Inception Report

EXTERNAL ENVIRONMENTAL MONITORING

ADB LOAN No. 4057/8397 AIIB-PAK

BALAKOT HYDROPOWER DEVELOPMENT PROJECT (BALAKOT HPP)

Prepared by Dr. Abdul Qayyum Aslam, External Environmental Monitor for Government of Pakistan and Asian Development Bank

Table of Contents

Annexures

List of Tables

List of Figures

1 Introduction

1.1 Balakot Hydropower Development Project

1. Balakot HPP is a 300 MW capacity run-of-river hydropower project with concrete gravity dam (Max height of 35 m) and underground cavern-type power house. The dam is located 18.6 km upstream of Balakot town, whereas the underground powerhouse will be located near the village of Barkot, 8.0 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 reservoir to the power house. 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 122m.

2. The main objective of Balakot HPP is to develop low cost hydropower and to 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 national grid especially rural and remote areas of Khyber Pakhtunkhwa through power distribution companies NTDC/PESCO.

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

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

   - **Reservoir:** A 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 (x106 m^3).

   - **River diversion scheme:** It include 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 1272 masl will be constructed. It will be concrete gravity solution and will be further converted to guiding structure. A downstream coffer dam with dam crest level of 1252.5 masl will be constructed. An archway shape diversion tunnel of 650 m length will be constructed.

   - **Sediment Management:** 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 x 4.5 meters (WxH). 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.
- **A concrete lined circular surge shaft** of 14.5 m diameter with 122 m height will be constructed.
- **Pressure Tunnel/Shaft:** A 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.
- **Power House:** A conventional underground cavern type power house is proposed. It will be operated through 3 Francis type turbines and 3 generators will be used to generate power.
- **Tailerace Tunnel:** A circular tunnel (8 m dia) 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 meter (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 by-pass tunnel of 440 m length from the dam bridge deck up to sediment bypass tunnel will be constructed.

4. Salient features of the project are provided in **Table 1** while project area map is shown as **Figure 1** below:

Table 1: Salient features of the project

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 1 0
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**	
Powerhouse 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)

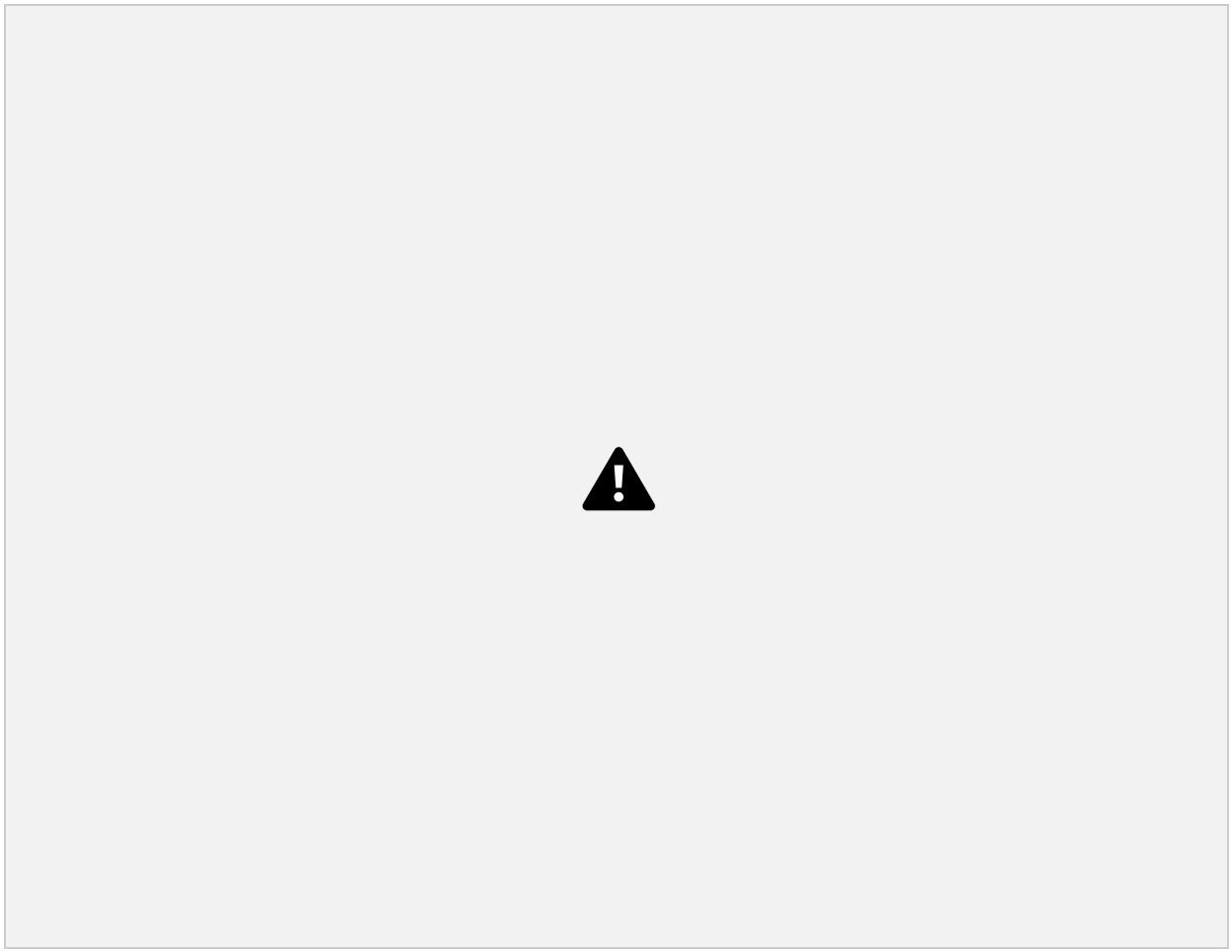

Figure 1: Layout Map of Balakot HPP

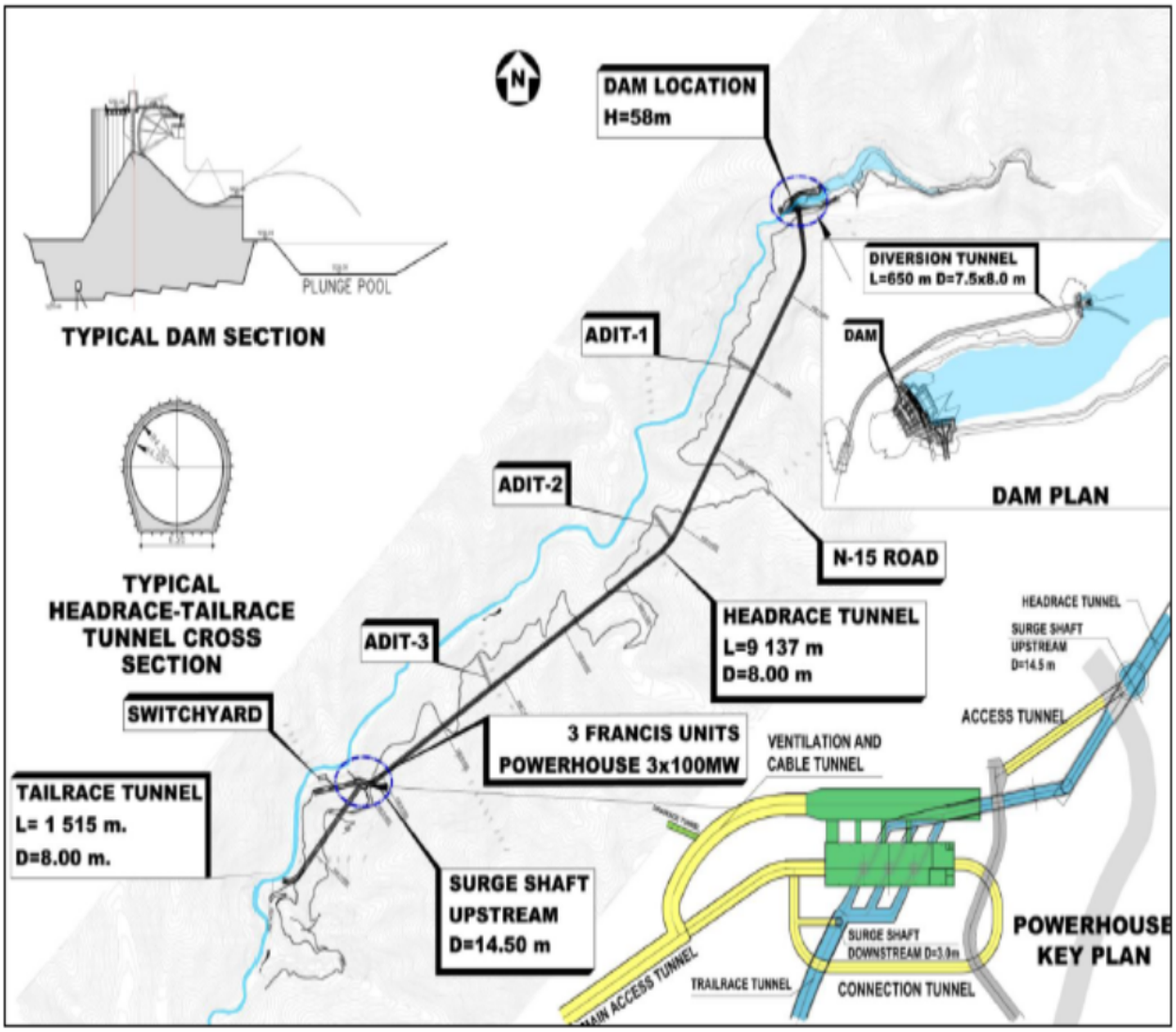

Figure 2: Layout Plan of Balakot HPP

1.2 Balakot HPP Project Area

5. 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. Power house is located near Sendori and tail race 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, 2209.

1.3 Balakot HPP Background

6. A feasibility study of the Project was prepared in 2013 (the “FS 2013”) which was evaluated by the technical consultants of The Asian Development Bank (“ADB” or the “Lenders”) and 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.

7. For the project development, the Government of Khyber Pakhtunkhwa signed a loan agreement with the Asian Development Bank (ADB) on May 21, 2021 which became effective on July 7, 2021.

8. As Asian Infrastructure and Investment Bank (AIIB) is the co-financier of the project, therefore, loan agreement was also signed with the bank which is effective since October 25, 2021.

9. The expected project completion date is March, 2028. The expected loan closing date is September, 2028.

10. Pakhtunkhwa Energy Development Organization (PEDO) is the executing agency of the project and will execute the project the Project Implementation Unit (PIU) established at Balakot.

11. On September 03, 2020, Pakhtunkhwa Energy Development Organization (PEDO) entered into Management Consultancy Service Agreement for Balakot Hydropower Project (300MW) with a Joint Venture (JV) of DOLSAR Engineering Inc. Co. (Turkey), AGES Consultants, BAK Consulting Engineers, CivTech Associates, Electra Consultants and Techno Legal Consultants (Pvt.) Limited from Pakistan. The JV is led by DOLSAR Engineering Inc. Co. (Turkey).

12. The consultancy services are effective for 84 months since Commencement of Services on September 11, 2020. During this period, the JV will provide services specified in the consultancy contract agreement as Project Management Consultant (PMC) and will act on behalf of PEDO as “Project Manager/Engineer”.

13. The construction contract of Balakot Hydropower Project (300MW) was awarded to a Joint Venture of China Gezhouba Group Company (CGGC), China & Ghulam Rasool and Company Pvt. Ltd (GRC), Pakistan on Mach 09, 2021.

14. Consequent upon fulfillment of the requisite conditions of the EPC Contract, the Implementing Agency (IA) notified September 27, 2021 as an Effective Date for EPC Contract.

15. PIU Balakot HPP has issued sectional work commencement to EPC contractor on December, 2022 for below project facilities falling in Moza Ghanol and Sangar of Balakot HPP.

    - Access road to Shaft
    - Switch yard

- Access Road to Switch yard
- Colony with Tailrace outlet
- Access to Power House
- Access road to Staff Colony

16. EPC contractor is engaged in construction of temporary access roads leading to various Adits, geotechnical investigations and construction of temporary camps.

17. With respect to environmental safeguards, project is categorized as A as per ADB SPS, 2009 for which EIA was prepared, approved and disclosed on ADB website in 2019.

18. The Employer granted sectional possession of site to the EPC Contractor for the project facilities falling in Ghanool and Sangar Mozas for which SSEMP was prepared by the EPC contractor and employer granted approval of the same in Dec, 2022.

19. Instrumental environmental monitoring for ambient air, noise, water and soil quality was carried out and results are discussed in SAEMR July-Dec, 2022. PM_{10} and $PM_{2.5}$ results at most of the monitored locations are not in compliance to WHO however in compliance to NEQS. Gaseous parameters of ambient air are well within the WHO and NEQS guidelines.

