

ES

EXECUTIVE SUMMARY

EAST COAST RAIL LINK PROJECT SECTION B (DUNGUN - MENTAKAB) REALIGNMENT AT KUANTAN PORT CITY

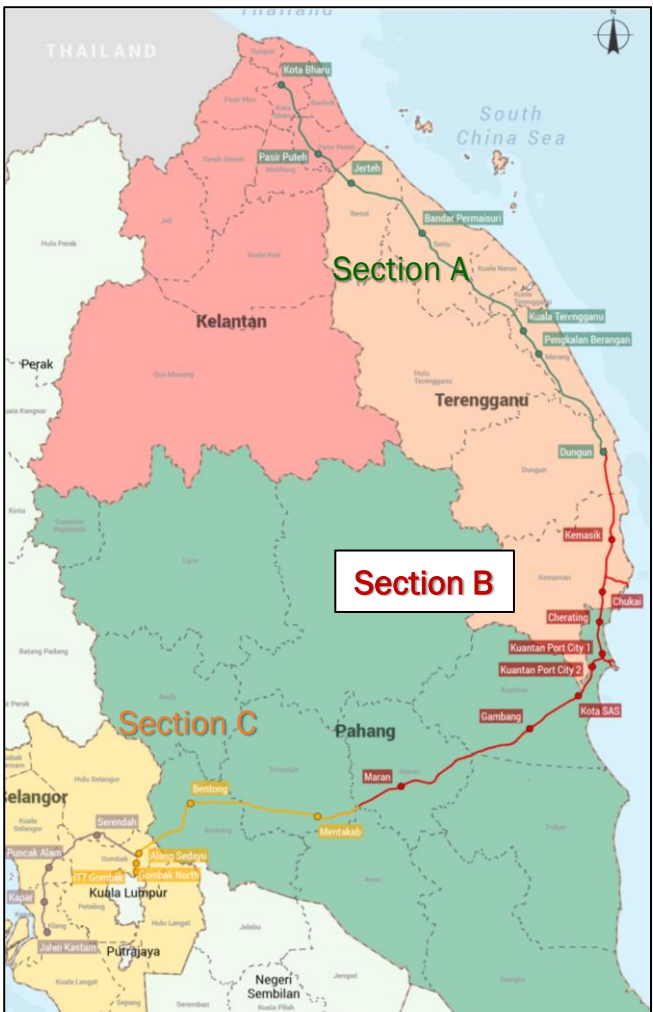
SECOND SCHEDULE ENVIRONMENTAL IMPACT ASSESSMENT

EXECUTIVE SUMMARY

The EIA for ECRL Phase 1 (Kota Bharu – ITT Gombak) was approved in June 2017 and construction commenced in August 2017.

As of 2020, the alignment from Dungun to Mentakab (now known as ECRL Section B) remains the same as in the original ECRL Phase 1 alignment in 2017. Construction works for the Section B, which had commenced in 2017, are on-going.

This EIA is for the proposed **realignment at Kuantan Port City (24.2 km)** which is within ECRL Section B.



OVERALL ECRL PROJECT



LOCATION OF REALIGNMENT AT KPC (THE PROJECT)

Project Proponent



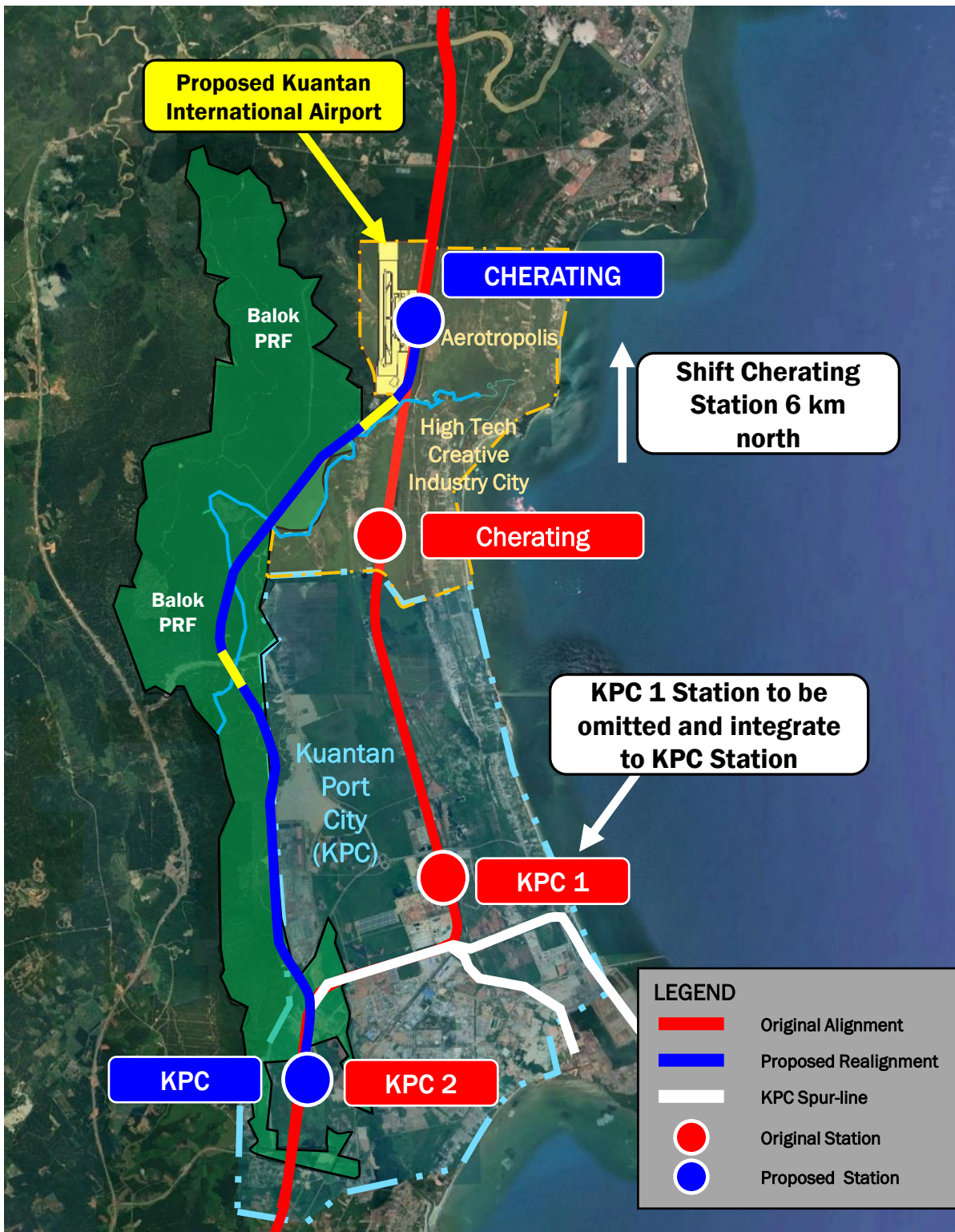
Malaysia Rail Link Sdn Bhd
CEO
Dato' Sri Darwis Abdul Razak

