



Northern Link

– Project Profile

June 2021

This Project Profile has been translated into Chinese. If there is any inconsistency or ambiguity between the English version and the Chinese version, the English version shall prevail.

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Figure 1 Location of the Project

1 BASIC INFORMATION

1.1 Project Title

1.1.1 Northern Link (NOL) Project (hereinafter known as “the Project”).

1.2 Purpose and Nature of the Project

1.2.1 The NOL is one of the seven recommended railway schemes in the Railway Development Strategy 2014. NOL will be a heavy railway line with a route length of about 10.7km between Kam Sheung Road (KSR) Station of the Tuen Ma Line (TML) and Kwu Tung (KTU) Station on the Lok Ma Chau Spur Line (LMCSL) of East Rail Line (EAL). The Project connects the EAL and the TML, forming a loop in the northern New Territories. Passengers will be able to interchange at KSR Station with TML and KTU Station with EAL. It could also serve potential New Development Areas (NDAs) in the northern New Territories and enhance cross-boundary movement.

1.2.2 The NOL runs between KSR and KTU with three intermediate stations at Au Tau (AUT), Ngau Tam Mei (NTM) and San Tin (SAT) to unleash development potentials along the NOL route.

1.3 Name of the Project Proponent

1.3.1 The project proponent is the MTR Corporation Limited.

1.4 Location and Scale of Project and History of Site

1.4.1 The Project is located in the northern part of the New Territories. NOL starts at KSR Station and ends at KTU Station with a route length of about 10.7km including three intermediate stations at AUT, NTM and SAT. The indicative locations of the proposed alignment and stations are shown in **Figure 1**.

1.4.2 The KSR Station is proposed to be located next to the existing TML KSR Station. The proposed location of AUT Station is near the Sha Po Development, the NTM Station is near Wang Ping Shan South Road, and the SAT Station is in the vicinity of the proposed town center of “San Tin / Lok Ma Chau Development Node” (by others). The KTU Station will be located in the future town centre of KTN NDA. The Emergency Access Points (EAPs) / Emergency Egress Points (EEPs) will be located at the ends of the stations and along the alignment to fulfil fire services and evacuation requirements. KSR, AUT, NTM and SAT Stations would be aboveground or underground, subject to further study in the detailed planning and design stage, and KTU Station is proposed to be underground.

1.4.3 From the KSR Station, the alignment runs north and crosses above Kam Tin Road roundabout and Kam Tin Low Flow Pumping Station. The alignment then diverges away from the TML and continues running through Sha Po Development, crossing Sha Po Tsuen Road and then curves north passing Sha Po Marsh under the CLP overhead power lines near San Tam Road. North of Mo Fan Heung, the alignment curves away from San Tam Road towards Ngau Tam Mei passing under the CLP power lines near Long Ha. After the NTM Station, the alignment passes over Ngau Tam Mei Road and curves north-east towards Tam Mei Shan and then reaches the SAT station. The alignment then continues northwards to connect to the underground KTU station at the future town centre of KTN NDA. The Project would pass through private lots, residential and commercial development, wetlands and agricultural land along its alignment. The alignment will be subject to further studies during the detailed planning and design stage to establish the locations of the aboveground and underground sections. All proposed stations, alignments, facilities and boundaries

are subject to further studies.

1.4.4 The Project will involve the following key construction elements:

- Railway corridor from KSR to KTU;
- Five stations KSR, AUT, NTM, SAT, KTU;
- San Tin Pocket Track and NTM Pocket Track;
- NTM Pocket Track North Ventilation Building and Feeder Station;
- Tam Mei Shan South Ventilation Building;
- Tam Mei Shan North Ventilation Building;
- San Tin Feeder Station;
- San Tin Ventilation Building;
- Expansion of existing Pat Heung Depot (PHD) and/or provision of stabling sidings at other location in vicinity of NOL and its Ancillary Building(s);
- Ancillary building facilities such as ventilation shafts, EAPs/EEPs and other station associated facilities;
- Enabling works for potential southern extension to the south of KSR Station and potential bifurcation to LMC Loop and Huanggang Port to the north of SAT Station; and
- Enabling works for potential extension to Ping Che Areas.

1.5 Number and Types of Designated Projects

1.5.1 The Project is a designated project by virtue of Item A.2 “A railway and its associated stations”, Item A.7 “A road or railway tunnel more than 800 m in length between portals”, and Item A.4 “A railway siding, depot, maintenance workshop, marshalling yard or goods yard”, Part I, Schedule 2 to the Environmental Impact Assessment Ordinance (EIAO) (Cap. 499). An environmental permit is required under the EIAO for the construction and operation of the Project.

1.6 Name and Telephone Number of Contact Persons

1.6.1 All queries regarding the Project can be addressed to:

Ms. Lisa Poon

MTR Corporation Limited

Tel.: 2688 1283

2 OUTLINE OF PLANNING AND IMPLEMENTATION PROGRAMME

2.1 Project Planning and Implementation

2.1.1 The Project will be implemented by engaging relevant professionals throughout the detailed planning, design, construction and implementation stages.

2.1.2 The construction works will be carried out by qualified contractors to be appointed under various works contracts.

2.2 Project Programme

2.2.1 The construction of the Project will be implemented tentatively from 2025 to 2034. This tentative project implementation programme is subject to review.