20. Ambient noise levels of the monitored locations are well within the NEQS except GRC camp where values are exceeding the guideline value of 55 dB(A). Ground water and surface water quality of the sampled site also shows compliance to WHO and NEQS. Soil baseline at Adit 1, Adit 2, Adit 3, GRC Camp and Powerhouse was also carried out to develop reference values for comparison purpose. Soil analysis results that will be obtained from monitoring during construction phase will be compared with these reference values to track any change caused by the project.

21. Internal environmental monitoring reports of the project for the period of September 2020-Dec, 2021 and Jan-June, 2022 and July-Dec, 2022 has been prepared by the PMC and accordingly ADB has approved and disclosed these documents on the website.

22. As per requirements of ADB SPS, 2009, third party environmental monitoring contact is also in place and effective since July, 2022.

1.4 Key Environmental Impacts and Mitigation Measures

23. The project EIA has identified following key adverse environmental impacts that need to be managed throughout construction of the project.

- Loss of river ecology due to construction of reservoir
- Degradation of downstream fish breeding grounds in low flow segments of river
- Disruption of natural passage of springs as a result of tunnels construction
- Spoil generated from tunneling activities
- Increased erosion of river banks and increased sedimentation impacting water quality

24. No International Union for Conservation of Nature (IUCN) critically endangered species were observed and reported during critical habitat assessment conducted as per the IFC Performance 6 at the time of EIA however study has determined that the Project would affect a Critical Habitat of two endemic and restricted range fish species Nalbant's Loach *Schistura Nalbanti* and Kashmir Hillstream Loach *Triplophysa kashmirensis*.

25. Construction phase impacts include loss of natural vegetation and trees due to land clearing under project footprints; spoils from tunneling activities, solid waste from worker‘s campsites and offices, construction and residential camp effluents, batching plants emissions; air, noise, soil pollution, increased traffic, worker OHS risks, Community health and safety, blasting operation, climate hazards and vibration impacts.

26. The EIA has identified mitigation and management measures and contain set of management plans to ensure that environmental safeguards are well taken by the project stakeholders during project execution.

27. A standalone Biodiversity Action Plan (BAP) has been prepared to ensure that impacts on Critical Habitat are mitigated and net gain‘ is achieved. The BAP implementation focuses on institutional arrangements and continuous coordination and collaboration among various stakeholder such as PEDO, KP EPA, KP Fisheries Department, other hydropower operators on the river and external stakeholders. BAP includes measures to improve net gain of impacted restricted range species and measures for Vulnerable Alwan Snow Trout *Schizothorax richardsonii* which is migratory fish.

28. During construction Spill Prevention and Response Plan, Waste Management Plan, Blasting and Explosives Control Plan, Stakeholder Engagement Plan (SEP), Dam Safety Review Procedure, Site Security Plan and Occupational Health and Safety (OHS) Plan will be developed to ensure that environmental impacts are minimized and well mitigated.

29. An Emergency Preparedness and Response Plan (EPRP) will be developed to mitigate and manage emergency risks.

30. The Project area is prone to climate hazards such as landslide, flood, change in rainfall pattern and change in the melting rate of the glaciers feeding the Kunhar River. The key climate change risks include precipitation extremes and increased Probable Maximum Flood. The Dam has been designed considering these climate risks and a climate monitoring and coordination framework will be developed to manage these impacts. Project climate modelling will be carried out and ADB has estimated budget of about USD 7 million for climate adaptation measures.

31. The Project construction is expected to create temporary positions for 1200 skilled, semi-skilled and unskilled workers during peak construction. The Project has committed to creating 500 jobs for local community members and will support capacity building in the community to achieve this objective. The General Conditions of Contract with the EPC comprise provisions to manage working conditions, including employment conditions, housing, occupational health and safety management, prevention of forced labor and harmful child labor, and protection of the health and safety of adjacent communities from physical hazards and/or the presence of the Project‘s workforce.

1.5 Site Specific Environmental Management Plan

32. EPC contractor has prepared site specific environmental management plan which was approved and disclosed by ADB. SSEMP has provided detailed discourse on risk assessment of key construction activities of Balakot HPP and provided set of environmental management plans including erosion and sedimentation control plan, pollution prevention plan, Waste management plan, Hazardous waste management Plan, Spoil management and disposal plan, tree plantation plan, environmental monitoring plan and OHS management plan. It is expected that successful implementation and monitoring of these plans will reduce adverse construction phase envrionmental impacts of the project.

1.6 Project Implementation Arrangements

33. The project implementation arrangements are detailed in below table.

Table 2: Project Implementation Arrangements

Arrangement	Organization/Agency
Funding Sources	● Asian Development Bank (ADB) and Asian Infrastructure and Investment Bank (AIIB) through a loan to the Government of Pakistan (Loan No: 4057/8397 (AIIB)-PAK) ● Government of Khyber Pakhtunkhwa
Executing Agency	Energy and Power Department, Government of Khyber Pakhtunkhwa
Implementing Agency	Pakhtunkhwa Energy Development Organization (PEDO), Government of Khyber Pakhtunkhwa
Project Management Consultants	Joint Venture of: ● DOLSAR Engineering Inc. Co. (Turkey) Lead Firm ● AGES Consultants ● BAK Consulting Engineers ● CivTech Associates ● Electra Consultants ● Techno Legal Consultants (Pvt.) Limited from Pakistan
EPC Contractor	Joint Venture of China Gezhouba Group Company (CGGC), China & Ghulam Rasool and Company Pvt. Ltd (GRC), Pakistan

1.7 External Environmental Monitoring

34. The goal of external environmental monitoring during implementation of Balakot HPP is to ensure compliance with the requirements of the EIA/EMP/SSEMPs and environmental approval (NOC) conditions of KP EPA. Compliance of the environmental management plans would help to mitigate the potential impact on the environment and sustainable development of the project. The results of external environmental monitoring will be recorded and checked in order to monitor the non-compliances and effectiveness of mitigation measures. In such cases any non-compliance will be flagged in the early stages and corrective actions will be recommended. This inception report outlines the methodology which will be adopted for external environmental monitoring of project

activities and effectiveness of mitigation measures including coordination mechanism with PIU, PMC and Project contractors and other stakeholders such as KP EPA and KP Fisheries and KP Wildlife Department.

35. As part of inception activities External Environmental Monitor visited the project area on 25th May, 2023 and paid visits to project areas including staff colony site, power house site, reservoir area, main dam site and temporary access roads. Site visit pictures of inception activities are provided below.

	
EEM and PIU staff taking field observations at staff colony site	Meeting with DD Environment PEDO and Environment Specialist PMC
	
Visit to Temporay Access Road R-1	Meeting with PMC Staff
	
EEM and PIU/PMC Team at Main Dam site	Visit to Temporary Access Road R-3

Figure 3: EEM Inception visit to Balakot HPP project area

2 Project Area Description

2.1 Project Area Description

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

- Dam and Reservoir Area
- Power House and Staff Colony

37. Details of project components that will be constructed in Main dam and reservoir area are shown as **Figure 4.** Components that will be constructed in Power House and staff colony area are shown as **Figure 5.**

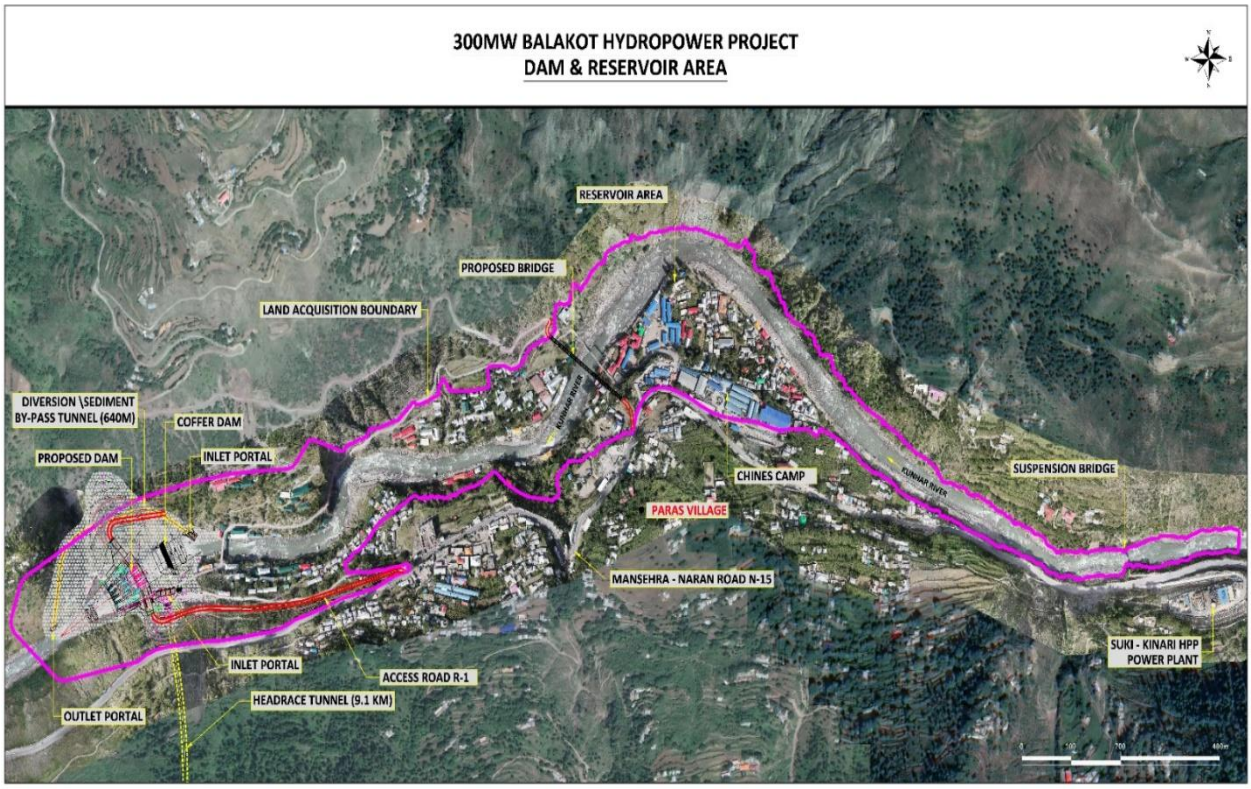

Figure 4: Typical setting of Reservoir and Main Dam

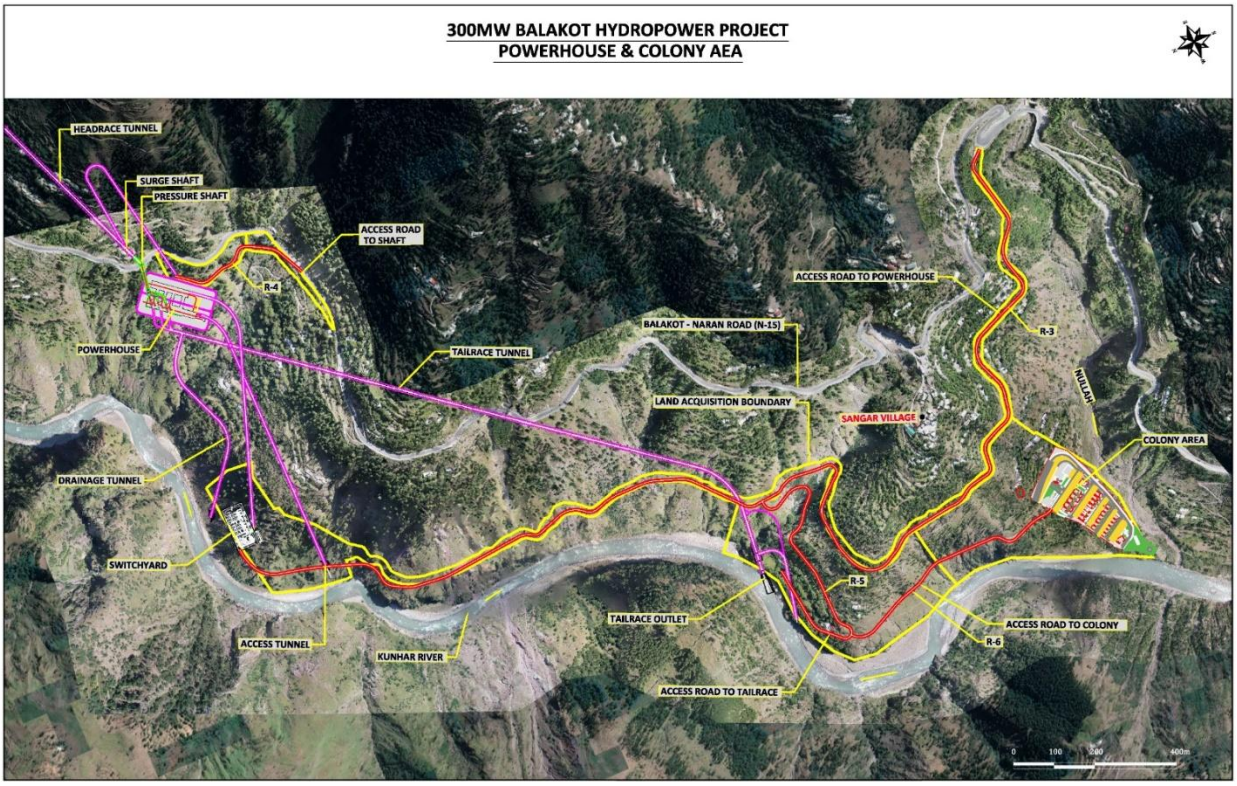

Figure 5: Typical Setting of Powerhouse & Colony Area

2.2 Reservoir and Dame Site

38. Reservoir and dam site are located at 1272 m amsl in the hilly terrain of steep slope valley of Paras village. Pine scrub forest are the ecology of the area. Photographs of proposed dam site, reservoir area, upstream coffer dam and downstream coffer dam are provided below.

