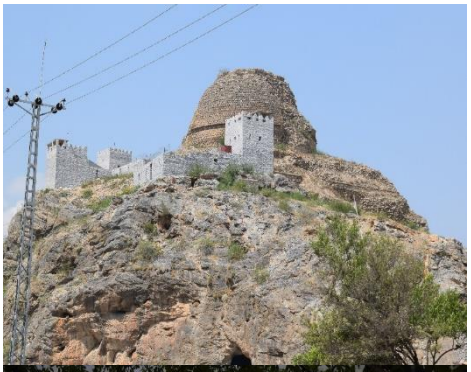
KHYBER PAKHTUNKHWA INTEGRATED TOURISM DEVELOPMENT PROJECT
(KITE – PMU DoT)

CONSERVATION, PRESERVATION, RESTORATION AND CIVIL WORKS AT SIX ARCHEOLOGICAL SITES IN KHYBER PAKHTUNKHWA

(Shapula Stupa, Bhamala Stupa, Main Kalam Mosque,
Pishmal Mosque, Hund Museum and Mardan Museum)






PHYSICAL CULTURAL RESOURCES MANAGEMENT PLAN (PCRMP)

OCTOBER, 2021

Conservation, Preservation, Restoration and Civil Works at Six Archeological Sites in Khyber Pakhtunkhwa

(Shapula Stupa, Bhamala Stupa, Main Kalam Mosque,
Pishmal Mosque, Hund Museum and Mardan Museum)

PHYSICAL CULTURAL RESOURCES MANAGEMENT PLAN (PCRMP)

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LIST OF ABBREVIATONS

AMSL	Above Mean Sea Level
AoI	Area of Influence
AP	Affected Person(s)
ARAP	Abbreviated Resettlement Action Plan
COP	Conference of Parties
DoAM	Directorate of Archaeology and Museum
EGL	Existing Ground Level
EHS	Environmental Health and Safety
EHSMP	Environmental Health and Safety Management Plan
EIA	Environmental Impact Assessment
EPA	Environmental Protection Agency
EPAs	Environmental Protection Agencies
ERP	Emergency Response Plan
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESSU	Environmental and Social Safeguard Unit
EUAD	Environment and Urban Affairs Division
FC	Frontier Corps
GoKP	Government of Khyber Pakhtunkhwa
GoP	Government of Pakistan
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
ILO	International Labour Organization
IR	Involuntary Resettlement
IUCN	International Union for Conservation of Nature
KITE	Khyber Pakhtunkhwa Integrated Tourism Project
KP	Khyber Pakhtunkhwa
LPS	Lightning Protection System
M&E	Monitoring and Evaluation
MEC	Monitoring and Evaluation Consultant
MEC	Monitoring and Evaluation Consultant
MMT	Main Mantle Thrust
MSDS	Material Safety Data Sheets
NCS	Pakistan National Conservation Strategy
NCS	National Conservation Strategy
NEP	National Environmental Policy
NEPA	National Environmental Protection Agency
NEQS	National Environmental Quality Standards
NGOs	Non-Government Organizations
NOC	No-Objection Certificate
O&M	Operation and Maintenance
OP	Operational policy
PAP	Project Affected Persons
PCR	Physical Cultural Resource
PCRMP	Physical Cultural Resource Management Plan
PEPA	Pakistan Environmental Protection Act
PEPC	Pakistan Environmental Protections Council

PGA	Peak Ground Acceleration
PMU	Project Management Unit
PPE	Personal Protective Equipment
SBC	Seismic Building Code of Pakistan
SDGS	Sustainable Development Goals
SDO	Sub-divisional Officer
SPM	Suspended Particulate Matter
SSEMP	Site Specific Environmental Management Plan
SSHSMP	Site Specific Health and Safety Management Plan
SSPCRMP	Site Specific Physical Cultural Resource Management Plan
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNCED	United Nations Conference on Environment and Development
WB	World Bank
WBGEHSG	World Bank Group Environmental Health and Safety Guidelines
WHO	World Health Organization

EXECUTIVE SUMMARY

ES-1 INTRODUCTION

This Physical Cultural Resource Management Plan (PCRMP) has been prepared for the Department of Tourism (DoT), Government of Khyber Pakhtunkhwa (GoKP). This study covers the impacts from the conservation, preservation, restoration and allied civil works of the Physical Cultural Resources (PCRs) / archaeological sites under Project Management Unit (PMU) Khyber Pakhtunkhwa Integrated Tourism Development (KITE) financed by the World Bank. One of main objectives of KITE is to promote and develop culture and religious tourism by exploring Archaeological Treasures. Therefore, the initiative to preserve the archeological sites and to make these sites hub for cultural and religious tourism was undertaken. In this connection, six (06) PCRs / archaeological sites including Bhamala Stupa, District Haripur, Shapula Stupa, Landi Kotal District Khyber, Pishmal and Main Kalam Mosques, District Swat, Hund Museum District Swabi and Mardan Museum, District Mardan, have been selected for conservation, preservation, restoration and civil works.

This document presents a consolidated PCRMP for all the above mentioned PCRs sites to outline the control/mitigation measures that must be implemented to reduce anticipated adverse impacts during the pre-construction, construction and operation phases of the proposed subprojects. This report has been prepared based on the Environmental and Social Management Framework (ESMF), 2020[1], to meet compliance with the World Bank's Safeguard policies applicable to these proposed subprojects, national, provincial regulations and other International Best Practices.

The GoKP through PMU-KITE-DoT is the executing agency for the project, headed by the Project Director. This PCRMP will be a part of the bidding / contracts documents and its compliance is mandatory.

ES-2 LEGAL, POLICY AND ADMINISTRATIVE FRAMEWORK

Applicable World Bank Policies include, Environmental Assessment (OP 4.01), Physical Cultural Resource (OP 4.11) and Involuntary Resettlement (OP 4.12) and other relevant guidelines including World Bank Group Environmental, Health & Safety Guidelines are considered.

The Government of Pakistan (GoP) has promulgated laws/acts, regulations and standards for the protection, conservation, rehabilitation and improvement of the environment. Relevant National laws and regulations include Pakistan Environment Protection Act 1997, Guidelines for Environmental Assessment, National Environmental Quality Standards; National Conservation Strategy,1992; Land Acquisition Act, 1894 including Later Amendments;

[1] *Environmental and social management framework, updated with covid-19 checklists, April 2020*

Hazardous Occupations Rules, 1963 Protection of Trees and Brushwood Act, 1949, The Forest Act (1927) including later amendment; Employment of Child Act, 1991, Draft Solid Waste Management Guidelines (2005). Applicable provincial laws and policies include Khyber Pakhtunkhwa Environmental Protection Act, 2014; Khyber Pakhtunkhwa wildlife and biodiversity act, 2015; Climate change policy, Khyber Pakhtunkhwa Antiquities Act, 2016; Tourism Policy, 2015; Culture Policy, Khyber Pakhtunkhwa, 2018 and applicable international conventions including Convention concerning the Protection of the World Cultural and Natural Heritage,1972 (UNESO World Heritage Convention), Convention on Biological Diversity, 1997, United Nations Framework Convention on Climate Change, (1994) and Sustainable Development Goals (SDGs)

ES-3 DESCRIPTION OF SUBPROJECTS

The project includes improvement of tourism-enabling infrastructure, enhance tourism assets and strengthen destination management for sustainable tourism development in Khyber Pakhtunkhwa. The planned activities (conservation, preservation, restoration and allied civil works) by subprojects (site) are given below:

Shapula Stupa: Conservation and restoration of the ancient, fragile, bulged, leaned and shattered structural ruins, architecture and artistry work through appropriate conservation measures, for instance preservation, restoration, anastylosis, under pinning, Water tightening, sheltering, shoring, buttressing and other associated activities as deemed necessary keeping in view site requirement. Removal of deposits, wild growth, sweeping and cleaning of area, filling of rain cuts, soil erosion sections, petty repair / maintenance of electrical, water supply, sanitary facilities, lawns. Archaeological excavation and cleaning within the complex additions/ alterations in open areas for swift flow of tourists all around.

Bhamala Stupa: Conservation and restoration of the ancient, fragile, bulged, leaned and shattered structural ruins, architecture and artistry work through appropriate conservation measures, for instance preservation, restoration, anastylosis, under pinning, Water tightening, sheltering, shoring, buttressing and other associated activities as deemed necessary keeping in view site requirement. Removal of deposits, wild growth, sweeping and cleaning of area, filling of rain cuts, soil erosion sections, petty repair / maintenance of electrical, water supply, sanitary facilities, lawns. Archaeological excavation and cleaning within the complex additions/ alterations in open areas for swift flow of tourists all around. Provision of Shed over Sleeping Buddha.

Main Kalam Mosque: Conservation and restoration of the ancient, fragile, bulged, leaned and shattered structural ruins, architecture and artistry work through appropriate Conservation measures, for instance preservation, restoration, anastylosis, under pinning, Water tightening, sheltering, shoring, buttressing and other associated activities.

Pishmal Mosque: Conservation and restoration of the ancient, fragile, bulged, leaned and shattered structural ruins, architecture and artistry work through appropriate Conservation measures, for instance preservation, restoration, anastylosis, under pinning, Water tightening, sheltering, shoring, buttressing and other associated activities. Removal of deposits, wild

growth, sweeping and cleaning of area, filling of rain cuts, soil erosion sections, petty repair / maintenance of electrical, water supply, sanitary, lawns etc. Archaeological excavation and cleaning within the complex additions/ alterations in open areas for swift flow of tourists all around. Removal of deposits, wild growth, sweeping and cleaning of area, filling of rain cuts, soil erosion sections, petty repair / maintenance of electrical, water supply, sanitary, lawns etc.

Hund Museum: Roof treatment (The roof treatment shall be done using Bitumen, polythene sheet covered with mud and Brick tile) and Replacement of Dooms.

Mardan Museum: Roof treatment, Internal electrification improvement, Replacement of Windows, Flooring, Walls Painting Works and Provision of CCTV Cameras System

Tentative workforce required for each proposed Project during construction phase will be about forty-five (45) workers/employees. The implementation period for each subproject is twelve (12) months.

ES-4 DESCRIPTION OF PHYSICAL AND BIOLOGICAL ENVIRONMENT

Physical Environment

The existing environment in and around the subproject areas has been studied with respect to the physical, ecological and socio-economic conditions.

The surrounded topography of the subprojects areas is predominately sub mountainous and eroded by intervening flat valleys. The environmental conditions by district[2] are briefly described here below:

District Haripur: Haripur District of the Hazara Division exhibits a suit of meta-sedimentary rocks of slates, phyllites, phyllitic-slate, quartzite and crystalline limestone. Elevation of the subproject area ranges from 604 to 630 meters. The subproject area is located in Seismic Zone 2B (moderate hazard), where 2B represents Peak Horizontal Ground Acceleration (PGA) from 0.16g to 0.24g. The important rivers of the district are River Indus, Sirin, Daur and Haro.

District Swabi: Topography of Swabi district is divided into northern hilly areas and southern plain area. Elevation of the subproject area ranges from 300 to 313 meters. The plain of Swabi District has developed from river alluvium or loses plains. Geology of Swabi district include Salkhala Formation, Manki Formation, Sobra Formation, Tanawal Formation, Ambar Formation, Miri Bnda Quartzite, Panjpir Formation, Granite and Doleritic dykes. According to Building code of Pakistan 2007, the project area falls in Seismic Zone 2B of Pakistan (moderate damage) with PGA from 0.16 to 0.24g[3]. Main River of the district is Indus River, which rises from Gadoon area at Satkhaiter flowing with eastern and southern boundary and entering the Nowshera and Attock districts at Khund.

[2] *Identified subproject sites are located in 6 districts of KP*
[3] *Building Code of Pakistan-Seismic Provisions, Ministry of Housing and Works, Government of Pakistan, 2008*

District Mardan: The total area of the District Mardan is 1,632 square kilometers. Elevation of the subproject area ranges from 307 to 319 meters. In the district, the highest points in these hills are Pajja or Sakra, 2,056 meters high and Garo or Pato, 1816 meters high. The south western half of the district is mostly composed of fertile plain with low hills strewn across it. Geographically the province could be divided into two zones: the Northern zone extending from the ranges of the Hindu Kush to the borders of Peshawar basin and the southern zone extending from Peshawar to the Derajat basin. The southern zone is arid with hot summers and relatively cold winters and scanty rainfall. According to Building code of Pakistan 2007, the project area falls in Seismic Zone 2B of Pakistan (moderate hazard) with PGA from 0.16 to 0.24 g. Generally, stream flows from north to the south. Most of the streams drain into Kabul River. Kalpani, an important stream of the district rises in the Baizai and flowing southwards join Kabul River.

District Khyber: The total area of the Khyber District is 2,576 sq.kms. Elevation of the subproject area ranges from 970 to 997 meters. It is dominated by barren and rugged mountainous terrain with narrow strips of valleys. The mountainous terrain of Khyber District has small basins and valleys, with scattered settlements and agricultural fields. This is the geological region of Pre-aravallis, metamorphic in general including Precambrian and younger intrusions. The soil of the Khyber District is mainly from the local weathering of bedrock, deposited by streams and rivers. Landforms in the area are varied and include piedmont plains, valleys, gravel fans, rough broken land and gullied land. Level areas are loamy, while lowlands are slightly strongly calcareous. According to Building code of Pakistan 2007, the project area falls in Seismic Zone 3 of Pakistan (high hazard) with PGA from 0.24 to 0.32g[4]. Two main rivers in the Khyber District are the Bara and Chora Rivers. On the northern border of district, River Kabul runs between the area of Shalmanis and Mullagoris.

District Swat: Swat is a mountainous region, located among the foothills of the Hindukush mountain range. Elevation of the subproject area (Mian Kalam Mosque and Pishmal Mosque) ranges from 1,899 to 2,008 meters. Average elevation of swat district is 980 m (3,220 ft). The project area is located in Seismic Zone 3 (high hazard), where 3 represents PGA from 0.24g to 0.32g. River Swat is the main source of surface water commencing at Kalam with the confluence of Ushu and Utror Rivers. It flows for about 160 km across the valley up to Chakdara, while its total length is 250 km upto River Kabul near Charsadda.

Average annual temperature of Haripur District for period of 30 years (1981-2010) is 16.5, Swat, 18.9, whereas, Swabi, Mardan, and Khyber is 22.8 respectively. Average annual precipitation of Haripur District for period of 30 years (1981-2010) is 1324.7, Swat, 1081.5, whereas, Swabi, Mardan, and Khyber is 507.9 respectively. Average annual humidity of Haripur District for period of 30 years (1981-2010) is 63.1, Swat, 73.5, whereas, Swabi, Mardan, and Khyber is 63.7 respectively. Average annual wind speed of Haripur District for period of 30 years (1981-2010) is 0.5, Swat, 0.4, whereas, Swabi, Mardan, and Khyber is 3.2 respectively.

[4] Building Code of Pakistan-Seismic Provisions, Ministry of Housing and Works, Government of Pakistan, 2008

Ecological Environment

In the Study Area/AoI of Swat District, the mountainous environment of the region in the Himalaya and Hindukush Ranges that harbor several unique species of fauna and flora including many globally important species. Generally, these species and their habitats are gradually on decline due to anthropogenic changes coupled with natural calamities. The proposed Kalam subproject area is falling in dry temperate forest eco-zone, dominated by deodar species along the road side and nailed the high hills as well. Blue pine, fir, spruce and walnut is also found in the Study Area/AoI which is providing habitat to wildlife species like Ermine, Kashmir Flying Squirrel and Yellow Throated Marten etc.

In District Haripur, scrub and chir forest is providing habitat to many different wildlife species and having good forest cover which is playing a role in regional stability and environmental balance.

The avian fauna of the Study Area was rich because the flora was thick. As per phyto-geographical classification of the area, major flora of the region is, chir pine, Olive, Ber etc.

The forest cover is depleting with passage of time in the District Swabi and Mardan due to anthropogenic pressures and natural hazards.

The Study Area/AoI represents 140 taxa with 63 families. Habitat class showed that herbaceous cover was dominant with 58.571% of the total flora followed by trees layer of 25%, Shruby layer of 11.42% and remaining 5.71% were climbers in area.

Socio-economic Environment

The socioeconomic environment has been studied with respect to human and economic development and quality of life values of the population residing in the vicinity of the project site.

Administrative settings are same in all the districts. The Deputy Commissioner supervises all the departments in the district and stationed at the head quarter. Deputy Commissioner assisted by the Assistant Commissioners in each sub- division. The sub-divisions have a revenue set up of Tehsildar, Naib Tehsildar who have a number of Girdawar under them.

District Mardan: The population of Mardan district, according to 2017 consensus, is 2,373,061 and the average household size of the district is 8.4 persons according to 1998 census which was 6.5 persons in 1981. The population of the district is almost Muslim who constitutes 99.51 of the total population. The main minorities are ahmadi and christian who are 0.32 and 0.14 percent respectively. Mardan district is mainly inhabited by the Yusafzai Pathans but the Lundkhwar valley has sizeable Khattak population. Mardan is rich in sugar cane, tobacco, poplar and sheesham wood.

District Swat: Provisional results of the 2017 census show District Swat with a population of 2,309,570 capita, which comprises 50.8% male and 49.2% female population. The people of

Swat are peaceful, hospitable, friendly with the majority being 'Pashto' speaking. Swat is ethnically and linguistically diverse. The main ethnic groups living in the area are Torwali, Gawri, Gujar, Oshojo, Qashqari (Khowar), and Pashtun Communities.

District Swabi: Swabi District is divided into four tehsils namely swabi, topi, lahor and razar. The population of Swabi district, according to the 2017 census, is 1,624,616. Swabi has a total area of 1543 sq.kms with a population size of 1,624,616 which comprises 50.2% (approx.) male and 49.8% female population. District Swabi is one of the economically developed region of KP Province. According to the Population Census of 1998, about 97% of the population of the Swabi and Haripur districts is Muslim, while the remaining 3% of the population consist of minorities such as "Ahmadis", Christians, Hindus and other scheduled castes.

District Haripur: District has two sub divisions i.e. Haripur and Ghazi. According to Census of 2017[5], the population of Haripur District is 1,003,031 with an average annual growth rate of 1.97 percent from 1998 to 2017. According to census report 2017, the average household size for the district is 6.1 persons. Sex ratio, i.e. number of males for every 100 females, is 98.81 per cent recorded in 2017 Census. The population of the District is predominantly Muslim i.e. 99.6 percent[6]. Hindko is the predominant language being spoken by majority of the population of the district.

Khyber District: The population of Khyber District, according to the 2017 census, is 986,973. The majority of the tribes in Khyber Agency are Afridis. Khyber District is currently subdivided into four tehsils i.e. Bara, Landi Kotal, Jamrud and Mula Gori. Khyber district is the most literate of all the Tribal Areas, with a literacy rate of 34.2%, as of 2007.

ES-5 PROJECT ALTERNATIVES

The No Project Option (NPO) requires no actions to be taken. Inadequate site management or unavailability of related facilities will result in further deterioration and/or destruction of the PCRs / archeological site(s) and its related social, historical, educational, and economic values. Therefore, this option is not feasible in terms of cultural resource and economic aspects. No other alternatives for the subprojects have been considered keeping in view the extent of activities

ES-6 PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

The consultation and information disclosure to the Project Affected Persons (PAPs) and other stakeholders including were conducted with local communities at Kalam Mosque, Bhamala Site, Mardan Museum, Main Kamal and Pishmal Mosques, Swat, Shapula Stupa Khyber, Assistant Director of Swabi Museum, Assistant Research Officer Directorate of Archeology and Meuseums, Bhamala. Some concerns were raised by the participants including scanning of all the items in three dimensional technologies, the provision of digital audio for visitors, maintain topography, natural drainage and ensure plantation around the PCRs /

[5] Pakistan Bureau of Statistics
[6] DCR Haripur, 1998

archaeological sites, preparation of technical drawings, remove the Frontier Corps (FC) from the site (Shapula Stupa), replacement costs for land acquired by the subprojects, social and environmental issues and design related aspects. Improvement of these proposed subproject sites not only improve the infrastructures facilities at the historical site but also change the socio-economic conditions of the area through tourism development. Therefore, locals actively participated at the meetings and participants expressed their willingness to support the subprojects at each site.

ES-7 POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS AND THEIR MITIGATIONS

The proposed activities will have both positive and adverse impacts during the construction and operational phases.

On the positive side; the project aims to enhance under-utilized potential of Khyber Pakhtunkhwa's (KP's) tourism sector for generating income and revenues, by providing an enhanced tourism experience to domestic and international tourists. The increased tourism promotion has led to an unprecedented rise in tourist traffic in the province, resulting in growth in economic activity in the province. The project will provide an opportunity to the tourist to explore new areas to visit and will enhance tourism experience. The project will provide socio-economic benefits to the inhabitants of the area associated with increase in tourism and services in the vicinity of all the PCRs / archaeological sites which create micro economic benefits to local people.

Major adverse impacts identified during pre-construction and construction are: technical design and layout planning, soil erosion & contamination, excavation of earth, accidental damages, re-plaster / repainting, restoring wooden objects and replacement of windows, roof treatment, surface and groundwater contamination, traffic issues, deterioration of air quality, noise and vibrations, generation of solid waste and wastewater from construction camps, disturbance to wildlife, social conflicts due to labor influx, land acquisition and resettlement, community health and safety, occupational health and safety issues and spread of COVID-19. However most of these adverse impacts are assessed as low to moderate in intensity, temporary in nature, site specific and could be managed through appropriate mitigation measures proposed in this PCRMP.

Impacts anticipated during operational phase include increase in air pollution and noise level and generation of solid waste due to increase in number of tourists.

Mitigation measures include: proponent must review and validate all the design and repair works considering the possible impacts before the start of works, prohibition of use of heavy machinery on wet soil to prevent damage to soil structure, follow the procedures in chance find / provided in PCRMP, avoid the use of heavy construction machinery during the excavation process, award of works to only DoA shortlisted/qualified contractors and the Contractors' staff must have relevant qualification and experience, laboratory tests of the original plaster and color will support the suitable choice in conservation, experienced skillful wooden craftsmen (team) may be deputed by the Contractor, ensure roof treatment in accordance with the authenticity of the material, shape, layout, and/or workmanship techniques, provision of temporary runoff collection system to contain the construction runoff,

safe storage and disposal of oil, lubricants, chemical and other hazardous substances, removal of left-over material from site, traffic management and adoption of work safety measures and good workmanship practices.

In addition; complying with Word Bank Group Environmental, Health and Safety guidelines, regular water sprinkling to control dust, compliance with National Environmental Quality Standards (NEQS) and IFC/WHO guidelines whichever is stringent (as per advised of Environmental Specialist), plantation of trees by implementing plantation plan, use of Personal Protective Equipment (PPEs), ensure safe disposal of domestic and construction waste and wastewater (compliance with applicable standards as per advise of Environmental Specialist), prohibition of hunting, poaching and harassing of animals and birds, obey local cultural and norms, ensure compensation of land based on national law and World Bank OP 4.12 and it should be at least the prevailing market rates, ensure implementation of site specific health and safety plan based on World Bank Group Environmental, Health and Safety Guidelines (WBGEHSG) and compliance with updated/latest guidelines of GoP and WHO.

Impacts anticipated during operational phase include increase in air pollution and noise level and generation of solid waste due to increase in number of tourists and road safety issues. Mitigation measures include: proper waste management plan should be prepared for onsite storage, collection and disposal of waste, monitoring of ambient air quality and noise level in accordance with NEQS and IFC/WHO guidelines whichever is stringent (as advised by Environmental Specialist, if required) with ensure provision of adequate parking facilities at cheap rates and indulge traffic police in traffic management plan and allocation of parking facilities.

ES-8 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

PCRMP provides institutional arrangement for the implementation of the proposed mitigation measures during the construction and operational phases of the proposed sub-project. The PCRMP defines roles and responsibilities, reporting mechanism, training needs and schedules; and budget to implement the PCRMP. The impacts, mitigation measures, monitoring indicators, frequency and responsibility have been documented in PCRMP.

Project Steering Committee will be responsible for overall project implementation while Directorate of Archaeology and Museums and PMU-KITE-DoT will be responsible for overall implementation of PCRMP of the subproject. Environmental and Social Safeguard Unit (ESSU)- PMU-KITE-DoT consisting of environment and social expert (already hired) assisted by one (01) environmental inspector/ nominated person, one (01) social inspector/ nominated person and one (01) conservation assistant (01) / designated person will be established in PMU-KITE-DoT to ensure compliance of PCRMP by the Construction Contractor. Monitoring and Evaluation consultant will carry out third party monitoring for implementation of PCRMP. The Contractor(s) will be responsible for the implementation of PCRMP for the proposed subprojects.

Environmental Monitoring will be undertaken during pre- construction, construction and operational phases to ensure the effectiveness of the proposed mitigation measures. Certain environmental parameters will be selected and quantitative analysis will be carried out to comply with national (NEQS) and international standards (IFC/WHO/FAO) whichever is

stringent (as per advise of Environmental Specialist). KP EPA represents the regulatory body for implementing E&S legal and policy requirements.

The total estimated cost required to effectively implement the mitigation measures is **PKRs. 12.12 Million.**

1 INTRODUCTION

1.1 GENERAL

Department of Tourism (DoT) through Government of Khyber Pakhtunkhwa (GoKP) intends to conserve, preserve, restore and develop the six (06) Physical Culture Resources[7] (PCRs) / archaeological sites under PMU-KITE-DoT.

1.2 PROJECT BACKGROUND

Tourism is an important contributor to KP's economy and job creation, and the number of domestic tourists traveling to KP keeps growing rapidly. KP is blessed with diverse tourism attractions, catering to all interest types. KP's rising value in the tourism sector is also evident from the fact that its expenditure in tourism sector rose from Rs. 86.23 million in the financial year 2012-13 to Rs. 791 million in financial year 2018-19. The increased tourism promotion has led to an unprecedented rise in tourist traffic in the province, resulting in growth in economic activity in the province and the creation of new employment opportunities for the local population.

The GoKP has received loan from International Development Association (administered by the World Bank) towards the KITE. The KITE project aims to enhance under-utilized potential of KP's tourism sector for generating income and revenues, by providing an enhanced tourism experience to domestic and international tourists, while focusing on preservation of environment, wildlife, culture and heritage.

One of main objectives of KITE is to promote and develop culture and religious tourism by exploring Archaeological Treasures. Therefore, the initiative to preserve the archeological sites and to make these sites hub for cultural and religious tourism was undertaken.

In this connection, six (06) PCRs / archaeological sites including Bhamala Stupa, District Haripur, Shapula Stupa, Landi Kotal District Khyber, Pishmal and Main Kalam Mosques, District Swat, Hund Museum District Swabi and Mardan Museum, District Mardan, have been selected for conservation, preservation, restoration and civil works. Bhamala Stupa, District Haripur is already enlisted on prestigious World Heritage list of United Nations Educational, Scientific and Cultural Organization (UNESCO).

The proposed subprojects involve the conservation, restoration and development works in or near the PCRs / archaeological sites, thus OP/BP 4.11 is triggered that requires Physical Cultural Resources Management Plan (PCRMP). This document presents a consolidated

[7] *Also known as cultural heritage, cultural patrimony, cultural assets or cultural property. PCRs are defined as movable or immovable objects, sites, structures, groups of structures and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic or other cultural significance. PCRs may be at located in urban or rural settings and may be above or below ground or under water.*

PCRMP for all the above mentioned PCRs sites to outline the control measures that must be implemented to reduce anticipated adverse impacts during the pre-construction, construction and operation phases of the proposed subprojects.

Once the site specific PCRMP approved and cleared by the World Bank and it can only be updated with addendum and get approve from World Bank, if any modifications as the project design and technical specifications modified prior to the implementation stage. This report has been prepared based on the Environmental and Social Management Framework (ESMF), 2020[8], to meet compliance with the World Bank's Safeguard policies applicable to these proposed subprojects, national, provincial regulations and other International Best Practices. Location map of sites is attached as Figure 1.1.

[8] *Environmental and social management framework, updated with covid-19 checklists, April 2020*

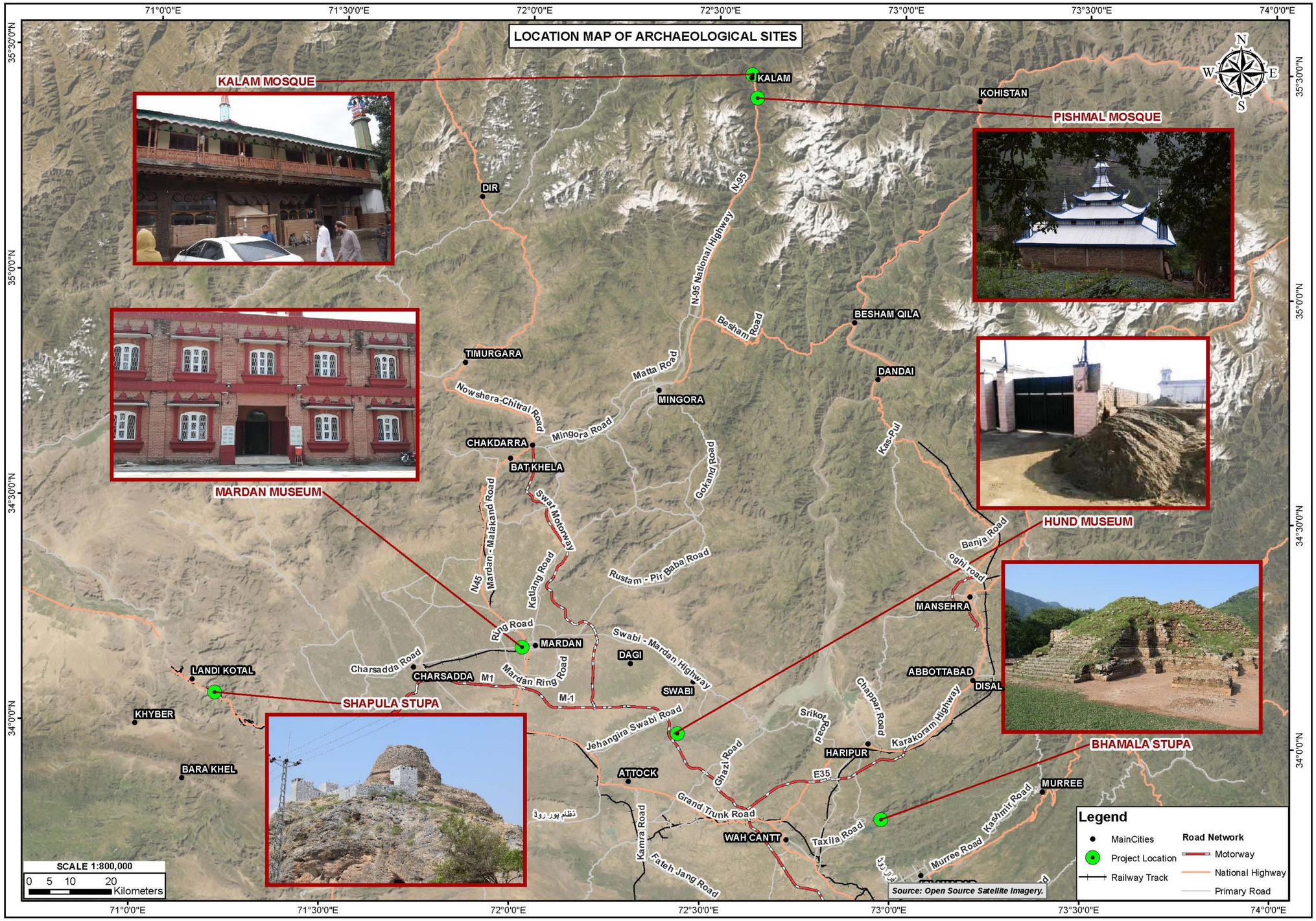

Figure 1-1: Subprojects Location Map

According to the World Bank Operational Policy OP 4.01 'Environmental Assessment' the proposed subprojects falls under Category 'B' as potential adverse environmental impacts of the proposed subprojects on human populations or environmentally important areas are less adverse than those of Category A projects. These impacts are site-specific; few if any of them are irreversible; and mitigation measures can be designed more readily than for Category A. However, ESMP will be prepared separately for the above archeological sites/PCRs.

1.3 OBJECTIVES OF PCRMP

The main objective of this PCRMP study is the identification of the possible and induced impacts of the proposed subprojects. The impact identification process focuses particularly on physical, ecological, socio-economic and cultural aspects of the environment. Based on the level and nature of these observations, the PCRMP then delineates proper mitigation measures. As a planning tool, the PCRMP aims to ensure that environmental including PCRs, socio-economic and cultural issues throughout the entire project lifecycle are anticipated and considered by the project proponent. It also serves as a framework for establishing project controls to reduce or prevent adverse environmental or socio-economic impacts. Three (03) separate Abbreviated Resettlement Action Plans (ARAPs) will be prepared to deal with the land acquisition, resettlement and rehabilitation issues for Shapula Stupa Landi Kotal District Khyber, Bhamala Stupa, District Haripur and Hund Museum, District Swabi.

The specific objectives of this PCRMP are:

- To assess the existing environmental and socioeconomic conditions of the subproject area;
- To identify potential impacts of the proposed subprojects on the physical, ecological and social aspects, to predict and evaluate these impacts and determine their significance;
- To provide practical and implementable actions for the Contractor to follow, to avoid, mitigate, remedy, offset or compensate for likely impacts or damages to PCRs;
- Protect physical cultural resources from the adverse impact(s) of the proposed subprojects and support conservation, preservation, restoration and civil works;
- To propose appropriate mitigation measures that should be incorporated in the design of the subprojects to avoid or minimize if not eliminate the potentially adverse impacts, and to implement during implementation and operational phases as well;
- To assess the compliance status of the proposed activities with respect to the national/provincial environmental legislation and WB's applicable OPs;
- To provide institutional, monitoring, reporting and documentation measures for environmental safeguards compliance; and
- To aid decision makers to take informed decisions (where applicable).

1.4 THE PROPONENT

The GoKP through PMU KITE-DoT is the executing agency for the subprojects, headed by the Project Director.

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Contact Person:	
Designation:	Project Director

Detail of PCRMP team is given in Annex-I**.**

1.5 APPROACH & METHODOLOGY TO WORK

1.5.1 Approach

The study has been conducted in accordance with the World Bank Safeguards policies (OP4.01, OP4.11 and OP4.12) applicable to these subprojects and Pak- EPA Guidelines for Sensitive and Critical Areas 1997, Khyber Pakhtunkhwa Environmental Protection Act, 2014. The study is based on both primary and secondary data and information. The primary data includes data/information collected from field. The secondary data includes a review of relevant information from literature and published reports. Discussions were held with stakeholders including government officials, and community representatives. The main purpose of this approach was to obtain an impartial impression of the people's perceptions about the project and its likely adverse impacts. PCRMP was prepared based on the proposed/planned subprojects activities. This PCRMP provides a comprehensive plan for implementing and managing the mitigation and monitoring measures, while assigning the relevant roles for implementing such measures.

1.5.2 Methodology

The following methodology was adopted for carrying out the PCRMP study of the proposed subprojects activity:

a) Data Collection

A detailed data acquisition plan was developed after understanding of the subprojects activities. The plan included; identification of specific data requirements and their sources; determination of time schedules and responsibilities for their collection and indication of the logistics and other supporting needs for the execution of the data acquisition plan. The study is based on both primary and secondary data and information. The primary data includes data/information collected from field. Field survey was then conducted based on the data collection plan.

The secondary data includes a review of relevant information from literature and published reports. Discussions were held with stakeholders including government officials, and community representatives. The main purpose of this approach was to obtain an impartial impression of the people's perceptions about the project and its likely adverse impacts. PCRMP was prepared based on the proposed/planned subprojects activities. This PCRMP

provides a comprehensive plan for implementing and managing the mitigation and monitoring measures; while assigning the relevant roles for implementing such measures

b) Field Survey

A site visit was conducted in the month of December 2019 and January 2020 for the preparation of environmental and social screening reports for all the seven (06) PCRs / archeological sites. For this purpose, checklists (attached as Annex- II) were developed in accordance with the World Bank's Environmental and Social operational policies and as per applicable national and provincial legislations. Afterwards a detailed site visit for collection of data was conducted during the month of May, 2021.

c) Area of Influence (AoI)

AoI/ Study Area includes the actual subproject area as well as the area in the surroundings in which positive and adverse impacts may be foreseen due to the implementation of the proposed subprojects.

The AoI for the baseline survey of each archeological sites/ PCRs is taken as 100 m from the center.

d) Stakeholder Consultations

For this PCRMP study, stakeholder consultation was carried out. The PCRMP team met with the government functionaries, affected persons and local communities along the proposed route. The objective of the consultation was to disseminate information on the subprojects and its likely adverse impacts among primary and secondary stakeholders and to gather information on relevant issues so that the feedback received could be used to address these issues at an early stage.

e) Anticipated Impact Assessment

The data collected from the field was analyzed and the impacts of the proposed subprojects on the physical, ecological and socio-economic environment prevalent in the subprojects area were identified and characterized with respect to significance and probability of occurrence at the design, construction, and operation phases. Possible mitigation measures and implementation mechanisms are proposed so that the impacts can be mitigated / controlled and the subprojects implementation remain sustainable.

f) Development of Physical Cultural Resource Management Plan (PCRMP)

PCRMP for the proposed subprojects activities was prepared. The PCRMP provides a plan for implementing and managing the mitigation and monitoring measures. The PCRMP includes the following:

- Mitigation and monitoring plan;
- Definition of roles and responsibilities of the proponent, contractors and monitoring teams;
- Requirements for communication, documentation and training during the project; and
- Change Management Plan to cover unforeseen events / unanticipated impacts during the project.

1.6 STRUCTURE OF REPORT

This document is a part of environmental and social safeguard documents prepared in the light of ToRs for KITE Project. The structure of this report is listed below:

Section 1: Introduction presents the project background, objectives, methodology and need of the PCRMP study.

Section 2: Legal and Administrative Framework Lists national as well as provincial laws, regulations and procedures and applicable World Bank OPs.

Section 3: Description of Subprojects provides an overall description of the subprojects including project components, implementation schedule, manpower requirement, waste generation, expected machinery and material requirements.

Section 4: Description of Environment gives a description of baseline physical, ecological and socio-economic conditions of the subprojects area**.**

Section 5: Project Alternatives enlists no project option for proposed subprojects.

Section 6: Public Consultation and Information Disclosure identifies the main stakeholders and their concerns raised during scoping sessions and deals with the measures to mitigate the social impacts.
Section 7: Potential Environmental and Social Impacts and their Mitigations Measures identifies, predicts and evaluates impacts of the subprojects activities during the construction and operation stages and deals with the measures proposed to mitigate potential environmental impacts of the proposed subprojects.

Section 8: Environmental and Social Management Plan This section outlines organizational framework, mitigation and monitoring plans training requirements, defines roles and responsibilities, estimates budgets requirements for satisfactory implementation.

Section 9: References presents the references consulted for the preparation of PCRMP.

1.7 INCLUSION OF SAFEGUARDS DOCUMENTS IN THE BIDDING DOCUMENTS

This PCRMP will be a part of the bidding / contracts documents and its compliance is mandatory.

2 LEGAL AND ADMINISTRATIVE FRAMEWORK

2.1 GENERAL

This section deals with the current legal and administrative framework required to carry out the PCRMP of the proposed subprojects. All the applicable World Bank Safeguards Policies and Environmental Policies laid out by the GoP, GoKP have been duly discussed and the subprojects proponent will be required to adhere to these regulations throughout the course of the subprojects.

2.2 APPLICABILITY OF WORLD BANK SAFEGUARD POLICIES

The development objectives of the World Bank safeguard policies are based on sustainability, transparency, fairness, accountability, governance, informed decision making, rights, participation and meaningful consultation for investment projects financed by the World Bank. The disclosure and access to information policy is applicable to all investment projects and programs funded by the World Bank. Based on available information the applicability of World Bank policies is summarized below, Table 2.1:

Table 2-1: Applicability of World Bank Policies

Sr. No.	WB Safeguard Policies Triggered by the Project	Triggered		Explanation
		Yes	No	
1.	The World Bank OP 4.01 Environmental Assessment	[√]	[ ]	The World Bank requires that an environmental assessment of all World Bank financed projects is carried out by the borrower to ensure that a project is environmentally sound and sustainable. As such, this policy has been triggered by KITE Project. According to the World Bank Operational Policy OP 4.01 'Environmental Assessment' the proposed subprojects falls under Category 'B' as potential adverse environmental impacts of the proposed subprojects on human populations or environmentally important areas are less adverse than those of Category A projects. These impacts are site-specific; few if any of them are irreversible; and mitigation measures can be designed more readily than for Category A. However, ESMP will be prepared separately for the above archeological sites. The PCRMP in hand is fully committed to the requirements determined in the WB Safeguard Policy. The environmental works carried out have been essentially guided by these rules as enunciated in the OP 4.01.

Sr. No.	WB Safeguard Policies Triggered by the Project	Triggered		Explanation
		Yes	No	
2.	The World Bank OP 4.04 Natural Habitats	[ ]	[√]	This OP is **triggered** to support the protection, maintenance and rehabilitation of natural habitats and their functions. This ESMF identifies the ecologically sensitive zones and protected areas present in the project districts. These zones will be assessed in each district prior to execution through sectoral ESMPs.
3.	The World Bank OP 4.09 Pest Management	[ ]	[√]	NA
4.	The World Bank OP 4.10 Indigenous Peoples	[ ]	[√]	NA
5.	The World Bank OP 4.11 Physical Cultural Resources	[√]	[]	The World Bank through its Policy on Physical Cultural Resources (OP 4.11) assists countries to avoid or mitigate adverse impacts on physical cultural resources from development projects that it finances. The impacts on PCRs resulting from project activities, including mitigating measures, may not contravene either the borrower's national legislation, or its obligations under relevant international environmental treaties and agreements. This OP 4.11 is triggered as the proposed conservation, restoration and development works will be carried out in or around the PCRs / archaeological sites.
6.	The World Bank OP 4.12 Involuntary Resettlement	[√]	[ ]	The WB policy on involuntary resettlement is triggered in any project with the potential to result in the involuntary taking of land which results in the relocation or loss of shelter, loss of assets or access to assets, or loss of income sources as well as involuntary restriction of access to legally designate parking and protected areas resulting in adverse impacts on livelihood. Land will be acquired from public/ private landholders. Hence this OP will be triggered.

Sr. No.	WB Safeguard Policies Triggered by the Project	Triggered		Explanation
		Yes	No	
7.	The World Bank OP 4.36 Forests	[ ]	[√]	This OP **is triggered** because while the project is not likely to support any activities that will lead to a significant degradation or conversion of forests, the project will comply with this policy and ensure that the forest resources of the selected project districts remain preserved.
8.	The World Bank OP 4.37 Safety of Dams	[ ]	[√]	NA
9.	The World Bank OP 7.50 Projects on International Waterways	[ ]	[√]	NA
10.	The World Bank OP 7.60 Projects in Disputed Areas	[ ]	[√]	NA

2.3 OTHER RELEVANT WORLD BANK GUIDELINES AND POLICIES

2.3.1 Guidance Note on Labor Influx

A Guidance Note for "Managing the Risks of Adverse Impacts on Communities from Temporary Project Induced Labour Influx" was issued by World Bank in 2016. This Note provide guidance on identifying, assessing and managing the risks of adverse social and environmental impacts that are associated with the temporary influx of labor resulting from Bank supported projects. It contains guiding principles and recommendations to be considered as part of the design and implementation of projects with civil works that require labor from outside the project's area of influence. It does not introduce new requirements, but rather seeks to provide concrete guidance on how to approach temporary labor influx within the environmental and social assessment process.

2.3.2 World Bank Group Environmental, Health & Safety Guidelines

In addition to OP, the World Bank Group has also established its Environmental, Health and Safety (EHS) guidelines for all the interventions that are financed by the group. These EHS Guidelines are technical reference documents with general and sector-specific examples of Good International Industry Practice (GIIP).

General EHS Guidelines: Issues associated with the construction and operation of maintenance facilities are addressed in the General EHS Guidelines with other key element like Environment and Occupational, Health and Safety (OHS) at workplace as well as for community. Summarized WB Group's Environmental and Health and Safety guidelines are provided in Annex- III.

(https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/policies-standards/ehs-guidelines)

2.3.3 World Bank Group Gender Strategy (2016-2023)

The 2015 Gender Strategy recognizes that stronger and better-resourced efforts are needed to address gender inequalities in access to jobs as well as control over and ownership of productive assets are key levers of change for women, their communities and economies and fundamental drivers of economic growth and poverty reduction. Gender equality is central to the World Bank Group's own goals of ending extreme poverty and boosting shared prosperity in sustainable manner.

2.4 KEY NATIONAL AND PROVINCIAL LAWS, REGULATIONS AND POLICIES

Government of Pakistan has promulgated laws and regulations to safeguard the environment. At national level Ministry of Climate Change is the responsible authority & at provincial level KP-EPA is responsible for promulgation & implementation of environment related laws. Besides environmental statutes, a number of laws governing the social performance of the project also exist, e.g. Land Acquisition Act, 1894. The following description presents a brief overview of the relevance of various existing national policies, legislation and guidelines:

2.4.1 National Laws, Regulations and Policies

2.4.1.1 Pakistan Environmental Protection Act (PEPA), 1997

The Act was enacted on December 06, 1997 by repealing the Pakistan Environmental Protection Ordinance, 1983. It provides the framework for implementation of the Pakistan National Conservation Strategy (PNCS), 1992, establishment of provincial sustainable development funds, protection and conservation of species, conservation of renewable resources, and establishment of Environmental Tribunals, appointment of Environmental Magistrates, Initial Environmental Examinations (IEE) and Environmental Impact Assessments (EIA). Section 12 of the Act stresses the need to carry out EIA/IEE study prior to construction or operation of a project. PEPA will play its role in relation to enforcement of other environmental laws in project's execution.

2.4.1.2 National Conservation Strategy, 1992

Pakistan National Conservation Strategy (NCS) approved by the federal cabinet in March 1992 is the principal policy document on environmental issues in the country (EUAD/IUCN,

1992). The NCS outlines the country's primary approach towards encouraging sustainable development, conserving natural resources, and improving efficiency in the use and management of resources. The NCS has 68 specific programs in 14 core areas including conservation of biodiversity, pollution prevention and abatement, soil and water conservation and preservation of cultural heritage and recommends immediate attention to these core areas

This strategy will safeguard and conserve natural environment and preserve the cultural heritage by ensuring sustainable development in relation to project activities.

2.4.1.3 National Environmental Policy (NEP), 2005

NEP is the primary policy of Government of Pakistan addressing environmental issues. The broad Goal of NEP is, “to protect, conserve and restore Pakistan’s environment in order to improve the quality of life of the citizens through sustainable development”. The NEP identifies a set of sectoral and cross-sectoral guidelines to achieve its goal of sustainable development. It also suggests various policy instruments to overcome the environmental problems throughout the country. The sectoral guidelines include water supply and management, Air quality and noise, waste management, forestry, biodiversity and protected areas, climate change and ozone depletion, energy efficiency and renewable, agriculture and livestock and multi-lateral agreements were as; cross sectoral guidelines include; poverty and environment, population and environment, gender and environment, health and environment, trade and environment, environment and local governance and natural disaster management. NEP will protect the environment by ensuring sustainable development.

2.4.1.4 Guidelines for Environmental Assessment, Pakistan EPA

The Pak-EPA has published a set of environmental guidelines for conducting environmental assessments and the environmental management of different types of development projects. The guidelines that are relevant to the proposed subprojects are listed below:

1. The Pakistan Environmental Protection Ordinance 1997;
2. Policy and procedures for filing, review and approval of environmental assessments;
3. Guidelines for the Preparation and Review of Environmental Reports, Pakistan, EPA 1997;
4. Guidelines for Public Consultations; Pakistan EPA May 1997;
5. Guidelines for Sensitive and Critical Areas, October 1997; and
6. Pakistan Environmental Legislation and the National Environmental Quality Standards.

These guidelines will be used as reference in preparation of EA reports (if required), in later stages of the subprojects.

2.4.1.5 Pak- EPA Guidelines for Sensitive and Critical Areas 1997

Pak-EPA has developed these guidelines to identify sensitive and critical areas in Pakistan. Upon identification of proposed development activities, the responsible authority will seek that the proponents and relevant conservation authorities have engaged in a verifiable process of

communication with each other which leads to a thorough investigation of likely impacts and alternatives for the project and satisfies the relevant conservation authority requirements.

2.4.1.6 National Environmental Quality Standards (NEQS), 2010

In pursuance of the statutory requirement under clause (e) of sub-section (1) of section (6) of the Pakistan Environmental Protection Act, 1997(XXXIV of 1997), Pakistan Environmental Protection Agency with prior approval of the Pakistan Environmental Protection Council, has published the NEQS in 2010.

The NEQS 2000 specify the following standards:

Maximum allowable concentration of pollutants (32 parameters) in municipal and liquid industrial effluents discharged to inland waters, sewage treatment facilities, and the sea (three separate sets of numbers);

- Maximum allowable concentration of pollutants (16 parameters) in gaseous emissions from industrial sources;
- Maximum allowable concentration of pollutants (two parameters) in gaseous emissions from vehicle exhaust and noise emission from vehicles; and
- Maximum allowable noise levels.

NEQS ensures that air, water and noise levels do not exceed their allowable limits, during project's implementation.

2.4.1.7 Land Acquisition Act, 1894 Including Later Amendments

The Land Acquisition Act, 1894, is a "law for the acquisition of land needed for public purposes and for companies and for determining the amount of compensation to be paid on account of such acquisition". The exercise of the power of acquisition has been limited to public purposes. This law is applicable in resettlement of the community and will ensure provision of adequate compensation of land to the affectees. This law is applicable as the land will be acquired from public/ private landholders.

2.4.1.8 Protection of Trees and Brushwood Act, 1949

This Act prohibits cutting or lopping of trees and brushwood without permission of the Forest Department. The Forest Department will be approached for permission to cut trees (if required) in or around the proposed subprojects site. This law is applicable to control the cutting of trees, bushes and shrubs.

2.4.1.9 Building Code of Pakistan, 1986

The provision of Building Code of Pakistan shall apply for engineering design of building like structure and related components. The construction in violation of the Building code shall be deemed as violation of professional engineering work. Seismic provisions were later added in 2007 named as 'Seismic Building Code of Pakistan'. This code stipulates the minimum

requirements for seismic safety of building and structures and the provisions of the Building Code of Pakistan (Seismic Provisions-2007) shall apply for engineering design of buildings, like structures and related components.

2.4.1.10 National Forest Policy 2015

Historically, Forestry remained a provincial subject even after independence of Pakistan. In the Constitution of Islamic Republic of Pakistan 1973, Forestry is purely a provincial subject and not impacted by the eighteenth amendments in the Constitution (2010). However, the federal support to federating units for meeting international obligations and filling their financial gaps is widely acknowledged. Climate mitigation and adaptation measures are the focus of National Forest Policy in view of Pakistan's high vulnerability to adverse impacts of climate change, in particular to extreme events.

2.4.1.11 The Forest Act (1927)/Addendum

The Forest Act 1927 is designed to protect forest areas. The law prohibits grazing hunting, quarrying, clearing for the purpose of cultivation, removing forest produce, and felling or looping trees in forest or protected areas. Section 26 of the act prohibits the clearing of land, felling trees, cultivation, grazing livestock, trespassing, mining and collecting forest reserves along with setting traps or snares and poisoning of water. Any person who contravene shall be liable with punishment set by the law. However, after Forest Ordinance Amendment (2016) in sec 27 and 34-A of the Forest Act 1927 a subsection (3) is inserted according to which the government after approval from the provincial cabinet declares reserved forest as no more reserved and can acquire the forest land for purpose of projects of national importance. The forest act also allows the concerned authorities to regulate privately owned forests and land under certain conditions such as protection from floods or landslides, safeguarding roads, bridges and railways and preservation of public health (Sec 55). This law avoids impacts on floral assets in development of tourist's facilities.

2.4.1.12 International Labour Organization (ILO)

The ILO aims to ensure that it serves the needs of working women and men by bringing together governments, employers and workers to set labor standards develop policies and devise programs.

The ILO has the following four strategic objectives:

- Promote and realize standards and fundamental principles and rights at work
- Create greater opportunities for women and men to decent employment and income
- Enhance the coverage and effectiveness of social protection for all
- Strengthen social dialogue.

The ILO aims to ensure the needs of working women and men by bringing together governments, employers and workers to set labor standards develop policies and devise programs.

2.4.1.13 Employment of Child Act, 1991

This act prohibits the employment of children in certain occupations and regulates the conditions of work of children. According to the definition in the act, a child is one who has not completed his 14th year of education. According to Section 3 of the Act, 'No child shall be employed or permitted to work in any of the occupations set forth in Part I of the Schedule or in any workshop wherein any of the processes set forth in Part II of that Schedule is carried on: Provided that nothing in this section shall apply to any establishment wherein such process is carried on by the occupier with the help of his family or to any school establishment, assisted or recognized by Government'. This Act prohibits the employment of children in any of the proposed subprojects activities.

2.4.1.14 Occupational Health & Safety Laws

In Pakistan, the OHS in different sectors is covered in various laws. There is no single comprehensive law covering OHS. The following pieces of legislation could be relevant to the project in terms of OHS aspects:

- Factories Act 1934;
- North-West Frontier Province Factories Rules 1975;
- West Pakistan Hazardous Occupations Rules 1963;
- Provincial Employees Social Security (Occupational Diseases) Regulation 1967; and
- Workmen Compensation Act 1923 and Rules 1961.

However, the exact applicability of the above laws to the proposed subprojects is subject to discussion and legal opinion.

2.4.1.15 National Disaster Risk Reduction Policy, 2013

National Disaster Management Authority (NDMA), being the lead focal agency for disaster preparedness and management, has therefore, embarked upon formulation of a comprehensive National Disaster Risk Reduction Policy through wider consultations with all stakeholders including all provinces, state of AJ&K and regions.

This policy covers disasters risk reduction in a more holistic way and introduces a proactive and anticipatory approach by laying special emphasis on risk assessment and prevention.

2.5 PROVINCIAL LAWS, REGULATIONS AND POLICIES

2.5.1 KP Environmental Protection Act, 2014

Post the adoption of the 18th Constitutional Amendment in 2011, the subject of environment was devolved, and the provinces have been empowered for environmental protection and conservation. Subsequently, the KP Government amended PEPA 1997 as KP Environmental Protection Act 2014, and KP EPA is responsible for ensuring the implementation of provisions

of the Act in KP's territorial jurisdiction. KP EPA is also required to ensure compliance with the NEQS and establish monitoring and evaluation systems. In case any project falls under Schedule I or II of this Act, the relevant IEE (or EIA where required) will be developed and submitted to EPA KP for issuing NOC before commencing any physical work. This law will enforce the implementation of environmental legislations at provincial level and will be responsible for issuing No Objection Certificates (NOCs), if required.

2.5.2 KP Tourism Policy, 2015

This policy identifies key priorities of provincial government for the next few years to develop the tourism sector as the priority sector and transform it into an engine of economic growth by making KP a preferred tourist destination. KP tourism sector vision aims to develop an internationally competitive tourism sector to fully realize its diverse potential; making tourism a leading economic sector for the province through public-private partnership. The policy focuses on sustainable tourism development. The objectives of policy includes; to establish KP as a preferred tourist destination, nationally in the short to medium term and globally in the long term, increase tourist traffic in the province by at least 10% every year over the next five years, Increase private sector investment in the provincial tourism sector in the provincial tourism sector over the next five years, increase workforce quality in the sector provide quality services in the short to medium terms and position KP as a source of world class tourism workforce in the long run. Establish a tourism quality assurance system in the province and ensure compliance in the short to medium term and achieve global service standards in the long term. This policy will provide guidance in planning and implementation of the subproject activities.

2.5.3 KP Tourism Act, 2019

Khyber Pakhtunkhwa Tourism Act, 2019 which will provide a framework for the Integrated Tourism Zones (ITZs), Provincial Tourism Authority (PTA), tourist police and private sector entities in the tourism and hospitality sectors of KP. The aims of this act includes but not limited to: promote, preserve and revive cultural heritage, cultural traditions, values, festivals and dialects; measures for sustainable development; promote and preserve tangible and intangible cultural assets, values and traditions of province, develop, publish and implement regulations in respect of forests, mountains, water features, lakes, waterfalls, flora and fauna. The authority will have the powers to acquire land for the purpose of promoting tourism and developing resorts, skiing facilities, hotels and other tourism related activities.

2.5.4 KP Wildlife & Biodiversity Act, 2015

KP Wildlife Act is expedient to provide for the protection, preservation, conservation and management of wildlife in KP. The aims and objects of this Act are the:

1. Strengthening the administration of the organization to effectively manage wild animals and their habitats;
2. To holistically manage Protected Areas in sustainable manners for the best interest of the indigenous communities and local stakeholders;

3. Securing appropriately the goods and services produced from wild animals and their habitats at the level of local communities;
4. Fulfilling the obligations envisaged under the biodiversity related multilateral environmental agreements ratified by the GoP;
5. Promotion of public awareness and capacity building for proper appreciation of the environmental significance and socio-economic values of wildlife; and
6. Conservation of biological diversity and realization of its intrinsic and extrinsic values through sustainable use and community participation.

This law is applicable to provide the protection and conservation to the local wildlife.

2.5.5 KP Forest Ordinance 2002

This Ordinance is relevant if the proposed subprojects are located in or around forested areas. Especially, during construction, the contractors will need to strictly abide by its provisions. This Ordinance prohibits construction of any building or shed, road or enclosure, or any infrastructure, or altering or enlarging any existing road or infrastructure in a reserved forest. It also bans any cutting, felling or uprooting any tree or brushwood listed in Schedule –I. This law is applicable to conserve and protect floral diversity for all subprojects sites.

2.5.6 Khyber Pakhtunkhwa Antiquities Act, 2016

The protection, preservation, development and maintenance of antiquities in KP is ensured by the Antiquities Act of 2016. Antiquities have been defined in the Act as ancient products of human activity, historical sites, or sites of anthropological or cultural interest, national monuments etc. The act is designed to protect antiquities from destruction, theft, negligence, unlawful excavation, trade and export. The law prohibits new construction in the proximity of a protected antiquity and empowers the GoP to prohibit excavation in any area, which may contain articles of archaeological significance. No Objection Certificate (NOC) would be requested from Director Archeology Department for construction within 200 feet of cultural heritage sites.

2.5.7 KP Climate Change Policy 2016

Pakistan has drafted its National Climate Change Policy in 2012. However, after the 18th amendment in the constitution of Pakistan, the Govt. of KP decided to formulate a Provincial Climate Change Policy to be more specific, target oriented and also in line with National Climate Change Policy of Pakistan 2012 - thus a Provincial Climate Change Policy was formulated for the first time in June, 2016, to the specific needs of the Province.

The Policy highlights sectors that need mitigation measures such as energy, transport, wastes, industries, urban planning etc. It also gives emphasis, to streamline Climate Change in different sectors of the economy and developmental projects in the Province to make a sustainable development and create resilience to natural disasters. Successful implementation of the Policy in relevant sectors like agriculture, water resources, forestry, wildlife etc. will help in achieving targets pertaining to Climate Change resilience. This law will

enforce the implementation of mitigation measures such as energy, transport, wastes, industries, urban planning etc.

2.5.8 Culture Policy, Khyber Pakhtunkhwa, 2018

The KP culture policy goals are to create an enabling environment in which Cultural Heritage Sector can flourish and play a significant and defining role in nation building, safeguarding of identity and socioeconomic development. The primary objective of KP cultural policy is to achieve the economic and social development and moderate the problems faced by existing cultural sector. KP culture policy aims to provide an environment conducive to the protection, growth and promotion of indigenous culture heritage. This policy will protect the cultural integrity of the province throughout the subprojects area.

2.5.9 KP Commission on Status of Women

The KP Commission on the Status of Women is a statutory advisory body established under the Khyber Pakhtunkhwa Act XIX of 2009 which was amended by the Khyber Pakhtunkhwa Assembly under the new Act XXVIII of 2016. The Commission in KP is the first ever Provincial Level Commission in the country, established with functions to oversee implementation of laws, policies and programs related to women and propose new measures where gaps exist. The third term of the Provincial Commission on the Status of Women was notified in January 2017.

2.5.10 National Disaster Management Act, 2010

National Disaster Management Act, 2010. Amended in March 2020 as “The National Disaster Management (Khyber Pakhtunkhwa) (Amendment) Act, 2020. National Disaster Management Act, 2010 was passed by Parliament of Pakistan in 2010. The Act applies to whole Pakistan. The Act was passed in backdrop of 2010 Floods in Pakistan and strengthens Disaster Management system.

2.5.11 Khyber Pakhtunkhwa Water Act, 2020

Khyber Pakhtunkhwa Water Act, 2020 was passed by provincial assembly in July 2020. The Act applies to comprehensive management of water resources in KP and regulate their use in conservation and sustainability. This act is applicable as the proposed subprojects may utilize the groundwater resources and dispose of wastewater during the conservation, restoration and development works phase.

