External Environmental Monitoring Report

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Pakistan: Balakot Hydropower Development Project

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ABBREVIATIONS

ADB	Asian Development Bank
AIS	Alien Invasive Species
BHPP	Balakot Hydropower Project
BAP	Biodiversity Action Plan
CAP	corrective action plan
CIA	cumulative impact assessment
CGGC	China Gezhouba Group Company
dB	decibel (measure of audible noise)
DHO	District Health Officer
EIA	Environmental Impact Assessment
EEM	External Environmental Monitor
EMP	Environmental Management Plan
EPA	Environmental Protection Agency
EPC	engineering, procurement and construction
ES	Environment Specialist
GRC	Ghulam Rasool & Company
GRM	Grievance Redress Mechanism
H&S	Health and Safety
HSE	health, safety and environment
KDA	Kaghan Development Authority
km	kilometer
KP	Khyber Pakhtunkhwa
LARP	Land Acquisition Resettlement Plan
LEP	lower explosive limit
m	meter
masl	meter above sea level
MW	megawatt
NEQS	National Environmental Quality Standards
NGO	nongovernment organization
NOC	no objection certificate
OHS	occupational health and safety
PEDO	Pakhtunkwa Energy Development Organization
PIU	Project Implementation Unit
PM10	particulate matter 10 microns' size
PM2.5	particulate matter 2.5 microns' size
PMC	Project Management Consultant
PPE	personal protective equipment
ROW	Right of Way
SAEMR	Semi-Annual External Environmental Monitoring Report
SAEEMR	Semi-Annual External Environmental Monitoring Report
SPS	Safeguard Policy Statement
SSEMP	Site-Specific Environmental Management Plan
TMP	traffic management plan
TR	temporary access road
WHO	World Health Organization

1 Introduction

1.1 Preamble

1. This is the first Semi-Annual External Environmental Monitoring Report (SAEEMR) for the Balakot Hydropower Power Project (BHPP 300 megawatts [MW]) covering January-June 2023.

1.2 Headline Information

2. This comprehensive SAEEMR covers the successful implementation status and significant physical progress of construction works at the site, and thoroughly discusses the findings of external environmental compliance monitoring against the project's Environmental Impact Assessment (EIA), Environmental Management Plan (EMP), and Site-Specific Environmental Management Plan (SSEMP) during the reporting period.

3. Environmental compliance monitoring visit was carried out on 18-19 July 2023 to assess the overall environmental compliance status of the project. Environmental compliance monitoring is conducted by assessing environmental records, tracking progress on previous corrective action plan (CAP) recommended by the Project Management Consultant (PMC); conducting on-site inspections and surveys; meeting with project stakeholders, including contractors, PMC, and Project Implementation Unit (PIU); and engaging in consultations with local staff.

4. The engineering, procurement and construction (EPC) contract of the BHPP was awarded to the Joint Venture of China Gezhouba Group Company (CGGC), and Ghulam Rasool and Company Pvt. Ltd (GRC), Pakistan on 9 March 2021.

5. PIU BHPP approved sectional work commencement to the EPC contractor in December 2022 for below project facilities in Mouzas Ghanool and Sangar:

- access road to shaft
- switchyard
- access road to switchyard
- colony with tailrace outlet
- access to powerhouse
- access road to staff colony

6. SSEMMP was prepared by the EPC contractor, and employer granted approval of the same in December 2022.

7. Construction work at the BHPP site proceeded according to the planned timeline during the monitoring period. Throughout this time, various tasks such as the project's engineering design, land acquisition, setup of batching plant, establishment of contractor's camps and workshops, construction of temporary access roads, earthworks, and Adits' portals advanced. Additionally, most of the temporary tasks were finished within the reporting period.

8. The primary camp of the EPC contractor, located at Adit-2, was officially opened on May 4, 2023 by the Chief Executive Officer of the Pakhtunkhwa Energy Development Organization (PEDO). This camp serves as the base for Chinese management and technical personnel. A dedicated area at the camp's entrance was designated for the Special Security Unit responsible for ensuring the security of the Chinese staff.

9. On May 22,2023, the Asian Development Bank (ADB) conveyed concurrence to the PIU in respect of the “Proposal for Revision in the Project Specific BAP” containing changes proposed in the institutional arrangement of the project-specific biodiversity action plan (BAP), and composition of the BAP Management Committee.

10. In June 2023, the PMC took the initiative to update the EIA report, in response to the effect caused by changes in the BAP institutional arrangement and design alterations made at the dam site.

11. Internal semi-annual environmental monitoring reports (SAEMRs) for the periods of September 2020-December 2021, January-June 2022, and July-December 2022 were prepared by the PMC. Accordingly, ADB approved and disclosed these documents on the website. The SAEMRs for January-June 2023 was submitted to ADB for approval.

12. ADB conducted a safeguard review mission for BHPP on May 22, 2023 in which the PIU and PMC presented the status of environmental safeguards through virtual media. Below are the major findings of ADB safeguard review mission.

- There is need to hire a Director for Environment and Social on priority basis as the position is still vacant.
- The EIA is to be updated as per the new design changes and revised consultation report on Project-Specific BAP.
- The BAP implementation plan with revised arrangements shall be submitted to ADB for review and concurrence.
- Inception report of external environmental monitoring shall be submitted by June 2023.

13. As per requirements of ADB’s Safeguard Policy Statement (SPS) 2009, third party environmental monitoring contract is also in place and effective since July 2022. The External Environmental Monitor (EEM) submitted his inception report to ADB for review and approval in July 2023. External environmental monitoring for January-June 2023 is also carried out as per requirement of ADB SPS to check effectiveness of mitigation measures proposed in the SSEMP and EMP, and findings are discussed and communicated to stakeholders.

14. The status of environmental safeguards compliance was assessed during the EEM’s visit, and findings are discussed in the report. The CAP for January-June 2023 is provided in this EEM’s report to resolve observed non-compliances to ensure safeguard compliance of BHPP as per ADB SPS.

15. EEM conducted field visit to all sites, and recorded portfolio-related observations on 18-19 July 2023. During this visit, EEM meticulously assessed and documented portfolio-related observations. The purpose of the visit was to monitor and evaluate the project's environmental performance, and ensure compliance with environmental regulations and standards.

16. The EPC contractor conducted quarterly instrumental environmental monitoring at the sites. Detailed comparison with the baseline results for air quality, noise pollution, water quality and soil etc. are in Section 9.

17. A total of 25 environmental non-compliances with the EMP/SSEMP/BAP were recorded during the monitoring period. About 19 minor non-compliances, 5 moderate non-compliances,

and 1 major non-compliance. Major non-compliance is related to absence of lower explosive limit (LEL) gases/dust monitoring in tunnels. The 5 moderate non-compliances include delayed construction of waste stabilization ponds, discharge of kitchen wash water into stream, waste record not maintained, delayed implementation of revised BAP arrangements, and placement of generators without enclosures. CAP to close out observed non-compliances is in Section 7.

18. Implementation of SSEMP and EMP requirements at Balakot HPP is an ongoing process, and the capacity of contractors shall be increased through formal and annual trainings.

1.3 Acknowledgment

19. EEM appreciates the overall commitments of PIU BHPP and PMC in managing the day-to-day health, safety and environment (HSE) issues during construction activities of BHPP facilities. The commitment of EPC contractor to implement SSEMP/EMP requirements was also found to be satisfactory. However, there is need to increase awareness among contractors on environmental safeguards requirements, implementation, compliance monitoring and reporting.

2 Project Description

2.1 BHPP

20. BHPP is a 300 MW capacity run-of-river hydropower project with concrete gravity dam (maximum height of 35 meters (m) and underground cavern-type powerhouse. The dam is located 18.6 kilometers (km) upstream of Balakot town, whereas the underground powerhouse is located near the village of Barkot, 8 km upstream of Balakot town. The dam will create a reservoir that will operate between the maximum operating level of 1,288 m, and the minimum operating water level of 1,283 m. The surface area of the reservoir will be approximately 28 hectares (ha) and it will extend 2.2 km upstream of the dam. A headrace tunnel of 9.1 km length will be constructed to convey water from then reservoir to the powerhouse. A tailrace tunnel of 1.565 km length will be constructed to discharge water back to Kunhar river. A circular surge tank with diameter of 14.5 m is also proposed at the end of low-pressure headrace tunnel to make a surge height of 122 m.

21. The main objective of BHPP is to develop low-cost hydropower, and provide more reliable and consistent power to local areas and the national grid, keeping in view the present severe power shortage and future requirements for industrial, agricultural and economic development of the country. The project will support economical, renewable and environment-friendly power supply to the national grid, especially in the rural and remote areas of Khyber Pakhtunkhwa (KP) through the power distribution companies, National Transmission Despatch Company, and Peshawar Electric Supply Company.

22. The major components of the project are detailed below:

- **Main dam** will be a concrete gravity dam of 35 m height from the river cbed and a crest length of 130 m. It has been designed to pass floods of 3,500 cubic meter per second (m^3/s), with an upper gated ogee crest spillway and a low-level gated spillway. Three radial upper spillway gates having an opening of 11 m height and 10 m width will be constructed. Two low level spillway sluice gates of 8 m height and 6 m width are proposed and these will be operated hydraulically.

- **Reservoir** of about 2.2 km length with about 0.28 km^2 will be constructed. The gross storage capacity of reservoir at normal operating level is 3.56 m^3 x 106 m^3.

- **River diversion scheme:** It includes openings left in the dam body for the low-level spillway and a left bank diversion tunnel (which will be further converted to the sediment by-pass tunnel). An upstream coffer dam with crest elevation of 1,272 m above sea level (masl) will be constructed. It will be concrete gravity solution, and further converted to guiding structure. A downstream coffer dam with dam crest level of 1,252.5 masl will be constructed. An archway shaped diversion tunnel of 650 m length will be constructed.

- **Sediment management** will be carried out through sediment bypass tunnel which will be gated intake followed by archway tunnel. The intake size of tunnel will be 7.5 m width x 4.5 m height. Other than sediment bypass tunnel, flushing outlets are also provided to manage sediments loads.

- **Power intake structure:** A horizontal intake structure with four track racks and two service gates will be constructed.

- **Headrace tunnel:** A circular concrete lined (8 m inner diameter) headrace tunnel of length 9.1 km will be constructed.

- **Concrete lined circular surge shaft** of 14.5 m diameter with 122 m height will be constructed.

- **Pressure tunnel/shaft** of steel lined circular cross section (5.6 m installed diameter) with shaft length of 152 m will be constructed. A pen stock of 88 m length is included in the design.

- **Powerhouse:** A conventional underground cavern type powerhouse is proposed. It will be operated through three Francis type turbines, and three generators will be used to generate power.

- **Tailrace tunnel:** A circular tunnel (8 m diameter) with transition to an archway section at final length and outlet is proposed. Tunnel final section will be archway concrete lined section. The length from transition (i.e. archway section) to outlet will be 50 m.

  Project access roads: A 550 m access road (from Sharan road, connection to N-15 Highway at the left side of Kunhar river near paras village) is included in the project design to access dam and other related structures. An access road to sediment bypass tunnel of 440 m length from the dam bridge deck up to sediment bypass tunnel will be constructed. A permanent access road will also be constructed to access powerhouse and residential colony site.

23. Project brief salient features are given in Table 2.1 followed by location maps and project setting in Figures 2.1 and 2.2.

Table 2-1: Salient Features of Balakot HPP

1. Hydrology and Design Flows	
River	Kunhar
Catchment area at dam site (km^2)	1939
Design Discharge (m^3/s)	154
Design Flood (m^3/s) T= 10 000 years	3500
Probable Maximum Flood (m^3/s)	5000
2. Reservoir	
Normal Operation Level (NOL)	1288.0
Minimum Operation Level (MOL)	1283.0
Surface area (at MOL) (km^2)	0.28
Length of Reservoir (at NOL) (km)	2.20
Gross storage capacity (at NOL) ($x10^6$ m^3)	3.56
Live storage (at NOL) ($x10^6$ m^3)	1.20
3. Dam Structure	
Type	Concrete Gravity Arch
Dam crest elevation (masl)	1292.0
Maximum height above river bed (m)	35.0
Maximum height above foundation (m)	58.0
Crest length (m)	130.0
4. Spillways and Low Level Outlets / Flushing Sluices	
Spillway type	Upper Gated Ogee Crest Spillway + low level Gated Spillway
Upper spillway crest elevation (masl)	1278.0
Upper spillway gates No. and type	3 (radial gates)
Upper spillway gates size (W x H) (m)	11 x 10
Low level spillway invert elevation (masl)	1258.0
Low level spillway gates no. and type	2 (sluice gates)
Low level spillway size (WxH) (m)	6 x 8
5. Sediment Management	
Sediment Bypass Tunnel type	Gated Intake followed by Archway Tunnel
Intake size (WxH)(m)	7 5 x 4.5
Inlet invert elevation (masl)	1261.0
Tunnel cross section (W x H) (m)	archway (7.5 x 8.0)
Tunnel length (m)	650
Tunnel slope (%)	1.5
Outlet invert elevation (masl)	1248.0
Submerged guiding structure crest elevation (masl)	1272.0
Submerged weir/guiding structure height (m)	21 (estimated maximum above foundation)
6. River Diversion	
Construction Flood (T= 20 years) (m^3/s)	900
Diversion type	Openings left in the dam body for the low-level spillway and a left bank diversion tunnel (which will be further converted to the sediment bypass tunnel)
Upstream Coffer dam type	concrete gravity solution (which will be further converted to guiding structure)
Upstream Coffer dam crest elevation (masl)	1272.0
Downstream Coffer dam type	concrete gravity solution
Downstream Coffer dam crest elevation (masl)	1252.5
Diversion tunnel type	archway (concrete lined)
Diversion tunnel no. (-)	1
Diversion tunnel size (WxH) (m)	archway (7.5 x 8.0)
Diversion tunnel length (m)	650
Diversion tunnel slope (%)	1.5
Diversion tunnel inlet invert El. (masl)	1261.0
Diversion tunnel outlet invert El. (masl)	1248.0
7. Power Intake Structure	

Intake type	Horizontal intake
Trash rack No.	4
Trash rack size (W x H) (m)	8 x 10
Service gates No.	2
Service gates size (W x H) (m)	4 x 8
Intake crest elevation (masl).	1271
8. Headrace Tunnel	
Tunnel section	Circular concrete lined (8.0 m inner diameter)
Length up to surge tank (m)	9137
Tunnel slope (%)	0.56%
9. Upstream Surge Shaft	
Type	Concrete lined circular surge shaft
Internal diameter (m)	14.5
Surge shaft height (m)	122
Surge shaft bottom elevation (masl)	1220.0
10. Pressure Tunnel/Shaft and Penstock	
Pressure tunnel/shaft main section type and size	Steel lined circular cross section (5.6 m internal diameter)
Pressure tunnel/shaft length (m)	152
Penstock length (m)	88
Branch Section Type	Manifold (3 branches)
Size of each branch (m)	3.2 m internal diameter conduits
Max. Length of branch (m)	~30
11. Powerhouse and Substation	
Powerho11. use type	Conventional underground cavern
Main cavern general dimensions (LxWxH) (m)	71 x 20 x 34
Turbine type	Francis
No. of units	3
Turbine axis elevation (masl)	1054.0
No. of generators	3
Transformer / Substation type	Underground cavern (adjacent to the main powerhouse cavern)
Transformer cavern general dimensions (LxWxH) (m)	88 x 14 x 20
12. Downstream Surge Shaft	
Type	Concrete lined circular surge shaft
Internal diameter (m)	3
Surge shaft height (m)	244
Surge shaft bottom elevation (masl)	1055.0
13. Tailrace	
Type	Circular tunnel with transition to an archway section at the final length and Outlet portal
Tunnel section	Circular concrete lined (8.0 m diameter)
Length up to the final transition section (m)	1515
Tunnel slope up to the final transition section (%)	0.23% (ascending slope)
Tunnel final section	Archway concrete lined section (8.0 W x 8.0 H)
Length from transition to outlet (m)	50
Tunnel slope up to the outlet portal (%)	15% (ascending slope)
14. Power and Energy	
Gross Head (m)	229.0
Design Net Head (m)	217.6
Installed plant capacity (MW)	300 (at the generator)
Mean annual energy (GWh)	1143 (average of 55 years)
15. Project Access Facilities	
Access road to dam and related structures (length)	550 m (Off taking from National Highway N-15 at the left side of Kunhar River, near Paras village)
Access road to sediment by-pass tunnel (length)	440 m (from dam bridge deck up to sediment by-pass tunnel intake)
Access road to powerhouse and staff colony	10-12 Km off taking from N-15 at the left side of Kunhar river

Figure 2.1: Project Layout Map of BHPP

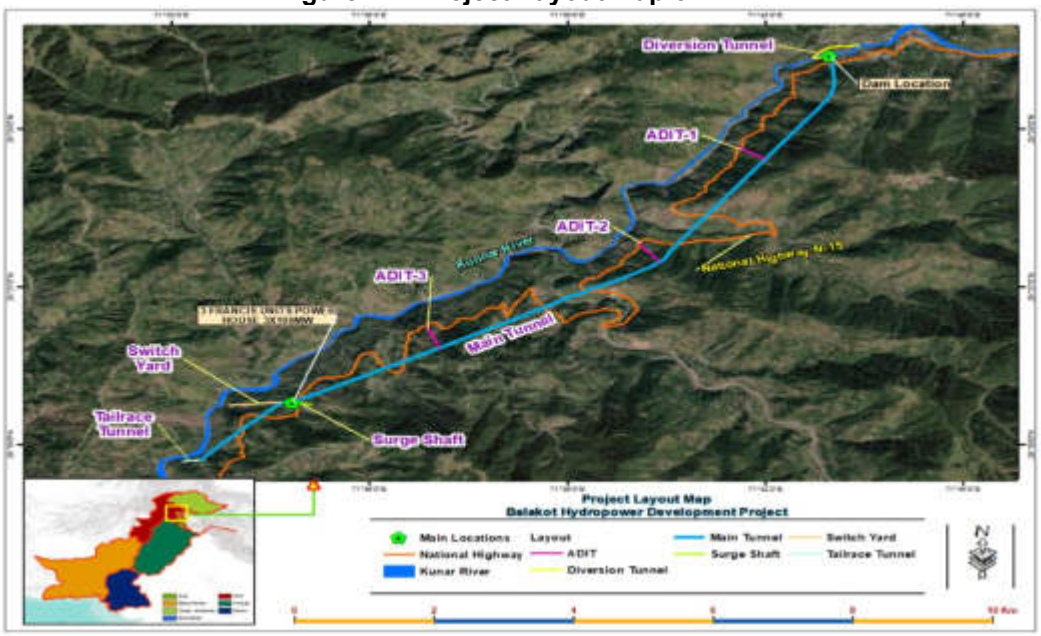
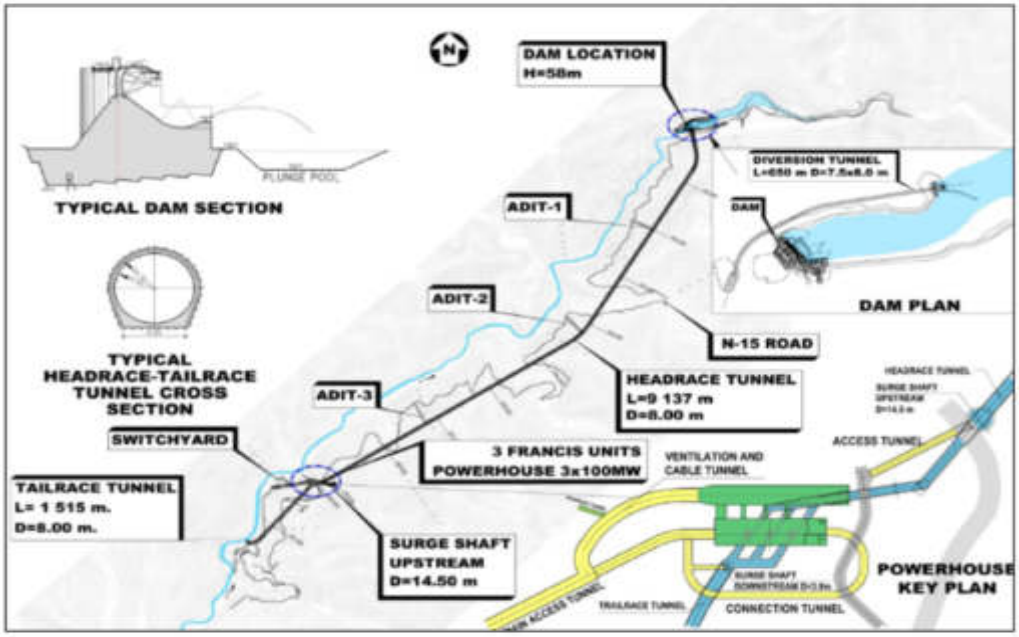


Figure 2.2: Schematic Layout Plan of BHPP



2.2 BHPP Area

24. The dam is located 18.6 km upstream of Balakot town near Paras village, whereas the underground powerhouse will be located near the village of Barkot, 8.0 km upstream of Balakot town. Dam and powerhouse sites are accessible from Balakot town from the Balakot-Jalkhand Road (N-15). The road is constructed at a gentle gradient and is metaled throughout the way up to Jalkhand. Scrub forest (40%) and agriculture lands (26%) are the major land use of the area followed by pine forest (19%). Dam site is located near Paras while Guddi, Manakpai and Sail are main settlements near headrace tunnel. Powerhouse is located near Sendori and tailrace tunnel

ends at Sangar. Bela Balseri, Nihan, Dhab, Rahter, Sangar and Kappi Gali are the affected settlements of the project area for which resettlement has been carried out as per ADB SPS.

2.3 BHPP Background

25. A feasibility study of the project was prepared in 2013, which was evaluated by the technical consultants of ADB. Finding shows that project feasibility study shall be updated. Project feasibility was updated by Aqualogus in 2018 which assessed dam site and powerhouse option alternatives with consideration of multiple parameters, such as earthquake, landslides, extreme weather, flood, and stability of the selected design.

26. For the project development, the Government of KP signed a loan agreement with ADB on May 21, 2021, which became effective on July 7, 2021.

27. As Asian Infrastructure and Investment Bank is the co-financier of the project, loan agreement was also signed with the bank which has been effective since October 25, 2021.

28. The expected project completion date is June 2027. The expected loan closing date is December 2027.

29. PEDO is the executing agency of the project, and will execute the project through PIU established at Balakot.

30. On September 3, 2020, PEDO entered into PMC Service Agreement for Balakot Hydropower Project (300 MW) with Joint Venture of DOLSAR Engineering Inc. Co. (Turkey, lead joint venture partner), AGES Consultants, BAK Consulting Engineers, CivTech Associates, Electra Consultants and Techno Legal Consultants (Pvt.) Limited from Pakistan.

31. The consultancy services are effective for 84 months since Commencement of Services on September 11, 2020. During this period, the PMC will act on behalf of PEDO as “Project Manager/Engineer”.

32. The EPC contract was awarded to CGGC, and GRC, Pakistan on March 9, 2021.

33. Consequent upon fulfillment of the requisite conditions of the EPC contract, PEDO notified September 27, 2021 as Effective Date for EPC contract.

34. PIU BHPP issued sectional work commencement to EPC contractor on December, 2022 for below project facilities falling in Mouza Ghanool and Sangar of BHPP.

- Access road to shaft
- Switch yard
- Access Road to switchyard
- Colony with tailrace outlet
- Access to powerhouse
- Access road to staff colony

35. EPC contractor is engaged in constructing temporary access roads (TRs) leading to various Adits, geotechnical investigations, and constructing temporary camps at the time of EEM’s visit in July 2023.

2.4 Environment Safeguards

36. With respect to environmental safeguards, project is categorized as 'Category A' as per ADB SPS for which EIA was prepared, approved and disclosed on ADB website in 2019. PIU BHPP also obtained environmental approval for the project from KP EPA in July 2021, which is attached as Annexure A.

37. To reflect the effect of changes in the revised BAP institutional arrangement, and design changes made at the dam site proposed by PIU and subsequently approved by ADB, the PMC initiated necessary updating of the EIA report in June 2023 upon instruction of ADB. Updated EIA was scheduled to be submitted to ADB in November 2023 for review and clearance.

38. For Category A projects, ADB SPS requires that external environmental monitoring is carried out during project construction to ensure EMP compliance and to evaluate environmental performance of the project. The project's EIA and EMP provide a system for compliance with applicable legislative requirements and obligations and commitments. Institutional level arrangements at various tiers of the project are in place to develop, implement and monitor EIA/EMP/SSEMP/BAP requirements. SSEMPs were also prepared for the project components, and their compliance was ensured through contractual binding in the EPC contract. PIU PEDO through PMC is closely monitoring and reporting EIA/EMP/SSEMP compliance at construction sites.

39. ADB conducted safeguard review mission for BHPP on May 22, 2023 in which PIU and PMC presented the status of environmental safeguards through virtual media. Below are the major findings of ADB safeguard review mission.

- There is need to hire Director Environment and Social on priority basis as position is still vacant.
- The EIA is to be updated as per the new design changes and revised consultation report on project-specific BAP.
- The BAP implementation plan with revised arrangements shall be submitted to ADB for review and concurrence.
- Inception report of EEM shall be submitted by June 2023.

2.5 External Environmental Monitoring

40. The objective of external environmental monitoring during implementation of BHPP is to ensure compliance with the requirements of the EIA/EMP/SSEMPs and environmental approval (NOC) conditions of KP EPA. Scanned copy of KP EPA approvals for the project is attached as **Annexure A.** Compliance of the EMPs/SSEMPs would help to mitigate the potential impact on the environment and sustainable development of the project. The results of external environmental monitoring are recorded and checked to monitor the non-compliances and effectiveness of mitigation measures. In such cases, any non-compliance are flagged in the early stages, and CAP is recommended. EEM will:

- Perform independent third-party monitoring on the implementation of mitigation and monitoring activities on the physical and ecological environmental components of BHPP.
- Develop the appropriate methodology and tools for monitoring process, design appropriate forms, formats, schedules and prepare other documents required for

successful monitoring activities.

- Conduct field visits during project construction period to monitor the implementation of relevant mitigation measures recommended by EMP/SSEMPs.
- Review mitigation measures; and provide advice and guidance on improvements, and corrective measures for any shortcomings.
- Support PEDO and PMC in making sure the project development complies with the EMP/SSEMPs and environmental protection requirements.
- Verify whether the set environmental targets are achieved, and recommended remedial measures are adopted.
- Submit environmental monitoring reports to the PIU PEDO and ADB semi-annually during the construction phase.

2.6 Project Implementation Status

41. Consequent upon grant of possession of colony site (Ghanool) and dam site (Paras) on December 28, 2023 and March 31, 2023 respectively, the EPC contractor initiated construction of permanent works. However, due to some issues pertaining to land acquisition, construction activities could not be initiated at the dam site.

42. During the reporting period, some of the major activities undertaken by the EPC contractor at the site were the (i) basic and detailed engineering designs; (ii) surveys; (iii) construction of access roads, Adit portals, EPC contractor's camps/workshops; (iv) installation of batching plant; and (iv) identification/acquisition of muck disposal areas.

43. The bypass tunnel, originally conceived for the Kunhar River diversion during construction phase, and sediment exclusion during operation phase of the project, was now proposed to be used as diversion tunnel only. Whereas for sediment flushing, additional bottom outlet will be provided in the dam body.

44. A combination of three spillways, which in the tender document were placed at the left side of the dam body, were now optimized to two spillways, placed at the left and right sides of the dam body. Also, bottom outlet systems increased from 2 to 3, and lowered by 5 m while shifting its location to the dam axis.

45. Submission of a comprehensive action plan for basin-wide BAP, and updated EIA report to the quarter concerned at ADB were the two main targets set in the presentation. In this regard, detailed BAP was submitted to ADB on June 15, 2023, while submission of the updated EIA report was scheduled before end of July 2023.

2.7 Project Physical Progress

46. Major activities that were carried out during the reporting semester included preparatory works (47%), basic design (93%), detailed design (3%), construction of roads and bridges (33%), and work on permanent staff residential colony (5%).

47. Physical work progress during the monitoring period is provided as Figure 2-3.

Figure 2-3: Physical Work Progress- BHPP

Description	Planned Start	Planned Finish	Planned %age	Achieved % Progress
Preparatory works	28-Aug-21	27-Feb-23	100%	47.0% / 53.0%
Basic Design	21-Sep-21	27-Sep-22	100%	93.0% / 7.0%
Detail Design	28-May-22	28 Dec-27	19%	3.0% / 97.0%
Procurement & Production & Test & transportation	28-Jul-22	30-May-26	23%	0.0% / 100.0%
River Diversion	1-Oct-22	27-Nov-23	62%	0.0% / 100.0%
Concrete Dam	19-Jun-23	27-Jan-27	0%	0.0% / 100.0%
Power Intake Works	28-Jan-23	28-Jul-24	28%	0.0% / 100.0%
Headrace Tunnel	13-Oct-22	27-Jun-26	19%	3.0% / 97.0%
Upstream Surge Tank, Pressure Shaft & Penstocks	23-Apr-23	28-Jul-25	0%	0.0% / 100.0%
Main Access Tunnel & Ventilation and Cable Tunnel	18-Nov-22	18-Oct-26	15%	0.0% / 100.0%
Powerhouse Works	4-Jun-23	20-Dec-25	2%	0.0% / 100.0%
Tailrace Tunnel Downstream Surge Shaft	29-Jul-23	27-Feb-26	0%	0.0% / 100.0%
Switchyard	16-Apr-23	15-Jan-24	24%	0.0% / 100.0%
Transmission Line Works	28-Sep-22	27-Aug-25	25%	0.0% / 100.0%
Main transformers and other equipment installation	1-Mar-25	30-Nov-26	0%	0.0% / 100.0%
Roads and Bridge	1-Oct-22	3-Oct-26	18%	33.0% / 67.0%
Permanent Staff Residential Colony	28-Jun-23	28-Dec-25	0%	5.0% / 95.0%
Erection of Unit1,2,3	29-Apr-26	28-May-27	0%	0.0% / 100.0%
Completion &Taking-over	28-Sep-27	28-Dec-27	0%	0.0% / 100.0%

Key: Achieved: Remaining:

3 Project Area Description

3.1 Project Area Description

48. Project area can be divided into two main components.

- Dam and Reservoir Area
- Powerhouse and Staff Colony

49. Details of project components that will be constructed in main dam and reservoir area are shown as Figure 3-1. Components that will be constructed in powerhouse and staff colony area are shown as Figure 3-2.

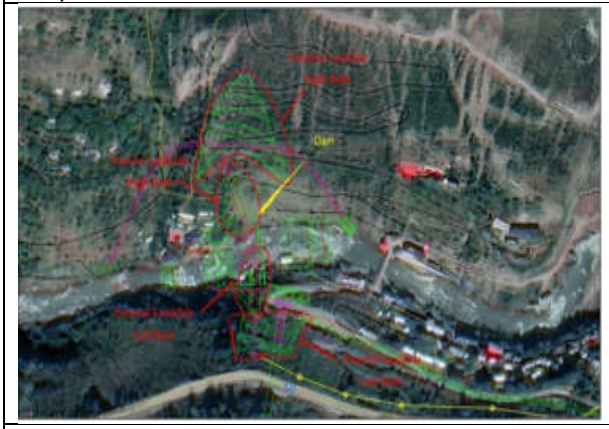
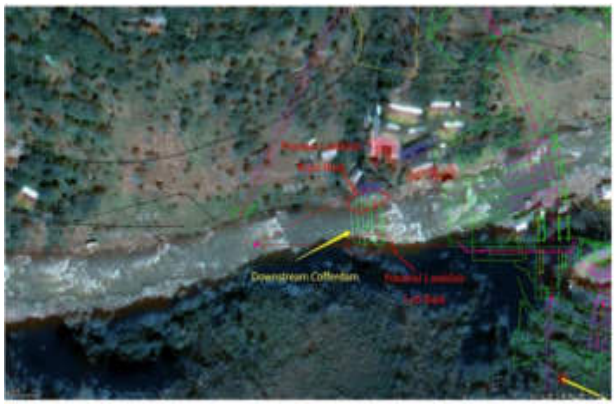
Figure 3-1: Typical Setting of Reservoir and Main Dam

Figure 3-2: Typical Setting of Powerhouse and Colony Area

3.2 Reservoir and Dam Site

50. Reservoir and dam site are located at 1,272 masl in the hilly terrain of steep slope valley of Paras village. Pine scrub forest is the ecology of the area. Photographs of proposed dam site, reservoir area, upstream coffer dam and downstream coffer dam are provided below.

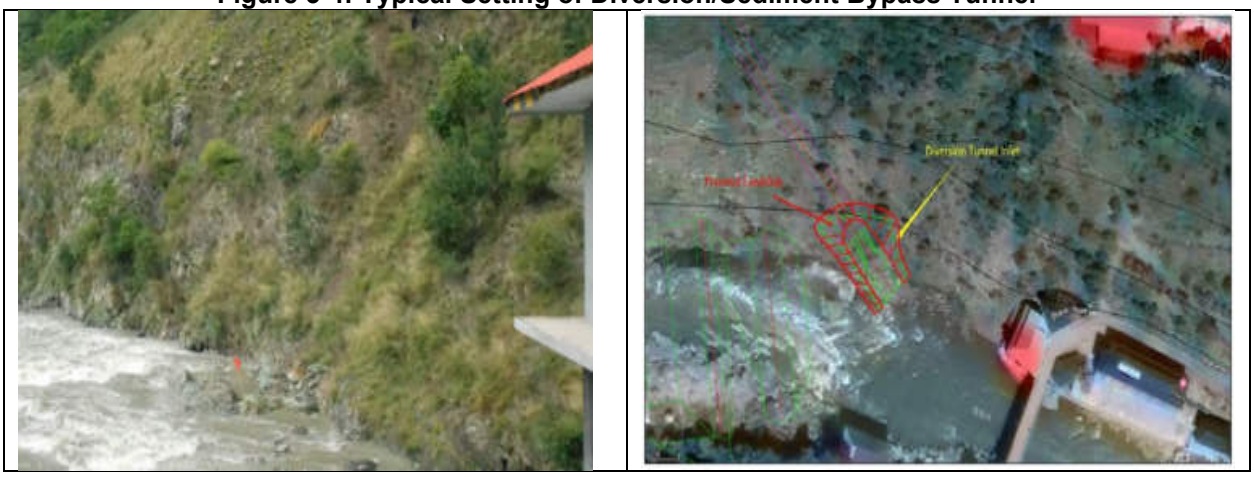
Figure 3-3: Typical Setting of Reservoir, Main Dam and Coffer Dam

<table>
<tr><td>  </td><td>  </td></tr>
<tr><td>Proposed reservoir area of BHPP</td><td>Proposed area for main and coffer dam</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>Main dam site</td><td>Downstream coffer dam</td></tr>
</table>

3.3 Diversion Tunnel

51. Diversion tunnel will be constructed on the left bank of the river which will also act as lowp-level spill way. The area is hilly terrain of steep slope surrounded by pine scrub forest. Photographs of diversion tunnel are provided below.

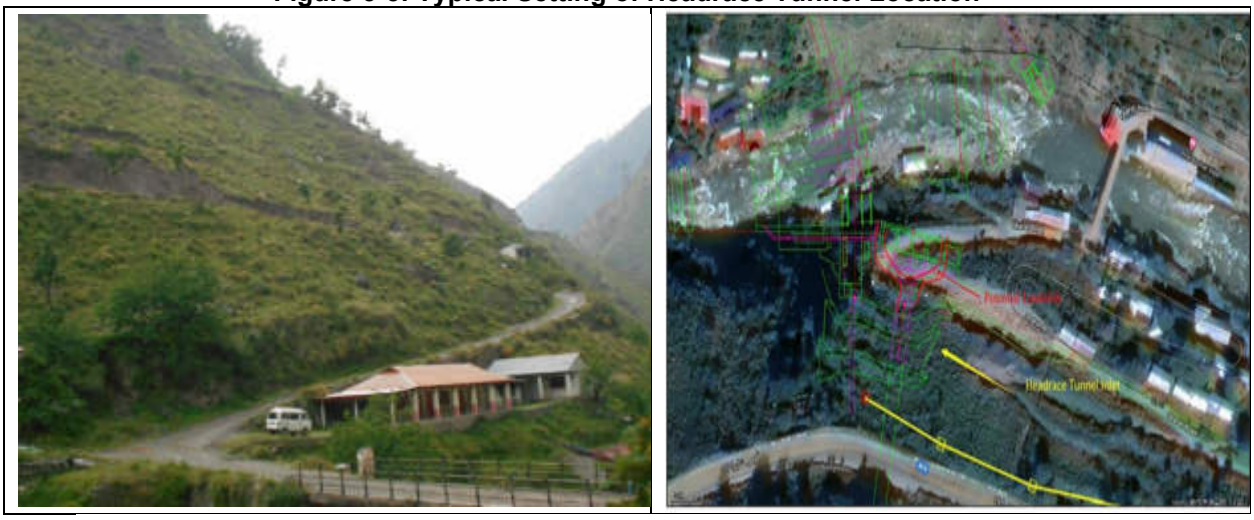
Figure 3-4: Typical Setting of Diversion/Sediment Bypass Tunnel



3.4 Headrace Tunnel

52. Headrace tunnel of 8 m diameter and about 9.1 km length will be constructed on left bank of river. The tunnel will comprise 3 Adits for access and passage to tunnel. The headrace tunnel traverses Kiwai, Zamanabad, Kholian, Barkot, Kappi Gali and Sandhu localities. Tunnel is passing from steep slope elevation of the hills, and details are shown below.