	
Proposed reservoir area of Balakot HPP	Proposed area for Main and Coffer Dam

Main Dam site	Downstream coffer dam

Figure 6: Typical Setting of Reservoir, Main Dam and Coffer Dam

2.3 Diversion and Sediment Bypass Tunnel

39. Diversion tunnel will be constructed on the left bank of the river which will also serve as sediment bypass tunnel and low level spill way. The area is hilly terrain of steep slope surrounded by pine scrub forest. Photographs of diversion and sediment bypass tunnel are provided below.

Figure 7: Typical setting of Diversion/Sediment Bypass Tunnel

2.4 Headrace Tunnel

40. Head race tunnel of 8 m diameter and about 9.1 km length will be constructed on left bank of river. The tunnel will comprise of 03 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 8: Typical setting of Headrace Tunnel location

2.5 Surge Shaft, Pressure Tunnel and Powerhouse

41. 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 1220 m while powerhouse turbine axis are located at elevation of 1050 m amsl. Underground cavern-type power house will be constructed. Typical setting of surge shaft, pressure tunnel and powerhouse is provided below.

Figure 9: Typical setting of Surge Shaft, pressure Tunnel and Power House

2.6 Tail Race Tunnel

42. Tailrace tunnel will be constructed upto 1.565 m length and will be comprised of circular tunnel with Archway section transition at outlet portion. It is also located in Kapi Gali and ultimately outfall in the Kunhar river. Proposed alignment and outlet of tail race tunnel is shown in below figure.

Figure 10: Typical setting of Tail Race Tunnel

2.7 Project Access Roads

43. Two permanent roads are included in the project design. These include a permanent road to Dam and a permanent road to the Powerhouse and project residential colony sites. Earth work 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 pilling, span girders, railing works, parapet walls, and surfacing.

44. 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.

45. 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.

46. Construction work on project temporary access roads has been started. Start points of temporary access roads from N-15 are shown below.

Figure 11: Temporary Access Roads R1 and R3 to access Adits

2.8 Staff Colony

47. Construction of staff colony is part of project design for which land has been acquired at Ganhool village. Key plan of the staff colony has been prepared while detailed planning and design finalization is in progress. The colony will comprise of residential units and offices for the project operational staff. Protection works, concreting, and brick masonry are some of the major construction activities to be under taken at this site. Site for staff colony near power house is shown in below figure.

Figure 12: Site for Staff Colony at Ganhool Village

3 Project Construction Camps & other Facilities

3.1 Project Construction Camps

48. EPC Contractor has 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 are planned to be constructed through pre-fabricated materials while platform formation and protection work will involve earthwork 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.

49. 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

50. Contractor's camps will be temporarily built and subject to restoration to its original condition after completion of the project. Periodic visit to camp sites will be done for the monitoring of EIA/EMP/SSEMP requirements and EHS indicators to monitor environmental safeguard compliance. Layout of construction camps are shown in **Figures 13-15.** Layout of asphalt and batching plant is shown as **Figure 16.**

