EXECUTIVE SUMMARY

PROJECT TITLE

"MEMBINA JALAN BARU DARI BATU TUJUH KE PERSIMPANGAN STESEN ECRL KUALA DUNGUN, DUNGUN, TERENGGANU"

PROJECT OWNER

KEMENTERIAN KEMAJUAN DESA DAN WILAYAH

No. 47, Persiaran Perdana, Presint 4, Pusat Pentadbiran Kerajaan Persekutuan, 62100 Putrajaya, WP Putrajaya

KEMENTERIAN KEMAJUAN DESA DAN WILAYAH

PROJECT EXECUTOR

JABATAN KERJA RAYA (JKR) NEGERI TERENGGANU

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Email: jkr@terengganu.gov.my

JKR TERENGGANU

DESIGN AND BUILD CONTRACTOR / PROJECT PROPONENT

BERIBU TRADISI SDN. BHD.

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BERIBU TRADISI

CIVIL AND STRUCTURAL CONSULTANT

ACTION BASE CONSULTANTS SDN BHD (439505-P)

No. 59A, Jalan Kencana 15, Taman Kencana, 56100 Kuala Lumpur

action base consultants

ENVIRONMENTAL CONSULTANT

NILAIMAS SERVICES (001953513-D)
No. 17-2 & 17-3, Jalan Equine 10D, Taman Equine, 43300 Seri Kembangan, Selangor
Tel: 03-8940 9959

NILAIMAS SERVICES
ENVIRONMENTAL & TRAFFIC CONSULTANTS

LABORATORY SERVICES

CHEMVI LABORATORY SDN. BHD. (514202-D)
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Tel. No.: 03-5525 3505 / 5525 3506

ChemVi

EXECUTIVE SUMMARY

PROJECT OVERVIEW

- This Project will be constructed to provide **four (4) lane dual carriageway road** with JKR **R3** design standard. Total length of the Project is **2.7 km**.
- The alignment traverse on flat terrain within Batu 7 Industrial Area.
- This Project **will connect ECRL Dungun Station to Federal Route 3 at Kampung Batu Tujuh**.

LEGISLATIVE REQUIREMENT

Environmental Quality Act 1974,
Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015;
First Schedule, the proposed Project falls under -

First Schedule - Activity 20 Road:
Activity 20(c):
Construction of road, tunnel or bridge traversing or adjacent or near to environmentally sensitive areas

STATEMENT OF NEED

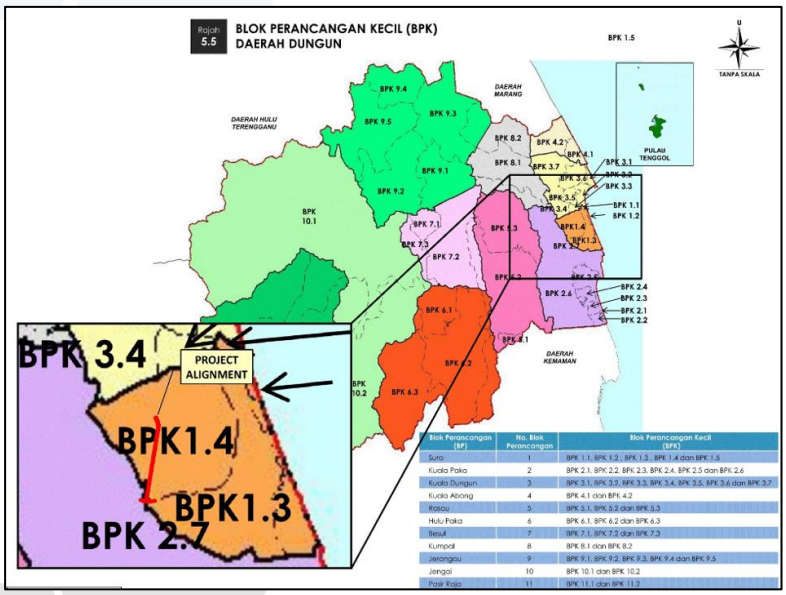
- Aims to improve the linkage and reduce traffic congestion at Jalan Kemaman – Dungun (FT03)
- To support the development of ECRL through smooth accessibility to the ECRL Dungun Station.
- Provide fast connectivity between Kampung Batu 7 to Kuala Dungun.
- To improve accessibility for commuters, especially in the Dungun area.
- The development of this new road is expected to bring significant benefits to the community by enhancing transportation options and, most importantly, ensuring the safety of road users.

COMPATIBILITY WITH LOCAL PLANNING STRATEGIES

- Referring to the **RTD Dungun 2035 (Gazette No. 831 Jil. 72 No. 14 on 04/07/2019),** the proposed Project site is included within two (2) main Blok Perancangan (BP) and several Blok Perancangan Kecil (BPK) of:

BLOK PERANCANGAN (BP)	BLOK PERANCANGAN KECIL (BPK)	AREA (Mukim)
BLOK PERANCANGAN 1: SURA	BPK 1.3	Mukim Sura
	BPK 1.4	
BLOK PERANCANGAN 2: KUALA PAKA	BPK 2.7	Mukim Kuala Paka