2.6 APPLICABLE INTERNATIONAL CONVENTIONS

Pakistan is signatory to a number of international conventions and agreements on biodiversity conservation, environmental protection, and sustainable development. The major conventions and agreements that are relevant to the project are the following:

2.6.1 Convention Concerning the Protection of the World Cultural and Natural Heritage, 1972 (UNESO World Heritage Convention)

The Convention concerning the Protection of the World Cultural and Natural Heritage entered into force in Pakistan by 1976 being signatory, requires parties to adapt a general policy on the protection of the natural and cultural heritage, to set up services for such protection, to develop scientific and technical studies, to take appropriate legal, technical, scientific and administrative measures and to foster training and education for such protection.

2.6.2 Convention on Biological Diversity, 1997

Also known informally as the Biodiversity Convention, it is a multilateral treaty. The Convention has three main goals including: the conservation of biological diversity (or biodiversity), the sustainable use of its components and the fair and equitable sharing of benefits arising from genetic resources.

The Convention requires parties to develop national plans for the conservation and sustainable use of biodiversity, and to integrate these plans into national development programmes and policies. Parties are also required to identify components of biodiversity that are important for conservation, and to develop systems to monitor the use of such components with a view to promoting their sustainable use.

Relevance: This convention is relevant to conserve, protect and manage the biological diversity of all subproject sites.

2.6.3 United Nations Framework Convention on Climate Change, (1994)

The UN Framework Convention on Climate Change (UNFCCC) is a multilateral agreement to address the issue of climate change. The Convention, was set out and opened for signature at the June 1992 UN Conference on Environment and Development (UNCED), also known as the Rio Earth Summit. The UNFCCC entered into force on 21 March 1994. Pakistan being signatory of this treaty is bound to control the GHG emissions and climate change. Recent conference of parties (COP) for UNFCCC was held from 6 to 17 November, 2017 in Bon Germany.

Relevance: Being a signatory to UNFCCC, the activities under the subprojects must avoid GHG emissions.

2.6.4 Sustainable Development Goals (SDGs)

Sustainable Development Goals (SDGs) are a collection of 17 global goals set by the United Nations General Assembly in 2015, and adopted by Pakistan as its national goals. The goals are broad and interdependent, yet each has a separate list of targets to achieve. The SDGs cover social and economic development issues including poverty, hunger, gender equality, water, sanitation, energy, health, education, global warming, urbanization, environment and social justice. Relevance: The subprojects has direct relevance with SDG 6 (Clean Water &

Sanitation), SDG 8 (Decent Work & Economic Growth), SDG 11 (Sustainable Cities & Communities), SDG 13 (Climate Action) and SDG 15 (Life on Land).

2.7 ADMINISTRATIVE FRAMEWORK

The PMU-KITE-DoT will monitor and coordinate all project implementation activities including financial management, procurement, recruitment of staff, consultants and contractors, and overseeing the implementation of PCRMP.

3 DESCRIPTION OF SUBPROJECTS

3.1 PROJECT OBJECTIVE

The project development objective is to improve tourism-enabling infrastructure, enhance tourism assets and strengthen destination management for sustainable tourism development in KP.

3.2 PROJECT ADMINISTRATIVE JURISDICTION

The six (06) selected archeological sites are located in (05) five districts of Khyber Pakhtunkhwa. These districts are Swat, Mardan, Swabi, Haripur and Khyber.

3.3 PROJECT IMPLEMENTATION SCHEDULE

The tentative implementation period for each Project is twelve (12) months.

3.4 LOCATION AND ACCESSIBILITY OF THE PROJECT AREA

The proposed sub projects are located in Swat, Mardan, Swabi, Haripur and Khyber districts. These sites can be accessible through motorways / national highways, railways and airways.

3.5 PROJECT COMPONENTS

KITE is contributing towards the planning, upgradation and restoration of PCRs / archaeological sites throughout Khyber Pakhtunkhwa. KITE in undertaking Conservation, Preservation and development works of seven (07) archaeological sites in KP, out of these seven (07) sites, this PCRMP has been framed for six (06) sites including:

- Shapula Stupa, Landi Kotal District Khyber;
- Bhamala Stupa, District Haripur;
- Main Kalam Mosque, District Swat;
- Pishmal Mosque, District Swat;
- Hund Museum District Swabi; and
- Mardan Museum, District Mardan.

The proposed components of individual sites are presented in Table 3.1:

Table 3-1: Components of the Proposed Site (s)

Sr. No.	Name of Proposed Site	Activities	Type of Works[9]			
			Conservation	Preservation	Restoration	Civil Works
1.	**Shapula Stupa**	Conservation and restoration of the ancient, fragile, bulged, leaned and shattered structural ruins[10], architecture and artistry work through appropriate conservation measures, for instance preservation, restoration, anastylosis, under pinning, Water tightening, sheltering, shoring, buttressing and other associated activities as deemed necessary keeping in view site requirement. Removal of deposits, wild growth, sweeping and cleaning of area, filling of rain cuts, soil erosion sections, petty repair / maintenance of electrical, water supply, sanitary, lawns.	√	√	√	NA

[9] *Conservation: is process of professionally protecting an archaeological site from further damage and restores it to a previous state (https://en.wikipedia.org/wiki/Conservation_and restoration_of_cultural property).*
Preservation: is the practice of maintaining Monuments/artifacts by providing a stable storage, necessary care or display environment in order to minimize further damage or deterioration (https://computerhistory.org/blog/preservation-conservation-restoration-whats-the-difference/).
Restoration: The process of preserving and revealing the aesthetic and historic value of the monument and is based on respect for original, material and authentic documents (https://www.icomos.org/20charters/venice_e.pdf).

[10] *By structural ruins we mean remains of ancient structures that were once intact and now as time passes they are in disrepair state due to lack of maintenance natural hazards long time weathering etc. structural ruins can be any component of structure it may be foundation wall dome etc. and can be made of any material.*

Sr. No.	Name of Proposed Site	Activities	Type of Works[9]			
			Conservation	Preservation	Restoration	Civil Works
		Archaeological excavation[11] and cleaning within the complex additions/ alterations in open areas for swift flow of tourists all around.				
2.	**Bhamala Stupa**	Conservation and restoration of the ancient, fragile, bulged, leaned and shattered structural ruins, architecture and artistry work through appropriate conservation measures, for instance preservation, restoration, anastylosis, under pinning, Water tightening, sheltering, shoring, buttressing and other associated activities. Removal of deposits, wild growth, sweeping and cleaning of area, filling of rain cuts, soil erosion sections, petty repair / maintenance of electrical, water supply, sanitary, lawns etc. Archaeological excavation and cleaning within the complex additions/ alterations in open areas for swift flow of tourists all around. Provision of Shed over Sleeping Buddha.	√	√	√	√
3.	**Main Kalam Mosque**	Conservation and restoration of the ancient, fragile, bulged, leaned and shattered structural ruins, architecture	√	√	√	NA

[11] The excavation is usually done by making Grid of 30mx30m trench, which is further divided into small grids of 5mx5m.In between these small grids 1meter space (balk) is left for necessary Movement. The balk is later on excavated when the grids are examined through systematic excavation. The depth of excavation depends on the site it can vary from few feet's to hundreds of feet's. The site is excavated till version soil is unearthed.

Sr. No.	Name of Proposed Site	Activities	Type of Works[9]			
			Conservation	Preservation	Restoration	Civil Works
		and artistry work through appropriate Conservation measures, for instance preservation, restoration, anastylosis, under pinning, Water tightening, sheltering, shoring, buttressing and other associated activities. Removal of deposits, wild growth, sweeping and cleaning of area, filling of rain cuts, soil erosion sections, petty repair / maintenance of electrical, water supply, sanitary, lawns etc.				
4.	**Pishmal Mosque**	Conservation and restoration of the ancient, fragile, bulged, leaned and shattered structural ruins, architecture and artistry work through appropriate Conservation measures, for instance preservation, restoration, anastylosis, under pinning, Water tightening, sheltering, shoring, buttressing and other associated activities. Removal of deposits, wild growth, sweeping and cleaning of area, filling of rain cuts, soil erosion sections, petty repair / maintenance of electrical, water supply, sanitary, lawns etc. Archaeological excavation and cleaning within the complex additions/ alterations in open areas for swift flow of tourists all around.	√	√	√	NA
5.	**Hund Museum**	1. Roof treatment (The roof treatment shall be done using Bitumen, polythene sheet covered with mud and Brick tile).	NA	NA	NA	√

Sr. No.	Name of Proposed Site	Activities	Type of Works[9]			
			Conservation	Preservation	Restoration	Civil Works
		2. Replacement of Dooms				
6.	**Mardan Museum**	1. Roof treatment 2. Internal electrification improvement 3. Replacement of Windows 4. Flooring 5. Walls Painting Works 6. Provision of CCTV Cameras System	NA	NA	NA	√

3.6 TECHNICAL DRAWINGS

The technical drawings of the archaeological sites / PCRs are provided in Annex- IV.

3.7 DESCRIPTION OF ARCHAEOLOGICAL SITES

Presented below is the brief introduction to the archaeological sites / PCRs.

3.7.1 Shapula Stupa

The Buddhist site of Shapula stupa is located on the Khyber Pass, about 25 km from Jamrud on a high rocky ridge. It is located 40 km west of Peshawar, 4 km short of Landi Kotal and 10 km short of Pak-Afghan border, Torkham. This PCR can be approached from Peshawar-Torkham road known as Khyber Pass, near Wali Beg Khel village. Shapula Stupa is a Buddhist monument, the 2nd century stupa may have been constructed towards the end of the Kushan Empire or according to some sources soon after third to fifth centuries. It is the most complete Buddhist monument in the Khyber Pass. It is a reminder of the great Kushana Empire and Buddhism. Plate 1.1 shows view of Shapula stupa.

Plate 1.1: A View of Shapula Stupa

3.7.2 Bhamala Stupa

This PCR is located at the head of Haro River at foothill of Muree range, about 20 km east of Taxila and 16 km north of Islamabad. It is protected on three sides by River Haro itself and from one side by the lofty hills. It is about 5 km from main Taxila-Haripur road on off track. Bhamala stupa is part of the larger Bhamala Buddhist Complex. The site is known for its 1,700 year old statue of the Buddha attaining enlightenment, considered the oldest such statue in the world. Bhamala Stupa, District Haripur is already enlisted on prestigious World Heritage list of UNESCO. Plate 1.2 shows view of Bhamala stupa.

Plate 1.2: A View of Bhamala Stupa

3.7.3 Main Kalam Mosque

The site is located in main bazar of Kalam city, just across the river. Main Kalam Bazar, across river Swat. According to the local people it is about 380 years old, dated to the end of 17th century. Nobody knows the exact history of this mosque. More than 200 people constructed the mosque. Without the help of machinery, the workers used ropes to drag the wood planks and other materials into place. The walls are constructed with solid deodar (*Cedrus deodara*) wood and tree trunks have been used as support structures. The wooden doors are engraved beautifully and present a beautiful picture. Plate 1.3 shows view of Main Kalam Mosque.

Plate 1.3: A View of Main Kalam Mosque

3.7.4 Pishmal Mosque

The Pishmal Wooden Mosque is located to the west side of the Kalam-Bahrain Road, in the village of Pishmal. It is the only mosque in the village. The village itself is located about 3 km short of Kalam town and about 93 km from Mingora city. The mosque is located close to Best View Hotel as well. A 12-feet wide concrete track towards the west from the main Kalam road, about 200-meter leads towards the old wooden mosque. Plate 1.4 shows view of Pishmal Mosque.

Plate 1.4: A View of Pishmal Mosque

3.7.5 Hund Museum

Hund Museum, Swabi is located on the right bank of Indus River, about 4 km from Anbar interchange on Motorway and about 12 km from Swabi city. The site can be approached from the main Swabi-Jehangira road or Motorway (M-1) at Anbar Interchange. Hund is the oldest city of the Swabi district having very rich history and passed through different eras with different peoples like Gandhara civilization after this passed by Hindu Shahi period the Muslim period and all the conquerors of this region passed by there like Alexander the Great in 327 BC also passed by this city. Another famous Chinese Buddhist monk, scholar, traveler, translator and pilgrim Hiuen Tsang passed through this area in 644 AD. This museum was established in 2009. Plate 1.5 shows view of Hund Museum.

Plate 1.5: A view of Hund Museum

3.7.6 Mardan Museum

Mardan Museum, Mardan is located about 45 km northeast of Peshawar on main Charsadda road in Mardan City. The site can be approached from the main Mardan-Charsadda road. The museum was first established in 1991 in a Town Hall with a single hall with 22 show cases displaying more than 90 Gandhara's sculptures by the supervision of Sahibzada Riaz Noor (then Commissioner of Mardan Division). Later in 2006 a portion of land provided by the Mardan District Government on the request of Provincial Government and build three Galleries in 2009. Plate 1.6 shows view of Mardan Museum.

Plate 1.6: A View of Mardan Museum

3.8 METHODOLOGY/ PROCEDURES FOR CONSERVATION WORKS

The conservation works shall be carried out as per steps given below with great care, skills and devotion and implemented at sites.

3.8.1 Shapula Stupa

a) Pre-Conservation

- Preparing necessary drawings and photographs, vividly highlighting the PCR areas/elements to be conserved, before starting conservation work; and
- Clearing and grubbing of whole site before execution of any activity.

b) During Conservation

- As per Conservation protocols, first Excavation of site shall be carried out in order to find antiquities /Artifacts. This activity shall be carried out under the supervision of Directorate of Archaeology and Museum (DoAM's) designated Archaeologists. The antiquity discovered shall be properly cleaned from dust/rust using proper techniques such as application of acetone. The antiquity shall be transferred to Antiquity store of DoAM in order to register it;
- During Excavation work the debris waste shall be properly disposed off after sieving it so that any minor antiquity like Coins can be collected and managed accordingly;
- The Conservation activities shall be carried out by pre-qualified contractor of DoAM having skilled labor, well trained for such works, under supervision of Technical staff of DoAM;
- The Dome of stupa shall be conserved in relevant Gandhara style course or Random Rubble Masonry, similar to original using lime, clay, sand as binding materials with appropriate ratios. These materials are mixed and blended in small tanks for usage; and
- After Conservation work of Dome, the Pradaksina-Patha (circulatory Path around stupa), and stairways of Stupa shall be conserved in next step following similar procedures.

c) Other Activities

- The Frontier Corps (FC) check post attached to Stupa shall be demolished in order to enhance its aesthetics may be discussed with relevant authorities. DoAM has taken up the case of relocation of FC post with FC authorities through Department of Tourism Khyber Pakhtunkhwa (copy of letter is attached in Annex- II at the end of screening checklist of Shapula Stupa);
- Beautification of site and provision of basic facilities for tourists such as installation of benches, dustbin etc.; and
- Improving access path to Stupa from Main Road.

3.8.2 Pishmal Mosque

a) Pre-Conservation

- Preparing necessary drawings and photographs, vividly highlighting the PCR areas/elements to be conserved, before starting conservation works; and
- Consultation meeting with local Community and Ulema regarding conservation work, removal of Additions made and demolishing of additional stories made up of RCC.

b) During Conservation

- Removal of Addition made inside main Prayer hall like addition made in Mihrab with modern building material and removal of Paints on wooden members etc.;
- Replacing rotten and decayed members such as wooden batten, windows etc. with new one similar to original building material. For this purpose, local experienced carpenter shall be hired to carry out conservation work under guidance of Archaeological Engineer/Conservator;
- The decayed wooden members are usually documented in form of photographs, and may be sent to lab for further investigation if deemed necessary. Any member if have some asthenic or architectural importance is registered as Antiquity;
- Repair of cracks, rectification of Bulged stones in walls as per DoAM approved retrofitting techniques such as lime base Grout injection and shoring of various elements and
- Mud plastering on walls.

c) Other Activities

- Improving of Ablution facility and Construction of water tank to avoid leakage of water; and
- Construction of Retaining wall to retain Soil.

3.8.3 Main Kalam Mosque

a) Pre-Conservation

- Preparing necessary drawings and photographs, vividly highlighting the PCR areas/elements to be conserved, before starting conservation work; and

- Consultation meeting with local Community and Ulema regarding conservation work, removal of Addition made and demolishing of additional stories made up of RCC.

b) <u>During Conservation</u>

- Removal of addition made such as Tiles installed on outer wall;
- Repair of cracks, rectification of Bulged stones in walls using proper Retrofitting techniques such as lime base Grout injection and shoring various elements;
- Conservation of wooden work such as replacing rotten and decayed members such as wooden batten, windows etc. with new one similar to original building material. For this purpose, local experience carpenter shall be hired to carry out conservation work under guidance of Archaeological Engineer/Conservator; and
- The decayed wooden members are usually documented in form of photographs, and may be sent to lab for further investigation if deemed necessary. Any member if have some asthenic or architectural importance is registered as Antiquity.

c) <u>Other Activities</u>

- Improving of ablution area at Basement.

3.8.4 Bhamala Stupa

a) <u>Pre-Conservation</u>

- Preparing necessary drawings and photographs, vividly highlighting the PCR areas/elements to be conserved, before starting conservation work; and
- Clearing and grubbing of whole site before execution of any activity.

b) <u>During Conservation</u>

- As per Conservation protocols, first Excavation of site shall be carried out in order to find antiquities /Artifacts. This activity shall be carried out under the supervision of DoAM's designated Archaeologist. The antiquity discovered shall be properly cleaned from dust/Rust using proper techniques such as application of acetone. The antiquity shall be transferred to Antiquity store of DoAM in order to register it;
- During Excavation work the debris waste shall be properly disposed of after sieving it so that any minor antiquity like Coins can be collected and managed accordingly;
- Conservation and restoration of the main, votive and other smaller stupas along with chapels & monastery in relevant Ghandhara style course or Random Rubble Masonry, similar to original using lime, clay, sand as binding materials. These materials are mixed with appropriate ratios and blended in small tanks for usage;
- Conservation and restoration of the in-situ sculptures through trained Sculpture Artist under supervision of DoAM's designated Archaeologist(s); and
- Conservation and restoration of steps/stairway leading to the complex.

c) <u>Other Activities</u>

- Beautification, plantation and provision of basic facilities on site for Tourists.

3.8.5 Museums (Hund & Mardan)

a) Pre Conservation

- The shifting of the antiquity will be verified/checked from record available in museum and the overall condition of antiquity will be documented along with photographs prior to any movement of antiquity; and
- The shifting of antiquities shall be taken place under supervision of DoAM's designated staff to antiquities store.

b) During Conservation Work

- The public/visitors shall not be allowed to enter museum premises during conservation works;
- The labor working shall be counseled about the importance of Antiquities, Museum and general safety measures; and
- During conservation of museum work, In-charge of museum shall take all safety measures and keep its staff vigilant to avoid any unforeseen event.

c) Post Conservation

- The antiquities shall be transferred back to Museums from antiquities store under Supervision of DoAM's designated staff and the whole process shall be documented along with photographs.

General considerations /protocols / SoPs for conservation works are provided in Annex-V.

3.9 WORKFORCE REQUIREMENT

Manpower demand estimation is an essential component to facilitate deployment of manpower. Tentative workforce required for proposed subprojects during construction phase will be about forty-five (45) workers/employees.

3.10 SOURCE OF WATER

Contractor(s) will be responsible to arrange water for conservation, preservation, restoration and civil works. However, it is supposed that water tanks will be used by the contractor on the site.

3.11 EXPECTED MACHINERY EQUIPMENT'S FOR CONSTRUCTION

The machinery and the equipment expected to be used for the proposed subprojects are concrete vibrators, lift, concrete mixer machine, tractor trolley, excavator, dozer, welding machines, hand drilling machine, iron cutting machine, water tankers, level machine, dewatering pumps, vehicles, and generators.

3.12 CONSTRUCTION CAMPS

Construction camps[12] for the construction of proposed subprojects components will be located within the premises of proposed subprojects.

However, if construction camp is to be located outside the project boundary, following criteria shall be adopted by the Contractor to identify and for the establishment of the construction camp sites before start of the construction:

- There should be no or minimum resettlement issues for the location of the camps;
- Camp site should be away, at least 500 m, from the residential areas and sensitive receptors;
- Selection of sites for construction camps shall be near the subproject area having proper access to the nearby main/link road;
- The camps must be located in a place where the drainage from and through the camps will not threaten any domestic or public water supply;
- Camp site must be adequate in size to prevent overcrowding of necessary structures;
- The camp site should consider avoiding any damage of property, vegetation, irrigation, and drinking water supply systems;
- The camp site must not be subject to periodic flooding; and
- There should not be any ecological sensitive areas e.g. wildlife sanctuaries, game reserves, national parks, forest areas, etc. near to the construction camp site.

[12] *Mostly the local labor would be hired due to small works, the establishing regular construction camps by the contractor(s) is unlikely. However, given measures would be taken, if needed.*

4 DESCRIPTION OF PHYSICAL AND BIOLOGICAL ENVIRONMENT

4.1 GENERAL

For any development project, the existing environmental conditions need to be assessed prior to the stages of designing, execution and infrastructure development works of the proposed subprojects. Identification of physical, biological, ecological and social aspects of environment and collection of relevant data is essentially important for the evaluation of impacts as well as for the suggestion of adequate mitigation measures, which forms the basis for the implementation of the proposed subprojects in terms of prevailing environmental and social conditions in the AoI.

4.2 DELINEATION OF AREA OF IMPACT

The existing environmental conditions of the proposed subprojects have been considered within radius of 100 m from the proposed subprojects (Area of Influence). The information has been collected from variety of sources, including published literature, DCRs, field observations, monitoring and surveys, conducted specifically for this project have been analyzed for this study. Consultations were also held with the general public and stakeholders of the subproject areas in order to seek the public opinion on the implementation of the proposed subprojects.

4.3 PHYSICAL ENVIRONMENT

The following section provides an overview of the information on physical environment of the proposed subprojects collected from primary as well as secondary sources. The major parameters covered include Physiographic and Topography, Geology, Soil, Seismicity, Climate and Meteorology, Water Resources, Solid Waste, and Land Use etc.

The conservation, restoration and developmental activities on selected PCRs sites fall in following five (05) districts;

- Khyber
- Haripur;
- Swat;
- Swabi; and
- Mardan.

4.4 HARIPUR DISTRICT[13]

4.4.1 Topography

The surrounded topography of the subproject area is predominately sub mountainous and eroded by intervening flat valleys. The Bhamala Stupa subproject lies in district Haripur. Geographically, Haripur District is divided into four regions. The first is Maidan-e-Hazara which consists of plain area of Haripur District surrounded by the mountains of Tanawal in north, Koh-e-Gandgar in the west and Khanpur in the south. Haripur City and majority of the villages of Haripur District are located in Maidan-e-Hazara. The second region Tanawal which is mainly mountainous, is sub-divided into Upper Tanawal and Lower Tanawal which lies in the north of Maidan-e-Hazara. The third region is Khanpur Punjkatha which is a well-watered plain lying in the south-eastern corner of the Haripur District. The last and fourth region is Chhachh (Maidan-e-Khari) in the west of Haripur City. All of this is submerged under the reservoir of Tarbela Dam. Elevation of the subproject area ranges from 604 to 630 meters.

4.4.2 Soil

The subproject is exposed to geological material in the area is generally silty sand, sandy gravel and silty clay which is either product of in-situ weathering or deposited by the action of gravity and water. Below this over burden of silty sandy gravel soil, alternating layer of sedimentary rock comprising of sandstone, shell mudstone, siltstone and limestone are present.

4.4.3 Geology

Haripur District of the Hazara Division exhibits a suit of meta-sedimentary rocks of slates, phyllites, phyllitic-slate, quartzite and crystalline limestone. Four lithological units can be differentiated in the northern part of the area, namely the Manki formation, Tanwal formation, Utch Khattak and Shakot undivided and Shekhai formation. These are the extension of the Attock-Cherat range. In the southern part of the area four units, the Dakhner, Samana suk, Lockhart and Patala formations are exposed.

4.4.4 Seismicity

The subproject area is located in the NW Himalayan Fold and Thrust Belt, which lies near the collisional zone of the Indian tectonic plate with the Eurasian plate. Due to the collisional tectonic, the site region is seismically active. The region in which the project is located has been subjected to severe shaking in the past due to earthquakes. The subproject (Bhamala Stupa) is located in Seismic Zone 2B (moderate hazard), where 2B represents peak horizontal ground acceleration from 0.16g to 0.24g.

[13] *Feasibility Study, Master Planning and Design of Pakistan Digital City, Haripur, Khyber Pakhtunkhwa, 2021*

4.4.5 Water Resources

4.4.5.1 Surface Water

The important rivers of the district are river Indus, Siran, Daur and Haro. River Indus enters the district Haripur at Darband in the north-west taking its course along the western boundary of Haripur, makes its exit from the district at Ghazi. River Indus is the main source of Tarbela Lake. River Siran being a tributary to Indus River enters the district at Bir and it merges with Tarbela Lake in the vicinity of Bir.

The Daur contains much less water and has a shorter and more rapid course than the Siran River. It originates at the northern end of Dunga Gali range and flows through the plains of district and joins the Siran near the north-eastern Gandger range 8km above Tarbela. It irrigates a large area in Haripur District.

The Haro River emanates from the southern end of Dunga Gali range where it has two main branches. The eastern known as Dhund and the western is known as Karral Haro. The two streams unite at the head of Khanpur track.

Harrow River and Khanpur Dam are present at the near vicinity of the sub-project site, approximately at 3-4 km and 1 km distance respectively.

4.4.5.2 Groundwater

The groundwater depth in the subproject area is about 200-250 feet.

4.4.6 Solid Waste and Sewerage System

In the subproject area, no conventional solid waste management system exists. Most of the solid waste is found to be stored in the form of small heaps at various locations near the villages and open burning of waste is a common practice. The major constituents of solid waste in the area are paper, plastic, and organic waste (food waste, garden waste, animal waste). The areas lack proper sewerage system with only some open drains constructed in the vicinity for the discharge of wastewater.

4.5 SWABI DISTRICT[14]

4.5.1 Topography

Topography of Swabi district is divided into two parts, northern hilly areas and southern plain area. The major part of hills are in Gadoon area in the north east. These are the continuation of the Mahaban hills. Naranji hills are situated in north-western side of this district with height ranges between 750-1400 meters above sea level. Other isolated and small hills can be

[14] *IEE of Rehabilitation of Swabi Roads, 2012*

found in south of Swabi town and also along the border with Nowshehra District which are the part of Khattak hill, north of Kabul River.

Plain area of Swabi district which is start from foot of hills and runs down towards the Kabul River and its lower southern half of the district has its slope toward Indus River. There are numerous small streams and ravines in plain area of this district. The most important stream is Naranji Khawar which flow from Naranji hills in south-western direction and join Kalapani stream in Mardan district. Badri khwar is another important stream which flows from north close to Swabi town and join Indus River near village Hund. The Indus River flows along the southern boundary of the district. Elevation of the subproject area ranges from 300 to 313 meters.

4.5.2 Geology

The plain of Swabi district has developed from river alluvium or loses plains. It is observed that the subproject area is dominated by high mountains. Geology of Swabi district include following rock units.

- **Salkhala Formation** This formation is of pre-Cambrian age and oldest unit of this area. It comprises chlorite quartzite –mica schist, graphitic schist, calcareous schist, marble and quartzite.
- **Manki Formation** Manki formation assigned a pre-Cambrian age. It is characterized by phyllites, slates and subordinate gray wakes, limestone and quartzite lenses.
- **Sobra Formation** The age of this formation is pre-Cambrian. It consists of limestone with subordinate quartzite and sandstone.
- **Tanawal Formation** This formation is of pre-Cambrian age. It is quite thick and comprised predominantly, quartzite, quartz's sandstone and sub ordinate argillite.
- **Ambar Formation** Amber formation is of Cambrian age and consists of dolomitic limestone with inters collection of quartzite and phyllite.
- **Miri Bnda Quartzite** The age of formation is early to middle Ordovician. It consisted of quartzite with subordinate argillite and lenses of conglomerate.
- **Panjpir Formation** The age of this formation is silnan. It dominantly comprised argillite phyllite and subordinate lenses of limestone and quartzite.
- **Granite and Doleritic dykes** In addition the area shows some granitic rocks and doleritic dykes at places which have been given Permian to carboniferous age.

4.5.3 Soil

The soil of Swabi District is arable. The soils have developed either from river alluvium or loess plains. Texture of river alluvium is sandy loam to loamy sand, loam approaching clay loam. The soil of loess plains ranges in texture from silt loam to silty clay. Soil is irrigated for general cropping purpose with canal and where irrigation is not feasible, used for dry farming of wheat gram and groundnuts.

4.5.4 Seismology

According to Building code of Pakistan 2007, the subproject area falls in Seismic Zone 2B of Pakistan (moderate damage) with PGA from 0.16 to 0.24g[15].

4.5.5 Surface Water Hydrology and Drainage

Main River of the district is Indus River, which is rises from Gadoon area at Satkhaiter flowing with eastern and southern boundary and entering the Nowshera and Attock districts at Khund. The river is fed by a number of small streams/ Nullahs, the most important Nullahs of the AoI are as follows:

- **Badrai Nullah:** It flows from the North close to Swabi town and joins the Indus river near Hund.
- **Naranji Nullah:** It enters the district at Narangi from the North- east Mountains passes through Nawa killi, Turlandi villages and leaving the district at Islamia village enters the Mardan District.
- **Shagai Nullah:** It enters at Chack Nodeh of Swabi District.

Irrigation mainly depends on rain or on the streams (Nullahs) falling from top of the hills into the river Indus. These Nullahs are also non-perennial. The irrigation department and local government working for the provision/ utilization of water resources of the district for the irrigation purpose.

4.5.6 Ground Water

The groundwater is available mostly at the optimum depth for various purposes by the local inhabitants. The shape of groundwater table generally follows the surface topography. The discharge from the groundwater reservoir in District Swabi occurs mainly through existing water wells and outflow to rivers. The water table in the district rises during rainy season, especially monsoons and recedes during dry season of winters and summers.

During the dry season, the groundwater abstraction is also higher.[16] The quality of drinking water in Swabi district has been assessed as High, Medium and Low level of contamination as given below:

- High: values 30 % or higher contamination than the WHO standards;
- Moderate: 10 % higher than the WHO standards; and
- Low: Within 5 % range of WHO standards.

[15] Building Code of Pakistan-Seismic Provisions, Ministry of Housing and Works, Government of Pakistan, 2008
[16] *WAPDA, 2008.*

4.6 MARDAN DISTRICT[17]

4.6.1 Physiography

The district lies from 34° 05 to 34° 32' north latitudes and 71° 48 to 72° 25' east longitudes. It is bounded on the north by Buner district and Malakand protected area, on the east by Swabi and Buner districts, on the south by Nowshera district and on the west by Charsadda District and Malakand protected area. The total area of the district is 1632 square kilometers.

4.6.2 Topography

Mardan District may broadly be divided into two parts, north eastern hilly area and south western plain. The entire northern side of the district is bounded by the hills. In the district, the highest points in these hills are Pajja or Sakra, 2,056 meters high and Garo or Pato, 1816 meters high. The south western half of the district is mostly composed of fertile plain with low hills strewn across it. It is generally accepted that this plain once formed the bed of a lake which was gradually filled up by the load of the river flowing into from the surrounding hills. From the foothills the plain runs down at first with a steep slope which carried the rain water to the lower levels and ultimately to the Kabul River. Elevation of the subproject area ranges from 307 to 319 meters.

4.6.3 Regional Geology

Khyber Pakhtunkhwa sits primarily on the Iranian plateau and comprises the junction where the slopes of the Hindu Kush Mountains on the Eurasian plate give way to the Indus-watered hills approaching South Asia. This situation has led to seismic activity in the past.

Geographically the province could be divided into two zones: the Northern zone extending from the ranges of the Hindu Kush to the borders of Peshawar basin and the southern zone extending from Peshawar to the Derajat basin.

The southern zone is arid with hot summers and relatively cold winters and scanty rainfall. The Sheikh Badin Hills, a spur of clay and sandstone hills that stretch east from the Sulaiman Mountains to the Indus River, separates Dera Ismail Khan District from the Marwat plains of the Lakki Marwat. The highest peak in the range is the limestone Sheikh Badin Mountain, which is protected by the Sheikh Badin National Park. Near the Indus River, terminus of the Sheikh Badin Hills is a spur of limestone hills known as the Kafir Kot hills, where the ancient Hindu complex of Kafir Kot is located. The major rivers that crisscross the province are the Kabul, Swat, Chitral, Kunar, Siran, Panjkora, Bara, Kurram, Dor, Haroo, Gomal and Zhob. Its snow-capped peaks and lush green valleys of unusual beauty have enormous potential for tourism.

[17] *District Census Report Mardan district, 1998.*

4.6.4 Soil

The ground comprises of Very Soft to Soft to Firm to Stiff Lean Clay/Silty Clay/Silt/ up to a depth of 7.0 m underlain by Medium Dense to Very Dense Poorly Graded Sand with Silt/Silty Sand, with a sandwiched layer of Very Stiff to Hard Silty Clay/Lean Clay/Sandy Silt, up to a depth of 21.0 m underlain by Stiff to Very Stiff to Hard Lean Clay/Silty Clay/Silt up to maximum investigated depth of 25.0 m below Existing Ground Level (EGL).

4.6.5 Seismology

According to Building code of Pakistan 2007, the subproject area falls in Seismic Zone 2B of Pakistan (moderate hazard) with PGA from 0.16 to 0.24 g. A moderate intensity earthquake can adversely impact the proposed development. This factor requires special consideration in the design.

4.6.6 Streams and Rivers

Generally stream flows from north to the south. Generally stream flows from north to the south. Most of the streams drain into Kabul River. Kalpani, an important stream of the district rises in the Baizai and flowing southwards join Kabul River. Other important streams which join Kalpani are Baghiari Khawar on the west and Muqam Khawar, coming from Sudham valley and Naranji Khawar from the Narangi hills on the left.

4.7 KHYBER DISTRICT[18]

4.7.1 Topography

The Khyber District is located between 33° 33' to 34° 27' north latitudes and 70° 28' to 71° 51' of east longitudes. Khyber District is dominated by barren and rugged mountainous terrain with narrow strips of valleys. The district share its borders with District Orakzai in south, Kurram District to south west, Peshawar to the east and Mohmand District in north. The total area of the district is 2,576 sq.kms. Elevation of the subproject area ranges from 970 to 997 meters.

4.7.2 Geology

The mountainous terrain of Khyber District has small basins and valleys, with scattered settlements and agricultural fields. This is the geological region of Pre-aravallis, metamorphic in general including Precambrian and younger intrusions. The massive grey limestone with sand and clay beds that makes up the Carboniferous Khyber Formation and the slate, phyllites, and schists with minor limestone and quartzite beds of the Ordovician-Silurian Landi Kotal Formation found in the eastern part of the Khyber Agency. However, Mesozoic sediments occur in the western part of the District.

[18] Environmental and Social Impact Assessment for Peshawar – Torkham Expressway (District Khyber), 2018

4.7.3 Soil

The soil of the Khyber District is mainly from the local weathering of bedrock, deposited by streams and rivers. Landforms in the area are varied and include piedmont plains, valleys, gravel fans, rough broken land and gullied land. Level areas are loamy, while lowlands are slightly strongly calcareous. The soil of low permeability strata consists of silt, clay and rarely fine sand. While the soil of high permeability strata is generally composed of sand and gravel from a depth of 30 m to 150 m. The content of organic matter and available phosphorus is very low.

4.7.4 Seismology

According to Building code of Pakistan 2007, the subproject area falls in Seismic Zone 3 of Pakistan (high hazard) with PGA from 0.24 to 0.32 g[19].

4.7.5 Surface Water Hydrology and Drainage

There are a number of rivers and their tributaries in the Khyber Agency that have perennial flow from snow melt. Two main rivers in the Khyber District are the Bara and Chora Rivers. On the northern border of district, River Kabul runs between the area of Shalmanis and Mullagoris. The details of different surface water resources present in and around the AoI is given below:

Bara River

Bara River originates in the southeast of Khyber Agency from Rajgah and Malik Din Khel watersheds. It drains into the Kabul River near Nissata, after passing through the settled areas. The high flow months are of April and May while January records minimum flows.

There are three canals off-taking from the river, within and outside Khyber Agency that includes Sangu Branch, Shekhan Branch and Bara River Canal[20].

Kabul River

Kabul River originates from Chitral, and enters in Afghanistan at Arandu, making a semi-circle around Kabul City reaches in the vicinity of Jalalabad where it is called Kunar River. Kabul River re-enters Pakistan in Mohmand Agency and after traversing a few kilometers it turns into a boundary river between Mohmand and Khyber agencies.

The major tributaries of the Kabul River are the Logar, Panjshir, Alingar, Surkhab, Kunar, Bara, and Swat Rivers. There are 07 canals off taking from the Kabul River for irrigation purposes[21].

[19] Building Code of Pakistan-Seismic Provisions, Ministry of Housing and Works, Government of Pakistan, 2008
[20] IEE of Federally Administered Tribal Areas Water Resources Development Project, 2014.
[21] IEE of Federally Administered Tribal Areas Water Resources Development Project, 2014.

Other Streams

The major streams draining the Khyber Agency are Nakai, Bazar, Aladand, Khangai, KamShilmen, Lashira, Malal, Ghalanai, etc.

4.7.6 Ground Water

Khyber Agency is mountainous without any well-developed alluvial plain. According to the available information, approximately 20 test-and tube wells have been drilled in different valleys. The lithological data on two boreholes in the Jamrud – LandiKotal area indicate an ill-sorted mixture of clay and gravels, probably with low transmissivity values.[22]

Groundwater is usually found at a depth of 55 - 70 meters, where annual recharge is 85.41 MCM for an average year, 46.18 for a dry year and 146.06 MCM for a wet year.

4.8 SWAT DISTRICT

4.8.1 Topography

Swat is a mountainous region, located among the foothills of the Hindukush mountain range. The elevation of Swat river valley, at the southern boundaries of the district, is over 600 meters above sea level (AMSL) and rises rapidly towards the north. There are several mountain peaks ranging from 4,500 to over 6,000 AMSL. The Swat region, containing the meandering Swat River, is also home to lush green valleys, snow–covered glaciers, forests, meadows and plains. Elevation of the subproject area (Pishmal and Main Kalam Mosques) ranges from 1,899 to 2,008 meters.

4.8.2 Geology

The project area is situated in the middle-western part of the Kohistan Tectonic Zone and comprises plutonic igneous rocks. The predominant rock type at the site is a medium-grained slightly foliated gabbroic rock, classified as Norite. This rock type is in intrusive contact with another plutonic igneous rock called Diorite. The contact between the two rock types passes almost midway between Kedam and Mankial. Minor rock types in the area include Amphibolites, Pegmatites and fine grained basic dykes. None of them are in significant large proportions to affect the mechanical strength of rocks in the site area.

4.8.3 Seismicity

According to Building code of Pakistan 2007, the subproject area falls in Seismic Zone 3 of Pakistan (high hazard) with PGA from 0.24 to 0.32g[23].

[22] ESIA for Peshawar – Torkham Expressway (Component I), April 2018.
[23] *Building Code of Pakistan-Seismic Provisions, Ministry of Housing and Works, Government of Pakistan, 2008*

4.8.4 Surface water

a. Irrigation Water

In district Swat, about 41% of the cultivated area is irrigated by canals (both Government and private), another 23% by wells (groundwater) for irrigation, while the rest is irrigated by other sources.

b. Swat River and Streams

River Swat is the main source of surface water commencing at Kalam with the confluence of Ushu and Utror Rivers. It flows for about 160 km across the valley up to Chakdara, while its total length is 250 km upto River Kabul near Charsadda. Many large and small tributaries like Gahil, Mankial, Daral, Chail, Barwai, Arnowai, Jambil and Marghazar streams join the river along its course. A number of streams in the lower Swat, Swat Ranrizai and Adinzai also contribute to the river. The river with its tributaries forms the drainage basin for the valley. Bashigram, Mahodand, Kundal, Daral Dand and Saif Ullah are major lakes and tourists' spots of the district Swat.

4.8.5 Climate

The climatic conditions i.e. Average temperature, precipitation, humidity and wind speed of each district for period of 30 years (1981-2010) is given below.

Temperature

District Haripur: In District Haripur, the coldest month is February with mean temperature 2.1°C and June is the hottest month with the mean temperature of 25.1°C.

District Swabi, Khyber, Mardan: District Peshawar is the nearest climatic station for these sub-project areas. Based on the Table 4.1, the coldest month is January (11.5°C) whereas May and June are the hottest months with mean temperature of 32.8°C in all the three districts.

District Swat: The coldest month of District Swat is January in which the mean temperature is 8.3°C and hottest months are May and June with mean temperature of 27.9°C.

Mean monthly temperature data for all the subproject areas (1981-2010) is presented in Table 4.1.

Table 4-1: Average Temperature in Subproject Areas from 1981-2010

Temperature (ºC) in Months	HARIPUR	SWABI	MARDAN	KHYBER	SWAT
January	6.8	11.5			8.3
February	2.1	13.6			10.1
March	12.2	17.8			14.1
April	17.2	23.7			19.1

May	21.7	29.4	24.3
June	25.1	32.8	27.9
July	24.5	32.2	27.9
August	23.7	30.9	26.7
September	21.9	29.0	24.3
October	17.7	23.8	19.5
November	13.3	17.8	14.2
December	9.0	13.0	9.9
Average	**16.5**	**22.8**	**18.9**

Source: Pakistan Meteorological Department

Precipitation

District Haripur: The maximum rainfall occurs in District Haripur during the month of July. The annual rainfall of the district is about 1324.7 mm.

District Swabi, Khyber, Mardan: March is the wettest month in all these sub-project areas, and annual rainfall of the region is about 507.9 mm.

District Swat: The maximum rainfall occurs during the monsoon season in the month of March with annual rainfall of about 1081.5 mm.

Average precipitation data for all the subprojects areas (1981-2010) is presented in Table 4.2.

Table 4-2: Average Precipitation in Subproject Areas from 1981-2010

Mean Precipitation (mm)	HARIPUR	SWABI	MARDAN	KHYBER	SWAT
	Mean				
January	69.8	40.9			82.6
February	104.4	60.1			120.0
March	143.6	80.7			157.1
April	111.9	62.1			125.0
May	70.2	22.6			63.1
June	88.9	20.4			57.5
July	257.5	58.3			166.0
August	235.6	77.1			124.7
September	100.6	29.4			73.0
October	50.6	22.1			46.8
November	31.1	13.8			33.4
December	60.4	19.9			51.6
Annual	**1324.7**	**507.9**			**1081.5**

Source: Pakistan Meteorological Department

Average Relative Humidity

District Haripur: The relative humidity, wind speed and direction has been recorded at three different times (e.g. 00 UTC, 03 UTC. 12 UTC) of the day. The relative humidity varies from lowest mean value of 52.6 % in June to highest mean value of 80.9 % in August.

District Swabi, Khyber, Mardan:
The relative humidity of the sub-project areas varies from lowest mean value of 47.1 % in June to highest mean value of 77.7 % in December.

District Swat:
The relative humidity varies from lowest mean value of 54 % in June to highest mean value of 77.3 % in August.

Average Relative Humidity data for all the subprojects areas (1981-2010) is presented in Table 4.3.

Table 4-3: Average Relative Humidity in Subproject Area from 1981-2010

Relative Humidity (%)	HARIPUR	SWABI	MARDAN	KHYBER	SWAT
January	64.4	69.4			73.5
February	65.8	65.4			72.6
March	64.4	66.1			68.7
April	59.8	59.8			65.0
May	52.7	47.3			57.0
June	52.6	47.1			54.0
July	74.8	63.0			70.8
August	80.9	71.3			77.3
September	72.1	68.0			73.1
October	61.2	66.1			68.6
November	57.7	69.5			69.9
December	60.6	71.7			73.5
Average	**63.1**	**63.7**			**73.5**

Source: Pakistan Meteorological Department

Wind Speed

District Haripur: The average wind speed of the district is about 0.5 knots.

District Swabi, Khyber, Mardan: The average wind speed of the sub-project areas is about 3.2 knots.

District Swat: The average wind speed of the district is about 0.4 knots.

Average wind speed data for all the subprojects areas (1981-2010) is presented in Table 4.4.

Table 4-4: Average Wind Speed in Project Area from 1981-2010

Wind Speed (knots)	HARIPUR	SWABI	MARDAN	KHYBER	SWAT
	Mean				
January	0.4	1.7			0.2
February	0.5	2.7			0.3
March	0.7	3.0			0.5
April	0.6	3.5			0.7
May	0.7	4.3			0.9
June	0.7	4.9			0.8
July	0.6	5.4			0.6
August	0.5	4.7			0.3
September	0.5	3.6			0.2
October	0.4	1.9			0.2
November	0.3	1.2			0.1
December	0.3	1.3			0.2
Average	**0.5**	**3.2**			**0.4**

Source: Pakistan Meteorological Department

4.8.6 Landuse

There are different classes of land use i.e. barren/open area, built-up, roads/tracks, trees/bushes, park, graveyard, railway track and river in the AoI (100 m radius from the center of each PCR site).

4.9 ECOLOGICAL ENVIRONMENT

4.9.1 Kalam & Pishmal Mosques Sites

The ecological survey of the proposed subprojects site has been carried out to assess the existing biodiversity of the area, as well as to assess the impacts of conservation, restoration and developmental activities on flora and fauna.

The mountain environments of the region in the Himalaya and Hindukush Ranges harbour several unique species of fauna and flora including many globally important species. Generally, these species and their habitats are gradually on decline due to anthropogenic changes coupled with natural calamities.

a) Flora

The proposed Kalam subproject area is falling in dry temperate forest eco-zone, dominated by deodar species along the road side and nailed the high hills as well. Blue pine, fir, spruce and walnut is also found in the AoI. The anthropogenic pressures such as deforestation and grazing are destroying the characteristic of vegetation that has resulted in loss of herbaceous and shrubby vegetation.

The surrounding area of the proposed subproject (Kalam and Pishmal Mosques) is witnessed

to scattered shrubs, and small trees including juniper Juniperus excelsa, commonly called the Greek juniper*),/* Sagar/ kusum tree (*Schleichera)*, plum (*Prunus domestica*), Guava (*Psidium guajava)*, and wild vegetable *(disambiguation)*.

Some major floral species of the Study Area / AoI[24] are presented in Table 4.5

Table 4-5: Major Floral Species of the Study Area

Sr. No.	Local/English Name	Scientific Name
1	Deodar	*Cedrus deodara*
2	Blue pine/Kail	*Pinus wallichiana*
3	Walnut/Ghuz	*Juglans regia*
4	Oak/Bunj	*Quercus ilex*
5	Poplar/Supedar	*Populus cilicata/nigra*
6	Toor Amlook	*Diospyrus lotus*
7	Sur Amlook/Persiman	*Debregeasia saeneb*
8	Ashan/Ban kor	*Aesculus indica*

Source: Field Observations and Literature Review

b) Fauna

The faunal diversity in the area (specifically) is highly degraded due to its commercial status and urbanization in Kalam Bazar. The upper reaches and valleys of the Kalam Valley are highly important interims of natural resources and habitats/assets of wildlife.

The rapidly growing human population, increased poverty and great dependence on natural resources are leading to gradual habitat loss. Lack of the required legislation and polices with no recognition of local's communities in the planning and management of natural resources have traditionally segregated communities, thus a decreased sense of local level ownership persists across the resource rich areas.

c) Mammals

Some of the major wild life species in the subproject area is presented in Table 4.6.

Table 4-6: Major Wildlife of the Study Area

Sr. No.	English/Local Name	*Scientific Name*	Conservation Status-IUCN
1	Ermine	*Mustela ermine*	*LC*
2	Kashmir Flying Squirrel	*Eoglaucomys fimbriatus*	*LC*
3	Yellow Throated Marten	*Martes flavigula*	*LC*
4	Wolf	*Canus lupus*	*LC*
5	Small asian mongoose	*Herpestes auropunctatus*	*LC*
6	Cape hare	*Lepus capensis*	*LC*
7	Long-tailed marmot	*Marmota caudata*	*LC*
8	Smooth-coated otter	*Lutra prespcillata*	*LC*

[24] *The term study area and Area of Influence (AoI) are interchangeable.*

Sr. No.	English/Local Name	*Scientific Name*	Conservation Status-IUCN
9	*Eurasian otter*	*Lutra lutra*	*LC*
10	Jackal	*Canis aureus*	*LC*

Source: Field Observations and Literature Review

d) Avifauna

The Study Area / AoI is habitat to variety of birds like King Fisher **(***Alcedinidae Spp***)**, Myna *(Acridotheres tristis), Sparrow (Passeridae), Brown Accentors (Prunella fulvescens) and* Green Dipper *(Cinclus)*.

The list of common birds Found in the Study/Kalam area presented in Table 4.7.

Table 4-7: List of Common Birds in Study Area

Sr. No.	English/Local Name	Scientific Name	IUCN/Conservation Status
1	Jungle crow	*Corvus macrorhynchos*	LC
2	Common sparrow	*Passer domesticus*	LC
3	King Fisher	*Alcedinidae Spp*	*LC*
4	Little brown dove/ laughing dove	*Spilopelia senegalensis*	LC
5	Koklas pheasant	*Pucrasia macrolopha*	LC
6	Monal pheasant	*Lophophorus impejanus*	LC
7	Chukar	*Alectoris chukar*	LC
8	Himalayan Snow Cock	*Tetraogallus himalayensis*	LC
9	Goshawk	*Accipiter gentilis*	*LC*
10	Common Kestrel	*Falco tinnunculus*	*LC*

Source: Field Observations and Literature Review

No other or conservation importance wildlife species are reported in and around the subproject area due to its commercial status and urbanization as discussed above.

4.9.2 Bhamala Site, Haripur

The district Haripur scrub and chir forest is providing habitat to many different wildlife species and having good forest cover which is playing a role in regional stability and environmental balance.

Forest cutting, urbanization, population growth, no planning toward land use, hunting and habitat destruction are major threats to wildlife. Fauna of an area depends on the flora present in the area because it provides food and shelter to the fauna and destruction of the habitats also results in the elimination or migration of species. The avian fauna of the Study Area was rich because the flora was thick.

a) Flora

As climate of Study Area is subtropical, the vegetation of the area falls under subtropical broad leaved evergreen scrub and chir pine forest type as per phyto-geographical classification of the area. Major flora of the region is, chir pine, Olive, Ber etc.

The tract, in which the project site exists, was once covered with native vegetation consisting, of trees and thick cover of bushy vegetation, but with the onslaught of civilization, this vegetation was cleared for agricultural and other commercial purposes.

The entire surrounding area of the proposed site are scattered shrubs, and small trees including sylvestris (*Phoenix sylvestris*), grasses (*Saccharum*), Smilax aspera (*rough bindweed*). Following is the major floral variety of the Study Area, refer Table 4.8.

Table 4-8: List of common trees in the Study Area

Sr. No	Common/Local Name	Botanical Name
1.	Chir pine	*Pinus roxburghii*
2.	Sufaida	*Populas alba (White poplar)*
3.	Tooth/Mulbery	*Morus alba*
4.	Eucalyptus	*Eucalyptus camaldulensis*
5.	Bikyana	*Ficus benjamina*
6.	Phulai (Khona)	*Acacia modesta*
7.	Wild Pomegranate (Annar)	*Punica granatum*
8.	Sanatha	*Dodonaea viscosa*
9	AaK	*Calatropis procera*
10	Sanatha	*Dodonea viscossa*
11	Ber/Mullah	*Ziziphus nummularia*

Source: Field Observations and Literature Review

b) Fauna

Mammals

The habitat health in the proposed subprojects area may be consider as degraded and poor, as on ground there is no attraction and safe havens for wildlife to stay and produce. The targeted Study Area/AoI is supporting habitat for the following mammalian species, refer Table 4.9.

Table 4-9: List of Mammals in Study Area

Sr. No.	Local/English Names	Scientific Names	Conservation Status-IUCN
1	Indian mole rat	*Rattus rattus*	*LC*
2	Field mouse	*Funambulus pennant*	*LC*
3	Porcupine	*Hystrix indica*	*LC*

Sr. No.	Local/English Names	Scientific Names	Conservation Status-IUCN
4	Rabbit	*Oryctolagus cuniculus*	*LC*
5	Cape hare	*Lepus capensis*	*LC*
6	Masked palm civet	*Paguma larvata*	*LC*
7	Wild boar	*Sus scrofa*	*LC*

Source: Field Observations and Literature Review

c) Avifauna

The proposed Study Area/AoI is not ecologically rich and may not be considered the home to rich biodiversity, following are some local birds of the area presented in Table 4.10.

Table 4-10: **Avifauna of the Study Area**

Sr. No.	Local/English Name	Scientific Name	Conservation Status-IUCN
1	House Sparrow	*Passer domesticus*	LC
2	Red-billed chough	*Pyrrhocorax pyrrhocorax*	LC
3	Magpie	*Pica pica*	LC
4	Alpine Chough	*Pyrrhocorax graculus*	LC
5	Grey shrikes	*Lanius excubitor*	LC
6	Spotted doves	*Spilopelia chinensis*	LC

Source: Field Observations and Literature Review

4.9.3 Hund Museum (District Swabi) and Mardan Museum (District Mardan) Site

The forest cover is depleting with passage of time in the Study Area due to anthropogenic pressures and natural hazards. To conserve and protect the biodiversity bassline information in needed for management and planning purposes as well. Biodiversity management and conservation initiatives are only possible with the appropriate information on forest and wildlife and its habitat. Wildlife and forest habitat basically comprises soil, temperature food, cover, and water. Each species requires a particular habitat or the space, food, shelter, and other needs of survival so much so that species are said to be the product of their habitat

a) Flora

The Study Area represents 140 taxa with 63 families including 4 Pteridophytic, 3 Gymnospermic and 56 Angiospermic families including 10 Monocots and 46 Dicots. Asteraceae was the top most in term of number of species (13 sp) followed by Poaceae (9 sp) and Solanaceae (9 sp) each. Fabaceae having 7 species followed by Moraceae, Amaranthaceae, Brassicaceae, Lamiaceae, Myrtaceae and Rosaceae 6 species each. Habitat class showed that herbaceous cover was dominant with 58.571% of the total flora followed by trees layer 25%, Shruby layer 11.42% and remaining 5.71% were climbers in area. Plant status concluded that 51.42% of plants were wild while 48.57% are cultivated. Biological spectra depicted that Therophytes were the dominant 40.71% followed by Micro-phanerophytes 18.57% in life form class while Microphyll, 43.57% were highest in leaf size

class followed by Nannophyll 20.71%. Following are the major flora for the subject Study Area/AoI, refer Table 4.11.

Table 4-11: Names of Trees Encountered in the Study Area

Sr. No.	Common Name	Scientific Name
1	Phulai	*Acacia modesta*
2	Wild olive	*Olea ferruginea*
3	Sanatha	*Dodonaea viscosa*
4	Dhak	*Butea frondosa*
5	Anar	*Punica granatum*
6	Pear	*Pyrus pasha*
7	Chir Pine	*Pinus roxburghii*
8	Eucalyptus	*Eucalyptus camaldulensis*
9	Tooth/Mubery	*Morus alba*
10	Poplar	*Populs euamericana*
11	Ber	*Zizyphys mauritiana*
12	Kikar	*Acacia modesta*
13	Sumbal	*Bombax ceiba*

Source: Field Observations and Literature Review

It is concluded that over utilization, over collection, over exploitation, habitat degradation, overharvesting, deforestation, population explosion and over grazing are the conspicuous biotic stresses which severely threatened the flora in the area which affect the population sustainability on earth crust.

b) Fauna

The subject area was once/in past considered as suitable habitat for different wildlife species even for kalbi markhor and other game species but due to habitat loss, commercialization, illicit forest cutting, illegal hunting and ill planed urbanization the above ideal condition were converted to into degraded habitats and forest were converted into agricultural land and commercial and residential buildings. The subproject area is found degraded and almost barren and not supporting any designated habitats. The Study Area/AoI is supporting following Wildlife species, refer Table 4.12.

Table 4-12: List of Common Mammals of the Study Area

Sr. No.	Mammals	Scientific Name	Conservation Status-IUCN
1	Jackal	*Canis aureus*	LC
2	Fox	*Vulpes vulpes*	LC
3	Indian mole rat	*Rattus rattus*	LC
4	Field mouse	*Funambulus pennant*	LC
5	Porcupine	*Hystrix indica*	LC
6	Rabbit	*Oryctolagus cuniculus*	LC
7	Cape hare	*Lepus capensis*	LC

Source: Field Observations and Literature Review

c) Avifauna

The Mardan and Swabi area is majorly falling in subtropical evergreen scrub forest which is supporting/habitat to following birds as presented in Table. 4.13.

Table 4-13: List of Birds in Study Area

Sr. No.	Local/English Name	Scientific Name	Conservation Status-IUCN
1	Myna	*Acrido therestritis*	LC
2	Grey Partridge	*Perdix perdix*	LC
3	House Sparrow	*Passer domesticus*	LC
4	Red-billed chough	*Pyrrhocorax pyrrhocorax*	LC
5	Magpie	*Pica pica*	LC
6	Alpine Chough	*Pyrrhocorax graculus*	LC
7	Grey shrikes	*Lanius excubitor*	LC
8	Spotted doves	*Spilopelia chinensis*	LC

Source: Field Observations and Literature Review

a) Endangered Species

No Endangered species were encountered in subproject areas.

b) Game Reserves/ Wildlife Sanctuaries/National Park/Protected and Reserve Forest

There is no protected area falling in the subproject areas and no impact on such areas is anticipated.

4.10 SOCIO-ECONOMIC ENVIRONMENT

The socioeconomic environment has been studied with respect to human and economic development and quality of life values of the population residing in the vicinity of the project site. The human and economic development will mainly focus on population and communities, industrial development, situation of infrastructure availability, institutions, transportation network, prevailing land use, power sources and agricultural pattern of the subproject area. Quality of life will include socio-cultural values, situation of public health, recreational resources & development and archaeological/historical and cultural sites etc. District wise socio-economic environment is discussed below:

Political and Administrative Settings in all Districts

Administrative settings are same in all the districts. The Deputy Commissioner supervises all the departments in the district and stationed at the head quarter. His major responsibility is to maintain law and order situation in the district as District Magistrate and look after the revenue records as District Collector. He is incharge of the treasury. He is assisted by the Assistant Commissioners in each sub- division. The Assistant Commissioners decide revenue cases as well as criminal case in the sub-divisions and also look after the law and order situation. The

sub-divisions have a revenue set up of Tehsildar, Naib Tehsildar who have a number of Girdawar under them. The Girdawar stay in the Girdawar halqas and maintain an update record of the halqa with the help of Patwaris.

The judicial system is based on the Criminal Procedure Code and Civil Procedure Code likewise other district in the country. The District and Session Judge, assisted by Senior Civil Judge hear the civil and criminal cases. The public prosecutor contests the cases on behalf of the state. There is a well-established Bar of lawyer at the head quarter as well as the sub-division level.

The police department headed by Superintendent of Police who supervises and controls the police force in maintaining the law and order situation in the district. He also control and supervise the investigation in the criminal cases. He is assisted by the Sub-Divisional Police Officers on sub-division level.

4.10.1 District Mardan

The population of Mardan district, according to 2017 consensus, is 2,373,061 and the average household size of the district is 8.4 persons according to 1998 census which was 6.5 persons in 1981. As per 1998 census the urban proportion of the district is 20.2 percent of the total population whereas rural proportion is 79.8 percent. The population of the district is almost Muslim who constitutes 99.51 of the total population. The main minorities are ahmadi and christian who are 0.32 and 0.14 percent respectively. Other minority is hindu who are 0.02 percent of the total population. Mardan district is mainly inhabited by the Yusafzai Pathans but the Lundkhwar valley has sizeable Khattak population. The other main tribe of Mardan is Khattak. Besides these main tribes, some Sayyeds and Gujars are also found in the district.
A small industrial estate has been set up wherein a total of 66 factories were established out of which 36 are operating while the rest have been closed. Mardan is rich in sugar cane, tobacco, poplar and sheesham wood.

There is a lot of industrial activity for the production of sugar and manufacturing of cigarettes. In 1997-98, there are 77 industrial units of sugar, tobacco, match, furniture, marble, flour mills, steel industries, aluminum goods and handi crafts etc. In Mardan there is one Post Graduate College, 6 Degree Colleges, 1 Commerce College, 1 Vocational, 10 Higher Secondary Schools, 87 High Schools, 112 Middle Schools, 1141 Primary Schools, 10 Community Model Schools, JICA - Model Schools. There are 2-Civil Hospital. 5-Rural Health Centre, 50-Basic Health Centre, 2-Sub Health Centre, 13-Dispensaries, 2-M.C.H Centre and one Leprosy Clinic in the district. There are several place for visit such as Shahbaz Garhi, Kashmir Ghar, Sawal Dher, Jamal Garhi, Takht Bhai, Sari Behlol etc.

4.10.2 District Swat

Swat District is in Malakand Division of KP province in Pakistan. Centered upon the upper portions. Provisional results of the 2017 census show District Swat with a population of 2,309,570 capita, which comprises of 50.8%male and 49.2% female population. The area has

seen a population growth of approximately 84% in the last 19 years. Urban and rural population comprised of 695,900 and 1,613,670 inhabitants respectively. In addition to its dramatic and natural beauty, Swat valley has rich and diverse cultural tapestry with its cultural heritage. The people of Swat are peaceful, hospitable, friendly with the majority being 'Pashto' speaking. Swat is ethnically and linguistically diverse. This complicates lessons in the primary schools and beyond. The main ethnic groups living in the area are Torwali, Gawri, Gujar, Oshojo, Qashqari (Khowar), and Pashtun Communities.

