

**01**

**INTRODUCTION**

# Section 1

## INTRODUCTION

### 1.1 PROJECT BACKGROUND

#### 1.1.1 Project Title

The Project is known as the “East Coast Rail Link Phase 2 Project”, hereinafter referred to as the “Project “ or “ECRL Phase 2”.

#### 1.1.2 Project Concept

Phase 2 of the ECRL will involve two extensions from the ECRL Phase 1; one each in Kelantan and Selangor (**Figure 1.1-1**). The proposed Phase 2 extension in Kelantan and Selangor is needed to further realize the need for Phase 1 that is to improve the connectivity between the East Coast and the West Coast. With the extensions in place, the country’s largest port at Port Klang will be connected to the largest port on the East Coast which is the Kuantan Port. This will reduce the dependency on road and air transport in Malaysia and also evenly distributes the regional shipping and port collection for business.

The ECRL has been identified in the National Physical Plan 1, 2 and 3 as well as the State Structure Plans of Kelantan and Selangor. Phase 2 of the ECRL also supports the objective of National Land Public Transport Master Plan (NLPTMP) by providing more capacity and a broader network of movements for freight accessing and egressing major city centers around the Greater Klang Valley.

A Feasibility Study for ECRL Phase 2 was conducted in May 2017, which encompassed an economic and financial valuation, alignment study, land use study, traffic study, rail operation and systems studies, environmental screening, preliminary land acquisition information, proposed railway infrastructure and facilities, passenger and freight traffic volume estimate and preliminary cost estimate. The Feasibility Study evaluated various options for the ECRL Phase 2 such as alignment options, passenger station locations, freight station locations, railway gauge before arriving at the final Project design.

### 1.1.3 Project Location

The proposed ECRL Phase 2 measures a total of 106.2 km and will be located in two states, i.e. Kelantan (26.7 km) and Selangor (79.5 km). The alignment will pass by a number of major towns such as Wakaf Bharu, Gombak, Rawang, Serendah, Batu Arang, Bandar Puncak Alam, Kapar and Klang before it terminates at the existing KTMB Jalan Kastam station. The details of the alignment and the location of the stations are described in **Table 1-1** and **Table 1-2**, respectively.

**Table 1-1 : Length of Alignment**

State	Main Alignment Length (km)	Spur Lines (km)
Kelantan	23.2	3.5
Selangor	79.5	-
<b>Total</b>	<b>102.7</b>	<b>3.5</b>

**Table 1-2 : Location of Stations**

Location	Type of Station	Latitude	Longitude
<b>Kelantan</b>			
Pengkalan Kubor	Passenger	6°12'45.89"N	102° 5'46.40"E
Wakaf Bharu	Passenger & Freight	6° 7'28.68"N	102°10'39.51"E
<b>Selangor</b>			
Serendah	Passenger & Freight	3°21'51.93"N	101°35'19.36"E
Puncak Alam	Passing loop (Future passenger)	3°14'55.31"N	101°24'42.42"E
Kapar	Passing loop (Future passenger)	3° 7'30.00"N	101°23'39.86"E
Jalan Kastam	Passenger & Freight	3° 0'55.16"N	101°24'11.85"E

### 1.1.4 Sensitive Receptors

There are numerous sensitive receptors along the alignment in Kelantan and Selangor as the alignment passes through multiple types of land uses. The sensitive receptors along the alignment include:

- rural, suburban and urban settlements / residential areas
- institutions
- commercial / industrial establishments
- agricultural land (paddy field & oil palm plantation)
- forested area and wildlife habitats
- steep slopes and high erosion risk areas
- beneficial water uses (water intake, aquaculture, etc.)

## 1.2 PROJECT PROPONENT

The Project Proponent is Malaysia Rail Link Sdn Bhd (MRL), a company wholly owned by the Minister of Finance Incorporated, Malaysia. MRL was established as a government-owned special purpose vehicle to undertake the ECRL Project and is the asset owner of the ECRL Project.

Enquiries about the Project may be directed to:

Malaysia Rail Link Sdn Bhd  
Level 15, Menara 1 Dutamas, Solaris Dutamas,  
No.1, Jalan Dutamas 1,  
50480 Kuala Lumpur

Tel: 03 - 2724 2524

Fax: 03 - 2724 2527

Email: dar@mrl.com.my / ybyew@mrl.com.my

**Contact Person: En. Darwis Abdul Razak / Mr. Yew Yow Boo**

## 1.3 EIA CONSULTANT

The Consultant undertaking the Environmental Impact Assessment is:

ERE Consulting Group Sdn Bhd.  
9, Jalan USJ 21/6,  
47630 Subang Jaya,  
Selangor Darul Ehsan

Tel : 03 - 8024 2287

Fax : 03 - 8024 2320

Email : rna@ere.com.my / kqw@ere.com.my

**Contact Person: Raja Nur Ashikin Raja Zainal / Kevin Quah Wenjie**

The EIA team members are listed in **Consultant's Declaration**.

## 1.4 LEGAL REQUIREMENT

The Project is classified as Prescribed **Activity 16b: Construction of New Railway Route** under the Second Schedule of the Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015 and Section 34A of the

Environmental Quality Act 1974 which stipulates that an Environmental Impact Assessment (EIA) report is required to be submitted to the Director - General of Environmental Quality for review and approval prior to Project implementation.

## **1.5 CONFORMANCE TO THE GOVERNMENT PLANS**

### **1.5.1 State Government**

The proposed Project has obtained approval from the *Mesyuarat Majlis Perancang Fizikal Negara (MPFN) ke-28* (Bil. 3/ 2017) which was held on the 30<sup>th</sup> October 2017. Generally, the council has agreed on the proposed Project subjected to few conditions, particularly to engage and brief the Selangor State Government. The Project proponent has taken the initiatives to meet the representative of Selangor State Government, Chief Minister of Selangor, the Sultan and Raja Muda Selangor to engage the Selangor State Government as soon as possible.

- a. Chief Minister of Selangor (Y.A.B. Dato' Seri Mohamed Azmin Bin Ali): 18<sup>th</sup> July 2017
- b. DYMM Sultan Selangor (Duli Yang Maha Mulia Sultan Sharafuddin Idris Shah Alhaj Ibni Almarhum Sultan Salahuddin Abdul Aziz Shah Alhaj): 22<sup>nd</sup> January 2018
- c. Raja Muda Selangor (Tengku Amir Shah Ibni Sultan Sharafuddin Idris Shah): 3<sup>rd</sup> January 2018

### **1.5.2 National Physical Plan**

#### **1.5.2.1 National Physical Plan 1**

The idea for a railway network linking the East Coast and the West Coast was proposed since the first National Physical Plan (NPP1) (2005). The NPP1, under the policy on integrating the national transportation network (NPP24), stated that a national integrated high-speed rail system shall be established (**Figure 1.5-1**). The NPP1 also called for the adoption of the standard gauge to enable higher speeds.

#### **1.5.2.2 National Physical Plan 2**

The National Physical Plan 2 (2010) re-emphasized the policies of NPP1 with regards to the national integrated transportation network with rail as the main mode of transportation with greater integration of the two key land modes of movement for people and goods, i.e. rail and road (**Figure 1.5-2**).

### 1.5.2.3 National Physical Plan 3

The National Physical Plan 3 (2016) proposed two east-west crosslinks towards the northern and central sections of Peninsular Malaysia. A rail transport system is being considered for this corridor to link all state capitals and designated urban conurbations, besides unifying distinct elements of the national transportation system (**Figure 1.5-3**).

With the implementation of the Phase 2 alignments in Kelantan and Selangor, the objectives of the various National Physical plans can be further realized especially in providing a “land bridge” that connects the West Coast and East Coast while connecting major capitals along the ECRL route.

### 1.5.3 State Structure Plans

The corridor for the ECRL have been indicated in the state Structure Plans of Kelantan, Terengganu, Pahang and Selangor. The ECRL supports the State Structure Plans by fulfilling the transportation development plans of each state while improving connectivity within and between states. The Structure Plans of Selangor, Pahang, Terengganu and Kelantan each reflect the National Physical Plan's national transportation policy of implementing an integrated transportation network which includes a proposed rail link from Kuala Lumpur to all East Coast state capitals, namely Kuantan, Kuala Terengganu and Kota Bharu (**Figure 1.5-4**).

#### 1.5.3.1 Rancangan Struktur Negeri Kelantan 2003 – 2020

The Rancangan Struktur Negeri Kelantan (RSNK), in its policy **DS-HP3**, calls for the planning and construction of the East Coast high-speed rail link in Kelantan. The RSNK emphasizes that the rail link is necessary for the transportation of goods and material to and from Kelantan to other parts of Peninsular Malaysia.

#### 1.5.3.2 Rancangan Struktur Negeri Selangor 2035

The Rancangan Struktur Negeri Selangor 2035, in its **Dasar MM20**, calls for the expansion and enhancement of the rail and bus rapid transits as the main mode of choice for public transportation. There is a proposal for a railroad between Serendah-Port Klang-Seremban (**Figure 1.5-5**), with the section from Serendah to Port Klang measuring 53 km while the Port Klang to Seremban section measures 52 km. This proposed route will facilitate the transport of goods to Port Klang and KLIA. The Serendah – Port Klang section of the ECRL Phase 2 will be in line with this proposed route.

### 1.5.3.3 Selangor Public Transport Master Plan

The Selangor Public Transport Master Plan was framed to overcome traffic congestion in Selangor. The Masterplan (**Figure 1.5-6**) will provide an alternative towards cheaper transportations means, efficient and safe as well as reducing the use of private vehicles which will minimize carbon release. The Master Plan involves 12 new route proposals, mostly extensions of existing LRT, BRT and MRT routes. Among the state's key proposals is to construct two new freight routes under KTM where the corridors have been identified in the Master Plan as described below:

- a. **P1:** KTM Freight Line North (Serendah – Klang) with a length of 63 km
- b. **P2:** KTM Freight Line South (Klang-KLIA-Senawang) with a length of 112 km

With the new freight route, the freight trains can now go directly to the ports without reducing the passenger capacity of the current KTM routes which shares with the freight trains.

### 1.5.4 ECER Master Plan

The ECRL is an initiative of the East Coast Economic Region (ECER) Master Plan to catalyze the economic development of the ECER by improving the land transport connectivity between major urban centres and economic growth corridors on the East Coast and providing a new east-west railway connection between the East Coast and the West Coast (**Figure 1.5-7**). At present, the railway network in the Eastern Region is limited to two rail lines, both of which are disjointed. The current East Coast railway line which branches off the West Coast mainline at the inter-change station in Gemas, heads north through the heart of Peninsular Malaysia and terminates at Kota Bharu, Kelantan. The other existing railway line is the Kuantan-Kertih line operated by Petronas. The ECER's Master Plan proposes a railway network integrating Kuala Lumpur-Mentakab, Mentakab-Kuantan/Kuantan Port, Kertih-Kuala Terengganu, and Kuala Terengganu-Tanah Merah with the existing Kuantan Port-Kertih lines (Phase 1). With the extensions in place, the objective to connect the East Coast and West Coast will be further realized.