Figure 3-5: Typical Setting of Headrace Tunnel Location

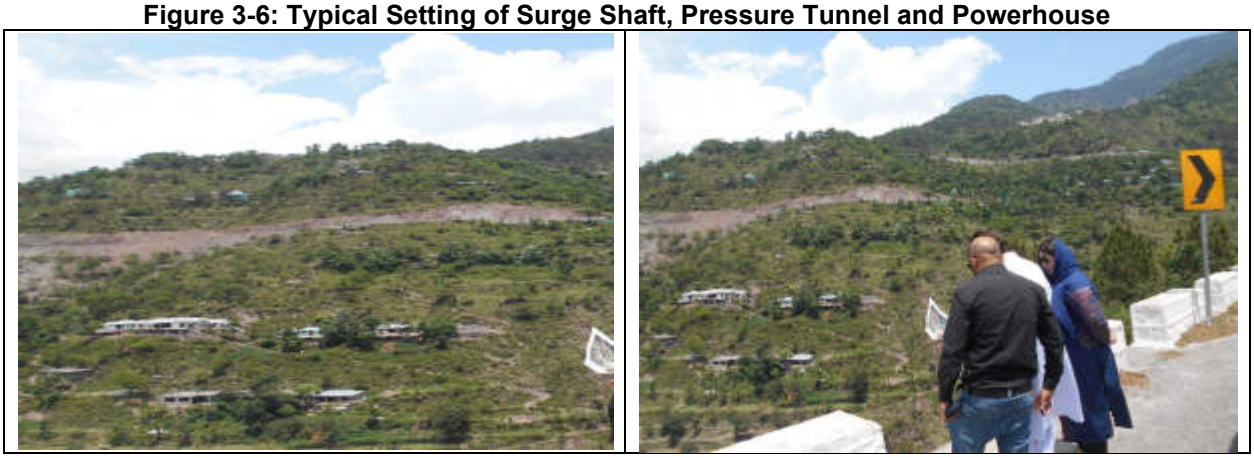


3.5 Surge Shaft, Pressure Tunnel and Powerhouse

53. Surge shaft, pressure tunnel and powerhouse are located in Sendori near Kappi Gali. Surge shaft and pressure tunnel will be located at an elevation of 1,220 m, while powerhouse turbine axis is located at elevation of 1,050 masl. Underground cavern-type powerhouse will

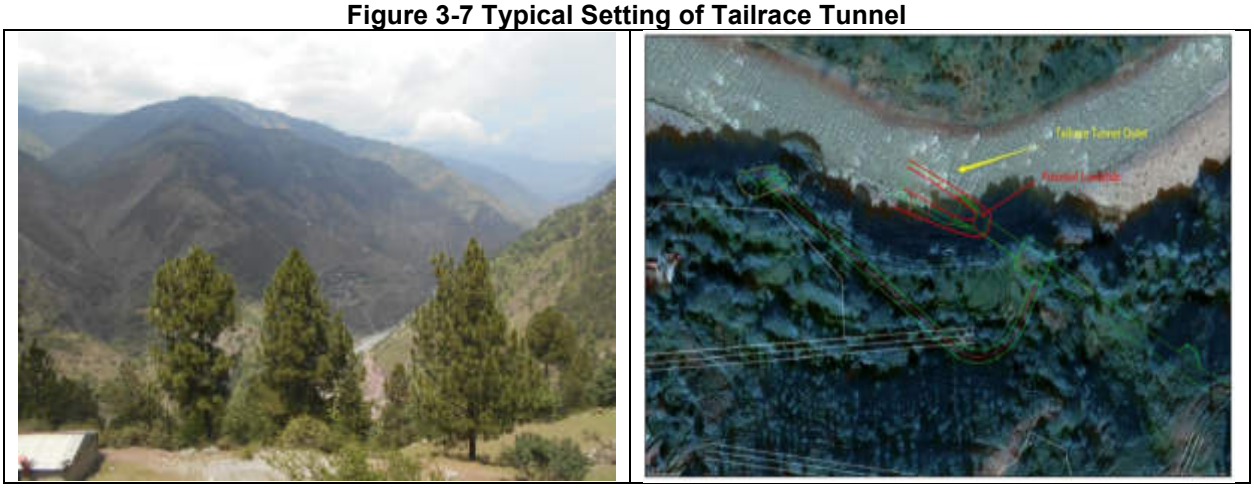
be constructed. Typical setting of surge shaft, pressure tunnel and powerhouse is provided below.

Figure 3-6: Typical Setting of Surge Shaft, Pressure Tunnel and Powerhouse



54. Tailrace tunnel will be constructed up to 1,565 m length comprised of circular tunnel with archway section transition at outlet portion. It is located in Kapi Gali, and ultimate outfall in the Kunhar river. Proposed alignment and outlet of tail race tunnel are shown in below figure.

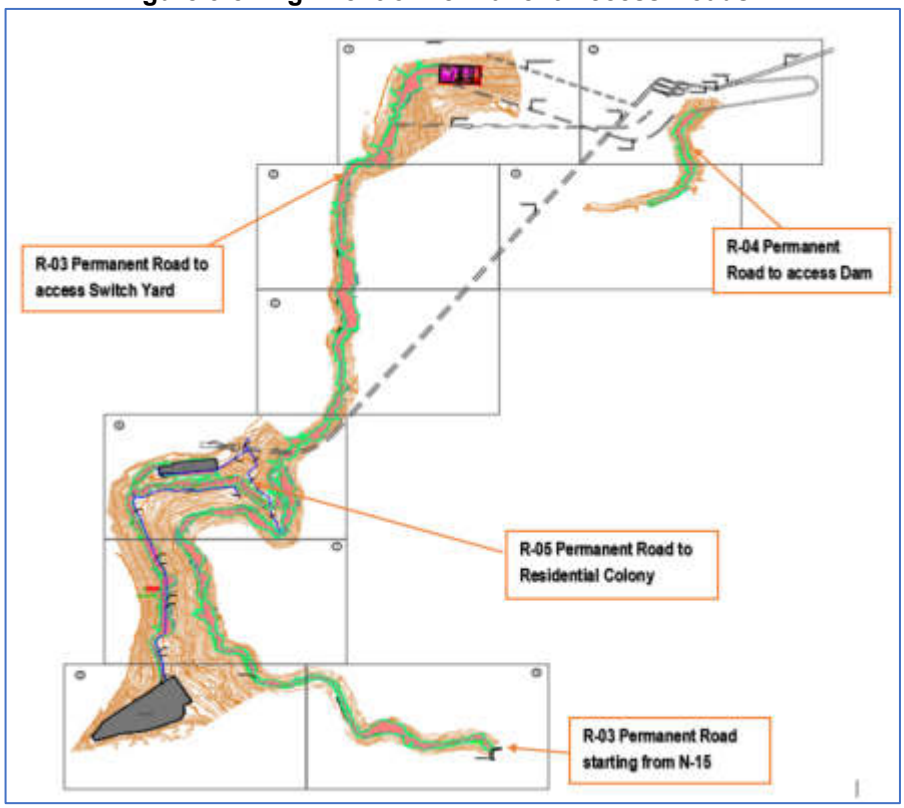
Figure 3-7 Typical Setting of Tailrace Tunnel



3.6 Permanent Access Roads

55. Three permanent roads are included in the project design. These include a permanent roads to dam (R-4), powerhouse (R-3), and project residential colony sites (R-5). R-5 originates from R-3 near tailrace colony site, and will be used to access the permanent residential colony. Earthworks, including cutting, filling, protection works, compaction and asphalting, are the major activities to be executed at the permanent roads sites. There is one proposed bridge at the reservoir area that will connect the main N-15 road with the adjacent roads on the left and right sides. The main activities are piling, span girders, railing works, parapet walls, and surfacing. Permanent access roads alignment is provided below**.**

Figure 3-8 Alignment of Permanent Access Roads



56. Dam site and other structures will be assessed through access road of about 550 m length. It will originate from Sharan road which is connected to N-15 at the left side of Kunhar river near Paras village.

57. An access road of 440 m will also be constructed to access the sediment bypass tunnel. It will start from the dam bridge deck and terminates at sediment bypass tunnel.

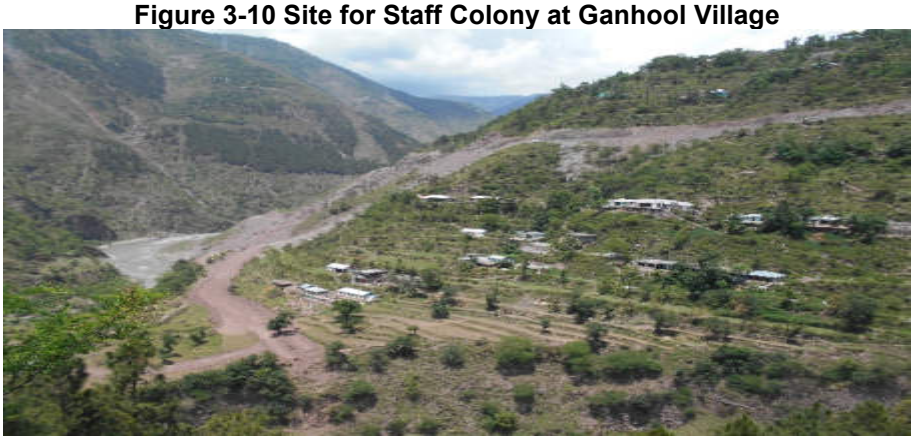
58. Construction work on TRs was started. Start points of TRs from N-15 are shown below.

Figure 3-9 Temporary Access Roads R1 and R3 to access Adits

3.7 Staff Residential Colony

59. Construction of staff colony is part of project design for which land has been acquired at Ganhool village. Key plan of the staff colony was prepared, while detailed planning and design finalization are in progress. The colony will comprise residential units and offices for the project operational staff. It will be a permanent residential colony for the staff during construction and operation phases of the project. It will house residential units of categories I-IV, community center, school, shopping market, mosque, hospital, and other civic facilities. Sewerage treatment plant, and reasonable land are allocated for green spaces and park in the layout plan of the colony. Protection works, concreting, and brick masonry are some of the major construction activities to be undertaken at this site. Site for staff colony near powerhouse is shown in below figure. Master plan of staff residential colony is provided as **Annexure F**.

Figure 3-10 Site for Staff Colony at Ganhool Village



4 Project Contractors and Construction Camps/Facilities

60. EPC contractor planned three temporary camps within the project boundary. These camps include (i) camp at Employer's residential colony site, (ii) Thobi camp (Adit-1), and (iii) camps at Adit-2 and Adit-3 sites. These camps will be constructed through pre-fabricated materials, while platform formation and protection works will involve earthworks and concreting activities. Also, the warehousing system, mixing system, explosive magazine, batching plant, crush plant, air compressor station, supply station, are to be installed/constructed at all the three Adits.

61. M/S GRC entered into rental agreement with private land owner at Thobi area to acquire about 23 Kanal land for construction of site camp. Camp is located in Kiwai village.

62. Contractor's camps will be temporarily built, and subject to restoration to its original condition after completion of the project. Periodic visits to camp sites will be done for monitoring EIA/EMP/SSEMP requirements; and environment, health and safety indicators. Layout of construction camps are shown in Figures 4-1 to 4-3. Layout of asphalt and batching plant is shown as Figure 4-4.

Figure 4-1: Camp Layout at Staff Colony

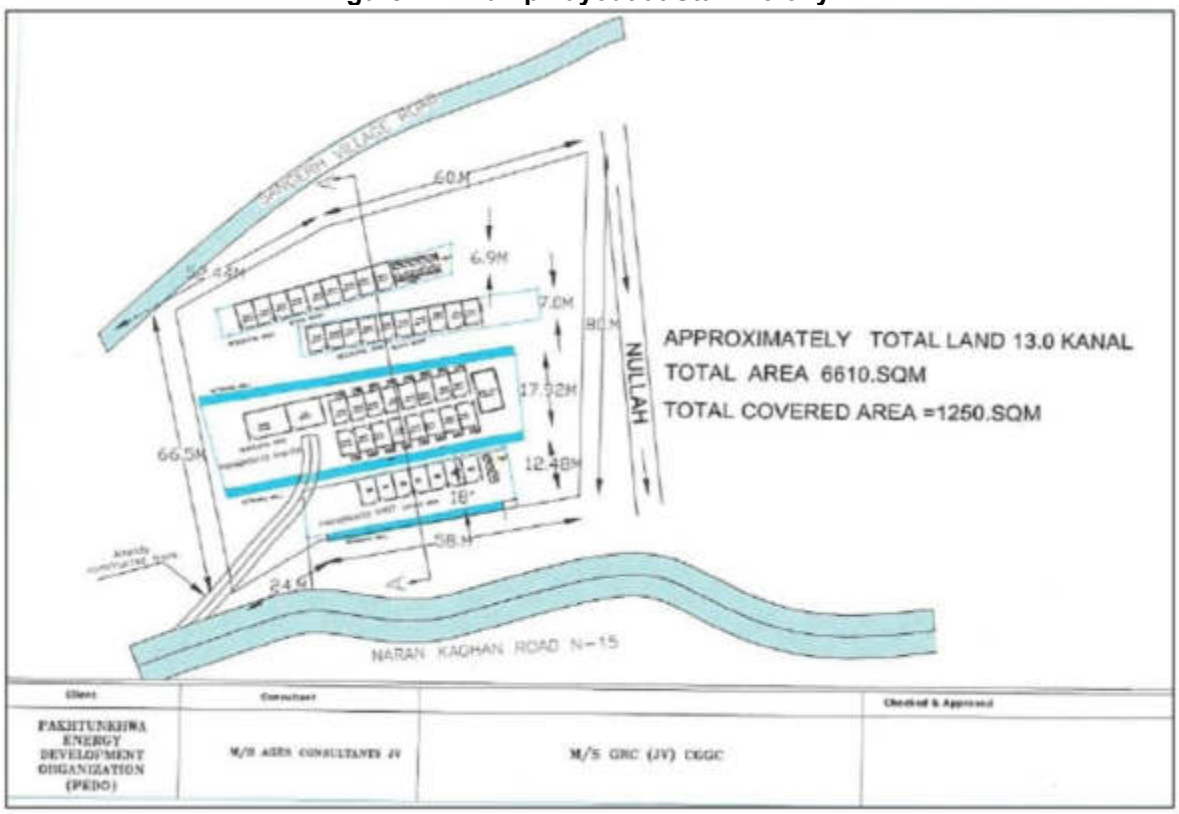


Figure 4-2: Camp Layout Plan to be constructed at Adit-2

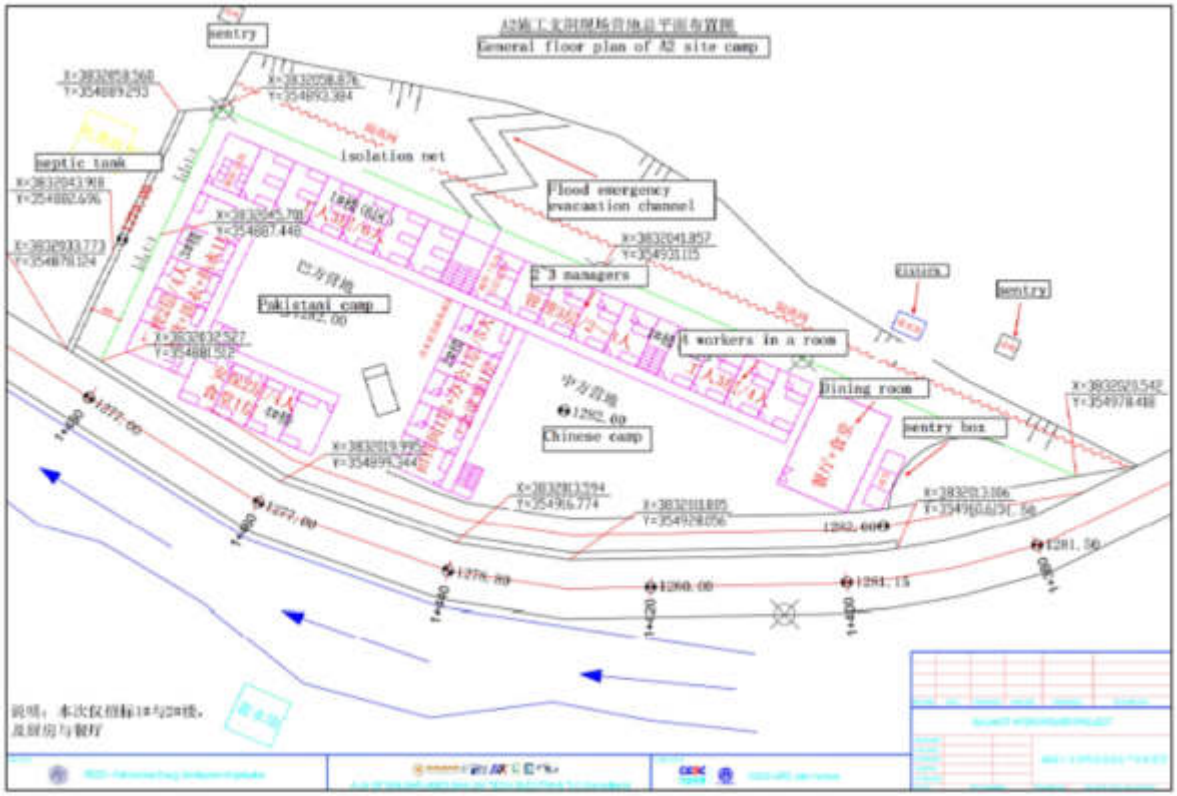


Figure 4-3: Camp Layout Plan to be constructed at Adit-3

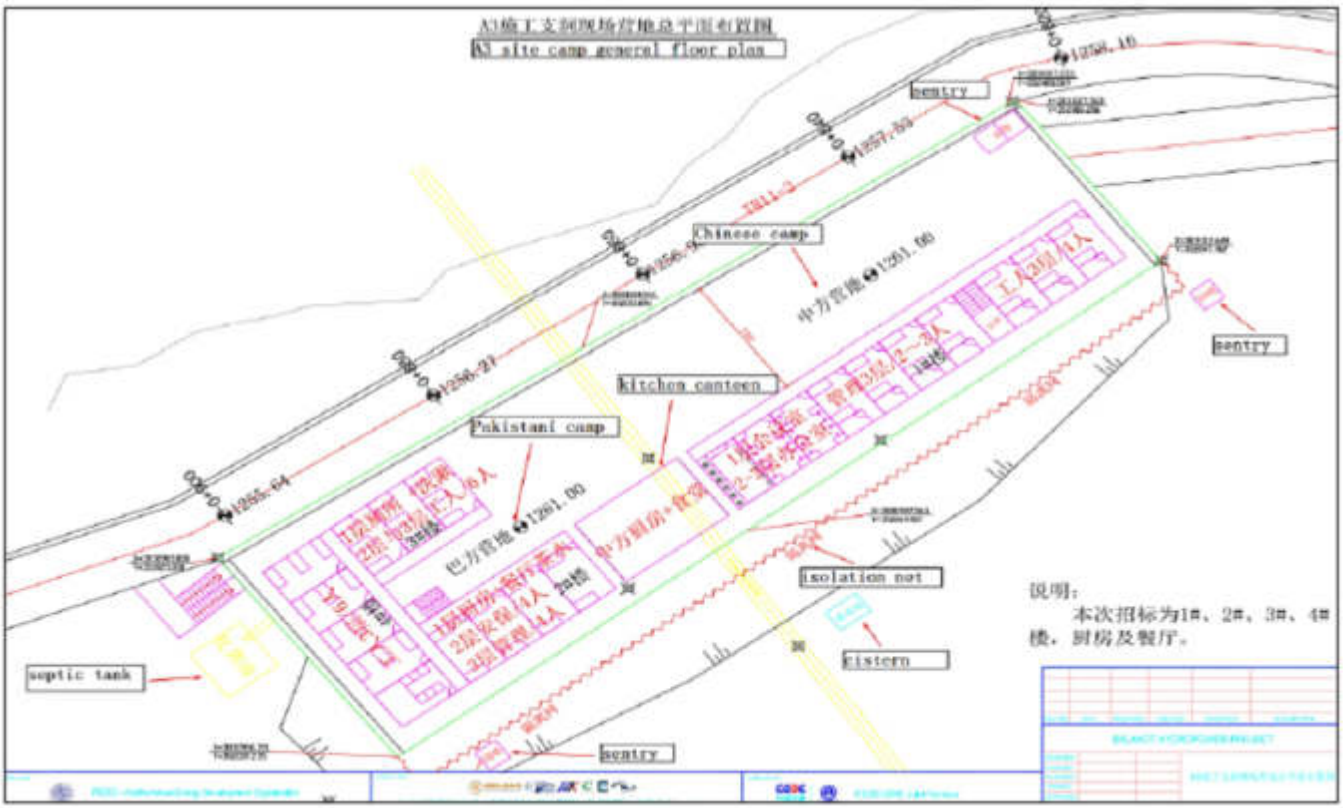
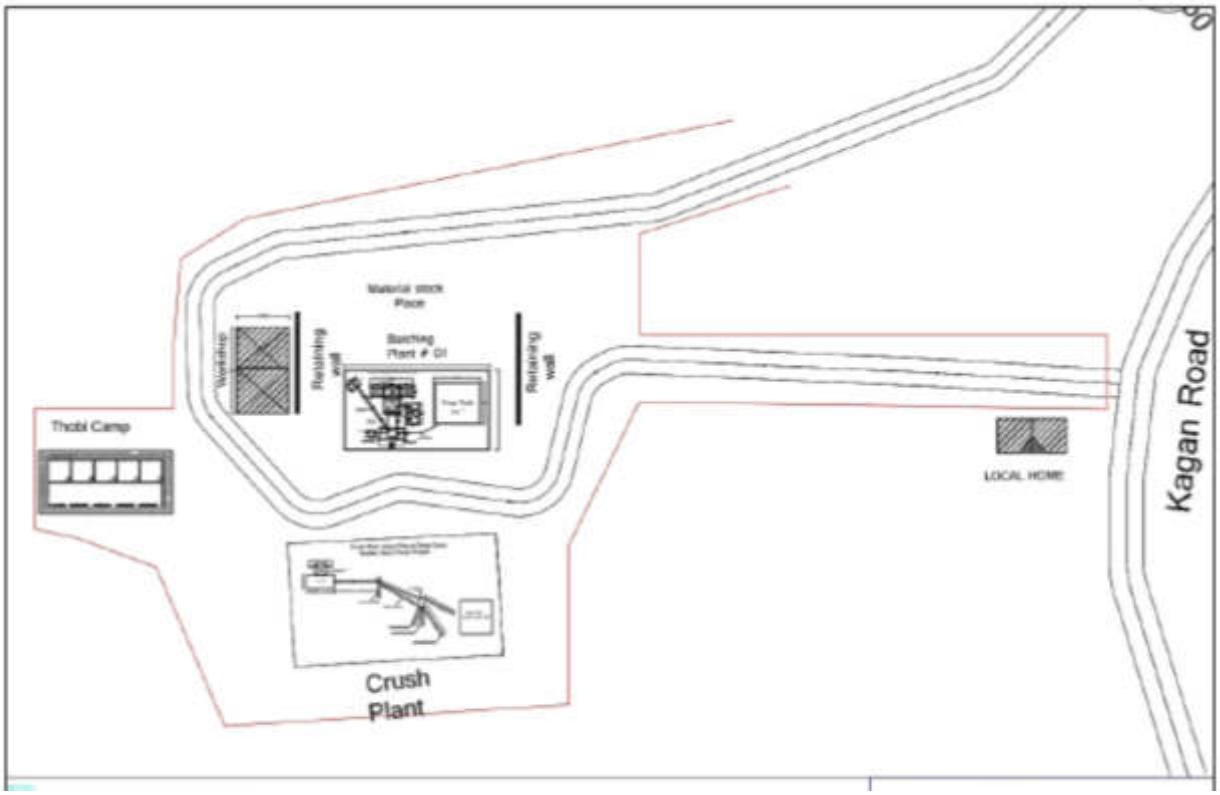
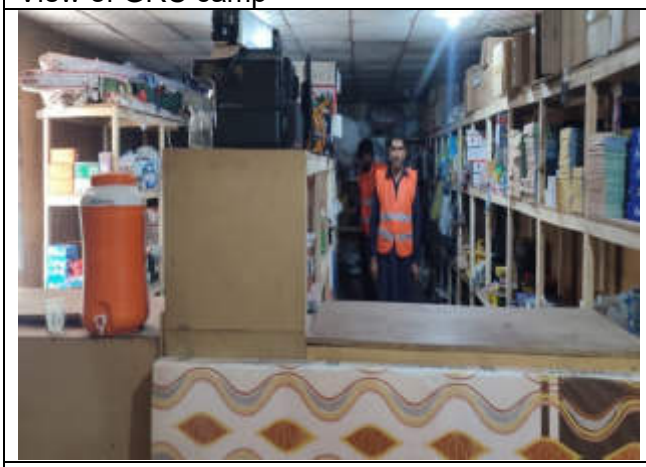
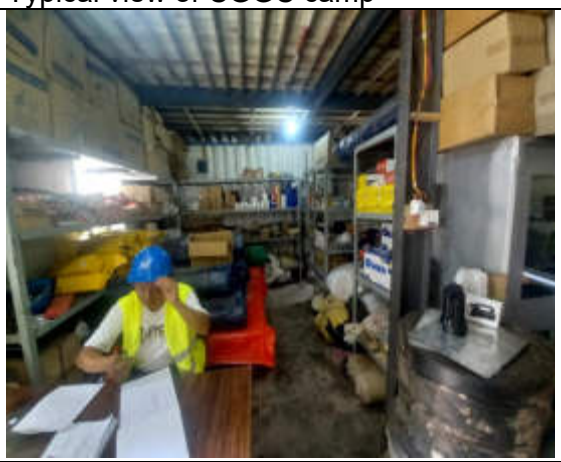


Figure 4-4: Layout Plan of Crush and Batching Plant



63. Various facilities of contractor camps are shown in below figure.

Figure 4-5: Various Facilities of Contractor Camps

	
View of GRC camp	Typical view of CGGC camp
	
GRC camp store	CGCC camp store
	
Batching plant Near CGGC camp and Adit-2 portal	Dedicated chambers for batching material storage

	
Waste pit at GRC camp	Generator of CGGC camp
	
Fabrication/workshop area	Kaghan Development Authority container for domestic waste collection
	
Fuel storage tanks with dispensing unit at C camp	Meeting with GRC Project Manager and environment team

	
Meeting with CGGC team	HSE best employee award distribution

4.1 Magazine Camps for Blasting Activities

64. BHPP involves blasting activities for which magazine camps are required. Magazine camps will be established following international standard practices to control HSE risks in storage and operation of blasting materials. EPC contractor identified two sites for magazine camps in Ghanool Nullah (near Adit-2) and Kholia (near Adit-3). Established magazine camp for Adit-2 in Ghanool area is shown as Figure 4-6. Magazine camp layouts in Adit-2 and Adit-3 are shown as Figure 4-7 and Figure 4-8, respectively.

Figure 4-6: Established Magazine Camp in Adit 2 (Ghanool Area)

Figure 4-7: Magazine Camp Layout Plan in Adit-2 (Ghanool Area)

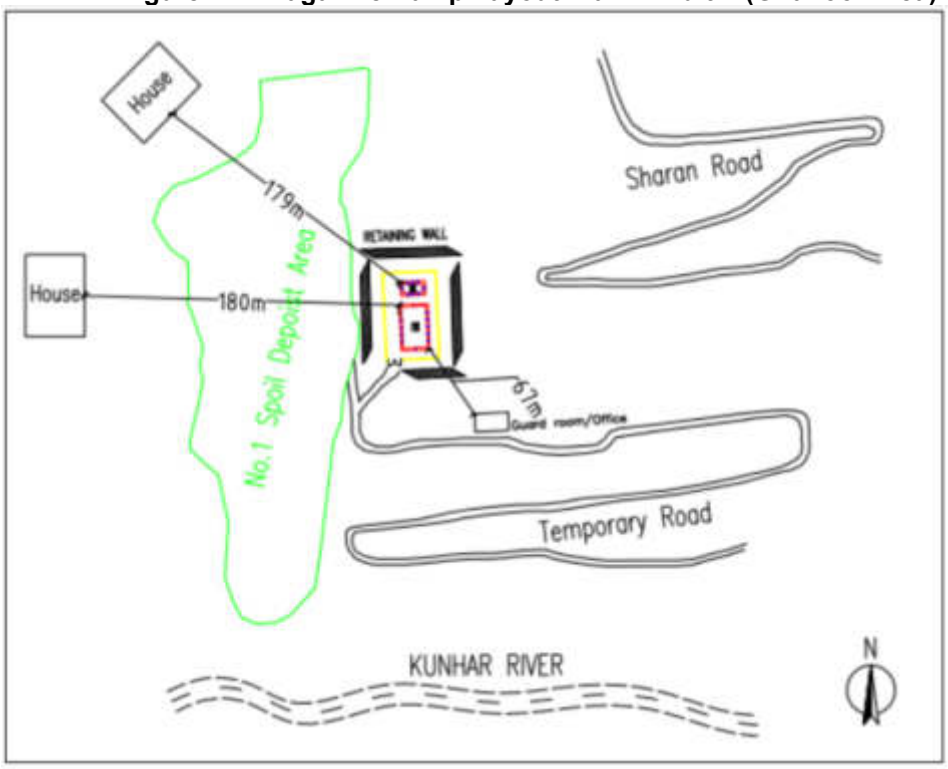
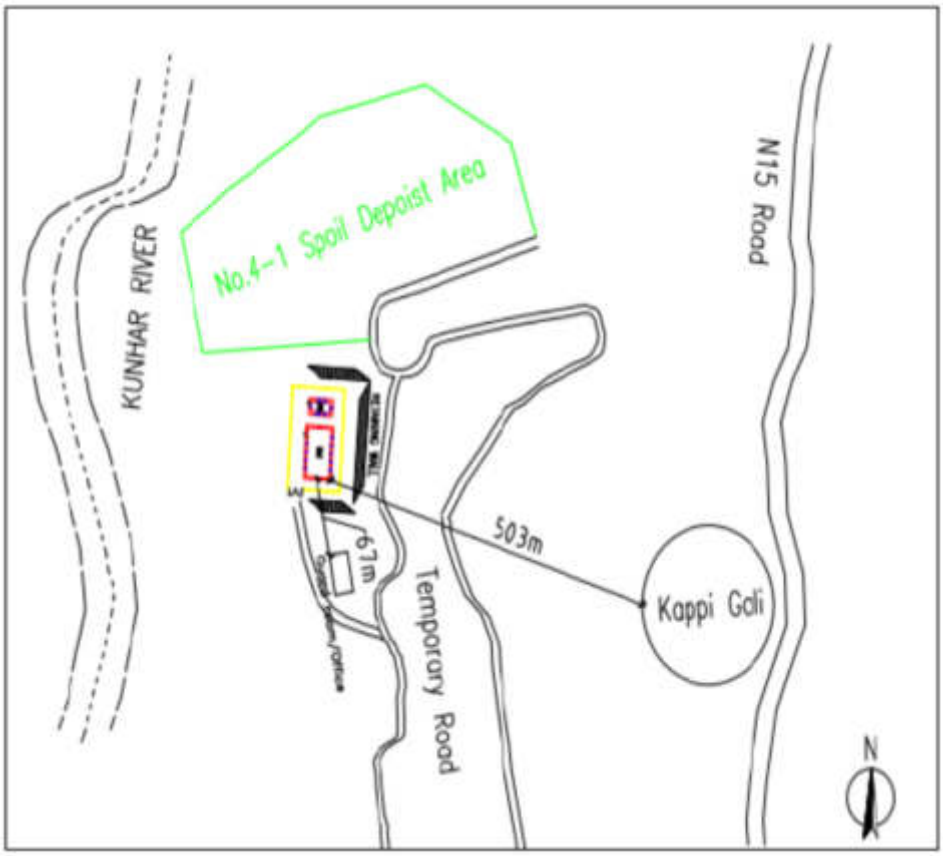


Figure 4-8: Magazine Camp Layout Plan in Adit-3 (Kholia Area)

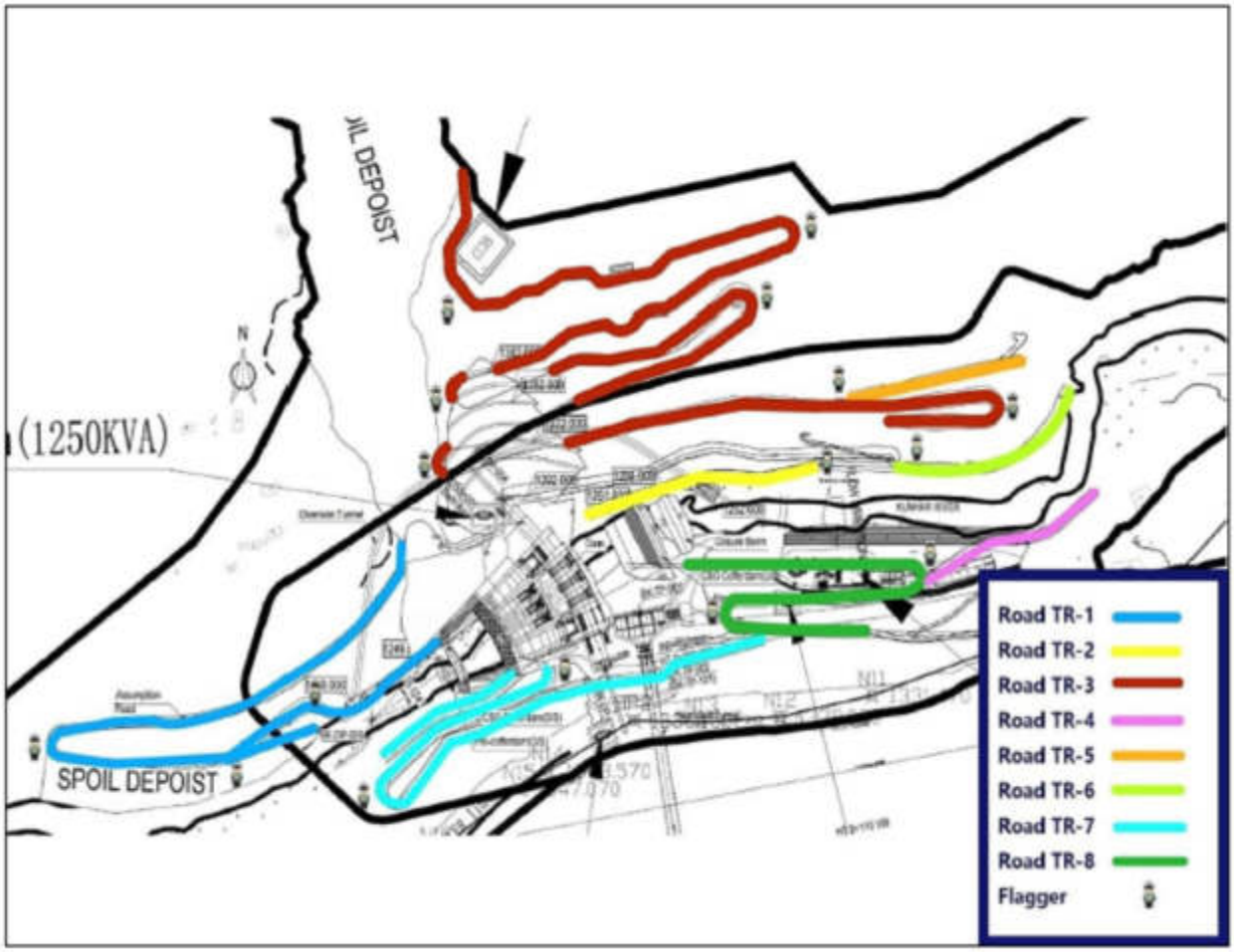


4.2 Project Temporary Access Roads

65. TRs are scheduled to be constructed at dam/headworks (TR11, TR1-1, TR1-2, TR3, TR4, TR5, TR6, TR7, TR8, TR18, TR20); headrace tunnel (TR9, TR10, TR11, TR19); and tailrace (TR12, TR13, TR14, TR15, TR16, TR17) sites. All these TRs are identified within the project boundary. These roads will generally be unpaved compacted roads which, at the end of contract period, shall either be reinstated to the pre-construction conditions or left in operational conditions subject to the demand of the locals. Earthworks, including cutting, filling and compaction, and protection works are the major activities to be undertaken at the TR sites. There are two temporary bridges at upstream and downstream of dam (BR12 & BR2) which will be constructed.

66. Initially, eight TRs are envisaged to be constructed to access the dam site area. Proposed layout of TRs is shown in below figure.

Figure 4-9: Layout of Temporary Access Roads to the Dam Site



67. To access Adit-1, Adit-2 and Adit-3, TRs will be constructed. TRs to Adit-1, Adit-2 and Adit-3 are marked as TR-9, TR-10 and TR-11, respectively, and layout setting is shown in below figures.

