



Highways Department

Improvement of Lion Rock Tunnel

Project Profile

September 2019

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Drawing

Drawing No. 60604728/R42a/700 – Location Plan of the Project – Key Plan

Drawing No. 60604728/R42a/701 – Location Plan of the Project – Sheet 1 of 4

Drawing No. 60604728/R42a/702 – Location Plan of the Project – Sheet 2 of 4

Drawing No. 60604728/R42a/703 – Location Plan of the Project – Sheet 3 of 4

Drawing No. 60604728/R42a/704 – Location Plan of the Project – Sheet 4 of 4

Drawing No. 60604728/R42a/705 – Locations of Air Sensitive Receivers

Drawing No. 60604728/R42a/706 – Locations of Noise Sensitive Receivers

Drawing No. 60604728/R42a/707 – Locations of Water Sensitive Receivers

Drawing No. 60604728/R42a/708 – Locations of Ecological Sensitive Receivers

Drawing No. 60604728/R42a/709 – Locations of Cultural Heritage Resources

1. BASIC INFORMATION

1.1 Project Title

- 1.1.1 The project is entitled “Improvement of Lion Rock Tunnel” (hereinafter referred to as the “Project”).

1.2 Purpose and Nature of the Project

- 1.2.1 The Lion Rock Tunnel (LRT) is an urban trunk road consisting of two tunnel tubes each with two traffic lanes, which have been put in use for over 40 years. Signs of deterioration of the tunnel structures have become apparent. Due to heavy traffic demand, tunnel closure of only a few hours during night time cannot allow comprehensive repair and strengthening works to be undertaken.
- 1.2.2 Being an old design, the LRT does not meet the latest standards in various aspects including waterproofing, dimensions (e.g. headroom and width), smoke extraction, evacuation, durability, Traffic Control and Surveillance System, etc. Comprehensive rehabilitation of the two existing tunnel tubes is needed to bring LRT up to current standards and extend its serviceable life; as well as to enhance the tunnel environment and road safety level.
- 1.2.3 As the capacity of the LRT cannot cope with the traffic demand during peak hours at present, long traffic queues appear at the connecting roads including Lion Rock Tunnel Road on Shatin side, as well as Lung Cheung Road and Waterloo Road on Kowloon side. Enhancing the capacity of the LRT and the connecting roads as far as possible is therefore necessary to improve the traffic flow at this critical link between Shatin and Kowloon.

1.3 Name of Project Proponent

- 1.3.1 The project proponent is the Highways Department (HyD), HKSAR Government.

1.4 Location and Scale of Project

- 1.4.1 The location of the Project is shown in Drawing No. 60604728/R42a/700 – 704. The study area covers the LRT, Lion Rock Tunnel Road (both Kowloon and Sha Tin sides), a section of Sha Tin Road near Pok Hong Estate, a section of Hung Mui Kuk Road and Chung Pak Road near World-wide Gardens and a short section of Waterloo Road adjoining Lion Rock Tunnel Road.

- 1.4.2 The scope of the Project comprises the construction of a new tunnel tube to facilitate the subsequent rehabilitation/reconstruction of the two existing tunnel tubes, widening of the connecting roads and the associated works. The details are as follows:
- (a) Construction of a road tunnel of approximately 1.4 km long between the two existing tunnel tubes of the LRT, together with the construction of cross passages linking the new tunnel tube with the existing tunnel tubes;
 - (b) Full-scale rehabilitation/reconstruction of the existing tunnel tubes of the LRT from tunnel lining to equipment and fittings following the latest standards;
 - (c) Provision of equipment for operation of the rehabilitated/new tunnel tubes;
 - (d) Re-provision of 5 nos. of large diameter water mains within the existing tunnel tubes and re-provision of associated waterworks facilities affected by the tunnel rehabilitation works;
 - (e) Conversion of the toll plaza together with the provision of equipment and facilities for e-tolling;
 - (f) Re-provision of tunnel buildings including tunnel administration building, ventilation buildings etc.;
 - (g) Widening of Lion Rock Tunnel Road at Kowloon side to dual three-lane from slip road of Lung Cheung Road interchange to LRT Kowloon portal and widening the existing vehicular bridge crossing over Lung Cheung Road;
 - (h) Widening of a section of Lion Rock Tunnel Road at Sha Tin side to dual three-lane from tunnel toll plaza to Fung Shing Court and a section of Sha Tin Road near Pok Hong Estate;
 - (i) Construction of a vehicular bridge crossing over Chung Pak Road as part of slip road to Hung Mui Kuk Road and modification of the junction of Hung Mui Kuk Road and Chung Pak Road;
 - (j) Re-provision of footbridges affected by the road widening works;
 - (k) Provision of noise barriers/enclosures to mitigate the noise impact on noise sensitive receivers; and
 - (l) Ancillary works including slope works, road lighting, drainage, landscaping works, etc.

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

1.5.1 The Project, which involves the construction and operation of road tunnel/highways and the associated link roads, is classified as Designated Projects under the following categories under Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO):

- (a) Item A.1 – A road which is an expressway, trunk road, primary distributor road or district distributor road including new roads, and major extensions or improvements to existing roads. Currently Lion Rock Tunnel and Lion Rock Tunnel Road are classified as trunk road and expressway respectively. Thus, the proposed works such as new tunnel tube and widening of Lion Rock Tunnel Road are considered as “major extensions or improvements to existing roads”;
- (b) Item A.7 – A road or railway tunnel more than 800 m in length between portals. The proposed new tunnel tube spans 1.4km;
- (c) Item Q.1 – All projects including new access roads, railways, sewers, sewage treatment facilities, 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. A portion of proposed new tunnel tube and part of widening works of Lion Rock Tunnel Road are located within the boundary Lion Rock Country Park.

1.6 Contact Person

1.6.1 For details of the Project, please contact:

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Fax: 2714 5289

- (b) Name: Ms LAM Larissa Wing-Ching
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Tel.: 2762 3570
Fax: 2714 5289

2. OUTLINE OF PLANNING AND IMPLEMENTATION PROGRAMME

2.1 Project Title and Implementation

2.1.1 The Project will be implemented under the PWP Item no. 6876TH. Consultants have been appointed to undertake the investigation study of the Project, including the environmental impact assessment. 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 tentative implementation programme is as follow:-

- | | |
|---|--------------------|
| (a) Investigation and Preliminary Design: | Q2 2019 to Q3 2021 |
| (b) Appointment of Consultants: | Q3 2021 |
| (c) Detailed Design and Tendering: | from Q3 2021 |
| (d) Construction: | to be ascertained |
| (e) Commissioning and Operation: | to be ascertained |

2.2.2 The packaging and programme of the Project shall be ascertained during the investigation and detailed design stages of the project, taking into account the prevailing site conditions and the results of relevant technical studies.

2.3 Interface with other Projects

2.3.1 The project “Revised Trunk Road T4 and associated Improvement Works in Sha Tin” managed by the Civil Engineering and Development Department, involving major improvement to Sha Tin Road near Pok Hong Estate, will interface with the Project. Underpasses, elevated structures and roads will be built to connect the two projects. Close liaison with CEDD during the preparation of EIA Study will be maintained to ensure that the cumulative effects by the two projects would be duly reflected in the EIA study.

3. POSSIBLE IMPACT ON THE ENVIRONMENT

3.1 Environmental Impact from the Project

3.1.1 Based on the preliminary design, the Project will conceptually be made up of the following elements:

- Elevated bridges/ viaducts/ footbridges
- Land tunnels
- At-grade roads
- Toll plaza modification
- Ventilation Buildings
- Administration building and other ancillary buildings

3.1.2 The Project would involve land-based construction works, including site clearance, earthworks, demolition works, piling or foundation works, construction of land tunnels, elevated bridges, viaducts, footbridges, road widening works, rehabilitation / reconstruction of the existing tunnel tubes, re-provision of water mains and associated water works facilities, ventilation buildings, administration building and other ancillary buildings, modification of toll plaza, erection of noise barriers/enclosure and slope works, draining and landscaping works, etc.

3.1.3 It is anticipated that the Project will bring potential environmental impacts on sensitive receivers in the vicinity, such as air quality, noise, water quality, ecology, waste management, hazard to life, cultural heritage, landscape and visual impacts, during the construction and operation phases of the Project. The potential environmental impacts are discussed in the following sub-sections. Detailed impact assessments will be carried out during the EIA study.

3.2 Air Quality

3.2.1 During construction phase, the major construction activities will be site formation, demolition works, construction of the elevated bridges/ footbridge, land tunnels and administration/ventilation buildings, toll plaza modification and widening of at-grade roads. The potential air quality impact on air sensitive receivers will be generated from the excavation and materials handlings. The construction dust generating activities will be those associated with site formation and construction works.

3.2.2 During operation phase, the key pollution sources within the study area that may have air quality impact include vehicle emissions from open sections of existing and proposed roads, emissions from the tunnel portals and emissions from ventilation buildings of the tunnel tubes within the study area.