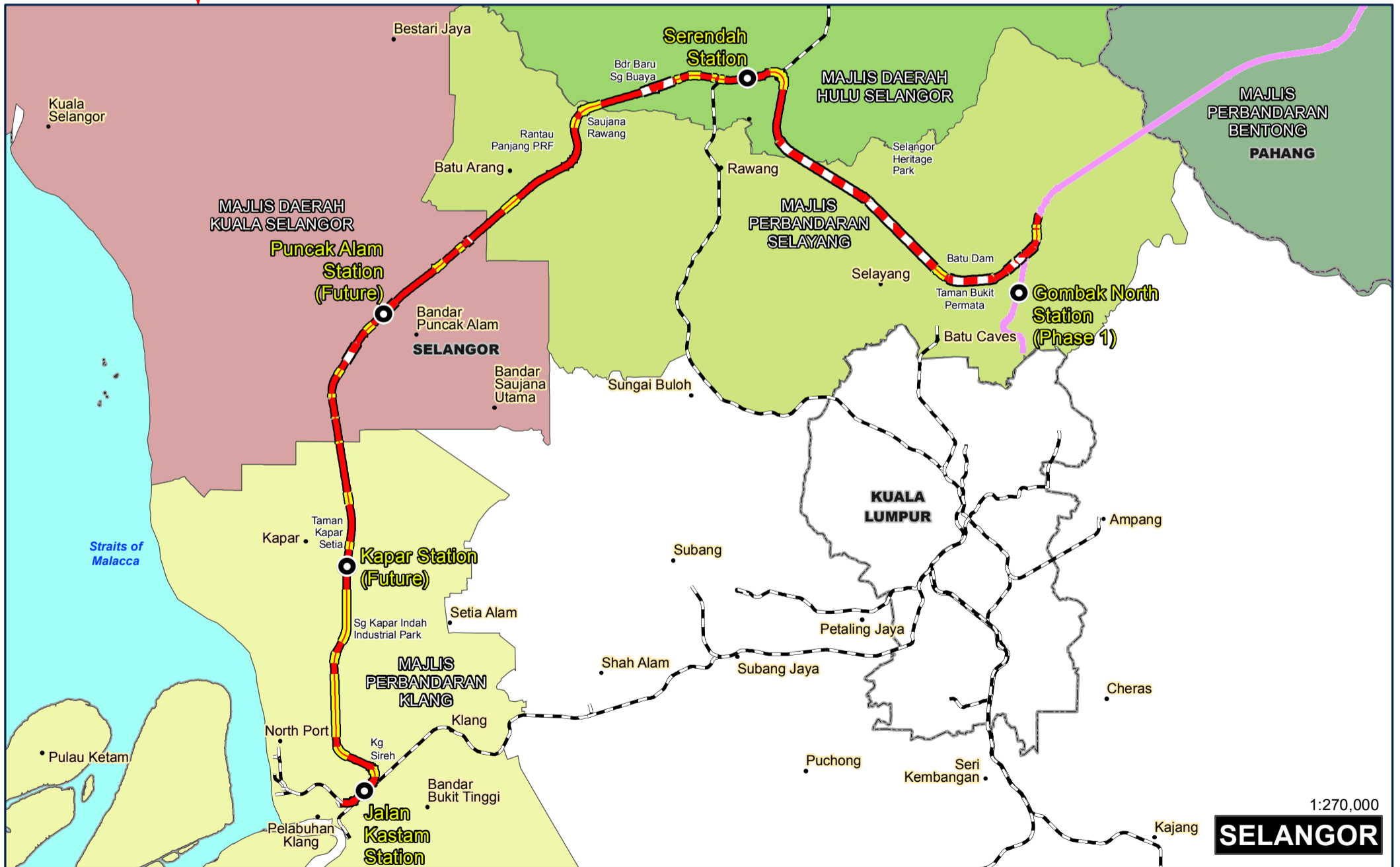
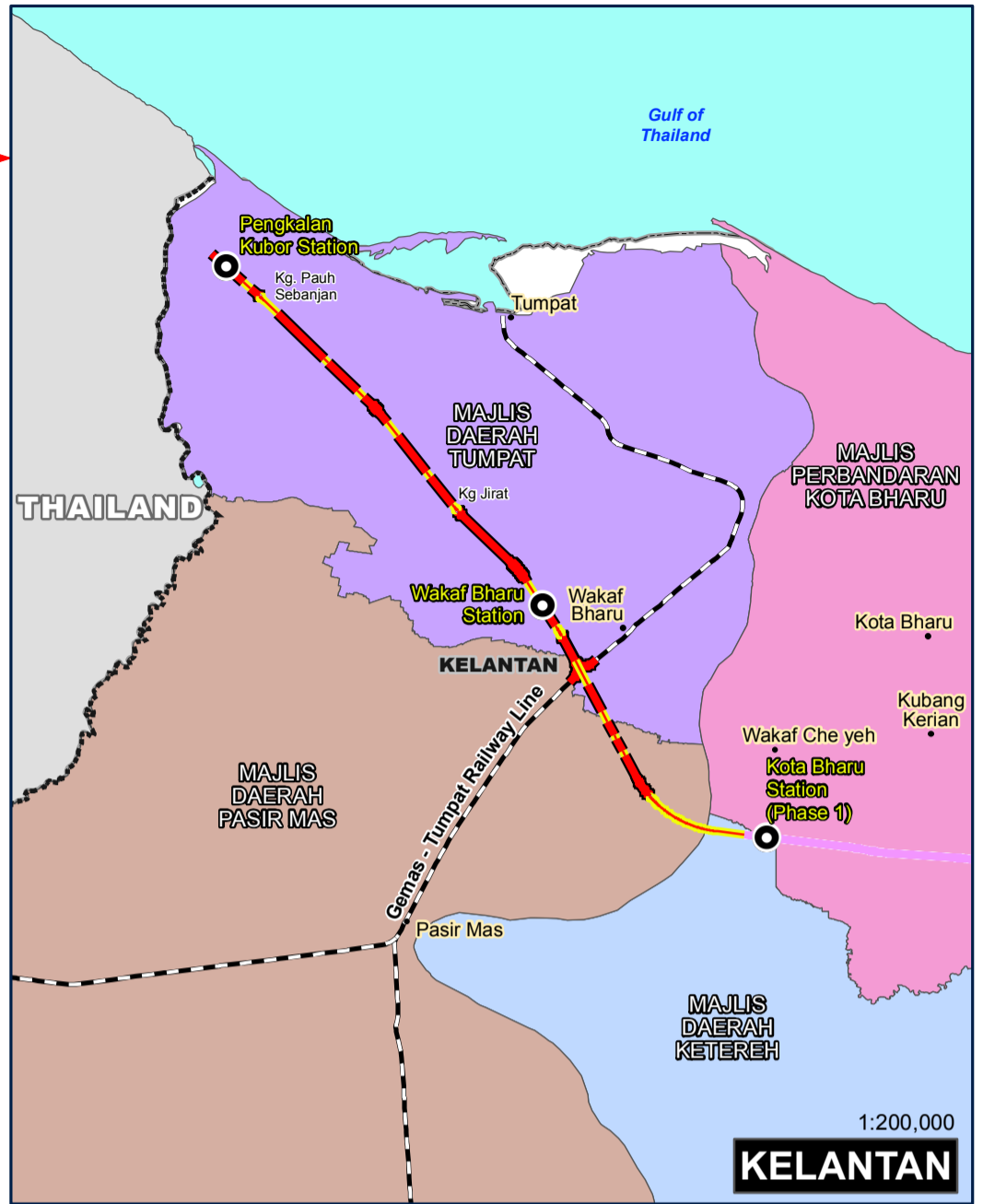
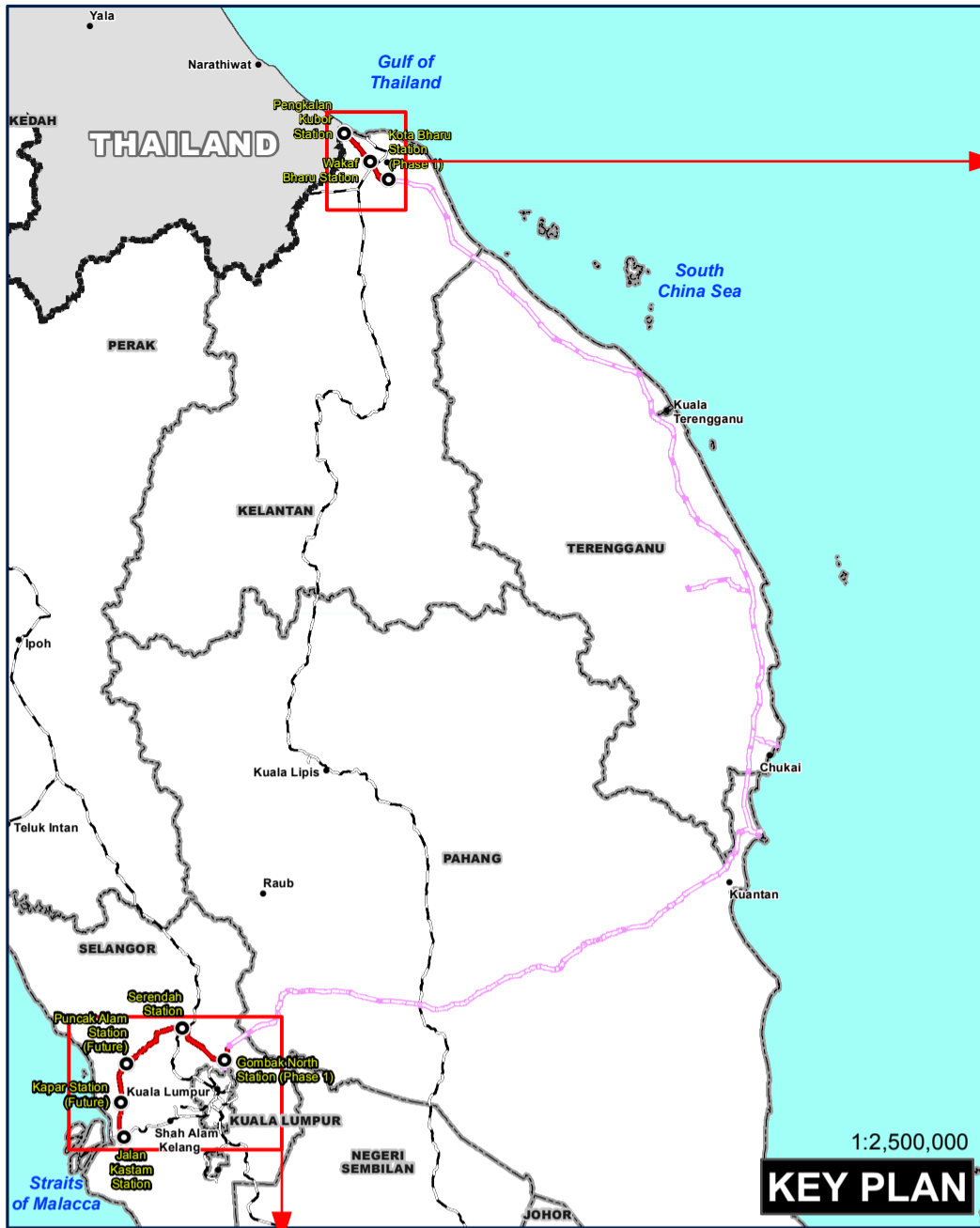
### 1.5.5 National Land Public Transport Master Plan

The National Land Public Transport Master Plan (NLPTMP) for Peninsular Malaysia was developed by the Land Public Transport Commission (*Suruhanjaya Pengangkutan Awam Darat*, or SPAD). This Master Plan was signed and approved by the Parliament on 16 October 2013 with the vision to “achieve a safe, reliable, efficient, responsive, accessible, planned, integrated, affordable and sustainable land public transport system to enhance socio-economic development and quality of life”.

To complement the main objective of the Master Plan which is to provide high impact and sustainable land public transport service for Malaysia, the National Land Public Transport Master Plan paves the way for the National Land Public Transport Policy which has identified and proposed a railway link connecting the East Coast and West Coast. This is in line with one of its strategic objectives to have a physically well-connected nation and also the supporting policy of “enhancing rural and inter-city connectivity”.



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Coordinate System: Kartau RSO Malaysia Meters  
Projection: Rectified Skew Orthomorphic Natural Origin  
Units: Meter

**LEGEND**

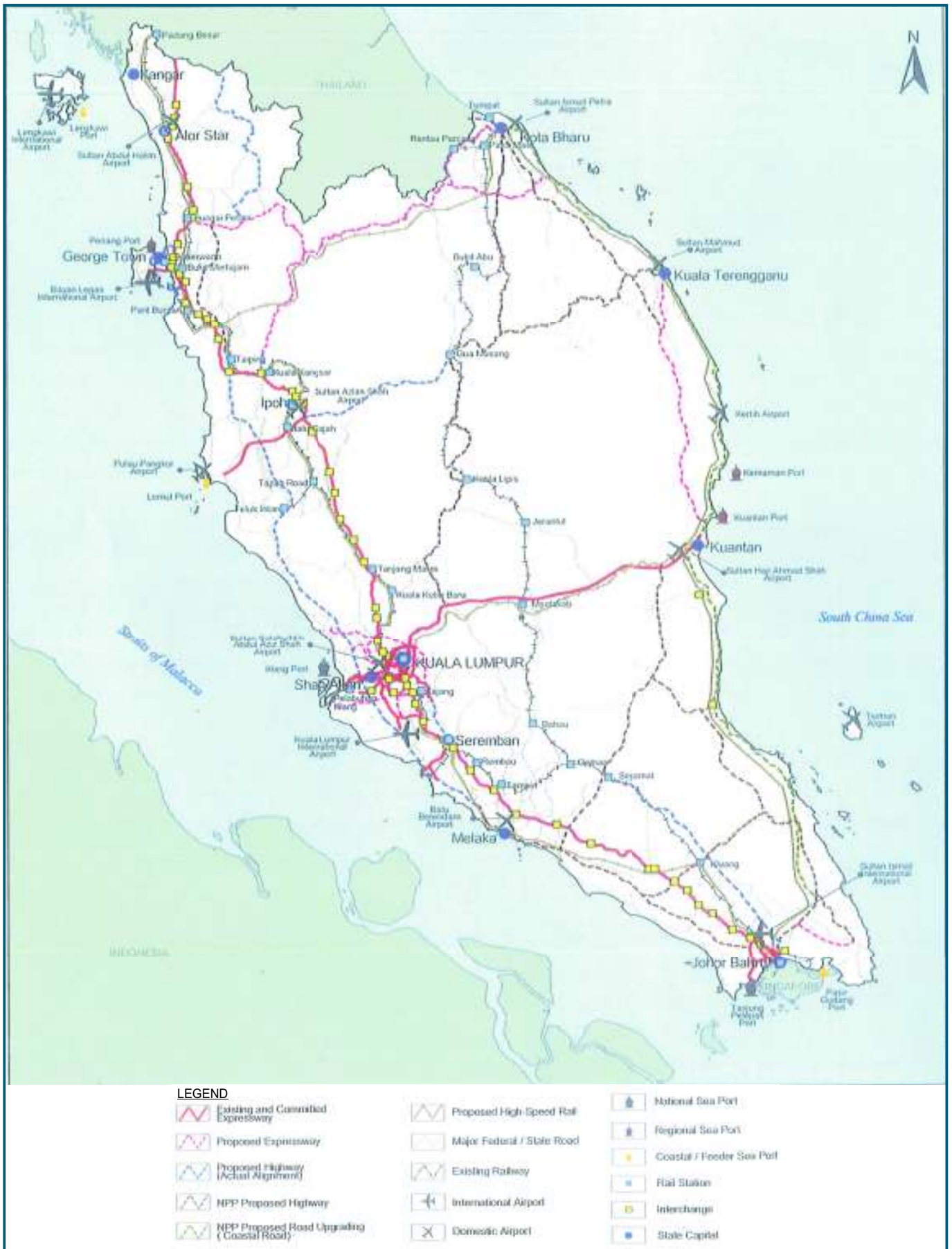
- Proposed Stations
- Proposed Alignment (At-grade)
- Proposed Alignment (Elevated)
- Proposed Alignment (Tunnel)
- Existing Railway Line
- ▭ State Boundary
- ..... Political Boundary

**Overview of ECRL Phase 2 Alignment**

Date	16-10-2017
Project No	EJ 616
Produced by	ZAB
Revision	A

**FIGURE 1.1-1**

Disclaimer: This map is produced solely for its intended purpose only. All reasonable care has been taken to ensure that the information presented here is accurate, subject to the availability and quality of data sources used. There is however no guarantee that this map is free from errors or omissions. Its use for any other purposes is therefore at the sole risk of the user.  
Source: I-PLAN, Jabatan Perancangan Bandar dan Desa (JPBD), Semenanjung Malaysia E:\Project\EJ 616 ECRL Phase 2\Maps\MXD\EJ 616 Overview.mxd