Figure 4-10: Layout of Temporary Access Roads to Adit-1

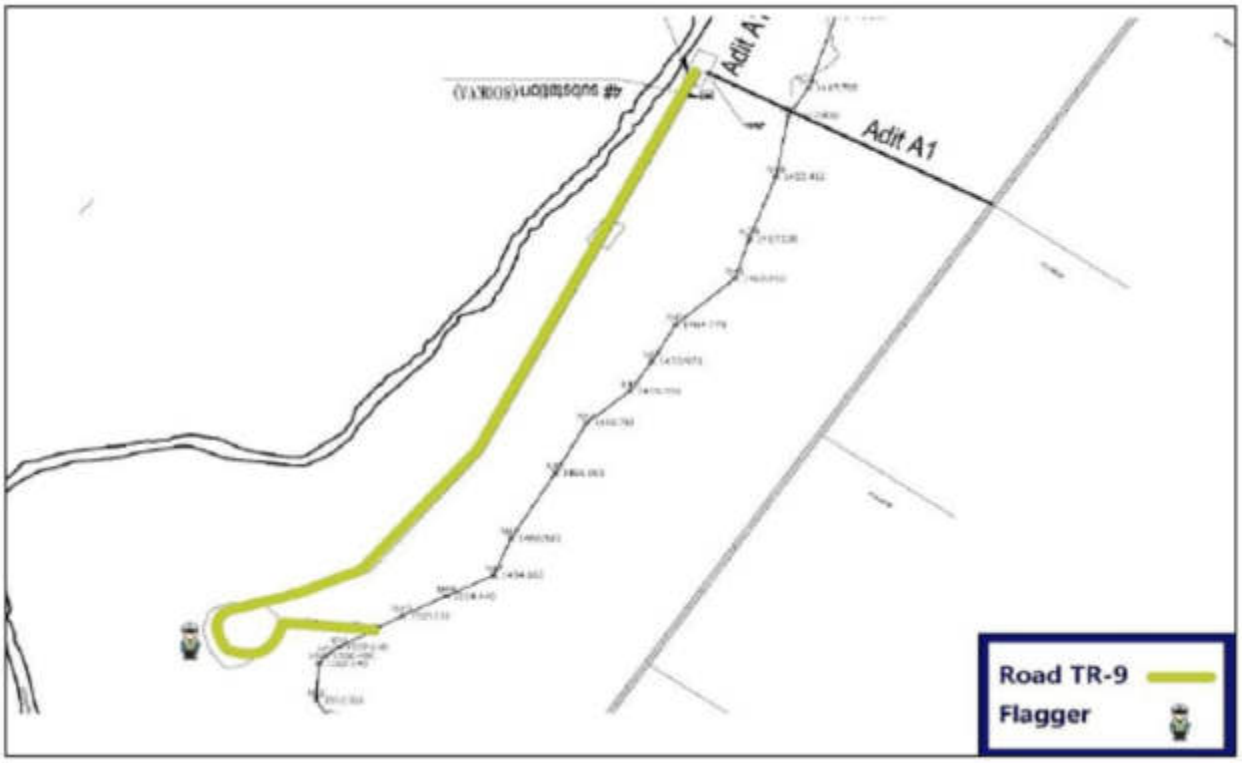


Figure 4-11: Layout of Temporary Access Roads to Adit-2

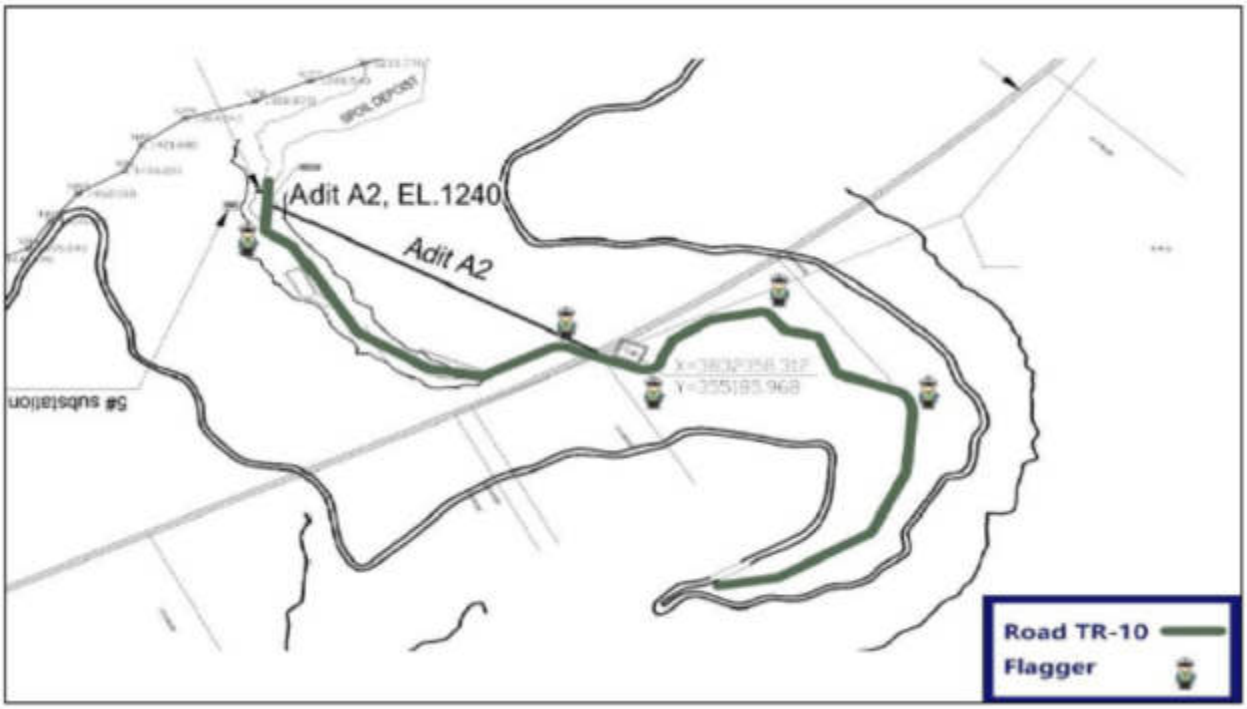
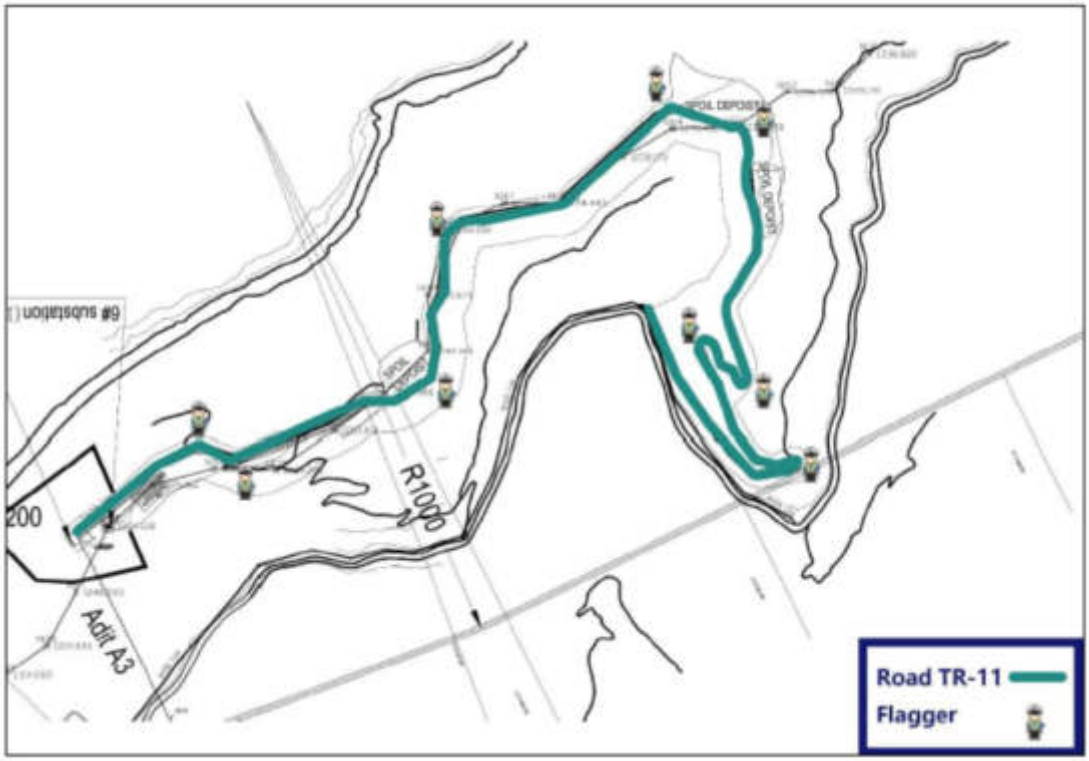
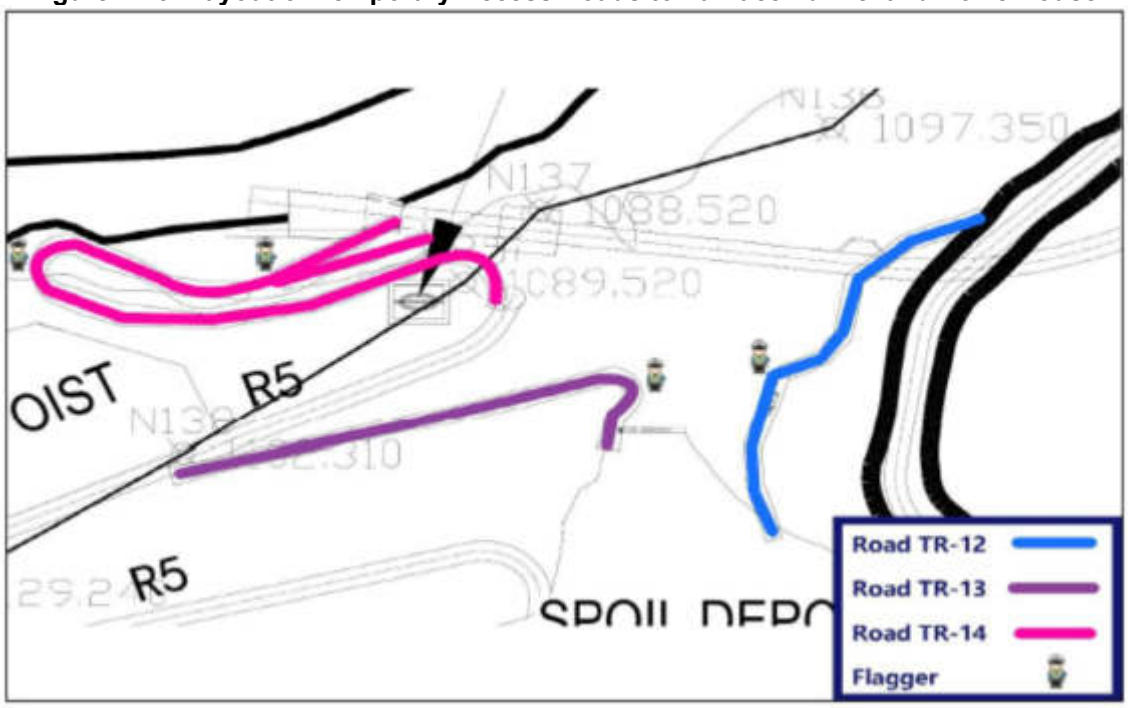


Figure 4-12: Layout of Temporary Access Roads to Adit-3



68. To access tailrace tunnel and powerhouse, three TRs are planned which are marked as TR-12, TR-13 and TR-14, respectively, and layout setting is shown in below figures.

Figure 4-13: Layout of Temporary Access Roads to Tailrace Tunnel and Powerhouse



4.3 Lease Agreement for Temporary Works and Spoil Disposal Areas

69. EPC contractor made land lease agreements to accommodate the following temporary works and spoil disposal areas for BHPP:

- site camp in Kiwai village measuring area of 23 Kanal for Thobi camp
- site camp in Mouza Ghanol measuring area of 5.53 Kanals for Adit-2
- magazine camp A2 in Mouza Ghanool measuring area of 3 Kanals (Owner 1)
- magazine camp A2 in Mouza Ghanool measuring area of 0.258 Kanals (Owner 2)
- batching Plant at Mouza Ghanool measuring area of 6.10 Kanals (Owner 1)
- batching Plant at Mouza Ghanool measuring area of 3.60 Kanals (Owner 2)
- batching Plant at Mouza Ghanool measuring area of 1.50 Kanals (Owner 3)
- soil disposal at Mouza Ghanool with 27 land owners
- Sangar village for camp at colony site measuring area of 13 Kanals

4.4 Quarry Areas

70. For the construction activities of BHPP, initially three quarry areas were identified for future use subject to Engineer's approval. As these quarry sites were near the river, the EPC contractor was not allowed to develop the quarry sites. At present, no quarry areas are being developed. Quarry material will now be purchased from approved sites such as Ghumwan for coarse aggregates; and Lawrencepur, Maira and Thakot for fine aggregates.

4.5 Waste Disposal Areas

71. Construction waste generated from construction activities will be reused as backfill. Tunneling waste generated at portal site of Adit-2 is temporarily stored at site, and will be used as fill material for raising platform of protection works. EPC contractor identified 11 waste disposal sites for tunneling waste. Approval of disposal sites is under review by PMC. As muck disposal sites are identified and sites approved by the PMC, details of the disposal sites will be mapped and reported in the next EEM's report.

72. EPC contractor entered into an agreement with Kaghan Development Authority (KDA) to manage domestic waste of BHPP. In this regard, KDA placed waste containers at camp sites, which will be hauled to KDA-approved sites. For disposal of medical waste, EPC contractor also requested the District Health Officer (DHO) to incinerate the medical waste.

5 Institutional Arrangements for EIA/EMP/SSEMP Implementation and Monitoring

73. Institutional arrangements for implementing mitigation measures are detailed in the EMP and SSEMP. Roles and responsibilities of project stakeholders are given below.

5.1 Project Director- PIU PEDO

74. Overall responsibility for environmental management and monitoring rests with the Project Director PIU. The Project Director will be assisted by the Environment and Health Security Unit, in matters pertaining to the environmental, health and security aspect of the

project. In this regard, Deputy Director (EHSafety & Gender) is on-board at PIU Balakot office since March 2022 to ensure compliance to EMP, SSEMP and other management plans. The responsibilities of PIU are:

- Ensure effective compliance of EMP/SSEMP and other supported management plans as per ADB SPS requirements.
- Provide technical assistance to the project team related to EMP/SSEMP in particular, and to environmental and social safeguards as a whole.
- Put in place reporting mechanism and monitoring regimes for project staff as well as contractors.
- Ensure that EMP-related clauses specifically, and environment-related clauses in general, are part of all the tender/bid/request for proposal documents.
- Provide technical input to the various training programs proposed as part of the EMP.
- Ensure that all regulatory clearances from the KP EPA are obtained before starting civil works for the project.
- Conduct onsite spot checks to check the compliance level, as well as any outstanding issue not being covered by the EMP. Regularly report to KP government as well as ADB on progress related to EMP compliance.
- Approve the SSEMP prepared by the EPC Contractor, and monitor its implementation.
- Arrange external environmental monitoring interventions to verify findings of semi-annual environmental monitoring reports.

5.2 Project Management Consultant

75. The Project Director is being supported during project implementation by the PMC. PMC staff comprise the environment expert on intermittent basis, and HSE monitor to supervise and monitor safeguard compliances.

76. The PMC is responsible for day-to-day monitoring of the EMP and SSEMP on behalf of PEDO during the civil works. Role of PMC is to:

- Review all relevant documents, particularly the EIA study and other management plans, and update them as may be required to bring them to compliance with ADB SPS.
- Prepare/update a cost-effective EMP for the Project in line with EIA/EMP recommendations to ensure minimal environmental effects during and following the construction period.
- Review the SSEMP prepared by the contractors.
- Monitor EMP/SSEMP implementation regularly during civil works by the EPC contractor.
- Prepare and execute required actions to mitigate any negative environmental impacts associated with construction activities in collaboration with all concerned stakeholders.
- Develop training materials for PIU PEDO to support environmental protection measures, and monitor and mitigate potential environmental impacts.
- Ensure that EIA fully complies with ADB SPS, ensure that all required mitigation measures are identified, and acceptable EMPs reflecting full details regarding the estimated mitigation costs are in place through the SSEMP.
- Prepare internal monitoring reports on implementation and monitoring of environmental safeguards and EMP/SSEMP during project implementation.

5.3 EPC Contractor

77. The EPC contractor is responsible for implementing the EMP/SSEMP and other management plans developed for the project, as well as environmental protection liabilities under KP Environmental Protection Act 2014, and ADB SPS requirements. The EPC contractor will also be responsible for training its workforce in all aspects and implementation of the EMP/SSEMP. The contract includes an environmental and social mitigation budget as part of the engineering costs of the respective works.

78. The key positions to be filled within the contractor's staff for implementing the EMP/SSEMP include:

- Environmental Manager
- Health and Safety (H&S) Manager
- Environmental staff reporting to Environmental Manager
- H&S and medical staff reporting to H&S Manager

79. During the reporting semester, the EPC contractor hired 1 H&S manager, 1 Environmental Manager, 2 HSE officers, and 1 HSE supervisor to implement SSEMP requirements and environmental safeguards during project construction activities. Contractor will fill the remaining positions as construction activities are executed at various project sites in coming semesters.

5.4 External Environmental Monitor

80. EEM for the project has been on board since July 2022. EEM is responsible to:

- Monitor and report all provisions of the EIA, EMP and SSEMP and other supported management plans.
- Conduct periodic environmental monitoring during construction phase;
- Report environmental non-compliances to project stakeholders, including ADB, PIU and PMC.
- Suggest corrective actions to close out of EMP/SSEMP non-compliances.

  Assess the contractors and project stakeholders' capacity toward EMP/SSEMP implementation, monitoring, reporting and conformance.

81. EEM's inception report was prepared as part of contractual requirements and submitted for review by ADB. This first SAEEMR is carried out for January-June 2023, which is shared with PIU/ADB for necessary corrective actions.

5.5 EMP Implementation and Monitoring Arrangement

82. Environmental safeguard matters are being supervised and monitored by PIU PEDO and PMC environment team. SSEMP is being implemented by the EPC contractor, and supervised and monitored by PMC. Details of environmental safeguard staffing for the project are in below table.

Table 5-1: Details of Environmental Staffing for BHPP

Organization	Job Title	Name	Contact Details
Asian Development Bank	Environmental Specialist - Country Environment Focal	Syed Asim Ali Sabzwari	asabzwari@adb.org
	Environmental Specialist – Regional Technical Assistance Consultant	Abdul Basit Khan	abkhan.consultant@adb.org
Project Implementation Unit of BHPP	Deputy Director, HSE and Gender	Ibtesaam Zaima	ibtesaamz@gmail.com
Project Management Consultant	Environmental Expert	Assad Ali Khan	dtlbalakothpp@yahoo.com
	H&S Monitor	Fawad Ali Shah	
EPC Contractor	H&S Manager	Qi Xiu Feng	453680735@qq.com
	Environmental Manager	Irshad Saeed	cggcbjstbalakot@126.com
	H&S Officer	Syed Baber Ali Shah	
	H&S Officer	Syed Zahir Shah	

6 External Environmental Monitoring

6.1 Scope of work of EEM

83. Scope of work of EEM includes monitoring of construction activities at the active and planned construction sites and facilities of BHPP. Details of the work (both qualitative and quantitative) are given in project design, EIA, and EPC contractor's SSEMP. EEM aims to:

- Develop specific monitoring indicators for monitoring and evaluation of EMP implementation, including the community participation, consultation and disclosure.
- Ensure that all the contractual obligations related to environmental compliance are met.
- Monitor EMP/SSEMP implementation, and identify potential non-compliances for critical parameters.
- Review results of internal monitoring, and verify through random checking at the field level to assess whether EMP/SSEMP objectives have been met.
- Review monitoring reports, conduct field inspections, verify the progress in EMP/SSEMP implementation, and prepare reports for the PIU and ADB.
- Review grievance procedures; and their recording, reporting, processing time, and redress.
- Evaluate performance of PIU, PMC and EPC contractors in EMP/SSEMP implementation, monitoring, reporting and conformance.
- Document monitoring results, identify necessary corrective and preventive actions in the periodic monitoring reports (semi-annual reporting), and follow up on these actions to ensure progress toward the desired outcomes.
- Conduct meetings and discuss environment-related issues with all key stakeholders, including project staff of the ADB, PIU, PMC and EPC contractor.

6.2 Methodology for EEM

6.2.1 Review of EIA/EMP, Design Documents, SSEMPs

84. External monitoring process was initiated by desk review of project EIA, and design review of all components, including infrastructure designs and other planning/pre-construction phase documents. Desk review of SSEMPs and other supporting management plans is also carried out. Project-specific BAP and arrangements, and their implementation, monitoring and consultations were reviewed. Desk review will be a continuous process, and it will include review of Spill Prevention and Response Plan, Waste Management Plan, Blasting and Explosives Control Plan, Stakeholder Engagement Plan, Dam Safety Review Procedure, Site Security Plan, and Occupational Health and Safety (OHS) Plan during project execution. This exercise will be supported by the EEM to identify any gaps for which corrective actions are required, and ensure compliance with ADB SPS requirements and KP Environmental Protection Act, 2014.

85. Upon instructions of ADB, project EIA is being updated by PMC to reassess the impacts of below changes which PIU approved in the design and implementation arrangements after concurrence from ADB. Proposed changes are detailed below.

86. Bypass tunnel to be constructed on left bank of river was initially proposed to be used for dual purpose of by-passing and sediment flushing. However, gated outlets at the bottom of the dam body are now proposed for sediment flushing. This change does not warrant major deviation from the EIA findings in 2019. Revised arrangements for BAP implementation and monitoring are also suggested by PIU and PMC after extensive consultations with KP Wildlife and Fisheries department. Revised arrangements include eliminating the roles of the implementation organization and KP Biodiversity and Wildlife board, and reducing members of BAP management committee. It is further proposed that BAP management committee be chaired by Director General fisheries instead of KP Wildlife department. The proposed revised arrangements warrant significant deviation from the EIA findings for which the EIA is being updated. Since the roles and responsibility for BAP implementation and monitoring are not yet concluded and approved by KP government, the delay may result in compromising the ecosystem integrity of the river.

87. Desk review of project EIA report, 2019 identified gaps, and suggested additional assessments as corrective actions. These gaps and corrective actions shall be part of the EEM's report, and PIU/PMC are expected to close out the corrective actions during project execution.

- Cumulative impact assessment (CIA) for river ecology, including impacts of downstream and upstream hydropower plans (already constructed and proposed), shall be carried out, and additional mitigation measures shall be proposed.
- It is predicted that BHPP will improve the ecosystem integrity from largely to moderately modified habitat. This CIA study shall be revised keeping in view the present year scenario and future climate changes. Projections made at the time of EIA preparation in 2019 shall be validated, and any departure shall be incorporated in the updated CIA study.
- Baseline of water temperature of river and sewerage dilution shall be developed during project execution. Sewerage drainage inlets on the Kunhar river shall be identified within project corridor, and need to be mapped in the geographic information system.
- Detailed consultation with other hydropower developers shall be a continuous process, and findings shall be reported and maintained. Robust corrective action shall be considered by the consultees to ensure river ecology integrity.

- Suspended sediment load analysis on upstream and downstream of BHPP shall be carried out during project execution, and inventory shall be maintained.
- CIA findings of two endemic and restricted range fish species, Nalbant's Loach *Schistura Nalbanti,* and Kashmir Hillstream Loach *Triplophysa kashmirensis, shall be validated*. Any departure shall be highlighted and reported.
- Project climate change impact modelling, and climate change risk and vulnerability study shall be carried out. Necessary design changes shall be suggested and incorporated during civil works.

6.2.2 Meetings with PIU, PMC and EPC Contractor

88. In this task, meetings are conducted with the management of PIU, PMC and EPC contractor, and staff responsible for implementing EMP/SSEMP and other management plans. The agenda of such meetings are to develop communication among stakeholders to implement and monitor environmental mitigation measures delineated in the EIA/EMP and SSEMPs. EMP annexed with SSEMP will be used as a checklist for visual observation and instrumental monitoring.

6.2.3 Field Environmental Monitoring

89. Field environmental monitoring shall be periodically done during construction and as per requirements received from PIU PEDO at construction sites of BHPP. Some specific tasks of the EEM will be:

- Monitor implementation of SSEMP.
- Monitor implementation of BAP.
- Monitor implementation of KP EPA no objection certificate (NOC) conditions.
- Monitor the environmental performance of the contractors.
- Field environmental inspections/audits at construction sites.
- Monitor camps, TRs, magazine camps, spoil disposal areas.
- Advise contractors on environmental non-conformities.
- Monitor records of all wastes and natural resources.
- Identify unanticipated impacts, and advise remedial actions.
- Monitor access routes, buffer zones and other activities.
- Ensure that any non-conformity arising during implementation are reported and corrective action taken.
- Ensure photographs are taken to record pre-project conditions for restoration and post-project comparisons.
- Conduct periodic inspections of all project facilities and activities, and suggest remedy of deficiencies noted. Keep track of the meeting points to ensure they are closed.
- Advise and monitor actions to reduce usage of natural resources.
- Ensure that the contractor's environmental representative provides environmental training to all new arrivals at the field.
- Monitor the implementation of emergency response plans, and evaluate their adequacy.
- Provide approvals for waste contractors. In this regard, the EEM shall assist project contractors to identify waste contractor and facilities, investigate the contractor's method

of waste disposal, and if found inappropriate, report his findings to the PIU/ADB.

- Ensure that the minimum distance to be maintained from the sensitive receptors, as defined in the EIA/EMP/SSEMP, are adequately followed.
- Ensure that the grievance redress mechanism (GRM) is being maintained, and complaints are being addressed.
- Evaluate the effectiveness of environmental trainings (e.g. EIA, EMP, sensitivity of the area, critical area, safe distances, noise, vibration, water quality, solid waste to be maintained).

90. The EEM's checklist is provided as **Annexure G** of the EEM report.

6.2.4 Approvals of Water Use

91. The EEM will verify the intended water use to ensure that there are no impacts on local waters from the project.

6.2.5 Environmental Trainings

92. EEM will review contractor's capacity in providing training to its staff so that EIA/EMP/SSEMP requirements, ADB policies and procedures, and KP EPA requirements are clearly understood by the personnel on board throughout the project.

6.2.6 Audit of Environmental Records

93. EEM will audit the following environmental records:

- all environmental reports (including monthly and quarterly progress reports, and inspection/audit reports) prepared by the PIU, PMC and EPC Contractor
- semi-annual internal environment monitoring reports prepared by PIU, PMC and contractors.
- social complaints register
- photographic records
- resource use (water, fuel etc.)
- vehicles/machinery
- people on board/weekly man hours
- handling of spoil materials
- handling of quarry materials and blasting materials
- handling of fuel, oils and chemicals etc
- HSE statistics
- waste management
- record of any spill, leak or any other event that the damages or can potentially damage the environment
- daily record of violations or any other event that or can potentially damage the environment
- record of all remedial actions
- record of fire-fighting and oil spill drills
- records of quarry areas
- record of stakeholder consultations
- instrumental monitoring reports

6.3 Monitoring of Biodiversity Action Plan

94. The EEM will monitor the implementation of the BAP developed for the project. The BAP includes the following actions that shall be taken to manage biodiversity impacts:

- actions to protect fish species of conservation importance, and to achieve Net Gain for species through a baseload operation with an E-Flow of 1.5 m^3/s and the alternate case for peaking operation with an E-Flow of 6.1 m^3/s
- implementation of high protection to reduce pressures on biodiversity of the Kunhar River and its tributaries, mainly unregulated fishing and sand mining
- physical transportation of migratory and non-migratory fish from downstream to upstream of the dam, if needed, to prevent genetic isolation in the long term.
- experimental captive breeding of fish species of conservation importance on which the impacts of the project are significant

95. Based on CIA at the time of EIA, the BAP recommends the following actions:

- Hire organization for BAP implementation.
- Establish a BAP management committee.
- Establish an institute for research on river ecology.
- Establish a watershed management program.
- Support sustainable livelihoods, including fishing, sediment mining, and tourism through curtailing illegal fishing, fishing in river tributaries and during breeding season, and regulated sediment mining.
- Support capacity building of KP fisheries and wildlife department.
- Support institutional arrangements for implementation of BAP.

96. The BAP also recommends extended stakeholder consultations with KP fisheries department, wildlife department, forest department, other HPP operators, and district management for wider river basin management. For this, the BAP management committee will be established and notified to ensure implementation of BAP.

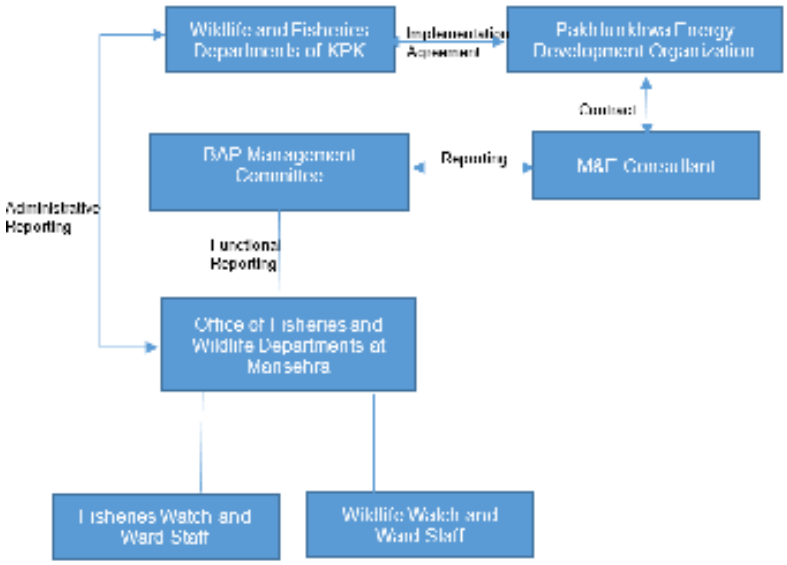
97. Revised arrangement for BAP implementation and monitoring are suggested by PIU PEDO and PMC during reporting semester after extensive consultation sessions with KP Wildlife and Fisheries department.

98. Revised arrangements include eliminating the roles of the implementation organization and KP Biodiversity and Wildlife board, and reducing members of BAP management committee. It is further proposed that BAP management committee be chaired by Director General fisheries instead of KP Wildlife department.

99. ADB granted concurrence to the proposed changes in the implementation of the project-specific BAP, while the Action Plan for Basin-wide BAP was submitted to ADB. PIU initiated consultation with the Fisheries and Wildlife departments of the government of KP to finalize office establishments, human resources, mode of payment and contract signing etc. under the project-specific BAP.

100. Revised arrangements for BAP implementation and monitoring are in below figure.

Figure 6-1: Revised BAP Arrangements for BHPP



101. The BAP Management Committee in the KP province will be established by the Competent Authority at PEDO, Ministry of Energy and Power, and government of KP. The Committee will have the following composition.

- Director General Fisheries-Chair
- Representative of PEDO – Member
- Representative of KPK Forest Department – Member
- Representative of Fisheries Department- Member
- Representative of Wildlife Department-Member
- Representative of EPA – Member
- Recognized Expert on Freshwater Ecology – Member
- Representative of District Administration- Member
- Representative of Project Area Community-Member

102. Tentative schedule for BAP implementation is provided in below table.

Table 6-1: Tentative Schedule for Revised BAP Arrangements

Sr. No	Activity	Tentative Schedule
1	Finalize various modalities, i.e. offices, human resources, payment modalities etc. in consultation with the Fisheries and Wildlife Departments of the government of KPK.	Q4 2023
2	Sign contract	Q4 2023
3	Notify BAP Management Committee.	Within 1 month after finalizing Sr/No. 2
4	Hire monitoring consultant.	Within 3 months after finalizing Sr/No. 2
5	Procure office and protection equipment, human resources, and logistics	Within 3 months of Sr/No. 2
6	Initiate field activities	Q1 2024

6.4 Quarry Area Management

103. Monitoring of quarry area extraction and restoration activities shall be carried out by EEM to ensure that all measures specified in the EIA/SSEMP and other project documents related to the extraction and restoration are fulfilled.

104. At present, no quarry areas are being developed. Quarry materials are purchased from approved sites, such as Ghumwan for coarse aggregates, and Lawrencepur, Maira and Thakot for fine aggregates.

6.5 Waste Management

105. Waste management at different locations, especially camp sites, will be monitored during EEM field visits. Provision of spoil disposal management plan will be monitored. Spillage of liquids hazardous to workers' health, wildlife and property will be monitored. Provision and use of personal protective equipment (PPE) will be monitored by the concerned supervisors. Similarly, proper disposal of waste related to human activities, existing drainage system etc. will be monitored through visual observation using standard checklists during field monitoring visits.

6.6 Monitoring of Management Plans of SSEMP

106. Management plans annexed to project SSEMP will be monitored during EEM site visits, and through review of records and observations related to environmental safeguards. Non-compliances will be reported along with suggested corrective action. As part of the EEM's scope of work, below management plans will be monitored.

- occupational H&S management plan
- blasting management plan
- erosion and sedimentation control plan
- management plan for underground works
- management plan for construction work in the river
- construction camp management plan
- drinking water supply and sanitation safety plan
- traffic management plan
- emergency response plan
- tree management plan

6.7 Monitoring of Grievance Redress Mechanism (GRM)

107. Record of the GRM will be collected during the semi-annual review meetings. The same will be verified during field monitoring visits on semi-annual basis.

6.8 Monitoring of Capacity Development Plan

108. Progress against the capacity development plan for the staff of different entities (PIU, PMC and EPC contractor) will be reviewed during the coordination meetings with PIU. Records of the training will be observed in the field and during interviews with key informants.

6.9 Monitoring of Tree Plantation Plan

109. During field visits, implementation of the tree management plan will be monitored against the progress reports submitted by the relevant department/consultant.

6.10 Monitoring of Traffic Management Plan

110. Traffic management plan (TMP) is part of the SSEMP, and will be monitored during field visits; and from the records, physical observations and informal feedback from staff and communities.

6.11 Monitoring of Public Consultations, and Sharing Project Profiles with Stakeholders

111. Status and progress of the public consultation process will be monitored to determine whether the standards and requirements are met in the pre-construction and construction phases.

7 External Environmental Monitoring Report

7.1 Project EIA/EMP/SSEMPs Readiness Assessment

112. The EEM assessed safeguards documents prepared for BHPP. The indicators and criteria are listed in Table 7-1.

Table 7-1: Project EIA/EMP/SSEMPs Readiness Assessment

Indicator	Criteria	Assessment	Remarks
EIA approval and disclosure	The EIA was cleared by ADB in 2019 and disclosed on ADB's project website.	Yes	Complied with.
Mitigation measures as described in the EMP adopted during detailed design, construction, preparation and implementation	Measures defined in EIA and EMP are included in detailed designs for each component.	Yes	EMP was included as part of tender/ contract documents.
EIA update	The EIA update is in progress to reflect proposed design changes and revised arrangements for BAP implementation and monitoring.	Yes	EIA update is in progress by PMC.
EMP update	Whether the EMP is updated after detailed design and cleared by ADB.	Yes	EMP update is in progress by PMC.
Compliance with loan covenants	The borrower complies with loan covenants related to project design and environmental management planning.	Yes	Complied with.
Environmental monitoring	The monitoring parameters, locations, and methods for ambient air, noise, and surface water defined in the EMP.	Yes	Complied with.
SSEMP	SSEMP prepared and approved in Dec, 2022. Conditional approval is granted.	Yes	Complied with.
EEM report	1st SAEEMR January-June 2023	Yes	Complied with.

7.2 Compliance with National/Local Requirements

113. Compliance with national and local requirements was assessed, and details are provided in Table 7-2.

Table 7-2: Approval/Clearances Obtained for BHPP

Sr. No	**Clearances Obtained**	**Status**
1	Approval from KP EPA	NOC obtained (**Annexure A**).
2	Approval from KP Forest Department	NOC obtained (**Annexure B**).
3	Approval from KP Fisheries Department	NOC obtained (**Annexure B**).
4	Approval from KDA for disposal of solid waste	NOC obtained (**Annexure B**).
5	Approval from District Health Quarter Balakot for Medical Waste disposal	Memorandum of understanding request from DHO Balakot sent by EPC contractor dated March 28, 2023. Approval is awaited.

7.3 Resource Use

7.3.1 Water Consumption

114. Water for project activities is being obtained from locally available springs. Spring water is being obtained with piped connection to springs at GRC camp, CGGC camp, Adit-2 and Adit-1 area. Mineral/spring water is being used for drinking purpose. Water abstraction data is being maintained by the project contractors and reported in semi-annual monitoring reports.

115. The cumulative water usage for the present reporting period amounts to 3047 cubic meters. Water consumption summary of the construction site of BHPP is provided in Table 7-3.

Table 7-3: Resource Usage – Water Consumption (Liter)

S/No	Month	Water (Liter)
1	January	565,500
2	February	601,500
3	March	558,000
4	April	51,600
5	May	639,000
6	June	631,800
Total		**3,047,400**

7.3.2 Fuel Consumption

116. Total fuel consumption recorded for the project during the monitoring period is 365,025 liters diesel, and 2,843 liters petrol. Project fuel requirements for BHPP are being fulfilled by fuel supply from the nearby petrol pump. GRC placed a fuel tank at its camp from which fuel is filled into drums through waste dispenser and transported to the site. At CGGC camps, fuel drums are stored at concrete pads. Fuel consumption summary of the construction site is in Table 7-4.

Table 7-4: Resource Usage – Fuel Consumption (Liter)

S/No	Month	Diesel	Petrol	Total
1	January	30,000	798	30,798
2	February	18,250	456	18,706
3	March	71,160	385	71,545
4	April	71,160	385	71,545
5	May	83,455	818	84,273
6	June	91,000	0	91,000
Total		**365,025**	**2,843**	**367,868**

7.3.3 Construction Materials

117. During the reporting period, major construction materials used under the project include reinforced steel, cement, sand and coarse aggregates supplied from approved sources outside of the project area. Construction material usage is summarized in Table 7-5.

Table 7-5: Usage of Construction Materials

S/No	Month	Steel (ton)	Cement (bag)	Sand (concrete filled tube)	Aggregates (concrete filled tube)
1	January	40	105	5,058	0
2	February	35	140	3,400	0
3	March	0	180	400	6,000
4	April	0	0	5,184	7,000
5	May	0	1,131	1,017	7,941
6	June	218	500	2,576	3,488
Total		**293**	**2,056**	**17,635**	**24,429**

7.3.4 Human Resources

118. In the course of the reporting period, an average of 426 individuals were employed as part of the project's workforce. Considering the progress of works, there was an upsurge in both skilled and unskilled labor, with a minor decline in March attributed to the onset of Ramadan. However, it is anticipated that this workforce will increase in accordance with the project's demands.

119. The project's contractors have actively engaged with the local community, employing a substantial number of skilled and unskilled workers. Out of the total workforce, an average of 237 individuals were sourced from the local area. Average manpower requirement in the construction sites of BHPP are in Table 7-6.

Table 7-6: Resource Usage – Manpower Requirements

Sr No.	Month	Workers per Month	Local Workforce
1	January	377	198
2	February	401	222
3	March	372	207
4	April	444	257
5	May	478	282
6	June	486	255
Average		**426**	**237**

7.3.5 Equipment/Machinery

120. Machinery deployed at BHPP works are in Table 7-7. According to the contractual agreement, 181 pieces of equipment were stipulated for deployment. However, the actual average deployment at the site consists of 153 vehicles. Further equipment and machinery will be engaged as per the construction schedule.

