



**Highways Department**

**Northern Metropolis Highway  
– San Tin Section**

**Project Profile**

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**Figure**

FIGURE 1

Indicative Layout Plan for Northern Metropolis  
Highway – San Tin Section

## **1. BASIC INFORMATION**

### **1.1 Project Title**

- 1.1.1 The title of the Project is “Northern Metropolis Highway – San Tin Section” (hereafter referred to as the Project).

### **1.2 Purpose and Nature of the Project**

- 1.2.1 The Government promulgated the final report of the “Hong Kong 2030+: Towards a Planning Vision and Strategy Transcending 2030” in October 2021, in which the Northern Metropolis was set out. With the progressive population intakes of the development areas in the Northern Metropolis, it is foreseeable that the existing road network serving these development areas would become overloaded in the future and hence new major road projects are proposed under the “infrastructure-led” and “capacity-creating” approaches to ensure the planning of major transport infrastructure could cater for or even reserve transport and logistic capacity to drive long-term development.
- 1.2.2 Amongst the major transport infrastructure projects announced in the 2022 Policy Address, Northern Metropolis Highway (NMH) is a major road project to facilitate the “east-west” connectivity. NMH is to provide a new strategic route between Tin Shui Wai in the New Territories West and Heung Yuen Wai in the New Territories East, thereby enhancing the east-west connectivity of the Northern Metropolis and alleviating the potential traffic congestion at Yuen Long Highway, San Tin Highway and Fanling Highway.
- 1.2.3 The objective of the Project is to enhance the connectivity in the San Tin Section between the interchange of San Tin Highway and Tsing Long Highway, and Kwu Tung to alleviate the future traffic demands generated by the future development in the concerned locations.

### **1.3 Name of Project Proponent**

- 1.3.1 Highways Department of the Government of Hong Kong Special Administrative Region (HKSAR).

### **1.4 Location and Scale of the Project and History of Site**

- 1.4.1 The location of the Project is shown on the Figure 1.
- 1.4.2 The alignment links the interchange at San Tin Highway and traverses the developed area in Mo Fan Heung, which are presently brownfield sites. It passes through the conservation areas near Fung Kat Heung and Ngau Tam Mei, goes underground at Ngau Tam Shan. The alignment travels along the villages near Saddle Pass, extends through the conservation areas near San Tin, continues underground at Hadden Hill, and finally connects to the Fanling Highway (Pak Shek Au Section).
- 1.4.3 The scope of the Project mainly comprises the following:
- (i) Construction of an approximately 8.5-kilometre (km) long dual three-lane carriageway, mainly in the form of at grade road/ tunnel / viaduct, from San Tin Highway to Fanling Highway (Pak Shek Au Section);

- (ii) Five interchanges (i.e., one at San Tin Highway, Ngau Tam Mei Development, and San Tin Technopole, and two at/near Fanling Highway); and
- (iii) Associated civil, geotechnical, landscape, road and drainage works, ancillary buildings, traffic control and surveillance system, ventilation buildings, toll collection facilities, electrical and mechanical installations, reprovisioning of facilities affected by the proposed works and environmental mitigation measures, etc.

1.4.4 The proposed works components mentioned above are tentative and subject to review in next detailed design stage and during the course of the Environmental Impact Assessment (EIA) study. There may be refinement of the alignment of the Project, which will be subject to a variety of factors such as planning and engineering considerations, environmental impacts, traffic impacts, land resumption requirements, and construction programme and cost, etc.

## **1.5 Number and Types of Designated Projects to be covered by the Project Profile**

1.5.1 The Project comprises the construction and operation of highways and the associated slip roads, which is classified as Designated Project (DP) under the following categories under Part I, Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO), subject to more detailed design and planning at later stage:

- Item A.1 A carriageway for motor vehicles that is an expressway, trunk road, primary distributor road or district distributor road;
- Item A.7 A road tunnel or railway tunnel more than 800 m in length between portals;
- Item I.1 A drainage channel or river training and diversion works located less than 300m from the nearest boundary of existing or planned conservation area; and
- Item Q.1 All projects involving earthworks, dredging works and other building works partly or wholly in an existing or gazetted proposed country park or special area, a conservation area, an existing or gazetted proposed marine park or marine reserve, a site of cultural heritage, and a site of special scientific interest.

## **1.6 Contact Person**

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## **2. OUTLINE OF PLANNING AND IMPLEMENTATION PROGRAMME**

### **2.1 Project Planning and Implementation**

- 2.1.1 The Project will be implemented under a Public Works Programme item. The Project Proponent has appointed consultants to undertake the Investigation study and preliminary design of the Project under Agreement CE4/2024 (HY). Subject to completion of detailed design, contractor(s) will be appointed to carry out the construction works.

### **2.2 Project Programme**

- 2.2.1 The Investigation study commenced in March 2025 and is targeted to be completed within 15 months. The Project is required to be commissioned in Year 2036 to alleviate the potential traffic congestion at Yuen Long Highway, San Tin Highway and Fanling Highway. The packaging and programme of the Project will be ascertained by the investigation study, taking into account other relevant technical studies.

