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Highways Department

Agreement No. CE 48/2018 (HY)

Improvement of Lion Rock Tunnel – Investigation

Contamination Assessment Plan (Final)

June 2021

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1 INTRODUCTION

1.1 Background

- 1.1.1 The Lion Rock Tunnel (LRT) is a trunk road linking traffic between Shatin and Kowloon. It consists of two tunnel tubes each with two traffic lanes. The Kowloon bound and Shatin bound tunnel tubes have been put in use for over 50 years and 40 years respectively. With reference to the previous tunnel inspection findings, it is noted that major defects such as concrete spalling, exposed reinforcement, cracks and water stains are observed on the ceiling slabs, road slab surfaces and tunnel linings. These signs of deterioration of tunnel structures have become apparent. Furthermore, being an old design, the LRT does not meet the current standards in various aspects including waterproofing, dimensions (e.g. headroom and width), smoke extraction, evacuation, durability, Traffic Control and Surveillance System (TCSS), etc.
- 1.1.2 The LRT is a major strategic corridor connecting the traffic between Shatin and Kowloon and it is one of the most heavily used road tunnels in Hong Kong. Due to the heavy traffic demand, the time slots of only a few hours during nighttime for tunnel closure cannot allow comprehensive improvements works to be undertaken. Hence there is a need for the Project to bring the LRT up to current standards and extend its serviceable years; thereby enhancing the tunnel environment and road safety level.
- 1.1.3 In addition, the capacity of the LRT cannot cope with the traffic demand during peak hours now, long traffic queues appear at the connecting roads including the LRT Road on Shatin side, as well as the Lung Cheung Road and the Waterloo Road on Kowloon side. Hence there is also a need to enhance the capacity of the LRT and the connecting roads as far as possible to improve the traffic flow and alleviate traffic congestion at this critical link between Shatin and Kowloon during peak hours.
- 1.1.4 The purpose of the Improvement of Lion Rock Tunnel Project (the Project) is to rehabilitate and improve the existing tunnel tubes of the LRT and to take this opportunity to enhance the capacity of the tunnel and the connecting roads as far as possible, with a view to extending the service life of the LRT and help alleviating the traffic congestion at the LRT during peak hours and the traffic impact during maintenance.
- 1.1.5 A Project Profile (No. PP-589/2019) was submitted to the Environmental Protection Department (EPD) on 24 September 2019 under Environmental Impact Assessment Ordinance (EIAO) and the Environmental Impact Assessment (EIA) Study Brief (No. ESB-323/2019) for the Project was issued on 6 November 2019 under the EIAO.

1.2 Purpose of the Report

- 1.2.1 Based on the EIA Study Brief (No. ESB-323/2019), an assessment on the potential land contamination issues within the Project Area for development works is required.
- 1.2.2 This Contamination Assessment Plan (CAP) is prepared for the EIA study. The purposes of this CAP are to present the findings of the site appraisal on the past and present potentially contaminative land uses / activities and to propose sampling and testing plan for the subsequent site investigation (SI) works in order to assess the presence, nature and extent of any contamination within the Project Area.

1.3 Environmental Legislation, Standards and Criteria

- 1.3.1 This CAP is prepared with reference to the following EPD issued guidelines:
- (a) Guidance Note for Contaminated Land Assessment and Remediation (Guidance Note)
- The Guidance Note sets out the requirements for proper assessment and management of potentially contaminated sites such as oil installations (e.g. oil

depots, petrol filling stations), gas works, power plants, shipyards/boatyards, chemical manufacturing/processing plants, steel mills/metal workshops, car repairing/dismantling workshops and scrap yards. In addition, this Guidance Note provides guidelines on how site assessments should be conducted and analysed and suggests practical remedial measures that can be adopted for the remediation of contaminated sites.

- (b) Practice Guide for Investigation and Remediation of Contaminated Land (Practice Guide)

This Practice Guide outlines typical investigation methods and remediation strategies for the range of potential contaminants typically encountered in Hong Kong.

- (c) Guidance Manual for Use of Risk-based Remediation Goals for Contaminated Land Management (Guidance Manual)

The Guidance Manual introduces the risk based approach in land contamination assessment and present instructions for comparison of soil and groundwater data to the Risk-Based Remediation Goals (RBRGs) for 54 chemicals of concern (COCs) commonly found in Hong Kong. The RBRGs were derived to suit Hong Kong conditions by following the international practice of adopting a risk-based methodology for contaminated land assessment and remediation and were designed to protect the health of people who could potentially be exposed to land impacted by chemicals under four broad post restoration land use categories. The RBRGs also serve as the remediation targets if remediation is necessary.

- (d) Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM)

- 1.3.2 The RBRGs stipulated in the Guidance Manual will be adopted as the criteria for assessing any soil and groundwater contamination.

1.4 Structures of this Report

- 1.4.1 Apart from this introductory section, the other sections of the CAP are as follows:

- (a) Section 2: presents the findings of the site appraisal;
- (b) Section 3: proposes the sampling and testing plan for subsequent SI works;
- (c) Section 4: discusses the analytical testing requirements for the subsequent SI works;
- (d) Section 5: evaluates the potential land contamination impact;
- (e) Section 6: presents the way forward and tentative schedule for the follow-up works; and
- (f) Section 7: concludes the report.

2 SITE APPRAISAL

2.1 General

2.1.1 The Project Area covers the entire existing LRT situated in Sha Tin and Kowloon and covers a total area of approximately 38.1 hectares. As shown in the site location plan provided in **Figure 2.1**, the tunnel area at the Project Area is located at a mountain terrain while the portal areas and roads were generally located on flat terrain. The Project Area is mainly bounded by residential buildings and roads to the north; residential buildings, parks and roads to the south; the Lion Rock Country Park to the east; and the Beacon Hill Site of Special Scientific Interest to the west.

2.1.2 Based on the latest design, the proposed works under the Project involves demolition of the facilities in the existing LRT portal areas. The DSD Lion Rock Valve House at the Kowloon Portal would however be retained.

2.2 Review of Historical Land Uses

2.2.1 A review of aerial photographs has been undertaken to evaluate the likelihood of potential contamination associated with past land uses within the Project Area. Findings of the review are summarized in **Table 2.1** and the reviewed aerial photographs are provided in **Appendix A**.

Table 2.1 Aerial Photographs Reviewed

| Year | Reference of Aerial Photos in Appendix A | Site Description |
|------|--|---|
| 1963 | A1 to A5 | The Lion Rock Tunnel was under construction. Lung Cheung Road and Waterloo Road were observed. The remaining portions of the Project Area were occupied by agricultural land and natural terrain. |
| 1976 | A6 to A10 | The agricultural land was cleared and the existing Lion Rock Tunnel was constructed. At the Sha Tin Portal, the former administration building (existing Electronic & Mechanical (E&M) Building), former service reservoirs (existing surge tanks), the existing toll plaza and ventilation building S1 were observed. At the Kowloon Portal, control room, valve house and ventilation building K1 were observed. The Second Lion Rock Tunnel was under construction and construction works were observed at both portals. Realignment of Lung Cheung Road and Waterloo Road were observed to connect with Lion Rock Tunnel Road. Village houses and construction site were also observed at Hung Mui Kuk. |
| 1985 | A11 to A15 | The existing Second Lion Rock Tunnel, Lion Rock Tunnel Office (Administration Building) and ventilation buildings (S2 and K2) were observed. The toll plaza was under expansion. The Lion Rock Country Park was established. Hung Mui Kuk Road and the existing car park at Hung Mui Kuk were also observed. |
| 1993 | A16 to A20 | The toll plaza was expanded. The existing Kak Tin Village Nam Hin Road was observed. No significant land use changes were observed in the remaining areas of the Project Area. |
| 2003 | A21 to A25 | The existing S1-2, S2-2 Buildings associated with ventilation buildings (S1 & S2) and a car park were observed at Sha Tin Portal. No significant land use changes were observed in the remaining areas of the Project Area. |
| 2017 | A26 to A30 | The existing K2-2 building associated with ventilation building K2 and expansion of Administration Building were observed. No significant land use changes were observed in the remaining areas of the Project Area. |

Source of aerial photographs: Survey and Mapping Office, Lands Department

2.2.2 Based on the review of aerial photographs, the Project Area had been mainly occupied by roads, the existing Lion Rock Tunnel, tunnel facilities (e.g. administration building, E&M building, ventilation buildings and other associated buildings, car park) and vegetation. Apart from the

concerned facilities / area at the tunnel portals (refer to **Section 2.5**), no other historical potentially contaminating land uses were identified within the Project Area

2.3 Site Geology

- 2.3.1 With reference to the published geology maps (scale 1:20,000 (Sheet Nos. 7 and 11) and scale 1:100,000), the Kowloon Portal is predominantly medium-grained Kowloon Granite (Klk_gm) which comprises of equigranular medium-grained biotite Granite. The majority of LRT is underlain by the equigranular medium-grained Kowloon Granite (Klk_gm) from southeast, and the equigranular coarse-grained biotite Shatin Granite (Jkt_gc) and porphyritic fine-grained Shui Chuen O Granite (Kcs_gf) toward northwest. The porphyritic medium-grained Tei Tong Tsui Quartz Monzonite (Klt_mq) is predominantly underlain in Sha Tin Portal.
- 2.3.2 Along the LRT Road and Sha Tin Road, the coarse grained Shui Chuen O Granite (Kcs_gc) and Tei Tong Tsui Quartz Monzonite (Klt_mq) are the major rock types underlain in the Project Area.
- 2.3.3 A widespread of colluvium comprising silt, sand, and gravels with occasional boulders is identified within the drainage depressions on the hillside catchments in Kowloon and Sha Tin Portals, and along the LRT Road.

2.4 Information from Government Departments

- 2.4.1 The EPD and FSD were contacted for (i) records of any spillage / leakage of chemicals, (ii) records of Dangerous Goods (DG) and (iii) records of Chemical Waste Producer(s) (CWPs) and (iv) records of reported fire incidents within the Project Area.
- 2.4.2 EPD and FSD's replies on the request have been received and attached in **Appendix B**. The information is summarized below.

Environmental Protection Department

- 2.4.3 Based on the replies given by EPD on 10 January 2020, 23 March 2021, 11 May 2021, 20 January 2022 and 8 June 2022, there is no record of spillage / leakage of chemical wastes or chemicals within the Project Area. In addition, visits to EPD's Southern Centre Office were undertaken on 26 August 2020, 11 May 2021, 16 February 2022 and 23 June 2022 to review the available CWP records. There are a total of 3 valid and 1 invalid registered CWP records identified within the Project Area and the details are summarised in **Table 2.2** below.
- 2.4.4 CWP ID 1 is the current contractor responsible for the management and maintenance of the LRT. CWP ID 2 to 4 are the past contractors responsible for the management and maintenance of the LRT (refer to **Section 2.5.1**). Based on the available records and findings from the site walkover (refer to **Section 2.5**), CWP ID 1 and ID 2 are associated with the vehicle maintenance workshop in the Administration Building at Sha Tin Portal. CWP ID 3 and ID 4 are likely associated with the workshop (where repair and maintenance of equipment was observed) and chemical store room at the E&M Building at Sha Tin Portal. According to the findings of the site walkover, there are potential land contamination concerns with these facilities / areas.

Table 2.2 Summary of Chemical Waste Producer Records within the Project Area

| CWP ID | Company Name | Address | Status | Business Nature | Type of Chemical Waste |
|--------|--------------------------------------|---|---------|--|------------------------|
| 1 | Chun Wo Tunnel Management Limited | Lion Rock Tunnel, Sha Tin, NT | Valid | Tunnel management | Spent lubrication oil* |
| 2 | Greater Lucky (H.K.) Company Limited | Administration Building, Lion Rock Tunnel, Sha Tin, NT | Valid | Tunnel management | Spent lubrication oil* |
| 3 | Serco Group (HK) Limited | E & M Building, Sha Tin Portal of Lion Rock Tunnel, Sha Tin, NT | Valid | Management and maintenance of vehicular tunnel | - |
| 4 | Serco Guardian (F.M.) Ltd. | E & M Building, Sha Tin Portal of Lion Rock Tunnel, Sha Tin, NT | Invalid | Operation & maintenance of E & M plant & equipment | - |

* Based on information provided by the site representative during site walkover.

Fire Services Department

- 2.4.5 Based on the replies from FSD on 2 March 2020, 4 June 2021, 8 February 2022, 16 February 2022 and 17 June 2022, there are no DG license records identified within the Project Area. However, there were a total of 8 incidents records and the details are summarized in **Table 2.3**. The addresses stated in records No. 1 to 4 are located in Tai Wai, Sha Tin Heights and Siu Lek Yuen and are approximately 700 m to 3.5 km from the Project Area. Given the distances from the Project Area, incidents associated with records No. 1 to 4 were not expected to pose any potential land contamination issues to the Project.
- 2.4.6 The address stated in record No. 5 is located on Lion Rock Tunnel Road just north of Lung Cheung Road (refer to **60604728/CAPb/PR9** in **Appendix C**). A site walkover was conducted on 12 February 2022 to assess the site conditions in the vicinity. Based on the observation from the site walkover, the concerned section of Lion Rock Tunnel Road was observed to be paved with intact concrete in good condition and with no stains / spillage / burn marks observed (refer to **60604728/CAPb/PR9** in **Appendix C**). The incident associated with record No. 5 was not expected to pose any potential land contamination issues to the Project.
- 2.4.7 The addresses stated in records No. 6 to 8 are located on Lung Cheung Road. Incident records No. 6 to 7 are located near the lampposts to the east and west of existing vehicular bridge within the Project Area (refer to **60604728/CAPb/PR9** in **Appendix C**). For record No. 6, according to FSD's clarification dated 9 June 2021 and local news media¹, the diesel leakage incident is associated with an overturned medium good vehicle at Lung Cheung Road. As indicated by FSD dated 28 June 2021, sawdust and sand would be used to absorb the excessive leakage on road in the fuel leakage incident. Based on the observation from the site walkover conducted on 11 June 2021, the concerned section of Lung Cheung Road was observed to be paved with intact concrete in good condition and with no stains / spillage / burn marks observed (refer to **60604728/CAPb/PR9** in **Appendix C**). The diesel leakage incident was expected to have been properly cleaned up. For record No. 7, a site walkover was conducted on 7 January 2022 to assess the site conditions in the vicinity. Based on the

¹ RTHK (29 October 2020). https://news.rthk.hk/rthk/ch/component/k2/1557279-20201029.htm?archive_date=2020-10-29

observation from the site walkover, the concerned section of Lung Cheung Road was observed to be paved with intact concrete in good condition and with no stains / spillage / burn marks observed (refer to **60604728/CAPb/PR9** in **Appendix C**). For record No. 8, the stated lamppost is located outside of the Project Area (approximately 170 m west of the Project Area). Given the above, the incidents associated with records No. 6 to 8 were not expected to pose any potential land contamination issues to the Project.

- 2.4.8 Based on the above, no potential land contamination issues associated with the incident records are anticipated within the Project Area.

Table 2.3 Summary of Incident Records

| No. | Date | Type of Incident | Address |
|-----|------------|--|--|
| 1. | 10.3.2017 | No.1 Fire Alarm | Unit 602, Transport City Building, 107 Shing Wan Road (outside Project Area) |
| 2. | 21.1.2018 | Special Service | Near Lamppost N7441, Sha Tin Heights (outside Project Area) |
| 3. | 5.4.2018 | Late Call | Room 958, Sun Fong House, Sun Chui Estate (outside Project Area) |
| 4. | 16.6.2018 | Special Service | Near Lamppost EB7948, Fa Sam Hang (outside Project Area) |
| 5. | 1.7.2019 | Vehicle Fire | Near Lamppost BF1962, near Lion Rock Tunnel Road, New Territories (NT) Bound |
| 6. | 29.10.2020 | Special Service (leakage of diesel from a medium good vehicle) | Lung Cheung Road near Lamppost E6986 |
| 7. | 6.1.2021 | Rubbish Fire | Near Lamppost AA8876, near Lung Cheung Road, Kwai Chung (KCG) Bound |
| 8. | 20.10.2021 | No. 1 Fire Alarm | Lung Cheung Road, KCG Bound, near Lamppost AA8872B (outside Project Area) |

2.5 Site Reconnaissance

- 2.5.1 Site walkover was conducted on 25 August 2020, 11 May 2021, 11 June 2021, 7 January 2022 and 12 February 2022 to investigate any contaminative issues associated with current land uses and activities within the Project Area. Findings of the site walkover, including the photographic records and site layout plan, are shown in **Appendix C**. Questionnaire was conducted with available site representative and the site walkover checklist is provided in **Appendix D**. According to the site representative, the LRT is currently managed by Chun Wo Tunnel Management Limited since August 2018. Prior to Chun Wo Tunnel Management Limited, the LRT was managed by the government (before 1993), Serco Group (HK) Limited (previously known as Serco Guardian (F.M.) Ltd.) (1993 to 2012) and Greater Lucky (H.K.) Company Limited (August 2012 to July 2018).
- 2.5.2 As observed during the site walkover, there are two portal areas at the existing LRT, i.e. the Sha Tin Portal and Kowloon Portal. The Sha Tin Portal mainly consists of the toll plaza, Lion Rock Tunnel Office (Administration Building), an E&M Building, 2 ventilation buildings (S1 and S2) with 2 associated buildings (S1-2 and S2-2) and a long vehicle maintenance and parking area. The Kowloon Portal mainly comprises of 2 ventilation buildings (K1 and K2) with an associated building (K2-2) and a control room. A large portion of the buildings within the two portal areas consisted of non-contaminating land uses / activities: Administration Building mainly comprised of offices, canteen, staff rest rooms and store rooms; E&M Building mainly

comprised of offices, staff rest rooms and store rooms of appliances; ventilation buildings mainly comprised of large air vents installed on concrete paved ground for the air ventilation of the tunnel. For the air vents, only general cleaning and minor maintenance of electronics are conducted and no chemicals were used. No potential land contamination issues were identified within these areas of the buildings. However, there were potential land contamination issues associated with some facilities / areas within the two tunnel portal areas that handle hazardous substances / chemical wastes, including vehicle maintenance areas, workshop, chemical and chemical waste storage areas (for lubricating oils, hydraulic fluids, cleaning solvents, thinners, anti-corrosive paints and spent diesel oils; refer to **Table 2.4**), diesel generators and transformer rooms. Except for the landscaped areas, all facilities and buildings, car parking areas and roads were paved with intact concrete in good condition and no stains / spillage / stressed vegetation were observed during the site walkover (refer to **Appendix C**). Based on the site condition and nature of the tunnel operation, widespread contamination is not envisaged across the Project Area.

- 2.5.3 Based on the site walkover, other than the Sha Tin Portal and Kowloon Portal, the Project Area is mainly occupied by non-contaminating land uses including roads, toll gates, vacant land and vegetation. No potentially contaminating land uses / activities were observed in these areas. As reported by the site representative, minor oil spillage incidents due to car accidents had occurred on the roads within the Project Area. However, the spillages were soaked up with sawdust and cleaned up immediately after car accidents, and roads were paved with intact concrete in good condition with no oil stains observed. Potential land contamination issue associated with these minor spillage incidents were not anticipated.
- 2.5.4 Details of the site walkover findings for the facilities / areas with potential land contamination concerns summarized in **Table 2.4**. The corresponding photographic records and site layout plans are shown in **Appendix C**.

2.6 Summary of Site Appraisal

- 2.6.1 Based on the findings of the site appraisal, a total of 11 facilities / areas were identified with potential land contamination concerns within the Project Area.
- 2.6.2 Details of the site appraisal for the concerned facilities / areas are summarised in **Table 2.4**. The locations of the concerned facilities / areas are shown in **Figure 3.1** and **3.2**. Intrusive SI works is considered necessary to confirm any land contamination in the concerned facilities / areas.

2.7 Future Land Uses

- 2.7.1 Land contamination assessment on the potentially contaminated sites would need to be evaluated against the RBRGs and if there were presence of non-aqueous phase liquid (NAPL), soil saturation (C_{sat}) / solubility limits, as stipulated in Table 2.1 and Table 2.2 of the Guidance Manual.
- 2.7.2 The RBRGs were developed based on a risk assessment approach to suit the local environmental conditions and community needs in Hong Kong. Decisions on contaminated soil and groundwater remediation are based on the nature and extent of the potential risks that are posed to human receptors as a result of exposure to chemicals in the soil and/or groundwater. RBRGs were developed for four different land use scenarios as below reflecting the typical physical settings in Hong Kong under which people could be exposed to contaminated soil and groundwater:
- Urban Residential
 - Rural Residential
 - Industrial

- Public Park
- 2.7.3 The proposed development includes roads, tunnel, bridges, car park, surge tank, administration and ventilation buildings. The RBRGs "Urban Residential" is considered appropriate for future land uses for administration buildings and RBRGs "Lower of Industrial or Public Park" for other land uses. However, based on the site appraisal, the proposed land uses that were confirmed within the concerned facilities / areas were roads and car park, the RBRGs "Lower of Industrial or Public Park" were therefore adopted. For the concerned areas where the proposed land use have not been confirmed, the appropriate RBRGs should be determined at the time of site re-appraisal and submission of supplementary CAP(s) at a later stage of the Project (refer to **Section 6**). If the proposed land use could not be confirmed at the time of site re-appraisal and submission of supplementary CAP(s), the most stringent set of RBRGs should be adopted for the concerned area(s).
- 2.7.4 The proposed RBRGs land use scenarios recommended for this Project are summarised in **Table 2.4**. Relevant RBRGs are shown in **Appendix E**.

Table 2.4 Summary of Potential Land Contamination Issues within the Project Area

| Concerned Facility / Area (approx. area) | Hotspot (approx. area) | Site Observation / Current Potentially Contaminating Activities | Corresponding Photographic Record Reference in Appendix C | Other Past Potential Contaminating Land Use / Activities | Potential COCs | Future Land Uses | RBRGs Land Use Scenario |
|---|---|---|---|--|------------------------------|------------------|------------------------------------|
| <i>Sha Tin Portal</i> | | | | | | | |
| Vehicle Maintenance Workshop in Administration Building (130 m ²) | - | <p>The vehicle maintenance workshop is located in the southwest of the Administration Building in the centre of the Sha Tin Portal of LRT.</p> <p>As reported by the site representative, maintenance works of tunnel operation vehicles are carried out at the vehicle maintenance workshop in Administration Building. Typical maintenance activities included greasing and lubrication involving use of lubricating oil.</p> <p>As observed during the site walkover, the entire area was paved with intact concrete noted to be in good condition with no signs of oil stains / chemical spillages observed.</p> <p>Based on EPD information, there were no spillage records. However, there were 2 valid CWP records for the site (refer to CWP ID 1 & 2 in Table 2.2).</p> | Photo 2506 in 60604728/CAPb/PR3 | N/A | Metals, VOCs, SVOCs and PCRs | Roads | Lower of Industrial or Public Park |
| | Chemical Storage Area (approx. 5 m ²) | A chemical storage area (approx. 5 m ²) was observed in the north of vehicle maintenance workshop in Administration Building. The chemicals identified including lubricating oils, hydraulic fluids, cleaning solvents (kerosene), thinners and anti-corrosive paints were stored in cabinets. The cabinets were in good conditions with no spillage observed in the vicinity. | Photo 2552 & 9731 in 60604728/CAPb/PR3 | N/A | Metals, VOCs, SVOCs and PCRs | Roads | Lower of Industrial or Public Park |
| | Chemical Waste Storage | A chemical waste storage area (approx. 6 m ²) for the storage of spent lubricating oil drums was observed in the southwest of the vehicle | Photo 2526 & 9713 in 60604728/CAPb/PR3 | N/A | Metals, VOCs, SVOCs and PCRs | Roads | Lower of Industrial |

| Concerned Facility / Area (approx. area) | Hotspot (approx. area) | Site Observation / Current Potentially Contaminating Activities | Corresponding Photographic Record Reference in Appendix C | Other Past Potential Contaminating Land Use / Activities | Potential COCs | Future Land Uses | RBRGs Land Use Scenario |
|---|---|--|---|--|------------------------------|------------------|------------------------------------|
| | Area (approx. 6 m ²) | maintenance workshop in Administration Building. The drums were stored on metal trays within a designated chemical waste storage container. The drums, metal trays and container were in good conditions with no spillage observed in the vicinity. | | | | | or Public Park |
| | Air Compressor (approx. 3 m ²) | An oil-lubricated mobile air compressor was observed on a metal tray within a metal storage cage in the west of the vehicle maintenance workshop in Administration Building. The metal tray was in good conditions with no spillage observed in the vicinity. | Photo 2518 in 60604728/CAPb/PR3 | N/A | Metals, VOCs, SVOCs and PCRs | Roads | Lower of Industrial or Public Park |
| Long Vehicle Maintenance and Parking Area (810 m ²) | - | A long vehicle maintenance and parking area was observed in the east of the Sha Tin Portal of LRT. As reported by the site representative, maintenance of long vehicles for tunnel operation are carried out at the area. As observed during the site walkover, the entire area was paved with intact concrete noted to be in good condition with no signs of oil stains / chemical spillages observed. | Photo 2621 & 9762 in 60604728/CAPb/PR3 | N/A | Metals, VOCs, SVOCs and PCRs | Roads / Car Park | Lower of Industrial or Public Park |
| | Chemical Storage Area (approx. 3 m ²) | A chemical storage area (approx. 3 m ²) was observed in the east of long vehicle maintenance and parking area. The chemicals identified included lubricating oils and anti-corrosive paints and were stored in cabinets within the storage area. The cabinets were in good conditions with no spillage observed in the vicinity. | Photo 4364 & 9760 in 60604728/CAPb/PR3 | N/A | Metals, VOCs, SVOCs and PCRs | Roads / Car Park | Lower of Industrial or Public Park |

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| Concerned Facility / Area (approx. area) | Hotspot (approx. area) | Site Observation / Current Potentially Contaminating Activities | Corresponding Photographic Record Reference in Appendix C | Other Past Potential Contaminating Land Use / Activities | Potential COCs | Future Land Uses | RBRGs Land Use Scenario |
|--|--|---|---|--|------------------------------|------------------|------------------------------------|
| Workshop at E&M Building (100 m ²) | - | A workshop was observed in the southwest of the E&M building. As reported by the site representative, repair and maintenance of equipment for tunnel operation are carried out at the workshop. The chemicals identified included lubricating oils and anti-corrosive paints, which were stored in cabinets within the workshop. No stains were observed inside the workshop. The concrete paved floors and the cabinets were in good condition. | Photo 2677, 2679, 2683 & 9782 in 60604728/CAPb/PR2 | N/A | Metals, VOCs, SVOCs and PCRs | Roads / Car Park | Lower of Industrial or Public Park |
| E&M Building | Chemical Store Room (10 m ²) | A store room for the storage of chemicals was observed in the E&M building located in the northeast of the Sha Tin Portal of LRT. The chemicals identified included cleaning solvents (naphtha), lubricating oils, anti-corrosive paints and thinners, which were stored on shelves and directly on the concrete paved ground in the room. No stains were observed inside the chemical store room. The concrete paved floors and shelves were in good condition. | Photo 9793, 9794 & 2709 in 60604728/CAPb/PR2 | N/A | Metals, VOCs, SVOCs and PCRs | Roads / Car Park | Lower of Industrial or Public Park |
| | Generator (1 m ²) | A generator with a 70 L diesel fuel tank was installed on a thick concrete slab in the southeast of the E&M building. No stains were observed in the vicinity of the generator. The concrete paved floor and the concrete slab were in good condition. | Photo 4378 in 60604728/CAPb/PR2 | N/A | Metals, PCRs, VOCs and SVOCs | Roads / Car Park | Lower of Industrial or Public Park |
| Ventilation Building S1 | Generator S1 (15 m ²) | A generator with a 300 L diesel fuel tank was installed on thick concrete slab in the ventilation building S1 in the south of the Sha Tin Portal of LRT. | Photo 9838 & 9840 in 60604728/CAPb/PR4 | N/A | Metals, PCRs, VOCs and SVOCs | Roads | Lower of Industrial or Public Park |

| Concerned Facility / Area (approx. area) | Hotspot (approx. area) | Site Observation / Current Potentially Contaminating Activities | Corresponding Photographic Record Reference in Appendix C | Other Past Potential Contaminating Land Use / Activities | Potential COCs | Future Land Uses | RBRGs Land Use Scenario |
|--|---|--|---|--|------------------------------------|------------------|------------------------------------|
| | | No stains were observed in the vicinity of the generator. The concrete paved floors and the concrete slabs were in good condition. | | | | | |
| | Transformer S1 (5 m ²) | A transformer was installed on concrete paved ground in the transformer room (substation D) of ventilation building S1. No stains were observed in the vicinity of the transformers. The concrete paved floors and the concrete slabs were in good condition. | Photo 2783 in 60604728/CAPb/PR4 | N/A | Metals, VOCs, SVOCs, PCRs and PCBs | Roads | Lower of Industrial or Public Park |
| | Chemical Waste Storage Area (5 m ²) | A chemical waste storage area for the storage of spent diesel oil after filling the generators (S1 and S1-2) was observed at the south of Ventilation Building S1. 4 spent diesel oil drums were observed on raised concrete platform within the area. No stains were observed in the chemical waste storage area. The raised concrete platform was in good condition. | Photo 4430 in 60604728/CAPb/PR4 | N/A | Metals, PCRs, VOCs and SVOCs | Roads | Lower of Industrial or Public Park |
| S1-2 Building | Generator S1-2 (15 m ²) | A generator with a 480 L diesel fuel tank was observed on thick concrete slab in the emergency generator room of S1-2 building located in the south of the Sha Tin Portal of LRT. No stains were observed in the vicinity of the generator. The concrete paved floors and the concrete slabs were in good condition. | Photo 9827 in 60604728/CAPb/PR4 | N/A | Metals, PCRs, VOCs and SVOCs | Roads | Lower of Industrial or Public Park |
| | Transformer S1-2 (5 m ²) | A transformer was observed on thick concrete slab in the transformer room of S1-2 building. No stains were observed in the vicinity of the transformers. The concrete paved floors and the concrete slabs were in good condition. | Photo 2752 in 60604728/CAPb/PR4 | N/A | Metals, VOCs, SVOCs, PCRs and PCBs | Roads | Lower of Industrial or Public Park |

| Concerned Facility / Area (approx. area) | Hotspot (approx. area) | Site Observation / Current Potentially Contaminating Activities | Corresponding Photographic Record Reference in Appendix C | Other Past Potential Contaminating Land Use / Activities | Potential COCs | Future Land Uses | RBRGs Land Use Scenario |
|--|---|--|---|--|------------------------------------|------------------|-------------------------|
| Ventilation Building S2* | Transformer S2 (5 m ²) | A transformer was observed on concrete paved ground in the transformer room (substation B) of ventilation building S2. The ventilation building S2 is located in the southwest of the Sha Tin Portal. No stains were observed in the vicinity of the transformer. All the concrete paved floors and concrete slabs were in good condition. | Photo 4481 in 60604728/CAPb/PR5 | N/A | Metals, VOCs, SVOCs, PCRs and PCBs | To be confirmed* | To be confirmed * |
| | Chemical Waste Storage Area (2 m ²) | A chemical waste storage area was observed in the south of the ventilation building S2. The chemical waste storage area was a vacant room and was reported to store spent diesel drums after filling the generator S2-2. No stains were observed in the chemical waste storage area. All the concrete paved floors and concrete slabs were in good condition. | Photo 2936 in 60604728/CAPb/PR5 | N/A | Metals, PCRs, VOCs and SVOCs | To be confirmed* | To be confirmed * |
| S2-2 Building* | Generator S2-2 (15 m ²) | A generator with a 300 L diesel fuel tank was observed on a thick concrete slab in the S2-2 building located in the southwest of the Sha Tin Portal of LRT. No stains were observed inside the generator room. All the concrete paved floors and concrete slabs were in good condition. | Photo 2917 in 60604728/CAPb/PR5 | N/A | Metals, PCRs, VOCs and SVOCs | To be confirmed* | To be confirmed * |
| | Transformer S2-2 (5 m ²) | A transformer was installed on thick concrete slabs in the transformer room of the S2-2 building. No stains were observed in the vicinity of the transformer. All the concrete paved floors and concrete slabs were in good condition. | Photo 9908 in 60604728/CAPb/PR5 | N/A | Metals, VOCs, SVOCs, PCRs and PCBs | To be confirmed* | To be confirmed * |

| Concerned Facility / Area (approx. area) | Hotspot (approx. area) | Site Observation / Current Potentially Contaminating Activities | Corresponding Photographic Record Reference in Appendix C | Other Past Potential Contaminating Land Use / Activities | Potential COCs | Future Land Uses | RBRGs Land Use Scenario |
|--|---|--|---|--|------------------------------------|------------------|------------------------------------|
| | Chemical Waste Storage Area (2 m ²) | A chemical waste storage area was observed in the vicinity of generator S2-2 in the S2-2 building. A total of 3 spent diesel oil drums after filling the nearby generator S2-2 were observed on concrete paved ground with no stains observed. No stains were observed in the chemical waste storage area. All the concrete paved floors and concrete slabs were in good condition. | Photo 4477 in 60604728/CAPb/PR5 | N/A | Metals, PCRs, VOCs and SVOCs | To be confirmed* | To be confirmed * |
| <i>Kowloon Portal</i> | | | | | | | |
| Ventilation Building K1* | 2 Transformers (K1 and K1-2) (5 m ² each) | The Ventilation Building K1 is located in the north of the Kowloon Portal of LRT. Two transformers (K1 and K1-2) were observed on concrete paved floor in the transformer rooms (substation C and substation K1-2) within the Ventilation Building K1. No stains were observed inside the building and the concrete paved floor was in good condition. | Photo 2881, 4462 & 9882 in 60604728/CAPb/PR6 | N/A | Metals, VOCs, SVOCs, PCRs and PCBs | To be confirmed* | To be confirmed * |
| Ventilation Building K2 | 2 Generators (Mobile Genset 1 and 2) (10 m ² each) | The Ventilation Building K2 located in the northeast of the Kowloon Portal of LRT. Two mobile diesel generators (Mobile Genset 1 and 2) were observed in the northwest and adjacent to the southeast of Ventilation Building K2 respectively. The generators were observed on raised concrete plinth / concrete paved ground. No stains were observed in the vicinity of the generators. All the concrete paved floors were in good condition. | Photo 2835 & 9854 in 60604728/CAPb/PR6 | N/A | Metals, PCRs, VOCs and SVOCs | Roads | Lower of Industrial or Public Park |

| Concerned Facility / Area (approx. area) | Hotspot (approx. area) | Site Observation / Current Potentially Contaminating Activities | Corresponding Photographic Record Reference in Appendix C | Other Past Potential Contaminating Land Use / Activities | Potential COCs | Future Land Uses | RBRGs Land Use Scenario |
|--|---|---|---|--|------------------------------------|------------------|------------------------------------|
| | Transformer K2 (5 m ²) | A transformer was installed on concrete paved floor in the transformer room (substation A) of Ventilation Building K2. No stains were observed in the vicinity of the transformer. All the concrete paved floors and the concrete slabs were in good condition. | Photo 9867 in 60604728/CAPb/PR6 | N/A | Metals, VOCs, SVOCs, PCRs and PCBs | Roads | Lower of Industrial or Public Park |
| | Chemical Waste Storage Area (2 m ²) | A chemical waste storage area was observed in the north of the ventilation building K2, which was a vacant concrete paved room. According to the site representative, the area reportedly store any spent diesel oil drums after filling the 2 mobile gensets. No stains were observed in the chemical waste storage area. All the concrete paved floors were in good condition. | Photo 9872 in 60604728/CAPb/PR6 | N/A | Metals, PCRs, VOCs and SVOCs | Roads | Lower of Industrial or Public Park |
| K2-2 Building | Transformer K2-2 (5 m ²) | A transformer was installed on a thick concrete slab in the transformer room of K2-2 building located in the south of Kowloon Portal. No stains were observed in the vicinity of the transformer. All the concrete paved floors and the concrete slabs were in good condition. | Photo 9857 in 60604728/CAPb/PR6 | N/A | Metals, VOCs, SVOCs, PCRs and PCBs | Roads | Lower of Industrial or Public Park |

Note:

* The proposed land use of the concerned areas will be determined at a later stage of the Project. If the proposed land use could not be confirmed at the time of site re-appraisal and supplementary CAP(s) (refer to **Section 6**), the most stringent set of RBRGs should be adopted for the concerned area(s).