There were 1,631 government schools in Swat, 1,367 were primary and of them 593 schools were for girls. According to the Alif Ailaan Pakistan District Education Rankings for 2017, Swat District with a score of 53.1, is ranked 86 out of 155 districts in terms of education.

To meet the health demands of the people, there are numerous clinics and hospitals in Mingora city. Saidu Teaching Hospital is located in Swat which is the 5th largest teaching hospital and institution of KP. The institution consists of two wings which are 1.5 km apart from each other. The institution has 1300 beds and further extension to 2000 beds new building is near to completion. The catchment area is Malakand Division and parts of Kohistan District. Moreover, the Jalil International Hospital, Sikandar Medical Infirmary Hospital, Hazara Medical and Hassan Medical Complex in Swat are providing better health facilities to the local communities.

Swat was home to Gandharan Buddhism and Hinduism, which lasted until the 10th century, after which most of the area converted to Islam. As per social survey almost 100 % people are Muslim in the proposed project area. The language spoken in the valley is Pashto, with a minority of Torwali and Kalami speakers in the Swat Kohistan region of Upper Swat. Specifically, in proposed project area, the Torwali and Gojri languages are being spoken on large scale. Yusufzais, Akhund Khel, Miangan (Syed), Chitralis, Kohistanis, Nooristani, Awans and Gurjar (Gujar or Gurjar, its people are divided in different clans including the Khatana, Bajar, Chechi, Ahir, Chauhan, Parmara, Gangal etc.) are the major tribes of the district Swat. Moreover, The Dardic people of the Kalam region in northern Swat are known as Kohistanis. They speak the Torwali and Kalami languages. Some Khowar speakers reside in the Kalam region. Tourist Attractions in Swat Valley.

Swat boasts great biodiversity and natural beauty, the valley has dramatic natural beauty and there are many places which have attractions for the tourists. The area has seven beautiful valleys and offers picturesque treks to Chitral, Ghizer, Indus Kohistan and upper Dor. It has some beautiful lakes such as Mahi Dhaan (Mahudand), Saidgey, Bishigram, Kandol Lake, Daral and Shaitaan Goot. Beside this, major attractive places of the district are Kalam Valley, Kumrat Valley, Madyan, Bahrain, Marghazar, Saidu Sharif, Malam Jabba and Fizaghat.

4.10.3 District Swabi

Swabi district is divided into four tehsils namely swabi tehsil, topi tehsil, lahor and razar tehsil. The population of Swabi district, according to the 2017 census, is 1,624,616. Swabi has a total area of 1543 sq.kms with a population size of 1,624,616 which comprises of 50.2% (approx.)

male and 49.8% female population. The area has seen a population growth of approximately 36% in the last 19 years. District Swabi is one of the economically developed region of KP Province. The sectors on which the future development of district stands are Agriculture (cereal crops), Manufacturing (potentially leather, textiles, light and heavy engineering) and Mining (limestone, marble etc.). Additionally, the economy of this district can support a world class Knowledge City.

According to the Population Census of 1998, about 97% of the population of the Swabi and Haripur districts is Muslim, while the remaining 3% of the population consist of minorities such as “Ahmadis”, Christians, Hindus and other scheduled castes. All people belong to the Muslim “Sunni “school of thought. The Major tribes in the district are as follows: (a) Razzar (b) Utman (c) Jadoon (d) Umar Khel (e) Aba Khel (f) Khattak (in small numbers). Pushto is the main language of the district. However, Hindko is also spoken in few villages i.e. Jehangira, Tordher, Manki and Jangidher etc. People wear the traditional pakhtoon dress of Shalwar Kameez, turban and Chaddar with Peshawari Chappal as footwear. The women wear Shalwar Kameez and Dopatta in their houses while outside their homes, they use Chaddar for “Purdah”. In upper class women, the use of gold ornaments is popular. Ornaments made of silver (Chandi) are used by the women folk of lower classes. Most of the houses are made of bricks and stones. The house generally consists of 2 / 3 rooms with veranda. There are several educational Institutions exists in the District. Such as Govt; Post Graduate College Gohati (Swabi), Govt Degree College Kotha, Govt Degree College Lahore, Govt Degree College Shewa, Govt Degree College, Yar Hussain, Govt Degree College, Zarobi, Govt Degree College, Gandaf (Gadoon), Govt Girls College Maneri (Swabi), Govt Girls College Marghuz. Govt Girls College Manki, FEF Girls Degree College, Topi, Girls Degree College, Zaida, Govt Girls College, Shewa, Govt; Commerce College Bamkhel, Govt College of Technology, Swabi at Shahmansoor and Vocational College Anbar. The Ghulam Ishaq Khan Institute for Science and Technology in Swabi provides higher education in the disciplines of Science and Technology. In recognition of sacrifices rendered by the Kargil Hero, Karnal Sher Khan Shaheed (NH) Cadet College has been established in Swabi.

Mahaban is a famous mountain, which according to Dr. Stein has been mentioned in the Alexander campaign. It is about 2,182 above sea level. On the top of the ridge that stretches towards the Indus, known as SHAH KOT, old ruins of a fortress are still present. It is partly located in District Buner and the greater portion is in District Swabi. From here it extends into Haripur District. It is a potential hill resort for the people of the area due to its close proximity to Tarbela Dam, Topi, Gadoon Industrial Estate and Mardan; but infrastructure facilities are barely available. There are 7 veterinary hospitals, 24 dispensaries and 11 veterinary centers in the District. They provide health cover to 70% of the animals of different species for different diseases. Industrial Estate Gadoon Amazai was approved by the Federal Government to create job opportunities for the local people in order to stop poppy cultivation in the area. Initially 83 ha land was developed with a Provincial Government grant of Rs.24.800 Million for purchase of land and Rs.20 Million by USAID for construction of infrastructure.

4.10.4 District Haripur

The proposed project area falls in the administrative jurisdiction of Haripur District. Haripur District has two sub divisions i.e. Haripur and Ghazi. The total area of the District Haripur was 1,725 square kilometers and there were two municipal committees, namely Haripur and Khalabat according to DCR 1998. According to Census of 201,725, the population of Haripur District is 1,003,031 with an average annual growth rate of 1.97 percent from 1998 to 2017. According to census report 2017, the average household size for the district is 6.1 persons. Sex ratio, i.e. number of males for every 100 females, is 98.81 per cent recorded in 2017 Census. The ratio was 98.12 per cent in rural areas and 103.73 in urban areas. According to 2017 census, the rural population of the district is higher than the urban population. As per 2017 census, 876,454 or 87.38 percent of the total population of the district is rural which grew at an average rate of 1.93 percent during 1998-2017. The population of the District is predominantly Muslim i.e. 99.6 percent[26]. The next higher proportion is that of Christians and Ahmadis with 0.1 percent. While other minorities like Hindujati, scheduled casts etc. also live in very small numbers. The population of the project area is also predominantly Muslims. One of the important races and tribes living in the Haripur District are the Tareen, Dilazak, Tarkheli, Gujar, Awan, Mishwani, Pathan, Gakhar, Jadoon, Syed, Tanoli and Turks. The main caste of population in the settlements of the Project area is Awan. While Afghani Pathan are also living in the project area. Hindko is the predominant language being spoken by majority of the population of the district Hazra followed by Urdu, Pashto, Punjabi, Balouchi and Pothohari etc.

Majority of the population of the Project area is running their own small level businesses like small shops, kiosks, mechanic workshops, cold drink shops etc. Beside this, the people of the project area also resort to labor jobs, while others go for government and private jobs in the subproject area. Industrial Estate of Hattar was setup in tehsil Haripur in 1985. About 214 industries including a large number of chemical industries, cotton, fiber, textiles and brick plants are functioning now in the estate. There are two government post graduate colleges in Haripur, which are providing higher level education. Along with these there are four government degree colleges for girls. RITE College for boys, Frontier Institute of Medical Sciences, The University of Haripur and Punjab College Haripur are also providing educational facilities in the district. The major health facilities available in the District are District Headquarter Hospital, two women & children hospital and two civil hospitals. About 200 dispensaries are working in urban and rural areas of the District. According to DCR 1998, there were 39 BHUs, 5RHCs and 12 Dispensaries functioning in the district. The famous recreational sites in the district are Tarbela Dam which is world's largest earth-filled dam and Khanpur dam.

4.10.5 Khyber District

Khyber District is a district in Peshawar Division of Khyber Pakhtunkhwa province in Pakistan. Until 2018, it was an agency of Federally Administered Tribal Areas, with merger

[25] *Pakistan Bureau of Statistics*
[26] *DCR Haripur, 1998*

of FATA with Khyber Pakhtunkhwa, it became a district. The population of Khyber district, according to the 2017 census, is 986,973. The majority of the tribes in Khyber Agency are Afridis. However, there are important pockets of Mullagoris, Shilmanis, Bangashs and Shinwaries. It ranges from the Tirah valley down to Peshawar. It borders Nangarhar Province to the west, Orakzai District to the south, Kurram District to south west, Peshawar to the east and Mohmand District in north. The majority of Afridis live in Khyber Agency, Dara Adam Khel, Kohat and Peshawar. Khyber District is currently subdivided into four tehsils i.e. Bara, Landi Kotal, Jamrud and Mula Gori. Khyber district is the most literate of all the Tribal Areas, with a literacy rate of 34.2%, as of 2007. Quite far ahead of the next highest Agency – Kurram at 26.5%. It is also the only Agency where the majority of its men are literate, at 57.2%, which is almost 20% ahead of the next highest agency, Kurram. However, its female literacy rate of 10.1% is 2nd after Kurram's 14.4%.

The most widely spoken language is Pashto, native to 80% of the population. Other languages with significant numbers of speakers include Hindko (9.9%), Saraiki (3.2%), Khowar and Kohistani.

4.10.6 Common Characteristic in all the Districts

a) Family System

Family system and inhabited status play an important role to establish a strong, sustainable and well recognized and identified society/community. It also provides a binding force to unite and to make struggle to achieve their objectives or targets and a large family size is also considered as the strength of the family particularly in Pakhtoon culture.

The Joint family system is the dominant culture in the area. It was observed that the family structure in the area was very strong and members played a pivot role in solving their social and cultural problems.

Most of the families are living in joint family system comprising grandparents, uncles, aunts and lot of cousins, whereas only a small percentage of families are living as a single family (nuclear family system). Although the joint family system is generally undergoing a radical change, with a greater influence of media and education whereas people of the Project Area do not feel good about this change. Because while living in a joint family system a lot of emotional attachments are enhanced and they feel that by separating in nuclear family system, their relationships will be damaged and family ties will be weakened.

As per the locals, joint family system is basically a form of organization. In this organization, there are defined norms and values to be followed strictly by all the members. All the members have their defined tasks and responsibilities to perform. There is an equal share of each and every member of the family with the available resources in the form of money, food and other requirements and locals feel better in joint family system as compare to nuclear family.

During the discussion with the locals, it was clarified that large family size is also treated as the strength of the family.

b) Mechanism of Conflict Resolution

The people of the proposed Project Area are peaceful, hospitable and friendly. During the field survey, group discussions held with the local communities, it was observed that most of activities are carried out under the instruction of the head of a family and village committee. Although the project area is very peaceful but disputes are inevitable and take place in all human societies. Hence, the local community of the project area is not immune from having disputes at all levels among individuals, families or even tribes. Most of the conflicts in the Project Area are insignificant, i.e. crossing the boundaries of grazing area and quarrels among youngsters which are mutually resolved within the local communities.

The local community has been using the Jirga system which is the oldest and still one of the typical dispute resolution mechanisms in the society. Although the Jirga system has been very crucial in ensuring the administration of justice and harmony in the community in various ways, it has also been subjected to several criticisms due to its application of unwritten rules and informal structures which sometimes may lead to grave injustice to the parties to the disputes.

But majority of the disputes are being settled at local level through community heads and Jirga system. Sometimes, the conflicts not resolved by the parties would be referred to the police or court of justice.

5 PROJECT ALTERNATIVE

5.1 GENERAL

This section outlines different scenario considered for conserving and restoring of the PCRs. The No Project Option (NPO) has been identified and is discussed in further detail below:

5.2 ALTERNATIVE: NO PROJECT OPTION

Archaeological tourism has expanded rapidly across the world since the 1990s. It makes a major contribution to national economies and to local prosperity.

Tourism is an important contributor to KP's economy and job creation, and the number of domestic tourists traveling to KP keeps growing rapidly. KP is blessed with diverse tourism attractions, catering to all interest types. KP's rising value in the tourism sector is also evident from the fact that its expenditure in tourism sector rose from Rs. 86.23 million in the financial year 2012-13 to Rs. 791 million in financial year 2018-19. The increased tourism promotion has led to an unprecedented rise in tourist traffic in the province, resulting in growth in economic activity in the province and the creation of new employment opportunities for the local population.

To promote the tourism, conservation, preservation, restoration and civil works of PCRs / archeological sites are utmost need as existing sites are not in good condition and lacking basic amenities. The proposed subprojects will ultimately increase the business / employment opportunities for the locals leading to a decrease in poverty. The subprojects aims to enhance under-utilized potential of KP's tourism sector for generating income and revenues, by providing an enhanced tourism experience to domestic and international tourists, while focusing on conservation and preservation of PCRs and environment. Many tourists from KP and all over Pakistan visit these areas especially in the summer season.

The conservation, preservation, restoration and allied civil works of PCRs refers to the measures taken to extend the life of PCRs while strengthening transmission of its significant heritage messages and values. Excessive or poorly managed tourism and tourism-related development can threaten their physical nature, integrity and significant characteristics. Tourism bring benefits to host communities and provide an important means and motivation for them to care for and maintain their PCRs.

The No Project Option (NPO) considers continuation of no further conservation, restoration and developmental works. Inadequate site management or unavailability of related facilities will result in further deterioration or even likely destruction of the PCRs and its related social, historical, educational, scientific and economic potential. Therefore, this option is not feasible in terms of PCRs and economic aspects.

No other alternatives for the subprojects have been considered keeping in view the extent of activities.

6 PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

6.1 GENERAL

The consultation and information disclosure to the PAPs, local community and other stakeholders during project planning, designing and implementation stages is a key to sustainable development. Likewise, participation of stakeholders at all stages of project preparation is essential to meet the objectives of meaningful consultation under resettlement policy. During preparation of the PCRMP, PAPS and other stakeholders from different fields of life were consulted to learn their concerns and adopt appropriate measure in project design, resettlement planning and implementation and disseminate requisite information about subprojects likely impacts on PCRs, environment and social aspects, bank policy guidelines and land acquisition parameters.

6.2 OBJECTIVES AND PRINCIPLES OF CONSULTATION

Consultations are key processes through which stakeholders influence project decision making and outcomes. It is the starting point for all resettlement activities. Experiences have shown that many resettlement-related problems are avoidable provided consultation activities are undertaken ahead to engage the community in local decision making. In many ways, stakeholders' consultations are "problem-solving" opportunities and help find meaningful options to various problems. It is always a two-way process where the executing agency, policy makers, beneficiaries and affected persons discuss and share their concerns in a project process.

The stakeholder's communication policy is based on the principles of transparency, timeliness, participation, meaningful engagement, and inclusiveness. Means of communication and consultation are to promote participation of those who may otherwise tend to be marginalized such as women, elderly, disabled and the poor. Stakeholder's communication will encompass institutional stakeholders, communities within the project area, and persons directly affected by the project.

In order to meet the criteria of meaningful consultation process, consultations were held with PAPs and local community from early stages of the project. At the start of the project, during the preparation of environmental and social screening reports during the month of July, 2021 for the preparation of PCRMP, a series of consultation sessions were held with the PAPs, local community and institutional stakeholders. These consultation meetings proved very useful for information sharing and consensus building. Concerns raised during the meetings were incorporated in the PCRMP.

The consultation process will be continued to share the latest development interventions in the project and solicit responses from the PAPs. Consultation sessions were held in different settlements along the project route.

At this stage, specific objectives of the public consultation were as follows:

- To share fully the information with the affected people about the proposed subprojects, components and activities, latest interventions in the project development;
- To share the views of local people and PAPs about the land acquisition and compensation process;
- To identify possible social impacts during the construction and operational phase of the project;
- To obtain the co-operation and participation of the PAPs in the planning and implementation process;
- To ensure transparency in all the project activities through sharing the information;
- Increase public confidence about the proponent, reviewers and decision makers; and
- The guiding principle underlying consultations is that social safeguard planning and implementation must follow a consultative and participatory process to ensure success of the project. This was further reinforced by the requirements of the World Bank OP 4.12.

The policies which give high priority to public consultation and participation during designing and implementation process are provided in Table 6.1.

Table 6-1: Frameworks for Consultation

Legal/ Policy Source	Regulations/Safeguard Policy Requirements
Government of Pakistan	• Land Acquisition Act (LAA) 1894 requires disclosures i.e. Under/4publication of preliminary notification; under Section/5A public purpose and hearing of objections • Environmental Protection Agency (EPA) 1997 Guidelines for Public Consultation requires public consultation and involvement in project planning and implementation. The policy and procedures require proponents to consult with affected community and relevant NGO during preparation reports. The guidelines contain a number of references to the need for Public Involvement.
World Bank	• OP.4.01, Clause 14 described that for all Categories A and B projects proposed for IBRD or IDA financing, during the EA process, the borrower consults project-affected groups and local non-governmental organizations (NGOs) about the project's Environmental aspects and takes their views into account. The borrower initiates such consultations as early as possible. For Category A projects, the borrower consults these groups at least twice: (a) shortly after environmental screening and before the terms of reference for the EA are finalized; and (b) once a draft EA report is prepared. In addition, the borrower consults with such groups throughout project implementation as necessary to address EA-related issues that affect them. • OP 4.12/Involuntary Resettlement: (i) Displaced persons should be meaningfully consulted and should have opportunities to participate in planning and implementing resettlement plans; (ii) Affected persons should be informed about their options and rights pertaining to resettlement; (iii) APs may be involved in the planning, implementation, and monitoring of the resettlement program, especially in the process of developing and implementing the procedures for determining eligibility for compensation benefits and development assistance; (iv) Establish appropriate and accessible grievance mechanisms; and (v) Particular attention be paid to the needs of vulnerable groups among those displaced, especially those below poverty line, the landless, the elderly, women and children or other displaced persons who may not be protected through national land compensation legislation.

6.3 PROJECT STAKEHOLDERS

Project stakeholders were engaged in the review and discussions on various project aspects related to social and environmental issues at the early stage of impact assessments for feedback. There are two categories of stakeholders in project as shown in Table 6.2 below:

Table 6-2: Categories of Project Stakeholders

Primary stakeholders	All project affected persons, households, local communities, Project beneficiaries - for instance, residents of the subprojects areas, local shopkeeper and business community, Custodian and users of the proposed sites, tourists and local authorities responsible for the protection and conservation of archaeological relics, historical sites and artifacts.
Secondary Stakeholders	Directorate of Archaeology and Museum, Archaeological Sector Experts, and other related government departments/agencies, responsible for the design, management, NGOs, CBOs and implementation of the project, the financing institutions like the World Bank.

6.4 FORUMS CONSULTED

The following forums were used to carry out the public consultation process.

- Consultative meetings held with the local residents, shop keepers and PAPs in the proposed subprojects sites;
- Scoping sessions held with the representatives of local communities; and
- Consultative workshops with archaeology sector experts and specialist.

The concerns raised by the stakeholders were considered in developing the PCRMP and resettlement planning document, in order to enhance subprojects acceptability among the general public on environmental and social considerations.

Table 6.3 provides a summary of the public consultations carried out at site.

Table 6-3: Summary of Consultation Meetings with the Primary and Secondary Stakeholders

Sr. No.	Location	Date	No. of Participations
1.	Main Kalam Mosque	22-08-2021	11
2.	Main Kalam and Pishamal Mosque	22-08-2021	07
3.	Bhamala Site	24-08-2021	04
4.	Mardan Museum	24-08-2021	19
5.	Shapula Stupa Khyber	26-08-2021	03
6.	Assistant Director	24-08-2021	02
7.	Assistant Research Officer DoAM, Bhamala	25-08-2021	02

6.5 APPROACH ADOPTED FOR THE CONSULTATION

To hold the meetings, PAPs and local communities were gathered at one place before the meeting in each subproject area. During the meetings, PAPs and locals were asked to discuss the social and subproject related issues. The meetings were held in an open encouraging atmosphere where PAPs as well as local communities expressed their concerns and views freely. For meetings with the institutional stakeholders, they were contacted through cell phone calls to confirm their availability and meetings were held in their offices at the given times. Online consultative workshop / session was also held (online via zoom) in PMU-KITE-DoT. List of participants along their contact numbers are attached as Annex-VI.

6.6 INFORMATION DISSEMINATED

Following issues were discussed and disclosed to the stakeholders during the consultation meetings:

- Introduction of the subproject;
- Description of various subproject components, its activities and impacts;
- Description of criteria of evaluation of land;
- Discuss PCRs, social and environmental impacts;
- Discuss overall land acquisition and construction related impacts for the all PCRs / archaeological sites; and
- Needs, priorities and reactions of the affected people regarding the proposed subprojects.

6.7 STAKEHOLDERS CONCERNS TOWARDS THE SUBPROJECT

As per stakeholders, the proposed subprojects will have several impacts of varying significance. Despite the impacts, the affected communities have a friendly attitude towards the subprojects.

The interest of the PAPs and local communities of the proposed subprojects in evidence during the consultation meetings held in July and August, 2021 at different locations of the each subproject site. The consultant team encouraged the participants to express themselves and engaged in detailed discussion on subprojects impacts, community consultation, compensation, awareness about the subproject, resettlement policies and mode of community support for the subprojects. Some concerns were raised by the participants, particularly with regard to replacement costs for land acquired by the subproject. Improvement of these subprojects sites not only improve the infrastructures facilities at the historical site but also change the socio-economic conditions of the area through tourism development. Therefore, locals actively participation at the meetings and participants expressed their willingness to support the subprojects. Table 6.4 shows concerns from the consultation meetings with the local communities and PAPs along with responses.

Table 6-4: Concerns raised During the Consultation Meetings and their Responses

Sr. No.	Concerns Raised	Responses
1.	During the consultation process, social and environment team briefed the proposed subprojects including fencing the sites, construction of the wash room, offices, stores, information desk, tuck shops, ground reservoir tanks, making lawns, green belts, lighting etc. Local residents, business community and the shopkeepers considered the subprojects very positive for the facilitation of tourists flow and emphasized that these sites should be completed as early as possible. The conservation, preservation, restoration and civil works of these sites will increase the employment and business opportunities for the locals. The various concerns raised related to compensation and construction activities with their responses during the consultation sessions are given below:	
2.	Scanning of all the items in three dimensional technologies to preserve and conserve according to the Antiquity Act, 2016 before artifacts transferred or moved. Interactive digital audio should be in place in all conservation sites for visitors (in popular languages, including ancient Gandharan language) for convenience and attractions. During replacing the lighting, an architect should be involved to design the lighting system in all the museums.	Suggestions noted, the scanning is in process for Peshawar Museum and this will be replicated in all museums across the province.
3.	While designing showcasing, this may be flexible, and movable according to the place and needs. Current practices are wooden showcasing which are fixed and cannot move. The lights should not damage the artifacts and handled directly.	Design & Architecture Consultant PMU KITE, is already working in Abbottabad Museum and same will be replicated for these PCRs / archaeological sites and across the province.
4.	Ensure the provision of digital audio for visitors, which can simulate re-enactment of events.	Suggestion noted and will be discussed with the design team for appropriate action.
5.	All the museum and heritage sites must have a theme or a “brand” so as to distinguish it. Cautioned that different artifacts will need different type of lighting. Ensure provision of wheel chairs for disabled persons so that they can enter sites and amenities with ease and including tactile objects, provision of activities for children and educational programs for staff members.	Expert’s opinion will be obtained and ToRs will be prepared for appropriate actions.
6.	Conduct an external audit of the PCR sites to identify gaps. The archeology department should prepare souvenirs for all the heritage sites so that visitors can take back with them something of the local culture of the province. This can also lead to Museum Shops in the future.	The work is already in progress.
7.	Whether the existing items will be display or replace by new items. Moreover, ensure labelling with appropriate languages.	Only the existing PCRs will be displayed with appropriate labeling under supervision of relevant experts.
8.	Maintain topography, natural drainage and ensure plantation. A small site museum near the Shapula Stupa may be build. Environmental and Social Management &	Suggestions noted, moreover, the Contractor will ensure the compliance with mitigation measures suggested in PCRMP.

Sr. No.	Concerns Raised	Responses
	monitoring system shall be in place for the all-heritage sites. Develop periodic monitoring mechanism for building structure and materials.	
9.	Technical drawings should be prepared and there may be PCR underneath the Stupa. Littering should be prevented and a solid waste management plan should be developed since visitors will be using cafeteria, tuck shop, and toilets.	Technical drawings for all the PCRs / archaeological sites will be prepared prior to start of civil works. Solid waste management plan will be prepared and implemented to avoid such impacts.
10.	Remove the FC from the site (Shapula Stupa) and prepare 3D scanning, a short informative book and CDs for visitors.	Suggestions noted for appropriate actions.
11.	The conservation, restoration and developmental activities may result in causing inconvenience to the nearby residents and affecting their daily life activities.	The Contractor will warn the staff strictly not to involve in any unethical activities and to obey the local norms and cultural restrictions.
12.	Minimize the effects of noise, dust, vibration, traffic and lightening associated with construction activities on the nearby communities living along the subprojects areas. The Contractor should not use heavy machinery which may affect the PCRs.	The Contractor will ensure the regular water sprinkling of the site to suppress excessive dust emission(s). All the construction machinery used during construction activities will be kept in good working condition and be properly tuned and maintained in order to minimize the exhaust emissions and vibration related issues in and around the subprojects areas. Moreover, the Contractor will ensure the compliance with measure recommended in this PCRMP.
13.	The Contractor shall dispose solid waste including construction debris on regular basis.	It was briefed that the Contractor will be bound to safely dispose all the solid waste generated in demarcated waste disposal sites.
14.	The sewerage system of Main Kalam Mosque shall be designed properly to avoid its adverse impacts on downstream communities.	The suggestion noted and will be discussed with the design team for consideration.
15.	Private land shall be acquired for Shapula Stupa, Bhamala Stupa and Hund Museum. PAPs expecting market based compensation against this land.	Land evaluation will be completed by Revenue Department after the demarcation of land for the proposed subprojects and compensation package will be prepared for all land affected PAPs in the Abbreviated Resentment Action Plan (ARAP) document as per World Bank OP 4.12 and National & Provincial Laws.
16.	Drinking water analysis should be carried out for Shapula Stupa Tube Well, Main Kalam Mosque and Bhamala Stupa.	It was briefed that drinking water monitoring will be carried out as per advise of Environmental Specialist.
17.	The sewerage system for Bhamala Stupa shall be laid down after appropriate design.	The suggestion noted and will be discussed with the design team for consideration.
18.	Storm water management system should be ensured for all the proposed subprojects sites.	The suggestion noted and will be discussed with the design team for consideration.
19.	Upper floor of Main Kalam Mosque Ablution sites seems cracked therefore, technical	Reservation noted and will be discussed with the design team for consideration.

Sr. No.	Concerns Raised	Responses
	engineering survey is required prior to start of developmental activities.	

PICTORIAL VIEW OF STAKEHOLDER CONSULTATIONS








7 POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES FOR PCRS

7.1 GENERAL

This chapter identifies the beneficial as well as the potentially significant adverse environmental and social impacts during design/pre-construction, construction and operation phases of the proposed subprojects on the physical, ecological and socio-economic domains of the environment. The appropriate mitigation measures are also proposed in this chapter.

7.2 NOTION OF SIGNIFICANCE

Impact significance depends on both the nature of the impact and on the sensitivity of the receptor. The more sensitive the receptor is the greater will be the significance of impact from that proposed activity. For this PCRMP, activities and nature of impact are combined with the sensitivity of the receptor to evaluate the significance of the impact. The significance of impact is characterized as *very low, low, moderate, high*, *very high, nature, duration of impact, reversibility of impact and consequence of impact*. Environmental issues having “moderate”, “high” and “very high” significance are provided with mitigation measures.

In order to identify spatial based impacts, overlays were used. An overlay is based on a set of transparent maps, each of which represents the spatial distribution of an environmental characteristic (for example, land acquisition). Information for an array of variables such as land use, infrastructure, vegetation etc. was collected for the standard geographical units within the project’s AoI, recorded on a series of maps, typically one for each variable. These maps were overlaid to produce a composite map. The resulting composite maps characterize the subproject area’s land use, physical, social, ecological and other relevant parameters related to proposed intervention. The overlays maps used in this PCRMP for the quantification of the landuse categories referred in Chapter 4: Description of Environment.

7.3 DELINEATION OF AREA OF INFLUENCE

The AoI is the area where the subproject impacts due to the proposed subprojects activities are assessed. Utilizing the information collected through the detailed site visit, consultations with the locals and concerned departments and foreseen impacts of the proposed subprojects, a tentative AoI was delineated. The AoI for each archaeological site is taken as 100 m from the center for the baseline survey.

7.4 POTENTIAL POSITIVE IMPACTS

The positive impacts due to the proposed subprojects are mentioned below:

- The project aims to enhance under-utilized potential of KP’s tourism sector for generating income and revenues, by providing an enhanced tourism experience to domestic and international tourists. The increased tourism promotion has led to an

unprecedented rise in tourist traffic in the province, resulting in growth in economic activity in the province;

- The project will provide an opportunity to the tourist to explore new areas to visit and will enhance tourism experience; and
- The project will provide socio-economic benefits to the inhabitants of the area associated with increase in tourism and services in the vicinity of all the PCRs / archaeological sites which create micro economic benefits to local people. There is a possibility of increased economic opportunities and significant growth and extension of the local markets.

7.5 POTENTIAL IMPACTS AND MITIGATION MEASURES

Apart from positive impacts, there are some potential adverse environmental impacts on the local environment including PCRs. The proposed subprojects are divided into three (03) stages i.e. Pre-construction / Planning and Design Stage, Construction Stage and Operation and Maintenance (O&M) Stage. The Pre-Construction Stage includes all stages before the construction Stage (i.e. site investigation work, seismic studies etc.); Construction Stage includes all stages from mobilization of Contractor to the completion of subproject and Operation Stage starts after the Construction Stage which includes the inspection and repair works.

The anticipated impacts for all the PCRs / archaeological sites are almost similar in nature. Adverse impacts envisaged for the all the PCRs / archaeological sites with their proposed remedial or mitigation measures are detailed below:

7.6 POTENTIAL IMPACTS DURING PRE-CONSTRUCTION PHASE

Following is the brief description of impacts envisaged and the recommended mitigation measures during pre-construction phase.

7.6.1 Technical Design and Layout Planning

Potential Impacts

Incompatible layout plan, engineering design and improper repair methods of the subproject's structures can undermine the historical value of PCRs, overall aesthetic beauty and ambience of the subproject areas. This impact is permanent and moderate adverse in nature.

Mitigation Measures

- The technical design of the proposed subprojects must incorporate the historical and aesthetic considerations meeting the local context and best international practices (as explained above) in project design; and
- The proponent must review and validate all the design and repair works considering the possible impacts (as listed/mentioned above) before the start of conservation, preservation, restoration and allied civil works of all the PCRs / archaeological sites.

7.6.2 Seismology

Potential Impact

As per Building Code of Pakistan, Seismic Provisions, 2007, the subprojects (Bhamala Stupa, District Haripur, Hund Museum District Swabi and Mardan Museum, District Mardan) areas are located in Seismic Zone 2B (moderate hazard), where 2B represents peak horizontal ground acceleration from 0.16 to 0.24 g while the subprojects (Shapula Stupa, Landi Kotal District Khyber, Pishmal Mosque District Swat and Main Kalam Mosque District Swat) areas are located in Seismic Zone 3 (high hazard), where 3 zone represents peak horizontal ground acceleration from 0.24 to 0.32 g. In this Zone, designing of various types of structures should be done on the basis of PGA.

A high intensity earthquake impacting the project site can adversely impact the proposed conservation, preservation, restoration and allied civil works. This factor requires special consideration of the designers keeping in view of the recent earthquake of October 08, 2005. This will be a local and high adverse impact.

Mitigation Measures

- The proposed structures should be designed to withstand high intensity earthquakes. For seismic hazard analysis, updated structural, geotechnical and seismic studies should be conducted; and
- Adopt Seismic Building Code of Pakistan 2007 (SBC-07) to mitigate the seismic hazard for subprojects design. This code specifies minimum requirements for seismic safety of buildings and has to be applied and used by engineers in conjunction with the necessary understanding of the concepts of structural, geotechnical and earthquake engineering.

7.6.3 Electrical Hazards

Potential Impact

The workers/ staff may be exposed to electrical hazards during repair / maintenance works including shocks, fires and burns caused by faulty electrical wiring, unsafe installations, frayed cords, substandard power trips and defective equipment. This impact is considered to be adverse, site specific, high, long-term and probable.

Mitigation Measures

- Appropriately grounded and double insulation of every single piece of equipment, machine and device should be kept in the design;
- Proper installation checks and periodic maintenance by a competent electrician should be planned; and
- All power strips should be planned in the design to place in well-ventilated areas for adequate heat dispersion.

7.6.4 Ecological Impacts

Potential Impacts

Since the subprojects interventions will be undertaken in northern areas of KP, therefore, care must be taken to protect the key natural features including wood trees, medicinal plants and resources of Non Timber Forest Products (NTFP). No significant impact is envisaged during design phase.

Mitigation Measures:

- During design, sites should be properly selected to avoid and minimize the cutting of trees, shrubs and herbs;
- The critical areas of animal breeding and nests should be avoided (if any);
- Tree planation must be formulated; and
- It should be properly planned in the design to avoid any impacts on green cover of the subproject sites which may be direct or indirect.

7.7 POTENTIAL IMPACTS DURING CONSTRUCTION PHASE

Following is the brief description of impacts envisaged and the recommended mitigation measures during construction phase.

7.7.1 Soil Erosion and Contamination

Potential Impacts

The removal of deposits, wild growth, sweeping and cleaning of area can loosen the soil and make it more susceptible to erosion due to wind and rain. There is also a possibility of silt runoff during rainy season causing soil erosion. During the rain, the eroded soil mix with stagnant water to transform into slush, which can affect movement of vehicles and machinery and construction work as well as limit the movements of local people. Soil erosion may occur at active construction sites and at contractors' camps (if required), as a result of uncontrolled run-off from equipment washing yards, excavation of earth and clearing of area. Soil may also be impacted due to unauthorized use of borrow areas, resulting in degradation of landscape. Whereas, contamination of soil may be caused by solid waste generated at campsites and by oil and chemical spills at asphalt plant sites, workshop areas and equipment washing yards. This impact is high adverse negative in nature.

Mitigation Measure

- The Contractors will be required to instruct and train their workforce in the storage handling and management of materials and chemicals that can potentially cause soil contamination;
- Material Safety Data Sheets (MSDS) will be strictly followed during handling and storage of chemicals;

- Soil contamination will be minimized by placing all containers having materials in a bounded area away from water courses (if any);
- Provision of impervious platform with oil and grease trap for collection of spillage during equipment and vehicle maintenance;
- All spoils shall be disposed of safely and the site shall be restored back to its original conditions;
- Solid waste generated at the camp sites will be properly treated and safely disposed only in the demarcated waste disposal sites/areas;
- If any contaminated soils are found, they shall be removed and deposited in a sealed pit in an area agreed with the concerned;
- Use of modern, well-maintained machinery and vehicles by the Contractor to avoid leakages; and
- Soils removed during conservation and developmental works would be stockpiled for reuse where possible.

7.7.2 Excavation of Earth

During excavation process, there is a chance of finding PCRs remains. Mismanagement of the PCRs remains may result loss of a valuable asset. Further, excavation of earth from borrow areas and for clearance of subproject area (where applicable) may result in erosion of soil. Erosion results in change of edaphic characteristics of soil. The impact is categorized as site specific, short term and high adverse in nature.

Mitigation Measures

- In case of finding PCRs remains during excavation, the Contractor shall immediately report through Supervision Consultant to Directorate of Archaeology and Museums, KP to take further suitable action to preserve those PCRs or sensitive remains;
- Follow all procedures for preservation and protection of sites and articles of paleontological, archaeological, and historical PCR as specified by the Antiquities Act, 2016/ procedures provided in this PCRMP. Chance finds procedure is given in Annex- VII must be followed;
- Professionalism may reduce larger risk to PCRs through the implementation of Khyber Pakhtunkhwa Antiquities Act, 2016 / procedures provided in this PCRMP;
- Contractor needs to obtain approval for excavation and submit the plan of rehabilitation of the site after excavation;
- Contractors and workers shall be advised of the penalties associated with the unlawful removal of cultural, historical, archaeological or paleontological artefacts
- Time scheduling to avoid excavation during rain; and
- Cover all exposed soil as soon as soils are exposed.

7.7.3 Minor Demolition

Potential Impact

Knocking down of original floor and other minor demolition activities might be harmful for other parts of the building by its vibration and causing noise disturbance. This impact is categorized as site specific and moderate adverse in nature.

Mitigation Measures

- Inventory of PCR close to the subproject area of influence, to be at risk of damage or disturbance should be prepared;
- Avoid, redirect the activities so that they do not endanger any archaeological site;
- Avoid extensive demolition works near or within the PCRs;
- Ensures that the relevant signs for protection of known PCRs are displayed where and when required; and
- Experienced skillful agent will be responsible for conducting the demolition activities.

7.7.4 Accidental Damages

Potential Impact

Conservation, preservation, restoration and allied civil works activities may potentially impact PCRs through direct ground disturbance during construction and where indirect disturbance occurs outside the PCRs area from increased access by people and construction machinery. Use of heavy equipment during the conservation, preservation, restoration and allied civil works of PCRs can cause compaction or collapse of buried PCRs / archaeological sites. This impact is usually caused by lack of technical capacity of the Contractor in technical management or caused by human error that can lead to the adverse impact on PCRs.

Sites have the potential to be damaged or destroyed, as follows:

- Within the direct disturbance areas due to on-ground works (e.g., levelling ground, demolition, excavating etc.); and
- Within the direct disturbance areas due to movements of people and construction machinery (e.g., erosion, removal of artefacts, etc.).

Mitigation Measures

- Avoid, redirect the activities so that they do not endanger any PCR;
- Inventory of PCR close to the subproject area of influence, to be at risk of damage or disturbance should be prepared along with photographs. The assessments shall be carried out by Conservation Architects/ Engineers in association with proposed alterations or renovations on a recorded structure;
- Training and briefing by PMU ESSU on PCRMP to the Contractor and workers that involve in the earthworks which have the potential to find unexpected objects PCRs;
- Ensures that the relevant signs for protection of PCRs are displayed where and when required;
- Consult with community representatives on matters concerning the management of PCRs to be impacted by activities. Develop protocols for salvage in consultation with the DoAM and ensure these are included in Contractor's Site Specific PCRMP;
- Avoid the use of heavy construction machinery during the excavation process; and
- The Contractor staff must have relevant qualification and experience of similar projects.

7.7.5 Re-plaster / Repainting

Potential Impact

New plaster and color scheme might not match the original and causing damage to the original wall or entirely change the building perception. This impact is categorized as site specific, permanent and moderate adverse in nature.

Mitigation Measures

- Laboratory tests of the original plaster and color will support the suitable choice in conservation;
- Ensure the conservation, preservation, restoration and allied civil works of PCRs / archaeological sites in accordance with the authenticity of the material, shape, layout, and/or workmanship techniques; and
- Some cracks might be left exposing (as per advise of DoAM) to the public but with appropriate and technical treatment, they will reduce the risk while also revealing traces of the past.

7.7.6 Restoring Wooden Objects and Replacement of Windows

Potential Impact

Restoration that using non-traditional and non-original technologies and materials might cause damage to the wooden objects. Displacement of the original windows before restoring might do harm to their physical condition. This impact is categorized as site specific, permanent and moderate adverse in nature.

Mitigation Measures

- Full investigation and documentation will be provided as references before starting the restoration;
- Ensure the conservation, preservation, restoration and allied civil works of PCRs / archaeological site in accordance with the authenticity of the material, shape, layout, and/or workmanship techniques; and
- Experienced skillful wooden craftsmen (team) may be deputed by the Contractor.

7.7.7 Roof Treatment

Potential Impact

During the roof treatment, new roof material might change the exterior fabric's perception of the historic value of PCR. This impact is site specific and moderate adverse in nature.

Mitigation Measures

- Full investigation and documentation will be provided as references before starting the roof treatment;
- Ensure roof treatment in accordance with the authenticity of the material, shape, layout, and/or workmanship techniques;
- Comparing various materials and choose one with the most appropriate choice; and
- The Contractor staff must have relevant experience.

7.7.8 Surface and Groundwater

Potential Impact

The surface water may get contaminated due to the surface runoff during conservation, preservation, restoration and civil works phase. Construction activities may result in debris entering water body resulting in sedimentation. Storage and transport of construction material may also result in spills of chemical and contamination of nearby water bodies.

Groundwater may also get contaminated from the wastewater generation from the construction camps, leachate from improper dumping of solid waste. Consumption of water for construction activities may also affect other designated uses of water especially drinking water. The impact is categorized as site specific, short term and high adverse in nature

Mitigation Measures

As a mandatory step, all the effluents will be disposed as per the requirements of NEQS. Moreover, to reduce the risk of surface and groundwater contamination, good management practices will be adopted to ensure that fuels, chemicals, raw sewage and wastewater effluent are disposed of in a controlled manner. These measures are described below:

- Construction camps (if required) will be established in areas with adequate natural drainage channels in order to facilitate the flow of the treated effluents after ensuring that NEQS are met (as advise by Environmental Specialist);
- The proponent will ensure that the construction work is confined within the subproject areas and water bodies are prevented from pollution during construction activities;
- The solid waste will be disposed of in designated landfill sites to sustain the water quality for domestic requirements;
- Regular water quality monitoring according to determined sampling schedule;
- Water required for construction shall be obtained in such a way that the water availability and supply to nearby communities remain unaffected;
- The Contractor will ensure that construction debris do not find their way into the drainage or nullah and nearby river (where applicable) which may get contaminated;
- 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;
- Wastes will be collected, stored and taken to approve disposal site;

- Wastewater effluent from the Contractors' workshops and equipment washing-yards may be treated before discharging into the streams as per NEQS;
  The Contractor shall ensure the compliance with NEQS (as advise by Environmental Specialist); and
- Similarly, if the sewage after treatment is to be discharged on to the land it will meet the requirements of the NEQS for disposal of wastewater.

7.7.9 Traffic Issues

Potential Impact

Due to the proposed subprojects construction activities and movement of subprojects vehicles for construction material supply, traffic problems may arise for the commuters and transporters travelling to the proposed areas. The problems will include traffic jams and inconvenience to the public passing through the subproject area. It may also increase traffic load on the existing road network or access roads ultimately deteriorating the existing condition of the roads. The movement of vehicles along the haulage routes will cause soil erosion, debris flow, dust emissions, vibrational impacts, etc. Considering these consequences, this impact can be categorized as direct, moderate, site-specific, medium term, temporary, medium probability and irreversible.

Mitigation Measures

To minimize traffic problems in the proposed subprojects area, following measures will be considered:

- Movement of vehicles carrying construction materials and equipment/machinery will be restricted during the night time to reduce traffic load and inconvenience to the local population;
- Construction vehicles, machinery and equipment will be parked at designated areas to avoid un-necessary congestions along the major roads;
- The speed of the vehicles will be controlled (at 15 to 25 km/hr) to reduce the probability of severe accidents, soil erosion, debris flows due to vibrations and dust emission;
- Damages of roads due to construction vehicles will be instantly repaired and/or compensated after the completion of work;
- Proper sign boards will be provided for smooth flow of traffic;
- Period of construction and area / location of construction site shall be informed to public in general and specifically to local residents; and
- Any closure of the roads (especially main roads) and deviations / diversions proposed should be informed to the riders through standard signs and displays, if required.

Traffic Management Plan (as per advise of Environmental Specialist) will be prepared by the Contractor and implemented to avoid traffic accidents, jams/public inconvenience.

7.7.10 Air Quality

Potential Impact

A decline in the ambient air quality within the vicinity of works is expected during the construction phase and demolition activities. Due to these activities release of exhaust emissions, containing carbon monoxide (CO), sulphur dioxide (SO_2), oxides of nitrogen (NO_X), and particulate matter (PM) is expected, which can deteriorate the ambient air quality in the subproject sites. The objectionable impacts of settling of the suspended dust would be its dry deposition on vegetation and tree covers, motor vehicles, PCRs, other exposed surface and indoor air quality. Exhausts from fossil fuel burning in the construction machinery and generators will also deteriorate ambient and indoor air quality.

The overall impact on the quality of air during the construction phase may be low adverse keeping in view the extent of conservation, preservation, restoration and civil works activities for all subproject sites, however, it will be temporary and limited to the project's implementation phase only.

Mitigation Measures

The impacts construction phase of the proposed subprojects could be effectively mitigated by the implementation of simple procedures by the Contractor including but not limited to the following:

- All vehicles, machinery, equipment and generators used during construction activities should be kept in good working condition and be properly tuned and maintained in order to minimize the exhaust emissions;
- Open burning of solid waste from the Contractor's camps (if required) and at construction site should be strictly banned;
- Preventive measures against dust should be adopted for on-site mixing and unloading operations;
- Construction materials (sand, cement, bricks, gravel, lime mortar, stone chip etc.) and spoil materials will be transported through trucks covered with tarpaulins;
- Regular water sprinkling of the site should be carried out to suppress excessive dust emission(s);
- Construction equipment is generally left idling while the operators are on break or waiting for the completion of another task. Emissions from idling equipment tend to be high. Existing idling control technologies, which automatically shut the engine off after a preset time can reduce emissions, without intervention of the operators;
- NEQS and IFC/WHO guidelines whichever is stringent applicable to gaseous emissions generated by construction vehicles, equipment and machinery should be enforced during construction works (if required / as advised by Environmental Specialist);
- Service roads (used for earthmoving equipment and general transport) should be regularly sprayed with water during dry weather;
- Construction workers should be provided with masks for protection against the inhalation of dust; and
- Regular monitoring of air quality (ambient/indoor as per advise of Environmental Specialist) in accordance with the formulated environmental monitoring plan (given in PCRMP).

7.7.11 Noise/Vibration

Potential Impact

The noise and vibration will be produced due to the operation of construction machinery (concrete vibrators, lift, concrete mixer machine, tractor trolley, excavator, dozer, welding machines, hand drilling machine, iron cutting machine, water tankers, level machine, dewatering pumps, vehicles, and generators etc.) and demolition activities. Noise and vibration are perceived as one of the most undesirable consequences of construction activity. The above machinery is expected to generate noise levels that would be severe in the subproject area.

The cumulative effects from several machines may be significant. However, these increased noise levels will prevail only for a short duration during the construction stage.

The likely impacts due to noise are:

- Psychological effects of distraction of attention, irritation and short temperedness in the exposed persons due to persistently higher noise levels;
- Noisy settings and higher background levels can cause temporary threshold shift and the consequent habit of speaking loud, which may cause damage to vocal cords in the persons exposed;
- Potential impact from vibration during the construction period may consists of damages to PCRs; and
- Moreover, vibrations from machinery and equipment may produce easy fatigability and generalized aches in the persons operating these machines.

This impact is negative, local, medium and short term.

Mitigation Measures

- Selection of up-to-date and well-maintained plant or equipment with reduced noise levels;
- Confining excessively noisy work to normal working hours in the day, as far as possible;
- The Contractors working may be limited to daytime to reduce disturbance;
- Vehicles and equipment used shall be fitted, as applicable, with silencers and properly maintained;
- 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 procedures;
- Personal Protective Equipment (PPEs) shall be provided and worn by the personnel involved in construction activities;
- First aid kit shall be available at easily accessible location.
- All complaints are recorded and responded to in a timely and professional manner; and

- The Contractor shall ensure the compliance with NEQS and IFC/WHO guidelines whichever is stringent (as advise by Environmental Specialist).

7.7.12 Borrow Areas

Potential Impacts

Borrow areas may result in potential sources of mosquito breeding and may prove hazardous to human beings, livestock and wildlife. This will also degrade hygienic condition of the subproject area. This impact is temporary and high adverse in nature.

Mitigation Measures:

- Necessary permits will be obtained for any borrow pits from the competent authorities;
- In borrow pits, the depth of the pit shall be as per design;
- Soil erosion along the borrow pit shall be regularly checked to prevent/mitigate impacts on adjacent lands; and
- In case borrow pits fill with water, measures have to be taken to prevent the creation of mosquito-breeding sites.

7.7.13 Construction Camps / Camp Sites[27]

Potential Impact

Improper construction camp location and mismanagement of construction camp activities can lead to various social and environmental impacts which include health and safety, traffic problems, soil degradation, loss of vegetation and assets on the selected land, solid waste and water pollution. Furthermore, cultural differences, behavior of construction workers, potential disregard for local cultural norms can lead to increased tension between local communities and workers residing in the construction camps. This impact is temporary and moderate negative in nature.

Mitigation Measures

- The project will seek to avoid sitting camps where their presence might contribute to any conflicts with locals;
- Employment policies which aim to maximize job opportunities for local people will help to minimize tensions caused by different socio-cultural values;
- Camps will be designed to be self-contained to reduce demand on infrastructure and services of nearby communities;
- A comprehensive safety and security plan for the camps will be prepared which will comprise of a training manual, use of safety equipment and emergency preparedness;

[27] *Mostly the local labor would be hired due to small works, the establishing regular construction camps by the contractor(s) is unlikely. However, given measures would be taken, if needed*

- Training will be provided to all staff on camp management rules and overall discipline and cultural awareness.
- Waste Management Plan will be implemented to ensure safe handling, storage, collection and disposal of construction wastes and the training of employees who handle waste;
- Domestic and chemical effluents from the construction camp will be disposed by the development of on-site sanitation systems i.e. septic tanks (if required / as per advise of Environmental Specialist);
- The Contractor(s) will be responsible to submit details of site-specific wastewater management plan along with details of wastewater collection, transportation and its disposal (if required / as per advise of Environmental Specialist);
- Site for construction camp will be selected to minimize the removal of existing macro-plants at camp sites and at least 500 m away from the settlements;
- Compensatory plantation to be done when construction work near ends; and
- The Contractor(s) shall ensure rehabilitation of site upon completion.

7.7.14 Wastewater Generation at Construction Camps[28]

Potential Impact

Wastewater will be generated at the construction camps by the workers. If the generated wastewater is not properly treated or disposed of, this may contaminate the surface water sources such as nullahs, drains, water channels, river etc. apart from soil contamination. The Table 7.1 below shows anticipated composition and estimate of the wastewater to be generated from construction camps project assuming that on average the water demand per person is 40 liters per day and that 80% of the water demand will become wastewater.

Table 7-1: Estimated Wastewater Generated by Workers in Construction Camps

Sr. No.	No. of Workers/ Staff*	Estimated Total Water Demand** (liters/day)	Estimated Wastewater Generated (liters/day)***
1	45	1,800	1,440

* "Tentative Work Force Requirements Including Client, Consultant and Contractor Staff for all the archaeological sites"
** = (45) x (40) = 1,800 liters/day
*** = (1,800) x (80%) =1,440 liters/day

This impact can be categorized as direct, moderate, site-specific, short term, temporary, high probability and reversible.

Mitigation Measures

To dispose the liquid waste generated from the construction activities, the following steps will be taken by the Contractor:

[28] *Mostly the local labor would be hired due to small works, the establishing regular construction camps by the contractor(s) is unlikely. However, given measures would be taken, if needed*

- Domestic and chemical effluents from the construction camp will be disposed by the development of on-site sanitation systems i.e. septic tanks (if required / as per advise of Environmental Specialist);
- Proper monitoring to check the compliance of NEQS will be carried out (as advise by Environmental Specialist); and
- The Contractor(s) will be responsible to submit details of site-specific wastewater management plan along with details of wastewater collection, transportation and its disposal may be prepared and implemented (if required / as per advise of Environmental Specialist).

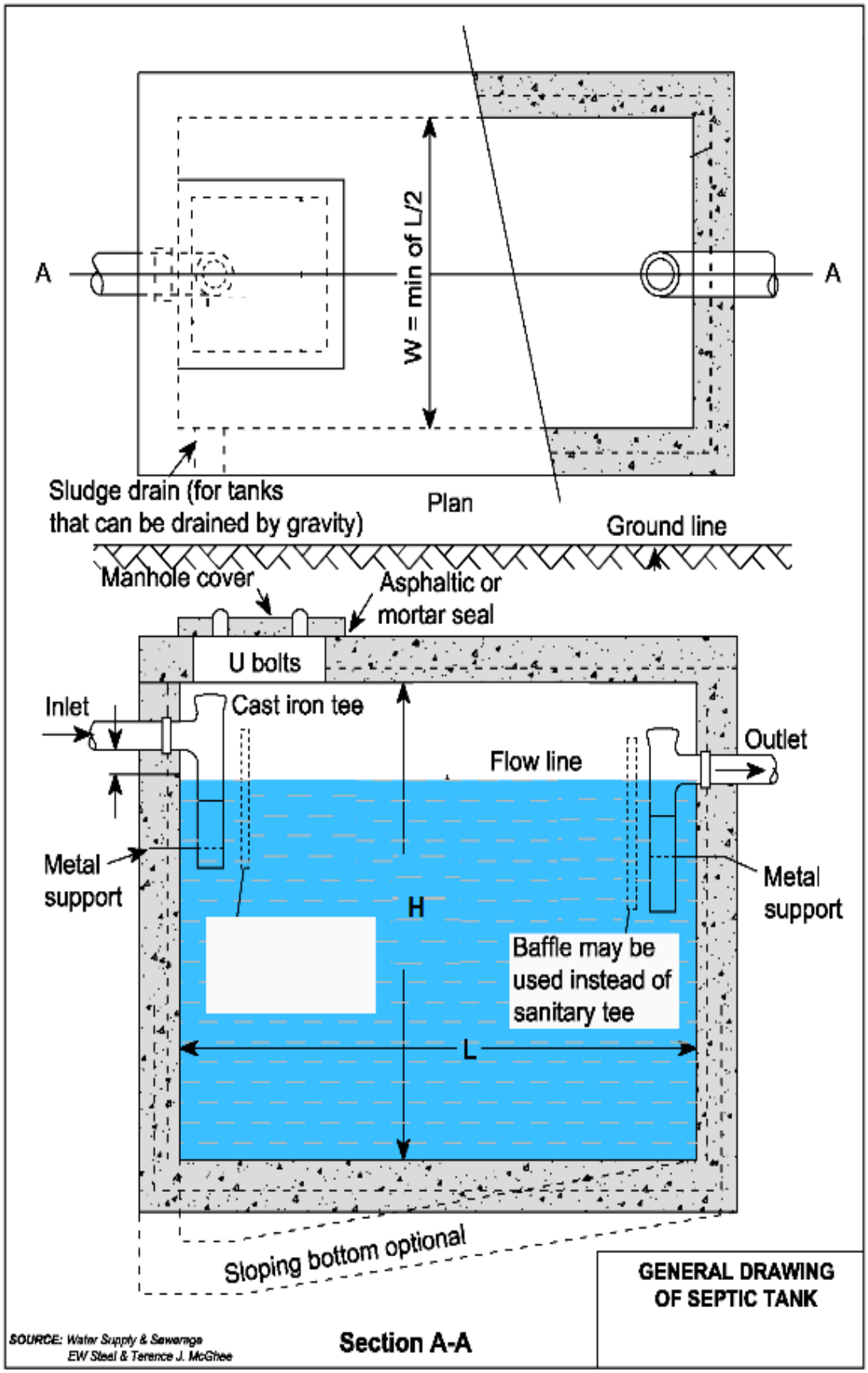

Figure 7-1: General Drawing of Septic Tank

7.7.15 Solid Waste (Construction, Municipal and Hazardous Waste)

Potential Impact

Considering the labour / staff (about 45 in numbers) residing in the construction camps[29] and the locally available labour, an average solid waste generation rate of 0.5 kg/capita/day[30] is adopted for the estimation of solid waste generation. Based on this assumption, a total of about 22.5 kg of solid waste will be generated from construction camps on daily basis. Different type of waste is likely to be generated during the construction phase of the subprojects. The municipal waste will be in the form of food, cans, paper and wastewater from construction camps toilets and washing yards. Construction waste will include excavated soil, pieces of concrete, bricks. stones etc. Whereas, hazardous waste can be comprised of paints and construction chemicals. All these, if left unattended, can become a source of nuisance and environmental pollution in the project area.

Insecure and unhygienic disposal of the solid wastes particularly garbage and trash may cause degradation of soil and land. Insecurely disposed of heaps of wastes containing kitchen garbage and food waste can serve as breeding grounds for the disease spreading vectors and rodents. Throwing away of solid wastes into water channels and the wastewater network can result into choking of the latter.

These impacts are temporary and major negative in nature.

Mitigation Measures

- 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;
- Training of work force in the storage and handling of hazardous materials and chemicals Construction workers and Supervisory staff should be encouraged and educated to practice waste minimization and reuse to reduce quantity of the waste;
- Proper labeling of containers, including the identification and quantity of the contents, hazard contact information etc.;
- Waste disposal plan must be reviewed during the entire construction phase in the light of changing weather conditions;
- Emergency Response plan shall be prepared to address the accidental spillage of fuels and hazardous goods;
- Immediate collection of spilled oils/fuels/lubricants by collection of contaminated soils and skipping oils from surface water by applying appropriate technologies;
- Used oil shall be collected in separate containers stored on impervious platform with restricted access and shall be sold to licensed contractor and the burning of waste oil shall be strictly restricted; and

[29] *Mostly the local labor would be hired due to small works, the establishing regular construction camps by the contractor(s) is unlikely. However, given measures would be taken, if needed*
Source: The World Bank Report 2012 – What a Waste: A global review of solid waste management. Based on UNEP estimates for waste generation in the Asia Pacific. Average is 0.45 kg/capita/day.

- Construction waste such as cement, bricks, stone, lime mortar and plaster can be crushed and reused in other sites, where applicable.

7.7.16 Natural and Man-Made Disasters

Potential Impact

Natural disasters (earthquakes) and accidents such as fire, falls, slips and trips may result in injuries, financial losses and may even lead to deaths. The workers shall be trained and facilitated to cope with such disasters. This impact is short term, site specific and medium to high significant.

Mitigation Measures

Mitigation measures include the following:

- Emergency prevention, preparedness and response arrangements for earthquakes and manmade disasters may be developed by the Contractor in coordination with DoAM, DoT and other relevant departments (where applicable / as per advise of Environmental Specialist);
- The Contractor will prepare a Site Specific Health and Safety Plan which is relevant to his chosen methodology;
- Training of workers;
- Documentation and reporting of occupational accidents, diseases and incidents;
- Provision of supply of PPEs will also be mandatory for all staffs and visitors; and
- Ensure the measures for fire prevention and firefighting.

7.7.17 Ecological Environment

Potential Impact

The proposed subprojects interventions will be undertaken in the area where presence of floral and faunal diversity is limited. Subproject construction activities might create disturbance to the flora and fauna of the subproject areas due to machinery movements. No major impacts are anticipated. Moreover, the extent of the subprojects activities is low in terms of physical intervention as the proposed subprojects involves the conservation, preservation, restoration and civil works of existing PCRs.

The conservation, preservation, restoration and civil works activities will not involve any tree removal, so no tree will be felled. However, minor land clearance activities shall be involved for clearing the land of bushes and small plants. Therefore, no adverse impacts are envisaged on the biodiversity.

Mitigation Measures

- To protect the natural environment of each subproject sites, 250 plants (as per advise of Environmental Specialist) shall be planted on each subproject site, which will play in rehabilitation and enhancement of local environment, creation of habitat for local

wildlife and will also add part in the aesthetics of the area (refer Annex- VIII Tree Plantation Plan);

- The tree plantation will also compensate the removal of small plants and bushes as these may be impacted due to the proposed subprojects activities;
- KP Forest Ordinance 2002, Protection of Trees and Brushwood Act, 1949 and KP Wildlife & Biodiversity Act, 2015 to be followed.

7.7.18 Disturbance to Wildlife

Potential Impact

The proposed subprojects interventions may increase number of the worker's activity, machinery movements and can impact animal movements by direct mortality or avoidance behavior. This impact is site specific, short term and low adverse.

Mitigation Measures

- Hunting, poaching and harassing of wild animals shall be strictly prohibited, and Contractor shall be required to instruct and supervise its labor force accordingly and clear orders should be given in this regard;
  - Safe speed limit will be strictly implemented during construction activities;
  - Awareness material regarding wildlife will be developed and displayed prominently at the sites;
  - The engineering design to integrate the principles of green infrastructure including habitat conservation; and
  - Noise produced by construction and other activities may be kept to acceptable level/kept minimum as per NEQS and IFC/WHO guidelines whichever is stringent (as advise by Environmental Specialist).

7.8 POTENTIAL IMPACTS DURING OPERATIONAL PHASE

The anticipated environmental impacts related to the proposed subprojects have been studied for the operational stage of the project as discussed hereunder.

7.8.1 Site Management

Potential Impacts

Signs and associated features of this type which are of unsympathetic design may constitute a visual intrusion, resulting in negative aesthetic impacts and diminishing the scenic and photographic value of the site. This impact is site specific and permanent in nature.

Mitigation Measures

- Signs and associated features shall be properly design from experienced team; and

- The placement of signs and associated features shall be ensured properly keeping in view the historic value of PRCs.