### **2.3 Interactions with other Projects**

- 2.3.1 Major committed / planned projects that will potentially interface with the Project have been identified and are listed below. Any cumulative impact from the concurrent projects during both construction and operation phases of the Project will be addressed in the EIA stage as appropriate. The list below should be re-visited during the EIA stage to ensure all of the latest projects available from the respective stakeholders are incorporated.
- Public Housing Development at Sha Po, Yuen Long
  - Ngau Tam Mei Development
  - San Tin Technopole
  - Kwu Tung North New Development Area
  - Fanling North New Development Area
  - Northern Link
  - Waterworks Projects at Ngau Tam Mei
  - Development of Wetland Conservation Parks System
  - The other Sections of the NMH

### **3. POSSIBLE IMPACT ON THE ENVIRONMENT**

#### **3.1 General**

3.1.1 Based on the preliminary study, the Project will involve land-based construction works and conceptually be made up of the following elements:

- Construction of tunnel by both Drill & Blast (D&B) and Tunnel Boring Machine (TBM) methods;
- Construction of associated tunnel portals, ventilation buildings, administration building and other ancillary facilities;
- Construction of viaducts / at-grade roads and road widening works; and
- Associated environmental protection and mitigation works (e.g. noise enclosures / barriers, if necessary).

#### **3.2 Construction and Operation Environmental Impact**

3.2.1 The potential environmental impacts associated with the Project during both construction and operation phases are discussed in the following paragraphs. Detailed impact assessments will be carried out during the EIA study.

##### **Air Quality**

3.2.2 During construction phase, major sources of air quality impact to the air sensitive receivers (ASRs) would be the dust emissions generated from construction activities including site formation, excavation works, mucking out blasted rock and soil from D&B operations, materials handling, backfilling, wind erosion of open sites and stockpiling area as well as exhaust emissions from construction machinery and construction vehicles. Cumulative impacts from other potential interfacing projects planned in the vicinity of the Project would be identified and taken into account in the EIA study.

3.2.3 During operation phase, air pollution sources associated with the Project will include vehicular emissions from the proposed open roads sections, tunnel portals and ventilation buildings of the NMH. Cumulative air quality impacts from the vehicular emissions from neighboring existing and planned road networks (e.g. San Tin Highway and Fanling Highway) and other emissions in the vicinity of the Project would be identified and taken into account in the EIA study.

##### **Noise**

3.2.4 During construction phase, major sources of noise impact to the noise sensitive receivers (NSRs) would be associated with the use of powered mechanical equipment (PME) (e.g. breakers, excavators, lorries, mobile cranes, concrete truck mixers, pokers and rollers, etc.) for construction activities. The key construction activities of the NMH which would create noise impacts are tunneling (both D&B and TBM methods), piling for foundation, excavation and concreting, etc. Meanwhile, potential ground-borne noise impacts would be caused mainly by the TBM operation and using PME for rock breaking / drilling. A construction programme should be formulated so that no works will be required in restricted hours, i.e. between 7 p.m. and 7 a.m. or at any time on a general holiday (including Sunday), as far as practicable in the EIA study.

- 3.2.5 During operation phase, major sources of noise impact to the NSRs would be associated with the traffic using the new roads and fixed plants (e.g. ventilation shaft of the NMH). The cumulative noise impacts from neighboring existing and planned road networks and other fixed noise sources associated with the Project would be identified and considered in the EIA study.

#### **Water Quality**

- 3.2.6 During construction phase, potential sources of water quality impacts would be associated with the construction site run-off, diversion of watercourse, fill of ponds and wastewater generated by construction activities of the NMH, which may cause blockage of existing drainage channel and increasing the amounts of pollutants, such as suspended solids etc., in the nearby water system. Meanwhile, sewage effluents from construction workforce and the accidental spillage of chemical may also cause water pollution. There may also be potential infiltration / drawdown of groundwater from tunnel construction.
- 3.2.7 During operation phase, potential sources of water quality impacts would be associated with the surface runoff from the new roads and wash-off from the buildings proposed under the Project, as well as sewage effluents generated from the staffs working in the administration buildings.

#### **Ecology**

- 3.2.8 The proposed NMH alignment is in close proximity to various key ecological resources within the 500 m Study Area. Some of the sites of conservation importance present include Lam Tsuen Country Park, "Conservation Area" zone, Wetland Conservation Area, Wetland Buffer Area, and "Deep Bay Wetland outside Ramsar Site" Priority Site for Enhanced Conservation. Other ecologically sensitive habitats present include mature wooded habitats (e.g. woodland, mixed woodland, and shrubland), agricultural land, and wetland habitats (e.g. pond, marsh and natural watercourse). Wildlife species of conservation importance previously recorded within the Study Area include mammals (e.g. non-flying mammal species and bats), avifauna (e.g. ardeids), amphibians (e.g. Lesser Spiny Frog), butterflies and odonates. Other notable ecological resources within the Study Area include avifauna roosting sites, avifauna flight paths, existing mitigation woodland and planting area, existing compensation wetland, proposed compensation wetland and proposed compensation bat shelter.
- 3.2.9 During construction phase, direct ecological impacts may arise from the potential direct loss and fragmentation of sensitive habitats from aboveground works, in particular habitats within sites of conservation importance. The proposed alignment may also directly encroach onto sensitive ecological resources such as ardeid night roost, wetland habitats, existing and proposed compensation wetland, proposed compensation bat shelter and mature wooded habitats. Similar ecological resources along the proposed alignment may also be subject to potential indirect impacts due to construction disturbance. Indirect ecological impacts may potentially arise from the obstruction of flight paths. There may also be potential infiltration / drawdown of groundwater from tunnel construction, affecting natural habitats located above underground sections of the proposed alignment.
- 3.2.10 During operation phase, while direct impacts are no longer anticipated, the increased traffic use may result in potential ecological impacts associated with the disturbance to surrounding recognized sites of conservation importance, natural habitats and

associated wildlife due to the increase in human activities, dust, noise, glare, and surface run-off, etc.