3 SAMPLING AND TESTING PLAN FOR SITE INVESTIGATION

3.1 Site Investigation Location

- 3.1.1 Based on the findings of the site appraisal, intrusive SI works is considered necessary for the 11 facilities / areas identified with potential land contamination concerns and the exact sampling locations will be determined by the on-site land contamination specialist. A total of 35 sampling locations are proposed to study the vertical profile of possible contamination at the portal areas of the LRT within the Project Area. Details of the sampling and testing plan are shown in **Table 3.1**. The proposed sampling locations followed the recommended grid sampling arrangement in Table 2.1 of EPD Practice Guide and have taken into account the sources of contamination (i.e. hotspots) identified during the site walkover. The sampling locations are illustrated in **Figure 3.1** and **Figure 3.2**. The exact sampling locations are subject to fine adjustment according to the actual site conditions and existence of underground structures/utilities as determined by the on-site land contamination specialist.
- 3.1.2 The COCs proposed for laboratory analysis included volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), petroleum carbon ranges (PCRs), metals and polychlorinated biphenyls (PCBs). The sampling and testing plan with rationale are summarized in **Table 3.1**.

Table 3.1 Sampling and Testing Plan

| Concerned Facility / Area (approx. area) | Hotspot (approx. area) | Sampling Location ID ⁽¹⁾ | Grid Size (m) | Sampling and Testing Rationale | Sampling Method | Sample Matrix/ Depth ⁽²⁾ | Parameters to be Tested ⁽³⁾ | | | | | |
|---|---|-------------------------------------|---------------|---|---|-------------------------------------|--|------|-------|--------|--------------|---|
| | | | | | | | PCRs | VOCs | SVOCs | Metals | PCBs | |
| <i>Sha Tin Portal</i> | | | | | | | | | | | | |
| Vehicle Maintenance Workshop in Administration Building (130 m ²) | - | ENV-BH01 to ENV-BH03 | 7 | Sampling to target the vehicle maintenance workshop in Administration Building (130 m ²). A grid sampling approach based on the Practice Guide and specified grid size was adopted for the sampling strategy. | Borehole drilling to 2m below the groundwater table or 6m bgl | Soil | (i) 0.5m bgl (ii) 1.5m bgl (iii) 3.0m bgl (iv) at GW level or 6m bgl ⁽⁴⁾ | ✓ | ✓ | ✓ | ✓ | - |
| | | | | | | GW | If present ⁽⁴⁾ | ✓ | ✓ | ✓ | Mercury only | - |
| | Chemical Storage Area (approx. 5 m ²) | ENV-BH04 | - | Target potential hotspot area at chemical storage area (approx. 5 m ²) | Borehole drilling to 2m below the groundwater table or 6m bgl | Soil | (i) 0.5m bgl (ii) 1.5m bgl (iii) 3.0m bgl (iv) at GW level or 6m bgl ⁽⁴⁾ | ✓ | ✓ | ✓ | ✓ | - |
| | | | | | | GW | If present ⁽⁴⁾ | ✓ | ✓ | ✓ | Mercury only | - |
| | Chemical Waste Storage Area (approx. 6 m ²) | ENV-BH05 | - | Target potential hotspot area at chemical waste storage area (approx. 6 m ²) | Borehole drilling to 2m below the groundwater table or 6m bgl | Soil | (i) 0.5m bgl (ii) 1.5m bgl (iii) 3.0m bgl (iv) at GW level or 6m bgl ⁽⁴⁾ | ✓ | ✓ | ✓ | ✓ | - |
| | | | | | | GW | If present ⁽⁴⁾ | ✓ | ✓ | ✓ | Mercury only | - |
| | Air Compressor (approx. 3 m ²) | ENV-BH06 | - | Target potential hotspot area at air compressor (approx. 3 m ²) | Borehole drilling to 2m below the groundwater table or 6m bgl | Soil | (i) 0.5m bgl (ii) 1.5m bgl (iii) 3.0m bgl (iv) at GW level or 6m bgl ⁽⁴⁾ | ✓ | ✓ | ✓ | ✓ | - |
| | | | | | | GW | If present ⁽⁴⁾ | ✓ | ✓ | ✓ | Mercury only | - |
| Long Vehicle Maintenance and Parking Area (810 m ²) | - | ENV-BH07 to ENV-BH12 | 13 | Sampling to target the long vehicle maintenance and parking area (810 m ²). A grid sampling approach based on the Practice Guide and specified grid size was adopted for the sampling strategy. | Borehole drilling to 2m below the groundwater table or 6m bgl | Soil | (i) 0.5m bgl (ii) 1.5m bgl (iii) 3.0m bgl (iv) at GW level or 6m bgl ⁽⁴⁾ | ✓ | ✓ | ✓ | ✓ | - |
| | | | | | | GW | If present ⁽⁴⁾ | ✓ | ✓ | ✓ | Mercury only | - |

| Concerned Facility / Area (approx. area) | Hotspot (approx. area) | Sampling Location ID ⁽¹⁾ | Grid Size (m) | Sampling and Testing Rationale | Sampling Method | Sample Matrix/ Depth ⁽²⁾ | Parameters to be Tested ⁽³⁾ | | | | | |
|--|---|-------------------------------------|---------------|--|---|-------------------------------------|--|------|-------|--------|--------------|---|
| | | | | | | | PCRs | VOCs | SVOCs | Metals | PCBs | |
| | Chemical Storage Area (approx. 3 m ²) | ENV-BH13 | - | Target potential hotspot area at chemical storage area (approx. 3 m ²) | Borehole drilling to 2m below the groundwater table or 6m bgl | Soil | (i) 0.5m bgl (ii) 1.5m bgl (iii) 3.0m bgl (iv) at GW level or 6m bgl ⁽⁴⁾ | ✓ | ✓ | ✓ | ✓ | - |
| | | | | | | GW | If present ⁽⁴⁾ | ✓ | ✓ | ✓ | Mercury only | - |
| Workshop at E&M Building | - | ENV-BH14 to ENV-BH16 | 6 | Sampling to target the workshop (100 m ²). A grid sampling approach based on the Practice Guide and specified grid size was adopted for the sampling strategy. | Borehole drilling to 2m below the groundwater table or 6m bgl | Soil | (i) 0.5m bgl (ii) 1.5m bgl (iii) 3.0m bgl (iv) at GW level or 6m bgl ⁽⁴⁾ | ✓ | ✓ | ✓ | ✓ | - |
| | | | | | | GW | If present ⁽⁴⁾ | ✓ | ✓ | ✓ | Mercury only | - |
| E&M Building | Chemical Store Room (10 m ²) | ENV-BH17 | - | Target potential hotspot area at chemical store room (10 m ²) | Borehole drilling to 2m below the groundwater table or 6m bgl | Soil | (i) 0.5m bgl (ii) 1.5m bgl (iii) 3.0m bgl (iv) at GW level or 6m bgl ⁽⁴⁾ | ✓ | ✓ | ✓ | ✓ | - |
| | | | | | | GW | If present ⁽⁴⁾ | ✓ | ✓ | ✓ | Mercury only | - |
| | Generator (1 m ²) | ENV-BH18 | - | Target potential hotspot area at generator (1 m ²) | Borehole drilling to 2m below the groundwater table or 6m bgl | Soil | (i) 0.5m bgl (ii) 1.5m bgl (iii) 3.0m bgl (iv) at GW level or 6m bgl ⁽⁴⁾ | ✓ | ✓ | ✓ | ✓ | - |
| | | | | | | GW | If present ⁽⁴⁾ | ✓ | ✓ | ✓ | Mercury only | - |
| Ventilation Building S1 | Generator S1 (15 m ²) | ENV-BH19 | - | Target potential hotspot area at generator S1 (15 m ²) | Borehole drilling to 2m below the groundwater table or 6m bgl | Soil | (i) 0.5m bgl (ii) 1.5m bgl (iii) 3.0m bgl (iv) at GW level or 6m bgl ⁽⁴⁾ | ✓ | ✓ | ✓ | ✓ | - |
| | | | | | | GW | If present ⁽⁴⁾ | ✓ | ✓ | ✓ | Mercury only | - |

| Concerned Facility / Area (approx. area) | Hotspot (approx. area) | Sampling Location ID ⁽¹⁾ | Grid Size (m) | Sampling and Testing Rationale | Sampling Method | Sample Matrix/ Depth ⁽²⁾ | Parameters to be Tested ⁽³⁾ | | | | | |
|--|---|-------------------------------------|---------------|--|---|-------------------------------------|--|------|-------|--------|--------------|---|
| | | | | | | | PCRs | VOCs | SVOCs | Metals | PCBs | |
| | Transformer S1 (5 m ²) | ENV-BH20 | - | Target potential hotspot area at transformer S1 (5 m ²) | Borehole drilling to 2m below the groundwater table or 6m bgl | Soil | (i) 0.5m bgl (ii) 1.5m bgl (iii) 3.0m bgl (iv) at GW level or 6m bgl ⁽⁴⁾ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | | | | | GW | If present ⁽⁴⁾ | ✓ | ✓ | ✓ | Mercury only | ✓ |
| | Chemical Waste Storage Area (5 m ²) | ENV-BH21 | - | Target potential hotspot area at chemical waste storage area (5 m ²) | Borehole drilling to 2m below the groundwater table or 6m bgl | Soil | (i) 0.5m bgl (ii) 1.5m bgl (iii) 3.0m bgl (iv) at GW level or 6m bgl ⁽⁴⁾ | ✓ | ✓ | ✓ | ✓ | - |
| | | | | | | GW | If present ⁽⁴⁾ | ✓ | ✓ | ✓ | Mercury only | - |
| S1-2 Building | Generator S1-2 (15m ²) | ENV-BH22 | - | Target potential hotspot area at generator S1-2 (15 m ²) | Borehole drilling to 2m below the groundwater table or 6m bgl | Soil | (i) 0.5m bgl (ii) 1.5m bgl (iii) 3.0m bgl (iv) at GW level or 6m bgl ⁽⁴⁾ | ✓ | ✓ | ✓ | ✓ | - |
| | | | | | | GW | If present ⁽⁴⁾ | ✓ | ✓ | ✓ | Mercury only | - |
| | Transformer S1-2 (5m ²) | ENV-BH23 | - | Target potential hotspot area at transformer S1-2 (5 m ²) | Borehole drilling to 2m below the groundwater table or 6m bgl | Soil | (i) 0.5m bgl (ii) 1.5m bgl (iii) 3.0m bgl (iv) at GW level or 6m bgl ⁽⁴⁾ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | | | | | GW | If present ⁽⁴⁾ | ✓ | ✓ | ✓ | Mercury only | ✓ |
| Ventilation Building S2 | Transformer S2 (5m ²) | ENV-BH24 | - | Target potential hotspot area at transformer S2 (5 m ²) | Borehole drilling to 2m below the groundwater table or 6m bgl | Soil | (i) 0.5m bgl (ii) 1.5m bgl (iii) 3.0m bgl (iv) at GW level or 6m bgl ⁽⁴⁾ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | | | | | GW | If present ⁽⁴⁾ | ✓ | ✓ | ✓ | Mercury only | ✓ |

| Concerned Facility / Area (approx. area) | Hotspot (approx. area) | Sampling Location ID ⁽¹⁾ | Grid Size (m) | Sampling and Testing Rationale | Sampling Method | Sample Matrix/ Depth ⁽²⁾ | Parameters to be Tested ⁽³⁾ | | | | | |
|---|---|-------------------------------------|--|--|---|--|--|------|-------|--------------|--------------|---|
| | | | | | | | PCRs | VOCs | SVOCs | Metals | PCBs | |
| | Chemical Waste Storage Area (2 m ²) | ENV-BH25 | - | Target potential hotspot area at chemical waste storage area (2 m ²) | Borehole drilling to 2m below the groundwater table or 6m bgl | Soil | (i) 0.5m bgl (ii) 1.5m bgl (iii) 3.0m bgl (iv) at GW level or 6m bgl ⁽⁴⁾ | ✓ | ✓ | ✓ | ✓ | - |
| | | | | | | GW | If present ⁽⁴⁾ | ✓ | ✓ | ✓ | Mercury only | - |
| S2-2 Building | Generator S2-2 (15 m ²) | ENV-BH26 | - | Target potential hotspot area at generator S2-2 (15 m ²) | Borehole drilling to 2m below the groundwater table or 6m bgl | Soil | (i) 0.5m bgl (ii) 1.5m bgl (iii) 3.0m bgl (iv) at GW level or 6m bgl ⁽⁴⁾ | ✓ | ✓ | ✓ | ✓ | - |
| | | | | | | GW | If present ⁽⁴⁾ | ✓ | ✓ | ✓ | Mercury only | - |
| | Transformer S2-2 (5 m ²) | ENV-BH27 | - | Target potential hotspot area at transformer S2-2 (5 m ²) | Borehole drilling to 2m below the groundwater table or 6m bgl | Soil | (i) 0.5m bgl (ii) 1.5m bgl (iii) 3.0m bgl (iv) at GW level or 6m bgl ⁽⁴⁾ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | | | | | GW | If present ⁽⁴⁾ | ✓ | ✓ | ✓ | Mercury only | ✓ |
| Chemical Waste Storage Area (2 m ²) | ENV-BH28 | - | Target potential hotspot area at chemical waste storage area (2 m ²) | Borehole drilling to 2m below the groundwater table or 6m bgl | Soil | (i) 0.5m bgl (ii) 1.5m bgl (iii) 3.0m bgl (iv) at GW level or 6m bgl ⁽⁴⁾ | ✓ | ✓ | ✓ | ✓ | - | |
| | | | | | GW | If present ⁽⁴⁾ | ✓ | ✓ | ✓ | Mercury only | - | |
| <i>Kowloon Portal</i> | | | | | | | | | | | | |
| Ventilation Building K1 | Transformers K1 and K1-2 (5m ² each) | ENV-BH29 ENV-BH30 | - | Target potential hotspot areas at transformers K1 and K1-2 (5 m ² each) | Borehole drilling to 2m below the groundwater table or 6m bgl | Soil | (i) 0.5m bgl (ii) 1.5m bgl (iii) 3.0m bgl (iv) at GW level or 6m bgl ⁽⁴⁾ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | | | | | GW | If present ⁽⁴⁾ | ✓ | ✓ | ✓ | Mercury only | ✓ |

| Concerned Facility / Area (approx. area) | Hotspot (approx. area) | Sampling Location ID ⁽¹⁾ | Grid Size (m) | Sampling and Testing Rationale | Sampling Method | Sample Matrix/ Depth ⁽²⁾ | Parameters to be Tested ⁽³⁾ | | | | | |
|--|--|-------------------------------------|---------------|---|---|-------------------------------------|--|------|-------|--------|--------------|---|
| | | | | | | | PCRs | VOCs | SVOCs | Metals | PCBs | |
| Ventilation Building K2 | Generators (Mobile Gensets 1 and 2) (10 m ² each) | ENV-BH31 ENV-BH32 | - | Target potential hotspot areas at mobile gensets 1 and 2 (10 m ² each) | Borehole drilling to 2m below the groundwater table or 6m bgl | Soil | (i) 0.5m bgl (ii) 1.5m bgl (iii) 3.0m bgl (iv) at GW level or 6m bgl ⁽⁴⁾ | ✓ | ✓ | ✓ | ✓ | - |
| | | | | | | GW | If present ⁽⁴⁾ | ✓ | ✓ | ✓ | Mercury only | - |
| | Transformer K2 (5 m ²) | ENV-BH33 | - | Target potential hotspot area at transformer K2 (5 m ²) | Borehole drilling to 2m below the groundwater table or 6m bgl | Soil | (i) 0.5m bgl (ii) 1.5m bgl (iii) 3.0m bgl (iv) at GW level or 6m bgl ⁽⁴⁾ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | | | | | GW | If present ⁽⁴⁾ | ✓ | ✓ | ✓ | Mercury only | ✓ |
| | Chemical Waste Storage Area (2 m ²) | ENV-BH34 | - | Target potential hotspot area at chemical waste storage area (2 m ²) | Borehole drilling to 2m below the groundwater table or 6m bgl | Soil | (i) 0.5m bgl (ii) 1.5m bgl (iii) 3.0m bgl (iv) at GW level or 6m bgl ⁽⁴⁾ | ✓ | ✓ | ✓ | ✓ | - |
| | | | | | | GW | If present ⁽⁴⁾ | ✓ | ✓ | ✓ | Mercury only | - |
| K2-2 Building | Transformer K2-2 (5 m ²) | ENV-BH35 | - | Target potential hotspot area at transformer K2-2 (5 m ²) | Borehole drilling to 2m below the groundwater table or 6m bgl | Soil | (i) 0.5m bgl (ii) 1.5m bgl (iii) 3.0m bgl (iv) at GW level or 6m bgl ⁽⁴⁾ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | | | | | GW | If present ⁽⁴⁾ | ✓ | ✓ | ✓ | Mercury only | ✓ |

(1) Refer to **Figure 3.1** and **3.2** for concerned facility / area and proposed sampling locations.

(2) bgl = below ground level; GW = groundwater

(3) The testing parameters refer to the parameters as shown in Table 2.1 – RBRGs for Soil & Soil Saturation Limit and Table 2.2 – RBRGs for Groundwater and Solubility Limit under VOCs, SVOCs, Metals, PCBs and PCRs in the Guidance Manual.

Since RBRG value of benzo(a)anthracene, benzo(a)pyrene, benzo(g,h,i)perylene, benzo(k)fluoranthene, bis-(2-Ethylhexyl)phthalate, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene and phenol were not available for groundwater, the said parameters would not be tested in groundwater samples.

(4) The deepest depth of sampling should be at groundwater table or 6m bgl, whichever is shallower. Groundwater sample would only be collected if encountered.

3.2 Soil Sampling Method and Depth of Sampling

- 3.2.1 All soil boring / excavation and sampling should be supervised by a land contamination specialist.
- 3.2.2 Boreholes should be advanced by dry rotary drilling, i.e. without the use of flushing medium, to prevent cross-contamination during sampling. For safety reasons, an inspection pit should be excavated to 1.5m below ground level (m bgl) to confirm the absence of underground utilities at the proposed borehole location and disturbed soil samples, using stainless steel hand tools or other appropriate equipment, should be collected at depth of 0.5m bgl. Soil boring using drill rigs should then be performed from depth of 1.5m bgl to the maximum boring depth. Undisturbed U100/U76 soil samples should be collected at depths from 1.5m and onwards. Boreholes are proposed to be advanced to approximately 2m below the stabilized water table or if no groundwater were encountered, a depth of 6m bgl. The termination depth of 6m bgl is considered sufficient given that the concerned areas / hotspots were small in size / scale of operation (1 m² – 810 m²), located aboveground and paved with intact concrete with no oil stains observed, and contamination (if any) is likely to be shallow. If sign of contamination is identified below 6 m bgl during SI, additional samples will be taken at lower depth(s) as determined by the on-site land contamination specialist subject to the actual site condition and engineering constraints. On-site screening using photo-ionization detectors (PID) for measurement of VOC concentration in soil vapour will also be carried out to assist in the identification of potentially contaminated soil and to determine the need to collect extra samples for laboratory analysis. Field observations such as abnormal odour, stained soil and the presence of non-aqueous phase liquid (NAPL) would be recorded.
- 3.2.3 At each sampling location/depth, sufficient quantity of soil (as specified by the laboratory) should be recovered to facilitate analyses of the specified suite of parameters. All soil samples should be uniquely labelled. Backup samples should be retained and stored at 0 - 4 °C in laboratory.

3.3 Strata Logging

- 3.3.1 Strata logging for boreholes should be undertaken during the course of drilling/digging and sampling by a qualified geologist. The logs should include the general stratigraphic description, depth of soil sampling, sample notation and level of groundwater (if encountered). The presence of rocks/boulders/cobbles and foreign materials such as metals, wood and plastics should also be recorded.

3.4 Groundwater Sampling and Free Product Measurement

- 3.4.1 Groundwater samples should be collected at each of the sampling location if groundwater were encountered.
- 3.4.2 At each borehole location, a groundwater sampling well should be installed. Suitable well materials (e.g. PVC) should be used for COCs with metals and organics. A typical design of a groundwater monitoring well is shown in **Appendix F**. After installation of the monitoring wells, the depth to water table at all monitoring wells should be measured and recorded with an interface probe in order to assess groundwater gradients and predominant flow direction. Prior to sampling activities, wells should be fully developed to ensure formation water is flowing into and out of the wells. The wells should then be allowed to stand for a day to permit groundwater conditions to equilibrate.
- 3.4.3 Groundwater level and thickness of free product layer, if present, should be measured at each well before groundwater samples are taken. In the unlikely event that measurable thicknesses of free product were encountered, a sample should be collected for laboratory analysis to determine the composition.

- 3.4.4 Prior to groundwater sampling, the monitoring wells should be purged with at least three times the well volume or until dry to collect representative fresh groundwater samples. Groundwater samples should be taken within 24 hours of the wells being purged.
- 3.4.5 After purging, one groundwater sample should be collected at each well using Teflon bailer and decanted immediately into appropriate sample containers in a manner that minimises agitation and volatilization of VOCs from the samples for the purpose of storage and transportation. The sample containers should be supplied by the laboratory and should be new, clean and made of 'amber glass'. Groundwater samples should be placed in the glass containers with zero headspace and promptly sealed with a septum-lined cap. All samples should be uniquely labelled.
- 3.4.6 Immediately after collection, samples should be placed in ice chests, cooled and maintained at temperature of about 0-4°C until delivered to the analytical laboratory.

3.5 Sample Size and Decontamination Procedures

- 3.5.1 All down hole or digging equipment should be decontaminated between drilling, digging and sampling event to minimise the potential for cross contamination. The equipment (including drilling pit, digging tools and soil/groundwater samplers) should be decontaminated by washing with phosphate-free detergent and rinsed with distilled / deionised water.
- 3.5.2 Prior to sampling, the laboratory responsible for analysis should be consulted on the particular sample size and preservation procedures that are necessary for each chemical analysis.
- 3.5.3 The sample containers should be laboratory cleaned, sealable, water-tight, made of glass or other suitable materials with aluminum or Teflon-lined lids, so that the container surface will not react with the sample or adsorb contaminants. No headspace should be allowed in the containers which contain samples to be analysed for VOCs, PCBs or other volatile chemicals.
- 3.5.4 The containers should be marked with the sampling location codes and the depths at which the samples were taken. If the contents are hazardous, this should be clearly marked on the container and precautions taken during transport. Samples should be stored at between 0-4 °C but never frozen. Samples should be delivered to the laboratory on the same day the sample being taken and analysed within the respective holding time, but, in any case, not more than 10 days after samples being taken.

3.6 QA/QC Procedures

- 3.6.1 QA/QC samples should be collected in the following frequency during the SI works. Chain of Custody protocol should be adopted.
- 1 equipment blank per 20 samples for full suite analysis including PCBs as shown in **Table 3.1**;
 - 1 field blank per 20 samples for full suite analysis including PCBs as shown in **Table 3.1**;
 - 1 duplicate soil sample per 20 soil samples and 1 duplicate groundwater sample per 20 groundwater samples for corresponding parameters analysis as shown in Table 3.1; and
 - 1 trip blank sample per trip for analysis of VOCs in **Table 3.1**.

3.7 Health and Safety

- 3.7.1 The specific safety measures to be taken depend on the nature and content of contamination, the site conditions and the regulations related to site safety requirements. Workmen Compensation Insurance and third party insurance must be provided for the SI.

- 3.7.2 Extreme care should be exercised in the event that potentially toxic gases or other suspected hazardous materials are encountered. Any abnormal conditions found should be reported immediately to the safety officer and the land contamination specialist.
- 3.7.3 The SI contractor should establish and maintain a Health and Safety Plan before commencement of the SI that will include the following:
- (a) Instruction of works on work procedures, safe practices, emergency duties, and applicable regulations;
 - (b) Regularly scheduled meetings of the workers in which the possible hazards, problems of the job, and related safe practices are emphasized and discussed;
 - (c) Good housekeeping practices; and
 - (d) Availability of and instruction in the location, use and maintenance of personal protective equipment.
- 3.7.4 The SI contractor should maintain equipment and supplies reasonably required in an emergency, including lifesaving, evacuation, rescue and medical equipment in good working order and condition at all times. The SI contractor should use all reasonable means to control and prevent fires and explosions, injury to personnel and damage to equipment of property. Without limiting the foregoing, the SI contractor should:
- (a) Maintain proper safety devices, barriers to minimize hazards during performance of the work;
 - (b) Prohibit smoking and open flames and the carrying of matches and lighters;
 - (c) Develop and maintain a written emergency plan applicable to the work and site;
 - (d) Maintain equipment in good operating condition and have emergency and first aid equipment ready for immediate use, where applicable;
 - (e) Conduct equipment tests to ensure that equipment is properly placed and in good operating condition, and that workers are able to respond to emergency situations;
 - (f) Require all workers employed or retained by the contractor, or a subcontractor, to at all time wear clothing suitable for existing work, weather and environmental conditions; and
 - (g) Wear safety helmet and protective boots. Respirators and gloves for vapour exposure protection should also be wore if necessary.

4 LABORATORY ANALYSIS

4.1.1 **Table 4.1** summarizes the parameters, the recommended reporting limits and reference methods for the laboratory analyses of soil and groundwater samples for the COCs under this land contamination assessment.

Table 4.1 Parameters, Reporting Limits and Reference Methods for Laboratory Analysis

| Item | Parameter | Soil | | Groundwater | |
|---------------|-----------------------------|--|-------------------|---|-------------------|
| | | Reporting Limit (mg/kg) or otherwise specified | Reference Method* | Reporting Limit (µg/L) or otherwise specified | Reference Method* |
| SVOCs | | | | | |
| 1 | Acenaphthene | 0.5 | USEPA 8270 | 2 | USEPA 8270 |
| 2 | Acenaphthylene | 0.5 | | 2 | |
| 3 | Anthracene | 0.5 | | 2 | |
| 4 | Benzo(a)anthracene | 0.5 | | NA | |
| 5 | Benzo(a)pyrene | 0.5 | | NA | |
| 6 | Benzo(b)fluoranthene | 0.5 | | 1 | |
| 7 | Benzo(g,h,i)perylene | 0.5 | | NA | |
| 8 | Benzo(k)fluoranthene | 0.5 | | NA | |
| 9 | bis-(2-Ethylhexyl)phthalate | 5 | | NA | |
| 10 | Chrysene | 0.5 | | 1 | |
| 11 | Dibenzo(a,h)anthracene | 0.5 | | NA | |
| 12 | Fluoranthene | 0.5 | | 2 | |
| 13 | Fluorene | 0.5 | | 2 | |
| 14 | Hexachlorobenzene | 0.2 | | 4 | |
| 15 | Indeno(1,2,3-cd)pyrene | 0.5 | | NA | |
| 16 | Naphthalene | 0.5 | | 2 | |
| 17 | Phenanthrene | 0.5 | | 2 | |
| 18 | Phenol | 0.5 | | NA | |
| 19 | Pyrene | 0.5 | | 2 | |
| VOCs | | | | | |
| 20 | Acetone | 50 | USEPA 8260 | 500 | USEPA 8260 |
| 21 | Bromodichloromethane | 0.1 | | 5 | |
| 22 | 2-Butanone | 5 | | 50 | |
| 23 | Chloroform | 0.04 | | 5 | |
| 24 | Methyl tert-Butyl Ether | 0.5 | | 5 | |
| 25 | Methylene Chloride | 0.5 | | 50 | |
| 26 | Styrene | 0.5 | | 5 | |
| 27 | Tetrachloroethene | 0.04 | | 5 | |
| 28 | Trichloroethene | 0.1 | | 5 | |
| 29 | Benzene | 0.2 | | 5 | |
| 30 | Toluene | 0.5 | | 5 | |
| 31 | Ethylbenzene | 0.5 | | 5 | |
| 32 | Xylenes | 2 | | 20 | |
| Metals | | | | | |
| 33 | Antimony | 1 | | NA | NA |

| Item | Parameter | Soil | | Groundwater | |
|--------------------------------|-----------------------------------|--|---------------------------------|---|-------------------|
| | | Reporting Limit (mg/kg) or otherwise specified | Reference Method* | Reporting Limit (µg/L) or otherwise specified | Reference Method* |
| 34 | Arsenic | 1 | USEPA 6020 | NA | NA |
| 35 | Barium | 1 | | NA | NA |
| 36 | Cadmium | 0.2 | | NA | NA |
| 37 | Chromium III [^] | 1 | By calculation | NA | NA |
| 38 | Chromium VI | 1 | USEPA 3060 APHA 3500 CR:D | NA | NA |
| 39 | Cobalt | 1 | USEPA 6020 | NA | NA |
| 40 | Copper | 1 | | NA | NA |
| 41 | Lead | 1 | | NA | NA |
| 42 | Manganese | 1 | | NA | NA |
| 43 | Mercury | 0.05 | APHA 3112B | 0.5 | APHA 3112B |
| 44 | Molybdenum | 1 | USEPA 6020 | NA | NA |
| 45 | Nickel | 1 | | NA | |
| 46 | Tin | 1 | | NA | |
| 47 | Zinc | 1 | | NA | |
| Petroleum Carbon Ranges | | | | | |
| 48 | C ₆ - C ₈ | 5 | USEPA 8015/8260 | 20 | USEPA 8015/8260 |
| 49 | C ₉ - C ₁₆ | 200 | | 500 | |
| 50 | C ₁₇ - C ₃₅ | 500 | | 500 | |
| PCBs | | | | | |
| 51 | PCBs | 0.1 | USEPA 8270 | 1 | USEPA 8270 |

Notes:

NA = Not Applicable

[^] Chromium III is quantified by calculation based on Chromium VI and Total Chromium measured under HOKLAS accredited methods.

* Alternative testing methods with accreditation by HOKLAS or its Mutual Recognition Arrangement partners are also accepted.

- 4.1.2 The actual reporting limits and testing methods to be adopted for the above parameters will be confirmed with the laboratory responsible for analysis prior to commencement of the SI works. Nevertheless, all the adopted reporting limits should be below the respective RBRGs and all laboratory testing methods for the above parameters should be accredited by the Hong Kong Laboratory Accreditation Scheme (HOKLAS) or one of its Mutual Recognition Arrangement partners.