7.8.2 Air Quality

Potential Impacts

Major sources of air emissions and dust pollution at all the PCRs sites will be visiting vehicular traffic especially during the peak seasons and generators (if installed). This may result in the rise of vehicular emissions (CO, NO_x, SO_x, PM_{10}) associated with the adverse effects on the PCRs, environment and human. This impact can be categorized as negative, local, low, long term and definite.

Mitigation Measures

- Location of generators (if installed) at sites should be carefully selected;
- Use of gas generators (if possible) should be preferred for low emissions;
- Plantation of trees around the generators to create a buffer zone that will help in absorbing the emissions;
- Use of solar panels (renewable energy source) for running generators, as it will save the energy;
- Ensure proposer parking system at each site; and
- Provision of budget for regular monitoring of ambient air quality in accordance with NEQS and IFC/WHO guidelines whichever is stringent (as advised by Environmental Specialist).

7.8.3 Noise

Potential Impact

The operation of generators and movement of vehicles (locals, staff and visitor vehicles during peak season) on access roads to the PCRs sites may create noise and vibration issues. The impact is local, negative, medium, definite and long term.

Mitigations Measures

- Use of horn should be prohibited in and around the all the PSRs sites;
- Trees should be planted along the boundary of subprojects as a noise barrier;
- Employees working close to generators for extended periods should be encouraged to wear ear protection; and
- Traffic signs/rules should be installed /placed in and around the PCRs sites regarding parking of vehicles and honking of horns.

7.8.4 Solid Waste Generation

Potential Impact

Municipal waste including tissue papers, packaging papers, papers and bottles etc. will be generated during operation phase especially during the peak seasons. Improper storage and dumping of waste may pollute soil, sewerage pipes and waterbodies. It may also affect the aesthetics and can cause health problems to the staff and workers handling waste. Therefore, this impact will be negative, local, medium, long term and definite.

Mitigations Measures

- Waste collection bins should be provided within the and around the PCRs sites at suitable locations for collection of daily generated municipal waste;
- Assign color to collection bins according to the international standards;
- Waste bins should be emptied by sanitary workers on daily basis;
- Recyclable wastes such as newspaper, cardboard, plastics, glass and metals could be separated for individual collection;
- Storage areas should be cleaned regularly to minimize odor, pests and nuisances and preserve visual amenity;
- Installation of sign boards with instructions for the visitors;
- Waste should be transferred to the properly covered purpose-built vehicle (truck / pick-up van) and then be carried out of the sites to nearby municipal disposal points; and
- A proper waste management plan should be prepared for onsite storage, collection and disposal of waste.

7.8.5 HSE Considerations

Potential Impact

During the operation phase, health and safety issues may arise. Operation and maintenance of the PCRs sites may cause health and safety risks to staff (electrical and mechanical staff, solid waste management staff and maintenance staff), that may include injuries due to electric shocks, slipping and falling, poor handling and storage of hazardous substances etc. The impact will be considered as negative, local, medium, long-term and probable.

Mitigation Measures

- Operation and maintenance of machinery, equipment conservation, preservation, restoration and allied civil works etc. shall be controlled and handled by efficient management, staff training, and other preventive measures;
- Proper storage and handling of generator fuel, chemicals and solvents;
- Ensure emergency prevention, preparedness and response arrangements;
- Emergency numbers should be clearly posted and communicated to the staff;
- Fire extinguishing equipment should be installed at sites;
- Provision of PPE's to the skilled and unskilled labors including masks, gloves, safety jackets and ear muffs;

- Necessary health and safety rules should be enforced by the Department if Archaeology & Museum for management;
- Proper training should be given to workers on health and safety measures;
- Hazardous materials should be well labeled and stored in their original containers;
- Ensure compliance with Pakistan Electric and telecommunication Safety Code-PETSAC-2014 and other relevant measures; and
- COVID-19 SOPs must be fully adopted in accordance with the updated / latest WHO and GoP guidelines (Annex- IX).

7.8.6 Soil Erosion and Contamination

Potential Impact

Any excavations required for maintenance would cause impacts similar to those from construction phase, but at a lesser spatial and temporal extent. The accidental spill of product such as accidental fuel and material spills would likely cause soil contamination. Except in the case of a large spill, soil contamination would be localized and limited in extent and magnitude.

Mitigation Measures

To minimize the disruption of top soil following remedial measures should be taken:

- The top soil that will be excavated from the area will be preserved and reused for the horticulture purpose;
- Proper solid waste management program is prepared and executed to ensure and Land waste containment, collection, transfer and disposal; and
- Monitoring is carried out at specific locations for strict compliance to the developed PCRMP in implementing measures to waste management.

7.8.7 Ecological Impacts

No impact is anticipated during operational phase of the project both on flora and fauna. However, the maintenance of the saplings/new plants must be monitored efficiently (as per advise of Environmental Specialist).

7.9 POTENTIAL SOCIAL IMPACTS AND MITIGATION MEASURES

7.10 POTENTIAL SOCIAL IMPACTS DURING PRE-CONSTRUCTION PHASE

The anticipated social impacts related to the subprojects have been studied for the pre-construction, construction and operation phases, as discussed hereunder.

7.10.1 Land Acquisition, Resettlement and Compensation

Potential Impact

The proposed subprojects involve the conservation, preservation, restoration and civil works activities for the PCRs / archeological sites. Therefore, proposed subprojects interventions will require land which will result in loss of land. For the proposed subprojects at three (03) sites, a total of 58.2 kanals of land will be acquired. Site wise detail is given below in Table 7.2.

Table 7-2: Details of Land Acquisition

Sr. No.	Location	Ownership Status
1.	Bhamala Stupa, Landi Kotal District Haripur.	Govt. / 4 Kanal 8 Marlas is private land. Will be acquired by the Govt. as per LAA 1894 and OP 4.12
2	Hund Museum, District Swabi.	Govt. / 23 Kanal 4 Marlas is private land. Will be acquired by the Govt. as per LAA 1894 and OP 4.12
3	Shapula Stupa, Landi Kotal District Khyber.	Govt. / 30 Kanal is private land. Will be acquired by the Govt. as per LAA 1894 and OP 4.12

The details of land under the impact with ownership status will be prepared by the Revenue Department. The impact of land acquisition and resettlement is site specific and moderate in nature.

Mitigation Measures

A detailed Abbreviated Resettlement Action Plan will be prepared as per World Bank OP 4.12 and Land Acquisition Act, 1894 including later amendments for acquisition and compensation strategies.

Mitigation measures will involve land management and providing judicious compensation to the affectees by providing sufficient budget in the subprojects cost. The process of land acquisition and compensation will be followed in a transparent manner to minimize the impacts and framing of a judicious and fair compensation package for provision of compensation on at least the prevailing market rates.

7.10.2 Temporary Acquisition of Land

Potential Impacts[31]

The Contractors will require temporary land acquisition for the development of Contractor camps (if required) and facilities i.e. storage of materials, workshops, equipment parking and washing areas etc.

Land utilization for subprojects activities and subsequent operation may induce temporary as well as permanent changes in the existing landuse pattern. This impact can be categorized as direct, low, site-specific, short term, temporary, medium probability and reversible.

Mitigation Measures

Land for above mentioned facilities will be directly rented from the private landowners or Government[32] by the Contractor(s). The provisions of the Land Acquisition Act (LAA), 1894 will not be involved as the acquisition of the land will be temporary and will be covered by short-term lease agreements between the landowners and Contractor. Rental terms should be negotiated to the satisfaction of the concerned landowners and the agreement should be in local language to make the process clear.

In addition, these project facilities should be located at a minimum distance of 500 meter from the existing settlements, built-up areas, PCRs / archaeological sites as the case may be. As far as possible, barren land i.e. areas not under agricultural should be used for setting up the contractor camps.

7.10.3 Public Utilities

Potential Impact

Due to the proposed subprojects, telephone lines, electric poles and wires, water lines within the proposed subprojects locations may require to be shifted. An electricity high tension (HT) pole inside the PCR shall need to remove at Bhamala Stupa Site. This impact is site specific and moderate in nature.

Mitigation Measures

During the design phase, maximum effort will be made to avoid the above mentioned public utilities, and if these are unavoidable than these will be relocated timely through the concerned department to avoid any public inconvenience.

[31] *This impact will be applicable if the Contractor develops the Construction Camp.*
[32] *If the Construction Camp established at Government land.*

7.11 POTENTIAL SOCIAL IMPACTS DURING CONSTRUCTION PHASE

7.11.1 Community Health and Safety

Potential Impact

The construction activities and vehicular movement at construction sites may result in roadside accidents particularly inflicting local communities who are not familiar with presence of construction equipment. Quality of groundwater and surface water resources available in the nearby local communities may be affected due to the construction activities, oil spillage and leakage, roadside accidents, etc. The proposed subprojects will also have potential of air (dust pollution), noise and vibrational impacts on nearby community. The labour works with different transmittable diseases like HIV/AIDs and COVID-19 etc. may cause spread out of those diseases in the local residents and for visitors. Conflicts may arise between the local community and the construction workers, which may be related to religious, cultural or ethnic differences, or based on competition for local resources. Considering these consequences, this impact can be categorized as direct, moderate, site-specific, medium term, temporary, medium probability and irreversible.

Mitigation Measures

- The Contractor will be required to strictly follow WBGEHSG (refer Annex-III). The Contractor will prepare the site specific community health and safety plan in compliance with relevant sections of the WBGEHSG and Pakistan Labor Laws;
- The Contractor will clearly barricade work areas to prevent access by the public;
- Providing basic medical training to specified work staff and basic medical service and supplies to workers;
- There will be proper control on construction activities and oil spillage leakage of vehicles;
- The labourers with different transmittable diseases will be restricted within the construction site;
- Ensure that the site is restricted for the entry of irrelevant people particularly children;
- Efforts will be made to create awareness about road safety among the drivers operating construction vehicles;
- Timely public notification on planned construction works;
- Close consultation with local communities to identify optimal solutions for diversions to maintain community integrity and social links;
- Seeking cooperation with local educational facilities (school teachers)/religious at each village along the route for road safety campaigns;
- Provision of proper safety and diversion signage, particularly at urban areas and at sensitive/accident-prone spots;
- Setting up speed limits in close consultation with the local stakeholders;
- The mitigation measures provided in the following sub-sections for air and noise shall be adopted to reduce the air pollution, noise pollution and vibrational impacts on nearby community;
- Construction Camp Management Plan (CCMP) and effective implementation of GRM may reduce this impact;
- The Contractor shall ensure the compliance with NEQS and IFC/WHO guidelines whichever is stringent (as advised by Environmental Specialist);

- The communicable disease of most concern during construction phase, like Sexually-Transmitted Disease (STDs) such as HIV/AIDS, COVID-19 will be prevented by successful initiative typically involving health awareness, education initiatives, training heath workers in disease treatment; immunization program and providing health service. Updated / latest guidelines by WHO / GoP may be observed to combat with COVID-19 (Annex-IX);
- Reducing the impacts of vector borne diseases will be accomplished through implementation of diverse interventions aimed at eliminating the factors that lead to disease, which include 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;
- Water sprinkling will be carried out to suppress dust;
- Contractor will prepare the Method of treatment and disposal of sanitary wastes, disposal of hazardous waste, actions to be taken in the event of land and water based pollution events and procedures for the collection and disposal of wastes, including domestic and construction waste to protect the local community;
- The Contractor will prepare the construction camp management plan which, in addition to other components, will include the labor influx management plan. This will be reviewed and approved by PMU-KITE-DoT /DoAM (if required); and
- Contractor will take due care of the local community and observe sanctity of local customs and traditions by his staff. Contractor will warn the staff strictly not to involve in any unethical activities and to obey the local norms and cultural restrictions.

Any environmental condition that is disagreeable to the public and causes an avoidable nuisance can be addressed with additional provisions over and above those described above, as determined necessary by the PMU-KITE-DoT /DoAM (if required).

These requirements will be incorporated into the bidding specification and contract documents and will be binding on the contractor, at risk of penalty for noncompliance, as charges to be recovered from contractor for unsafe act or condition.

7.11.2 Occupational Health and Safety

Potential Impact

Occupational Health and Safety (H&S) related impacts may arise during construction phase due to activities including earthworks, roof works, replacement of dooms and windows, wall painting works, installation of concrete mixing plant, construction of Contractor camps (if required), movement of machinery and manual handling during loading unloading operation, as result of these works there will be a direct impact on the health and safety of all staffs working in subprojects. Eye injury can be caused by stone or metal particles. Hazard of being hit by falling objects, major hand-arm and whole body vibration hazards, skin and respiratory tract irritation from exposure to cement dust, overexertion and awkward postures etc. will be another impact. Welding (if required) hazards include electric shock, fumes and gases, fire, falls from height, eye and head injuries etc.

Other impacts will be contact with heavy electrical and mechanical equipment, equipment failure, uncontrolled movement, unguarded moving mechanical equipment parts, fatigue, unbalanced load, falling objects, hand injury, slip and trip hazards, wind / storm activity, injury from releasing load too soon etc. Operating mechanical and electrical equipment will trigger the H&S issues e.g. struck by moving vehicles or other equipment, slips or trips, struck by

flying objects, such as dirt or splashed fluids, caught in pinch points, shear points, crush points, falling from machine etc. Considering these consequences, this impact can be categorized as direct, moderate, site-specific, medium term, temporary, medium probability and irreversible.

Mitigation Measures

Following mitigation is given to avoid the accidental risks:

- The Contractor will be required to strictly follow WBGEHSG (refer Annex-III). The Contractor will prepare the site specific community health and safety plan in compliance with relevant sections of the WBGEHSG and chosen methodology;
- Occupational health and safety monitoring programs of the Contractor (s) should verify the effectiveness of prevention and control strategies;
- Providing basic medical training to specified work staff and basic medical service to workers;
- Contractor will ensure the provision of medicines, first aid kits, ambulance etc. at the camp site;
- Complying with the safety precautions for the construction workers as per International Labour Organization (ILO) Convention No. 62,;
- Training of workers in construction safety procedures, environmental awareness, equipping all construction workers with safety boots, helmets, gloves and protective masks, goggles, shields and monitoring their proper and sustained usage;
- Moreover, proper planning should be done for food storage, setting up of kitchens, production of sewage and waste water may result in multiplication of rodents like rats, mice and shrew etc. and vectors like mosquitoes, bugs and flies which will have a negative impact;
- Work areas will be cordoned off where necessary;
- Ensure the provision of fire prevention and firefighting equipment;
- Contractors will instruct their staff to use PPEs (e.g., wire containment, displaying warning signs along the work site, communicating advance warnings to mats) to enhance the safety; and
- Ensure the provision of emergency prevention, preparedness and response arrangements by the Contractor.

These requirements will be incorporated into the bidding specification and contract documents, and will be binding on the Contractor, at risk of penalty for noncompliance, as charges to be recovered from Contractor for unsafe act or condition.

7.11.3 Coronavirus Disease (COVID-19)

Potential Impact

Coronavirus disease (COVID-19) may be introduced due to the immigration of workers associated with the proposed subprojects.

Ministry of National Health Services, Regulations and Coordination, GoP has issued guidelines in April, 2020 for Health & Safety of Building and Construction Workers during COVID-19 outbreak. These guidelines are prepared for the workers involved in building and construction work during the current epidemic of COVID-19. These guidelines provide the

safety measure to be implemented at the construction site having a dusty environment, continuous flow of different materials and make-shift type of arrangements for storage, food and sanitation calls for implementation. This impact is site specific, temporary and medium to high adverse.

Mitigation Measures

- All workers must perform complete sanitization at the site as per updated / latest SOPs/guidelines issued by WHO and the national guidelines issued by the GoP[33];
- All workers must wear a mask and gloves as soon as they arrive at site and must keep wearing it at all times while present at the work site and their body temperature must be checked;
- Make alcohol-based hand sanitizer (at least 70%) available for the workers handling deliveries
- At the work site(s), social distancing measures must be strictly implemented and gathering of workers at any location at the work site(s) must be strictly forbidden.
- All workers will be strictly advised to wash their hands as frequently as practicable and not to touch their face during work.
- COVID awareness sign boards must be installed at the camp clinic 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 soaps and disinfectant spray;
- Everyone on the construction site must observe sneezing and coughing etiquettes;
- The lunch breaks and stretch breaks of the workers must be staggered to avoid the clustering of workers;
- Sick worker should immediately inform the focal person of health and safety and must get medical advice from nearby health center; and
- The contractor may ensure the vaccination of all working staff.

Measures for protecting staff and labour from exposure to, and infection with, the COVID-19 depend on the type of work being performed and exposure risk, including potential for interaction with infectious people and contamination of the work environment. Guidelines to combat with COVID-19 are attached as Annex-IX**.**

7.11.4 Labor Influx

Potential Impact

This can be particularly acute in smaller communities hosting male workforce and/or a workforce from other regions which may result in conflicts between locals and non-locals concerning employment opportunities, wages and natural resources. Mobile workers can also contribute significantly to gender-based social impacts and risks.

[33] https://covid.gov.pk/guideline

Risk of social conflict: Conflicts may arise between the local community and the construction workers, which may be related to religious, cultural or ethnic differences, or based on competition for local resources. Tensions may also arise between different groups within the labor force and pre-existing conflicts in the local community may be exacerbated. Ethnic and regional conflicts may be aggravated if workers from one group are moving into the territory of the other.

Increased risk of illicit behavior and crime: The influx of workers and service providers into communities may increase the rate of crimes and/or a perception of insecurity by the local community. Such illicit behavior or crimes can include theft, physical assaults, substance abuse, prostitution and human trafficking. Local law enforcement may not be sufficiently equipped to deal with the temporary increase in local population.

Increased risk of communicable diseases and burden on local health services: The influx of people may bring communicable diseases to the project area, including sexually transmitted diseases (STDs), COVID- 19 or the incoming workers may be exposed to diseases to which they have low resistance. This can result in an additional burden on local health resources. Workers with health concerns relating to substance abuse, mental issues or STDs may not wish to visit the project's medical facility and instead go anonymously to local medical providers, thereby placing further stress on local resources. Local health and rescue facilities may also be overwhelmed and/or ill- equipped to address the industrial accidents that can occur in a large construction site. This impacts are site specific, temporary and medium to high adverse.

Mitigation Measures

- Local population will be given preference in jobs. Most unskilled workers will be hired from local communities, while for skilled manpower also, first choice will be given to local area residents;
- The Contractor will prepare the construction camp management plan which, in addition to other components, will include the labor influx management plan. This will be reviewed and approved by PMU-KITE-DoT /DoAM (if required);
- The Contractor will select the specific timings for the construction activities particularly near the settlements, so as to cause least disturbance to the local population, particularly women;
- Contractor will take due care of the local community and observe sanctity of local customs and traditions by his staff. Contractor will warn the staff strictly not to involve in any unethical activities and to obey the local norms and cultural restrictions;
- The Contractor will carry out the construction activities in such a way that the open defecation timings by the local community should not be affected. The normal defecation timings are early in the morning and at late in the evening. So, the Contractor will have to take care of these timings;
- Updated / latest SoPs related to the construction industry to control spreading of COVID-19 may be observed and should be implemented monitored by the Contractor (refer Annex-IXI); and
- During construction activities, if privacy of the nearby households is affected, the Contractor will inform the house owner to make some arrangements. Similarly,

Contractor will take care as much as possible that the construction activities should not affect the privacy.

7.11.5 Gender Issues

Potential Impact

Due to the proposed subprojects activities, local women many not be able to perform their daily outdoor chores (where applicable). The induction of outside labor may create social and gender issues due to the labor force being unaware of local customs and norms. It may also cause hindrance to the mobility of local women for working in the field, herding livestock, picking fuel wood, etc.

Construction workers may predominantly younger males. Those who are away from home on the construction job are typically separated from their family and act outside their normal sphere of social control. This can lead to inappropriate and criminal behavior, such as sexual harassment of women and girls, exploitative sexual relations and illicit sexual relations with minors from the local community. A large influx of male labor may also lead to an increase in human trafficking whereby women and girls are forced into sex work. This impact is site specific, temporary and medium to high adverse.

Mitigation Measures

- The Contractor will be required to provide a nominated person to address the specific risks identified;
- The bidding documents will include specific requirements that minimize the use of expatriate workers and encourage hiring of local workers, thereby minimizing labor influx;
- The Contractor will be required to establish anti-sexual harassment policies that governs conduct in the workplace; and
- The Contractor will be required to provide mandatory and repeated training to workers on sexual exploitation and abuse and HIV/AIDS prevention and on the content and obligations derived from the code of conduct

7.12 POTENTIAL SOCIAL IMPACTS DURING OPERATIONAL PHASE

After completing the subprojects, tourism will increase in the area which cause socio-economic uplift for the local community. The anticipated social impacts related to the proposed subprojects have been studied for the operational phase, as discussed hereunder.

7.12.1 Traffic Issues during Peak Seasons

Potential Impact

At present, parking is the major issue and point of conflict in the subprojects areas. During the peak seasons, people do not find adequate parking spaces and they either end up parking at the main roads blocking the traffic. Since the subprojects are envisaged to increase the tourist

influx, therefore, the parking issues shall be aggravated after the implementation of the project. This impact is site specific temporary and medium adverse in nature.

Mitigation Measures

- Ensure provision of adequate parking facilities at cheap rates; and
- Indulge traffic police in traffic management plan and allocation of parking facilities.

7.12.2 Employment Opportunities

Potential Impact

Economic activity will be generated in the subproject areas as the laborers and semi-skilled staff will have an opportunity to work during the operation of the proposed subprojects. This will help in developing their skills and capacities. This is a moderate positive impact.

Mitigation Measures

This is a positive impact, no mitigation required.

7.12.3 Change in Land Value

Potential Impact

The land values are expected to increase in the area, especially surrounding of these sites due to economic activities. Locals will have an opportunity to sell their land on increased prices and invest into new businesses. This impact will be major positive in nature.

Mitigation Measures

This is a positive impact, no mitigation required.

7.12.4 Economic Boost

Tourism will boost in these areas and this will create new business opportunities in region for the locals. In addition, the local community will be benefited with economic boost and better employment. This impact will be permanent and major positive in nature.

8 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

8.1 GENERAL

This chapter summarizes the mitigation, monitoring, and institutional measures to be taken during implementation and operation to eliminate adverse environmental and social impacts.

8.2 INCLUSION OF PCRMP IN BIDDING/ CONTRACT DOCUMENTS

The present PCRMP will be included in the bidding/ contract documents and their implementation will be a contractual binding for the Contractor (s).

8.3 INSTITUTIONAL ARRANGEMENTS

The proposed organizational structure under Project Steering Committee (PSC) for the implementation of the PCRMP is presented in Figure 8.1 and roles and responsibilities of key role players are given in Table 8.1**.**

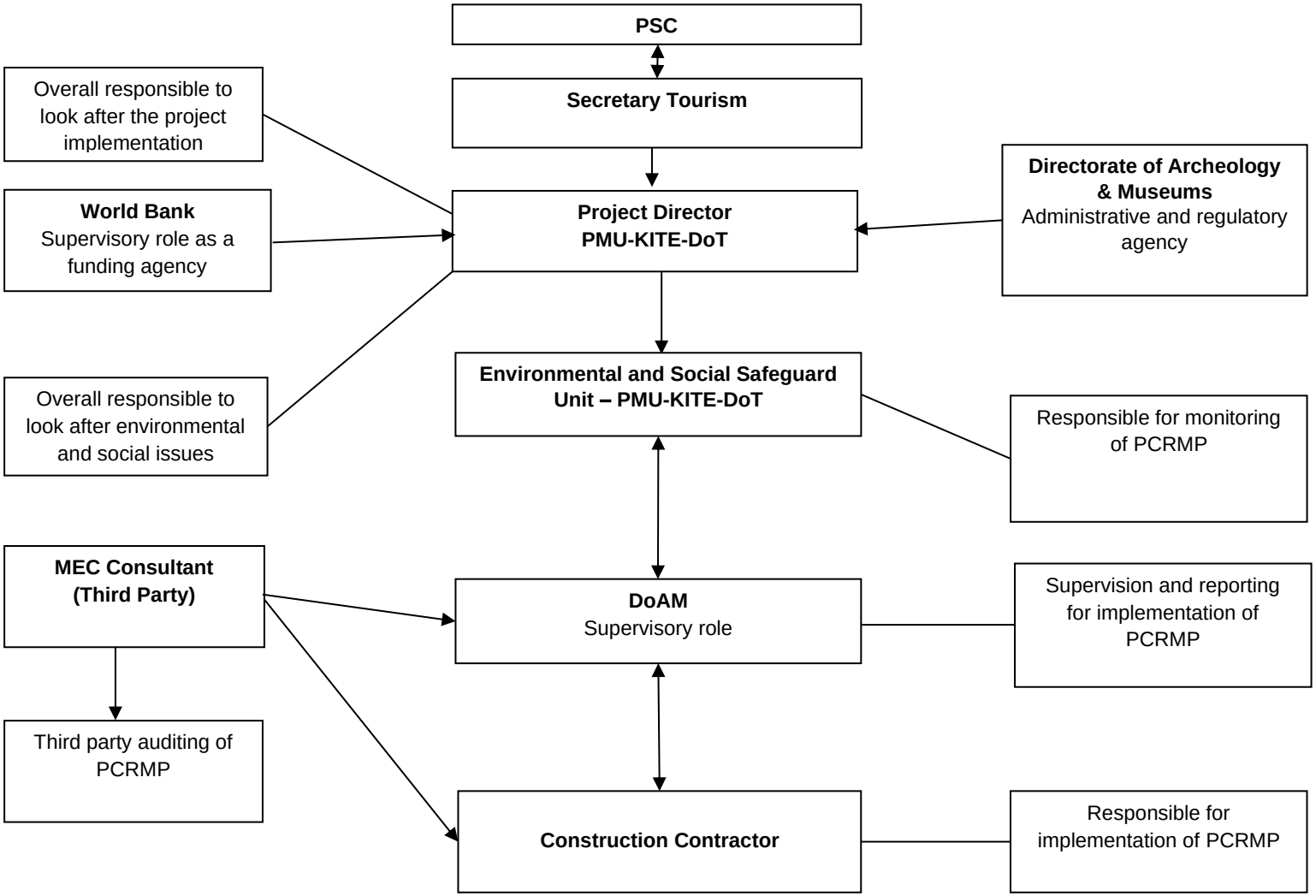

Figure 8-1: Institutional Arrangement for Implementation of PCRMP

Table 8-1: Roles and Responsibilities for the Implementation of PCRMP

Organization	Position	Responsibility
Directorate of Archaeology and Museums/ PMU-KITE-DoT	Project Director	▪ Ensure PCRMP Implementation; ▪ Supervise procurement and hiring of staff; ▪ Close supervision and monitoring of conservation, preservation, restoration and allied civil works by designated DoA staff; and ▪ Overall supervision of subprojects.
	Environment and Social Safeguards Specialist (assisted by Enviroemntal Inspector (01)/ Nominated Person Social Inspector (01)/ Nominated Person and Conservation Assist (01)/ Designated Person)	**Environmental Aspects** ▪ Ensure that the construction contracts include clauses for PCRMP implementation; ▪ Ensure implementation of the PCRMP during various phases of design and construction; ▪ Certify timely and robust environmental monitoring in the field by local facilitators and technical resource persons; ▪ Ensure that PCRs management and health & safety (occupational & community) and environmental trainings are planned and implemented; ▪ Overall monitoring and reporting of environmental impacts; ▪ Coordinate and ensure development of awareness material; ▪ Prepare Progress Reports e.g. Annual / Quarterly / Monthly Progress Reoprts inculing monitoring reports for the subprojects (as advise by Environmental Specialist). ▪ Monitor and check the proper implementation of all occupational health and safety mitigation measures as suggested in PCRMP through field visits as well as site records; ▪ Overall monitoring and reporting of occupational health and safety issues; and ▪ Prepare Progress reports regarding compliance of mitigation measures for occupational health and safety for the subprojects.
		Social Aspects ▪ Monitor and check the proper implementation of all social mitigation measures as suggested in PCRMP; ▪ Monitoring and evaluation of social related matters of the subprojects and maintain a social complaint register to document social issues; ▪ Certify timely and robust social monitoring in the field by local facilitators and technical resource persons; ▪ Ensure inclusion of PCRMP requirements in subprojects designs; ▪ Remain the focal point for managing the subprojects GRM and maintain analysis and reports on types of complaints received, resolved, time taken to action, etc. ▪ Provide technical lead to the field teams regarding gender mainstreaming activities of the project;

Organization	Position	Responsibility
		▪ Linkages development with NGOs and public-sector entities working on empowerment of women and marginalized segments of society (if required); ▪ Ensure the GRM is gender friendly; ▪ Provide assistance and advice to field staff for resolving grievances related to gender arising on account of subprojects implementation; and ▪ Prepare Grievance Reports as and when required basis.
MEC	Thrid Party	▪ Evaluation of PCRMP implementation; ▪ Supervision of construction Contractor; and ▪ Reporting to higher authorities.

8.3.1 Directorate of Archaeology and Museums and PMU-KITE-DoT

The Directorate of Archaeology and Museums and PMU-KITE-DoT will monitor and coordinate all subprojects implementation activities. The PMU-KITE-DoT, led by a Project Director, will be responsible for all aspects of subprojects implementation including financial management, procurement, recruitment of staff, consultants and contractors, and overseeing the implementation of PCRMP.

8.3.2 Environmental and Social Safeguard Unit (ESSU) – PMU-KITE-DoT

ESSU will be established under PMU-KITE-DoT consisting of the following staff:

- Environmental and Social Specialist (already hired);
- Environmental Inspector / Nominated Person;
- Social Inspector / Nominated Person; and
- Conservation Assist (Designated by Directorate of Archaeology & Museum)

Overall responsibility of ESSU- PMU-KITE-DoT include:

(i) Supervising, facilitating and coordinating implementation of environmental and social plans including PCRMP;
(ii) Ensuring that Contractor (s) follow World Bank Safeguard Policies, EPA–KP regulations and other requirements mentioned in the PCRMP;
(iii) Identifying any issues of non-compliance and report these;
(iv) Preparing monthly/quarterly monitoring and progress reports for submission to the World Bank;
(v) Suggesting mechanisms to link Contractor performance in relation to the PCRMP to the timing of financial payments, incentives or penalties;
(vi) Interacting with stakeholders for their concerns about the construction activities;
(vii) Assisting Project Director in addressing and resolving environment-related complaints and grievances;
(viii) Identifying and preparing PCRs management, environmental and health & safety (occupational & community) training materials and conducting trainings; and
(ix) Reviewing PCRMP and revising it, if required.

8.3.3 Directorate of Archaeology & Museum

Roles and responsibilities of DoAM will be:

- To oversee the performance of the Contractor to make sure that the Contractor is complying with PCRMP;
- Ensuring that the day-to-day construction activities are carried out in an environmentally and socially sound and sustainable manner;
- Strong coordination with the Contractor and PMU-KITE-DoT;
- Preparing training materials regarding defining PCRs and chance finds, local sensitivity to damage to PCRs, sensitivity of cultural heritage sites to looting and legal penalties for looting or the destruction of cultural heritage sites, chance finds reporting procedures and consultation process with local and regulatory agencies;
- Ensure the implementation of the mitigation measures suggested in PCRMP;
- To organize periodic training programs and workshops for the Contractor's staff;
- Periodic reporting of PCRMP (if required); and
- Suggest any additional mitigation measures (where required).

8.3.4 Contractors

Contractors are also required to appoint/designate the following environmental staff/focal points for the implementation of PCRMP in the field, particularly the mitigation measures.

- Environmental and Social Expert;
- Archaeological Officer; and
- Community Liaison Officer.

The Contractor will develop various plans directed towards PCRs, health, safety environment and social issues and get them approved by the ESSU PMU-KITE-DoT. The Contractor will also be responsible for communicating with and training of its staff in the PCRs/environmental/social/health & safety (occupational and community) aspects before the commencement of the Construction works (as per advise of ESSU). The construction contract will have appropriate clauses to bind the Contractor for the above obligations.

8.3.5 Monitoring and Evaluation Consultant (MEC)

MEC will be recruited by PMU-KITE-DoT to carry out independent monitoring of implementation of PCRMP. The MEC will have archaeological, environmental and social experts and shall carryout intermittent third party monitoring of the subprojects. MEC will also carry out annual third party auditing of PCRMP and make further modifications, if required.

8.4 SITE-SPECIFIC MANAGEMENT PLAN

Prior to mobilization, within 30 days of commencement, the Construction Contractor with the consent of ESSU prepare the Site Specific Physical Cultural Resource Management Plan (SSPCRMP), Site Specific Environmental Management Plan (SSEMP) and Site Specific Health and Safety Management Plan (SSHSMP), based on the WB Physical Cultural

Safeguard Policy, Guidebook and WBG EHS guidelines (refer Annex-III), which will be relevant to his chosen methodology and meet the requirement of this PCRMP.
These plans may include the following:

- Physical Cultural Resource Management Plan;
- Pollution Prevention Plan (Air/Noise/Waste/Sanitary Waste);
- Tree Plantation Plan;
- Traffic Management Plan;
- EHS Training Plan;
- Occupational Health and Safety Plan;
- Emergency Plan; and
- Site Restoration Plan.

These Plans will be submitted to the ESSU PMU-KITE-DoT for review and approval before Contractor mobilization.

8.5 PCRS, ENVIRONMENTAL AND SOCIAL MITIGATION AND MONITORING PLAN

The impacts, mitigation measures, monitoring indicators, frequency and responsibility has been documented in PCRMP and given in Table 8.2**.** This table is applicable for all the six (06) PCRs / archaeological sites including Bhamala Stupa, District Haripur, Hund Museum District Swabi, Mardan Museum, District Mardan, Shapula Stupa, Landi Kotal District Khyber, Pishamal Mosque District Swat and Main Kalam Mosque District Swat.

Table 8-2: PCRs, Environmental and Social Mitigation and Monitoring Plan

Sr. No.	Parameter	Potential Impacts	Mitigation Measure	Implemented by	Monitoring Location	Monitoring Frequency	Performance Monitoring Indicators	Monitored by		
								PMU-KITE-DoT	DoAM	MEC (Third Party)
PRE-CONSTRUCTION DURING DESIGN PHASE										
1.	**Technical Design and Layout Planning**	Incompatible layout plan, engineering design and improper repair methods of the project's structures can undermine the historical value of PCRs, overall aesthetic beauty and ambience of the subproject areas.	•Technical design of the proposed subprojects must incorporate the historical and aesthetic considerations meeting the local context and best international practices in project design; and •The proponent must review and validate all the design and repair works considering the possible impacts (as listed/mentioned above) before the start of conservation, preservation, restoration and allied civil works of all the PCRs / archaeological sites. •(For detail section 7.6.1 shall be followed)	Design Consultant	Subproject Area	Monthly	• Confirmation of design incorporation. • Audits and Checks.	√	√	NA
2.	**Seismology**	A high intensity earthquake impacting the subproject sites can adversely impact the proposed conservation, preservation, restoration and civil works (PGA: 0.16 to 0.32 g).	•Adopt Seismic Building Code of Pakistan 2007 (SBC-07) to mitigate the seismic hazard, for subprojects design. This code specifies minimum requirements for seismic safety of buildings and has to be applied and used by engineers in conjunction with the necessary understanding of the concepts of structural, geotechnical and earthquake engineering. *(For detail section 7.6.2 shall be followed)*	Design Consultant	Subproject Area	Monthly	• Confirmation of design incorporation. • Audits and Checks.	√	√	NA
3.	**Electrical Hazards**	The workers/ staff may be exposed to electrical hazards during repair / maintenance works including shocks, fires and burns caused by faulty electrical wiring, unsafe installations, frayed cords, substandard power trips and defective equipment.	•Appropriately grounded and double insulation of every single piece of equipment, machine, and device should be kept in the design; •Proper installation checks and periodic maintenance by a competent electrician; and •Power strips should be planned in the design to place in well-ventilated areas for adequate heat dispersion. *(For detail section 7.6.3 shall be followed)*	Design Consultant	Subproject Area	Monthly	• Confirmation of design incorporation. • Audits and Checks.	√	√	NA
4.	**Ecology**	Subprojects interventions will be undertaken in northern areas of KP, therefore, care must be taken to protect the key natural features including wood trees, medicinal plants and resources of Non Timber Forest Products (NTFP). No significant impact is envisaged during design phase.	•During design, sites should be properly selected to avoid and minimize the cutting of trees, shrubs and herbs; •Critical areas of animal breeding and nests should be avoided (if any); and •Tree planation must be formulated; *(For detail section 7.6.4 shall be followed)*	Design Consultant	Subproject Area	Monthly	• Audits and Checks.	√	√	NA
POTENTIAL IMPACTS DURING CONSTRUCTION PHASE										
5.	**Soil Erosion and Contamination**	During the rain, the eroded soil mix with stagnant water to transform into slush, which can affect movement of vehicles and machinery and construction work as well as limit the movements of local people. Soil erosion may occur at active construction sites and at contractors' camps (if required), as a result of uncontrolled run-off from equipment washing yards, excavation of earth and	•Material Safety Data Sheets (MSDS) will be strictly followed during handling and storage of chemicals; •Soil contamination will be minimized by placing all containers having materials in a bounded area away from water courses (if any); •Provision of impervious platform with oil and grease trap for collection of spillage during equipment and vehicle maintenance; •Solid waste generated at the camp sites will be properly treated and safely disposed only in the demarcated waste disposal sites/areas; •Ensure the use of modern, well-maintained machinery and vehicles by the contractor to avoid leakages; and	Contractor	Subproject Area	Monthly	• Visual checks and photographic record • Site restoration and rehabilitation.	√	√	√

Sr. No.	Parameter	Potential Impacts	Mitigation Measure	Implemented by	Monitoring Location	Monitoring Frequency	Performance Monitoring Indicators	Monitored by		
								PMU-KITE-DoT	DoAM	MEC (Third Party)
		clearing of area. Unauthorized use of borrow areas, resulting in degradation of landscape. Contamination of soil may be caused by solid waste generated at campsites and by oil and chemical spills at asphalt plant sites, workshop areas and equipment washing yards.	•Ensure the soils removed during conservation, preservation, restoration and civil works would be stockpiled for reuse where possible. *(For detail section 7.7.1 shall be followed)*							
6.	**Excavation of Earth**	There is a chance of finding PCRs remains. Mismanagement of the PCRs remains may result loss of a valuable asset.	•Ensure immediate reporting through Supervision Consultant to Directorate of Archaeology and Museums, KP to take further suitable action to preserve those PCRs or sensitive remains; •Follow all procedures for preservation and protection of sites and articles of paleontological, archaeological, and historical PCR as specified by the Antiquities Act, 2016/ procedures provided in this PCRMP. Chance finds procedure is given in Annex- VII must be followed; •Ensure approval for excavation and submit the plan of rehabilitation of the site after excavation; and •Contractors and workers shall be advised of the penalties associated with the unlawful removal of cultural, historical, archaeological or paleontological artefacts. (For detail section 7.7.2 shall be followed)	Contractor	Subproject Area	Occasional at chance finds during construction	• Visual checks and photographic record • Check and audits	√	√	√
7.	**Minor Demolition**	Knocking down of original floor and other minor demolition activities might be harmful for other parts of the building by its vibration and causing noise disturbance.	•Inventory of PCR close to the subproject area of influence, to be at risk of damage or disturbance should be prepared; •Avoid, redirect the activities so that they do not endanger any archaeological site; •Avoid extensive demolition works near or within the PCRs; •Ensures that the relevant signs for protection of known PCRs are displayed where and when required; and •Experienced skillful agent will be responsible for conducting the demolition activities. (For detail section 7.7.3 shall be followed)	Contractor	Subproject Area	Daily	• Visual checks and photographic record • Check and audits	√	√	√
8.	**Accidental Damages**	Conservation, preservation, restoration and allied civil works activities may potentially impact PCRs through direct ground disturbance during construction and where indirect disturbance occurs outside the PCRs area from increased access by people and construction machinery. Use of heavy equipment during the conservation, preservation, restoration and allied civil works of PCRs / archaeological sites can cause compaction or collapse of buried PCRs / archaeological sites.	•Avoid, redirect the activities so that they do not endanger any PCR; •Inventory of PCR close to the subproject area of influence, to be at risk of damage or disturbance should be prepared along with photographs. The assessments shall be carried out by Conservation Architects/ Engineers in association with proposed alterations or renovations on a recorded structure; •Ensure training and briefing by PMU ESSU on PCRMP to the Contractor and workers that involve in the earthworks which have the potential to find unexpected objects PCRs; •Ensures that the relevant signs for protection of PCRs are displayed where and when required;	Contractor	Subproject Area	Daily	• Visual checks and photographic record • Check and audits	√	√	√

Sr. No.	Parameter	Potential Impacts	Mitigation Measure	Implemented by	Monitoring Location	Monitoring Frequency	Performance Monitoring Indicators	Monitored by		
								PMU-KITE-DoT	DoAM	MEC (Third Party)
			•Consult with community representatives on matters concerning the management of PCRs to be impacted by activities. Develop protocols for salvage in consultation with the DoAM and ensure these are included in Contractor's Site Specific PCRMP; •Avoid the use of heavy construction machinery during the excavation process; •Staff must have relevant qualification and experience. (For detail section 7.7.4 shall be followed)							
9.	**Re-plaster / Repainting**	New plaster and color scheme might not match the original and causing damage to the original wall or entirely change the building perception.	• Ensure laboratory tests of the original plaster and color will support the suitable choice in conservation; •Ensure the conservation, preservation, restoration and allied civil works of PCRs / archaeological sites in accordance with the authenticity of the material, shape, layout, and/or workmanship techniques; and •Some cracks might be left exposing (as per advise of DoAM) to the public but with appropriate and technical treatment, they will reduce the risk while also revealing traces of the past. (For detail section 7.7.5 shall be followed)	Contractor	Subproject Area	Daily	• Visual checks and photographic record • Check and audits	√	√	√
10.	**Restoring Wooden Objects and Replacement of Windows**	Restoration that using non-traditional and non-original technologies and materials might cause damage to the wooden objects. Displacement of the original windows before restoring might do harm to their physical condition	• Ensure full investigation and documentation will be provided as references before starting the restoration; •Ensure the conservation, preservation, restoration and allied civil works of PCRs / archaeological sites in accordance with the authenticity of the material, shape, layout, and/or workmanship techniques; and •Experienced skillful wooden craftsmen (team) may be deputed by the Contractor. (For detail section 7.7.6 shall be followed)	Contractor	Subproject Area	Daily	• Visual checks and photographic record • Check and audits	√	√	√
11.	**Roof Treatment**	During the roof treatment, new roof material might change the exterior fabric's perception of the historic value of PCR	•Ensure full investigation and documentation will be provided as references before starting the roof treatment; •Ensure roof treatment in accordance with the authenticity of the material, shape, layout, and/or workmanship techniques; •Comparing various materials and choose one with the most appropriate choice; and •Staff must have relevant experience. (For detail section 7.7.7 shall be followed)	Contractor	Subproject Area	Daily	• Visual checks and photographic record • Check and audits	√	√	√
12.	**Surface and Groundwater**	Surface water may get contaminated due to the surface runoff. Construction activities may result in debris entering water body resulting in sedimentation. Storage and transport of construction material may also result in spills of chemical and contamination of nearby water bodies. Groundwater may also get contaminated from the wastewater generation from the	•Construction camps (if required) will be established in areas with adequate natural drainage channels in order to facilitate the flow of the treated effluents after ensuring that NEQS are met (as advise by Environmental Specialist); •Regular water quality monitoring according to determined sampling schedule; •Water required for construction shall be obtained in such a way that the water availability and supply to nearby communities remain unaffected;	Contractor	Subproject Area	Monthly	• Visual checks • Regular environmental monitoring, sampling and testing reports (as advised by Environmental Specialist)	√	√	√

Sr. No.	Parameter	Potential Impacts	Mitigation Measure	Implemented by	Monitoring Location	Monitoring Frequency	Performance Monitoring Indicators	Monitored by		
								PMU-KITE-DoT	DoAM	MEC (Third Party)
		construction camps (if required), leachate from improper dumping of solid waste. Consumption of water for construction activities may also affect other designated uses of water especially drinking water.	•Ensure that construction debris do not find their way into the drainage or nullah and nearby river which may get contaminated; •Wastewater effluent from the Contractors' workshops and equipment washing-yards may be treated before discharging into the streams as per NEQS; and •Similarly, if the sewage after treatment is to be discharged on to the land it will meet the requirements of the NEQS for disposal of wastewater. *(For detail section 7.7.8 shall be followed)*				• Waste Management plan implementation			
13.	**Traffic Issues**	Construction activities and movement of subprojects vehicles for construction material supply, traffic problems may arise for the commuters and transporters travelling to the proposed areas. The problems will include traffic jams and inconvenience to the public passing through the subproject areas. Movement of vehicles along the haulage routes will cause soil erosion, debris flow, dust emissions, vibrational impacts, etc.	•Movement of vehicles carrying construction materials and equipment/machinery will be restricted during the nighttime to reduce traffic load and inconvenience to the local population; •Construction vehicles, machinery and equipment will be parked at designated areas to avoid un-necessary congestions along the major roads; •Speed of the vehicles will be controlled (at 15 to 25 km/hr) to reduce the probability of severe accidents, soil erosion, debris flows due to vibrations and dust emission; •Damages of roads due to construction vehicles will be instantly repaired and/or compensated after the completion of work; •Any closure of the roads (especially main roads) and deviations / diversions proposed should be informed to the riders through standard signs and displays, if required; and •Traffic Management Plan (as per advise of Environmental Specialist) will be prepared by the contractor and implemented to avoid traffic accidents, jams/public inconvenience. *(For detail section 7.7.9 shall be followed)*	Contractor	Subproject Area	Monthly	• Vehicle maintenance record • Training record • Implementation of TMP • Regular visual checks	√	√	√
14.	**Air Quality**	Decline in the ambient air quality within the vicinity of works is expected during the construction phase and demolition activities. Due to these activities release of exhaust emissions, containing carbon monoxide (CO), sulphur dioxide (SO_2), oxides of nitrogen (NO_X), and particulate matter (PM) is expected, which can deteriorate the ambient air quality in the subproject sites. The objectionable impacts of settling of the suspended dust would be its dry deposition on vegetation, motor vehicles, PCRs, and other exposed surfaces and indoor air quality.	•Vehicles, machinery, equipment and generators used during construction activities should be kept in good working condition and be properly tuned and maintained in order to minimize the exhaust emissions; •Construction materials (sand, cement, bricks, gravel, lime mortar, stone chip etc.) and spoil materials will be transported through trucks covered with tarpaulins; •Provision of regular water sprinkling of the site; •Existing idling control technologies, which automatically shut the engine off after a preset time can reduce emissions, without intervention of the operators; •NEQS and IFC/WHO guidelines whichever is stringent applicable to gaseous emissions generated by construction vehicles, equipment and machinery should be enforced during construction works (if required / as advised by Environmental Specialist); and •Construction workers should be provided with masks for protection against the inhalation of dust. *(For detail section 7.7.10 shall be followed)*	Contractor	Subproject Area	Quarterly	• Visual checks • Regular environmental monitoring, sampling and testing reports, (as advised by Environmental Specialist) • Vehicle maintenance records • Water sprinkling records.	√	√	√

Sr. No.	Parameter	Potential Impacts	Mitigation Measure	Implemented by	Monitoring Location	Monitoring Frequency	Performance Monitoring Indicators	Monitored by		
								PMU-KITE-DoT	DoAM	MEC (Third Party)
		Exhausts from fossil fuel burning in the construction machinery and generators will also deteriorate ambient and indoor air quality.								
15.	**Noise/ Vibration**	The noise and vibration will be produced due to the operation of construction machinery concrete vibrators, lift, concrete mixer machine, tractor trolley, excavator, dozer, welding machines, hand drilling machine, iron cutting machine, water tankers, level machine, dewatering pumps, vehicles, and generators etc.) and demolition activities. The above machinery is expected to generate noise levels that would be severe in the subproject area. The cumulative effects from several machines may be significant and may cause significant nuisances.	•Selection of up-to-date and well-maintained plant or equipment with reduced noise levels; •Working may be limited to daytime to reduce disturbance; •Vehicles and equipment used shall be fitted, as applicable, with silencers and properly maintained; •Comply with submitted work schedule, keeping noisy operations away from sensitive points; implement regular maintenance and repairs; and employ strict implementation of operation procedures; •Personal Protective Equipment (PPEs) shall be provided and worn by the personnel involved in construction activities; •First aid kit shall be available at easily accessible location; and •The Contractor shall ensure the compliance with NEQS and IFC/WHO guidelines whichever is stringent (as advise by Environmental Specialist). *(For detail section 7.7.11 shall be followed)*	Contractor	Subproject Area	Quarterly	• Physical observation • Regular environmental monitoring, sampling, and testing reports (as advised by Environmental Specialist) • Vehicle maintenance records	√	√	√
16.	**Borrow Areas**	Borrow areas may result in potential sources of mosquito breeding and may prove hazardous to human beings, livestock and wildlife.	•Necessary permits will be obtained for any borrow pits from the competent authorities; •The depth of borrow pit shall be as per design; •Soil erosion along the borrow pit shall be regularly checked to prevent/mitigate impacts on adjacent lands; and •Ensure appropriate measures to prevent the creation of mosquito-breeding sites. *(For detail section 7.7.12 shall be followed)*	Contractor	Subproject Area	Monthly	• Visual checks and photographic record • Check and audits	√	√	√
17.	**Construction Camps / Camp Sites**[34]	Improper construction camp location and mismanagement of construction camp activities can lead to various social and environmental impacts which include health and safety, traffic problems, soil degradation, loss of vegetation and assets on the selected land, solid waste and water pollution. Furthermore, cultural differences, behavior of construction workers, potential disregard for local cultural norms can lead to increased	•Avoid setting camps where their presence might contribute to any conflicts with locals; •Employment policies which aim to maximize job opportunities for local people will help to minimize tensions caused by different socio-cultural values; •Comprehensive safety and security plan for the camps will be prepared which will comprise of a training manual, use of safety equipment and emergency preparedness. •Waste Management Plan will be implemented to ensure safe handling, storage, collection and disposal	Contractor	Subproject Area	Monthly	• Visual checks and photographic record. • Waste Management plan implementation	√	√	√

[34] *It is expected that for all proposed subprojects, local labor / workers may be hired and returned to their residences on daily basis. However, this impact may be applicable where the contractor (s) needs to established the construction camp.*

Sr. No.	Parameter	Potential Impacts	Mitigation Measure	Implemented by	Monitoring Location	Monitoring Frequency	Performance Monitoring Indicators	Monitored by		
								PMU-KITE-DoT	DoAM	MEC (Third Party)
		tension between local communities and workers residing in the construction camps.	of construction wastes and the training of employees who handle waste; •Site for construction camp will be selected to minimize the removal of existing macro-plants at camp sites and at least 500 m away from the settlements; •Compensatory plantation to be done when construction work near ends; and •Ensure rehabilitation of site upon completion. *(For detail section 7.7.13 shall be followed)*							
18.	**Wastewater Generation at Construction Camps**	Generated wastewater is not properly treated or disposed of, this may contaminate the surface water sources such as nullahs, drains, water channels, river etc. apart from soil contamination.	•Domestic and chemical effluents from the construction camp will be disposed by the development of on-site sanitation systems i.e. septic tanks (if required / as per advise of Environmental Specialist); •Proper monitoring to check the compliance of NEQS will be carried out (as per advise of Environmental Specialist); and •Site-specific wastewater management plan along with details of wastewater collection, transportation and its disposal may be prepared and implemented (if required / as per advise of Environmental Specialist). *(For detail section 7.7.14 shall be followed)*	Contractor	Subproject Area	Quarterly	• Visual observation • Regular environmental monitoring, sampling and testing reports (as advised by Environmental Specialist)Waste Management plan implementation	√	√	√
19.	**Solid Waste Generation**	The municipal waste will be in the form of food, cans, paper and wastewater from construction camps toilets and washing yards. Construction waste will include excavated soil, pieces of concrete, bricks, stone, lime mortar etc. Whereas, hazardous waste can be comprised of paints and construction chemicals. All these, if left unattended, can become a source of nuisance and environmental pollution in the subproject area. Insecure and unhygienic disposal of the solid wastes particularly garbage and trash may cause degradation of soil and land, choking of drains etc.	•Solid Waste generated during construction and camp sites will be safely disposed in demarcated waste disposal sites and provide a proper waste management plan; •Training of work force in the storage and handling of hazardous materials and chemicals Construction workers and Supervisory staff should be encouraged and educated to practice waste minimization, reuse to reduce quantity of the waste; •Emergency Response plan shall be prepared to address the accidental spillage of fuels and hazardous goods; •Immediate collection of spilled oils/fuels/lubricants by collection of contaminated soils and skipping oils from surface water by applying appropriate technologies; •Used oil shall be collected in separate containers stored on impervious platform with restricted access and shall be sold to licensed contractor and the burning of waste oil shall be strictly restricted; and •Construction waste such as cement, bricks, stone, lime mortar and plaster can be crushed and reused in other sites, where applicable. (For detail section 7.7.15 shall be followed)	Contractor	Subproject Area	Quarterly	• Visual checks and photographic record. • Waste Management plan implementation	√	√	√
20.	**Natural and Man-Made Disasters**	Natural disasters (earthquakes) and accidents such as fire, falls, slips and trips may result in injuries, financial losses and may even lead to deaths. The workers	•Emergency prevention, preparedness and response arrangements for earthquakes and manmade disasters may be developed in coordination with DoAM, PMU-KITE-DoT and other relevant departments (where applicable / as per advise of Environmental Specialist);	Contractor	Subproject Area	Monthly	• Implementation of Emergency response plan.	√	√	√

Sr. No.	Parameter	Potential Impacts	Mitigation Measure	Implemented by	Monitoring Location	Monitoring Frequency	Performance Monitoring Indicators	Monitored by		
								PMU-KITE-DoT	DoAM	MEC (Third Party)
		shall be trained and facilitated to cope with such disasters.	•Site Specific Health and Safety Plan based chosen methodology must be prepared and implemented; •Ensure Training of workers; •Documentation and reporting of occupational accidents, diseases and incidents; •Provision of supply of PPEs will also be mandatory for all staffs and visitors; and •Ensure the measures for fire prevention and firefighting. *(For detail section 7.7.16 shall be followed)*							
21.	**Ecology**	The proposed subprojects interventions will be undertaken in the area where presence of floral and faunal diversity is limited. Subprojects construction activities might create disturbance to the flora and fauna of the subprojects areas due to machinery movements. No major impact is anticipated. Moreover, the extent of the project activities is low in terms of physical intervention. The conservation, preservation, restoration and civil works activities will not involve any tree removal. However, minor land clearance activities shall be involved for clearing the land of bushes and small plants.	•250 plants (as per advise of Environmental Specialist) shall be planted for each subproject site, which will play in rehabilitation and enhancement of local environment, creation of habitat for local wildlife and will also add part in the aesthetics of the area. *(For detail section 7.7.17 shall be followed)*	Contractor	Subproject Area	Quarterly	• Visual checks • Regular monitoring, audit and checks • Departmental consultation record	√	√	√
22.	**Disturbance to Wildlife**	The proposed subprojects interventions may increase number of the worker's activity, machinery movements and can impact animal movements by direct mortality or avoidance behavior.	•Hunting, poaching and harassing of wild animals shall be strictly prohibited, and required to instruct and supervise its labor force accordingly and clear orders should be given in this regard; •Safe speed limit will be strictly implemented during construction activities; •Awareness material regarding wildlife will be developed and displayed prominently at the sites; and •Noise produced by construction and other activities may be kept to acceptable level/kept minimum as per NEQS and IFC/WHO guidelines whichever is stringent (as advise by the Environmental Specialist). *(For detail section 7.7.18 shall be followed)*	Contractor	Subproject Area	Quarterly	• Visual checks • Regular monitoring, audit and checks • Departmental consultation record	√	√	√
POTENTIAL ENVIRONMENTAL IMPACTS DURING OPERATIONAL PHASE										
23.	**Site Management**	Signs and associated features of this type which are of unsympathetic design may constitute a visual intrusion, resulting in	•Signs and associated features shall be properly design from experienced team; and	Department of Archaeology & Museum	Subproject Area	Biannually	• Monitoring of plant maintenance activities records	NA	√	NA

Sr. No.	Parameter	Potential Impacts	Mitigation Measure	Implemented by	Monitoring Location	Monitoring Frequency	Performance Monitoring Indicators	Monitored by		
								PMU-KITE-DoT	DoAM	MEC (Third Party)
		negative aesthetic impacts and diminishing the scenic and photographic value of the site.	•Placement of signs and associated features shall be ensured properly keeping in view the historic value of PRCs. (For detail section 7.8.1 shall be followed)							
24.	**Air Quality**	Major sources of air emissions and dust pollution at all the PCRs sites will be visiting vehicular traffic especially during the peak seasons and generators (if installed). This may lead to rise in vehicular emissions (CO, NOx, SOx, PM_{10}) which may result in causing public nuisance and other impacts on the PCRs, environment and human.	•Location of generators (if installed) at sites should be carefully selected; •Gas generators (if possible) should be preferred for low emissions; •Solar panels (renewable energy source) for running generators, as it will save the energy; •Ensure proposer parking system at each site; •Provision of budget for regular monitoring of ambient air quality in accordance with NEQS and IFC/WHO guidelines whichever is stringent (as advise by Environmental Specialist). *(For detail section 7.8.2 shall be followed)*	Department of Archaeology & Museum	Subproject Area	Biannually	• Visual checks • Regular environmental monitoring, sampling and testing reports (if required).	NA	√	NA
25.	**Noise**	The operation of generators and movement of vehicles (locals, staff and visitor vehicles during peak season) on access roads to PCRs sites may create noise and vibration issues.	•Horn should be prohibited in and around the all the PCRs sites; •Trees should be planted along the boundary of subprojects as a noise barrier; and •Traffic signs/rules should be installed /placed in and around the PCRs sites regarding parking of vehicles and honking of horns. *(For detail section 7.8.3. shall be followed)*	Department of Archaeology & Museum	Subproject Area	Biannually	• Physical checks. • Regular environmental monitoring, sampling and testing reports (if required).	NA	√	NA
26.	**Solid Waste Generation**	Municipal waste including tissue papers, packaging papers, papers and bottles etc. will be generated during operation phase especially during the peak seasons. Improper storage and dumping of waste may pollute soil, sewerage pipes and water bodies. It may also affect the aesthetics and can cause health problems to the staff and workers handling waste.	•Waste collection bins should be provided within the and around the PCRs sites at suitable locations for collection of daily generated municipal waste; •Waste bins should be emptied by sanitary workers on daily basis; •Recyclable wastes such as newspaper, cardboard, plastics, glass and metals could be separated for individual collection; •Installation of sign boards with instructions for the visitors; •Waste should be transferred to the properly covered purpose-built vehicle (truck / pick-up van) and then be carried out of the sites to nearby municipal disposal points; and •Waste management plan should be prepared for onsite storage, collection and disposal of waste. *(For detail section 7.8.4 shall be followed)*	Department of Archaeology & Museum	Subproject Area	Biannually	• Visual checks and photographic record.	NA	√	NA
27.	**HSE Considerations**	Operation and maintenance of the PCRs sites may cause health and safety risks to staff (electrical and mechanical staff, solid waste management staff and maintenance staff), that may include injuries due to electric shocks, slipping and falling, poor handling and storage of	•Operation and maintenance of machinery, equipment, conservation, preservation, restoration and allied civil works etc. shall be controlled and handled by efficient management, staff training, and other preventive measures; •Proper storage and handling of generator fuel, chemicals and solvents;	Department of Archaeology & Museum	Subproject Area	Biannually	• Implementation of HSE procedures • Use of PPEs	NA	√	NA

Sr. No.	Parameter	Potential Impacts	Mitigation Measure	Implemented by	Monitoring Location	Monitoring Frequency	Performance Monitoring Indicators	Monitored by		
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		hazardous substances etc.	•Ensure emergency prevention, preparedness and response arrangements; •Emergency numbers should be clearly posted and communicated to the staff; •Fire extinguishing equipment should be installed at sites; •Provision of PPE's to the skilled and unskilled labors including masks, gloves, safety jackets and ear muffs; •Proper training should be given to workers on health and safety measures; •Hazardous materials should be well labeled and stored in their original containers; • Ensure compliance with Pakistan Electric and telecommunication Safety Code-PETSAC-2014 and other relevant measures; and •COVID-19 SOPs must be fully adopted in accordance with updated / latest the WHO and GoP guidelines (Annex-IX). *(For detail section 7.8.5 shall be followed)*				• Community concerns record • Medical reports of worker			
28.	**Soil Erosion and Contamination**	Excavations required for maintenance would cause impacts similar to those from construction phase, but at a lesser spatial and temporal extent. The accidental spill of product such as accidental fuel and material spills would likely cause soil contamination. Except in the case of a large spill, soil contamination would be localized and limited in extent and magnitude.	•The top soil that will be excavated from the area will be preserved and reused for the horticulture purpose; and •Ensure proper implementation of solid waste management program. *(For detail section 7.8.6 shall be followed)*	Department of Archaeology & Museum	Sub Project Area	Biannually	• Visual checks and photographic record • Site restoration and rehabilitation.	NA	√	NA
29.	**Ecology**	No impact is anticipated during operational phase of the project both on flora and fauna. However, the maintenance of the saplings/new plants must be monitored efficiently (as per advise of Environmental Specialist). *(For detail section 7.8.7 shall be followed)*		Department of Archaeology & Museum	Subproject Area	Biannually	• Visual checks • Regular monitoring, audits and check reports.	NA	√	NA
POTENTIAL SOCIAL IMPACTS DURING PRE-CONSTRUCTION DURING DESIGN PHASE										
30.	**Land Acquisition, Resettlement and Compensation**	Proposed subprojects interventions will require land which will result in loss of land. For the proposed subprojects at three (03) sites (Bhamala Stupa, Hund Museum and Shapula Stupa), a total of 58.2 kanals of land will be acquired.	Land will be acquire as per Wolrd Bank OP 4.12 and Land Acquisition Act, 1894 including later amendments for acquisition and compensation strategies. *(For detail section 7.10.1 shall be followed)*	Department of Archaeology & Museum	Subproject Area	Monthly (Before start of construction)	▪ Compensation and land acquisition records ▪ Implementation record of ARAP	NA	✓	NA