**East Coast Rail Corridor in Integrated National Transport Network in NPP1**

Date 04-10-2017  
 Project No EJ 616  
 Produced by FCZ  
 Revision -

**FIGURE 1.5-1**



Source: National Physical Plan-2, 2010

**LEGEND**

	INTERNATIONAL AIRPORT		COASTAL SEA PORT		HIGH-SPEED RAIL CORRIDORS
	DOMESTIC AIRPORT		MAIN CENTRE		KTM ELECTRICIFIED DOUBLE TRACK RAIL
	NATIONAL SEA PORT		EXPRESSWAY		KTM SINGLE TRACK RAIL
	REGIONAL SEA PORT		MAJOR HIGHWAY		



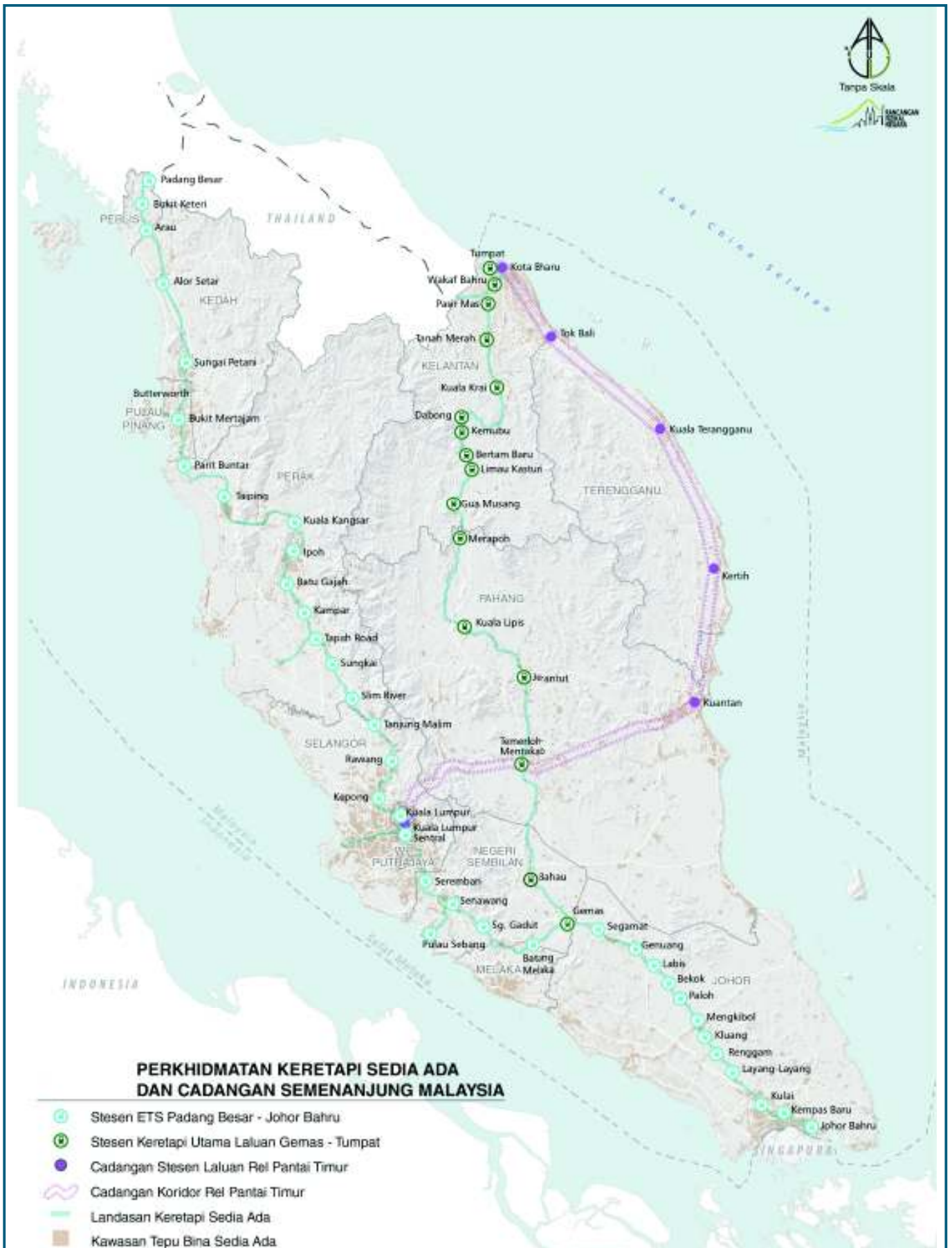
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**East Coast Rail Corridor in Integrated National Transport Network in NPP2**

Date 04-10-2017  
 Project No EJ 616  
 Produced by GJK  
 Revision -

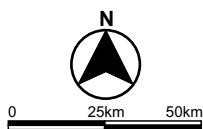
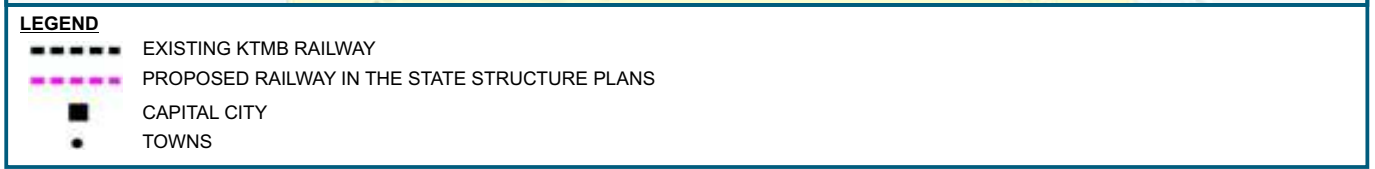
**FIGURE 1.5-2**



**East Coast Rail Corridor in Proposed Railway for Peninsular Malaysia in NPP3**

Date	04-10-2017
Project No	EJ 616
Produced by	GJK
Revision	-

**FIGURE 1.5-3**

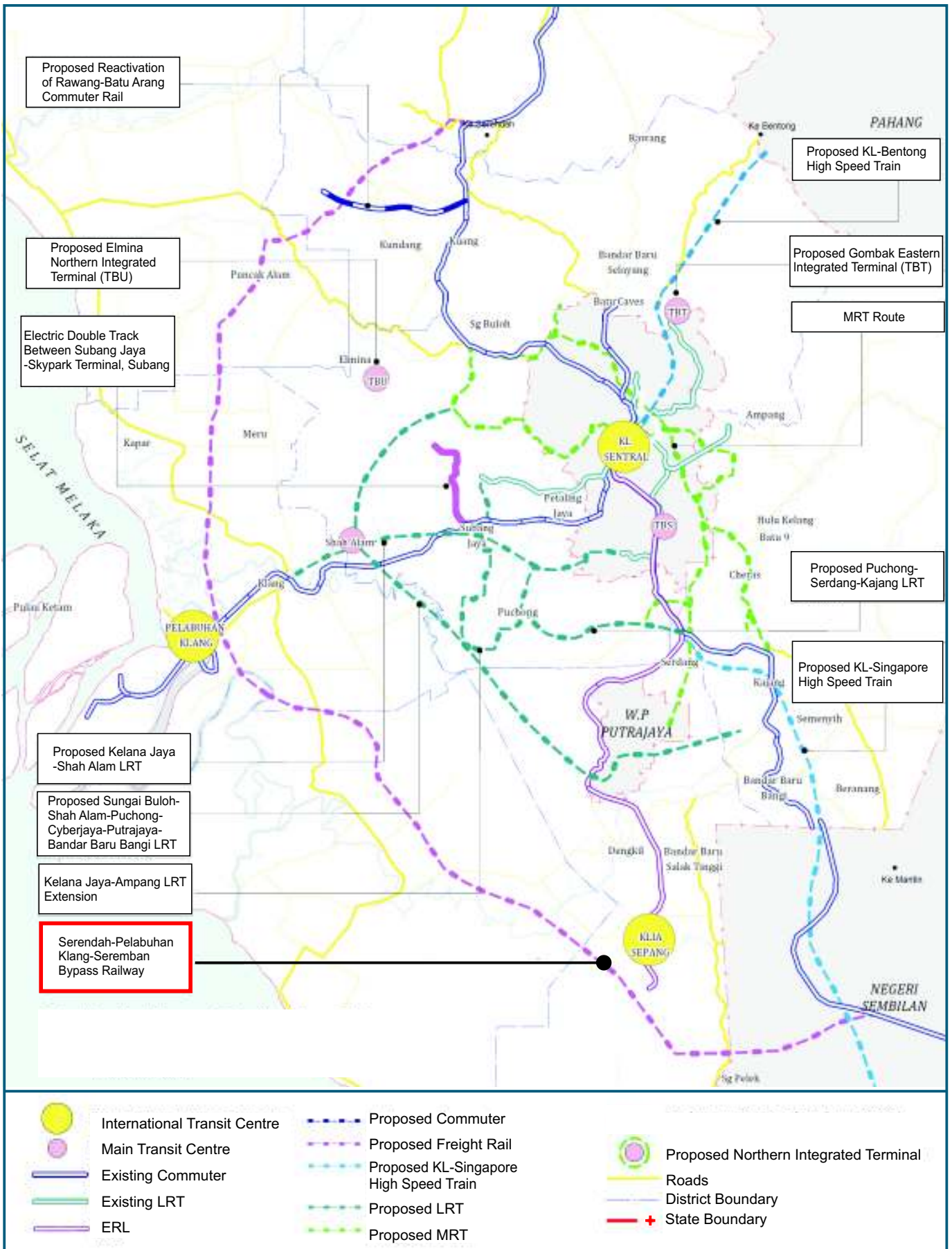


**Proposed Rail Network in State Structure Plans (Kelantan, Terengganu & Pahang)**

Date	04-10-2017
Project No	EJ 616
Produced by	GJK
Revision	-

**FIGURE 1.5-4**

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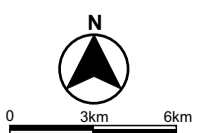
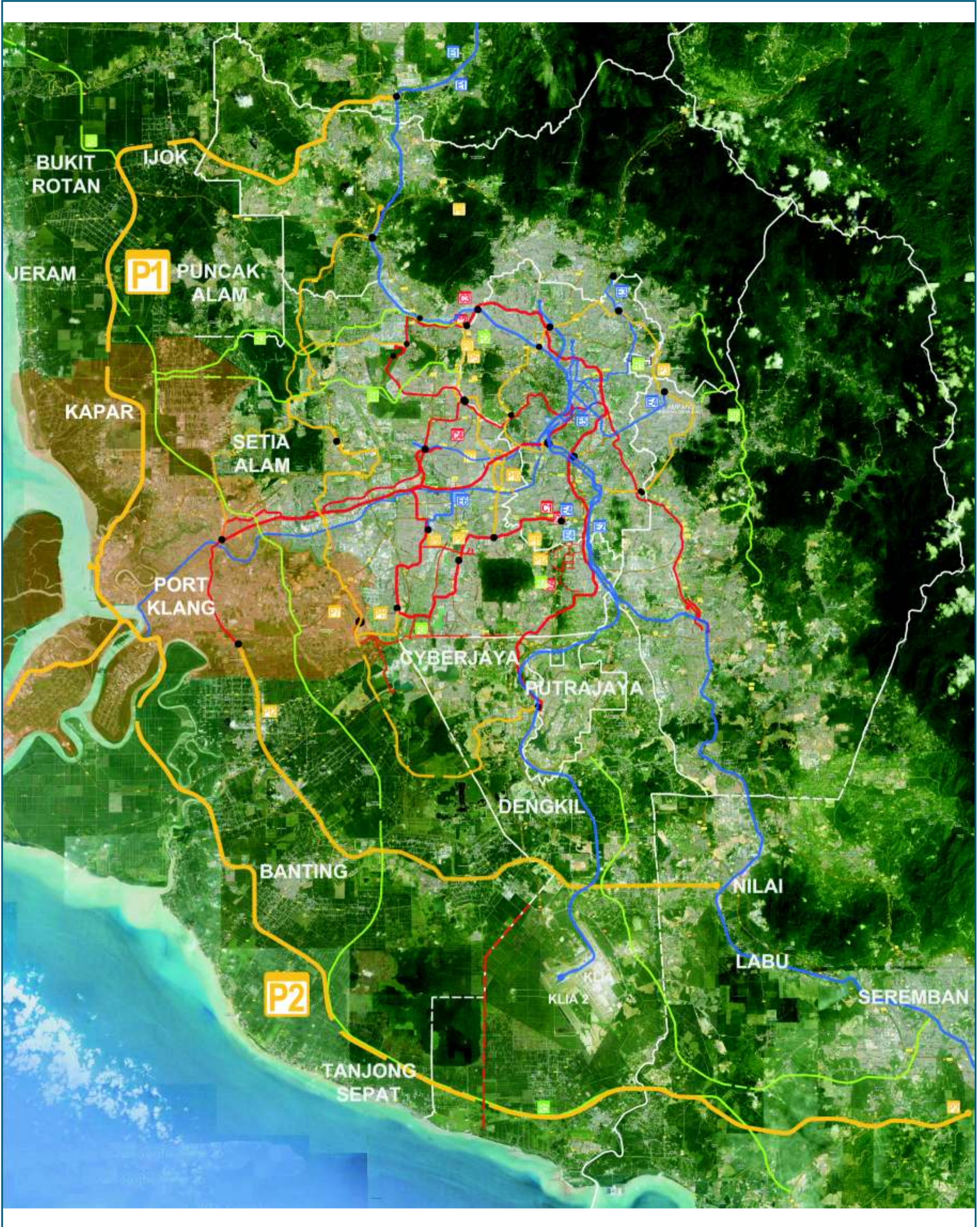
Not to scale



**Proposed Public Transport Network in Selangor**

Date: 04-10-2017  
 Project No: EJ 616  
 Produced by: FCZ  
 Revision: -

**FIGURE 1.5-5**



**LEGEND**

- Existing PT Alignment
- Committed PT Alignment
- Proposed PT Alignment



**Selangor Public Transport  
Master Plan**

Date	12-10-2017
Project No	EJ 616
Produced by	FCZ
Revision	A

**FIGURE 1.5-6**





LEGEND	
	KOTA BHARU - PENANG
	KUALA TERENGGANU - TUMPAT
	KERTIH - KUALA TERENGGANU
	MENTAKAB - KUANTAN / KUANTAN PORT
	MENTAKAB - KUALA LUMPUR
	EXISTING KTMB
	ECER BOUNDARY



Not to scale



**Potential Rail Network in ECER Master Plan**

Date	04-10-2017
Project No	EJ 616
Produced by	FCZ
Revision	-

**FIGURE 1.5-7**

Disclaimer: This map is produced solely for its intended purpose only. All reasonable care has been taken to ensure that the information presented here is accurate, subject to the availability and quality of data sources used. There is however no guarantee that this map is free from errors or omissions. Its use for any other purposes is therefore at the sole risk of the user. Source: ECER Masterplan, 2008



## Section 2

# TERMS OF REFERENCE OF EIA

### 2.1 INTRODUCTION

The Terms of Reference (TOR) of the EIA for the Project was submitted to the DOE HQ on 31<sup>st</sup> July 2017 with another revision submitted on 17<sup>th</sup> August 2017. The TOR Adequacy Check meeting was held on the 14<sup>th</sup> August 2017, following which the TOR was endorsed by the DOE on the 6<sup>th</sup> October 2017 via endorsement letter reference JAS.50/013/602/008 Jld.2 (3). The TOR approval letter is attached at the end of this section.