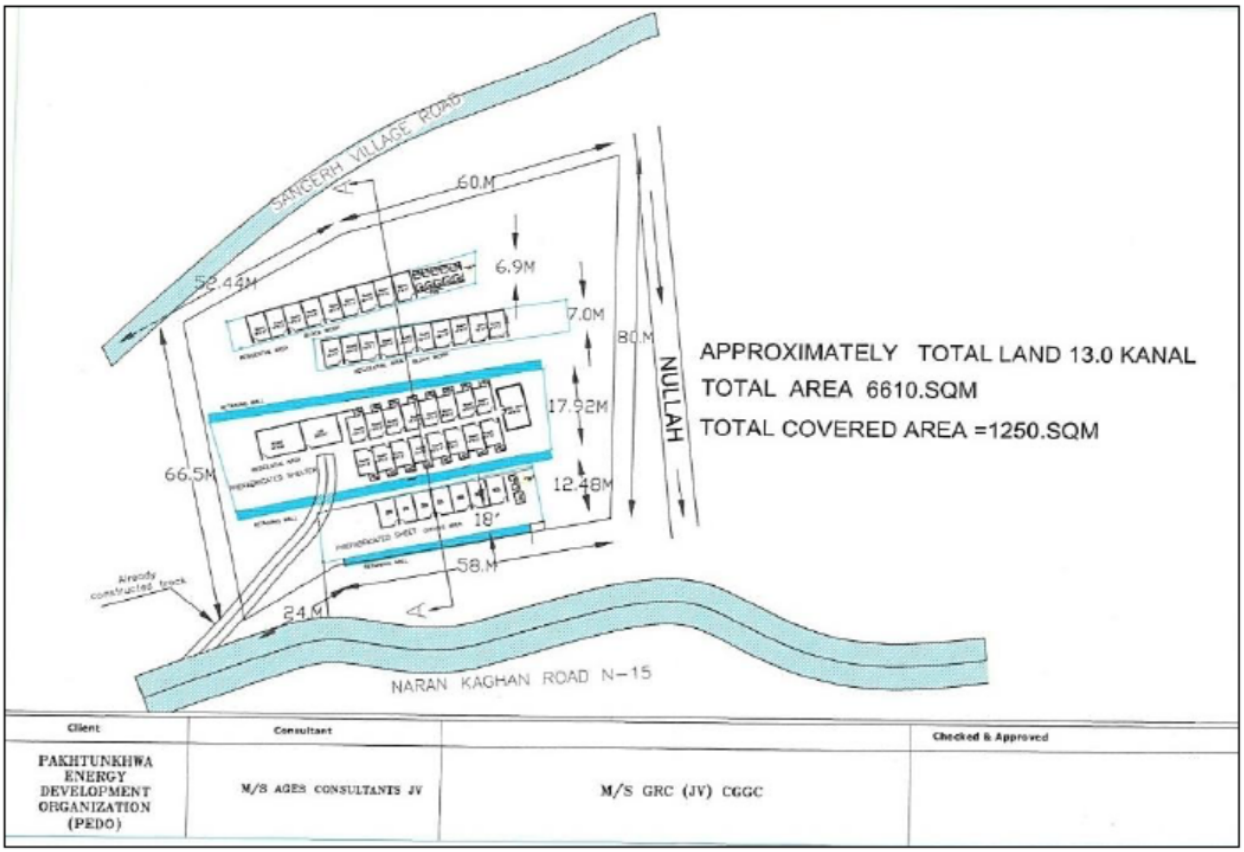

Figure 13: Camp layout at Staff Colony

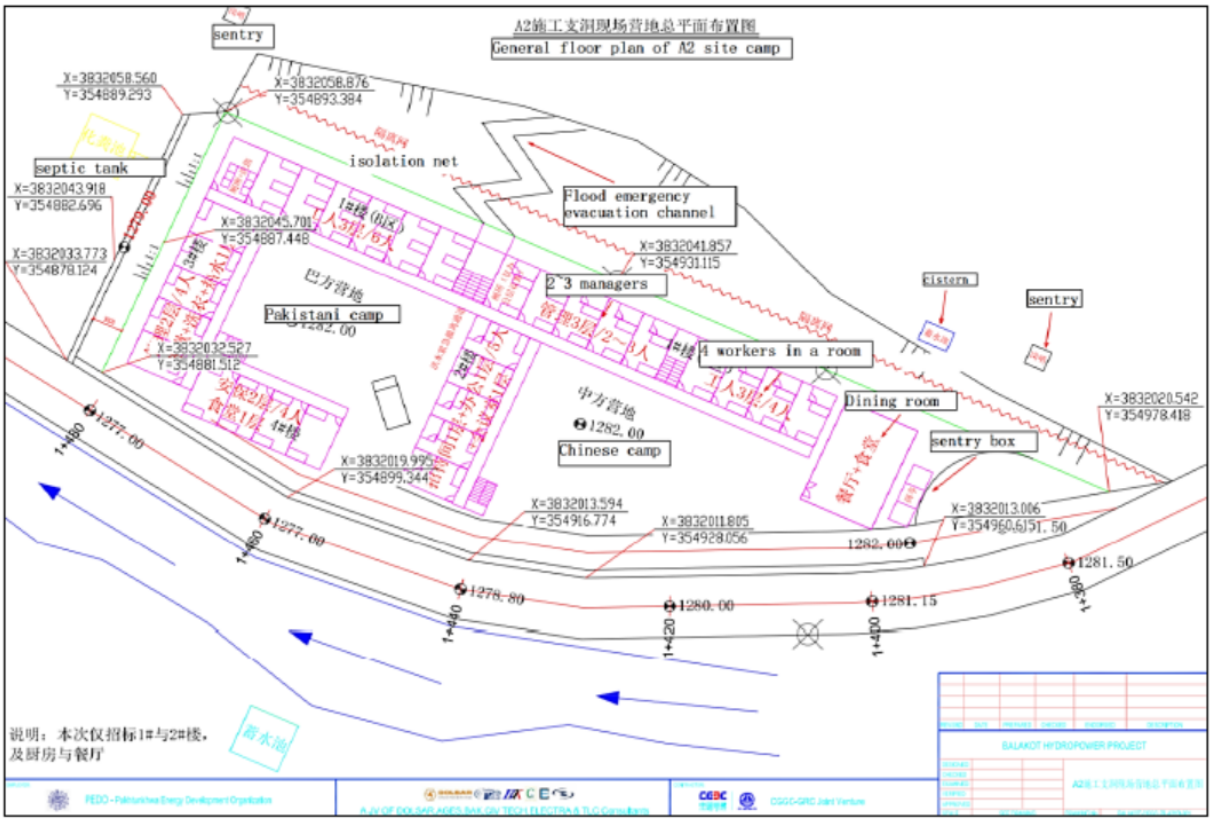

Figure 14 : Camp Layout Plan to be constructed at Adit-2

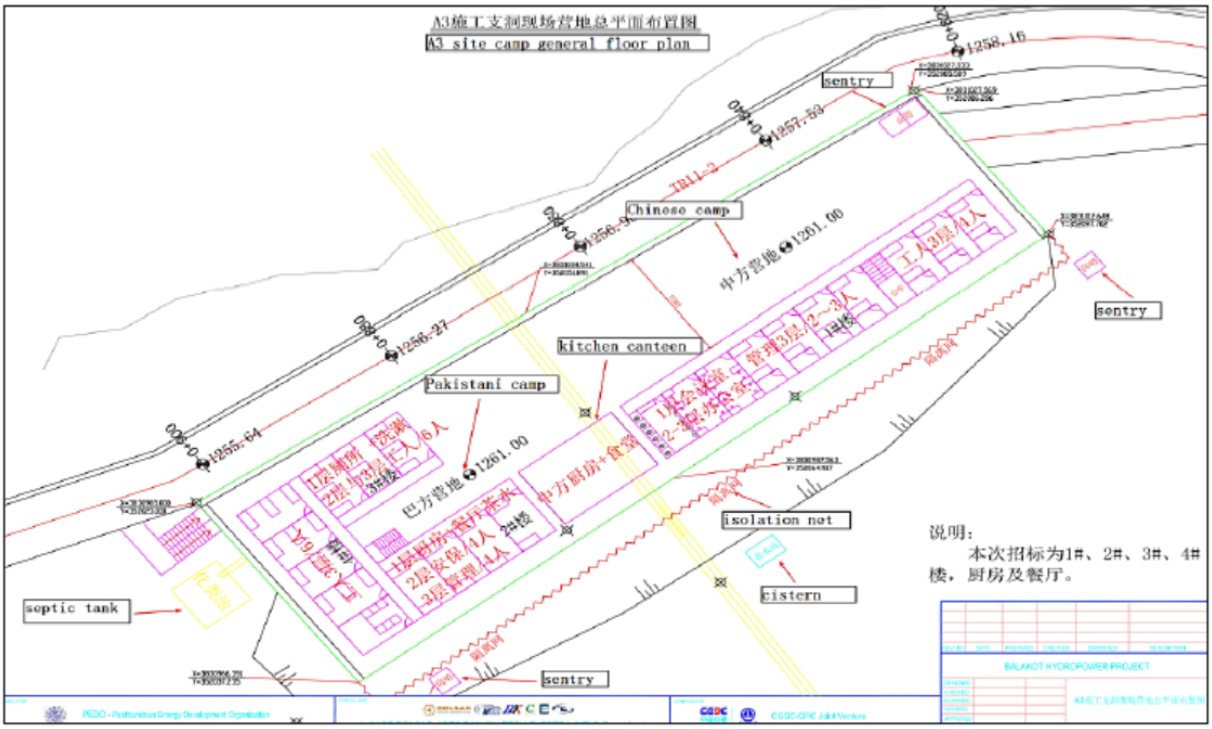

Figure 15 : Camp Layout Plan to be constructed at Adit-3

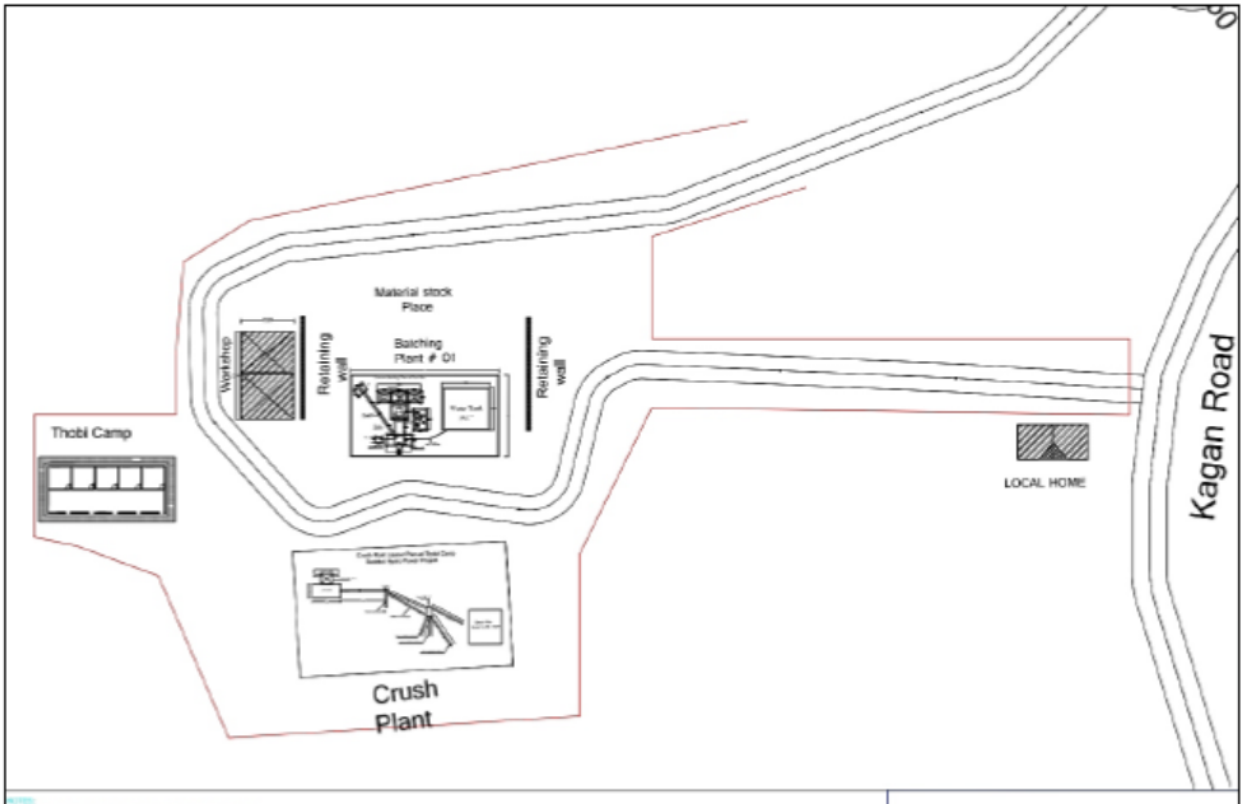

Figure 16 : Layout Plan of Asphalt and Batching Plant

3.2 Magazine Camps for Blasting Activities

51. Since Balakot HPP involves blasting activities for which Magzine camps are required to be established. Magazine camps will be established following international standard practices to control HSE risks involved in storage and operation of blasting material. EPC contractor has identified 02 sites for Magazine camps at Ghanool Nullah (Near Adit-2) and at Kholia (Near Adit-3). Magazine camp layout at Adit-2 and Adit-3 is shown as **Figure-17** and **Figure-18** respectively.

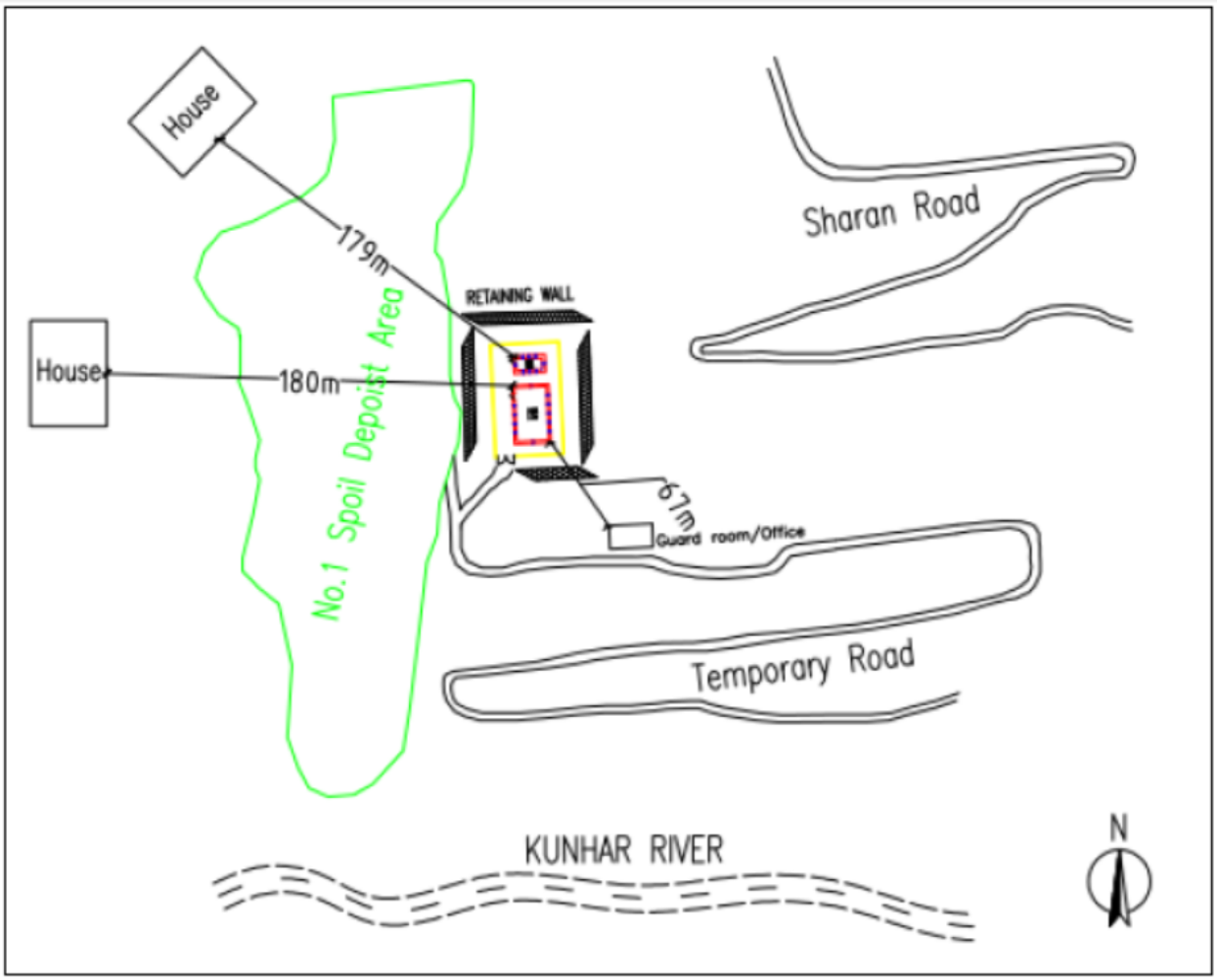

Figure 17 : Magazine Camp Layout Plan to be constructed at Adit-2 (Ghanool Area)

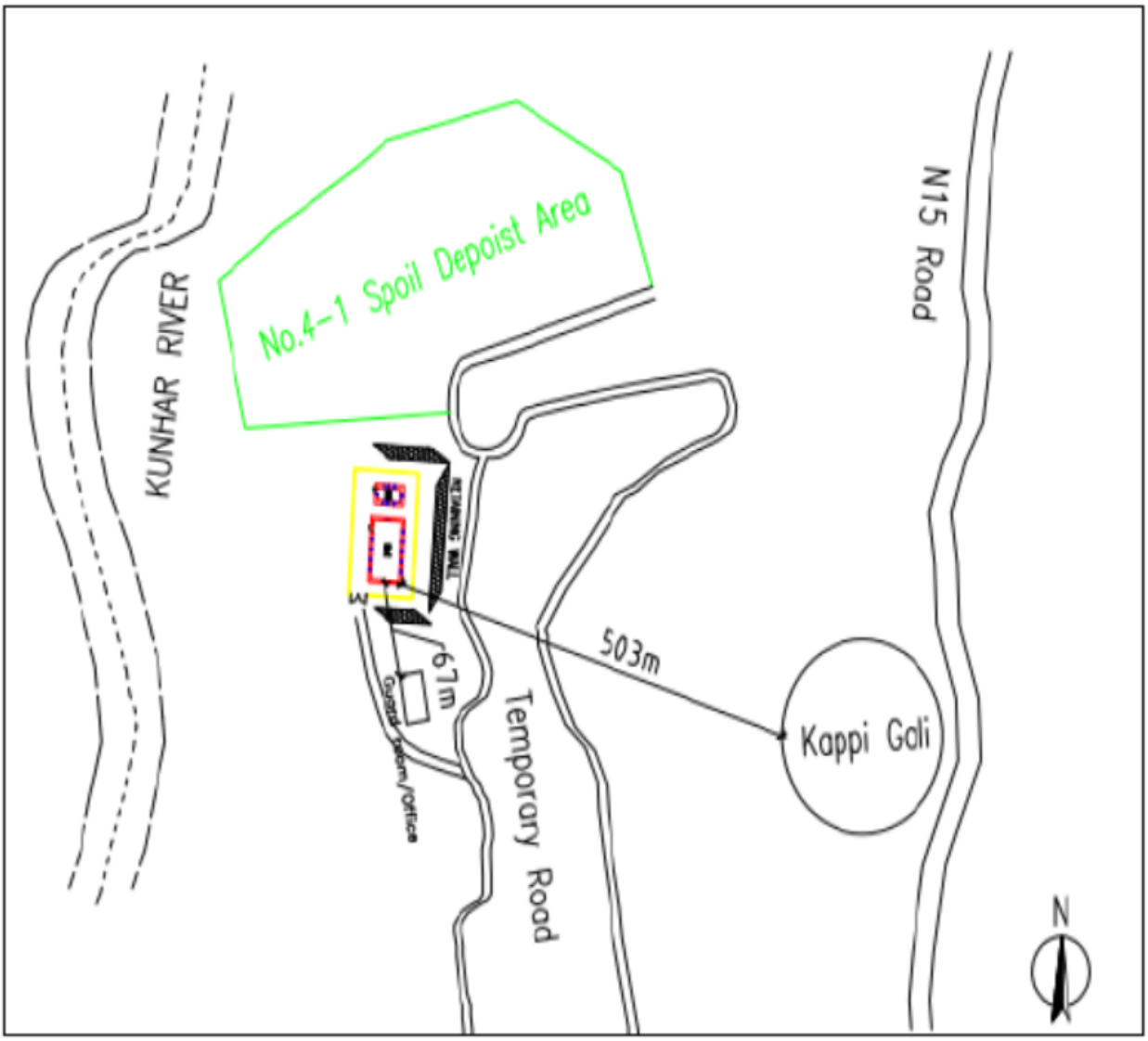

Figure 18 : Magazine Camp Layout Plan to be constructed at Adit-3 (Kholia Area)

3.3 Project Temporary Access Roads

52. Temporary access roads (TR) are scheduled to be constructed at Dam/Headworks and marked as (TR1$_1$, TR1-1, TR1-2, TR3, TR4, TR5, TR6, TR7, TR8, TR18, TR20), at Headrace Tunnel (TR9, TR10, TR11, TR19), and at Tailrace (TR12, TR13, TR14, TR15, TR16, TR17) sites. All these temporary roads 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 shall be left in operational conditions subject to the demand of the locals. Earthwork, including cutting, filling and compaction, and protection works are the major activities to be undertaken at the temporary access roads sites. There are two temporary bridges at upstream and downstream of Dam (BR1$_2$ & BR2) which will be constructed.