Sr. No.	Parameter	Potential Impacts	Mitigation Measure	Implemented by	Monitoring Location	Monitoring Frequency	Performance Monitoring Indicators	Monitored by		
								PMU-KITE-DoT	DoAM	MEC (Third Party)
31.	**Temporary Acquisition of Land**	Temporary land acquisition for the development of Contractor camps (if required) and facilities i.e. storage of materials, workshops, equipment parking and washing areas etc. Land utilization for subprojects activities and subsequent operation may induce temporary as well as permanent changes in the existing landuse pattern.	▪Land for above mentioned facilities will be directly rented from the private landowners or Government[35] by the Contractor(s); ▪Rental terms should be negotiated to the satisfaction of the concerned landowners and in local language; ▪Located at a minimum distance of 500 meter from the existing settlements, built-up areas, PCRs / archaeological sites; and ▪Barren land i.e. areas not under agricultural should be used for setting up the contractor camps. *(For detail section 7.10.2 shall be followed)*	Contractor	Subproject Area	As and when required	▪ Rental terms and conditions	✓	✓	NA
32.	**Public Utilities**	Due to the proposed subprojects, telephone lines, electric poles and wires and water lines within the proposed subprojects location may require to be shifted. An electricity high tension (HT) pole inside the PCR shall need to remove at Bhamala Site.	•During the design phase, maximum effort will be made to avoid the public utilities, and if these are unavoidable than these will be relocated timely through the concerned department to avoid any public inconvenience. *(For detail section 7.10.3 shall be followed)*	Design Consultant	Subproject Area	Monthly	▪ Confirmation of design incorporation. ▪ Audits and Checks	✓	✓	NA
33.	**Community Health and Safety**	Vehicular movement at construction sites may result in roadside accidents. Quality of groundwater and surface water resources available in the nearby local communities may be affected. The proposed subprojects will also have potential of air (dust pollution), noise and vibrational impacts on nearby community. The labour works with different transmittable diseases may cause spread out of those diseases in the local residents. Conflicts may arise between the local community and the construction workers, which may be related to religious, cultural or ethnic differences, or based on competition for local resources.	▪Strictly follow WBGEHSG (refer Annex-III) and prepare the site specific community health and safety plan in compliance with relevant sections of the WBG General Environmental Health and Safety Guidelines (WBG EHS Guidelines 2007) and Pakistan Labor Laws; ▪Barricade work areas to prevent access by the public ▪Ensure medical training to specified work staff and basic medical service and supplies to workers; ▪Ensure proper control on construction activities and oil spillage leakage of vehicles; ▪Efforts will be made to create awareness about road safety among the drivers operating construction vehicles; ▪Close consultation with local communities to identify optimal solutions for diversions to maintain community integrity and social links; ▪Seeking cooperation with local educational facilities (school teachers)/religious at each village along the route for road safety campaigns; ▪Provision of proper safety and diversion signage, particularly at urban areas and at sensitive/accident-prone spots; ▪Setting up speed limits in close consultation with the local stakeholders; ▪Ensure the mitigation measures provided for air and noise shall be adopted;	Contractor	Subproject Area	Monthly	▪ Implementation of HSE Plan ▪ Use of PPEs ▪ Community concerns record ▪ Medical reports of worker	✓	✓	✓

[35] *If the Construction Camp established at Government land.*

Sr. No.	Parameter	Potential Impacts	Mitigation Measure	Implemented by	Monitoring Location	Monitoring Frequency	Performance Monitoring Indicators	Monitored by		
								PMU-KITE-DoT	DoAM	MEC (Third Party)
			▪Construction Camp Management Plan (CCMP) and effective implementation of GRM may reduce this impact; ▪Communicable disease will be prevented by successful initiative typically involving health awareness; education initiatives; training heath workers in disease treatment; immunization program and providing health service; ▪Updated / latest guidelines by WHO / GoP may be observed to combat with COVID-19 (Annex-IX); ▪Reducing the impacts of vector borne diseases ▪Ensure preparation and implementation of construction camp management plan (where applicable) and ▪Observe sanctity of local customs and traditions by his staff. ▪*(For detail section 7.11.1 shall be followed)*						
34.	**Occupational Health and Safety**	Eye injury can be caused by stone or metal particles. Hazard of being hit by falling objects, major hand-arm and whole body vibration hazards, skin and respiratory tract irritation from exposure to cement dust, overexertion and awkward postures etc. will be another impact. Welding (if required) hazards include electric shock, fumes and gases, fire and explosions, falls from height, eye and head injuries etc. Other impacts will be contact with heavy electrical and mechanical equipment, equipment failure, uncontrolled movement, unguarded moving mechanical equipment parts, fatigue, unbalanced load, falling objects, hand injury, slip and trip hazards, wind / storm activity, injury from releasing load too soon etc. Operating mechanical and electrical equipment will trigger the H&S issues e.g. struck by moving vehicles or other equipment, slips or trips, struck by flying objects, such as dirt or splashed fluids, caught in pinch points, shear points, crush points, falling from machine etc.	▪Strictly follow WBGEHSG (refer Annex-III) and prepare the site specific community health and safety plan in compliance with relevant sections of the WBGEHSG; ▪Ensure medical training to specified work staff and basic medical service and supplies to workers; ▪Complying with International Labour Organization (ILO) Convention No. 62; ▪Training of workers in construction safety procedures, environmental awareness, equipping all construction workers with safety boots, helmets, gloves and protective masks, goggles, shields and monitoring their proper and sustained usage; ▪Ensure proper planning for food storage, setting up of kitchens, production of sewage and waste water may result in multiplication of rodents like rats, mice and shrew etc. and vectors like mosquitoes, bugs and flies which will have a negative impact; and ▪Ensure the provision of emergency prevention, preparedness and response arrangements. *(For detail section 7.11.2 shall be followed)*	Contractor	Subproject Area	Monthly	▪ Implementation of HSE Plan ▪ Use of PPEs ▪ Training Records ▪ Work permits ▪ Implementation of Emergency response plan ▪ Accident/Incident reported.	✓	√	✓

Sr. No.	Parameter	Potential Impacts	Mitigation Measure	Implemented by	Monitoring Location	Monitoring Frequency	Performance Monitoring Indicators	Monitored by		
								PMU-KITE-DoT	DoAM	MEC (Third Party)
35.	**Coronavirus Disease (COVID-19)**	Coronavirus disease (COVID-19) may be introduced due to the immigration of workers associated with the proposed subprojects.	•Ensure complete sanitization of workers at the sites as per updated / latest SOPs/guidelines issued by WHO and the national guidelines issued by the GoP[36] (refer Annex- IXI); •Ensure wearing of mask and gloves; •Ensure social distancing measures; •Ensure COVID awareness sign boards must be installed at the work site(s); •Ensure prohibition of entry for local community/any unauthorized persons at work sites; •Ensure proper hygiene practices in the toilets and washrooms will be implemented with proper and adequate use of soaps and disinfectant spray; •Observe sneezing and coughing etiquettes; •Ensure the lunch breaks and stretch breaks of the workers must be staggered to avoid the clustering of workers; •Sick worker should immediately inform the focal person and get medical advice from nearby health center; and •Ensure the vaccination of all working staff. *(For detail section 7.11.3 shall be followed)*	Contractor	Subproject Area	Monthly	▪ Implementation of SoPs/ Guidelines ▪ Use of PPEs ▪ Training Records	✓	✓	✓
36.	**Labor Influx**	Workforce from other regions which may result in conflicts between locals and non-locals concerning employment opportunities, wages and natural resources. Mobile workers can also contribute significantly to gender-based social impacts and risks. Other Issues related to labour influx includes Risk of social conflict, Increased risk of illicit behavior and crime, communicable diseases and burden on local health services, etc.	▪Preference should be given to locals for employment; ▪ Ensure preparation and implementation of construction camp management plan; ▪Ensure specific timings for the construction activities particularly near the settlements; ▪Updated/latest SoPs related to the construction industry to control spreading of COVID-19, should be implemented and should be strictly monitored (refer Annex-IX); and ▪Ensure that the construction activities should not affect the privacy of nearby households; *(For detail section 7.11.5 shall be followed)*	Contractor	Subproject Area	Monthly	Record register of all the issues and rational expectations desired by the local public;	✓	✓	✓
37.	**Gender Issues**	The induction of outside labor may create social and gender issues due to the labor force being unaware of local customs and norms.	▪Nominate person to address the specific risks; ▪Bidding documents will include specific requirements that minimize the use of expatriate workers and encourage hiring of local workers, thereby minimizing labor influx; ▪Ensure establishment of anti-sexual harassment policies that governs conduct in the workplace; and ▪Provision of mandatory and repeated training to workers on sexual exploitation and abuse and HIV/AIDS prevention and on the content and obligations derived from the code of conduct. *(For detail section 7.11.5 shall be followed)*	Contractor	Subproject Area	Monthly	▪ Grievance redress record Minutes of meetings of community/ gender consultation	✓	✓	✓

[36] https://covid.gov.pk/guideline

Sr. No.	Parameter	Potential Impacts	Mitigation Measure	Implemented by	Monitoring Location	Monitoring Frequency	Performance Monitoring Indicators	Monitored by		
								PMU-KITE-DoT	DoAM	MEC (Third Party)
POTENTIAL SOCIAL IMPACTS DURING OPERATION AND MAINTENANCE PHASE										
38.	**Traffic Issues during Peak Seasons**	The subprojects are envisaged to increase the tourist influx, therefore, the parking issues shall be aggravated after the implementation of the subprojects.	•Ensure provision of adequate parking facilities at cheap rates; and •Indulge traffic police in traffic management plan and allocation of parking facilities. *(For detail section 7.12.1 shall be followed)*	Department of Archaeology & Museum	Subproject Area	Biannually	• Implementation of traffic management plan by the local traffic police • Visual observations	NA	✓	NA

8.6 MONITORING PLAN

Monitoring Plan is also associated with mitigation plan during the different phases of the subprojects. It ensures that mitigation measures are being effectively implemented. The monitoring of the subproject is very imperative for implementation of the PCRMP. The ESSU-PMU-KITE-DoT will carry out the monitoring at the field level on a continuous basis while MEC will also carry out intermittent third-party monitoring of PCRMP implementation.

8.6.1 Monitoring Mechanism

Safeguard monitoring is an essential tool for assessing whether the adopted environmental and social management measures are meeting their stated objectives. Two complementary methodology approaches are being applied to monitor the proposed actions under the PCRMP:

- Compliance monitoring; which checks whether the actions proposed by the PCRMP have been carried out by visual observation, photographic documentation and the use of checklists prepared for the PCRMP; and
- Effects monitoring; which records the consequences of program activities on the biophysical and social environment; as applicable, these effects are repeatedly measured by applying selected indicators.

The plan also defines the monitoring mechanism and identifies a set of verifiable monitoring parameters to ensure that all proposed mitigation measures laid down in the PCRMP are completely and effectively implemented.

Monitoring will be carried out to ensure that the mitigation plans are regularly and effectively implemented. It will be performed at three levels. At the PMU level, the ESSU will do PCRMP monitoring to ensure that the mitigation plans are being effectively implemented. The ESSU-PMU-KITE-DoT will regularly monitor the PCRMP implementation by the contractor. At Contractor's level, the environmental monitoring checklist will be filled on daily basis by their environmental expert and countersigned by the representative of ESSU PMU-KITE-DoT.

8.6.2 Monitoring Plan

Proposed monitoring plan to be carried out during pre-construction, construction and operation phases of the project to establish the baseline condition and ensure Contractor(s) compliance with the mitigation measures and evaluation of the subprojects impact on post-completion is given in Table 8.3 along with the monitoring indicators and frequency. A template form for PCRs, environment and social monitoring is provided as Annex-X.

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Table 8-3: Environmental Monitoring Plan

Sr. No.	Receptor	Monitoring Parameters / Performance Indicator	Locations	Monitoring Mechanism	Monitoring and Reporting Frequency	Responsibility
1	Accidental Damages of PCRs and Chance Finds	Ground disturbances (e.g., levelling ground, demolition, excavating etc.), movements of construction machinery, removal of artefacts, Management PCRs remains. Compliance with mitigation measures provided in PCRMP	i. Bhamala Stupa ii. Hund Museum iii. Mardan Museum iv. Shapula Stupa v. Pishmal Mosque vi. Main Kalam Mosque	Visual observations and checks.	Daily	Construction Contractor
2	Water Resources/ Water Quality (as advised by Environmental Specialist)	Compliance with all parameters as per NEQS/ WHO Guidelines /FAO applicable standards.	i. Bhamala Stupa ii. Hund Museum iii. Mardan Museum iv. Shapula Stupa v. Pishmal Mosque vi. Main Kalam Mosque – Sampling from nearby water bodies. – One (01) Surface / Wastewater sample for each site. – One (01) Drinking / Groundwater sample for each site.	Visual checks Discrete grab sampling and laboratory testing of water samples by EPA approved Laboratory for monitoring.	• Once before the start of construction by activity monitors and reported. • On quarterly basis during the construction. • One sampling testing and reporting should also be mandatory at the end of construction. • Bi-annually for at least one year during O&M.	• Construction Contractor • Construction Contractor • Construction Contractor • Proponent

Sr. No.	Receptor	Monitoring Parameters / Performance Indicator	Locations	Monitoring Mechanism	Monitoring and Reporting Frequency	Responsibility
3	Air Quality (as advised by Environmental Specialist)	Monitoring of CO, CO_2, SOx, NO_x, HC and $PM_{2.5}$ PM_{10} and compliance with NEQS and IFC/WHO guidelines (whichever is stringent). Vehicular emissions as per NEQS and IFC/WHO guidelines (whichever is stringent).	i. Bhamala Stupa ii. Hund Museum iii. Mardan Museum iv. Shapula Stupa v. Pishmal Mosque vi. Main Kalam Mosque – Within the subproject area. One (01) point for each site.	Visual checks of laboratory activities Onsite Ambient Air Monitoring equipment	• Once before the start of construction by activity monitors and reported. • On quarterly basis during the construction. • One sampling testing and reporting should also be mandatory at the end of construction. • Bi-annually for at least one year during O&M.	• Construction Contractor • Construction Contractor • Construction Contractor • Proponent
3	Noise Pollution (as advised by Environmental Specialist)	Compliance with dBA Leq. as per NEQS and WHO guidelines (whichever is stringent).	i. Bhamala Stupa ii. Hund Museum iii. Mardan Museum iv. Shapula Stupa v. Pishmal Mosque vi. Main Kalam Mosque – Within the subproject area. One (01) point for each site.	Visual checks of laboratory activities Monitoring of noise level at site.	• Once before the start of construction by activity monitors and reported. • On quarterly basis during the construction. • One sampling testing and reporting should also be mandatory at the end of construction.	• Construction Contractor • Construction Contractor • Construction Contractor • Proponent

Sr. No.	Receptor	Monitoring Parameters / Performance Indicator	Locations	Monitoring Mechanism	Monitoring and Reporting Frequency	Responsibility
					• Bi-annually for at least one year during O&M.	
4	Soil Contamination	Soil contamination, uncontrolled solid waste / wastewater disposal activities at sites.	i. Bhamala Stupa ii. Hund Museum iii. Mardan Museum iv. Shapula Stupa v. Pishmal Mosque vi. Main Kalam Mosque – Sites with severe contamination. Other proposed sites are: – Construction Camp. – Equipment washing yards. – Spillage points of fuel, chemicals and lubricants.	Visual observations and checks.	• Once before the start of construction by activity monitors and reported. • On quarterly basis during the construction. • One reporting should also be mandatory at the end of construction.	• Construction Contractor • Construction Contractor • Construction Contractor
5	Land Resources	Landuse change	i. Bhamala Stupa ii. Hund Museum iii. Mardan Museum iv. Shapula Stupa v. Pishmal Mosque vi. Main Kalam Mosque – Sites with severe contamination.	Random visits and visual observations of landuse change.	• Once before the start of construction by activity monitors and reported. • On quarterly basis during the construction. • One reporting should also be	• Construction Contractor • Construction Contractor • Construction Contractor

Sr. No.	Receptor	Monitoring Parameters / Performance Indicator	Locations	Monitoring Mechanism	Monitoring and Reporting Frequency	Responsibility
			Other proposed sites are: – Construction Camp. – Equipment washing yards. – Spillage points of fuel, chemicals and lubricants.		mandatory at the end of construction.	
6	Ecological Resources	Disturbance wood trees, medicinal plants, resources of NTFP, bushes and small plants, animals and birds hunting.	i. Bhamala Stupa ii. Hund Museum iii. Mardan Museum iv. Shapula Stupa v. Pishmal Mosque vi. Main Kalam Mosque Natural habitats around the subproject areas	Visual checks to ensure no damages to trees, bushes and small plants. Monitoring of Wildlife / birds hunting.	• Once before the start of construction by activity monitors and reported. • On quarterly basis during the construction. • One reporting should also be mandatory at the end of construction.	• Construction Contractor • Construction Contractor • Construction Contractor
7	Public Infrastructure	Disturbance or damage to public infrastructure (telephone lines, electric poles and wires, water lines, electricity high tension pole).	i. Bhamala Stupa ii. Hund Museum iii. Mardan Museum iv. Shapula Stupa v. Pishmal Mosque vi. Main Kalam Mosque Public infrastructures within the subproject	Random visits and consultations with AP's.	• Prior to the start of construction. • Reporting will be done on the basis of recommendation.	Construction Contractor

Sr. No.	Receptor	Monitoring Parameters / Performance Indicator	Locations	Monitoring Mechanism	Monitoring and Reporting Frequency	Responsibility
			area. These structures may require to be shifted prior to the start of construction.			
8	Community around the Subproject Areas	Use of common resources. Hindrance to mobility. Community health and safety.	Communities within the AoI.	Community consultations.	• Prior to the start of construction and during the construction phase. • Reporting will be done on the basis of recommendation.	Construction Contractor
9	Labour Management and Influx	Child labour, employment conditions, workers' accommodation, Housekeeping, HIV/STDs, COVID 19 etc.	i. Bhamala Stupa ii. Hund Museum iii. Mardan Museum iv. Shapula Stupa v. Pishmal Mosque vi. Main Kalam Mosque	Consultations and medical check ups	Daily	Construction Contractor
10	Grievances Redressal	Type and number of grievances.	i. Bhamala Stupa ii. Hund Museum iii. Mardan Museum iv. Shapula Stupa v. Pishmal Mosque vi. Main Kalam Mosque	Complaint register	Daily	Construction Contractor
11	Community/Occupational health & safety	Type and number of accidents.	i. Bhamala Stupa ii. Hund Museum iii. Mardan Museum iv. Shapula Stupa v. Pishmal Mosque	Consultations and complaint register	Daily	Construction Contractor

Sr. No.	Receptor	Monitoring Parameters / Performance Indicator	Locations	Monitoring Mechanism	Monitoring and Reporting Frequency	Responsibility
			vi. Main Kalam Mosque			
12	Covid-19 SoPs	Vaccination Certificate. PCR test, PPEs	i. Bhamala Stupa ii. Hund Museum iii. Mardan Museum iv. Shapula Stupa v. Pishmal Mosque vi. Main Kalam Mosque	Visual observations, Consultations and medical check ups	Daily	Construction Contractor
13	Gender Based Violence	Number of incidents of women harassment	i. Bhamala Stupa ii. Hund Museum iii. Mardan Museum iv. Shapula Stupa v. Pishmal Mosque vi. Main Kalam Mosque	Community consultations	Daily	Construction Contractor
14	Trainings	Training records, training contents	i. Bhamala Stupa ii. Hund Museum iii. Mardan Museum iv. Shapula Stupa v. Pishmal Mosque vi. Main Kalam Mosque	Audits, checks and evaluation reports	Biannually	Construction Contractor

8.7 TREE PLANTATION[37]

The basic purpose of afforestation/plantation of suitable species in the subproject area is to reduce the risk been made due to cutting of trees for the proposed subprojects and to enhance green cover and improve the overall environment of the area. Afforestation will not only reduce the risk been made but will also increase the carrying capacity of the area regarding many positive aspects.

Trees recommended for planting are 250 for each PCR site. The tentative cost for the plantation / site is about Rs. 483,000/- and total cost estimated cost for all the PCRs sites is Rs. 3,381,000/-. Detailed Tree Plantation Plan is attached as Annex-VIII.

8.8 CHANGE MANAGEMENT PLAN

The present PCRMP has been carried out on the basis of the Project information available at this stage. It is however possible that the changes are made in some components of the Project during the design and construction phases. In order to address the environmental and social implications of these changes, a simple framework has been devised, which is described in this section. The change management framework recognizes the three broad categories (A, B & C) of the changes in the Project as detailed below:

8.8.1 Category 'A' Change

The 'Category A' change is one that will lead to a significant departure from the subproject described in the PCRMP and consequently requires a reassessment of the environmental and socioeconomic impacts associated with the change. In such an instance, Client will be required to conduct a fresh PCRMP of the changed aspect of the subproject design and send the updated report to the relevant agencies for approval.

8.8.2 Category 'B' Change

The category 'B' change is one that will entail Project activities not significantly different from those described in the PCRMP, which may result in the Project effects with overall magnitude to be similar to the assessment made in this report. In case of such changes, the PCRMP will be required to reassess the environmental and socio-economic impacts of the activity, specify additional mitigation measures, if necessary and report the changes to the relevant agencies.

8.8.3 Category 'C' Change

A Category-C change is one that is of little consequence to the PCRMP findings such as change in alignment. This type of change does not result in effects beyond those already assessed in the PCRMP rather it may be made onsite to minimize the impact of an activity,

[37] *As per Advise of Department of Tourism, either required or not.*

such as re-aligning a particular section to avoid cutting a tree or relocating construction campsites to minimize clearing vegetation. The only actions required for such changes are informing all the key personnel and document the change.

8.9 CAPACITY BUILDING/STRENGTHENING

The PCRs management, environmental and social trainings will help to ensure that the requirements of the PCRMP are clearly understood and followed by all subprojects personnel. The primary responsibility of providing these trainings to all subprojects personnel will be that of the contractor and PMU-KITE-DoT. The trainings will be provided to different professional groups separately such as managers, skilled personnel, unskilled labors, and camp staff. Capacity building will be aimed at strengthening the PMU-KITE-DoT, and operational staff in the field of environmental management and social development. Members of the ESSU PMU-KITE-DoT responsible for supervision of environmental and social mitigation measures would be trained in environmental management, environmental quality control, ecology, environmental awareness, participatory approach and social development. The contractor will also be required to provide environmental and social trainings to its staff, to ensure effective implementation of the PCRMP. The training plan shall include a program for the delivery of intermittent training, to cover the subjects included in Table 8.4.

Table 8-4 : Training Subjects for Inclusion in Contractors Training Plan

Training Activity	Participants	Type of Training	Content	Scheduling
Construction Phase (01 years)				
World Bank Safeguard policies World Bank PCR Safeguard Policy, guidebook and Khyber Pakhtunkhwa Antiquities Act, 2016 / Procedures defined in PCRMP WB ESHGS EPA Regulation	Contractor and Supervision Consultant Staff	Presentation	• Awareness on WB operational policies and best practices on environment and social issue • Defining PCRs and Chance Finds, local sensitivity to damage to PCRs, sensitivity of cultural heritage sites to looting and legal penalties for looting or the destruction of cultural heritage sites, Chance Finds reporting procedures; and consultation process with local and regulatory agencies. • Awareness and • Applicability of environmental practices • Awareness and applicability of Community/ occupational health and safety	Biannually

			• Awareness on EPA rules, guidelines, regulation and standards for satisfactory compliance	
Awareness workshop regarding Covid19 and other vector borne diseases Social Aspects Gender Aspects	Contractor and Supervision Consultant Staff	Presentation	Risk, Prevention and available treatment. Awareness about the social issues on site. Awareness on gender inequalities/GBV	Biannually
Pollution prevention practices	Contractor Staff	Lecture	Awareness and importance of Practices to be adopted for pollution preventions	Biannually
Emergency Response Driver safety	Contractor Staff	Workshop Presentation	Potential natural and other hazard/emergencies and dealing with emergency to minimize damage Risks, safe practices and responding to accidents	Biannually

8.10 AUDITS AND ANNUAL REVIEW OF PCRMP

External third party environmental audits will be held with an objective to review the effectiveness of environmental and social management of the subprojects. It is proposed that MEC carry out these audits on yearly basis and prepare audit reports. These audit reports would be used to re-examine the continued appropriateness of the PCRMP and to provide advice on any updates required.

8.11 GRIEVANCES REDRESS MECHANISM

The grievance redress mechanism will focus on the following during the implementation process:

- Record grievances, both written and oral, categorizing and prioritizing them, and providing solutions within an agreed timeframe;
- Discuss the grievances on a regular basis with relevant authorities and identify decisions/actions for issues that can be resolved at that level;
- Informing the PMU and PSC of any more serious issues;
- Reporting to the aggrieved parties about the developments regarding their grievances and the decisions;

- All expenses incurred in arranging grievance negotiations and meetings of Grievance Redress Committee (GRC) as well as logistics required, shall be arranged by the PMU-KITE-DoT being the executing agency; and
- All information about grievance procedures, grievance forms, and responses will be available in languages readily understandable to the locals.

8.11.1 Composition of GRC

The PMU DoT will develop a Grievance Redress Mechanism (GRM) at its PMU level. This GRC will be accessible to project affected persons and tourists. PMU DoT will notify the following Grievance Redress Committee (GRC) as per following:

- Project Director PMU DoT — Chairman
- Liaison & Coordination Officer PMU DoT/ E&S Specialist PMU — Member/ Secretary
- Co-opted Member/s of Relevant Government Departments (e.g., KDA, GDA, Revenue, Archaeology, etc.) (as required) needed to resolve Complaint
- Invited Members (e.g., Complainant, concerned local citizen, etc) needed to resolve Complaint.

8.11.2 Working Arrangements

GRC meeting will be held in the PMU or any other location agreed by the Committee. If needed GRC members may undertake field visits to verify and review the issues of dispute.

If the affected person is not satisfied with the decision of GRC at PMU DoT, then it can be referred to the Project Steering Committee for resolution. If the complainant does not accept these options or if he/she does but an agreement is not reached, the same will be stated in writing, and the case will be closed. The complainant may also seek redress through courts or other mechanisms available.

The PSC will be the highest forum within the project for redressing the grievances received from the beneficiaries, stakeholders and other concerned. Liaison & Coordination Officer PMU DoT / E&S Specialist will be designated as Secretaries to the GRC at their respective PMUs and will act as Focal Person/Complaint Handling Officers for GRC. The GRC, while handling a complaint may requisition any staff for assistance and/or may constitute a special committee if required. The GRC may also invite other relevant Government Departments or individuals as Co-opted Members or Special Invitees to assist in grievance resolution.

The Project Director, with prior approval of the World Bank, may replace a single member and/or the entire GRC.

8.11.3 Procedures for Filing the Complaints

There will be a 5-step process to resolve grievances, as follows:

When a grievance arises, the complainant (affected person/s or stakeholders) may directly contact the Project Management Unit (PMU) through either registering a complaint/s via

Complaint Register Book at the PMU offices, Tourist Facilitation Hub, respective sub-project site offices, or through filling the online grievance form available at website i.e. **www.kptourism.com**, or by calling the Tourism Helpline **1422**.

Flow chart of the proposed GRM is provided in Figure 8.2.

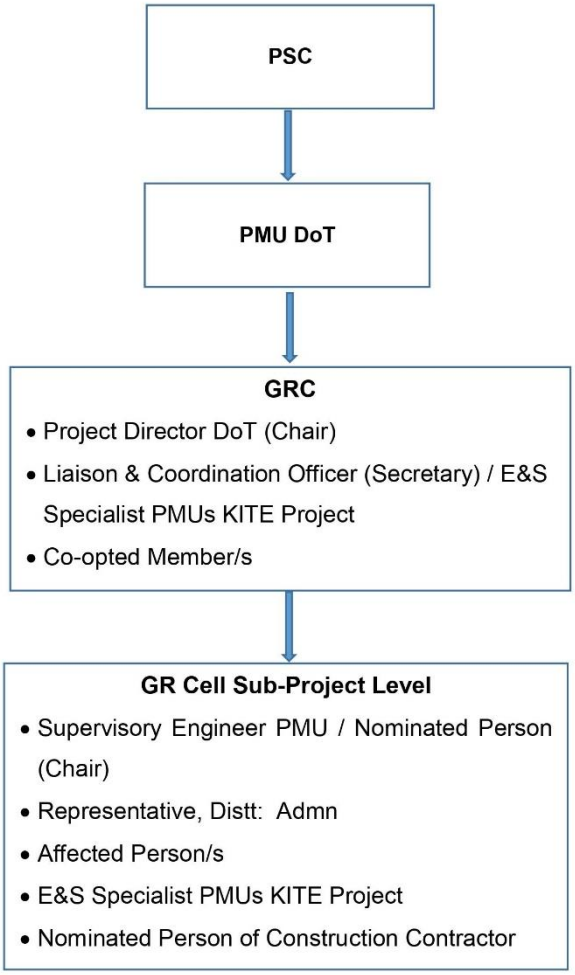

Figure 8-2: Flow Chart of the Proposed Grievances Redress Mechanism

8.12 REPORTING

The ESSU- PMU-KITE-DoT will prepare monthly reports covering various aspects of the PCRMP implementation including compliance and effects monitoring, capacity building, and grievance redressal during subprojects implementation. MEC will prepare reports during post-completion. List of reports to be prepared during implementation and operation phases are presented in Table 8.5.

Table 8-5: Reporting during Implementation and Operation Phases

Report	Contents	Prepared by	Submitted to
Monthly Progress Report for PCRMP Compliance	Non-Compliances observed on sites and actions required	Supervision Consultant and ESSU	PMU-KITE-DoT, Contractor
Monthly Progress Report for PCRMP Compliance	Actions taken on site in response to ESSU-PMU-KITE-DoT monthly report Project progress and works to be undertaken in the coming three months Details of training delivered Details of	Contractor	ESSU PMU-KITE-DoT
Quarterly Progress Report for PCRMP Compliance	Quarterly review on implementation of PCRMP including compliance and monitoring, capacity building, OHS related issues and grievance redressal	ESSU- PMU-KITE-DoT	PMU-KITE-DoT, World Bank, EPA – KP (if required/ as per advise of environmental specialist), Contractor
Annual Report for PCRMP Compliance	Results of effects monitoring Independent review of environmental and social performance on site Recommended actions required by all parties	MEC	Supervision Consultant

8.13 COST FOR IMPLEMENTATION OF PCRMP

8.13.1 Cost for Testing of Noise and Water Quality

Testing and analysis for noise and drinking / ground and surface water will be undertaken during pre- construction, construction and operational phases to ensure the effectiveness of the proposed mitigation measures. Certain environmental parameters will be selected and quantitative analysis will be carried out. The results of analysis will be compared with the

guidelines; standards and pre-project conditions to investigate whether the PCRMP and its implementation are effective for the mitigation of impacts or not. Parameters to be analyzed during pre- construction, construction and operation phase of the project and responsibilities for monitoring and reporting have been discussed in the Table 8.6.

Table 8-6: Environmental Monitoring and Testing Cost Estimate

Sr. No.	Parameter	Mechanism	Frequency	Unit Rate (PKR)	Quantity	Cost (PKRs)	Remarks
A	**Pre- Construction Phase**						
1	Surface Water / Wastewater (as advise by Environmental Specialist)	Discrete grab sampling and laboratory testing of water samples by EPA approved Laboratory for monitoring.	Once	20,000	06	120,000	One-time monitoring shall be carried out before the mobilization of Contractor for all the PCRs / archaeological sites, one (01) sample for each site.
2	Drinking Water (as advise by Environmental Specialist)	Discrete grab sampling and laboratory testing of water samples by EPA approved Laboratory for monitoring.	Once	20,000	06	120,000	
3	Noise Levels (as advise by Environmental Specialist)	dBA Leq. as per NEQS	Once	2,000	06	12,000	
	Total					**252,000**	
B	**Construction Phase (1 Years Cost)**						
1	Surface Water / Wastewater (as advise by Environmental Specialist)	Discrete grab sampling and laboratory testing of water samples by EPA approved Laboratory for monitoring.	Quarterly	20,000	06x04	480,000	Quarterly monitoring cost for the one-year construction period. One (01) sample for each site.

Sr. No.	Parameter	Mechanism	Frequency	Unit Rate (PKR)	Quantity	Cost (PKRs)	Remarks
2	Drinking Water (as advise by Environmental Specialist)	Discrete grab sampling and laboratory testing of water samples by EPA approved Laboratory for monitoring.	Quarterly	20,000	06x04	480,000	
3	Noise Levels (as advise by Environmental Specialist)	dBA Leq. as per NEQS	Quarterly	2,000	06x04	48,000	
Total						**1,008,000**	
C	**OPERATION & MAINTENANCE PHASE (One Year Cost)**						
1	Water Resources (Surface water / wastewater =01 sample and Drinking Water =01 sample)	Discrete grab sampling and laboratory testing of water samples by EPA approved Laboratory for monitoring.	Biannually	20,000	06x02	240,000	Biannually monitoring cost for the one year O&M Phase and will be reproduced for next years of O&M based on updated rates.
2	Noise Levels	dBA Leq. as per NEQS	Biannually	2,000	06x2	24,000	
Total						**264,000**	
Grand Total						**1,524,000**	

8.14 COST FOR TRAINING AND CAPACITY BUILDING/STRENGTHENING

In order to ensure that the PCRMP provisions are implemented efficiently and effectively, training and capacity building and strengthening are required for PMU staff, contractors' staff/workers. Therefore, based on the assessment of the institutional capacities that will be involved in the implementation of the PCRMP, the following broad areas of capacity building/strengthening have been identified. Table 8.7 shows the positions proposed for institutional strengthening for an effective implementation of environmental and social mitigation measures, whereas Table 8.8 shows various training.

Table 8-7: Cost for Institutional Strengthening

Institutional strengthening	Position	Scheduling (Months)	Cost Estimates Rs.	Remarks
Establishment of ESSU – PMU-KITE-DoT	Environmental and Social Safeguard Expert (E&SSE)	12	NA	Already hired
	Environmental Inspector / Nominated Person	12	80,000 x 12 = 960,000/-	
	Social Inspector / Nominated Person	12	80,000 x 12 = 960,000/-	
	Conservation Assist (Designated by Directorate of Archaeology & Museum)	12	NA	Designated persons from Directorate of Archaeology & Museum will be deputed.
Total			**1,920,000/-**	

Table 8-8: Institutional Training for Implementation

Training Activity	Participants	Type of Training	Content	Scheduling	Cost Estimates Rs.
Construction Phase (01 years)					
World Bank Safeguard policies World Bank PCR Safeguard Policy, Guidebook WB ESHGS EPA Regulation	Contractor and Supervision Consultant Staff	Presentation	• Awareness on WB operational policies and best practices on environment and social issue • Defining PCRs and Chance Finds, local sensitivity to damage to PCRs, sensitivity of cultural heritage sites to looting and legal penalties for looting or the destruction of cultural heritage sites, Chance Finds	Biannually	200,000/-

			reporting procedures; and consultation process with local and regulatory agencies. • Awareness and • Applicability of environmental practices • Awareness and applicability of Community/ occupational health and safety • Awareness on EPA rules, guidelines, regulation and standards for satisfactory compliance		
Awareness workshop regarding Covid19 and other vector borne diseases Social Aspects Gender Aspects	Contractor and Supervision Consultant Staff	Presentation	Risk, Prevention and available treatment. Awareness about the social issues on site. Awareness on gender inequalities/GBV	Biannually	200,000/-
Pollution prevention practices	Contractor Staff	Lecture	Awareness and importance of Practices to be adopted for pollution preventions	Biannually	200,000/-
Emergency Response Driver safety	Contractor Staff	Workshop Presentation	Potential natural and other hazard/emergencies and dealing with emergency to minimize damage Risks, safe practices and responding to accidents	Biannually	200,000/-
Total					**800,000/-**

8.15 COST FOR PERSONAL PROTECTIVE EQUIPMENT (PPE)

The cost required for PPEs for forty-five (45) staff including skilled and unskilled during the whole construction period of twenty-four (12) months is given in the Table 8.9.

Table 8-9: Break-up for Personal Protective Equipment Cost

Items	Quantity	Cost / Item (Rs.)	Total Cost (Rs.)
Dust masks - 20 box per site	140	500	70,000
Safety Shoes - 10 pair per Site	70	2000	140,000
Gloves - 50 pairs per site	350	1000	350,000
First Aid Box – 01 per site	7	5,000	35,000
Ear Plugs - 50 per site	350	50	17,500
Safety Helmets – 10 per site	70	1500	105,000
Sanitizers – 10 bottles per site	70	1,000	70,000
Reflective Tape	7	200	1,400
Safety Cones	100	700	70,000
Safety Boards	14	1,500	21,000
Total			**879,900**

Time required for Construction = 12 months

Estimated No. of labor required during construction = 45

The cost required to effectively implement the mitigation measures is important for the sustainability of the subprojects and is summarized as under:

Items	Unit	Cost
Personal Protective Equipment cost	Rs.	879,900
Environmental Monitoring and Testing Cost	Rs.	1,524,000
Tree Plantation Cost	Rs.	2,898,000[38]
Institutional Strengthening Cost	Rs.	1,920,000
Institutional Training Cost	Rs.	800,000
Hiring of Monitoring and Evaluation Consultant (MEC)	Rs.	3,000,000
Sub Total	**Rs.**	**11,021,900**
Contingencies @10%	**Rs.**	**1,102,190**
Total	**Rs.**	**12,124,090**

8.16 RECOMMENDATIONS

The key recommendations for the proposed subprojects are as follows:

- Conservation, preservation, restoration and civil works for PCRs structure should be in accordance with measures mentioned in PCRMP and this PCRMP should be part of the bidding document;
- Ensure the works are awarded to DoAM's approved/pre-qualified Contractors only and employing skilled labor with past experience of similar projects/conservation works;
- The Bidding documents shall clearly state that the Contractor will be responsible for the implementation of the requirements of the EMP through his own SSPCRMP, SSEMP and SSHSMP;
- The EMP and all its requirements should be then added to the Contractors Contract,

[38] *As per advise of Department of Tourism, either required or not.*

thereby making implementation of the EMP a legal requirement according to the Contract;

- To mitigate the adverse impacts related to PCRs, environmental and social aspects, mitigation measures mentioned in PCRMP should be followed;
- A separate ESMP for all the PCRs / archaeological sites should be prepared and followed;
- Stakeholder consultations should be carried out on as and when required basis;
- During the excavations process PCRs may expose, it should immediately be reported to designated person of Directorate of Archaeology and Museum, so that an investigation and evaluation of the finds can be made; and
- The Contractor will submit the monitoring reports (daily, weekly and monthly as per advise of ESSU).

9 REFERENCES

- Environmental Assessment Report-ARM: North South Road Corridor Investment Program https://www.adb.org/sites/default/files/project-document/74864/42145-043-arm-eia-0.pdf
- The World Bank-Physical Cultural Resources Safeguard Policy - Guidebook http://documents1.worldbank.org/curated/en/842681468339637585/pdf/713300WP00PUBL00Edition00March02009.pdf
- Heritage Impact Survey Report for the Proposed Mixed Use Development (Appendix G4: Cultural/Heritage Resources Report) https://www3.opic.gov/environment/eia/jabulani/Parcels%20A%20thru%20C/Appendiix%20G4%20-%20Cultural%20Hertitage%20Resources%20Report.pdf
- Cultural Heritage Management Plan-Rovuma LNG Project https://www3.opic.gov/Environment/EIA/rovuma/ESMP/MZLN%20EL%20RPPLN%2000%200007%20Rev%200%20Cultural%20Heritage%20Management%20Plan.pdf
- Environmental Impact Assessment for the Archaeological and Cultural Heritage Resources http://www.smec.com/application/files/6815/3620/7579/Apendice_G2_Final_Leonardo_baseline_impacts_management.pdf
- School of Civil Protection (Module Bl-4/C) - Protection of Cultural Heritage https://www.coe.int/t/dg4/majorhazards/ressources/pub/handbookfiles/4c.pdf
- Mitigation Measures and the Cultural Heritage Resource https://assets.gov.ie/119653/0495874c-3374-4c05-8ea7-6da6338c8c7a.pdf
- Anhui Yellow Mountain New Countryside Demonstration Project- Physical Cultural Resource Management Plan https://documents1.worldbank.org/curated/en/493771609126605741/pdf/China-Anhui-Yellow-Mountain-New-Countryside-Demonstration-Project.pdf
- Guidance Note 8 Cultural Heritage https://www.ifc.org/wps/wcm/connect/cce98f3d-f59e-488f-be59-6456c87d3366/Updated_GN8-2012.pdf?MOD=AJPERES&CVID=mRQk91V
- Environmental Impact Statement- PNG LNG Project https://pnglng.com/Environment/Environmental-Impact-Statement
- Water and Sanitation Institutional Support Project- Physical Cultural Resources & Management Plan http://documents1.worldbank.org/curated/en/348871468061726957/pdf/E24050v40P120510AFR1PCRMP1P120546V1.pdf
- The Architectural Heritage Conservation and Management Plan for the Udom- Dech-Wathana Mansion, Thailand https://www.researchgate.net/publication/266137580_The_Architectural_Heritage_Conservation_and_Management_Plan_for_the_Udom-Dech-Wathana_MansionTha-rae_Muang_Sakon_Nakhon_Thailand_By_Mr_Sitta_Kongsasana_56056960_Submitted_to_Dr_Donald_Ellsmore_The_Fin
- The Cultural and Economic Impacts of Using Virtual Heritage in Archaeological Sites in Egypt https://www.researchgate.net/publication/325049910_The_Cultural_And_Economical_Impacts_Of_Using_Virtual_Heritage_In_Archaeological_Sites_In_Egypt.

ANNEXES

ANNEX-I: PCRMP TEAM COMPOSITION

ANNEX-I

TEAM COMPOSITION FOR THE PCRMP STUDY

Sr. No.	Name	Designation
1.	Touseef Khalid	Project Director, PMU-KITE-DoT
2.	Mr. Fazal Rabbi	Technical Team Leader, Social and Environmental Safeguards. KITE Project PMU C&W.
3.	Mr. Faiz Muhammad	Liaison Coordinator Officer
4.	Mr. Samad Khan	Director Archeology Department.
5.	Engr. Farooq Shah	Archeological Expert
6.	Mr. Muhammad Sajjad	Environmental and Social Associates

ANNEX-II: SCREENING CHECKLISTS FOR PCRS / ACRCHAEOLOGICAL SITES/

ANNEX-II

KP INTEGRATED TOURISM DEVELOPMENT PROJECT (KITE) P163562

PHYSICAL CULTURAL RESOURCE (PCRMP) SURVEY OF SITES

Screening Checklist – Shapula Stupa

Heritage Site's Name	Shapula Stupa
Total Budget	PKR 98 million
Assessment Date	07/07/2020
Name of Accessor	Prof. Dr. Ihsan Ali
Designation of Accessor	Consultant
Project Implemented By	Department of Tourism, Khyber Pakhtunkhwa Integrated Tourism Development Project
Project Monitored By	Department of Tourism through its PMU, Khyber Pakhtunkhwa Integrated Tourism Development Project
Consultation Undertaken	Yes, with local community and officials of the site

1.	**Location:**	
	Latitude	34.060294
	Longitude	71.229840
	Elevation	3236 ft
	Tehsil/District	Landi Kotal/Khyber
	City	Khyber
	Province	Khyber Pakhtunkhwa
2.	**Statutory Designation of Site**	
	Local	
	National	✔
	World Heritage	
3.	**Ownership**	
	Government	
	Private individual	
	Communal	✔
	Responsibility of Management of PCR	Directorate of Archaeology and Museums, Khyber Pakhtunkhwa
	Post-Complete Management Responsibility	Directorate of Archaeology and Museums, Khyber Pakhtunkhwa
4.	**Capacity of Management Agency**	
	High	
	Low	
	Moderate	✔
5.	**Type of Heritage site**	
	Stupa/Monastery	✔
	Mosque	
	Fort	

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	Museum	
6.	**Salient Nature of the site**	
	Moveable/Immovable	Immovable
	Natural/Manmade	Manmade
	Registered/Unregistered	Registered
7.	**Tentative Chronology**	
	Buddhist	✔
	Islamic	
	Other	
8.	**Present Condition of PCR**	
	Intact	
	Damaged	✔ stupa, partly damaged
	Missing	✔ certain portions are missing
9.	**Type of Property/Land of PCR**	
	Agricultural	
	Commercial	
	Barren	✔
10.	**Physical Requirement**	
	Restoration	✔
	Conservation	✔
	Beautification	✔
11.	**Archaeological Assessment/Requirement**	
	Mapping	✔
	Surveying	✔
	Drawing/Plotting	✔
	Clearance	✔
	Excavations	✔
12.	**Surveying**	
	Extent of Site	✔

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	Topography	✔		
	Surface features recording	✔		
	Surface collection			
	Geophysical investigation			
13.	**Clearance**			
	Exposed features	✔ Partly		
	Damaged features	✔		
	Suspected sub surface features	✔		
14.	**Excavations**			
	Subsurface features/structures	✔		
	Deep digging/Profiling			
15.	**Significance of PCR (Please elaborate the significance/history of site)**			
	Historical	✔		
	Archaeological	✔		
	Cultural	✔		
	Socio-economic	✔		
16.	**Socio-Economic Value of PCR**			
	Very high ✔	Medium		Negligible
	High	Low		Unknown
17.	**Facilities**			
		Existing	Required	Remarks
	Car Parking		✔	
	Washrooms		✔	
	Information counter/desk		✔	
	Office		✔	
	Rooms/Storerooms		✔	
	Lawn/Plantation		✔	
	Electrification		✔	
	CCTV Camera			

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	Digital information System/Mechanism			
	Walk/pathways		✔	
	Sheds		✔	
18.	**Security/Protection Measures of PCR**			
	Fencing/boundary wall			
	Barbed wire	✔ required all around		
19.	**Conservation/Restoration Assessment of PCR**			
	Identification of areas	Plinth, Drum, dome of the stupa		
	Material availability	✔		
	Impacts *	Nil		
20.	**Nature and Extent of Potential Impacts (Negative) on PCRs during restoration/conservation**			
	Physical	Nil		
	Social	Nil		
	Environmental	Nil		
	Economic	Nil		
	Academic	Nil		
21.	**Potential Causes of Damages to the PCRs during restoration/conservation**			
		Assessment	Mitigation measures	Irreversibility
	Walk/Pathways	Nil		
	Drainage	Nil		
	Access/Approach	Nil		
	Electrification	Nil		
	Lawns/Plantation	Nil		
	Rooms/Stores/Office construction	Nil		
	Material re-use	Nil		
	Parking	Nil		
	Sheds	Nil		
	Any other	Nil		
22.	**Extent of Potential Damage**			

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	Structures	Nil
	Area	Nil
	Access	Nil
	Beauty	Nil
	Societal	Nil

Location of PCR	The Buddhist site of Shapula is located on the Khyber Pass, about 25 km from Jamrūd on a high rocky ridge. It is located 40 km west of Peshawar, 4 km short of Landi Kotal and 10 km short of Pak-Afghan border, Torkham.
Access	The PCR can be approached from Peshawar-Torkham road known as Khyber Pass, near Wali Beg Khel village.
Date/Chronology of the PCR	Based on the excavation as well as comparison of architectural style, the stupa can be dated to 3rd - 4th century A.D.
Description as the site Appears	The stupa is the largest one in the Peshawar Valley. It is lying on hill overlooking the valley/gulley of the Khyber Pass. The stupa has square shape base in typical Gandharan style with lofty dome, which is partly preserved and partly damaged. The illegal diggers have cut a chamber to get to the relic casket. The eastern as well as southern part of the stupa has the lower drum/plinth preserved a bit, which is made of huge blocks set in diaper style. The eastern portion of the dome is also intact whereas the rest is damaged and needs conservation and restoration. The votive stupas around the main stupa are buried in the debris and need clearance. There are also certain architectural remains scattered on the north of stupa that could possibly be the remains of monastery. The Frontier Corps (FC) has recently partly occupied/encroached the southern part of the complex for the purpose of a post where a couple of rooms and perimeter wall have been constructed. DoAM has taken up the case of relocation of FC post with FC authorities through Department of Tourism Khyber Pakhtunkhwa (copy of letter is attached at the end of this check list).
History	Since the Buddhists were spread from South Asia to central Asia, they constructed stupas and other establishment on trade routes and the Shapula stupa is one of them. It is first mentioned by Wilburn Simpson in the Royal Institute of British Architects in January 1880. It was then visited by V. Natesa Aiyar (former Curator of the Peshawar Museum) and Mr. Pears (I.C.S., Political Agent, Khyber). Aiyar examines the site in detail and also carried out some conservation work. In its general plan, outlook and the magnitude and strength of construction, the Shapola stupa bears resemblance with stupas which dominate the valley of Taxila and hence can be dated to third or fourth century A.D.
Significance	Since the site is located on the famous Khyber Pass, an ancient route or gateway to enter the Indo-Pak subcontinent, it is very significant. The use of this route during the Buddhist period can well be attested by the construction of this and similar other remains. Peshawar remained the capital city of the Kushana rulers where monks from far off regions such as far east, central Asia and China used to come for Buddhist teaching and religion. This majestic complex on the pass is very vital. From tourism point of view this complex is also outstanding and needs promotion.

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Current Condition	The main stupa is partially intact and has been robbed and damaged by diggers. The entire complex is not in good state of preservation, although it is very important heritage of the province. The PCR is under the control of the local community. The Directorate of Archaeology and Museums, Government of the Khyber Pakhtunkhwa should immediately acquire it for preserving the heritage and promoting tourism. Partially the para-military FC has encroached the southern part and must be vacated for the interest of public, heritage and archaeology. DoAM has taken up the case of relocation of FC post with FC authorities through Department of Tourism Khyber Pakhtunkhwa (copy of letter is attached at the end of this check list). The originality of the PCR is partially intact and has not been modified.
Requirements	Conservation and restoration of the main stupa, the plinth and associated structures Installation of information boards Provision of access route and steps leading to the complex Beautification and plantation Car park with shed, archaeological mapping and drawing, 3D scanning, Clearance of the exposed and unexposed structures Excavations of subsurface features at possible monastery and stupa court Huts and benches on site for tourists Tuck-shop/souvenir shop on site Proper signage on remains for visitors
Impact	No adverse impact on PCR from restoration and conservation work

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DIRECTORATE OF ARCHAEOLOGY AND MUSEUMS
GOVT. OF KHYBER PAKHTUNKHWA, PESHAWAR

No. 383 /A-72 Archymus
Dated: 1-10-2026

C/O Peshawar Museum Peshawar

Ph. # 091-9211194, 9211488
Fax # 091-9210690

To

The Secretary to Govt. of Khyber Pakhtunkhwa,
Sports, Tourism, Culture, Archaeology & Museums,
Department Peshawar.

Subject: **REQUEST TO RELOCATE F.C CHECK POST AT SHAPOLA STUPA, KHYBER DISTRICT.**

Dear Sir,

Enclosed please find herewith a letter addressed to Inspector General, Frontier Corps, Bala Hisar Fort, Khyber Pakhtunkhwa Peshawar for onward submission to the quarter concerned.

Yours Faithfully,

DR. ABDUL SAMAD
DIRECTOR

Encl: As Above.

O/C

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Most Immediate/Confidential

Peshawar, the __October, 2020

The Inspector General,
Frontier Corps,
Khyber Pakhtunkhwa,
Bala Hisar Fort, **Peshawar**

Subject: **REQUEST TO RELOCATE F.C CHECK POST AT SHAPOLA STUPA, KHYBER DISTRICT.**

Dear Sir,

As you are aware tourism has now been developed to a full-fledged industry and has assumed as one of the most effective instrument in generating multi-dimensional economic activities resulting in earning the much needed foreign exchange for many countries of the world including China, India, Egypt, Sri Lanka, Thailand, Spain, Peru etc. The present Government has laid great emphasis on promotion of tourism in Pakistan in general and cultural/religious tourism in particular. Pakistan Army as an elite national institution has supported the efforts of the Government and opening of Kartharpur Corridor close to the Indian boarder is a worth mentioning example of this support. I feel great pleasure to share with you that the Government of Khyber Pakhtunkhwa is very much alive to the importance of tourism in the culturally highly rich province in line with the vision of the Prime Minister of Pakistan.

2. The Government of Khyber Pakhtunkhwa has allocated considerable funds for proper conservation and restoration of all important cultural/religious sites/monuments in the province to make them worthy of visiting by potential tourists from across the world. Shpola Stupa, located in Zarai Village in District Khyber is one of the great and most Buddhist stupas in the ancient Gandhara country that have great attraction for the Buddhists from all over the world. Further, being on the main road from Peshawar to Kabul, it is one of the most promising tourist destinations with considerable attraction for tourists, scholars and researchers. However, due to its very bad state of preservation and neglect for some valid reasons, the Buddhist communities and international organizations such as UNESCO have been expressing discontentment over the neglect of the monument.

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3. This is a second century Buddhist monument of the current era which was once one of the most magnificent Stupas in the region and revered by the Buddhist not only from the Indo-Pakistan Sub-continent, but those from China and other Buddhist countries. It has been declared a protected antiquity due to its importance. It is still held in reverence by Buddhist throughout the world, but due to variety of reasons including security environment, they are reluctant to visit such places. We intend to preserve this important Buddhist stupa befitting its past grandeur to promote inter-faith harmony to show the bright face of Islam and Pakistan to the world.

4. In view of the concerns of the international community in general and the Buddhist community in particular, the desire of the Government of Pakistan to promote cultural tourism in the country and above all the will of the Provincial Government to conserve and restore this important Buddhist Shpola stupa to its original grandeur by providing funds and necessary expertise through this Directorate, you are requested to kindly help both Federal and the Provincial governments to **relocate the check post of the Frontier Corps from its present position close to Shpola Stupa in Jamrud** (Photographs attached) to a safe distance so that the conservation activities at the site could be immediately resumed in compliance with the directives of the government and restore the monument to its past grandeur. Further, the Buddhist visiting such sites for religious ceremonies and tourists feel unnecessary embarrassment due to presence of the security check post and restrictions on visit to the monument.

5. An early action on our request will greatly facilitate the efforts of the Government of Pakistan and the Government of Khyber Pakhtunkhwa and will be greatly appreciated.

Yours faithfully,

Muhammad Abid Majeed
Secretary,
Sports, Tourism, Culture,
Archaeology & Museums.

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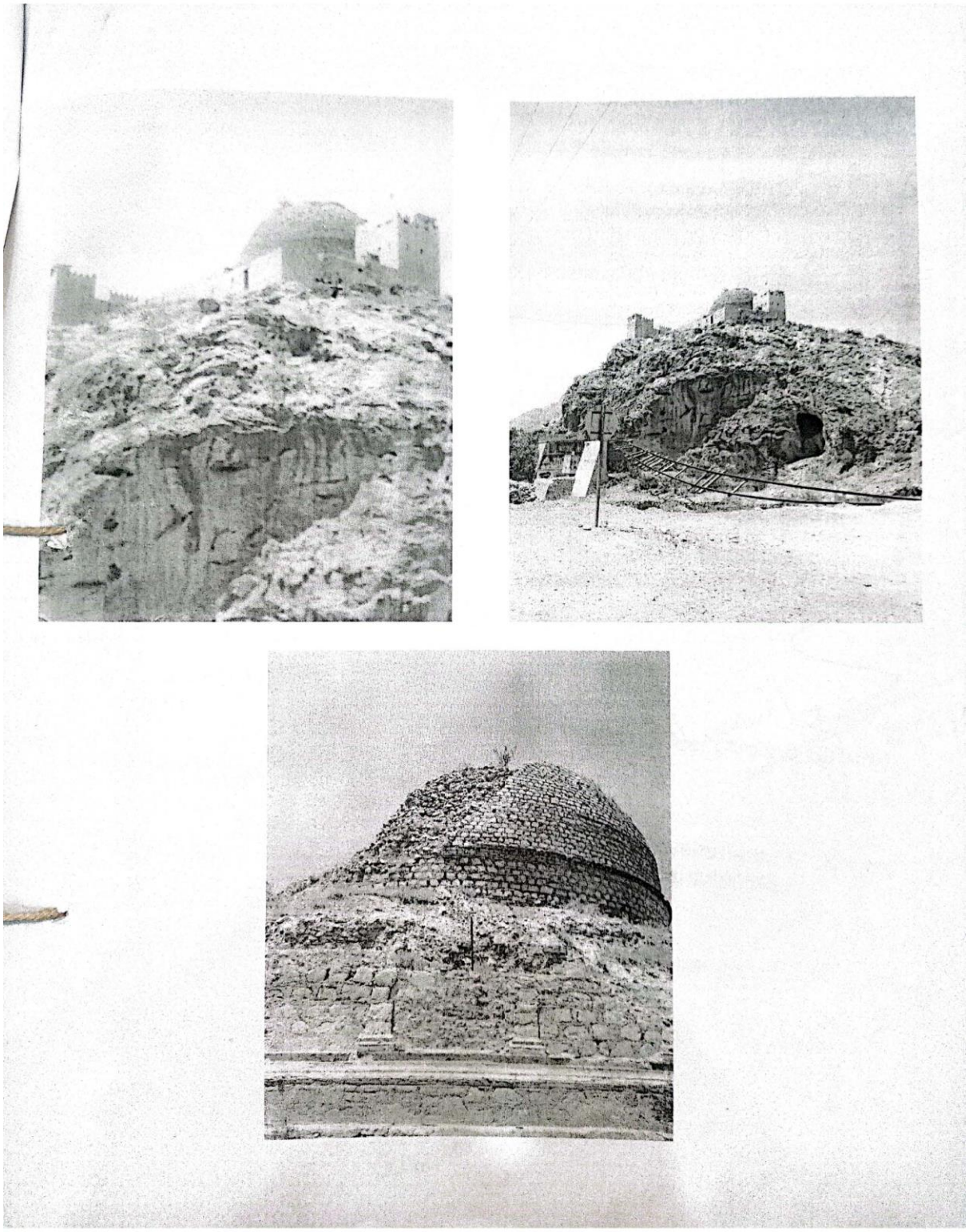

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KP INTEGRATED TOURISM DEVELOPMENT PROJECT (KITE) P163562

PHYSICAL CULTURAL RESOURCE (PCRMP) SURVEY OF SITES

Screening Checklist – Bhamala Stupa

Heritage Site's Name	Bhamala Stupa
Total Budget	
Assessment Date	13/08/2020
Name of Accessor	Prof. Dr. Ihsan Ali
Designation of Accessor	Consultant
Project Implemented By	Department of Tourism, Khyber Pakhtunkhwa Integrated Tourism Development Project
Project Monitored By	Department of Tourism through its PMU, Khyber Pakhtunkhwa Integrated Tourism Development Project
Consultation Undertaken	Yes, with local people and officials of the Museum. Minutes of the consultation meeting is enclosed with this PCRMP.