2.3 Project Interface

2.3.1 Major committed projects in the vicinity which may have potential interface with this Project have been identified and listed below. Any cumulative impacts from these concurrent projects, including but not limited to the following during both construction and operational phases of the Project, will be addressed in the EIA as appropriate:

- Development of Lok Ma Chau Loop;
- San Tin / Lok Ma Chau Development Node;
- Site formation and infrastructure works for public housing developments at Kam Tin South, Yuen Long;
- Site Formation and Infrastructure Works for Development at Kam Tin South, Yuen Long – Advance Works;
- Advance Site Formation and Engineering Infrastructure Works at Kwu Tung North and Fanling North New Development Area;
- First Stage of Site Formation and Engineering Infrastructure at Kwu Tung North and Fanling North New Development Area;
- Remaining Phase of Site Formation and Engineering Infrastructure Works at Kwu Tung North and Fanling North New Development Area; and
- Proposed development to be studied under the land Use Review for Ngau Tam Mei Area
- Other housing projects and major development along NOL.

3 POSSIBLE IMPACT ON THE ENVIRONMENT

3.1 Environmental Impacts from the Project

- 3.1.1 The NOL alignment from KSR to KTU comprises tunnel section and viaduct section, with a short at-grade section for connection to PHD, five stations and the expansion of existing PHD and/or provision of stabling sidings at other location in vicinity of NOL. The works for the Project will include site formation, foundation and piers works, building works, mining works, cut and cover construction at stations and special track areas, tunneling works mainly using Tunnel Boring Machines (TBM) and construction of EAP/EEP/ventilation buildings potentially with drill and blast method. It is anticipated that the surrounding sensitive receivers may be affected during the construction and operational stages of the Project.
- 3.1.2 Temporary/offsite works areas and works sites may be required for the provision of site office, workshops, temporary storage of construction materials, utility or temporary access to support the construction of the Project.
- 3.1.3 The potential impacts arising from the construction and the operation of the Project are discussed in **Sections 3.2 to 3.11**. All the prevailing statutory requirements will be considered in the EIA to assess the possible environmental impacts.

3.2 Air Quality

Construction Phase

- 3.2.1 The construction of the Project, in particular earthworks, handling of materials at temporary stockpile areas, demolition and building works would be potential sources of dust impacts. Major sources of construction dust impact include activities such as demolition, excavation, tunneling works (e.g. TBM, drill and blast method), filling, material handling, vehicle movement and wind erosion of unpaved areas and stockpiles, etc. The use of diesel-powered construction plant and equipment may also result in gaseous emissions.

Operational Phase

- 3.2.2 As electrically powered trains will be operated for the Project, no direct atmospheric emissions will arise from the train operations and no air quality issue is envisaged.

3.3 Noise

Construction Phase

- 3.3.1 Source of construction noise would mainly be the use of powered mechanical equipment (PME) for various construction activities. Major construction works that would contribute to airborne construction noise impacts would include site clearance and formation activities, structure construction, tunnel construction, portal construction, station/ train stabling sidings construction, structure dismantling if required, spoils removal from underground works & stockpiling, backfilling and reinstatement works. It is anticipated that large diameter bored piling will be used for foundation works, TBM method will be adopted for the tunnel section, and open-cut method will be used for the underground stations. The Noise Sensitive Receivers (NSRs) located in the vicinity of the works area would be affected by the construction activities. Insurmountable construction ground-borne noise impact from the use of TBM is unlikely and construction ground-borne noise study would be conducted in the EIA.

Operational Phase

- 3.3.2 Potential airborne rail noise impact is anticipated during the operation phase, particularly for areas near the above ground sections of the alignment. For the tunnel sections, airborne noise would be constrained within the tunnel and thus adverse impacts are not envisaged. The at-grade section approaching PHD, and the expansion of existing PHD and/or provision of stabling sidings at vicinity of NOL would pose potential airborne rail noise impact to nearby NSRs.
- 3.3.3 Potential ground-borne noise from the tunnel section of the project is envisaged for tunnel sections of the alignment.
- 3.3.4 In addition, considerations would need to be given to fixed plant noise generated by the electrical and mechanical (E&M) equipment of the stations and ventilation/auxiliary buildings.

3.4 Water Quality

Construction Phase

- 3.4.1 The potential sources of water quality impact would be related to construction activities near and across Water Sensitive Receivers (WSRs). Construction site runoff and drainage; construction wastewater, debris, refuse and liquid spillages; and sewage from the on-site construction workforce would be potential sources of water quality impacts.

Operational Phase

- 3.4.2 Potential water quality impacts during the operational phase would mainly be related to sewage effluents from the staff and passengers and trade effluents from shops at the stations and surface run-off from tracks and station areas.

3.5 Waste Management

Construction Phase

- 3.5.1 Waste generated from the construction of the Project would include construction and demolition (C&D) materials, general refuse from the onsite workforce, potential contaminated soil and some chemical wastes from the maintenance of construction plant and equipment. C&D materials will be generated from the construction of structures, tunnels, stations, stabling sidings, ventilation buildings and EAPs/EEPs. Soft spoil may be excavated where site formation works encroach upon rivers and fishponds, e.g. Kam Tin River, ponds at San Tin. Good site practices would be implemented to avoid or minimise potential environmental impacts associated with the handling, collection and disposal of waste.

Operational Phase

- 3.5.2 The key issues with respect to waste are anticipated to be mainly related to the management of general refuse and a small amount of chemical waste generated from the operation of the stations.

