Projek Rapid Transit System Link (RTS Link) Antara Johor Bahru dan Singapura

Second Schedule Environmental Impact Assessment (EIA)

Executive Summary

PROJECT BRIEF

- Project located in Johor Bahru city connecting Johor Bahru in Johor, Malaysia and Woodlands in Singapore
- Approximately 4 km long and will traverse along 2.7 km in Malaysia (1.9 km on land, 0.8 km in marine environment) and 1.3 km in Singapore
- Station in Malaysia is located at Bukit Chagar
- Elevated maintenance depot (Malaysia) at Wadi Hana, Johor Bahru

STATEMENT OF NEED

- Reducing traffic congestion between Johor Bahru and Singapore

LEGAL REQUIREMENT

SECOND SCHEDULE

16. TRANSPORTATION

a) Construction of new routes or branch line for a mass rapid transport project

PROJECT PROPONENT

MRTS

MALAYSIA RAPID TRANSIT SYSTEM SDN BHD

EIA CONSULTANT

DHI

DHI WATER & ENVIRONMENT (M) SDN BHD

Project Location

PROJECT CONCEPT

- To provide an alternative means of transportation into and out of Malaysia and Singapore
- To alleviate existing traffic and crowd congestions at existing immigration checkpoints at both countries
- A transportation hub dedicated for travelling into and out of Malaysia and Singapore

PROJECT COMPONENT

Maintenance Depot

- At Wadi Hana, JB

Station and Immigration, Custom and Quarantine (ICQ) Building

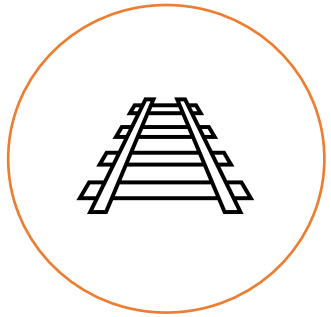
- At Bukit Chagar, JB

Viaduct Piers

- Terrestrial - 67
- Marine - 16

Rolling Stock

- 4-car light rail train (LRT) of 8-train set
- Capacity: 605 passengers



Track Works

- Standard gauge track
- Walkway
- Slab track on bridge

BUFFER ZONE – RIGHT OF WAY (ROW)

- Generally, 6 m from the edge of parapet or foundations

PROJECT ACTIVITIES

PRE-CONSTRUCTION

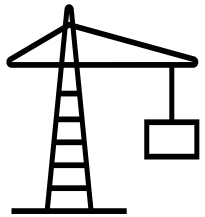
- Land acquisition
- Utilities relocation

CONSTRUCTION

- Management activities
- Construction of depot
- Construction of station and ICQ building
- Construction of terrestrial viaduct
- Construction of marine viaduct
- Track works

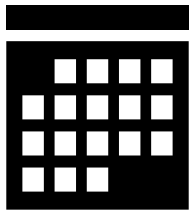
OPERATION

- Capacity
- Operation hours
- Control centre
- Immigration clearance
- Maintenance activities
- Operational emissions and wastes