### 2.2 ENDORSEMENT OF TERMS OF REFERENCE

The DOE HQ endorsed the Terms of Reference of the EIA for the Project, subject to the conditions expressed in the TOR endorsement letter and the comments by the relevant technical agencies (**Table 2-1**). The EIA study has thus been prepared with consideration of the TOR endorsement conditions, including the following:

- Consideration of options
- Baseline sampling locations
- Water quality:
  - Pollutant loading and mitigation measures
  - Impact on Sg. Selangor
  - Kelantan section - Monitoring and detailed EMP for granary, fish cage rearing area / fishing village
- Flora and fauna:
  - Inventories list of CITES & IUCN
  - Issues of right-of-way to avoid collision between wildlife and train

The EIA study has been carried out taking consideration the comments and conditions contained in the TOR endorsement. The EIA has emphasized the three main components, namely water quality, air quality and waste management.

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**Table 2-1 : Terms of Reference Compliance Checklist**

ITEM	COMMENTS/ITEMS RAISED BY TECHNICAL AGENCIES / APPOINTED INDIVIDUAL	REFERENCE IN THE EIA REPORT	DOE'S COMMENTS
<b>ITEM 1: TOR APPROVAL LETTER (DOE HQ)</b>			
1.	<i>Kesemua ulasan bertulis daripada agensi dan pakar pengulas individu yang dikemukakan kepada pihak tuan termasuk ulasan sama ada secara bertulis atau yang dibincangkan hendaklah diberikan perhatian yang sewajarnya dalam Laporan EIA.</i>	Refer item 2 for technical agencies' comments	
2.	<i>Laporan Land Disturbing Pollution and Mitigation Measures (LD-P2M2) hendaklah disediakan mengikut Guidance Document for the Preparation of the Document on Land Disturbing Pollution Prevention and Mitigation Measures (LD-P2M2).</i>	The LD-P2M2 has been prepared based on the Guidance Document for the Preparation of the Document on Land Disturbing Pollution Prevention and Mitigation Measures (LDP2M2).  Details of the LDP2M2 section can be referred to <b>Section 8.3.1</b> and <b>Appendix H</b> in the EIA Report.	
<b>ITEM 2: COMMENTS BY TECHNICAL AGENCIES</b>			
<b><u>Majlis Daerah Kuala Selangor</u></b>			
1.	<i>i. Cadangan jajaran / laluan yang dikekalkan perlu meminimakan pecahan lot-lot penduduk kampung tradisional sedia ada.</i>	Noted. Land acquisition mitigation measures are described in <b>Section 8.2</b> in the EIA Report.	
	<i>ii. Faktor geografi dan penempatan penduduk kampung tradisional sedia ada seharusnya menerima kesan minima atas jajaran yang dicadangkan;</i>	Geotechnical mitigation measures described in <b>Section 8.3.7</b> .	
	<i>iii. Bagi laluan yang berhampiran kawasan atau zon kediaman perlu mempunyai zon pemampasan yang mencukupi;</i>	Setbacks or buffer zones will be provided within the ROW of the railway. Details to be available during the detail design stage of the Project.	

**Table 2-1: Terms of Reference Compliance Checklist (Cont'd)**

ITEM	COMMENTS/ITEMS RAISED BY TECHNICAL AGENCIES / APPOINTED INDIVIDUAL	REFERENCE IN THE EIA REPORT	DOE'S COMMENTS
	<i>iv. Mengambil kira kepentingan alam sekitar, kawasan sensitif alam sekitar, pengekalan flora dan fauna di sekitar tapak cadangan.</i>	Flora and Fauna impact assessment are described in <b>Section 7.4.10 &amp; 7.5.9 and Section 8.3.10 &amp; 8.4.7.</b>	
	<i>v. Bagi kemudahan penduduk di daerah Kuala Selangor dicadangkan disediakan dua stesen yang terletak di utara dan selatan daerah Kuala Selangor.</i>	To be addressed during the Railway Scheme submission and display process.	
	<i>vi. Terdapat rentis TNB sediada di kawasan cadangan dan perlu diambil kira untuk diselaraskan dan dijajarkan dengan rentis sediada.</i>	To be addressed during the Railway Scheme submission and display process.	
<b><u>Jabatan Perhilitan</u></b>			
2 a.	<p><i>i. Maklumat berkenaan spesies-spesies hidupan liar di kawasan yang dinyatakan tidak jelas serta tiada kaedah pengambilan data yang diambil disertakan dan sumber data tidak jelas.</i></p> <p><i>ii. Jabatan mencadangkan inventori hidupan liar dijalankan di kesemua kawasan Hutan Simpan, Tanah negeri dan lain-lain habitat hidupan liar di sepanjang jajaran dan kawasan bersebelahan.</i></p> <p><i>iii. Kaedah perangkap kamera dan inventori secara base camp dicadangkan bagi mengenalpasti sepsis mamalia bersaiz sederhana, bersaiz besar, ground birds dan mamalia kecil yang terdapat di kawasan cadangan Projek, Senarai sepsis ini amat penting bagi memudahkan pihak pemaju dan Jabatan menentukan kaedah mitigasi yang sesuai di dalam Wildlife Management Plan (WMP).</i></p>	<ul style="list-style-type: none"> <li>• Wildlife inventory using camera trap was completed by DWNP Selangor in all PRFs and state land forests across the alignment from August to October 2017.</li> <li>• The selection of site was discussed and agreed beforehand with DWNP Selangor based on their recommendation. Refer <b>Section 6.11.2 in EIA</b></li> </ul>	

**Table 2-1: Terms of Reference Compliance Checklist (Cont'd)**

ITEM	COMMENTS/ITEMS RAISED BY TECHNICAL AGENCIES / APPOINTED INDIVIDUAL	REFERENCE IN THE EIA REPORT	DOE'S COMMENTS
2b.	<p>i. <i>Laluan elevated (eco viaduct) adalah dicadangkan bagi kawasan hutan simpan dan tanah negeri yang memounyai laluan hidupan liar. Pelebaran river buffer zone disarankan sebagai riparian corridor untuk hidupan liar di kawasan tebing sungai terutamanya kawasan hutan bakau.</i></p> <p>ii. <i>Ini untuk mengelakkan habitat menjadi terpisah dan memastikan ekosistem di kawasan tersebut terpelihara. Perkara ini selaras dengan keputusan Majlis Biodiversiti Kebangsaan 2016 yang dipengerusikan oleh YAB Timbalan Perdana Menteri dan juga CFS Masterplan.</i></p> <p>iii. <i>Mohon rujuk kepada Garis Panduan Perancangan Pemuliharaan dan Pembangunan Kawasan Sensitif Alam Sekitar (KSAS) yang dikeluarkan oleh Jabatan Perancangan Bandar dan Desa bagi kawasan-kawasan yang berkaitan.</i></p>	<ul style="list-style-type: none"> <li>• Tunnels are provided across all forest reserves in Selangor State Park and have reduced fragmentation substantially. There will also be zero forest loss in the State Park. <b>Refer Section 6.11.2 and Section 8.3.10</b> in the EIA</li> <li>• Wildlife crossing in forms of monkey bridges at Sg. Puloh mangrove are recommended in <b>Section 8.3.10</b> in the EIA.</li> </ul>	
2c	<p>i. <i>Jajaran landasan yang dicadangkan terutamanya dari Gombak ke Klang meliputi beberapa hutan simpan dan tanah negeri yang bersebelahan dengan kawasan penempatan manusia yang merekodkan aduan konflik manusia - hidupan liar yang tinggi. Pembinaan dan pembukaan kawasan untuk jajaran rel ini dikhuatiri akan meningkatkan kes konflik. Oleh itu, isu knflik manusia-hidupan liar ini perlu diberi lebih perhatian sebagai impak</i></p>	<ul style="list-style-type: none"> <li>• Human-wildlife conflict (HWC) conflict data have been acquired by DWNP. Analysis of HWC is included in Chapter 6. The findings have also been used in identifying impacts and designing mitigation measures. Refer <b>Section 6.11.2</b> in EIA</li> <li>• The alignment at Rantau Panjang FR have been substantially revised to minimize fragmentation and habitat loss. As such, wildlife crossings/viaduct is no longer necessary. Refer</li> </ul>	

**Table 2-1: Terms of Reference Compliance Checklist (Cont'd)**

ITEM	COMMENTS/ITEMS RAISED BY TECHNICAL AGENCIES / APPOINTED INDIVIDUAL	REFERENCE IN THE EIA REPORT	DOE'S COMMENTS
	<p><i>signifikan yang berpotensi.</i></p> <p><i>ii. Pembinaan viaduct di beberapa lokasi lintasan hidupan liar adalah dicadangkan terutama di HS Rantau Panjang.</i></p>	<p><b>Section 6.11.2, Section 7.5.9 and Section 8.3.10</b> in EIA.</p>	
2d	<p><i>i. Mohon ambil kira konflik manusia- hidupan liar semasa peringkat planning/pre-development, construction dan operations.</i></p> <p><i>ii. Konflik manusia- hidupan liar terutamanya bagi spesies kera dan babi hutan. Walaupun spesies ini boleh bergerak ke kawasan sekitar, tetapi sekiranya habitat sedia ada terganggu dan tiada lagi habitat untuk kera-kera bermandiri, ianya berpotensi menimbulkan konflik di kawasan tersebut.</i></p> <p><i>iii. Konflik manusia-hidupan liar tidak hanya dikhususkan dikawasan hutan simpan sahaja tetapi perlu meliputi habitat di kawasan laut dan darat.</i></p>	<ul style="list-style-type: none"> <li>• Pre-development activities are planning/land acquisition process and doesn't have ecological impacts.</li> <li>• Potential impact on HWC during construction and operation are highlighted in <b>Section 7.5.9</b> based on wildlife survey results, literature studies and HWC data received from DWNP.</li> </ul>	
2e	<p><i>i. Wildlife Management Plan (WMP) hendaklah kemaskini bagi memastikan program mitigasi hidupan liar di seluruh jajaran ECRL dilaksanakan dengan sempurna.</i></p>	<ul style="list-style-type: none"> <li>• Wildlife Management Plan for ECRL Phase 2 shall be prepared and submitted to DWNP for feedback and approval.</li> </ul>	
2f	<p><i>i. WMP seperti yang disentuh dalam Mitigation Measures perlu meliputi pelbagai pelan termasuklah pelan penguatkuasaan Akta Pemuliharaan Hidupan Liar 2010 (Akta 716), pelan pengurusan konflik manusia- hidupan liar, pelan Pengurusan mitigasi dan program kesedaran awam.</i></p>	<ul style="list-style-type: none"> <li>• The requirements under Act 716 including conflict management, awareness building and mitigation measures will be included in the WMP.</li> </ul>	



**Table 2-1: Terms of Reference Compliance Checklist (Cont'd)**

ITEM	COMMENTS/ITEMS RAISED BY TECHNICAL AGENCIES / APPOINTED INDIVIDUAL	REFERENCE IN THE EIA REPORT	DOE'S COMMENTS
	ii. Peruntukan sedia ada Jabatan tidak mengambilkira program mitigasi ini. Sehubungan dengan itu, mohon pihak pemaju mengambil maklum perkara ini.		
<b><u>PLAN Malaysia</u></b>			
4.1	<i>Impak sosial kepada penduduk tempatan terlibat.</i>	The social impact has been identified in <b>Section 7.4.11 and Section 7.5.10.</b>	
4.2	<i>Langkah mitigasi bagi impak aktiviti pembangunan kepada alam sekitar sedia ada seperti kawasan litupan hutan, kawasan hidupan liar, system hidrologi, badan air, kualiti air sungai, bekalan air dan Kawasan Sensitif Alam Sekitar (KSAS).</i>	The mitigation measures have been identified in the following sections: Ecology (Forest and wildlife): <b>Section 8.3.10 &amp; Section 8.4.7</b> Hydrology: <b>Section 8.3.8</b> Water quality: <b>Section 8.3.2 &amp; Section 8.4.1</b> Water supply: <b>Section 8.3.2 &amp; Section 8.4.1</b> KSAS: <b>Section 8.3.10 &amp; Section 8.4.7</b>	
<b><u>Appointed Individual (Dr. Pauziah Hanum bt. Abdul Ghani)</u></b>			
1.	<u>Alternative Consideration</u> i. The justification on the good, average and bad (pg3-4;3-5), is it based on any scale. ii. The consideration on the various option should be shown either in the text or as appendix in the DEIA report. Table 3-4 did not take in account environmental considerations. Why. iii. There is no such table for Kelantan options. Why	Environmental considerations have been taken into account for project options. More in depth considerations have been introduced for Kelantan. Refer <b>Section 4.</b>	