3.6 Land Contamination

Construction Phase

- 3.6.1 There would be several potential contaminated sites within/in the vicinity of the Project. The initially identified sites with land contamination concern in the vicinity of

the Project include storage areas, industrial factories, petrol filling stations and vehicle parking/maintenance areas.

- 3.6.2 Site appraisal should be carried out during the EIA stage to identify areas with potential soil or groundwater contamination. Based on the findings of site investigations and assessment to be undertaken during the EIA stage, appropriate remediation actions would be formulated, and endorsed by EPD for implementation if contamination is identified.

Operational Phase

- 3.6.3 The operation of the railway extension and stations would unlikely cause any land contamination, and therefore no environmental concern in this respect is envisaged.

3.7 Ecology

Construction Phase

- 3.7.1 Potential permanent and temporary wetland habitat loss would be the main ecological impacts associated with the Project. Direct and indirect habitat loss would be anticipated.
- 3.7.2 The following key potential ecological areas and impacts along the alignment based on current design information has been identified. The construction phase ecological impact will be assessed in detail during the EIA process when more design information becomes available.

West Rail Mitigation Wetland

- 3.7.3 The Project would result in both direct and indirect impacts to the WRL mitigation areas which are mitigation for historical wetland loss. The NOL alignment would be very close to the WRL viaduct north of KSR Station and as such would be within the area already disturbed by the WRL. It is likely that there would be construction activities within some of the land parcels of WRL mitigation wetland or that they may be used as works areas etc. and would cause disturbance to these mitigation wetlands. The area supported species including wetland dependent birds, herpetofauna and dragonflies.

Sha Po Marsh

- 3.7.4 The Sha Po Marsh is currently managed by the estate developer as an Ecological Enhancement Area. The marsh supports a Near Threatened damselfly species Four-spot Midget. The Sha Po Marsh lie within the corridor of the proposed NOL and will be directly or indirectly disturbed during the construction and operation of NOL.

Shek Wu Wai Wet Agricultural Lands

- 3.7.5 The proposed construction of the pocket track section and San Tin ventilation building by cut-and-cover method to the northeast of the SAT Station will result in the temporary loss of wetland habitats which support common wetland dependent birds including kingfishers, small ardeids and common shorebirds. This area of dry, wet agricultural lands, watercourses and ponds may potentially be utilized by Greater Painted-snipe.

Tung Shing Lei Egretty

- 3.7.6 Tung Shing Lei Egretty is a major egretty located about 680m to the west of AUT Station. It is mainly utilized by Chinese Pond Heron and Little Egret. It is expected that there would be no disturbance to the flight lines from the Project and thus no impact is anticipated.

Egret Night Roosting Site near Kam Tin River

- 3.7.7 A few egretties were observed near Kam Tin River. The egret night roosting site is close to the proposed NOL and would be potentially impacted during the construction of NOL.

Kam Tin River Main Drainage Channel (MDC)

- 3.7.8 Much of the Kam Tin River MDC is tidal and provides foraging opportunities for waterbirds, the construction of the NOL alignment would potentially cause indirect impact to the Kam Tin River MDC. The Kam Tin River MDC is utilized by a number of wetlands associated bird species including egrets, Grey Heron, sandpipers, kingfishers, plovers and Great Cormorant.

Operational Phase

- 3.7.9 It is anticipated that the potential impacts to habitat types will be less severe than those identified for the construction phase and will be assessed in detail during the EIA process.

3.8 Agriculture and Fisheries

Construction Phase

- 3.8.1 Construction phase impacts that may arise due to the potential encroachment of agriculture land/ fishponds include impacts on farming/ fisheries resources/ production. In-direct agriculture/ fisheries impact may arise if construction activities result in pollution of watercourses. Such impacts can be avoided by appropriate construction site management protocols.

Operational Phase

- 3.8.2 Impact on agriculture/ fisheries is not anticipated during the operation of the Project.

3.9 Cultural Heritage

Construction Phase

- 3.9.1 Ten Sites of Archaeological Interest (SoAIs) and a medium potential archaeological area are located in the vicinity of the Project.
- 3.9.2 Six declared monuments and 49 graded historic buildings are located in the areas near the alignment and works areas.
- 3.9.3 The Project would potentially affect a few burial grounds near Pok Wai, Wai Tsai and Fuk Hing Lei due to at-grade construction works.

Operational Phase

- 3.9.4 As the horizontal alignment of the Project, the separation between the scheme boundary of the Project and the identified SoAI/potential archaeological area would

be more than 100m. Therefore, potential adverse impacts on SoAI and potential archaeological area due to the Project are not envisaged.

- 3.9.5 As the distance between identified declared monuments and graded historic buildings are more than 100m, no adverse impact on the cultural heritage resources is envisaged from the Project.

3.10 Landscape and Visual

Construction Phase

- 3.10.1 Landscape and visual impacts may arise during the construction of the Project as a result of the removal of existing trees and vegetation, the use of construction equipment, the erection of hoardings and temporary structures, erection of station and other structures, cut and cover works and lighting for the construction sites. There will be potential impacts arising from the construction works at PHD expansion area and/or provision of stabling sidings at other location in vicinity of NOL.