1.	**Location:**	
	Latitude	33.83278167
	Longitude	72.97534000
	Elevation	2020 ft
	Tehsil/District	Khanpur/Haripur
	City	Haripur
	Province	Khyber Pakhtunkhwa
2.	**Statutory Designation of Site**	
	Local	
	National	✔
	World Heritage	
3.	**Ownership**	
	Government	✔
	Private individual	
	Communal	
	Responsibility of Management of PCR	Directorate of Archaeology and Museums, Khyber Pakhtunkhwa
	Post-Complete Management Responsibility	Directorate of Archaeology and Museums, Khyber Pakhtunkhwa
4.	**Capacity of Management Agency**	
	High	
	Low	
	Moderate	✔
Note: We used the term moderate because the site is far away from the office of the directorate and are generally controlled by site attendant. For high capacity will be the direct management of the		

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administration for sites, which are closers to the museums and offices of the directorate, or it branches. The low capacity will be used where there is no chowkidar or attendant.		
5.	**Type of Heritage site**	
	Stupa/Monastery	✔
	Mosque	
	Fort	
	Museum	
6.	**Salient Nature of the site**	
	Moveable/Immovable	Immovable
	Natural/Manmade	Manmade
	Registered/Unregistered	Registered
7.	**Tentative Chronology**	
	Buddhist	✔
	Islamic	
8.	**Present Condition of PCR**	
	Intact	
	Damaged	✔ stupa, monastery, votive stupas partly damaged
	Missing	✔ certain portions are missing
9.	**Type of Property/Land of PCR**	
	Agricultural	
	Commercial	
	Barren	✔
10.	**Physical Requirement**	
	Restoration	✔
	Conservation	✔
	Beautification	✔
11.	**Archaeological Assessment/Requirement**	
	Mapping	✔
	Surveying	✔
	Drawing/Plotting	✔
	Clearance	✔

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	Excavations	✔		
12.	**Surveying**			
	Extent of Site	✔		
	Topography	✔		
	Surface features recording	✔		
	Surface collection			
	Geophysical investigation			
13.	**Clearance**			
	Exposed features	✔ Partly		
	Damaged features	✔		
	Suspected sub surface features	✔		
14.	**Excavations**			
	Subsurface features/structures	✔		
	Deep digging/Profiling			
15.	**Significance of PCR (Please elaborate the significance/history of site)**			
	Historical	✔		
	Archaeological	✔		
	Cultural	✔		
	Socio-economic	✔		
Remarks: Located near the World Heritage sites and on the far end of the beautiful Khanpur lake, the site is easily accessible by the tourists through road as well boats and provides a unique opportunity to those who are here for pleasure or picnics or learning purposes. Surrounding of the lake are already inhabited by high profile residences, hotels and seasonal restaurants because of the beauty and seasonal environmental condition, which are sufficient to boast the socio-economic condition further when the PCR is completely restores and properly projected.				
16.	**Socio-Economic Value of PCR**			
	Very high ✔	Medium		Negligible
	High	Low		Unknown
Closeness with the world heritage sites and touristic facility of the Khanpur dam/lake, the environment of the region and the location of the stupa in the beautiful mountains range at the rear end of the lake provides a unique opportunity for the promotion of the socio-economic condition of the area.				
17.	**Facilities**			
		Existing	Required	Remarks

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	Car Parking		✔	To initiate section 4to get land
	Washrooms		✔	Incomplete due to low water level
	Information counter/desk		✔	
	Office		✔	
	Rooms/Storerooms		✔	
	Lawn/Plantation		✔	
	Electrification		✔	
	CCTV Camera			
	Digital information System/Mechanism			
	Walk/pathways		✔	Staircase required
	Sheds		✔	New and large one required
18.	**Security/Protection Measures of PCR**			
	Fencing/boundary wall	✔ required all around		
	Barbed wire			
19.	**Conservation/Restoration Assessment of PCR**			
	Identification of areas	Protective grills around sculptures, steps, stupa, votive stupas, monastery, sculptures		
	Material availability	✔ The material is locally available in the mountains of the surrounding area, will certainly support the local economy.		
	Impacts *	Nil		
20.	**Nature and Extent of Potential Impacts (Negative) on PCRs during restoration/conservation**			
	Physical	Nil		
	Social	Nil		
	Environmental	Nil		
	Economic	Nil		
	Academic	Nil		
Remarks: E&S mitigation plan will be developed				
21.	**Potential Causes of Damages to the PCRs during restoration/conservation**			
		Assessment	Mitigation measures	Irreversibility
	Walk/Pathways	Nil		

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	Drainage	Nil		
	Access/Approach	Nil		
	Electrification	Nil		
	Lawns/Plantation	Nil		
	Rooms/Stores/Office construction	Nil		
	Material re-use	Nil		
	Parking	Nil		
	Sheds	Nil		
	Any other	Nil		
Note:The fallen material from the PCR as well as the material which can be purchased from the locals in the region will in fact strengthen the PCR, and as such will have no negative impact.				
22.	**Extent of Potential Damage**			
	Structures	Nil		
	Area	Nil		
	Access	Nil		
	Beauty	Nil		
	Societal	Nil		

Location of PCR	The PCR is located at the head of Haro River at foothill of Muree range, about 20 km east of Taxila and 16 km north of Islamabad. It is protected on three sides by River Haro itself and from one side by the lofty hills.
Access	It is about 5 km from main Taxila-Haripur road on off track.
Date/Chronology of the PCR	The stupa and monastery at Bhamala are dated to the Buddhist period approximately 3-5th century AD.
Description as the site Appears	It is a Buddhist period Stupa and Monastery complex, having certain unique architectural, iconographic and ideological features as compared to other Buddhist stupa monastery complex at Taxila Valley and at Gandhara. The complex is constructed on a naturally made terrace. The Monastery measures some 400 x 140 ft, surrounded by chapels, assembly hall, kitchen etc. In the middle of the complex rises the solid mass of principal stupa, surrounded by a group of small votive stupas. At Bhamala the stupa is cruciform in shape, which is not found elsewhere. This cruciform stupa is built and composed of heavy blocks of limestone laid in regular courses in the manner common during the fourth and fifth century A.D., with small pebbles and mud filling the interstices between them. The facing is of semi-ashlar masonry of a characteristically late type, similar to that of the monastery but less massive. Moldings and pilasters are, as usual, of kanjur stone, which can be easily be carved than the limestone. A coat of lime pilaster is plastered on

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	the stones, in which all the finer details of decorations, both architectural and figural, were executed. The most significant discovery of the recent excavations is *Parinirvana*-chamber, exposed to the western side of the principal stupa.
History	The stupa was first discovered and excavated by Sir John Marshall in 1930-31. Archaeological remains were unearthed. After a long period, its excavations were resumed in 2012-13 and 2014-15 by the Department of Archaeology, Hazara University, Mansehra in collaboration with the Directorate of Archaeology and Museums Government of Khyber Pakhtunkhwa, Peshawar and the University of Wisconsin-Madison (USA).
Significance	It is the most important heritage site in the Taxila/Khanpur region due to its unique architectural feature i.e. cruciform or crossed shaped construction, symbolizing the death or *mahaparinirvana* of the Buddha. The cool and serene place selected for the death of Buddha is synonymous with heaven. The clouds, hills, springs, river, the environment and the construction of stupa with iconographic representation of *mahaparinirvana* shows the significance of this place. From tourism perspective, this location is ideal, which has ecological, cultural and religious tourism attraction together. Its proximity with Islamabad enhances its beauty, which can be an easy destination of the international as well as national tourists if facilitated.
Current Condition	The ruins are partially intact and partly damaged/missing, which needs conservation and restoration. The steps and lower circumambulatory is preserved whereas the supper structure of the stupas is missing. The main stupa is damaged at the center since centuries. The votive stupas around the main stupa also are damaged but their demarcations are there. The walls of the Monastery are partly damaged and in a bad state of preservation The fresh excavated area where the death scene was discovered is also not in a good state and needs preservation and restoration. The PCR is under the control of the Directorate of Archaeology and Museums, Government of the Khyber Pakhtunkhwa and is away from the village, therefore, it is safe and away from encroachment. The originality of the PCR is intact and has not been modified.

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Requirements	Conservation and restoration of the main, votive and other smaller stupas along with chapels The stupas and monastery need shed Conservation and restoration of the monastery, chapels, kitchen, assembly hall etc and be protected with sheds Conservation and restoration of the in-situ sculptures Installation of information boards Installation of water supply system and drainage of rainwater from the main complex in subtle way Conservation and restoration of steps leading to the complex Beautification and plantation Car park with shed, archaeological mapping and drawing, 3D scanning, Clearance of the exposed and unexposed structures Excavations of subsurface features at monastery and stupa court, especially at western side of the complex Removal of the electric pole on the west side is required Embankment or retaining wall with a podium on river side is required for protection as well as tourists, who wants to come by boats in lake Huts and benches on site for tourists Tuck-shop/souvenir shop on site Proper signage on remains for visitors
Impact	No adverse impact on PCR from restoration and conservation work

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KP INTEGRATED TOURISM DEVELOPMENT PROJECT (KITE) P163562

PHYSICAL CULTURAL RESOURCE (PCRMP) SURVEY OF SITES

Screening Checklist – Main Kalam Mosque

Heritage Site's Name	Main Kalam Mosque
Total Budget	
Assessment Date	19/08/2020
Name of Accessor	Prof. Dr. Ihsan Ali
Designation of Accessor	Consultant
Project Implemented By	Department of Tourism, Khyber Pakhtunkhwa Integrated Tourism Development Project
Project Monitored By	Department of Tourism through its PMU, Khyber Pakhtunkhwa Integrated Tourism Development Project
Consultation Undertaken	Yes, with local people and officials of the Museum. Minutes of the consultation meeting is enclosed with this PCRMP.

1.	**Location:**	
	Latitude	35.4832817
	Longitude	72.5892207
	Elevation	6542 ft
	Tehsil/District	Bahrain/Swat
	City	Mingora, Swat
	Province	Khyber Pakhtunkhwa
2.	**Statutory Designation of Site**	
	Local	✔
	National	
	World Heritage	
3.	**Ownership**	
	Government	
	Private individual	
	Communal	✔ an undertaking will be taken from local community before starting of work
	Responsibility of Management of PCR	Directorate of Archaeology and Museums, Khyber Pakhtunkhwa
	Post-Complete Management Responsibility	Directorate of Archaeology and Museums, Khyber Pakhtunkhwa
4.	**Capacity of Management Agency**	
	High	
	Low	
	Moderate	✔
Remarks: We used the term moderate because the site is far away from the office of the directorate and are generally controlled by site attendant. For high capacity will be the direct management of the		

administration for sites, which are closers to the museums and offices of the directorate, or it branches. The low capacity will be used where there is no chowkidar or attendant.		
5.	**Type of Heritage site**	
	Stupa/Monastery	
	Mosque	✔
	Fort	
	Museum	
6.	**Salient Nature of the site**	
	Moveable/Immovable	Immovable
	Natural/Manmade	Manmade
	Registered/Unregistered	Unregistered
7.	**Tentative Chronology**	
	Buddhist	
	Islamic	✔
8.	**Present Condition of PCR**	**Renovated mainly**
	Intact	
	Damaged	✔
	Missing	
9.	**Type of Property/Land of PCR**	
	Agricultural	
	Commercial	✔
	Barren	
10.	**Physical Requirement**	
	Restoration	✔
	Conservation	✔
	Beautification	✔
11.	**Archaeological Assessment/Requirement**	
	Mapping	✔
	Surveying	
	Drawing/Plotting	✔
	Clearance	

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	Excavations				
12.	**Surveying**				
	Extent of Site	Nil			
	Topography	Nil			
	Surface features recording	Nil			
	Surface collection	Nil			
	Geophysical investigation	Nil			
13.	**Clearance**				
	Exposed features	Nil			
	Damaged features	Nil			
	Suspected sub surface features	Nil			
14.	**Excavations**				
	Subsurface features/structures	Nil			
	Deep digging/Profiling	Nil			
15.	**Significance of PCR (Please elaborate the significance/history of site)**				
	Historical	✔			
	Archaeological	✔			
	Cultural	✔			
	Socio-economic	✔			
16.	**Socio-Economic Value of PCR**				
	Very high	Medium ✔		Negligible	
	High	Low		Unknown	
17.	**Facilities**				
		Existing	Required		
	Car Parking		✔		
	Washrooms		✔		
	Information counter/desk				
	Office				
	Rooms/Storerooms				
	Lawn/Plantation				

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	Electrification		✔		
	CCTV Camera				
	Digital information System/ Mechanism				
	Walk/pathways		✔		
	Sheds		✔		
18.	**Security/Protection Measures of PCR**				
	Fencing/boundary wall	✔			
	Barbed wire				
19.	**Conservation/Restoration Assessment of PCR**				
	Identification of areas	Wooden Pillars, beams, cupboards, mihrab, doors, walls, seepage control			
	Material local availability	✔			
	Impacts *	Nil			
20.	**Nature and Extent of Potential Impacts (Negative) on PCRs during restoration/conservation**				
	Physical	Nil			
	Social	Nil			
	Environmental	Nil			
	Economic	Nil			
	Academic	Nil			
Remarks: The restoration and conservation work will be carried out phase wise, as the mosque has a reasonable size. The prayers and conservation work can be undertaken in different parts of the mosque simultaneously. Also there is an upper story that provides space for teaching to the students as well as provision for congregational prayers, if needed so. As the upper story /first floor is completely new structure, therefore the same will facilitate the requirements of prayers and congregational activities.					
21.	**Potential Causes of Damages to the PCRs during restoration/conservation**				
		Assessment	Mitigation measures	Irreversibility	
	Walk/Pathways	Nil			
	Drainage	Nil			
	Access/Approach	Nil			
	Electrification	Nil			
	Lawns/Plantation	Nil			

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	Rooms/Stores/Office construction	Nil		
	Material re-use	Nil		
	Parking	Nil		
	Sheds	Nil		
	Any other	Nil		
22.	**Extent of Potential Damage**			
	Structures	Nil		
	Area	Nil		
	Access	Nil		
	Beauty	Nil		
	Societal	Nil		

Location of PCR	The site is located in main bazar of Kalam city, just across the river.
Access	Main Kalam Bazar, across river Swat
Date/Chronology of the PCR	According to the local people it is about 380 years old, dated to the end of 17th century.
Description as the site Appears	It is an interesting wooden structure, speaking of its glorious architecture. Currently it is a double storey building. The lower storey is the actual mosque whereas the upper storey is recently built (1980) for a madrassa, where about 60 children are getting Islamic education in the evening who are at different stages of learning. The lower portion of the mosque is renovated in 2019. The lower prayer chamber has now a partition wall, separating the front hall from the rear one. However, it was originally a single chamber. The whole structure is originally resting on nine (09) pillars, arranged in three rows. The central ones are larger relatively from those on sides. In order to support the second storey and concrete pillar is also added, which has wooden facing to make it similar in appearance. At the rear part of the prayer chamber a boiler has been provided to supply warm water as well heat in winter. At the back wall a podium is made to store wood/fuel for the boiler. It has a flat wooden roof supported by means of wooden beams and lintels. The partition wall has a wooden entrance at southern end, where steps are also leading to the basement where area for washrooms and ablution has been separated. In front, the mosque is an open space, which can be converted into car parking, office or room for imam as well.
History	The history of the mosque is not known from any written record. However, the architectural style and local traditions suggests, it was constructed by the Muslims in late 17th century. Renovation from time to time was made but the originality of the mosque inside has been retained especially in the pillars, capitals, beams and lintels. Some of the walls are also original. According to the local people, the mosque burnt about 200 years ago.

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Significance	The architecture of the mosque is very important. There are several mosques in the region, which are made of wood and the earliest among them is this one. it not only speaks of the glory of the people but also exhibit excellent craftsmanship in the area, bequeathed from the Hindu-Buddhist eras. The beautiful carving of floral and geometric decoration on the columns, capitals, mihrab, door, windows etc signifies skillful hands and proper organizations carrying out such accomplishment.
Current Condition	The site is very important and intact up to a greater extent. The walls, pillars/columns, capitals, door, windows and beams/lintels are intact and needs repair and maintenance for sustainability of this heritage. It is totally under the control of the local people and therefore vulnerable to renovation. The Directorate of Archaeology and Museums, GoKP should get it under its control to preserve for future. Since it is religious building, so the land is safe so far from encroachment. However, the structure of the mosque needs repair and conservation. The originality of the site is partly intact and partly modified.
Requirements	Conservation of pillars, capitals, mihrab, ceiling, walls, door, windows, Removal of partition wall between two lower halls Repairing ceiling History board be written Washrooms repair Walls seepage be controlled Room for Imam Car parking with sheds
Impact	No adverse impact on PCR from restoration and conservation work

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KP INTEGRATED TOURISM DEVELOPMENT PROJECT (KITE) P163562

PHYSICAL CULTURAL RESOURCE (PCRMP) SURVEY OF SITES

Screening Checklist – Pishmal Mosque

Heritage Site's Name	Pishmal Mosque
Total Budget	
Assessment Date	19/08/2020
Name of Accessor	Prof. Dr. Ihsan Ali
Designation of Accessor	Consultant
Project Implemented By	Department of Tourism, Khyber Pakhtunkhwa Integrated Tourism Development Project
Project Monitored By	Department of Tourism through its PMU, Khyber Pakhtunkhwa Integrated Tourism Development Project
Consultation Undertaken	Yes, with local people and officials of the Museum. Minutes of the consultation meeting is enclosed with this PCRMP.

1.	**Location:**	
	Latitude	35.4832817
	Longitude	72.5892207
	Elevation	6400 ft
	Tehsil/District	Bahrain/Swat
	City	Mingora, Swat
	Province	Khyber Pakhtunkhwa
2.	**Statutory Designation of Site**	
	Local	✔
	National	
	World Heritage	
3.	**Ownership**	
	Government	
	Private individual	
	Communal	✔ Local people of the village for construction activity and an undertaking will be received from local community for this purpose
	Responsibility of Management of PCR	Directorate of Archaeology and Museums, Khyber Pakhtunkhwa
	Post-Complete Management Responsibility	Directorate of Archaeology and Museums, Khyber Pakhtunkhwa
4.	**Capacity of Management Agency**	
	High	
	Low	
	Moderate	✔
5.	**Type of Heritage site**	
	Stupa/Monastery	

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	Mosque	✔
	Fort	
	Museum	
6.	**Salient Nature of the site**	
	Moveable/Immovable	Immovable
	Natural/Manmade	Manmade
	Registered/Unregistered	Unregistered
7.	**Tentative Chronology**	
	Buddhist	
	Islamic	✔
8.	**Present Condition of PCR**	**Renovated mainly**
	Intact	
	Damaged	✔
	Missing	✔ **(**ceiling is missing)
9.	**Type of Property/Land of PCR**	
	Agricultural	✔
	Commercial	
	Barren	
10.	**Physical Requirement**	
	Restoration	✔
	Conservation	✔
	Beautification	✔
11.	**Archaeological Assessment/Requirement**	
	Mapping	✔
	Surveying	
	Drawing/Plotting	✔
	Clearance	
	Excavations	
12.	**Surveying**	
	Extent of Site	

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	Topography			
	Surface features recording			
	Surface collection			
	Geophysical investigation			
13.	**Clearance**			
	Exposed features			
	Damaged features			
	Suspected sub surface features			
14.	**Excavations**			
	Subsurface features/structures			
	Deep digging/Profiling			
15.	**Significance of PCR (Please elaborate the significance/history of site)**			
	Historical	✔		
	Archaeological	✔		
	Cultural	✔		
	Socio-economic	✔		
Remarks: Pishmal mosque is located close to the main tourist route to Kalam (a very high profile tourist destination in the region), the preservation and protection of the mosque will provide a good opportunity to the travelers for offering prayers as well as understanding the history and culture of the region.				
16.	**Socio-Economic Value of PCR**			
	Very high	Medium ✔		Negligible
	High	Low		Unknown
17.	**Facilities**			
		Existing	Required	Remarks
	Car Parking		✔	
	Washrooms		✔	18 marla space available for ablution
	Information counter/desk			
	Office			
	Rooms/Storerooms			
	Lawn/Plantation			

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	Electrification		✔	
	CCTV Camera			
	Digital information System/ Mechanism			
	Walk/pathways		✔	
	Sheds		✔	
18.	**Security/Protection Measures of PCR**			
	Fencing/boundary wall	✔		
	Barbed wire			
19.	**Conservation/Restoration Assessment of PCR**			
	Identification of areas	Wooden Pillars, beams, cupboards, mihrab, doors, walls, seepage control		
	Material local availability	✔		
	Impacts *	Nil		
20.	**Nature and Extent of Potential Impacts (Negative) on PCRs during restoration/conservation**			
	Physical	Nil		
	Social	Nil		
	Environmental	Nil		
	Economic	Nil		
	Academic	Nil		
Remarks: An upper story is available, so closure will have no impact on academic.				
21.	**Potential Causes of Damages to the PCRs during restoration/conservation**			
		Assessment	Mitigation measures	Irreversibility
	Walk/Pathways	Nil		
	Drainage	Nil		
	Access/Approach	Nil		
	Electrification	Nil		
	Lawns/Plantation	Nil		
	Rooms/Stores/Office construction	Nil		
	Material re-use	Nil		
	Parking	Nil		

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	Sheds	Nil		
	Any other	Nil		
22.	**Extent of Potential Damage**			
	Structures	Nil		
	Area	Nil		
	Access	Nil		
	Beauty	Nil		
	Societal	Nil		

Location of PCR	The Pishmal Wooden Mosque is located to the west side of the Kalam-Behrain Road, in the village of Pishmal. It is the only mosque in the village. The village itself is located about 3 km short of Kalam town and about 93 km from Mingora city. The mosque is located close to Best View Hotel as well.
Access	A 12-feet wide concrete track towards the west from the main Kalam road, about 200-meter leads towards the old wooden mosque.
Date/Chronology of the PCR	There is no historical reference to the construction of the mosque but the according to the local people the mosque was constructed about 350 years back, roughly dated to late 17th century.
Description as the site Appears	It is an interesting wooden structure, speaking of its glorious architecture. Currently it is a three-storey building. The lower storey is the actual mosque whereas the upper two are under construction for a madrassa, where children will get Islamic education in the evening. The entire mosque is under renovation since last five years including the outer facing, and upper portions. At sides of the mosques concrete pillars are constructed to support wooden roofs of the upper two storey. The originality of the mosque is extremely endangered, and the local people are determined to renovate, despite resistance from few who favor maintaining the original look of the mosque. The lower portion of the mosque is partly original, especially the wooden columns, capitals, walls etc. The lower chamber is actual prayer hall of the mosque, which was originally a single large hall, but has now been divided into four portions. It is squarish mosque of about 50 x 53 ft size internally, with 4-7 ft thick walls of wood, plastered with mud. The hall is first partitioned in east to west chambers. The eastern chamber is further partitioned into north-south, which is exclusively used in cold winter. A boiler for heating and a podium for storing wood/fuel is provided respectively in the north and south chambers. The southern most portion is specified for ablution and taking off shoes. The local people intend to dismantle the original walls and extend the size of the prayer chamber. The mihrab has already been modified and renovated about 25-30 years ago, which is made of marble stone, unlike Kalam Mosque. The original flat ceiling supported by means of beams and lintels have already been modified. At the southern part of the mosque has some open space, which can be converted into car parking, office or room for imam as well.

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History	The history of the mosque is not known from any written record. However, the architectural style and local traditions suggests, it was constructed by the Muslims in late 17th century. According to the local people prior to the construction of this mosque, another one was located nearby, about 50 m, but was dismantled and this one was founded. Some wooden fragments of pillars, capitals and other architectural features are still lying with local people. Renovation from time to time was made but the originality of the mosque inside has been partly retained especially in the pillars, capitals and walls, which are highly vulnerable to human vandalism. For the renovation of the mosque the 370 *nimazis* are annually contributing Rs. 1000/- per person. According to the local people, certain Mr. Dhaya Qalbi from Afghanistan, was the first *pesh Imam*, of this mosque.
Significance	The architecture of the mosque is very important. There are several mosques in the region, which are made of wood and this one is one of the earliest. It not only speaks of the glory of the people but also exhibit excellent craftsmanship in the area, bequeathed from the Hindu-Buddhist eras. The beautiful carving of floral and geometric decoration on the columns, capitals, door, windows etc signifies skillful hands and proper organizations carrying out such accomplishment.
Current Condition	The site is very important and intact partially up to the wooden columns, capitals, beams and walls that need repair and maintenance for sustainability of this heritage. It is totally under the control of the local people and therefore vulnerable to renovation. The Directorate of Archaeology and Museums, GoKP should get it under its control to preserve for future. Since it is religious building, so the land is safe so far from encroachment but not from renovation/modification at the hands of the local people. However, the structure of the mosque needs repair and conservation. The originality of the site is partly intact and partly modified.
Requirements	Conservation of pillars, capitals, walls, Removal of partition wall between two lower halls Repairing ceiling History board be written Washrooms construction Walls seepage be controlled Room for Imam Car parking with sheds
Impact	No adverse impact on PCR from restoration and conservation work

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KP INTEGRATED TOURISM DEVELOPMENT PROJECT (KITE) P163562

PHYSICAL CULTURAL RESOURCE MANAGEMENT PLAN (PCRMP)

Screening Checklist – Hund Museum

Heritage Site's Name	Hund Museum
Total Budget	PKR 90 million
Assessment Date	12/08/2020
Name of Accessor	Prof. Dr. Ihsan Ali
Designation of Accessor	Consultant
Project Implemented By	Department of Tourism, Khyber Pakhtunkhwa Integrated Tourism Development Project
Project Monitored By	Department of Tourism through its PMU, Khyber Pakhtunkhwa Integrated Tourism Development Project
Consultation Undertaken	Yes, with local people and officials of the Museum (Messer Amanullah, Ijaz Ali) The consultative meeting held on October 16, 2020 raised the points of scanning the antiquity three dimensionally, audio-visual multi-lingual system, use of local and international languages for convenience of visitors, detail recording by curatorial staff of the antiquity before removing. Other details are reflected in the relevant section below

1.	**Location:**	
	Latitude	34.0138183
	Longitude	72.4331785
	Elevation	1020 ft
	Tehsil/District	Chota Lahor/Swabi
	City	Swabi
	Province	Khyber Pakhtunkhwa
2.	**Ownership**	
	Government	✔
	Private individual	
3.	**Type of Heritage site**	
	General	
	Site	✔
4.	**Size/Area**	
	Total area	33 kanal
	Covered area	
5.	**Number and Types of Galleries**	**05**
	Prehistoric	
	Protohistoric	

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	Hindu	
	Buddhist	✔ **Gandhara**
	Islamic	✔
	Manuscript	✔
	Ethnological	✔
	Any other	✔ **pottery/ceramics**
6.	**Show cases**	
	Total number	118 =(32+32+27+27) They are arranged in four different galleries making a total of 118.
	Fixed/Walled	✔
	Free standing	
	Any other	
7.	**Condition of Show cases**	
	Intact	
	Partly damaged	
	Defaced	✔ partly defaced
8.	**Labels**	
	Standard shape	No
	Standard size	No
	Language(s)	Urdu, English , Pashto for audio recording
	Aesthetics maintained	No
	Any other	Background cloth needs change
9.	**Lighting of Showcases**	
	LED	
	Other	
	Fixed	✔ florescent tubes
	Adjustable	
	Visible/invisible	Invisible
10.	**Displayed Antiquity**	
	Congested	

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	Appropriate according to showcase	✔
	Aesthetics maintained	✔ partly
	Sequence maintained	✔
11.	**Movement of Antiquity**	
	Display	✔
	Transfer	
Note: The movement of display is meant for movement within the museum building while transfer means shifting of the antiquity to headquarter (Peshawar).		
12.	**Curatorial Staff Responsibilities**	
	Display/arrangement	✔
	Transfer of antiquity	✔
	Placement of Labels	✔
	Handling antiquity/artifacts	✔
	Monitoring	✔
	Any other	✔ Any other unforeseen as directed by the director from time to time
13.	**Present Condition of PCR**	
	Intact	✔
	Damaged	
	Missing	
14.	**Physical Requirement**	
	Restoration	✔ of showcases
	Conservation	✔
	Beautification	✔
15.	**Assessment/Requirement**	
	Mapping	✔
	Showcasing	✔
	Repair	✔
	Electrification	✔
	Lighting	✔

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	Any other	Conference room with accessories for presentation to visitors for education		
16.	**Clearance (in case museum is on a site)**			
	Exposed features	✔		
	Damaged features	✔ Persian wheel needs repair		
	Suspected sub surface features	Nil		
17.	**Excavations (in case museum is on a site)**			
	Subsurface features/ structures	✔		
	Deep digging/Profiling	✔		
18.	**Significance of PCR**			
	Historical	✔		
	Archaeological	✔		
	Cultural	✔		
	Socio-economic	✔		
19.	**Facilities**			
		Existing	**Required**	**Remarks**
	Car Parking		✔	70x30 ft open space available at entrance
	Washrooms	✔		Needs improvement
	Information counter/desk	✔		Needs washroom
	Office	✔		04 with fixtures i.e. Office furniture and facility like computer, printer
	Rooms/Storerooms	✔		Residential quarters for Curatorial staff and chowkidar)
	Lawn/Plantation	✔	✔	
	Electrification	✔	✔	
	CCTV Camera	✔	✔	32 required It is a huge museum with 5 galleries, two stores, auditorium, rest house, newly built laboratories, an extensive vulnerable area to the river side to be watched through cameras
	Digital information System/Mechanism		✔	

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	Walk/pathways		✔	Not good, needs repair
	Sheds		✔	
20.	**Security/Protection Measures of PCR**			
	Fencing/boundary wall	✔ needs repairs		
	Barbed wire			
21.	**Conservation/Restoration Assessment of PCR**			
	Identification of areas	Total renovation, fiberglass ceiling needs replacement to avoid seepage and humidity, doors/windows repair, showcases repair, background cloth, labeling, information flex, brochures,		
	Material availability	✔		
	Impacts	✔		
22.	**Nature and Extent of Potential Impacts (negative) on PCRs during restoration/conservation**			
	Physical	✔ Negligible		
	Social	Nil		
	Environmental	✔ Negligible		
	Economic	Nil As the process of conservation and renovation of the showcases will be undertaken stage wise, therefore, potential impact will be very limited, as the museum will not be closed to the visitors. However, there will be some social and economic impact due to the temporary closure for repair (if any).		
	Academic	Nil		
23.	**Potential Causes of Damages to the PCRs during restoration/conservation**			
		Assessment	Mitigation measures	Irrever sibility
	Walk/Pathways	Nil		
	Drainage	Nil		
	Access/Approach	Nil		
	Electrification	Nil		
	Lawns/Plantatio n	Nil		
	Rooms/Stores/Office construction	✔ Negligible	As there is an extensive open area outside the building of museum within the perimeter wall, therefore, no damage will occur to the museum visitors or display. However mitigation plan is developing to address the	

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			issue.	
	Material re-use	Nil		
	Parking	Nil		
	Sheds	✔ Negligible		
	Any other	Nil		
Remarks: Mitigation plan is in development process and this is also the part of contract activity.				
24.	**Extent of Potential Damage**			
	Structures	Nil		
	Area	Nil		
	Access	Nil		
	Beauty	Nil		
	Societal	Nil		
	Any other	Nil		

Location of PCR	Hund Museum, Swabi is located on the right bank of Indus River, about 4 km from Anbar interchange on Motorway and about 12 km from Swabi city.
Access	The site can be approached from the main Swabi-Jehangira road or Motorway (M-1) at Anbar Interchange
History of the PCR	It is a provincial museum of the Directorate of Archaeology and Museums, Government of the Khyber Pakhtunkhwa. The Museum building was inaugurated in 2009. Since then the archaeological/cultural material is put on display. The Gandharan material was brought here from Peshawar Museum. The museum is constructed on a very historical city dated back to the time of Alexander invasion, where he crossed the Indus and defeated the rulers of Taxila and the Punjab. Xuan Zang, the Chinese pilgrim also visited this city and mentioned the surroundings. It remained the third capital of ancient Gandhara under the Hindu Shahi rulers who were dethroned by the Muslims of Ghazni. Since the Museum is constructed on the archaeological site, therefore sub-surface features need to be explored. A well of late historic period was also found there that currently needs to be preserved and restored to its original shape and function. A Persian wheel shall be installed to bring the heritage to its original form and to pull out water for the plants/lawns. It will attract further the visitors to the museum.
Type of the PCR	The Hund Museum Swabi is a general archaeological Museum, which not only houses archaeological but also exhibit ethnological material as well as manuscript.
Description as the site Appears	The building of the Museum is currently a single story, which is beautifully designed and constructed with sufficient open space available at the front and sides. The front at entrance is paved as well with a chowkidar's room. The back of the museum also has open space, where certain necessary

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	offices can be constructed in future. The western side is totally open where pavements and plantation will enhance the look of the building and attract visitors.
Lighting and Labeling	The overall lighting in the showcases is not according to the international standard. It is neither soothing to the eyes nor projecting the antiquity and is also damaging the displayed items with heat and rays therefore, it needs replacement. The labels are also oversized at one place and undersized at other. A standard shape/size written in Pushto, Urdu and English languages is recommended.
Display of Antiquity	Issues of congested display of certain item is observed whereas some important objects are not at eye level. They need proper order of display.
Significance	The Museum is located on the ancient trade route from Afghanistan to Lahore. Dozens of archaeological sites of the historic periods are located in the length and breadth of District Swabi. Some of them have been excavated and their material are displayed in the Museums, which is arousing interest of the people in highlighting the archaeological significance of the region. Being located on a crossroad connecting, the culturally rich region of Swat on the north, Afghanistan and Central Asia on the west, Hazara and Kashmir on the east and the plains of Punjab and Taxila on the south/southeast, Swabi is culturally also a very promising region. Tourism at national and international level has changed positively the socio-economic life of the local people.
Current Condition	Since it is recently built Museum, therefore, it is in a very good state of preservation except minor repair work. It is under the control of the Directorate and no encroachment has been done by any public or private sector. The originality of the site is intact and has not been modified.
Requirements	Repair and Maintenance for showcases Tiles repair where broken Barbed wire on top of the boundary walls, where missing. Fire extinguisher Conservation and restoration of the historic period well Installation of Persian wheel on well Digital information system i.e. Work office/workstations are for the curatorial and administrative staff while digital information system will provide information to the visitor through audio-visual recording. Digital security and fire alarm system Change in Display in chronological order according to the size of antiquity. The display in galleries is subject wise and are in order of time and theme.

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	Here we meant that presentation be made proportional to the size of objects displayed for better projection but at the same time chronology should be maintained Change of lights Change of background cloth Standard shape/size labels according to the displayed antiquity Standees with relevant information. inside the galleries. Treating/conservation of the Manuscripts, which are not in good condition and properly managed. Rather these should be brought back to Peshawar Museum and should be displayed in a single gallery with constant treatment /conservation .Both museums ie Hund museum district Swabi and Mardan museum district Mardan the manuscripts were donated by the Peshawar Museum for display . And in both cases the same treatment is required and hereby recommended Car parking, sheds, plantation, pathways, pavements, public toilet near entrance (separate for males and females) Solar panel with accessories Fixtures and essential furniture Souvenir/tuck shop Ramp on riverside for enjoying view/boating of the river Since the site is located on the ruins of an ancient city, therefore, archaeological probing and documentation of features and antiquity is needed. The collected antiquity shall be placed in the showcases of the museums and exposed structures shall be preserved for visitors.
Movement/Transfer of Antiquity/ Cultural Artefacts	During the commencement of work the antiquity / cultural artefacts will need to be dislocated from the showcases. These will only be shifted from one place to another within the premises of the Museum by the curatorial staff there. The concern officer in-charge (designated by Director Archaeology) will undertake this task, following the Antiquity Act 2016, Government of Khyber Pakhtunkhwa.
Transfer/shifting responsibility	The contractor or KITE officials will not handle/shift/transfer the antiquity. Only the concern staff under the supervision of in charge of the Museum will handle/touch/shift the antiquity according to the principles/guidelines set by the Directorate of Archaeology and Museums, GoKP or world Bank/UNESCO. The Directorate will be required to guide the concern staff/in-charge at the Museum.
Impact	No adverse impact on PCR from restoration and conservation work inside the Museum is expected however E&S impacts will be generated during construction activities for which mitigation measure will be developed.

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KP INTEGRATED TOURISM DEVELOPMENT PROJECT (KITE) P163562

PHYSICAL CULTURAL RESOURCE MANAGEMENT PLAN (PCRMP)

Screening Checklist – Mardan Museum

Heritage Site's Name	Mardan Museum
Total Budget	
Assessment Date	08/07/2020
Name of Accessor	Prof. Dr. Ihsan Ali
Designation of Accessor	Consultant
Project Implemented By	Department of Tourism, Khyber Pakhtunkhwa Integrated Tourism Development Project
Project Monitored By	Department of Tourism through its PMU, Khyber Pakhtunkhwa Integrated Tourism Development Project
Consultation Undertaken	Yes, with local people and officials of the Museum (Messer Jehangir Khan, Nauman Khan, Adnan Khan, Asif Rehman)

Heritage Site's Name		Mardan Museum, Mardan
1.	**Location:**	
	Latitude	34.1968226
	Longitude	72.0166536
	Elevation	1018 ft
	Tehsil/District	Mardan
	Province	Khyber Pakhtunkhwa
2.	**Ownership**	
	Government	✔
	Private individual	
3.	**Type of Heritage site**	
	General	✔
	Site	
4.	**Size/Area**	
	Total area	04.12 kanal
	Covered area	
5.	**Number and Types of Galleries**	**03**
	Prehistoric	
	Protohistoric	
	Hindu	
	Buddhist	✔
	Islamic	

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	Manuscript	✔
	Ethnological	✔
	Any other	
6.	**Show cases**	
	Total number	48
	Fixed/Walled	Fixed
	Free standing	Nil
	Any other	
7.	**Condition of Show cases**	
	Intact	
	Partly damaged	✔
	Defaced	
8.	**Labels**	
	Standard shape	No
	Standard size	No
	Language(s)	Urdu, English
	Aesthetics maintained	yes
	Any other	
9.	**Lighting of Showcases**	
	LED	
	Other	
	Fixed	✔
	Adjustable	
	Visible/invisible	Invisible
10.	**Displayed Antiquity**	
	Congested	
	Appropriate according to showcase	✔
	Aesthetics maintained	✔
	Sequence maintained	✔

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11.	**Movement of Antiquity**	
	Display	✔
	Transfer	
12.	**Curatorial Staff Responsibilities**	
	Display/arrangement	✔
	Transfer of antiquity	✔
	Placement of Labels	✔
	Handling antiquity/artifacts	✔
	Monitoring	✔
	Any other	✔
13.	**Present Condition of PCR**	
	Intact	
	Damaged	Ceiling needs repair, tiles broken
	Missing	
14.	**Physical Requirement**	
	Restoration	
	Conservation	✔
	Beautification	✔
15.	**Assessment/Requirement**	
	Mapping	✔
	Showcasing	✔
	Repair	✔
	Electrification	✔
	Lighting	✔
	Any other	Conference room with accessories for presentation to visitors for education
16.	**Clearance (in case museum is on a site)**	
	Exposed features	Nil
	Damaged features	Nil
	Suspected sub surface features	Nil

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17.	**Excavations (in case museum is on a site)**				
	Subsurface features/structures	Nil			
	Deep digging/Profiling	Nil			
18.	**Significance of PCR**				
	Historical	Being located in the heart of Gandhara, Mardan Museum has great historical value, where prehistoric Sanghao cave, Jamal Garhi rock shelter, Asokan edicts in Kharoshti at Shahbaz Garhi and Buddhist stupas of Takht Bahi, Jamal garhi are located. All of them show the rich cultural history of the region whose material is displayed in Mardan Museum.			
	Archaeological	The Museum houses archaeological material excavated from Mardan District, where dozens of important archaeological heritage site are located.			
	Cultural	Pakhtun Cultural material in the form of dresses and daily used items are also housed, reflecting cultural features of the Yousafzae Pakhtun of the area			
	Socio-economic	Since the visitors are frequently visiting the museum, which has great impact on the socio-economic life of the local society.			
19.	**Facilities**				
		Existing	Required	Comments	
	Car Parking	Nil	✔		
	Washrooms	Nil	✔		
	Information counter/desk	✔		Upgradation	
	Office		✔	03 required	
	Rooms/Storerooms		✔		
	Lawn/Plantation		✔		
	Electrification		✔		
	CCTV Camera		✔		
	Digital information System/Mechanism		✔		
	Walk/pathways		✔		
	Shades		✔		
20.	**Security/Protection Measures of PCR**				
	Fencing/boundary wall	✔			
	Barbed wire				
21.	**Conservation/Restoration Assessment of PCR**				

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	Identification of areas	Manuscript needs conservation		
	Material availability			
	Impacts	Nil		
22.	**Nature and Extent of Potential Impacts on PCRs during restoration/conservation**			
	Physical	Nil		
	Social	Nil		
	Environmental	Nil		
	Economic	Nil		
	Academic	Nil		
23.	**Potential Causes of Damages to the PCRs during restoration/conservation**			
		Assessment	Mitigation measures	Irreversibility
	Walk/Pathways	X		
	Drainage	X		
	Access/Approach	X		
	Electrification	X		
	Lawns/Plantation	X		
	Rooms/Stores/Office construction	X		
	Material re-use	X		
	Parking	X		
	Sheds	X		
	Any other	X		
24.	**Extent of Potential Damage**			
	Structures	X		
	Area	X		
	Access	X		
	Beauty	X		
	Societal	X		
	Any other	X		

Location of PCR	Mardan Museum, Mardan is located about 45 km northeast of Peshawar on main Charsadda road in Mardan City.

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Access	The site can be approached from the main Mardan-Charsadda road
History of the PCR	It is a provincial museum of the Directorate of Archaeology and Museums, Government of the Khyber Pakhtunkhwa. The structure is a copy of the building of the Directorate. The Museum building was inaugurated in 2007 and made functional in 2009. Since then the material is displayed. The Gandharan material was brought here from Peshawar Museum in 2011. Prior to the construction of the current building, Mardan Museum was started in 1991 at Town Hall, which was later on shifted to this museum.
Type of the PCR	The Mardan Museum, Mardan is a general archaeological Museum, which not only houses archaeological material but also exhibit ethnological material as well as manuscript.
Description as the site Appears	The building of the Museum is currently a two story with a basement as well. It is beautifully designed and constructed with sufficient open space available at the front, which is paved as well with a chowkidar room. This may be converted to reception/ticket rooms. The back of the museum also has recently acquired open space, where certain necessary offices and guest house be constructed in future.
Lighting and Labeling	The overall lighting in the showcases is not according to the international standard. It is neither soothing to the eyes nor projecting the antiquity and is also damaging the displayed items with heat and rays therefore, it needs replacement. The labels are also oversized at one place and undersized at other. A standard shape/size written in English and Urdu languages is recommended.
Display of Antiquity	Issues of congested display of certain item is observed whereas some important objects or not at eye level. They need proper order of display.
Significance	Since the Mardan Museum is located in the center of ancient Gandhara where heritage sites are located in large number and the visitors are frequently coming to this region, so the establishment of a museum here was important. In addition to fulfilling the need of the local, national and international visitors, the museum has historical, archaeological, social and academic significance. The fertile land of Mardan has been occupied by different ethnic groups in the past who left their cultural and historical imprints that glorified the rich cultural history of the region. The District of Mardan is littered with dozens of archaeological sites from the prehistoric to the late historic age where human cultural remains in the form of sculptures, pottery, coins, structure are found. Some of them have been excavated and their material is displayed in the Museums, which is arousing interest of the people in highlighting the archaeological significance of the region. Being located on a crossroad connecting, the culturally rich region of Swat on north, Afghanistan and Central Asia on the west, Hazara and Kashmir on the east and the plains of Punjab on the south/southeast, Mardan is culturally also very promising. The wake of tourism at national and international level has changed positively the socio-economic life of the local people.

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Current Condition	Since it is recently built Museum, therefore, it is in a very good state of preservation except minor repair work, which is badly required. It is under the control of the Directorate and no encroachment has been done by any public or private sector. The originality of the site is intact and has not been modified.
Requirements	Repair and Maintenance for showcases Tiles repair where broken Barbed wire on top of the boundary walls, where missing. Fire extinguisher Digital information system Digital security and fire alarm system Change in Display in chronological order according to the size of antiquity. Change of lights Change of background cloth Standard shape/size labels according to the displayed antiquity Standees with relevant information inside the galleries. Installation of a location map at entrance, marking important archaeological sites for educating the visitors. Treating/conservation of the Manuscripts, which are not in good condition and properly managed. Rather these should be brought back to Peshawar Museum and should be displayed in a single gallery with constant treatment /conservation Car parking, sheds, plantation, pathways, pavements, public toilet near entrance (separate for males and females) Solar system Fixtures and essential furniture Souvenir/tuck shop
Movement/Transfer of Antiquity/ Cultural Artefacts	During the commencement of work the antiquity / cultural artefacts will need to be disturbed from the showcases. These will only be shifted from one place to another within the premises of the Museum by the curatorial staff there. No transfer of antiquity/cultural artefact is needed. The concern officer in-charge will be the sole person to undertake this task, following the Antiquity Act 2016, Government of Khyber Pakhtunkhwa.
Transfer/shifting responsibility	The contractor or KITE officials will not handle/shift/transfer the antiquity. Only the concern staff under the supervision of the in-charge of the Museum will handle/touch/shift the antiquity according to the principles/guidelines set by the Directorate of Archaeology and Museums, GoKP Pakhtunkhwa or world Bank/UNESCO. The Directorate will be required to guide them well before carrying out the project in the Museum.
Impact	No adverse impact on PCR from restoration and conservation work

ANNEX-III: WORLD BANK GROUP EVIRONMENTAL, HEALTH AND SAFETY GUIDELINES

ANNEX-III

World Bank Group Environmental, Health and Safety Guidelines

Workers Occupational health and community health and safety guidelines

Workers health and safety guidelines

Employers and supervisors are obliged to implement all reasonable precautions to protect the health and safety of workers. This section provides guidance and examples of reasonable precautions to implement in managing principal risks to occupational health and safety. Although the focus is placed on the operational phase of projects, much of the guidance also applies to construction and decommissioning activities.

Companies should hire contractors that have the technical capability to manage the occupational health and safety issues of their employees, extending the application of the hazard management activities through formal procurement agreements.

Preventive and protective measures should be introduced according to the following order of priority:

- *Providing appropriate personal protective equipment (PPE)* in conjunction with training, use, and maintenance of the PPE.
- The application of prevention and control measures to occupational hazards should be based on comprehensive job safety or job hazard analyses.

General Facility Design and Operation

Integrity of Workplace Structures

Permanent and recurrent places of work should be designed and equipped to protect OHS:

- Surfaces, structures and installations should be easy to clean and maintain, and not allow for accumulation of hazardous compounds.
- Buildings should be structurally safe, provide appropriate protection against the climate, and have acceptable light and noise conditions.
- Fire resistant, noise-absorbing materials should, to the extent feasible, be used for cladding on ceilings and walls.
- Floors should be level, even, and non-skid.
- Heavy oscillating, rotating or alternating equipment should be located in dedicated buildings or structurally isolated sections.

Severe Weather and Facility Shutdown

- Work place structures should be designed and constructed to withstand the expected elements for the region and have an area designated for safe refuge, if appropriate.

Workspace and Exit

- The space provided for each worker, and in total, should be adequate for safe execution of all activities, including transport and interim storage of materials and products.
- Passages to emergency exits should be unobstructed at all times.
- Exits should be clearly marked to be visible in total darkness. The number and capacity of emergency exits should be sufficient for safe and orderly evacuation of the greatest number of people present at any time, and there should be a minimum two exits from any work area.
- Facilities also should be designed and built taking into account the needs of disabled persons.

Fire Precautions

The workplace should be designed to prevent the start of fires through the implementation of fire codes applicable to industrial settings. Other essential measures include:

- Equipping facilities with fire detectors, alarm systems, and fire-fighting equipment. The equipment should be maintained in good working order and be readily accessible. It should be adequate for the

dimensions and use of the premises, equipment installed, physical and chemical properties of substances present, and the maximum number of people present.
- Provision of manual firefighting equipment that is easily accessible and simple to use
- Fire and emergency alarm systems that are both audible and visible

The IFC Life and Fire Safety Guideline should apply to buildings accessible to the public.

Lavatories and Showers and laundry

- Adequate lavatory facilities (toilets and washing areas) should be provided for the number of people expected to work in the facility and allowances made for segregated facilities, or for indicating whether the toilet facility is "In Use" or "Vacant". Toilet facilities should also be provided with adequate supplies of hot and cold running water, soap, and hand drying devices.
- Where workers may be exposed to substances poisonous by ingestion and skin contamination may occur, facilities for showering and changing into and out of street and work clothes should be provided.
- Adequate laundry facilities should be provided.

Potable Water Supply

- Adequate supplies of potable drinking water should be provided from a fountain with an upward jet or with a sanitary means of collecting the water for the purposes of drinking.
- Water supplied to areas of food preparation or for the purpose of personal hygiene (washing or bathing) should meet drinking water quality standards

Clean Eating Area

- Where there is potential for exposure to substances poisonous by ingestion, suitable arrangements are to be made for provision of clean eating areas where workers are not exposed to the hazardous or noxious substances

Lighting

- Workplaces should, to the degree feasible, receive natural light and be supplemented with sufficient artificial illumination to promote workers' safety and health, and enable safe equipment operation. Supplemental 'task lighting' may be required where specific visual acuity requirements should be met.
- Emergency lighting of adequate intensity should be installed and automatically activated upon failure of the principal artificial light source to ensure safe shut-down, evacuation, etc.

Safe Access

- Passageways for pedestrians and vehicles within and outside buildings should be segregated and provide for easy, safe, and appropriate access
- Equipment and installations requiring servicing, inspection, and/or cleaning should have unobstructed, unrestricted, and ready access
- Openings should be sealed by gates or removable chains
- Covers should, if feasible, be installed to protect against falling items
- Measures to prevent unauthorized access to dangerous areas should be in place

First Aid

- The employer should ensure that qualified first-aid can be provided at all times. Appropriately equipped first-aid stations should be easily accessible throughout the place of work.
- Eye-wash stations and/or emergency showers should be provided close to all workstations where immediate flushing with water is the recommended first-aid response.
- Where the scale of work or the type of activity being carried out so requires, dedicated and appropriately equipped first-aid room(s) should be provided. First aid stations and rooms should be equipped with gloves, gowns, and masks for protection against direct contact with blood and other body fluids
- Remote sites should have written emergency procedures in place for dealing with cases of trauma or serious illness up to the point at which patient care can be transferred to an appropriate medical facility.

Air Supply

- Sufficient fresh air should be supplied for indoor and confined work spaces. Air distribution systems should be designed so as not to expose workers to draughts
- Mechanical ventilation systems should be maintained in good working order. Point-source exhaust systems required for maintaining a safe ambient environment should have local indicators of correct functioning.
- Re-circulation of contaminated air is not acceptable. Air inlet filters should be kept clean and free of dust.

Work Environment Temperature

- The temperature in work, rest room and other welfare facilities should, during service hours, be maintained at a level appropriate for the purpose of the facility.

Communication and Training

Occupational Health and Safety (OHS) Training

- Provisions should be made to provide OHS orientation training to all new employees to ensure they are apprised of the basic site rules of work at / on the site and of personal protection and preventing injury to fellow employees.
- Training should consist of basic hazard awareness, site-specific hazards, safe work practices, and emergency procedures for fire, evacuation, and natural disaster, as appropriate. Any site-specific hazard or color coding in use should be thoroughly reviewed as part of orientation training.

New Task Employee and Contractor Training

The employer should ensure that workers and contractors, prior to commencement of new assignments, have received adequate training and information enabling them to understand work hazards and to protect their health from hazardous ambient factors that may be present. The training should adequately cover:

- Knowledge of materials, equipment, and tools
- Known hazards in the operations and how they are controlled
- Potential risks to health
- Precautions to prevent exposure
- Hygiene requirements
- Wearing and use of protective equipment and clothing
- Appropriate response to operation extremes, incidents and accidents

Prevention and Protection Measure

Prevention and protection measures should be implemented whenever a worker is exposed to the hazard of falling more than two meters; into operating machinery; into water or other liquid; into hazardous substances; or through an opening in a work surface. Fall prevention / protection measures may also be warranted on a case-specific basis when there are risks of falling from lesser heights. Fall prevention may include:

- Proper use of ladders and scaffolds by trained employees.
- Use of fall prevention devices, including safety belt and lanyard travel limiting devices to prevent access to fall hazard area, or fall protection devices such as full body harnesses used in conjunction with shock absorbing lanyards.
- Appropriate training in use, serviceability, and integrity of the necessary PPE
- Inclusion of rescue and/or recovery plans, and equipment to respond to workers after an arrested fall.

Personal Protective Equipment (PPE)

Personal Protective Equipment (PPE) provides additional protection to workers exposed to workplace hazards in conjunction with other facility controls and safety systems. PPE is considered to be a last resort that is above and beyond the other facility controls and provides

the worker with an extra level of personal protection. Recommended measures for use of PPE in the workplace include:

- Active use of PPE if alternative technologies, work plans or procedures cannot eliminate, or sufficiently reduce, a hazard or exposure.
- Identification and provision of appropriate PPE that offers adequate protection to the worker, co-workers, and occasional visitors, without incurring unnecessary inconvenience to the individual.
- Proper maintenance of PPE, including cleaning when dirty and replacement when damaged or worn out. Proper use of PPE should be part of the recurrent training programs for employees Selection of PPE should be based on the hazard and risk ranking.

Accidents and Diseases monitoring

The employer should establish procedures and systems for reporting and recording:

- Occupational accidents and diseases
- Dangerous occurrences and incidents

These systems should enable workers to report immediately to their immediate supervisor any situation they believe presents a serious danger to life or health. The systems and the employer should further enable and encourage workers to report to management all:

- Occupational injuries and near misses
- Suspected cases of occupational disease
- Dangerous occurrences and incidents

All reported occupational accidents, occupational diseases, dangerous occurrences, and incidents together with near misses should be investigated with the assistance of a person knowledgeable/competent in occupational safety.

The investigation should:

- Establish what happened
- Determine the cause of what happened
- Identify measures necessary to prevent a recurrence

Community Health and Safety

This section complements the guidance provided in the preceding environmental and occupational health and safety sections, specifically addressing some aspects of project activities taking place outside of the traditional project boundaries, but nonetheless related to the project operations, as may be applicable on a project basis. These issues may arise at any stage of a project life cycle and can have an impact beyond the life of the project.

Water Quality and Availability

Project activities involving wastewater discharges, water extraction, diversion or impoundment should prevent adverse impacts to the quality and availability of groundwater and surface water resources.

Water Quality

Drinking water sources, whether public or private, should at all times be protected so that they meet or exceed applicable national acceptability standards or in their absence the current edition of WHO Guidelines for Drinking-Water Quality. Air emissions, wastewater effluents, oil and hazardous materials must not degrade soil and water resources.

Where the project includes the delivery of water to the community or to users of facility infrastructure (such as hotel hosts and hospital patients), where water may be used for drinking, cooking, washing, and bathing, water quality should comply with national acceptability standards or in their absence the current edition of with WHO Drinking Water Guidelines.

Any dependency factors associated with the delivery of water to the local community should be planned for and managed to ensure the sustainability of the water supply by involving the community in its management to minimize the dependency in the long-term.

Structural Safety of Project Infrastructure

Reduction of potential hazards is best accomplished during the design phase when the structural design, layout and site modifications can be adapted more easily. The following issues should be considered and incorporated as appropriate into the planning, siting, and design phases of a project:

- Incorporation of siting and safety engineering criteria to prevent failures due to natural risks posed by earthquakes, tsunamis, wind, flooding, landslides and fire.
- All project structures should be designed in accordance with engineering and design criteria mandated by site-specific risks, including but not limited to seismic activity, slope stability, wind loading, and other dynamic loads
- Application of locally regulated building codes to ensure structures are designed and constructed in accordance with sound architectural and engineering practice, including aspects of fire prevention and response
- Engineers and architects responsible for designing and constructing facilities, building, plants and other structures should certify the applicability and appropriateness of the structural criteria employed.

Although major design changes may not be feasible during the operation phase of a project, hazard analysis can be undertaken to identify opportunities to reduce the consequences of a failure or accident.

Emergency Response Plan

An Emergency Response Plan is a set of scenario–based procedures to assist staff and emergency response teams during real life emergency and training exercises. This chapter of the Fire and Life Safety Master Plan should include an assessment of local fire prevention and suppression capabilities.

Specific Requirements for Existing Buildings

All life and fire safety guideline requirements for new buildings apply to existing buildings programmed for renovation.

- A suitably qualified professional conducts a complete life and fire safety review of existing buildings slated for renovation.
- The findings and recommendations of the review are used as the basis to establish the scope of work of a Corrective Action Plan and a time frame for implementing the changes.
- If it becomes apparent that life and fire safety conditions are deficient in an existing building that is not part of the project or that has not been programmed for renovation, a life and fire safety review of the building may be conducted by a suitably qualified professional. The findings and recommendations of the review are used as the basis to establish the scope of work of a Corrective Action Plan and a time frame for implementing the changes.
- All such structures should be designed in accordance with the criteria mandated by situation-, climatic-, and geology-specific location risks (e.g. seismic activity, wind loading, and other dynamic loads).
- Structural engineers and architects responsible for facilities, buildings, plants and structures should certify the applicability and appropriateness of the design criteria employed.

Traffic Safety:

Traffic accidents have become one of the most significant causes of injuries and fatalities among members of the public worldwide. Traffic safety should be promoted by all project personnel during displacement to and from the workplace, and during operation of project equipment on private or public roads. Prevention and control of traffic related injuries and fatalities should include the

adoption of safety measures that are protective of project workers and of road users, including those who are most vulnerable to road traffic accidents.

Road safety initiatives proportional to the scope and nature of project activities should include:

- Adoption of best transport safety practices across all aspects of project operations with the goal of preventing traffic accidents and minimizing injuries suffered by project personnel and the public.
- Emphasizing safety aspects among drivers
- Improving driving skills and requiring licensing of drivers
- Adopting limits for trip duration and arranging driver rosters to avoid overtiredness
- Avoiding dangerous routes and times of day to reduce the risk of accidents
- Use of speed control devices (governors) on trucks, and remote monitoring of driver actions
- Regular maintenance of vehicles and use of manufacturer approved parts to minimize potentially serious accidents caused by equipment malfunction or premature failure.

Where the project may contribute to a significant increase in traffic along existing roads, or where road transport is a significant component of a project, recommended measures include:

- Minimizing pedestrian interaction with construction vehicles
- Collaboration with local communities and responsible authorities to improve signage, visibility and overall safety of roads, particularly along stretches located near schools or other locations where children may be present.
- Collaborating with local communities on education about traffic and pedestrian safety (e.g. school education campaigns).
- Coordination with emergency responders to ensure that appropriate first aid is provided in the event of accidents
- Using locally sourced materials, whenever possible, to minimize transport distances. Locating associated facilities such as worker camps close to project sites and arranging worker bus transport to minimizing external traffic.

Incident Investigation:

Incidents can provide valuable information about transportation hazards and the steps needed to prevent accidental releases. The implementation of incident investigation procedures should ensure that:

- Investigations are initiated promptly
- Summaries of investigations are included in a report
- Report findings and recommendations are addressed

Employee Participation:

There should be a written plan of action regarding the implementation of active employee participation in the prevention of accidents.

Contractors: The plan should include procedures to ensure that:

- The contractor is provided with safety performance
- procedures and safety and hazard information
- Contractors observe safety practices
- Verify that the contractor acts responsibly

The plan should also include additional procedures to ensure the contractors will:

- Ensure appropriate training for their employees
- Ensure their employees know process hazards and applicable emergency actions
- Prepare and submit training records
- Inform employees about the hazards presented by their work

· *Training:*

· Good training programs on operating procedures will provide the employees with the necessary information to understand how to operate safely and why safe operations are needed. The training program should include:

- The list of employees to be trained
- Specific training objectives
- Mechanisms to achieve objectives (i.e. hands-on workshops, videos, etc.)
- Means to determine the effectiveness of the training program
- Training procedures for new hires and refresher programs

Disease Prevention

Communicable Diseases

Communicable diseases pose a significant public health threat worldwide. Health hazards typically associated with large development projects are those relating to poor sanitation and living conditions, sexual transmission and vector-borne infections. Communicable diseases of most concern during the construction phase due to labor mobility are sexually-transmitted diseases (STDs), such as HIV/AIDS. Recognizing that no single measure is likely to be effective in the long term, successful initiatives typically involve a combination of behavioral and environmental modifications.