### **Fisheries**

- 3.2.11 Key fisheries resources include active and inactive fishponds along the proposed NMH alignment (e.g. near Ngau Tam Mei and Kam Tin River). Some abandoned fishponds are also observed nearby. The active and inactive fishponds support aquaculture activities and production, which may be subject to direct impact due to loss of fishponds. Other indirect impacts may arise from the potential deterioration of water quality due to site runoff, risk of groundwater drawdown, as well as impact on bund stability and pond accessibility during construction and operation phases.

### **Landscape and Visual**

- 3.2.12 The major landscape and visual impacts of the NMH would be associated with the proposed at-grade / elevated roads connecting to the main tunnel of the NMH, and associated tunnel portals, as well as administration and ventilating buildings. Landscape with distinctive character/resources such as wetland, Lam Tsuen Country Park, and "Conservation Area" zone etc. are found within the 100m assessment area of the Project.
- 3.2.13 During construction phase, landscape impacts would be anticipated from aboveground construction sites, associated slope works and retaining walls of the NMH and temporary working areas, etc. Potential impacts on landscape resources such as loss of hillside vegetation, loss of vegetation in existing villages, loss of roadside amenity, disturbance on watercourses and ponds etc. would also be anticipated.
- 3.2.14 During operation phase, there would be permanent loss of existing vegetation and visual impacts due to the aboveground structures of the NMH (e.g. open roads, tunnel portals, and ventilation buildings, etc.) to the public viewers of road travellers, hikers and other recreational users.

### **Cultural Heritage**

- 3.2.15 No declared monument, proposed monument, graded historic building or Government historic site identified by the Antiquities and Monuments Office is located within or in vicinity of the proposed NMH alignment.
- 3.2.16 Ngau Tam Mei Site of Archaeological Interest is located in the vicinity of the proposed NMH alignment. The proposed NMH alignment has encroached into various archaeological potential areas identified in the EIA Reports of San Tin / Lok Ma Chau Development Node (Register No.: AEIAR-261/2024) and Northern Link (Register No.: AEIAR-259/2024). During construction phase, direct impact to archaeology arising from at-grade construction activities may be anticipated.
- 3.2.17 On the other hand, direct impact on built heritage would not be anticipated during construction phase. Indirect impact due to ground-borne vibration would be anticipated to built heritage located in close vicinity of the proposed NMH alignment. This EIA study should include impact assessment to the cultural heritage resources and recommend appropriate measures to mitigate any said impact(s).
- 3.2.18 During operation phase, no potential impact to built heritage and archaeology is anticipated, subject to further review and findings under the EIA study.

### **Waste Management**

- 3.2.19 During construction phase, the main activities that would generate waste include excavation, tunneling, demolition and construction of structures. Typical waste generated from the above activities include the inert and non-inert construction and demolition (C&D) materials, chemical waste from the maintenance of the plants, equipment and general refuse from the construction workforce.
- 3.2.20 During operation phase, the amount of waste generated would be limited, comprising mainly the general refuse from the workforce and chemical wastes from the operation and maintenance.

### **Land Contamination**

- 3.2.21 Potential land contamination sources in the vicinity of the Project would include construction material storage, container storage, warehouse, and vehicle maintenance workshop. Detailed assessment is required to examine if there is any potential land contamination issue within the Project area and any associated works area.
- 3.2.22 Besides, according to the Geochemical Atlas of Hong Kong, there would be elevated arsenic content in soil in San Tin / Ngau Tam Mei area.
- 3.2.23 Potential contaminated land impacts would be related to the health risks to site workers, disposal of contaminated soils, where encountered, and potential health risks to future users.

### **Hazard to Life**

- 3.2.24 The proposed alignment of the NMH falls within the consultation zone (CZ) of a Potentially Hazardous Installation (PHI), i.e. Ngau Tam Mei Water Treatment Works (NTM WTW). According to the approved EIA report for Ngau Tam Mei Water Treatment Works Extension (EIA Register No.: AEIAR-262/2024), there would be no liquid chlorine stored at the NTM WTW prior commencing construction of the extension works in Q1 of 2025. Therefore, NTM WTW is not considered as a hazardous facility, and there would not be any hazards related to storage of liquid chlorine.
- 3.2.25 Meanwhile, a part of NMH tunnel would be constructed by the D&B method. Use of explosives may pose potential risk impacts to nearby populations. A quantitative risk assessment will be conducted to assess the hazards due to the storage, transport and use of explosives.

## **4. MAJOR ELEMENTS OF THE SURROUNDING ENVIRONMENT**

### **4.1 Existing and Planned Sensitive Receivers**

- 4.1.1 The major existing and planned sensitive receivers that may be affected by the Project have been identified and listed out in the following paragraphs. The listed receivers are not exhaustive and are subject to further review in the EIA study.