Operational Phase

- 3.10.2 There would be permanent loss of existing trees when construction of the Project is completed and potential impact on existing facilities within public open spaces would result.
- 3.10.3 There would be potential visual impact on the adjacent VSRs due to the above ground structures, stabling sidings at the PHD expansion area and/or other location in vicinity of NOL, ventilation buildings, stations, potential noise barrier or enclosure and EEPs/EAPs. Considerations for aesthetic treatment will be required in the design of the physical structures to mitigate the impacts imposed by the Project.

3.11 Hazard to Life

Construction Phase

- 3.11.1 There is an existing Potentially Hazardous Installations (PHIs) in relation to hazard due to liquefied chlorine storage, namely the Au Tau Water Treatment Works (ATWTW), located in the vicinity of the NOL alignment. The potential impact during the construction phase would be limited to additional population associated with construction workers on above-ground works area.
- 3.11.2 There are two closed landfills located in Ngau Tam Mei and Kwu Tung respectively in the proximity of the Project. However, since the Project lies beyond the 250m Consultation Zone (CZ) of both closed landfills, adverse impacts are therefore unlikely.
- 3.11.3 As the tunnels would be constructed by TBM, no major blasting activities and overnight storage of explosive is envisaged. Hence no issue on hazard-to-life related to blasting works is anticipated. If blasting activities and overnight storage of explosive will be required by the Project, quantitative risk assessment (QRA) should be undertaken in the EIA stage to ensure compliance with Government's Risk Guidelines.

Operational Phase

- 3.11.4 Low impact to train passengers is anticipated for the Project during the operation phase. The train operation will increase the transient population within the Consultation Zone (CZ), which may have some effects on the risk levels of the existing PHI, however the effect on the risk levels of the existing PHI is considered

minimal. Risk assessments will be undertaken during the EIA stage to evaluate the risk of the Project for compliance with the Government's Risk Assessment Guidelines.

4 MAJOR ELEMENTS OF THE SURROUNDING ENVIRONMENT

4.1 General

4.1.1 The Project is located in the in the northern part of the New Territories. The Project is a railway line with a route length of about 10.7km between KSR Station of the TML and a KTU Station on the LMCSL with three intermediate stations at AUT, NTM and SAT. The alignment would pass through a large area of wetlands, agricultural lands, private lots, burial grounds, graves and urns, etc. Based on current design information, an overview of the existing environment adjacent to the Project is shown in **Figure 1**.

4.2 Sensitive Receivers

4.2.1 The major sensitive receivers and sensitive parts of the natural environment and potential hazard installation, which might be affected by the Project, are listed in **Table 4.1**. The list is not exhaustive and will be reviewed during the EIA stage.

Table 4.1 Major Sensitive Receivers/Concerned Areas/Hazard Installation in the vicinity of the Project

| Types | Sensitive Receivers/Concerned Areas/Hazard Installation |
|--|--|
| Residential Developments | Tai Kek, Tourmaline Villa, Tin Sam Tsuen, Village house near Kam Po Road, Shek Wu Tong, Park View Villa, Village house to the south of KSR station, Sha Po North Comprehensive Development, Park Yoho, Chui Yee Garden, Kut Hing Garden, Noble Park, Yuk Yat Garden, Riva, Cheung Chun San Tsuen, Mo Fan Heung, Pok Wai, Fuk Hing Lei, Yau Tam Mei Tsuen, Greenacres Villa, Tam Mei Barracks, The Vineyard, Shek Wu Wai San Tsuen, San Tin Barracks |
| Planned Residential Developments and G/IC | Kam Tin South CDA, Kam Sheung Road Station packages 1 and 2 private housing developments, Kam Tin South public housing development, Kam Tin North OU Zone, CDA (East of Chi Ho Road), Pok Wai OU Zone, Long Ha CDA, CDA (East of Sheung Chuk Yuen), CDA (South of Tam Mei Barrack), Shek Wu Wai CDA, CDA (South-west of Shek Tsai Leng and South of Yin Kong Village), CDA (North-east of Shek Tsai Leng), Lok Ma Chau OU Zone, AFCD Au Tau Fisheries Office, G/IC zone (South of Kam Sheung Road Station) |
| Residential and Development Proposals under Planning | San Tin Lok Ma Chau Development Node, Proposed Development to be studied under the land Use Review for Ngau Tam Mei Area |
| Educational Institutions | Kam Tin Mung Yeung Public School |
| Others | Clinics, industrial buildings, offices, shop and shopping centres, sport centres, community centres, place of public worships, playgrounds, parks and barracks etc. |
| Water Bodies | San Tin Eastern Drainage Channel, Kam Tin Main Drainage Channel, Kam Po Road Drainage Channel, Ngau Tam Mei Main Drainage Channel, Pok Wai Stream, Sha Po Tsuen Nullah, Kam Tin River, Wetland at Pok Wai, Marsh at Sha Po, |