3.3 Noise

3.3.1 During construction phase, the potential noise impacts on noise sensitive receivers will be associated with the construction activities and powered mechanical equipment including breaker, excavators, lorries, mobile cranes, concrete truck mixers, pokers, rollers, etc. The operation of Tunnel Boring Machine (TBM) for tunnel boring will also be one of the key construction activities that would create noise. The impact for any nighttime works will need to be considered as well.

3.3.2 During operation phase, noise sources will mainly be generated by road traffic from the highways and the tunnel portals, and the noise coming from the ventilation buildings as well as the mechanical ventilation systems for the tunnel.

3.4 Water Quality

3.4.1 During construction phase, the major water quality impact will be from general construction activities, construction site run-off, accidental spillage, sewage effluent from the construction workforce, excavation works and temporary on-site storage of excavated materials.

3.4.2 During operation phase, potential water pollution sources will include the road surface run-off from the bridge/viaduct, accidental spillage from travelling vehicles, washing and maintenance activities of works vehicles, sewage effluent generated from staff working at the administration building, building run-off such as wash-off from the outside of the buildings during rainstorm. Consideration will also be given to the cumulative water quality impacts arising from other projects anticipated in operation concurrently.

3.5 Ecology

3.5.1 During construction phase, the potential direct impact from the proposed works (e.g. site formation) will result in habitat loss of woodland, natural/semi-natural watercourse, and plantation habitats. The proposed works would generate indirect impacts (e.g. dust, noise, vibration, site run-off) and may affect the habitats aboveground and in the vicinity of the Project site and its associated fauna. Moreover, potential drawdown of underground water table and / or hydrological

change of aboveground streams (e.g. Lion Rock Country Park) may be resulted from the tunnel construction works by bored tunneling.

3.5.2 During operational phase, the improvement of Lion Rock Tunnel (e.g. widening the existing Lion Rock Tunnel Road at Kowloon side to a dual three-lane) would generate noise, glare and increase the level of anthropogenic disturbance, which may disturb various fauna (e.g. avifauna) and reduce their usage of the habitats

3.5.3 Potential direct and indirect impacts arising from the construction and operation of the proposed works of Improvement of Lion Rock Tunnel on sites of conservation importance (e.g. Lion Rock Country Park) would be identified and evaluated comprehensively in the EIA study. Avoidance and other possible measures would be carried out, if necessary, to prevent any unacceptable adverse impacts.

3.6 Waste Management

3.6.1 During construction phase, the main activities that will potentially generate waste include excavation, tunneling (e.g. TBM), demolition and construction of structures. Typical waste types associated with these activities include inert construction and demolition (C&D) materials, non-inert C&D materials, non-recyclable C&D waste, chemical waste and general refuse.

3.6.2 During operation phase, the tunnel ventilation buildings and administration building will generate general refuse and chemical waste.

3.7 Hazard to Life

3.7.1 The Project area will be located within the consultation zone of the Shatin Water Treatment Works (STWTW), which is classified as a Potentially Hazardous Installation (PHI) on account of storage of hazardous chemical chlorine in one-tonne drums. A Consultation Zone (CZ), centered at the chlorine store, of 1000 m radius but excluding the areas located at over 150m above the STWTW is established around the STWTW.

3.7.2 The Project would not involve the use of any explosives and there is no storage of such goods in the vicinity of the Project. It is anticipated that there would be no hazard to life arising from the use of explosive during the construction of the Project.

3.8 Cultural Heritage

3.8.1 The project will not encroach upon any Sites of Archaeological Interest and declared monuments, but two cultural heritage resources are identified within 50m of the

Project site boundary including Tsang Tai Uk (Grade 1 Historic Building) and Ex Kowloon-Canton Railway Beacon Hill Tunnel (Government Historic Site identified by AMO). Tsang Tai Uk is situated approximately 15m outside the Project Boundary while Ex Kowloon-Canton Railway Beacon Hill Tunnel is situated in the vicinity of the Project boundary. Any direct or indirect impacts on the heritage resources nearby will be addressed in the EIA study.

- 3.8.2 Both built heritages are located outside the proposed widened / altered road and tunnel alignment, thus the Project would not induce direct impact on the cultural heritage resources. As advised by the Antiquities and Monuments Office (AMO), a Heritage Impact Assessment is not required. However, a cultural heritage impact assessment under the Environmental Impact Assessment Ordinance will be conducted to assess the potential impact on cultural heritage arising from the proposed works. Suitable mitigation measures will be proposed in the cultural heritage impact assessment such as erection of fencing/hoarding along the site boundary for road section near Tsang Tai Uk in order to minimize the potential indirect impacts.

3.9 Landscape and Visual

- 3.9.1 During construction phase, sources of impacts on landscape will include direct impacts such as construction works and associated slope works, including site clearance and excavation works which may involve the removal of existing vegetation and trees, and indirect impacts such as construction traffic, laying of utilities, temporary site access areas, heavy machinery, increased road traffic congestion and dust generation during dry weather. For visual impacts, there is unlikely any significant adverse visual impact on the concerned area as the construction works will be carried out along existing road. The unmitigated visual impacts may include blockage of views to the visual resources, degrading of visual quality of existing views and visual incompatibility of the construction works with the surroundings.
- 3.9.2 During operation phase, the sources of impacts on landscape will be the operation of the tunnel due to the vehicle emission on the vegetation at the adjacent land and on the road side planting. For visual impact, it will be arisen from road widening of existing road and other proposed structure (i.e. the new administration building and ventilation buildings).

4. MAJOR ELEMENTS OF THE SURROUNDING ENVIRONMENT

4.1 General

4.1.1 The Project area locates at connecting rims of Kowloon and Shatin districts. It lies across the Lion Rock and spans along the northern part of Waterloo Road, Lion Rock Tunnel Road, and to the west part of the Sha Tin Road. Abundant residential uses exist along the rims of two districts while recreational uses exist on the Lion Rock side.

4.1.2 A number of existing sensitive receivers have already been identified based on the existing development in the vicinity. Other potential sensitive receivers will be identified in the EIA study. Detailed investigation and surveys will be carried out to assess how they are affected by the Project under this EIA study.

4.2 Air Quality

4.2.1 The study area for the air quality impact assessment is defined as area within 500 metres from the boundary of the proposed roads. Potential air sensitive receivers that may be affected by the Project will be included in the assessment and are as follows:

- At the Kowloon end: Residential Land Uses – Eastland Heights, Peninsula Heights, Meridian Hill, Lung Cheung Court, planned residential development (NKIL 6579); Recreational Uses – Lion Rock Park, Lung Cheung Road Park, Broadcast Drive Garden;
- At the Shatin end: Residential Land Uses – Ka Tin Court, Hill Paramount, World-wide Gardens, Sha Tin Tau Village, Fung Shing Court, Sha Tin Tau New Village, Sun Tin Wai Estate, King Tin Court, Kak Tin Village, Village House at Hung Mui Kuk Road, Pok Hong Estate, Tsang Tai Uk, Tsok Pok Hang San Tsuen; Educational Institution – Sha Tin Government Primary School, Christ College; Health Care Facilities – Union Hospital; Recreational Uses – Hung Mui Kuk Barbecue Area.

4.2.2 The locations of the above potential air sensitive receivers are illustrated in Drawing No. 60604728/R42a/705. The abovementioned air sensitive receivers are not exhaustive and indicative only, more potential air sensitive receivers will be identified in the EIA study.

4.3 Noise

4.3.1 The study area for the noise impact assessment is defined as area within 300 metres from the boundary of the proposed roads. Potential noise sensitive receivers that may be affected by the Project are identified as follows:

- At the Kowloon end: Residential Land Uses – Eastland Heights, Peninsula Heights, Lung Cheung Court, Pearl Court and Vista Panorama , planned residential development (NKIL 6579);
- At the Shatin end: Residential Land Uses – Ka Tin Court, Parc Royale, Julimount Garden, Hill Paramount, World-wide Gardens, Sha Tin Tau Village, Fung Shing Court, Sha Tin Tau New Village, Sun Tin Wai Estate, King Tin Court, Kak Tin Village, Golden Lion Garden, Village House at Hung Mui Kuk Road, Pok Hong Estate, Tsang Tai Uk, Tsok Pok Hang San Tsuen; Educational Institution – Sha Tin Government Primary School, Christ College; Hospital – Union Hospital.
- Country Park – Lion Rock Country Park

4.3.2 The locations of the above potential noise sensitive receivers, except Lion Rock Country Park, are illustrated in Drawing No. 60604728/R42a/706. The area of Lion Rock Country Park is illustrated in Drawing No. 60604728/R42a/708. The abovementioned noise sensitive receivers are not exhaustive and indicative only, more potential noise sensitive receivers will be identified in the EIA study.

4.4 Water Quality

4.4.1 The potential water sensitive receivers in the vicinity of the Project include:-

- Freshwater stream at Tei Lung Hau;
- Tin Sum Nullah next to Shatin Water Treatment Works;
- Kwun Yam Shan Stream;
- Watercourse at Lion Rock;
- Watercourse at Shatin Tau New Village;
- Watercourse at Beacon Hill;
- Lion Rock Country Park; and
- Beacon Hill SSSI.

4.4.2 The locations of the above potential water sensitive receivers are illustrated in Drawing No. 60604728/R42a/707. No planned water sensitive receiver is identified.