Table 7-7: Equipment/Machinery Used for BHPP

Sr No	Description	Equipment/Machinery		
		Model	As per Contract	Average Deployed Per Month
1	Excavator	HITACHI 200	6	4
2	Excavator	Doosan 210	4	4

Sr No	Description	Equipment/Machinery		
		Model	As per Contract	Average Deployed Per Month
3	Crawl excavator	CDM 6225	1	1
4	Excavator	Hyundai	2	2
5	Excavator	Volvo 145	4	3
6	Excavator	HITACHI	3	3
7	Excavator		2	1
8	Excavator	Doosan	4	3
9	Excavator	CAT, Hyundai	4	3
10	Crawl excavator	Hitachi 200	4	3
11	Loader		1	1
12	Tractor trolley	385	1	1
13	Dump truck	FAW 280	5	4
14	Roller		1	1
15	Generator	200, 200, 65 KV 15 KV	5	5
16	Batching plant		1	1
17	Double cabin	Revo, Tiger 2002	2	2
18	Car	Toyota Corolla	1	1
19	Transit mixer	Nissan, Hino	2	2
20	Compressor /12 bar		2	2
21	Jeep		2	2
22	Trolley crane		1	1
23	Drilling equipment		14	14
24	Shotcrete pump		1	1
25	Air winder		1	0
26	Dump truck		3	1
27	Generator 250		1	0
28	Water bowser		1	0
29	Power generator	375KVA	1	1
30	Power generator	100 KVA	1	0
31	Ventilation fan		1	1
32	Jeep		1	0
33	Double cabin		1	0
34	Car	Toyota Fortuner	1	1
35	Peter engine	25 HP	1	2
36	Bulldozer		1	1
37	Excavator	Mobile Sunny/SAY155UU	1	0
38	Crawl excavators	PC200-8	1	1
39	Dump trucks	SX3255DR384R	7	5
40	Excavator	Hitachi 200, Hitachi	2	2
41	Excavator	CATN320D,Hyundai 210	2	2
42	Excavator	Komatsu 200	2	2
43	Loader	LW500	1	1
44	Crawler bulldozer	SD22	1	2
45	Side dump loader	WA380-6	1	1
46	Jeep		1	0
47	Mini dumper	Mercedes	1	1
48	Loader	LW500FN, LW300F	3	3
49	Diesel generators	V550C2,HDG22	2	2
50	Diesel generators	Perkins 121hp,1106	2	2
51	Water tank	SCS5160GSS	2	2
52	Concrete mixture machine		2	2
53	Diesel tank	Foton Daimler, M600	1	1
54	Water truck	DLQ5161GSSZ4	1	1
55	Flatbed truck	FG1JKPB	1	1
56	Concrete Mixture Machine		3	3
57	GPS-RTK survey system brand	Nan fang S82	4	4

Sr No	Description	Equipment/Machinery		
		Model	As per Contract	Average Deployed Per Month
58	Total station brand	GPT-4002LN	1	1
59	Digital leveling instruments	Trimble DINI03	1	1
60	Pickup	4X4	3	3
61	Car	Prado	3	3
62	Car	MJ	1	1
63	Road roller	XS183JPD	1	1
64	Air compressors		2	2
65	Crawler drilling machine	T35	1	1
66	Diesel air compressor	XRHS666CD, XAHS750	2	2
67	Mobile truck crane 25 tons	QY25K5-I	1	1
68	Concrete pump	HBT80.13.112RSD, HBT60.16.110S	2	2
69	Power transformer	500,800KV,100,1200KV&1250	5	5
70	Single arm rock drilling rig	D7	1	1
71	Binding machine		1	1
72	Shaper	BC6063	1	1
73	Jib crane	BZD-2	1	1
74	Jib crane	BZD-2	1	1
75	Digital underground scale	SCS-60	1	1
76	low voltage switch box	380V 1600A	1	1
77	low voltage switch box	380V 2000A	1	1
78	low voltage switch box	UAN111-354-111	1	1
79	Ordinary lathe	C6160C	1	1
80	Vertical lifting table milling machine	ZX7045	1	1
81	Shaper	BC6063	1	1
82	Sewage pump	TS200-125-365	1	1
83	Oil storage tank	5170 Gallon 19500L	1	1
84	Lathe	CY6166B-3000	1	1
85	Shaper	B6065	1	1
86	Vertical lifting table milling machine	XQ6232W-B	1	1
87	Radial drilling machine	Z5140A	1	1
88	Single column press	YX41-100T	1	1
89	Other hydraulic presses (pipe crimping machines)	XM91-C1	1	1
90	lathe		1	1
91	Dump truck		1	1
92	Excavator	210,323&323	3	1
93	Jeep		1	0
94	Mazda		1	0
95	Pickup double cabin		1	0
96	Batching plant		1	0
97	Lifter		1	0

7.3.6 Waste Generated

121. All the waste generated at construction sites of BHPP were collected in waste drums. Construction waste, i.e. waste from tunneling and excavated materials are being used for road fill materials and upraising platforms of protection works. Identification and finalization of muck disposal sites is under progress, and EPC contractor submitted a disposal site report which is under review by PMC. Black water was temporarily stored in the septic tanks, and then drained at nearby drains. Storm water drains are also provided to divert storm water from the camp. Domestic waste is collected by KDA. Data on types and quantities of waste generated during the monitoring period is not maintained by the contractors, and they were advised to do so for reporting purpose. Modes of disposal of project waste are listed in Table 7-8.

Table 7-8: Modes of Waste Disposal at Balakot HPP

Type of Waste	Disposal Mode
Construction waste, including excavated material and tunneling waste	Surplus excavated or tunneling waste are being used for road fill materials, slope stabilization, and upraising of platform for protection works. During coming semester EPC, contractor will develop muck disposal sites for disposal of construction waste.
Domestic Waste	Stored in container provided by KDA at camp site, and KDA will dispose at their designated site. EPA contractor obtained NOC from KDA.
Medical Waste (kilogram)	Medical waste will be temporarily stored at camp site, and then handed over to District Health Quarter for final disposal. NOC with DHO is in progress.

7.4 Batching Plant Management

122. EPC contractor installed batching plant near Thobi camp area as per the batching plant layout plan given in the SSEMP. Construction materials are stored adjacent to the batching plants. No crush plant was installed at the site during the reporting semester.

123. Batching plant operates under the direct supervision of CGGC Material Engineer, and his laboratory staff as per standard operating procedure approved by the manufacturer and the PMC-approved methodology. Batching plants are operated following approved PMC procedures with minimum dust emissions. However, there is need to fix leakages during batch transfer. Basic environmental mitigation controls are provided in the batching plant.

7.5 Borrow Areas

124. During reporting, there is no borrow area requirement requested by contractor.

7.6 Communication and Documentation

7.6.1 EMP Compliance Monitoring Reports

125. Environmental compliance monitoring reports are prepared by PMC and reviewed/approved by PIU. Deputy Director environment PIU and environment specialist of PMC are responsible for EMP/SSEMP compliance reporting, and effective supervision of mitigation measures adopted during construction the phase of BHPP. There is need to instruct contractor to submit monthly environmental reports, and PMC will ensure their submission to PMC and PEDO as per approved reporting mechanism. At present, adopted reporting frequency is detailed in Table 7-9 below.

Table 7-9: EMP Compliance Monitoring Reports

Report	Prepared by	Reviewed by	Distribution
Quarterly	C–ES	PMC–ES	PMC
Quarterly	PMC-ES	PIU- Deputy Director (Environment)	PMC, PIU
Semi Annual	PMC–ES	PIU–Deputy Director (Environment)	PMC, PIU, ADB
	EEM	ADB	PIU, ADB
Annual	PMC–ES	PIU–Deputy Director (Environment)	PMC, PIU
Final Report upon completion of project	PMC–ES	PIU–Deputy Director (Environment), ADB	PMC, PIU, ADB

ADB = Asian Development Bank, C-ES=Contractor Environment Specialist, EEM = External Environmental Monitor, PIU = Project Implementation Unit, PMC-ES: PMC Environment Specialist

7.6.2 Environmental Training/Meetings and Drills

126. Limited trainings were conducted during the reporting semester. Attendance sheet is attached as **Annexure C.** No periodic trainings in compliance with SSEMP were carried out. There is need to hold environmental meetings/trainings periodically, and discuss topics on relevant environmental controls, environmental sensitivity and HSE aspect in the project area. PIU, PMC and contractor essential staff shall participate in the training sessions. Training plan shall be prepared and implemented at project sites. Periodic drills shall also be carried out to ensure effectiveness of trainings/tool box talks, and improve SSEMP and HSE compliance.

7.6.3 Grievance Redress Mechanism

127. Under BHPP, GRM is effective and functional at EPC contractor level (internal) and PIU level. Environmental issues and HSE complaints will be addressed through PIU-level GRM which has two tiers, including PIU- and village-level GRMs. The grievance redress committees (GRCs) constituted under project GRM are in the field and were operative since September 2022. GRM Committee notification is attached as **Annexure D**.

128. Record of the GRM was reviewed by the EEM in the project sites. The GRCs at the field and project levels have been notified, and they function in compliance with EMP/SSEMP requirements.

129. For registration of complaints, complaint registers are available at field offices and at sites wherein complainant can register complaint(s).

130. Upon receipt of complaint, construction firm follows the specified procedure to address the complaint and resolve the issue within prescribed time frame. During the reporting period, no grievance was registered against the environmental safeguard aspect of the works under BHPP.

7.6.4 Tree Plantation Plan

131. About 14,568 trees will be uprooted during construction of the project facilities. However, the exact number of affected trees will be counted by PEDO/PMC and EPC contractor. Tree plantation plan is provided in project SSEMP. The plantation sites were identified with the consent of the Sub Divisional Forest Officer, Balakot office with whom the EPC contractor held consultation meeting on July 14, 2022. As directed by him, local species will be planted against the affected trees at the locations exhibited in the table below. He further directed the EPC contractor to follow rules and regulation of Forest department while planting these trees.

Table 7.10: Tree Plantation Areas with Coordinates

Sr. No.	Plantation Area	Coordinates
1	Paras	34° 39’ 34” N 73° 27’ 00” E
2	Zamanabad	34° 37’ 35” N 73° 24’ 58” E
3	Kholian	34° 37’ 36” N 73° 24’ 57” E
4	Kappi Gali (A)	34° 36’ 26” N 73° 22’ 59” E
5	Kappi Gali (B)	34° 36’ 28” N 73° 22’ 61” E

132. The complaint by Divisional Forest Officer, Kunhar Watershed Division, Mansehra regarding damages to the trees at access road R3 was undertaken jointly by the PIU, PMC, and EPC Contractor. Several meetings were held while the Divisional Forest Officer conducted visit to the Site on June 24, 2023. Copy of the complaint is attached as **Annexure E.**

133. As result of the above, Forest department prepared shape file of the area, and assessed the damaged trees. However, as the damaged trees are identified within the Right of Way (ROW)

permanently acquired by PEDO, the matter is yet to be sorted out on whether the affected trees have been accounted for payment at the time of tree assessment or not. Outcome of the complaint will be reported in the next SAEEMR.

134. Other than the ROW, no tree cutting was carried out during the reporting period. Tree plantation shall be carried out in collaboration with KP forest department and EPC contractor. In this regard, PIU Balakot will coordinate with forest department, and accordingly tree plantation plan will be prepared and implemented. Every tree removed will be compensated with the planting of 5 seedlings to ensure at least 2 mature trees.

135. Tree plantation plan will be finalized in the fourth quarter of 2023. Upon finalization by PIU and PMC, it will be shared with EEM for review, and with ADB for final concurrence.

7.6.5 Traffic Management Plan

136. As evident from the air monitoring, a sharp increase in the primary air pollutants was recorded in June, which is the time when tourism in the area reached its peak. Tourists rushing to Kaghan, Naran, Bata kundi etc. used the N-15 route which significantly increased vehicular traffic and gaseous emissions all along the route. Same is the case for noise pollution.

137. Construction activities will affect the project area air quality and noise levels. However, the tourism-related increase in vehicular traffic also significantly impacted air quality and noise level.

138. To facilitate traffic on the road diversions, flag men were deployed during traffic management operations. So far, no complaint of road closure due to project activities was registered under GRM in project or contractor offices during the reporting semester. Temporary diversion routes were sufficiently compacted for vehicle operations, and continually sprinkled with water bowsers to suppress dust. Sections of the road diversions were cordoned off by safety tapes and cones. Approach to diversion section was marked through proper diversion signage.

139. Keeping in view the nature of project construction activities, no significant traffic issue was observed on the existing routes to project sites and on temporary diversions. Construction material is transported in closed or properly covered vehicles such that there is no chance of leakage / spreading during haulage.

7.6.6 Public Consultation Plan

140. During the construction period, contractor held consultations with the nearby villagers wherein the project layout, nature of activities, and machinery to be deployed were discussed in detail. Such consultations were organized by project site management, and environmental and community liaison officers.

141. Consultations regarding environmental safeguards were also carried out by the PIU and PMC environmental experts with locals periodically. Overall, the community appreciated the project activities, and no grievance related to environmental safeguards were raised and registered by the locals during the monitoring period.

7.6.7 Photographic Records

142. Photographic records have been maintained to date of project activities and non-compliances, good practices, and trainings and emergency drills.

143. Photographic records of sites prior to starting work should be initiated and maintained. EPC contractor shall ensure the pre-site conditions are captured and recorded to facilitate the restoration of such conditions upon completion of construction works.

7.6.8 Incident/Accident Reporting

144. Pollution incidents, incidents during blasting or in explosive magazine will be reported by the EPC contractor through monthly progress reports. The EPC contractor will also propose how to rectify problems and actions to prevent their occurrence.

145. The EPC contractor will document and report occupational accidents, diseases and incidents. In case of serious injury or illness which need hospitalization or further tests/investigations, the injured/patient will be shifted to the nearby hospital as mentioned in the Emergency Response Plan for further treatment.

146. PMC will ensure that EPC contractor has adopted incident/accident reporting procedure, and training is provided to understand and monitor the notification/reporting mechanism. ADB incident/accident reporting mechanism is attached as **Annexure H**.

7.7 Socio-Economic Issues

7.7.1 Environmental and Social Complaint Register

147. As per requirements of the EIA/EMP/SSEMP, a Complaint Register has been maintained at construction sites to log any complaints from the locals. No complaint was registered by the locals during the monitoring period regarding environmental safeguards.

7.7.2 Economic Opportunities for Locals

148. The community is enjoying generous economic benefits and opportunities from the project as unskilled labor is hired from locals. Local employment is being carried out transparently, and no grievances were received by the project office. Food stuff and other domestic necessities of the contractor workforce are being purchased from local markets in the project area.

149. During the reporting period, 237 locals out of 426 total manpower (55.63%) were hired for the BHPP construction site.

7.8 Environmental Safeguard Compliance Status

150. EEM visited the project facilities, and monitored field activities for implementation and compliance with EIA/EMP/SSEMP. The deviations were noted along with photographic records. These issues were then discussed with PIU, PMC and contractor site management, and mutually agreed actions were sought. EMP compliance status of BHPP monitored by EEM is detailed in Table 7-11. Compliance status of KP EPA approvals granted for BHPP was also assessed, and details are provided in Table 7-12.

Table 7-11: EMP Compliance Status of BHPP

S/ No	EMP Requirements		Key Performance Indicators	Status of EMP Compliance
	Impact	Mitigation Measures		
Design and Pre-Construction Phase				
1	Terrestrial habitat loss caused by construction related activities	Minimize disturbance to, or movement of, soil and vegetation. Minimize project footprint. Retain as much natural vegetation as possible. Locate construction facilities based on a knowledge of the soil. slope and vegetation cover of the area to avoid disturbance to the natural environment.	Measures included in design documents	**Complied.** Camp and TRs are selected in such a way that vegetation damage is avoided. Camps are established with minimum land requirements. GRC has established residential camp on already settled area at N-35 road. CGGC camps are multi-story steel structures in which rooms, offices and residential cabins are structured. Vegetation clearance is minimized. No off tracking is practiced as area is hilly terrain.
2	Decline in abundance and diversity of terrestrial flora and fauna caused by construction -related activities	Locate vehicle yards away from open soils and top soil stockyard. Maximize use of locally sourced aggregate and borrow materials. Minimize contact of non-local aggregate and borrow material with native soil. Minimize disturbance to, or movement of, soil and vegetation.	Measures included in design documents	**Complied.** Vehicle yards are located within camp sites. Quarry material is being purchased from approved sites such as Ghumwan for coarse aggregates and Lawrencepur, Maira and Thakot for fine aggregates. No borrow area/quarry sites developed during reporting semester. No off tracking of vehicles reported. Only designated routes/tracks are being used.
3	Blasting may pose a health hazard due to flying debris	A minimum buffer of 500 m should be provided between the settlements and point of blasting.	Measures included in design documents	**Complied.** Pre-condition assessment is part of blasting method statement provided in project SSEMP.
4	Construction activities may cause alterations to groundwater flow patterns	Record location of the springs, especially those in areas proximal to where the underground headrace tunnel will be closer to the ground level	Coordinates and map of spring locations	**Partially complied.** EPC contractor identified springs in the vicinity of Adit 1, Adit 2, and Adit 3 works sites. Details will be submitted with the corresponding method statements. There is need to provide details of springs locations and distances from Adit 1, Adit 2 and Adit 3 work sites.

S/ No	EMP Requirements		Key Performance Indicators	Status of EMP Compliance
	Impact	Mitigation Measures		
				Additional mitigation measures shall be proposed to protect such springs.
5	Use of local water resources for construction activities may reduce the water availability for the local communities	Prepare a water sourcing and abstraction plan specifying the source, owner, total yield, current usage, allowable quantity and the duration for which water can be obtained.	Agreements among community, government, and contractor Water sourcing and abstraction plan	**Complied.** EPC contractor is using spring water through piped network in the GRC camp, CGGC camp, Adit-1 and Adit-2 location. For drinking purpose mineral water is being used. Sprinkling water is also spring water transported through bowsers to the site.
		To the extent possible, avoid, and where unavoidable, minimize the use of water from local sources (springs) for the project where local abstraction is unavoidable.		**Not complied.** Use of local spring water will be subject to approval from the Engineer and lab analysis against World Health Organization/National Drinking Water Quality Standards.
		Undertake an assessment of the local source identifying its total yield and current usage. If the abstraction from a single source extends three months, then repeat the assessment.		**Not complied.** There is need to calculate total yield and safe yield of springs or other water sources identified for water usage.
		Fix the allowable quantity to not more than 50% of the available yield (total yield minus current usage).		EPC contractor shall monitor safe yield from springs used for water abstraction. There is need to ensure that allowable yield shall not exceed 50% of the safe yield.
		Enter into a formal agreement with the owner for the water source (or government if it is a public source).		**Not applicable at this stage.**
6	Increased ambient noise levels due to operation of construction equipment, movement of construction traffic, and blasting may create nuisance for nearby communities and visiting tourists.	Visual alarms preferred over audible alarms.	Measures included in design documents	**Complied.** No extensive alarms are being used.
		Locate noisy equipment behind parking lots, parks or behind sound barriers or sound absorbers (e.g. gravel stockpiles or constructed barriers), and away from potential sources of conflict.		**Complied.** Noisy equipment are located away from parking lots and sensitive receptors. Ambient noise levels are well within national environmental quality standards (NEQS), and therefore sound barriers are not required at this stage.
		Use vibratory piling instead of impact piling.		**Not applicable at this stage.**
		Erect earth mounds around the site boundary. which can provide acoustic as well as visual screening.		**Complied.** Construction sites are located in hilly terrain, and vegetation and mountain mounds are serving as

S/ No	EMP Requirements		Key Performance Indicators	Status of EMP Compliance
	Impact	Mitigation Measures		
				the acoustic barriers.
7	Failure of spoil dumping sites resulting in increased erosion and sediment load entering river	Dumping sites should have a flood prevention design for a 20-year flood.	Detailed plan and lease agreement of muck disposal	**Complied.** EPC contractor identified sites for muck disposal. However, PMC has not approved the sites yet. Much materials will be reused as back fill for raising platforms and road fill materials. Remaining materials will be disposed of at designated sites.
		Prepare spoil management plan.	Spoil management plan	**Complied.** EPC contractor prepared spoil management plan as part of SSEMP.
8	Permanent impact in aesthetics due to proposed developments	Develop and implement a site rehabilitation and landscaping plan.	Measures included in design documents	**Not applicable at this stage.**
		Use colors that better integrate with the landscape.		
		Disguise elements with vegetation where possible.		
		Retain as much natural vegetation as possible.		
9	Improved accessibility due to construction of project internal roads	Consult communities during final design and location of site access roads.	Measures included in design documents	**Complied.** TRs are scheduled to be constructed at dam/jeadworks and marked (TR11, TR1-1, TR1-2, TR3, TR4, TR5, TR6, TR7, TR8, TR18, TR20), headrace tunnel (TR9, TR10, TR11, TR19), and at tailrace (TR12, TR13, TR14, TR15, TR16, TR17) sites. All TRs are identified within the project boundary keeping in view project requirements. Communities are consulted during final alignment. TRs will generally be unpaved compacted roads which, at the end of contract period, shall either be reinstated to pre-construction conditions or left in operational conditions subject to the demand of the locals.
10	Increase in congestion due to increased traffic volume will cause delays	Make roundabouts for the congestion points.	Measures included in design documents	**Complied.** Project roads are designed with crossing junctions at regular intervals to avoid congestion. Further, these roads are dedicated for project use to access various project facilities. Therefore, no public traffic congestion observed and reported. Three permanent roads are included in the project design. These include

S/ No	EMP Requirements		Key Performance Indicators	Status of EMP Compliance
	Impact	Mitigation Measures		
				permanent roads to dam road to diversion tunnel, powerhouse, and project residential colony sites. TR-3 will be converted to permanent road, and it will provide access to staff colony. It will be further connected to TR-5 and TR-6 to access other project structures. TR-4 will be converted to permanent road, and it will provide access to powerhouse. All temporary and permanent roads are designed keeping in view of future traffic requirements, and sufficient crossing pass are provided.
		Retain as much natural vegetation as possible to reduce the impact of smoke due to vehicles.		**Complied.** No excessive vegetation clearance involved in alignment of temporary roads construction for Balakot HPP.
		Consult National Highway Authority for implementation of the above measures.		**Complied.** EPC contractor will use Naran-Jhalkand road to access the project facilities. No traffic disruption/ congestion from project vehicles is reported on N-35 during reporting semester.
11	Loss of assets and livelihood as a result of land acquired for the project	Land acquisition and resettlement (LARP) implementation	Measures included in project LARP	**Complied.** Loss of assets and livelihood is covered under project LARP and its implementation is in progress.
12	Submergence of the graveyard	Plaster the graves with mud or cement. If relocation of the graveyard cannot be avoided, then it shall be managed through the local religious authorities.	Measures included in project LARP	**Complied.** There are 10-12 graves at dam site in Paras village which will be impacted. The affected community and district administration have not yet decided to shift the graves, and if so, when. Nevertheless, funds have been allocated to shift the graves. At present, no damage to graves occurred as construction activity at dam site has not started yet.
13	Climate change may enhance flood impacts such as during	Ensure minimal damage to dam structure from small amount of overtopping of spillway through design.	Coastal resource management plan prepared, and	**Partially complied.** Impact of climate change is incorporated in the project design. However, detailed climate risk

S/ No	EMP Requirements		Key Performance Indicators	Status of EMP Compliance
	Impact	Mitigation Measures		
	possible overtopping of spillway		measures are included on impact of climate change	and vulnerability study needs to be carried out.
Construction Phase				
1	Construction impacts	SSEMP exhibiting areas to be cleared, vegetated areas to be protected or fenced, slopes to be stabilized and solid waste disposal locations.	SSEMP prepared before initiating works	**Complied.** Project SSEMP was prepared and approved by Employer on December 30, 2022. ADB provided concurrence on issuance of the SSEMP to contractors for necessary implementation and compliance.
2	Improvement of the river ecosystem through implementation of the BAP Loss of riverine ecosystem due to inundation by project reservoir Degradation of the river ecosystem in the low flow segment downstream of the project dam Degradation of the river ecosystem downstream of the tailrace Terrestrial habitat loss caused by construction related activities.	Implement BAP.	BAP is prepared and implemented Allocated resources are budgeted Role and responsibilities are clearly defined	**Partially complied.** EPC contractor is taking work-related measures to minimize impact on river ecosystem. Delay in BAP implementation arrangements is observed, as the arrangements are not clear to stakeholders, such as KP Wildlife Department, KP fisheries Department, PEDO and PMC. Delay in implementation was primarily caused by the departments' reluctance to accept role of independent implementation organization as there is no provision for such organization in the relevant laws. Concurrence to the revision in the BAP implementation arrangements was intimated on May 22, 2023, and thereafter confirmed by the ADB on June 15, 2023. Necessary budget for BAP implementation is allocated. Revised arrangements for BAP implementation are under review and approval by the KP government. Finalization of various modalities, i.e., offices, human resources, payment procedure for BAP implementation is expected by November 2023.

S/ No	EMP Requirements		Key Performance Indicators	Status of EMP Compliance
	Impact	Mitigation Measures		
3	Terrestrial habitat loss caused by construction-related activities.	Provide environmental training plan (ETP) and awareness training to staff and contractors on preventing injury of animals; identifying likely species found on site, and animal hazards such as venomous snakes; and what to do if dangerous animals are encountered.	SSEMPs prepared before initiating construction Visual confirmation of replantation Waste Management Plan ETP	**Partially complied.** There is need to provide awareness training on wildlife sensitivity to the workers. Solid waste management plan is part of SSEMP. Solid waste is being disposed through KDA. No ETP on wildlife awareness, and identifying species and animal hazards is available with EPC contractor. No wildlife sighting is observed and reported. There is no awareness and procedure available for wildlife sighting and reporting. There is need to develop wildlife sighting and reporting procedure. Soil damage and vegetation disturbance is minimized.
		Encourage personnel to report sightings of wildlife of conservation importance or incidents of poaching to PEDO.		
		Minimize disturbance to, or movement of, soil and vegetation.		
		Prevent soil damage and erosion.		
		Prevent Alien Invasive Species (AIS) on exposed stored soil (do not store bare soil near known sources of AIS). The habitat most at risk is the Riparian Habitat. The species that are at highest risk include Parthenium Weed, Common Weed and Castor Oil Plant.		**Not applicable at this stage.**
		Train and raise awareness regarding AIS among project staff and contractors.		
		Retain as much natural vegetation as possible.		
		Dispose solid waste only at designated sites, and develop and implement a waste management plan.	Solid waste disposal site identified Agreement/ NOC from KDA Agreement with landowners for quarrying and borrow areas	**Partially complied.** At present, construction waste generated from tunneling activity at Adit-2 portal is being stored at site. It will be used as fill material for raising platform of protection works. EPC contractor requested KDA for NOC which was obtained. KDA placed waste containers at GRC and CGGC camp for waste collection, and waste is being transported periodically. EPC contractor shall pursue NOC applications with District Health Officer for disposal of hazardous waste.

S/ No	EMP Requirements		Key Performance Indicators	Status of EMP Compliance
	Impact	Mitigation Measures		
				At GRC camp, waste is scattered near fuel storage area. Color-coded waste bins are not provided in GRC and CGCC camps.
		Minimize the project footprint, and clearly delineate and restrict access beyond work sites and other areas to be disturbed.		**Complied.** Project footprint is minimized for camps, roads and other project facilities.
		Within the quarry and borrow areas, restrict activities to areas far from perennial water channels to avoid disturbances to them, including the risk of siltation.		**Complied.** No quarry and borrow areas are developed for the project at this stage. Quarry material will be purchased from approved sites, such as Ghumwan for coarse aggregates, and Lawrencepur, Maira and Thakot for fine aggregates.
4	Decline in abundance and diversity of terrestrial flora and fauna caused by construction related activities.	Large flood lights should not be installed outside 50 m of the project fence.	ETP Training schedule Evidence of trainings and attendance lists Provision of required regulations in contract documents Evidence of tree planting to required levels, and yearly survival records	**Complied.** No flood lights outside 50 m of project fence are installed.
		Direct lights towards project facilities, and not natural habitats.		**Complied.** Lights are directed toward project facilities instead of natural habitats.
		Incorporate regulations for project staff and contractors to avoid illegal poaching in contract documents		**Complied.** All type of poaching is restricted in the contract documents.
		Provide awareness training to staff and contractors on preventing injury of animals; identifying likely species found on site, and animal hazards (such as venomous snakes); and what to do if dangerous animals are encountered.		**Not complied.** No ETP on wildlife awareness, and identifying species and animal hazards are available with EPC contractor. No environmental training with respect to wildlife sighting, illegal poaching, and killing prohibition is provided to contractor staff.
		Incorporate regulations for project staff and contractors to avoid illegal poaching in contract documents		
		Provide adequate knowledge to the workers on relevant government regulations and punishments for illegal poaching.		
		Encourage personnel to report sightings of wildlife of conservation importance or incidents of poaching to PEDO.		
		Project staff and contractors to report kills of large mammals, particularly designated species of conservation concern.		
		Train and raise awareness regarding AIS among project staff and contractors		
		The Contractor shall prepare an ETP for all construction workers. The ETP shall include the following items: • All contractor's employees shall comply with environmental protection procedures, and provide evidence that they attended the training sessions detailed in the ETP.	ETP Training schedule Evidence of trainings and	**Not complied.** There is need to develop contractor ETP covering issues such as firearm possession, traffic regulations, illegal logging and collection of non-timber forestry

S/ No	EMP Requirements		Key Performance Indicators	Status of EMP Compliance
	Impact	Mitigation Measures		
		• Educate all construction workers on the following issues, among others: fire arm possession, traffic regulations, illegal logging and collection of non-timber forestry products, non-disturbance of resettlement communities, hunting and fishing restrictions, waste management, erosion control, H&S issues, all prohibited activities, Code of Conduct requirements and disciplinary procedures, and general information on the environment in which they will be working and living • Proposed methods for conducting the training program, which shall include formal training sessions, posters, data in newsletters, signs in construction and camp areas, and 'tool box' meetings	attendance lists	products, non-disturbance of resettlement communities, hunting and fishing restrictions, waste management, erosion control, H&S issues, and all prohibited activities.
		Equipment emitting excessive noise compared with other similar equipment will not be allowed to operate.	SSEMP documents prepared before initiating construction Air pollution control plan Continuous observation for non-compliance Vehicle and equipment maintenance logs	**Complied.** No equipment with excessive noise is used for construction activities.
		Requlary maintain and tune equipment under use, and provided mufflers to minimize noise levels.		**Complied.** Equipment are regularly maintained and tuned.
		Check equipment in poor state of maintenance, particularly without effective noise control, to determine if it can be improved, and replace with less noisy equipment as soon as practicable		**Complied.** Equipment in poor state of maintenance shall be inspected and checked.
		Prohibit blowing of horn in all sensitive areas except under emergency conditions		**Complied.** Blowing of horn is prohibited at the sites.
		Plant compensatory trees. The EPC contractor will plant a minimum of ten trees for each tree removed from acquired land. PEDO will monitor and maintain the vegetation until it is established.		**Partially complied.** About 14,568 trees will be cut as part of clearing activities. Draft tree plantation plan is part of SSEMP, and will be finalized when muck disposal sites are identified. EPC contractor identified tree plantation sites in Paras, Zamanabad, Kholian, Kappi Gali Site A, and Kapi Gali site B. Tree plantation will be carried out in consultation with Divisional Forest Officer Mansehra.
5	Increased ambient and ground level concentration of air pollutants from construction activities and vehicular movement may cause health impacts to the community.	Develop and implement an air pollution control plan	SSEMP documents prepared before initiating construction Air pollution and control plan Continuous	**Complied.** SSEMP is prepared by EPC contractor and approved by the PIU. Concurrence on the same is also obtained from ADB. Pollution prevention plan is part of SSEMP. There is need to maintain vehicle and equipment maintenance logs.
		Prepare a SSEMP (see Section 9.5.3) for each construction site. The SSEMP must outline areas to be cleared, vegetated areas to be protected or fenced, solid waste disposal locations, and sprinkling locations.		

S/ No	EMP Requirements		Key Performance Indicators	Status of EMP Compliance
	Impact	Mitigation Measures		
		Fugitive and exhaust emissions from transport vehicles Cover all trucks hauling soil, sand, and other loose materials; or require all trucks to maintain at least two feet of freeboard (i.e., the minimum required space between the top of the load and top of the trailer). Install and maintain all vehicles and machinery with appropriate emission control equipment. Regularly maintain vehicles and equipment to keep emissions in check. Smoke from internal combustion engines should not be visible for more than ten seconds. To the extent possible, use new and low emission equipment and vehicles. Purchase best quality fuel and lubes, and where possible use lead free oil and lubes. Sprinkle water on all unsealed roads used by project vehicles that are within 200 m of any settlement. Cover loads and long-term piles of friable material to reduce fugitive dust emission. Reduce traffic speeds on all unpaved surfaces to 15 miles per hour or less. Paved roads shall be swept frequently if soil material has been carried onto adjacent paved, public thoroughfares from the project site. Install wheel washers where vehicles exit from unpaved to paved road from unpaved. Wash wheels of vehicles leaving the site. Wash vehicles/ equipment prior to each trip. Use catalytic converters on vehicles, an emission control device used to convert harmful pollutants to less harmful pollutants (e.g. it converts the nitrogen oxides back into nitrogen and oxygen). Maintain vehicles and machinery.	observation for non-compliance Vehicle and equipment maintenance logs	**Complied.** Fugitive dust emissions are avoided by covering loose material with tarpaulin/polyethylene sheets. Periodic sprinkling on access road and camps is carried out to suppress any dust generation. Wheel washing is done only in designated lined surfaces. There is need to follow speed limit of 30 km/hour for light transport vehicle and 20 km/hour for heavy transport vehicle. Appropriate maintenance of vehicles and machinery is being carried out.
		Fugitive dust emissions from blasting Indicate the limits of a clearing land with highly visible markers. Leave a layer of about 5 m of undisturbed softs above the top of the overburden blasts. This will act as a blanket to contain air blast, dust and fly rock. Sprinkle water on the area where blasting is done to settle down	Blasting and explosives control plan document Blasting timetable available in nearby	**Partially complied.** Blasting and explosive control plan is detailed in blasting management plan which is part of SSEMP. However, it is being updated. Blast design is being submitted and

S/ No	EMP Requirements		Key Performance Indicators	Status of EMP Compliance
	Impact	Mitigation Measures		
		the particulate matter emissions.	villages Results of preconstruction survey Availability of GRM	signed by the EPC Contractor construction department and safety department. At present, blasting sites are located away from nearby villages. There is need to assess wind direction before start of blasting operation. Project GRM is available and functional. Workers in tunnels shall be provided with N95 or P3 masks. There is need to conduct gas test in the tunnels to monitor LELs of various gases. Provisions shall be added in the contractor instructions. Silica dust monitoring shall be carried out in the tunnels, with the necessary budget.
		Fugitive dust emissions from quarry areas Indicate the limits of a clearing land with highly visible markers. Avoid earth stripping or moving in periods of dry and windy weather. Carry out dust- generating activities where maximum protection can be obtained through topography or in areas where prevailing winds will blow dust away from sensitive areas/uses. Water spray conveyors/conveyor transfer points, stockpiles, and roads. Cover fine dry loads or spray loads prior to exiting the site. If necessary, regularly clean public roads in the vicinity of the entrance.	SSEMP documents prepared before initiating construction Air pollution and control plan Continuous observation for non-compliance Vehicle and equipment maintenance logs	**Complied.** No quarry areas are developed during reporting semester. Quarry material is being purchased from locally available resources.
		Fugitive dust emissions from concrete batching plants Suspend earthworks operation when wind speed exceeds 20 km/hour in areas within 500 m of any settlement. Perform the whole process of weighing and mixing in a fully enclosed environment. Equip all mixers with dust collectors to prevent dust emission. Site the concrete batching plant out of prevailing high winds minimizing dust emissions.	SSEMP documents prepared before initiating construction Air pollution and control plan Continuous observation	**Complied.** Concrete batching plant is located near camp at Thobi area. Wind sack is installed at the batching site. Weighing and mixing are being performed in closed environment. Batching site is located in valley depression and surrounded with

S/ No	EMP Requirements		Key Performance Indicators	Status of EMP Compliance
	Impact	Mitigation Measures		
		Site bunkers and conveyors in the leeward direction to minimize the effects of the wind. Provide natural or artificial wind barriers, such as trees, fences and landforms, to help control the emission of dust from the plant. Site batching plants on land that is not flood- prone. Keep batching plant near natural sinks to minimize emissions to ambient environment. Place all stacks vertically and at least 3 m above ground.	for non-compliance Vehicle and equipment maintenance logs	mountains. Batching site is located on land which is not flood-prone and away from settlements. Batching vent is vertical, located at top of silo with height above 3 m from ground. Batching wash water settling tanks are available at batching site. Batching plant is equipped with dust filters. There is need to ensure periodic water sprinkling in batching area.
		Fugitive dust emissions from aggregate production and handling system Suspend operation when wind speed exceeds 20 km/hour in areas within 500 m of any settlement. Consider the prevailing wind direction to ensure that aggregate handling systems located in the leeward direction to minimize the effects of the wind. Sprinkle water on all exposed surfaces, particularly those close and up-wind of settlements.	SSEMP documents prepared before initiating construction Air pollution and control plan Continuous observation for non-compliance Vehicle and equipment maintenance logs	**Complied.** No fugitive dust emissions generated from aggregate production and handling system. Wind stacks shall be installed at batching sites.
		Wind-blown dust from exposed surfaces such as bare land and waste dumping sites Cover all exposed surfaces, particularly those close and up-wind of settlements. All grading operations on a project should be suspended when winds exceed 20 miles per hour. Minimize disturbance to, or movement of, soil and vegetation. Sprinkle water on all exposed surfaces, particularly those close and up-wind of settlements. Retain as much natural vegetation as possible		**Complied.** No windblown dust is generated from exposed bare land and waste dumping sites within project corridor. Water sprinkling is carried out periodically.
		Wind-blown dust from stockpiles of dusty materials such as sand and other minerals Cover on-site dirt piles or other stockpiled particulate matter; and install wind breaks, and water and/or soil stabilizers to reduce wind-blown dust emissions. Adequately wet, cover with plastic, or provide with wind shield all		**Complied.** Stockpiles located at constructions sites are covered with plastic. Stockpiles for batching plant are stored in dedicated concrete chambers. While stockpiles for construction are covered with plastic sheets to avoid windblown