5 INITIAL EVALUATION OF POTENTIAL LAND CONTAMINATION IMPACT AND POSSIBLE REMEDIATION MEASURES

5.1 Initial Evaluation of Potential Land Contamination Impact

- 5.1.1 Based on the site appraisal, 11 facilities / areas within the Project Area as listed in **Section 2.6** were identified with potential land contamination concerns and required further SI works. However, as all the concerned facilities / areas are in operation, it would not be feasible to carry out the proposed SI works under the EIA Study.
- 5.1.2 The potential land contamination concerns for the abovementioned facilities / areas were associated with handling and storage of hazardous substances. The sizes of the concerned facilities / areas (ranged from 1 m² to 810 m²) were considered small and all the handling and storage activities of hazardous substances were carried out on paved concrete floor. As reported by EPD and FSD, there are no records of spillages / leakages accidents of chemicals / chemical wastes at the concerned facilities / areas within the Project Area. It is therefore considered that the contamination (if indeed present) would likely be restricted to the concerned facilities / areas and extensive contamination is not expected within the Project Area.
- 5.1.3 Land contamination assessment including intrusive SI works and, if required, remediation works would need to be carried out at a later stage of the Project (refer to **Section 6** below for details) and should follow EPD's Guidance Manual, Guidance Note and Practice Guide. Any soil/groundwater contamination would be identified and properly treated prior to the commencement of construction works under the Project. The potential COCs identified include metals, VOCs, SVOCs, PCRs and PCBs and referring to **Section 5.2** below, there are commercially available technologies that could tackle these COCs.
- 5.1.4 Given the above, land contamination impacts are considered not insurmountable to the Project if the recommended actions as outlined in **Section 6** were followed and contaminated soil and groundwater (if any) were properly treated using appropriate remediation methods and according to the Remediation Action Plan (RAP) to be agreed by EPD.

5.2 Possible Remediation Measures

- 5.2.1 The actual remediation methods could only be determined after completion of the land contamination assessment (including intrusive SI works and EPD's agreement on the Contamination Assessment Report (CAR) and RAP at the later stage of the Project. The RAP will provide details of the remedial actions for any identified contaminated soil and groundwater.
- 5.2.2 Nevertheless, based on the site appraisal, hotspots were identified within the existing LRT portals. The potential COCs may include metals, VOCs, SVOCs, PCRs and PCBs. For contaminated soil, there are a number of technologies commercially available to tackle the identified COCs and are presented in the Practice Guide. Technologies that are commonly used in Hong Kong are biopiling and cement solidification/stabilisation. These ex-situ methods were proven to be effective in treating the target COCs and the treated soil could then be reused on site (e.g. backfilling materials). Given the size of the portal areas (approximately 2.5 - 7.8 ha), there would be sufficient space available to handle and treat the contaminated soil and the two methods are considered to be appropriate for the Project. For groundwater, there are remediation techniques as shown in EPD's Practice Guide (e.g. air sparging, recovery trenches / wells, in-ground containment/capping and permeable reactive barriers) that could be applied to this Project if contaminated groundwater were identified.

6 WAY FORWARD AND PROGRAMME SCHEDULE

- 6.1.1 As the concerned facilities of the LRT are still in operation, it would not be feasible to carry out the proposed SI works under the EIA Study. Moreover, based on the tentative construction programme, demolition of the concerned facilities and construction works at the concerned areas will not commence until 2026-2027, there could be changes in the operation or changes in land use within the Project Area which may cause further contamination issues. Site re-appraisal should be carried out for the whole Project Area at a later stage of the Project in order to address any new contamination issues caused by the (i) changes in operation of the identified potentially contaminated site and (ii) changes in land use within the Project Area. The submission of supplementary CAP(s), associated SI works and any necessary remediation should be carried out at the concerned facilities and any new contaminated area identified in the site re-appraisal, prior to the commencement of construction at the potentially contaminated area(s).
- 6.1.2 The site re-appraisal and submission of supplementary CAP(s) should be carried out prior to the commencement of the SI works. Supplementary CAP(s), presenting findings of the review, the latest site conditions of the concerned facilities / new contaminated area and updated sampling strategy and testing protocol, should be submitted to EPD for endorsement. The SI works should be carried out according to EPD’s agreed supplementary CAP(s). Following the completion of SI works and receipt of laboratory test results, CAR(s) should be prepared to present the findings of the SI works and to discuss the presence, nature and extent of contamination. If contamination is identified, RAP(s) which provides details of the remedial actions for the identified contaminated soil and / or groundwater should be endorsed by EPD.
- 6.1.3 Remediation action, if necessary, will be carried out according to EPD endorsed RAP(s) and Remediation Report(s) (RR(s)) will be submitted after completion of the remediation action. The RR(s) should be endorsed by EPD prior to the commencement of construction works at the respective identified contaminated areas (if any).
- 6.1.4 A tentative programme for land contamination assessment is shown in **Table 6.1**. It should be noted that the tentative schedule is subject to the construction programme to be agreed with Highways Department (HyD) and the actual time span is subject to the actual site conditions.

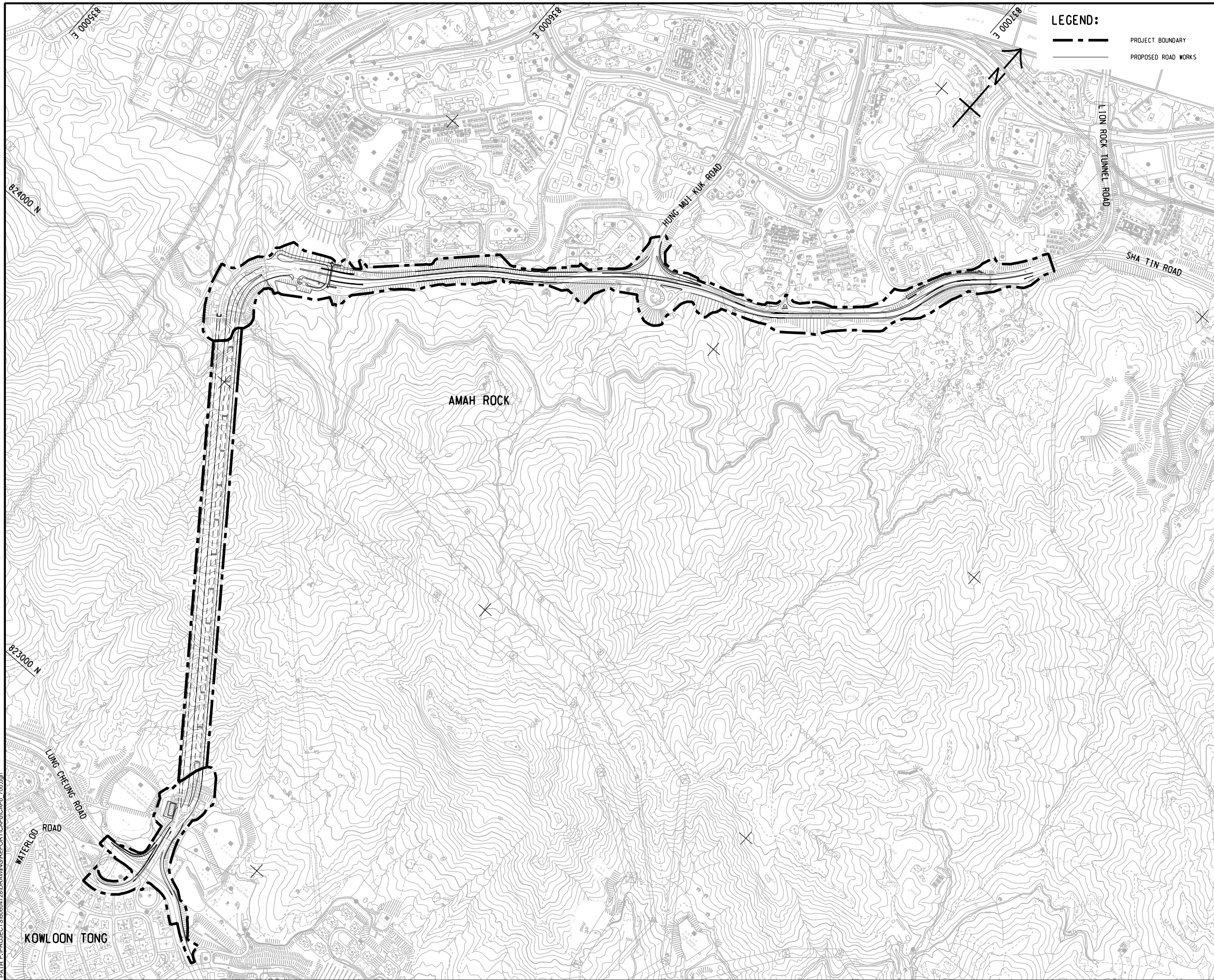
Table 6.1 Tentative Programme for Land Contamination Assessment

| Task | Tentative Timeframe |
|--|------------------------------------|
| Site re-appraisal, preparation and submission of supplementary CAP | Q1 of 2026 |
| Approval of supplementary CAP | Q1 of 2026 |
| SI works, laboratory tests, preparation and submission of CAR/RAP | Q2 of 2026 |
| Approval of CAR/RAP | Q2 of 2026 |
| Remediation works, preparation and submission of RR | Subject to results of the SI works |

7 CONCLUSION

- 7.1.1 This CAP covered the Project Area at LRT and is prepared for the EIA Study.
- 7.1.2 A site appraisal, in the form of desktop review and site walkover, was conducted from August 2020 to June 2022 to identify any current/historical potentially contaminating and uses within the Project Area. Based on the site appraisal, a total of 11 facilities / areas were identified with potential land contamination concerns at the tunnel portal areas within the Project Area.
- 7.1.3 A sampling and testing programme, targeting the concerned facilities / areas had been proposed. A total of 35 sampling locations were proposed for soil and groundwater sample collection. The collected samples will be tested for the COCs (i.e. metals, VOCs, SVOCs, PCRs and PCBs).
- 7.1.4 As the concerned facilities of the LRT are still in operation, the proposed SI works are considered not feasible to be carried out under the EIA Study. Moreover, based on the tentative construction programme, the demolition of the concerned facilities and construction works at the concerned areas will not commence until 2026-2027, there could be change in site activities and land uses within the Project Area prior to development which may cause further contamination issues. Site re-appraisal should be carried out for the whole Project Area at a later stage of the Project in order to address any new contamination issues caused by the (i) changes in operation of the identified potentially contaminated site and (ii) changes in land use within the Project Area. The submission of supplementary CAP(s), associated SI works and any necessary remediation should be carried out at the concerned facilities and any new contaminated area identified in the site re-appraisal, prior to the commencement of construction at the potentially contaminated area(s). The recommended further assessment and remediation works, including the submission of supplementary CAP(s), CAR/RAP(s) and RR(s) would follow relevant Guidance Manual, Guidance Note and Practice Guide.
- 7.1.5 With the implementation of the recommended follow up works for the Project, any soil/groundwater contamination would be identified and properly treated prior to the construction works. No insurmountable land contamination impacts to the Project are therefore anticipated.

Figures



LEGEND:

- PROJECT BOUNDARY
- PROPOSED ROAD WORKS



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STATUS

SCALE

A3 1 : 10000

DIMENSION UNIT

METRES

KEY PLAN

PROJECT NO.

60604728

AGREEMENT NO.

CE 48/2018(HY)

SHEET TITLE

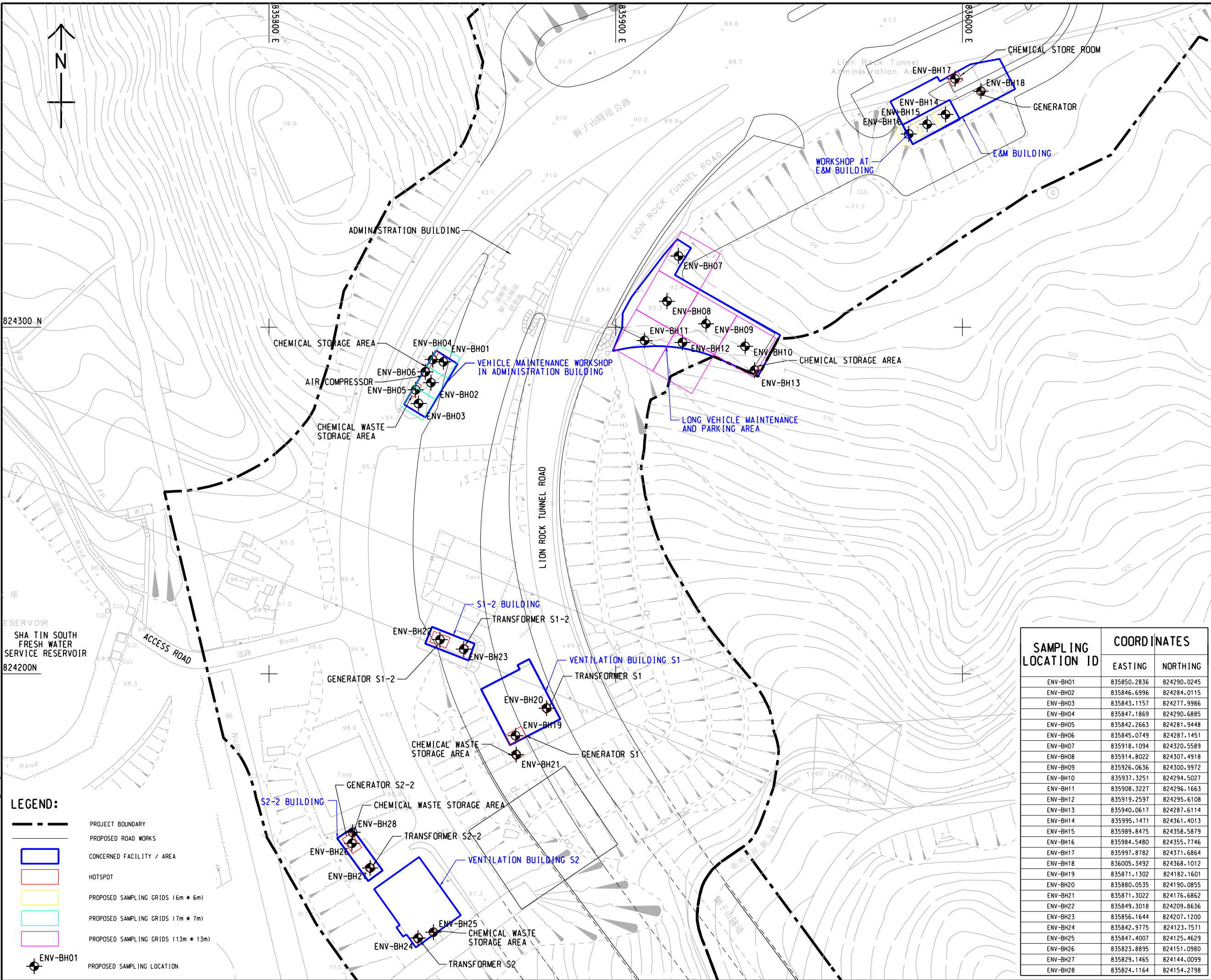
SITE LOCATION PLAN

SHEET NUMBER

60604728/CAPb/FIGURE 2.1

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PATH PROJECTS/0604728/DRAWING/REPORT/CAPb/FIG 3.1.dgn



LEGEND:

- PROJECT BOUNDARY
- PROPOSED ROAD WORKS
- CONCERNED FACILITY / AREA
- HOTSPOT
- PROPOSED SAMPLING GRIDS (6m * 6m)
- PROPOSED SAMPLING GRIDS (7m * 7m)
- PROPOSED SAMPLING GRIDS (13m * 13m)
- ENV-BH01
- PROPOSED SAMPLING LOCATION

| SAMPLING LOCATION ID | COORDINATES | |
|----------------------|-------------|-------------|
| | EASTING | NORTHING |
| ENV-BH01 | 835850.2836 | 824290.0245 |
| ENV-BH02 | 835846.6996 | 824284.0115 |
| ENV-BH03 | 835843.1157 | 824277.9986 |
| ENV-BH04 | 835847.1869 | 824290.6885 |
| ENV-BH05 | 835842.2663 | 824281.9448 |
| ENV-BH06 | 835845.0749 | 824287.1451 |
| ENV-BH07 | 835918.1094 | 824320.5589 |
| ENV-BH08 | 835914.8022 | 824307.4918 |
| ENV-BH09 | 835926.0636 | 824300.9972 |
| ENV-BH10 | 835937.3251 | 824294.5027 |
| ENV-BH11 | 835908.3227 | 824296.1663 |
| ENV-BH12 | 835919.2597 | 824295.6108 |
| ENV-BH13 | 835940.0617 | 824287.6114 |
| ENV-BH14 | 835995.1471 | 824361.4013 |
| ENV-BH15 | 835989.8475 | 824358.5879 |
| ENV-BH16 | 835984.5480 | 824355.7746 |
| ENV-BH17 | 835997.8782 | 824371.6864 |
| ENV-BH18 | 836005.3492 | 824368.1012 |
| ENV-BH19 | 835871.1302 | 824182.1601 |
| ENV-BH20 | 835880.0535 | 824190.0855 |
| ENV-BH21 | 835871.3022 | 824176.6862 |
| ENV-BH22 | 835849.3018 | 824209.8636 |
| ENV-BH23 | 835856.1644 | 824207.1200 |
| ENV-BH24 | 835842.9775 | 824123.7571 |
| ENV-BH25 | 835847.4007 | 824125.4629 |
| ENV-BH26 | 835823.8895 | 824151.0980 |
| ENV-BH27 | 835829.1465 | 824144.0099 |
| ENV-BH28 | 835824.1164 | 824154.2798 |

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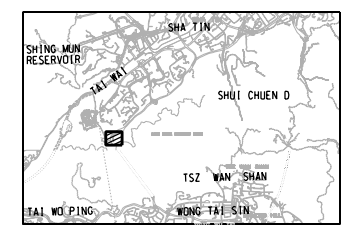
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KEY PLAN 索引圖: A3 1:160000



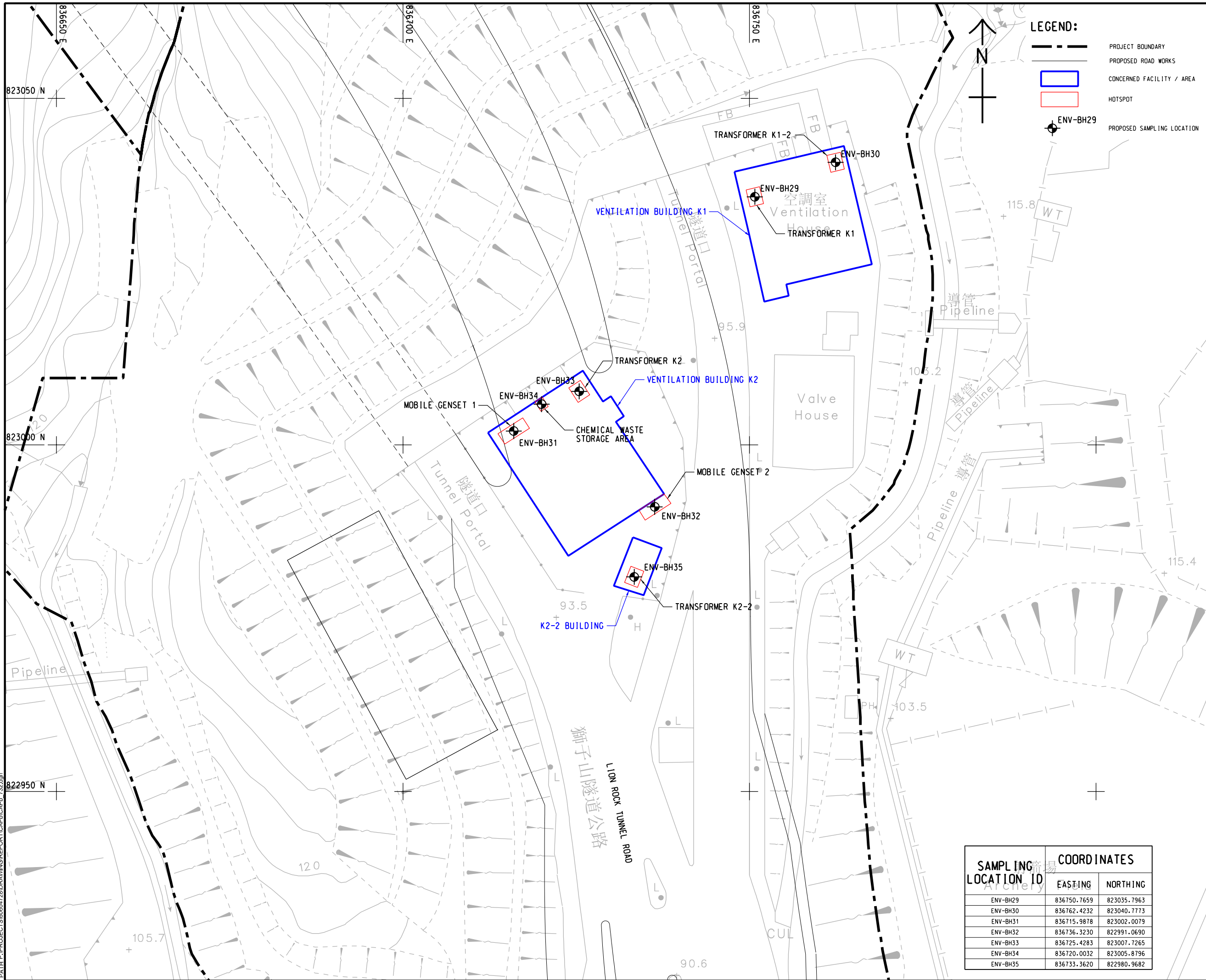
PROJECT NO. 項目編號: 60604728
AGREEMENT NO. 協議編號: CE 48/2018(HY)

SHEET TITLE 圖則名稱: CONCERNED FACILITIES / AREAS AND PROPOSED SAMPLING LOCATIONS (SHA TIN PORTAL)

SHEET NUMBER 圖則編號: 60604728/CAPb/FIGURE 3.1

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 Plot File by: ZHILZ



LEGEND:

- PROJECT BOUNDARY
- PROPOSED ROAD WORKS
- CONCERNED FACILITY / AREA
- HOTSPOT
- PROPOSED SAMPLING LOCATION

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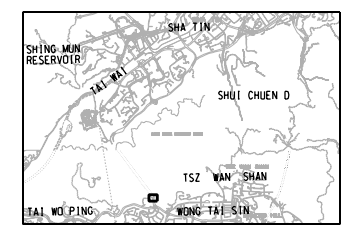
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STATUS
 狀態

SCALE
 比例尺
 A3 1 : 500

DIMENSION UNIT
 尺寸單位
 METRES

KEY PLAN A3 1 : 160000



| SAMPLING LOCATION ID | COORDINATES | |
|----------------------|-------------|-------------|
| | EASTING | NORTHING |
| ENV-BH29 | 836750.7659 | 823035.7963 |
| ENV-BH30 | 836762.4232 | 823040.7773 |
| ENV-BH31 | 836715.9878 | 823002.0079 |
| ENV-BH32 | 836736.3230 | 822991.0690 |
| ENV-BH33 | 836725.4283 | 823007.7265 |
| ENV-BH34 | 836720.0032 | 823005.8796 |
| ENV-BH35 | 836733.3620 | 822980.9682 |

PROJECT NO.
 項目編號
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 協議編號
 CE 48/2018(HY)

SHEET TITLE
 圖紙名稱
 CONCERNED FACILITIES / AREAS AND PROPOSED SAMPLING LOCATIONS (KOWLOON PORTAL)

SHEET NUMBER
 圖紙編號
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Appendix A
Relevant Historical Aerial Photographs



NOTE:
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LEGEND:
 - - - PROJECT BOUNDARY
 - - - PROPOSED ROAD WORKS

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STATUS
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 比例

A3 1 : 3000

DIMENSION UNIT
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METRES

KEY PLAN
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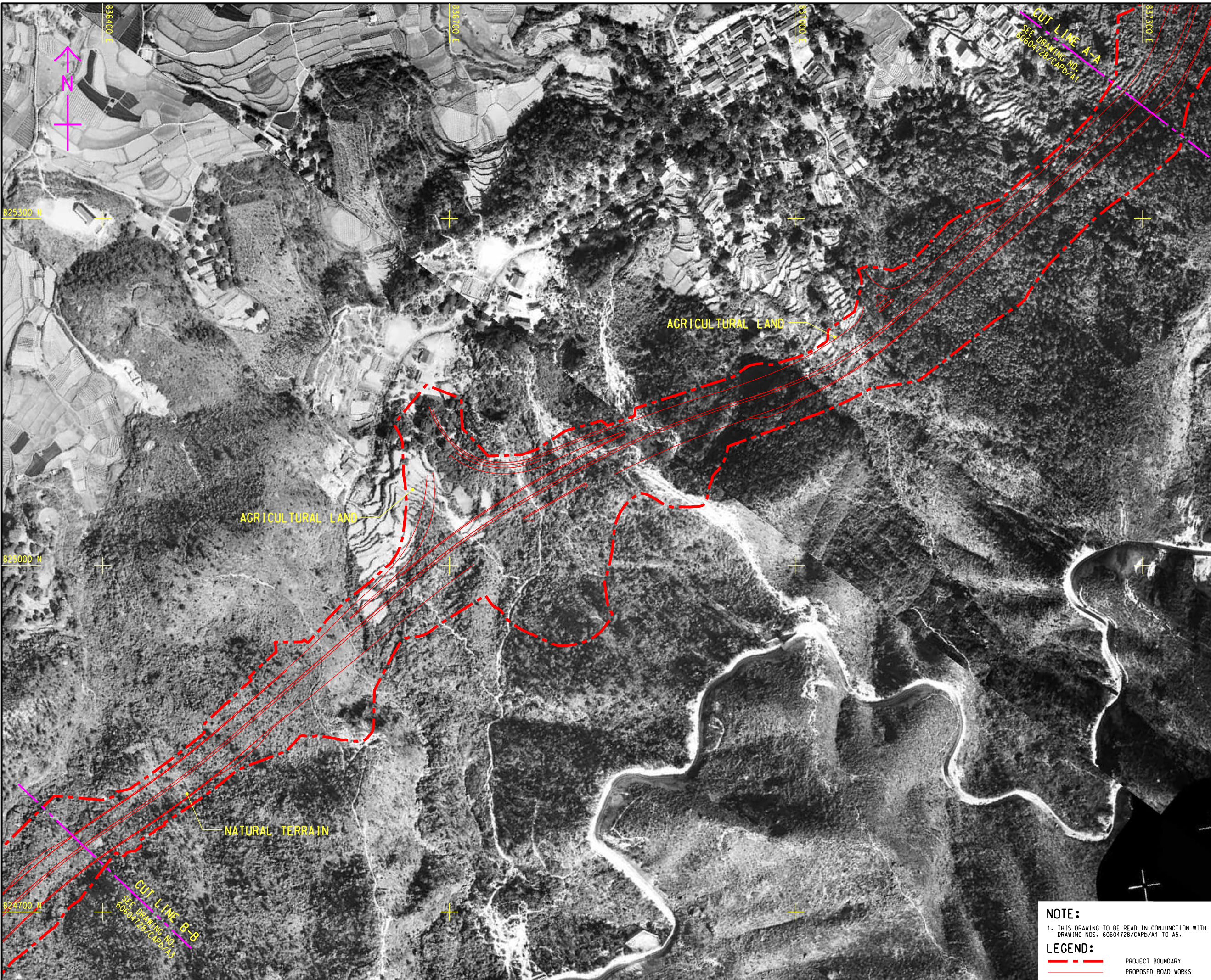
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 圖紙名稱
 AERIAL PHOTOGRAPH 1963

SHEET NUMBER
 圖紙編號
 60604728/CAPb/A1

SHEET 1 OF 5

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STATUS
 狀況

SCALE
 比例尺
 A3 1 : 3000

DIMENSION UNIT
 尺寸單位
 METRES

KEY PLAN
 索引圖



PROJECT NO.
 項目編號
 60604728

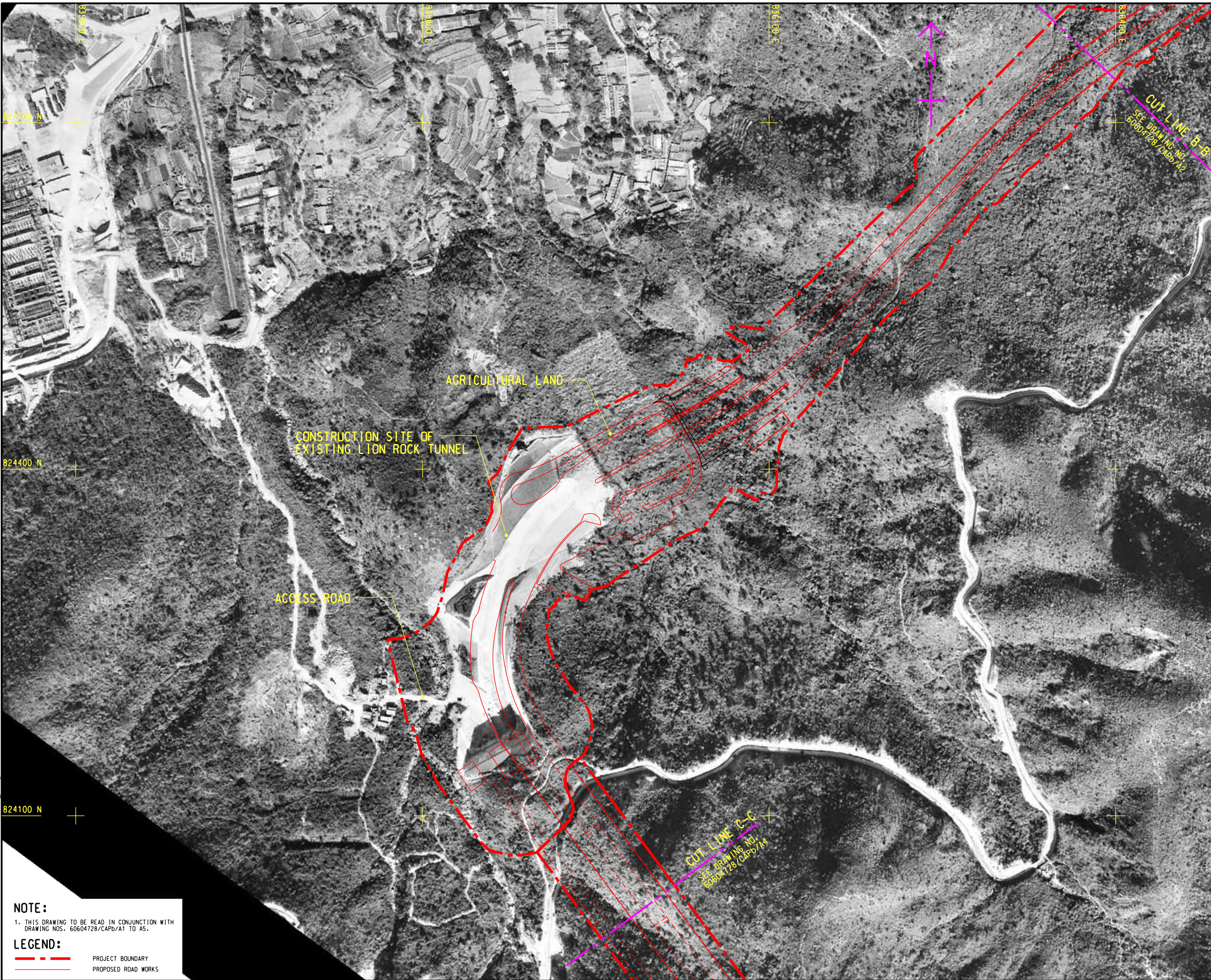
AGREEMENT NO.
 協議編號
 CE 48/2018(HY)

SHEET TITLE
 圖紙名稱
 AERIAL PHOTOGRAPH 1963

SHEET NUMBER
 圖紙編號
 60604728/CAPb/A2

NOTE:
 1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60604728/CAPb/A1 TO A5.

LEGEND:
 PROJECT BOUNDARY
 PROPOSED ROAD WORKS



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STATUS
 狀況

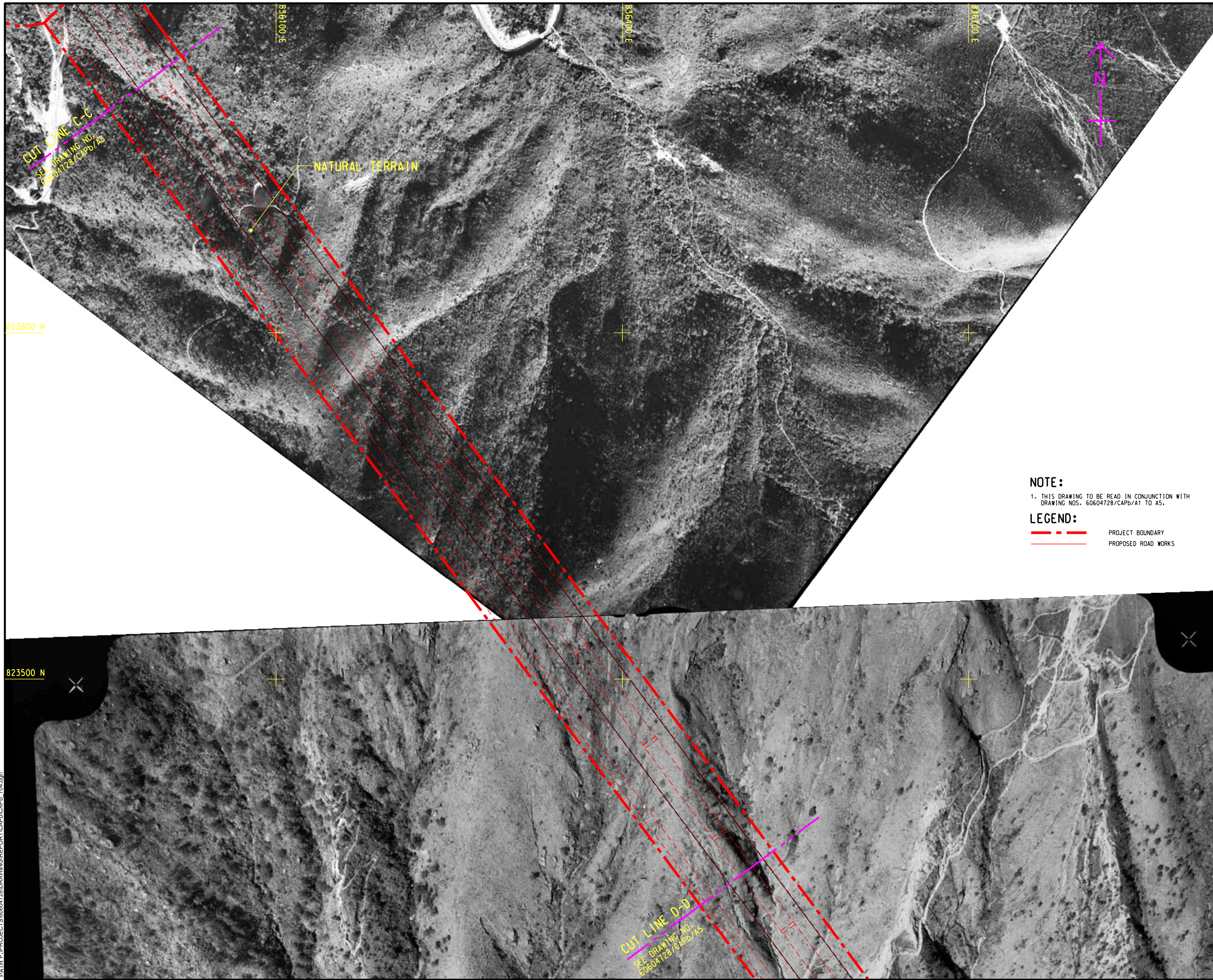
| SCALE | DIMENSION UNIT |
|-------------|----------------|
| 比例 | 尺寸單位 |
| A3 1 : 3000 | METRES |

KEY PLAN
 索引圖

| PROJECT NO. | AGREEMENT NO. |
|-------------|----------------|
| 項目編號 | 協議編號 |
| 60604728 | CE 48/2018(HY) |

SHEET TITLE
 圖紙名稱
AERIAL PHOTOGRAPH 1963

SHEET NUMBER
 圖紙編號
60604728/CAPb/A3



NOTE:
 1. THIS DRAWING TO BE READ IN CONJUNCTION WITH
 DRAWING NOS. 60604728/CAPb/A1 TO A5.

