

EXECUTIVE SUMMARY

Project Title:

**Environmental Impact Assessment (EIA) for
Proposed Multi Species Forest Development Project (202.0 Ha)
At HSK Sungai Berok (Compartment 91, 92 & 93 - Partially)
Mukim Ulu Nenggiri, Daerah Bertam, Jajahan Gua Musang,
Kelantan Darul Naim.**

(1st Schedule)



Project Proponent

**BPE Cahaya Enterprise
(KT0310247-V)**
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Kelantan Darul Naim.

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Legislative Requirements

Legal Requirement (EIA Order 2015) First Schedule

"Item 5(e) of First Schedule: Development of planted forest
covering an area of 100 hectares or more but less than 500 ha"

Statement of Need

Forest revenue was the 4th largest contributor for **State of Kelantan**, amounting to RM129.5 million (12.65%) of total revenue, which showed an increase of RM6.5 million (5.28%) compared to the estimated RM123 million in 2020. (Sidang Dun Belanjawan 2021, Negeri Kelantan)

To provide local spending and positive impact into the local economy, generation of employment and creation of job opportunities.

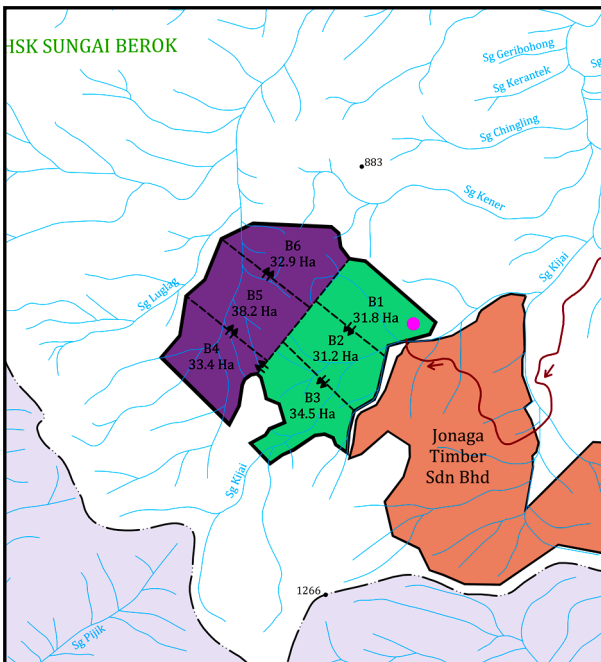
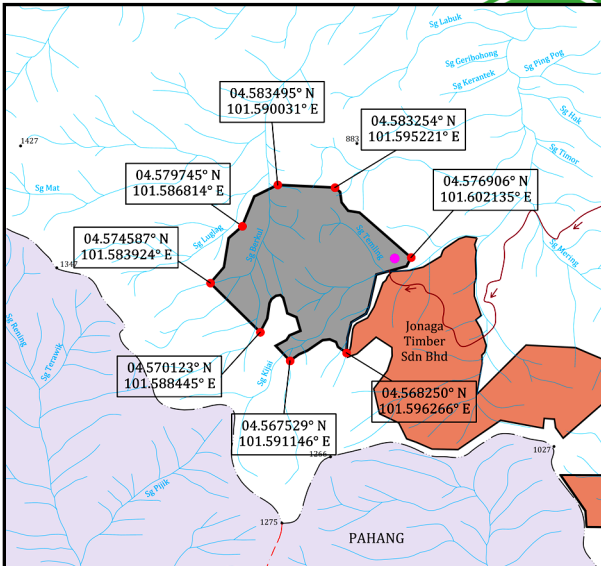


To promote establishment of forest plantation for future sustainable timber supply and fulfill demand in Malaysia timber industry

To increase the investment in the timber industry and as one of main income for **State of Kelantan**.



