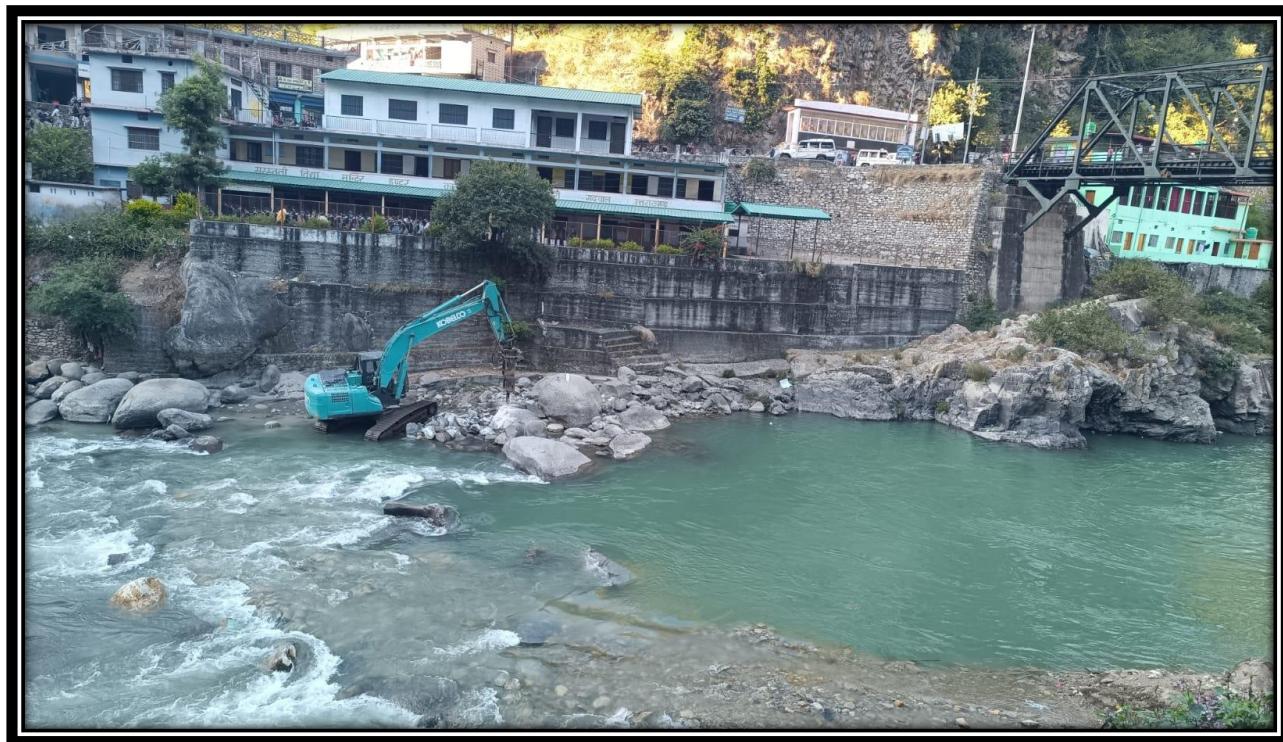


ENVIRONMENT MANAGEMENT REPORT



Project: Construction of 50 m Intermediate lane steel truss bridge in Uttarkashi – Lambgaon-Ghansali-Tilwara Motor Road km 98- near Hanuman Temple, Block-Bhilangana, District Tehri, Uttarakhand

Location: Ghansali

Executing Firm: M/S Doon Infrastructure Implementing

Agency: U PREPARE, Uttarakhand

Client: Program Manager, U PREPARE, Dehradun, Uttarakhand

FPIU: Executive Engineer, TD, PWD, Ghansali

Funding Agency: The World Bank

Site specific-Environmental Management Plan (EMP)