#### **Air Quality**

- 4.1.2 Key potential air sensitive receivers that may be affected by the Project include:

- Anchors Academy;
- Crescent Green;
- Riva;
- Village type houses at Tung Shing Lei, Mo Fan Heung, Pok Wai, Long Ha, and San Wai Tsuen;
- Construction Sector Imported Labour Quarters;
- Park Yoho;
- York International Kindergarten;
- Koon Chun Hing Kee Soy & Sauce Factory Ltd.;
- Wah On Villa;
- Ian Court;
- House at Lot No. 163 in D.D. 104;
- Dhamma Garden Meditation (Tawya) Centre at Ngau Tam Mei;
- Wat Buddhaddhamaram at Ngau Tam Mei;
- Potential housing developments, education institutions, home for the aged, hospital at Ngau Tam Mei New Development Area;
- Saint Yiu the Virgin Temple at Ngau Tam Mei;
- Village type houses at Saddle Pass;
- Scattered village type houses to the north and south of Ki Lun Tsuen Playground;
- Planned logistics, storage, and workshop and innovation and technology uses at San Tin Technopole;
- Europa Garden;
- Village type houses near Tit Hang;
- Village type houses near Ma Tso Lung;
- Village type houses near Pak Shek Au;
- Planned residential development at Sha Po; and
- Planned residential development at Kwu Tung North Development;

#### **Noise**

- 4.1.3 Key potential noise sensitive receivers that may be affected by the Project include:

- Anchors Academy;
- Crescent Green;

- Riva;
- Village type houses at Tung Shing Lei, Mo Fan Heung, Pok Wai, Long Ha, and San Wai Tsuen;
- Construction Sector Imported Labour Quarters;
- Park Yoho;
- York International Kindergarten;
- Wah On Villa;
- Ian Court;
- House at Lot No. 163 in D.D. 104;
- Dhamma Garden Meditation (Tawya) Centre at Ngau Tam Mei;
- Wat Buddhahamaram at Ngau Tam Mei;
- Potential housing developments, education institutions, home for the aged, hospital at Ngau Tam Mei New Development Area;
- Saint Yiu the Virgin Temple at Ngau Tam Mei;
- Village type houses at Saddle Pass;
- Scattered village type houses to the north and south of Ki Lun Tsuen Playground;
- Europa Garden;
- Village type houses near Tit Hang;
- Village type houses near Ma Tso Lung;
- Village type houses near Pak Shek Au;
- Planned residential development at Sha Po; and
- Planned residential development at Kwu Tung North Development;

#### **Water Quality**

- 4.1.4 Key potential water sensitive receivers (WSRs) that may be affected by the Project include:

- Ponds adjacent to Kam Tin River, near Greenery Gardens, along Chun Shin Road, and near Ngau Tam Mei Water Treatment Works;
- Kai Kung Leng downstream rivers;
- Lam Tsuen Country Park;
- Watercourses near Ngau Tam Mei Water Treatment Works;
- Downstream river of Hadden Hill;
- Kwu Tung Reservoir;
- Wetland Conservation Area; and
- Wetland Buffer Area;

#### **Ecology**

- 4.1.5 Key ecological sensitive receivers nearby that may be affected by the Project include:

Sites of Conservation Importance:

- Wetland Buffer Area;
- Wetland Conservation Area;

- “Deep Bay Wetland outside Ramsar Site” Priority Site for Enhanced Conservation;
- Lam Tsuen Country Park; and
- “Conservation Area” zone gazetted under Nam Sang Wai OZP no. S/YL-NSW/9, Kam Tin North OZP no. S/YL-KTN/11, Ngau Tam Mei OZP no. S/YL-NTM/14, and San Tin Technopole OZP no. S/STT/2.

Other Ecologically Sensitive Resources:

- Wooded habitats (e.g. woodland, mixed woodland, shrubland);
- Agricultural land;
- Wetland habitats (e.g. pond, watercourse, marsh);
- Species of conservation importance (including mammals, avifauna, herpetofauna and terrestrial insects such as butterflies and odonates)
- Avifauna roosting sites and flight lines;
- Existing mitigation woodland and planting area (e.g., along Ngau Tam Mei Drainage Channel, and Kam Tin River);
- Existing compensation wetland (including Sha Po Marsh, Yuen Long Bypass Floodway Engineered Wetland, West Rail Compensatory Wetland);
- Proposed compensation wetland (including compensation wetland for Northern Link, and Development at Ngau Tam Mei); and
- Proposed compensation bat shelter at Pok Wai.

### **Fisheries**

4.1.6 Potential fisheries sensitive receivers that may be affected by the Project include:

- Active and inactive fishponds within the Study Area which support fisheries resources (aquaculture activities and aquaculture production).

### **Landscape and Visual**

4.1.7 Key potential landscape resources, visual resources and key public viewing points that may be affected by the Project include:

Key Landscape with Distinctive Character/Resources:

- Hillside vegetation in Lam Tsuen Country Park;
- Vegetation in Conservation Areas near Fung Kat Heung and Ngau Tam Mei;
- Vegetation in Conservation Areas near San Tin; and
- Wetland Conservation Area and Wetland Buffer Area near Kam Tin River etc.

Key Visual Resources:

- Mountain backdrop from Kai Kung Leng, Ngau Tam Shan, Tit Hang and Ki Lun Shan; and
- River channels at Kam Tin River, Ngau Tam Mei and Sheung Yue River.

Key Public Viewing Points:

- Hikers' view at Ngau Tam Shan;
- Hikers' view at Tit Hang;
- Hikers' view at Lam Tsuen Country Park;
- View along Kam Tin River;
- View along river channel at Ngau Tam Mei;
- View along Sheung Yue River;
- View along San Tin Highway; and
- View along Fanling Highway etc.