4.5 Ecology

4.5.1 Potential ecologically sensitive receivers identified within 500m from the Project site include (refer to Drawing No. 60604728/R42a/708):-

- Lion Rock Country Park;
- Beacon Hill SSSI;
- Natural and semi-natural habitats, including woodland and stream (e.g. Kwun Yam Shan Stream, streams at Tei Lung Hau); and
- Existing and potential ardeid night roosting site on the banks of Shing Mun River Channel.

4.6 Hazard to Life

4.6.1 Shatin Water Treatment Works (STWTW) is classified as a Potentially Hazardous Installation (PHI) on account of storage of hazardous chemical chlorine in one-tonne drums. A Consultation Zone (CZ), centered at the chlorination store, of 1000 m radius but excluding the areas located at over 150m above the STWTW is established around the STWTW. Based on the latest design, some works areas will be located within the consultation zone at the PHI. The chlorination store with storage capacity of 190 tonnes situates at about 580m to the project. A hazard to life assessment may be required for assessing the risk level posed by STWTW subject to the number of construction workers during construction phase and increased traffic population during operation phase.

4.7 Cultural Heritage

4.7.1 Tsang Tai Uk (Grade 1 historic building) and Ex Kowloon-Canton Railway Beacon Hill Tunnel (Government Historic Site identified by AMO) are within 50m of the project area as shown in Drawing No. 60604728/R42a/709. No Declared Monuments and Sites of Archaeological Interest are identified within or in the vicinity of the Project site.

4.8 Landscape and Visual

4.8.1 The potential landscape and visual sensitive receivers will be:-

Landscape Sensitive Receiver

- Lion Rock Country Park;
- Road side planting and planting on slopes along Lion Rock Tunnel Road;
- Secondary woodland; and
- Watercourse / Stream.

Visual Sensitive Receiver

- Residents of residential areas along Lion Rock Tunnel Road, Sha Tin Road and near the interchange of Waterloo Road/ Lung Cheung Road; and
- Wilson Trail (Section 5).

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

5.1 Mitigation Measures for the Project

5.1.1 Practicable and effective mitigation measures will be adopted during the construction and operation phases of the Project to minimize environmental impacts on sensitive receivers.

5.2 Air Quality

5.2.1 During the construction phase, appropriate dust mitigation measures as stipulated in the Air Pollution Control (Construction Dust) Regulation (Cap. 311R) and good site practices will be implemented properly to minimize fugitive dust emission. Possible key measures include:-

- Regular watering on all exposed and unpaved surface, particularly during dry weather;
- Frequent watering, particularly in dusty construction areas and areas close to air sensitive receivers;
- Covering all excavated or stockpile of dusty material by impervious sheeting or spraying with water to maintain the entire surface wet;
- Provision of wheel washing facilities at the exit points of the site;
- Covering of any dusty materials on vehicles leaving the site; and
- Minimizing the extent of slope cutting.

5.2.2 Requirements stipulated in the Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation will be applied to control potential emission from non-road mobile machinery used during construction phase.

5.2.3 Subject to investigation and further assessment to identify additional mitigation measures, provision of buffer area between the sources and the receivers, careful positioning of ventilation buildings away from receiver will be considered to minimize the air quality impacts on nearby air sensitive receivers during operation phase.

5.3 Noise

5.3.1 Possible key measures during construction period to minimize construction noise impacts on the nearby noise sensitive receivers include:-

- Use of quiet plants, silencers or mufflers on construction equipment;
- Use of moveable and temporary noise barriers to screen noise from relatively static power mechanical equipment;
- Installation of temporary noise screening structures or purpose-build noise barriers along the site boundary;
- Adoption of good site practices such as orientating noisy plant away from the nearby noise sensitive receivers, scheduling noisy activities to minimize noise exposure, carrying out proper maintenance of construction plant, devising quiet methods of working, and carrying out regular noise monitoring; and
- Proper planning of construction vehicle travelling routes.

5.3.2 Subject to detailed investigation, noise enclosures/barriers and low noise road surfacing will be required along some sections of roads to mitigate the noise impact during operation phase. Louvres of ventilation buildings should be orientated away from adjacent NSRs. Direct noise mitigation measures including silencers, acoustic louvres and acoustic enclosures for ventilation buildings will be implemented. The façade for those ventilation buildings should have adequate sound insulation properties.

5.4 Water Quality

5.4.1 Possible key mitigation measures to minimize water quality impact on nearby water sensitive receivers during construction phase include:-

- Good site practices in accordance with the ProPECC PN 1/94 “Construction Site Drainage” and “Recommended Pollution Control Clauses for Construction Contracts” issued by EPD;
- Practices outlined in ETWB TC(W) No. 5/2005 “Protection of Natural Stream/ Rivers from Adverse Impacts from Construction Works” should be adopted; and
- All runoffs arising from the construction sites should be properly collected and treated to ensure the effluent comply with the Water Pollution Control

Ordinance. Silt trap and oil interceptor will be provided to remove the oil, lubricants, grease, silt, grit and debris from the wastewater before being pumped to the public stormwater drainage system.

- Temporary stockpiles of the on-site excavated materials, which is stored on-site before disposal to landfill site or before reused in other construction sites, will be covered to avoid erosion and washing of solid waste into the drainage system. The disposal of the on-site excavated materials will be carried out as soon as possible.

5.4.2 The following measures shall be adopted during operation period to minimize the water quality impacts on nearby water sensitive receivers. In addition, the practices as stated in the “ProPECC PN 5/93 – Drainage Plans subject to Comment by the Environmental Protection Department” would also be followed.

- Screening of road surface runoff;
- Discharge from washing and maintenance activities of works vehicles at administrative building should pass through oil/grit interceptors/chambers to remove oil, grease and sediment before discharging into public storm drainage/ fouled sewerage system; and
- Pre-treatment of wastewater generated by the maintenance of ventilation system using active carbon filters will be applied before discharging to foul sewerage systems.

5.5 Ecology

5.5.1 Encroachment within ecologically sensitive sites (e.g. Lion Rock Country Park, Beacon Hill SSSI) or important habitats for fauna and flora will be avoided as far as practicable. Other potential direct and indirect impacts will also be avoided, wherever possible. Where avoidance is inapplicable, the following mitigation measures will be considered to minimise or compensate the ecological impact:

- Confining construction works to a specific area or season;
- Using alternative design or construction methods;
- Transplanting flora species of conservation importance; and
- Compensation for unavoidable habitat loss on a “like for like” basis.

5.5.2 Good site practices and mitigation measures aiming to reduce impacts from air, water and noise pollution as stated in Sections 5.2.1, 5.3.1 and 5.4.2 would also minimise potential indirect impact to ecological resources.

5.6 Waste Management

5.6.1 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.

5.6.2 During operation phase, a waste collector shall be employed to remove general refuse and chemical waste generated from administration building and ventilation buildings on a daily basis.

5.6.3 No land contamination issue is expected. Detail assessment is required to check if there is any potential land contamination issue arising from the proposed development.

5.7 Hazard to Life

5.7.1 Mitigation measures including adequate emergency response/ evacuation plans for the works area of the Project should be established and emergency training/drills for all relevant personnel conducted at regular level if necessary.

5.8 Cultural Heritage

5.8.1 A cultural heritage impact assessment will be carried out to assess the potential direct and indirect impacts on cultural heritage resources. Impacts on cultural heritage will be avoided as far as practicable. If found unavoidable, mitigation measures to minimise the impacts on cultural heritage will be proposed and implemented with prior agreement with the AMO. Suitable measures such as erection of fencing/hoarding along the site boundary for road section will be proposed in order to minimize the potential indirect impacts.

5.9 Landscape and Visual

5.9.1 Mitigation measures to minimize the landscape and visual impacts during both the construction and operation phases will be comprehensively reviewed. Possible mitigation measures are as follows:-

During construction phase

- Temporary greening treatment on bare soil surface before construction works of structures take place;
- Hoarding to be erected at the interface between the construction site and the existing area;
- Early formation of the planting area and advance planting of vegetation on the concerned landscape sensitive receivers; and
- Sensible alignment of road widening to minimize impacts to existing trees.

During operation phase

- Aesthetic design of the portal structures;
- Aesthetic design noise barriers/ enclosures near residential areas;
- Tree planting near portals, administration building and ventilation buildings to reduce their apparent size and to visually screen the structures; and
- Early formation of the planting area and advance planting of vegetation on the concerned landscape sensitive receivers in operation phase.

