a further update. Otherwise, this interim guidance document will expire 2 years after the date of publication.

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