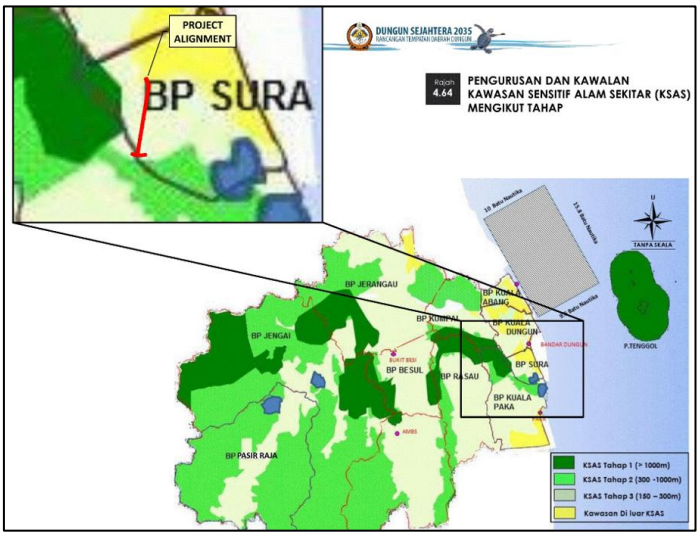
- As referred to the response letter from PLANMALAYSIA@Terengganu dated 24th September 2024, the Project alignment falls within the zoning area of **"Transportation"** under Blok Perancangan Kecil (BPK) 1.3: Mukim Sura, BPK 1.4: Mukim Sura and BPK 2.7: Mukim Kuala Paka.



COMPATIBILITY WITH LOCAL PLANNING STRATEGIES

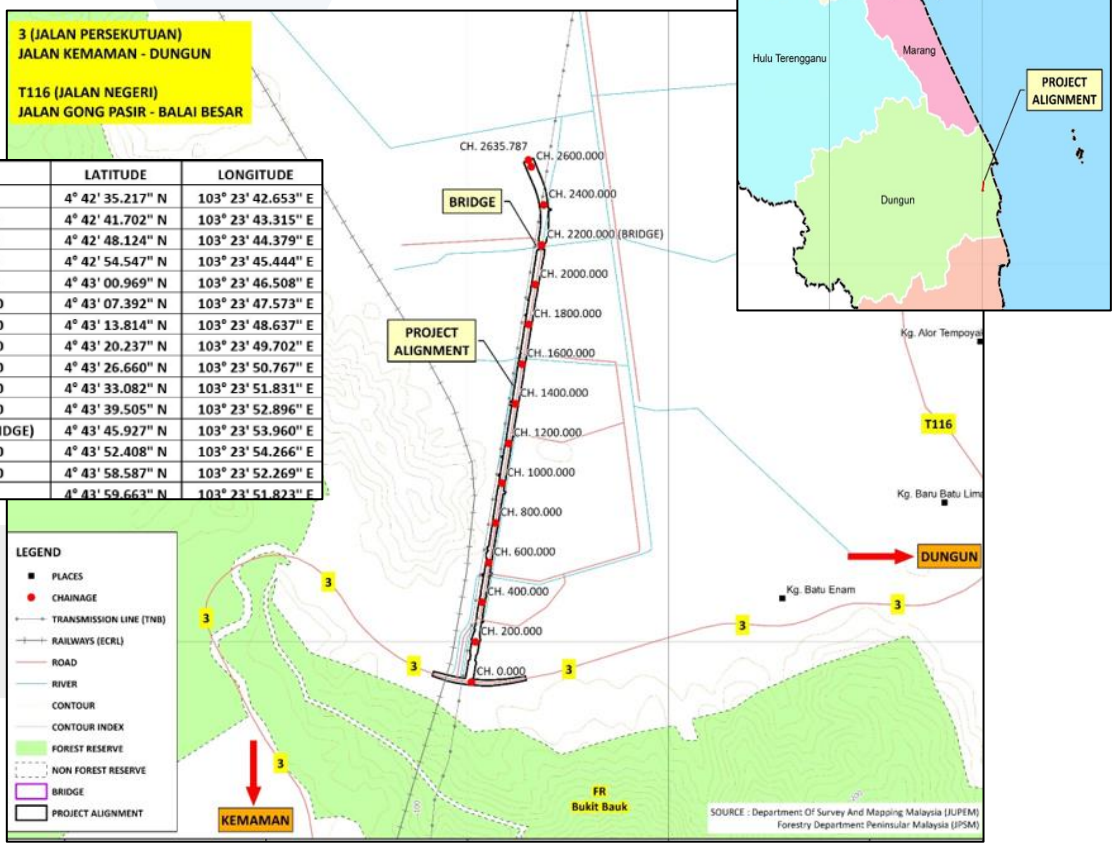
- Referring to the feedback letter from **DOE Terengganu (AS(B): 50/013/501/056 (43) dated 6 December 2023,** this proposed Project falls under First Schedule, Activity 20 (c) of the Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015, as the starting chainage (CH 0.000) of the proposed Project alignment is located in close proximity (115.15 m) to the ESA of Hutan Simpan Kekal (HSK) Bukit Bauk.