**Cultural Heritage**

- 4.1.8 Ngau Tam Mei Site of Archaeological Interest is located in the vicinity of the proposed NMH alignment. However, the proposed NMH alignment has encroached into various archaeological potential areas identified in the EIA Reports of San Tin / Lok Ma Chau Development Node (Register No.: AEIAR-261/2024) and Northern Link (Register No.: AEIAR-259/2024). Other cultural heritage resources within and in the vicinity of the proposed NMH alignment will be identified and assessed in the EIA study.

**Hazard to Life**

- 4.1.9 There are various types of sensitive receivers along the proposed NMH alignment including populated areas, man-made slopes, retaining walls, natural boulders, and potentially unstable terrain etc. Charge weights per delay will be controlled during blasting operations to minimize the hazards.

## **5. ENVIRONMENTAL PROTECTION MEASURES TO BE INCORPORATED IN THE DESIGN AND FURTHER ENVIRONMENTAL IMPLICATIONS**

### **5.1 General**

- 5.1.1 The EIA study will investigate those environmental impacts (both cumulative impacts and those arising from the Project) and propose the appropriate mitigation measures with the intention that the Project would be environmentally acceptable and cost-effective. The residual impacts, if any, would be confined to within the allowable limits. Subject to the findings of the EIA study, environmental monitoring and audit of potential impacts that may arise from implementation of the works will be provided during construction and operation phases. The following mitigation measures would also be incorporated in the design and construction of the Project.

### **5.2 Measures to Minimize Environmental Impacts**

#### **Air Quality**

- 5.2.1 During the construction phase, dust emissions from the construction activities related to excavation, mucking out of blasted rock and soil, materials handling, and emissions associated with construction machinery and construction vehicles etc., would be anticipated. Appropriate air quality control measures as stipulated in the Air Pollution Control (Construction Dust) Regulations and good site practices will be implemented to minimize the air pollutant emissions. Possible key mitigation measures would include:

- Regular watering on all exposed and unpaved surface, excavation, and fill materials handling, particularly during dry weather;
- Covering all excavated or stockpile of dusty materials by impervious sheeting or spraying with water to maintain the entire surface wet;
- Provision of wheel washing facilities at construction site access;
- Covering any dusty materials on vehicles before leaving the site;
- Implementing speed control of vehicles on unpaved haul roads;
- Erection of screen hoarding along the construction site boundary;
- Follow the Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation and Air Pollution Control (Fuel Restriction) Regulation (i.e., using liquid fuel with a sulphur content of less than 0.001% by weight) to control the exhaust emissions from construction equipment;
- Connect construction machinery to mains electricity supply and avoid use of diesel generators and diesel-powered machinery as far as practicable to minimize air quality impact arising from the construction machinery;
- Provide blasting door at the portal of tunnel with air treatment system;
- The areas within 30m from the blasting area should be wetted with water prior

to blasting;

- blasting shall not be carried out when the strong wind signal or tropical cyclone warning signal No. 3 or higher is hoisted;
- Avoid the use of exempted Non-road Mobile Machinery (NRMMS);
- Deploy electrified NRMMS as far as practicable; and
- Plan the travelling route of construction vehicles on public roads as far as practicable in a way to minimise the air quality impact to ASRs.

5.2.2 During operation phase, the major source of air pollutants will be the exhaust gas emissions from the vehicular use of the NMH and associated slip roads. Besides, the vehicular emissions from the tunnel portals and ventilation buildings will also give impacts on the air quality. Possible key mitigation measures would include:

- Provision of buffer areas between the sources of air pollutant and the ASRs;
- Location and orientation of the ventilation buildings and tunnel portals to be away from the nearby ASRs;
- Alternative road alignment / portal exit of the NMH for provision of sufficient buffer areas between the sources of air pollutant and the ASRs; and
- Other mitigation measures (e.g. Enclosure of open roads and/or viaducts with installation of pollution control technology) may be necessary subject to air quality assessment during the EIA stage.

### **Noise**

5.2.3 Possible key measures to minimize construction noise impacts on nearby NSRs during construction phase would include:

- Use of quieter PME fitted with silencers/mufflers or alternative quieter construction methods;
- Provision of temporary/movable noise barriers and enclosures where practicable;
- Installation of temporary noise screening structures or barriers along the construction site boundary;
- Adopt good site practices such as locating the noisy equipment and activities as far away from nearby NSRs as practicable, providing proper maintenance of construction plants and limiting the use and number of equipment operating close to the NSRs;
- Proper planning of travelling route of the construction vehicles;

- Incorporate the noise control requirements stipulated in the "Recommended Pollution Control Clauses for Construction Contracts" of the EPD into the construction works contract(s) for the Contractor to follow and implement relevant measures in minimising the construction noise impact; and
- Make reference to the ProPECC Note PN1/24 to plan and implement the project, and the particular specifications shall be imposed in the construction contract(s) to avoid causing adverse construction noise impact to the nearby NSRs.

5.2.4 Subject to the detailed investigation, the following measures will be considered during operation phase to minimize noise impacts on nearby NSRs:

- Noise barriers / enclosures and low noise road surface materials will be provided for open road sections of the NMH where necessary;
- Sound-absorbing materials may be required for tunnel portals where the NSRs are in their vicinity; and
- Suitable mitigation measures (e.g. proper orientation, silencers, acoustic louvres and acoustic enclosures, etc.) for the fixed plants of proposed facilities, including ventilation shafts, administration building and other ancillary buildings should also be reviewed and considered in the EIA study.