| Types | Sensitive Receivers/Concerned Areas/Hazard Installation |
|-----------------------------|--|
| | Wetland at Kam Tin East, Mitigation Wetlands for WRL, Channelized stream at Shek Wu Wai, Channelized stream at Long Ha, Channelised stream to the east of Shek Wu Wai |
| Areas of Conservation Value | West Rail Mitigation Wetland, Sha Po Marsh, Shek Wu Wai Wet Agricultural Lands, Tung Shing Lei Egrettry, Kam Tin River Main Drainage Channel, Lam Tsuen Country Park, Ho Sheung Heung Egrettry, Wetland Conservation Area, Wetland Buffer Area |
| Cultural Heritage Resources | <p>Site of Archaeological Interest (SoAIs): Mai Po SoAI, Ngau Tam Mei SoAI, Tai Kong Po SoAI, Tsat Sing Kong SoAI, Lin Fa Tei SoAI, Pat Heung Sheung Tsuen SoAI, Shui Lau Tin SoAI, Yuen Shan SoAI, Ho Pui SoAI, Ho Pui Trackway SoAI, Medium Potential archaeological areas in Ho Sheung Heung</p> <p>Declared Monuments: Man Lun Fung Ancestral Hall, Tai Fu Tai, Yi Tai Study Hall, Tang Kwong U Ancestral Hall, Leung Ancestral Hall (Pat Heung)</p> <p>Grade 1 Historic Buildings: Man Ancestral Hall (San Tin), Kat Hing Wai Shrine, Kat Hing Wai - Entrance Gate, Kat Hing Wai - Watchtower (Northwest) and Enclosing Walls, Kat Hing Wai - Watchtower (Southeast) and Enclosing Walls, Pun Uk, Lik Wing Tong Study Hall, Cheung Chun Yuen, Tang Tsing Lok Ancestral Hall</p> <p>Grade 2 Historic Buildings: Ming Yuen Tong Ancestral Hall, Lok Ma Chau Police Station, Lady Ho Tung Welfare Centre - Main Block, Lady Ho Tung Welfare Centre – Bungalow, Man San Ye Ancestral Hall, No. 57 San Wai Tsuen, General House - Main Building, General House – Shum Ancestral Hall, General House - Hip Wai House, Chou Wong Yi Kung, Bin Mo Bridge, St. John’s Chapel, Yeung Ancestral Hall (Pat Heung), Ling Mui Chong, Nos. 109-112 Lin Fa Tei</p> <p>Grade 3 Historic Buildings: Tung Shan Temple, No.22 San Lung Tsuen, No.21 San Lung Tsuen, Manor House, Yan Wah Lo, Yeung Yuen, Miu Kok Yuen, No. 51 San Wai Tsuen, No. 35 San Wai Tsuen, No. 36 San Wai Tsuen, No. 71 San Wai Tsuen, No. 87 San Wai Tsuen, No. 70 San Wai Tsuen, Hon Lo, No. 62 San Wai Tsuen, No. 50 San Wai Tsuen, No. 4 Ng Ka Tsuen, No. 5 Ng Ka Tsuen, No. 6 Ng Ka Tsuen, Tang Lung Yau Wan Tsuen Um Ancestral Hall, So Lau Yuen, Tang Chan Yui Kuen Ancestral Hall, Tin Hau Temple (Kam Tin), Tang Yu Kai Study Hall Hung Shing Temple (Kam Tin), Watchtower (Northwest) Tai Hong Wai, Kang Sam Tong, On Ding Ancestral Hall, Fan Ancestral Hall, Cheng Ancestral Hall (Yuen Long), Yik Ting</p> |

| Types | Sensitive Receivers/Concerned Areas/Hazard Installation |
|------------------------------------|---|
| | Study Hall, Residence of Lee Jim Hung, Cheung Ancestral Hall (Shui Tsan Tin), Chung Shing Temple (Pat Heung), Lee Tat Bridge, Tai Kei Study Hall |
| Potentially Contaminated Site | Kam Sheung Road Near Kat Hing Wai (Vehicle Maintenance/Repairing Workshops, Construction Equipment and Machinery, Storage Areas), Kam Ting Road Near Yuk Yat Garden Stage III (Vehicle Maintenance/Repairing Workshops), San Tam Road Near Sha Po Tsuen (Open Storage Area) Mo Fan Heung (Vehicle Maintenance/Repairing Workshops, Warehouses), Castle Peak Road Near Mo Fan Heung and Pok Wai (Open Storage Area, Warehouses, Petrol Filling Stations), Yau Tam Mei Tsuen (Vehicle Maintenance/Repairing Workshops, Factory), Ki Lung Tsuen (Open Storage Area, Small Warehouses), Wing Ping Tsuen (Open Storage Area, Petrol Filling Station), San Tin Interchange (Vehicle Maintenance/Repairing Workshops, Container Storage Areas) |
| Potentially Hazardous Installation | Au Tau Water Treatment Works |

5 ENVIRONMENTAL PROTECTION MEASURES TO BE INCORPORATED IN THE DESIGN AND ANY FURTHER ENVIRONMENTAL IMPLICATIONS

5.1 Mitigation Measures for The Project

5.1.1 Practicable and effective mitigation measures will be adopted for construction and operation of the Project, as necessary, to ensure compliance of relevant environmental standards. Possible key measures to be adopted, subject to studies, are listed below.

5.2 Air Quality

Construction Phase

5.2.1 Dust suppression measures such as sufficient watering and good site practices should be adopted to mitigate the potential impact. With the adoption of the proper measures, no insurmountable air quality impact is envisaged.