- Project Site fall under:
  - ***KSAS Tahap 3:*** 150 – 300m
  - ***Diluar kawasan KSAS***



PROJECT LOCATION AND ACCESSIBILITY

- The alignment traverse on flat terrain within **Batu 7 Industrial Area**. This Project **will connect ECRL Dungun Station to Federal Route 3 at Kampung Batu Tujuh.**
- The Project site will be accessed from existing **Jalan Kemaman – Dungun (FT03).**



NAME	LATITUDE	LONGITUDE
CH. 0.000	4° 42' 35.217" N	103° 23' 42.653" E
CH. 200.000	4° 42' 41.702" N	103° 23' 43.315" E
CH. 400.000	4° 42' 48.124" N	103° 23' 44.379" E
CH. 600.000	4° 42' 54.547" N	103° 23' 45.444" E
CH. 800.000	4° 43' 00.969" N	103° 23' 46.508" E
CH. 1000.000	4° 43' 07.392" N	103° 23' 47.573" E
CH. 1200.000	4° 43' 13.814" N	103° 23' 48.637" E
CH. 1400.000	4° 43' 20.237" N	103° 23' 49.702" E
CH. 1600.000	4° 43' 26.660" N	103° 23' 50.767" E
CH. 1800.000	4° 43' 33.082" N	103° 23' 51.831" E
CH. 2000.000	4° 43' 39.505" N	103° 23' 52.896" E
CH. 2200.000 (BRIDGE)	4° 43' 45.927" N	103° 23' 53.960" E
CH. 2400.000	4° 43' 52.408" N	103° 23' 54.266" E
CH. 2600.000	4° 43' 58.587" N	103° 23' 52.269" E
CH. 2635.787	4° 43' 59.663" N	103° 23' 51.823" E

EXECUTIVE SUMMARY

PROJECT DESCRIPTION

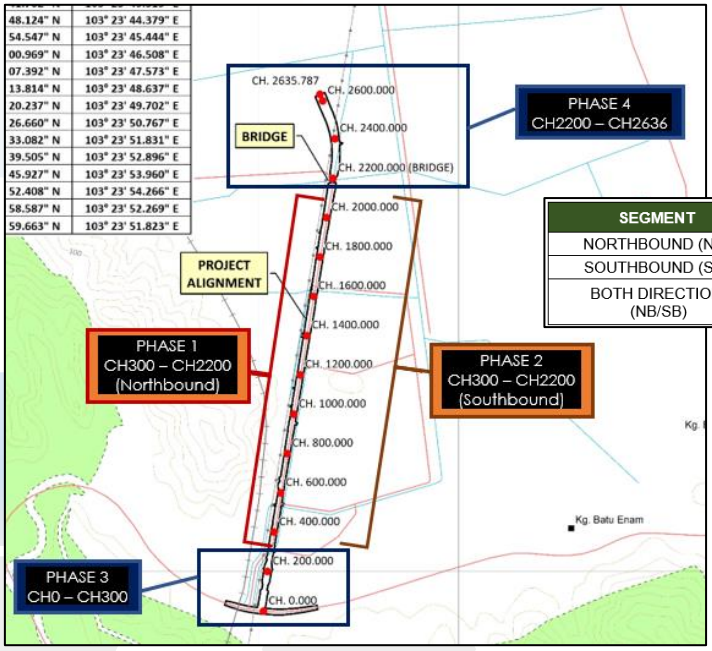
- The alignment traverse on flat terrain within **Batu 7 Industrial Area**.
- The proposed road upgrading will initially **connect Jalan Kemaman – Dungun (FT03) to the ECRL Kuala Dungun Station, which is currently a single-lane dual carriageway**.
- It will be upgraded to a **four (4) lane dual carriageway**, with a total alignment of **2.7 km** (**CH0.000 – CH2635.787**) in compliance with **JKR R3 Standard** as outlined in the Arahan Teknik (Jalan) 8/86 (Amendment 2015).
- Includes the construction of **one (1) bridge structure** at **CH2200.00**.
- The construction of new road will generate a significant amount of traffic especially lorries on the main road. Hence, this main existing road should be used for transportation of construction materials during non-peak hours to avoid traffic congestion.

PROJECT SCOPE

- The road development is according to **JKR R3 Geometric Design Standard**. Generally, the scope of project development consists of:
  - Design and construction of the new road – upgrading existing 2.7 km road to four (4) lane dual carriageway, complying with JKR R3 (ATJ);
  - Design and construct one (1) unit of bridge;
  - Site clearing;
  - Earthwork;
  - Geotechnical Treatment;
  - Drainage system and culverts works;
  - Relocation of utilities – TNB, SATU
  - Upgrade existing junction FT03 and ECRL interchange Kuala Dungun;
  - Pavement works;
  - Road Furniture and Road Marking;
  - Traffic Management Plan;
  - Street Lighting;
  - Environmental Requirement Works;
  - Land Acquisition

PROJECT CONCEPT

- The road upgrading will be segmented into **four (4) phases**, with the Phase 1 traversing Northbound (NB) and the Phase 2 traversing Southbound (SB). Both Northbound and Southbound segments will commence sequentially at CH300 – CH2200, followed by Phase 3 at CH0 – CH300 and Phase 4 at CH2200 – CH2636.



- The development timeframe of the proposed Project is approximately **3 years / 36 months** (14th May 2024 – 14th May 2027).

SEGMENT	PHASING	DEMARCATION (CH)
NORTHBOUND (NB)	**PHASE 1**	CH300 – CH2200
SOUTHBOUND (SB)	**PHASE 2**	CH300 – CH2200
BOTH DIRECTION (NB/SB)	**PHASE 3**	CH0 – CH300
	PHASE 4	CH2200 – CH2636