**Table 2-1: Terms of Reference Compliance Checklist (Cont'd)**

ITEM	COMMENTS/ITEMS RAISED BY TECHNICAL AGENCIES / APPOINTED INDIVIDUAL	REFERENCE IN THE EIA REPORT	DOE'S COMMENTS
2.	<p><u>Water quality and quantity</u></p> <ul style="list-style-type: none"> <li>i. Justification on the location of sampling stations.</li> <li>ii. Pollutant loading must be calculated and recommended for PP to implement</li> <li>iii. Water quality of Sungai Selangor water in-take simulation on the impact from the construction and operation phase-stringent mitigation measures must be imposed to reduce the pollutant load and to maintain class II of river.</li> <li>iv. For Kelantan water requirement (granary), fish cage rearing area/ fishing village required close monitoring and detailed EMP.</li> </ul>	<p>Sampling locations are mostly selected close to where the proposed alignment will be crossing for assessment of immediate impacts (especially during construction phase i.e. soil erosion hotspots). For Segment 2B - water samples were taken at Sg. Serendah, Sg. Garing, Sg. Kundang and Sg. Selangor for water quality modelling purposes with focus on the water supply intakes in Sg. Selangor. Similarly, in Sg. Mentua &amp; Sg. Pengkalan Nangka (Segment 1), samples were taken with the in-river fishing cages in mind.</p> <p>Noted. In the assessments, Scenario 3 looks at the recommended pollution loading of problematic parameters to preserve the current water quality status (baseline). This is a case-by-case basis and only prescribed when the impacts cause water quality deterioration. It is important to note that the baseline water quality at Sg. Selangor is not Class IIA but already Class III. Refer <b>Section 7.4.2 (Construction) and 7.5.1 (Operation)</b>.</p> <p>Noted. Recommendations are included in the Mitigation Measures, <b>Section 8.3.2</b>. It was also mentioned in the Summary of <b>Section 7.1.1.1</b> Segment 1: Kelantan.</p>	

**Table 2-1: Terms of Reference Compliance Checklist (Cont'd)**

ITEM	COMMENTS/ITEMS RAISED BY TECHNICAL AGENCIES / APPOINTED INDIVIDUAL	REFERENCE IN THE EIA REPORT	DOE'S COMMENTS
3.	<p><u>Flora and Fauna</u></p> <p>i. Inventories list of CITES &amp; IUCN</p> <p>ii. Issues of wildlife right way much be detailed to avoid collision between wildlife and train.</p>	Inventory of Flora and Fauna attached in <b>Appendix D</b> . Impact assessment on wildlife can be referred in <b>Section 7.4.10 &amp; 7.5.9</b> .	
<b><u>Unit Perancang Ekonomi Negeri Selangor</u></b>			
2.	Untuk makluman pihak tuan, tiada sebarang keputusan di peringkat Kerajaan Negeri Selangor pada masa ini berhubung dengan pembangunan East Coast Rail Link Project di negeri Selangor. Semakan juga mendapati, pembangunan ECRL tiada dalam senarai jajaran laluan tetap pengangkutan awam komited atau cadangan jajaran laluan tetap pengangkutan awam yang akan dibangunkan dalam Pelan Induk Pengangkutan Awam Negeri Selangor (PIPANS).	Noted.	

**Table 2-1: Terms of Reference Compliance Checklist (Cont'd)**

ITEM	COMMENTS/ITEMS RAISED BY TECHNICAL AGENCIES / APPOINTED INDIVIDUAL	REFERENCE IN THE EIA REPORT	DOE'S COMMENTS
<b><u>Jabatan Pengairan Dan Saliran Negeri Kelantan</u></b>			
3.	<p>a) Perunding hendaklah memastikan keperluan untk langkah-langkah kawalan diambil bagi kerja-kerja yang melibatkan sungai dan rizab sungai semasa peringkat "Pre-Construction", "Construction" dan "Operational".</p> <p>i. Pihak perunding hendaklah menamakan dan menandakan dalam pelan pertapakan bagi sungai yang terdapat di dalam dan sekitar kawasan tapak projek dan menyediakan rizab sungai bagi sungai-sungai yang telah diwartakan sebagaimana Seksyen 13 Kanun Tanah Negara 1965, Warta kn.2402/2014.</p> <p>ii. Enakmen Sungai dan Parit 1935.</p> <p>iii. Pihak perunding juga hendaklah menamakan dan menandakan dalam pelan pertapakan bagi sungai yang terdapat dalam dan sekitar kawasan tapak projek dan menyediakan rizab sungai bagi sungai-sungai yang belum diwartakan sebagaimana keperluan "Garis Panduan Penetapan Rizab Sungai Oleh JPS" bagi tujuan mengurangkan masalah dalam melaksanakan kerja-kerja operasi dan pemuliharaan sungai di masa akan datang.</p>	<p>List of river crossings are identified in <b>Section 6.2</b>. Provision if river reserves will be detailed in the ESCP to be submitted to JPS Kelantan before construction.</p>	

**Table 2-1: Terms of Reference Compliance Checklist (Cont'd)**

ITEM	COMMENTS/ITEMS RAISED BY TECHNICAL AGENCIES / APPOINTED INDIVIDUAL	REFERENCE IN THE EIA REPORT	DOE'S COMMENTS
	<p><b>b) Pelan Kawalan Hakisan Dan Kelodak</b></p> <ul style="list-style-type: none"> <li>i. Pelan Kawalan Hakisan Dan Kelodak (ESCP) secara konsep perlu ditunjukkan dan perinciannya perlu dikemukakan kepada Pengarah JPS Negeri Kelantan untuk ulasan dan perbentangan kepada Jawatankuasa Penilaian Ulasan Teknikal Pelan Kawalan Hakisan Dan Kelodak sebelum kerja-kerja tanah dijalankan.</li> <li>ii. Pelan Kawalan Hakisan dan Kelodak (ESCP) hendaklah dikemukakan kepada JPS Negeri Kelantan dalam tempoh dua (2) tahun daripada tarikh Kelulusan Laporan EIA dan sebelum kerja tanah dijalankan di tapak.</li> </ul>	Noted.	
	<p><b>b) Pelan Perparitan</b></p> <ul style="list-style-type: none"> <li>i. Pelan Perparitan dan Pengiraan Hidraulik hendaklah disediakan berpandukan Manual Saliran Mesra lam Edisi Ke-2 (<i>MSMA 2<sup>nd</sup> Edition@MS2526</i>).</li> <li>ii. Pihak penggerak projek dikehendaki menyediakan kaedah kawalan pada punca dengan berpandukan MSMA 2<sup>nd</sup> Edition.</li> <li>iii. Pelan perparitan juga hendaklah mengambil kira kawasan tadahan dan kawasan berisiko banjir yang terlibat bagi mengurangkan dan mengurus risiko banjir dengan kaedah yang terbaik.</li> </ul>	Noted.	

**Table 2-1: Terms of Reference Compliance Checklist (Cont'd)**

ITEM	COMMENTS/ITEMS RAISED BY TECHNICAL AGENCIES / APPOINTED INDIVIDUAL	REFERENCE IN THE EIA REPORT	DOE'S COMMENTS
<b><u>Jabatan Perhutanan Semenanjung Malaysia</u></b>			
i	<p><b>Elakkan laluan melalui Hutan Simpan Kekal (HSK)</b>                      Perlaksanaan projek ini perlu mengambil kira kepentingan alam sekitar. Seboleh-bolehnya laluan landasan keretapi hendaklah mengelak daripada melalui kawasan HSK terutama bagi kawasan dengan ciri-ciri unik. Jajaran ECRL yang merentasi HSK terutama bagi kawasan HSK di Negeri Selangor perlu dikaji memandangkan kawasan-kawasan tersebut merupakan sebahagian daripada kawasan hutan perlindungan yang dikategorikan sebagai kawasan hutan tadahan air, hutan perlindungan hidupan liar, hutan taman negeri dan juga Selangor Heritage Park. Malah kawasan tersebut juga merupakan kawasan yang dikategorikan sebagai Kawasan Sensitif Alam Sekitar (Rank 1) di bawah Rancangan Fizikal Negara. Sekiranya perlu, terowong atau penukaran jajaran adalah dicadangkan bagi memastikan kawasan tersebut terpelihara. Pelaporan penilaian EIA yang disediakan juga perlu mengambil kira komitmen-komitmen di peringkat dasar seperti Rancangan Fizikal Negara (RFN) dan Rancangan Malaysia Ke Sebelas (RMKe-11). Perkara ini adalah penting kerana sebarang pelanggaran akan menjejaskan komitmen negara di peringkat kebangsaan dan antarabangsa.</p>	<p>Tunnels are proposed under forest reserves of the Selangor Heritage Park. The alignment at Rantau Panjang PRF was also realigned to minimize fragmentation (from 7.3% to 1.6% fragmentation).</p>	

**Table 2-1: Terms of Reference Compliance Checklist (Cont'd)**

ITEM	COMMENTS/ITEMS RAISED BY TECHNICAL AGENCIES / APPOINTED INDIVIDUAL	REFERENCE IN THE EIA REPORT	DOE'S COMMENTS
<b><u>Jabatan Perhutanan Semenanjung Malaysia</u></b>			
ii.	<p><b>Penggantian Kawasan Hutan Simpan Kekal (HSK)</b>            Sekiranya jajaran ECRL tidak dapat dialihkan dan melibatkan pewartaan keluar HSK, maka pemilik projek bertanggungjawab untuk menggantikan kawasan yang terlibat dengan kawasan lain yang lebih kurang sama keluasannya sepertimana peruntukan di bawah seksyen 12, Akta Perhutanan Negara 1984. Manakala sekiranya jajaran ECRL tidak dapat dialihkan dan tidak melibatkan pewartaan keluar HSK, maka pemilik projek perlu mematuhi syarat yang akan dikenakan oleh pihak Berkuasa Negeri yang berkaitan antaranya bayaran pampasan/gantirugi dan bayaran permit penggunaan. Artikel 74 (2) Perlembangaaan Persekutuan menyatakan tanah dan hutan adalah di bawah bidang kuasa Kerajaan Negeri. Oleh itu, pemilik projek perlu membuat permohonan secara terus dengan setiap Kerajaan Negeri yang berkaitan untuk mendapatkan kelulusan dan mematuhi apa juga syarat yang dikenakan oleh Kerajaan Negeri.</p>	Noted.	

**Table 2-1: Terms of Reference Compliance Checklist (Cont'd)**

ITEM	COMMENTS/ITEMS RAISED BY TECHNICAL AGENCIES / APPOINTED INDIVIDUAL	REFERENCE IN THE EIA REPORT	DOE'S COMMENTS
<b><u>Jabatan Perhutanan Semenanjung Malaysia</u></b>			
iii.	<p><b>Pelaksanaan Kajian Penilaian Flora</b>                      Pemilik projek perlu menjalankan kajian flora yang terperinci bagi kawasan HSK yang terlibat dengan jajaran menyediakan pelan pemeliharaan yang sewajarnya serta dinyatakan di dalam pelaporan EIA.</p>	<p>Flora surveys are conducted and attached in <b>Appendix D</b> in the EIA.</p>	
iv.	<p><b>Pelaksanaan Kajian Impak Bagi Pelaporan EIA</b>                      Pelaporan EIA juga perlu memberi tumpuan kepada isu-isu impak terhadap ekologi kawasan hutan sekitar selain daripada fragmentasi kawasan yang terlibat dengan jajaran. Langkah atau tindakan mitigasi yang bersesuaian bagi mengatasi kedua-dua isu tersebut perlu diperjelaskan untuk panduan pihak agensi yang terlibat.</p>	<p>Potential ecological impact are elaborated in <b>Sections 7.4.10 &amp; 7.5.9</b> while mitigation measures are proposed in <b>Sections 8.3.10 &amp; 8.4.8</b> in the EIA.</p>	



## 2.3 TERMS OF REFERENCE

As a reference for the reader, this section presents the Terms of Reference in its original form as submitted to the DOE HQ. The content, details and findings in the TOR were based on the Project information that was available at the time of TOR preparation in July 2017. Certain details and findings of the original TOR presented in this section have been superseded, as the Project design has undergone several revisions and changes to improve the Project during the period after the TOR submission. These revisions and changes have been incorporated in the EIA study and presented in the final EIA Report.

### 2.3.1 Introduction

1. The Terms of Reference (TOR) is formulated for the preparation of an Environmental Impact Assessment (EIA) Report for the “**East Coast Rail Link Phase 2 Project**” (hereinafter referred to as ECRL Phase 2 or the Project), involving two extensions from the original alignment (ECRL Phase 1): one each in Kelantan and Selangor.
2. The purpose of the TOR and Environmental Scoping Information (ESI) is to present the scope of work and the methodology for undertaking the EIA, and to briefly describe the Project, the existing environment and potential anticipated issues and proposed mitigation measures. The TOR is essentially a summary of the more detailed ESI document. The proposed work programme for the EIA process is shown in **Chart 2-1**.
3. The Project is classified as **Prescribed Activity 16b: Construction of New Railway Route**, under the **Second Schedule** of the Environmental Quality (Prescribed Activity) (Environmental Impact Assessment) Order 2015.
4. The Project Proponent is Malaysia Rail Link Sdn Bhd (MRL), which is a company wholly owned by the Ministry of Finance Incorporated, Malaysia.
5. Enquiries about the Project may be directed to:

**Malaysia Rail Link Sdn Bhd.**  
Level 15, Menara 1 Dutamas  
Solaris Dutamas  
No.1, Jalan Dutamas 1  
50480 Kuala Lumpur

Tel: 03 - 2096 5079

Fax: 03 – 2096 5078  
Email: dar@mrl.com.my/ ybyew@mrl.com.my

**Contact Person: En. Darwis Abdul Razak/ Mr. Yew Yow Boo**

6. The Consultant undertaking the Environmental Impact Assessment study is:

**ERE Consulting Group Sdn Bhd.**

9, Jalan USJ 21/6  
47630 Subang Jaya  
Selangor Darul Ehsan

Tel: 03 – 8024 2287  
Fax: 03 – 8024 2320  
Email: rna@ere.com.my/ kqw@ere.com.my

**Contact Person: Raja Nur Ashikin Raja Zainal / Kevin Quah Wenjie**

### 2.3.2 Statement of Need

7. **Enhances connectivity of ECRL Phase 1** - With the extensions in place, the country's largest port at Port Klang will be connected to the largest port on the East Coast which is the Kuantan Port. This will reduce the dependency on road and air transport in Malaysia and also evenly distributes the regional shipping and port collection for business.
8. **Enhancing Freight Transport Capacity** - The proposed extension especially at Selangor not only provides the "missing link" between west coast with East Coast ports, it also provides the much-needed freight relief by connecting at the existing KTMB Serendah Station, enabling transfer of freight to and from the North.
9. **Transportation Developments Plan in Selangor** - Phase 2 of the ECRL supports this objective and strengthens the feasibility of the relief line by providing more capacity and a broader network of movements for freight accessing and egressing major city centers around the Greater Klang Valley.
10. **Reduce Greenhouse Gases** - the electric-powered trains have no emissions at the point of use and therefore air pollution impacts along the railway alignment is negligible. This will also reduce greenhouse gas emissions in Malaysia due to the reduction in road traffic and higher efficiency of electric trains for passenger and freight transportation.