EIA Consultant



ERE Consulting Group Sdn. Bhd.
EIA Team Leader
Raja Nur Ashikin Raja Zainal

PROPOSED REALIGNMENT FEATURES



Parameters	Original Alignment	Proposed Re-Alignment
Length	22.6 km	24.2 km
Alignment Route	Avoids Balok PRF, traverse 11 km peat area	Traverses east of Balok PRF for 16 km, minimise traversing through peat area
Stations	3 Stations: • Cherating • KPC1 • KPC2	2 Stations: • Cherating <i>shifted 6 km north, next to proposed airport</i> • KPC (integration of KPC1 & KPC2)
Spurlines	Spur-lines provided to Kuantan Port	
Impact to Future Developments	Cuts through KPC, Aerotropolis, and High-Tech Creative Industry City	Avoids splitting KPC, Aerotropolis, and High-Tech Creative Industry City

PROJECT DESCRIPTION

The Project involves the proposed realignment of 24.2 km from Cherating to Kuantan Port City

Length: 24.2 km (CHK277.700 to CHK301.900)

At-grade (22.87 km, 94.5%)

Elevated (1.33 km, 5.5%)

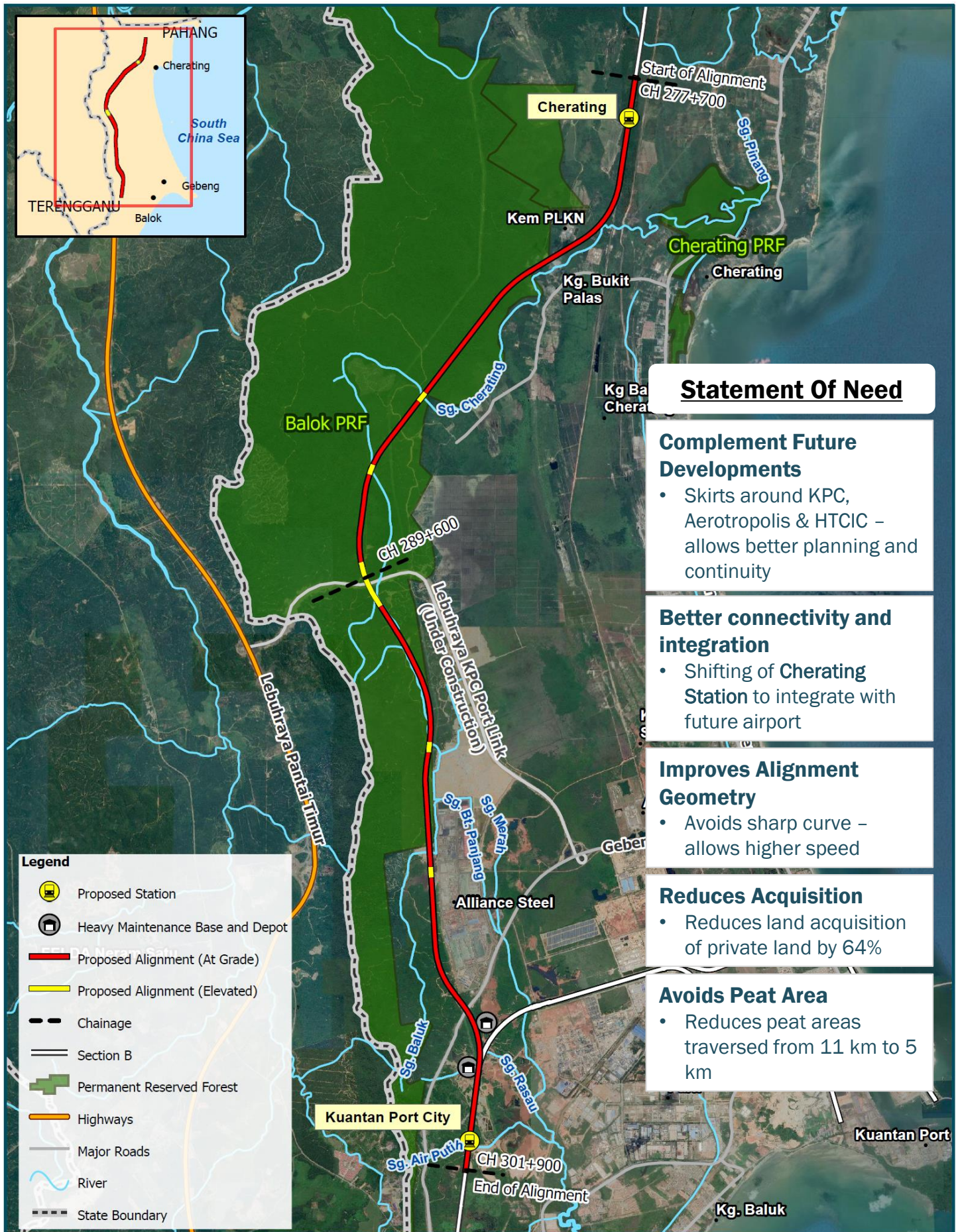
No tunnel

2 Stations

- Cherating – Passenger
- Kuantan Port City (KPC) – Passenger & Freight

1 Depot

1 Heavy Maintenance Base



Statement Of Need

Complement Future Developments

- Skirts around KPC, Aerotropolis & HTCIC – allows better planning and continuity