S/ No	EMP Requirements		Key Performance Indicators	Status of EMP Compliance
	Impact	Mitigation Measures		
		stockpiles to reduce dust emission. Sprinkle water on all exposed surfaces, particularly those close and up-wind of settlements. Minimize disturbance to, or movement of, soil and vegetation. Prevent soil damage and erosion. Retain as much natural vegetation as possible		dust. There is need to conduct sprinkling or wetting of stockpiles if exposed to air.
6	Vibration from blasting during the construction phase may disturb local communities.	Develop a blasting and explosives management plan, and vibration monitoring plan.	Blasting and Explosives Control Plan document Blasting timetable available in nearby villages Results of preconstruction survey Availability of GRM	**Complied.** Blasting and explosives management plan is developed and part of SSEMP however it is being updated to consider project requirements.
		Conduct a pre-construction survey of structures at risk of vibration impacts on households. • In the initial stages, the blasting induced vibration shall be measured as a function of maximum instantaneous charge and distance from the blasting site. This data shall be then used to refine the Blasting Induced Vibration Risk Zones based on the adopted criteria. • Using the refined Blasting Induced Vibration Risk Zones maps and tunnel boring schedule, the PMC, in consultation with PEDO and EPC contractor, shall identify the houses that will be affected, and impact duration and schedule. • For the houses that will fall in the Structural Damage Risk Zone, a temporary relocation plan will be developed. An amendment to the LARP will be commissioned for this purpose. Before start of blasting, all residents of houses in the Structural Damage Risk Zone will be relocated as per the LARP. • A survey will be undertaken in both zones to determine the pre-blasting conditions of the buildings. The survey will be commissioned by PMC, and will identify and record any existing damage to the structures. The survey will cover the following aspects: ➢ Overall condition of the structures, both exterior and interior. ➢ Documentation of defects observed in the structure and pre-existing cracks using digital imagery along with notes, measurements and sketches.		**Complied.** Blast design is being submitted and signed by the EPC contractor construction department and safety department Pre-construction survey for blasting operation is being carried out by EPC contractor. Survey shall account for maximum blasting induced vibration and its impacts on surroundings. Based on the results, vibration risk zones shall be refined for implementation of mitigation measures. No blasting shall be carried until a pre-conditions survey report is submitted by PMC and verified by PEDO. Continuous community consultation needs to be ensured during blasting operation. Community relocation plan shall be prepared, approved and executed before start of blasting operation (as and where applicable).
		Following completion of the blasting, repeat the survey in the Structural Damage Risk Zone to determine the condition of the buildings, and verify that they are safe for re-occupation. If the buildings are safe, then allow the residents to return to their houses following any necessary damage repairs. If the buildings		**Not applicable at this stage.**

S/ No	EMP Requirements		Key Performance Indicators	Status of EMP Compliance
	Impact	Mitigation Measures		
		are damaged beyond repair, then compensate the owners as per the LARP. If there are any claims or reports of damage in the Cosmetic Damage Risk Zone, then survey the affected houses against the pre-project survey, and undertake repairs as appropriate.		
		Maintain meaningful contact with the community, and attend to their grievance in a timely manner. In this regard: • A meaningful community engagement plan will be developed. The plan will identify the affected community, key contact persons, frequency of engagement, information to be shared, responsibilities to manage the plan, and the notice period to be given to the community for various blasting-related activities. • GRM will be used to record, investigate, and respond to any complaints. Investigation of the complaints will be undertaken by the PMC.		**Not applicable at this stage.**
		Develop a vibration monitoring plan that will include monitoring of vibration levels and frequency around the blasting sites. The objectives of the monitoring will be to • ensure that vibration levels in the communities are within the adopted criteria levels; • maintain record of vibration to settle any potential conflicts; and • monitor changes in the vibration levels due to possible changes in the rock formation, and take appropriate corrective actions.		**Not applicable at this stage.**
7	Blasting may pose a health hazard due to flying debris.	Provide a minimum buffer of 500 m between the settlements and point of blasting.	Blasting and Explosives Control Plan document Blasting timetable available in nearby villages Results of preconstruction survey Availability of GRM	**Partially complied.** Detailed blasting management plan is part of SSEMP. However, it is being updated. Drilling of blast holes, collaring and adjustment of frond row burden shall be carried out systematically to reduce flying debris. No blasting shall be carried out until a pre-conditions survey report is submitted by PMC and verified by PEDO. Workers in tunnels shall be provided with N95 or P3 masks. There is need to conduct gas test in the tunnels to monitor LELs of various gases. Provisions shall be added in the contractor instructions.
		Leave a layer of about 5 m of undisturbed softs above the top of the overburden blasts. This will act as a blanket to contain air blast, dust and fly rock.		
		Ensure that the holes are correctly collared with respect to the back-break/inclination of the face, and digging alongside the initiation face is well controlled.		
		Inadequate forward displacement of the front row burden arising out of the under charging of these holes will result in fly rock from vertical catering of the rear holes.		
		Where fly rock possesses a serious problem, the stemming length should not be less than the hole burden. Also, use an effective stemming material, like crushed angular rock, to prevent premature venting of explosion gases through the stemming column.		
		The forward fly rock could be fairly controlled to the commonly used 'inline open loop' pattern. The maximum inter-row delay		

S/ No	EMP Requirements		Key Performance Indicators	Status of EMP Compliance
	Impact	Mitigation Measures		
		interval consistent with the absence of cut off helped in minimizing the fly rock formation. As a rule of thumb, an inter-row delay of 4-8 ms/m of burden could be used for this purpose.		Silica dust monitoring shall be carried out in the tunnels. Necessary budget shall be allocated. Use of PPEs shall be ensured.
		Carefully connect the delay devices in the holes/rows, and check the initiation sequence before firing to avoid initiating blast holes out of sequence.		
		Blasts designed on a face length to width ratio in the range of 3 to 4 produces minimum fly rock.		
8	Alterations of natural passage of springs due to blasting for tunnels may disrupt the water supply for mountain spring users.	Record locations of the springs, especially those in areas proximal to where the underground headrace tunnel will be closer to the ground level, i.e. high risk areas.	Map of identified springs Safe yield calculation and monitoring Agreement with land owner Community consultation record	**Partially complied.** EPC contractor is using spring water through piped network in the GRC camp, CGCC camp, Adit-1 and Adit-2 locations. For drinking purpose, mineral water is being used. Sprinkling water is also spring water transported through bowsers to the site. Survey report on identified springs near Adits and headrace tunnel shall be submitted. Survey report shall cover calculation of safe yield and monitoring reports. Survey findings shall be verified by PMC. Agreement with spring owners shall be submitted to PMC.
		Monitor flow for located springs, and maintain records.		
		Support the community in developing alternate water supply schemes through local NGOs		
		Ensure the availability of water to the communities, and access to the water resources is not adversely affected.		
9	Use of local water resources for construction activities may reduce the water availability for the local communities.	Develop a water sourcing and abstraction plan	Agreements documents for water use. Water sourcing and abstraction plan Water use record documents	**Partially complied.** EPC contractor shall submit survey report on identified springs near Adits and Headrace tunnel to PMC for review and approval. PMC shall approve the sources of water abstraction in consultation with local communities. Water yield monitoring shall be carried out for approved sources. Access of community to water sources will be ensured once sources are approved by PMC and agreement is
		Source water for construction from authorized abstraction sources agreed among the local communities, local government, and EPC contractor.		
		Develop and implement water conservation techniques by the EPC contractor.		
		Keep access of the community to water sources clear so that the community's ability to meet its water requirements are not compromised.		
		Carefully move heavy machinery to avoid damage or blockage of natural waterways and channels.		
		Maintain records of water usage in all project activities.		

S/ No	EMP Requirements		Key Performance Indicators	Status of EMP Compliance
	Impact	Mitigation Measures		
		Incorporate the above measures in the SSEMP.		made with the owners. No damage and blockage of waterways and channels observed during reporting period. Record of water usage is being maintained and reported by EPC contractor. Mitigation measures related to use of local water sources are part of SSEMP.
10	Discharge from construction activities can potentially result in the contamination of soil, groundwater and surface water.	Develop and implement a water quality management plan.		**Complied.** Pollution prevention plan is part of SSEMP, and being implemented.
		Prepare and implement a spill prevention and response plan, and instruct staff for any incident of spill.	Water quality management plan Spill prevention and response plan Visual implementation of mitigation measures, such as use of spill prevention trays, and proper storage of fuel storage. Record of spills and remedial actions taken Provision of spill kits at sites	**Partially complied.** Cutting spoil is dumped at portal site of Adit-2 near the stream. Spoil shall be placed away from the stream edge to ensure that it does not landslide/contaminate the stream. Tunneling waste is being stored at site. Waste at Adit-2 will be used to fill material for raising platform, while at Adit-1, it will be used as road fill material. There were some minor spills observed at the GRC and CGCC camps which were rectified after the PMC's instructions. Kitchen washing water is being discharged to nearby stream without treatment. Contractors are advised to construct grease traps in the kitchens. Engine drums are placed at the GRC camp without secondary containment. Fuel storage is not marked and stored in secondary containment. EPC contractor has not provided spill kits in all sites. Washing yard facility has not been constructed yet.
		Provide and use spill prevention trays at refueling locations.		
		Collect the run-off from maintenance workshops by impervious channels, and pass them through oil water separators before final disposal. Dispose the sludge and oil collected at the oil water separators properly.		
		Build separate impervious pits (with concrete walls and proper shed) at the construction sites for temporary handling and storage of contaminated soil and water if encountered during construction, such as sludge from oil water separators.		
		Keep all fuel storage tanks and lubricating oil drums in secondary containment impervious pits with impervious shed walls.		
		Avoid on-site maintenance of construction vehicles and equipment as far as possible.		
		Regularly inspect construction vehicles and equipment to detect leakages.		
		Store fuels and lubricants in covered and dyked areas, underlain with impervious lining.		
		Make spill control kits (shovels, plastic bags and absorbent materials) available near fuel and oil storage areas, vehicle parking and maintenance areas, and construction sites.		
		Remove contaminated soil from the site, and dispose them in a manner to ensure protection of water sources.		
		Construct the bottom of any soak pit or septic tank at least 100 m away from springs and water bores.		
		Maintain records of spills, and volume of removed contaminated soil.		

S/ No	EMP Requirements		Key Performance Indicators	Status of EMP Compliance
	Impact	Mitigation Measures		
		Maintain record of remedial measures taken. Use silt traps to prevent contamination of river and streams. Incorporate the above measures in the Construction Site EMP.		EPC Contractor has identified locations for construction of Stabilization Ponds however, construction has not initiated yet. There is need to develop waste stabilization ponds to manage tunneling waste. No on-site maintenance is practiced at the construction sites. Septic tank is constructed at CGGC camp. It is of adequate capacity and no leakage observed. Oil spill drills shall be planned and conducted There is need to ensure construction of stabilization ponds before start of tunneling activities.
11	Increase in ambient noise levels due to operation of construction equipment, movement of construction traffic and blasting may create nuisance for nearby communities and visiting tourists.	Develop a noise and vibration control plan. **Noise generated in construction sites from construction activities.** Select the quietest available plant and equipment that can economically undertake the work required. Maintain equipment as simple maintenance can reduce noise levels by as much as 50%. Parts may become loose, creating more noise because of improper operation or scraping against other parts. Grinding noises may also occur as a result of inadequate lubrication. Regularly maintain and tune up equipment under use, and provide mufflers to minimize noise levels. Use visual alarms in preference to audible alarms. Enclose noisy equipment. Provide noise attenuation screens, where appropriate. Build an enclosure around the noise source so that noise is contained. The enclosure should be free from gaps, made of dense material, and lined with noise-absorbing material like glass or polyester batts. Locate noisy equipment behind parking lots or parks. Closely liaise with the community, and regularly monitor the noise	Noise and vibration control plan Maintenance record of equipment Records of community meetings regarding noise. Noise level monitoring in nearby communities	**Partially complied.** Noise and Vibration Impacts and measures are discussed in SSEMP. Mitigation measures related to noise impacts at construction sites are being implemented however there is need to maintain inventory of inspected equipment. Noise level monitoring near sensitive receptors is being carried out. Community consultation plan shall be developed and implemented. There is need to construct proper enclosures for generators.

S/ No	EMP Requirements		Key Performance Indicators	Status of EMP Compliance
	Impact	Mitigation Measures		
		levels in the community which are key to successfully implementing the above mitigation measures. Specifically, inform communities of all major construction activities three days in advance.		
		Construction noise from traffic Fit and maintain appropriate mufflers on earth-moving and other vehicles on the site. Fit mobile plants, such as excavators, front-end loaders and other diesel-engine equipment, with residential class mufflers and other silencing equipment as applicable. Haul roads within the site should have as low a gradient as possible. Consider paving, if practicable, where noise-sensitive receptors are likely to be affected; Owners and operators of existing facilities should implement special noise reduction measures, such as erecting purpose-built acoustic barriers, restricting opening hours, and maintaining transport vehicles.		**Complied.** Earthmoving vehicles are operating away from traffic roads. There is need to install mufflers on excavators, front end loaders, and diesel operated generators. TRs are being constructed with good gradient to suppress noise generation. Erecting purpose-built acoustic barriers is not required as SRs are located far away. However, machinery operating hours are restricted to daylight operations.
		Construction noise from on-site plant operations and equipment Select all fixed plant at the work sites appropriately; and where necessary, fit them with silencers, acoustical enclosures, and other noise attenuation measures. Modify the equipment or work area to make it quieter by substituting existing equipment with quieter equipment; retro-fitting existing equipment with damping materials, mufflers, or enclosures; erecting barriers; and maintenance. Shift to a quieter construction process (e.g. pile driving is very loud as compared to boring which is a much quieter way to do the same work). Combine noisy operations in the same time period. The total noise level will be significantly less than if the operations were performed separately. Maintain all plant and equipment regularly. Move static plant and equipment from sensitive boundaries, as work allows. A distance four times farther lowers the noise by 12 A-weighted dBs. A reduction of 10 A-weighted dBs will sound half as loud. Use sound attenuation measures for plant and equipment, such as baffles and specialized mufflers, acoustic enclosures, or partial		**Partially complied.** Generators are placed at designated locations near the camps. There is need to develop proper enclosures for generators to reduce noise. Design of acoustic enclosure needs to be submitted to PMC for approval. Ear plugs are not provided to the workers. Use of PPE at the sites is not strictly implemented. Training on noise hazards and mitigations shall be planned by PMC.

S/ No	EMP Requirements		Key Performance Indicators	Status of EMP Compliance
	Impact	Mitigation Measures		
		enclosure housings. Design and build acoustic barriers if needed. Plant vegetated buffer zones to mitigate noise from operations using suitably selected native plantings local to the area. Reduce workers' exposure to high noise levels by keeping workers away from the noise source, restricting access to areas, rotating workers performing noisy tasks, and shutting down noisy equipment when not needed. Use earplugs to reduce workers' exposure to high noise levels.		
		Noise generated from the blasting in quarry areas. Use vibratory piling instead of impact piling. House conveyor belts and crushing/screening equipment for acoustic screening. Fit sound-reduction equipment to machinery, and maintain them properly. Erect earth mounds around the site boundary, which can provide acoustic as well as visual screening. Soft ground (e.g. grassland and cultivated fields) attenuation can sometimes have a greater impact in reducing noise than barrier attenuation, especially if the ground supports sound absorbing vegetation.		**Not applicable at this stage.** No quarry area is developed for the project.
		Noise emissions from concrete batching Locate noisy equipment away from potential sources of conflict. Locate noisy equipment behind sound barriers or sound absorbers (e.g. gravel stockpiles or constructed barriers). Install silencing devices to all pressure-operated equipment		**Complied.** Batching plant is fitted with rubber pads to reduce noise. Batching site is located away from sensitive receptors. Batching operation is only carried out for a limited time, keeping in view the construction requirements. Provision and use of PPE shall be ensured at batching plant site. PMC shall ensure that ear plugs and earmuffs are provided to workers closely working to motors and pumps of batching plant.
12	Contamination of soil as a result of accidental release of solvents, oils and lubricants can	Prepare a spill prevention and response plan, and instruct the staff for any incident of spill. Appropriately mark fuel tanks by content, and store them in dyked areas with an extra 10% of the storage capacity of the fuel tank.	Spill Prevention and Response Plan document	**Partially complied.** Pollution prevention plan is part of SSEMP, and being implemented.

S/ No	EMP Requirements		Key Performance Indicators	Status of EMP Compliance
	Impact	Mitigation Measures		
	degrade soil fertility and agricultural productivity.	Line the area with an impervious base.	Visual verification of conformance	There is need for periodic inspection of fuel storage areas, tanks and vehicles to check leaks/spills. There is no grease trap available at the contractor kitchens. Spill cleaning kits are not available at the site. Fuel supply is arranged through local pumps. Fuel is stored in fuel tank at the GRC camp from where it is filled in drums to further transport to construction sites and machineries. Fuel is stored in drums at the CGGC camp in secondary containments. Drip trays shall be arranged for refueling purpose. Refueling shall be carried out on impermeable surfaces, i.e. concrete pad with drains. Septic tanks are located away from surface water bodies and above the groundwater table.
		Install grease traps on the site, wherever needed, to prevent flow of oily water.		
		Make spill cleaning kit (shovels, plastic bags and absorbent materials) available near fuel and oil storage areas.		
		Carry cleanup kits in all fuel trucks.		
		Allow fueling only over impermeable surfaces. Store other hazmat and use them over impermeable surfaces.		
		The bottom of any soak pit or septic tank shall be at least 10 m above the groundwater table. Reduce the distance based on the soil properties if it is established that the distance will not result in contamination of groundwater.		
		Develop an erosion control plan.	Erosion control plan Demobilization plan upon completion of works	**Complied.** Erosion and sediment control plan is part of SSEMP, and being implemented.
		Limit vegetation loss to demarcated construction area.		**Complied.** Vegetation loss is avoided to a possible extent.
		Cover areas, such as muck disposal area, batching plant, labor camp and quarry sites, with grass and shrubs.		**Not applicable at this stage**
		Adopt slope stabilization measures, such as adequate vertical and horizontal drains, drainage along roadsides, cross drainage, and retaining walls.		
		Monitor slope movements around excavation work areas.		
		Salvage, store, and reuse all topsoil at all construction sites.		
		Minimize the height of the stockpile by increasing the size of the land for the stockpile.		
		Carefully strip topsoil to ensure that it is not mixed with subsoil.		
		Revegetate stockpiles to minimize loss of soil quality; minimize weed infestation; and maintain soil organic matter levels, soil		

S/ No	EMP Requirements		Key Performance Indicators	Status of EMP Compliance
	Impact	Mitigation Measures		
		structure, and microbial activity.		
		Put clear signposts on topsoil stockpiles for easy identification, and to avoid any inadvertent losses.		
		Monitor declared plants on the stockpiles, and implement control programs as required.		
		Treat the topsoil with temporary soil stabilization and erosion control measures.		
		During removal of topsoil stockpile for restoration of project affected areas, preferably remove the soil in layers (less than 0.5 m thick) under a gradual process.		
		Mix the top layer with the remainder of the stockpile to ensure that living organisms are distributed throughout the topsoil material at the time of final placement. The use of micro-organism inoculates may be necessary to re-establish micro-organisms in topsoil material.		
		Select local species for plantation to restore the biodiversity of the area in consultation with Forest Department after completion of respective activities.		
14	Failure of spoil dumping sites, resulting in increased erosion and sediment load entering river	Design dumping sites to prevent flood for 20 years.		
		The water drainage works consist of the masonry structures, and shall be designed to drain a 5-year rainfall every 10 minutes.		
		Constructed tailing hold structure will be of galvanized woven wire mesh gabions		
		All dumping sites will undergo vegetation restoration works comprising surface leveling, covering and forest/grass planting, or agricultural land rehabilitation		
		Develop a spoil disposal plan that includes the following measures: Slope movements will be monitored around excavation work areas. Restore to the maximum extent possible the hydrological regime, and reinstate natural drainage of the land (including provisions to maintain the water balance of the site and protect from flooding where appropriate). Reinstate topsoil in case it was stripped before construction activities. Revegetate sites with suitable native plant species. Drain spoil piles to prevent the concentration of flow, and rill and gully erosion.	Spoil disposal plan On-site inspection of spoil disposal sites to ensure that mitigations are applied	**Partially complied.** Spoil disposal and management plan is in the SSEMP. Spoil generated from tunneling activity at Adit 1 and Adit 2 is temporarily stored at site. Spoil of Adit-1 will be used as fill material for platform raising, while Spoil of Adit-2 will be used for levelling of access road. To control erosion and destabilization, protection measures such as reinstating top soil, draining spoil piles, diverting rainwater and revegetation shall be carried out while developing spoil disposal areas.

S/ No	EMP Requirements		Key Performance Indicators	Status of EMP Compliance
	Impact	Mitigation Measures		
		Separate organic materials (e.g., roots, stumps) from the dirt fill, and store them separately. Place them in long-term, upland storage sites as they cannot be used for fill. Store “clean” materials in a short-term disposal site (stockpile) if it will likely be re-used for fill or shoulder-widening projects. Where feasible, recycle asphalt materials in embankments and shoulder backing. Place them where they will not enter the stream system. Asphalt that is 5 years old is considered “inert” (that is, all oils washed off). Do not add excess unusable materials to permanently closed sites. Spread materials not to be re-used in compacted layers, generally conforming to the local topography. Design the final disposal site reclamation topography to minimize the discharge of concentrated surface water and sediment off the site and into nearby watercourses. Cover the compacted surfaces with a 6-inch layer of organic or fine-grained soil if feasible. After placement of the soil layer, track walk the slopes perpendicular to the contour to stabilize the soil until vegetation is established. Track walking creates indentations that trap seed and decrease erosion of the reclaimed surfaces. Revegetate the disposal site with a mix of native plant species. Cover the seeded and planted areas with straw compost, mulched with straw at a rate of 1 to 1 ½ tons per acre. Apply jute netting or similar erosion control fabric on slopes greater than 1:2 if site is erosive. Locate stockpiles away from drainage lines, at least 10 m away from natural waterways, and where they will be least susceptible to wind erosion. Ensure that stockpiles and batters are designed with slopes no greater than 1:2 (vertical/horizontal). Besides these measures, minimize erosion by regularly rehabilitating areas not in use for project activities during construction. These will include re-grading and immediate revegetation (using fast-growing species and different functional groups of plants for keeping soil in place) of slopes to minimize erosion. Install erosion and sediment control measures if possible before		At present, generated spoil will be used as fill material. However, EPC contractor shall prioritize developing spoil disposal sites following mitigation measures provided in EMP/SSEMP, and the spoil disposal and management plan.

S/ No	EMP Requirements		Key Performance Indicators	Status of EMP Compliance
	Impact	Mitigation Measures		
		construction commences. Identify drainage lines and install control measures to handle predicted stormwater and sediment loads generated in the mini-catchment. Design and install erosion and sediment run-off control measures appropriate to site conditions to handle a one-in-two-year storm event (two-year average recurrence interval with intensity of six hours) for temporary structures, and a one-in-fifty year storm event for permanent structures. Establish an adequate inspection, maintenance and cleaning program for sediment run-off control structures. Ensure that contingency plans are in place for unusual storm events. Continually assess the effectiveness of sediment control measures, and make necessary improvements. Keep temporary disposal sites out of wetlands, adjacent riparian corridors, ordinary high-water areas, and high-risk zones such as 100-year floodplain and unstable slopes. Anticipate sufficient storage area with no risk for sediment delivery for piles that may slump. Stress cracks indicate that the pile is at risk of slumping. Cover trucks that will be used for transporting spoil materials to disposal sites.		
15	Deteriorated aesthetics and visual amenity of nearby receptors due to construction activities, including vehicular movement on roads, may disturb aesthetics for tourists, businesses and nearby communities	Minimize disturbance to, or movement of, soil and vegetation. Back fill to original levels. Reshape to match with surrounding topography. Reinstate vegetation around construction sites.	Cover used to disguise equipment Landscape and rehabilitation plan	**Not applicable at this stage**
16	Permanent impact in aesthetics due to proposed developments	Develop and implement a site rehabilitation and landscaping plan. Use colors that better integrate with the landscape. Disguise elements with vegetation where possible. Retain as much natural vegetation as possible.	Cover used to disguise equipment Landscape and rehabilitation plan	**Not applicable at this stage**
17	Increased traffic volume will deteriorate the air quality	Keep speeds slow (30 km/hour) on unsealed roads. Sprinkle water on unsealed roads used for construction traffic. Retain as much natural vegetation as possible to reduce the impact of smoke due to vehicles.	Traffic management plan Speed limit for light vehicles: 30	**Partially complied.** TMP is place and part of SSEMP. There is need to train drivers with respect to compliance with speed

S/ No	EMP Requirements		Key Performance Indicators	Status of EMP Compliance
	Impact	Mitigation Measures		
		Completely cover vehicles going on the spoil routes and passing through the communities to avoid dust emissions.	km/hour on unsealed road Speed limit for heavy machinery: 15 km/hour on unsealed road	limits, covering spoil disposal during transfer, road safety, and community sensitization. There is need to increase water sprinkling frequency at site.
		Strictly implement speed limits and defensive driving policies.		
		Promptly and properly repair and maintain roads that are subject to damage by project activities.		
19	Increased risk to community safety due to increased traffic volume during the construction phase near communities.	Develop and implement a traffic management plan.	Traffic Management Plan	**Complied.** Traffic management plan is prepared and part of SSEMP. EPC contractor has not provided flag men. However, bank men are provided. At present, no major traffic- related issues observed and reported. There is need to train drivers on complying with speed limits, covering spoil disposal during transfer, road safety, and community sensitization. Material and machinery movement shall be avoided during peak school/public business hours. Compliance with speed limits needs to be ensured.
		Identify suitable times to transport equipment.		
		Include road safety awareness during community visits or information sessions on common road signs, and types of vehicles and equipment that will be moving through the area.		
		Keep speeds slow (30 km/hour) where there is traffic exchange between roads.		
		Make roundabouts for the congestion points.		
		Designate traffic wardens on roads on the transport route to manage traffic during school hours.		
		Prohibit construction traffic during school starting and ending hours on designated road segments in front of schools on the transport route.		
		Strictly implement speed limits and defensive driving policies.		
		Maintain vehicles especially brakes.		
20	Degradation of the pavement due to use by heavy construction traffic	Promptly repair and maintain roads that are subject to damage by project activities.	Number of pavement damages reported	**Complied.** No pavement damage reported during reporting semester.
21	Direct, indirect and induced employment at the local levels, resulting in increased prosperity and well-being due to higher and stable incomes of people.	**Enhancement measures**: Ensure preferential recruitment of local candidates provided they have the required skills and qualifications. Assess the contractor's demonstrated commitment to domestic procurement and hiring during tender evaluation. Coordinate recruitment efforts related to non-skilled labor, including for non-skilled labor positions required by contractors.	Number and ratio of local to non-local employees	**Complied.** EPC contractor employed good ratio of local employees. About 237 employed out of 246 are locals. No local employment conflicts reported during reporting semester.
		Good practice measures: Determine what are considered fair and transparent' in recruitment and distribution of jobs among different community groups, in consultation with local communities and their leaders.		
22	Increase in the stock of skilled human capital due to transfer of knowledge and skills under the	Support a vocational training program to assist local people to qualify for semi-skilled positions, focusing on issues such as procurement, involvement of vulnerable groups in project opportunities, and continual professional development of staff.	Vocational training program, including annual schedule.	EPC contractor identified four vocational institutes in Balakot, Shinkiari, Sajwal and Manshera to execute its vocational training program

S/ No	EMP Requirements		Key Performance Indicators	Status of EMP Compliance
	Impact	Mitigation Measures		
	project resulting in enhanced productivity of the local labor.	Assist local people having practical skills but lacking qualifications to obtain their certificates, and thus increase their employment opportunities.	Budget allocation for trainings. Documentary evidence including photographs and attendance lists of trainings.	for 2023-2027. EPC contractor will offer 6 months of vocational training to the selected candidates in the institutes. Training plan is part of SSEMP. However, there is need to implement the plan.
		Support initiatives promoting a culture of learning in local communities.		
		Develop and implement training program for vulnerable groups to encourage their participation in economic opportunities created by the project.		
		Assist employees and local communities to improve basic personal financial life skills through training and awareness campaigns, respectively.		
		Consider further training programs to prepare retrenched workers to seek employment in sectors not related to dam construction.		
23	Increased recreational and subsistence fishing due to increased fish catch following creation of favorable habitats for the fish in the Kunhar River.	Implement the BAP.	Monitoring of BAP requirements	**Partially complied.** Revised arrangements for BAP are under review and approval by the government. Consultation with the Fisheries and Wildlife department for establishing offices, and deploying requisite human and logistic resources etc. is in progress.
24	Loss of income from sand and gravel mining due to change in sediment deposition pattern after dam construction.	Sediment mining and management guidelines are prepared, and will be implemented as part of the BAP. The guidelines will identify possible sand and gravel mining spots along the Kunhar River to meet community needs without harming the river ecology.	Hot spots for sediment mining are identified	**Not applicable at this stage**.
25	Increased population due to in-migration of job seekers (in-migrants) leading to pressure on existing social infrastructure and services in the study area.	Develop a GRM.	Grievance register and records Influx management plan	**Complied.** Project GRM is notified, effective and implemented. There is need for GRM dissemination through banners, and announcements in the villages etc. near the sites. Contractor staff and workers shall be trained with respect to local norms and community sensitization.
		Encourage local communities to use the grievance procedure for concerns related to deterioration of local services.		
		Support local government in implementing infrastructure projects.		
		Support NGOs specializing in development of infrastructure to assist local government.		
26	Disputes over distribution of project employment within and between study area inhabitants and the in-migrants resulting in	Implement PEDO stakeholder engagement plan, including the following: • maintain regular communication with local communities and other stakeholders to minimize tensions arising from project activities	Stakeholder engagement plan Minutes of community and stakeholder	**Not complied.** Stakeholder engagement plan is not prepared and implemented. There is need to develop stakeholder engagement plan with consultation

S/ No	EMP Requirements		Key Performance Indicators	Status of EMP Compliance
	Impact	Mitigation Measures		
	social unrest.	• maintain a grievance procedure, and encourage and facilitate stakeholders to use the mechanism to express concerns; and • provide sufficient resources to the community relations officers to monitor negative perceptions and associated tensions, and address them in a timely fashion.	consultations Provision in budget for activities.	objectives. Minutes of such consultations shall be recorded and maintained. Necessary budget shall be allocated for stakeholder engagement plan.
27	Potential social unrest in the study area due to conflicting socio-cultural norms among the inhabitants and in-migrants.	Plaster graves with mud or cement. If relocation of the graveyard cannot be avoided, then manage it through local religious authorities.	Photographic evidence	**Complied.** There are 10-12 graves located in Paras village near the dam site. The affected community and district administration have not yet decided to shift the graves or when to do so. Nevertheless, funds have been allocated to shift the graves. At present, no construction work at the dam site started, and graves are not impacted.
28	OHS risks, such as physical hazards (rotating and moving equipment, electrical hazards, eye hazards, welding, hot work, vehicle/machinery operation, temperature for working equipment, and work at height) may occur if not planned and supervised. OHS risk, such as chemical hazards (e.g, chronic repetitive exposure to toxic, corrosive, sensitizing or oxidative substances, respiratory hazards, fire and explosions, corrosive and oxidizing agents and reactive chemicals) may take place during construction activities. OHS risks, such as biological hazards (e.g. communicable diseases, infectious diseases,	Ensure job safety analysis is carried out for the construction works. Design machines to eliminate trap hazards, and ensure that extremities are kept under normal operating conditions. Implement Log Out Tag Out procedure. Periodically maintain and service equipment and machinery. Allow job rotation of workers where exposure is high. Conduct periodic medical checkups of workers which are exposed to high noise, vibration or equipment temperature. Periodically inspect all electrical cords, cables and hand power tools. Restrict access to high-voltage area. Use proper PPE to avoid eye and welding hazards. Implement special hot work and fire prevention precautions and standard operating procedures Install proper scaffoldings, and periodically inspect them to ensure stability Hire trained and licensed operators. Designate storage for hazardous materials and chemicals. Make material safety data sheets available. Place hazard communication boards. Segregate corrosive oxidizing and reactive chemicals from flammable materials and other chemicals of incompatible class.	OHS Plan Documen Provision of PPEs OHS Inspection and Monitoring Checklist OHS training program Procedures for working in confined spaces, working alone or isolated or work at height developed	**Partially complied.** OHS plan is part of SSEMP, and is being implemented. There is a need to conduct job safety analysis for critical jobs. OHS inspection and monitoring checklist is available. PPE are provided to workers. However, strict compliance on use need to be ensured. Workers in tunnels shall be provided with N95 or P3 masks. There is a need to conduct gas test in the tunnels to monitor LELs of various gases. Silica dust monitoring shall be carried out in the tunnels. Hazardous materials are stored in designated sites. Explosives are stored at magazine camps located away from communities. Necessary protocols of explosive storage are being complied with. There is need to train workers on procedures for working in confined

S/ No	EMP Requirements		Key Performance Indicators	Status of EMP Compliance
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	dengue larva, COVID-19) may occur during execution of project activities.	Handle hazardous materials and chemicals by trained workers. Establish procedures for working in confined spaces, alone or isolated, at height.		spaces, isolated, and at height. There is ed to adopt Permit to Work procedure for critical jobs, such as working in confined spaces, isolated, and at height. Material safety data sheets are available for hazardous materials. There is need to increase hazard communication boards at sites.