EXECUTIVE SUMMARY

PROJECT COMPONENT

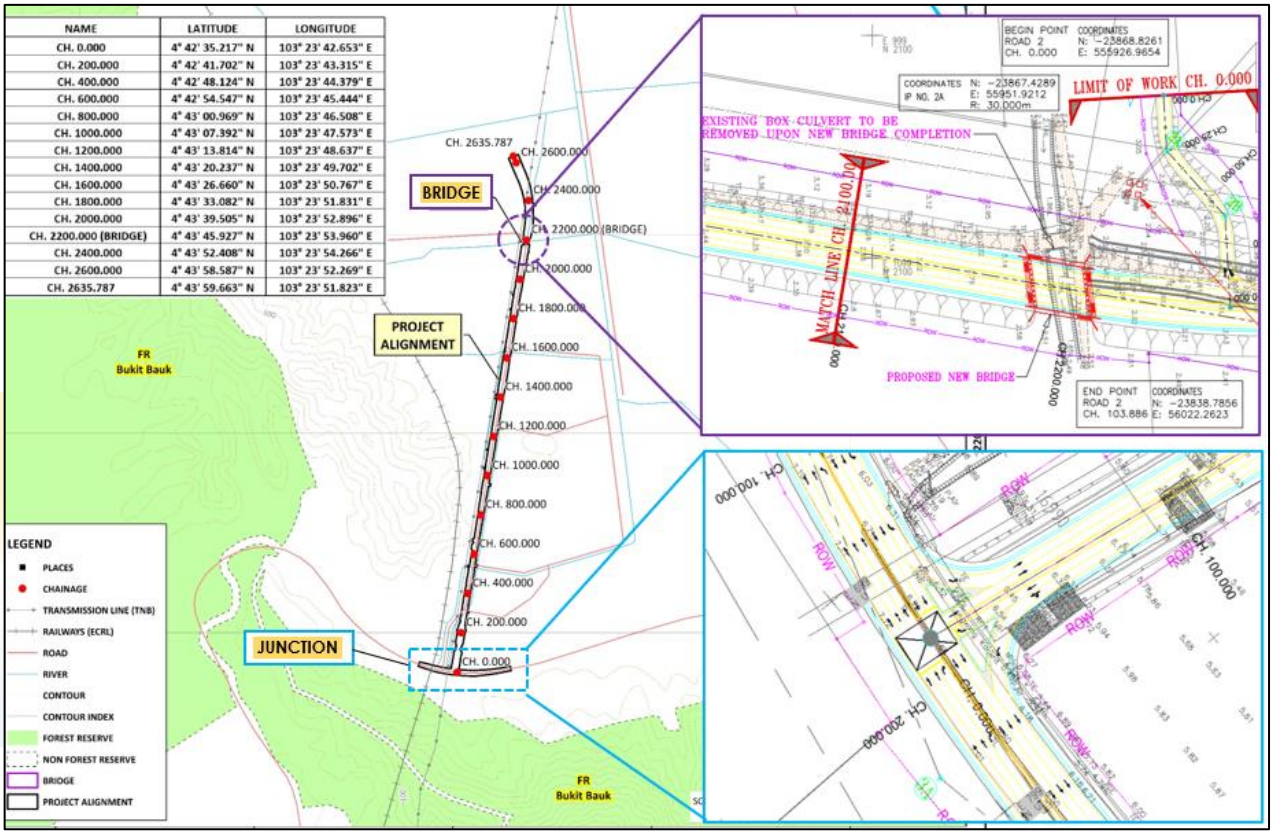
- Generally, the road development consists of:
  - Design and construction of the new road – upgrading existing 2.7 km road to four (4) lane dual carriageway, complying with JKR R3 (ATJ);
  - Design and construct one (1) unit of bridge;
  - Upgrade existing junction FT03 and ECRL interchange Kuala Dungun

BRIDGE CONSTRUCTION

- The expansion of the bridge in this road development involves **one (1) un-named primary rivers** located at **CH2200.00.**
- The bridge construction structure will be done by piling method and other necessary methodologies.

JUNCTION

- The proposed junction is designed to be a **three-arm signalized junction**.
- This is to reduce the traffic conflict on the main road, thus increasing the capacity of the both major and minor road surrounding the proposed road upgrading.



METEOROLOGY

Average Annual Rainfall
Highest : 1435.8 mm/month in November 2023
Highest rain days : 28 days – November 2020

Average Annual Temperature
Maximum : 28.3°C in May 2024
Minimum : 26.3°C in August 2024

Average Relative Humidity
Maximum : 90.6 % in December 2018
Minimum : 79.7 % in February 2018

Wind Direction
Predominant wind is from the north east occurring about 17.8 %
Calm : 2.2 %