PROJECT ABANDONMENT

Construction waste materials and machinery will be removed



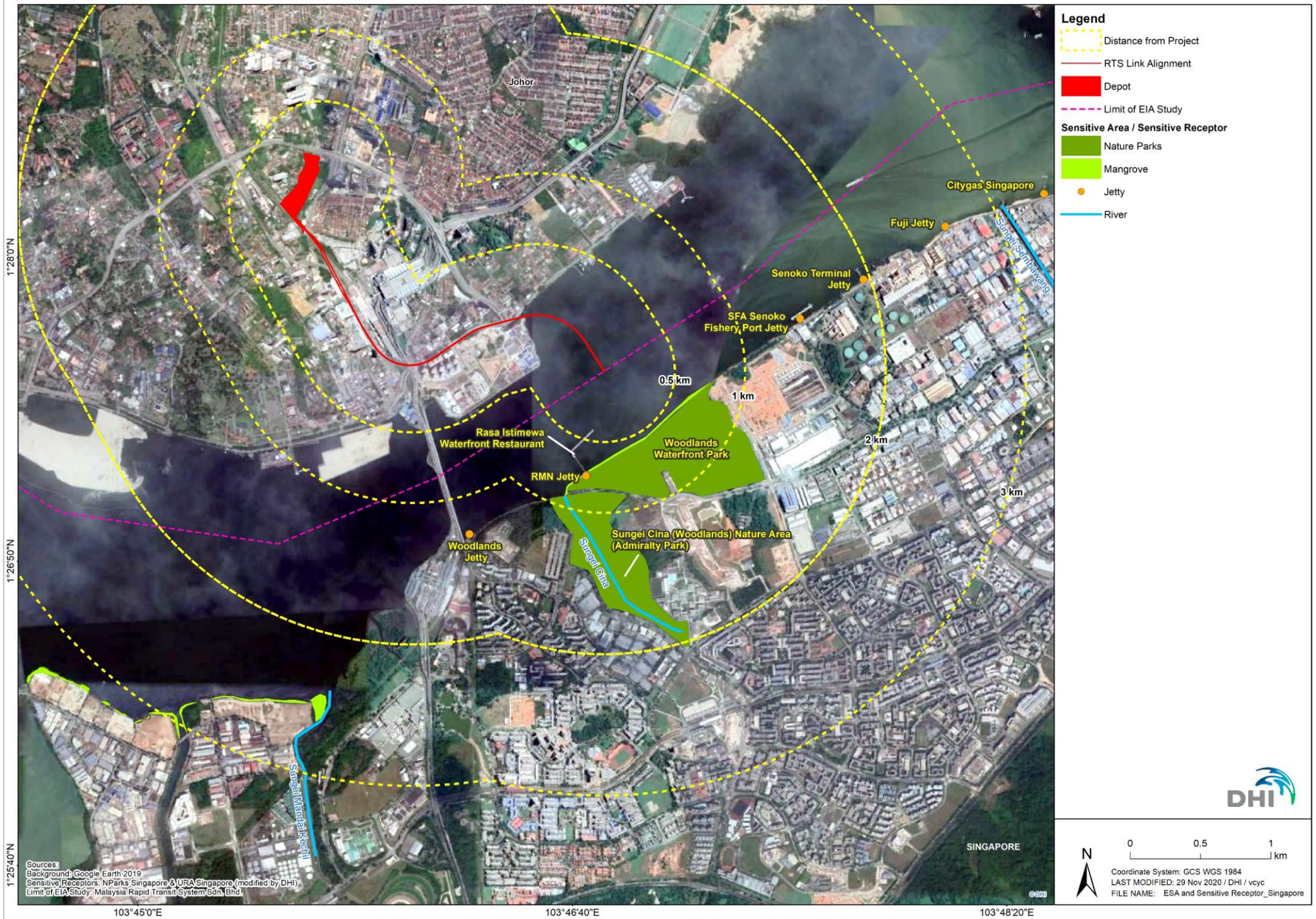
PROJECT IMPLEMENTATION

72 months (48 months civil works; 24 months systems work)

Environmentally Sensitive Areas (ESA) within 500 m from Overall Project Alignment

Sensitive Receptors within 500 m from the Overall Project Alignment

Sensitive Receptors in Singapore



Existing Terrestrial Environment

Topography: Generally flat with very low gradient slope at certain areas.

Geology: Three main formations, namely the man-made fill, older alluvium formation and granite formation.

Air quality: Air quality parameters are well below their respective limits compared to the Malaysia Ambient Air Quality Standards, 2015 (Standard 2020).

River water quality: Water quality classified as Class III (slightly polluted).

Existing land use: Land use comprised of housing, commercial areas, institutions and public facilities, transportation, vacant land, and open space and recreation areas.

Future land use: Future land use designation in Majlis Bandaraya Johor Bahru (MBJB) district will increase by 6,320.95 ha. The most significant land use is housing development, which will comprise a total of 27.83% of the MBJB district land area followed by transportation and communication uses (17.61%)

Existing Terrestrial Environment (cont'd)

Terrestrial vegetation: Vegetation composition within the surrounding depot area mainly consist of sparse woodland, followed by herbaceous (i.e. grassland) and shrubland within unused land and cleared land. There was no significant plant species or wildlife sighted during site observation.

Heritage assets: One listed built heritage, three inventory-built heritage by Jabatan Warisan Negara (JWN) and one built heritage by MBJB within the 200 m radius from RTS Link alignment.

Hydrology and drainage: Project located within Sg. Segget catchment, but no piers will be crossing the river. Based on modelling, the proposed depot and Bukit Chagar Station are flood prone areas for 100-year ARI at 30 minutes storm duration.

Vibration: Vibration measurement within the stipulated limit for Human Response and Annoyance from Short Term Vibration and Damage Risk in Buildings from Short Term Vibration except for station at the Arulmigu Sri Rajakaliamman Glass Temple, which slightly exceeded the limit due to ground borne vibration generated by the train movement along the KTM railway track nearby the vicinity of the sampling point.