LEGEND:
 PROJECT BOUNDARY
 PROPOSED ROAD WORKS

ISSUE/REVISION
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STATUS
 狀況

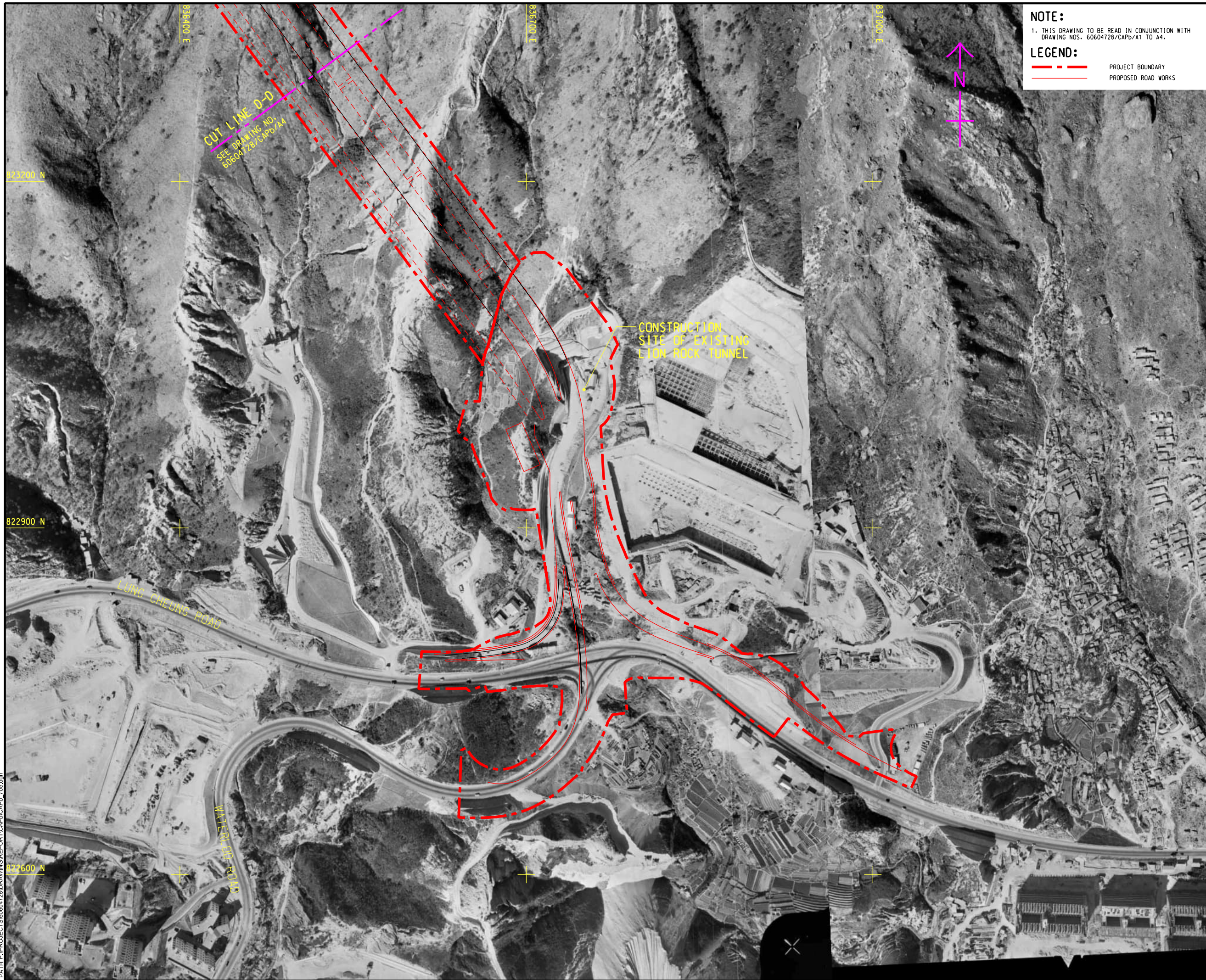
SCALE **DIMENSION UNIT**
 比例 尺寸單位
 A3 1 : 3000 METRES

KEY PLAN
 索引圖

PROJECT NO. **AGREEMENT NO.**
 項目編號 協議編號
 60604728 CE 48/2018(HY)

SHEET TITLE
 圖紙名稱
 AERIAL PHOTOGRAPH 1963

SHEET NUMBER
 圖紙編號
 60604728/CAPb/A4



NOTE:
1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60604728/CAPb/A1 TO A4.

LEGEND:
- - - PROJECT BOUNDARY
--- PROPOSED ROAD WORKS



PROJECT
項目
IMPROVEMENT OF LION ROCK TUNNEL - INVESTIGATION

CLIENT
業主
**路政署
HIGHWAYS
DEPARTMENT**

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STATUS
狀況

SCALE **DIMENSION UNIT**
比例 尺寸單位

A3 1 : 3000 METRES

KEY PLAN
索引圖

PROJECT NO. **AGREEMENT NO.**
項目編號 協議編號

60604728 CE 48/2018(HY)

SHEET TITLE
圖紙名稱

AERIAL PHOTOGRAPH 1963

SHEET NUMBER
圖紙編號

60604728/CAPb/A5

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NOTE:
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LEGEND:
 - - - - - PROJECT BOUNDARY
 - - - - - PROPOSED ROAD WORKS

AECOM

PROJECT
 項目
IMPROVEMENT OF LION ROCK TUNNEL - INVESTIGATION

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 業主
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STATUS
 狀況

SCALE
 比例
 A3 1 : 3000

DIMENSION UNIT
 尺寸單位
 METRES

KEY PLAN
 索引圖

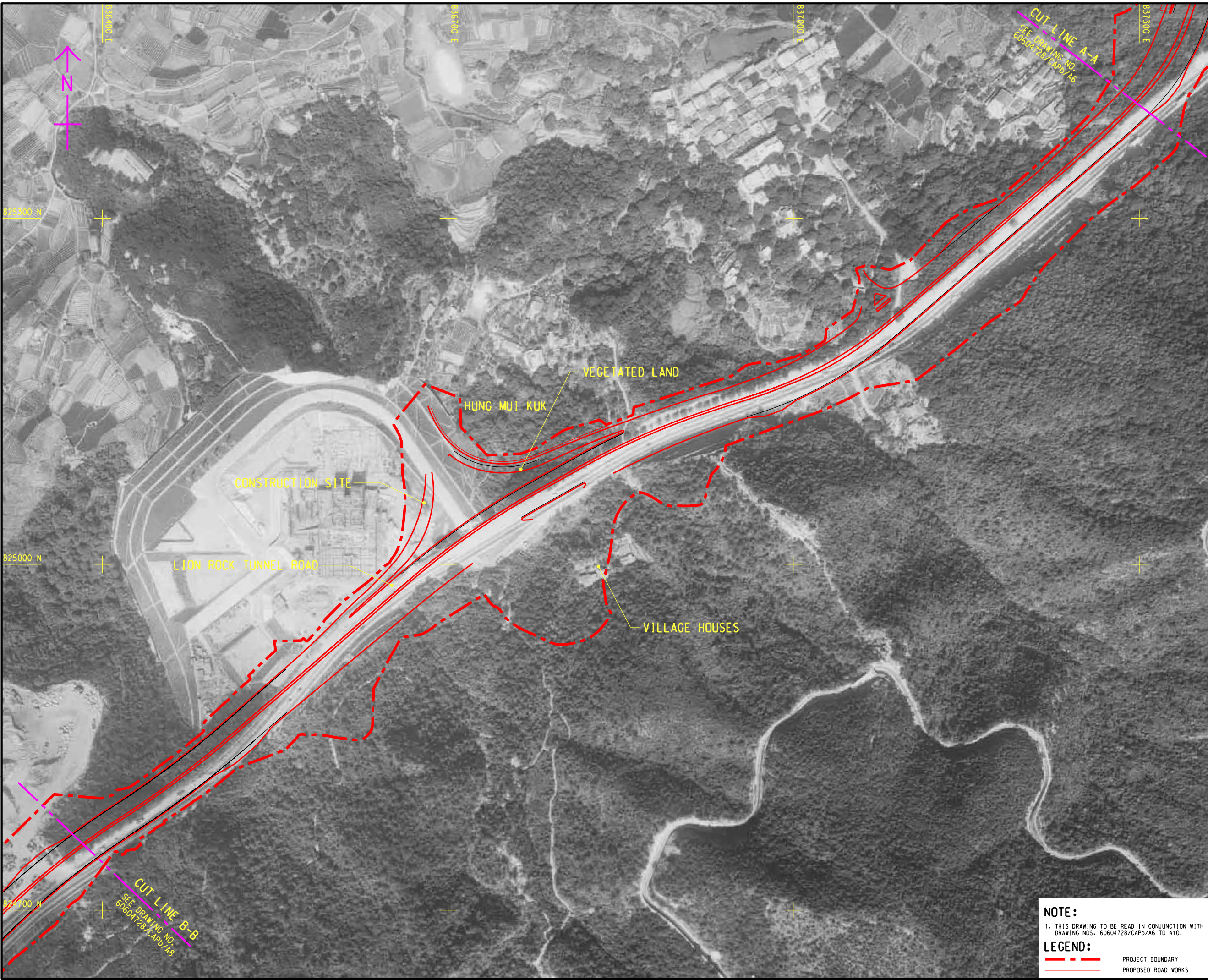
PROJECT NO.
 項目編號
 60604728

AGREEMENT NO.
 協議編號
 CE 48/2018(HY)

SHEET TITLE
 圖紙名稱
 AERIAL PHOTOGRAPH 1976

SHEET NUMBER
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 60604728/CAPb/A6

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STATUS
 狀況

SCALE
 比例尺

DIMENSION UNIT
 尺寸單位

A3 1 : 3000 METRES

KEY PLAN
 索引圖

PROJECT NO.
 項目編號

AGREEMENT NO.
 協議編號

60604728 CE 48/2018(HY)

SHEET TITLE
 圖名

AERIAL PHOTOGRAPH 1976

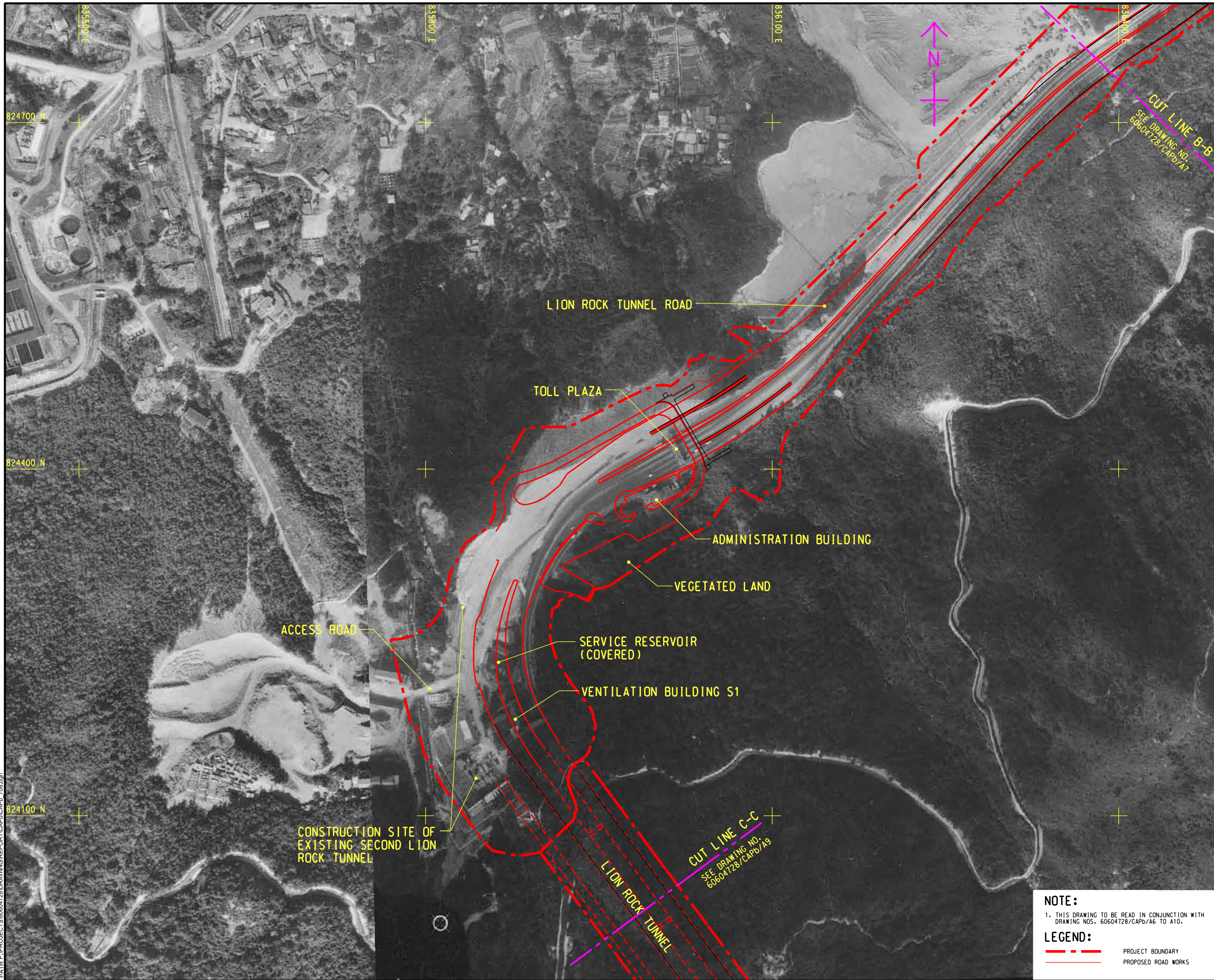
SHEET NUMBER
 圖號

60604728/CAPb/A7

NOTE:
 1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60604728/CAPb/A6 TO A10.

LEGEND:

--- PROJECT BOUNDARY
 --- PROPOSED ROAD WORKS



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STATUS
 狀況

SCALE
 比例尺
 A3 1 : 3000

DIMENSION UNIT
 尺寸單位
 METRES

KEY PLAN
 索引圖

PROJECT NO.
 項目編號
 60604728

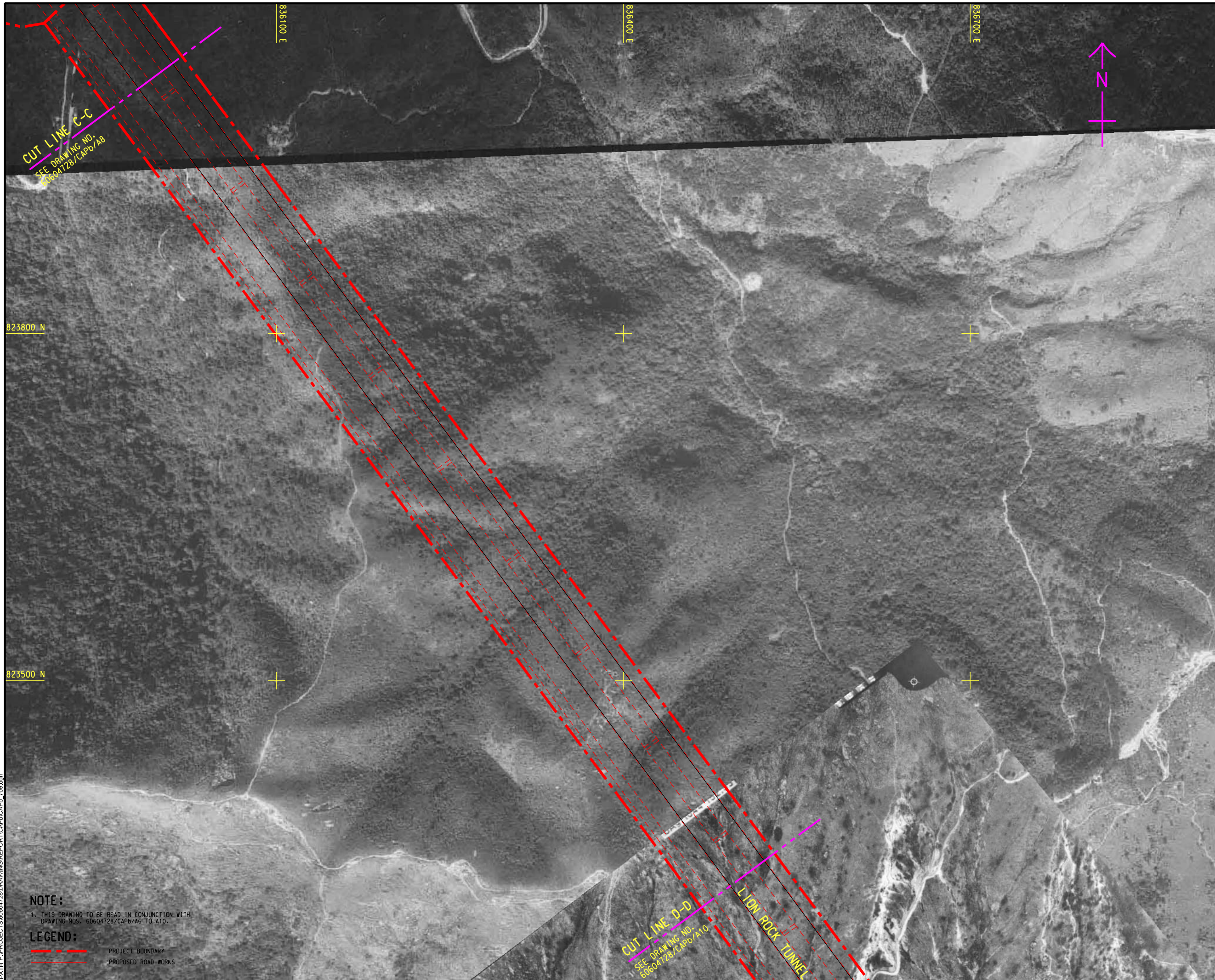
AGREEMENT NO.
 協議編號
 CE 48/2018(HY)

SHEET TITLE
 圖紙名稱
 AERIAL PHOTOGRAPH 1976

SHEET NUMBER
 圖紙編號
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ISO A1 594mm x 841mm
 Approved:
 Checked:
 Designer:
 Project Management Initials:
 2022/6/9
 PATH P:\PROJECTS\60604728\DRAWING\REPORT\CAPb\CAPb_709.dgn
 Plot File by: ZHLZ



NOTE:
 1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60604728/CAPb/A6 TO A10.

LEGEND:
 - - - - - PROJECT BOUNDARY
 - - - - - PROPOSED ROAD WORKS

CUT LINE D-D
 SEE DRAWING NO. 60604728/CAPb/A10

LION ROCK TUNNEL

CUT LINE C-C
 SEE DRAWING NO. 60604728/CAPb/A8

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AECOM

PROJECT
 項目

IMPROVEMENT OF LION ROCK TUNNEL - INVESTIGATION

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STATUS
 狀況

SCALE
 比例

DIMENSION UNIT
 尺寸單位

A3 1 : 3000 METRES

KEY PLAN
 索引圖

PROJECT NO.
 項目編號

60604728

AGREEMENT NO.
 協議編號

CE 48/2018(HY)

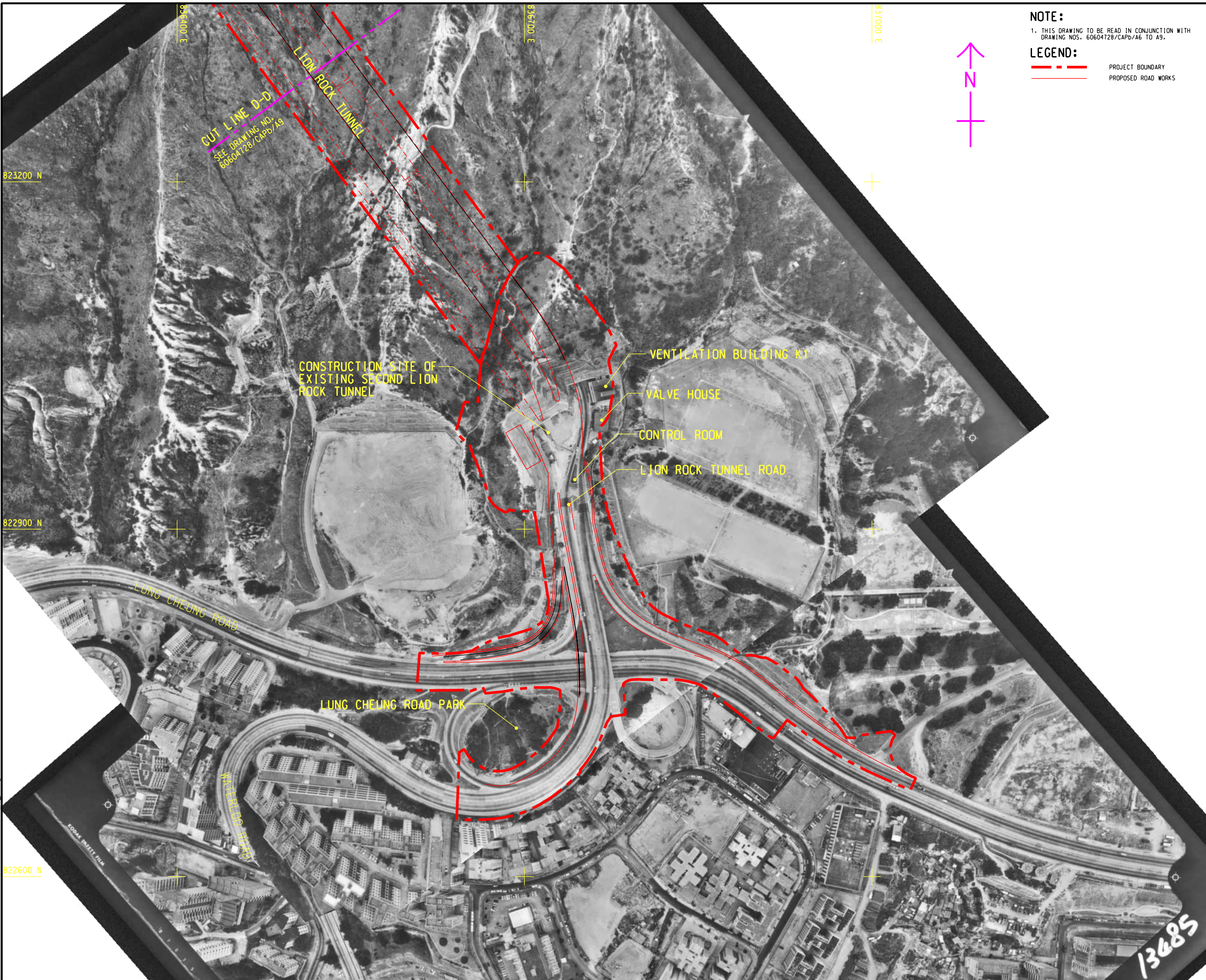
SHEET TITLE
 圖紙名稱

AERIAL PHOTOGRAPH 1976

SHEET NUMBER
 圖紙編號

60604728/CAPb/A9

ISO A1 594mm x 841mm
 Approved:
 Checked: 823200 N
 Designer:
 Project Management Initials:
 2022/6/9
 PATH PROJECTS/60604728/DRAWING/REPORT/CAPb/A10.dgn
 822900 N
 822600 N



NOTE:
 1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60604728/CAPb/A6 TO A9.

LEGEND:
 - - - - - PROJECT BOUNDARY
 - - - - - PROPOSED ROAD WORKS

AECOM

PROJECT
 項目
IMPROVEMENT OF LION ROCK TUNNEL - INVESTIGATION

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STATUS
 狀況

SCALE
 比例

DIMENSION UNIT
 尺寸單位

A3 1 : 3000 METRES

KEY PLAN
 索引圖

PROJECT NO.
 項目編號
 60604728

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SHEET TITLE
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SHEET NUMBER
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SHEET 5 OF 5

13685

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NOTE:
 1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60604728/CAPb/A12 TO A15.

LEGEND:
 - - - - - PROJECT BOUNDARY
 _____ PROPOSED ROAD WORKS

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PROJECT
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STATUS
 狀況

SCALE
 比例
 A3 1 : 3000

DIMENSION UNIT
 尺寸單位
 METRES

KEY PLAN
 索引圖

PROJECT NO.
 項目編號
 60604728

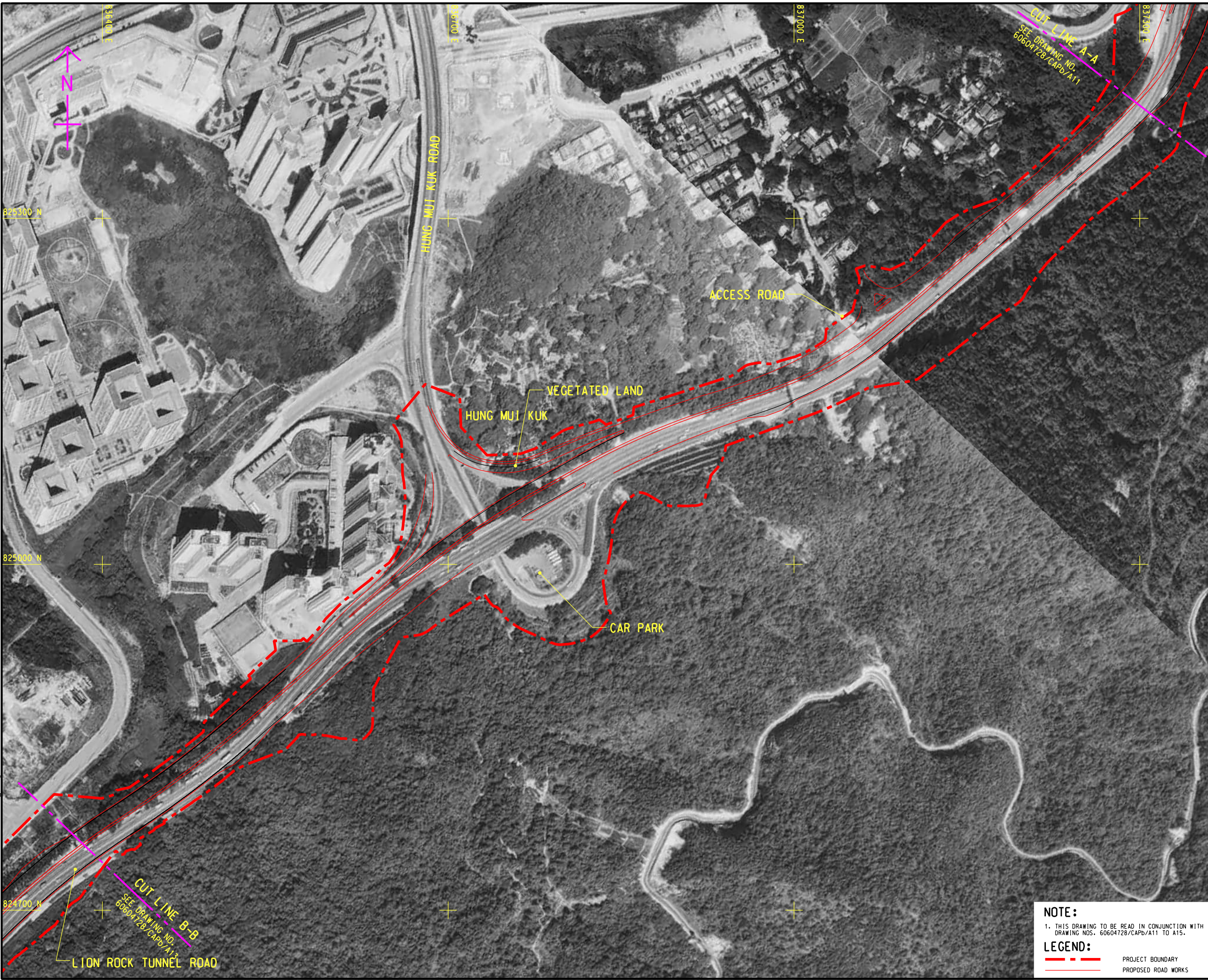
AGREEMENT NO.
 協議編號
 CE 48/2018(HY)

SHEET TITLE
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SHEET NUMBER
 圖紙編號
 60604728/CAPb/A11

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STATUS
 狀況

SCALE **DIMENSION UNIT**
 比例尺 尺寸單位
 A3 1 : 3000 METRES

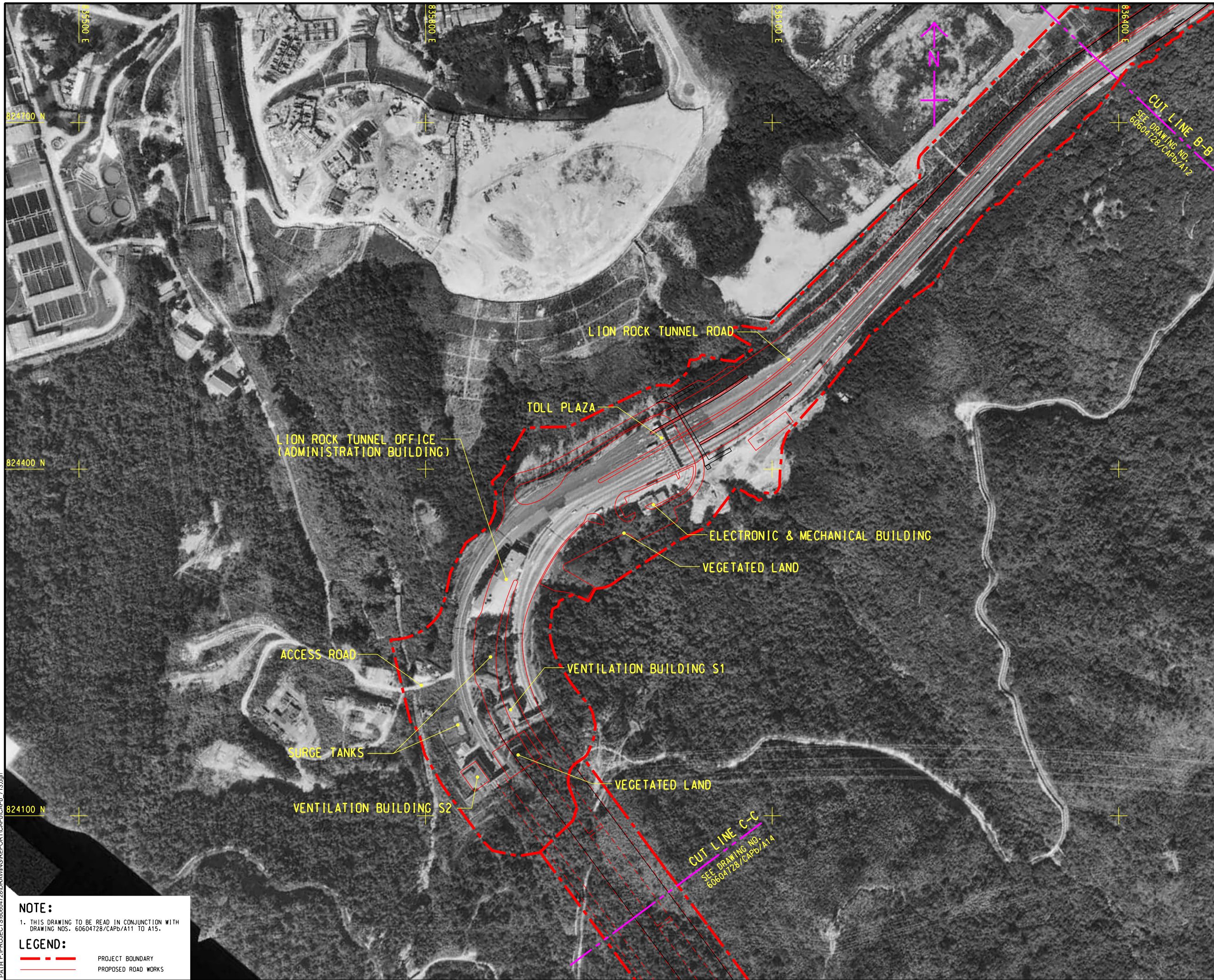
KEY PLAN
 索引圖

PROJECT NO. **AGREEMENT NO.**
 項目編號 協議編號
 60604728 CE 48/2018(HY)

SHEET TITLE
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 AERIAL PHOTOGRAPH 1985

SHEET NUMBER
 圖紙編號
 60604728/CAPb/A12

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STATUS
 狀況

| SCALE | DIMENSION UNIT |
|-------------|----------------|
| 比例 | 尺寸單位 |
| A3 1 : 3000 | METRES |



KEY PLAN
 索引圖

| PROJECT NO. | AGREEMENT NO. |
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| 項目編號 | 協議編號 |
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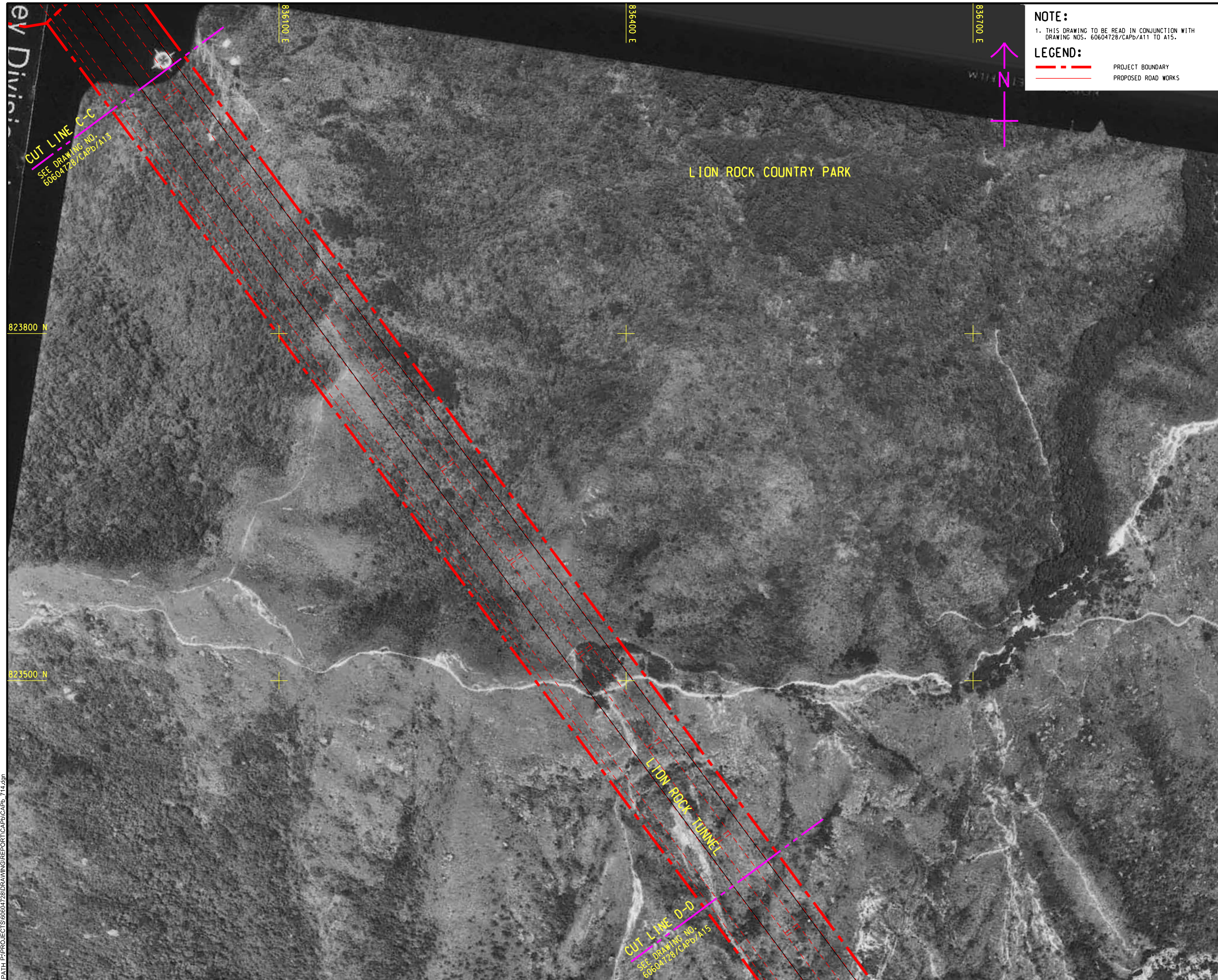
SHEET TITLE
 圖紙名稱
 AERIAL PHOTOGRAPH 1985

SHEET NUMBER
 圖紙編號
 60604728/CAPb/A13

NOTE:
 1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60604728/CAPb/A11 TO A15.