Better connectivity and integration

- Shifting of Cherating Station to integrate with future airport

Improves Alignment Geometry

- Avoids sharp curve – allows higher speed

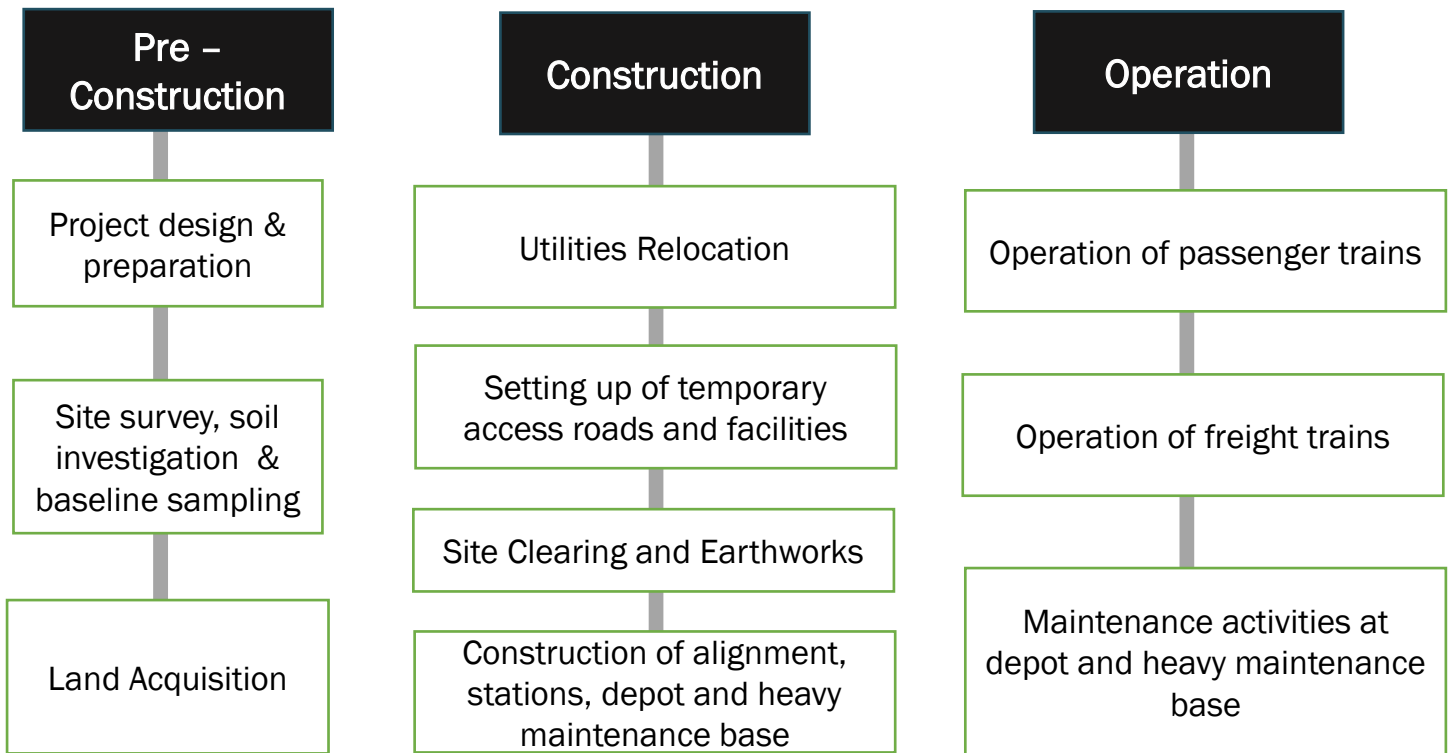
Reduces Acquisition

- Reduces land acquisition of private land by 64%

Avoids Peat Area

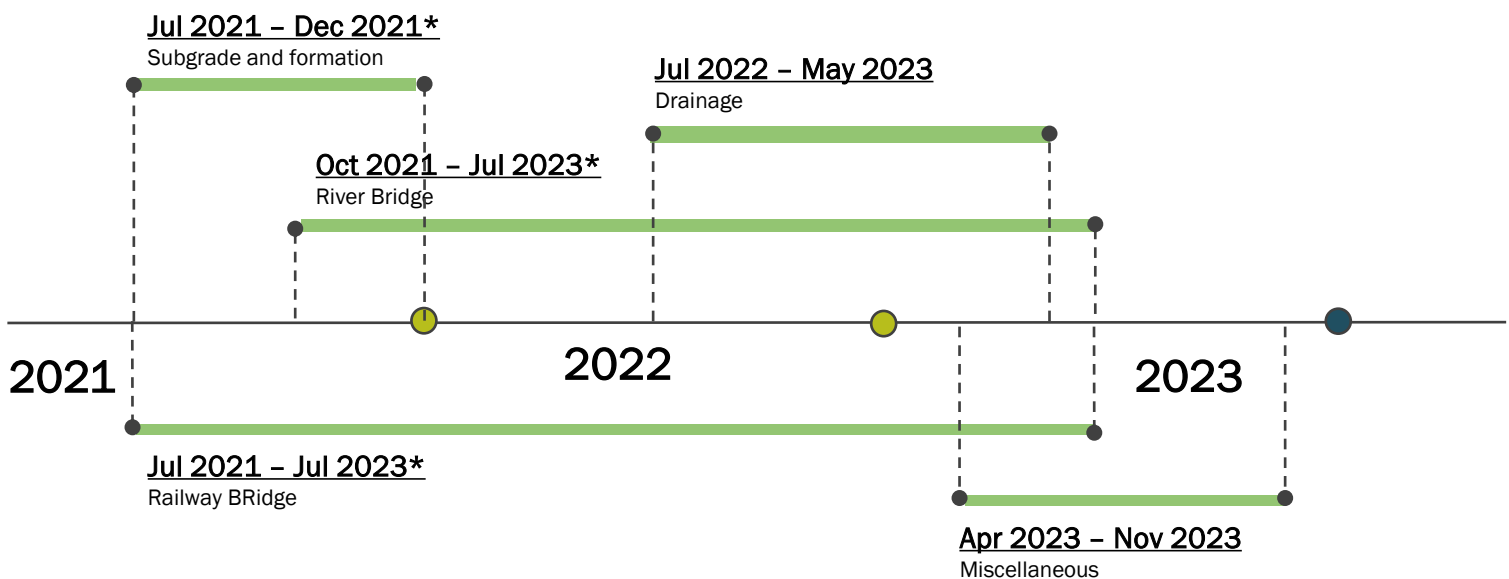
- Reduces peat areas traversed from 11 km to 5 km

PRINCIPAL PROJECT ACTIVITIES

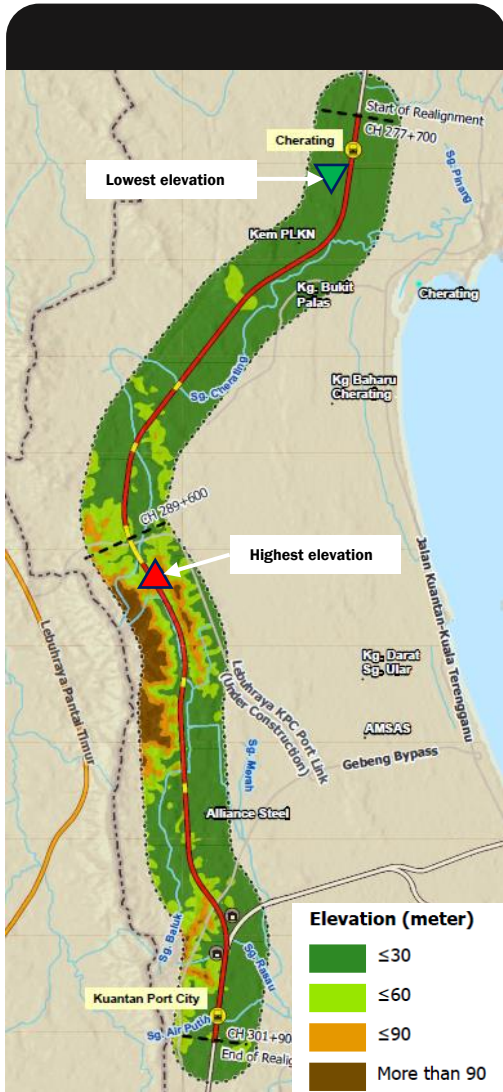


PROJECT TIMELINE (Construction Stage)