#### **Water Quality**

5.2.5 The following mitigation measures during the construction phase will be adopted to prevent adverse impacts on nearby WSRs:

- Good site practice in accordance with the ProPECC PN 2/24 "Construction Site Drainage" and "Recommended Pollution Control Clauses for Construction Contracts" issued by Environmental Protection Department (EPD);
- Implementation of recommended pollution control clauses for construction contracts, and guideline under Environment, Transport and Works Bureau Technical Circular (Works) (ETWB TC(W)) No. 5/2005 "Protection of Natural Stream / Rivers from Adverse Impact arising from Construction Works";
- Construction surface runoffs should be properly collected by silt trap and oil interceptor to remove the oil, lubricants, grease, silt, grit and debris before being discharged to the public stormwater drainage system to ensure compliance with the Water Pollution Control Ordinance;
- Appropriate monitoring and mitigation measures should be developed for groundwater control (e.g. probing ahead and pre-grouting during tunnel construction, and installation of waterproof lining after the formation of the tunnel) to minimize the potential groundwater drawdown / infiltration due to tunnel construction;
- Proper construction techniques should be employed to prevent sediment release during construction. Stringent site sediment control and mitigation measures should be implemented to prevent elevation of suspended solids;

- flow diversion shall be conducted prior to the construction works to prevent water overflow to the surrounding area;
- flow diversion should be conducted in dry season as far as practicable when the flow is low;
- Construction works at the existing ponds should be conducted only after dewatering of these ponds is fully completed;
- Water in existing ponds shall be sampled and pre-treated if required before discharge; and
- Proper management of the drained water and sediment shall be implemented to prevent release to existing watercourses.

5.2.6 The following measures will be incorporated for the NMH to minimize the water quality impacts on nearby WSRs during operation phase:

- Appropriate mitigation measures in accordance with the ProPECC PN1/23 “Drainage Plans subject to Comment by the Environmental Protection Department -Building (Standards of Sanitary Fitments, Plumbing, Drainage Works and Latrines) Regulations” issued by EPD;
- Adopting storm drainage system to collect the surface runoffs from the road via silt trap and oil interceptor to remove silt / grit and oil before discharging; and
- Adopting sewerage system to collect the wastewater generated from the NMH and connecting to the existing sewerage network in the region.

### **Ecology**

5.2.7 Aboveground works of the Project should avoid encroachment onto recognized sites of conservation importance (e.g. Wetland Conservation Area, Priority Site for Enhanced Conservation, Lam Tsuen Country Park, and “Conservation Area”) or important habitats for fauna and flora (e.g. wetland habitats, avifauna roosts, and compensation habitats) as far as practicable by examining alternative engineering schemes wherever possible. Where loss of natural habitats (e.g. wooded habitats and wetland habitats) is inevitable, habitat reinstatement works should be considered as far as practicable, while habitat compensation may also be required, such as woodland compensation and/or wetland compensation. Provision of buffer between recognized sites of conservation importance / important habitats and aboveground works should be duly examined to minimise the potential indirect ecological impacts. To minimise fragmentation of habitat and animal movement corridor, fine-tuning of alignment may be required to minimise obstruction of flight paths, while wildlife corridor may be required to facilitate animal movement, subject to further investigation.

5.2.8 Subject to the investigation, the following mitigation measures during construction phase will be considered to minimize and compensate the ecological impacts:

- Avoid / minimize direct encroachment on sites of conservation importance and

ecologically sensitive habitats;

- Avoid / minimize habitat fragmentation and unnecessary damage / disturbance to the natural habitats;
- Confine construction activities to a specific area or season;
- Adopt alternative design or construction methods where necessary;
- Carefully plan the placement of equipment and stockpile area in the designated area within existing disturbed lands;
- Compensation for unavoidable loss of important natural habitats (e.g. woodland and wetland habitats such as ponds and natural stream);
- Translocation / transplantation of unavoidably affected species of conservation importance;
- Maintaining flight corridor by fine-tuning alignment;
- Maintaining animal movement corridor by inclusion of wildlife corridor / underpass; and
- Good site practices and mitigation measures aiming to reduce impacts from air, noise and water pollution, as well as to minimize the potential groundwater drawdown / infiltration due to tunnel construction as stated in **Sections 5.2.1, 5.2.3 and 5.2.5** would also minimize potential indirect impact to the ecological resources.

5.2.9 During operation phase, appropriate measures, including but not limited to traffic noise and water quality control measures as stated in **Sections 5.2.4 and 5.2.6**, and control of direction / intensity of light not spilling into the sensitive areas, should be incorporated into the design of the NMH to avoid / minimize the ecological impacts. Potential ground water drawdown / infiltration would not be expected.

### **Fisheries**

5.2.10 The proposed NMH alignment and the associated aboveground works for the tunneling works that may encroach onto fisheries resources (including ground investigation and treatment work) should be avoided or minimized as far as practicable. Construction method of the tunnel should be carefully designed and appropriate precautionary / mitigation measures should be proposed to avoid the potential impact due to groundwater drawdown or dewatering of surface settlement.

5.2.11 Good site practices for the control of construction site runoff should be fully implemented to minimise impacts on the ponds in vicinity of the Project. Careful planning of works and adoption of good site practice would be recommended to minimize potential fisheries impacts, where appropriate.

