ADDENDUM TO THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA)

Access Road Components for the 132 kV D/C Wobthang–Garpang Transmission Line Project

This addendum has been prepared to supplement the existing ESIA report for the 132 kV D/C Wobthang–Garpang Transmission Line Project. The document consolidates the revised access road assessments, environmental and social impact evaluations, stakeholder-driven route optimization measures, and Environmental Management Plan (EMP) requirements for integration into the revised ESIA submission.

Project Description

The proposed transmission line project requires construction and improvement of temporary and semi-permanent access roads to facilitate transportation of materials, equipment, machinery, and workforce to tower locations across mountainous terrain in Bumthang Dzongkhag.

Approximately 19.2 km of access roads are proposed across Choekhor and Tang Gewogs.

1. Transportation of tower materials
2. Construction equipment mobilization
3. Workforce access
4. Emergency operation and maintenance access

The alignment planning prioritizes use of existing disturbed corridors, minimization of forest clearance, shortest feasible alignments, and avoidance of environmentally sensitive areas.

Access Road Alternatives Assessment and Route Optimization

The alignment selection process involved iterative consultations and field verification with Gewog Administrations, Community Forest Management Groups, forestry officials, engineering teams, and local communities.

1. Minimization of forest clearance
2. Utilization of existing logging tracks and disturbed corridors
3. Avoidance of private land where feasible
4. Reduction of slope instability risk
5. Minimization of road lengths and community forest impacts

Several alignments were revised based on stakeholder feedback and field conditions, demonstrating implementation of the mitigation hierarchy through avoidance and minimization.

Environmental Management Plan

Land and Terrain Stability			
Potential Impact	**Mitigation Measures**	**Monitoring Indicators**	**Responsible Entity**
Slope instability, soil erosion, and sediment transport due to earthworks	Minimize cut-and-fill activities, avoid overcutting, install retaining structures, provide drainage and slope stabilization measures, avoid monsoon excavation.	Inspection of erosion-prone sections, slope stability checks, drainage inspections	BPC / Contractor / Supervision Consultant
Improper spoil disposal leading to downstream impacts	Dispose spoil only at approved sites, prohibit dumping into valleys and watercourses, rehabilitate disturbed surfaces.	Monitoring of spoil disposal locations and rehabilitation status	BPC / Contractor / Supervision Consultant
Water Resources and Drainage			
Potential Impact	**Mitigation Measures**	**Monitoring Indicators**	**Responsible Entity**
Sediment runoff and downstream sedimentation	Install hillside drains, cross-drainage structures, mitre drains, and sediment traps.	Drainage functionality inspections during construction	BPC / Contractor / Supervision Consultant
Obstruction of natural drainage systems	Maintain natural drainage patterns and conduct regular drain cleaning.	Sediment control monitoring during monsoon periods	BPC / Contractor / Supervision Consultant
Forest and Biodiversity			
Potential Impact	**Mitigation Measures**	**Monitoring Indicators**	**Responsible Entity**
Vegetation clearance and habitat disturbance	Restrict clearing to approved limits and rehabilitate disturbed areas with native species.	Vegetation rehabilitation monitoring	BPC / Contractor / Supervision Consultant
Wildlife disturbance and introduction of invasive species	Provide worker awareness training and monitor invasive species establishment.	Inspection of compliance with biodiversity protection measures	BPC / Contractor / Supervision Consultant

Community and Social Impacts			
Potential Impact	**Mitigation Measures**	**Monitoring Indicators**	**Responsible Entity**
Temporary disturbance to community movement and traffic	Maintain stakeholder consultations, provide advance notice of road blockages, implement traffic safety measures.	Community grievance monitoring	BPC / Contractor / Supervision Consultant
Dust, noise, and localized impacts on private land	Restore damaged roads and avoid unnecessary disturbance to private land.	Inspection of road restoration and contractor compliance	BPC / Contractor / Supervision Consultant

Construction Methodology and Environmental Controls

Construction activities shall include vegetation clearing within approved limits, localized cutting and benching, drainage installation, slope stabilization, spoil management, temporary surfacing, and rehabilitation.

Construction shall be sequenced to minimize exposed surfaces during monsoon periods.

Spoil materials shall not be disposed downslope, into watercourses, or onto existing roads.

Cumulative Impact Assessment

Cumulative impacts arise from the combined interaction of transmission line construction, access road development, vegetation clearance, forest disturbance, and temporary worker presence.

Impacts are expected to remain localized and manageable due to restricted road widths, rehabilitation commitments, alignment optimization, and use of existing access tracks where feasible.

Environmental and Social Monitoring Framework

1. Inspection of erosion-prone areas
2. Monitoring of spoil disposal sites
3. Drainage functionality inspections
4. Vegetation rehabilitation monitoring
5. Community grievance tracking
6. Contractor environmental compliance monitoring
7. Slope stability inspections during monsoon periods

Monitoring shall be jointly undertaken by BPC, supervision consultants, contractors, and relevant local authorities.