Noise: Noise level within stipulated guidelines but certain areas had levels beyond the guidelines; possible noise sources were community activities, traffic and vehicle movement, train movement, and animal sounds.

Existing Terrestrial Environment (cont'd)

Population profile: The study area had a population of 15,625 persons (2010); Malaysian citizens took a share of 92.3% of total population while the rest are non-Malaysians; 34.6% of the population in 2010 was ethnic Malays and other Bumiputras, and the ethnic Chinese formed the larger majority of 48.2%.

Perception (level of support): The extent of support appears highest in the commercial group (92.8%), only to be followed by 'others' group (81.2%) and residential (74.0%) group.

Perception (awareness): Strong level of awareness is only evident among the residents (51.9%) while the proportions for the commercial, 'others' and the commuters' groups are 28.9%, 37.1% and 37.9%, respectively.

Public engagement: Qualitative feedback obtained from the stakeholders through the engagements such as focus group discussions (FGDs), public forums (when there is large number of participants) and case of interviews (Cis). In general, the stakeholders expressed their support for the RTS Link project. Throughout the engagement, the stakeholders have also highlighted the various benefits and issues of concerns (like potential increase of tourism activities, growth in business sector especially tourism, job opportunities, shorter commuting period to Singapore, better for environment, etc.)

Existing Marine Environment

Coastal hydraulics

Bathymetric condition: Bathymetric contours show gradual changes in the depth with contours ranging from +2 m CD in the nearshore areas to -12 mCD along the central of the water body.

Current: Very weak current and restricted by the causeway with speed below 0.05 m/s and 0.10 m/s during flood and ebb tides.

Waves: Area is well protected from swell wave actions, this is mainly due to the sheltering effect from Peninsular Malaysia and Singapore. Significant wave heights in the area are in the order of 0.2 m.

Water level: Maximum tidal range at the project area is in the order of 4.00 m. The mean sea level (MSL) is 2.20 m above the lowest astronomical tide (LAT).

Marine water quality: Most mid and bottom waters are either hypoxic or anoxic; ammoniacal-nitrogen levels are high and over the MSJCE limit; waters were contaminated with bacteria; water quality classified as ‘moderate’ based on MSJCE water quality index.

Marine sediment: Sediments within the project area are contaminated with high concentrations of cadmium and nickel. Compared to other areas in Peninsular Malaysia, the project area had the highest level of cadmium concentration in sediments.

Marine traffic and navigation: Project area is located within the Pasir Gudang Port Limit; the traffic density was low within project area with vessel trip density on average below 6 vessels per 24-hour period (0.25 vessels/hr); a total of 24,666 trip counts or vessel moves based on AIS logs.

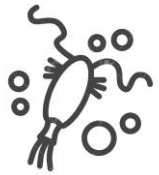
Existing Marine Environment (cont'd)

Macrobenthos: The density and diversity at the study sites are generally low particularly along the project alignment and at stations that coincide with water quality stations. Hypoxia or low oxygen concentrations in bottom waters may be one of the major factors contributing to the low macrobenthos density and diversity.

Marine megafauna: Based on available literature, three species of marine mammals and one species of reptile have been reported to habituate the waters of the southern coast of Johor.

Mangrove: Mangrove can be found fringing the shoreline 1.4 km from the project area along the shoreline from Sg. Stulang estuary to Sg. Tebrau estuary; 7 true mangrove genus/species, found to be healthy with young/propagules present; at risk of disappearing due to land development and erosion.

Fish fauna: Seven fish fauna species recorded; low fish density (i.e. 24 individuals) with several sampling stations with no samples.



Plankton

Phytoplankton: Community was dominated by Ochrophyta, which is common in Malaysia; bloom forming genus (*Skeletonema* sp.) found; two potentially toxic genus (*Alexandrium* and *Noctiluca*) were also found, but below bloom level densities

Zooplankton: Community dominated by calanoid, *Bestiolina similis* and cyclopoid, *Oithona* sp.

Proposed Pollution Prevention and Mitigation Measures

Schedule Site Meeting

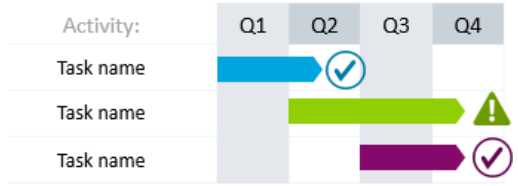
- Prior to start of any construction activity.
- Discuss in detail all relevant scope of work that have relevance to P2M2s, etc.