| Environmental component / Issues | Potential Impact | Mitigation Measures |
|---|--|--|
| PRE-CONSTRUCTION PHASE | | |
| Arrangements for temporary land for Establishing Camps/ Plants/ Temporary diversions, etc. | <ul style="list-style-type: none"> • Local Conflicts, • Land Restrictions • Enhanced accident hazards and risks | <ul style="list-style-type: none"> • Consent for temporary use of lands for worker's camp, construction sites/hot mix plants/traffic detours etc. will be done • The Contractor will provide proper safety arrangements along such sites, such as proper barricading's (full barricading of camp/construction site), installation of safety and reflective caution signboards, proper lighting arrangements (with Authorised connections), deployment of safety personnel at site, maintenance of proper hygienic conditions, etc. • Camp layout plan (will be submitted). Will be finalised after the approval of the concerned FPIU. • Toilets will be arranged separately for male and female. It should be well connected with the soak pit. • information board will be placed on both the sides of the proposed bridge in hindi and English |
| Contractor's Environmental and Occupational Health and Safety (EHS) Officer | Non-compliance to the Environmental & OHS Management Plan in absence of Contractor's designated staff | <ul style="list-style-type: none"> • One Environment and one Occupational Health & Safety Officer having requisite qualification and sufficient experience will be appointed in implementation of Environmental and OHS safeguards in the site. • They will maintained all the records for TBT, water sprinkling, PPE record, monthly trainings in registers or file in the prescribed formats |
| Contractor's C-ESMP | In absence, Non-compliance to the Environmental Management Plan | <ul style="list-style-type: none"> • Statutory clearances and permits • Pollution Control Measures (Air, water, noise and soil) at different activity areas • Environmental Management at Borrow areas and Quarry sites, if any • Environmental Management at Plant site (Stone Crusher, Batching Plant, Hot mix plant etc.) • Waste Management Plan (Solid Waste, Waste water C&D waste including disposal plan) (will be submitted) • Construction water management • Traffic Management Plan including diversion plan (will be submitted) • Environmental Monitoring Schedule • Training schedule on ESHS among contractor's workforces • Any other aspects as directed by the Engineer |
| CONSTRUCTION PHASE | | |
| Land Resource | Loss of vegetation and disturbance to natural drainage | <ul style="list-style-type: none"> • The camps (if required) will be located preferably on barren land and sufficiently away from settlements and water bodies. |
| Soil Environment | Loss of Top soil | <ul style="list-style-type: none"> • Top soil, if any, shall be stripped and stored at corners of the area before the start of excavation for material collection • No construction materials should be stacked in the agriculture field |
| | Soil Erosion | <ul style="list-style-type: none"> • stockpiling of material will be done at designated storage site to prevent erosion and runoff related problem • The disturbed areas and soil stock piles will be kept moist to avoid wind erosion of soil |
| Water Environment | Impact on Supply of Water due to requirement for Construction | <ul style="list-style-type: none"> • Permissions will be obtained before using water from the Competent Authority |
| | Contamination of surface water and degradation of water quality | <ul style="list-style-type: none"> • Excavation will not be scheduled during rains, so that there is no impact on drainage and surface water quality. • Avoid stockpiling of earth fill especially during the monsoon season unless covered by tarpaulins or plastic sheets • Provide temporary bunds for stockpiles and materials • Install temporary silt traps or sedimentation basins along the drainage leading to the water bodies • All liquid wastes arising from construction activities will be properly disposed of and will not be discharged into any water body/ stream course without adequate treatment • Littering or unauthorized discharge will not be permitted. |

