JENTAYU
SUSTAINABLES

Biodiversity Action Plan for Project Oriole

JENTAYU Group of Companies

JENTAYU SUSTAINABLES BERHAD
Registration No. 197501000834 (22146-T)

Biodiversity Action Plan (BAP) for the Development of 162MW Run of River Hydropower Plant Project in Sipitang Sabah

Version 1.0

1. BACKGROUND

This Biodiversity Action Plan (BAP) is developed to address potential biodiversity impacts resulting from the development of 162MW Run-of-River Hydroelectric Project in Sipitang, Sabah (The Project or Project Oriole). The project, undertaken by Oriole Hydro Padas Sdn Bhd, spans 548 hectares, including a 26 km transmission line through the Sipitang Forest Reserve (Class II).

The BAP outlines key mitigation measures, monitoring protocols, and reporting obligations—including monthly Environmental Compliance Reports—to manage biodiversity risks associated with construction and operational activities. It focuses specifically on protecting terrestrial and aquatic habitats and maintaining biodiversity integrity throughout the project lifecycle.

References

- Environmental Impact Assessment (EIA) Report prepared by Kinabalu Environmental Consultancy Sdn Bhd, dated 31 July 2024.
- Environmental Protection Department's (JPAS) Agreement of Environmental Conditions (AEC), reference JPAS/PP/SPG/600-1/16/2/2 Jld. 2(18), dated 05 November 2024.
- International Finance Corporation (IFC) Performance Standards

2. OBJECTIVE

The primary objectives of the BAP are to:

- Implement biodiversity-related mitigation measures to address impacts on terrestrial fauna, aquatic ecosystems, and areas near water bodies, as outlined in the EIA Report.

- Conduct monitoring and reporting activities in accordance with the EIA and Environmental Agreement Conditions (AEC), including submission of Environmental Compliance Reports (ECR) to JPAS.

3. POTENTIAL BIODIVERSITY IMPACTS

This section presents the specific impacts to biodiversity identified in the EIA, which may occur during the project's construction and operational phases.
The biodiversity-related impacts are as follows:

- **Habitat Loss and Displacement**: Clearing and blasting may result in the destruction of terrestrial habitats, leading to temporary migration of wildlife. This can increase interspecies competition and pressure on remaining habitat areas.

- **Disturbance to Fauna:** Project activities may disturb fauna within and around the site, including noise, vibrations, and human presence.

- **Aquatic Ecosystem Impacts:** Increased sedimentation and runoff into receiving waterbodies may degrade water quality. This can reduce the survival of aquatic fauna and disrupt breeding habitats.

- **Encroachment and Pollution Risk:** Improper waste handling or unregulated activities near riparian zones can introduce contaminants into aquatic habitats. Unauthorized entry and encroachment may also disrupt sensitive ecosystems

4. MITIGATION MEASURES

This section presents biodiversity-related mitigation measures designed to manage impacts on terrestrial fauna, aquatic ecosystems, and habitats during the construction and operational phases.

Biodiversity Impact	Mitigation Measures
Terrestrial Fauna and Habitat	• Occupation site such as employer's quarters, site office, workers' quarters, maintenance area and other related facilities must be located at least 50 m away from any riparian reserves and waterways edges. • All workers should be regularly briefed to avoid disturbance of flora and fauna especially protected species. • Housing, confining or breeding any wildlife is strictly prohibited. • No unauthorized access by outsiders into the Project site should be allowed, especially hunters. • Animal hunting by workers, family members or unauthorized personnel is prohibited within and at the vicinity of the Project area.
Aquatic Ecosystems and Water Quality	• Field checks on any contamination of river and tributaries within the site to ensure they are in healthy environment for aquatic wildlife.