### **Landscape and Visual**

5.2.12 Mitigation measures to minimize landscape impact during both construction and operation phases and visual impact during operation phase should be comprehensively reviewed.

5.2.13 The following mitigation measures will be considered during the construction phase subject to the investigation:

- Tree preservation in accordance with DEVB TC(W) No. 4/2020 and TC(W) No. 5/2020;
- Implementation of good site practices for preservation and protection of the existing natural streams in accordance with ETWB TC(W) No. 5/2005;
- Minimize disturbance to Lam Tsuen Country Park and Conservation Areas nearby;
- Minimize disturbance to Kam Tin River and watercourses nearby;
- Erection of decorative screen hoarding or hoarding compatible with the surrounding areas;
- Management of construction activities and facilities; and
- Reinstatement of temporarily disturbed landscape areas.

5.2.14 The following mitigation measures will be considered during the operation phase subject to the investigation:

- Trees and shrub will be planted to provide adequate greening, screening, and mitigation, and minimize visual impact of the Project, where appropriate;
- Sensible locations of viaducts alignment, columns and portals to minimize impact to existing trees and adjoining existing, planned and potential developments;
- Tree transplanting and compensatory planting for compensation of the loss of existing vegetation (including trees and shrubs, etc.). In case loss of vegetation in woodland and Country Park are unavoidable, compensation in native woodland mix will be provided to mitigate the impact and enhance the biodiversity;
- Aesthetically pleasing design and responsive design will be adopted for aboveground structures (e.g. tunnel portals and ventilation buildings). Buffer planting near portals to reduce their apparent size/scale and to visually screen and soften the structures;
- Aesthetic design will be adopted for the road structures such as slip roads, viaducts and tunnel portals, and slope associated structures. Road structures will be designed with considerations and suitable measures to minimize the visual impact of the road corridor. Submission to Advisory Committee on the Appearance of Bridges and Associated Structures (ACABAS) in respect of the

aesthetic design of the structures associated with the public highway system in accordance with ETWB TC(W) No. 36/2004 will be made during preliminary design; and

- The visual impact of noise mitigation measures including noise barriers, if any, will be mitigated by appropriate design, including use of transparent panels, appropriate colour selection of panels and supporting structures, as well as design of supporting structures to incorporate a high level of quality and aesthetics.

### **Cultural Heritage**

- 5.2.15 A Cultural Heritage Impact Assessment, including the Built Heritage Impact Assessment and Archaeological Impact Assessment, will be carried out during the EIA stage to assess the potential direct and indirect impacts on cultural heritage during the construction and operation phases. Impacts on cultural heritage resources should be avoided as far as practicable. If unavoidable, mitigation measures to minimise the impacts on cultural heritage will be proposed and implemented with prior agreement with the Antiquities and Monuments Office.

### **Waste Management**

- 5.2.16 The waste management hierarchy is to minimize the waste generation. If waste generation cannot be avoided, a material/waste management plan will be established prior to commencement of excavation and construction work to outline the methods that can be incorporated into the Project for waste minimization, including reuse, recycle, matching disposal with other projects, handling, storage, transportation and disposal of expected waste materials.
- 5.2.17 During operation phase, waste collectors shall be employed to remove general refuse and chemical waste, if any, generated from administration / ventilation buildings on a regular basis. Reuse and removal of recyclables shall be encouraged, and collection bins for used aluminium cans, wastepaper, plastics, and glass bottles are recommended to be provided at the administration buildings. The recyclables shall be collected by a recycler on a regular basis.

### **Land Contamination**

- 5.2.18 Site appraisal should be carried out during the EIA study to identify if there are any potential soil / groundwater contaminations within the Project area and any associated works area. Site investigation and land contamination assessment should be conducted prior to the construction works at the concerned area. Based on the findings of site investigation and assessment, appropriate remediation strategies / options should be detailed in a Remediation Action Plan. Upon completion of the remediation works, if any, a Remediation Report that demonstrates the clean-up works are adequate should be submitted to EPD for and endorsement prior to commencement of any construction / development works.
- 5.2.19 Should high level of arsenic be identified within the Project area and any associated works area, further arsenic assessment and treatment of high arsenic containing soil with reference to the approved EIA reports of San Tin/Lok Ma Chau Development Node (Register no.: AEIAR-261/2024) and North East New Territories New Development Areas (Register no.: AEIAR-175/2013) will be implemented if required.

### **Hazard to Life**

- 5.2.20 Potential hazards associated with the storage, transport and use of explosives will be assessed. Close liaison with the Mines Division of Civil Engineering and Development Department will be maintained. Necessary safety precautions and control measures will be proposed during the EIA study.

### **5.3 Severity, Distribution and Duration of Environmental Effects**

- 5.3.1 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 terms, secondary and induced effect, cumulative effects and transboundary effects, will be considered and addressed in the EIA study, where applicable.

### **5.4 Further Implication**

- 5.4.1 Close co-ordination with relevant authorities, particularly EPD and other interfacing projects will be necessary. Public consultation will be arranged once sufficient information is available.