Construction Markers

- Fences, signs, tapes or other similar marking device shall be constructed on site.
- Most notable – hoarding around the project site.

Stabilised Construction Entrance

- Construct a wash trough at access point.
- Channel dirt water to silt trap.
- Proper disposal of removed materials and collected sediment.
- Stabilise site entrance with paver blocks.
- Repair pothole and road crack.



Minimize Soil Erosion

- Limit disturbed area.
- Prepare a LD-P2M2.
- Regulate the phase of earthwork and construction through proper development scheduling.

Proposed Pollution Prevention and Mitigation Measures (Cont'd)

Preserving Topsoil and Other Assets

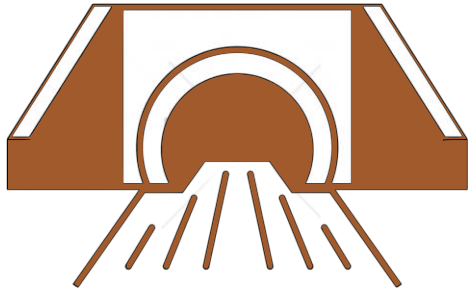
- Site clearing after stabilising the entrance.
- Protect natural vegetation.
- Cover excavated topsoil.
- Location of temporary stockpile topsoil and spoil material should be 30 m out of drainageways.

Site Management

- Spray unpaved road.

Stream/ Drainage/ Waterway Buffer

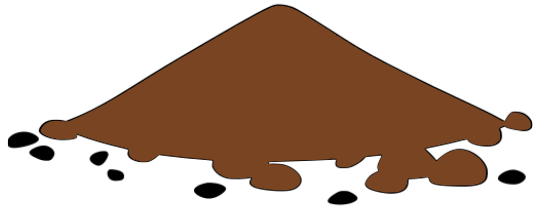
- Establish riparian buffer zone/ strip.



Runoff Management & Perimeter Control

Construct/ Establish/ Use:

- Temporary earth drain
- Site detention pond
- Silt trap
- Geotextile
- Retaining wall
- Sediment fence
- Close turfing



Stockpile Management

- Stockpile area at a minimum of 30 m away from any nearby waterways.
- Drainage network channel to silt trap.
- Construct low bunds to protect stockpile from runoff.

Proposed Pollution Prevention and Mitigation Measures (Cont'd)

Spoil Management

- Proper planning that involve private/ government agencies in charge of waste collection.
- Utilise excavated soil to construct bunds.
- Use the most suitable method of waste management.

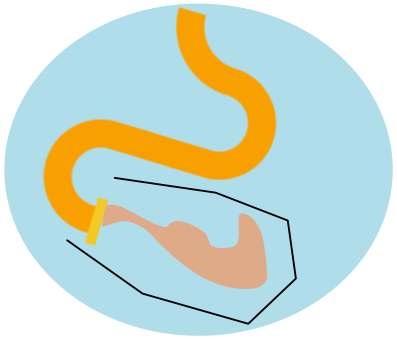
Site Inspection

- Check that all P2M2s have been properly installed and maintained.
- Conduct performance monitoring.
- Record inspection activities in logbook.
- Inspect areas before commencement of land clearing activities.
- Maintain a rain gauge.
- Record major observation and incidents of non-compliance.

Maintenance

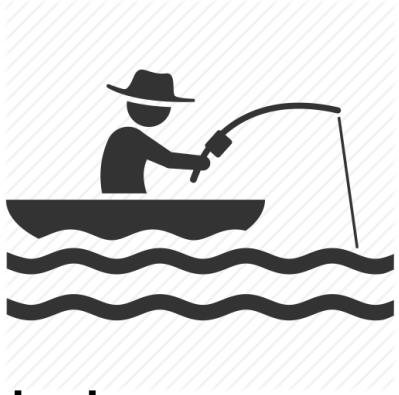
- Maintenance begin as soon as the first P2M2 is installed/ applied.
- Maintenance occur within seven calendar days.
- Ensure silt trap in effective operation condition.
- Maintain stabilised construction entrance.