Table 7-12: EMP Compliance Status of KP EPA NOC Conditions

Sr. No	KP EPA NOC Conditions	NOC Conditions Compliance Status
1	The proponent will adopt all precautionary measures identified in EIA report as well as any unanticipated impacts during the construction and operational phases of the project.	PIU BHPP is adopting all precautionary measures identified in the EIA report. Unanticipated impacts are also covered, and EIA is being updated based on design changes and recent information.
2	Arrangement for compensation to the affectees in case of loss of land, crops, property, schools, water springs, water supply schemes, hotels and masjids will be finalized before starting construction. Any money involved in compensation will be deposited with the District Government/Revenue Department for disbursement among the affectees. A committee shall be constituted ensuring fair representation of locals with properly documented grievance procedure. As far as possible, recommendations of a committee comprising land/house owners and tenants shall be considered in finalizing the compensation package. All conflicting issues regarding compensation, etc. should be settled before executing/commencing project activities, and a certificate in this regard should be submitted to EPA.	Project LARP including compensation to the affectees is prepared and being implemented. Money is deposited in the District Government/Revenue Department, and disbursement is in progress. It will be ensured that there will be no conflicting issues regarding compensation packages to locals. Summary of compensation will be submitted to EPA in environmental monitoring reports.
3	The LARP shall be properly implemented before executing construction work. The proponent shall submit verified land acquisition and compensation documents prior to commencing construction activities. A certificate of payment to the locals shall be generated from the concerned Revenue Department and must be submitted to this Agency before commencing construction. In light of the LARP, in addition to other compensation measures, at least one male and one female from every affected household will be eligible for employment/labor, training or loan based on their willingness and the project requirement.	LARP is being properly implemented before executing construction work. Verified land acquisition and compensation documents are available with PIU PEDO, and will be shared with EPA through environmental monitoring reports. PIU and PMC are advised to consider eligibility of one male and one female of affected households for employment/labor or training or loan based on their willingness and the project requirement.
4	The existing natural water springs, and water supply scheme/spring affected by the project shall be properly compensated, and alternate water supply for the affectees shall be ensured. Details shall be shared with the Agency before commencing construction.	Spring survey is being carried out by the EPC contractor, and owners of affected springs will be compensated accordingly. Record of such compensation will be maintained for verification and auditing.
5	The spring channels disturbed during tunnel excavation shall be connected to pipes, and used as source of drinking water for the locals of the area.	Not applicable at this stage.
6	Details of steps/mitigation measures shall be taken to mitigate impacts of the project on River Kunhar/natural water streams.	Implementation of revised biodiversity arrangements is in progress, and project-specific BAP will be implemented and monitored by the PIU, PMC and regulators. BAP management committee will be formulated to review the arrangements.
7	The ROW of the River Kunhar shall be protected. Moreover, the River shall be also protected from all types of pollution from project activities.	Kunhar river will be protected from all type of pollution from project activities.
8	The natural rainwater water sheds ROW shall not be disturbed.	The natural water shed ROW is not disturbed from project activities.
9	The contaminated wastewater of the tunnels shall be retained in confined pits of proper size ensuring proper treatment, complying with NEQS parameters before final disposal.	Proper waste collection and treatment arrangements are provided for tunneling works. In this regard, water stabilization ponds will be developed to confine wastewater of the tunnels to ensure proper treatment, complying with NEQS parameters before final disposal.
10	The existing ROW of the nearby villages shall not be affected, or alternate routes shall be provided to the	No ROW of the nearby villages is affected. TRs are well designed and do not impact public

Sr. No	KP EPA NOC Conditions	NOC Conditions Compliance Status
	villagers.	trespassers.
11	The affected existing houses, bridges, BHU, school, dispensaries, electric poles, mosques and other structures shall be compensated and relocated to other appropriate areas before starting construction.	All the affected existing houses, bridges, BHU, school, dispensaries, electric poles, mosques and other structures are compensated as per LARP provisions.
12	A committee shall be constituted under the supervision of District Administration comprising representatives of the affected villages, i.e. Bela Balsehri, Nihan, Dhab, Rehtar, and Sangar Kappi Gali. The committee will look into issues arising from the project.	GRCs are notified for dam site, powerhouse, and colony sites and nominated representatives of affected communities are members. Representation of affected communities at all GRC levels is ensured
13	To avoid traffic congestion issues, the management of the project shall formulate a TMP to be submitted to this Agency before commencing construction.	TMP is part of SSEMP. Flagmen are provided by the contractors to manage traffic. TMP is robust and effective with respect to traffic management at the construction sites.
14	The existing graveyard shall be properly protected and not be disturbed by the project activity,unless allowed by elders of the area/local committee by mutual agreement.	The graveyards are properly protected and not disturbed by the project activity during reporting semester. There are 10-12 graves at the dam site in Paras which are falling under the project area, for which relocation will be carried out subject to agreement of the relatives/guardians of graves.
15	Proper mitigation plan shall be formulated and implemented to avoid soil erosion and land sliding before commencing construction activity.	Landslide management plan is part of SSEMP. Landslides hazards are included in the risk assessment, and mitigation plan is provided to avoid soil erosion. Slope stabilization survey is being carried out before commencing construction.
16	As per Section Officer (Tech) letter No. SO 427/2021/PC dated July 6, 2021, after report is submitted by Chief Conservator of Forest-II, there is no chance of disturbance to any vegetation and soil cover of the land, and issuance of NOC from Forest Department is irrelevant. However, the management shall make no deviation to the project design, and designated forest/trees shall not be disturbed.	There is no major deviation observed to project design which can increase project foot print during reporting semester.
17	Minimum environmental flow of 6.1 m^3/s, with 10% extra provision, if required, shall be maintained in the downstream. In light of the submitted EIA report, the project management shall make maximum efforts to operate the dam on preferable option of base load high protection operation mode.	Not applicable at this stage.
18	The muck/debris generated from the project shall be properly quantified, dumping sites for the same shall be properly identified and selected, and this Agency shall be informed prior to commencing construction. The proponent shall ensure to avoid dumping debris into down slope or near River Kunhar ROW or water bodies. The same shall be stabilized by proper plantation, and bioengineering and engineering techniques. Retention walls of proper size shall be erected along the muck disposal material/site.	At present, produced muck is being used as road fill materials and raising platform for tunnel protection works. EPA contractor identified muck disposal sites, which are under review by PMC. A report on muck disposal sites will be prepared which contain feasibility of such sites and mitigation arrangements, such as protection works, overflow protection, and plantations around the disposal sites.
19	The BAP shall be implemented. Moreover, Wildlife, Forest Department and EPA shall be consulted on improving the BAP to mitigate the impact of the project on aquatic life, fauna, flora, and environment.	Revised arrangements for BAP implementation is in progress, and being finalized by PIU BHPP.
20	Safety zone/adequate engineering measures should be provided to overcome fears of the residents regarding the impact of project activities to their houses.	Safety zones with respect to blasting activities are being identified and detailed in pre-blasting survey. Blasting activities will be communicated to nearby villages to overcome fears of the residents regarding the impact of

Sr. No	KP EPA NOC Conditions	NOC Conditions Compliance Status
		project activities to their houses.
21	The construction/installations shall be carried out keeping in view seismicity of the project area, and to ensure implementation of updated building by-laws/codes.	Construction activities are designed keeping in view the seismicity of the project area.
22	Proper flood management plan shall be identified for the project site, and site-specific mitigation measures shall be implemented during floods.	Climate risk and vulnerability assessment is included in the project design, including flood management. Climate adaptation plan of the project is prepared, and budget is allocated. Design-related adaptation measures are being implemented by the EPC contractor, while climate awareness and capacity building component is being implemented by NGO which is a joint venture of MM Pakistan and Development Alternatives.
23	Primary baseline data, comprising analysis reports of surface water (River Kunhar/water bodies), soil, ambient air, noise etc. of the project area shall be collected from KP EPA-certified laboratory before commencing construction. Moreover, quarterly analysis reports shall be submitted to EPA.	Primary baseline data at project identified sites are being collected quarterly.
24	A sedimentation load study shall be carried out along with mitigation measures for the control of sedimentation from upstream of the reservoir.	Sedimentation load study was carried out at the time of project EIA. To control sedimentation, a diversion tunnel will be constructed on left bank of Kunhar river which will also serve as sediment bypass tunnel and low-level spillway.
25	Road/highway submerged/damaged due to project activity should be reconstructed/repaired/rehabilitated at another suitable place in consultation with the concerned government department.	No road/highway was submerged and damaged due to project during reporting semester. Therefore, no formal consultation with NHA was carried out. Consultation with NHA will be carried out as and when road diversion is required during construction phase of the project. In case of any road damage due to project activities due compensation will be paid to NHA following the set procedure.
26	The effluents generated during tunnel blasting/excavating activities shall not be disposed to any surface water before NEQS compliance. The effluents generated shall be treated in a properly designed facility.	The effluents generated during tunneling/blasting will be treated into stabilization ponds and then disposed of in nearby TMA designated drains. No effluent will be discharged to nearby surface water bodies.
27	In case blasting is inevitable, the controlled techniques, in accordance with Pakistan Explosive Act, should be adopted in sliding and perspective sliding-prone areas.	Controlled blasting is being practiced. Blasting management plan is prepared and part of SSEMP. Provisions of explosive acts are complied with. Magazine camps are established in secure places away from settlements, following the international protocols for establishing such facilities.
29	The camp site, asphalt plants, crush plants and batching plants shall be at least 500 m away from residential area/villages.	The camps and batching plants are located at safe distances from residential areas.
30	The proponent shall ensure strict and efficient health and safety measures for protecting workers and passersby, and backed by a comprehensive emergency response plan.	Strict and efficient HSE measures are being taken by the EPA contractor. HSE plan is is further backed by the emergency response plan. Provision of HSE plan and emergency arrangements are in place in active construction sites. PIU and PMC are also monitoring and verifying the requirements of these plans.
31	A comprehensive corporate social responsibility (CSR)	As part of CSR, Livelihood Restoration Plan is

Sr. No	KP EPA NOC Conditions	NOC Conditions Compliance Status
	policy shall be formulated keeping in view the demands/needs of the locals and quantum of the project activity. Detailsshall be shared with this Agency before commencing construction.	included in the project, for which NGO is hired to assess the demands/needs of the locals. Project also developed and budgeted a vocational training plan to assist local people to qualify for semi-skilled positions focusing on issues such as procurement, involvement of vulnerable groups in project opportunities, and continual professional development of staff. Community-level gardening and farming is also part of project CSR through engaging local community.
32	Non-technical jobs shall be provided to local community/villages. Employment records for all positions shall be provided to EPA-K P, and priority should also be given to locals in technical jobs. Regular trainings shall be arranged for the locals to acquire knowledge of technical jobs.	The project's contractors have actively engaged with the local community, employing a substantial number of skilled and unskilled workers. Out of the total workforce of 246, about 237 of 246 are locals.
33	Separate approval shall be obtained for establishing the crushing plant, town/colony, asphalt plant, etc. under K P Environmental Protection Act, 2014, and the prevailing rules/regulations. For temporary colony, proper treatment plant shall be constructed for municipal effluents treatment, and bringing within the NEQS parameters before final discharge.	EPC contractor submitted initial environmental examination report for establishing crush plant of capacity 50 tons/hour to KP EPA in compliance with KP Environmental Assessment Rules, 2021. KP EPA North Office Abbottabad granted approval in August 2022 following due procedure. Separate approval for establishing crushing plant is attached as **Annexure A.** Construction of staff colony is covered under project main design for which EIA was prepared and NOC obtained. The colony will comprise residential units and offices for the project operational staff. It will be a permanent residential colony for the staff during the construction and operational phases of the project. It will house residential units of categories I-IV, community center, school, shopping market, mosque, hospital, and other civic facilities including sewerage treatment plant and green spaces. Reasonable land is allocated in master plan of staff colony for sewage treatment plant and parks. Domestic sewerage will be treated in sewage treatment plant, and will be disposed of into nearby drain in compliance with NEQS.
34	Fish ladder of proper efficiency shall be constructed for fish movement. Moreover, the conditions suggested by Fisheries Department with its letter No. 2084 dated June 16, 2021, shall be implemented to ensure survival of aquatic life. Furthermore, a Fish Hatchery shall be established in consultation with Fishery Department.	Provision of fish ladder is not feasible, and condition is withdrawn by KP EPA.
35	A comprehensive plantation plan, in consultation with Forest Department, shall be submitted to this Agency along with Global Positioning System coordinates of the plantation sites. Moreover, a nursery shall be established in consultation with Forest Department, and a forester along with other supporting staff shall be hired.	A comprehensive tree plantation plan in consultation with forest department is in progress, and will be submitted to PIU/ADB in November 2023.
36	Proper mitigation measures shall be adopted tr control land sliding, soil erosion, and sedimentation to the nearby river/water channel.	Proper mitigation measures are provided to control land sliding, soil erosion, and sedimentation to the nearby river/ water channel.
37	An environmentalist along with a team shall be hired for the environmental issues redressal.	Environmental experts are hired at various project tiers including staff in PIU, PMC and EPC contractor to implement NOC conditions.

Sr. No	KP EPA NOC Conditions	NOC Conditions Compliance Status
		EEM is also hired to assess and report non-compliances to environmental approval conditions.
38	Copy of approval from Mines and Mineral Department shall be shared with this Agency prior to commencing construction.	Copy of permission from mines and minerals department is available with PIU, and will be shared with the regulator.
39	The cultural values and social norms of the area shall be followed strictly.	Condition is complied with.
40	The proponent shall adopt the mitigations measures as mentioned in the Wildlife Department letter No.4233/WI-M dated June 24, 2021 for fauna protection.	Mitigation measures mentioned in the wildlife letter will be implemented and complied with during project execution.
41	Refer to Mines & Minerals Department vid letter No. 7082/MDW/MA/Misc (01)/2021 dated June 30, 2021, clearance shall be taken from Mines & Mineral Department before commencing construction.	Necessary clearance from Mines & Minerals Department is taken, and activities commenced after necessary notification to the department.

7.9 Environmental Non-compliances

151. EEM visited the project facilities, and monitored field activities for implementation and compliance with EIA/EMP/BAP and SSEMP. Since project is at startup phase, minor non-compliances were reported. It is expected that PMC and PIU PEDO will improve capacity of EPC contractor towards project environmental safeguards awareness, implementation and reporting. No grievance related to environment impact from project activity is reported in the GRM.

152. EEM visited the project construction sites, and observed safeguard activities and non-compliances through document review and walk-through survey. Photographs of EEM visit at various construction sites of Balakot HPP are provided as Figure 7-1.

Figure 7-1: Photographs of EEM's Visits to Project Sites

Port site at Adit-2

Staff colony site

	
Batching site at Thobi area	GRC camp

7.9.1 Details of Environmental Non-compliances

153. Total of 25 environmental non-compliances of EMP/SSEMMP/BAP were recorded during monitoring period. About 19 non-compliances were minor, 5 moderate, and 1 major non-compliance. Major non-compliance is related to absence of LEL gases/dust monitoring in Adits tunnels. Five moderate non-compliances included delayed construction of waste stabilization ponds, discharge of kitchen wash water into stream, waste generation record not maintained, delayed implementation of revised BAP arrangements, and placement of generators without enclosures. CAP to close out observed non-compliances is provided in this EEM report.

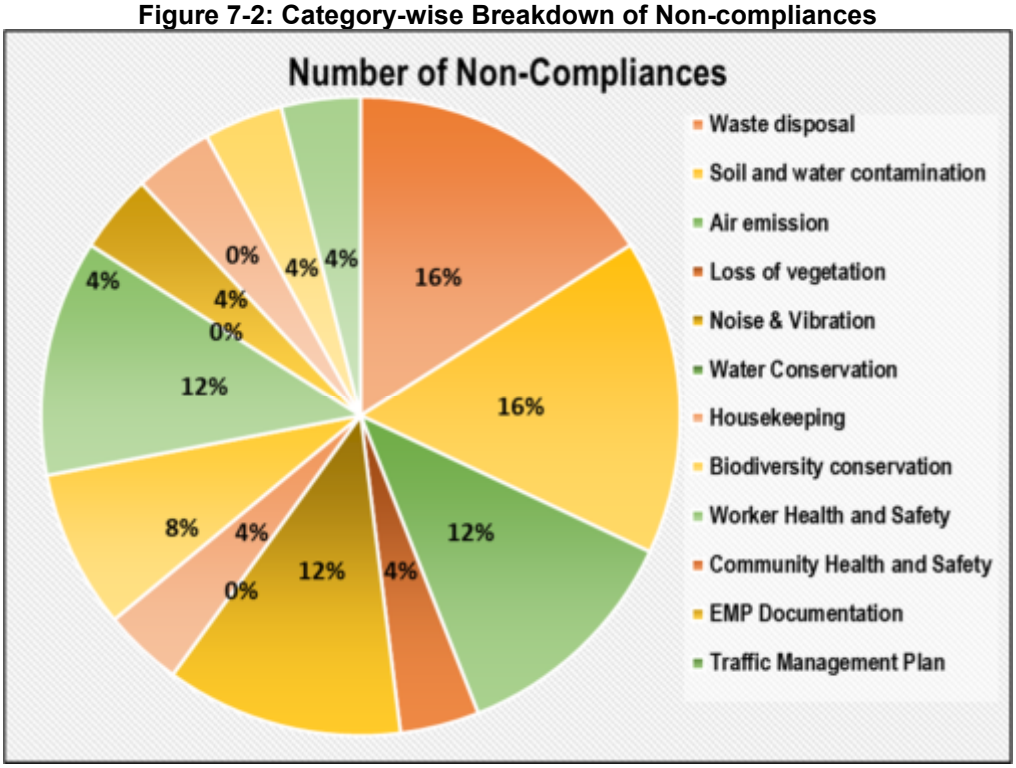
154. Category-wise breakdown of environmental non-compliances recorded during the reporting period are in Table 7-13 and Figure 7-2. Table 7-13 contains non-compliances which are based on this external monitoring in compliance with project EMP/SSEMP/SAEMR, details of which are discussed in Table 7-11. These non-compliances also include monitoring/verification of internal SAEMR non-compliances and corrective action taken by PEDO/PMC/EPC contractor. These non-compliances are clubbed in broader non-compliance categories for analysis and comparison. Category-wise number of non-compliances will be used for comparison purpose in forthcoming SAEMR.

Table 7-13: Category-wise Breakdown of Non-compliances

Category	Non-compliance	
	Number	Details
Waste disposal	4	There is need to develop waste stabilization ponds to manage tunneling waste, and ensure construction of stabilization ponds before start of tunneling activities. EPC contractor shall pursue NOC applications with DHO Mansehra. Waste generation data is not maintained. Color coded waste bins are not provided in GRC and CGGC camps. The EPC contractor identified sites for muck disposal. However, PMC has not approved the sites yet.
Soil and water contamination	4	There is need to provide details of springs locations and distances from Adit 1, Adit 2 and Adit 3 work sites, and calculate total yield and safe yield of springs or other water sources identified for water usage. Kitchen washing water is being discharged to nearby stream without treatment. Contractors are advised to construct grease traps in the kitchens. Oil drums are placed at GRC camp without secondary containment. Fuel storage is not marked and not stored in secondary containment. EPC contractor

Category	Non-compliance	
	Number	Details
		has not provided spill kits at all sites.
Air emission	3	There is need to assess wind direction before starting blasting operation. There is need to conduct gas test in the tunnels to monitor LELs of various gases. Provisions shall be added in the contractor instructions. Silica dust monitoring is not carried out in the tunnels. Necessary budget shall be allocated.
Loss of vegetation	1	EPC contractor has not submitted tree plantation plan.
Noise and Vibration	3	Pre-condition blasting report shall account for maximum blasting-induced vibration and its impacts on surroundings. Based on the results vibration risk zones shall be refined to implement mitigation measures. There is need to construct proper enclosures for generators. There is need to install mufflers on excavators, front end loaders, and diesel-operated generators.
Water conservation	0	No No non-compliance reported in this category.
Housekeeping	1	At GRC camp, waste is scattered near fuel storage area.
Biodiversity conservation	2	Revised arrangements for BAP implementation are still under review and approval by the KP government. There is need to expedite consultation with the Fisheries and Wildlife department to establishffices, and deployequisite human and logistic resources. No procedure for wildlife sighting and reporting is available with contractors. No ETP on wildlife awareness, and identifying species and animal hazards is available with EPC contractor.
Worker Health and Safety	3	Non-compliances related to use of PPE are observed. Workers in tunnels are not provided with N95 or P3 masks. Absence of Permit to Work procedure for critical jobs, such as working in confined spaces, isolated, and at height. There is need to increase hazard communication boards at sites.
Community Health and Safety	0	No non-compliance reported in this category.
EMP Documentation	1	There is need to develop stakeholder engagement plan with consultation objectives, plan.
Traffic Management Plan	0	No non-compliance reported in this category.
Grievance Redress Mechanism	1	There is needfor GRM dissemination through banners, announcements in the villages etc. near the sites.
Capacity Building and Trainings	1	No contractor training plan covering issues such as firearm possession, traffic regulations, speed limits, covering construction materials during transport, non-disturbance of resettlement communities, hunting and fishing restrictions, waste management, erosion control, H&S issues is prepared and documented. Training on EMP/SSEMP requirements shall be prepared, and tabular record of such trainings, including photographic records and training report shall be kept and maintained to monitor continual improvement.
Miscellanous	1	Climate risk and vulnerability study needs to be carried out.
Total	**25**	

Figure 7-2: Category-wise Breakdown of Non-compliances



7.9.2 Photographs of Environmental Safeguard Activities and Non-compliances

155. Photographs of environmental non-compliances observed during EEM's visit and required corrective actions are provided as Figure 7-3.

Figure 7-3: Photographs of Environmental Non-Compliances

	
Filled drum placed with flammables at GRC camp	Use of local wood as fuel at GRC camp

	
Improper material stacking at assembly area of GRC camp	Improper dumping of waste at GRC camp
	
No sedimentation pond, ventilation system, lighting and emergency escape route provided at Adit-2 portal	Batching waste disposed of at bank of stream at batching plant site
	
Minor oil spills at generator area of CGCC camp	Disposal of kitchen washing without treatment to near stream at CGCC camp

	
Poor sitting arrangements at Pakistani mess-CGCC camp	Generator with incomplete enclosure and improper secondary containment

Table 7-14: Significance-wise Breakdown of Environmental Non-compliances

Significance Category	Number of Non-compliances in January-June 2023
Minor	19
Moderate	05
Major	01

7.9.3 Status of Ongoing Issues

156. All environmental non-compliances were discussed with PIU PEDO and PMC for necessary close outs.

7.10 Corrective Action Plan for Environmental Non-compliances

157. CAP for the environmental non-compliances observed and reported during the monitoring period along with required actions, responsibilities and timeline is provided in Table 7-15.

Table 7-15: Corrective Action Plan of Environmental Non-Compliances during Reporting Period

Sr. No	Details of Environmental Non-compliances	Required Actions	Responsibility		Timeline
			Execution	Supervision/ Monitoring	
1	There is need to develop waste stabilization ponds to manage tunneling waste, and ensure construction of stabilization ponds before start of tunneling activities.	Waste stabilization ponds shall be constructed before start of tunneling activities. These ponds shall be well designed to accommodate tunneling waste, and waste from ponds shall be removed on periodic basis to prevent overflow. Layout of ponds shall be reviewed and approved by PMC.	EPC Contractor	PMC/PIU	November 2023
2	EPC contractor shall pursue NOC applications with KDA and DHO.	EPC contractor shall communicate and make follow ups with DHO for issuance of NOC or memorandum of understanding for disposal of domestic and hazardous waste.	EPC Contractor	PMC/PIU	October 2023
3	EPC contractor has not maintained waste generation record. Color- coded waste bins are not provided in GRC and CGCC camps.	As per provision of waste management plan, waste generation and disposal record shall be maintained by contractors. EPC contractor shall arrange color coded waste drums for GRC and	EPC Contractor	PMC/PIU	October 2023

Sr. No	Details of Environmental Non-compliances	Required Actions	Responsibility		Timeline
			Execution	Supervision/ Monitoring	
		CGGC camps.			
4	The EPC contractor has identified sites for muck disposal. However, PMC has not approved the sites yet.	Muck disposal sites shall be finalized by EPC contractor on priority basis. Map of disposal sites shall be prepared. Report on muck disposal sites for the project along with location, size, capacity, protection measure, and lease agreements shall be prepared by EPC contractor and approved by PMC. To control erosion and destabilization protection measures, such as reinstating top soil, draining spoil piles, diverting rainwater and revegetation shall be carried out while developing spoil disposal areas.	EPC Contractor	PMC/PIU	November 2023
5	There is need to provide details of springs locations and distances from Adit 1, Adit 2, and Adit 3 work sites; and calculate total yield and safe yield of springs or other water sources identified for water usage.	Detailed spring survey report shall be submitted to PMC and PIU PEDO for review and approval. Use of spring water shall be subject to approval of PMC followed by calculation of safe yields.	EPC Contractor	PMC/PIU	November 2023
6	Kitchen washing water is being discharged to nearby stream without treatment. Contractors are advised to construct grease traps in the kitchens.	Discharge of kitchen wash water into nearby stream shall be stopped. CGGC is advised to construct proper grease trap and after treatment wash water shall be disposed of in the septic tank.	EPC Contractor	PMC/PIU	September 2023
7	Oil drums are placed at GRC camp without secondary containment.	There is need to secure placement of oil drums in the camp with proper secondary containment. Secondary containment shall be of capacity 120% for actual storage and be concrete bundled.	EPC Contractor	PMC/PIU	September 2023
8	Fuel storage is not marked and not stored in secondary containment. EPC contractor has not provided spill kits at all sites. There is need for periodic inspection of fuel storage areas, tanks, and vehicles to check leaks/spills. Drip trays shall be arranged for refueling purpose.	Fuel storage at GRC and CGGC camps shall be marked and stored in secondary containments. EPC contractor shall arrange spill kits including shovel, polyethene bags and absorbent sponge at fuel storage area. Weekly inspections of fuel storage areas, tanks and vehicles/machinery shall be carried out. Records of such inspections shall be prepared and verified by PMC. Appropriate number of drip trays shall be arranged by the EPC contractor.	EPC Contractor	PMC/PIU	September 2023
9	There is need to assess wind direction before start of blasting operation.	Requirement for assessment of wind direction shall be added in the blasting method.	EPC Contractor	PMC/PIU	Septembber 2023
10	Non-compliances related to use of PPE are observed. Workers in tunnels are not provided with N95 or P3 masks.	P3 masks shall be provided to workers in the tunnels. Strict compliance on use of PPE shall be ensured by the workers. There is need develop culture on use of PPE. Use of PPE related to work at height (safety harness) and in confined spaces (P3 mask), and ear plugs shall be ensured.	EPC Contractor	PMC/PIU	September 2023
11	There is need to conduct gas test in the tunnels to monitor	Gaseous LELs monitoring shall be carried in all tunnel works. EPC	EPC Contractor	PMC/PIU	November 2023

Sr. No	Details of Environmental Non-compliances	Required Actions	Responsibility		Timeline
			Execution	Supervision/ Monitoring	
	LELs of various gases. Provisions shall be added in the contractor instructions.	contractor is advised to arrange potable gadgets for gas testing in the tunnels.			
12	Silica dust monitoring is not carried out in the tunnels. Necessary budget shall be allocated.	Silica dust monitoring within the tunnels shall be carried out. Requirements shall be added in instrumental monitoring plan of the project, and necessary budget shall be allocated.	EPC Contractor	PMC/PIU	November 2023
13	Pre-condition blasting report shall account for maximum blasting-induced vibration and its impacts on surroundings. Based on the results, vibration risk zones shall be refined to implement mitigation measures.	Detailed pre-condition assessment report for blasting shall be prepared and submitted to PMC for review and approval. Preparation of pre-blasting report shall be part of blasting management plan, and include vibration impacts and necessary mitigation measures.	EPC Contractor	PMC/PIU	November 2023
14	There is need to construct proper enclosures for generators.	Proper noise acoustic enclosures shall be constructed and installed for generators.	EPC Contractor	PMC/PIU	October 2023
15	There is need to install mufflers on excavators, front end loaders, diesel operated generators.	Mufflers shall be installed on excavators, front end loader, and diesel generators to reduce noise impacts in the surroundings.	EPC Contractor	PMC/PIU	October 2023
16	At GRC camp, waste is scattered near fuel storage area.	Waste scattering and littering is not allowed. Waste shall be temporarily stored in the color-coded waste bins/drums, and then stored in KDA-placed containers. No waste shall be thrown or stored on the ground by EPC contractor.	EPC Contractor	PMC/PIU	September 2023
17	Revised arrangements for BAP implementation are still under review and approval by the KP government. There is need to expedite consultations with the Fisheries and Wildlife department to establish offices, and deploy requisite human and logistic resources.	Revised arrangements for BAP implementation shall be finalized and concluded by EPC contractor at priority. Consultations shall be completed in a timely and conclusive manner. PIU PEDO and PMC shall expedite the revised approval arrangements, finalize memorandum of understanding with fisheries department, and start implementation as soon as possible.	EPC Contractor	PMC/PIU	November 2023
18	No procedure for wildlife sighting and reporting is available with contractors. No ETP on wildlife awareness, and identifying species and animal hazards is available with EPC contractor.	EPC contractor shall develop procedure for wildlife sighting and reporting. No wildlife hunting, poaching and harassment is allowed. There is need to train workers on wildlife sensitivity, sighting and reporting. Wildlife awareness shall be part of contractor training plan, and record of such trainings shall be maintained.	EPC Contractor	PMC/PIU	October 2023
19	Absence of Permit to Work procedure for critical jobs such as working in confined spaces, isolated and at height.	Permit to Work procedure, especially hot work permits, shall be adopted and implemented for critical jobs such as working in confined spaces, isolated, and at height. Such permits shall be issued after detailed job safety analysis, and work is authorized by construction manager and supervised by the contractor HSE. PMC HSE manger shall	EPC Contractor	PMC/PIU	October 2023

Sr. No	Details of Environmental Non-compliances	Required Actions	Responsibility		Timeline
			Execution	Supervision/ Monitoring	
		audit such permits periodically to ensure that all safety precautions are in place during execution of the job.			
20	There is need to develop stakeholder engagement plan with consultation objectives.	Stakeholder engagement plan shall be developed to outline future consultation on environmental safeguards with stakeholders. SSEMP awareness consultations can be clubbed with stakeholder consultation plan under LARP, Livelihood Restoration Plan and vocational trainings for effective results and to avoid duplication of efforts.	EPC Contractor	PMC/PIU	November 2023
21	There is need for GRM dissemination through banners, announcements in the villages etc. near the sites.	GRM and compliant hotlines shall be well disseminated in the project area and in nearby villages.	EPC Contractor	PMC/PIU	September 2023
22	No contractor training plan covering issues such as firearm possession, traffic regulations, speed limits, covering construction materials during transport, non-disturbance of resettlement communities, hunting and fishing restrictions, waste management, erosion control, and H&S issues is prepared and documented.	EPC contractor shall develop training plan covering issues such as firearm possession, traffic regulations, speed limits, covering of construction material during transport, non-disturbance of resettlement communities, hunting and fishing restrictions, waste management, erosion control, and H&S issues.	EPC Contractor	PMC/PIU	October 2023
23	Climate risk and vulnerability study needs to be carried out.	There is need to conduct climate risk and vulnerability study keeping in view the baseline survey and future projections. Special focus shall be made on extreme events analysis and associated climate risks to the project. Based on the study, necessary climate mitigation measures shall be adopted.	EPC Contractor	PMC/PIU	December 2023
24	There is need to increase hazard communication boards at sites.	Hazard communication boards shall be installed at prominent places of project facilities, including camp, batching plant, magazine camps, waste disposal sites, access roads, staff colony site, and Adits works.	EPC Contractor	PMC/PIU	October 2023
25	EPC contractor has not submitted tree plantation plan.	EPC contractor prepare tree plantation plan containing details on plantation sites, type of plantation, budget/ resources allocated, frequency and aftercare.	EPC Contractor	PMC/PIU	November 2023

8 Instrumental Monitoring Plan

158. Instrumental monitoring has been carried out to capture the effects of development activities on environmental parameters as defined in EIA and SSEMP report. A comprehensive Instrumental Monitoring Plan was made part of the construction contract with budgetary provisions thereof.

159. To implement the instrumental monitoring EPC contractor hired services of KP EPA certified lab integrated Environmental Services having Head Office in Peshawar.

160. After review of available data from different reports, following points have been selected as critical points for conducting instrumental monitoring on quarterly basis. These points are selected based on their selection in EIA report (which will be used as baseline), comparison of the results of risk matrix and sensitivity of these areas from environmental point of view.

8.1 Environmental Monitoring Points

161. Environmental monitoring including ambient air quality (particulate matter 2.5 microns size [$PM_{2.5}$] and particulate matter 10 microns size [PM_{10}]), ambient noise level, drinking water, waste water quality and soil quality was assessed during monitoring period. Environmental monitoring of 2nd quarter commenced in the month of June, 2023, Semi-annual environmental monitoring report details the results of environmental sampling and comparative analysis of 1st and 2nd quarter of 2023.

162. Monitoring is being carried out by KP EPA certified lab following approved procedures and verified by EEM. Details of environmental monitoring points are provided in Table 8-1.

Table 8-1: Location of Environmental Monitoring Points

Environmental Factor	Parameters	Standards/ Guidelines	Locations	Monitoring Period/ Frequency/Year
Air quality	SO_2, oxides of nitrogen, carbon monoxide, O_3, suspended particulate matter, PM_{10}, $PM_{2.5}$, humidity, wind direction, wind speed, temperature etc.	Air quality standards by NEQS, WHO	MP-1 Dam site MP-2 Adit 1 MP-3 Adit 2 MP-4 Adit 3 MP-5 Powerhouse MP-6 Upstream tailrace MP Camp -7 GRC MP-8 Staff colony	Quarterly (24-hour duration)
Dust	Dust control	Air quality standards by NEQS, WHO		Quarterly (24-hour duration)
Noise level	dB(A)	Noise pollution control standards by NEQS, WHO		Quarterly (24-hour duration)
Water quality	Surface water, temperature, turbidity, pH, TDS, EC, TSS, DO, COD, BOD_5	Water quality standards by NEQS, WHO		Quarterly
	Ground water: color, odor, taste, temperature, turbidity, pH, TDS, EC, TSS, $CaCO_3$, hardness, potassium, nitrate, nitrite (as NO_2), phosphate, arsenic, COD, DO, TSS, total *coil form*, *faecal coliform* and *E. Coli*	Water quality standards by NEQS, WHO		Quarterly
Soil pollution	Soil texture, pH, EC, available phosphorus and SAR.	NEQS, Government of Pakistan		Twice a year

8.2 Monitoring of Air, Noise and Water

8.2.1 Ambient Air Quality Monitoring

163. Ambient particulate matter (PM_{10} & $PM_{2.5}$) and gases were monitored for 24 hours at the pre-identified locations. In the first and second quarters of the reporting year, monitoring was carried out at the six locations which comprise Dam Site, Adit-1, Adit-2, Adit-3, GRC camp, Upstream Tailrace, Powerhouse and Staff Colony. Location of monitoring points are shown in

Figure 8-1 while the results obtained are shown in the graph given under Figure 8-2. It is important to regularly monitor and assess the dust levels and compliance with environmental standards throughout the project's implementation to ensure continued adherence to regulations and address any potential concerns that may arise.

164. The PM_{10} concentration at most of the sampling points exceeds the WHO guiding values but fall well below the NEQS. Same scenario was recorded at the time of baseline monitoring. However, in the second quarter, there was sharp increase in the PM_{10} concentration at Adit 3 site which happened primarily due to earth work activities. To subsidize the particulate matter concentration, sprinkling frequency was increased during work hours.

165. The baseline results obtained for $PM_{2.5}$ shows compliance with NEQS. However, they exceed the WHO guideline values at some locations. As evident from the graph, even baseline results recorded at some locations exceed the WHO guideline values. Due to excavation for access road and land leveling at colony site, the result obtained shows sharp increase in the $PM_{2.5}$ concentrations. Also, high concentration at Adit 3 is due to the vehicular movement on katcha track leading to Adit 3, although sprinkling of water was regularly being undertaken at these sites. However, no special mitigation measures, other than those specified in the SSEMP, were adopted as the concentration was for a short period and below the permissible NEQS guideline values. The monitoring period has also some impact on the high $PM_{2.5}$ concentrations as evident from the results obtained during the first quarter monitoring which was undertaken in March.

166. The results recorded during the second quarter show increase in the carbon monoxide concentration which is mainly attributed to the increased vehicular traffic on the N-15 (Kaghan-Naran) road during tourist seaso,n and initiation of construction works at site. However, the results still fall well below the NEQS and WHO guideline values.

167. The nitrogen oxide (NO) concentration is well below the NEQS and WHO permissible limits. Again, the high concentration is due to increased vehicular movement on N-15 in June as all the project facilities are located along this route.

168. The Nitrogen Dioxide (NO_2) and Sulphur Dioxide (SO_2) concentration in all the quarters fall well below the guideline values of NEQS and WHO.

Figure 8-1: Location of Instrumental Monitoring Points for BHPP

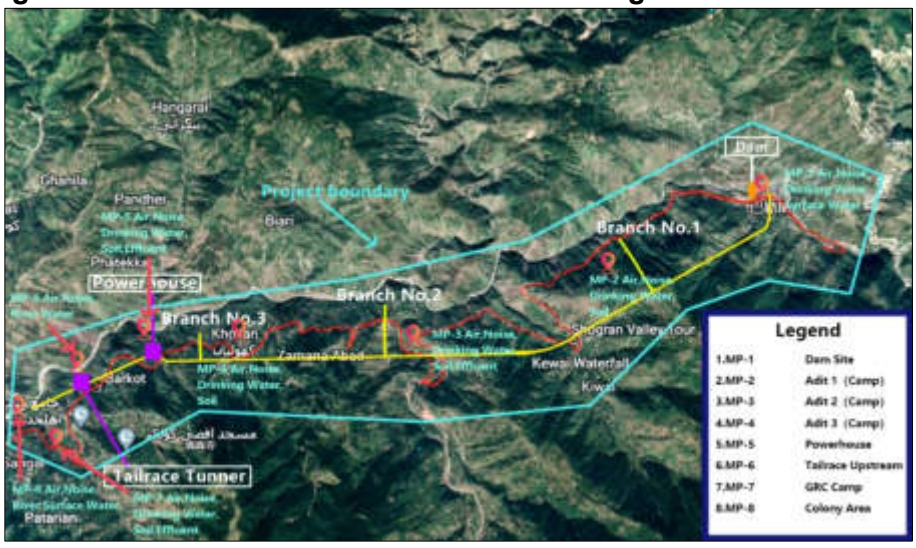
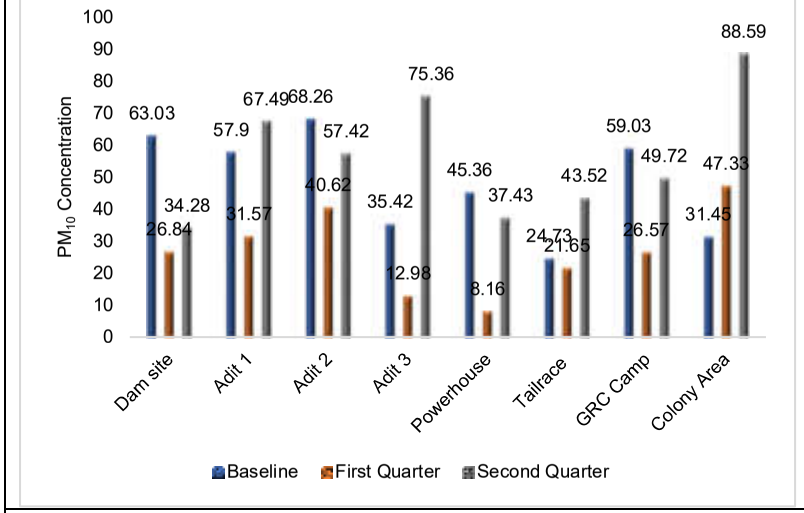
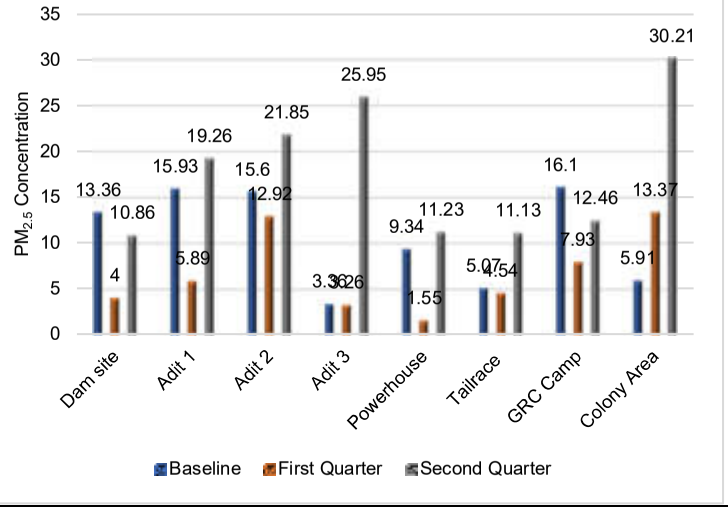


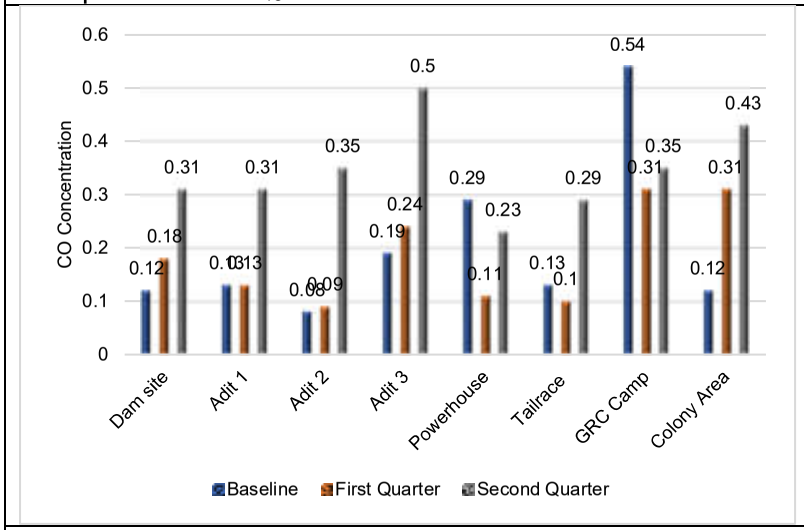
Figure 8-2: Ambient Air Quality Analysis BHPP



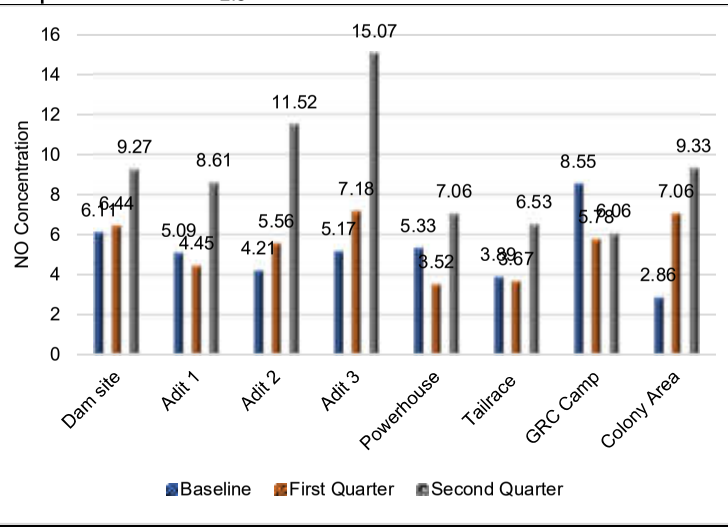
Comparison of PM_{10} Values in Both Quarters



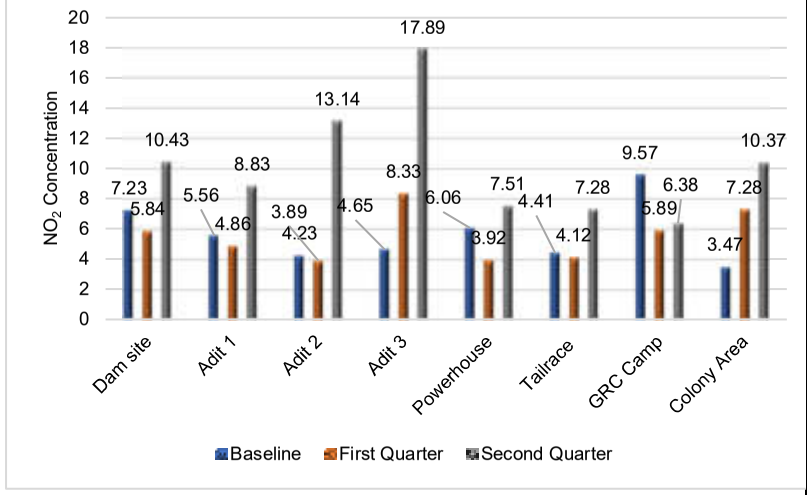
Comparison of $PM_{2.5}$ Values in Both Quarters



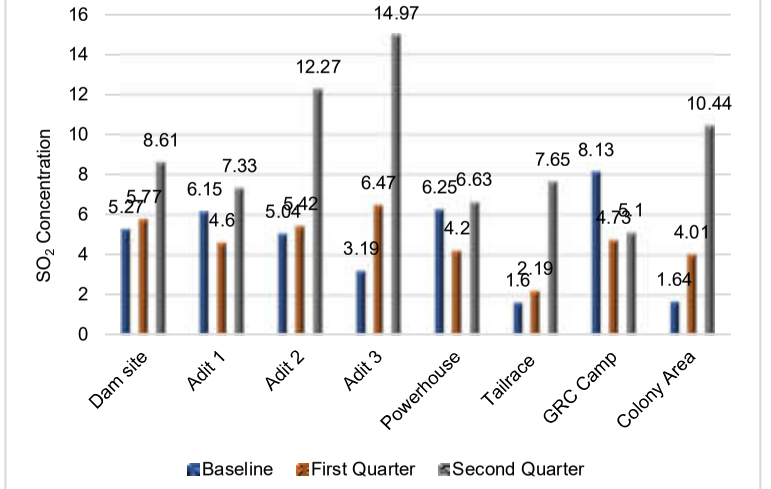
Comparison between Two Quarters Carbon Monoxide (µg/m^3)



Comparison between Two Quarters Nitrogen Oxide (NO) (µg/m^3)



Comparison between Two Quarters Nitrogen Dioxide (NO_2) (µg/m^3)



Comparison between Two Quarters Sulfur Dioxide (SO_2) (µg/m^3)

8.2.2 Noise Monitoring

169. The 24-hour results for ambient noise level monitoring show that the recorded noise levels at GRC camp exceeds the NEQS guideline value of 55 dB. As the camp is located adjacent to the N-15, the excessive noise levels are primarily attributed to the vehicular traffic on N-15 because, apparently, there are no other stationary sources that may cause noise pollution.