Recommended interventions at the project level include providing surveillance and active screening and treatment of workers

Preventing illness among workers in local communities by:

- Undertaking health awareness and education initiatives.
- Training health workers in disease treatment
- Conducting immunization programs for workers in local communities to improve health and guard against infection
- Providing health services
- Providing treatment through standard case management in on-site or community health care facilities.
- Ensuring ready access to medical treatment, confidentiality and appropriate care, particularly with respect to migrant workers
- Promoting collaboration with local authorities to enhance access of worker's families and the community to public health services and promote immunization

Vector-Borne Diseases

Reducing the impact of vector-borne disease on the long-term health of workers is best accomplished through implementation of diverse interventions aimed at eliminating the factors that lead to disease. Project sponsors, in close collaboration with community health authorities, can implement an integrated control strategy for mosquito and other arthropod-borne diseases that might involve:

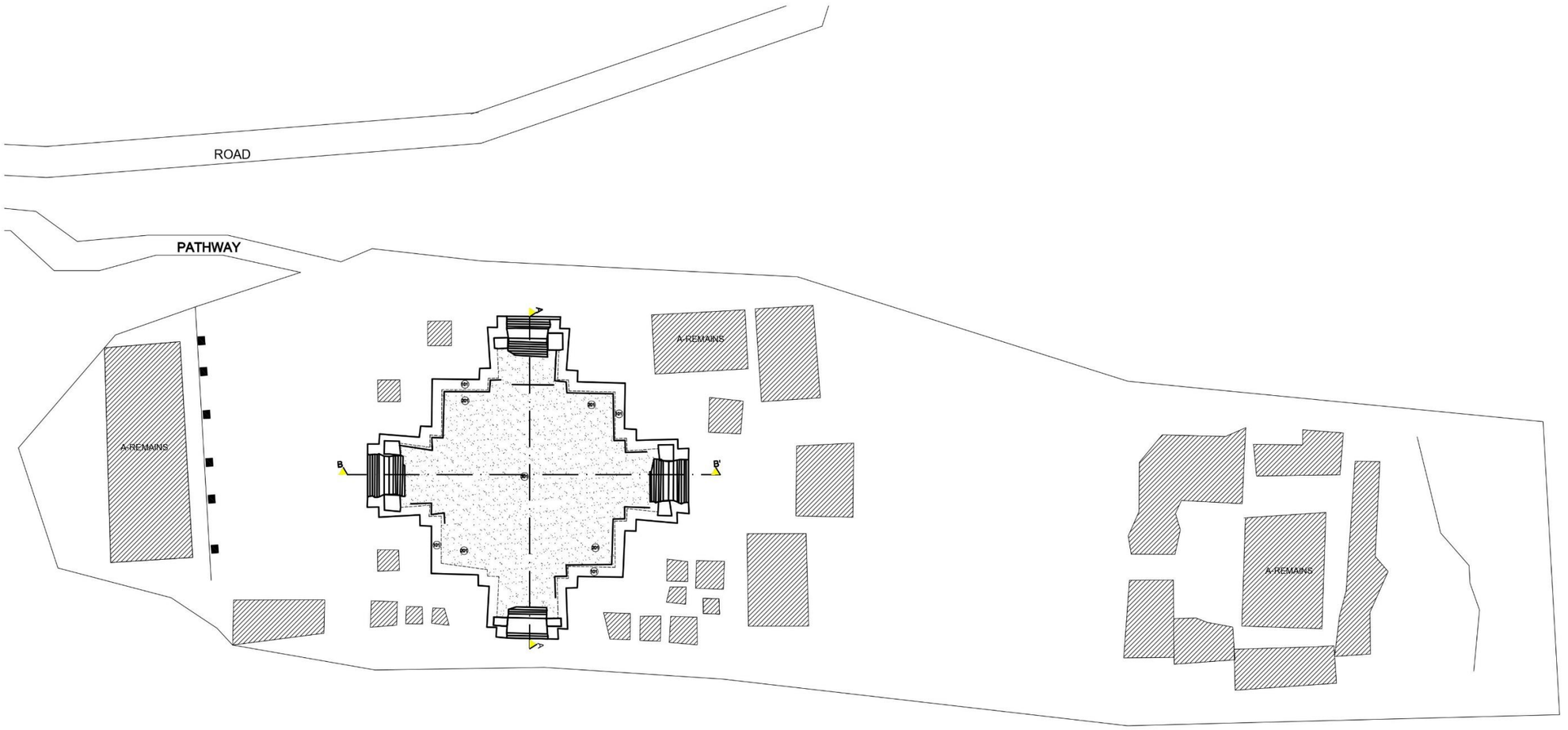
- Prevention of larval and adult propagation through sanitary improvements and elimination of breeding habitats close to human settlements
- Elimination of unusable impounded water
- Considering the application of residual insecticide to dormitory walls
- Implementation of integrated vector control programs
- Promoting use of repellents, clothing, netting, and other barriers to prevent insect bites
- Monitoring and treatment of circulating and migrating populations to prevent disease reservoir spread
- Collaboration and exchange of in-kind services with other control programs in the project area to maximize beneficial effects
- Educating project personnel and area residents on risks, prevention, and available treatment
- Monitoring communities during high-risk seasons to detect and treat cases
- Following safety guidelines for the storage, transport, and distribution of pesticides to minimize the potential for misuse, spills, and accidental human exposure

ANNEX-IV: TECHNICAL DWAINGS

ANNEX-IV

BHAMALA STUPA, DISTRICT HARIPUR

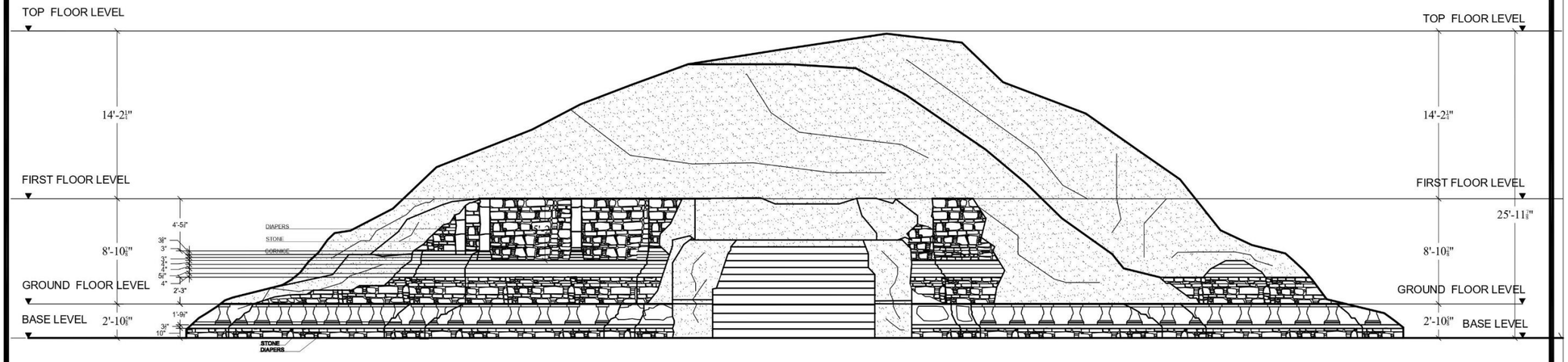
ANNEX-IV



SITE PLAN /MASTER PLAN

DIRECTORATE OF ARCHAEOLOGY AND MUSEUMS CONSERVATION OF ARCHAEOLOGICAL REMAINS BHAMALA STUPA DISTRICT HARIPUR	NO.	DATE	DESCRIPTION	GOVERNMENT OF KHYBER PAKHTUN KHWA DIRECTORATE OF ARCHAEOLOGY AND MUSEUM PESHAWAR	PROJECT TITLE: CONSERVATION OF ARCHAEOLOGICAL REMAINS BHAMALA STUPA DISTRICT HARIPUR	PROJECT COMPONENT: BHAMALA STUPA DISTRICT HARIPUR	DRAWING TITLE: SITE PLAN /MASTER PLAN	KEY PLAN:	PROJECT LEAD ARCHITECT : AR. AHMED MAHMOOD PROJECT ARCHITECT : AR. AHMED MAHMOOD PROJECT ENGINEER : ENGR .UMAIR	CHECKED BY : AR. AHMED MAHMOOD DRAWN BY : AR. AHMED MAHMOOD ENGR .UMAIR	SCALE : 1/32" DRAWING NO : A-101	DATED: 18/12/2020

ANNEX-IV



WEST ELEVATION

DIRECTORATE OF ARCHAEOLOGY AND MUSEUMS CONSERVATION OF ARCHAEOLOGICAL REMAINS BHAMALA STUPA DISTRICT HARIPUR	NO.	DATE	DESCRIPTION	GOVERNMENT OF KHYBER PAKHTUN KHWA DIRECTORATE OF ARCHAEOLOGY AND MUSEUM PESHAWAR	PROJECT TITLE: CONSERVATION OF ARCHAEOLOGICAL REMAINS BHAMALA STUPA DISTRICT HARIPUR	PROJECT COMPONENT: BHAMALA STUPA DISTRICT HARIPUR	DRAWING TITLE: WEST ELEVATION	KEY PLAN:	PROJECT LEAD ARCHITECT : AR. AHMED MAHMOOD	CHECKED BY : AR. AHMED MAHMOOD	SCALE : 1/8"	DATED: 18/12/2020
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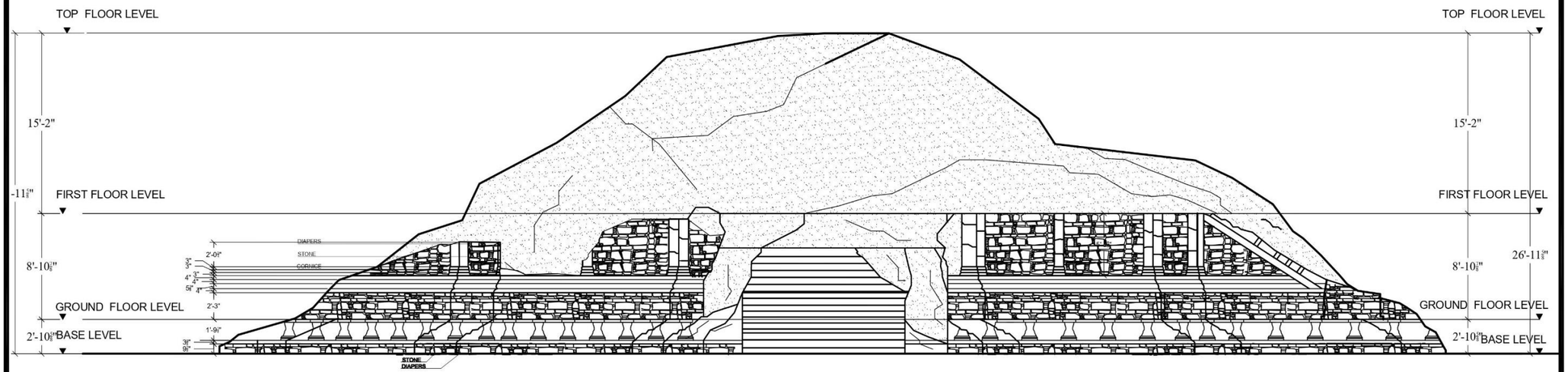
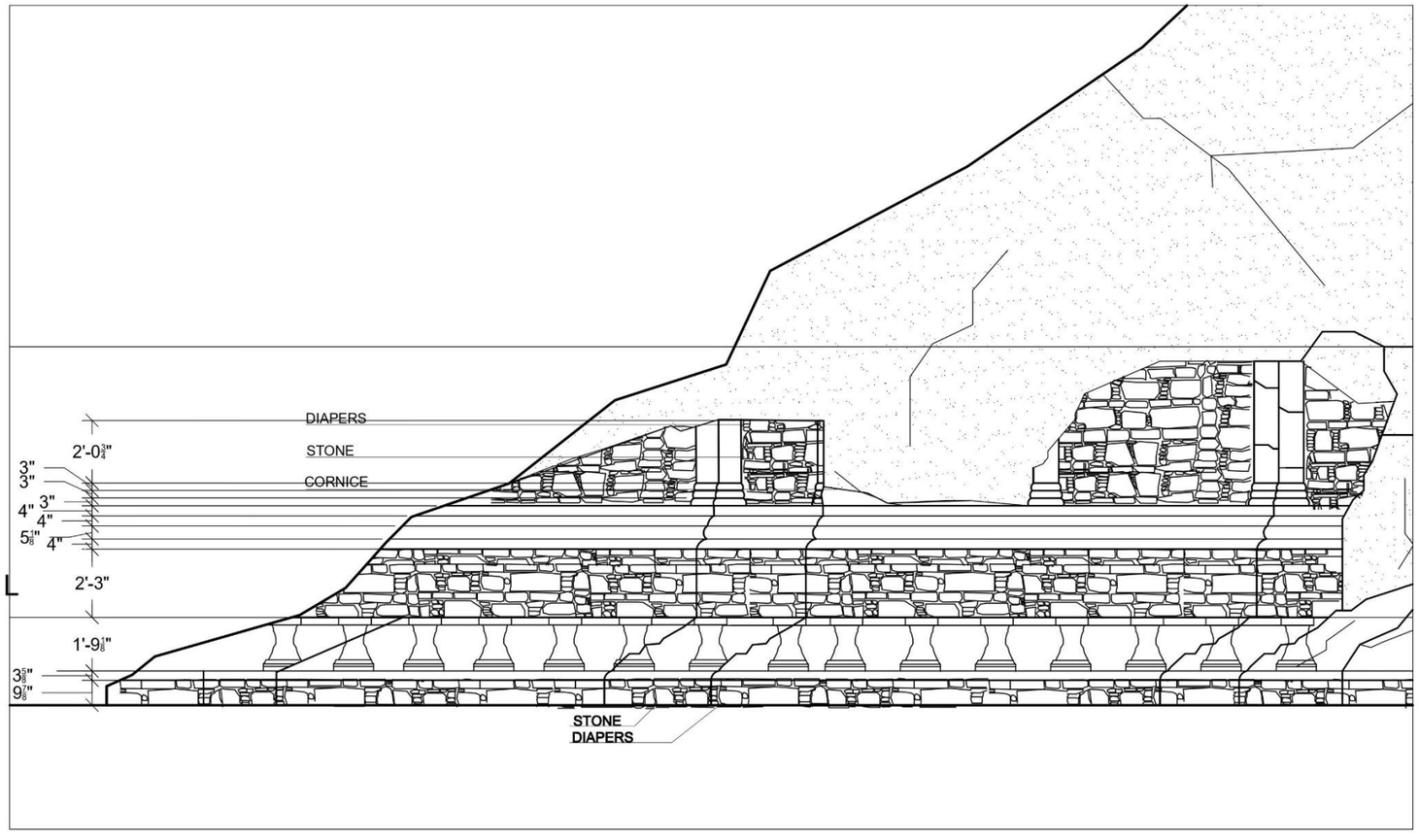
ANNEX-IV



SOUTH ELEVATION

DIRECTORATE OF ARCHAEOLOGY AND MUSEUMS CONSERVATION OF ARCHAEOLOGICAL REMAINS BHAMALA STUPA DISTRICT HARIPUR	NO.	DATE	DESCRIPTION	GOVERNMENT OF KHYBER PAKHTUN KHWA DIRECTORATE OF ARCHAEOLOGY AND MUSEUM PESHAWAR	PROJECT TITLE: CONSERVATION OF ARCHAEOLOGICAL REMAINS BHAMALA STUPA DISTRICT HARIPUR	PROJECT COMPONENT: BHAMALA STUPA DISTRICT HARIPUR	DRAWING TITLE: EAST ELEVATION	KEY PLAN:	PROJECT LEAD ARCHITECT : AR. AHMED MAHMOOD PROJECT ARCHITECT : AR. AHMED MAHMOOD PROJECT ENGINEER : ENGR .UMAIR	CHECKED BY : AR. AHMED MAHMOOD DRAWN BY : AR. AHMED MAHMOOD ENGR .UMAIR	SCALE : 1/8" DRAWING NO : A-108	DATED: 18/12/2020

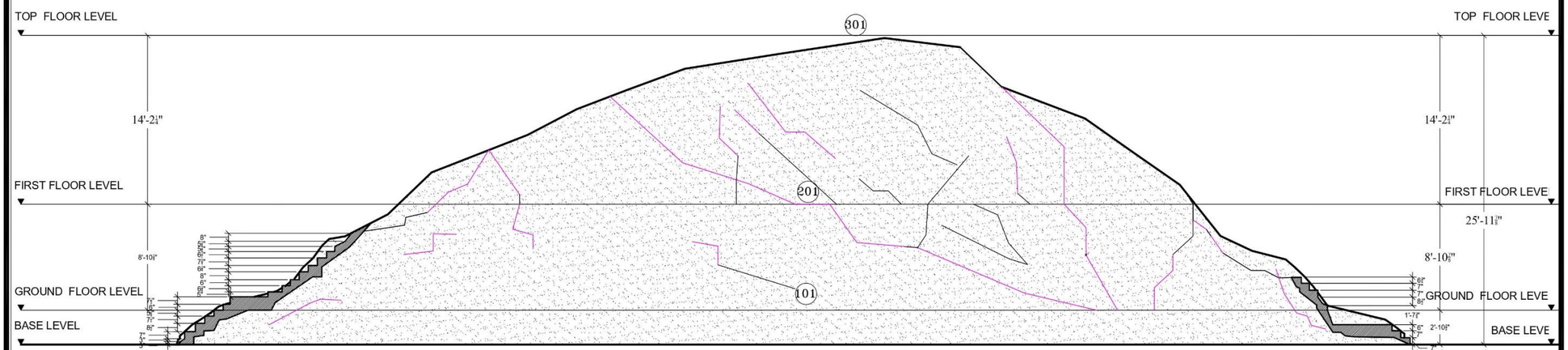
ANNEX-IV



EAST ELEVATION

DIRECTORATE OF ARCHAEOLOGY AND MUSEUMS CONSERVATION OF ARCHAEOLOGICAL REMAINS BHAMALA STUPA DISTRICT HARIPUR	NO. / DATE / DESCRIPTION	GOVERNMENT OF KHYBER PAKHTUN KHWA DIRECTORATE OF ARCHAEOLOGY AND MUSEUM PESHAWAR	PROJECT TITLE: CONSERVATION OF ARCHAEOLOGICAL REMAINS BHAMALA STUPA DISTRICT HARIPUR	PROJECT COMPONENT: BHAMALA STUPA DISTRICT HARIPUR	DRAWING TITLE: EAST ELEVATION BLOW UP DETAIL	KEY PLAN:	PROJECT LEAD ARCHITECT : AR. AHMED MAHMOOD PROJECT ARCHITECT : AR. AHMED MAHMOOD PROJECT ENGINEER : ENGR .UMAIR	CHECKED BY : AR. AHMED MAHMOOD DRAWN BY : AR. AHMED MAHMOOD ENGR .UMAIR	SCALE : 1/4" DRAWING NO : A-109	DATED: 18/12/2020

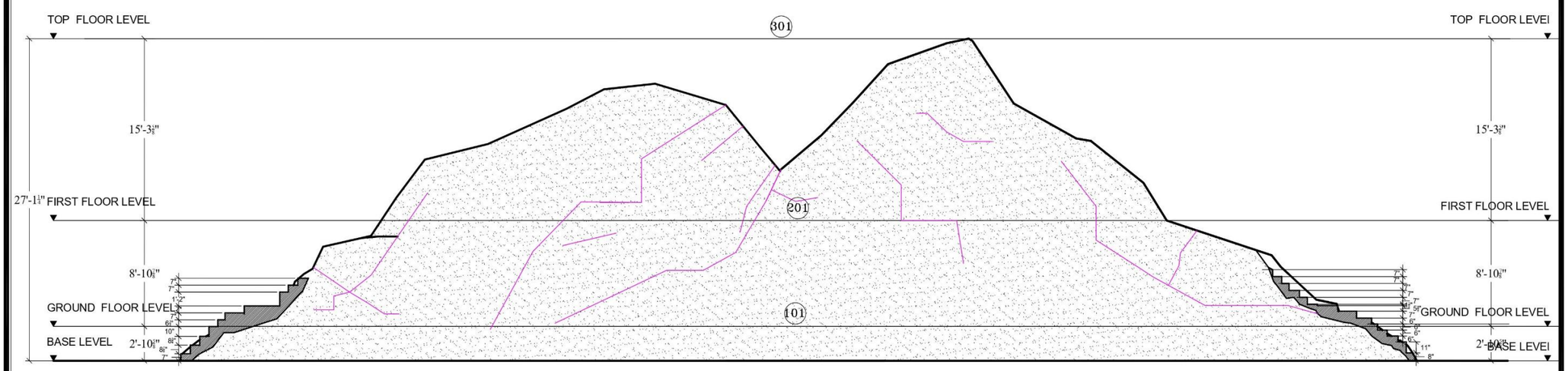
ANNEX-IV



SECTION A–A'

DIRECTORATE OF ARCHAEOLOGY AND MUSEUMS CONSERVATION OF ARCHAEOLOGICAL REMAINS BHAMALA STUPA DISTRICT HARIPUR	NO.	DATE	DESCRIPTION	GOVERNMENT OF KHYBER PAKHTUN KHWA DIRECTORATE OF ARCHAEOLOGY AND MUSEUM PESHAWAR	PROJECT TITLE: CONSERVATION OF ARCHAEOLOGICAL REMAINS BHAMALA STUPA DISTRICT HARIPUR	PROJECT COMPONENT: BHAMALA STUPA DISTRICT HARIPUR	DRAWING TITLE: SECTION A-A'	KEY PLAN:	PROJECT LEAD ARCHITECT : AR. AHMED MAHMOOD PROJECT ARCHITECT : AR. AHMED MAHMOOD PROJECT ENGINEER : ENGR .UMAIR	CHECKED BY : AR. AHMED MAHMOOD DRAWN BY : AR. AHMED MAHMOOD ENGR .UMAIR	SCALE : 1/8" DRAWING NO : A-112	DATED: 18/12/2020

ANNEX-IV



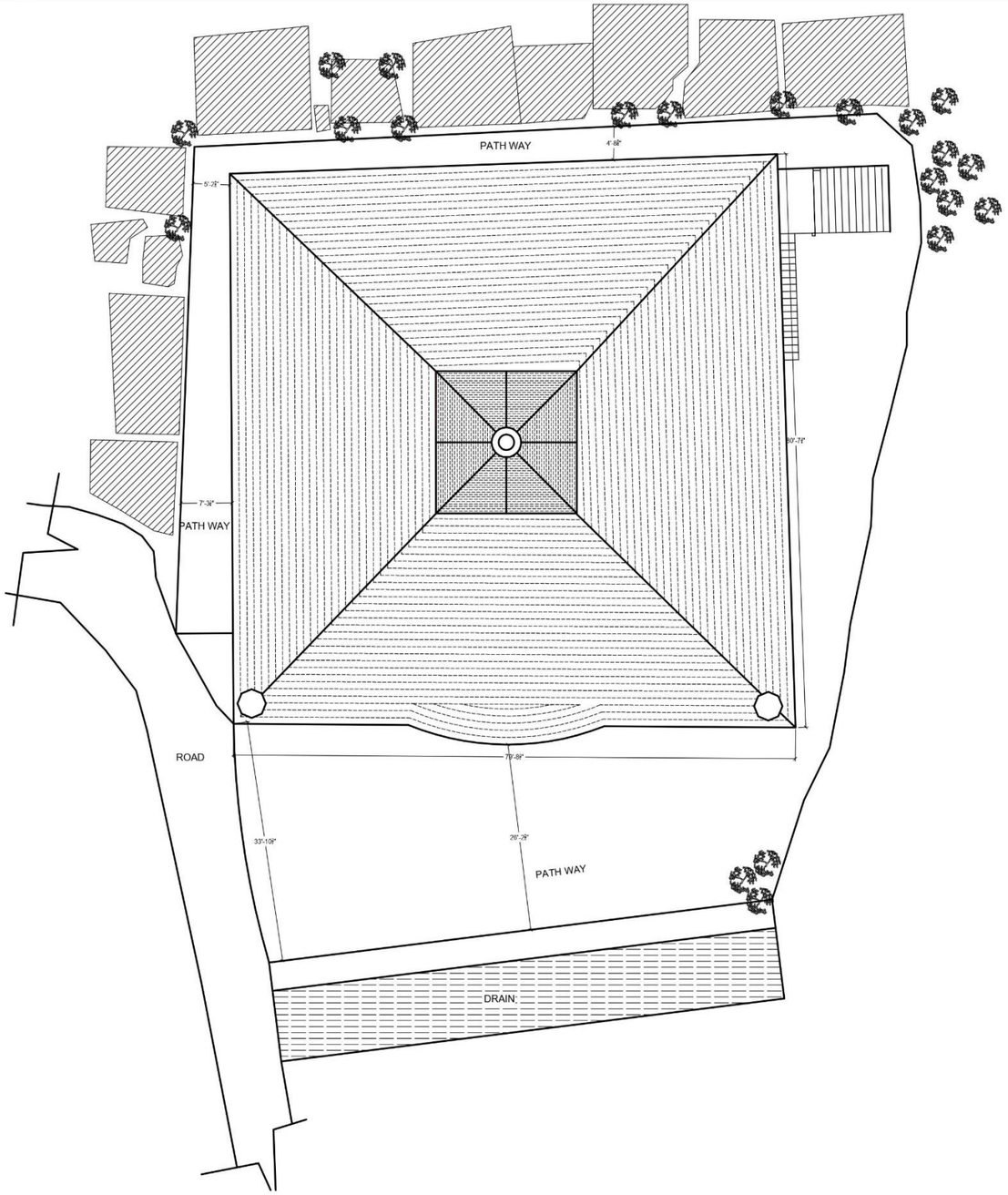
SECTION B–B'

DIRECTORATE OF ARCHAEOLOGY AND MUSEUMS CONSERVATION OF ARCHAEOLOGICAL REMAINS BHAMALA STUPA DISTRICT HARIPUR	NO. / DATE / DESCRIPTION	GOVERNMENT OF KHYBER PAKHTUN KHWA DIRECTORATE OF ARCHAEOLOGY AND MUSEUM PESHAWAR	PROJECT TITLE: CONSERVATION OF ARCHAEOLOGICAL REMAINS BHAMALA STUPA DISTRICT HARIPUR	PROJECT COMPONENT: BHAMALA STUPA DISTRICT HARIPUR	DRAWING TITLE: SECTION B-B'	KEY PLAN:	PROJECT LEAD ARCHITECT : AR. AHMED MAHMOOD PROJECT ARCHITECT : AR. AHMED MAHMOOD PROJECT ENGINEER : ENGR .UMAIR	CHECKED BY : AR. AHMED MAHMOOD DRAWN BY : AR. AHMED MAHMOOD ENGR .UMAIR	SCALE : 1/8" DRAWING NO : A-113	DATED: 18/12/2020

ANNEX-IV

MAIN KALAM MOSQUE, DISTRICT SWAT

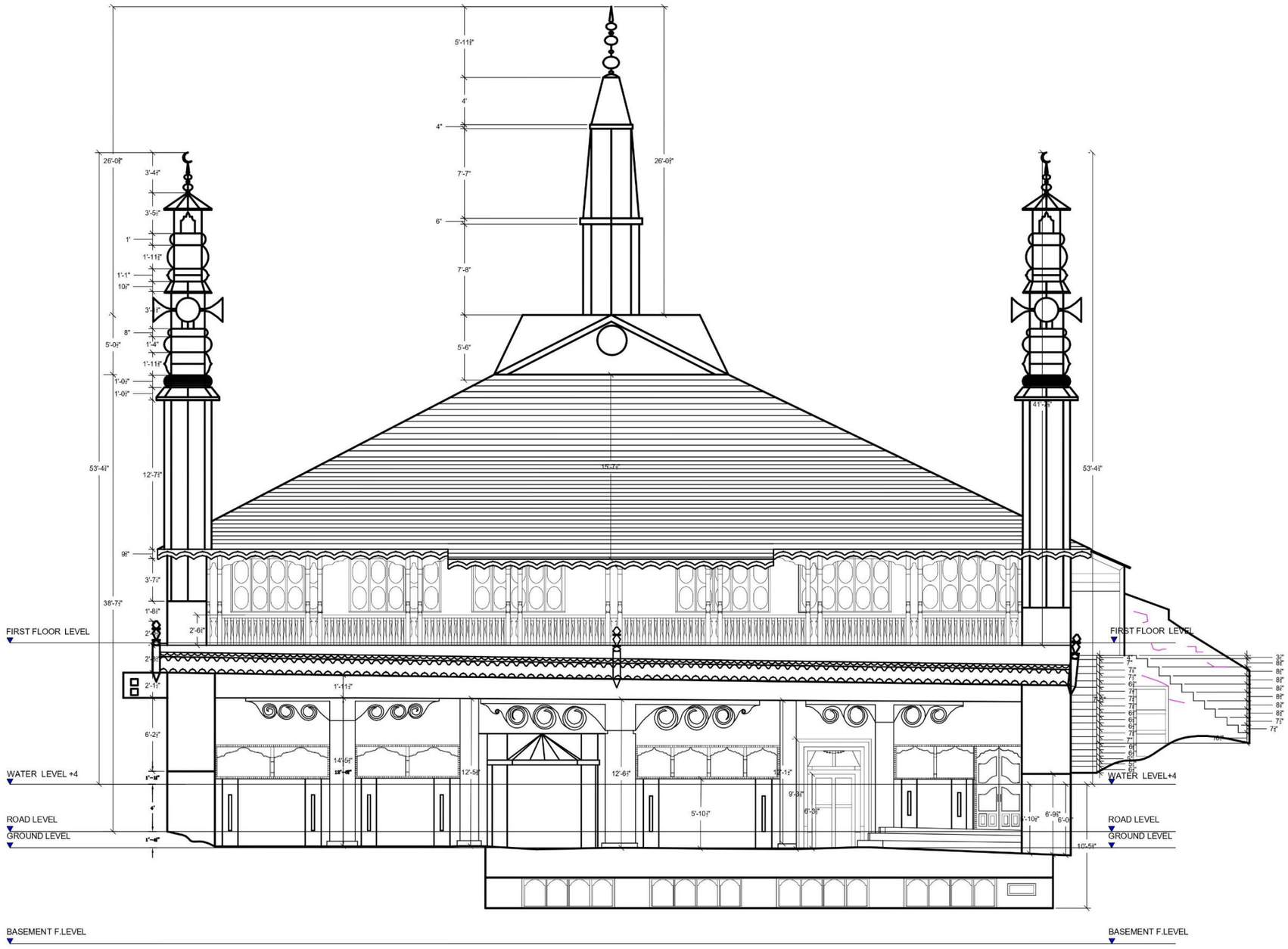
ANNEX-IV



SITE PLAN /MASTER PLAN

DIRECTORATE OF ARCHAEOLOGY AND MUSEUMS CONSERVATION OF MAIN KALAM MOSQUE AT DISTRICT SWAT	NO.	DATE	DESCRIPTION	GOVERNMENT OF KHYBER PAKHTUN KHWA DIRECTORATE OF ARCHAEOLOGY AND MUSEUM PESHAWAR	PROJECT TITLE: CONSERVATION OF MAIN KALAM MOSQUE AT DISTRICT SWAT	PROJECT COMPONENT: MAIN KALAM MOSQUE	DRAWING TITLE: SITE PLAN /MASTER PLAN	KEY PLAN:	PROJECT LEAD ARCHITECT : AR. AHMED MAHMOOD PROJECT ARCHITECT : AR. AHMED MAHMOOD PROJECT ENGINEER : ENGR .UMAIR	CHECKED BY : AR. AHMED MAHMOOD DRAWN BY : AR. AHMED MAHMOOD ENGR .UMAIR	SCALE : 3/32" DRAWING NO : A-101	DATED: 31/10/2020

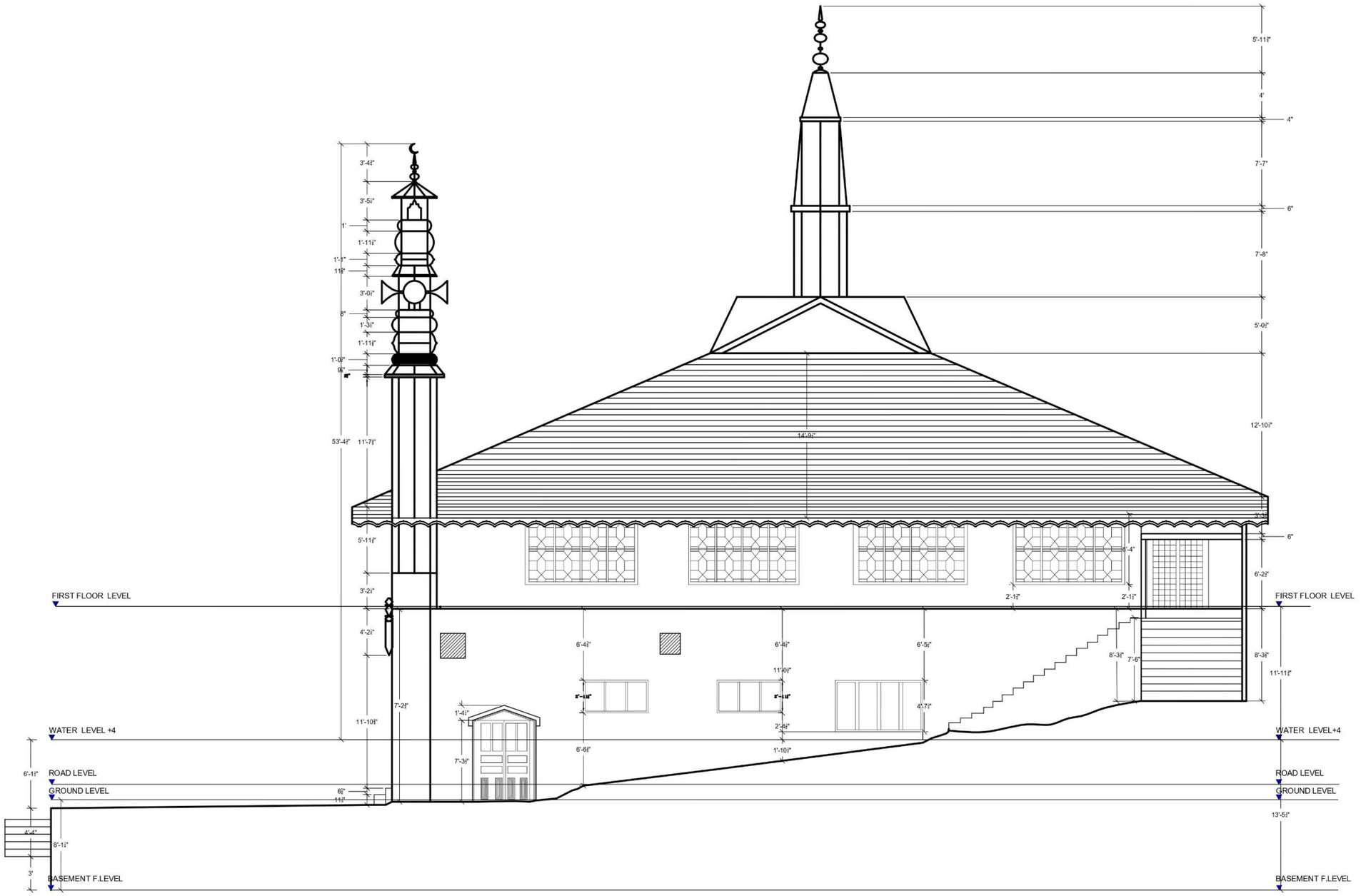
ANNEX-IV



WEST ELEVATION

DIRECTORATE OF ARCHAEOLOGY AND MUSEUMS CONSERVATION OF MAIN KALAM MOSQUE AT DISTRICT SWAT	NO.	DATE	DESCRIPTION	GOVERNMENT OF KHYBER PAKHTUN KHWA DIRECTORATE OF ARCHAEOLOGY AND MUSEUM PESHAWAR	PROJECT TITLE: CONSERVATION OF MAIN KALAM MOSQUE AT DISTRICT SWAT	PROJECT COMPONENT: MAIN KALAM MOSQUE	DRAWING TITLE: WEST ELEVATION	KEY PLAN:	PROJECT LEAD ARCHITECT : AR. AHMED MAHMOOD PROJECT ARCHITECT : AR. AHMED MAHMOOD PROJECT ENGINEER : ENGR .UMAIR	CHECKED BY : AR. AHMED MAHMOOD DRAWN BY : AR. AHMED MAHMOOD ENGR .UMAIR	SCALE : 1/8" DRAWING NO : A-116	DATED: 31/10/2020

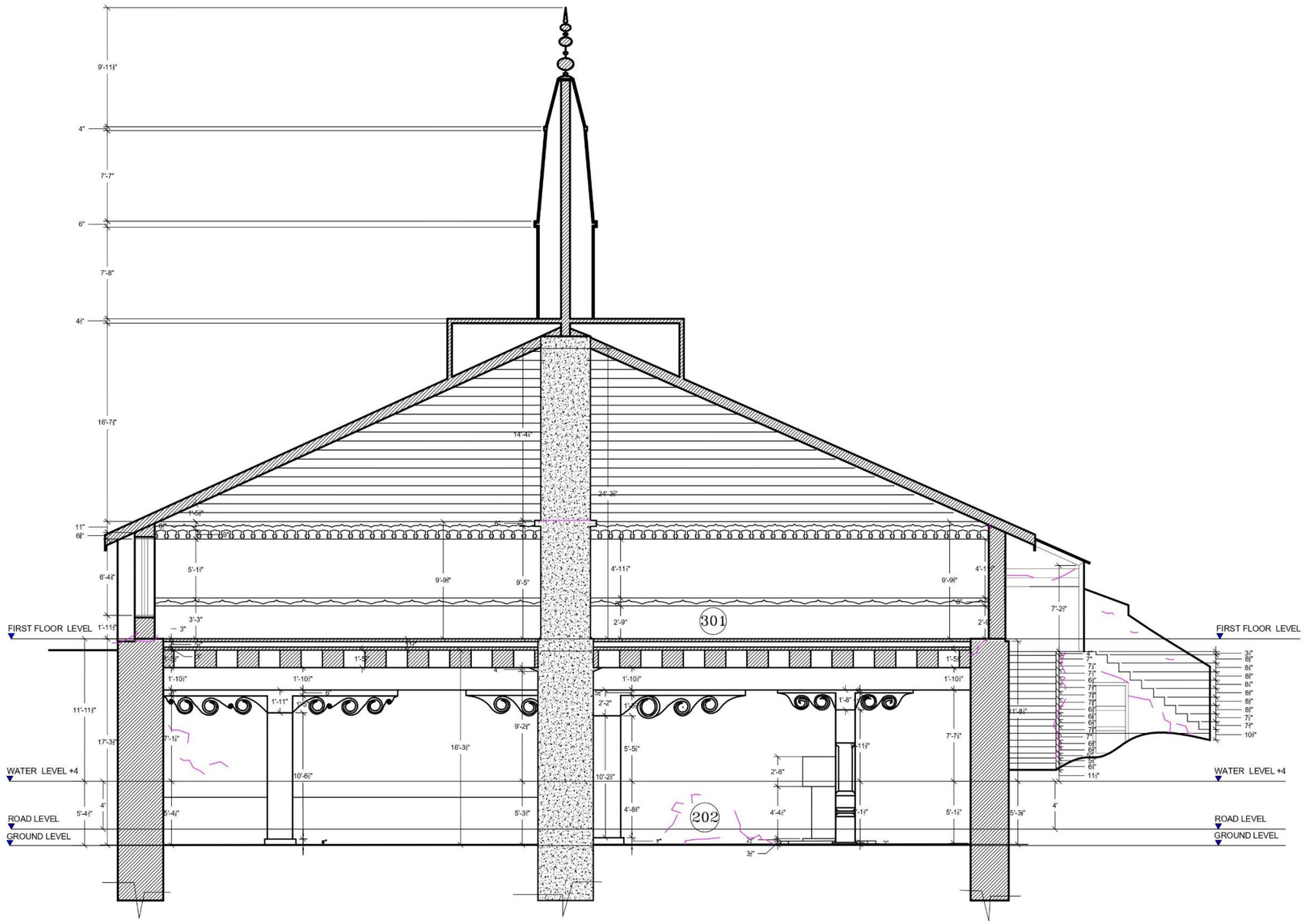
ANNEX-IV



SOUTH ELEVATION

DIRECTORATE OF ARCHAEOLOGY AND MUSEUMS CONSERVATION OF MAIN KALAM MOSQUE AT DISTRICT SWAT	NO.	DATE	DESCRIPTION	GOVERNMENT OF KHYBER PAKHTUN KHWA DIRECTORATE OF ARCHAEOLOGY AND MUSEUM PESHAWAR	PROJECT TITLE: CONSERVATION OF MAIN KALAM MOSQUE AT DISTRICT SWAT	PROJECT COMPONENT: MAIN KALAM MOSQUE	DRAWING TITLE: SOUTH ELEVATION	KEY PLAN:	PROJECT LEAD ARCHITECT : AR. AHMED MAHMOOD PROJECT ARCHITECT : AR. AHMED MAHMOOD PROJECT ENGINEER : ENGR .UMAIR	CHECKED BY : AR. AHMED MAHMOOD DRAWN BY : AR. AHMED MAHMOOD ENGR .UMAIR	SCALE : 1/8" DRAWING NO : A-117	DATED: 31/10/2020

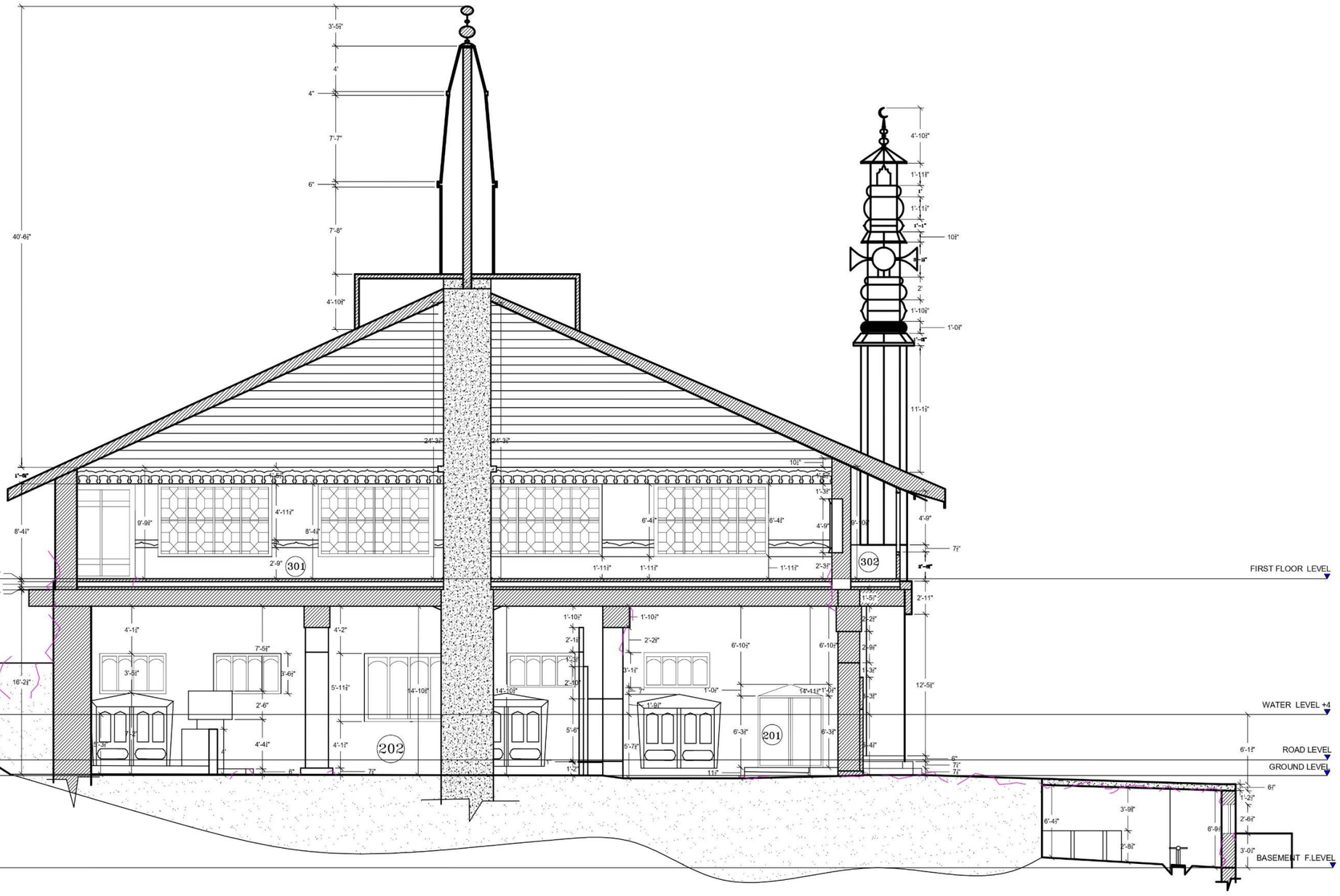
ANNEX-IV



SECTION A-A'

DIRECTORATE OF ARCHAEOLOGY AND MUSEUMS CONSERVATION OF MAIN KALAM MOSQUE AT DISTRICT SWAT	NO.	DATE	DESCRIPTION	GOVERNMENT OF KHYBER PAKHTUN KHWA DIRECTORATE OF ARCHAEOLOGY AND MUSEUM PESHAWAR	PROJECT TITLE: CONSERVATION OF MAIN KALAM MOSQUE AT DISTRICT SWAT	PROJECT COMPONENT: MAIN KALAM MOSQUE	DRAWING TITLE: SECTION A-A'	KEY PLAN:	PROJECT LEAD ARCHITECT : AR. AHMED MAHMOOD PROJECT ARCHITECT : AR. AHMED MAHMOOD PROJECT ENGINEER : ENGR .UMAIR	CHECKED BY : AR. AHMED MAHMOOD DRAWN BY : AR. AHMED MAHMOOD ENGR .UMAIR	SCALE : 1/8" DRAWING NO : A-118	DATED: 31/10/2020

ANNEX-IV



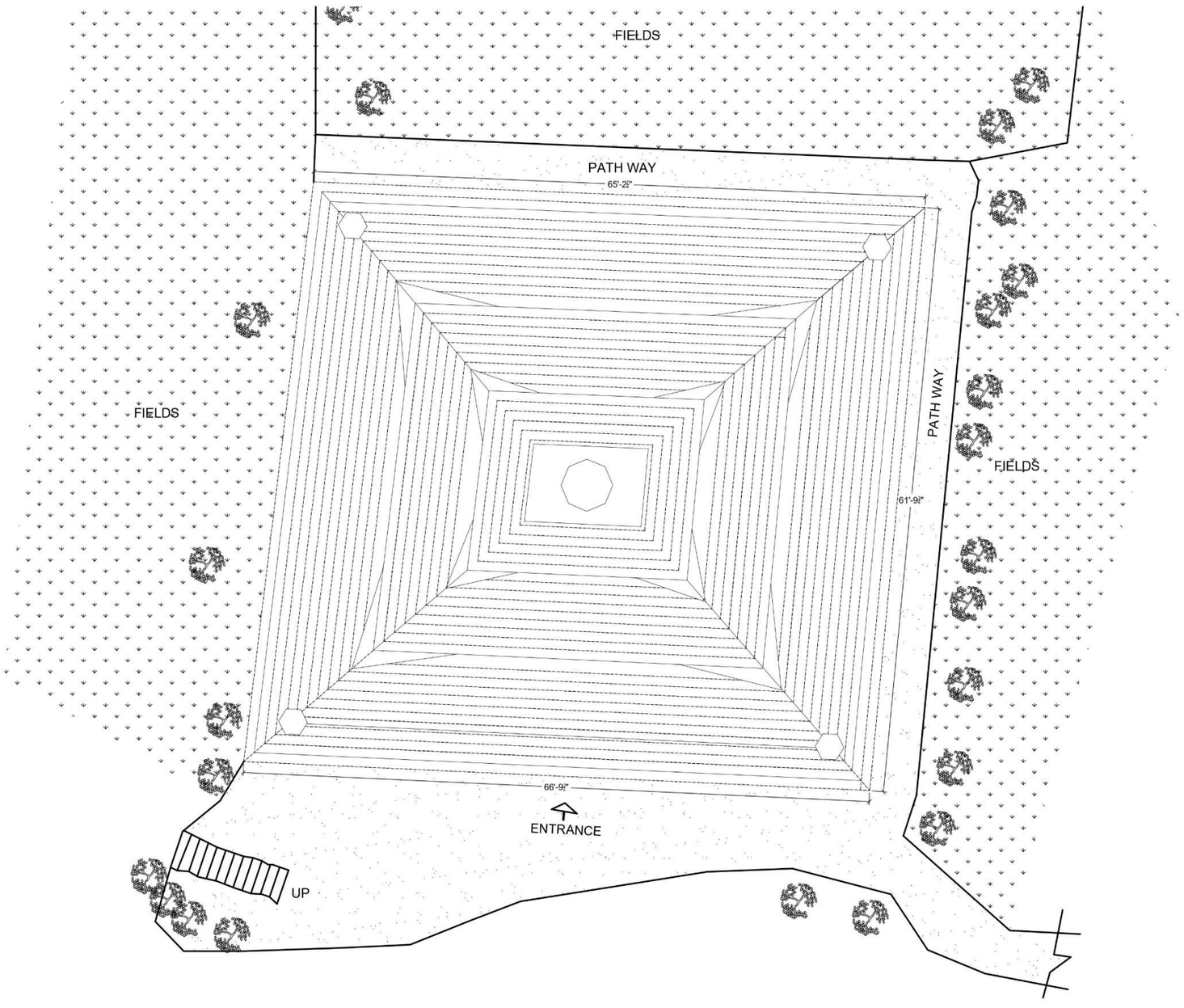
SECTION B-B'

DIRECTORATE OF ARCHAEOLOGY AND MUSEUMS CONSERVATION OF MAIN KALAM MOSQUE AT DISTRICT SWAT	NO.	DATE	DESCRIPTION	GOVERNMENT OF KHYBER PAKHTUN KHWA DIRECTORATE OF ARCHAEOLOGY AND MUSEUM PESHAWAR	PROJECT TITLE: CONSERVATION OF MAIN KALAM MOSQUE AT DISTRICT SWAT	PROJECT COMPONENT: MAIN KALAM MOSQUE	DRAWING TITLE: SECTION B-B'	KEY PLAN:	PROJECT LEAD ARCHITECT : AR. AHMED MAHMOOD PROJECT ARCHITECT : AR. AHMED MAHMOOD PROJECT ENGINEER : ENGR .UMAIR	CHECKED BY : AR. AHMED MAHMOOD DRAWN BY : AR. AHMED MAHMOOD ENGR .UMAIR	SCALE : 1/8" DRAWING NO : A-119	DATED: 31/10/2020

ANNEX-IV

PISHMAL MOSQUE, DISTRICT SWAT

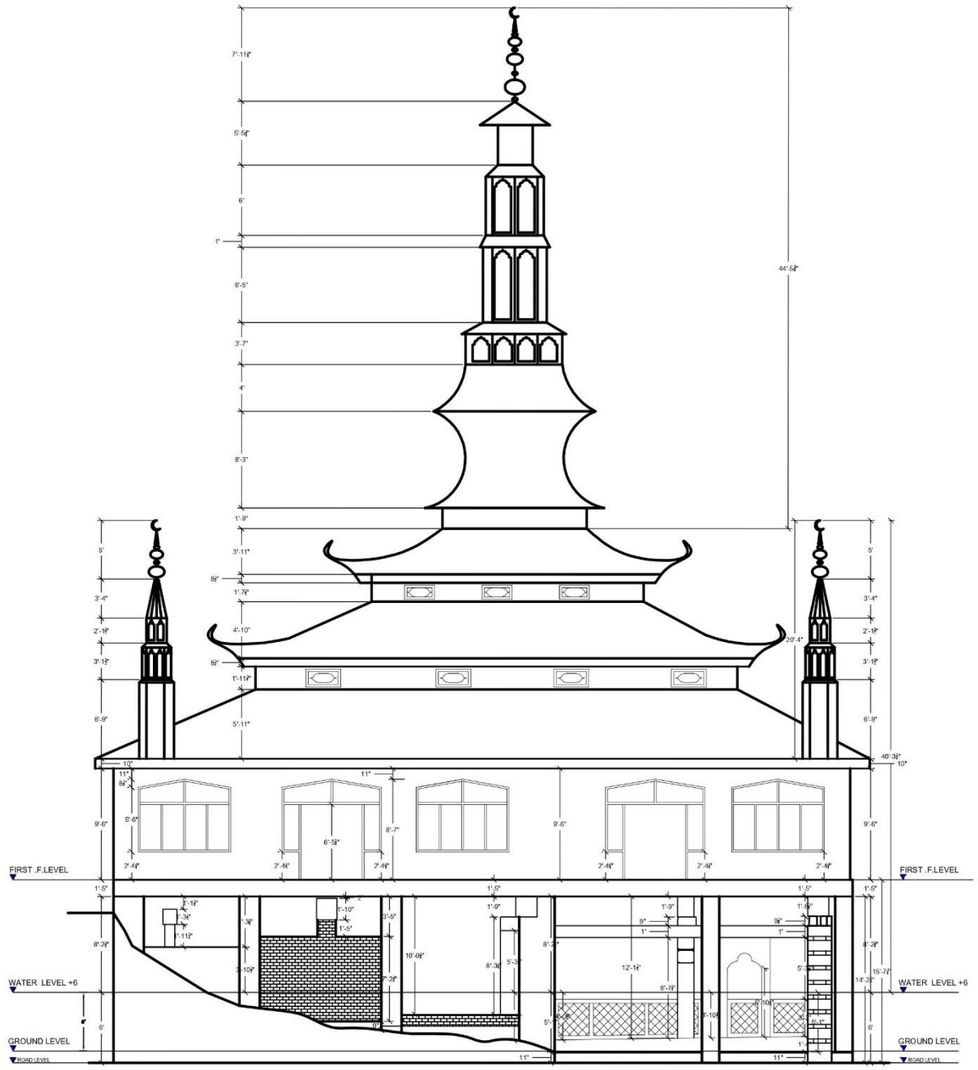
ANNEX-IV



SITE PLAN /MASTER PLAN

DIRECTORATE OF ARCHAEOLOGY AND MUSEUMS CONSERVATION OF PISHMAL MOSQUE AT DISTRICT SWAT	NO. / DATE / DESCRIPTION	GOVERNMENT OF KHYBER PAKHTUN KHWA DIRECTORATE OF ARCHAEOLOGY AND MUSEUM PESHAWAR	PROJECT TITLE: CONSERVATION OF PISHMAL MOSQUE AT DISTRICT SWAT	PROJECT COMPONENT: PISHMAL MOSQUE	DRAWING TITLE: SITE PLAN /MASTER PLAN	KEY PLAN:	PROJECT LEAD ARCHITECT : AR. AHMED MAHMOOD PROJECT ARCHITECT : AR. AHMED MAHMOOD PROJECT ENGINEER : ENGR .UMAIR	CHECKED BY : AR. AHMED MAHMOOD DRAWN BY : AR. AHMED MAHMOOD ENGR .UMAIR	SCALE : 3/32" DRAWING NO : A-101	DATED: 31/10/2020

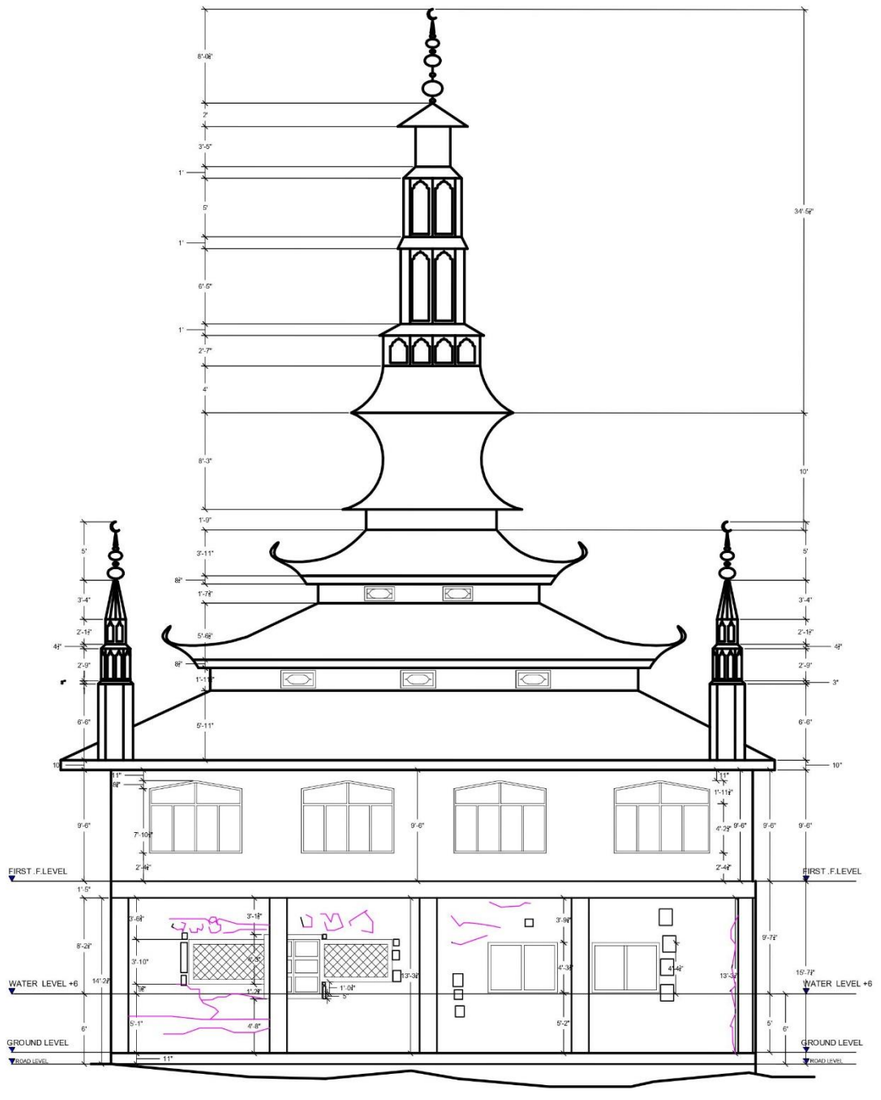
ANNEX-IV



SOUTH ELEVATION

DIRECTORATE OF ARCHAEOLOGY AND MUSEUMS CONSERVATION OF PISHMAL MOSQUE AT DISTRICT SWAT	NO.	DATE	DESCRIPTION	GOVERNMENT OF KHYBER PAKHTUN KHWA DIRECTORATE OF ARCHAEOLOGY AND MUSEUM PESHAWAR	PROJECT TITLE: CONSERVATION OF PISHMAL MOSQUE AT DISTRICT SWAT	PROJECT COMPONENT: PISHMAL MOSQUE	DRAWING TITLE: SOUTH EEVATION	KEY PLAN:	PROJECT LEAD ARCHITECT : AR. AHMED MAHMOOD PROJECT ARCHITECT : AR. AHMED MAHMOOD PROJECT ENGINEER : ENGR .UMAIR	CHECKED BY : AR. AHMED MAHMOOD DRAWN BY : AR. AHMED MAHMOOD ENGR .UMAIR	SCALE : 3/32" DRAWING NO : A-112	DATED: 31/10/2020

ANNEX-IV



EAST ELEVATION

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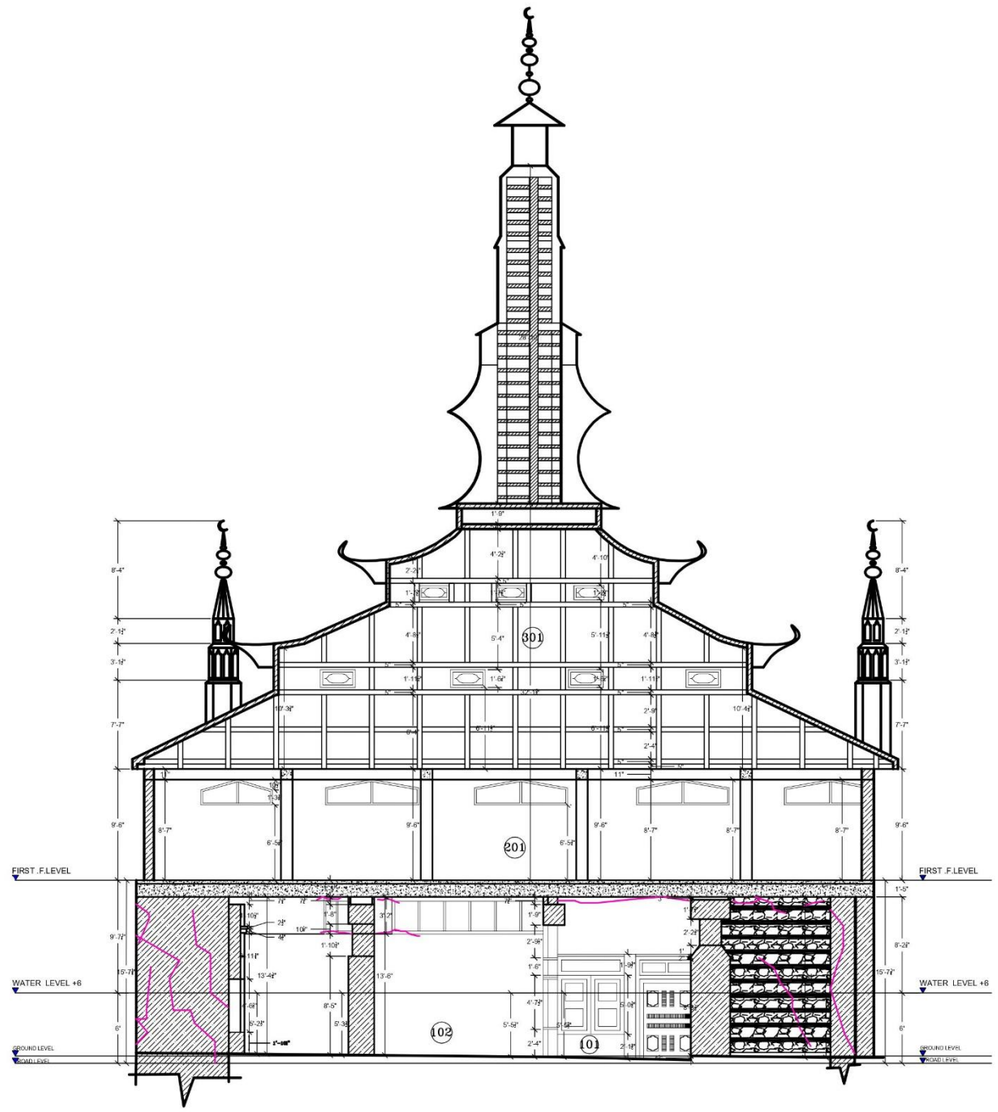
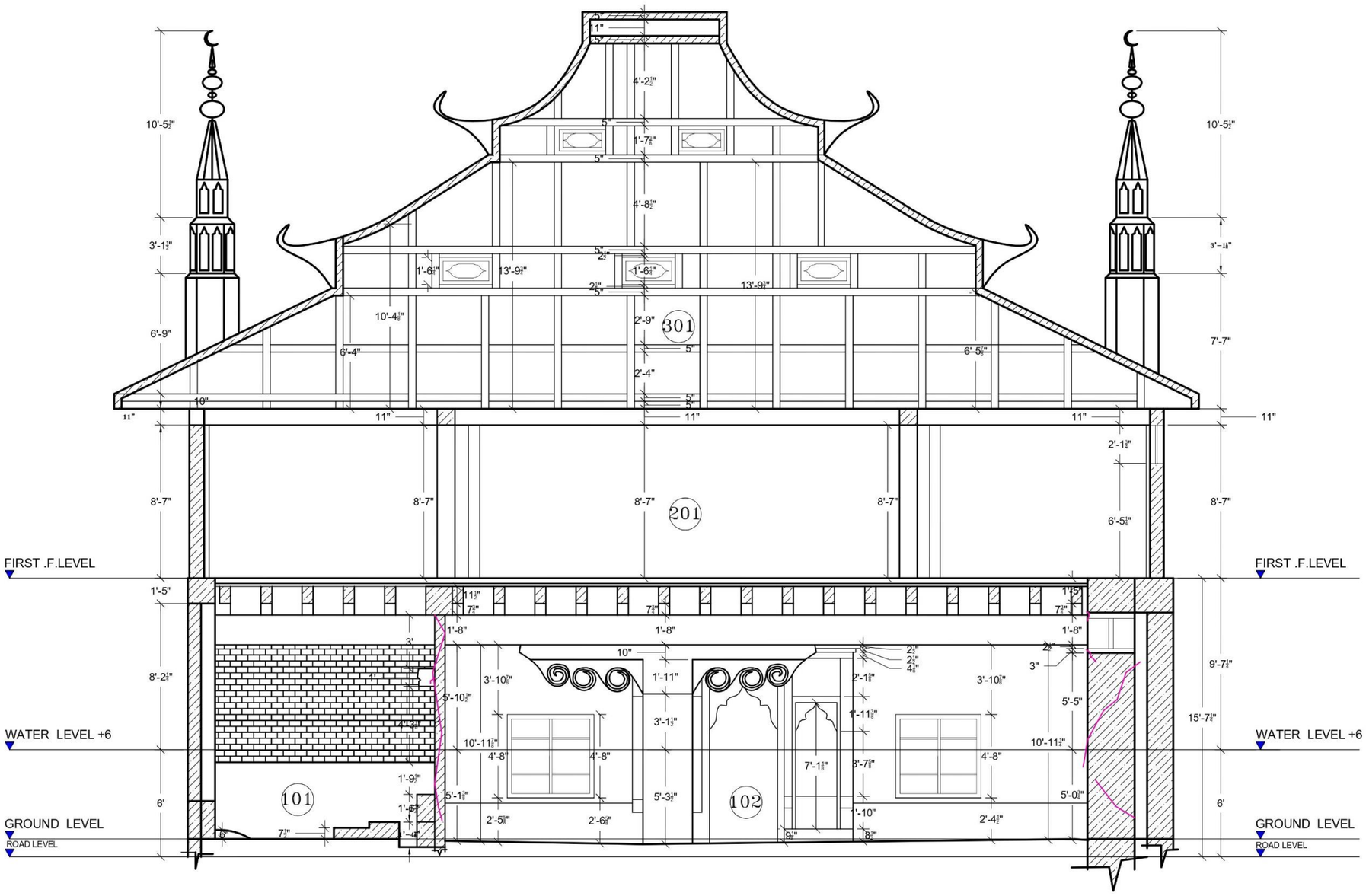
ANNEX-IV