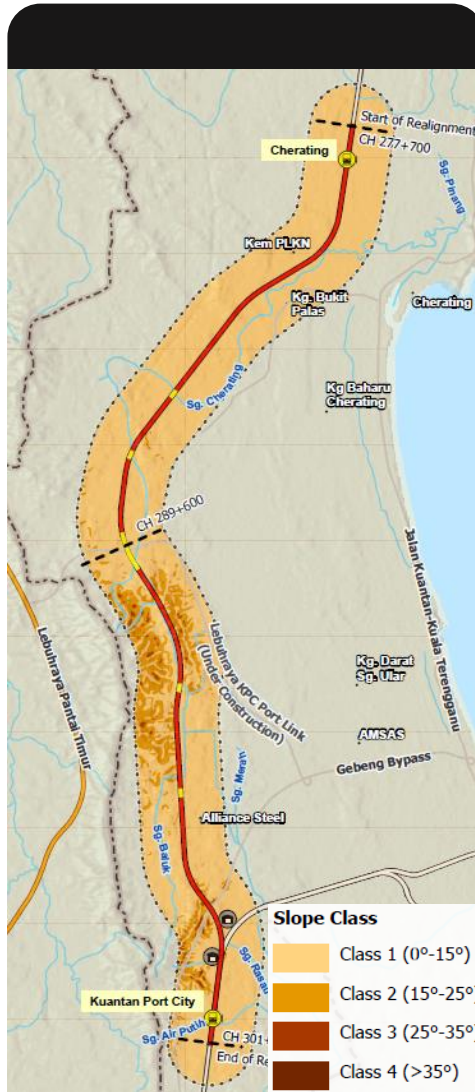
29 months
July 2021 – November 2023



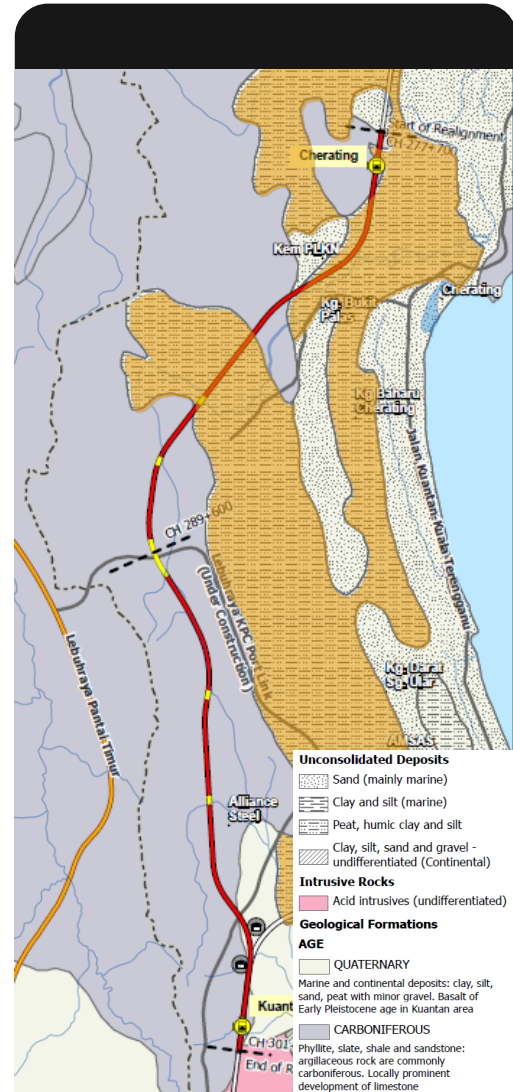
PHYSICAL ENVIRONMENT



TOPOGRAPHY



SLOPE



GEOLOGY

Most of alignment elevation is less than 30 metres

Short sections passing through elevations above 60 metres

Lowest elevation along alignment: **20 metres** at Cherating area

Highest elevation the alignment passes through: **90 metres** at CH290.400

More than 90% of the alignment traverses on **Class I** slopes.

Class III slopes intermittently between CH289.800 – CH295.700

Class IV slopes intermittently between CH298.700 – CH300.400

Subsurface Geology

- Quaternary unconsolidated sediments; deposition of **peat**
- Carboniferous argillaceous sedimentary rocks typically sandstones, schists, phyllite

Soil Investigation

- 96** boreholes from preliminary SI:
- **Topsoil** layer (up to 7 m) typically of silty sand, clay, silty clay, humic organic matters
 - **Bedrock:** Sandstone, phyllite, schists, granite
 - **Variable bedrock depth:** 0 to more than **20 m**
 - **Weathered** bedrock layer from 6 metres thickness and more

KEY IMPACTS AND SENSITIVE RECEPTORS



Kg. Bkt. Palas



Balok PRF



Sg. Cherating



Alliance Steel Sdn Bhd (ASSB)



Balok PRF and ASSB Quarters



Predicted Impacts

Ecology

- Habitat loss and fragmentation
- Human-wildlife conflicts
- Poaching

Water Quality

- Erosion and sedimentation of rivers from construction activities
- Water pollution from chemical, oil, and grease spillages
- Discharge of treated sewage for stations, depot, and heavy maintenance base

Social

- Noise, vibrations, and air pollutions during construction
- Potential hazards when there is a railway nearby settlements

Receptors

Balok PRF

Alignment pass through PRF for 16 km

7 River Crossings at:

- Sg. Cherating (3 crossings)
- Sg. Baluk
- Sg. Bukit Panjang
- Sg. Rasau
- Sg. Air Putih

Kg. Bukit Palas & ASSB Quarters



20 camera traps

at 16 survey points along the Project installed from 22 February – 28 March 2021

Flora

196 species, 49 families

14 Rare, Endangered, Threatened sp.

e.g., *Balau Pasir*, *Keruing Gombang* (CR)

Fauna

28 species, 20 Totally-Protected, WCA2010

22 Rare, Endangered, Threatened sp.

e.g., *Indochinese Leopard*, *Sunda Pangolin*, *flat-headed cat*

Habitat Quality

Intact Forest (Survey Points 2, 3, 4)

Regenerating (Survey Points 11 – 16)

Disturbed (Survey Points 1, 5 – 10)