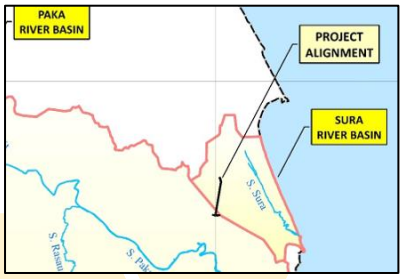
SLOPE ANALYSIS

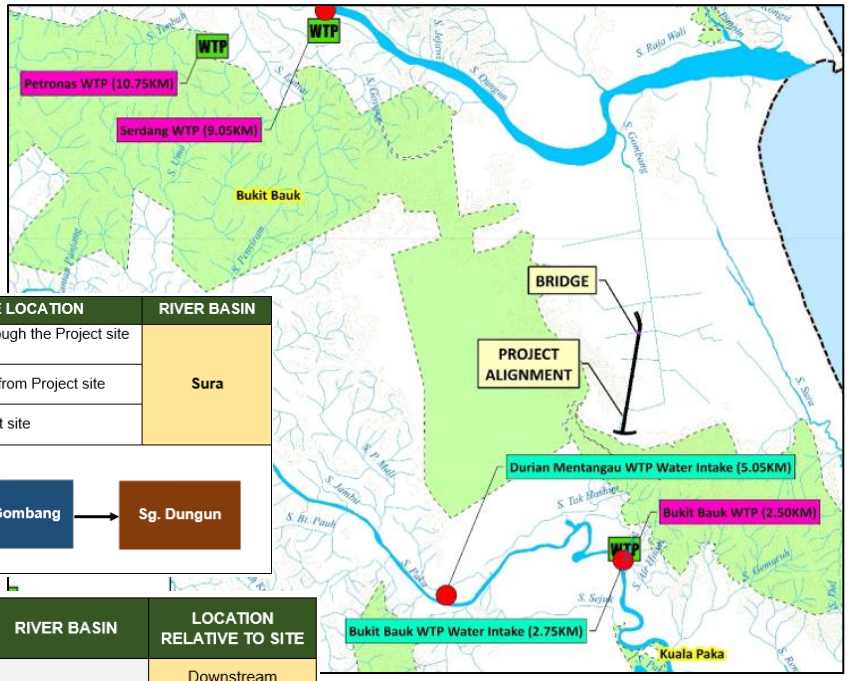
- The proposed alignment is positioned on relatively flat area.
- The majority of the terrain is characterized as gently to moderately sloping, covering 99.80% of the area (with slopes below 15°).
- Only 0.20 % of the total area covered with slope ranging from 15° to 25°.

SLOPE GRADIENT		AREA (HECTARES)	PERCENTAGE (%)
<5°	Gently Sloping	9.34	91.32
5° - 15°	Gently to Moderately Sloping	0.87	8.48
15° - 25°	Moderately Sloping	0.02	0.20
25° - 35°	Steep	0.00	0.00
35° - 60°	Very Steep	0.00	0.00
>60°	Extremely Steep	0.00	0.00
	TOTAL	10.23	100.00

HYDROLOGY

- Located within **Sungai Sura River Basin.**
- There are several tributaries of Sg. Gombang along the Project alignment which then flow into Sg. Gombang before merging with the main river of Sg. Dungun.
- According to the feedback letter from Syarikat Air Terengganu (SATU), the communities of surrounding the Project site received their clean water supply from Bukit Bauk WTP, which is located 2.50 km from the starting chainage of the Project alignment.





RIVERS	LOCATION RELATIVE TO SITE LOCATION	RIVER BASIN
Unnamed River (Upstream)	Tributaries of Sg. Gombang, flowing through the Project site before merges with Sg. Gombang	Sura
Sg. Gombang (Downstream)	Tributaries of Sg. Dungun, downstream from Project site	
Sg. Dungun (Downstream)	The main river, downstream from Project site	

Project Alignment → Tributaries of Sg. Gombang → Sg. Gombang → Sg. Dungun

WTP / WATER INTAKE	DISTANCE FROM SITE BOUNDARY (km)	RIVER BASIN	LOCATION RELATIVE TO SITE
Bukit Bauk WTP	2.50	Paka	Downstream
Bukit Bauk WTP Water Intake	2.75		Downstream
Durian Mentangau Water Intake	5.05		Upstream
Serdang WTP	9.05		Upstream
Serdang WTP Water Intake	9.35		Upstream
Petronas WTP	10.75		Upstream
Petronas WTP Water Intake	12.55		Upstream

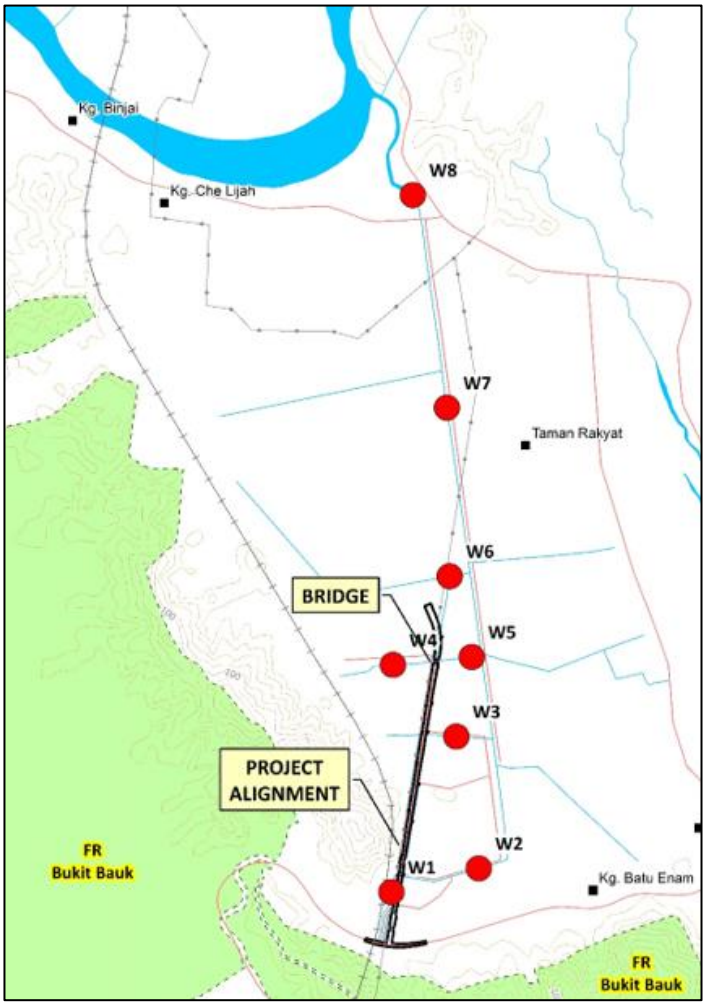
Note:
The WTP is situated within a 5-kilometer radius of the Project Site but lies in a different river basin – River Basin Paka