Biodiversity Impact	Mitigation Measures
	• Removal of vegetation should be restricted to required area only and immediately cover any exposed areas. • Erosion and sediment control structures including temporary earth drains equipped with check dams, silt fence and sediment basins as per the ESCP shall be established at erosion prone areas in advance of site formation works. • Operation of heavy equipment should be confined to dry stable area. • All type of machineries and equipment should be in good conditions and free from defect, leaks, as well as oil and grease prior to mobilization to the Project site. • Any possible source of pollution, such as from sanitary facilities, diesel storage areas, maintenance area, temporary waste collection area should be located away from the seasonal waterway as any potential area of water flow.
Vegetative and Biomass Waste	• Prohibition of stacking of vegetative/biomass wastes adjacent to the nearby existing water bodies and existing drainage system. • Prohibition of open burning.
Scheduled Waste (Oil and Grease)	• Oily wastewater should not be directly discharged to any water bodies without treatment using oil trap. • On-site maintenance should only be carried out in a proper maintenance area which is equipped with drainage, oil trap system and located away from any source of surface water. • Photographs showing storage area for oily waste is located at least 50 m away from immediate watercourse.
Construction Activities Near Riparian Zones	• Site clearing and earthwork activities should be avoided during wet season. • Buffer zone with 50 meter or accordance to Forestry Department should be provided for the protection of forest reserves. • Earth stockpile should be placed not less than 30 m from the edge of the waterbodies and mitigated with appropriate temporary erosion measures.

Biodiversity Impact	Mitigation Measures
	• Drainage system should be constructed surrounding the stockpile area.

5. MONITORING AND REPORTING

This section outlines the biodiversity-related monitoring and reporting requirements as prescribed in the EIA Report. These activities are essential to track the effectiveness of mitigation measures and ensure compliance with environmental conditions during both construction and operational phases.

Parameter / Impact	Frequency	Monitoring Method	Reporting
Water Quality (Surface Water Monitoring Points)	• Monthly during earthworks • Quarterly during operation	• Sampling at designated surface water monitoring points for pH, TSS, DO, Oil & Grease, Ammonia, and Turbidity, as described in the EIA	• Results compared with baseline and Class IIB NWQSM • Submitted quarterly to JPAS with photos and sampling location maps • Reported via Environmental Compliance Report (ECR)
Sediment Basins	• Monthly during earthworks • Quarterly during operation	• Sampling for TSS and Turbidity at sediment basin monitoring points as described in the EIA	• Results submitted to JPAS with coordinates and photos • Reported via Environmental Compliance Report (ECR)
Contamination of Rivers and Tributaries	• Ongoing during construction	• Field checks for any signs of contamination in rivers or tributaries	• Photo documentation included in compliance reports

Parameter / Impact	Frequency	Monitoring Method	Reporting
		within the project area	• Reported via Environmental Compliance Report (ECR)
Vegetation Regrowth and Riparian Buffer Zones	• Quarterly	• Field inspection and photo records of vegetation regrowth in cleared or re-vegetated areas	• Included in bi-annual report to JPAS • Reported via Environmental Compliance Report (ECR)
Drainage and Erosion Control Structures	• At least twice monthly during construction	• Visual inspection of sediment basins, drains, and erosion control measures	• Photos and inspection records documented • Reported via Environmental Compliance Report (ECR)
Vegetative / Biomass Waste Management	• Ongoing	• Site inspections and photos showing biomass stored ≥30 m from watercourses	• Monitoring records included in internal compliance documentation
Scheduled Waste (Oil and Grease)	• Ongoing	• Inspection and photos of scheduled waste storage area with drainage and oil trap systems, located ≥50 m from watercourses	• Submitted as part of scheduled waste reporting to JPAS
Wildlife Disturbance and Fauna Encounters	• Monthly • Immediate upon encounter	• Field checks, incident reports, and GPS-stamped photographs	• Immediate reporting to Jabatan Hidupan Liar (JHL)

Environmental Compliance Reporting (ECR)

In line with the Environmental Agreement Conditions approved by the JPAS, a **Laporan Pematuhan Alam Sekitar (Environmental Compliance Report)** must be submitted monthly, prepared by a JPAS-registered Environmental Consultant and endorsed by the appointed Pegawai Alam Sekitar (PAS). For biodiversity, the report covers implementation and monitoring of wildlife and habitat protection measures, including coordination with Jabatan Hidupan Liar (JHL). Reports must follow JPAS's required format and be submitted online by the 28th of each subsequent month.

6. REVIEW AND UPDATE

This Biodiversity Action Plan is considered a living document and will be reviewed and updated as necessary to reflect project changes, regulatory updates, or new biodiversity findings. The review process includes:

- Annual review to assess the effectiveness of mitigation measures and monitoring protocols.
- Incorporation of new regulatory requirements or guidelines issued by JPAS and JHL.
- Revision and dissemination of the updated BAP to relevant stakeholders, including project management, contractors, and regulatory authorities.