5.2.2 Appropriate dust mitigation measures as stipulated in the Air Pollution Control (Construction Dust) Regulations will be implemented during the construction period to control fugitive dust emission. The following key dust mitigation measures should be implemented:

- Watering of the active works areas, exposed areas and paved haul roads to reduce dust emission;
- Establishment and use of vehicle wheel and body washing facilities at the exit points of the site;
- Side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering should be applied to aggregate fines;
- Provision of wind shield or similar dust mitigation measures at the loading area where dust generation is likely during the loading/unloading process of loose material, particularly in dry seasons/periods;
- Provision of impervious dust screens/sheeting and water spraying for demolition of buildings and breaking works;
- Where a site boundary adjoins a road, street, service lane or other area accessible to the public, hoarding of not less than 2.4 m high from ground level shall be provided as far as practicable; and where possible, routing of construction vehicles and positioning of construction plant should be at the maximum possible distance from Air Sensitive Receivers.

Operation Phase

5.2.3 As no direct atmospheric emissions will arise from the operation of the electric trains and the stations, mitigation measures would not be required during the operation phase.

5.3 Noise

Construction Phase

5.3.1 Cumulative construction noise impact from concurrent projects during the construction stage will be included in the noise impact assessment.

- 5.3.2 Construction noise impacts can be minimized through adoption of good site practice and management, use of quiet plant and adoption of noise barrier/enclosure. All construction works should be carried out during non-restricted hours (i.e. 0700 to 1900 hours, Monday to Saturday) unless a Construction Noise Permit (CNP) is obtained from EPD. For works areas near schools, construction activities should be scheduled to avoid school examination period as far as possible. The following noise mitigation measures are recommended to reduce the noise impact during the construction phase:
- Only well-maintained plant should be operated on-site, and plant should be serviced regularly during the construction program;
 - Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction program;
 - Location of items of PME should be sited as far from NSRs as possible;
 - Machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum;
 - Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs;
 - Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities;
 - Use of quality powered mechanical equipment (QPME) as far as possible; and
 - Use of noise barrier/enclosure could further alleviate the construction noise impacts.

Operational Phase

- 5.3.3 Cumulative railway noise impact from the existing WRL and LMCSL during the operational stage will be included in the noise impact assessment.
- 5.3.4 Possible key measures to reduce operational noise impact include:
- Provision of noise barriers, semi-enclosure and full enclosure;
 - Provision of a fully enclosed platform and concourse arrangement with air-conditioning for station(s); and
 - The maximum sound power level (SWL) allowed for each fixed plant noise source to achieve noise compliance should be determined in the EIA stage and adopted as specification for future procurement contracts of the Project.
- 5.3.5 Ground-borne railway noise from the tunnel section could be adequately mitigated by the use of low vibration trackform based on findings in WRL EIA and Ma On Shan Line (MOL) EIA, and thus adverse impact is not anticipated by adoption of equivalent provision where necessary. Ground-borne railway noise study should be conducted during the EIA when more information (e.g. ground condition) becomes available and appropriate potential mitigation measures would be recommended accordingly in the EIA.
- 5.3.6 For railway noise, the exact type and extent of the mitigation measures will depend on the noise impact assessment in the EIA stage.

5.4 Water Quality

Construction Phase

5.4.1 Proper construction methods and sequences should be adopted to minimise the potential water quality impact. Mitigation measures including good site management practices as provided in Practice Note for Professional Persons on Construction Site Drainage, Environmental Protection Department, 1994 (ProPECC PN 1/94) as well as standard measures in handling groundwater discharges/seepage from underground tunnelling works should be adopted to minimise the potential water quality impact. With the selection of proper construction methods and/or sequences, and adoption of appropriate mitigation measures, the potential water quality impact is expected to be minimized.

5.4.2 The following measures are recommended as good site practices to mitigate water quality impact during the construction phase:

- Construction site effluents including surface runoff should be properly collected, handled, treated and disposed of in accordance with the guidelines in ProPECC Practice Note PN 1/94 on Construction Site Drainage and provisions of WPCO license to prevent high levels of suspended solids from entering surrounding waters or drainage network;
- Provision of proper silt-trap and settlement facilities for construction wastewater;
- Stockpiles of construction materials and dusty materials should be covered and located away from watercourses;
- Sewage generated from the construction workforce should be collected in portable toilets and tankered away for proper disposal by a licensed specialist contractor at regular intervals; and
- Proper measures should be implemented to prevent oil or fuel spillage, e.g. removal of construction plant with identified oil/fuel leakage from site.

Operational Phase

5.4.3 All effluents arising from the Project should be properly diverted, and surface runoff should be diverted to sedimentation basin or oil interceptors before discharge to the public sewerage system. Wastewater from stations and plant buildings should be collected for treatment, silt traps and grease traps should be properly maintained to minimise water quality impacts and ensure compliance to WPCO.

5.5 Waste Management

Construction Phase

5.5.1 During the construction stage, standard waste management measures and good site practices that should be implemented to manage C&D materials generated from the Project include preparation of a Waste Management Plan, on-site sorting and reuse of C&D materials, implementation of a trip-ticket system and appropriate handling, storage and disposal of chemical waste in accordance with the Waste Disposal (Chemical Waste) (General) Regulation and the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. General refuse should be stored in bins or other types of containers with cover separately from C&D materials and chemical wastes. Licensed waste collectors/haulers should be employed by the contractor to remove general refuse from the site, separate from C&D materials and chemical wastes, on a regular basis to minimize environmental impacts. Contaminated soil, if any, arising from the project should be properly handled and remediated.