Harimau kumbang



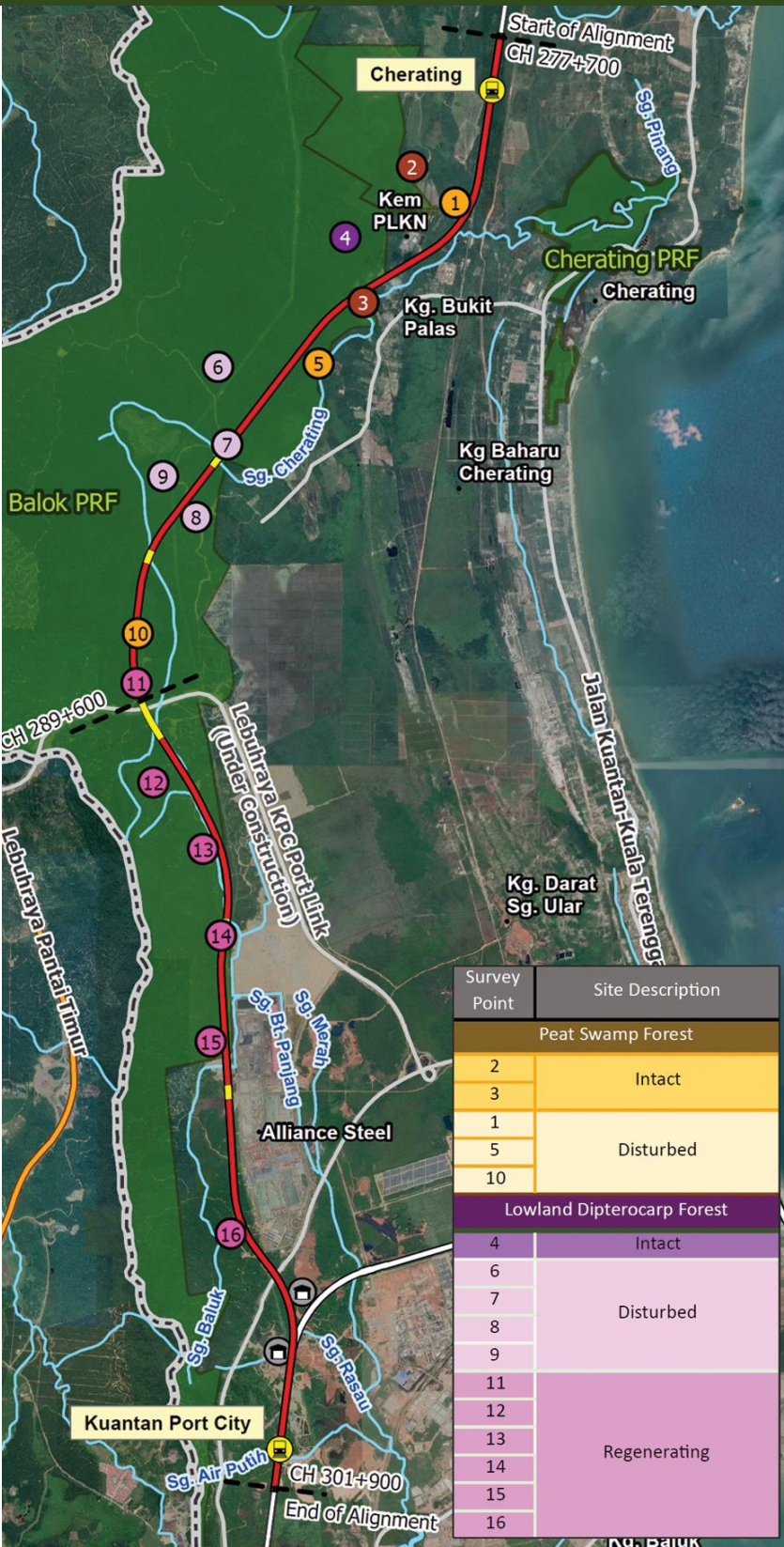
Tenggiling



Takor Gunung

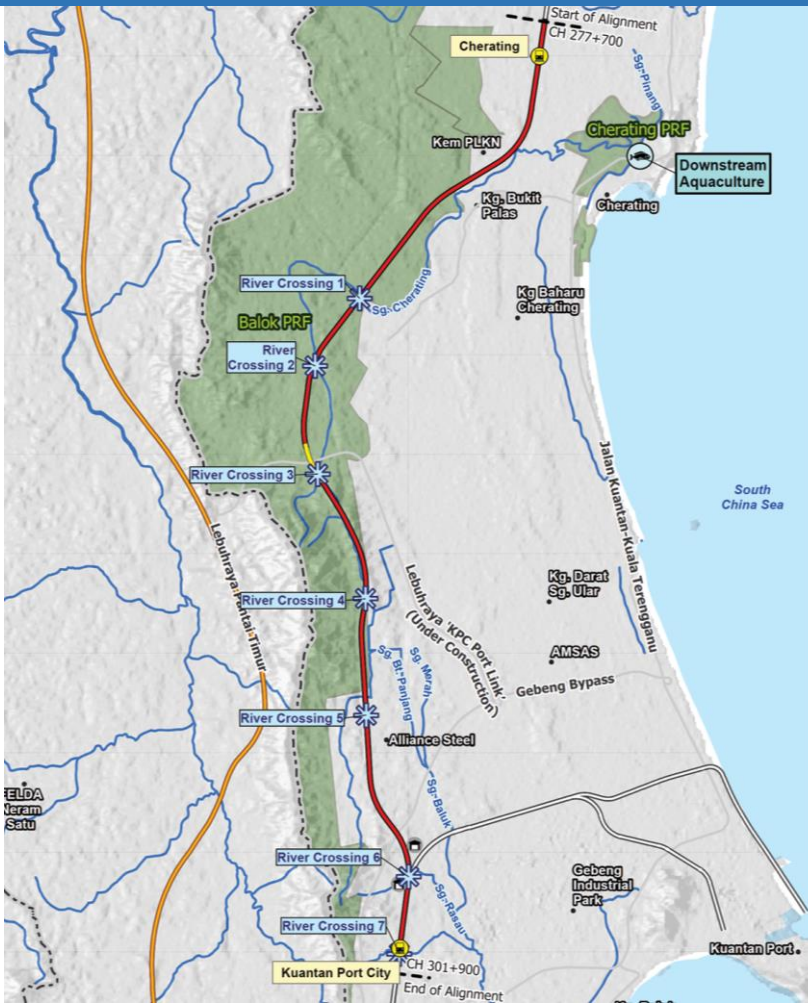


Enggang Papan



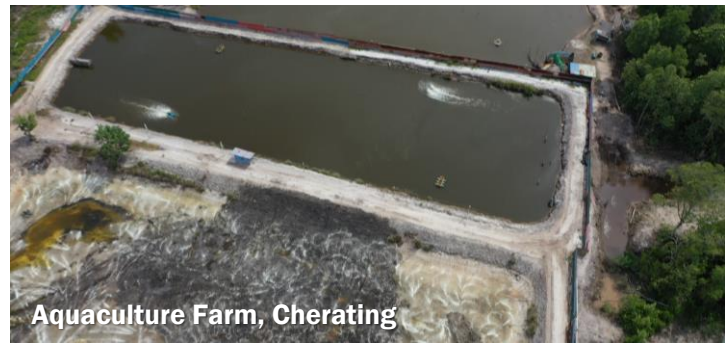
Findings Summary

Although the Balok PRF is functionally a production forest experiencing various forms of disturbances, the reserve forest still possesses a relatively rich composition of flora and fauna. Flora survey findings found that there are **at least 14 plant species of conservation importance**. Camera-trap and site recce findings have noted the presence of **several RET wildlife species** including the **Malayan sun bear**, **Malayan tapir**, **Sunda pangolin**, **Indochinese leopard**, and the **exceedingly rare flat-headed cat** were recorded across different areas of the reserve forest. Sighting of **8 hornbill species**, as well as other **forest-dependent bird species**, emphasizes the importance of the Balok PRF to sustain local populations.



