

Conservation of Coastal Forest and Peatlands in Gunung Arong Forest Reserve, Johor

Progress Update from July – December 2022

1. Introduction

The Global Environment Centre (GEC)¹ a Malaysian non-profit organization (NGO) with expertise in peatland and forest conservation and restoration and TH Plantations Berhad (THP)², an active Malaysian company in the palm oil sector, signed an Agreement effective July 2022 to support the conservation of coastal forests and peatlands in Gunung Arong Forest Reserve (GAFR), Johor, in partnership with the Johor State Forestry Department (JSFD). The project will focus on the long-term protection and rehabilitation of 4,300 ha in the northeast portion of the GAFR (to the east of the road between Mersing and Endau that runs through the forest). This conservation project will be part of the Recovery Plan for THP. GEC had been working previously at this site with the Johor State Forest Department and it has been identified as a highly suitable area for a forest conservation project. Phase 1 of the project is being implemented over a period of seven years between July 2022 and June 2029.



Figure 1. Initial meeting and site visit with the Johor State Forestry Department to discuss the implementation of the Conservation of Coastal Forest and Peatlands, in Gunung Arong Forest Reserve, Johor

¹ a Malaysian non-profit organization (NGO) with more than 20 years of experience in peatland and forest conservation and restoration throughout Southeast Asia

² a Malaysian-owned company active in the palm oil sector with 38 plantations and 6 mills in the Terengganu, Pahang, Johor, Negeri Sembilan, Sabah and Sarawak in Malaysia and in Indonesia

This brief progress update describes the initial activities have been undertaken from July until December 2022 in and around Gunung Arong Forest Reserve (GAFR) in Mersing District in Northeast of Johor State by GEC in collaboration with Johor State Forestry Department.

2. The following table outlines the progress of initial activities have been undertaken from July until December 2022:

No.	Activities	Progress and accomplishment of the activities
1.	Preliminary field visits to Gunung Arong Forest Reserve	<ul style="list-style-type: none"> Identified the degraded sites, areas impacted by peatland and forest fires, drainage canals and areas developed for agriculture, adjacent to the forest boundary. Degraded sites were identified to be rehabilitated with rewetting, fire patrolling and monitoring, installation of forest boundary signages including fire danger warning signages.
2.	Land cover and land use assessment	<ul style="list-style-type: none"> Identified type of forest type, land use and peatland distribution by combining drone survey and remote sensing analysis using a time series of satellite imageries (sources: Google Earth, Landsat, 4, 5, 7 & 8 and Sentinel 2). Identified the total cover of the project site in the northeast portion of GAFR of 4,350 ha of lowland and peat swamp forest/peatland (with approximately 1,500 ha identified to be peat swamp forest/peatland) as well as coastal ecosystem. From the analysis, 685 ha of peatlands and 1,392 ha of inland forest on mineral soil has been degraded due to peatland fires and extensive drainage and other factors (being assessed). Drainage canals, deeper than 3 meters were found in peat and mineral soils in several portion of the site. Restoring the hydrology of the area and promoting Best Management Practices (BMPs) in adjacent agriculture will be essential to reduce fire risks while supporting natural regeneration and conservation of the forest and peatland ecosystem. Further field assessment will be conducted in January – June 2023.
3.	Analysis of Fire Hotspots	<ul style="list-style-type: none"> The fire hotspot clusters over the last ten years (2011-2021) in GAFR are concentrated along the drainage canals and the boundary of the forest reserve as well as along the road cutting through the forest reserve.

		<ul style="list-style-type: none"> The fire hotspot analysis is being used planning of the restoration of hydrology of any drained areas via canal blocking and rewetting to reduce fire risks while supporting the forest natural regeneration. Based on an analysis of the land degradation and the fire history, a fire risk map has been developed.
4.	Peatland survey and depth assessments	<ul style="list-style-type: none"> Conducted peat depth assessments at twenty locations mainly focus within the forest compartments 86 and 103, GAFR and adjacent areas. Has recorded peat depths along the forest boundary ranging from 0.6 m to more than 1.68 m. Further peatland and coastal surveys will be conducted in 2023.
5.	Vegetation and fauna surveys	<ul style="list-style-type: none"> Rapid surveys on vegetation, fish and fauna were conducted in June, July and September 2022 included water quality tests in targeted forest compartments. The objective of the field assessments was to support the identification and development of appropriate forest rehabilitation activities at the project area. The study revealed presence of <i>Gonystylus bancanus</i> (Ramin melawis) in FC 86 and elephants in the eastern portion of the site . Further vegetation and fauna surveys will be conducted in 2023.
6.	Preliminary Fish Survey	<ul style="list-style-type: none"> A preliminary survey of black-water fish species by GEC and Universiti Malaysia Terengganu (UMT) was conducted with the support of Synchronicity Earth. The study identified eleven (11) species of fish during the rapid assessment conducted in FC 86 and FC 103. One of the species (<i>Betta tomi</i>) is restricted to peat swamp forests in Johor and endangered. Further fish surveys will be conducted in 2023.
7.	Meetings with Johor State Forestry Department	<ul style="list-style-type: none"> Several meetings and communications were held with the Johor State Forestry Department (JSFD) during the reporting period, including with the JSFD Headquarters in Johor Baharu and the East Johor District Forestry Office in Mersing.