- 5.5.2 Excavated spoil should be considered for reuse on-site or other concurrent projects as far as practicable, given that the excavated spoil is uncontaminated and would not be regarded as sediment under ETWB TCW No. 34/2002.
- 5.5.3 Sediment for marine disposal should be handled in accordance with ETWB TC(W) 34/2002 (or PNAP Adv-21) Management of Dredged/Excavated Sediment. Contaminated sediments should be covered with tarpaulin for stockpiling and transportation. Construction plant and equipment should be properly designed and maintained to minimize release of silt, sediments, contaminants or other pollutants.

Operational Phase

- 5.5.4 During the operational phase, general refuse should be collected and removed in appropriate covered containers to prevent odour and windblown litter. Separation of recyclable materials, such as paper and metals, from other waste streams should be encouraged to minimise waste disposal to landfills. All chemical wastes from equipment maintenance should be handled, stored and disposed of properly and in accordance with the requirements of the Waste Disposal (Chemical Waste) Regulation.

5.6 Land Contamination

- 5.6.1 Site appraisal will be carried out during the EIA stage to identify areas with potential soil or groundwater contamination. Prior to the construction works at the areas of concern, site investigations and land contamination assessment should be conducted. Based on the findings of the investigation, the remediation actions, if required, should be detailed in a Remediation Action Plan (RAP).

5.7 Ecology

Construction Phase

- 5.7.1 Detailed ecological assessment would be carried out during the EIA stage. Ecological impacts will be avoided to the maximum extent practicable and minimized as far as practicable. For habitats of significant ecological value that would be adversely impacted by the Project, habitat compensation is one of the key measures to mitigate the permanent and temporary wetland habitat loss. The scale of compensation and timeframe would be further reviewed in consultation with Government bureau and departments during the detailed design stage.

Operational Phase

- 5.7.2 Habitat compensation is one of the measures to mitigate the habitat loss by the above ground structure during the operation of the railway.

5.8 Agriculture and Fisheries

- 5.8.1 Appropriate construction site management protocols will be adopted to avoid impact on agriculture/ fisheries due to pollution of watercourses. Other required mitigation measures for agriculture/ fisheries, if any, will be identified during the EIA stage and to be implemented during construction.

5.9 Cultural Heritage

- 5.9.1 No mitigation measures would be anticipated for the SoAI and built heritage including declared monuments and graded buildings. However, there are still some graves near Pok Wai, Wai Tsai and Fuk Hing Lei that would be affected by the at-grade construction works of the Project.

- 5.9.2 The historic buildings/ structures which would be affected by the Project would be identified during the EIA Stage. A Cultural Heritage Impact Assessment, including the Built Heritage Impact Assessment and Archaeological Impact Assessment would be carried out under the EIA study to assess the potential direct and indirect impacts on cultural heritage. Impacts on cultural heritage will be avoided as far as practicable. If unavoidable, mitigation measures for the direct and indirect impacts on cultural heritage will be proposed and implemented with prior agreement with the Antiquities and Monuments Office.

5.10 Landscape and Visual

- 5.10.1 Possible key landscape and visual mitigation measures include but not limited to the followings:

- Tree preservation, transplanting and compensatory planting in accordance with DEVB TCW 4/2020– Tree Preservation (or LAO PN Nos 2/2020) and DEVB TCW 5/2020- Registration and Preservation of Old and Valuable Trees;
- Control of night-time lighting glare;
- Erection of decorative screen hoarding compatible with the surrounding setting;
- Hard and soft landscape areas disturbed temporarily during construction shall be reinstated on like-to-like basis, or to the satisfaction of the relevant Government Departments;
- Considerations for aesthetic design and finishing materials would be adopted to alleviate the visual impacts of any above-ground structures and potential noise barriers/enclosures; and
- Adoption of sensitive architectural design, buffer/screen planting.

5.11 Hazard to Life

- 5.11.1 Quantitative risk assessment (QRA) should be undertaken in the EIA stage to confirm the compliance with the risk guidelines in Annex 4 of the Technical Memorandum of Environmental Impact Assessment Ordinance. Mitigation measures, such as the adoption of a contingency plan, location of works site away from the CZ as far as practicable, and minimisation of works force within CZ during the construction phase to reduce the risk associated with the Project, if required, would be developed as part of the QRA to be undertaken during the EIA stage to ensure compliance with the “As Low As Reasonably Practicable” (ALARP) level under the Hong Kong Government Risk Guidelines (HKRG).