53. Initially 08 temporary roads are envisaged to be constructed to access the dam site area. Proposed layout of these area is shown in below figure.

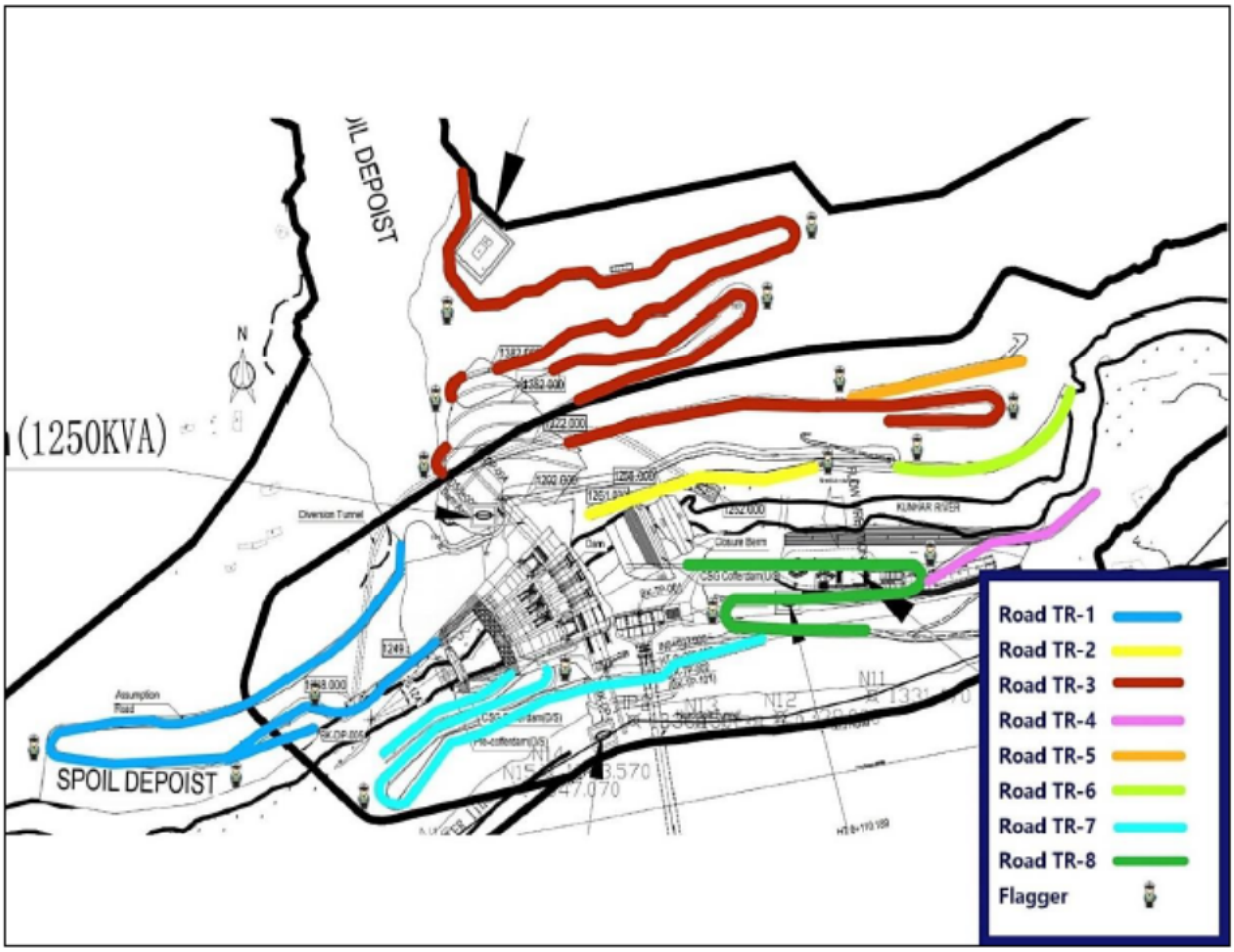

Figure 19 : Layout of Access Roads to the Dam Site

54. In order to access Adit-1, Adit-2 and Adit-3 temporary roads will be constructed. Temporary Access roads 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.

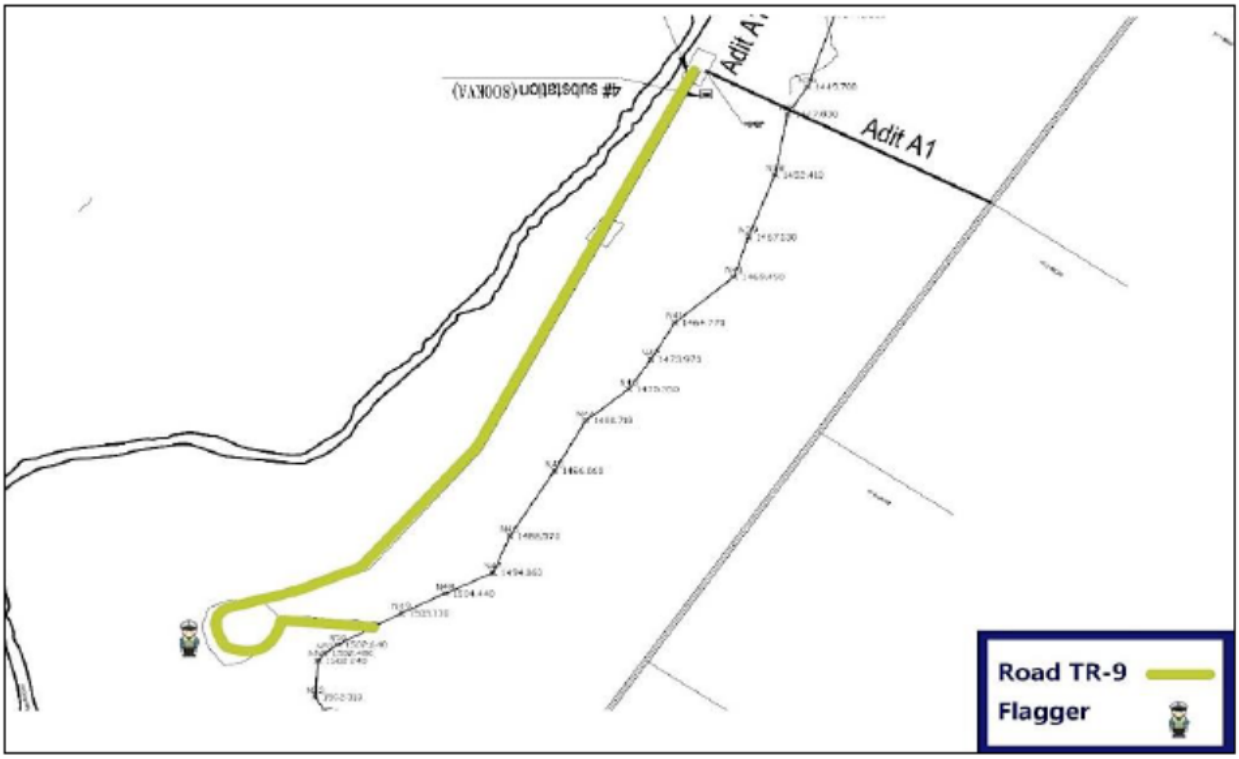

Figure 20 : Layout of Access Roads to Adit-1

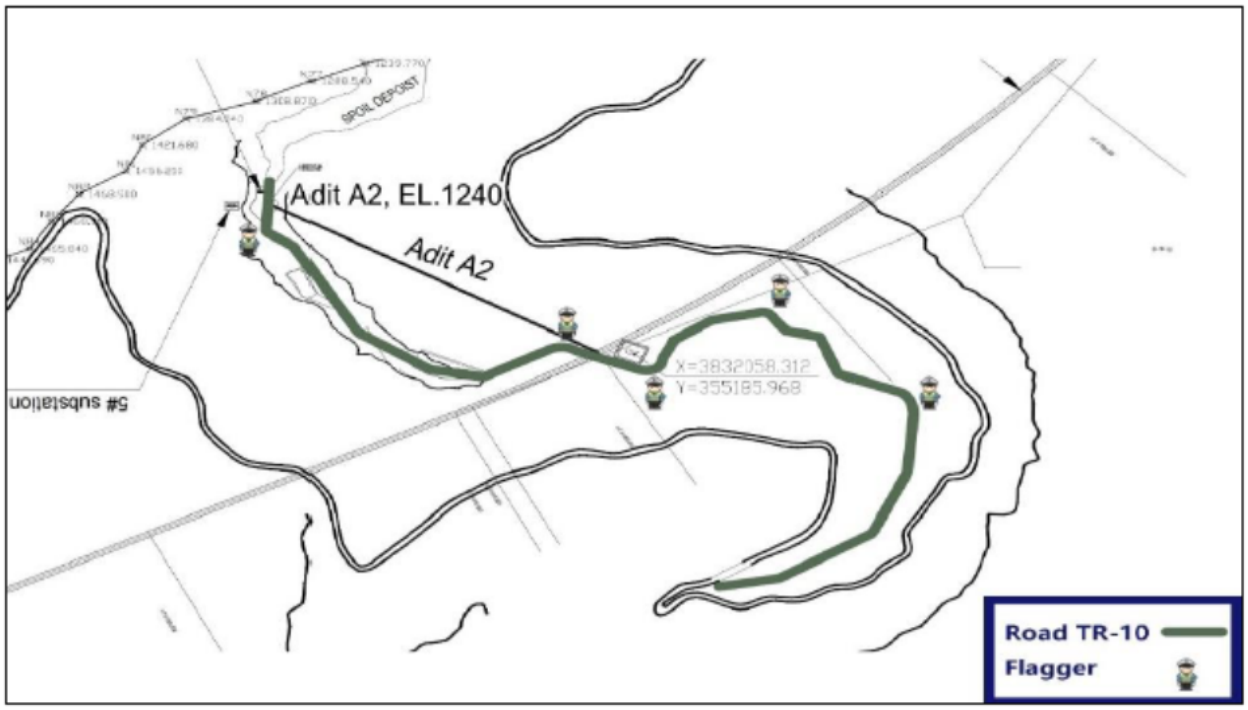

Figure 21 : Layout of Access Roads to Adit-2

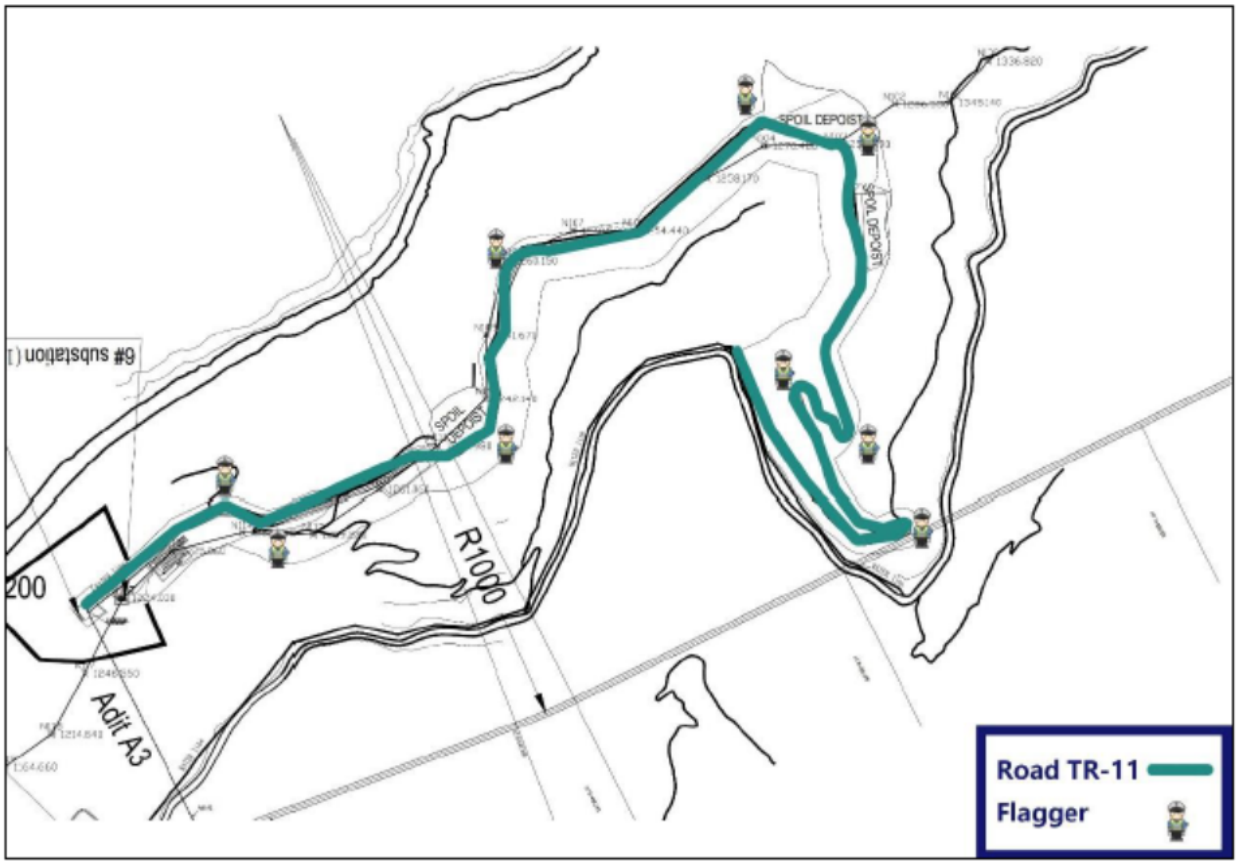

Figure 22 : Layout of Access Roads to Adit-3

55. In order to access tail race tunnel and power house three temporary roads are planned which are marked as TR-12, TR-13 and TR-14 respectively and layout setting is shown in below figures.