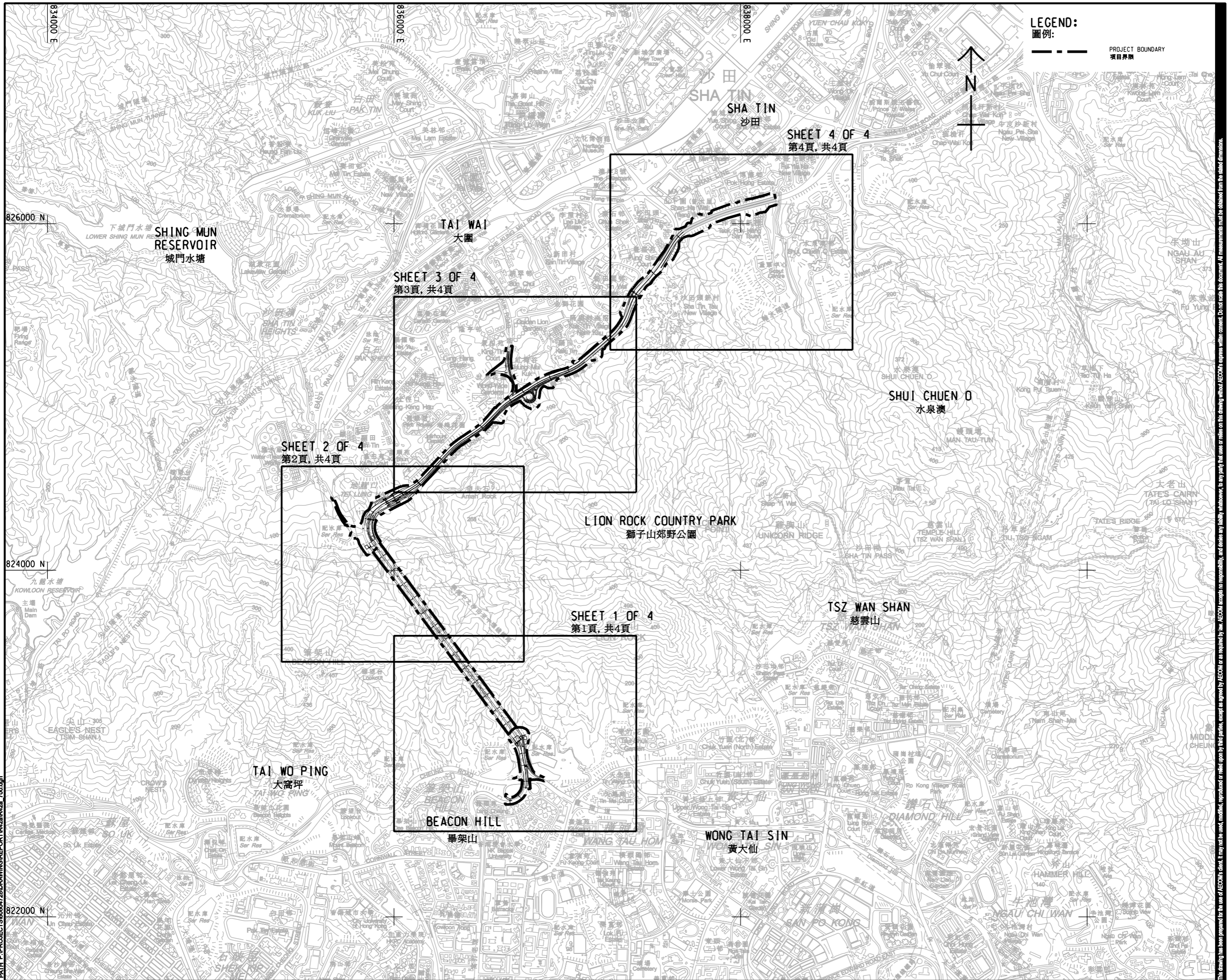
5.10 Further Implication

- 5.10.1 In future public consultation process, the District Councils and relevant stakeholders will be briefed and consulted on the proposals.

6. USE OF PREVIOUSLY APPROVED EIA REPORTS

6.1 There is no previous approved EIA report for the Project.

ISO A1 594mm x 841mm
Approved:
Checked:
Designer:
Project Management Initials:
8/3
Pld File By: Guo YU
PATH: P:\PROJECTS\6064728\DRAWING\REPORT\42a\42a_700.dgn



LEGEND:
圖例:
--- PROJECT BOUNDARY
項目界線



AECOM

PROJECT
項目
IMPROVEMENT OF LION ROCK TUNNEL - INVESTIGATION
獅子山隧道改善計劃- 勘察研究

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STATUS
階段

SCALE
比例
A3 1:20000

DIMENSION UNIT
尺寸單位
METRES

KEY PLAN
索引圖

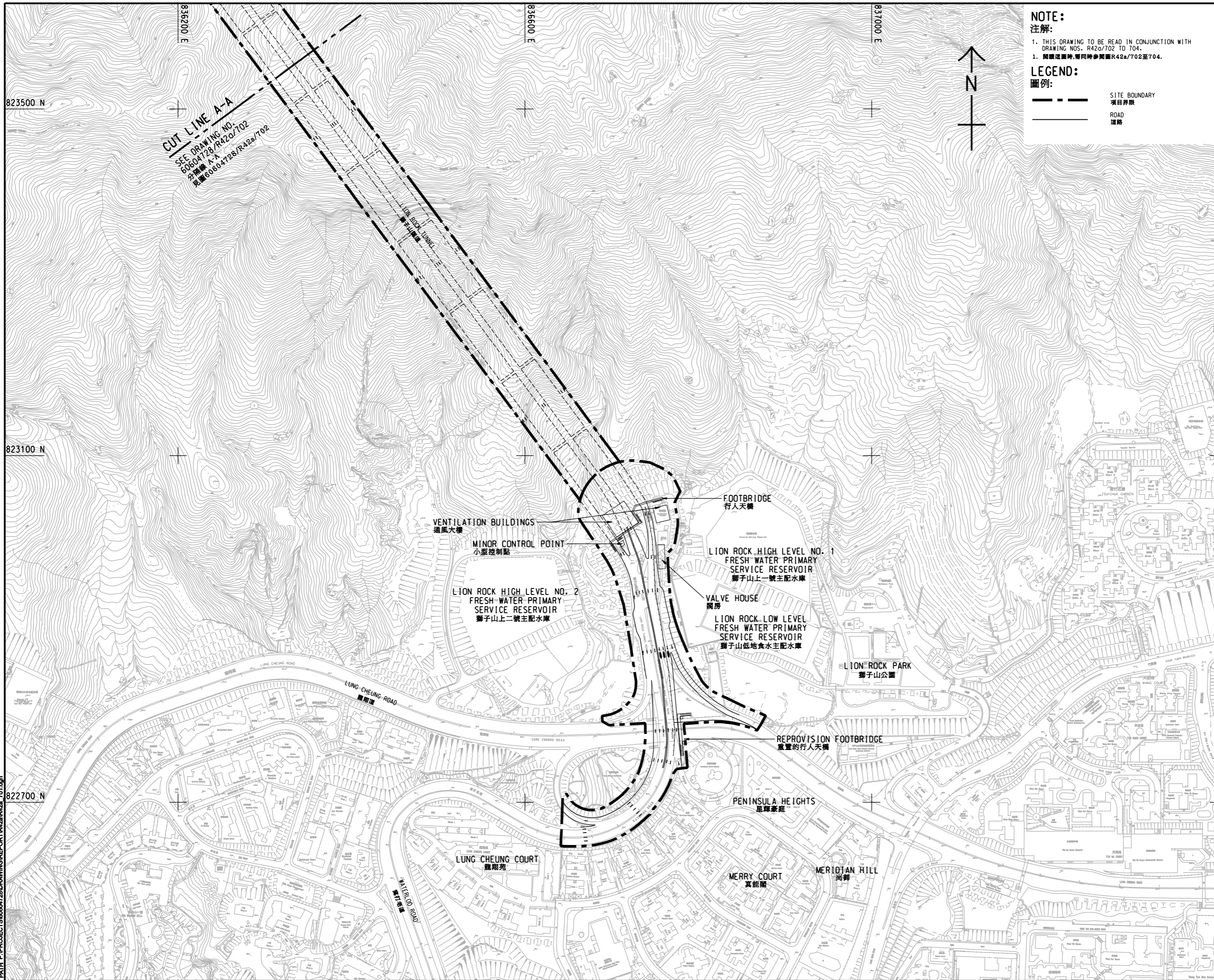
PROJECT NO.
項目編號
60604728

AGREEMENT NO.
協議編號
CE 48/2018(HY)

SHEET TITLE
圖名
LOCATION PLAN OF THE PROJECT - KEY PLAN
項目位置圖-索引圖

SHEET NUMBER
圖號
60604728/R42a/700

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 1. 閱讀此圖時,需同時參閱圖R42a/702至704.