LEGEND:
 PROJECT BOUNDARY
 PROPOSED ROAD WORKS

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 Approved:
 Checked:
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 Project Management Initials:
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NOTE:
 1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60604728/CAPb/A11 TO A15.

LEGEND:
 - - - - - PROJECT BOUNDARY
 _____ PROPOSED ROAD WORKS

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PROJECT
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STATUS
 狀況

SCALE
 比例
 A3 1 : 3000

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
 AERIAL PHOTOGRAPH 1985

SHEET NUMBER
 圖紙編號
 60604728/CAPb/A14

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 Project Management Initials:
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 PATH PROJECTS/60604728/DRAWING/REPORT/CAPb/A15.dgn
 822600 N



NOTE:
 1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60604728/CAPb/A11 TO A14.

LEGEND:
 - - - - - PROJECT BOUNDARY
 - - - - - PROPOSED ROAD WORKS



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PROJECT
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STATUS
 狀況

SCALE
 比例
 A3 1 : 3000

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
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 圖紙編號
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NOTE:
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LEGEND:
 - - - - - PROJECT BOUNDARY
 - - - - - PROPOSED ROAD WORKS

AECOM

PROJECT
 項目
IMPROVEMENT OF LION ROCK TUNNEL - INVESTIGATION

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STATUS
 狀況

SCALE
 比例

DIMENSION UNIT
 尺寸單位

A3 1 : 3000 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
 AERIAL PHOTOGRAPH 1993

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 60604728/CAPb/A16

SHEET 1 OF 5

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STATUS
 狀況



SCALE **DIMENSION UNIT**
 比例 尺寸單位
 A3 1 : 3000 METRES

KEY PLAN
 索引圖

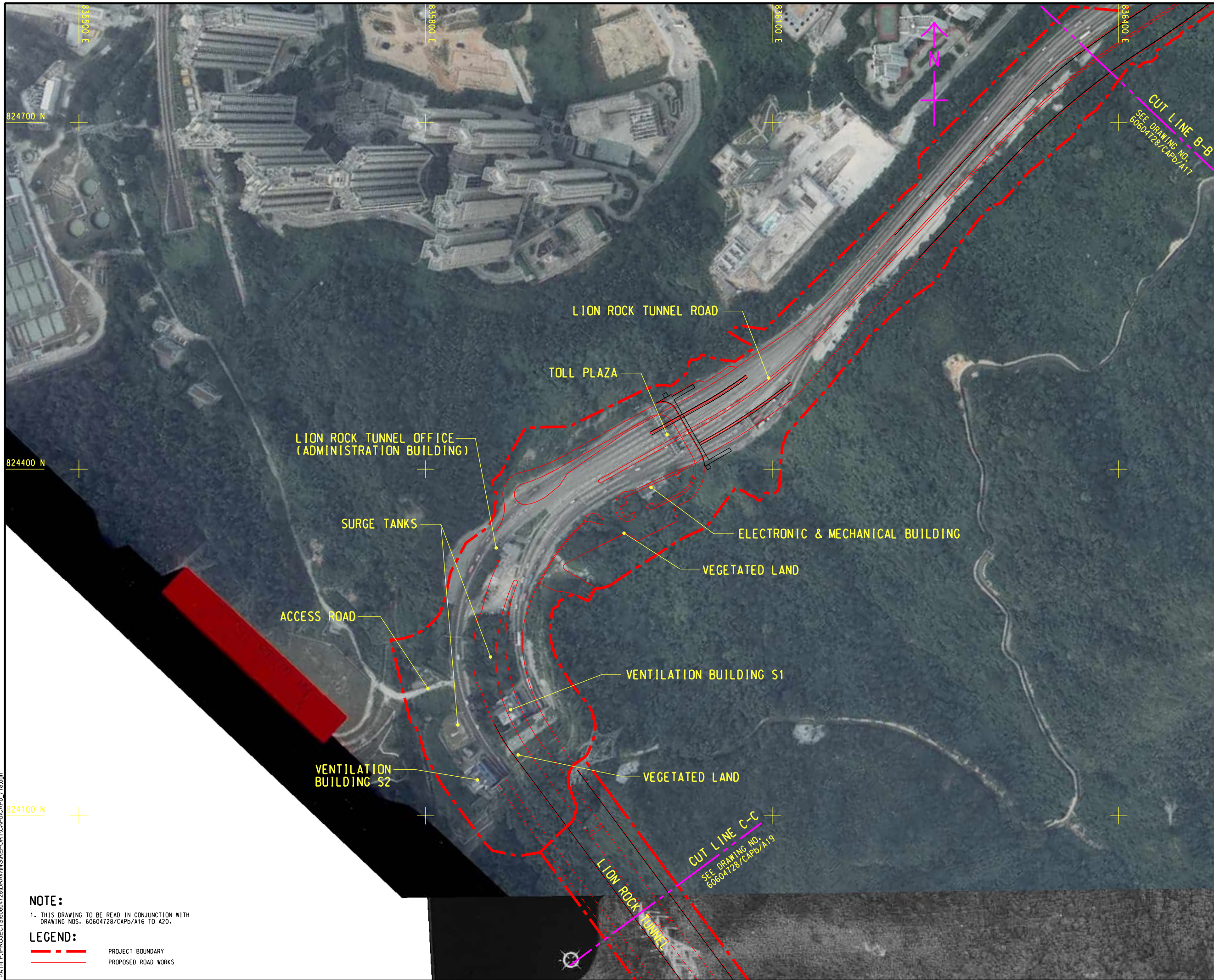
PROJECT NO. **AGREEMENT NO.**
 項目編號 協議編號
 60604728 CE 48/2018(HY)

SHEET TITLE
 圖則名稱
 AERIAL PHOTOGRAPH 1993

SHEET NUMBER
 圖則編號
 60604728/CAPb/A17

NOTE:
 1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60604728/CAPb/A16 TO A20.
LEGEND:
 PROJECT BOUNDARY
 PROPOSED ROAD WORKS

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STATUS
 狀況

SCALE **DIMENSION UNIT**
 比例 尺寸單位
 A3 1 : 3000 METRES



KEY PLAN
 索引圖

PROJECT NO. **AGREEMENT NO.**
 項目編號 協議編號
 60604728 CE 48/2018(HY)

SHEET TITLE
 圖紙名稱
 AERIAL PHOTOGRAPH 1993

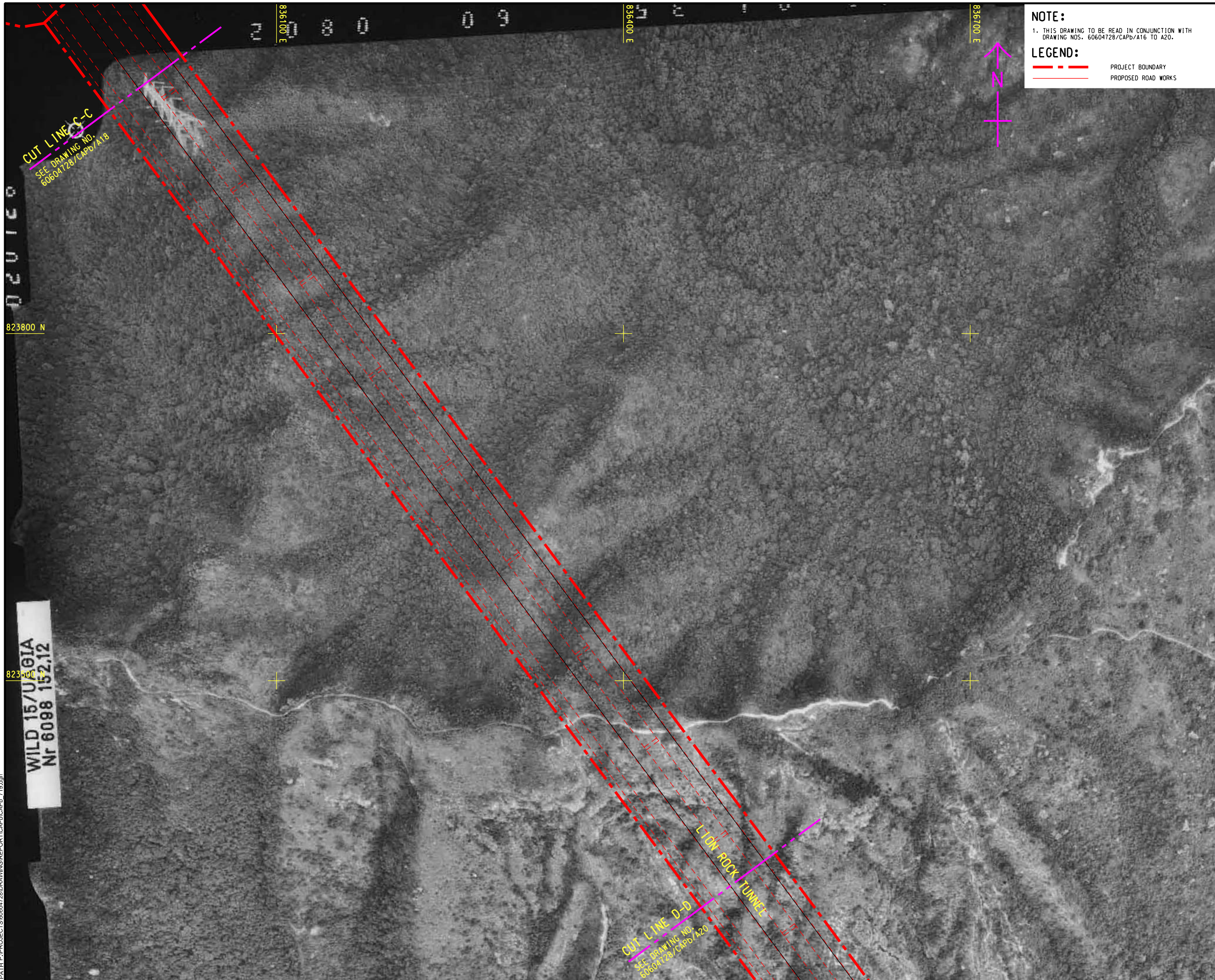
SHEET NUMBER
 圖紙編號
 60604728/CAPb/A18

NOTE:
 1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60604728/CAPb/A16 TO A20.

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Approved:
Checked:
Designer:
Project Management Initials:
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NOTE:
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LEGEND:
- - - PROJECT BOUNDARY
- - - PROPOSED ROAD WORKS



PROJECT
項目
IMPROVEMENT OF LION ROCK TUNNEL - INVESTIGATION

CLIENT
業主
 路政署
HIGHWAYS DEPARTMENT

CONSULTANT
顧問公司
AECOM Asia Company Ltd.
www.aecom.com

SUB-CONSULTANTS
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STATUS
狀況

SCALE
比例
A3 1 : 3000

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
AERIAL PHOTOGRAPH 1993

SHEET NUMBER
圖紙編號
60604728/CAPb/A19

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NOTE:
 1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60604728/CAPb/A16 TO A19.

LEGEND:
 - - - - - PROJECT BOUNDARY
 - - - - - PROPOSED ROAD WORKS

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 項目
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STATUS
 狀況

SCALE
 比例尺
 A3 1 : 3000

DIMENSION UNIT
 尺寸單位
 METRES

KEY PLAN
 索引圖

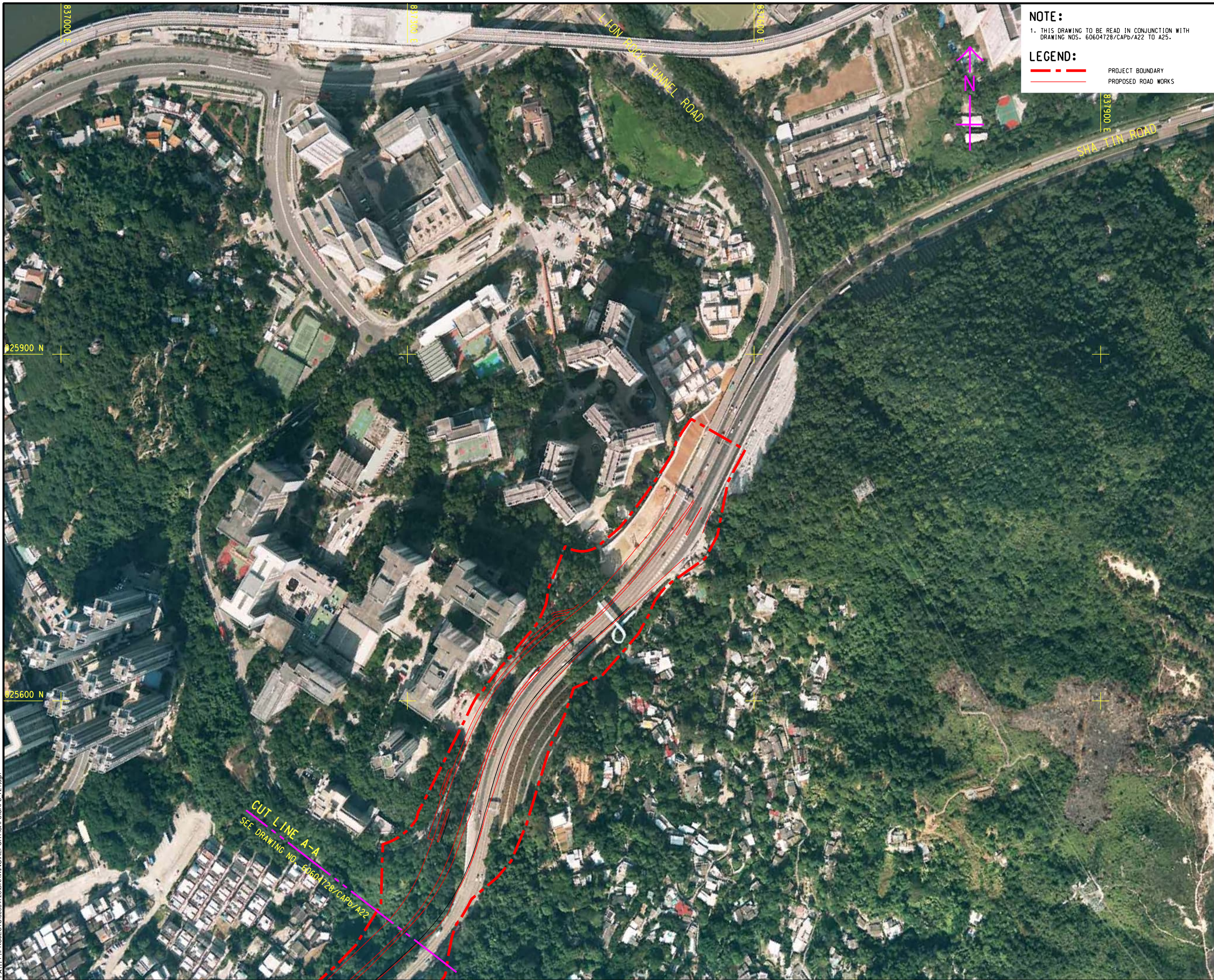
PROJECT NO.
 項目編號
 60604728

AGREEMENT NO.
 協議編號
 CE 48/2018(HY)

SHEET TITLE
 圖紙名稱
 AERIAL PHOTOGRAPH 1993

SHEET NUMBER
 圖紙編號
 60604728/CAPb/A20

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LEGEND:
- - - PROJECT BOUNDARY
- - - PROPOSED ROAD WORKS



PROJECT
項目
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STATUS
狀況

SCALE
比例
A3 1 : 3000

DIMENSION UNIT
尺寸單位
METRES

KEY PLAN
索引圖

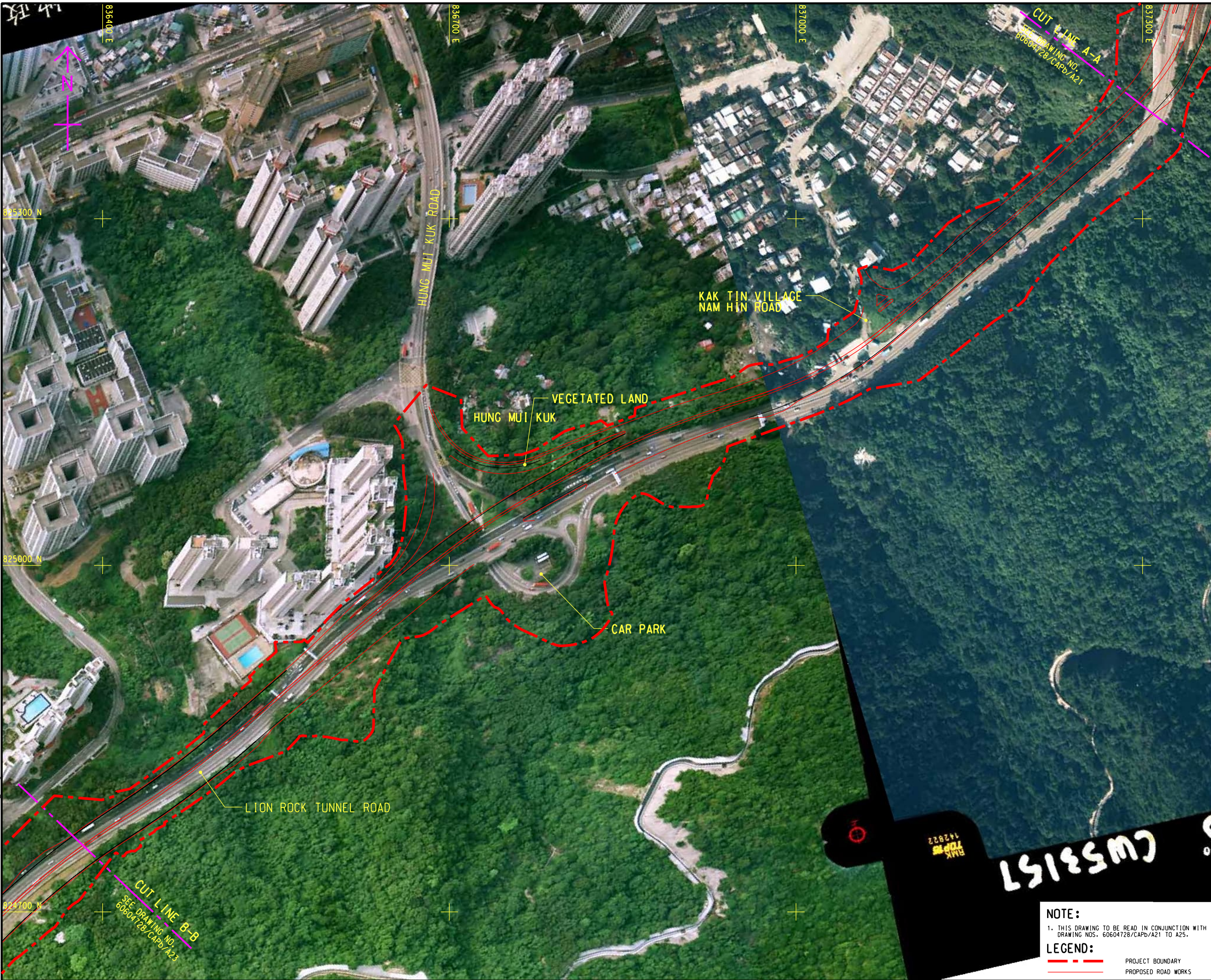
PROJECT NO.
項目編號
60604728

AGREEMENT NO.
協議編號
CE 48/2018(HY)

SHEET TITLE
圖紙名稱
AERIAL PHOTOGRAPH 2003

SHEET NUMBER
圖紙編號
60604728/CAPb/A21

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STATUS
 狀況

SCALE
 比例
 A3 1 : 3000

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
 AERIAL PHOTOGRAPH 2003

SHEET NUMBER
 圖號
 60604728/CAPb/A22



NOTE:
 1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60604728/CAPb/A21 TO A25.

LEGEND:
 - - - PROJECT BOUNDARY
 - - - PROPOSED ROAD WORKS

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STATUS
 狀況

SCALE **DIMENSION UNIT**
 比例 尺寸單位
 A3 1 : 3000 METRES

KEY PLAN
 索引圖

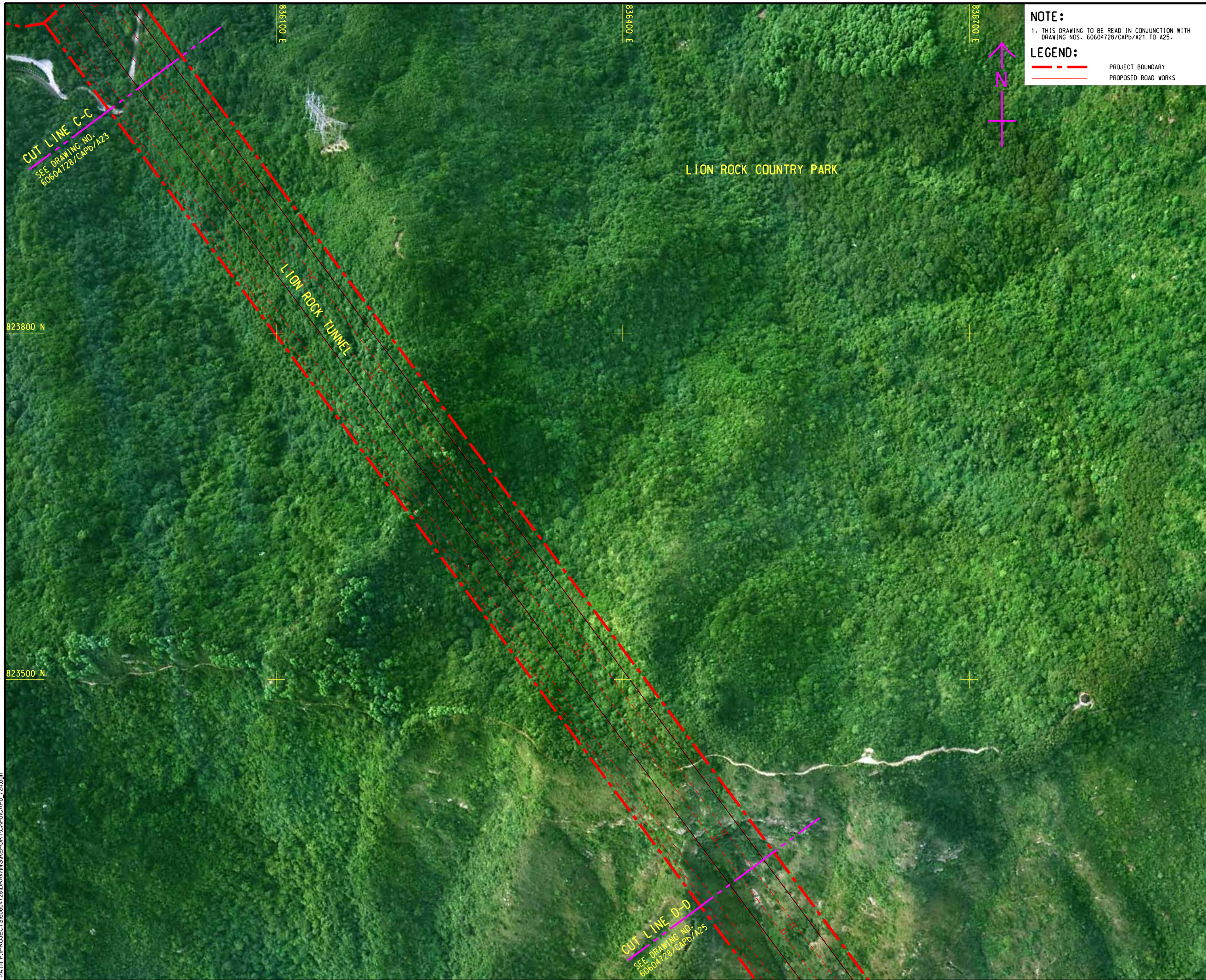
PROJECT NO. **AGREEMENT NO.**
 項目編號 協議編號
 60604728 CE 48/2018(HY)

SHEET TITLE
 圖紙名稱
 AERIAL PHOTOGRAPH 2003

SHEET NUMBER
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ISO A1 594mm x 841mm
 Approved:
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 Designer:
 Project Management Initials:
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NOTE:
 1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60604728/CAPb/A21 TO A25.

LEGEND:
 - - - - - PROJECT BOUNDARY
 - - - - - PROPOSED ROAD WORKS

AECOM

PROJECT
 項目

IMPROVEMENT OF LION ROCK TUNNEL - INVESTIGATION

CLIENT
 業主

**路政署
 HIGHWAYS DEPARTMENT**

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STATUS
 狀況

SCALE
 比例

A3 1 : 3000

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)

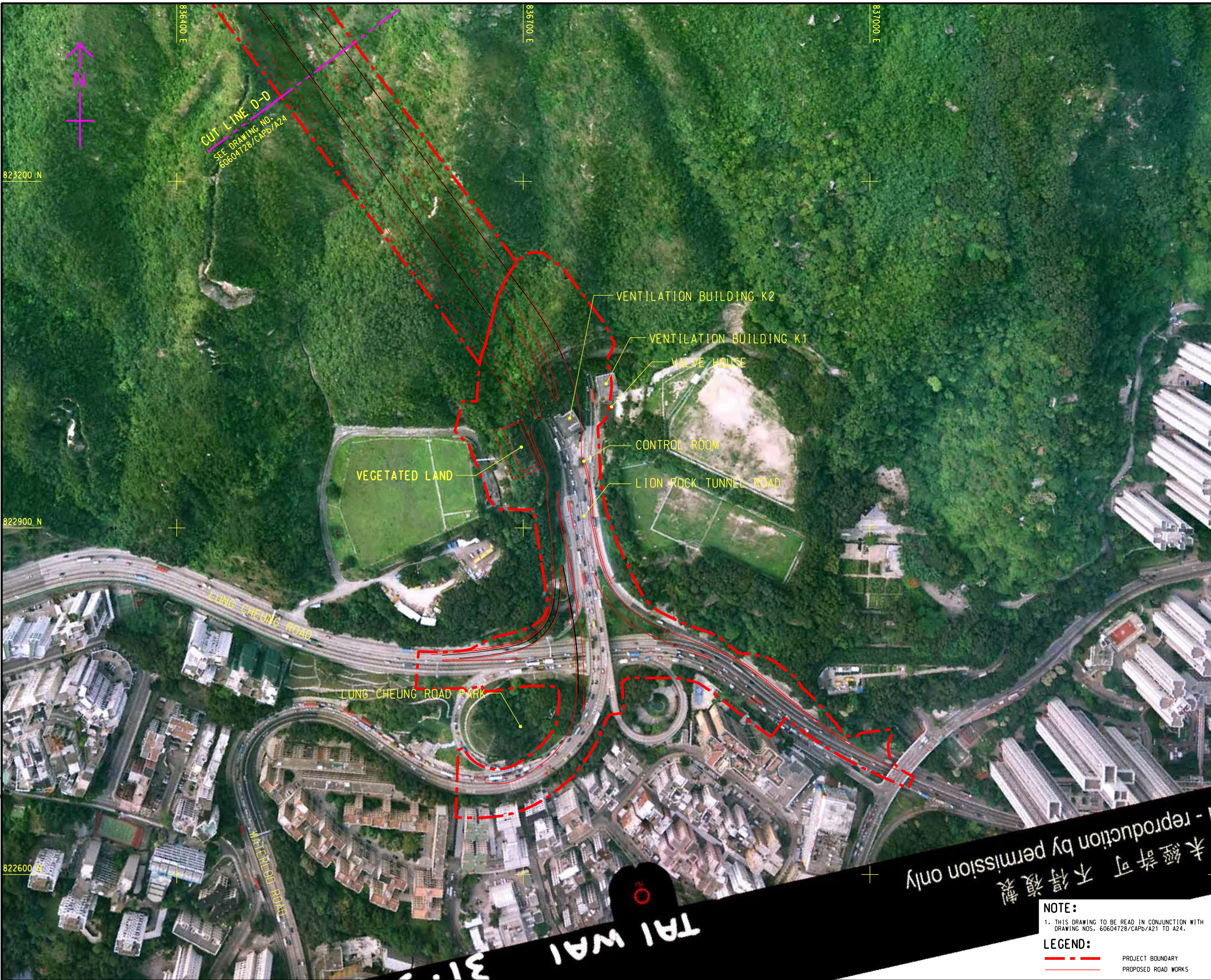
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STATUS
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SCALE
 比例

DIMENSION UNIT
 尺寸單位

A3 1 : 3000 METRES



KEY PLAN
 索引圖

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| PROJECT NO. 60604728 | AGREEMENT NO. CE 48/2018(HY) |
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SHEET TITLE
 圖名
 AERIAL PHOTOGRAPH 2003

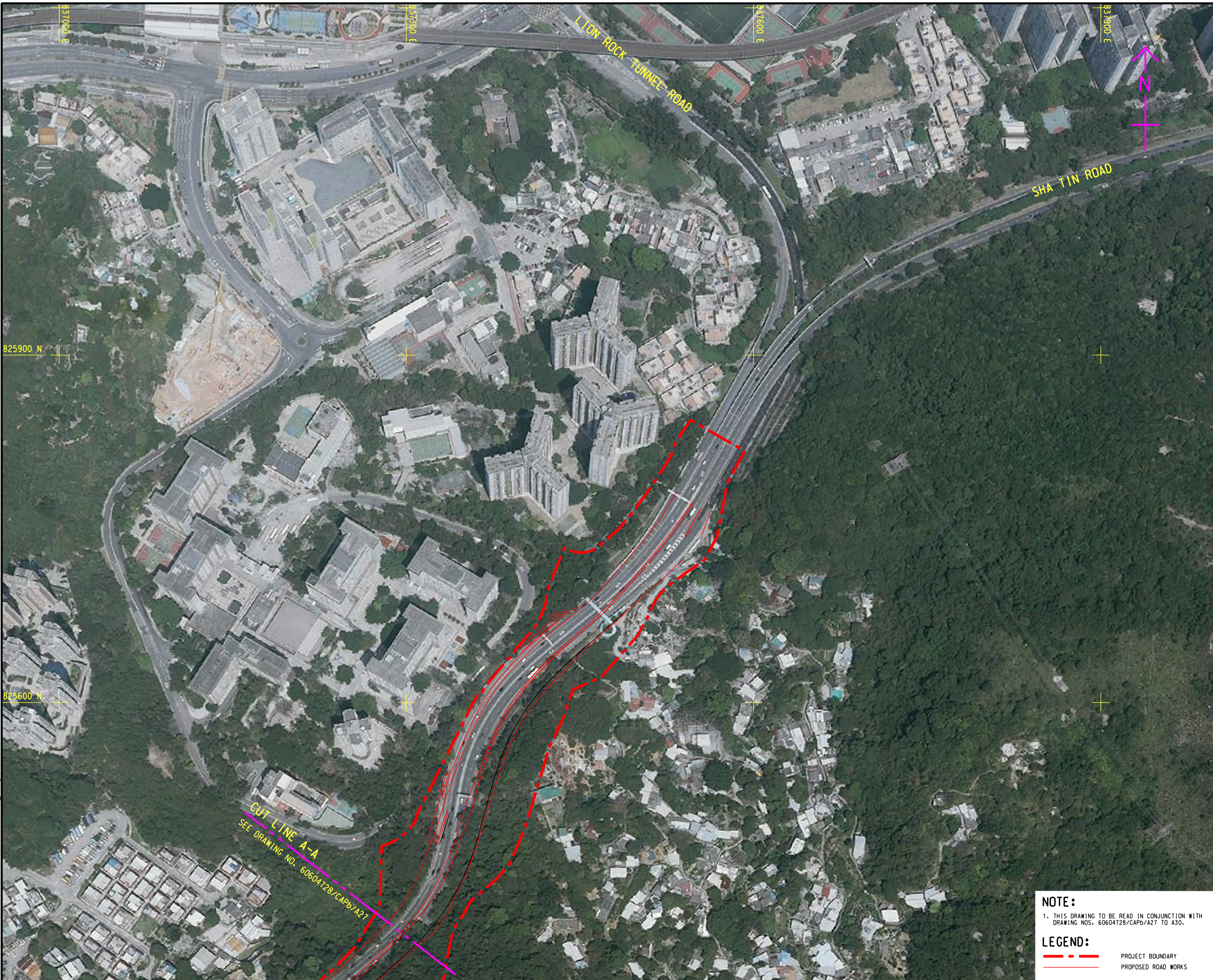
SHEET NUMBER
 圖號
 60604728/CAPb/A25

NOTE:
 1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60604728/CAPb/A21 TO A24.