Project Description



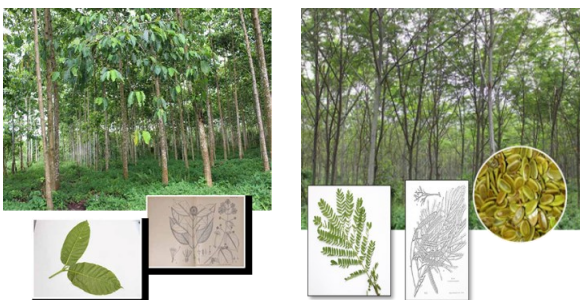
- * The proposed project site is located at **HSK Sungai Berok** (Compartment 91, 92 & 93 - Partially) Mukim Ulu Nenggiri, Daerah Bertam, Jajahan Gua Musang, Kelantan Darul Naim to develop 202.0 ha of area with multi species forest plantation project.
- * The proposed project site lies at coordinate 04.567529° N to 04.583495° N and 101.583924° E to 101.602135° E.

- * **BPE Cahaya Enterprise** granted usage permit of fifty (50) years by **Department of Forestry (DOF) Negeri Kelantan** through letter PHN.KN 200/1/1522 (17) dated on 11th March 2021.
- * According to **Rancangan Tempatan Jajahan Gua Musang (RTJGM) 2020** document and official correspondence letter from **PLAN Malaysia Negeri Kelantan** through letter ref JPBD/PK/T/185/14/2/Jld17 dated on 29th March 2021, the proposed project site is identified as forest reserve area known as **Hutan Simpan Kekal (HSK) Sungai Berok** and located under landuse zone for forestry area at **Blok Perancangan (BP) 4: Lojing**, Block Perancangan Kecil (**BP**) 4.4: **Hutan Simpan Sungai Betis & Sungai Berok**.

- * The proposed project site is being access from existing established plantation road via Jalan Simpang Pulai - Lojing - Gua Musang - Kuala Berang highway located approximately 17.8 km (straight line) at the northeast part of proposed project site area.
- * The proposed project site will carried out phase by phase basis (6 blocks & 2 phases)
- * Proposed development will carried out starting from **Phase 1** (Block B1, B2 & B3 - 97.5 Ha) and followed by **Phase 2** (Block B4, B5 & B6 - 104.5 Ha)
- * Unusable area must be retained and preserved from any development activity.
- * Total usable area is 149.68 ha (74.1%) and un-usable area is 52.32 ha (25.9%)

Planting Material

- * Proposed type of forest timber specification based on **Department of Forestry (DOF)** are *Eucalyptus spp*, *Hevea brasiliensis* (TLC), *Acacia mangium* (Akasia), *Tectona grandis* (Jati), *Azadirachta excelsa* (Sentang), *Khaya spp.* (*Khaya ivorensis*/*Khaya senegalensis*), *Neolamarckia cadamba* (Kelempayan/Laran), *Paraserianthes falcataria* (Batai) and *Octomeles sumatrana* (Binuang).



Proposed Planting Method

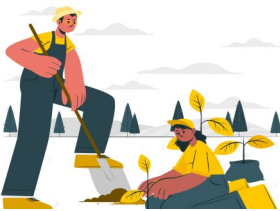
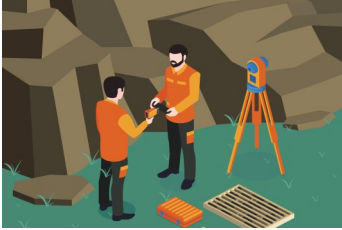
Legend	Proposed Planting Method
Slope 0° - 25° - 95.57 ha (47.3%)	Terracing Method
Slope 25° - 35° - 54.11 ha (26.8 %)	Platform Method or spot planting
Slope >35° - 14.61 ha (7.2 %)	Not Recommended for forest plantation development
Buffer Zone (20m Both Sided) - 37.71 Ha (18.7 %)	Not Recommended for forest plantation development

Main Activities of Forest Plantation Development Project

PRE-PLANNING STAGE

Surveys

- Site Surveys
- Boundary Survey
- Ecology Studies
- Soil Suitability Studies
- EIA Report Preparation
- EMP & LD-P2M2 Report Preparation