LEGEND:
 圖例:
 - - - SITE BOUNDARY (項目界線)
 _____ ROAD (道路)

AECOM

PROJECT
 項目
IMPROVEMENT OF LION ROCK TUNNEL - INVESTIGATION
 獅子山隧道改善計劃- 勘察研究

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STATUS
 階段

SCALE
 比例
 A3 1:4000

DIMENSION UNIT
 尺寸單位
 METRES

KEY PLAN
 索引圖

PROJECT NO.
 項目編號
 60604728

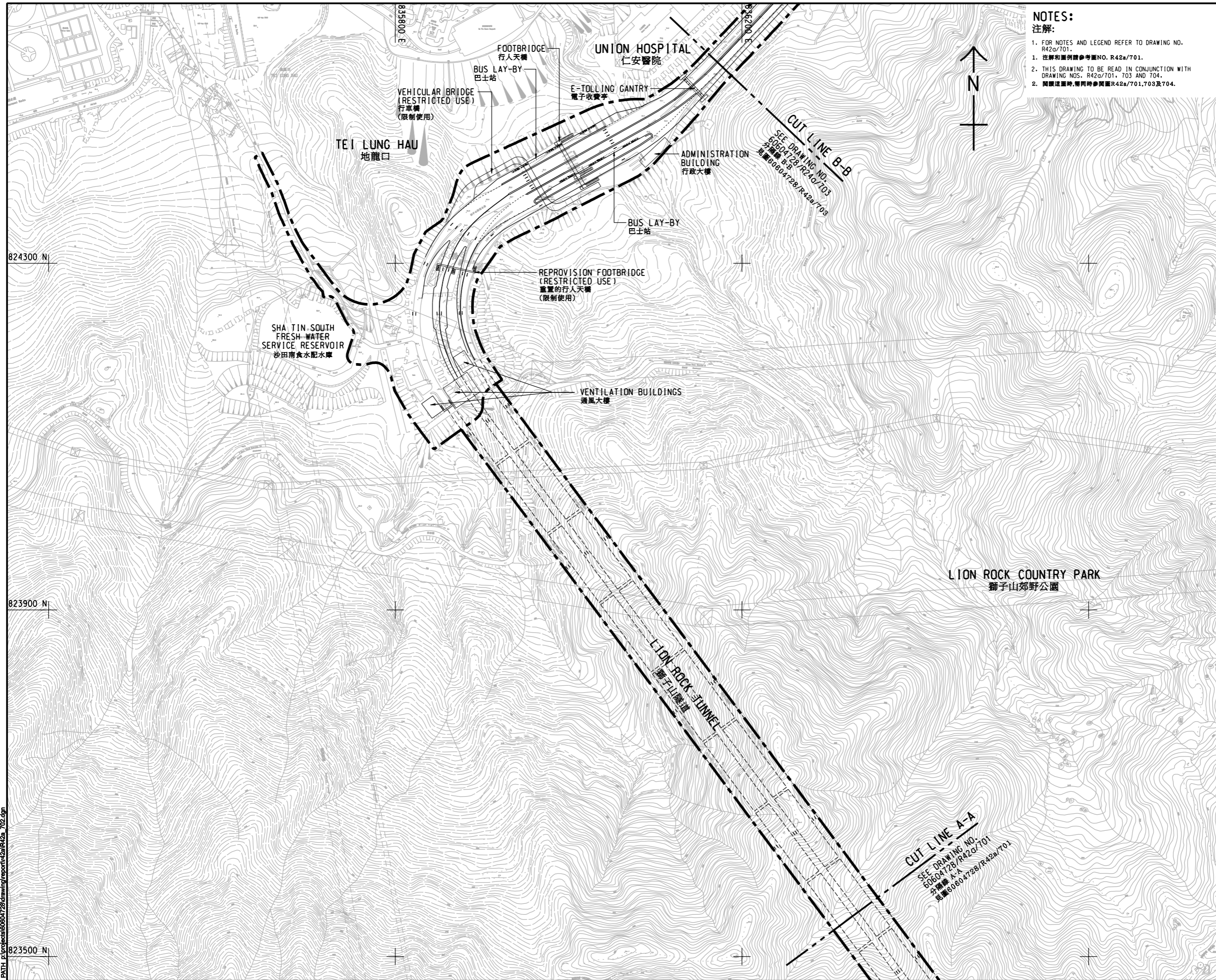
AGREEMENT NO.
 協議編號
 CE 48/2018(HY)

SHEET TITLE
 圖紙名稱
 LOCATION PLAN OF THE PROJECT
 項目位置圖

SHEET NUMBER
 圖紙編號
 60604728/R42a/701

SHEET 1 OF 4
 第1頁, 共4頁

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STATUS
 階段

SCALE
 比例

A3 1: 4000

DIMENSION UNIT
 尺寸單位

METRES

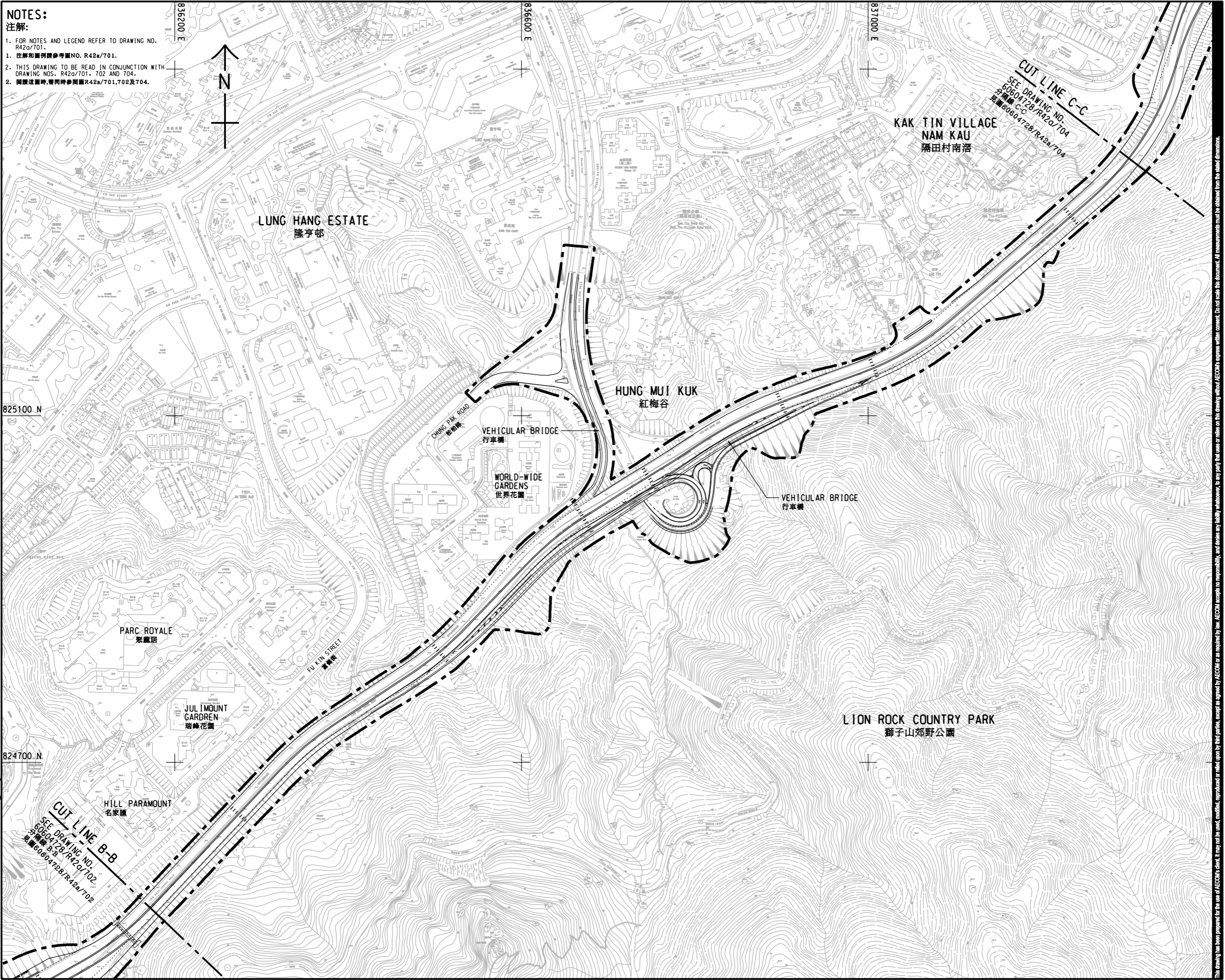
KEY PLAN
 索引圖

SHEET TITLE
 圖紙名稱

LOCATION PLAN OF THE PROJECT
 項目位置圖

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PROJECT
 項目
IMPROVEMENT OF LION ROCK TUNNEL - INVESTIGATION
 獅子山隧道改善計劃- 勘察研究

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STATUS
 階段

SCALE
 比例
 A3 1 : 4000

DIMENSION UNIT
 尺寸單位
 METRES

KEY PLAN
 索引圖

PROJECT NO.
 項目編號
 60604728

AGREEMENT NO.
 協議編號
 CE 48/2018(HY)