LEGEND:
 PROJECT BOUNDARY
 PROPOSED ROAD WORKS

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PROJECT
 項目
**IMPROVEMENT OF
 LION ROCK TUNNEL -
 INVESTIGATION**

CLIENT
 業主
 **路政署
 HIGHWAYS
 DEPARTMENT**

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STATUS
 狀況

SCALE
 比例
 A3 1 : 3000

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
 AERIAL PHOTOGRAPH 2017

SHEET NUMBER
 圖紙編號
 60604728/CAPb/A26

NOTE :
 1. THIS DRAWING TO BE READ IN CONJUNCTION WITH
 DRAWING NOS. 60604728/CAPb/A27 TO A30.

LEGEND:
 PROJECT BOUNDARY
 PROPOSED ROAD WORKS

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NOTE:

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LEGEND:

--- PROJECT BOUNDARY
 --- PROPOSED ROAD WORKS



825300 N

825000 N

824700 N



836400 E

836700 E

837000 E

837300 E



2022/6/9
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 Plot File by: ZHILZ

CUT LINE B-B
 SEE DRAWING NO.
 60604728/CAPb/A28



PROJECT

IMPROVEMENT OF
 LION ROCK TUNNEL -
 INVESTIGATION

CLIENT



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STATUS

SCALE

A3 1 : 3000

DIMENSION UNIT

METRES

KEY PLAN

PROJECT NO.

60604728

AGREEMENT NO.

CE 48/2018(HY)

SHEET TITLE

AERIAL PHOTOGRAPH 2017

SHEET NUMBER

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STATUS
 狀況

| SCALE | DIMENSION UNIT |
|-------------|----------------|
| 比例 | 尺寸單位 |
| A3 1 : 3000 | METRES |



KEY PLAN
 索引圖

| PROJECT NO. | AGREEMENT NO. |
|-------------|----------------|
| 項目編號 | 協議編號 |
| 60604728 | CE 48/2018(HY) |

SHEET TITLE
 圖則名稱
 AERIAL PHOTOGRAPH 2017

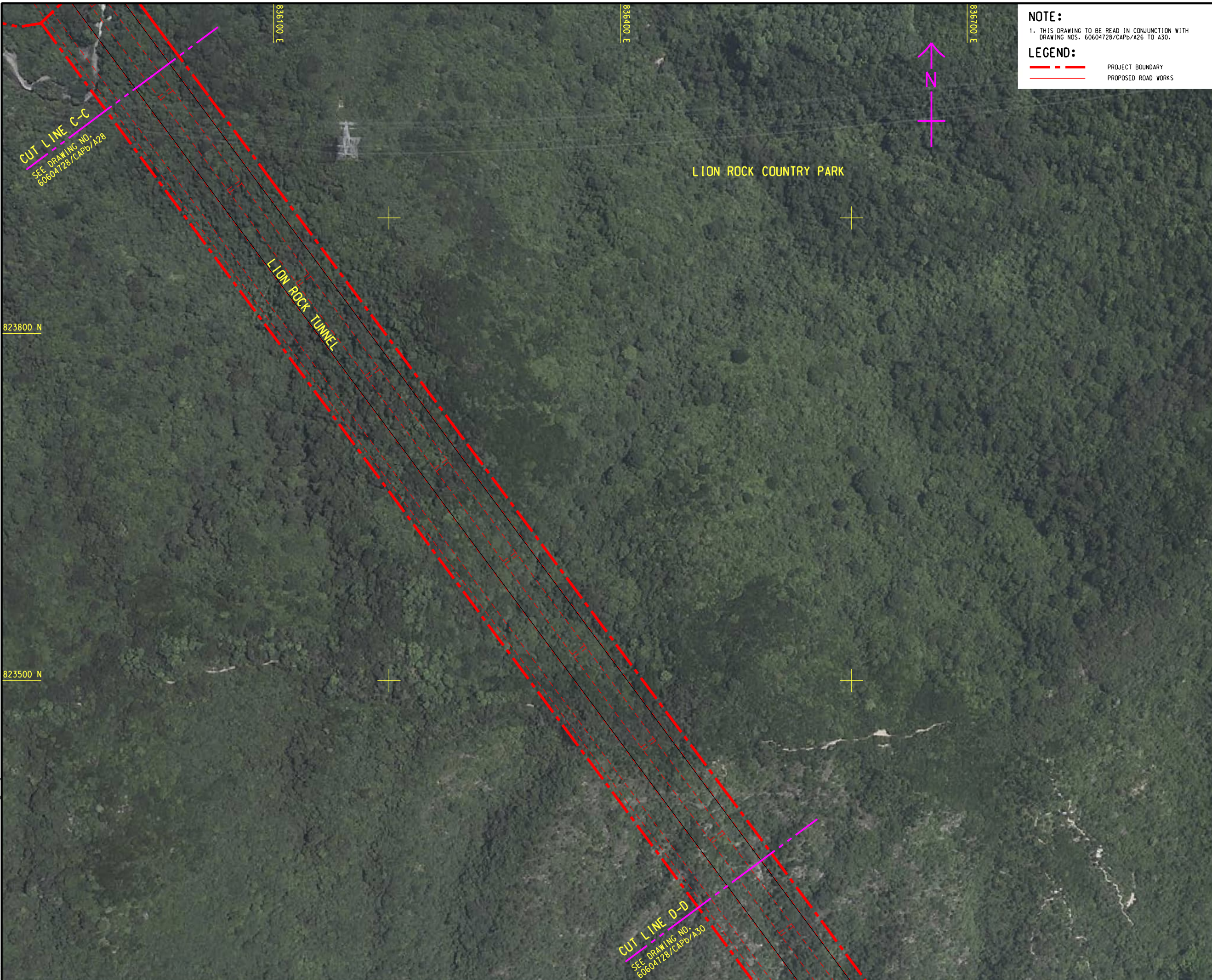
SHEET NUMBER
 圖則編號
 60604728/CAPb/A28

NOTE:
 1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60604728/CAPb/A26 TO A30.

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NOTE:
 1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60604728/CAPb/A26 TO A30.

LEGEND:
 - - - - - PROJECT BOUNDARY
 - - - - - PROPOSED ROAD WORKS

CUT LINE C-C
 SEE DRAWING NO.
 60604728/CAPb/A28

LION ROCK TUNNEL

LION ROCK COUNTRY PARK

CUT LINE D-D
 SEE DRAWING NO.
 60604728/CAPb/A30

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PROJECT
 项目

IMPROVEMENT OF LION ROCK TUNNEL - INVESTIGATION

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STATUS
 状态

SCALE
 比例

DIMENSION UNIT
 尺寸单位

A3 1 : 3000 METRES

KEY PLAN
 索引图

PROJECT NO.
 项目编号

60604728

AGREEMENT NO.
 协议编号

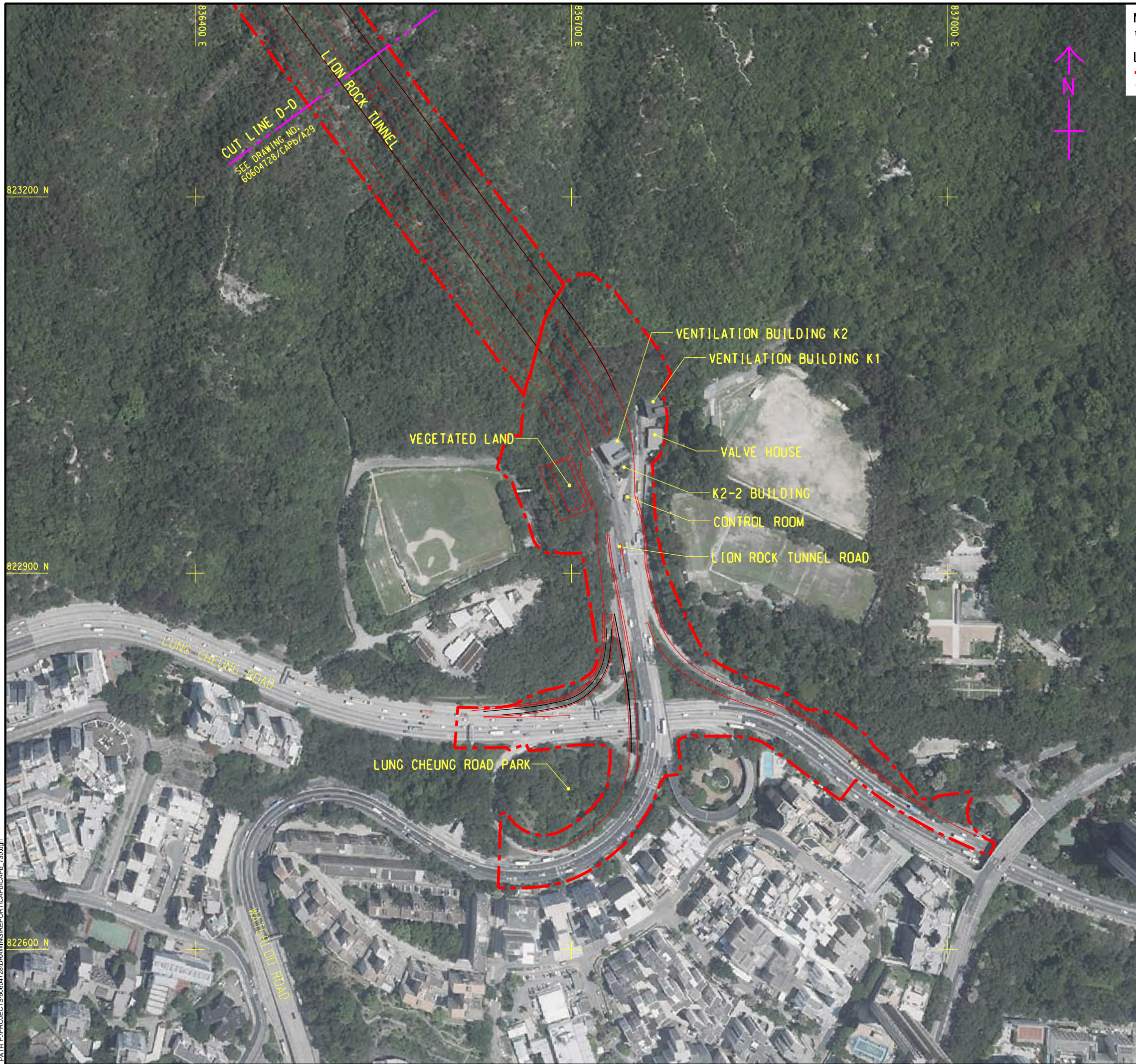
CE 48/2018(HY)

SHEET TITLE
 图名

AERIAL PHOTOGRAPH 2017

SHEET NUMBER
 图号

60604728/CAPb/A29



NOTE:
 1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60604728/CAPb/A26 TO A29.

LEGEND:
 - - - - - PROJECT BOUNDARY
 - - - - - PROPOSED ROAD WORKS

AECOM

PROJECT
 项目
IMPROVEMENT OF LION ROCK TUNNEL - INVESTIGATION

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STATUS
 狀況

SCALE
 比例

DIMENSION UNIT
 尺寸單位

A3 1 : 3000 METRES

KEY PLAN
 索引圖

The Government of Hong Kong
 Survey & Mapping Office

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Appendix B
Acquisition of Information from
Government Departments

Our Ref: CWN:DCCH:wmy:60604728/04.07-2020000050T

2 January 2020

By Hand & Fax (Fax No. 2756 8588)

Environmental Protection Department
Regional Office (East)
5/F., Nan Fung Commercial Centre,
19 Lam Lok Street, Kowloon Bay,
Kowloon

Dear Sir/Madam,

**Agreement No. CE 48/2018 (HY)
Improvement of Lion Rock Tunnel – Investigation
Request for Information of Chemical Waste Producer, Chemical Spillage Accident and Previous
Land Contamination Assessment Report**

We have been commissioned by Highways Department (HyD) to undertake Agreement No. CE 48/2018 (HY) Improvement of Lion Rock Tunnel – Investigation. A copy of the self-explanatory memo on the appointment of consultants issued by HyD is enclosed for your reference.

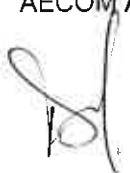
As part of the land contamination assessment and following the *Practice Guide for Investigation and Remediation of Contaminated Land* issued by EPD, we have to collect historical information regarding the past and present activities of the Project Boundary. In order to facilitate our assessment, we would like to request for the following information regarding the captioned Project Boundary indicated in the figure enclosed:

1. Current and past (as early as the records are available) registered Chemical Waste Producer(s) within the Project Boundary (preferably with the registration date, status (moved out or active), nature and quantity of the chemical waste);
2. Reported accidents of spillage / leakage of chemicals within the Project Boundary; and
3. Previous land contamination assessment report where the assessment was conducted within the Project Boundary.

We would highly appreciate if you could supplement the information by 16 January 2020. Please feel free to contact our Ms. Chloe Ng at 3922 9305 / Ms. Vanni Liu at 3922 9507 should you have any queries.

Thank you very much for your kind assistance.

Yours faithfully,
For and on behalf of
AECOM Asia Co. Ltd.



David Ho
Executive Director
Transportation, Hong Kong

Encl.

[]

By Fax

**MEMO**

| | |
|--|---|
| From CE3/MW, MWPMO, HyD | To Distribution |
| Ref. (JKBY) in HYD MWO 11/1/876TH/7/1 | (Attn. : _____) |
| Tel. No. 2762 3644 | Your Ref. _____ |
| Fax No. 2714 5289 | Dated _____ Fax No. _____ |
| Date 9 April 2019 | Total Pages 2 + Encl. |

**Agreement No. CE 48/2018 (HY)
Improvement of Lion Rock Tunnel - Investigation**

Appointment of Consultants

I write to inform that AECOM Asia Company Limited has been appointed as the Consultant to undertake the captioned Assignment. The Assignment commenced on 29 March 2019 for completion in September 2021. The layout plan of the improvement works is shown in the attached drawings for your reference.

2. The Assignment involves working out feasible options for rehabilitation of the two existing tunnel tubes of the Lion Rock Tunnel (LRT) and the associated road improvement works, conducting preliminary design for the selected option, various impact assessments, associated ground investigation works, public consultation, gazettal of the proposed road scheme, liaison with relevant parties of interfacing projects, etc.

3. During the course of the Assignment, AECOM may contact you for information, assistance or other matters relating to the Assignment. I would like to seek your cooperation and assistance to AECOM in carrying out their services for the Assignment.

4. The Project Manager of AECOM for the Assignment is Mr David C C HO. The contact details are as follows:

Tel : 3922 8421
 Fax : 3922 9797
 e-mail : david.ho@aecom.com
 Address : 8/F Grand Central Plaza, Tower 2, 138 Shatin Rural Committee Road, Shatin, Hong Kong

5. Should you require any further information on the above Assignment, please contact my senior engineer, Mr Bond CP CHOW at 2762 3580 or my engineer Mr W K LO at 2762 3570.

(Stephen WONG)
 Chief Engineer 3/ Major Works
 Major Works Project Management Office
 Highways Department

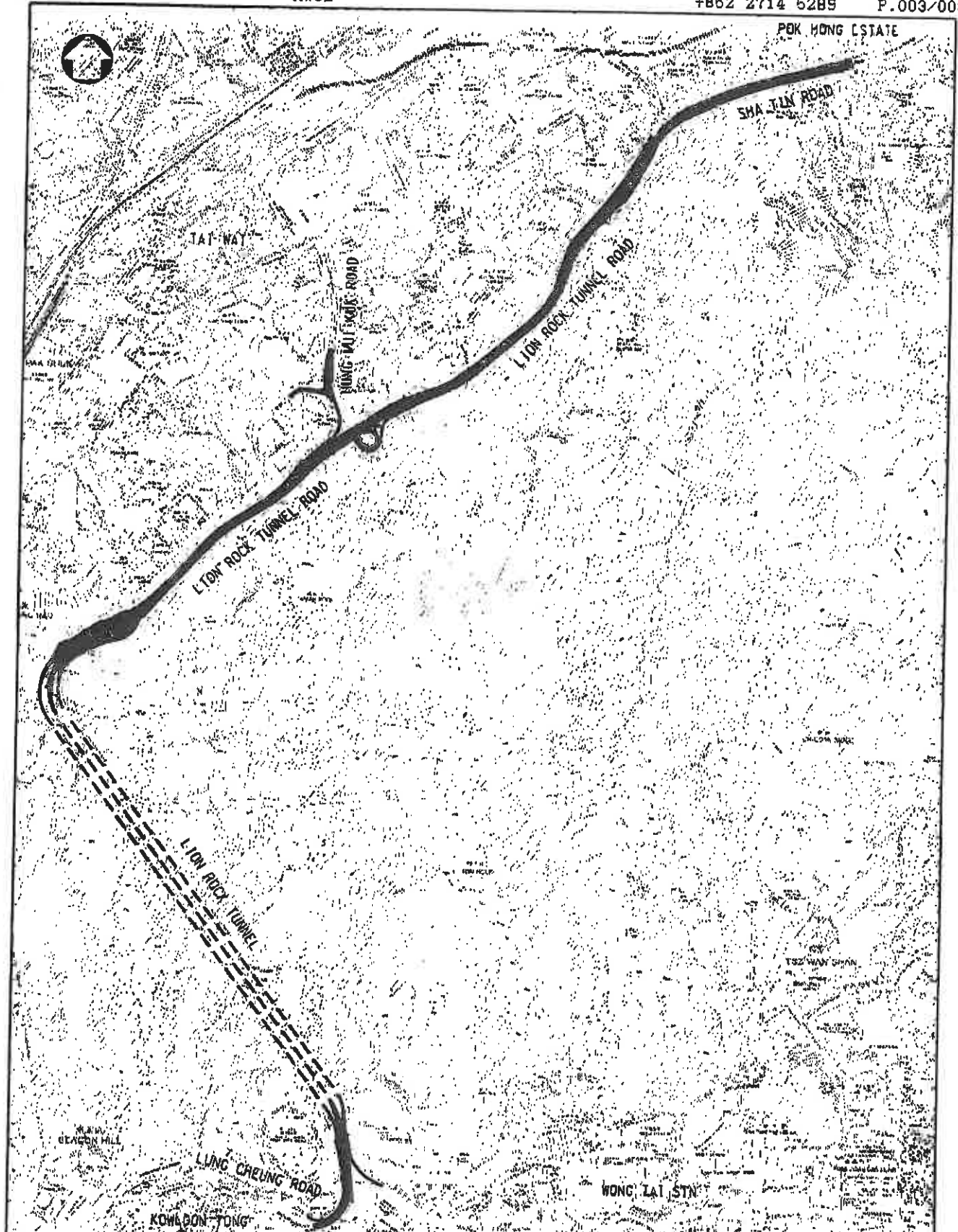
Distribution - w/c


| | |
|---------------------------------|---|
| PEPO(MA), EPD | (Attn: Ms. Eva Y. C. LAU) |
| CTE/K, TD | (Attn: Mr. Edward K. W. CHAN) |
| CTE/NTE, TD | (Attn: Mr. W. H. POON) |
| CE/TP, TD | (Attn: Mr. Andrew P. Y. HUANG) |
| PTO/M, TD | |
| RMO E&C Div (Traffic NTS), HKPF | (Attn: Mr. C. S. LEUNG) |
| RMO E&C Div (Traffic KE), HKPF | (Attn: Mr. Peter K. W. LI) |
| DFS | |
| CE/NTE, WSD | (Attn: Mr. Gary K. C. LEE) |
| CE/K, WSD | (Attn: Mr. Vincent C. W. HA) |
| CE/MS, DSD | (Attn: Mr. C. H. YEE) |
| DLO/ST, LandsD | (Attn: Mr. K. Y. CHUNG) |
| DLO/KE, LandsD | (Attn: Ms. Veronica S. F. LEE) |
| DLM(KC), LCSD | (Attn: Ms. Jos P. L. CHENG) |
| Planning Section, LCSD | (Attn: Ms. Maggie M. K. LAM) |
| PM(N), CEDD | (Attn: Mr. Haven HAR) |
| CGE/MW, GEO, CEDD | (Attn: Mr. Eric S. H. YUNG) |
| CGE/ME, GEO, CEDD | (Attn: Ms. Jennifer C. K. NGAI) |
| CGE/P, GEO, CEDD | (Attn: Mr. W. K. LEUNG) |
| CGE/S&T, GEO, CEDD | (Attn: Ms. Florence L. F. CHU) 27140275 |
| DPO/STN, PlanD | (Attn: Mr. Dino W. L. TANG) |
| DPO/K, PlanD | (Attn: Ms. Johanna W. Y. CHENG) |
| AD(C&MP), AFCD | (Attn: Mr. Y. P. LAU) |
| CE/TSCS, EMSD | (Attn: Mr. George C. K. KWONG) |
| CE/EEA, EMSD | (Attn: Mr. Eric LAU) |
| SPSM/WTS&ST, ArchSD | (Attn: Mr. K. Y. CHIU) |
| DO(ST), HAD | (Attn: Ms. Cornelia CHAN) |
| DO(KC), HAD | (Attn: Ms. Jess LEUNG) |
| DO(WTS), HAD | (Attn: Mr. Daniel CHAN) |

Internal - w/c

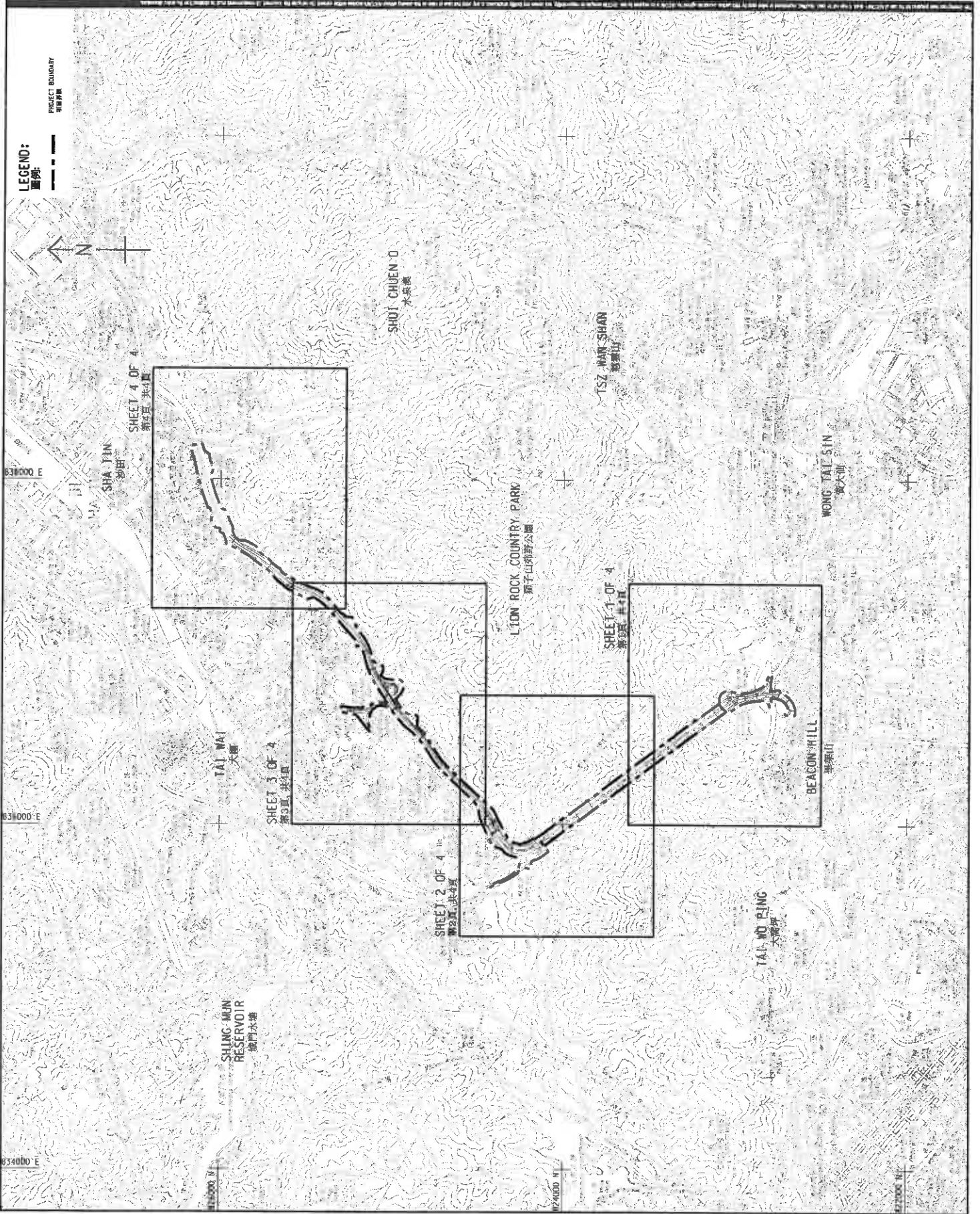
| | |
|------------------|---|
| CHE/NTE, HyD | (Attn: Mr. Wilson T. K. LOK) |
| CHE/K, HyD | (Attn: Mr. Andy M. H. POON) |
| CHE/B&S, HyD | (Attn: Mr. C. M. TSANG) |
| CE/Lighting, HyD | (Attn: Mr. C. H. CHEUNG) |
| SE/P, HyD | (Attn: Mr. William LAU) |
| CLA/LD, HyD | (Attn: Mr. Isaac S. S. SO/ Ms Helen Y. Y. NGAI) |
| LS/MW | (Attn: Mr. Calvin TSE) |

c.c. AECOM Asia Company Limited (Attn: Mr Conrad NG) - Fax no: 3922 9797



| | | | | | | |
|---|---|------|-----------------------------|----------|-----------------------------------|--|
| Project IMPROVEMENT OF LION ROCK TUNNEL | no. | date | description | initials | drawing no. HNTDM18-104 | scale 1 : 15000 A4 |
| | designed | | T. H. LOK M/181 | SIGNED | | |
| drawing title ALIGNMENT OF THE TUNNEL TUBES AND EXTENT OF ROAD WIDENING WORKS | drawn | | H. M. FONG T81316 | SIGNED | 9-JUL-2018 | office NEW TERRITORIES REGION |
| | checked | | T. H. LOK M/181 | SIGNED | 9-JUL-2018 | |
| | approved | | | | |  THE GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION HIGHWAYS DEPARTMENT |
| | C. H. TANG CHIEF HIGHWAY ENGINEER / NY EAST | | SIGNED | | 6-JUL-2018 | |

| NO. | DATE | DESCRIPTION | CHKD BY |
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ISSUE/REVISION

| NO. | DATE | DESCRIPTION | CHK. | APP. |
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SCALE
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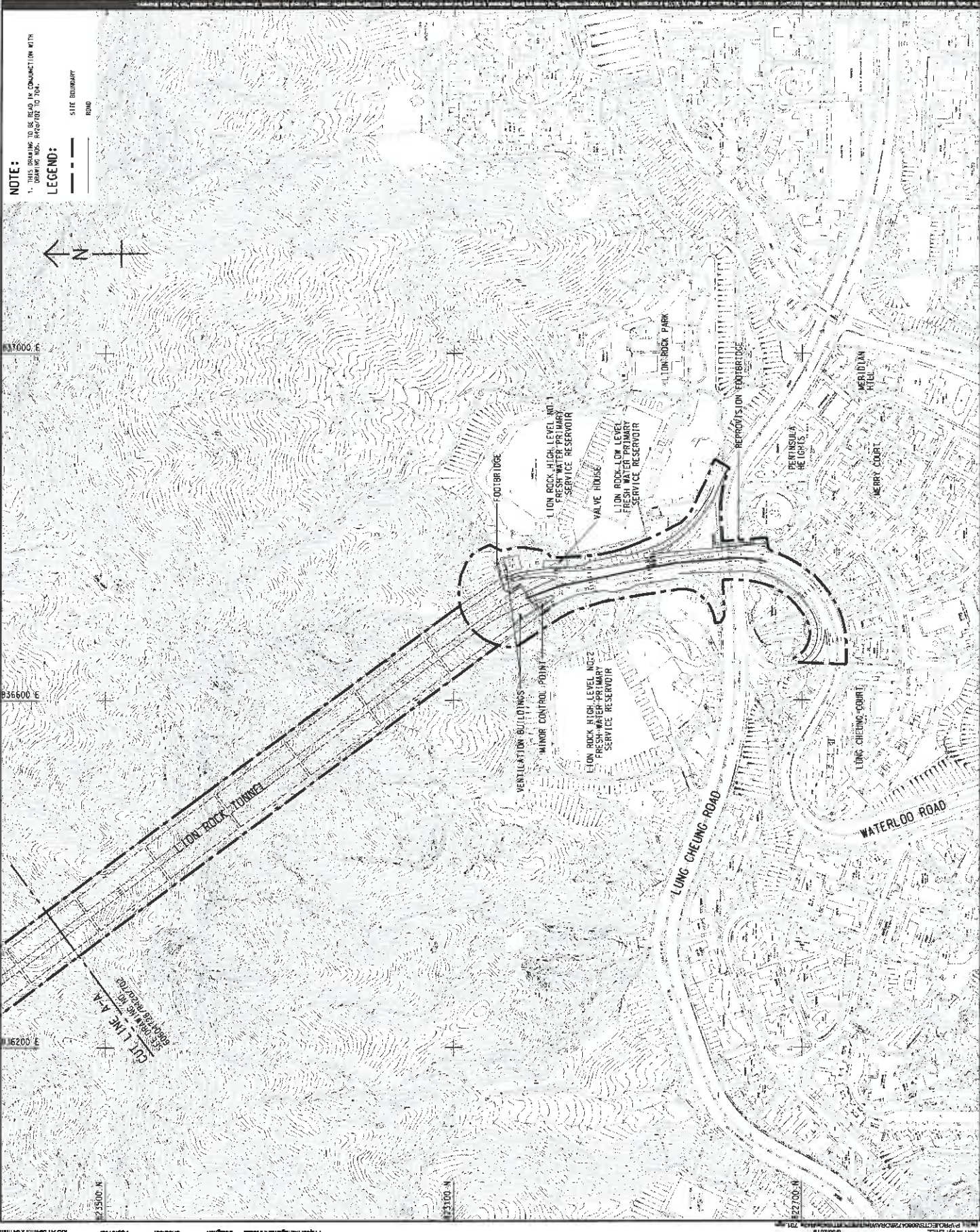
PERMISSION UNIT
 METRES