PLANTING STAGE

Site Preparation Works

- Construction of Access Road
- Logging and Land Clearing Activities
- Log Transportation
- Development of Matau/Skid Area
- Establishment of Base Camp/Worker Quarters
- Establishment of Nursery and Storage Area

Installation of LD-P2M2 Element

- Installation of River Crossing System (Bridge and Culvert)
- Construction of BMPs (Sediment Basin, Check Dam Etc)
- Drainage and Sedimentation Control
- River Buffer Zone

Field Establishment

- Terracing
- Field lining, Holing and Planting
- Temporary Stabilization & Cover Crop Establishment
- Fencing/Trencing

Environmental Management Plan

- Environmental Monitoring Report (EMR)
- Environmental Audit Exercise
- Environmental Compliances

OPERATION STAGE

Field Maintenance Activities

- Weeding
- Manuring
- Refining and Thinning
- Pest and Diseases Control
- Pesticides and Fertilizer Application
- Access Road Maintenance
- Maintenance of LD-P2M2 Elements

Harvesting

- Collection of products
- Clearing and Felling
- Transportation
- Storage/Stockpiling

Environmental Management Plan

- Environmental Monitoring Report (EMR)
- Environmental Audit Exercise
- Environmental Compliances



REPLANTING STAGE

Replanting

- Field lining, Holing and Planting
- Maintenance of Nursery
- Access Road Maintenance
- Maintenance of LD-P2M2 Elements

Environmental Management Plan

- Environmental Monitoring Report (EMR)
- Environmental Audit Exercise
- Environmental Compliances

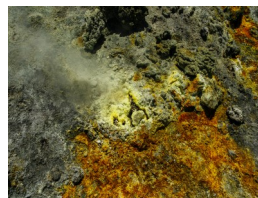
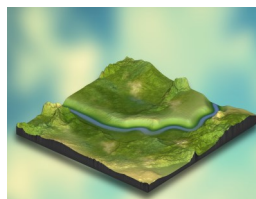
ABANDONMENT

Exposed land

- Landscapping
- Retrenchment
- Removal of structures and machinery
- Rehabilitation

Existing Environment

- * Highest topography - 947 to 980 meter ASL (42.42 ha or 21%)
- * Lowest topography - 680 to 713 meter ASL (2.02 ha or 1%)
- * **Geology & Mineral** - The proposed project site was located within igneous activity area which consists of intrusive rocks, mainly granite with minor granodiorite. No deposits of valuable mineral and potential gold area are to be found within proposed project site.



- * Fauna survey recorded 70 avian species from 38 family, 19 mammals species from 15 family and 16 herpetofauna species from 10 family.
- * Flora survey recorded 267 species plants from 183 genera and 77 family.
- * It was categorized to 160 species of tree (T), 39 species of shrub (S), 17 species of herbaceous (H), 36 species of climber (C), 6 species of palm (P) and 9 species of ferns (F).

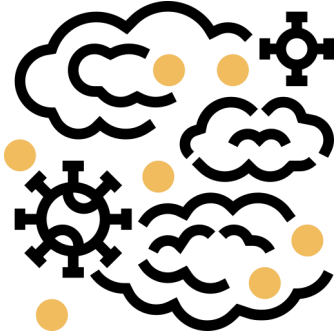
Water Quality



- * Water analysis has been conducted at nine (9) different sampling station.
- * **Water Quality Index (WQI)** for all nine (9) sampling station ranged from 84.46 to 95.16. All nine (9) sampling station has been classified to be in **Clean** condition under **Class I and II** of **NWQSM**.



Air Quality



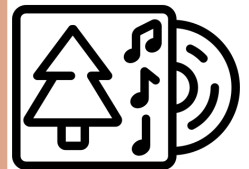
- * One (1) sampling station for ambient air quality (**A1**) has been set up within proposed project site.
- * Air quality measurement for parameter **PM₁₀** at 35.0 $\mu\text{g}/\text{m}^3$ which noted below standard limit of **Malaysian Ambient Air Quality Standard, 2020**.