170. Although the noise levels recorded at almost all work sites exceed NEQS guideline values of 55 dB, they mostly fall within WHO permissible limits. As the work sites are located away from the nearby settlements or sensitive receptors, and there is no continued stationary noise generating sources, no special arrangements are needed to bring the noise level to 55 dB. Furthermore, most of the settlements in the project area, particularly at the dam site, are exposed to the noise pollution associated with the vehicular traffic on N-15 and other intervillage roads.

8.2.3 Drinking Water Quality

171. During the reporting period, the drinking water quality tests were conducted at the sample points identified on the map given under Figure 8-1 above. The results obtained from the analysis of drinking water sources in the project area indicate that nearly all of the measured parameters are within the acceptable limits defined by WHO, and National Standards for Drinking Water Quality.

8.2.4 Surface Water Quality

172. Samples were collected from three locations at the nearby Kunhar River, i.e. Dam site (upstream of temporary diversion dam, just downstream of the Sukki Kinari HPP tailrace), Tailrace upstream (Barkot), and downstream side of the project residential colony area. The analysis of surface water revealed that most of the measured parameters are within the acceptable limits set by the NEQS.

8.2.5 Soil Quality

173. Soil analysis was also carried out at the pre-identified six locations which comprise the Dam Site, Adit-1, Adit-2, Adit-3, GRC camp, Upstream Tailrace, Powerhouse and Staff Colony.

174. The monitored parameters remain unchanged, indicating that the properties of the soil in the camps and workshops still correspond to the baseline properties.

175. The results obtained from the soil analysis are presented for comparison in Table 8-2.

Table 8-2: Soil Quality Report

S/ No	Parameters		Sampling Points and Results														
			Adit 1			Adit 2			Adit 3			GRC Camp			Powerhouse		
			Baseline	First Quarter	Second Quarter	Baseline	First Quarter	Second Quarter	Baseline	First Quarter	Second Quarter	Baseline	First Quarter	Second Quarter	Baseline	First Quarter	Second Quarter
1	Soil Texture	Sand %	14	13	19	8	10	13	17	21	19	16	15	17	12	14	16
		Silt %	57	54	49	58	53	49	49	56	53	43	46	45	61	59	57
		Clay %	29	33	32	34	37	38	34	23	28	41	39	38	37	27	27
		Texture Class	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam
2	pH		8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.0	8.0	8.0	8.0	8.0	8.1	8.1	8.1
3	Electrical Conductivity (μSm^{-1})		238	238	238	238	238	238	238	231	231	231	231	231	229	229	229
4	Phosphorus ($mgkg^{-1}$)		2.01	2.01	2.01	2.01	2.01	2.01	2.01	3.2	3.2	3.2	3.2	3.2	2.9	2.9	2.9
5	Sodium Absorption Ratio		4.07	4.07	4.07	4.07	4.07	4.07	4.07	3.54	3.54	3.54	3.54	3.54	3.37	3.37	3.37

9 Change Management Statement

176. There are no major changes in the project design which warrant preparation of change management statement or major departure from EIA/EMP findings and SSEMP. The construction activities at various sections of BHPP are in progress in accordance with the Engineer's approved methodology and specifications. Below are minor changes that are agreed by the EPC contractor, PMC and PIU PEDO to execute the project followed by concurrence of same from ADB.

177. Bypass tunnel to be constructed on left bank of river was initially proposed to be used for dual purpose of by-passing and sediment flushing. However, now gated outlets at the bottom of THE dam body are proposed for sediment flushing. This change does not warrant major deviation from the EIA findings that was carried out in 2019.

178. Revised arrangement for BAP implementation and monitoring are also suggested by PIU and PMC after extensive consultation sessions with KP Wildlife and Fisheries department. Revised arrangements include eliminating the roles of the implementation organization and KP Biodiversity and Wildlife board, and reducing members of BAP management committee. It is further proposed that BAP management committee be chaired by DG fisheries instead of KP Wildlife department. Proposed revised arrangement warrant significant deviation from the EIA findings. However, there is no change in overall footprint of the project. Upon ADB instructions, EIA is being updated to reflect the revised BAP implementation arrangements, and assess and manage associated environmental impacts. Updated EIA submission is expected in quarter 4 2023.

10 Conclusion and Recommendations

179. The EEM report concludes that project stakeholders, including PIU BHPP, PMC, and the EPC contractor are in the process of improving the compliance status of environmental safeguard requirements vested in the EIA/EMP, SSEMP, BAP, and KP EPA NOC conditions. Basic safeguard controls are in place, and site management of stakeholders is committed towards implementation, monitoring and reporting of environmental safeguards. There is need to increase capacity building of contractors towards compliance of environmental safeguards through both external/internal trainings, and toolbox talks.

180. Total of 25 environmental non-compliances of EMP/SSEMMP/BAP were recorded during the monitoring period. About 19 non-compliances were minor, 5 moderate, and 1 major non-compliance. Major non-compliance is related to absence of LEL gases/dust monitoring in tunnels. The five moderate non-compliances include delayed construction of waste stabilization ponds, discharge of kitchen wash water into stream, waste record not maintained, delayed implementation of revised BAP arrangements, and placement of generators without enclosures. CAP to close out observed non-compliances is provided in this EEM report.

181. All non-compliances were discussed with PIU and PMC for necessary action. There is need to closely follow up with the contractor by the PMC to ensure implementation of CAP and close out non-compliances.

182. Overall, PIU BHPP, PMC and EPC contractor implemented environmental safeguard requirements, including hiring qualified safeguard staff, TMP, blasting management plan, spoil management plan, emergency response plan, solid waste management plan, GRM, instrumental

EMP, efficient resource utilization, EMP documentation, and internal/external EMP compliance monitoring and reporting.

183. During reporting semester ,overall EMP compliance level was found satisfactory. However, there is need to increase compliance level of environmental safeguards with respect to waste disposal, soil and water contamination, air pollution, workers, and HSE and EMP documentation. EPC contractor's capacity building is critical to enhance compliance level. Robust training plan on environmental safeguards shall be prepared and implemented to improve understanding of EMP/SSEMP/BAP requirements by project stakeholders.

184. PMC shall supervise critical activities; conduct weekly inspections of camps; and ensure that all contractors are well aware, equipped and trained in monitoring and reporting of environmental non-compliances and CAP. PIU shall closely work with PMC and EPC contractor to achieve the required compliance level of BHPP.

ANNEXURES

Annexure A
KP EPA APPROVALs OF BHPP & CRUSH PLANT

Environmental Protection Agency
Forestry, Environment & Wildlife Department
Govt. of Khyber Pakhtunkhwa

No.EPA/EIA/HPP/300MW/Balakot/21/980

Dated 06 / 07 /2021

To,

The Project Director,
Balakot HPP, PEDO, Peshawar.
Contact No. 091-9217463

SUBJECT: DECISION ON ENVIRONMENTAL IMPACT ASSESSMENT (EIA) REPORT OF 300MW BALAKOT HYDRO POWER PROJECT FOR ENVIRONMENTAL APPROVAL

Kindly refer to the subject cited above and to enclose herewith Environmental Approval/Decision Note (in original) on EIA Report of the subject project for your information and further implementation.

Moreover, Schedule-VII must be submitted to this Agency within a month on Stamp Paper (Copy enclosed). The same shall be submitted as an undertaking for the compliance of terms and conditions as mentioned in the Environmental Approval as well as mitigation measures proposed in the EIA Report, please.

Director General

Copy for information to the;

1. Secretary, Forestry, Environment and Wildlife Department, Govt. of Khyber Pakhtunkhwa, Peshawar.
2. Commissioner, Hazara Division, Govt. of Khyber Pakhtunkhwa.
3. Secretary, Mines & Mineral Development Department Govt. of Khyber Pakhtunkhwa.
4. Chief Conservator, Forest Department, Govt. of Khyber Pakhtunkhwa.
5. Director General, Fisheries Department, Govt. of Khyber Pakhtunkhwa.
6. Chief conservator, Wildlife Department, Govt. of Khyber Pakhtunkhwa.
7. The Director North, EPA Regional Directorate, Abbottabad.

D:\EIA Section 2011\Sectors\Hydro Power Projects\300MW Balakot HPP District Mansehra

3rd Floor, SDU Building, Khyber Road, Peshawar Cantt
Telephone: 92 (91) 9210263, Fax: 92 (91) 9210280

SCHEDULE-VI
Decision on EIA

1. **Name, address of proponent:** The Project Director, Balakot HPP, PEDO, Plot No. 38-B2, PEDO House, Phase-V, Haytabad, Peshawar. Contact No. 091-9217463

2. **Description of project.** M/S 300 MW Balakot Hydropower Development Project located at 18.6km upstream of the town of Balakot, District Mansehra. The Dam will be a concrete gravity dam with a maximum height of 35m from the river bed and dam crest length of 130m. The top elevation will be 1292m above mean sea level (amsl). The dame will create a reservoir that will operate between with a maximum level of 1288m and the minimum operating water level of 1283m. The reservoir volumes corresponding to the maximum and minimum operating levels are 3.6million cubic meter and 2.4 million cubic meter, respectively. The surface area of the reservoir will be approximately 28 hectares and it will be extend 2.2 km upstream of the dam. A headrace tunnel extending 9.1km will divert water from the reservoir created by the dam to the powerhouse. The powerhouse will be underground caven-type powerhouse. A 1.565km long tailrace tunnel will discharge the water back to the Kunhar River. The total distance between the dam and the outfall of the tailrace tunnel will be about 13.4km. The total installed capacity will be 300MW. The average annual energy generation will be 1143 Gigawatt-hour (GWh).

3. **Location of project.** District Mansehra.

06/07/2021

GPS Coordinates:

S.No	Type	Latitude	Longitude	S.No.	Type	Latitude	Longitude
1	Weir	34.659454°	73.449015°	8	Tunnel	34.603045°	73.381508°
2	Tunnel	34.659567°	73.449193°	9	Tunnel	34.603295°	73.380966°
3	Tunnel	34.654372°	73.451447°	10	Tunnel	34.594936°	73.371572°
4	Tunnel	34.653311°	73.451488°	11	Tunnel	34.594429°	73.370584°
5	Tunnel	34.652587°	73.451374°	12	Tunnel	34.594230°	73.369587°
6	Tunnel	34.628207°	73.430871°	13	Tunnel	34.594324°	73.368471°
7	Tunnel	34.627600°	73.429977°	14	Tunnel	34.594638°	73.367308°
-	-	-	-	15	Powerhouse	34.604418°	73.380401°

06/07/2021

4. **Date of filing of EIA.** 03/09/2019 (Ref: EPA Diary No.798)

5. After careful review, the Environmental Protection Agency, Govt. of Khyber Pakhtunkhwa has decided to accord Construction Environmental Approval of the Environmental Impact Assessment (EIA) Report of **"300MW Balakot Hydro Power Project, District Mansehra"** in line with the Khyber Pakhtunkhwa Environmental Protection Act, 2014 and the Review of IEE/EIA Regulations, 2000, subject to the following Terms & Conditions;

   a) The proponent shall adopt all precautionary and mitigation measures recommended in the EIA Report as well as replies of the proponent submitted to this Agency and any un-anticipated impacts arising during the Construction and Operation phase of the project.

   b) Arrangement for compensation to the affectees, in case of loss of land, Crops, property, Schools, Water Springs, Water Supply Schemes, Hotels and Masjids will be finalized before the start of construction. Any money

involved in compensation will be deposited with District Govt./Revenue Department for disbursement among the affectees. A committee shall be constituted ensuring fair representation of locals with properly documented grievance procedure. As far as possible recommendations of a committee comprising of land/house owners and tenants shall be taken into consideration during finalizing the compensation package. All conflicting issues regarding compensation, etc. should be settled before executing/commencing of the project activities and a certificate in this regard should be submitted to EPA;

c) The Land Acquisition & Resettlement Plan (LARP) shall be properly implemented before execution of construction work. The proponent shall submit verified land acquisition and compensation documents prior commencement of construction activities. A certificate of payment to the locals shall be generated from the concerned Revenue Department and must be submitted to this Agency before commencement of the construction activity;

d) In light of the LARP, in addition to other compensation measures, at least one male & one female from every affected household will be eligible for employment/labor or training or loan based on their willingness, based on the project requirement;

e) The existing natural water springs, the water supply scheme/spring affected from the Project shall be properly compensated and alternate water supply for the affectees shall be ensured, Detail of the same shall shared with the Agency before commencement of the construction activity;

f) The spring channels disturbed during tunnel excavation shall be connected to pipes and shall be used as source of drinking water for the locals of the area;

g) Detail of steps/mitigation measures shall be taken to mitigate impacts of the project on River Kunhar/natural water streams;

h) The Right of Way (RoW) of the River Kunhar shall be protected. Moreover, the River shall be also protected from all type of pollution from project related activities;

i) The natural rainwater water sheds RoW shall not be disturbed;

j) The contaminated waste water of the tunnels shall be retained in confined pits of proper size ensuring proper treatment, complying NEQS parameters before final disposal;

k) The existing RoW of the nearby villages shall not be affected or alternate routes shall be provided to the villagers;

l) The affected existing Houses, Bridges, BHU, School, Dispensaries, Electric Poles, Mosque and other structures shall be relocated &

06/07/2021

compensated to other appropriate area before start of construction work;

m) A Committee shall be constituted under the supervision of District Administration comprising representatives of the affected villages i.e. Bela Balsehri, Nihan, Dhab, Rehtar, Sangar & Kappi Gali. The Committee will look into issues arising from the Project;

n) In order to avoid the traffic congestion issues, the management of the project shall formulate Traffic Management Plan and be submitted to this Agency before commencement of Construction activity;

o) The existing Graveyard shall be properly protected and not be disturbed by the project activity, however, unless allowed by elders of the area/local committee by mutual agreement;

p) Proper mitigation plan shall be formulated and implemented to avoid soil erosion and land sliding before commencement of Construction activity;

q) As per Section Officer (Tech) letter No. SO (Tech)/FE&WD/V-427/2021/PC dated 06/07/2021, after report submitted by Chief Conservator of Forest-II, there is no chance of disturbance to any vegetation & soil cover of the land and issuance of NOC from Forest Department is irrelevant. However, the management shall make no deviation in the project design and designated forest/trees shall not be disturbed;

r) Minimum environmental flow of 6.1 Cumecs, with 10% extra provision, if required, shall be maintained in the downstream. In light of the submitted EIA Report, the project management shall made maximum efforts to operate the dam on preferable option of base load high protection operation mode;

s) The muck/debris generated from the project shall be properly quantified, dumping sites for the same shall be properly identified & selected and this Agency shall be informed prior commencement of the construction activities. The proponent shall ensure to avoid dumping of debris into down slope or near River Kunhar Right of Way (RoW) or water bodies. The same shall be stabilized by proper plantation, bio engineering and engineering techniques. Retention walls of proper size shall be erected along the muck disposal material/site;

t) The biodiversity action plan shall be implemented. Moreover, Wildlife, Forest Department and EPA shall be consulted in improvement of the Biodiversity Action Plan to mitigate the impact of the project on aquatic life, fauna, flora and Environment;

u) Safety zone/adequate engineering measures should be provided to overcome fears of the residents regarding project activities to their houses;

06/07/2021

v) The construction/installations shall be carried out keeping in view seismicity of the project area & ensuring implementation of updated building by-laws/codes;

w) Proper Flood Management Plan shall be identified for the project site & site specific mitigation measures shall be implemented during floods;

x) Primary baseline data comprising analysis reports of surface water (River Kunhar/water bodies), Soil, ambient air, noise etc of the project area & shall be carried out from KP-EPA certified Lab before commencement of the construction activity. Moreover, the analysis reports shall be submitted to EPA on quarterly basis;

y) A sedimentation load study shall be carried out along with mitigation measures for the control of sedimentation from upstream of the reservoir;

z) Road/Highway Submerged/damaged due to project activity should be reconstructed/repaired/rehabilitated to another suitable place in consultation with concerned Govt. Department;

aa) The effluents generated during tunnel blasting/excavating activities shall not be disposed to any surface water before NEQS compliance. The effluents generated shall be treated in a properly design facility;

bb) In case, the blasting is inevitable, the controlled techniques, in accordance with Pakistan Explosive Act should be adopted in sliding and perspective sliding prone areas;

cc) The camp site, asphalt plants, crush plants & batching plants shall be at least 500 m away from residential area/villages;

dd) The proponent shall ensure the strict and efficient health and safety measures for the protection of workers and passersby backed by a comprehensive emergency response plan;

ee) A comprehensive CSR policy shall be formulated keeping in view, the demands/needs of the locals and quantum of the project activity. The detail of the same shall be shared with this Agency before commencement of the construction activity;

ff) Non-technical jobs shall be provided to local community/villages. Employment record for all positions shall be provided to EPA-Khyber Pakhtunkhwa and priority should also be given to locals in technical jobs. Regular trainings shall be arranged for the locals regarding acquiring knowledge of technical jobs;

gg) Separate approval shall be obtained for establishment of Crushing Plant, Town/Colony, Asphalt plant, etc. under Khyber Pakhtunkhwa Environmental Protection Act, 2014 & the prevailing Rules/Regulations in-vogue; For temporary colony, proper treatment plant shall be constructed for municipal effluents treatment and bringing within the NEQS parameters before final discharge;

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hh) Fish ladder of proper efficiency shall be constructed for fish movement. Moreover, the conditions suggested by Fisheries Department with his letter No. 2084 dated 16/06/2021, shall be implemented to ensure survival of aquatic life. Furthermore, a Fish Hatchery shall be established in consultation with Fishery Department;

ii) A comprehensive plantation plan, in consultation with Forest Department, shall be submitted to this Agency along with GPS Coordinates of the plantation sites. Moreover, a nursery shall be established in consultation with Forest Deptt. & a forester along with other supporting staff shall be hired for the same;

jj) Proper mitigation measures shall be adopted for control of land sliding, soil erosion and sedimentation to the nearby river/water channel;

kk) An Environmentalist along with team shall be hired for the environmental issues redressel.

ll) Copy of approval from Mines & Mineral Department shall be shared with this Agency prior commencement of construction activities.

mm) The cultural values & social norms of the area shall be followed strictly;

nn) The proponent shall adopt the mitigations measures as mentioned in the Wildlife Department letter No.4233/WI-M dated 24/06/2021 for fauna protection;

oo) Refer to Mines & Mineral Department vide letter No. 7082/MDW/MA/Misc (01)/2021 dated 30/06/2021, clearance shall be taken from Mines& Mineral Department before commencement of construction activity;

pp) This Agency shall suggest any additional mitigation measures/updated technology for the control of Environmental Pollution/degradation at any stage (construction & operational phase) of the project;

qq) No extension would be permitted in the future in the existing hydropower project without prior approval of the EPA/Govt. of Khyber Pakhtunkhwa;

rr) The proponent shall provide the copy of this approval and EIA Report to the contractor for information and compliance.

6. The Proponent shall be liable for correctness and validity of the information supplied by the environmental consultant.

7. There shall be no legal case pending in the courts against the project

8. The proponent shall be liable for compliance of Regulation 13, 14, 16, 17 and 18 of the IEE/EIA Regulations, 2000, regarding approval, confirmation of compliance, entry, inspections and monitoring.

9. This approval is accorded only for the installation/construction phase of the project. The Proponent will obtain approval for operation of the hydro

06/07/2021

power project in accordance with the Regulation 13 (2) (b) and Regulation 18 of the IEE/EIA Regulations, 2000.

10. Any change in the approved project shall be communicated to EPA, Khyber Pakhtunkhwa and shall be commenced after obtaining the approval.
11. This approval shall be treated as null and void if all or any of the conditions mentioned above is/are not complied with.
12. This approval does not absolve the proponent of the duty to obtain any other approval or clearance that may be required under any law in force.
13. The quarterly progress/compliance report of the above conditions shall be submitted to EPA.
14. In exercise of the power under Section-13 of the Khyber Pakhtunkhwa Environmental Protection Act, 2014, the undersigned is pleased to approve the EIA Report of **"300MW Balakot Hydro Power Project, District Mansehra"** for construction phase of the project with above mentioned terms and conditions.

Dated: Peshawar 06/07/2021

Tracking/File.No. **EPA/EIA/HPP/300MW-Balakot/21/** 980

DIRECTOR GENERAL,
EPA, Khyber Pakhtunkhwa,
3rd Floor, SDU Building,
Khyber Road, Peshawar Cantt.

EPA NORTHERN DIRECTORATE, ABBOTTABAD,
Forestry, Environment & Wildlife Department
Govt. of Khyber Pakhtunkhwa

No.EPA/ND/ATD/ 483
Dated: 26th May, 2022

To

Mr. Ghulam Rasool (Owner)

Ghulam Rasool constrution company

GRC Site camp Thobi village Kiwai Tehsil Balakot Disatrict Mansehra

Subject: **PLANT DESIGN PROCUREMENT AND CONSTRUTION OF BALAKOT HYDROPOWER PROJECT SUBMISSION OF LAYOUT PALN AND X-SECTIONS OF TEMPORARY SITE CAMP FOR BALAKOT HYDRO POWER PROJECT.**

Reference to your application No GRC.JV/BKHPP/EPA/0001 dated 25/01/2022 on the subject cited above and to state that Environmental approval for Batching plant is not mandatory under Khyber Pakhtunkhwa Environmental Assessment Rules,2021 and IEE/EIA Regulation-2000, as the subject project is not included in any category of Schedule-II,III & IV of Khyber Pakhtunkhwa Environmental Assessment Rules,2021.

Director (North)

House No.CB-1118/1, Ghost Market Supply Abbottabad. Phone No. 0992-9310472

EPA NORTHERN DIRECTORATE, ABBOTTABAD,
Forestry, Environment & Wildlife Department
Govt. of Khyber Pakhtunkhwa

No. EPA/NDT/22/GRC/BHPP/ 686
Dated 1st August, 2022

To

Mr. Ghulam Rasool & Company, Village Thobi,
Kiwai, Tehsil Balakot, Dsitrict Mansehra.

Subject: **SUBMISSION OF IEE REPORT FOR THE INSTALLATION OF CRUSH PLANT AT GRC THOBI CAMP LOCATION (BALAKOT HYDROPOWER PROJECT)**

I am directed to refer to the subject cited above and to enclose herewith Environmental Approval/decision note on IEE Report of GRC Crush Plant at Village Thobi, Kiwai, Tehsil Balakot, Dsitrict Mansehra for your information and further implementation.

Moreover, schedule X must be submitted to this Agency within a month on stamp paper as an undertaking for the compliance of term and condition as mentioned in the Environmental Approval as well as mitigation measure proposed in the IEE report. (Copy enclosed).

DIRECTOR (NORTH)

House No.CB-111&1, Gosht Market, Supply, Abbottabad. Phone No. 0992-9310472

EPA NORTHERN DIRECTORATE, ABBOTTABAD,
Forestry, Environment & Wildlife Department
Govt. of Khyber Pakhtunkhwa

No.EPA/ND/ATD/IEE/CP/GRC/ 626
Dated : 1st August, 2022

SCHEDULE-VIII

Decision on IEE

1.	**Name, address of proponent:**	Mr. Ghulam Rasool & Company, Village Thobi, Kiwai, Tehsil Balakot, Dsitrict Mansehra.
2.	**Description of project:**	The proposed crush plant namely GRC Crush Plant is proposed to be installed at Village Thobi, Kiwai, Tehsil Balakot, Dsitrict Mansehra. Total Capacity of the project is 50 Tons/hour. A 3500 KW generator will be installed to operate the proposed crush plant. 400 KVA transformers will be installed to fulfill the need of energy. About 15 labor and Technicians will work during construction phase, whereas 20 Staff will work for the operation of the project.
3.	**Location of the project:**	Village Thobi Kiwai, Tehsil Balakot, District Mansehra. (GPS N: 34.636349, E: 73.428441)
4.	**Date of filling of IEE:**	19/01/2022 EPA, Northern Directorate (Dairy No.513)

5. After careful review of IEE report and field visit report carried out by official of this Agency on 03-03-2022, the Environmental Protection Agency, Northern Directorate, Abbottabad, Govt. of Khyber Pakhtunkhwa has decided to accord approval of the Initial Environmental Examination of **GRC Crush Plant at Village Thobi Kiwai, Tehsil Balakot, District Mansehra**, of Khyber Pakhtunkhwa in line with the Khyber Pakhtunkhwa Environmental Assessment Rules 2021 subject to the following terms & conditions:

EPA NORTHERN DIRECTORATE, ABBOTTABAD,
Forestry, Environment & Wildlife Department
Govt. of Khyber Pakhtunkhwa

No.EPA/ND/ATD/IEE/CP/GRC/ 686
Dated : 1st August, 2022

a) The proponent will adopt all precautionary and mitigation measures identified in IEE report as well as any unanticipated impacts during the construction and operation phase of project.

b) The proposed crush plant must be constructed as per the Rule-6 of Khyber Pakhtunkhwa Powers Crushers (Installation, Operation and Registration) 2020".

(c) Employment should be provided to local people particularly for unskilled jobs.

(d) Carry sprays twice a day i.e 9:00 AM and 3:00 PM on non-metal roads during construction and operation phase in order to minimize dust during delivery.

(e) The proponent should cover the delivery vehicles properly.

(f) Health & Safety equipments (mask, helmet, glasses, gloves, shoes, air plugs, etc) should be provided to the workers.

(g) The proponent shall plant Chinar &Walnut plants in available space around the crush plant.

(h) Water spray should be carried out on material through a water pump connected with pipelines and water spraying nozzles.

(j) The proponent will install Air/Dust Control System as per SOPs of stone crush plant: Specification and drawing of Dust/Air Pollution Control System is given as below):

House No.CB-1118/1, Gosht Market, Supply, Abbottabad. Phone No. 0992-9310472 ~ 2 ~

EPA NORTHERN DIRECTORATE, ABBOTTABAD,
Forestry, Environment & Wildlife Department
Govt. of Khyber Pakhtunkhwa

No.EPA/ND/ATD/IEE/CP/GRC/686
Dated : 1st August, 2022

(k) The proponent should submit undertaking on stamp paper regarding protection of rainy water stream/Nullah and avoid throwing/dumping of waste material (Khaka) into the stream.

6. The proponent shall be liable for replacement/upgradation of the Air/Dust Pollution Control System, if the above Air/Dust Pollution Control System failed to bring the dust emission within National Environmental Quality Standards (NEQS).

7. Environmental Management Plan must be strictly followed.

8. The proponent shall be liable for correctness and validity of the information supplied by the environmental consultant.

9. The proponent shall be liable for compliance of section 15 (1), 18, 19 and 20 of Khyber Pakhtunkhwa Environmental Assessment Rules 2021, regarding approval, written confirmation of compliance, entry, inspection and monitoring.

10. This approval is accorded only for the **"CONSTRUCTION PHASE"** of project.

11. The proponent will obtain approval for **"OPERATON OF THE PROJECT"** in accordance with the section 15 (1) and 20 of the Khyber Pakhtunkhwa Environmental Assessment Rules 2021.

12. Any change in the approved project shall be communicated to EPA, Northern Directorate, Abbottabad, Khyber Pakhtunkhwa and shall be commenced after obtaining the approval.

13. This approval does not absolve the proponent of the duty to obtain any other approval or clearance that may be required under any law in force.

14. There is no legal case pending in the courts against the project.

16. In exercise of the power under Section 14 of the Khyber Pakhtunkhwa Environmental Protection Act, 2014 and The Delegation of Powers Vide letter No. EPA/050/01/93/ Peshawar, dated the May 19, 2017, the undersigned is pleased to approve the IEE Report

EPA NORTHERN DIRECTORATE, ABBOTTABAD,
Forestry, Environment & Wildlife Department
Govt. of Khyber Pakhtunkhwa

No.EPA/ND/ATD/IEE/CP/GRC/ 686
Dated : 1st August, 2022

GRC Crush Plant at Village Thobi Kiwai, Tehsil Balakot, District Mansehra, with the above mentioned terms and conditions.

17. This approval shall be treated as null and void if all or any of the conditions mentioned above is/are not complied with.

Dated: Abbottabad 1st August, 2022
Tracking/ File. No.EPA/ND/IEE/CP/GRC/BHHP/ 686

DIRECTOR (NORTH)
EPA, NORHTERN DIRECTORATE
CB-1118/1, GOSHT MARKET, SUPPLY,
ABBOTTABAD.

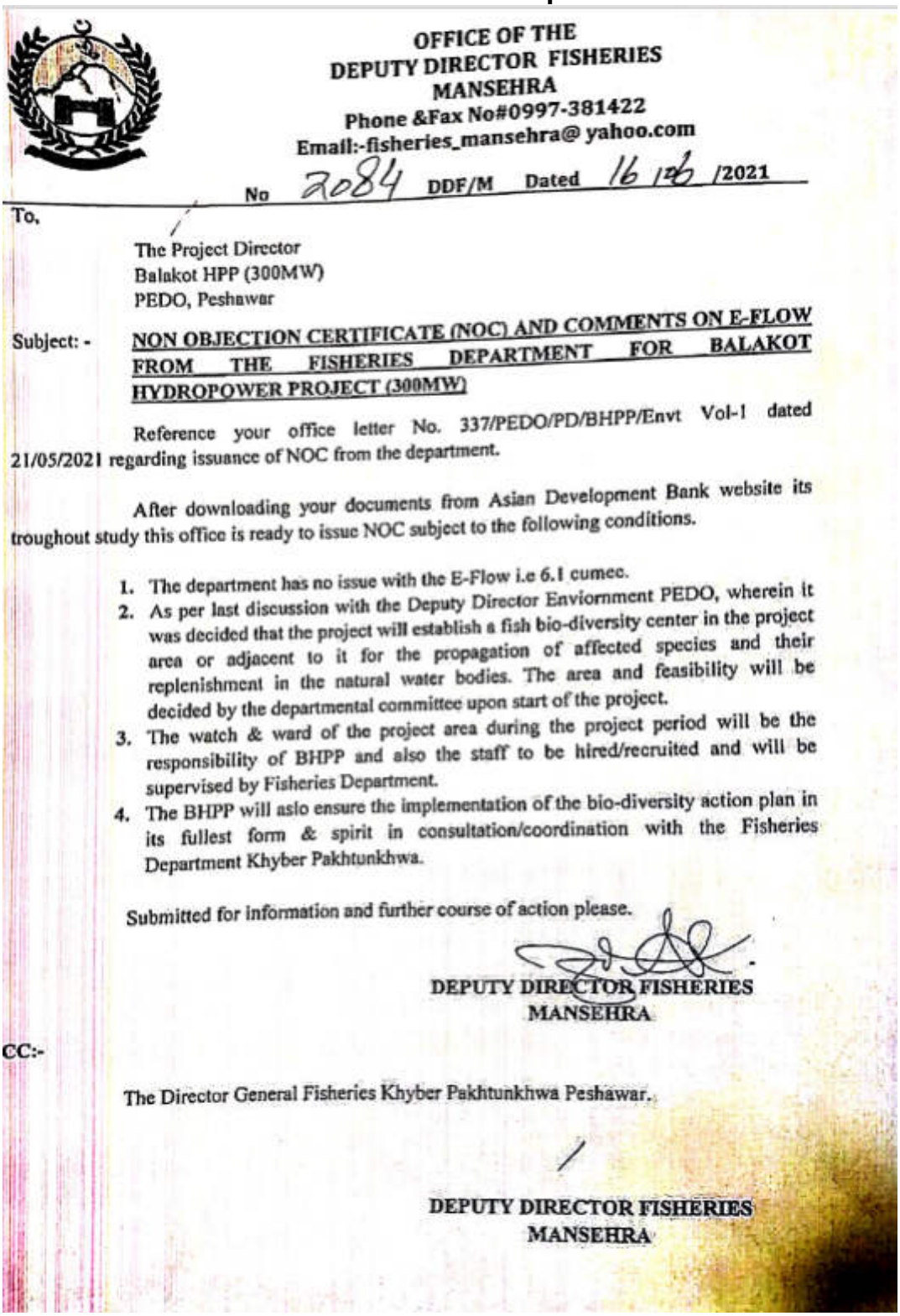
CC:

1. Director General, Environmental Protection Agency, Peshawar.
2. Deputy Commissioner, District Mansehra

House No.CB-1118/1, Gosht Market, Supply, Abbottabad. Phone No. 0992-9310472 ~ 4 ~

Annexure B
EPC Contractor's Correspondences for NOCs

NOC from Fisheries Department



OFFICE OF THE
DEPUTY DIRECTOR FISHERIES
MANSEHRA
Phone &Fax No#0997-381422
Email:-fisheries_mansehra@ yahoo.com

No 2084 DDF/M Dated 16/6/2021

To,

The Project Director
Balakot HPP (300MW)
PEDO, Peshawar

Subject: - **NON OBJECTION CERTIFICATE (NOC) AND COMMENTS ON E-FLOW FROM THE FISHERIES DEPARTMENT FOR BALAKOT HYDROPOWER PROJECT (300MW)**

Reference your office letter No. 337/PEDO/PD/BHPP/Envt Vol-1 dated 21/05/2021 regarding issuance of NOC from the department.

After downloading your documents from Asian Development Bank website its troughout study this office is ready to issue NOC subject to the following conditions.

1. The department has no issue with the E-Flow i.e 6.1 cumec.
2. As per last discussion with the Deputy Director Enviornment PEDO, wherein it was decided that the project will establish a fish bio-diversity center in the project area or adjacent to it for the propagation of affected species and their replenishment in the natural water bodies. The area and feasibility will be decided by the departmental committee upon start of the project.
3. The watch & ward of the project area during the project period will be the responsibility of BHPP and also the staff to be hired/recruited and will be supervised by Fisheries Department.
4. The BHPP will aslo ensure the implementation of the bio-diversity action plan in its fullest form & spirit in consultation/coordination with the Fisheries Department Khyber Pakhtunkhwa.

Submitted for information and further course of action please.

DEPUTY DIRECTOR FISHERIES
MANSEHRA

CC:-

The Director General Fisheries Khyber Pakhtunkhwa Peshawar.

DEPUTY DIRECTOR FISHERIES
MANSEHRA

NOC from Forest Department

GOVERNMENT OF KHYBER PAKHTUNKHWA
FORESTRY, ENVIRONMENT & WILDLIFE DEPARTMENT

No: SO (Tech)/FE&WD/V-427/2021/PC
DATED PESHAWAR THE, 06/07/2021

To

The Director General,
Environmental Protection Agency,
Khyber Pakhtunkhwa, Peshawar.