5.12 Severity, Distribution and Duration of Environmental Effects and Further Implications

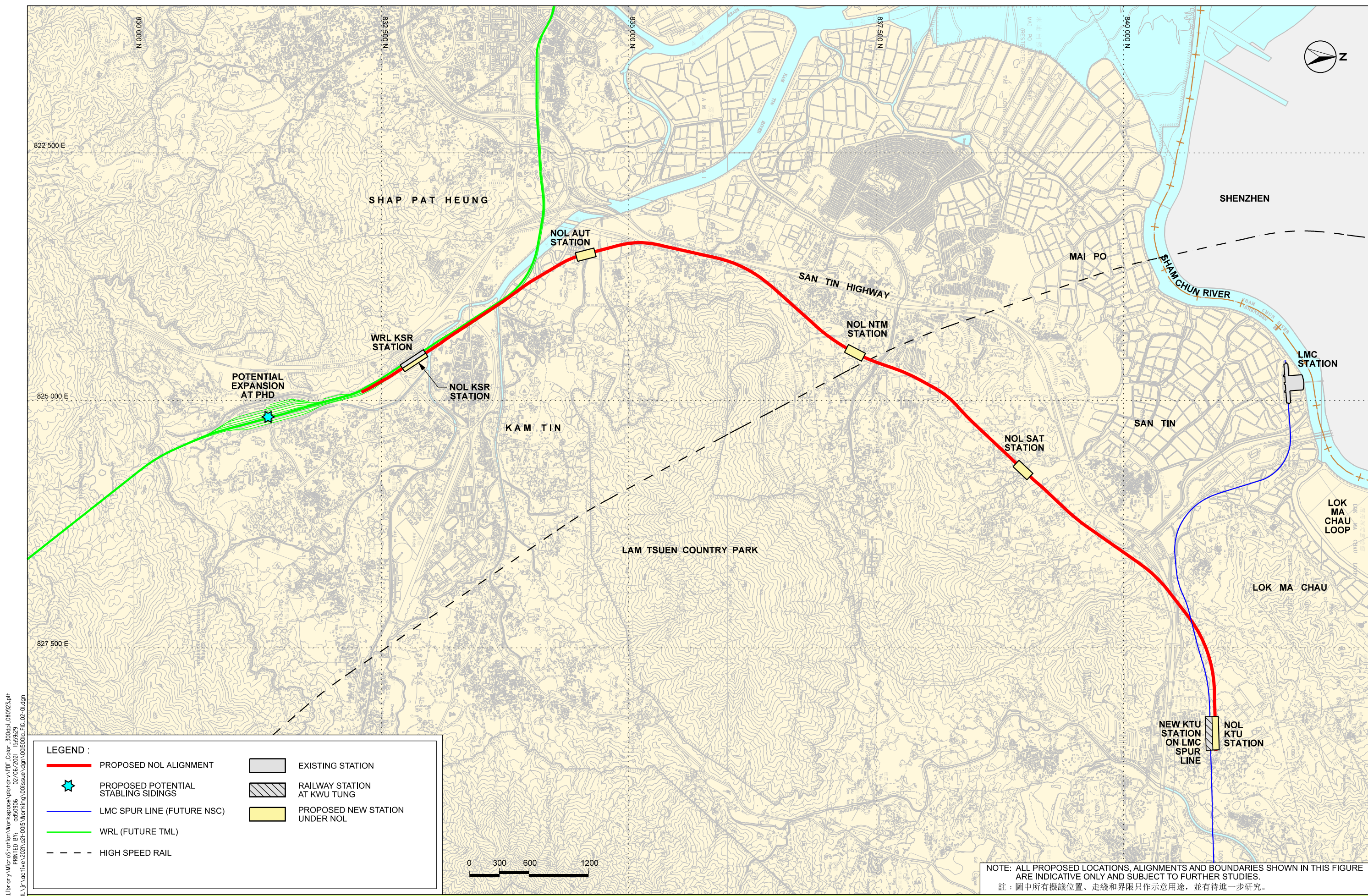
- 5.12.1 Subject to the findings of assessments, effective control and mitigation measures would be identified to ensure the impacts are at acceptable levels. The possible severity, distribution and duration of environmental effects such as beneficial and adverse effects; short and long term effects; secondary and induced effects; cumulative effects and trans-boundary effects from committed projects, and further implications would be considered and addressed in the EIA, where applicable.

6 USE OF PREVIOUSLY APPROVED EIA REPORTS

- 6.1.1 The following EIA reports are relevant for reference in the course of the EIA study for the Project as appropriate:

| EIAO Register No. | Project Name | Date of Approval | Relevance Environmental Aspect to the Project |
|--------------------------|---|-------------------------|---|
| EIA-149/1998 | West Rail – Final Assessment Report West Kowloon to Tuen Mun Centre – Environmental Impact Assessment | 16 September 1998 | <ul style="list-style-type: none">• Noise• Ecology• Culture Heritage |
| EIA-027/1999 | East Rail Extensions - Tai Wai to Ma On Shan - Environmental Impact Assessment Report | 15 January 2000 | <ul style="list-style-type: none">• Noise |
| EIA-071/2001 | Sheung Shui to Lok Ma Chau Spur Line - Environmental Impact Assessment Report | 11 March 2002 | <ul style="list-style-type: none">• Land Contamination• Culture Heritage |
| EIA-213/2013 | North East New Territories New Development Areas – Final Environmental Impact Assessment Report | 18 October 2013 | <ul style="list-style-type: none">• Air• Noise• Land Contamination• Culture Heritage |

Figure



LEGEND :

| | | | |
|--|-------------------------------------|--|--------------------------------|
| | PROPOSED NOL ALIGNMENT | | EXISTING STATION |
| | PROPOSED POTENTIAL STABLING SIDINGS | | RAILWAY STATION AT KWU TUNG |
| | LMC SPUR LINE (FUTURE NSC) | | PROPOSED NEW STATION UNDER NOL |
| | WRL (FUTURE TML) | | |
| | HIGH SPEED RAIL | | |

NOTE: ALL PROPOSED LOCATIONS, ALIGNMENTS AND BOUNDARIES SHOWN IN THIS FIGURE ARE INDICATIVE ONLY AND SUBJECT TO FURTHER STUDIES.
 註：圖中所有擬議位置、走綫和界限只作示意用途，並有待進一步研究。

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NORTHERN LINK
 北環綫

Figure 1
 圖1