## 6. USE OF PREVIOUSLY APPROVED EIA REPORTS

- 6.1.1 There is no previously approved EIA report under EIAO for the Project. Nonetheless, reference may be made to the following previously approved EIA reports and will be referred to in the subsequent EIA study:

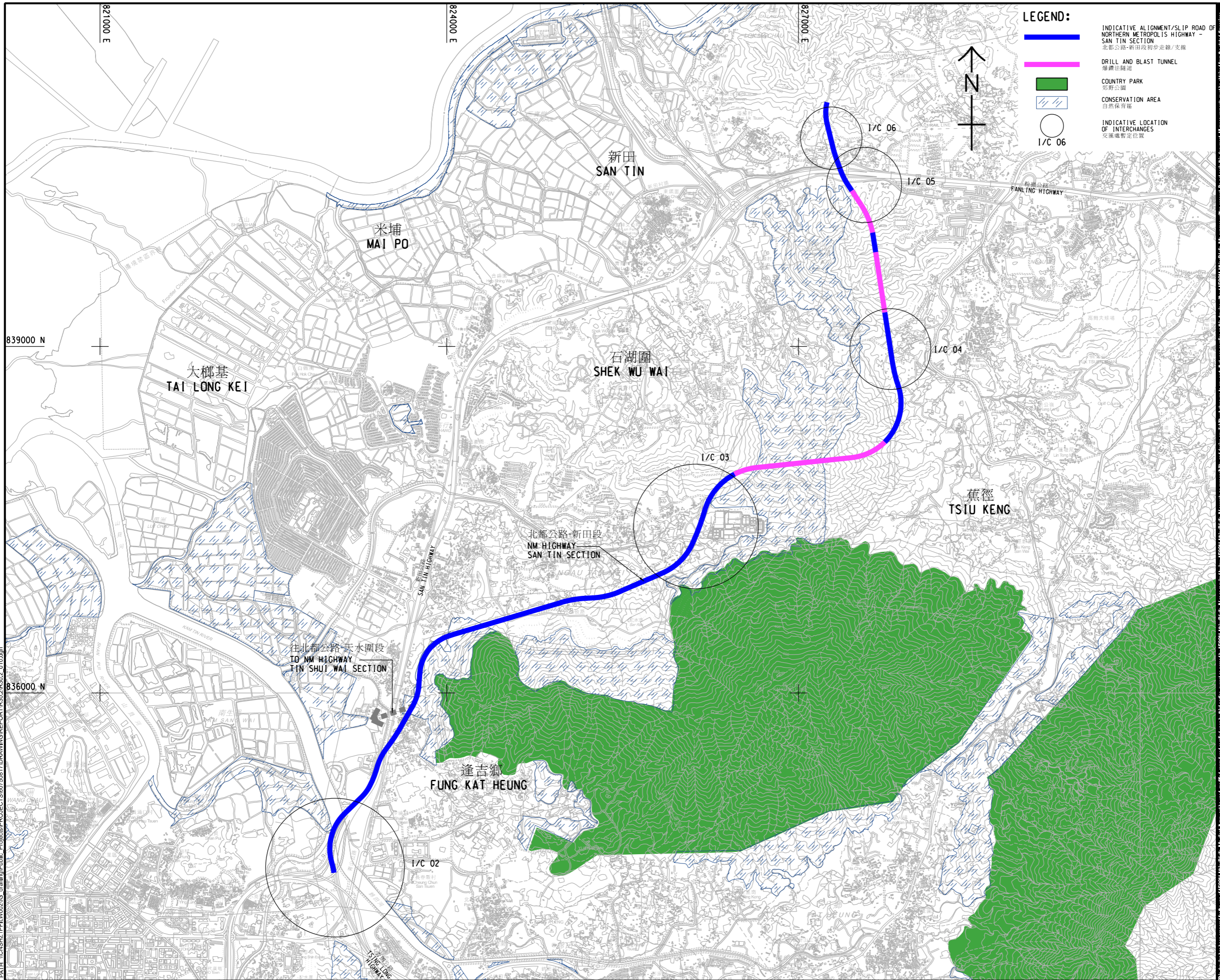
Register No.	Title
AEIAR-143/2009	Hong Kong Section of Guangzhou – Shenzhen – Hong Kong Express Rail Link
AEIAR-175/2013	North East New Territories New Development Areas
AEIAR-205/2017	Proposed Low-rise and Low-density Residential Development at Various Lots and their Adjoining Government Land in D.D. 104, East of Kam Pok Road, Mai Po, Yuen Long, N.T.
AEIAR-259/2024	Northern Link
AEIAR-261/2024	San Tin / Lok Ma Chau Development Node
AEIAR-262/2024	Ngau Tam Mei Water Treatment Works Extension

## Figure

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*Indicative Layout Plan For Northern Metropolis Highway  
– San Tin Section*

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Plot File by: YangRO 4/22/2025



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## PROJECT

# NORTHERN METROPOLIS HIGHWAY - INVESTIGATION STAGE 北都公路-勘察研究

**CLIENT**  
業主

CONSULTANT  
工部局有限公司

AECOM - ATKINSREALIS JOINT VENTURE

**SUB-CONSULTANTS**  
分判工程顧問公司

## ISSUE/REVISION


## STATUS

## SCALE

A3 1 : 30000

**DIMENSION UNIT**

METRES

## KEY PLAN

## PROJECT NO.

**AGREEMENT NO**

CE 4/2024(HY

**SHEET TITLE**

INDICATIVE LAYOUT PLAN FOR  
NORTHERN METROPOLIS HIGHWAY -  
SAN TIN SECTION  
北部公路-新田段初步走線平面圖

**SHEET NUMBER**

FIGURE 1

1