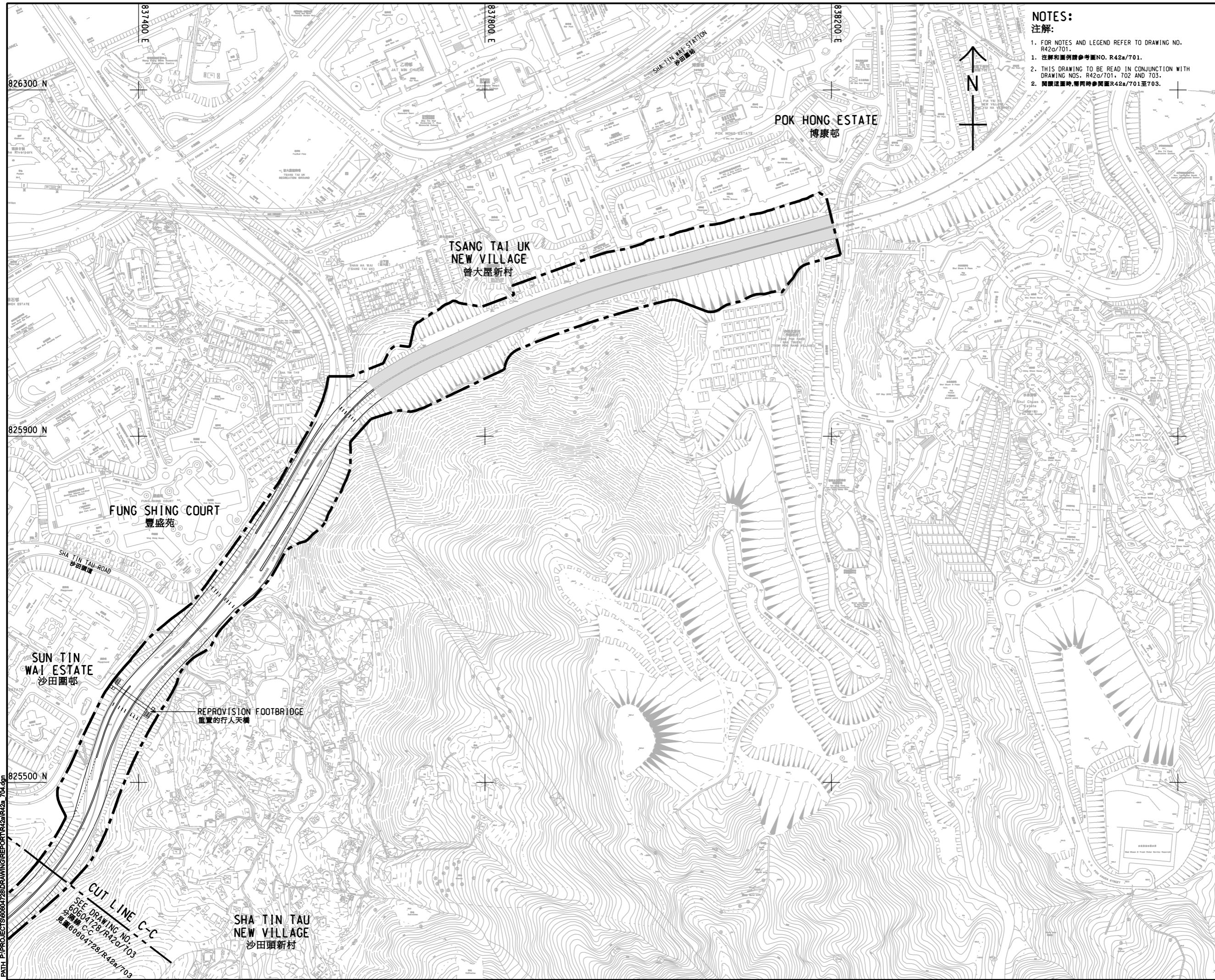
SHEET TITLE
 圖紙名稱
 LOCATION PLAN OF THE PROJECT
 項目位置圖

SHEET NUMBER
 圖紙編號
 60604728/R42a/703

SHEET 3 OF 4
 第3頁, 共4頁

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PROJECT
項目
IMPROVEMENT OF LION ROCK TUNNEL - INVESTIGATION
獅子山隧道改善計劃- 勘察研究

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STATUS
階段

SCALE
比例
A3 1 : 4000

DIMENSION UNIT
尺寸單位
METRES

KEY PLAN
索引圖

PROJECT NO.
項目編號
60604728

AGREEMENT NO.
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SHEET TITLE
圖紙名稱
LOCATION PLAN OF THE PROJECT
項目位置圖

SHEET NUMBER
圖紙編號
60604728/R42a/704

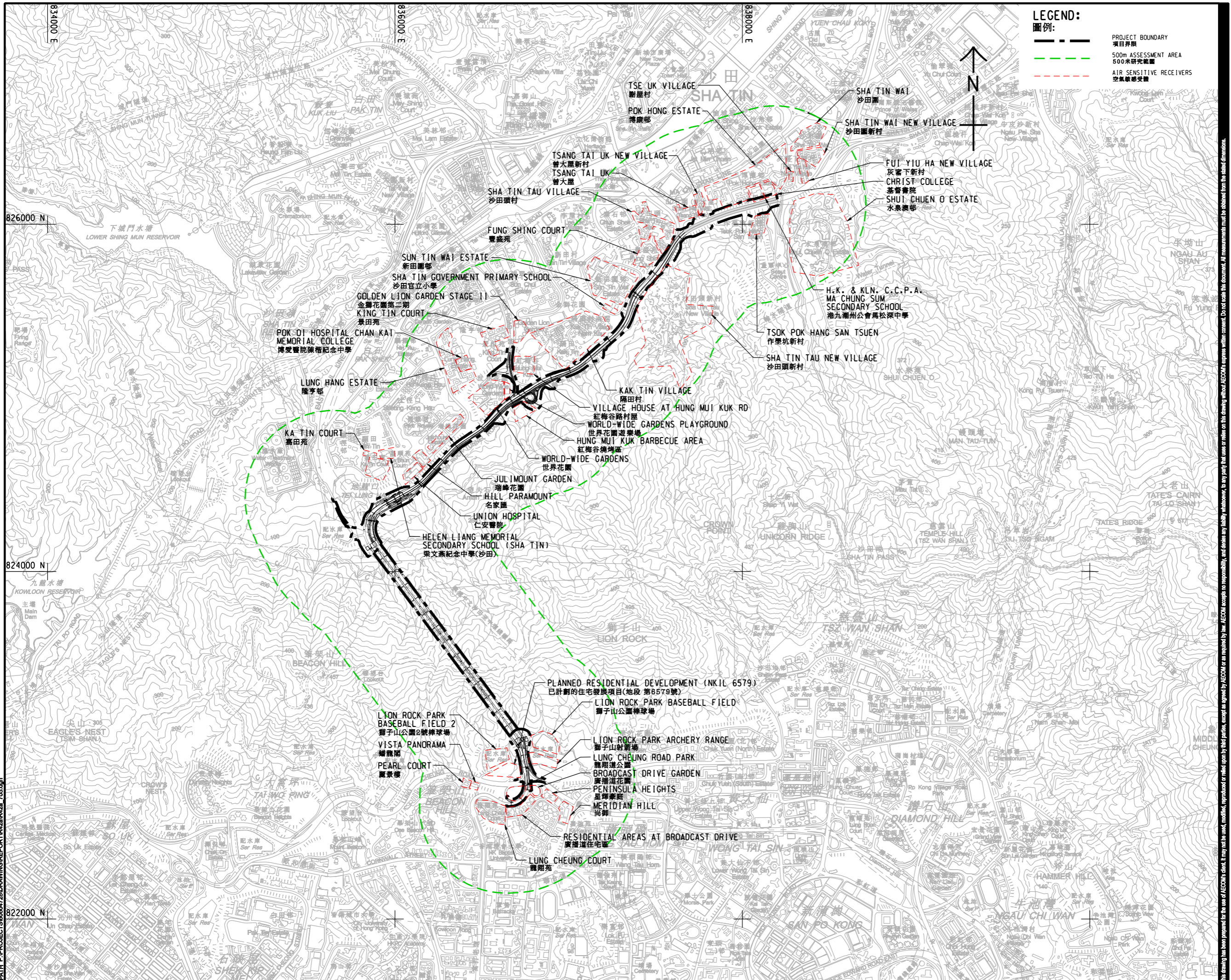
SHEET 4 OF 4
第4頁, 共4頁

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8/4/2018

CUT LINE C-C
SEE DRAWING NO.
60604728/R42a/703
分層線 C-C
見圖 60604728/R42a/703

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LEGEND:
圖例:

- PROJECT BOUNDARY
項目界限
- 500m ASSESSMENT AREA
500米研究範圍
- AIR SENSITIVE RECEIVERS
空氣敏感受體