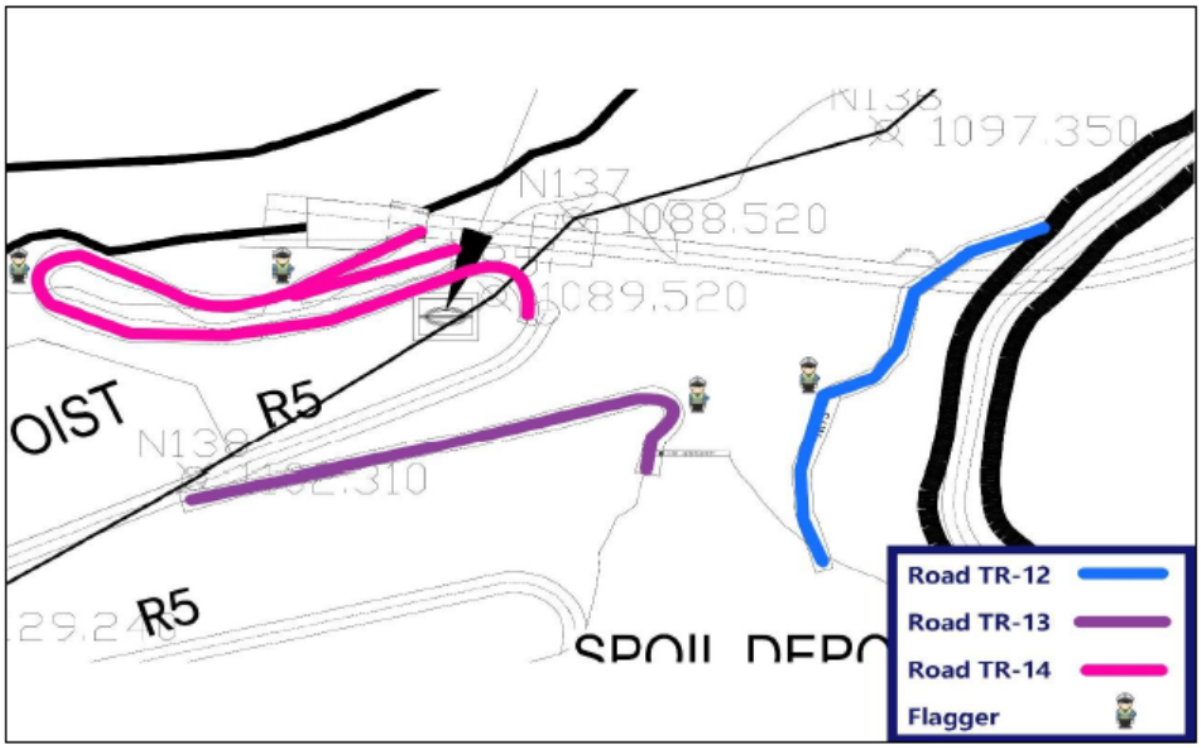

Figure 23 : Layout of Access Roads to Tailrace Tunnel and Power House

3.4 Lease Agreement for Temporary Works and Spoil Disposal Areas

56. EPC contractor has made below lease agreements to accommodate temporary works and spoil disposal areas for Balakot HPP.

- Lease agreement for construction of site camp in Kiwai village measuring area of 23 Kanal for Thobi camp
- Land lease agreement for site camp in Mouza Ghanol measuring area of 5.53 Kanals for Adit-2
- Land lease agreement for Magazine camp A2 in Mouza Ghanool measuring area of 3 Kanals (Owner 1)
- Land lease agreement for Magazine camp A2 in Mouza Ghanool measuring area of 0.258 Kanals (Owner 2)
- Land lease agreement for Batching Plant at Mouza Ghanool measuring area of 6.10 Kanals (Owner 1)
- Land lease agreement for Batching Plant at Mouza Ghanool measuring area of 3.60 Kanals (Owner 2)
- Land lease agreement for Batching Plant at Mouza Ghanool measuring area of 1.50 Kanals (Owner 3)
- Land lease agreement for Soil disposal at Mouza Ghanool with 27 land owners

- Land lease agreement in Sangar village for camp at colony site measuring area of 13 Kanals

3.5 Quarry Areas

For the construction activities of Balakot HPP, initially three quarry areas have been identified for future use and subject to approval from the Engineer. These quarry sites are near the river and EPC contractors was not allowed to develop the quarry sites. At present no quarry areas are being developed. Quarry material will be purchased from approved sites such as Ghumwan for coarse aggregates and Lawrencepur, Maira and Thakot for fine aggregates.

4 Environmental Safeguards

57. As per the ADB environment safeguard categorization based on SPS, 2009 requirements, Balakot HPP Project was classified under Category A and a detailed EIA was prepared at the time of loan processing which was approved and disclosed on ADB web site. For Category A projects ADB SPS, 2009 requires that external environmental monitoring must be carried out during project construction to ensure EMP compliance and to evaluate environmental safeguard performance of the project. Balakot HPP 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 requirements. SSEMP was also prepared for the project components and its compliance will be ensured through contractual binding in construction contracts. PIU Balakot HPP office through PMC is closely monitoring the EIA/EMP/SSEMP compliance on construction sites where sectional approval has been granted.

5 Institutional Arrangements for EIA/EMP/SSEMP Implementation

58. Institutional arrangements for implementation of mitigation measures are detailed in the EMP and further site specific environmental management plan (SSEMP) has been prepared to implement mitigations measures. An overview of roles and responsibilities of executing agency, project management consultant and project contractors is provided below.

5.1 Project Director- PIU

59. Overall responsibility for environmental management and monitoring rest with the Project Director (PD), PIU. PD will be assisted by the Environment & Health Security Unit, in matters pertaining to the Environmental, Health and Security aspect of the project. In this regard Deputy Director (Environment Health, Safety & 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, 2009 requirements.
- Provide technical assistance to the project team, in matters related to EMP 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/RFP documents.
- Provide technical input to the various training programs proposed as a part of the EMP.
- Ensuring that all regulatory clearances from the KP EPA are obtained before starting civil works for the project.

- Conduct on site spot checks to check the compliance level, as well as for 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 site-specific EMP (SSEMP) prepared by the Contractor and also monitor the implementation of the SSEMP.

5.2 Project Management Consultants

60. The PD is being supported during implementation of the Project by Project Management Consultants (PMCs). PMC staff to look after Environmental safeguards is comprised of environment expert on intermittent basis and HSE monitor to supervise and monitor safeguard compliances. PMC has hired environment expert and HSE monitor for the project activities.

61. The PMCs are responsible for day-to-day monitoring of the EMP and SSEMP on behalf of the Client (PEDO) during the execution of the civil works of the Project. Role of PMC is to:

- Review all relevant documents, particularly the Environmental Impact Assessment study, other management plans and update these as may be required to bring it in compliance with ADB's SPS.
- Prepare/update a cost-effective environmental management plan for the Project in line with EIA/EMP recommendations so as to ensure minimal environmental effects both during and following the construction period.
- Review the site-specific environmental management plan (SSEMP) for the project prepared by the contractors.
- Monitor the implementation of EMP and SSEMP on a regular basis during execution of civil works by the Contractor.
- Prepare and execute required appropriate 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 to monitor and mitigate potential environmental impacts.
- Ensure that any environmental impact assessments, if required, fully comply with ADB SPS, 2009 and ensure, that all required mitigation measures are identified and acceptable environmental management and monitoring plans 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 during project implementation.

5.3 The EPC Contractor

62. The EPC Contractor are responsible for the implementation of the EMP/SSEMP and other management plans developed for the project as well as maintaining responsibility for environmental protection liabilities under KP Environmental Protection Act 2014, ADB's SPS, 2009 requirements. The EPC contractor will also be responsible for training

his crew in all aspects and implementation of the EMP/SSEMP. The contract would include an environmental and social mitigation budget as part of the engineering costs of the respective works.

63. The key positions to be filled within the contractor's staff for implementation of the EMP/SSEMP include:

- Environmental Manager
- H&S Manager
- Environmental staff reporting to Environmental manager
- H&S and medical staff reporting to H&S Manager
- EPC contractor has hired environmental and H&S manager to implement SSEMP requirements and environmental safeguards during project construction activities.

5.4 External Environmental Monitor

64. External Environmental Monitor is responsible for:

- Monitoring and reporting of all provisions of the EIA, EMP and SSEMP and other supported management plans
- Periodic environmental monitoring during construction phase
- Reporting of environmental non-compliances to project stakeholders including ADB, PIU and PMC.
- Suggest corrective actions for close out of EMP/SSEMP non compliances.
- Assess the contractors and project stakeholder capacity toward EMP/SSEMP implementation, monitoring, reporting and conformance.

65. External environmental monitor for the project has been hired and is on board since July, 2022. This inception report is prepared as part contractual requirements of External Environmental Monitoring. First semi-annual external environmental monitoring will be carried out for the duration of Jan-June, 2023 and findings will be shared as semi-annual external environmental monitoring report of PIU/ADB for necessary corrective actions.

6 External Environmental Monitoring (EEM)

6.1 Scope of EEM

66. Scope of external environmental monitoring include monitoring of construction activities at active and planned construction sites of Balakot HPP. Details of the work (both qualitative and quantitative) is given in project design, EIA and Contractor's SSEMP. EEM aims to:

- Develop specific monitoring indicators for undertaking monitoring and evaluation of EMP implementation including the community participation, consultation and disclosure;
- Ensure that all the contractual obligations related to the environmental and social
- compliance are met;
- Monitoring EMP/SSEMP implementation and identifying 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 and conduct field inspections and verify the progress in EMP/SSEMP implementation of the project and prepare reports for the PIU and the ADB.
- Review grievance procedures; its recording, reporting and processing time and its redressal;
- Evaluate performance of PIU, PMC and EPC contractors in EMP/SSEMP Implementation, monitoring, reporting and conformance;
- Document monitoring results and 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; and
- Conduct meetings, and discuss environment-related issues with all key stakeholders including project staff of the PIU, PMC and EPC contractors.

6.2 Methodology for EEM

6.2.1 Review of EIA/EMP, Design Documents, SSEMPs

67. External monitoring process has been 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 will also include review of SSEMPs and other supporting management plans. This review will include review of Biodiversity Action Plan and monitoring on its implantation and consultations. This exercise will also include review of Spill Prevention and Response Plan, Waste Management Plan, Blasting and Explosives Control Plan, Stakeholder Engagement Plan (SEP), Dam Safety Review Procedure, Site Security Plan and Occupational Health and

Safety (OHS) Plan. This exercise will support in developing context of EEM and to identify any gaps for which corrective actions are required to ensure compliance to ADB SPS 2009 requirements and KP Environmental Protection Act, 2014.

68. Desk review of project EIA, SSEMP and Design review has been carried out and findings/gaps are detailed below. Upon instructions of ADB, project EIA is being updated by PMC to re-assess the impacts of below changes which PIU has approved in design and implementation arrangements after the concurrence from ADB. Proposed changes are detailed below.

69. 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 dam body are proposed for sediment flushing. This change does not warrant major deviation from the EIA findings that was carried out in 2019. Revised arrangement for BAP implementation and monitoring are also suggested by PIU and PMCSC after extensive consultation sessions with KP Wildlife and Fisheries department. Revised arrangements include elimination of role of implementation organization, role of KP Biodiversity and Wildlife board and reduction in members of BAP management committee. It is further proposed that BAP management committee shall be chaired by DG fisheries instead of KP Wildlife department. Proposed revised arrangement warrant significant deviation from the EIA findings for which EIA is being updated. Since implementation of revised arrangements is facing delays which result in compromise on ecosystem integrity of river.

70. Desk review of project EIA report, 2019 has identified following gaps and suggest additional assessments as corrective actions to bridge these gaps. These gaps and corrective actions shall be implemented during project execution.

    - Cumulative impact assessment for river ecology including impacts of downstream and upstream HPPs (already constructed and proposed) shall be updated and additional mitigation measures shall be proposed in light of revised arrangements.