BASELINE MONITORING (WATER QUALITY)

- Baseline monitoring was carried out at **8 locations**.
- Water sampling date: **23rd August 2024**

ID	COORDINATE	DESCRIPTION	STATUS (WQI)
W1	4° 42' 48.352" N, 103° 23' 42.851" E	Sg. Gombong tributaries – Upstream (CH200.00)	Slightly Polluted
W2	3° 14' 57.476" N; 101° 43' 42.133" E	Tributaries of Sungai Gombong – Middle stream	Polluted
W3	3° 19' 36.79" N, 101° 45' 17.32" E	Tributaries of Sungai Gombong – Middle stream	Slightly Polluted
W4	4° 43' 44.710" N, 103° 23' 43.205" E	Tributaries of Sungai Gombong – Middle stream (CH2200.00)	Polluted
W5	4° 43' 46.703" N, 103° 24' 2.686" E	Tributaries of Sungai Gombong – Middle stream (CH2200.00)	Polluted
W6	4° 44' 6.724" N, 103° 23' 57.213" E	Tributaries of Sungai Gombong (End Chainage)	Polluted
W7	4° 44' 48.507" N, 103° 23' 56.538" E	Tributaries of Sungai Gombong (Upstream)	Polluted
W8	3° 17' 18.544" N; 101° 43' 48.803" E	Confluence point of Sungai Gombong (Upstream)	Slightly Polluted

- Most exceeded parameters:
  - **pH, COD, BOD, TSS, Turbidity and Ammonical Nitrogen**
- The WQI readings **"Polluted"** at **five (5) stations** are significantly influenced by the surrounding ECRL development and other industrial community activities nearby



BASELINE MONITORING (AIR, NOISE AND VIBRATION)

- The sampling ambient air and noise quality were conducted from **9th** to **11th September 2024**

AIR QUALITY

- All ambient air parameter is **within the acceptable level** of the New Malaysia Air Quality Standard (MAAQS) 2020

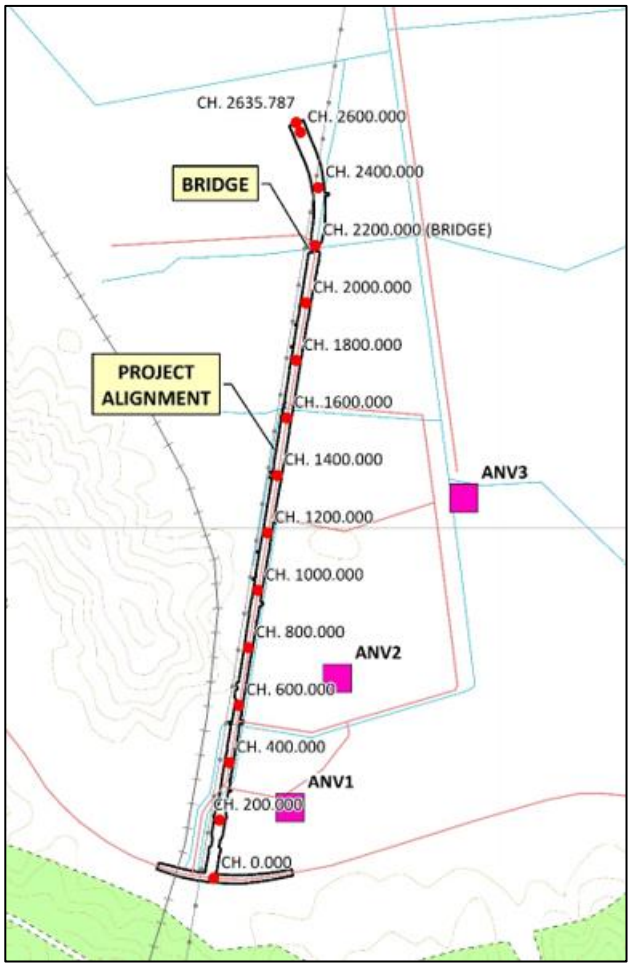
NOISE QUALITY

- LAeq measured for this Project was found **in compliance with recommended limit** during both day time and night time.

VIBRATION

- The vibration level at all stations is lower than the limiting steady-state vibration levels set by the guideline.

ID	COORDINATE	DESCRIPTION
ANV1	4° 42' 43.123" N, 103° 23' 51.136" E	Kawasan Perumahan Batu 7
ANV2	4° 42' 57.551" N, 103° 23' 56.411" E	Batu 7 Industrial Area
ANV3	4° 43' 17.708" N, 103° 24' 10.483" E	Taman Indah Sari Batu 7



ECOLOGY (BIOLOGICAL ENVIRONMENT)

CENTRAL FOREST SPINE (CFS)

- Based **on Pelan Induk Rangkaian Ekologi Central Forest Spine (PIRECFS) 2022 (Negeri Terengganu),** the Project site **located outside** the **Ecological Linkage Network – Secondary Link of - Secondary Linkage 1 (T-SL1) (HS Bukit Bauk – HS Rasau Kertih – HS Besul – HS Jerangau)**
- **111.15 m** away from **Bukit Bauk Forest Reserve** boundaries.