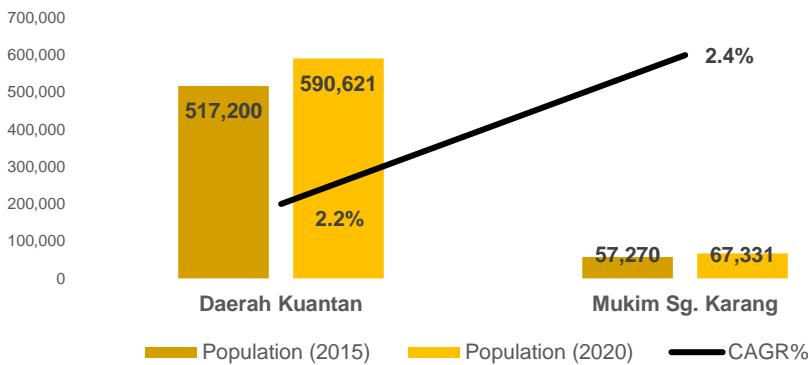
7 River crossings across two (2) river catchments
 Sg. Chering catchment
 Sg. Balok catchment

1 Aquaculture farm
 located 7.7 km downstream Sg. Chering



SOCIO-ECONOMICS

Population



Main Economic Activity



Average labour force:
15 – 64 years old

Focus Group Discussions With Kg. Chering and JAKOA Pahang-Terengganu

- Two (2) Focus Group Discussions were held:
- **Kg. Chering residents** (27th February 2021)
 - **JAKOA Pahang and Terengganu** (8th April 2021)

Main Concerns Raised

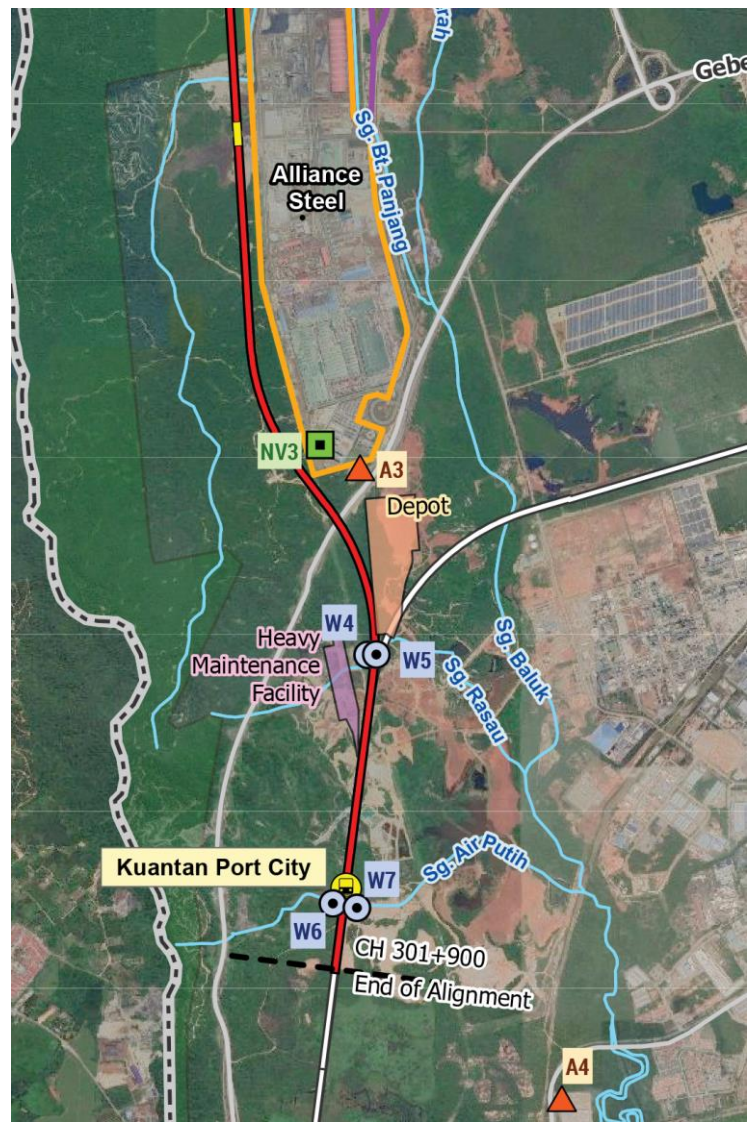
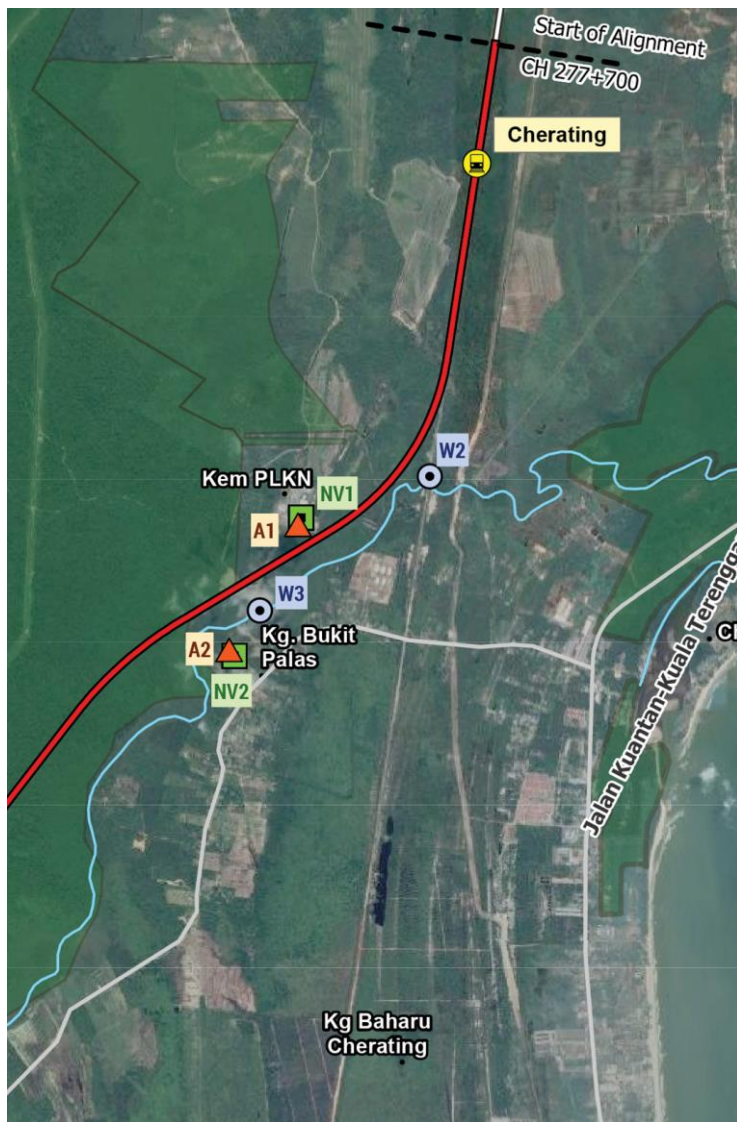
- Narrow access road
- Dirt on roads
- Road damage
- Users' Road safety
- Environmental pollution