Subject: - **NO OBJECTION CERTIFICATE (NOC) FROM THE FOREST DEPARTMENT FOR BALAKOT HYDROPOWER PROJECT (300 MW).**

I am directed to refer to Chief Conservator of Forests, Northern Forest Region-II, Abbottabad letter No.90/GB dated 02/07/2021 addressed to this department and copy to others as well as to your good office on the subject cited above and to say that as reported by Chief Conservator of Forests-II vide letter under reference that issuance of NOC from Forest Department is irrelevant as the depth of land measuring 4-5 km underneath the proposed tunnel (passing 1.3 km under Paras Guzara Compartment No.3 and Kawai Guzara Compartment No.2) will pass far away the maximum possible depth of root system of any tree species. Therefore, there is no chance of disturbance to any vegetation and soil cover of the land;

Provided that no deviation shall be made in the project design and the designated forest/trees shall not be disturbed at any cost, please.

(Muhammad Alam Zeb)
Section Officer (Tech)

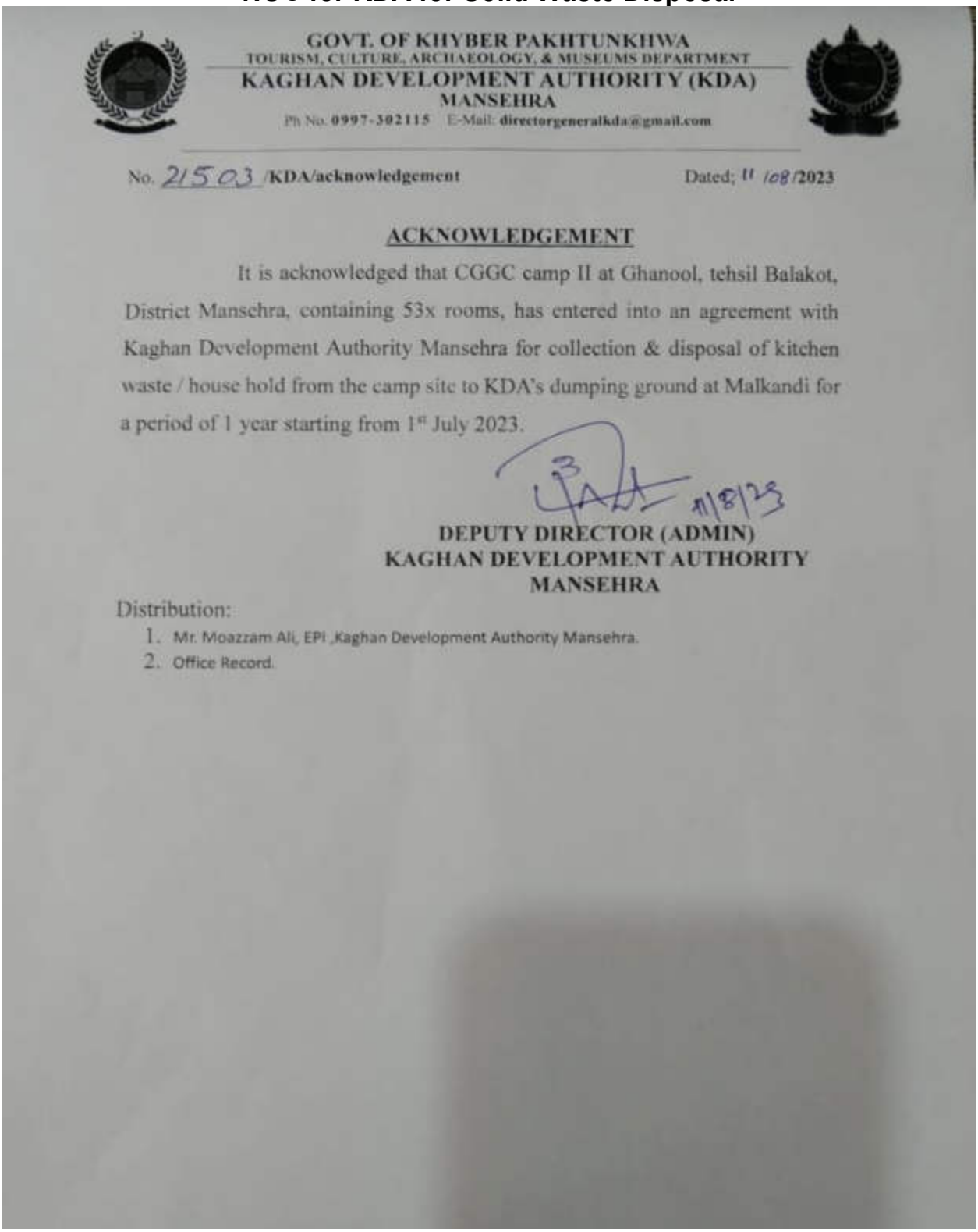
Endst: No: & Date even

Copy forwarded for information to:

1. Chief Conservator of Forests, Central Southern Forest Region-I, Peshawar w/r to Chief Conservator of Forests-II letter No. quoted above.
2. Chief Conservator of Forests, Northern Forest Region-II, Civil Line Forest Offices, Abbottabad w/r to his letter No. quoted above.
3. PS to Secretary, Forestry, Environment & Wildlife Department Khyber Pakhtunkhwa.
4. PS to Secretary, Energy & Power Department Khyber Pakhtunkhwa.
5. PS to CEO, PEDO, Peshawar.

Section Officer (Tech)

NOC for KDA for Solid Waste Disposal



GOVT. OF KHYBER PAKHTUNKHWA
TOURISM, CULTURE, ARCHAEOLOGY, & MUSEUMS DEPARTMENT
KAGHAN DEVELOPMENT AUTHORITY (KDA)
MANSEHRA
Ph No. 0997-302115 E-Mail: directorgeneralkda@gmail.com

No. 21503 /KDA/acknowledgement Dated: 11/08/2023

ACKNOWLEDGEMENT

It is acknowledged that CGGC camp II at Ghanool, tehsil Balakot, District Mansehra, containing 53x rooms, has entered into an agreement with Kaghan Development Authority Mansehra for collection & disposal of kitchen waste / house hold from the camp site to KDA's dumping ground at Malkandi for a period of 1 year starting from 1st July 2023.

11/8/23

DEPUTY DIRECTOR (ADMIN)
KAGHAN DEVELOPMENT AUTHORITY
MANSEHRA

Distribution:
1. Mr. Moazzam Ali, EPI ,Kaghan Development Authority Mansehra.
2. Office Record.

Application for NOC for Medical Waste Disposal

中国葛洲坝集团股份有限公司
CHINA GEZHOUBA GROUP COMPANY LIMITED

Ref. No: DHO-2023-001

Date: 28th March 2023

To: District Health Officer
Mansehra Khyber Pakhtunkhwa;

PROJECT: DESIGN SUPPLY AND INSTALLATION, TESTING AND COMMISSIONING OF BALAKOT HYDRO POWER PROJECT INCLUDING THE RELATED CIVIL WORKS FOR RIVER DIVERSION

SUBJECT: APPLICATION FOR MEDICAL WASTE MANAGEMENT

Dear Sir,

Reference to the subject captioned above CGGC-GRC-JV wants to used incinerator presents in Government hospital to dump our medical waste, so for that purpose we requesting you to allow us and gave us an NOC for our documentational requirement, please let us know the criteria of issuing NOC as well as waste management, we are looking forward to your prompt response, your early response will be highly appreciated.

With Profound Regards!

Mr. WANG YANWEI
Authorized representative of CGGC-GRC JV

30/3/23

巴基斯坦伊斯兰堡 F6/1 区 30 街 2 号
IslamabadOffice: HouseNo2, StreetNo30, F6/1, Islamabad, Pakistan
Tel: +92-51-8746578/Fax: +92-51-8746579 Email: CGGCGRCJV@163.com

Annexure C
Attendance Sheet of HSE Progress Review Meetings

Attendance Sheet
Meeting with the EPC Contractor's HSE Team

BALAKOT HPP CONSULTANTS

A JV of DOLSAR, AGES, BAK, CIV TECH, ELECTRA & TLC Consultants

LIST OF PARTICIPANTS

MEETING WITH THE EPC CONTRACTOR'S HSE TEAM AT PMC OFFICE BALAKOT HYDROPOWER PROJECT ON 25TH JANUARY 2023

Sr.#	Name of Participants	PMC/EPC Contractor	Designation	Signature
1.	Baxiufang	CGGC	DPM	
2.	Ashfaq Nazir	CGGC	Env. Manager	
3.	Ali Hussnain Khan	CGGC	QA/QC	
4.	Wang He	CGGC	H&S	
5.	Assad Ali Khan	DMC	E.E	
6.	Syed Ali Fawad Shah	PMC	H&S Monitor	
7.				
8.				
9.				
10.				
11.				
12.				
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20.				
21.				
22.				
23.				
24.				

Four Season Hotel, Near PTCL Exchange, Shohal Najaf Khan, Kaghan Road Balakot, District Mansheha Khyber Pakhtunkhwa, Pakistan
Tel: +92-0997-360155

Page 1 of 1

Balakot Hydropower Project (300 MW)

District Mansehra

HSE Progress Review Meeting held at PMC office Balakot

List of Participants

Date: March 21, 2023

S/No	Name of Participant	Organization	Designation	Signature
1	Assad Ali Khan	PMC	Environmental Expert	
2	SYED ALI FAWAD	PMC	H&S EXPERT	
3	Wang He	CGGC	HSE	
4	Guo Ze Lin	CGGC	HSE	
5	Qi xiufeng	CGGC	DPM (QHSE)	
6	Syed Babar Ali	CGGC	HSE officer	
7	Ali Hussnain khan	CGGC	Quality Engineer	
8	Azeem ullah	GRC	HSE Incharge	
9	Ibtesaam Zaman	PEDO	DD EH&S	
10				
11				

Annexure D
GRC Notifications

PEDO

PAKHTUNKHWA ENERGY DEVELOPMENT ORGANIZATION
GOVERNMENT OF KHYBER PAKHTUNKHWA

Dated Peshawar the 03 /01/2022

NOTIFICATION

No. 38-42 /PEDO/CEO/16The Competent Authority is pleased to notify the attached Grievance Redress Mechanism (GRM) & Grievances Redress Committees (GRCs) at Village level and at Project level for 300MW Balakot Hydropower Project District Mansehra for implementation in true letter & spirit.

The attached GRM is for compliance for 300MW Balakot HPP Project, PEDO.

-Sd/-
Chief Executive Officer
PEDO, Peshawar.

Endst. No. & Date as above.

Copy forwarded for information to:-

1. The Chief Engineer (Development/Plan), PEDO, Peshawar.
2. The Director (P&F) PEDO, Peshawar.
3. The Project Director Balakot HPP (300 MW) District Mansehra
4. PS to CEO PEDO, Peshawar.
5. PA to Director (Admn/HR) PEDO, Peshawar.

Assistant Director (Admin),
PEDO, Peshawar

Notification

1 GRIEVANCE REDRESS MECHANISM (GRM)

1. The Pakhtunkhwa Energy Development Organization (PEDO) being carrying out the construction of Balakot Hydropower Development Project (300MW), in District Mansehra of Khyber Pakhtunkhwa (KP), Pakistan, as an Engineering, Procurement and Construction (EPC) Contract, through a proposed loan from Asian Development Bank (ADB) and Asian Infrastructure Investment Bank (AIIB).

2. The Balakot Hydropower Project (300 MW) is category "A" Project as per ADB safeguard criteria, for which a detailed Grievance Redress Mechanism (GRM) has been developed with the aim to mediate conflicts and response to complaints related to environment and social performance of the project. GRM also provide a forum to general public/community who might believe that they are adversely affected by the ADB/AIIB financed project.

3. The proposed GRM is consist of two–tier Grievance Redress Committees (GRCs) i.e., at village level and at Project level. In both the GRCs, the Project area community represented by the villager's nominated representatives. Having members based in the village, the village–level GRC is helpful in swift resolution of the grievance(s) without indulging in lengthy documentation/legal proceedings. The local participation further build local capacity in dispute resolution and decision–making and provide leadership support in the implementation of the Project.

4. Cases, which are not satisfactorily resolved or affected persons remain aggrieved, the case then forwarded to the Project–level GRC as the prime floor for resolution of the grievances.

5. However, if any disputant remains dissatisfied with the GRC decision/resolution the disputant can seek redress from a court of law.

1.1 Composition of Grievance Redress Committees

6. Under the current arrangements, two village level GRCs have been formed i.e. One at Paras (Dam Site), and the other at Sangar (Powerhouse/Colony Site). Following is the composition of the Village and the Project level GRCs.

Table 11.1: Grievance Redress Committee at Paras (Dam Site)

S/No	Organization	Member
1	Pakhtunkhwa Energy Development Organization (PEDO)	Deputy Director Social & Resettlement (Chair Person)
2	Pakhtunkhwa Energy Development Organization (PEDO)	Deputy Director Environment, and Gender (Member)
2	Revenue Department	Concerned Patwari (Member)
3	Dam Site Community	Person Nominated by the Community

Grievance Redress Committee at Sangar

S/No	Organization	Member
1	Pakhtunkhwa Energy Development Organization (PEDO)	Deputy Director Social & Resettlement (Chair Person)
2	Pakhtunkhwa Energy Development Organization (PEDO)	Deputy Director Environment, and Gender (Member)

3	Revenue Department	Concerned Patwari (Member)
4	Powerhouse/Colony Site Community	Person Nominated by the Community

Grievance Redress Committee Project level

S/No	Organization	Member
1	Pakhtunkhwa Energy Development Organization (PEDO)	Project Director (Chair Person)
2	Revenue Department	LAC or LAC's Representative
3	Powerhouse/Colony Site Community	Two persons Nominated by the Community (One each from Dam and Powerhouse/ Colony Site Villages) *

*The community representation in the Project level GRC shall not be the same as that of the village level GRC.

1.2 GRC's Scope of Work

7. The scope of work of the GRC include the following:

i. The village GRC ensures that all grievances related to social and environmental issues are registered, formally recorded, reviewed, resolved and the concerned person is informed in a timely manner.

ii. The Project GRC monitor the working of the village GRC and work as a forum for appeal against the decision of the village GRC.

iii. GRC-at any level- not consider complaints related to the procurements or with any matters pending in the court of law.

iv. In resolving the disputes, the GRCs take into consideration the following:

- Merit of the complaints/case received for consideration;
- Evidences to take a decision on the complaint;
- Witness statements;
- Plausibility of the case in the light of related project activity;
- Applicable laws, environmental guidelines of Pakistan, initial environmental examination and environmental review document of the project, and ADB/AIIB environmental guidelines;
- Observations made on the field; and
- Available information on previous complaints of similar nature.

1.3 Orientation of GRC Members

8. All GRC members attend a training and orientation meeting prior to commencement of their work. The training is provided by competent technical experts in social/resettlement and environmental management. The training addressed the policy aspects, compliance requirements, expectations of the community, and need for rapport and communication with the affected communities, and finally need for independence and transparent views in dealing with grievances.

1.4 Grievance Redress Procedure

9. Following procedure is adopted to resolve grievances received by the GRCs.

1.5 Filing of Grievances to Village GRC

10. For grievances related to social and environmental safeguards, the aggrieved person (or their authorized representatives) may file a grievance with the village–level GRC in one of the following ways:

i. Submit a written complaint to any member of the village GRC

ii. Given the local cultural context, any aggrieved women may submit complaints to GRCs directly or through the head of the household.

11. For complaints registration, Complaint Registration Forms are available with the secretary of the village level GRCs and complaints are registered on Grievance Log.

1.6 Hearing and Resolution of the Cases by Village GRC

12. The procedure for hearing and resolution of the complaint are follows.

i. On receipt of a complaint:

- Secretary of village GRC log the complaint in a register called Complaint Register.
- Contact other members of the GRC to conduct a meeting within 10 calendar days of the logging of the complaint.
- If needed, request the complainant or his/her representative to meet the Village GRC on the appointed date to discuss his/her complaint.
- Prepare all the relevant information and document relevant to the complaint prior to the meeting and provide copies to all members.

ii. The GRC meet on the appointed date during which it may:

- Deliberate on the nature and circumstances of the complaint;
- Investigate the complaint based on evidence provided by the complainant;
- Meet with the complainant and other persons;
- Visit the site; and
- Take a decision.

iii. If the GRC needs extra time to investigate or deliberate on the complaint, the secretary informs the complainant of the time when a decision is expected. In any case, all complaints shall be resolved within 30 calendar days of logging.

iv. Once the complaint is resolved, the secretary document the decision and prepare full documentation on the process including minutes of meeting, photographs of visits, documents reviewed, and reasons of the decision.

v. The GRC ensure that the complainant is fully informed of the decision and is also informed about his/her right to appeal to the Project GRC and to the court of law at any point.

vi. In case follow–up action is required, the chairperson of the village GRC ensure that the actions are taken and are documented.

1.7 Hearing and Resolution of the Cases by Project GRC

13. The procedure for hearing and resolution of the complaint by the Project GRC will be as follows.

i. On receipt of a complaint from:

- Secretary of Project GRC request all the concerned documentation from the secretary of the concerned village GRC.
- Contact other members of the Project GRC to conduct a meeting within 15 calendar days of the logging of the complaint to the Project GRC.
- If needed, request the complainant or his/her representative to meet the Project GRC on the appointed date and place to discuss his/her complaint.
- If needed, request the members of the village GRC to meet the Project GRC on the appointed date and place.
- Prepare all the relevant information and document relevant to the complaint prior to the meeting and provide copies to all members.

ii. The Project GRC meet on the appointed date during which it may:

- Deliberate on the nature and circumstances of the complaint;
- Investigate the complaint;
- Meet with the complainant and other persons;
- Visit the site; and
- Take a decision.

iii. If the GRC needs extra time to investigate or deliberate on the complaint, the secretary informs the complainant of the time when a decision is expected. In any case, all complaints shall be resolved in 45 calendar days of logging with the Project GRC.

iv. Once the complaint is resolved, the secretary document the decision and prepare full documentation on the process including minutes of meeting, photographs of visits, documents reviewed, and reasons of the decision.

v. The GRC ensure that the complainant is fully informed of the decision and is also informed about his/her right to appeal to the court of law.

vi. In case follow–up action is required; the chairperson of the Project GRC ensure that the actions are taken and are documented.

1.8 GRM Related Information and Documentation

14. The PIU ensure that it receives copies of all complaints, meeting notices, decisions, and documentations related to proceedings of the village and Project GRCs.

15. The PIU maintain complete record of the complaints in a database or tabular form consisting of the following fields.

i. Project name.

ii. Village, union council, tehsil, and district.

iii. Name of complainant.

iv. Nature of complaint like environment (trees cutting, Noise, Dust, Waste, Air– Water– Soil Pollution etc.), social (damage to infrastructure, land, privacy, Favoritism/Nepotism issues, etc.), Gender (gender equality, empowerment, privacy etc.) and non–compliance to the Govt. /Donor provided guidelines.

v. Date of logging of complaint with village GRC.

vi. Date of first meeting of village GRC.

vii. Information on members attended, number of meetings, meeting with complainant, and site visit.

viii. Date of decision of village GRC.

ix. Follow–up actions, responsibilities, and completion with dates.

x. Date of logging of complaint with Project GRC.

xi. Date of first meeting of Project GRC.

xii. Information on members attended, number of meetings, meeting with complainant, and site visit.

xiii. Date of decision of Project GRC.

xiv. Follow–up actions, responsibilities, and completion with dates.

xv. The PMU will prepare periodic report on the GRM reporting on, for example:

xvi. Number of complaints received and resolved by village GRC, Project GRC and nature of complaint;

xvii. The average time of it took to resolve the complaint; and

xviii. The fraction to complaints that were resolved at the village GRC level.

The Notification of GRM as attached as (**Appendix-N Volume -02**)

Annexure E
Copy of the Kunhar River Watershed Complaint

☎ 0997-381001
☎ Fax 0997-381001

OFFICE OF THE
DIVISIONAL FOREST OFFICER
KUNHAR WATERSHED DIVISION
MANSEHRA

No. 959 /KWM dated Mansehra the 11 / 01 / 2023

To

The Project Director
PEDO Balakot Hydro Power Project.

Subject:- **DAMAGE TO PLANTATION SITES.**

Memo:-

It is submitted that Mr. Fawad Ahmed Forest Guard of Balakot Watershed Range has reported vide his application dated 20.12.2022 duly forwarded by the concerned Range Forest Officer, Balakot Watershed Range (Copy enclosed) that the construction of Audit Tunnel road and other works by CGGC at Kholian Ghanool is in progress due to which plantation activities carried out under BTAP/10BTAP is badly suffering Kail , Chir, Deodar and other species of plants are damaging on daily basis and Government is sustaining huge loses. The concerned authority has baldy failed to obtain necessary NOC from Forest Department (Kunhar Watershed Division Mansehra).

The Range Forest Officer along with his staff has already held meeting with the concerned officer of CGGC on 3.1.2023 both on the site and Head Quarter at Shohal as well.

You are requested to stopped the construction works and obtained an NOC from Kunhar Watershed Division Mansehra accordingly as well as in order to compensate the damage of planting site till date.

Divisional Forest Officer
Kunhar Watershed Division
Mansehra

No. /KWM,

Copy forwarded to the:-

1. The Chief Conservator of Forests, Northern Forest region-II Abbottabad.
2. The Conservator of Forests, Watershed Management Circle Abbottabad.
3. The Deputy Commissioner Mansehra.

For information and necessary action please.

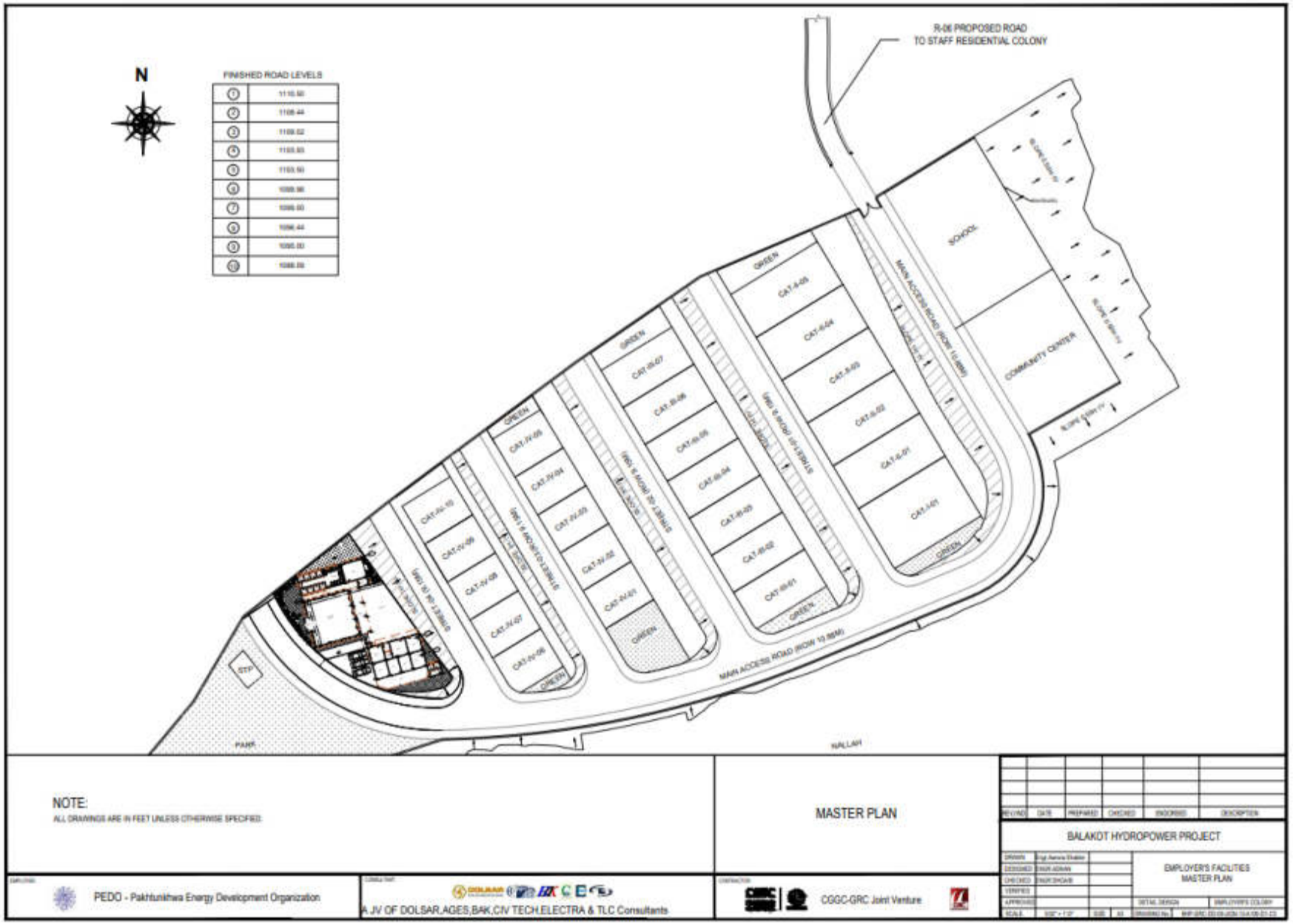
Divisional Forest Officer
Kunhar Watershed Division
Mansehra

Project Director Balakot
Diary No. 384
Dated: 18-01-2023

DFO Kwd-I / DTL
Pl. address the issue and discuss with the concerned Forest staff.
18/01/2023

ANNEXURE-F

Annexure F
Layout Plan of Staff Residential Colony


N
FINISHED ROAD LEVELS
R-06 PROPOSED ROAD
TO STAFF RESIDENTIAL COLONY
SCHOOL
COMMUNITY CENTER
GREEN
MAIN ACCESS ROAD (ROW 10.68M)
STP
PARK
NALLAH
NOTE:
ALL DRAWINGS ARE IN FEET UNLESS OTHERWISE SPECIFIED.
MASTER PLAN
BALAKOT HYDROPOWER PROJECT
EMPLOYER'S FACILITIES
MASTER PLAN
PEDO - Pakhtunkhwa Energy Development Organization
A JV OF DOLSAR,AGES,BAK,C/V TECH,ELECTRA & TLC Consultants
CGGC-GRC Joint Venture

Annexure G
Environmental Monitoring Checklist

Inspection Items	Implemented?			Remarks (i.e. specify location, good practices, problem observed, possible cause of nonconformity and/or proposed corrective/preventative actions)
	Yes	No*	N/A	
1.Permits and Approvals				
EIA and Permits				
Have EIA reports been already prepared in official process?				
Have EIA reports been approved by ADB and KP EPA?				
Have EIA reports been unconditionally approved? If conditions are imposed on the approval of EIA reports, are the conditions satisfied?				
In addition to the above approvals, have other required environmental permits been obtained from the appropriate regulatory authorities of the host country's government?				
Is project SSEMP approved and issued to contractors				
Are other approvals from KP Fisheries, wildlife and irrigation departments has been obtained.				
Explanation to the Local Stakeholders				
Have contents of the project and the potential impacts been adequately explained to the Local stakeholders based on appropriate procedures, including information disclosure? Is understanding obtained from the Local stakeholders?				
Have the comment from the stakeholders (such as local residents) been reflected to the project design?				
Alternative Analysis				
Have alternative plans of the project been examined with social and environmental considerations?				
2. River Water Quality				
Does the water quality of dam pond/reservoir comply with the country's ambient water quality standards? Is there a possibility that proliferation of phytoplankton and zooplankton will occur?				
Does the quality of water discharged from the dam pond/reservoir comply with the country's ambient water quality standards?				
Are adequate measures, such as clearance of woody vegetation from the inundation zone prior to flooding planned to prevent water quality degradation in the dam pond/reservoir?				
Is there a possibility that reduced the river flow downstream will cause water quality degradation resulting in areas that do not comply with the country's ambient water quality standards?				
Is the discharge of water from the lower portion of the damp on reservoir (the water temperature of the lower portion is generally lower than the water temperature of the upper portion) planned by considering the impacts to downstream areas?				
3. Ecosystem				
Does the project site encompass primeval forests, tropical rain forests, ecologically valuable habitats (e.g., coral reefs, mangroves, or tidal flats)?				
Does the project site encompass the protected habitats of endangered species designated by the country's laws or international treaties and conventions?				
Is there a possibility that the project will adversely affect downstream aquatic organisms, animals, plants, and ecosystems?				
Are adequate protection measures taken to reduce the impacts on the ecosystem?				
Is there a possibility that installation of structures, such as dams willblock the movement of the migratory fish species (such as salmon, trout and eel those move between rivers and sea for spawning)?				

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Are adequate measures taken to reduce the impacts on these species?				
4. Hydrology				
Is there a possibility that hydrologic changes due to the installation of structures, such as weirs will adversely affect the surface and groundwater flows (especially in "run of the river generation" projects)?				
5. Topography and Geography				
Is there a possibility that reductions in sediment loads downstream due to settling of suspended particles in the reservoir will cause impacts, such as scouring of the downstream riverbeds and soil erosion? Is there a possibility that sedimentation of the reservoir will cause loss of the storage capacity, water logging upstream, and formation of sediment deposits at the reservoir entrance?				
Are the possibilities of the impacts studied, and adequate prevention measures taken?				
Is there a possibility that the project will cause a large-scale alteration of the topographic features and geologic structures in the surrounding areas (especially in run of the river generation projects and geothermal power generation projects)?				
6. Air Pollution Control				
Are the construction sites watered to minimize dust generated?				
Are stockpiles of dusty materials (size with more than 20 bags cement) covered or watered?				
Cement debagging process undertaken in sheltered areas				
Are all vehicles carrying dusty loads covered/watered over prior to leaving the site?				
Are demolition work areas watered? (e.g. trimming activities by using breaker)				
Are dusty roads paved and/or sprayed with water?				
Are dust controlled during percussive drilling or rock breaking?				
Are plant and equipment well maintained? (any black smoke observed, please indicate the plant/equipment and location)				
Is dark smoke controlled from plant?				
Are there enclosures around the main dust- generating activities? (e.g. grout mixing)				
Hoarding (not <2.4m) provided along boundaries and properly maintained (any damage / opening observed, please indicate the location).				
Are speed control measures applied? (e.g. speed limit sign)				
Others (please specify)				
7. Water Pollution Control				
Are water discharge licenses valid?				
Are conditions of the license compiled with? (check the monitoring records and observe physically)				
Are wastewater treatment system being used and properly maintained on site? (e.g. desalting tank)				
Are there any wastewater discharged to the storm drains? Is the wastewater being treated?				
Are measures provided to properly direct effluent to silt removal facilities? (e.g. provide earth bunds / U-channels)				
Are u-channels and manholes free of silt and				

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	Yes	No*	N/A	
sediment?				
Are sedimentation traps and tanks free of silt and sediment?				
Are all manholes on-site covered and sealed?				
Are sandbags/earth bund adopted to prevent washing away of sand/silt and wastewater to drains, catch pit, public road and footpath?				
Are vehicles and plants cleaned before leaving the site?				
Are wheel washing facilities well maintained to prevent overflow, flooding sediment?				
Is sand and silt settled out in wheel washing bay and removed?				
Is the public road/area around the site entrance and site hoarding kept clean and free of muddy water?				
Is domestic water directed to septic tanks or chemical toilets?				
Others (please specify)				
8. Noise Control				
Is the CNP (Construction Noise Permit) valid for work during restricted hours?				
Are copies of the valid Construction Noise Permits posted at site entrance/exit?				
Do air compressors and generators operate with doors closed?				
Is idle plant/equipment turned off or throttled down?				
Do air compressors and hand-held breakers have valid noise emission labels (NEL)?				
Any noise mitigation measures adopted (e.g. use noise barrier / enclosure)?				
Are silenced equipment's utilized?				
Others (please specify)				
10. Waste Management				
Is the site kept clean and tidy? (e.g. litter free, good housekeeping)				
Are separate chutes used for inert and non-inert wastes?				
Are separated labeled containers / areas provided for facilitating recycling and waste segregation?				
Are construction wastes / recyclable wastes and general refuse removed off site regularly?				
Are construction wastes collected and disposed of properly by licensed collectors?				
Are chemical wastes, if any, collected and disposed of properly by licensed collectors?				
Does chemical waste producer license covers all major chemical wastes produced on site?				
Are chemical wastes properly stored and labelled?				
Are oildrums and plants/equipment's provided with drip trays?				
Are drip trays free of oil and water?				
Is there any oil spillage? Clean-up the contaminated soil immediately?				
Is litter, foam or other objectionable matters in the nearby water drain/sewer cleaned?				
Are asbestos wastes handled by registered professionals?				
Others (please specify)				
Are earth and sand generated by excavation properly treated and disposed of in accordance with the country's regulations?				
11. Storage of Chemicals and Blast Material				

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	Yes	No*	N/A	
Are chemicals stored and labeled properly?				
Does storage of blast material comply with license conditions (include types and quantities blast material is available?				
Are proper measures to control oil spillage during maintenance or to control other chemicals spillage? (e.g. provide drip trays)				
Are spill kits / sand / saw dust used for absorbing chemical spillage readily accessible?				
Others (please specify)				
12. Protection of Flora, Fauna and Historical Heritage				
Is the project site located in protected areas designated by the country' s laws or international treaties and conventions? Is there a possibility that the project will affect the protected areas?				
Are disturbance to terrestrial flora minimized (e.g. plants to be preserved)?				
Are disturbance to terrestrial fauna minimized (if rare species identified)?				
Any historical heritage exists on site? If yes, ensure appropriate measures taken to preserve it				
Others (please specify)				
13. Resource Conservation				
Is water recycled wherever possible for dust suppression?				
Is water pipe leakage and wastage prevented?				
Are diesel-powered plants and equipments shut off while not in use to reduce excessive use?				
Are energy conservation practices adopted?				
Are metal or other alternatives used to minimize the use of timber?				
Are materials stored in good condition to prevent deterioration and wastage (e.g. covered, separated)?				
Are pesticides used under the requirement of Agriculture, Fishers and Conservation Department?				
Others (please specify)				
14. Emergency Preparedness and Response				
Are fire extinguishers / fighting facilities properly maintained and not expired? Escape not blocked / obstructed?				
Are accidents and incidents reported and reviewed, and corrective & preventive actions identified and recorded?				
Others (please specify)				
15. Review of Implemented Mitigation Measures				
Are adequate measures considered to reduce impacts during construction (e.g., noise, vibrations, turbid water, dust, exhaust gases, and wastes)?				
If construction activities adversely affect the natural environment (ecosystem), are adequate measures considered to reduce the impacts? (c) If construction activities adversely affect the social environment, are adequate measures considered to reduce the impacts?				
16. Monitoring Plan				

Inspection Items	**Implemented?**			**Remarks** (i.e. specify location, good practices, problem observed, possible cause of nonconformity and/or proposed corrective/preventative actions)
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Does the proponent develop and implement monitoring program for the environmental items that are considered to have potential impacts?				
What are the items, methods and frequencies of the monitoring program?				
Does the proponent establish an adequate monitoring framework (organization, personnel, equipment, and adequate budget to sustain the monitoring framework)?				
Are any regulatory requirements pertaining to the monitoring report system identified, such as the format and frequency of reports from the proponent to the regulatory authorities?				
17. Review of Environmental Records				
Are environmental records has been prepared and maintained?				
Are training/drills records has been prepared and maintained.				
Is resources utilization record in being maintained?				
Are necessary agreements for camp sites, borrow area sites, magazine camp and temporary access roads been signed and filed?				

Annexure H
ADB Incident/Near Miss Reporting Form

INCIDENT / NEAR MISS REPORT	QUALITY RECORDS / FORMS	
	Doc. Level:	Doc. Version:1
	Doc. No	

HS.T.02	INCIDENT / NEAR MISS REPORT	
Title of Project:		
Location:		Date:

Objective(s)

To implement immediate and effective process in order to provide immediate treatment against any fatality, Injuries, Casualty.

SECTION A: TO BE COMPLETED BY PERSON INVOLVED (OR BY SUPERVISOR OR HEALTH AND SAFETY REPRESENTATIVE IF WORKER IS INCAPACITATED) AND BY THEIR SUPERVISOR

Details of the person involved in the incident/near miss

Employee #: ..... **Site Address** ..... **Work phone:** .....

Name: ..... **Father Name:** .....

Position: ..... **Date of birth:** ..... ☐ **Male** ☐ **Female**

Please select one: ☐ Member ☐ Client Member ☐ Sub Contractor ☐ Visitor/Other

Details of the: ☐ Incident ☐ Near miss ☐ Medical

Date: ..... **Time:** ..... A.M /P.M

City: ..... **Location:** .....

Was the incident/near miss reported to your supervisor, immediately: ☐ Yes ☐ No

Part of the body injured

Head	Trunk	Internal	Arm	Hand	Leg	Foot eye
☐ neck	☐ heart	☐ left	☐ left	☐ left	☐ left	☐ ear
☐ hip	☐ lungs	☐ right	☐ right	☐ right	☐ right	☐
☐ nose	☐ chest	☐ systemic	☐ shoulder	☐ thumb	☐ knee	☐ great toe
☐ mouth	☐ stomach		☐ upper arm	☐ fingers	☐ lower leg	☐ other toes
☐ teeth	☐ groin		☐ elbow	☐ palm	☐ ankle	
☐ face	☐ back		☐ forearm		☐ thigh	
☐ skull	☐ multiple		☐ wrist		☐ upper leg	☐ psychosocial

Nature of injury

☐ abrasion	☐ puncture	☐ heart attack	☐ sprain	☐ burn	☐ traumatic shock
☐ bruise	☐ laceration	☐ hearing loss	☐ strain	☐ scald	☐ electric shock
☐ fracture	☐ amputation	☐ foreign body	☐ hernia	☐ rash	☐ psychosocial
☐ concussion	☐ bite	☐ minor cuts		☐ allergy	☐ chemical

☐ aggravation of previous injury or medical condition *(please describe)*: .....

Type of incident which caused injury

☐ striking against	☐ stumbling	☐ lifting	☐ pushing	☐ ingestion
☐ struck by	☐ slipping	☐ bending	☐ pulling	☐ absorption
☐ caught in/on	☐ tripping	☐ twisting	☐ jumping	☐ inhalation
☐ stepping on	☐ falling	☐ stress	☐ vehicle	☐ needlestick

☐ other *(please describe)*: .....