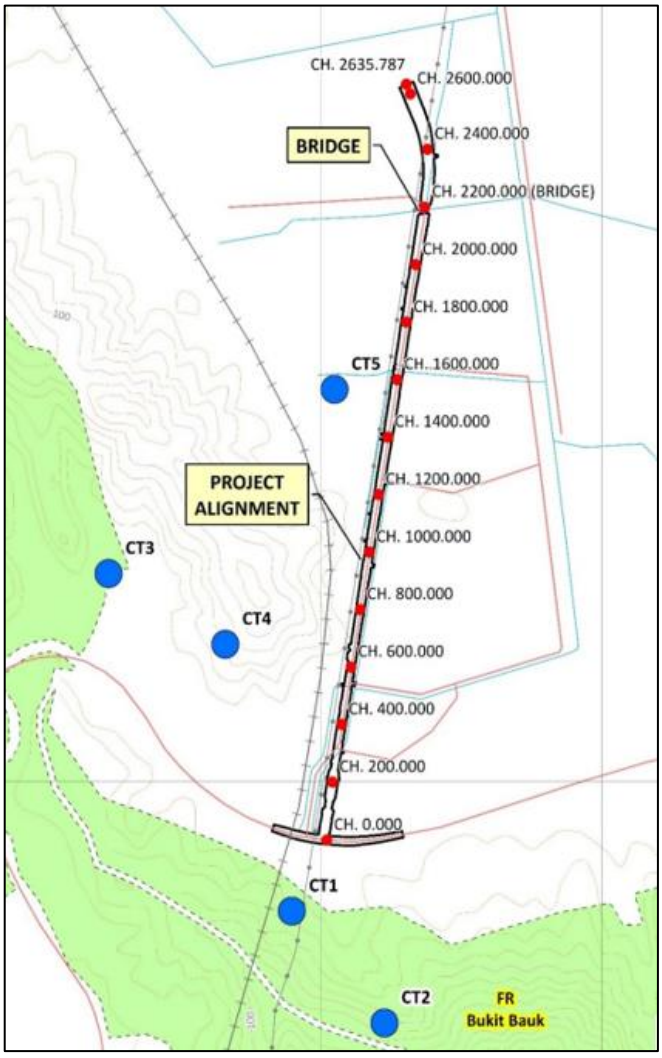
FLORA AND FAUNA

FLORA

- The study of flora survey was conducted from **10th to 13th September 2024** at **five (5) floral survey checkpoint**
- 110 species derived from 43 families. The Dipterocarpaceae family is the largest family, with a total of 10 species recorded.
- **NO ENDEMIC** species recorded.

FAUNA

- A total of **five (5) camera traps (CT 1 - CT 5)** installed on site starting from **10th September to 15th October 2024.**
- The cameras were set up for one **(1) month (30 days)** to cover all habitat types of interest (as determined in the habitat assessment method) and the possible locations to be utilized by animals, especially in concealing habitat.
- **15 species** of mammals from **12 families** was recorded from the Camera Trap.
- In the IUCN Red List, there are two (2) species were categorized as endangered, one (1) species are Vulnerable and the remaining are listed in Least Concern (LC) or Not Evaluated (NE).
- Under the Red list of Mammals for Peninsular Malaysia Ver. 2, there are two (2) Near Threatened species (*Muntiacus muntjac* and *Macaca nemestrina*) were recorded while the rest are listed as Least Concern (LC) or Not Evaluated (NE).



SOCIO-ECONOMIC

- Social survey was conducted **from 2nd to 6th December 2024**.
- The study area, also known as Zone of Influence (ZOI) covers a 5-km concentric zone.
- The impacted areas are divided into **two (2) zones** of influences, which are the **primary** and **secondary impact zones**
- The 372 target respondents are based on ZOI 5km radius, but for these Socio-Economic Study (SES) it **required ZOI 0 - 3km only** which cover **60% of sample size** (372).
- Thus, a total of **217 respondents** are successfully interviewed for the questionnaire survey.
- Based on the social survey result, **majority of the respondents are agreed** toward the Project with **95.5%.**

NO.	SETTLEMENTS	AGREE (%)	DISAGREED (%)	NOT SURE (%)
ZOI (0-3km)				
1.	Kampung Batu 7	26 (11.98)		1 (0.46)
2.	Kampung Paya Balai Besar	14 (6.45)		1 (0.46)
3.	Kampung Gong Pasir	32 (14.74)	1 (0.46)	3 (1.38)
4.	Kampung Balai Besar	9 (4.15)		
5.	Kampung Baru Batu 5	33 (15.21)		2 (0.92)
6.	Kampung Alor Tempoyak	45 (20.74)	1 (0.46)	
7.	Kampung Batu 48	25 (11.52)		
8.	Kampung Pengkalan Jering	3 (1.38)		
9.	Kampung Pak Sabah	8 (3.69)		
10.	Kampung Sura Utara	13 (5.99)		
	TOTAL	**208 (95.5)**	**2 (0.9)**	**7 (3.2)**

Source: Social Survey, December 2024

TRAFFIC

TRAFFIC FORECAST

- Three (3) analysis years will be performed namely **2027, 2037**, and **2047**.
- These years will represent the widening completion year, an interim 10-year, and a 20-year analysis.

YEAR	PERIOD	DEGREE OF SATURATION	DELAYS (s)	LEVEL OF SERVICES (LOS)	QUEUE (veh)
2027	AM Peak	0.533	8.9	A	8
	PM Peak	0.728	12.2	B	13
2037	AM Peak	0.650	9.6	A	11
	PM Peak	0.709	10.7	B	16
2047	AM Peak	0.796	12.0	B	16
	PM Peak	0.760	10.9	B	23

Source: Traffic Impact Assessment, S.Y.A.S Consult, 2024

Note:
Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement

- According to the Traffic Impact Assessment Report by S.Y.A.S Consultant (July 2024), to address the additional traffic generated by the proposed road development, it is recommended that the primary access be designed as a **three-arm signalized intersection**.
- It is recommended that this junction serve as the primary access to the proposed road to ensure **smooth traffic flow.**
- A dedicated lane is proposed to accommodate right-turn traffic approaching from Kuala Dungun to the proposed road development, along with a continuous lane for left-turn traffic traveling from Paka to the Proposed Road.