Social Perception towards Project

Feedback received from engagements:

- No major concerns regarding the Project
- Minor suggestions to shift alignment at Chering
- Residents expect noise and vibrations mitigations to be implemented

BASELINE MONITORING LOCATIONS



WATER QUALITY



7 Sampling Points

- Sg. Cherating: 3 locations
- Sg. Rasau: 2 locations
- Sg. Air Putih: 2 locations



Sg. Balok Catchment
NWQS Class II
 Sg. Rasau & Sg. Air Putih
 (W4 - W7)

WQI: 79 - 87

Sg. Cherating Catchment
NWQS Class III

Sg. Cherating
 (W1 - W3)

WQI: 73 - 75



Ammoniacal Nitrogen (NH₃-N) Class III

For all locations. Levels from 0.9 - 2.8 mg/L
 Source: agriculture practices, domestic waste dumping

AIR QUALITY, NOISE & VIBRATIONS



4 Sampling Locations

- Kem PLKN Cahaya Gemilang
- Kg. Bkt. Palas
- ASSB Workers' Quarters
- Kawasan Perumahan Baluk Baru



PM_{2.5}:	15 - 25	µg/m ³
PM₁₀:	29 - 57	µg/m ³
CO₂:	1.4 - 4.3	mg/m ³

**All are within the
 MAAQS limits**



Day time L_{eq}: 57.2 - 61 dBA
 Night-time L_{eq}: 50.6 - 57.8 dBA
 Kem PLKN Cahaya Gemilang exceeds
 permissible limits at **night**.
 Main source of noise from nearby ambience



Peak Particle Velocity, PPV:
 All locations were in **Curve 4** limits for
 both day and night.

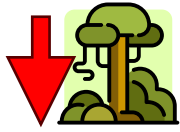
MAIN IMPACTS TO ECOLOGY

CONSTRUCTION

ACTIVITIES: Site Clearing, Earthwork

RECEPTOR: Balok PRF (16 km)

Impacts



Loss of natural vegetation due to clearance of **99 ha** of Balok PRF and state land forest along Project corridor

Felling of dipterocarp trees with high conservation value



9.84% - 12.83% of habitat fragmentation in Balok PRF

6 forest fragments

Largest fragmented area: **354.70 ha**



Potential increase in **human-wildlife conflicts** due to human-induced disturbance from vegetation removal.

Areas of concern:

- Kg. Bkt. Palas
- Within Project construction site (along alignment, stations, depot, and heavy maintenance base)



Increased **poaching activities** from illegal usage of access road into Balok PRF

Mitigation Measures

Phasing of vegetation clearance

Assist wildlife to retreat into surrounding forested areas in the right direction

Clearing of forest within Balok PRF will be facilitated by Pahang State Forestry Department

*Since the southern section of the Balok PRF is **more degraded** than the northern section, land clearing shall begin from CH 301 and proceed **progressively northwards** to CH 276*

Minimise excessive vegetation clearance

Using existing access roads leading to Project site reduces need to clear more forest for new access roads

Implement good housekeeping practices

Proper solid waste management to prevent wildlife scavenging at construction sites

Awareness raising and education

Educate site workforce to properly handle encroaching wildlife on-site

Monitor access roads and install barriers/gates

Prevent trespassers from entering forest reserve without any official purposes/permit from Forestry Department

Appoint officer to patrol, report and liaise with enforcers

Systematically record signs of trespassing to determine poaching entry and hotspots

OPERATION

ACTIVITY: Operation of the ECRL

RECEPTOR: Balok PRF (16 km)

Impacts



Railway-related **limitations and adversities:**

- Restrictions to wildlife movement due to the barrier created by the alignment
- Potential wildlife-train collisions due to wildlife encroachment into railway



Long-term **forest degradation** due to increased edge effects from cleared areas along alignment



Increased **human-wildlife conflicts** along railway corridor



Increased **poaching** threats into Balok PRF from abandoned access roads, cleared areas and culverts

Mitigation Measures

Provision of **wildlife crossing** box culvert at 5 locations along alignment, viaducts at 2 locations can also serve as wildlife crossings

Long-term wildlife monitoring

e.g., installation of motion-sensor camera-traps at wildlife crossings to record wildlife occurrences and poaching activities in Balok PRF

Conduct **habitat enrichment activities** along forest edges to maintain habitat integrity

*e.g., native species such as mahang (*Macaranga spp.*) and simpoh (*Dilenia spp.*)*

Install wildlife **warning signs** at built-up areas

Translocate persisting fauna species

Establish **CEPA** programmes

Monitoring of forest access points with enforcement agencies

Empower local communities to deter poaching activities

MAIN IMPACTS TO WATER QUALITY

CONSTRUCTION

ACTIVITIES : Site Clearing, Earthworks & Construction of Access Road, Rail Embankment, Viaduct, Station, Depot & Heavy Maintenance Base

RECEPTORS : Sg. Bkt. Panjang, Sg. Baluk, Sg. Rasau, Sg. Air Putih, Sg. Cherating

Impacts



Land clearing and earthwork activities for railway embankments and foundations **increases soil erosion risk** along the alignment which will cause elevated levels of **suspended solids** in the receiving rivers.



Untreated **sewage** and **sullage** discharge from portable toilets or individual septic tank will increase levels of DO, BOD, COD & NH₃-N in the receiving rivers.



Improper **discharge** or **spillage** at construction sites along the alignment leading to river water & soil contamination e.g., *grease, diesel, etc.*

Pollution Prevention & Mitigation Measures

Proper design and implementation of **LD-P2M2** including:

- 23 Sediment basins (18 along the alignment, 2 at KPC station, 1 at Cherating station, 1 at depot and 1 at heavy maintenance base)
- Silt Traps
- Silt Fences
- Check Dams
- Erosion Control Blanket
- Wheel washing facilities

Sewage Management

- Temporary toilets to be connected to septic tank or portable sewerage system.
- All discharge treated to Standard B of Environmental Quality (Sewage) Regulations 2009

Fuel, Oil and Lubricant Spillage Management

Provision of skid tanks, oil spill kits, containment bunds and implementation of SW management in accordance with Environmental Quality (Scheduled Wastes) Regulation 2005

OPERATION

ACTIVITIES : Operation of the ECRL, Stations, Depot, and Heavy Maintenance Base

RECEPTORS : Sg. Cherating, Sg. Bkt. Panjang, Sg. Baluk, Sg. Rasau, Sg. Air Putih

Impacts



Sewage generated at stations, depot, and heavy maintenance base as well as toilet facilities within passenger trains if not managed properly will increase levels of DO, BOD, COD & NH₃-N in the receiving rivers.