Proposed Pollution Prevention and Mitigation Measures (Cont'd)



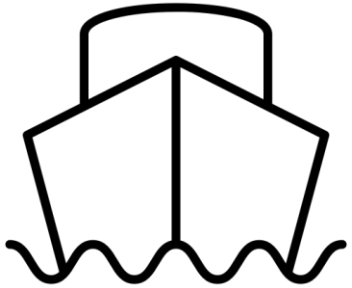
Marine Water Quality

- Use of silt curtain to prevent impact in case of accidental rupture during excavation.
- Prepare Emergency Response Plan (ERP) in case of accidental spill.
- Adhere to IMO and MARPOL requirements and other measures for wastewater handling and disposal.



Fisheries

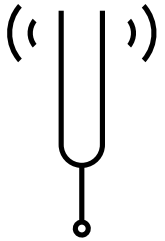
- Engagement with fishermen – includes informing and educating the public on work schedule.
- Compensation payments to fishermen.
- Give priority for employment to local fishermen or their family members.
- Mitigation measures in place to prevent accidents at sea.



Marine Traffic & Navigation

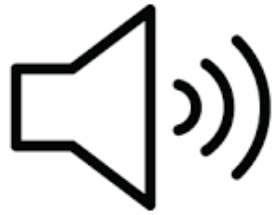
- Prepare marine navigation plan detailing measures to prevent or minimise risks at sea.

Proposed Pollution Prevention and Mitigation Measures (Cont'd)



Vibration management (during construction)

- Route heavily loaded trucks away from residential streets.
- Operate earth-moving equipment on the construction lot as far away from vibration-sensitive sites as possible.
- Phase demolition, earth-moving, and ground-impacting operations so as not to occur in the same time period.
- Avoid night-time activities.
- Carefully consider the use of impact pile-driving versus drilled piles or the use of a sonic/ vibratory pile driver or push pile driver.



Noise management (during construction)

- Construction activities involving heavy machineries with high noise shall be carried out during daytime only (between 7 am to 7 pm).
- Regular maintenance of equipment and machineries.
- Compliance to existing legislations at all times.
- Impose speed limits for construction vehicles at depot and Bukit Chagar Station/ICQ areas.
- Erection of temporary metal hoarding around the project site and/or active work areas and use of acoustic cover or screen for noisy machinery.

Proposed Pollution Prevention and Mitigation Measures (Cont'd)

Vibration management (during operation)

- Use of continuous welded tracks is proposed.

Noise management (during operation)

- Preliminary assessment shows 1.6 m parapet was observed to act as a noise barrier for the track.

Proposed Environmental Monitoring Programme

Impact Monitoring
During Construction

Marine water quality:

- 7 stations (MWQ1 – MWQ7)
- Once prior to the start of construction
- Bi-weekly during piling
- Quarterly during pile cap construction
- Once, two months after the completion of marine construction

River water quality:

- 5 stations (RWQ1 – RWQ5)
- Monthly basis (especially during depot construction)

Plankton:

- 3 stations (P1- P3)
- Once prior to the start of construction
- Monthly during piling
- Quarterly during pile cap construction
- Once, two months after the completion of marine construction

Impact Monitoring
During Construction

Air quality:

- 6 stations (A1 – A6)
- Quarterly monitoring

Noise and vibration:

- 16 stations (N1/V1 – N16/V16)
- Quarterly monitoring

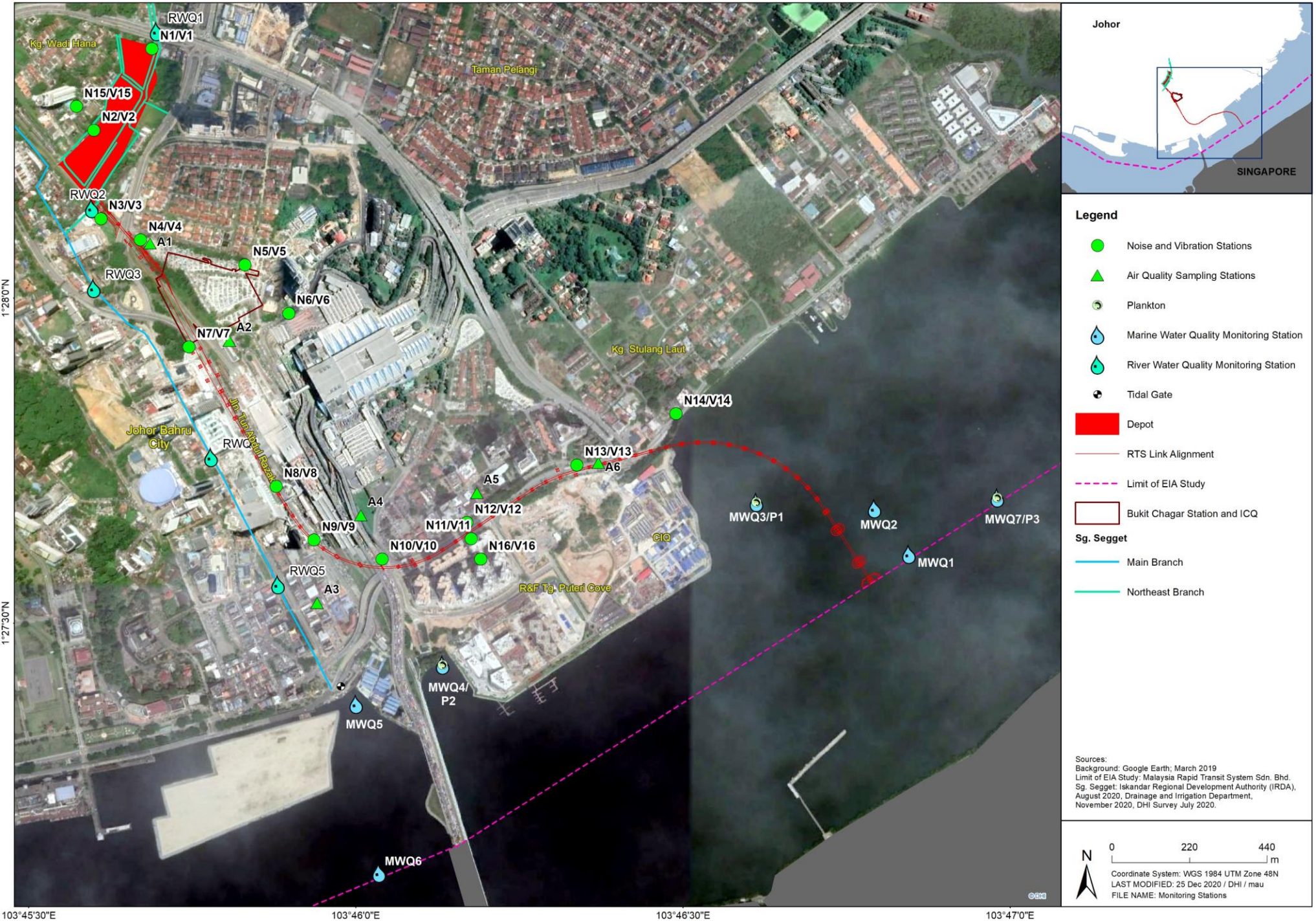
Heritage asset:

- Regular maintenance and repairs during construction near the assets

Impact Monitoring
During Operation

Noise and vibration:

- 16 stations (N1/V1 – N16/V16)
- Bi annually for two years



Legend

- Noise and Vibration Stations
- Air Quality Sampling Stations
- Plankton
- Marine Water Quality Monitoring Station
- River Water Quality Monitoring Station
- Tidal Gate
- Depot
- RTS Link Alignment
- Limit of EIA Study
- Bukit Chagar Station and ICQ

Sg. Segget

- Main Branch
- Northeast Branch

Sources:
Background: Google Earth; March 2019
Limit of EIA Study: Malaysia Rapid Transit System Sdn. Bhd.
Sg. Segget: Iskandar Regional Development Authority (IRDA), August 2020, Drainage and Irrigation Department, November 2020, DHI Survey July 2020.

N

0 220 440 m

Coordinate System: WGS 1984 UTM Zone 48N
LAST MODIFIED: 25 Dec 2020 / DHI / mau
FILE NAME: Monitoring Stations

Location of Monitoring Sites during Construction

Proposed Environmental Monitoring Programme

Compliance Monitoring
During Construction

Compliance with environmental regulations/legislations

Air quality:

- Equipment/vehicle maintenance log to be kept by contractors.
- Layout plan and photographs of wet dust suppression system.
- Regular site inspection.

Noise:

- Set up and create public awareness of noise complaint register (local telephone number).
- Noise complaints to be recorded in log book.
- Layout plan and photographs of physical noise barriers and equipment enclosures.

River water quality:

- Water discharging out of the silt trap or sediment basin shall not be more than 50 mg/L for total suspended sediment and 50 NTU for turbidity.

Marine water quality:

- Layout plan and photographs of the oily waste temporary storage area(s).
- Site inspection by contractor.
- Log of scheduled waste disposal.