AECOM

PROJECT
項目
IMPROVEMENT OF LION ROCK TUNNEL - INVESTIGATION
獅子山隧道改善計劃- 調查研究

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STATUS
階段

SCALE
比例
A3 1:20000

DIMENSION UNIT
尺寸單位
METRES

KEY PLAN
索引圖

PROJECT NO.
項目編號
60604728

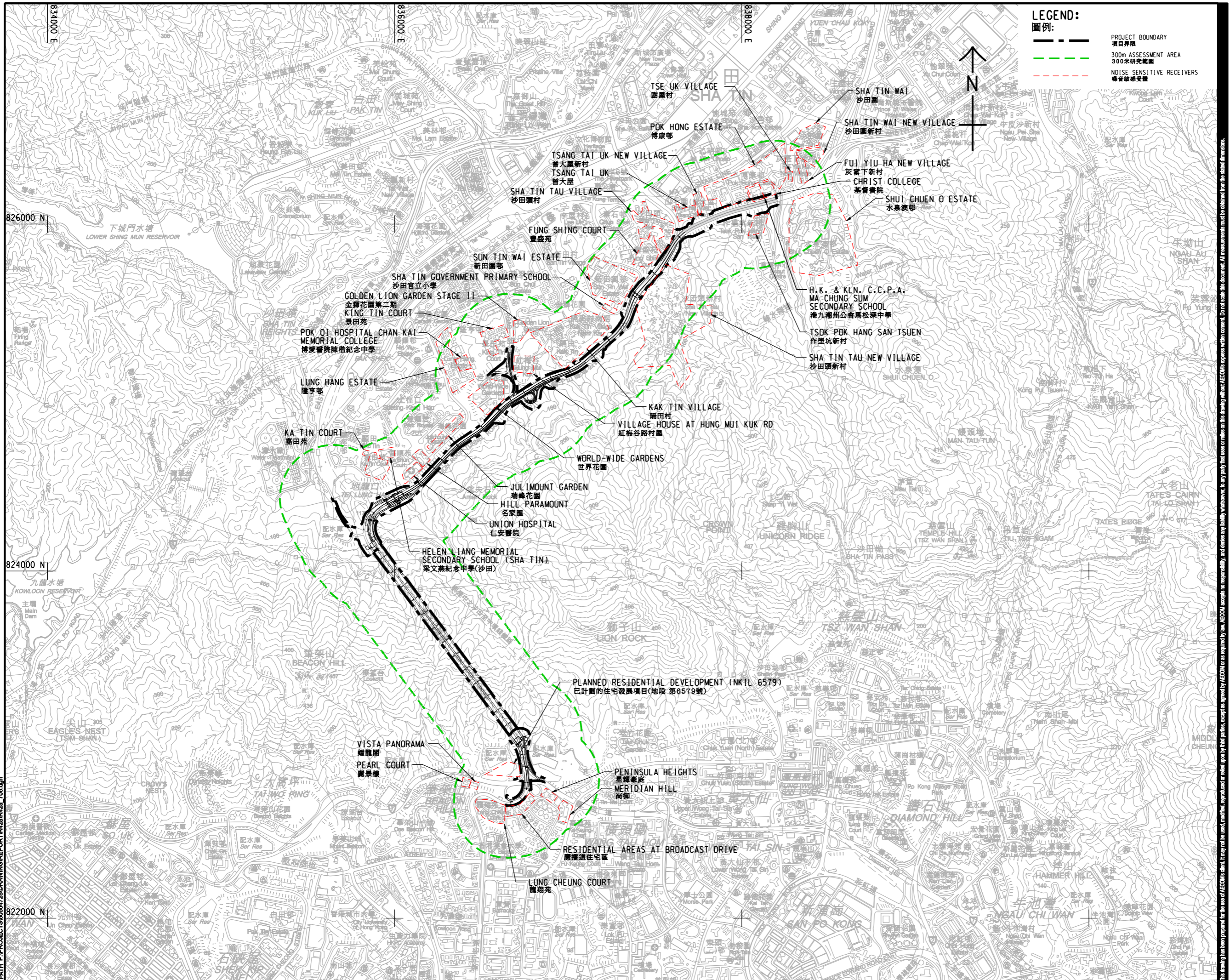
AGREEMENT NO.
協議編號
CE 48/2018(HY)

SHEET TITLE
圖名
LOCATIONS OF AIR SENSITIVE RECEIVERS
空氣敏感受體位置圖

SHEET NUMBER
圖號
60604728/R42a/705

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Pld File by: ZHLZ



LEGEND:
圖例:

- PROJECT BOUNDARY
項目界限
- 300m ASSESSMENT AREA
300米研究範圍
- NOISE SENSITIVE RECEIVERS
噪音敏感受體



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PROJECT
項目
IMPROVEMENT OF LION ROCK TUNNEL - INVESTIGATION
獅子山隧道改善計劃- 調查研究

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STATUS
階段

SCALE
比例
A3 1:20000

DIMENSION UNIT
尺寸單位
METRES

KEY PLAN
索引圖

PROJECT NO.
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60604728

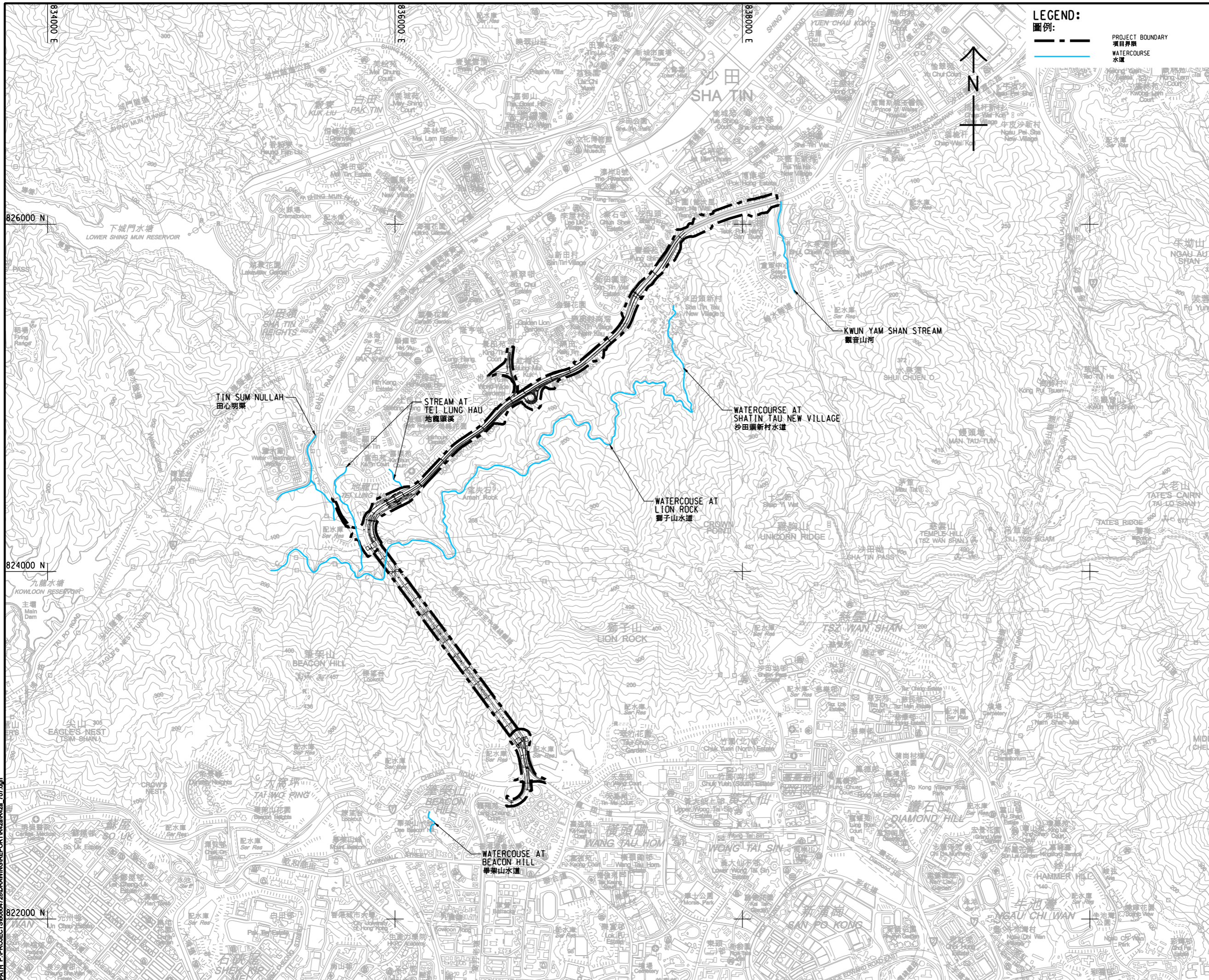
AGREEMENT NO.
協議編號
CE 48/2018(HY)

SHEET TITLE
圖名
LOCATIONS OF NOISE SENSITIVE RECEIVERS
噪音敏感受體位置圖

SHEET NUMBER
圖號
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LEGEND:
圖例:

PROJECT BOUNDARY
項目界限

WATERCOURSE
水道

AECOM

PROJECT
項目

IMPROVEMENT OF LION ROCK TUNNEL - INVESTIGATION
獅子山隧道改善計劃 - 勘察研究

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STATUS
階段

SCALE
比例

A3 1:20000

DIMENSION UNIT
尺寸單位

METRES

KEY PLAN
索引圖

PROJECT NO.
項目編號

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AGREEMENT NO.
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CE 48/2018(HY)