    - Project EIA suggests that Balakot HPP 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 GIS.

    - 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 Balakot HPP shall be carried out during project execution and inventory shall be maintained.

- CHA findings of two endemic and restricted range fish species Nalbant's Loach *Schistura Nalbanti* and Kashmir Hillstream Loach *Triplophysa kashmirensis shall be validated* and any departure shall be highlighted and reported.

- Project climate change impact modelling shall be carried out. Climate change risk and vulnerability study shall be carried out and necessary design changes shall be suggested and incorporated during civil works.

71. Project SSEMP review suggests that following plans/survey reports shall be prepared/updated incorporating site specific details keeping in view the project activities and construction schedule.

    - Blasting Management Plan
    - Tree management Plan
    - Spring Survey Report

6.2.2 Meetings with PIU, PMC and EPC Contractor

72. In this task the meetings will be conducted with management of PIU, PMC and EPC contractors and staff responsible for implementation of EMP/SSEMP and other management plans. The agenda of such meetings will be to develop communication among stakeholder in order to implement and monitor environmental mitigation measures delineated in EIA/EMP and SSEMPs. Environmental Management Plan annexed with Site Specific Environmental Management Plan (SSEMP) will be used as a checklist for visual observation and instrumental monitoring.

6.2.3 Field Environmental Monitoring

73. Field Environmental monitoring shall be done during construction activities on periodic basis and as per requirements received from PIU PEDO at construction sites of Balakot HPP. During field monitoring some specific tasks of the external environmental monitor will be:

    - Monitoring implementation of SSEMP
    - Monitoring implementation of Biodiversity Action Plan (BAP)
    - Monitoring implementation of KP EPA NOC conditions
    - Monitoring the environmental performance of the contractors
    - Field Environmental inspections/audits at construction sites
    - Monitoring of camps, temporary access roads, magazine camps, spoil disposal areas
    - Monitoring of quarry sites
    - Advising contractors on environmental non-conformities
    - Monitoring 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 shall be reported and corrective action taken.
- Ensure photographs are taken to record pre-project conditions for use during restoration and post project comparisons.
- Periodic inspections of all project facilities and activities and to suggest remedy of deficiencies noted. Keep track of the meeting points to ensure mentioned point has been closed.
- Advise and monitor actions to reduce usage of natural resources.
- Monitor that contractor Environmental representative provides Environmental training to all new arrivals at the field.
- Monitor the implementation of emergency response plans and evaluate its adequacy.
- Provide approvals for waste contractors. In this regard external environmental monitor shall assist project contractors in identifying waste contractor, waste 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 GRM is being maintained and complaints are being addressed
- Evaluate the effectiveness of environmental trainings, (EIA, EMP, sensitivity of the area, critical area, safe distances, noise, vibration, water quality, solid waste to be maintained, etc.).

74. External Environmental monitoring checklist is provided as Annexure 3 of the inception report.

6.2.4 Approvals of Water Use

75. The External Environmental Monitor will verify the intended water use to ensure that there are no impacts on local waters from the project.

6.2.5 Environmental Trainings

76. Environmental monitor will review contractors 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

77. External Environmental Monitor (EEM) will conduct audit of the following environmental records:

- All Environmental reports (including MPR, QPRs and Inspection/Audit reports) prepared by the PIU, PMC and EPC Contractors.

- Semi-annual internal environment monitoring reports prepared by PIU, PMC and contractors.
- Social complaints register
- Photographic record
- Resource use (water, fuel etc.)
- Vehicles/machinery
- POB/weekly man hours
- Handling of spoils 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
- Record of violations or any other event that or can potentially damage the environment, on a daily basis
- 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

78. The EEM will monitor the implementation of Biodiversity Action Plan developed for the project. The BAP includes 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 EFlow of 1.5 m3 /s and the alternate case for peaking operation with an EFlow of 6.1 m3 /s.
    - Implementation of High Protection (HP) 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.

79. Based on cumulative impact assessment (CIA), BAP has recommended following actions;

- Hiring of Implementation organization for BAP implementation- under revised arrangements this action has been eliminated after concurrence from ADB
- Establishment of BAP management committee
- Establishment of an Institute for Research on River Ecology- under revised arrangements this action has been eliminated after concurrence from ADB
- Establishment of Watershed Management Program- under revised arrangements scope of watershed management program is reduced to Kunhar river only instead of basin wide.
- Sustainable livelihoods, including fishing, sediment mining, and tourism through curtailing illegal fishing, fishing in river tributaries and during breeding season and regulated sediment mining
- Capacity building of KP fisheries and wildlife department
- Institutional arrangements for implementation of BAP

80. 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.

81. Under the provision of BAP, PEDO will engage BAP implementation organization for protection (IOP). PEDO will enter into agreements with the Fisheries and Wildlife departments for the project specific BAP implementation.

82. The BAP Management Committee in the Khyber Pakhtunkhwa province will be established by the Competent Authority at PEDO/Ministry of Energy and Power, Government of Khyber Pakhtunkhwa. The Committee will be composed of DG Fisheries as Chair while representatives of PEDO, KP Forest, Wildlife, Fisheries, EPA, District administration and project area community and recognized expert on fresh water ecology as members.

83. Under the provision of BAP, PEDO will engage M&E consultant to monitor and report biodiversity of the area.

84. Revised arrangement for BAP implementation and monitoring are agreed by PEDO and ADB and under finalization stage. Under revised arrangements role of implementation organization, role of KP Biodiversity and Wildlife board and reduction is eliminated, Further members of BAP management committee are reduced. It is further proposed that BAP management committee shall be chaired by DG fisheries instead of KP Wildlife department. PIU PEDO and PMC has conducted consultations with project stakeholders and findings are presented in the SAEMR. Round 2 consultations are planned in October 2023 to finalize the revised arrangements for implementation including setting up offices, human resources, payment procedure for BAP implementation and capacity building. The prime focus of revised BAP arrangements will be watch and ward, protection of Kunhar river ecology, watershed management program for Kunhar river and construction of fish hatcheries with limited research interventions.

6.4 Quarry Area Management

85. Monitoring of quarry area extraction and restoration activities shall be carried out by external environmental monitor in which it will be ensured that all measures specified in the EIA/SSEMP and other project documents related to the extraction and restoration are fulfilled.

6.5 Waste Management

86. 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 of PPEs will be monitored along with their use enforcement 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 check lists during field monitoring visits.

6.6 Monitoring of Management Plans of SSEMP

87. Provision of Management Plans annexed to project SSEMP will be monitored during EEM site visits and through review of records and observations related to environmental safeguard compliances and non-compliances will be reported along with suggested corrective action. As part of scope of EEM below management plans will be monitored.

    - OHS management plan
    - Blasting management plan
    - Erosion & 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

6.7 Monitoring of Grievance Redress Mechanism (GRM)

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

6.8 Monitoring of Capacity Development Plan

89. 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. Record of the training will be observed in field and during interviews with key informants.

6.9 Monitoring the Implementation of the Re-forestation plan.

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

6.10 Monitoring of Traffic Management Plan

91. Traffic management plan is part of the SSEMP and will be monitored during field visits from the record, physical observations and informal feedback from staff and communities.

6.11 Monitoring of public consultation status and sharing project profiles with stakeholders

92. Status and progress of public consultation process will be monitored to determine whether the standards and requirements are met in pre-construction and on-going construction phase.

7 Instrumental Monitoring Plan

93. Instrumental monitoring will be carried out by EPA certifies labs by the contractors to capture the effects of development activities on environmental parameters as defined in EIA/EMP and SSEMP. After review of available data from different reports, following points have been selected as critical points for conducting instrumental monitoring on Bi-annual 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.

Table 3: Location of Environmental Monitoring Points

Environmental Quality	Parameters	Standards/Guidelines	Locations	Monitoring period/ Frequency/ Sampling No/Year
Air Quality, Noise Level, Water Quality (drinking, and surface water of the Kunhar River), Soil and Effluent	Same as given for construction phase	Same as given for construction phase	MP-1 Dam site MP-2- Adit 1 MP-3- Adit 2 MP-4 Adit 3 MP 5- Powerhouse MP-6 Upstream tailrace MP-7 GRC Camp MP-8 Staff colony	Once
Air Quality	SO_2, NOx, CO, O_3, SPM, 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-7 GRC Camp MP-8 Staff colony	Quarterly (24 Hours Duration)
Dust	Dust control	Air quality standards by NEQS, WHO		Quarterly (24 Hours Duration)
Noise Level	dB(A)	Noise pollution Control NEQS, WHO		Quarterly (24 Hours Duration)
Water Quality	Surface water, Temperature, Turbidity, pH, TDS, EC, TSS, DO, COD, BOD_5	Water quality standards by NEQS, WHO		Quarterly

Environmental Quality	Parameters	Standards/Guidelines	Locations	Monitoring period/ Frequency/ Sampling No/Year
	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 standard by NEQS, WHO		Quarterly
Soil Pollution	Soil texture, pH, EC, Available Phosphorus and SAR.	NEQS, Government of Pakistan		Twice a year

94. Location of monitoring points are shown in **Figure 27.**

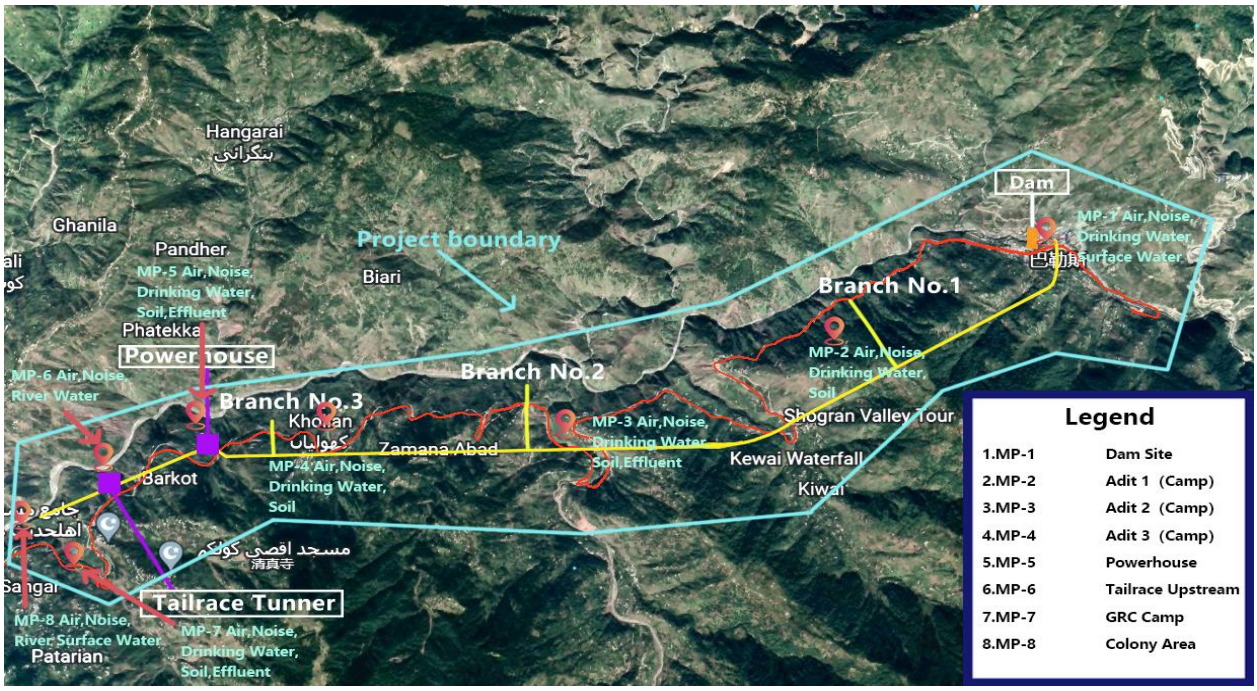

Figure 24: Location of Instrumental Monitoring Points for Balakot HPP

8 EEM Report Template

95. The information collected during the External Environmental Monitoring shall form the basis for evaluating the impacts and environmental performance of the project. EEM findings will be reported to PI and ADB on semi-annual basis. The final monitoring reports will be prepared and submitted after financial closing of the project. EEM report template is provided below.