KEY PLAN

PROJECT NO.
 60804728

AGREEMENT NO.
 CE-482018(HY)

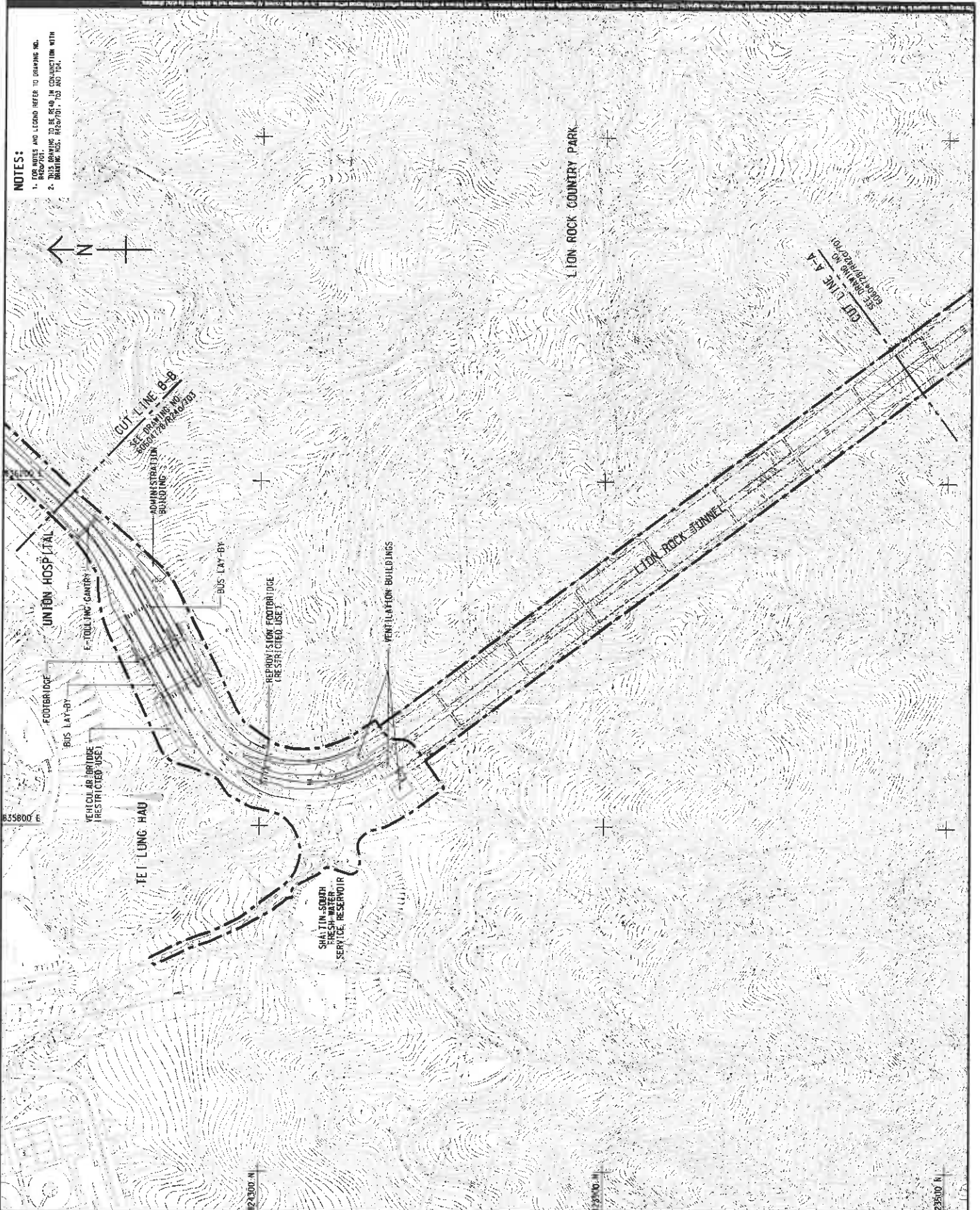
SHEET TITLE
 LOCATION PLAN OF THE PROJECT



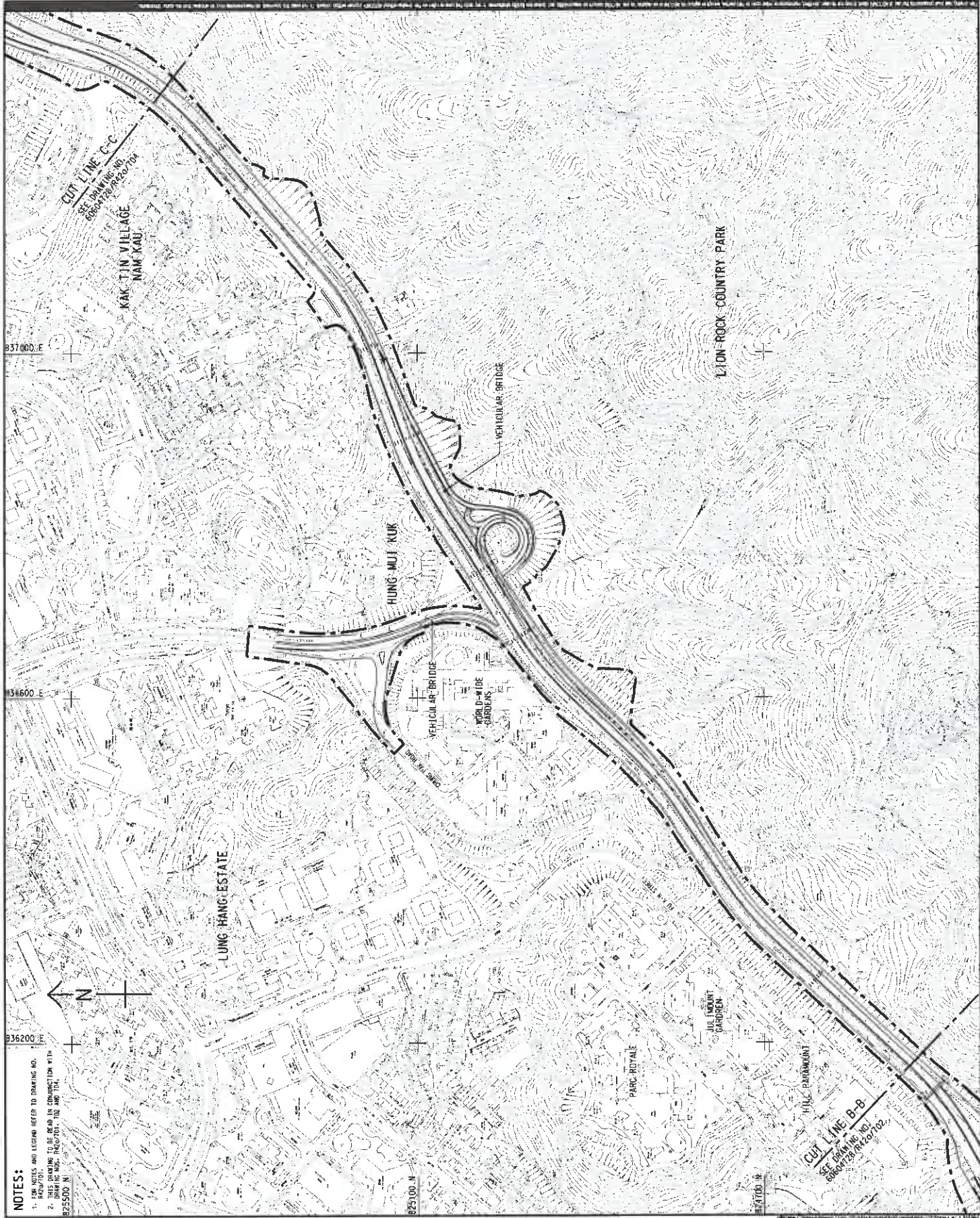
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NOTES:

1. FOR NOTES AND LEGEND REFER TO DRAWING NO. REPORT.
2. DIMENSIONS TO BE CHECKED IN CONJUNCTION WITH SURVEYING NO. 84267/01, 703 AND 704.



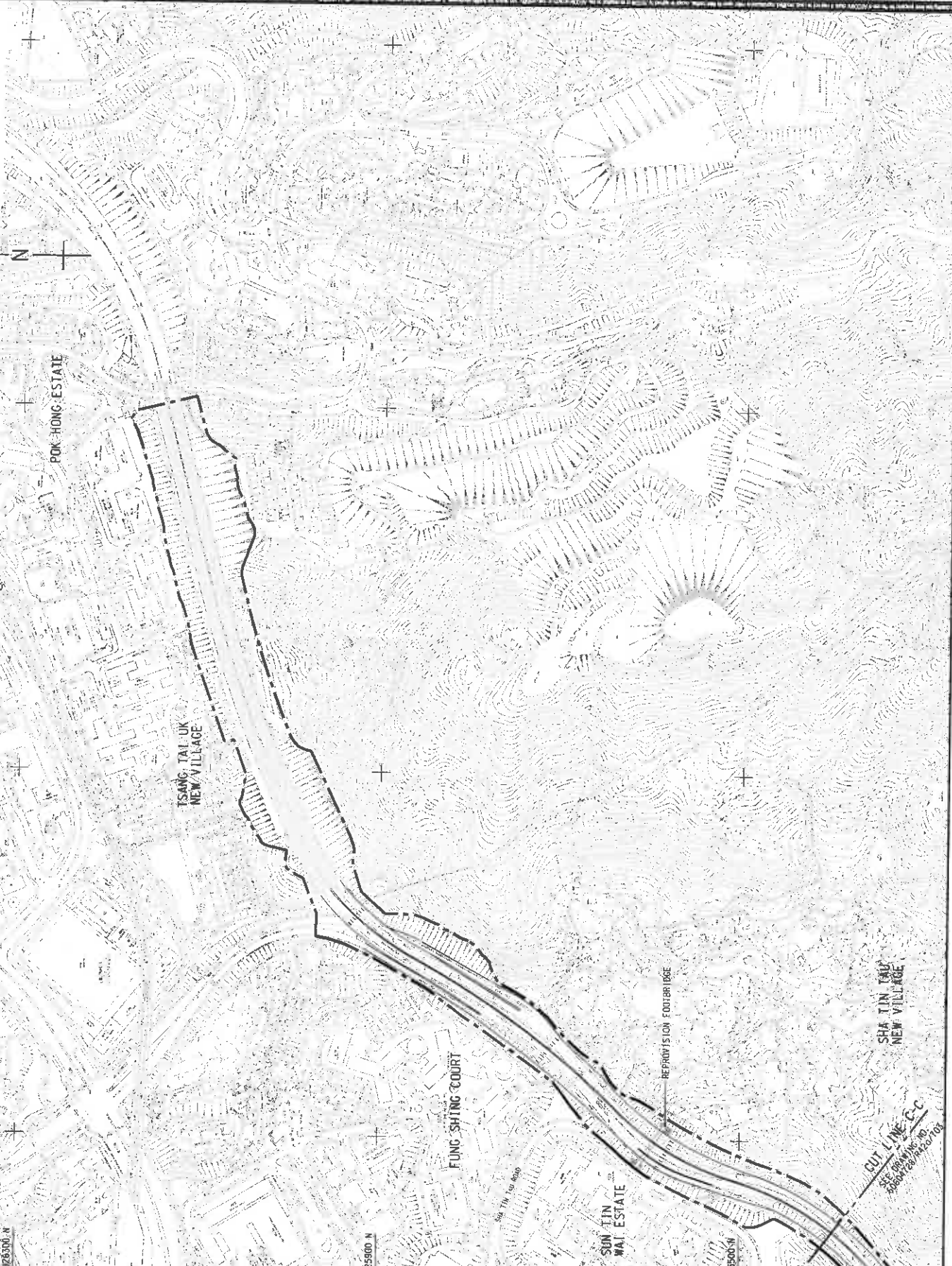
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NOTES:
 1. FOR NOTES AND LEGEND REFER TO DRAWING NO. 60604728/42a/703
 2. THIS DRAWING TO BE IN CONJUNCTION WITH DRAWING NO. 60604728/42a/703 AND 60604728/42a/703

| NO. | DATE | DESCRIPTION | CHK. BY |
|-----|------|-------------|---------|
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NOTES:
1. DIMENSIONS AND LEGEND REFER TO DRAWING NO. 00004728/426/704
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NO. 00004728/426/704



SHA TIN MAI
NEW VILLAGE

CUT LINE C.C.
SEE DRAWING NO.
00004728/426/704

REPROVISION FOOTBRIDGE

FUNG SHING COURT

SUN TIN
MAI ESTATE

TSANG TAI UK
NEW VILLAGE

POK HONG ESTATE

Our Ref: CWN:DCCH:wmy:60604728/04.07-2020000051T

2 January 2020

By Hand & Fax (Fax No. 2685 1133)

Environmental Protection Department
Regional Office (North)
10/F., Sha Tin Government Offices,
No.1 Sheung Wo Che Road, Sha Tin,
New Territories

Dear Sir/Madam,

**Agreement No. CE 48/2018 (HY)
Improvement of Lion Rock Tunnel – Investigation
Request for Information of Chemical Waste Producer, Chemical Spillage Accident and Previous
Land Contamination Assessment Report**

We have been commissioned by Highways Department (HyD) to undertake Agreement No. CE 48/2018 (HY) Improvement of Lion Rock Tunnel – Investigation. A copy of the self-explanatory memo on the appointment of consultants issued by HyD is enclosed for your reference.

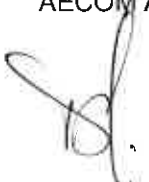
As part of the land contamination assessment and following the *Practice Guide for Investigation and Remediation of Contaminated Land* issued by EPD, we have to collect historical information regarding the past and present activities of the Project Boundary. In order to facilitate our assessment, we would like to request for the following information regarding the captioned Project Boundary indicated in the figure enclosed:

1. Current and past (as early as the records are available) registered Chemical Waste Producer(s) within the Project Boundary (preferably with the registration date, status (moved out or active), nature and quantity of the chemical waste);
2. Reported accidents of spillage / leakage of chemicals within the Project Boundary; and
3. Previous land contamination assessment report where the assessment was conducted within the Project Boundary.

We would highly appreciate if you could supplement the information by 16 January 2020. Please feel free to contact our Ms. Chloe Ng at 3922 9305 / Ms. Vanni Liu at 3922 9507 should you have any queries.

Thank you very much for your kind assistance.

Yours faithfully,
For and on behalf of
AECOM Asia Co. Ltd.



David Ho
Executive Director
Transportation, Hong Kong

Encl.

[]

By Fax

**MEMO**

| | |
|--|---|
| From CE3/MW, MWPMO, HyD | To Distribution |
| Ref. (JKBY) in HYD MWO 11/1/876TH/7/1 | (Attn. : _____) |
| Tel. No. 2762 3644 | Your Ref. _____ |
| Fax No. 2714 5289 | Dated _____ Fax No. _____ |
| Date 9 April 2019 | Total Pages 2 + Encl. |

**Agreement No. CE 48/2018 (HY)
Improvement of Lion Rock Tunnel - Investigation**

Appointment of Consultants

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2. The Assignment involves working out feasible options for rehabilitation of the two existing tunnel tubes of the Lion Rock Tunnel (LRT) and the associated road improvement works, conducting preliminary design for the selected option, various impact assessments, associated ground investigation works, public consultation, gazettal of the proposed road scheme, liaison with relevant parties of interfacing projects, etc.

3. During the course of the Assignment, AECOM may contact you for information, assistance or other matters relating to the Assignment. I would like to seek your cooperation and assistance to AECOM in carrying out their services for the Assignment.

4. The Project Manager of AECOM for the Assignment is Mr David C C HO. The contact details are as follows:

Tel : 3922 8421
 Fax : 3922 9797
 e-mail : david.ho@aecom.com
 Address : 8/F Grand Central Plaza, Tower 2, 138 Shatin Rural Committee Road, Shatin, Hong Kong

5. Should you require any further information on the above Assignment, please contact my senior engineer, Mr Bond CP CHOW at 2762 3580 or my engineer Mr W K LO at 2762 3570.

(Stephen WONG)
 Chief Engineer 3/ Major Works
 Major Works Project Management Office
 Highways Department

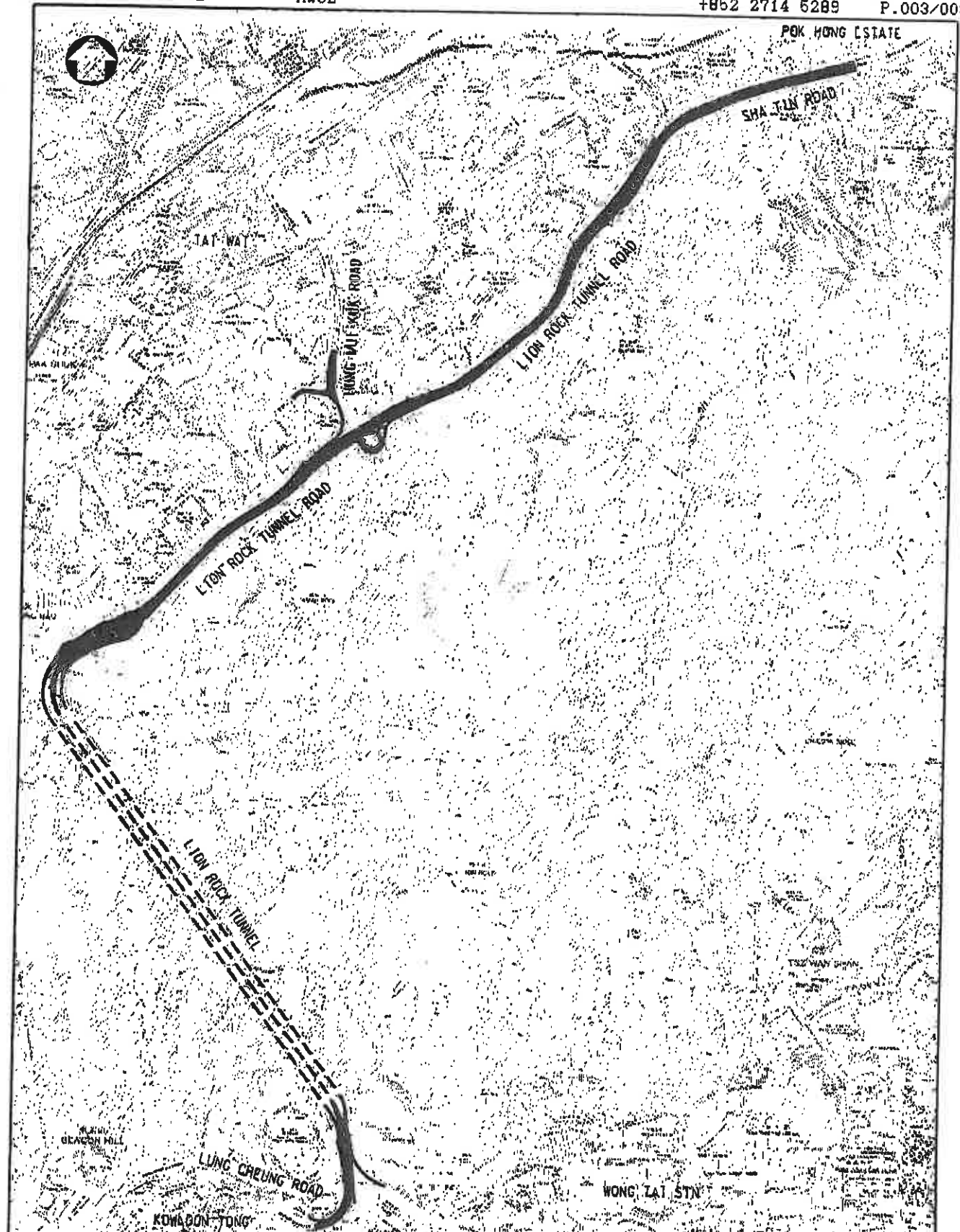
Distribution – w/c


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|---------------------------------|---|
| PEPO(MA), EPD | (Attn: Ms. Eva Y. C. LAU) |
| CTE/K, TD | (Attn: Mr. Edward K. W. CHAN) |
| CTE/NTE, TD | (Attn: Mr. W. H. POON) |
| CE/TP, TD | (Attn: Mr. Andrew P. Y. HUANG) |
| PTO/M, TD | |
| RMO E&C Div (Traffic NTS), HKPF | (Attn: Mr. C. S. LEUNG) |
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| DFS | |
| CE/NTE, WSD | (Attn: Mr. Gary K. C. LEE) |
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| DLM(KC), LCSD | (Attn: Ms. Jos P. L. CHENG) |
| Planning Section, LCSD | (Attn: Ms. Maggie M. K. LAM) |
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| CGE/MW, GEO, CEDD | (Attn: Mr. Eric S. H. YUNG) |
| CGE/ME, GEO, CEDD | (Attn: Ms. Jennifer C. K. NGAI) |
| CGE/P, GEO, CEDD | (Attn: Mr. W. K. LEUNG) |
| CGE/S&T, GEO, CEDD | (Attn: Ms. Florence L. F. CHU) 27140275 |
| DPO/STN, PlanD | (Attn: Mr. Dino W. L. TANG) |
| DPO/K, PlanD | (Attn: Ms. Johanna W. Y. CHENG) |
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| SPSM/WTS&ST, ArchSD | (Attn: Mr. K. Y. CHIU) |
| DO(ST), HAD | (Attn: Ms. Cornelia CHAN) |
| DO(KC), HAD | (Attn: Ms. Jess LEUNG) |
| DO(WTS), HAD | (Attn: Mr. Daniel CHAN) |

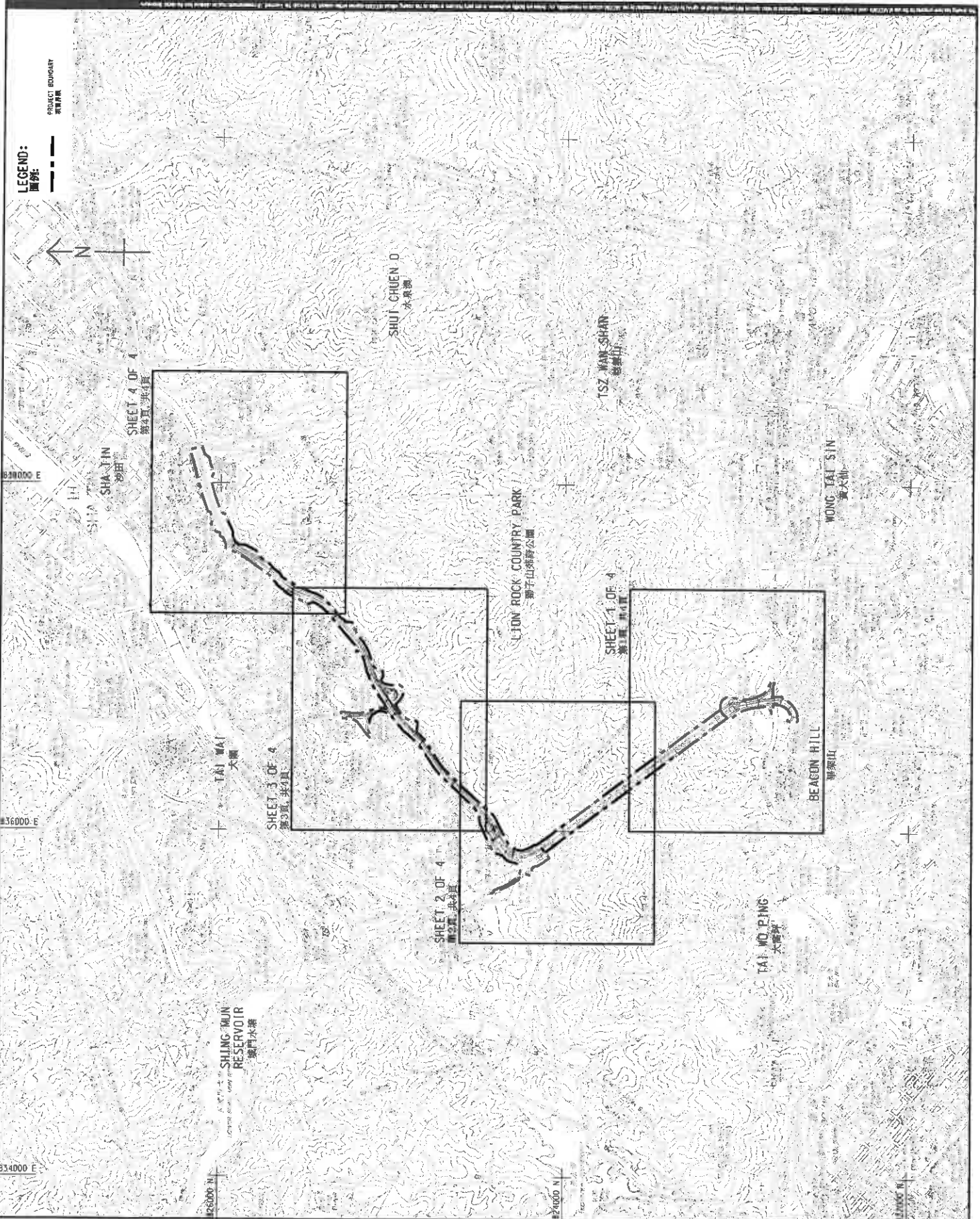
Internal – w/c

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|------------------|---|
| CHE/NTE, HyD | (Attn: Mr. Wilson T. K. LOK) |
| CHE/K, HyD | (Attn: Mr. Andy M. H. POON) |
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| SE/P, HyD | (Attn: Mr. William LAU) |
| CLA/LD, HyD | (Attn: Mr. Isaac S. S. SO/ Ms Helen Y. Y. NGAI) |
| LS/MW | (Attn: Mr. Calvin TSE) |

c.c. AECOM Asia Company Limited (Attn: Mr Conrad NG) – Fax no: 3922 9797



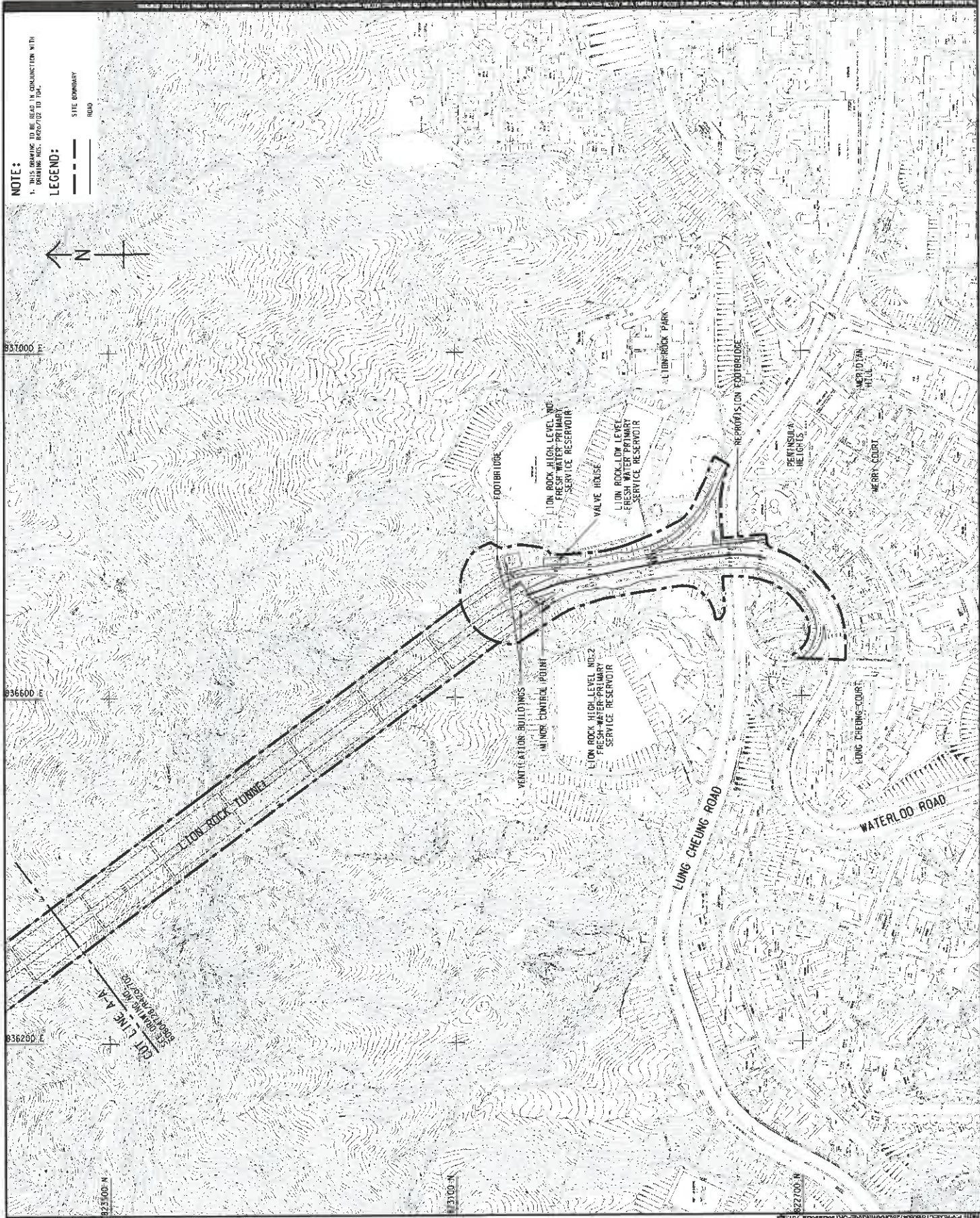
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|---|------------|----------------------|-------------|----------------------------------|--|-------------------------------|
| Project IMPROVEMENT OF LION ROCK TUNNEL | no. | date | description | status | drawing no. HNTDM18-104 | scale 1 : 15000 0A4 |
| | DATE | | | | | |
| Drawing title ALIGNMENT OF THE TUNNEL TUBES AND EXTENT OF ROAD WIDENING WORKS | designed | T. H. LOK 22/01 | SIGNED | 3-JUL-2018 | Checked by: [Signature] | |
| | Drawn | Ho Ho Fong 18/318 | SIGNED | 3-JUL-2018 | office | |
| | checked | T. H. LOK 22/01 | SIGNED | 3-JUL-2018 | NEW TERRITORIES REGION | |
| | approved | | | |  THE GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION HIGHWAYS DEPARTMENT | |
| | E. M. Tang | SIGNED | 04-JUL-2018 | CHIEF HIGHWAY ENGINEER / NT EAST | | |



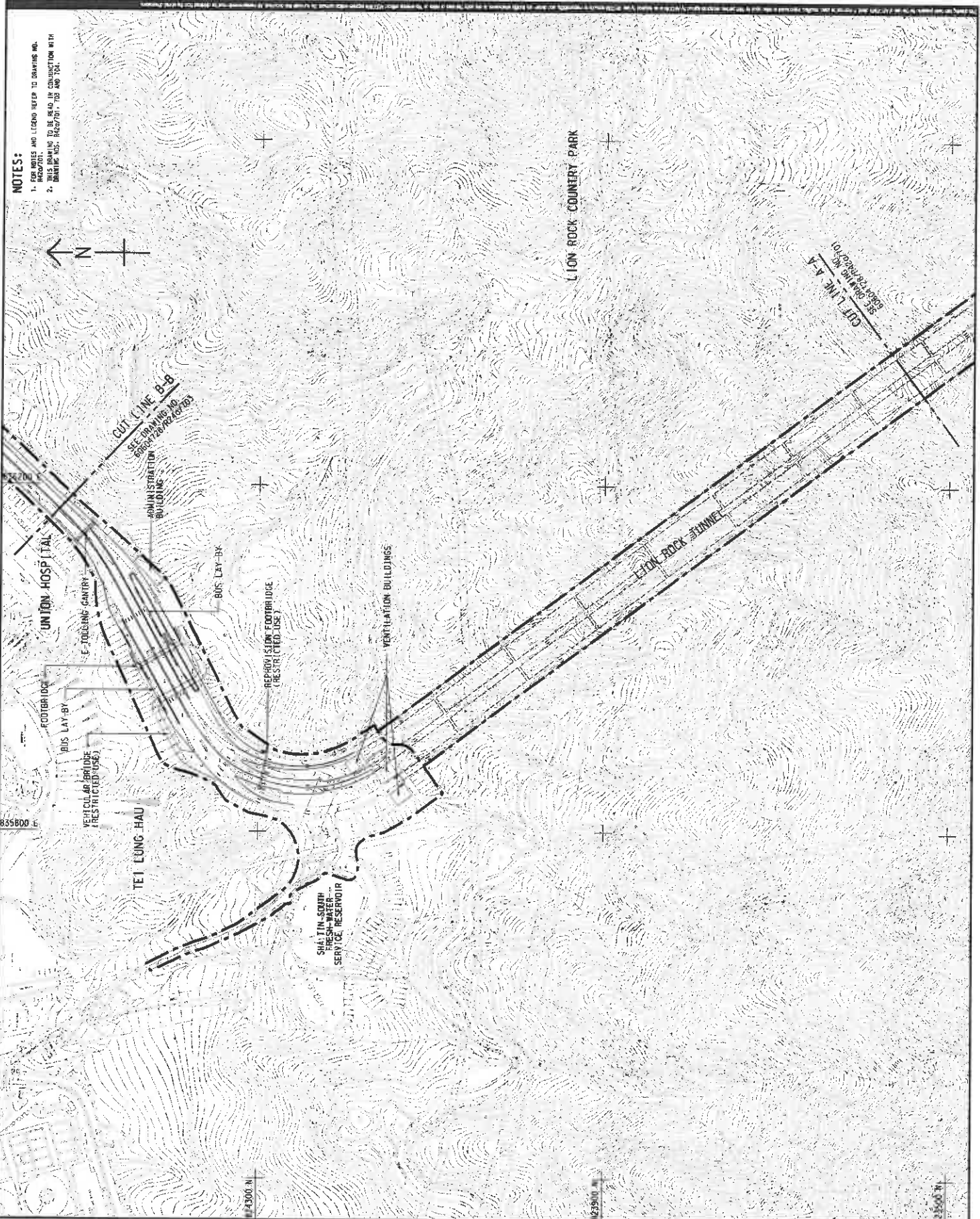
| NO. | DATE | DESCRIPTION | BY | CHK |
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NOTE:
 1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NO. 00004728 TO 704.