| Environmental component / Issues | Potential Impact | Mitigation Measures |
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| | | <ul style="list-style-type: none"> • Permission of the engineer and the concerned regulatory authorities will be obtained for disposal of the waste as the designated disposal point. • The stream course and drain will be kept free from dumping of solid wastes and earth materials. • The construction materials and debris will be stored away from water bodies or water ways and only at the designated sites along the construction zones. • Surface and drinking quality inspection and monitoring will be done once before construction and the in every quarter except monsoon season. |
| Air Environment | Deterioration of air quality due to generation of dust | <ul style="list-style-type: none"> • Dust suppression measures like water sprinkling, will be applied in all dust prone locations and log book will be maintained. • DG set will be provided a chimney with vertical opening having adequate height as per CPCB guidelines (Height of stack in meter = Height of the building + 0.2 √KVA). • All the vehicles, machineries used during the construction stage will have valid PUC certificate • Wind breaking walls of GI Sheets will be provided along periphery construction area and the area within the construction zone shall be regular cleaned and wetted to control dust. |
| | Gaseous pollution | <ul style="list-style-type: none"> • All the Construction vehicles and machineries will be regularly maintained to conform to the emission standards stipulated under Environment (Protection) Rules, 1986. • All the DG sets will conform to the emission standards as stipulated under Environment (Protection) Rules, 1986. • The workers working at Batch mix plants will be provided with masks for working near the emission source. • Engine of construction vehicles and equipment's will be switched-off when not in use to save fuel, prevent accidents and air pollution • All the construction vehicles used during the construction stage including those of main contractor and subcontractors will have valid PUC certificate • The air quality monitoring in terms of PM10, PM2.5, Sox & NOx as per monitoring plan will be done once before construction and the in every quarter except monsoon season. |
| Noise Environment | Increase in noise level due to earth moving and excavation equipment, and the transportation of equipment, materials, and people | <ul style="list-style-type: none"> • All construction activities shall be restricted to day time hours only. • The plants and equipment used in construction (including those of sub-Contractors) shall strictly conform to the MoEF&CC/ CPCB noise standards and shall have latest noise suppression mountings. • All vehicles and equipment used in construction work will be fitted with muffles or silencers • Servicing of construction vehicles and machinery will be done regularly and during routine servicing operations, the effectiveness of exhaust silencers will be checked and if found defective, these shall be replaced, • Only low noise DG set fitted with acoustic enclosures will be allowed at the construction site and camp site. • Noise to be monitored as per monitoring plan and if the noise level at any time found to be higher than immediate measure to reduce noise in that area will be ensured. • All the workers working very close to the noise generating machinery shall be provided with earplugs to avoid any ill impacts on their health. • The Noise level will be tested once before construction and the in every quarter except monsoon season. |
| Sources of Materials | Unregulated quarrying and instability may cause erosion and water pollution | <ul style="list-style-type: none"> • Use quarry sites and sources permitted by Mines and Geology Department only • No new quarry sites shall be developed for the project • All material to be obtained from authorized vendor and Verify suitability of all material sources and obtain approval of implementing agency |
| Biological Environment | Adverse impact on forest and other ecological resources due to construction in nearby area | <ul style="list-style-type: none"> • Construction materials as well as debris will not be stacked around trees and forest area. • No Campsite or any other allied site will be established within 1 Km of the forest area. • Contractor will take all precautions to avoid damage to the forest during transportation of material through forest area • The Contractor shall ensure that there is no disruption or damage to the wild animals due to his activities or by his persons. • It will be responsibility of the Contractor to ensure that there is no illegal poaching |

| Environmental component / Issues | Potential Impact | Mitigation Measures |
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| | | <p>of wild animals around the area of activities by his staff, labours or subcontractor's personnel.</p> <ul style="list-style-type: none"> Construction vehicles will run along specified access to avoid accidents to cattle or wild animal |
| | Disturbance to aesthetics and land contamination | <ul style="list-style-type: none"> The site will be cleaned immediately after the construction activity is over. The debris materials will be disposed of only at identified area for disposal and the disposal site to be levelled properly after completion of the debris disposal activities and the area will be covered with top soil Landscaping will be done at the disposal site |
| Debris Disposal | Impact on Aesthetics of area and creation of unhygienic conditions | <ul style="list-style-type: none"> NOC will be granted from the concerned authority The local governing body and community shall be consulted while selecting the site. <p>Debris disposal plan (will be submitted) after the approval of concerned FPIU</p> |
| Post Construction Compliance | Damage due to debris, spoils, excess construction materials | <ul style="list-style-type: none"> All spoils wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required will be removed All excavated roads shall be reinstated to original condition and restoration of disrupted utilities. The area that previously housed the construction camp is to be checked for spills of substances such as oil, paint, etc. and these shall be cleaned up. All hardened surfaces within the construction camp area shall be ripped, all imported materials removed, and the area shall be covered with top soil and re-grassed The contractor must arrange the dismantling & removal of all temporary services; All the sites must be restored prior to demobilisation of Contractor After obtaining the permission or Work Completion Certificate from the PIU/PMU, the site will be formally handed over to the PWD. |