SHEET TITLE
圖名

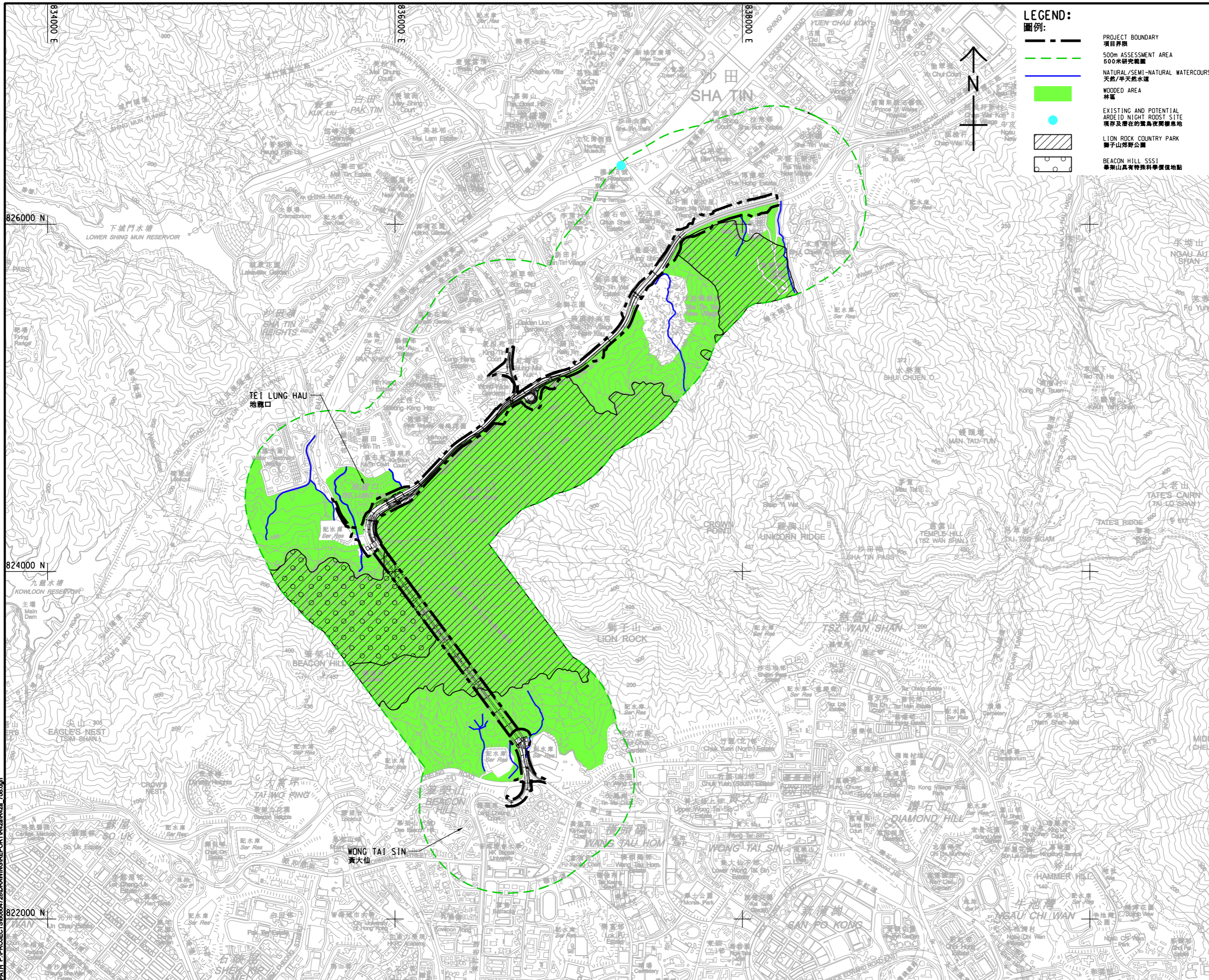
LOCATIONS OF WATER SENSITIVE RECEIVERS
水質敏感受體位置圖

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圖號

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 816
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LEGEND:
圖例:

- PROJECT BOUNDARY
項目界線
- 500m ASSESSMENT AREA
500米研究範圍
- NATURAL/SEMI-NATURAL WATERCOURSE
天然/半天然水道
- WOODED AREA
林區
- EXISTING AND POTENTIAL ARBoreal NIGHT ROOST SITE
現存及潛在的鸛鳥夜間棲息地
- LION ROCK COUNTRY PARK
獅子山郊野公園
- BEACON HILL SSSI
畢架山具有特殊科學價值地點

AECOM

PROJECT
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IMPROVEMENT OF LION ROCK TUNNEL - INVESTIGATION
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STATUS
階段

| SCALE | DIMENSION UNIT |
|------------|----------------|
| A3 1:20000 | METRES |

KEY PLAN
索引圖

| PROJECT NO. | AGREEMENT NO. |
|-------------|----------------|
| 60604728 | CE 48/2018(HY) |

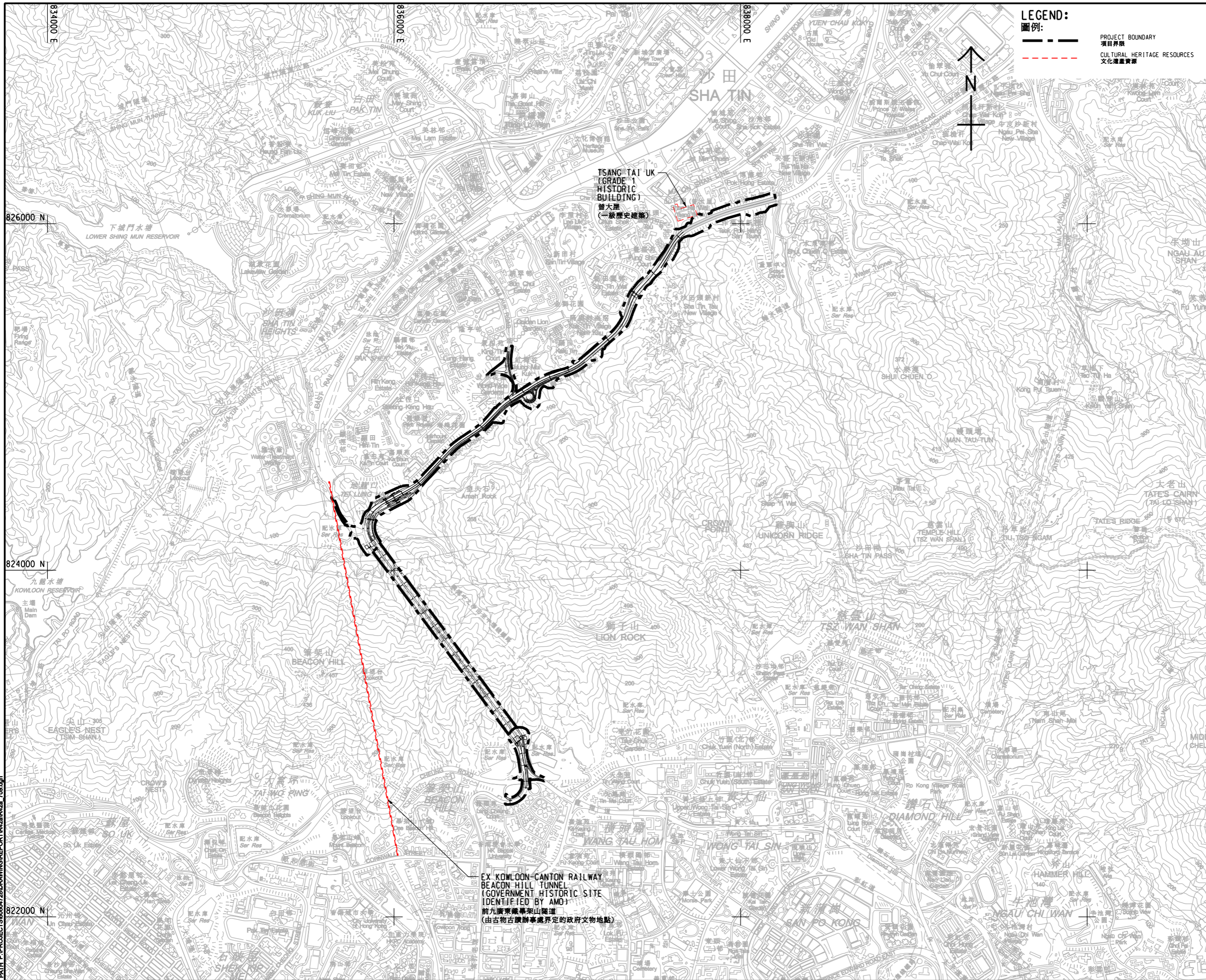
SHEET TITLE
圖名

LOCATIONS OF ECOLOGICAL SENSITIVE RECEIVERS
生態敏感受體位置圖

| SHEET NUMBER |
|-------------------|
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LEGEND:
圖例:

--- PROJECT BOUNDARY
項目界線

- - - CULTURAL HERITAGE RESOURCES
文化遺產資源

AECOM

PROJECT
項目

IMPROVEMENT OF LION ROCK TUNNEL - INVESTIGATION
獅子山隧道改善計劃- 勘察研究

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STATUS
階段

SCALE
比例

A3 1:20000

DIMENSION UNIT
尺寸單位

METRES

KEY PLAN
索引圖

PROJECT NO.
項目編號

60604728

AGREEMENT NO.
協議編號

CE 48/2018(HY)

SHEET TITLE
圖名

LOCATIONS OF CULTURAL HERITAGE RESOURCES
文化遺產資源位置圖

SHEET NUMBER
圖號

60604728/R42a/709

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