11. A Feasibility Study for the ECRL Phase 2 was conducted in May 2017, which encompassed an economic and financial valuation, alignment study, land use study, traffic study, rail operation and systems studies, environmental screening, preliminary land acquisition information, proposed railway infrastructure and facilities, passenger and freight traffic volume estimate and preliminary cost estimate.

### 2.3.3 Basic Project Information

#### Planning and Design Basis

12. During the Feasibility Study for the ECRL, a set of planning guidelines were used to develop the design concept for the ECRL corridor and the alignment (**Table 2-2**).

**Table 2-2: Planning Guidelines for ECRL Phase 2**

Aspect	Description
Strategic position	<ul style="list-style-type: none"> <li>• Enhancing existing railway stations close to town centers to provide connectivity for freight transport</li> </ul>
Future development	<ul style="list-style-type: none"> <li>• To avoid encroaching on areas committed for future development</li> </ul>
Connectivity	<ul style="list-style-type: none"> <li>• Provide connectivity to:                             <ul style="list-style-type: none"> <li>▪ Major urban centers</li> <li>▪ Industrial clusters</li> <li>▪ Sea ports and internal container depot</li> <li>▪ Airports</li> <li>▪ Tourism zones</li> <li>▪ Integrated transport terminals</li> </ul> </li> </ul>
Environment	<ul style="list-style-type: none"> <li>• Minimize encroaching to Environmentally Sensitive Areas (ESAs) such as swamp forest, river corridors, forest reserves, ecological linkages and wildlife habitats wherever possible</li> </ul>

#### Project Alignment

13. The proposed ECRL Phase 2 measures a total of 108 km and will be located in two states, i.e. Kelantan (24.5 km) and Selangor (83.5 km). The alignment structure in both states will include a mixture of at-grade, elevated and tunnel structures as shown in **Table 2-3**. The ECRL will traverse 7 jurisdictions in Kelantan and Selangor.

**Table 2-3: Approximate Alignment Structural Components**

State	Elevated (km)	At grade (km)	Tunnels (km)	Total (km)
Kelantan	20.5	4.0	-	24.5
Selangor	18.5	47.8	17.2	83.5
<b>Total (km)</b>	<b>39.0</b>	<b>51.8</b>	<b>17.2</b>	<b>108.0</b>

14. The northern extension commences from Kota Bharu (Phase 1) to Pengkalan Kubor, where ECRL is proposed to link with the proposed new Customs, Immigration and Quarantine (CIQ) complex at Pengkalan Kubor.
15. The alignment in Selangor is proposed to spur off from Gombak North Station (Phase 1), where it will run northwest to Serendah and then southwards where it shall terminate at Port Klang (adjacent to existing KTM Jalan Kastam Station).

#### Stations

16. A total of 4 stations are proposed for the ECRL Phase 2. There will be two new stations in Kelantan, namely Wakaf Bharu and Pengkalan Kubor while another two stations in Selangor will involve the expansion of the existing Serendah Freight Terminal into a passenger & freight station and the existing Jalan Kastam Station into a freight station. The Kota Bharu and Gombak North stations will be constructed under the ECRL Phase 1 Project. A summary of the proposed stations and their configurations is shown in **Table 2-4**.

**Table 2-4: Summary of Proposed Stations and Station Configuration**

No.	State	District	Station	Station Configuration
1.	Kelantan	Tumpat	Wakaf Bharu (new)	Passenger & Freight
2.			Pengkalan Kubor (new)	Passenger
3.	Selangor	Hulu Selangor	Serendah (Expansion)	Passenger & Freight

**Table 2-4: Summary of Proposed Stations and Station Configuration (Cont'd)**

No.	State	District	Station	Station Configuration
4.	Selangor	Klang	Jalan Kastam (Expansion)	Passenger & Freight

#### Principal Project Activities

17. The anticipated principal Project activities are mainly related to construction activities, which may cause environmental impacts. The key construction

activities of the ECRL Phase 2 include, but are not limited to, the following activities (Table 2-5).

**Table 2-5: Principal Project Activities**

Stage	Activities
Pre-Construction	<ul style="list-style-type: none"> <li>• Land acquisition, utilities relocation</li> </ul>
Construction	<ul style="list-style-type: none"> <li>• Site clearing and earthworks</li> <li>• Alignment Construction               <ul style="list-style-type: none"> <li>➤ At-grade embankment construction</li> <li>➤ Railway bridge and viaduct construction</li> <li>➤ Tunnel construction</li> </ul> </li> <li>• Station construction / Expansion</li> <li>• Installation of railway tracks and systems</li> </ul>
Operation	<ul style="list-style-type: none"> <li>• Train and station operations (passenger and freight)</li> </ul>

### 2.3.4 Alternatives Consideration

18. For the Kelantan extension, four proposed routes were studied to determine the best alignment. The options were:
  - **Option A & D:** Generally, in the same northwest direction from Kota Bharu Station to Pengkalan Kubor Station with some differences in curvature of the alignments.
  - **Option B:** From Kota Bharu but will turn northeast at Wakaf Bharu to join the existing KTM line before heading northwest again and ending at Pengkalan Kubor.
  - **Option C:** Commences from Jelawat station and travels closer to the coast, passing Kota Bharu and Pengkalan Chepa and then continuing northwest before ending at Pengkalan Kubor.
  
19. **Option D** was preferable as it had the lowest construction and land costs (shorter and more straightforward alignment) and the least social impacts (shorter alignment passing through less communities).
  
20. For the Selangor Feasibility Study, three proposed routes were studied for freight relief and connectivity. The options were:
  - **Option 1:** Gombak – Batu Caves – Sg Buloh – SkyPark – Subang Jaya – Port Klang
  - **Option 2:** Gombak – Bandar Malaysia – Subang Jaya – Port Klang
  - **Option 3:** Gombak – Serendah – Port Klang

21. An appraisal of the three main options indicates that **Option 3** is preferred for its better geometry, passing through less residential areas (less acquisition issues), easier constructability and cheaper costs and creation of a new corridor to spur nearby development.

### 2.3.5 Potential Impacts

22. Based on a preliminary assessment of the Project, the potential environmental impacts and the likely magnitude of these impacts are shown in **Table 2-6**.

**Table 2-6: Potential Impacts and Anticipated Magnitude of Impacts**

Potential Impacts	Activities	Potential Magnitude of Impacts
<b>Pre-Construction Stage</b>		
Relocation/displacement	<ul style="list-style-type: none"> <li>Land acquisition</li> </ul>	Segment 1: High Segment 2A: Moderate Segment 2B: Moderate Segment 2C: Moderate
Soil erosion and sedimentation	<ul style="list-style-type: none"> <li>Utilities relocation</li> </ul>	Segment 1: Low Segment 2A: Low Segment 2B: Low Segment 2C: Low
<b>Construction Stage</b>		
Water Quality – Soil erosion and sedimentation	<ul style="list-style-type: none"> <li>Site clearing and earthworks</li> <li>Excavation works and spoil disposal</li> <li>Tunneling works</li> </ul>	Segment 1: Moderate Segment 2A: Very high Segment 2B: High Segment 2C: Low
Water Quality - Sedimentation - Sewage and sullage discharge - Oil and grease spills	<ul style="list-style-type: none"> <li>Site clearing and earthworks</li> <li>Excavation works and spoil disposal</li> <li>Tunneling works</li> <li>Workers’ camps (if any)</li> <li>Machinery and equipment maintenance, loading trucks</li> </ul>	Segment 1: Moderate Segment 2A: Very high Segment 2B: High Segment 2C: Moderate
Air pollution	<ul style="list-style-type: none"> <li>Earthworks</li> <li>Movement of construction vehicles and machinery</li> </ul>	Segment 1: Low Segment 2A: Low Segment 2B: Low Segment 2C: Moderate
Increased noise level for receptors located close to construction zones	<ul style="list-style-type: none"> <li>Concreting and piling works</li> <li>Use of high noise generating machinery such as generator sets, power tools, hydraulic breaker, grinding and cutting equipment</li> </ul>	Segment 1: High Segment 2A: Moderate Segment 2B: Moderate Segment 2C: Moderate

**Table 2-6: Potential Impacts and Anticipated Magnitude of Impacts(Cont'd)**

Potential Impacts	Activities	Potential Magnitude of Impacts
<b>Construction Stage</b>		
Increased vibration for receptors located close to construction zones	<ul style="list-style-type: none"> <li>• Movement of construction vehicles</li> <li>• Operation of construction machinery</li> </ul>	Segment 1: High Segment 2A: Moderate Segment 2B: Moderate Segment 2C: Moderate
Waste generation	<ul style="list-style-type: none"> <li>• Site office and workers camp</li> <li>• Site clearing (biomass)</li> <li>• Demolition of structures</li> <li>• Spoil/unsuitable material disposal</li> </ul>	Segment 1: Moderate Segment 2A: Moderate Segment 2B: Moderate Segment 2C: Moderate
- Hydrology/Flooding	<ul style="list-style-type: none"> <li>• Blockage of drainage / irrigation canals</li> <li>• Reduced capacity of the existing drainage system/ rivers</li> <li>• Diversion of drainage / irrigation canals</li> </ul>	Segment 1: High Segment 2A: Moderate Segment 2B: Moderate Segment 2C: Moderate
Ecology - Habitat destruction, fragmentation and disturbance to wildlife	<ul style="list-style-type: none"> <li>• Site clearing and earthworks</li> <li>• Concreting and piling works</li> <li>• Use of high noise generating machinery such as generator sets, power tools, hydraulic breaker and grinding and cutting equipment</li> </ul>	Segment 1: Very low Segment 2A: Moderate Segment 2B: High Segment 2C: Moderate
Traffic Congestion	<ul style="list-style-type: none"> <li>• Road diversion and closures;</li> <li>• Construction traffic that will be generated from/to the construction works.</li> </ul>	Segment 1: Moderate Segment 2A: Low Segment 2B: Moderate Segment 2C: Moderate
Social well-being of population residing nearby the Project site	<ul style="list-style-type: none"> <li>• Influx of workers</li> <li>• Noise/Vibration from construction works</li> <li>• Increased road traffic around project site</li> </ul>	Segment 1: Moderate Segment 2A: Moderate Segment 2B: Moderate Segment 2C: Moderate
Hazards & Public Safety	<ul style="list-style-type: none"> <li>• Hazards to public due to construction activities</li> </ul>	Segment 1: Low Segment 2A: Moderate Segment 2B: Moderate Segment 2C: High

**Table 2-6: Potential Impacts and Anticipated Magnitude of Impacts(Cont'd)**

Potential Impacts	Activities	Potential Magnitude of Impacts
<b>Operational Stage</b>		
Water Quality - Sewage and sullage discharge - Oil and grease spills	<ul style="list-style-type: none"> <li>• STP at stations</li> <li>• Maintenance works at maintenance bases</li> </ul>	Segment 1: Moderate Segment 2A: Low Segment 2B: Low Segment 2C: Moderate
Reduced greenhouse gas (GHG) emissions	<ul style="list-style-type: none"> <li>• Increased efficiency of rail-based transport system</li> <li>• Reduction in road traffic</li> </ul>	Segment 1: Low Segment 2A: Low Segment 2B: Low Segment 2C: Moderate
Increased noise level for receptors located close to the railway tracks and stations	<ul style="list-style-type: none"> <li>• Train traffic on the railway</li> </ul>	Segment 1: Moderate Segment 2A: Low Segment 2B: Low Segment 2C: Low
Potential vibration impacts particularly to the receptors close to the railway tracks & stations	<ul style="list-style-type: none"> <li>• Train traffic on the railway</li> </ul>	Segment 1: Moderate Segment 2A: Low Segment 2B: Low Segment 2C: Low
Waste	<ul style="list-style-type: none"> <li>• Domestic waste from passengers and stations</li> </ul>	Segment 1: Low Segment 2A: Low Segment 2B: Low Segment 2C: Low
Hydrology/Flooding	<ul style="list-style-type: none"> <li>• Embankment obstructing / limiting existing flow</li> <li>• Reduced capacity of the existing drainage system/ rivers</li> <li>• Diversion of drainage / irrigation canals</li> </ul>	Segment 1: Moderate Segment 2A: Moderate Segment 2B: Moderate Segment 2C: Moderate
Barriers to wildlife movement; Severing of wildlife corridors	<ul style="list-style-type: none"> <li>• Presence of railway track cutting through forests and wildlife corridors</li> <li>• Train traffic on the railway</li> </ul>	Segment 1: Very low Segment 2A: Low Segment 2B: High Segment 2C: Low
Fragmentation of land use and settlements; Physical barrier splitting existing communities	<ul style="list-style-type: none"> <li>• Presence of railway tracks cutting through existing communities and settlements</li> <li>• Railway tracks being restricted and off-limits to the public</li> </ul>	Segment 1: High Segment 2A: Moderate Segment 2B: Moderate Segment 2C: Moderate
Social well-being of population along the alignment	<ul style="list-style-type: none"> <li>• Noise/vibration from train operation</li> <li>• Increased road traffic/risks around the stations</li> </ul>	Segment 1: Low Segment 2A: Low Segment 2B: Low Segment 2C: Low
Catalyst for development in the East Coast	<ul style="list-style-type: none"> <li>• Improved connectivity and accessibility for East Coast communities and businesses</li> </ul>	High