Section 1: Introduction

- Preamble
- Headline Information
- Acknowledgements

Section 2: Project Description

- Balakot HPP
- Balakoat HPP Project Area
- Balakot HPP Background
- Environment Safeguards
- External Environmental Monitoring
- Project Implementation Status
- Project Physical Progress

Section 2: Project Area Description

- Project Area Description
- Reservior and Dam Site
- Diversion and Sediment Bypass Tunnel
- Headrace Tunnel
- Surge Shaft, Pressure Tunnel and Power House
- Tailrace Tunnel
- Project Access Roads
- Staff Colony

Section 3: Project Construction Camps and Other Facilities

Section 4: Environmental Safeguards

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

- Project Director
- Project Implementation Unit (PIU)

- Project Management Consultant (PMC)
- The EPC Contractor
- External Environmental Monitor
- EMP Implementation and Monitoring Arrangement

Section 6: External Environmental Monitoring (EEM)

- Scope of EEM
- Methodology for EEM
- Review of EIA/EMP, Design Documents, SSEMPs
- Meetings with PIU, PMC and EPC Contractors
- Field Environmental Monitoring
- Approvals of Water Use
- Environmental Trainings
- Audit of Environmental Records

Section 7: External Environmental Monitoring Report

- Project EIA/EMP/SSEMPs Readiness Assessment
- Compliance with National/Local Requirements
- Resource Use
- Water Consumption
- Fuel Consumption
- Construction Material
- Human Resources
- Equipment/Machinery
- Waste Generated
- Borrow Areas
- Batching Plant management
- Biodiversity Action Plan (BAP) monitoring
- Communication and Documentation
- Environmental compliance monitoring reports
- Environmental audits and trainings
- Grievance Redressal Mechanism
- Tree plantation plan
- Traffic management plan
- Public consultation Plan

- Environmental Safeguard Compliance Status
- Environmental Non-compliances
- List of ongoing issues
- Photographs of Environmental Safeguard Activities and Env. Non-Compliances

Section 8: Instrumental Monitoring Plan

- Environmental Monitoring Points
- Monitoring of Air, Noise and Water
- Ambient Air Quality Monitoring
- Noise Monitoring
- Drinking Water Quality
- Surface Water Quality
- Soil Quality

Section 9: Change Management Statement

Section10: Conclusion & Recommendations

Annexures

ANNEXURES

Annexure 1
TORs for EEM Assignment

Annex 1

300 MW Balakot Hydropower Project (HPP)

Terms of Reference (TORS) for External Environmental Monitoring (EEM) Consultant

FINAL TERMS OF REFERENCE

1. **The Project.** The Pakhtunkhwa Energy Development Organization (PEDO) intends to construct the **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).

2. **Objective of the Assignment.** The Balakot Hydropower Project (300 MW) is category "A" Project as per ADB safeguard criteria with the expected negative impacts on associated ecosystem in the project area. The core objective of the assignment is to conduct independent environmental monitoring during the construction phase of the Project in coordination with the Pakhtunkhwa Energy Development Organization (PEDO) and following ADB's Safeguards Policy Statement (SPS 2009) and national environment laws. The focus of the assignment is on the project's significant environmental impacts and risks. The External Environmental Monitor (EEM) will complement the work of the environment experts of the Project Management Consultant (PMC) and Project Implementation Unit (PIU) by verifying critical environmental parameters of the project independently.

3. **Input and Timing.** The expected input is six (06) person-months intermittently, specifically during construction works with high potential of significant environmental impacts. The schedule will be coordinated with the PIU at the beginning of the assignment.

4. **Scope of Work.** The EEM will visit the project area as required to undertake an independent assessment of implementation of the environmental management plan (EMP) by the engineering, procurement and construction (EPC) contractor, particularly during construction at the sites and of construction activities posing significant environmental risks.

5. **Detailed Tasks and/or Expected Output.** The expert will undertake the following tasks:

(i) Ensure that all the contractual obligations related to the environmental and social compliance are met by (a) familiarizing him/herself with project's environmental provisions in loan agreements and contractual obligations, environmental assessment and environmental planning documents including Environmental Impact Assessment, EMP and EPC contractor (site-specific)

EMPs, environmental sections in bills of quantities specifically on environmental aspects posing significant environmental risks and/or having significant environmental impacts; (b) monitoring EMP implementation and identifying potential non-compliances for critical parameters; and (c) Reporting on identified non-compliances and suggesting mitigation measures.

(ii) Monitor environmental performance of the project during design and construction stages as stipulated in the EMP. The EEM will (a) ensure that the detailed design of the project in areas posing significant environmental risks avoids, mitigate or minimize those impacts; (b) engage certified analytical laboratory to conduct selective instrumental testing of selected environmental parameters (air and water quality, noise, etc) at the environmentally sensitive locations; and (c) conduct environmental monitoring of other critical parameters of the project.

(iii) Oversee compliance of the critical parameters of monitoring programs as given in EMP by verifying environmental monitoring programs of the EPC Contractor, specifically for significant environmental risks and sensitive receptors; and providing recommendations to improve the environmental monitoring programs, if necessary.

(iv) Check randomly whether monitoring of the environmental aspects of the project during construction is being properly carried out. The EEM will (a) develop an environmental monitoring program to complement regular environmental monitoring by the environment specialist of the PMC (Engineer) by verifying critical environmental parameters of the project independently; (b) evaluate the effectiveness and/or deficiencies in compliance monitoring by the PMC; (c) assess effectiveness of implementation of the grievance redressal mechanism and extent of addressing of complaints; and (d) conduct spot feedback consultation sessions with key stakeholders at key receptor locations (residences, hospitals, schools etc.) to assess implementation of mitigation measures along with their frequency and effectiveness to mitigate undesirable impacts.

(v) Document monitoring results, and identify necessary corrective and preventive actions in the periodic monitoring reports (bi-annual reporting), and follow up on these actions to ensure progress toward the desired outcomes.

(vi) Assess effectiveness of implementation of the Grievance Redressal Mechanism (GRM) and extent of addressing of complaints.

(vii) Assess effectiveness of implementation of the Biodiversity Action Plan (BAP) and provide any recommendation to fill any gap.

(viii) Ensure that the EPC contractor is implementing their suggested additional measures.

(ix) Report the status of EMP implementation to PEDO. The EEM will conduct meetings, and discuss environment-related issues with all key project staff of PEDO, the EPC contractor and the PMC.

Annexure 2

Work Plan for External Environmental Monitoring

Work Plan for External Environmental Monitoring 2023-2024

Annexure 2

S. No	Description of Activity																		
	Year	2023												2024					
	Month (s)	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep.	Oct	Nov.	Dec.	Jan	Feb	Mar	Apr	May	June
1	Hiring of External Environmental Monitor	Jul, 22																	
2	Inception Report					May 23	Jun 23												
3	Introductory Meeting with PIU/PMC and EPC contractor					May 23													
4	Bi-annual Meeting with PIU/PMC						June 23						Dec 23						Jun 24
5	Desk Review of reports by PIU/PMC			Mar 23	Apr 23	May 23	Jun 23				Oct 23		Dec 23		Feb 23	Mar 23		May 23	Jun 23
6	Selection of non-critical points for visual monitoring						Jun 23						Dec 23						Jun 24
7	Selection of critical points for instrumental monitoring						Jun 23						Dec 23						Jun 24
8	Field visits to non-critical sites for visual monitoring/ observations					May 23	June 23					Nov 23	Dec 23					May 24	June 24
9	Compilation of field observation data					May 23	June 23					Nov 23	Dec 23					May 23	Jun 24
10	Monitoring of health and safety plans					May 23	June 23					Nov 23	Dec 23					May 23	Jun 24
11	Monitoring of Staff Capacity Building Plans					May 23	June 23		Aug 23	Sep 23		Nov 23	Dec 23			Mar 24			Jun 24
12	Visit to critical points and collecting instrumental monitoring data						June 23						Dec 23						Jun 24

S. No	Description of Activity																		
	Year	2023												2024					
	Month (s)	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep.	Oct	Nov.	Dec.	Jan	Feb	Mar	Apr	May	June
13	Compilation and analysis of instrumental data						June 23						Dec 23						Jun 24
14	Monitoring of Reforestation campaign					May 23	June 23					Nov 23	Dec 23					May 24	Jun 24
15	Monitoring of GRM Implementation					May 23	June 23					Nov 23	Dec 23					May 24	Jun 24
16	Semi-Annual Reports						June 23						Dec 23					May 24	Jun 24

Work Plan for External Environmental Monitoring 2024-2025

S. No	Description of Activity																		
	Year	2024						2025											
	Month (s)	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	Hiring of External Environmental Monitor	Jul, 22																	
2	Inception Report																		
3	Introductory Meeting with PIU/PMC and EPC contractor					Nov 24													
4	Bi-annual Meeting with PIU/PMC						Dec 24						Jun 25						Dec 25
5	Desk Review of reports by PIU/PMC					Nov 24	Dec 24				Apr 25		Jun 25		Aug 25	Sep 25		Nov 25	Dec 25
6	Selection of non-critical points for visual monitoring						Dec 24						Jun 25						Dec 25
7	Selection of critical points for instrumental monitoring						Dec 24						Jun 25						Dec 25

S. No	Description of Activity																		
	Year	2024						2025											
	Month (s)	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
8	Field visits to non-critical sites for visual monitoring/ observations					Nov 24	Dec 24					May 25	Jun 25					Nov 25	Dec 25
9	Compilation of field observation data					Nov 24	Dec 24					May 25	Jun 25					Nov 25	Dec 25
10	Monitoring of health and safety plans					Nov 24	Dec 24					May 25	Jun 25					Nov 25	Dec 25
11	Monitoring of Staff Capacity Building Plans					Nov 24	Dec 24		Feb 25	Mar 25		May 25	Jun 25			Sep 25			Dec 25
12	Visit to critical points and collecting instrumental monitoring data						Dec 24						Jun 25						Dec 25
13	Compilation and analysis of instrumental data						Dec 24						Jun 25						Dec 25
14	Monitoring of Reforestation campaign					Nov 24	Dec 24					May 25	Jun 25					Nov 25	Dec 25
15	Monitoring of GRM Implementation					Nov 24	Dec 24					May 25	Jun 25					Nov 25	Dec 25
16	Semi-Annual Reports						Dec 24						Jun 25						Dec 25

Work Plan for External Environmental Monitoring 2026-2027

S. No	Description of Activity																	
	Year	2026												2027				
	Month (s)	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep.	Oct	Nov.	Dec.	Jan	Feb	Mar	Apr	May	June
1	Hiring of External Environmental Monitor	Jul, 22																	
2	Inception Report																		
3	Introductory Meeting with PIU/PMC and EPC contractor					May 26													
4	Bi-annual Meeting with PIU/PMC						June 26						Dec 26						Jun 27
5	Desk Review of reports by PIU/PMC					May 26	Jun 26				Oct 26		Dec 26		Feb 27	Mar 27		May 27	Jun 27
6	Selection of non-critical points for visual monitoring						Jun 26						Dec 26						Jun 27
7	Selection of critical points for instrumental monitoring						Jun 26						Dec 26						Jun 27
8	Field visits to non-critical sites for visual monitoring/ observations					May 26	June 26					Nov 26	Dec 26					May 24	June 27
9	Compilation of field observation data					May 26	June 26					Nov 26	Dec 26					May 23	Jun 27
10	Monitoring of health and safety plans					May 26	June 26					Nov 26	Dec 26					May 23	Jun 27
11	Monitoring of Staff Capacity Building Plans					May 26	June 26		Aug 26	Sep 26		Nov 26	Dec 26			Mar 27			Jun 27
12	Visit to critical points and collecting instrumental monitoring data						June 26						Dec 26						Jun 27

S. No	Description of Activity																	
	Year	2026												2027					
	Month (s)	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep.	Oct	Nov.	Dec.	Jan	Feb	Mar	Apr	May	June
13	Compilation and analysis of instrumental data						Jun 26						Dec 26						Jun 27
14	Monitoring of Reforestation campaign					May 26	Jun 26					Nov 26	Dec 26					May 27	Jun 27
15	Monitoring of GRM Implementation					May 26	June 26					Nov 26	Dec 26					May 27	Jun 27
16	Semi-Annual Reports						June 26						Dec 26					May 27	Jun 27

Annexure 3

External Environmental Monitoring Checklist

External 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				

Inspection Items	Implemented?			Remarks (i.e. specify location, good practices, problem observed, possible cause of nonconformity and/or proposed corrective/preventative actions)
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)?				
Are adequate measures taken to reduce the				

Inspection Items	Implemented?			Remarks (i.e. specify location, good practices, problem observed, possible cause of nonconformity and/or proposed corrective/preventative actions)
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)				

Inspection Items	Implemented?			Remarks (i.e. specify location, good practices, problem observed, possible cause of nonconformity and/or proposed corrective/preventative actions)
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 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?				

	Implemented?			Remarks (i.e. specify location, good practices, problem observed, possible cause of nonconformity and/or proposed corrective/preventative actions)
Others (please specify)				
Inspection Items				
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 oil drums and				

Inspection Items	Implemented?			Remarks (i.e. specify location, good practices, problem observed, possible cause of nonconformity and/or proposed corrective/preventative actions)
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				
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				

Inspection Items	Implemented?			Remarks (i.e. specify location, good practices, problem observed, possible cause of nonconformity and/or proposed corrective/preventative actions)
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				
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				

Inspection Items	Implemented?			Remarks (i.e. specify location, good practices, problem observed, possible cause of nonconformity and/or proposed corrective/preventative actions)
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?				