Noise Measurement



- * One (1) sampling station (**N1**) for noise measurement has been conducted. The result recorded noise levels for day time is 62.11 dBA, while for the night time, Leq recorded at 52.40 dBA.
- * Result obtained is compared with standard limit of **Schedule 1 (Suburban Residential (Medium Density), Recreational) of Guidelines for Environmental Noise Limits and Control, Third Edition 2019 (Reprint 2021)** where the limit shall be 60 dBA (day time) and 55 dBA (night time).



Standard Guidelines for Environmental Monitoring

- * **National Water Quality Standards Malaysia (NWQSM)**
- * **Malaysian Ambient Air Quality Standard 2020**
- * **Guidelines for Environmental Noise Limits and Control, Third Edition 2019 (Reprint 2021)**

Significant Potential Impact

High Potential Impact

- * Soil Erosion, Siltation and Sedimentation
- * Water Pollution
- * Solid Waste Disposal
- * Flora & Fauna



Moderate Potential Impact

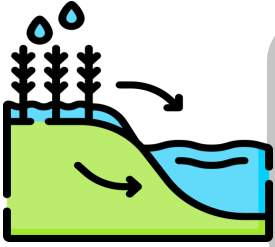
- * Air Pollution
- * Noise Generation
- * Scheduled Waste Disposal
- * Traffic Congestion



Low Potential Impact

- * Socio-Economy
- * Health and Disease
- * Safety and Security

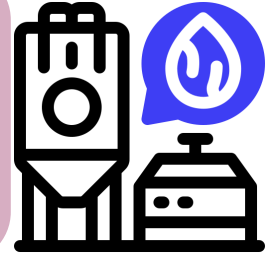




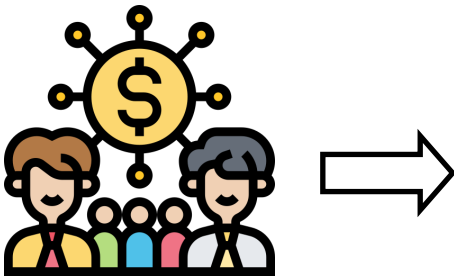
- * It was found that various rivers known as Sg Berkul, Sg Temling, Sg Kijai & Sg Kener and its tributaries found scattered within proposed project site area.
- * These rivers (Sg Berkul, Sg Temling, Sg Kijai & Sg Kener) will flow towards Sg Mering which is located approximately 2.6 km (straight line) at the northeast part outside of proposed project site before entering the major river known as Sg Berok.

Water Treatment Plant

- * No Air Kelantan Sdn Bhd (AKSB) water intake point located within 5.0 km radius of proposed project site. The nearest water intake is **Water Treatment Plant Lojing** which is located approximately 11.0 km (straight line) upstream from proposed project site area.
- * There is another water intake known as **Water Treatment Plant Kuala Betis** which is located approximately 28.8 km (straight line) at downstream from proposed project site area.
- * Official feedback from **Department of Health (DOH)** revealed there is no 'tandak air' located within 5.0 km radius.



Socio Economy



- * There is no orang asli community area to be found within 5.0 km radius from proposed project site.
- * However, there are **Orang Asli Pos Blau** community area located approximately 15.89 km (Kg Kelaik) and 17.04 km (Kg Selyeh) at southwest part from proposed project site.
- * Latest information gathered from **Jabatan Kemajuan Orang Asli Negeri Kelantan dan Terengganu (JAKOA)**, revealed that **Orang Asli Pos Blau community area** consist of six (6) small villages headed by one (1) 'Penghulu' named as Salleh Bin Angah.
- * This Orang Asli community belonging to the Temiar (Senoi) tribe, consist of approximately 575 individuals across 139 families.
- * Information from **JAKOA** also revealed that **Orang Asli Pos Blau** equipped with several facilities such as school (Sek. Keb. Blau), balai rawatan, dewan, gelanggang, water sources ('tandak air') and road network (unpaved road).