**Table 2-6: Potential Impacts and Anticipated Magnitude of Impacts(Cont'd)**

Potential Impacts	Activities	Potential Magnitude of Impacts
<b>Operational Stage</b>		
Enhanced Freight Transport capacity	<ul style="list-style-type: none"> <li>Increased freight transport capacity between East and West Coast, and within East Coast</li> <li>Reduced travel time</li> </ul>	High
Disruption in road traffic flow	<ul style="list-style-type: none"> <li>Railway track intersecting existing roads resulting in new railway crossings</li> <li>Trains having right-of-way over road traffic</li> <li>Traffic from the stations entrance/exit</li> </ul>	Segment 1: Moderate Segment 2A: Moderate Segment 2B: Moderate Segment 2C: Moderate
Hazards & Public Safety	<ul style="list-style-type: none"> <li>Hazards to public due to railway operations</li> </ul>	Segment 1: Low Segment 2A: Moderate Segment 2B: Moderate Segment 2C: Moderate

Note:

Segment 1: Kelantan

Segment 2A: Gombak North - Serendah

Segment 2B: Serendah - Bandar Puncak Alam

Segment 2C: Bandar Puncak Alam - Port Klang

23. The scope of the EIA study as presented in this TOR and ESI will focus on the following environmental issues of concern:

**1. Water**

- River Water Quality
- Erosion Risk

**2. Air Quality**

**3. Greenhouse gas emissions**

**4. Noise and vibration**

**5. Waste**

**Others**

1. Geotechnical & geological risks
2. Hydrology/ flooding
3. Ecology
4. Socio- economic
5. Traffic
6. Hazards and public safety

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**Table 2-7 : Potential Impacts and Assessment Methodologies**

Environmental Aspect	Study Boundaries/ Receptors	Potential Impacts	Impact Assessment/ Models/ Tools	Assessment Standards	Possible Mitigation Measures
<b>Construction Stage</b>					
Water Quality – Soil erosion and sedimentation	<ul style="list-style-type: none"> <li>Hilly areas, tunnel portals, major earthwork areas</li> <li>Receiving waters: Rivers and waterways along the alignment</li> </ul>	<ul style="list-style-type: none"> <li>Earthworks may lead to erosion and subsequently sedimentation of receiving waters</li> </ul>	<ul style="list-style-type: none"> <li>Soil erosion risk mapping and calculation of sediment yield at selected high erosion risk areas (RUSLE &amp; MUSLE)</li> <li>Comparison against pre-project conditions</li> </ul>	National Water Quality Standards (NWQS)	<ul style="list-style-type: none"> <li>LD-P2M2 to control soil erosion and sedimentation for pre-construction, construction and operational stages</li> </ul>
Water Quality - Sewage and sullage discharge - Oil and grease spills	<ul style="list-style-type: none"> <li>Water intakes downstream of alignment</li> <li>Rivers and waterways</li> <li>Aquaculture activities downstream e.g. fish farms</li> </ul>	<ul style="list-style-type: none"> <li>Sedimentation of receiving waters</li> <li>Site clearing and earthworks</li> <li>Excavation works and spoil disposal</li> <li>Tunneling works</li> <li>Workers’ camps (if any)</li> <li>Machinery and equipment maintenance, loading trucks</li> </ul>	<ul style="list-style-type: none"> <li>Establish baseline conditions through water quality sampling</li> <li>Use Mixing Zone Model for point source pollution</li> <li>Assessment model (QUAL2K)</li> </ul>	National Water Quality Standards (NWQS)	<ul style="list-style-type: none"> <li>Sedimentation control (LD-P2M2)</li> <li>Effluent treatment</li> </ul>
Air pollution	<ul style="list-style-type: none"> <li>Air sensitive receptors along the alignment</li> </ul>	<ul style="list-style-type: none"> <li>Generation of dust from site clearing and earthworks</li> <li>Dust from movement of construction vehicles</li> </ul>	<ul style="list-style-type: none"> <li>Comparing against baseline conditions and air quality standards</li> <li>Qualitative assessment</li> </ul>	Malaysian Ambient Air Quality Standards (MAAQS) especially for PM <sub>10</sub> and PM <sub>2.5</sub>	<ul style="list-style-type: none"> <li>Control of dust dispersion particularly during earthworks and from vehicular emissions</li> </ul>

**Table 2-7 : Potential Impacts and Assessment Methodologies (Cont'd)**

Environmental Aspect	Study Boundaries/ Receptors	Potential Impacts	Impact Assessment/ Models/ Tools	Assessment Standards	Possible Mitigation Measures
<b>Construction Stage</b>					
Noise Quality and Vibration - Increased noise level and vibration for receptors located close to construction zones	<ul style="list-style-type: none"> <li>Noise sensitive receptors along the alignment</li> </ul>	<ul style="list-style-type: none"> <li>Concreting and piling works</li> <li>Use of high noise generating machinery such as generator sets, power tools, hydraulic breaker, grinding and cutting equipment</li> </ul>	<ul style="list-style-type: none"> <li>Qualitative assessment at sensitive receptors</li> <li>Noise prediction using CADNA modelling</li> <li>Compare baseline conditions with noise guidelines</li> <li>Federal Transit Administration, USA procedures</li> <li>British Standards BS 5228-4, 1992 <i>"Noise control on construction and open sites; Part 4: Code of practice for noise and vibration control applicable to piling operations"</i>, Appendix B - <i>Prediction of vibration levels.</i></li> </ul>	<ul style="list-style-type: none"> <li>Planning Guidelines for Environmental Noise Limits and Control, 2007</li> <li>Planning Guidelines for Environmental Vibration Limits and Control, 2007</li> </ul>	<ul style="list-style-type: none"> <li>Control noise and vibration levels to acceptable limits</li> </ul>

**Table 2-7 : Potential Impacts and Assessment Methodologies (Cont'd)**

Environmental Aspect	Study Boundaries/ Receptors	Potential Impacts	Impact Assessment/ Models/ Tools	Assessment Standards	Possible Mitigation Measures
<b>Construction Stage</b>					
Waste	<ul style="list-style-type: none"> <li>Receiving waters</li> <li>Residential areas nearby</li> </ul>	<ul style="list-style-type: none"> <li>Generation of biomass from clearing of oil palm and forest</li> <li>Improper biomass waste management can degrade surrounding waters</li> <li>Site office and workers camp</li> <li>Demolition of structures</li> <li>Spoil/unsuitable material disposal</li> </ul>	<ul style="list-style-type: none"> <li>Estimation of wastes generated will be quantified following the accepted waste generation rate (based on their types) from published literature</li> <li>Qualitative impact assessment to the environment and human health</li> </ul>	<ul style="list-style-type: none"> <li>-</li> </ul>	<ul style="list-style-type: none"> <li>Proper biomass management strategies such as chipping, mulching or timber extraction</li> <li>Disposal to approved dumpsite</li> </ul>
Hydrology/ Flooding	<ul style="list-style-type: none"> <li>Existing identified flood prone areas</li> </ul>	<ul style="list-style-type: none"> <li>Blockage of drainage / irrigation canals</li> <li>Reduced capacity of the existing drainage system/ rivers</li> <li>Diversion of drainage / irrigation canals</li> </ul>	<ul style="list-style-type: none"> <li>Comparison against pre-project conditions</li> <li>Secondary information such as the hydrology report and drainage plan for the Project.</li> </ul>	<ul style="list-style-type: none"> <li>-</li> </ul>	<ul style="list-style-type: none"> <li>Ensure all soil erosion and sediment control are functioning</li> </ul>
Ecology	<ul style="list-style-type: none"> <li>Flora within forest reserves</li> <li>Fauna within forest reserves</li> </ul>	<ul style="list-style-type: none"> <li>Potential human-wildlife conflicts</li> <li>Fragmentation of habitats</li> <li>Disruption of wildlife corridors</li> </ul>	<ul style="list-style-type: none"> <li>Literature review</li> <li>Consultation with government agencies</li> <li>Consultation with relevant key experts</li> <li>Assessing extent and area of habitat fragmentation</li> <li>Wildlife survey</li> </ul>	<ul style="list-style-type: none"> <li>IUCN Red List of Threatened Species</li> <li>High Conservation Value Forests (HCVF) Toolkit for Malaysia</li> </ul>	<ul style="list-style-type: none"> <li>Wildlife Management Measures</li> </ul>

**Table 2-7: Potential Impacts and Assessment Methodologies (Cont'd)**

Environmental Aspect	Study Boundaries/ Receptors	Potential Impacts	Impact Assessment/ Models/ Tools	Assessment Standards	Possible Mitigation Measures
<b>Construction Stage</b>					
Traffic	<ul style="list-style-type: none"> <li>Construction routes and accesses into the construction sites along the alignment</li> <li>Road users using roads intersected by the Project alignment</li> </ul>	<ul style="list-style-type: none"> <li>Minimal increase in construction traffic volume along surrounding roads</li> <li>Safety risks for road users using road crossing alignment</li> </ul>	<ul style="list-style-type: none"> <li>Identify route of transportation and access points</li> <li>Identify quantity and volume of construction vehicles during peak hours</li> </ul>	<ul style="list-style-type: none"> <li>-</li> </ul>	<ul style="list-style-type: none"> <li>Traffic Management Plan</li> </ul>
Socio-Economics	<ul style="list-style-type: none"> <li>Residents and local communities located within 500 m distance</li> </ul>	<ul style="list-style-type: none"> <li>Land acquisition</li> <li>Disruption of community</li> <li>Noise and dust</li> <li>Traffic</li> <li>Influx of foreign workers may pose social problems</li> </ul>	<ul style="list-style-type: none"> <li>Engage stakeholders involved via perception surveys, interviews and meetings to gather information on positive and negative impacts from the Project</li> </ul>	<ul style="list-style-type: none"> <li>-</li> </ul>	<ul style="list-style-type: none"> <li>Early engagements and early dissemination of information and support if necessary</li> </ul>
Hazards & Public Safety	<ul style="list-style-type: none"> <li>Adjacent communities, public road users</li> </ul>	<ul style="list-style-type: none"> <li>Hazards to public due to construction activities</li> </ul>	<ul style="list-style-type: none"> <li>Hazard identification</li> </ul>	<ul style="list-style-type: none"> <li>-</li> </ul>	<ul style="list-style-type: none"> <li>Implement construction safety measures</li> </ul>

**Table 2-7 : Potential Impacts and Assessment Methodologies (Cont'd)**

Environmental Aspect	Study Boundaries/ Receptors	Potential Impacts	Impact Assessment/ Models/ Tools	Assessment Standards	Possible Mitigation Measures
<b>Construction Stage</b>					
Geotechnical Risks	<ul style="list-style-type: none"> <li>• Groundwater</li> <li>• Fault lines</li> <li>• Fractured granites</li> <li>• Landslide areas</li> <li>• Peat areas</li> </ul>	<ul style="list-style-type: none"> <li>• Groundwater contamination</li> <li>• Uneven grades of weathering</li> <li>• Instable layered rocks</li> </ul>	<ul style="list-style-type: none"> <li>• Geological, hydrogeological and geotechnical investigations and planning</li> <li>• Soil investigations</li> <li>• Detailed geological investigation</li> </ul>	<ul style="list-style-type: none"> <li>• -</li> </ul>	<ul style="list-style-type: none"> <li>• Proper ground treatment works</li> </ul>
<b>Operation Stage</b>					
Water Quality	<ul style="list-style-type: none"> <li>• Water intake points downstream of the project</li> </ul>	<ul style="list-style-type: none"> <li>• Effluent discharge from STP at stations,</li> <li>• Maintenance works at maintenance bases, if any</li> </ul>	<ul style="list-style-type: none"> <li>• Non-point source will be assessed through catchment runoff estimation to estimate the load of non-point source pollution</li> <li>• Use Mixing Zone Model for point source pollution</li> <li>• Assessment model (QUAL2K)</li> </ul>	<ul style="list-style-type: none"> <li>• Environmental Quality (Sewage) Regulations 2009</li> </ul>	<ul style="list-style-type: none"> <li>• Proper treatment and control of effluent discharges</li> </ul>
Greenhouse Emissions	Gas <ul style="list-style-type: none"> <li>• Regional and national GHG emissions</li> </ul>	<ul style="list-style-type: none"> <li>• Reduction in GHG due to reduction in road traffic</li> </ul>	<ul style="list-style-type: none"> <li>• GHG estimation calculation using emission factors and traffic volumes</li> </ul>	<ul style="list-style-type: none"> <li>• Carbon emission calculator tool, <i>Mobile Combustion: GHG Emissions Calculation Tool Version</i></li> </ul>	<ul style="list-style-type: none"> <li>• No mitigation measures required for positive impacts</li> </ul>

**Table 2-7 : Potential Impacts and Assessment Methodologies (Cont' d)**

Environmental Aspect	Study Boundaries/ Receptors	Potential Impacts	Impact Assessment/ Models/ Tools	Assessment Standards	Possible Mitigation Measures
<b>Operation Stage</b>					
Noise and vibration	<ul style="list-style-type: none"> <li>Noise sensitive receptors along the alignment</li> </ul>	<ul style="list-style-type: none"> <li>Noise levels from movement of trains</li> </ul>	<ul style="list-style-type: none"> <li>Qualitative assessment at sensitive receptors</li> <li>Noise prediction using CADNA modelling</li> <li>Compare baseline conditions with noise guidelines</li> </ul>	<ul style="list-style-type: none"> <li>Planning Guidelines for Environmental Noise Limits and Control, 2007</li> <li>Planning Guidelines for Environmental Vibration Limits and Control, 2007</li> </ul>	<ul style="list-style-type: none"> <li>Control noise levels to acceptable limits</li> </ul>
Waste	<ul style="list-style-type: none"> <li>Surrounding waterways</li> <li>Nearby residential areas</li> </ul>	<ul style="list-style-type: none"> <li>Domestic waste from stations:               <ul style="list-style-type: none"> <li>➢ Passenger</li> <li>➢ Café</li> <li>➢ Office</li> <li>➢ Kiosk</li> </ul> </li> <li>Scheduled waste</li> </ul>	<ul style="list-style-type: none"> <li>Estimation of wastes generated will be quantified following the accepted waste generation rate (based on their types) from published literature</li> <li>Qualitative impact assessment to the environment and human health</li> </ul>	<ul style="list-style-type: none"> <li>-</li> <li>Environmental Quality (Scheduled Waste) Reg 2005</li> </ul>	<ul style="list-style-type: none"> <li>Proper management strategies</li> </ul>