SECTION A-A'

DIRECTORATE OF ARCHAEOLOGY AND MUSEUMS CONSERVATION OF PISHMAL MOSQUE AT DISTRICT SWAT	NO.	DATE	DESCRIPTION	GOVERNMENT OF KHYBER PAKHTUN KHWA DIRECTORATE OF ARCHAEOLOGY AND MUSEUM PESHAWAR	PROJECT TITLE: CONSERVATION OF PISHMAL MOSQUE AT DISTRICT SWAT	PROJECT COMPONENT: PISHMAL MOSQUE	DRAWING TITLE: SECTION A-A'	KEY PLAN:	PROJECT LEAD ARCHITECT : AR. AHMED MAHMOOD PROJECT ARCHITECT : AR. AHMED MAHMOOD PROJECT ENGINEER : ENGR .UMAIR	CHECKED BY : AR. AHMED MAHMOOD DRAWN BY : AR. AHMED MAHMOOD ENGR .UMAIR	SCALE : 3/32" DRAWING NO : A-114	DATED: 31/10/2020

ANNEX-IV



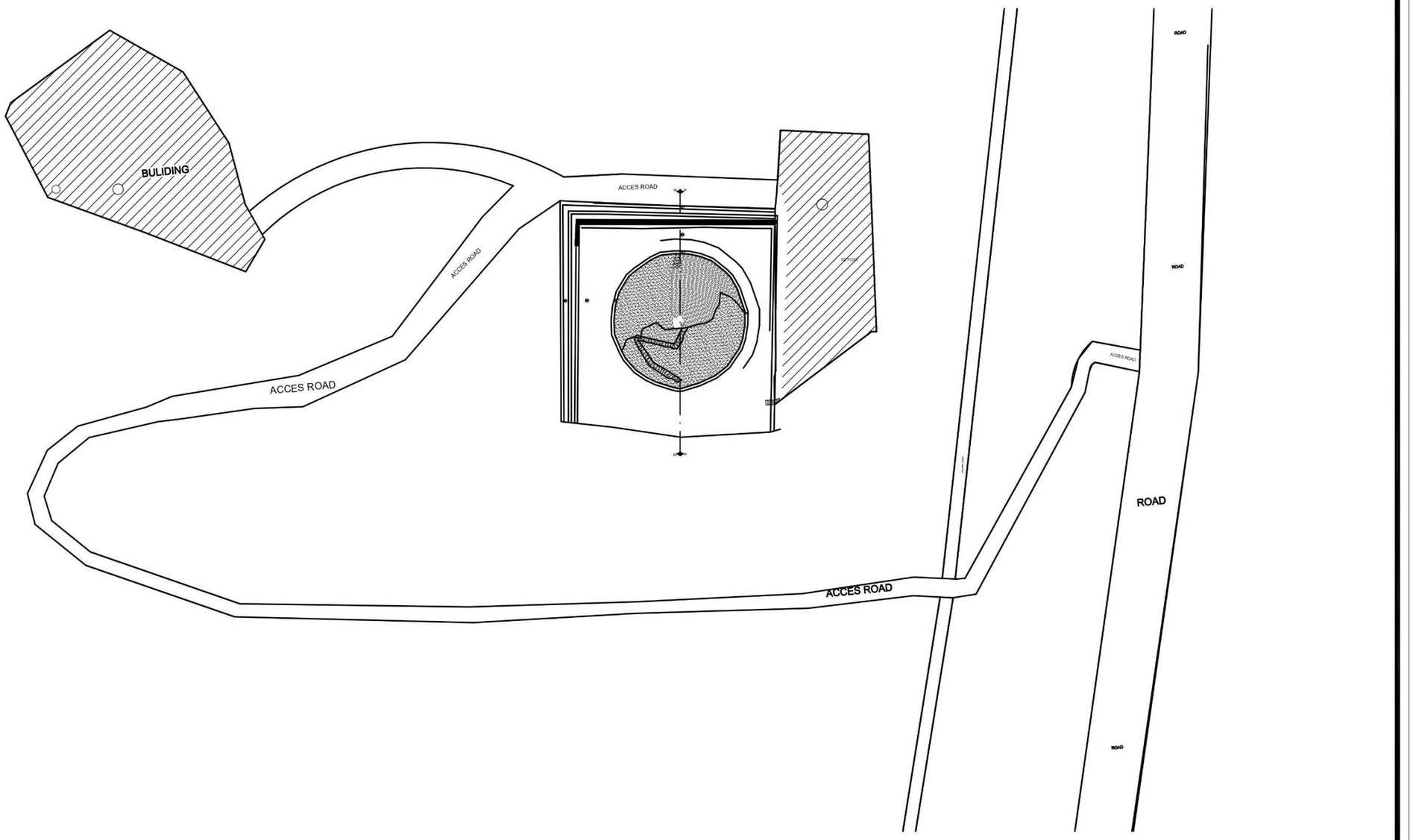
SECTION B-B'

DIRECTORATE OF ARCHAEOLOGY AND MUSEUMS CONSERVATION OF PISHMAL MOSQUE AT DISTRICT SWAT	NO.	DATE	DESCRIPTION	GOVERNMENT OF KHYBER PAKHTUN KHWA DIRECTORATE OF ARCHAEOLOGY AND MUSEUM PESHAWAR	PROJECT TITLE: CONSERVATION OF PISHMAL MOSQUE AT DISTRICT SWAT	PROJECT COMPONENT: PISHMAL MOSQUE	DRAWING TITLE: SECTION B-B'	KEY PLAN:	PROJECT LEAD ARCHITECT : AR. AHMED MAHMOOD PROJECT ARCHITECT : AR. AHMED MAHMOOD PROJECT ENGINEER : ENGR .UMAIR	CHECKED BY : AR. AHMED MAHMOOD DRAWN BY : AR. AHMED MAHMOOD ENGR .UMAIR	SCALE : 3/32" DRAWING NO : A-115	DATED: 31/10/2020

ANNEX-IV

SHAPULA STUPA, DISTRICT KHYBER

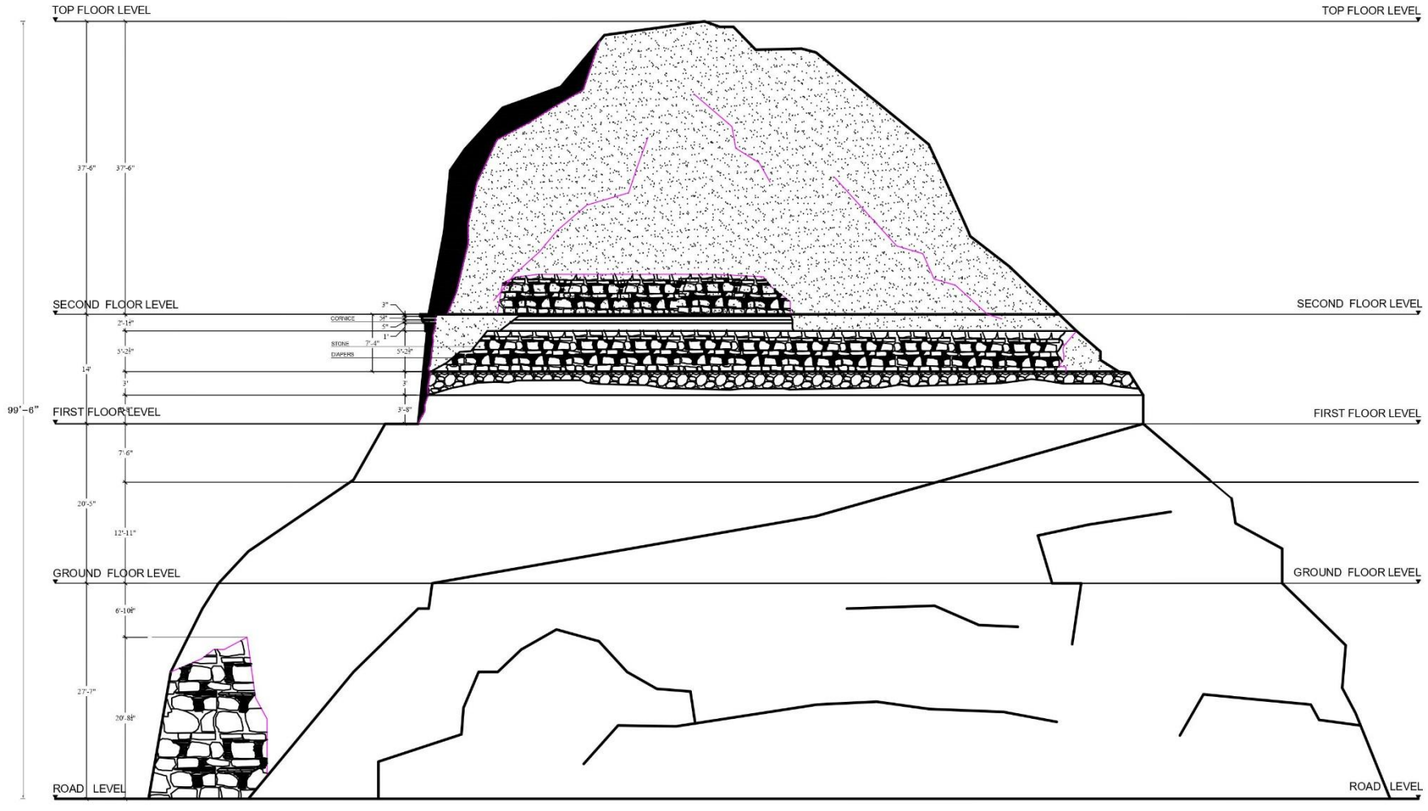
ANNEX-IV



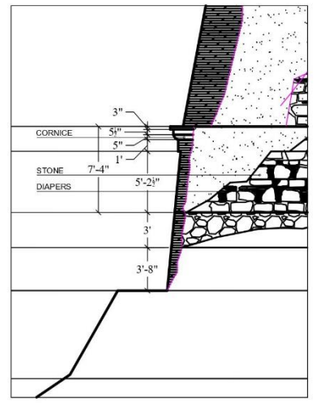
SITE PLAN /MASTER PLAN

DIRECTORATE OF ARCHAEOLOGY AND MUSEUMS CONSERVATION OF ARCHAEOLOGICAL REMAINS SHAPULA STUPA DISTRICT KHYBER	NO.	DATE	DESCRIPTION	GOVERNMENT OF KHYBER PAKHTUN KHWA DIRECTORATE OF ARCHAEOLOGY AND MUSEUM PESHAWAR	PROJECT TITLE: CONSERVATION OF ARCHAEOLOGICAL REMAINS SHAPULA STUPA DISTRICT KHYBER	PROJECT COMPONENT: SHAPULA STUPA DISTRICT KHYBER	DRAWING TITLE: SITE PLAN /MASTER PLAN	KEY PLAN:	PROJECT LEAD ARCHITECT : AR. AHMED MAHMOOD PROJECT ARCHITECT : AR. AHMED MAHMOOD PROJECT ENGINEER : ENGR .UMAIR	CHECKED BY : AR. AHMED MAHMOOD DRAWN BY : AR. AHMED MAHMOOD ENGR .UMAIR	SCALE : 1/64" DRAWING NO : A-101	DATED: 21/11/2020

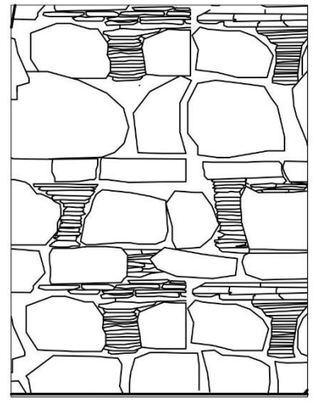
ANNEX-IV



NORTH ELEVATION



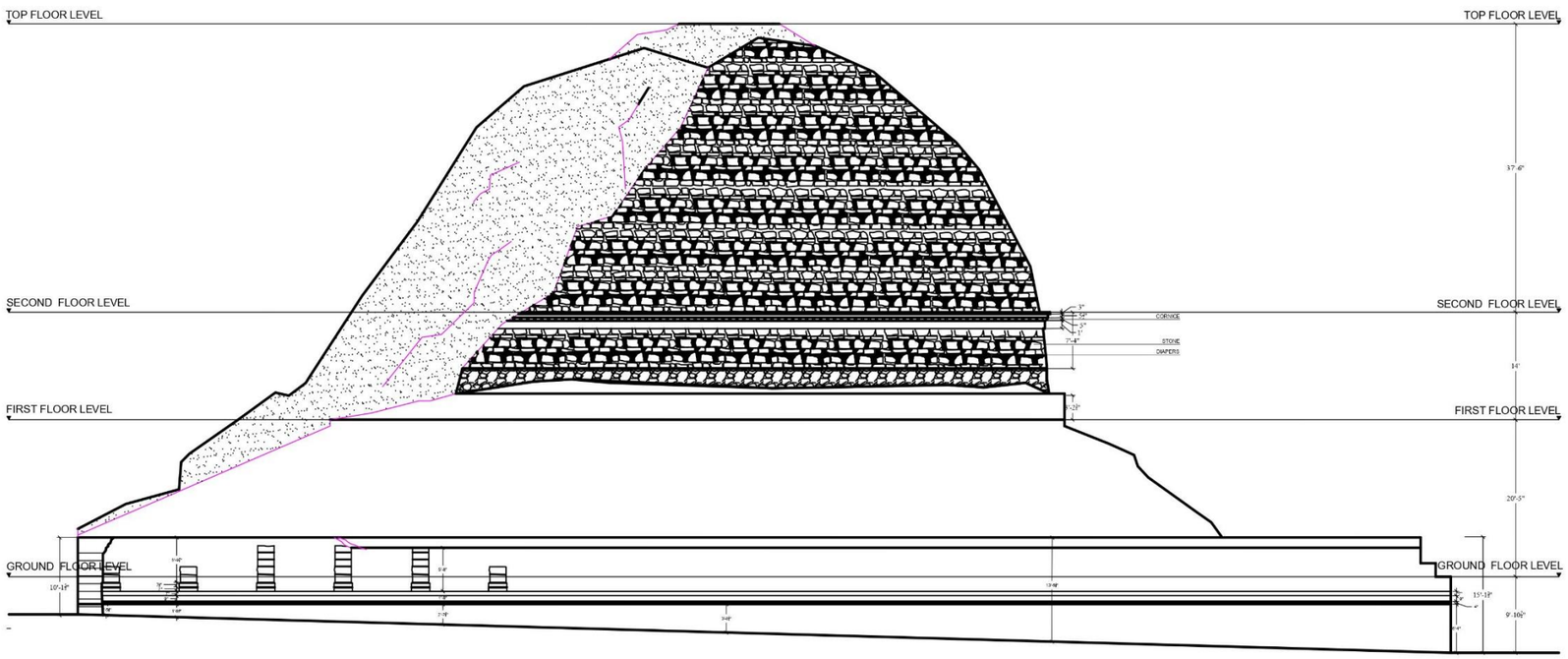
BLOW UP A



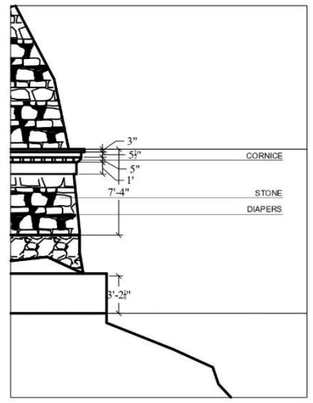
BLOW UP B

DIRECTORATE OF ARCHAEOLOGY AND MUSEUMS CONSERVATION OF ARCHAEOLOGICAL REMAINS SHAPULA STUPA DISTRICT KHYBER	NO.	DATE	DESCRIPTION	GOVERNMENT OF KHYBER PAKHTUN KHWA DIRECTORATE OF ARCHAEOLOGY AND MUSEUM PESHAWAR	PROJECT TITLE: CONSERVATION OF ARCHAEOLOGICAL REMAINS SHAPULA STUPA DISTRICT KHYBER	PROJECT COMPONENT: SHAPULA STUPA DISTRICT KHYBER	DRAWING TITLE: NORTH ELEVATION	KEY PLAN:	PROJECT LEAD ARCHITECT : AR. AHMED MAHMOOD PROJECT ARCHITECT : AR. AHMED MAHMOOD PROJECT ENGINEER : ENGR .UMAIR	CHECKED BY : AR. AHMED MAHMOOD DRAWN BY : AR. AHMED MAHMOOD ENGR .UMAIR	SCALE : 1/16" DRAWING NO : A-106	DATED: 21/11/2020

ANNEX-IV



SOUTH ELEVATION



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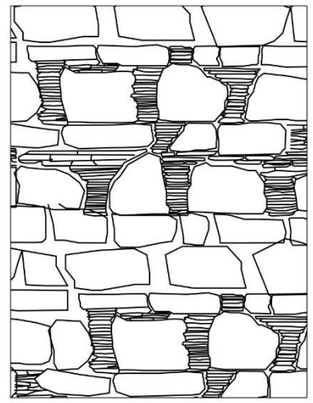

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DIRECTORATE OF ARCHAEOLOGY AND MUSEUMS CONSERVATION OF ARCHAEOLOGICAL REMAINS SHAPULA STUPA DISTRICT KHYBER	NO.	DATE	DESCRIPTION	GOVERNMENT OF KHYBER PAKHTUN KHWA DIRECTORATE OF ARCHAEOLOGY AND MUSEUM PESHAWAR	PROJECT TITLE: CONSERVATION OF ARCHAEOLOGICAL REMAINS SHAPULA STUPA DISTRICT KHYBER	PROJECT COMPONENT: SHAPULA STUPA DISTRICT KHYBER	DRAWING TITLE: SOUTH ELEVATION	KEY PLAN:	PROJECT LEAD ARCHITECT : AR. AHMED MAHMOOD PROJECT ARCHITECT : AR. AHMED MAHMOOD PROJECT ENGINEER : ENGR .UMAIR	CHECKED BY : AR. AHMED MAHMOOD DRAWN BY : AR. AHMED MAHMOOD ENGR .UMAIR	SCALE : 1/16" DRAWING NO : A-107	DATED: 21/11/2020

ANNEX-V: GENERAL CONSIDERATIONS /PROTOCOLS / SOPs FOR CONSERVATION WORK

ANNEX-V

GENERAL CONSIDERATIONS /PROTOCOLS / SOPs FOR CONSERVATION WORK

- The officer in charge with the execution of conservation work should never forget that the reparation of any remnant of ancient architecture, however humble, is a work to be done with totally different feeling from a new work. It should be kept in mind that the aim is to preserve not to renew them. Therefore, effort should be spared to save as many parts of the original as possible. Broken or half decayed original work is of infinitely more value than the smartest and perfect new work;
- The conservation intervention needs to follow a logical procedure. This starts with visual assessment and compilation of relevant historical data/information available including in recent history & information on any previous conservation interventions. Analytical techniques for investigation may be applied if necessary in order to study other aspects of the object;
- Then a diagnosis as to the state of conservation of the object is required. Is the object sound? Does it suffer from deterioration? If so what are the causes? The result from analysis serves various purposes. The most appropriate method and material need to be determined;
- The Conservation activities shall be carried out by Pre-qualified trained Contractor under supervision of technical staff of DoAM. The Contractors shall contain team of skilled labors having past experience in similar works;
- Conservation Assistant shall watch the operation and provide necessary guidance to worker. Conservation Assistant shall inform Archaeological Engineer/Conservator about the progress of work and if any difficulty arises;
- Before execution of conservation work careful inquiries should be made regarding supplies of sand, bricks, stone, lime and other material etc. in the immediate neighborhood. Samples of which shall be checked and approval shall be taken from Archaeological Engineer;
- It is important that an Archaeologist from Department must be present whenever excavations are carried out in or around the PCR, in case of discovery of any immovable antiquity during execution of work, he shall take charge and register it to further inform higher ups. Secure the site to prevent any damage or loss to movable objects. In cases of movable antiquities or sensitive remains, a night guard shall be present until the responsible authorities take over;
- All excavation is to be carried out with great care in order that any old masonry or other remains buried in the earth may not be damaged., any such remain should be left untouched when found and if liable to weather decay, it should be covered;
- The conservation assistant should carefully strut up or support any overhanging pieces of masonry, fractured door or window lintel. Decayed arches should be properly centered up, if in an unstable condition. Any wall or tower which are in a dangerous state, and are liable to fall down, must be properly shored up with raking shores, needles, plates etc. as per instruction of Engineer in charge;
- Visitors should not be allowed near those portions of building where work of Preservation is in progress, and in some cases the building should be completely closed to the public.
- Conservation assistant shall collect every scrap of evidence existing in the building on which they are working, such as broken corbels, string courses, relieving arches, etc.

is to be preserved and not in any way obscured by the work of preservation, and that all new evidences bought to light should be reported;

- Any carved stone or bricks or any pieces of tile work that are found lying in the debris on old sites, should be restored. if possible, to their former position, provided that no doubts exist as to what those position were;
- Where it is necessary to introduce new pillar or new masonry in order to support the mass of rock, the archaeological officer must furnish measured plans and drawing showing the precise position and detail of new pillars or masonry, in all such works care must be taken that the new stone work may match in texture and color and may be dressed in the same ways the face of the rock immediately joining;
- Proper provision is to be made for drainage, especially for taking off flood water after heavy rain. Water must not be allowed to stand about in pools or ditches near an ancient monument;
- For making lime mortar, kankar lime is mixed in a trough according to the requirements of the day, as much as water being added as will make it into a stiff paste;
- As a rule, the lime is soaked in water in trough at evening time and is mixed and used on the day following, but if required for immediate use, it should be passed wet through a mortar mill for at least 2 hours before use;
- Lime mortar of which tensile strength is less than 100lbs. per square inch is not to be used in conservation work. A practical and quick way of testing it on site is to take a handful of mortar from the trough and after minute or two wash it off the hand, if the skin is left rough after washing, the mortar may be considered fit for use;
- When dismantling masonry, previous to re-building, it may be necessary to mark or number the old stones so as to readily replace them in original position. The numbering should be made in such a way that it is removable again;
- The restoration of plaster stucco on walls and ceiling is rarely admissible and is to be carried out only under instruction from Archaeological engineer. Broken damaged or lose plaster may be preserved with the help of lime grout or in some cases of plaster of paris injected into the hollow cavities behind the loos plaster and by applying a neat fillet of lime mortar round the broken edges, care being taken that the cavities and edges are washed clean with water;
- The principles applying to the conservation of wooden building must, owing to the nature of their material and the comparatively short duration of their existence necessarily differ from the principles applying to the structure in the brick or stone;
- For the preservation of teak wood, periodic application of crude earth oil or boiled linseed oil is efficacious. For other kinds of wood “Solignum” is generally preferable;
- Woodwork found in wet soil or water should not be exposed to the air, but should be kept in water or wet sand and follow other procedures as per instruction of archaeologist chemist. Before being laid in wet sand or sawdust, painted, carved or inscribed parts should be protected by a layer of cotton wool. These precautions are necessary to prevent shrinkage and distortion of the wood through rapid drying; and
- If the wood work is found infected by insects, the pests may be destroyed by means of carbon di-sulphide or hydrocyanic acid, the wood being afterwards protected against further damaged by the application of suitable preservative.

ANNEX-VI: LIST OF PARTICIPANTS FOR STAKEHOLDER CONSULTATIONS

ANNEX-VI

Participants List of Consultation- Kalam Bazar

Sr. No.	Name of participant	Designation/ local community	Address	Cell No.
1.	Mr. SahibUllah	Masjid In charge	Kalam bazar	0315- 9299736
2.	Mr. Abdul Hameed	Member of the committee	Kalam bazar	03149706070
3.	Mr. Shabuddin Khan baba	Member of the committee	Kalam bazar	0313-7835609
4.	Mr. Faqir Jan	Member of the committee	Kalam bazar	0314-9704030
5.	Mr. Safir Ullah	Member of the committee	Kalam bazar	0314-9724430
6.	Mr. Shaukat Ali	Member of the committee	Kalam bazar	0314-9737722
7.	Mr. Abdul Aziz	Member of the committee	Cherat Kalam	0314-9663665

Participant List of Mardan Museum Consultation/ Surrounding Communities

Sr. No.	Name	Designation	Address	Cell No
1.	Mr. Tayeeb	Community Member / Engineer	Mardan	03119304801
2.	Mr. Asif ur Rehman	Community Member / Sub Engineer	Mardan	03339145476
3.	Mr. Jehangir Khan	Incharge Mardan Museum	Peshawar	03459205845
4.	Mr. Feroz Shah	Community Member	Charsadda	03469887045
5.	Mr. Shahab	Field Officer	Peshawar	03459495089
6.	Mr. Numan	Gallery Assistant	Peshawar	03469993999
7.	Mr. Salman	Community Member	Mardan	03434585590
8.	Mr. Abbas Khan	Community Member	Mardan	03159467990
9.	Mr.Amir Ali	Community Member	Mardan	03009058145
10.	Mr. Hafiz Ullah	Community Member	Mardan	03159666489
11.	Mr. Amjid	Museum Attendant	Mardan	0345934841
12.	Mr. Muhammad Gul	Museum Attendant	Mardan	03471365992
13.	Mr. Fazal-e-Wahid	Mali / Community Member	Mardan	03028012556

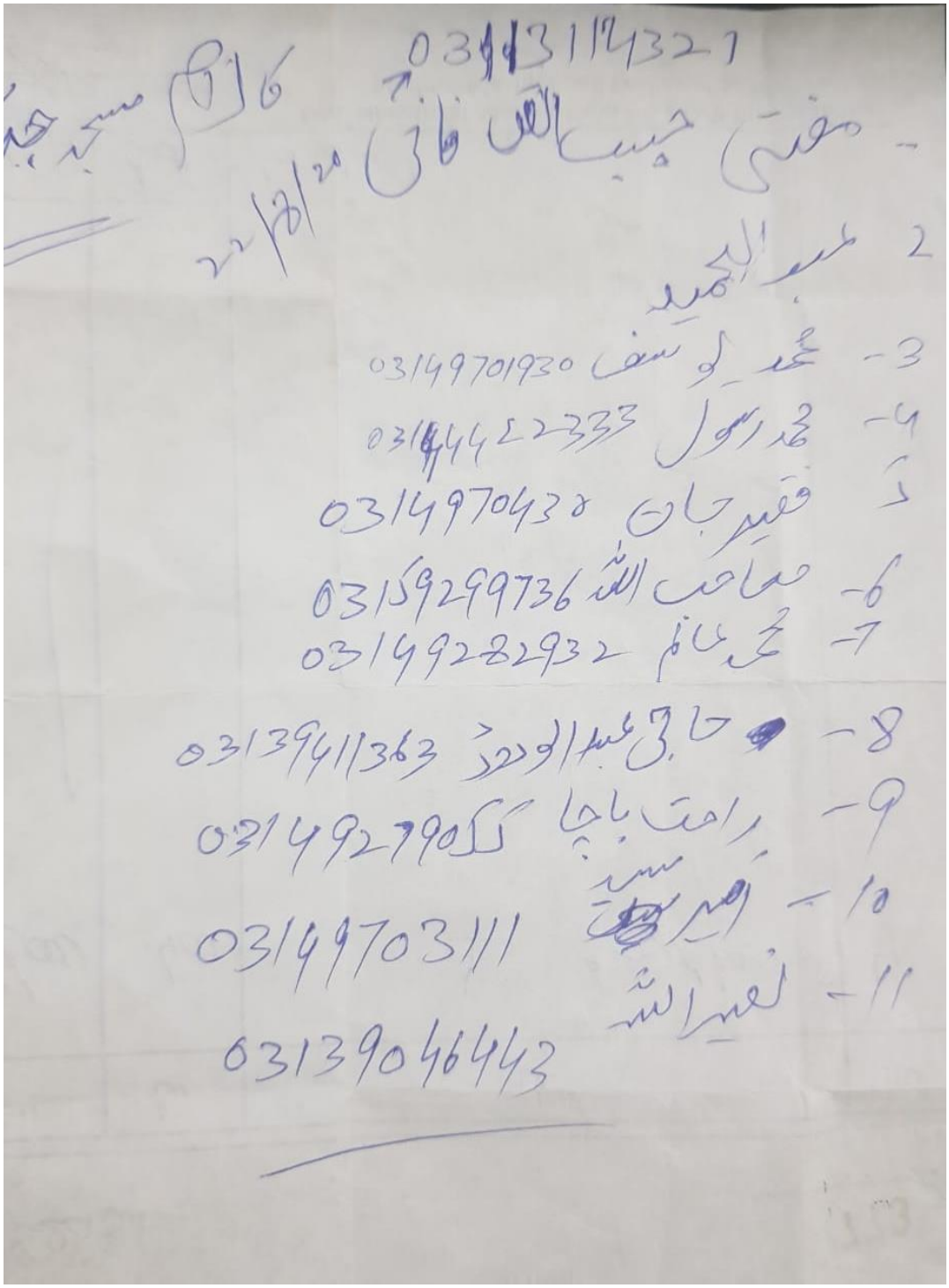
ANNEX-VI

Sr. No.	Name	Designation	Address	Cell No
14.	Mr. Dost Muhammad	Community Member	Mardan	03418012556
15.	Mr. Midrar Ahmed	Community Member	Risalpur	03124444088
16.	Mr. Shahzad	Community Member	Risalpur	03499618211
17.	Mr. Musa Khan	Community Member	Mardan	
18.	Mr. Masood Khan	Attendant Mardan Museum	Mardan	
19.	Mr. Amjid Ali	Community Member	Mardan	

Consultative Session via Zoom with Professional Stakeholders (October 16, 2020)

Sr. No.	Participants	Designation
1.	Mr. Touseef Khalid	Project Director KITE PMU DoT
2.	Dr. Abdul Samad	Director Archaeology Khyber Pakhtunkhwa
3.	Dr. Ihsan	PCR Consultant PMU KITE
4.	Mr. Fazal-e-Rabi	E&S Consultant PMU KITE
5.	Dr. Zahra	Design & Architecture Consultant PMU KITE
6.	Mr. Habib Ullah Khattak	Legal Expert PMU KITE
7.	Dr. Asma Ali	Director State Bank Museum
8.	Mr. Muhammad Tahir Khattak	Archaeological Experts
9.	Ms. Nida Sherai	
10.	Dr. Farooq Swati	
11.	Dr. Zakir Ullah Khan	
12.	Ms. Kiran Siddiqi	
13.	Dr. Badshah Sardar	
14.	Dr. Shakirullah Khan	
15.	Dr. Ijaz, Mr. Shaukat Sharrar	

ANNEX-VI


03443114321
16 مسجد
- مفتی حبیب اللہ فاتح 22/8/20
2 عبد الحمید
3- محمد یوسف 03149701930
4- محمد رسول 03444222333
5- فقیر جان 03149704388
6- صاحب اللہ 03159299736
7- محمد عاصم 03149282932
8- حاجی عبد الودود 03139411363
9- رامت باچا 03149279055
10- [illegible] 03149703111
11- نعیم اللہ 03139046643

ANNEX-VII: CHANCE FIND PROCEDURE

ANNEX-VII

CHANCE FIND PROCEDURES

Project may involve deep excavations. Therefore, the possibility of chance find is not ignorable. In case of any chance find, the contractor will immediately report through Supervision Consultant to Director of Archeology & Museums Department, KP, to take further suitable action to preserve those antique or sensitive remains. Representative of the Director will visit the site and observe the significance of the antique, artefact and Cultural (religious) properties and significance of the project. The report will be prepared by representative and will be given to the Director. The documentation will be completed and if required suitable action will be taken to preserve those antiques and sensitive remains.

In case any artefact, antiques and sensitive remains are discovered, chance find procedures should be adopted by contractor workers as follows:

- Stop the construction activities in the areas of chance find;
- After stopping work, the contractor must immediately report the discovery to the Supervision Consultant;
- The Director decides to take over the antiquity for purposes of custody, preservation and protection, the person discovering or finding it shall hand it over to the Director or a person authorized by him in writing;
- Delineate the discovered site or area;
- Consult with the local community and provincial Archaeological Department;
- The Director shall, constitute a team of archaeologists for undertaking preliminary investigation and will decide about further course of action in light of findings of the team;
- The suggestion of the local communities and the concerned authorities will be suitably incorporated during taking the preventive measures to conserve the antique, artefact and cultural (religious) properties; and
- Secure the site to prevent any damage or loss of removable objects. In case of removable antiquities or sensitive remain, a night guard shall be arranged until the responsible local authorities take over.

The contact Address of Archaeology Department is given below:

Directorate of Archeology & Museums,
Saddar Road opposite Governor House,
Peshawar.
Tel: 091-9210985

ANNEX-VIII: TREE PLANTATION PLAN

TREE PLANTATION PLAN

The basic purpose of afforestation/plantation of suitable species in the project area is to reduce the risk been made due to cutting of trees for the proposed subprojects and to enhance green cover and improve the overall environment of the area. Total 250 number of plants are recommended for each sub project site. Afforestation will not only reduce the risk been made but will also increase the carrying capacity of the area regarding many positive aspects.

Importance of Tree Plantation

- Trees contribute to their environment by providing oxygen, improving air quality, climate amelioration, conserving water, preserving soil, and supporting wildlife.
- Trees control climate by moderating the effects of the sun, rain and wind. Leaves absorb and filter the sun's radiant energy, keeping things cool in summer.
- Trees also preserve warmth by providing a screen from harsh wind.
- Trees also lower the air temperature and reduce the heat intensity of the greenhouse effect by maintaining low levels of carbon dioxide.
- Both above and below ground, trees are essential to the eco-systems in which they reside.
- Trees absorb and store rainwater which reduce runoff and sediment deposit after storms. This helps the ground water supply recharge, prevents the transport of chemicals into streams and prevents flooding.
- Trees, shrubs and turf also filter air by removing dust and absorbing other pollutants like carbon monoxide, sulfur dioxide and nitrogen dioxide.

Objectives

- To Restore native species
- To improve the quality of air and reduce its pollution
- To add color to the landscape and enhances the beauty of the environment
- To uplift the quality of our living environment through active planting, proper maintenance and preservation of trees together with other vegetation.
- To Protect and conserve flora and fauna of the project area.
- To attract rain which is a positive impact on the project area at all.
- To reduce sedimentation by plantation in the project area which will act as protection wall against wind born dust particles.

PLANTATION TECHNIQUE

Plantation of conifers and broad leaved species is to be carried out in the immediate vicinity of the project area. The project area can be afforested and vegetation cover can be improved by adopting standard afforestation technique of digging pits. The subprojects area is suitable for plantation activities and can be managed thoroughly with care.

Pits

Pits should be dug in the project area at a spacing of 10' linearly. The pits should be of 1.5 feet dia at the top and 1 feet dia at the bottom with a depth of 1-3/4" ft. The earth taken out of the pits will be deposited below each pit in a crescent shape, so as to form a ridge with a clear berm of 9 inches in front. The consecutive crescents will be joined to catch the maximum quantity of moisture. Moreover, planting should be carried out in the pits and sowing on the berms, before or immediately after the first shower of rain. The choice of species (Forest Department may change as per actual requirement and suitability *standards & Species as well) for the project area is given below.

Table: Recommended Species for Plantation of the Subprojects Area

Sr. No.	English/ Common Name	Scientific Name
1	Chir-Pine/Nakhtar	Pinus roxburghii
2	Mulbery/ Tooth	Morus alba
3	Bakain/Dhrek	Melia azedarach

When to plant

Planting should be completed early in the rains in as short a time as possible. The trees must be given time to become well established prior to the dry season. A good rule of thumb is to start planting when the soil is moist to a depth of 15-25 cm or to the bottom of the planting hole. Failures because planting is too late are more common than failures because of planting too early. To obtain good results and avoid labor shortage in these areas considerable preparatory planning is needed. The size of the plantation might have to be adapted to the availability of labor. If dry sites cannot be planted in time, planting should be postponed until the next season.

Plantation Plan for PCRs Sites

Plants will be raised along the around each subprojects area or in nearby available spaces.

**KP Forest Department will implement may update the standards of planting and choice of species as per the requirements and suitability.*

Cost

Break-up of Expenditure per Avenue kilometer @ Rs. 1500/- per diem: Break-up of Expenditure per Avenue kilometer or 250 plants @ Rs. 1500/- per diem:

FIRST YEAR

Sr. No.	Item	Quantity	Rate	Amount (Rs.)
1.	Layout	1 Av.km	2 MD/Av.km	3000.00
2.	Digging of Pits 2.5 ft. each 2.5x250 = 625 cft.	625 cft.	5 MD/Av.km	7500.00
3.	Cost of Plants including	250 No.	Rs100/- plant	25,000.00
4.	Cost of planting of plants	250 No.	Rs. 25/- plant	6250.00
5.	Carriage of plants from private nursery to site including loading/unloading	250 No.	Rs. 10/- plant	2500.00
6.	Cost of Manure and Bhall (silt) including carriage	1 Av. Km		20,000.00
7.	H/watering 50 times 250x50 with water bowser, one driver and one coolie	12500 no.	5MD/per %0	100,000.00
8.	Weeding twice 250x2	500 no.	2 MD/per %	15,000.00
9.	Reopening of Pits twice (250x2)/cft/pit	500 cft.	2 MD/per %	15,000.00
10.	Unforeseen			5750.00
Total				200,000.00

SECOND YEAR

Sr. No.	Item	Quantity	Rate	Amount (Rs.)
1.	Cost of Plants 20% Restocking	50 No.	Rs.100/- plant	5,000.00
2.	Cost of planting	50 No.	Rs. 25/- plant	1250.00
3.	Carriage of plants	50 No.	Rs. 10/- plant	500.00
4.	H/watering 50 times with water bowser, one driver and one coolie	12500 no.	5MD/per %0	100,000.00
5.	Reopening of Pits twice (250x2)	500 cft.	2 MD/per %	1,5000.00
6.	Weeding twice 250x2	500 no.	2 MD/per %	1,5000.00
7.	Unforeseen			1250.00
Total				1,38,,000.00

THIRD YEAR

Sr. No.	Item	Quantity	Rate	Amount (Rs.)
1.	Cost of Plants 10% Restocking 25 No.	25 No.	Rs.100/- plant	2500.00
2.	Cost of planting	25 No.	Rs. 25/- plant	625.00
3.	Carriage of plants	25 No.	Rs. 10/- plant	250.00
4.	H/watering 40 times x250 no.	10,000 no.	5MD/per %0	75000.00
5.	Reopening of Pits twice (250x2)	500	5MD/per %0	3750.00
6.	Unforeseen			2875.00
Total				85,000.00

FOURTH YEAR

Sr. No.	Item	Quantity	Rate	Amount (Rs.)
1.	H/watering 30 times	7500 no.	5MD/per %0	56250.00
5.	Pruning and cleaning of plants	250 no.	5MD/per %0	1875.00
6.	Unforeseen			1875.00
Total				60,000.00

Cost for raising 1 Av. Km and Maintenance or 250 plants in single for each subproject = **Rs.4,83,000/-**

Note: *The above rates and calculations are approximate and tentative which will be updated according to the standard rates of concerned Forest Departments/Implementing Agency, during implantation stage.*

ANNEX-IX: GUIDELINES TO COMBAT WITH COVID-19

ANNEX-IX

PRECAUTIONARY ACTION AGAINST THE POTENTIAL RISK OF NOVEL CORONAVIRUS

INTRODUCTION

On February 11, 2020 the World Health Organization announced an official name for the disease that is causing the 2019 novel coronavirus outbreak, first identified in Wuhan China. The new name of this is coronavirus disease 2019, abbreviated as COVID-19. In COVID-19, 'CO' stands for 'corona,' 'VI' for 'virus,' and 'D' for disease. Formerly, this disease was referred to as "2019 novel coronavirus" or "2019-nCoV".

The risk of exposure to COVID-19 is no different for employees of Employer, Engineer, Contractor, and suppliers than for the general population. Contractor, therefore, must consider the physical well-being and safety of all the persons entitled to be on the Site and follow reasonable guidelines and recommendations of Government authorities and healthcare professionals. As experience has shown in other countries, confirmed cases of COVID-19 expand exponentially if health and safety controls are left unheeded.

Contractor should enforce all health and safety procedures at Site including sanitary protocols, proper hygiene, social distancing, use of personal protective equipment (PPE), toolbox talks on special COVID-19 requirements, and prompt reporting of health issues related to COVID-19. Contractors must put safeguards in place to keep workers exposed to COVID-19 away from Site for at least 14 days after the last potential exposure.

WHO declared the COVID-19 as a Public Health Emergency of International Concern (PHEIC) in January 2020 and afterwards announced the COVID-19 outbreak as pandemic on 11th March 2020 due to the widespread of the disease in 114 countries at that time. WHO Director General urged the countries to take action now to stop the disease.

The rapid spread of COVID-19 hits all the provinces of Pakistan Sindh, Balochistan, Punjab & Khyber Pakhtunkhwa including the Gilgit Baltistan and Azad Jammu & Kashmir. The prevailing virus creates the menacing and distressing situation when it arrived around the closed proximities of the subproject areas.

Government of Pakistan has launched the National Action Plan for COVID-19 Pakistan to combat the challenge of prevailing virus, also available at https://www.nih.org.pk/wp-content/uploads/2020/03/COVID-19-NAP-V2-13-March-2020.pdf. The Government of Pakistan has launched the real-time data portal for COVID-19 http://covid.gov.pk/. These measures are mostly relating to the containment and awareness and capacity building. Besides this COVID-19 daily situation report is also available at https://www.nih.org.pk/wp-content/uploads/2020/04/COVID-19-Daily-Updated-SitRep-03-April-2020.pdf.

All the stakeholders are on board to jointly prevent/ limit/ control the spread of COVID-19. All of the staff is required to take precautionary measures as well as maintain social distances. The use of thermal guns for checking every single person body temperature, placement of relevant flyers and disinfection spray inside of all the containers are few of the measures to combat COVID-19.

ANNEX-IX

OBJECTIVE

Following are the objectives of this report to jointly prevent / limit/ control the spread of COVID-19 at Site that can hamper the progress of proposed subprojects:

i. To enhance understanding of the evolving COVID-19;
ii. To share knowledge on COVID-19 and preparedness measures being implemented at Site;
iii. To generate recommendations for adjusting COVID-19 containment and response measures; and
iv. Outline the measures taken at Site. The advised measures will help all the stakeholders to plan their work continuity in response to the COVID-19.

Due to the evolving situation of the COVID-19, this document should be read in conjunction with the latest relevant advisories issued by WHO (especially "Getting your workplace ready for COVID-19, 3 March 2020") and Government of Pakistan.

WHAT IS CORONA VIRUS (COVID-19)

The symptoms of the COVID-19 are similar to that of regular pneumonia. Typical symptoms include;

- Fever;
- Cough;
- Difficulty in breathing;
- Pneumonia;
- Runny nose;
- Sore throat; and
- Feeling of being unwell.

MODE OF SPREAD

Infected person – person transmission; Infected people can spread COVID-19 through their respiratory secretions via droplets produced when an infected person coughs or sneezes, similar to how influenza and other respiratory pathogens spread. The spread from person-to person is most likely among close contacts (about 6 feet);

- Infected animals' dead or Alive;
- Air by coughing and sneezing;
- Close personal contact, such as touching or shaking hands;
- Touching an object or surface with a virus on it; and
- Touching your mouth nose or eyes before washing your hands.

GENERAL STANDARDIZED PRECAUTIONARY MEASURES

Following measures/recommendations are suggested as a general guidance to be followed for the protection of potential impacts of COVID-19:

Since, there is no vaccine available to protect against human Coronavirus infections. Therefore, transmission can be prevented through following measures:

- Cover your mouth while cough or sneeze;
- Avoid close contact with people who are sick;
- Avoid the use of hard soap;
- Wash your hands often with liquid soap and water for at least 20 seconds;
- All the employees should ensure sanitization of hands at appropriate time;
- Avoid touching your eyes, nose, and mouth with unwashed hands;
- If you are concerned about your symptoms you should see your health care provider at site or in office;
- Use of Personal Protective Equipment (PPE) according to risk (a surgical or N95 mask);
- Do not spit, wrap your oral and nasal secretion with tissue and throw it in a covered dustbin;
- Balance your nutrition and exercise moderately;
- Sterilization / disinfection of medical devices at Site dispensaries; and
- Do not touch, buy or eat wild animals (gamey). Try to avoid visiting markets that sell such animals.

PROJECT SITE SPECIFIC PRECAUTIONARY MEASURES

WB Guidelines for COVID-19 during construction activities shall be followed. Measures for protecting staff and labour from exposure to, and infection with, the COVID-19 depend on the type of work being performed and exposure risk, including potential for interaction with infectious people and contamination of the work environment. Regardless of specific exposure risks, following are the main actions that have been jointly taken at Site to combat the COVID-19:

Employer's Side / PMU-KITE-DoT / DOAM

Employer should issue the notification containing the precautionary measures in the light of updated / latest WHO / GoP guidelines to be implemented at Site. Upon receiving the Employer notification all the mentioned precautionary measures will be communicated to Engineer staff for compliance. Employer technical staff is also complying with the updated / latest WHO / GoP guidelines and Contractor suggestion to control the spread of COVID-19 at Site in the best interest of the Project and country.

Consultant's Side

Consultant's top management will issue the orders in the light of updated / latest WHO / GoP guidelines containing the precautionary measures to control the spread of COVID-19 for the staff working at Site.

Consultant staff at Site will fully complying with the orders including photographic evidence. Considering the severity of the prevailing virus Engineer devised the Standard Operating

ANNEX-IX

Procedure (SOP) containing precautionary action against the potential risk of novel corona virus.

Besides, above Consultant will ensure the following precautionary measures at Site.

- Adequate signage and information at all entrances and exits showing what is Corona Virus, how it spreads, what are the symptoms, standard precautions;
- The awareness session for the Contractor staff is equally important as of Consultant staff to combat the COVID-19 at Site. The Consultant will ensuring that Contractor is arranging such session at Site from time to time to reduce the potential risk of COVID-19. Further, all the newly inducted and existing staff have been given HSE training by the Consultant & Contractor.

Contractor's Side

Contractor will communicate various precautionary measures to Employer and Engineer through letters to control the spread of COVID-19 at Site. Following are the major steps to be taken by the Contractor:

- Contractor will convey the instructions and requirements of its superior unit for the prevention and control of COVID-19 epidemic at Site.
- Contractor will establish a special organization for epidemic prevention and control on the Project Site that is responsible for arranging, implementing, publicizing and supervising the epidemic prevention and control measures.
- Launch the plan for epidemic prevention and control on the project Site that includes:
    - All personnel in temporary camp are required to wear masks;
    - Contractor personnel incharge of Site to wear masks;
    - Arranged special personnel to measure and record the temperature of all personnel when entering or leaving the temporary camp;
    - If any person with fever, cold and other symptoms are found, they will be admonished to go home for isolation and asked about the development of the disease every day; and
    - Propagate and implement the epidemic prevention measures for the staffs and labours and warn them not to go outside and home as much as possible.
- All these meetings should carried out through video conference.

Contractor is not limited to the above precautionary measures but practicing and implementing the following;

- Contractor will prepare a pamphlet for the awareness of Site staff to combat the COVID-19. It will also place/posted at strategic points at Site.
- Launch awareness campaign to inform all the staff and labour about the coronavirus, to use facemask, hand hygiene, cough etiquette, and avoidance of close contact with animals and consumption of their raw products.
- Everyday awareness speech in English and Urdu in the temporary camp.
- All the employees are not allowed to go outside of the Project Area or on vacation to their homes and on daily basis visit to sites;

- Contractor will provide medical masks and antibacterial liquid hand wash to all personnel.
- Contractor will prepare the isolation facility at Site and provided three isolated rooms for such patients inside the temporary camp. Each room have three beds, oxygen cylinder, sanitizers, isolation kit, hand wash.
- Thermal scanning will be carried out continuously in the morning for everybody at the main gate of temporary camp.
- Record will be maintained for everyone that includes the temperature value of each person with their names, every morning and afternoon go to each department for scanning separately and noted down their name with temperature values.
- Contractor carry out disinfectant spray on daily basis morning and afternoon in each office and rooms and all the area of the camp.
- SSWMB and Consultant staff will also requested by Contractor to do not interact physically rather through electronically by emails or video conferencing.

RECOMMENDATIONS FOR THE CONTROL OF COVID-19 AT SITE

To Avoid Transmission

For all personnel at Site, it is always a good to practice the following precautionary measures:

- Workers to remain at least two meters apart from each other at all times (social distancing) – i.e. spread out and reduce the number of people working together in one area of the site;
- Avoid eating lunch in the form of group in available mess/canteens at Site;
- Close site canteens/ food preparation and eating areas (avoid gatherings) – workers to bring their own prepared lunch to site and eat alone e.g. in their van, car, or in an open space;
- Avoid in-person meetings if possible. In the case that an in-person meeting is unavoidable, make sure to have it in a well-ventilated area with sufficient space for attendees to distance themselves from one another. For meetings such as toolbox talks, consider breaking them up into smaller group meetings versus one large meeting;
- Introduce enhanced cleaning procedures across the Site and touch points e.g. office equipment, plant and machinery controls, taps/toilet/washing facilities, handrails;
- Stagger start times on site to avoid congestion in entrance areas;
- Reduce the number of people on site inductions at any one time and hold them outdoors if possible;
- Stop workers moving across various sites (potential for cross contamination);
- No outsiders should be at the Project Site;
- Contractor, Consultant and Employer personnel are advised to avoid travelling and in case traveling is unavoidable, prior approval from the management should be essential. In case of travelling, the above mentioned measures need to be strictly followed by the traveller;
- Prompt identification and isolation of potentially infectious individuals is a critical first step in protecting workers and other Site staff. An isolated area should be available at

Site to immediately isolate suspected person, as it is most important to stop its spread at Site.

- Rapid Response Team should be formed and be informed immediately in case of suspect and confirmed case of COVID-19.
- Medical team at Site should separate the suspected person displaying fever, cough or difficulty breathing from other personnel; and
- If a person has had close contact with an individual that has confirmed COVID-19, that person will not be allowed to return to the Site until he/she has been symptom free for 14 days.
- Clean and fumigate all the workplaces at Site on daily basis;
- Ask people to stay at home if they have fever, cough, difficulty in breathing, runny nose, sore throat as per organizational rules;
- An immediate replacement of solid soap with liquid anti-bacterial soap bottles may be appropriate.
- Provision of alcohol-based hand sanitizer need to available for all staff;
- Clean the religious places carpets and rugs. Have them washed in place over the weekend and then do regular cleaning;
- Have the cleaners/ maintenance crews regularly clean surfaces that are touched frequently by personnel with disinfectants such as in and out doors;
- Fresh medical tests of staff working should be carried out at Site;
- Dispose of all contaminated waste (gloves, paper, swab handles, etc.) into biohazard waste bags for disposal;
- Ensure that panic is not created. In fact the posters should start with statements such as do not panic and fear the virus but know and prevent; and
- Ensure proper ventilation system for all the personnel at Site.

Use of Personal Protective Equipment (PPEs)

- Necessary PPE should be available at Site all the times and are being issued to each personnel at Site;
- Practice of using masks is also being ensured by all parties at Site (a surgical or N95 masks);
- Re-usable PPE should be thoroughly cleaned after use and not shared between workers. Single use PPE should be disposed of so that it cannot be reused;

Outside Visitors

- Visitors should enter with strictly wearing visitors card;
- Ensure sanitization of hands;
- All parties should ensure that the sick persons should be wearing a surgical or N95 masks;
- Note down the complete information of outsiders before entrance;
- Proper screening should be carried out before entering the Site;
- Refrain from handshakes. Rather than shaking hands, visitors may explain why handshakes can contribute to the risk of spread;

- Attempt to maintain a general six (6) feet distance between themselves. This will be challenging to follow at all times but it is Engineer recommendation to follow;
- Refrain from and/or limit touching of workplace surfaces; and
- In addition to these on-site procedures, it is advised to follow their respective organizational instructions related to Site visits.

ANNEX-X: TEMPLATE FORM FOR PCRS, ENVIRONMENTAL AND SOCIAL MONITORING

ANNEX-X

KHYBER PAKHTUNKHWA INTEGRATED TOURISM DEVELOPMENT PROJECT

TEMPLATE FORM FOR PCRS, ENVIRONMENTAL AND SOCIAL MONITORING

Title of Subproject ----------

Proponent ----------

Contractor's Name ----------

Monitoring Date & Time ----------

Sr. No.	Receptor	Monitoring Parameters	Locations	Monitoring Mechanism	Monitoring and Reporting Frequency				Compliance Status (Yes/No)	Reason for Non Compliance	Remarks
					Daily	Monthly	Bi-annual	Annual			
1.	Accidental Damages of PCRs										
2.	Chance Finds										
3.	Water Quality										
4.	Soil Contamination										
5.	Land Resources										
6.	Dust Emissions										
7.	Noise & Vibration Issue										
8.	Fumes and Gases										
9.	Ecological Resources[39]										
10.	Public Utilities[40]										

[39] *Wood trees, medicinal plants, resources of NTFP, bushes and small plants, animals and birds hunting.*

[40] *Telephone lines, electric poles and wires, water lines and electricity high tension pole.*

ANNEX-X

Sr. No.	Receptor	Monitoring Parameters	Locations	Monitoring Mechanism	Monitoring and Reporting Frequency				Compliance Status (Yes/No)	Reason for Non Compliance	Remarks
					Daily	Monthly	Bi-annual	Annual			
11.	Community Around the Subproject Area										
12.	Labour Management										
13.	Labour Influx										
14.	Grievances Redressal										
15.	Community/Occupational Health & Safety										
16.	Covid-19 SoPs										
17.	Gender Based Violence										
18.	Trainings										

PHOTO DOCUMENTATION OF ISSUE IDENTIFIED ABOVE

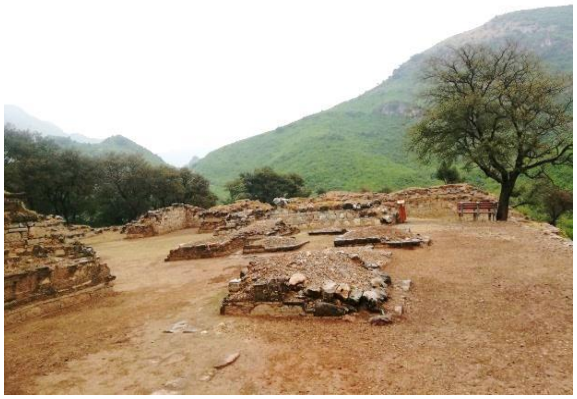
Sr. No.	Date of Photograph	Photograph Depicting Issue	Remarks

Name of Monitoring Person: _____ Designation: _____ Signature: _____

ANNEX-X

PHOTOLOG

PICTORIAL VIEW OF BHAMALA STUPA SITE




BHAMALA

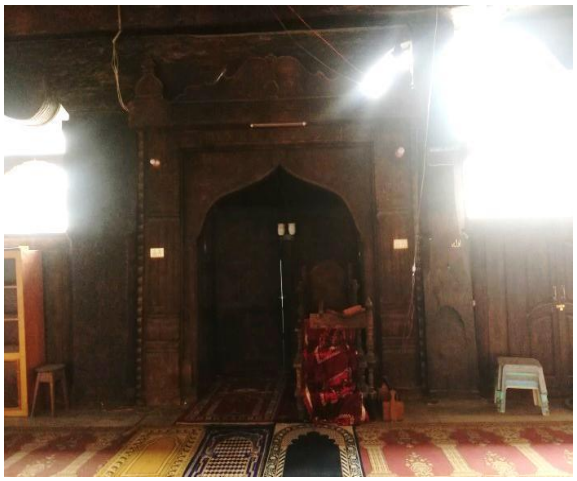

UNESCO
آثار قدیمہ
WELCOME
TO
BUDDHIST
REMAINS
OF
Bhamala
Directorate of
Archaeology &
Museums Govt. Of KP

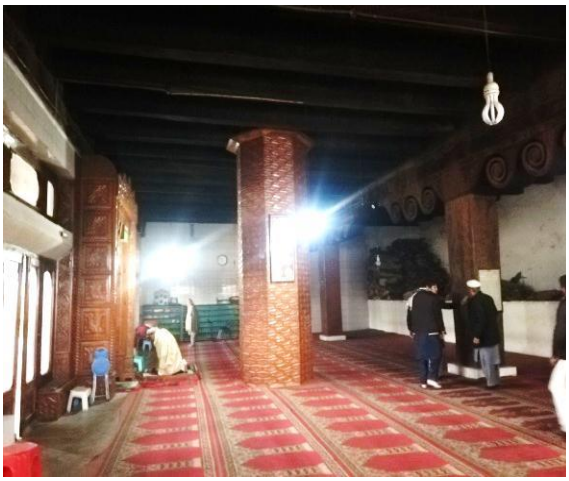
PICTORIAL VIEW OF PISHAMAL MOSQUE DISTRICT SWAT

PICTORIAL VIEW OF HUND MUSEUM DISTRICT SWABI

PICTORIAL VIEW OF SHAPULA STUPA DISTRICT KHYBER

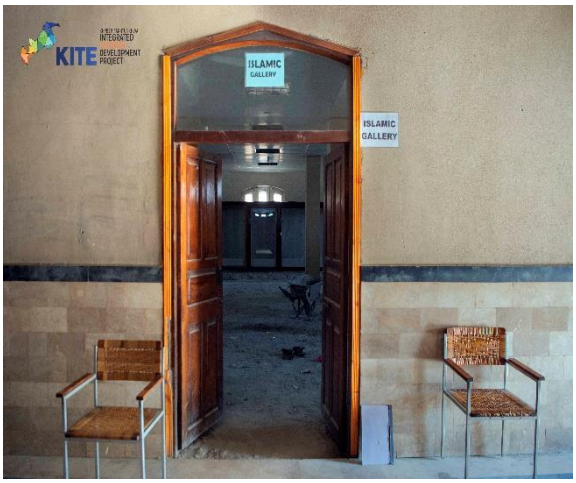
PICTORIAL VIEW OF MAIN KALAM MOSQUE DISTRICT SWAT






چندہ برائے
تاریخی جامع مسجد کالام سوات

PICTORIAL VIEW OF MARDAN MUSEUM DISTRICT MARDAN




KITE
INTEGRATED
TOURISM
DEVELOPMENT
PROJECT