A view of Settlement Area Captured at Orang Asli Pos Blau (Kg Kelaik) Which Is Located 15.89 km From Proposed Project Site

Significant Potential Impact & Proposed Pollution Prevention & Mitigation Measures (P2M2)

Soil Erosion & Sedimentation



- * Land clearance activities are to be conducted in phases to reduce soil erosion. The proposed development will be carried out at **Phase 1** (Block B1, B2 & B3 - 97.5 Ha) and followed by **Phase 2** (Block B4, B5 & B6 - 104.5 Ha).
- * River buffer zone was preserved about 20.0 meter each side as regulated by **Department of Irrigation and Drainage (DID)**.
- * Soil erosion and sediment control measures include installation of silt traps and sediment basins.
- * The appropriate drainage system should be installed to lead the runoff from upper slopes.
- * Vegetation cover should not be cleared until earthworks are ready to begin in order to reduce soil erosion.

Water Pollution

- * **LDP2M2** element such as silt trap/sediment basin, earth drain, check dam, temporary or permanent river crossing shall be first established and regularly inspect and maintained.
- * Earthwork activities are to be conducted in phases to reduce soil erosion.
- * The river buffer zone was preserved about 20.0 meter each side.
- * Environmental monitoring programmer and environmental audit exercises are necessary to follow up the effectiveness.



Air Pollution



- * The proposed development will be carried out by phases.
- * Any fuel burning equipment installation have to be submitted to **Department of Environment (DOE) Negeri Kelantan** for **Written Notification (WN)** and **Written Declaration (WD)** within a month or thirty (30) days prior to any installation/construction or alteration of air pollution control system.
- * Regular watering shall be conducted for the unpaved road and exposed earth surface especially during dry season.
- * Open burning is strictly prohibited at all time.
- * Environmental monitoring program and environmental audit exercises are necessary to follow up the effectiveness of such **P2M2** that have been implemented.

Noise generation

- * Limit the working hours to daytime 7.00 am to 7.00 pm and vehicles and machinery to be well maintained.
- * Monitoring of ambient noise quality shall be regularly done at proposed project site and nearby plantation area.
- * Environmental monitoring program and environmental audit exercises are necessary to follow up the effectiveness of such **P2M2** that have been implemented on-site.



Flora & Fauna



- * The proposed development will be carried out by phases.
- * Both workers and local people are strictly prohibited from poaching on any wildlife species. An appropriate warning post 'No Hunting' should be erected at the approach and strategic location within proposed project site
- * Project proponent should seek advice from **PERHILITAN Negeri Kelantan** for development of a ditch/trench or electrical fencing at boundary of proposed project site.
- * The ditch or any other structural control system shall be well maintained to ensure its effectiveness.

Waste Generation

- * Open burning is strictly prohibited at all time. Any offences on the matter shall be subjected to heavier penalty of a fine not less than RM 25,000 and not exceeding RM 1000,000 or to imprisonment for a term not exceeding 5 years or both.
- * It is recommended that proper waste storage bins for the workers must be provided.
- * All scheduled wastes including used oil and spent/waste oil generated from machines, generators, chemical containers, etc. shall be collected and disposed off-site by licensed contractors for disposal.
- * Large stumps, small branches and other organic materials shall be disposed of via mulching/composting in a suitable area within the proposed project site.
- * Biomass wastes suggested to be buried within one (1) meter deep in the ground as to prevent these kinds of



Traffic Congestion



- * Project proponent should share cost of road maintenance to the existing plantation road with another neighbouring plantation. A proper arrangement shall be made in written between relevant parties as to avoid any misunderstanding in the future.
- * Project proponent has to ensure that no obstruction can be made at this existing plantation road especially during site clearing and preparation.
- * The usage of existing road entrance to the proposed project site must be scheduled, controlled and not to get into and out populated area during peaks hours or night times.

Health & Disease

- * Due to the increasing number of infectious diseases (Malaria, Dengue, Leptospirosis, COVID-19 and etc) the mitigating measures must be taken for any development works in order to prevent major outbreak.
- * Housekeeping need to conduct regularly in quarters, office, canteen and workshop. This will keep the project site clean and could avoid from the vector borne disease to breeding around.
- * Proper septic tank at worker's quarters area are required and need to be construct by the project proponent
- * Take great care when applying pesticides, or working in treated areas after spraying, as the risk of poisoning. During the spraying activities, workers need a proper cover such as PPE are mandatory to wear.