**Table 2-7 : Potential Impacts and Assessment Methodologies (Cont'd)**

Environmental Aspect	Study Boundaries/ Receptors	Potential Impacts	Impact Assessment/ Models/ Tools	Assessment Standards	Possible Mitigation Measures
<b>Operation Stage</b>					
Hydrology / Flooding	<ul style="list-style-type: none"> <li>Flood prone area</li> </ul>	<ul style="list-style-type: none"> <li>Flooding upstream due to embankment sections of the railway</li> </ul>	<ul style="list-style-type: none"> <li>Identify location of irrigation schemes</li> <li>Identify existing flood prone area</li> </ul>	<ul style="list-style-type: none"> <li>-</li> </ul>	<ul style="list-style-type: none"> <li>To liaise with Department of Irrigation and Drainage with regards to the engineering design for the alignment including for drainage and flood mitigation.</li> </ul>
Ecology	<ul style="list-style-type: none"> <li>Flora within forest reserves</li> <li>Fauna within forest reserves</li> </ul>	<ul style="list-style-type: none"> <li>Restriction of wildlife movement</li> <li>Human wildlife conflict</li> <li>Wildlife collisions</li> </ul>	<ul style="list-style-type: none"> <li>Assessing fragmentation</li> <li>Engagement with Department of Wildlife and National Parks &amp; key experts</li> <li>Wildlife survey</li> </ul>	<ul style="list-style-type: none"> <li>-</li> </ul>	<ul style="list-style-type: none"> <li>Wildlife management measures</li> </ul>
Socio-Economics	<ul style="list-style-type: none"> <li>Surrounding towns and settlements along alignment</li> </ul>	<ul style="list-style-type: none"> <li>Downstream economic opportunities</li> <li>Increased economic activity</li> <li>Improved standard of living</li> </ul>	<ul style="list-style-type: none"> <li>No assessment required for positive impacts</li> </ul>	<ul style="list-style-type: none"> <li>-</li> </ul>	<ul style="list-style-type: none"> <li>No mitigation measures required for positive impacts</li> </ul>

**Table 2-7 : Potential Impacts and Assessment Methodologies (Cont' d)**

<b>Environmental Aspect</b>	<b>Study Boundaries/ Receptors</b>	<b>Potential Impacts</b>	<b>Impact Assessment/ Models/ Tools</b>	<b>Assessment Standards</b>	<b>Possible Mitigation Measures</b>
<b>Operation Stage</b>					
Socio-Economics	<ul style="list-style-type: none"> <li>Surrounding towns and settlements along alignment</li> </ul>	<ul style="list-style-type: none"> <li>Fragmentation of land use and settlements</li> </ul>	<ul style="list-style-type: none"> <li>Engage stakeholders involved via perception surveys, interviews and meetings to gather information on positive and negative impacts from the Project</li> </ul>	<ul style="list-style-type: none"> <li>-</li> </ul>	<ul style="list-style-type: none"> <li>Early engagement with affected communities</li> </ul>
Traffic	<ul style="list-style-type: none"> <li>Surrounding roads</li> </ul>	<ul style="list-style-type: none"> <li>Change in traffic patterns and volume along major roads</li> <li>Reduced travel time</li> </ul>	<ul style="list-style-type: none"> <li>Traffic Assessment to be conducted by traffic consultant.</li> <li>Calculate projected traffic during operation</li> <li>Identify positive &amp; negative impacts</li> </ul>	<ul style="list-style-type: none"> <li>-</li> </ul>	<ul style="list-style-type: none"> <li>Traffic management plan</li> </ul>

**Chart 2-1 : Project Assessment (EIA) Timeline**

No.	Task	2017																										
		July				August				September				October					November				December					
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	5	1	2	3	4	1	2	3	4	5	
<b>Term of Reference (TOR) and Environmental Scoping Information (ESI)</b>																												
1.1	Drafting and confirmation of TOR and ESI for EIA	█	█	█	█																							
1.2	Submission of TOR and ESI to DOE HQ																											
1.3	Review Period & presentation of TOR and ESI to the DOE HQ					█	█	█	█	█																		
1.4	Approval of TOR and ESI by DOE HQ																											
<b>Environmental Impact Assessment (EIA)</b>																												
2.1	Baseline surveys, ecological survey and investigations			█	█	█	█	█	█	█																		
2.2	Laboratory analysis and results			█	█	█	█	█	█																			
2.3	Collection of secondary data			█	█	█	█	█	█																			
2.4	Prediction of significance of environmental impacts							█	█	█	█	█																
2.5	Evaluate results from modelling and impact assessment												█	█	█	█	█											
2.6	Determine the appropriate mitigating measures												█	█	█	█	█											
2.7	Prepare Draft EIA report			█	█	█	█	█	█	█	█	█	█															





## Section 3

# STATEMENT OF NEED

### 3.1 NEED FOR THE PROJECT

#### 3.1.1 Enhances Connectivity of ECRL Phase 1

The proposed Phase 2 extension in Kelantan and Selangor is needed to further realize the need for Phase 1 that is to improve the connectivity between the East Coast and the West Coast. With the extensions in place, the country's largest port at Port Klang will be connected to the largest port on the East Coast which is the Kuantan Port. This will reduce the dependency on road and air transport in Malaysia and also evenly distributes the regional shipping and port collection for business.

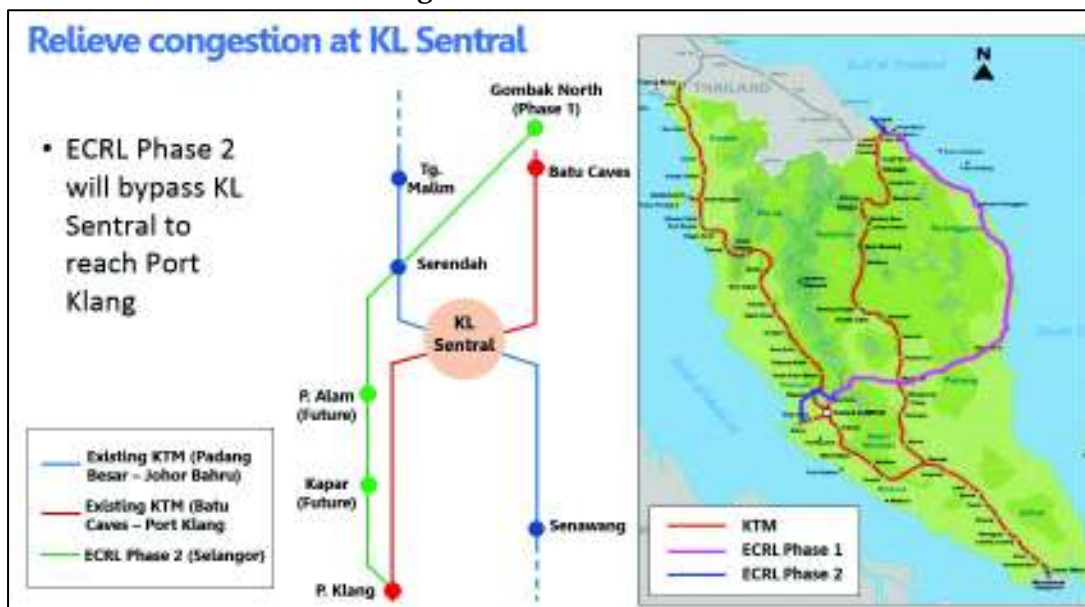
There is currently no direct railway connection between the East Coast and the West Coast except for the KTMB railway line from Kota Bharu to Kuala Lumpur via Gemas. There is an existing Kuantan-Kertih railway line but it is isolated from the rest of the national railway network. Furthermore, the overall transportation infrastructure and capacity of the East Coast Economic Region (ECER) requires significant improvement and upgrading in order to support the economic growth.

The ECRL, which is envisaged to comprehensively serve all main centers in the East Coast Region and connect to the overall rail network in Peninsular Malaysia, is mentioned in several development plans, namely the National Physical Plan, ECER Master Plan and State Structure Plans (**Section 1.5**).

#### 3.1.2 Enhancing Freight Transport Capacity

Presently, KTMB provides freight services from the North and South of Peninsular Malaysia to Port Klang and vice versa. However, the freight trains have to pass through KL Sentral which is highly congested, making freight transport via rail very unattractive. The proposed extension especially at Selangor not only provides the "missing link" between west coast with East Coast ports, it also provides the much-needed freight relief by connecting at the KTMB Serendah Freight Terminal, enabling transfer of freight to and from the norther states (**Chart 3-1**).

Chart 3-1 : Freight Relief Provided for KL Sentral



Source: Feasibility Study of The East Coast Rail Link Project Extension Line (Gombak To Port Klang), May 2017

### 3.1.3 Reduction in Greenhouse Gases

The increase in CO<sub>2</sub> emission has become an important global issue due to the intensification in demand from the transport sector. The increase has a strong correlation between the upward surge in urbanization and rapid economic growth.

Shifting from private vehicles to public transportation such as trains is an effective mitigation strategy to reduce the CO<sub>2</sub> emissions. The extension lines will be clean operations as the electric-powered trains have no emissions at the point of use, resulting in negligible air pollution impacts along the railway alignment. This will also reduce greenhouse gas emissions in Malaysia due to the reduction in road traffic and higher efficiency of electric trains for passenger and freight transportation. For example, up to 146,366 MT CO<sub>2</sub>e/yr emission is expected to be avoided in 2045 for ECRL Phase 2.

### 3.1.4 Transportation Developments Plan in Selangor

#### Greater Kuala Lumpur / Klang Valley Land Public Transport Masterplan (SPAD)

A number of issues and opportunities are raised within the National Land Public Transport Master Plan (NLPTMP) relating to freight and passenger movement, including the impact of rail freight on passenger service capacity, particularly on the Batu KTMB line and towards Port Klang.

Under the urban rail proposals of the NLPTMP, a freight relief line is proposed and needed to divert trains away from Kuala Lumpur and the Klang line. Phase 2 of the ECRL supports this objective and strengthens the feasibility of the relief line by providing more capacity and a broader network of movements for freight accessing and egressing major city centers around the Greater Klang Valley. As part of the benefits of this freight relief, KTMB services will be able to enjoy a 5 minute “Metro Style” headway for East-West movement through central Greater Klang Valley.

### **Malaysia Logistics and Trade Facilitation Masterplan (2015-2020) (EPU)**

Strategic Shift 3: Developing Infrastructure and Freight Demand of the Masterplan focuses on better connectivity to entry points (such as Port Klang and Kuantan Port) and also optimizing usage of existing infrastructure to promote the modal shift from road to rail.

Phase 2 of the ECRL is particularly valuable to achieving the objectives of this Masterplan by improving connectivity between the East Coast and West Coast. The Phase 2 will also alleviate road congestion at Port Klang besides linking into the Freight Relief Line which will provide capacity resilience for the existing KTMB freight services. This in-turn will provide additional train paths on the passenger line from Port Klang to Kuala Lumpur.

### **3.1.5 National Physical Plan 3, *Dasar Perbandaran Kedua (DPN2)* and *Dasar Perancangan Fizikal Desa Negara (DPFDN)***

The proposed Project will be in line with the need of National Physical Plan 3, *Dasar Perbandaran Negara Kedua (DPN2)* and *Dasar Perancangan Fizikal Desa Negara (DPFDN)* that emphasizes on the following strategies:

#### **a. Enhanced Connectivity and Access**

This strategic focus on the development of a comprehensive transportation and access system to meet the country's development needs to stimulate local economic growth. The role of rail services will be strengthened through the expansion of railway development to other regions to complement the integrated rail transport network system in Malaysia

#### **b. Holistic Land Use Planning**

This strategy focuses on promoting transit-oriented development. In order to create efficient land use, transit-oriented development (TOD) at local levels should be implemented more effectively. Transit development corridors can promote development around transit-oriented areas such as High-Speed Rail (HSR), Electric



Train Service (ETS) and Bus Rapid Transit (BRT). This is important to ensure maximum transit utilization.

In line with the Eleventh Malaysia Plan strategy, the 3rd National Physical Plan highlights on the development of infrastructure and services that support low carbon mobility that emphasizes on public transport with low carbon footprint. Among the measures that can be implemented to promote low carbon mobility are as follows:

- Expand transit transport catchment area
- Provide a comprehensive public transportation master plan and
- Integrate network and public transport facilities as part of development plan

The proposed Project is also in line with *Dasar Perbandaran Negara 2*, i.e. to increase the use of public transport and reduce carbon emission by up to 45% by year 2030.

### **3.2 BENEFITS OF THE PROJECT**

An integrated transport infrastructure network is crucial for the development of the nation. The ECRL Phase 2 as an extension of the Phase 1 alignment will continue to bring major economic growth and can act as a catalyst for further development of both the west and east coasts of Peninsular Malaysia.

- The ECRL Phase 2 will serve a large population catchment area where more travelling will occur along the alignment corridor for business, tourism and personal trips.
- Facilitates long distance travel and transport of bulk goods that are not easily transported through motor vehicles.
- Increases competitiveness of the urban centers in Selangor and promotes urbanization in Kelantan.
- Enhances quality of life, business opportunities, cultural integration and national integration.
- Facilitates tourist travel and promotes tourism development.
- Promotes the development of Education Hubs.
- Strengthen Port Klang linkages with Kuantan port, connecting the Western Gateway with the Eastern gateway and further to the international market.
- Reduction in traffic congestion, road maintenance and repair cost, road accidents and land consumption.
- Enhancement of land values around key station nodes.