Wastewater generated from depot and heavy maintenance base from washing and maintenance activities will increase risk of pollution in the receiving rivers.

Improper **discharge** or **spillage** at construction sites along the alignment leading to river water & soil contamination e.g., *grease, diesel, etc.*

Pollution Prevention & Mitigation Measures

Sewage Treatment

- Utilization of small sewage treatment system (SSTS)
- Regular desludging of sewage holding tanks
- Sewage discharge shall comply with Standard B of the Environmental Quality (Sewage) Regulations 2009 prior to discharge to receiving waterways

- Install grease interceptors to capture sullage, oil and grease and chemicals from being discharged
- Dispose scheduled waste according to Environmental Quality (Scheduled Wastes) Regulations 2005
- Emergency Response Plan (ERP) and contingency plans for oil spill incidents
- Implement fuel, oil and lubricant spillage management such as skid tanks, oil spill kits and containment bunds.

MAIN IMPACTS TO SOCIO-ECONOMY

CONSTRUCTION

RECEPTORS: Kg. Bukit Palas & Alliance Steel Sdn Bhd (ASSB) Workers Quarter

Impacts



Environmental changes (ambient air, noise, traffic) towards residents and workers



Influx of foreign workers causing security concerns

Mitigation Measures

- Implement all mitigation measures for controlling noise, dust and traffic.
- Contractors to monitor their workers' movements.
- No new workers' camp to be built. Workers' accommodation will utilise existing Base Camp Site 2 and Site 3 near the Project

OPERATION

RECEPTORS: Cherating & Gebeng Area

Benefits



Boost in Logistic, Manufacturing And Tourism Industries which provides business and job opportunities for the locals and surrounding community



Spur urban developments in the Kuantan conurbation area

MAIN IMPACTS TO NOISE AND VIBRATIONS

CONSTRUCTION

ACTIVITIES : Site Clearing, Earthwork & Construction of Access Road, Rail Embankment, Viaduct, Station, Depot & Heavy Maintenance Base

RECEPTORS : Kg. Bkt. Palas & ASSB Workers Quarter

Impacts



Increased noise and vibration level from:

- *piling works*
- *civil and structural works*
- *platform preparation works*
- *heavy vehicle movements*
- *construction machinery*

Pollution Prevention & Mitigation Measures

- Carry out construction site activities at permitted time only
- Temporary noise barrier facing Kg. Bkt. Palas and ASSB Workers Quarter
- Utilization of diaphragm sheet piles at sites with longer construction period (typically at station, depot and heavy maintenance base)
- Maintenance of vehicles and machinery

OPERATION

ACTIVITY : Operation of the ECRL

RECEPTORS : Kg. Bkt. Palas and ASSB Workers Quarter

Impacts



Noise and vibration from train passing through or near inhabited areas

Pollution Prevention & Mitigation Measures

- Install noise barriers near ASSB Workers Quarter
- Installation of under-sleeper pads on rail track

MAIN IMPACTS TO AIR QUALITY

CONSTRUCTION

ACTIVITIES : Site Clearing, Earthwork & Construction of Access Road, Embankment, Viaducts/Bridges, Station, Depot & Heavy Maintenance Base
RECEPTOR : Kg. Bkt. Palas and ASSB Workers Quarter

Impacts



- **Fugitive Dust** (PM₁₀) generation from earthwork activities
- **Dust and gaseous** emissions from construction equipment & vehicles (PM₁₀, PM_{2.5}, CO, NO₂ and SO₂)

Pollution Prevention & Mitigation Measures

- Regular water spraying of construction sites, particularly along haul roads
- Wheel washing facility shall be provided
- Vehicles which carry particle-type materials shall be covered with tarpaulin

OPERATION

ACTIVITY: Operation of the ECRL

RECEPTORS: Kg. Bkt. Palas and ASSB Workers Quarter

No air pollution expected as the trains are electric-powered
 Negligible air pollution at stations where vehicles congregate to send/receive passengers and goods.

CO ₂ e emissions avoided:	2025	2035	2045
	334,354 tCO ₂ e/yr	821,290 tCO ₂ e/yr	1,131,288 tCO ₂ e/yr

MAIN IMPACTS OF WASTE GENERATION

CONSTRUCTION

ACTIVITIES : Site Clearing, Earthwork & Construction of Access Road, Rail Embankment, Viaduct, Station, Depot & Heavy Maintenance Base
RECEPTORS : Sg. Cherating, Sg. Batu Panjang, Sg. Rasau, Sg. Air Putih, Sg. Baluk

Impacts



Transport and handling of **excavated material** from earthworks activities within project site



Generation of **biomass** from site clearing activities



Generation of **construction waste** from site clearing and construction activities

Pollution Prevention & Mitigation Measures

- Soil stockpiling with erosion and sediment control.
- Cut & fill to be balanced within Project site
- Residual as backfill at identified few areas
- Clearing of forest within Balok PRF will be facilitated by Pahang State Forestry Department
- Minimise excessive vegetation clearance
- Implement construction waste management system

OPERATION

ACTIVITIES : Operation of Stations, Depot & Heavy Maintenance Base
RECEPTORS : Sg. Cherating, Sg. Batu Panjang, Sg. Rasau, Sg. Air Putih

Impacts







Generation of **domestic and scheduled waste** at stations, depot and heavy maintenance base

Pollution Prevention & Mitigation Measures

- Scheduled waste to be managed in accordance with the Environmental Quality (Scheduled Waste) Regulations 2005

PROPOSED ENVIRONMENTAL MONITORING PROGRAMME

During Construction Stage

	Locations	Parameter	Frequency
	<ul style="list-style-type: none"> • 6 River Water Quality Locations • 6 Sediment Basin Discharge Points 	<ul style="list-style-type: none"> • Temp., pH, DO, COD, BOD, TSS, Turbidity, O&G, NH₃-N & E.coli 	Monthly
	<ul style="list-style-type: none"> • 2 Air & Noise Locations 	<ul style="list-style-type: none"> • TSS, Turbidity (Sediment Basins) 	Quarterly
	<ul style="list-style-type: none"> • 2 Vibration Locations 	<ul style="list-style-type: none"> • L_{aeq} & L_{max}, 24-hour • PM₁₀, 24 hour 	Quarterly
	<ul style="list-style-type: none"> • Construction Audit 	<ul style="list-style-type: none"> • Peak Particle Velocity, on 1-hour monitorings • As per EIA Conditions of Approval 	Once every 4 months