Safety & Security










- * Workers should provide an appropriate clothing, footwear and Personal Protective Equipment (PPE).
- * Emergency Response Plan also the vital role in proposed. This plan will include the flow chart/process that need to be taken when the emergency happens.
- * Appointed Environmental Officer (EO) or Safety Officer (SO) should constantly monitor and must recorded in log book.
- * Workers should be given proper and adequate training in machinery handling and safe working procedures.
- * The entrance must 24 hour guided by the security. The gate should be close and not allowed to enter proposed project site and directly report to the nearest police station.

Abandonment

- * Demolished all the worker's quarters, site office and etc. All the waste must be disposed with the proper way.
- * All the schedule waste must be return to the supplier or to the registered schedule waste collector.
- * Cover crop must be planted at all open area. It could avoid from the soil erosion in the slope area.



Proposed Environmental Monitoring Program

Environmental Components	Parameter	Standard Requirements	Monitoring Station	Proposed Frequency
 <p>River Water Quality</p>	<ul style="list-style-type: none"> * Temperature * pH * Dissolved Oxygen (DO) * Biochemical Oxygen Demand (BOD) * Chemical Oxygen Demand (COD) * Total Suspended Solid (TSS) * Turbidity * Iron * Manganese * Ammonia Nitrogen * E. Coli * Oil & Grease 	<ul style="list-style-type: none"> * National Water Quality Standard for Malaysia (NWQSM) * Water Quality Index (WQI) * EIA Conditions of Approval 	<ul style="list-style-type: none"> * W1, W2, W3, W4, W5, W6 & W7, W8, W9, W10 & W11 (as per baseline study and subjected to change based on site condition according to development phase) 	<ul style="list-style-type: none"> * Monthly
 <p>Air Quality</p>	<ul style="list-style-type: none"> * PM₁₀ 	<ul style="list-style-type: none"> * Malaysian Ambient Air Quality Standards (2020) * EIA Conditions of Approval 	<ul style="list-style-type: none"> * A1 	<ul style="list-style-type: none"> * Quarterly
 <p>Noise Level</p>	<ul style="list-style-type: none"> * L₁₀, L₅₀, L₉₀, L_{eq}, L_{peak}, L_{max} and L_{min}. 	<ul style="list-style-type: none"> * Guidelines for Environmental Noise Limits and Control, Third Edition (2019) * EIA Conditions of Approval 	<ul style="list-style-type: none"> * N1 	<ul style="list-style-type: none"> * Quarterly
 <p>Sedimentation & Erosion</p>	<ul style="list-style-type: none"> * Suspended solid * Turbidity 	<ul style="list-style-type: none"> * EIA Conditions of Approval 	<ul style="list-style-type: none"> * Sediment basin discharge outlet 	<ul style="list-style-type: none"> * Inspection by EO After Rainfall Event (12.5 mm)
 <p>Scheduled Waste Management</p>	<ul style="list-style-type: none"> * Visual inspection of storage condition * Signs of oil spill 	<ul style="list-style-type: none"> * Environmental Quality (Scheduled Wastes) Regulations (2005) * EIA Conditions of Approval 	<ul style="list-style-type: none"> * At storage areas for scheduled wastes * At active work areas 	<ul style="list-style-type: none"> * Inspection by EO
 <p>Solid Waste Management</p>	<ul style="list-style-type: none"> * Visual inspection on mode and efficiency of disposal 	<ul style="list-style-type: none"> * Environmental Quality (Prescribed Activity) (Open Burning) Order (2000) * EIA Conditions of Approval 	<ul style="list-style-type: none"> * General cleanliness 	<ul style="list-style-type: none"> * Inspection by EO
 <p>Ecology</p>	<ul style="list-style-type: none"> * Flora * Wildlife 	<ul style="list-style-type: none"> * EIA Conditions of Approval 	<ul style="list-style-type: none"> * Throughout proposed project site 	<ul style="list-style-type: none"> * Inspection by EO

Proposed Environmental Monitoring Station