3. Pictorial report of the progress of initial activities have been undertaken from July until December 2022:

Figure 2. Observations from initial field visits to Gunung Arong Forest Reserve

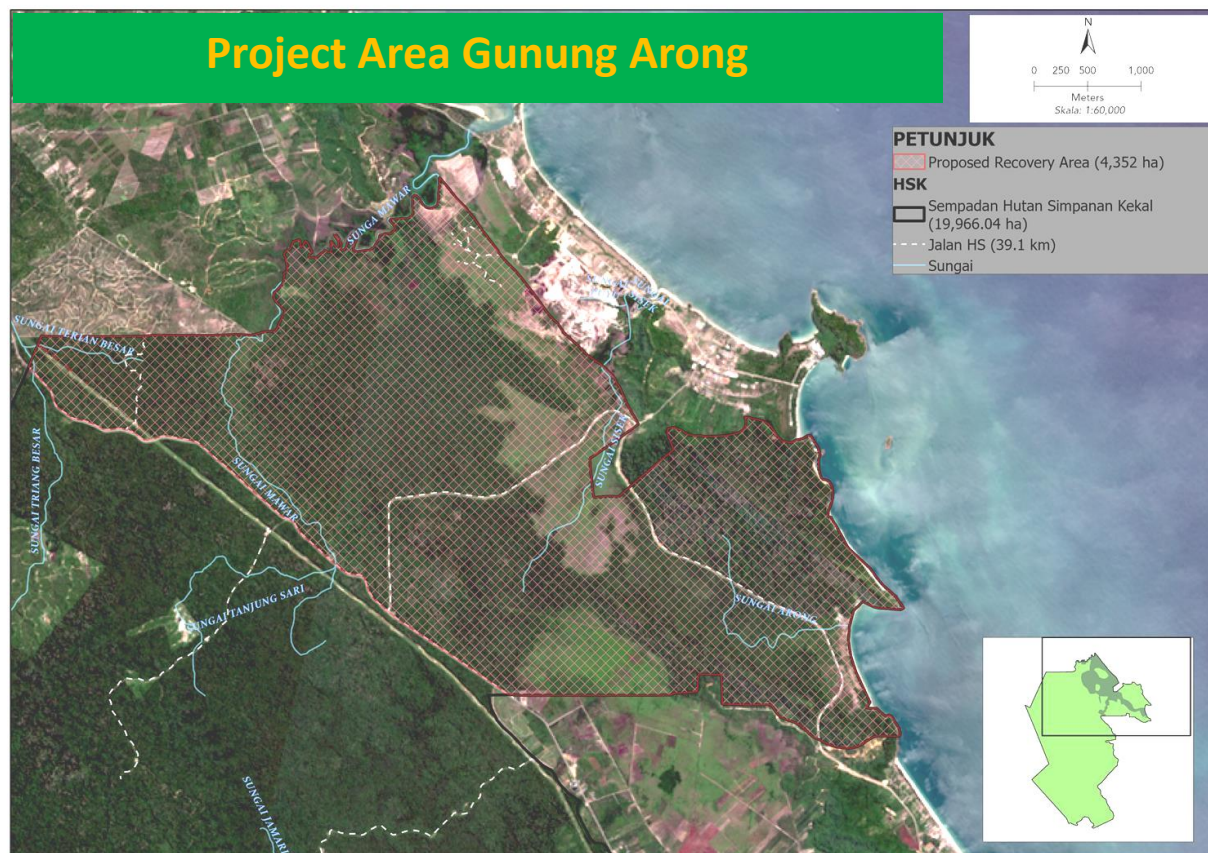


Figure 2.1: Satellite image (2019) showing the Project site in the north eastern portion of the Gunung Arong Forest Reserve



Figure 2.2 Forest compartment 86 has been degraded due to repeated fire incidents.



Figure 2.3 Degraded areas either side of the main road cutting through the Forest Reserve.



Figure 2.4 Area of degraded forest in Forest Compartment 103 in the north east of the project site that has been impacted by logging, land clearing and fire.



Figure 2.5 Area immediately to the north east of the project site cleared for conversion to oil palm but has been abandoned due to flooding, salinity and acid sulphate soils.

Figure 3. Peat sampling in Gunung Arong Forest Reserve



Figure 3.1 Peat depth assessments at twenty locations mainly focus within the forest compartments 86 and 103, GAFR



Figure 3.2 Peatland in Forest Compartment 86.

Figure 4: Field assessments in Gunung Arong Forest Reserve



Figure 4.1 (i) Drainage canals canal in FC 86, GAFR and (ii) Peat depth survey conducted



Figure 4.2 (i) Vegetation survey at GAFR, (ii) Ramin melawis tree and (ii) survey team

Figure 5: Fish sampling in Gunung Arong Forest Reserve in July 2022.



Figure 5.1 Fish sampling in Gunung Arong Forest Reserve in July 2022.



Figure 5.2 (i) *Betta belica* (LC) and (ii) *Betta tomi* (EN)

Figure 6: Meeting with Johor State Forestry Department.



Figure 6.1 Meeting with Johor Timur District Forest Officer

4. Main activities planned for 2023

The following activities are planned in 2023:

- a) Establishment of project office in Mersing (January 2023)
- b) Organisation of a project launch event at the project sit (March 2023)
- c) Further field assessment (such as flora, fauna, fish, peat and fire prevention) and mapping in Gunung Arong Forest Reserve (GAFR) (January-June 2023)
- d) Stakeholders and community engagement (January to June 2023 and ongoing)
- e) Patrolling and fire prevention in forest reserve and adjacent areas with the assistance from locals and JSFD in GAFR (July – December 2023)
- f) Blocking of selected drainage canals in forest reserve and adjacent areas (September – November 2023)
- g) Survey and demarcation of selected portion of the boundary of the GAFR and installation of forest boundary signboards (October-December 2023)
- h) Rehabilitation of degraded forest and peatland areas (through encouragement of natural forest regeneration and selected planting) (September -December 2023)
- i) Monitoring and reporting (January, July and December 2023)