POTENTIAL IMPACT AND MITIGATION MEASURES

IMPACTS	MITIGATION MEASURES
 • Erosion due to site clearing activities • Deteriorates water quality	• Erosion prone activities should be scheduled in drier period; • All filled areas must be firmly consolidated and compacted; • Install suitable size of silt traps • Construct proper and adequate surface water drains/ channels designed to prevent erosion and slope failure; • Prepare LDP2M2 prior Project commencement; • Maintenance of drainage system and all erosion control tools; • Vegetation along the rivers must be retained as buffers.
 • Water pollution due to site clearing. • Accidental oil / fuel leakage / spillage from storage tank.	• Construct temporary earth drain that connect to silt trap; • The earthworks must be carried out during dry weather; • Install mitigation instruments: ESCP/ LDP2M2; • Regular water quality monitoring should be done by a competent person and full time EO on monthly basis; • Practices a reasonably good level of housekeeping;
 • The use of heavy machineries can increase vibration level. • Transportation of construction materials will cause dust dispersion. • Improper waste management will cause air pollution.	• Exposed soil areas and stockpiles shall be dampened with water using water bowser; • Vehicle wheel-wash facilities shall be provided at the exits to the paved road; • No burning of wastes shall be permitted; • Conduct monitoring and maintenance; • Provide PPE to workers.

POTENTIAL IMPACT AND MITIGATION MEASURES

IMPACTS	MITIGATION MEASURES
 • Impact is significant as the existing environment will be altered. Natural vegetation will be cleared and replaced with new one. • Fauna will lose their natural habitat due to site clearing and site preparation.	• Site clearing shall be conducted in proposed phases; Riparian buffer zone is recommended to be allocated particularly along main river; • BMP's shall be provided during site clearing/ site preparation stage; • Felling and removal of trees, vegetation and natural cover shall be conducted by reputable Sub-contractor; • Felled trees and other biomass can be used as mulch at suitable area; • Collaboration with PERHILITAN is necessary – officially request PERHILITAN to catch, trap and remove the conflicting species
 • Transportation of materials and waste which can disrupt traffic movement. • The movement of vehicles and heavy machineries can cause road damage.	• Prior to entering paved road, lorry shall undergo types of cleaning process; • Maintenance of paved road to be done to repair the damage cause by Project's heavy machineries; • The Project proponent shall install clear speed limit and warning signs beside the road approaching worksite areas; • Material transportation shall be avoided during peak hours (7.00 am – 9.00 am).
 • Generation of waste from site clearing activities, workers rest area, and the use of machineries. • Generation of waste from project activities.	• Open burning shall be prohibited; • General refuse generated shall be stored in enclosed bins separately from hazardous wastes; • General wastes shall be kept segregated and reused or recycled whenever possible; • Adopting proper housekeeping practices and proper maintenance of the drainage system; • Reuse of waste materials, recovery and recycling shall be taken place whenever.

ENVIRONMENTAL MONITORING PROGRAMME

PERFORMANCE MONITORING (PM) PARAMETERS	PARAMETER / PERFORMANCE MONITORING STATUS	RECOMMENDED LIMITS	MONITORING LOCATIONS	FREQUENCIES
Silt Pocket / Silt Trap	Silt Marker	2/3 of the height of silt marker	The locations referred to the LD-P2M2 attachment	After 12.5 mm of heavy rainfall
Check Dam				
Wash Trough	Structure			Weekly
Temporary or Permanent Waterway Crossing (culvert / bridge)	Structure	-		After 12.5 mm of heavy rainfall
Silt Fence	Silt Marker	2/3 of the height of silt marker		Twice per week and every after a major event (Within 24 hours)

COMPLIANCE MONITORING (CM) PARAMETERS	PARAMETER / PERFORMANCE MONITORING STATUS	RECOMMENDED LIMITS	MONITORING LOCATIONS	FREQUENCIES
Air Quality	PM_{10}	100 µg/m^3	Three (3) location adjacent to ROW	Quarterly
Noise	L_{Aeq}	Day: 75 dBA Night: 70 dBA		
Vibration	Vertical Vibration Peak Velocity	Day and Night: 3.2 mm/s (R=32)		
Water Quality (Discharge from Sediment Basin)	Total Susupended Solid (TSS)	50 mg/L	The locations referred to the LD-P2M2 attachment	After 12.5 mm of heavy rainfall

IMPACT MONITORING (IM) PARAMETERS	MONITORING PARAMETERS	MONITORING LOCATIONS	FREQUENCIES
Air Pollution	PM_{10}	Three (3) location at nearest sensitive receptor	Quarterly
Noise Pollution	L_{Aeq}, Lmax, Lmin, L10, L50, L90	Three (3) location at nearest sensitive receptor	Quarterly
Water Pollution	Total Suspended Solids (TSS), Biochemical Oxygen Demand (BOD), pH, Turbidity, Ammoniacal Nitrogen (NH3-N), Dissolved Oxygen (DO), Chemical Oxygen Demand (COD)	Eight (8) locations	Monthly