LEGEND:
 --- SITE BOUNDARY
 --- ROAD



NOTES:
 1. FOR NOTES AND LEGEND REFER TO DRAWING NO. H020011.
 2. DRAWING NO. H020011 TO BE USED IN CONJUNCTION WITH DRAWING NO. H020012 AND 100.



| NO. | DATE | DESCRIPTION | BY | CHECK |
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| SCALE | SCALE UNIT |
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| A3 1:4000 | METRES |

| SCALE | SCALE UNIT |
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| A3 1:4000 | METRES |

PROJECT NO.
 60804728

AGREEMENT NO.
 CE 42018(17)

SHEET TITLE
 LOCATION PLAN OF THE PROJECT

SHEET NUMBER
 SHEET 2 OF 4

DRAWING NO.
 60804728/RK28/702

| NO. | DATE | DESCRIPTION | BY | CHK |
|-----|------|-------------|----|-----|
| | | | | |
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NOTES:
 1. FOR DIMENSIONS AND LEGEND REFER TO DRAWING NO. 825500 N
 2. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 825001, 102 AND 104.
 825500 N

CUT LINE B-B
 SET DRAWING NO. 8000728/142/702

本署檔案
OUR REF : () in EP549/E2/1 Pt.5
來函檔案
YOUR REF : CWN:DCCH:wmy:60604728/04.07-202000051T
電話
TEL NO : 2158 5744
圖文傳真
FAX NO : 2650 6033
網址
HOMEPAGE : <http://www.epd.gov.hk/>

Environmental Protection Department
Environmental Compliance Division
Regional Office (North)
10/F., Sha Tin Government Offices,
No. 1, Sheung Wo Che Road,
Sha Tin, N.T. Hong Kong.



環境保護署
環保法規管理科
區域辦事處(北)
香港新界沙田
上禾輋路1號
沙田政府合署10樓

10 January 2020

AECOM
8/F Grand Central Plaza, Tower 2
138 Shatin Rural Committee Road,
Shatin, Hong Kong
(Attn: Mr. David HO)

Dear Mr. HO,

Agreement No. CE 48/2018 (HY)
Improvement of Lion Rock Tunnel – Investigation
Request for Information of Chemical Waste Producer, Chemical Spillage Accident
and Previous Land Contamination Assessment Report

I refer to your letter dated 2 January 2020 on the subject matter.

Please be informed that we have nil record of chemical spillage/leakage within the project boundary as shown in the enclosed location plan of your letter. You may wish to check with other relevant parties or departments for the record as appropriate.

Regarding your request on land contamination assessment report, please be advised that the EPD is responsible for vetting land contamination assessment submissions for specific development projects but we do not have the ownership of the submissions. You should approach relevant land owner(s)/occupier(s) for the requested reports.

As registered chemical waste producers at the location are concerned, a register of chemical waste producers is available for inspection in the Territorial Control Office of this department. If you would like to inspect, please contact Mr. LEUNG Chi-keung, Dennis at 2835 1017 for making appointment to view the records.

While we have made a reasonable effort to ensure the completeness and accuracy of the information provided, you should comprehend that the information is provided as is and the EPD is not responsible or liable for any claim, loss or damage resulting from the use of this information.

Should you have any queries, please feel free to contact the undersigned or our Senior Environmental Protection Inspector, Mr. TONG at 2158 5741.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Jacky K. Y. NG', written over a light blue horizontal line.

(Jacky K. Y. NG)

for Director of Environmental Protection

c.c. TCO/EPD
CE3/MW, HyD

(Attn: Mr. Dennis LEUNG
(Attn: Mr. Stephen WONG

Fax: 2305 0453)
Fax: 2714 5289)

From: kyng@epd.gov.hk
Sent: Tuesday, March 23, 2021 5:31 PM
To: Yuen, Robert
Cc: Ng, Lok Yi Chloe; Au, Kin; Man, Yu Kit Marty
Subject: [EXTERNAL] Re: Agreement No. CE 48/2018 (HY) Improvement of Lion Rock Tunnel – Investigation – Request for Information of Chemical Waste Producer and Chemical Spillage Accident

Dear Mr. Yuen,

As spoken just now, our previous reply dated 10.01.2020 refers to the project boundary as shown in the enclosed location plan of your letter dated 10 January 2020, which should include the area from Sha Tin to Beacon Hill.

Regards,
Jacky Ng
E(RN)42
Tel: 2158 5744

From: "Yuen, Robert" <robert.yuen@aecom.com>
To: "kyng@epd.gov.hk" <kyng@epd.gov.hk>
Cc: "Man, Yu Kit Marty" <marty.man@aecom.com>, "Ng, Lok Yi Chloe" <Chloe.Ng@aecom.com>, "Au, Kin" <kin.au@aecom.com>
Date: 23/03/2021 17:08
Subject: Agreement No. CE 48/2018 (HY) Improvement of Lion Rock Tunnel – Investigation – Request for Information of Chemical Waste Producer and Chemical Spillage Accident

Dear Mr. Ng,

We refer to your letter dated 10 January 2020 (Ref: ()) in EP549/E2/1 Pt.5) regarding our captioned enquiry.

Grateful if you can confirm that your reply refers to the entire Project Boundary, including the Kowloon portal area of the Lion Rock Tunnel.

Should you have any queries, please do not hesitate to contact the undersigned.

Regards,
Robert Yuen
Graduate Environmental Consultant, Environment, Hong Kong
D +852-3922-9439
robert.yuen@aecom.com

AECOM
13/F Grand Central Plaza, Tower 2,
138 Shatin Rural Committee Road,
Shatin, Hong Kong
T +852 3922 9000 F +852 3922 9797
www.aecom.com/hk/

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Our Ref: DCCH:wmy:60604728/02.42-2021006551L

5 May 2021

By Hand and Fax (2650 6033)

Environmental Protection Department
Environmental Compliance Division
Regional Office (North), Shatin
10th floor, Shatin Government Offices,
No.1 Sheung Wo Che Road,
Shatin New Territories

Attn: Mr. NG Kwong Yi, Jacky

Dear Sir,

**Agreement No. CE 48/2018 (HY)
Improvement of Lion Rock Tunnel – Investigation
Request for Information – Chemical Waste Producer and Chemical Spillage Accident**

AECOM Asia Co. Ltd. has been commissioned by Highways Department as the Consultant to undertake land contamination assessment for the captioned project. The Project Boundary is indicated in the figure enclosed.

As part of the land contamination assessment and following the *Practice Guide for Investigation and Remediation of Contaminated Land* issued by EPD, we have to collect historical information regarding the past and present activities of the Project Boundary. Further to our request with ref.: CWN:DCCH:wmy:60604728/04.08-2020000052T dated 2 January 2020 and your replies with ref.: () in EP549/E2/1 Pt.5 dated 10 January 2020 and email dated 23 March 2021, we would like to request for the following information regarding the updated Project Boundary as indicated in the enclosed General Layout Plan:

1. Current and past (as early as the records are available) registered Chemical Waste Producer(s) within the updated Project Boundary (preferably with the registration date, status (moved out or active), nature and quantity of the chemical waste); and
2. Reported accidents of spillage / leakage of chemicals within the updated Project Boundary.

Due to the tight programme of the Assignment, it would be much appreciated if you could reply to the above on or before 12 May 2021. Should you have any queries, please feel free to contact our Ms. Chloe Ng at 3922 9305 / Mr. Robert Yuen at 3922 9439. Thank you.

Yours faithfully,
For and on behalf of
AECOM Asia Co. Ltd.



David Ho
Executive Director
Land Supply / Municipal, Hong Kong

Encl.

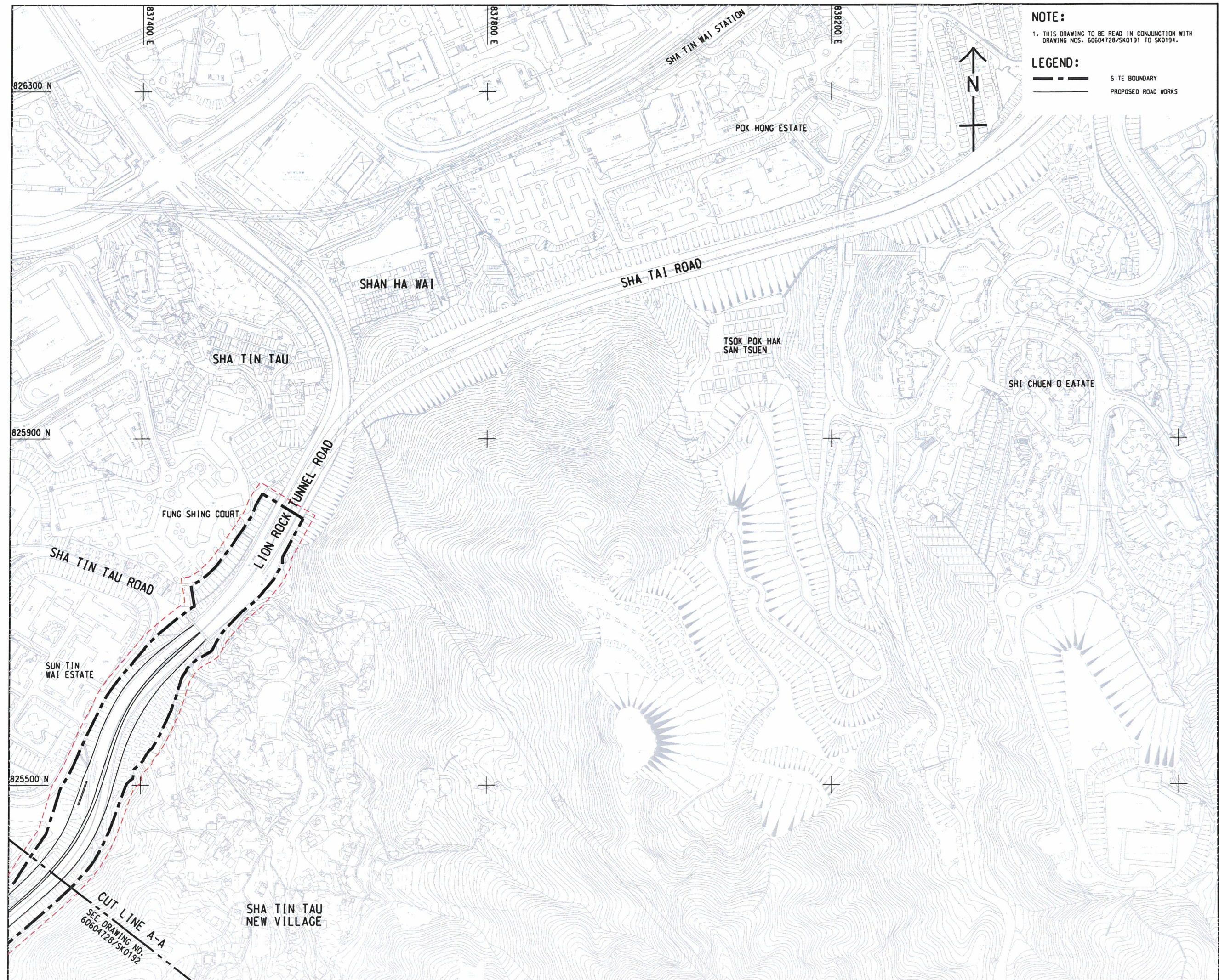
cc CE3/MW, HyD (Attn: Mr. LEUNG Siu-Kau, Kelvin)

(Fax: 3525 1450)

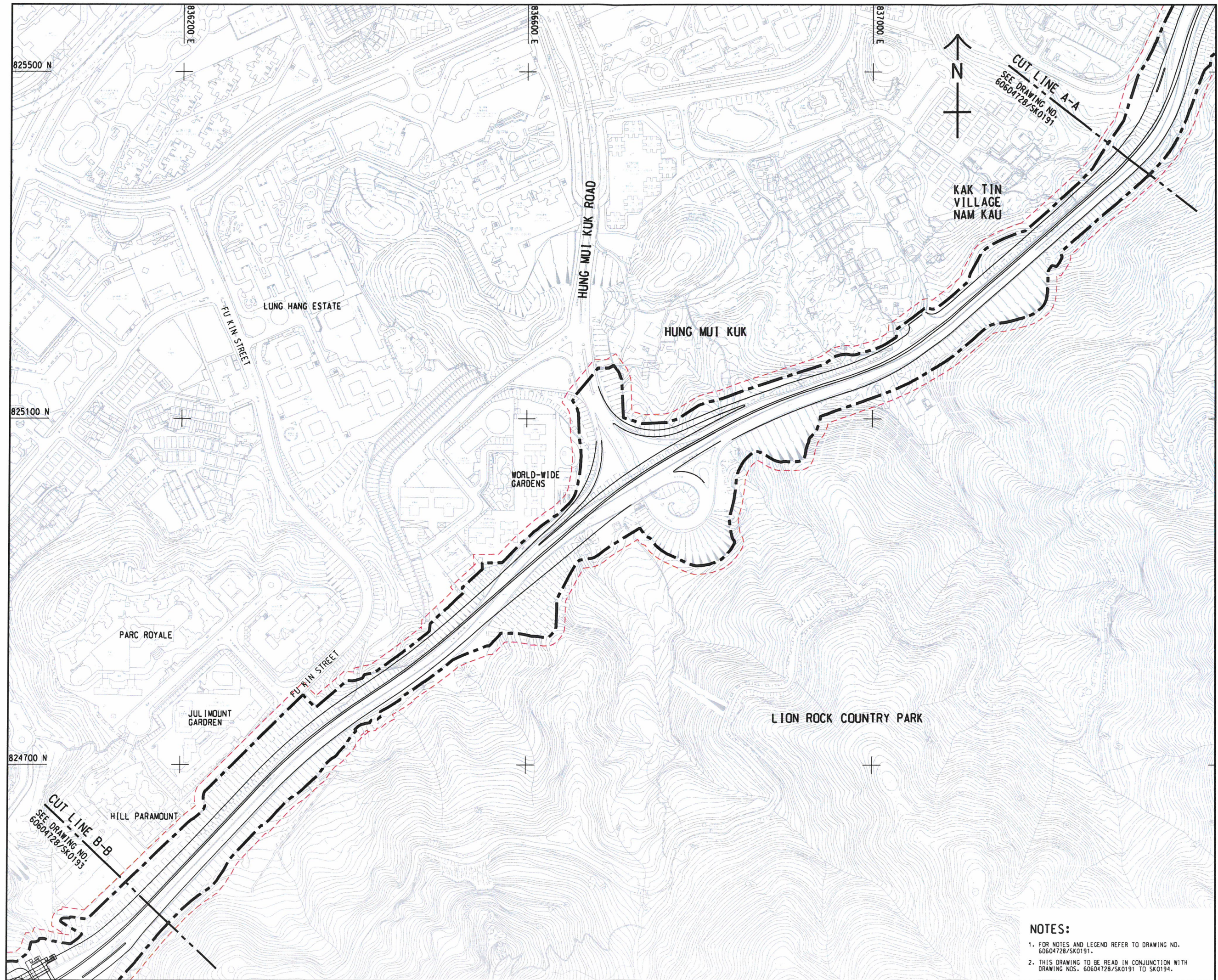
(w/o)

NOTE:
1. THIS DRAWING TO BE READ IN CONJUNCTION WITH
DRAWING NOS. 60604728/SK0191 TO SK0194.

LEGEND:
- - - SITE BOUNDARY
- - - PROPOSED ROAD WORKS



CUT LINE A-A
SEE DRAWING NO.
60604728/SK0192



825500 N

836200 E

836600 E

837000 E



CUT LINE A-A
SEE DRAWING NO.
60604728/SK0191

KAK TIN
VILLAGE
NAM KAU

LUNG HANG ESTATE

HUNG MUT KUK ROAD

HUNG MUT KUK

FU YIN STREET

825100 N

WORLD-WIDE
GARDENS

PARC ROYALE

FU YIN STREET

JULIMOUNT
GARDEN

824700 N

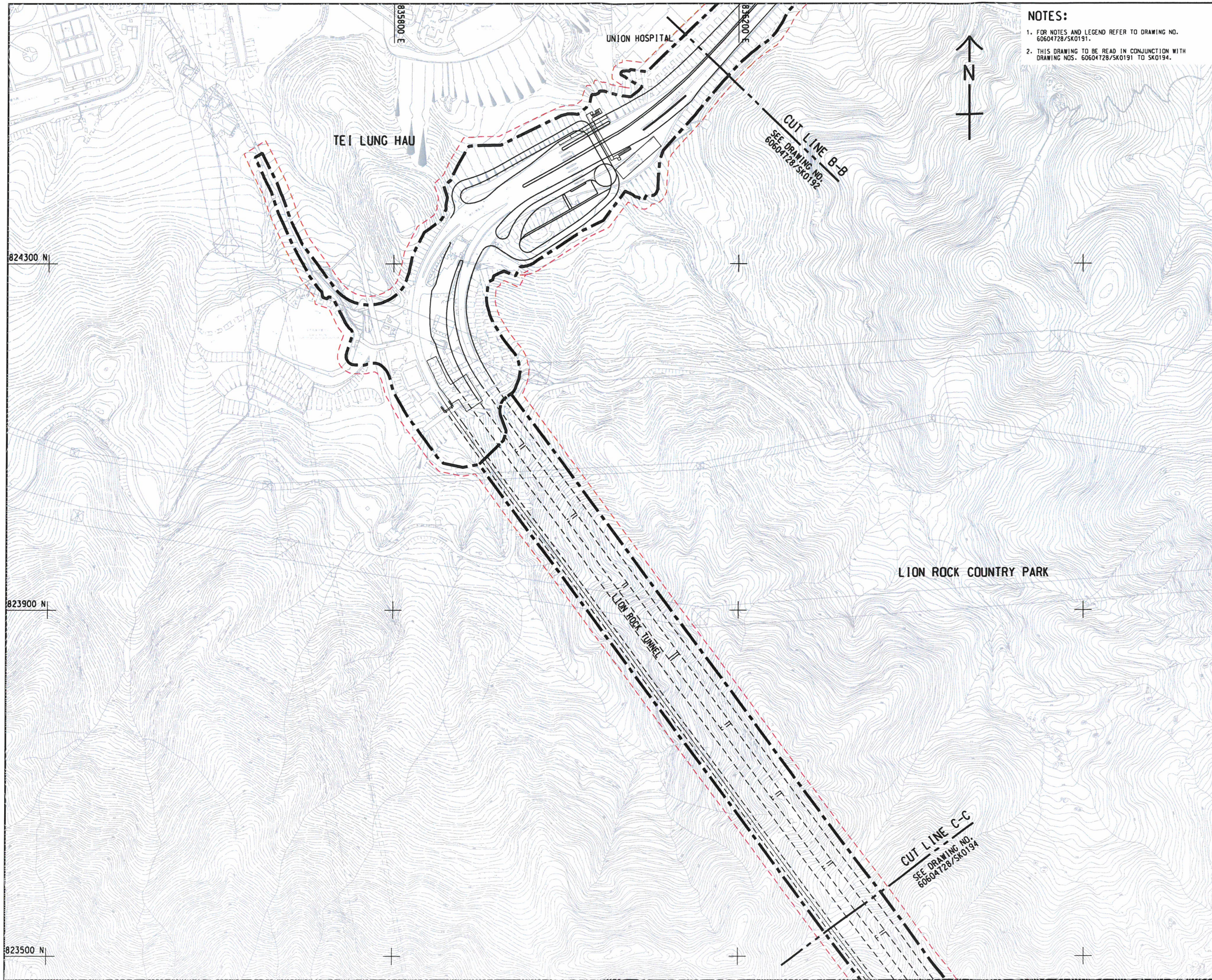
LION ROCK COUNTRY PARK

HILL PARAMOUNT

CUT LINE B-B
SEE DRAWING NO.
60604728/SK0193

NOTES:

- 1. FOR NOTES AND LEGEND REFER TO DRAWING NO. 60604728/SK0191.
- 2. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60604728/SK0191 TO SK0194.



NOTES:

- 1. FOR NOTES AND LEGEND REFER TO DRAWING NO. 60604728/SK0191.
- 2. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60604728/SK0191 TO SK0194.

UNION HOSPITAL

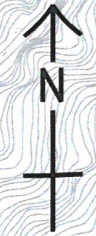
TEI LUNG HAU

LION ROCK COUNTRY PARK

LION ROCK TUNNEL

CUT LINE B-B
SEE DRAWING NO.
60604728/SK0192

CUT LINE C-C
SEE DRAWING NO.
60604728/SK0194



824300 N

823900 N

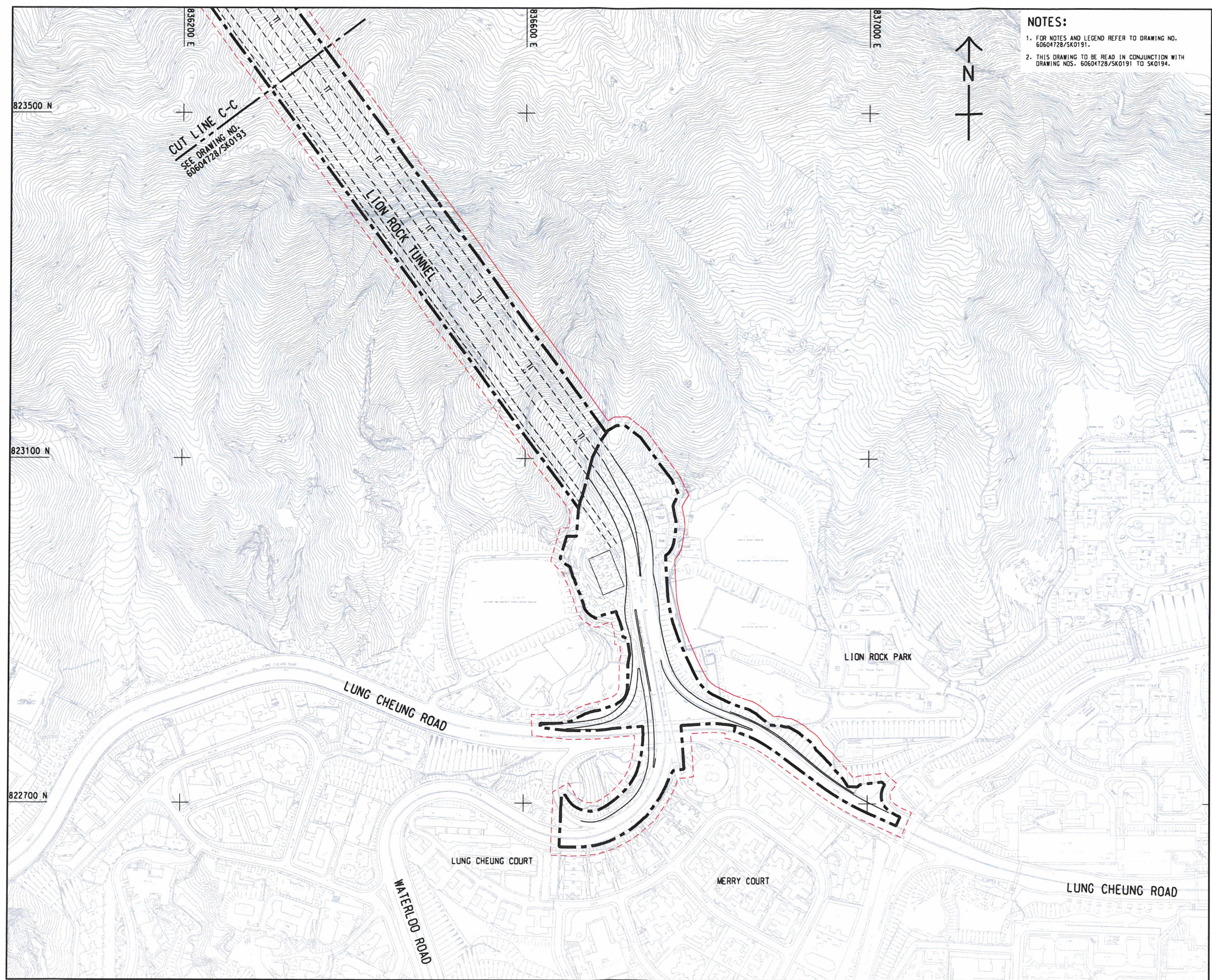
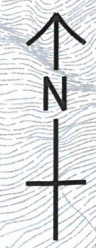
823500 N

835800 E

835200 E

NOTES:

- 1. FOR NOTES AND LEGEND REFER TO DRAWING NO. 60604728/SK0191.
- 2. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60604728/SK0191 TO SK0194.



本署檔案
OUR REF : () in EP549/E2/1 Pt.5
來函檔案
YOUR REF : DCCH:wmy:60604728/02.42-2021006551L
電話
TEL NO : 2158 5744
圖文傳真
FAX NO : 2650 6033
網址
HOMEPAGE : <http://www.epd.gov.hk/>

Environmental Protection Department
Environmental Compliance Division
Regional Office (North)
10/F., Sha Tin Government Offices,
No. 1, Sheung Wo Che Road,
Sha Tin, N.T. Hong Kong.



環境保護署
環保法規管理科
區域辦事處(北)
香港新界沙田
上禾輦路1號
沙田政府合署10樓

11 May 2021

AECOM
12/F Grand Central Plaza, Tower 2
138 Shatin Rural Committee Road,
Shatin, Hong Kong
(Attn: Mr. David HO)

Dear Mr. HO,

Agreement No. CE 48/2018 (HY)
Improvement of Lion Rock Tunnel – Investigation
Request for Information - Chemical Waste Producer and Chemical Spillage Accident

I refer to your letter dated 5 May 2021 on the subject matter.

Please be informed that we have nil record of chemical spillage/leakage within the project boundary as shown in the enclosed location plan of your letter. You may wish to check with other relevant parties or departments for the record as appropriate.

As registered chemical waste producers at the location are concerned, a register of chemical waste producers is available for inspection in the Territorial Control Office of this department. If you would like to inspect, please contact Mr. LEUNG Chi-keung, Dennis at 2835 1017 for making appointment to view the records.

While we have made a reasonable effort to ensure the completeness and accuracy of the information provided, you should comprehend that the information is provided as is and the EPD is not responsible or liable for any claim, loss or damage resulting from the use of this information.

Should you have any queries, please feel free to contact the undersigned or our Senior Environmental Protection Inspector, Mr. TONG at 2158 5741.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Jacky K.Y. NG'.

(Jacky K.Y. NG)

for Director of Environmental Protection

c.c. CE3/MW, HyD (Attn: Mr. Kelvin LEUNG Fax: 3525 1450)

Our Ref: DCCH:mlpm:60604728/02.42-2022000222L

7 January 2022

By Hand and Fax (Fax No.: 2650 6033)

Environmental Protection Department
Environmental Compliance Division
Regional Office (North)
10th floor, Shatin Government Offices,
No.1 Sheung Wo Che Road,
Shatin, New Territories

Dear Sir/Madam,

Agreement No. CE 48/2018 (HY)
Improvement of Lion Rock Tunnel – Investigation
Request for Information of Chemical Waste Producer and Chemical Spillage Accident

We refer to your letter dated 11 May 2021 (ref.: () in EP549/E2/1 Pt.5) on the captioned. The said letter is enclosed herewith for your ease of reference. Since the Project Boundary has been updated, we would like to collect historical information listed in below regarding the past and present activities of the site as a part of the land contamination assessment and following the Practice Guide for Investigation and Remediation of Contaminated Land issued by EPD based on the updated Project Boundary.

1. Current and past (as early as the records are available) registered Chemical Waste Producer(s) within the updated Project Boundary (preferably with the registration date, status (moved out or active), nature and quantity of the chemical waste); and
2. Reported accidents of spillage / leakage of chemicals within the updated Project Boundary.

Due to the tight programme of the Assignment, it would be much appreciated if you could reply to the above on or before 14 January 2022. Should you have any queries, please feel free to contact our Mr. Lawrence Tso at 3922-9422 or Mr. Kin Au at 3922-9507. Thank you.

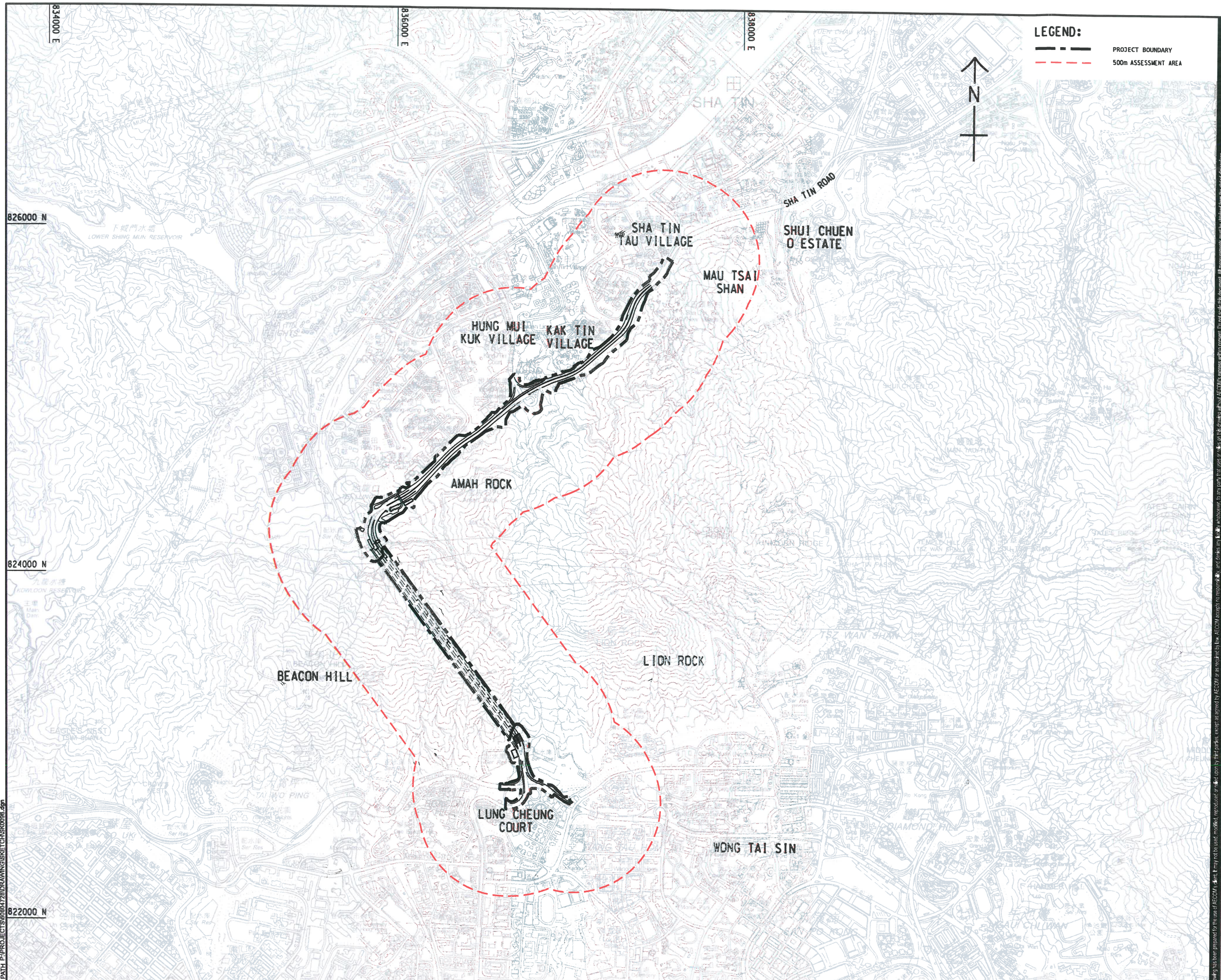
Yours faithfully,
For and on behalf of
AECOM Asia Co. Ltd.



David Ho
Executive Director
Land Supply / Municipal, Hong Kong

Encl.

ISO A1 594mm x 841mm
 Approved:
 Checked:
 Designer:
 Project Management Initials:



LEGEND:
 - - - PROJECT BOUNDARY
 - - - 500m ASSESSMENT AREA

AECOM

PROJECT
 項目
IMPROVEMENT OF LION ROCK TUNNEL - INVESTIGATION

CLIENT
 業主
HIGHWAYS DEPARTMENT

CONSULTANT
 工程顧問公司
AECOM Asia Company Ltd.
 www.aecom.com

SUB-CONSULTANTS
 分門工程顧問公司

ISSUE/REVISION
 修訂

| NO. | DATE | DESCRIPTION | CHK. |
|-----|------|-------------|------|
| | | | |
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STATUS
 階段

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|--|

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
 圖紙名稱
LOCATION PLAN OF THE PROJECT

SHEET NUMBER
 圖紙編號

2022/1/8
 Plot File by: ZHANGWRS
 PATH: P:\PROJECTS\60604728\DRAWINGS\SKETCH\HSK0088.dgn

This drawing has been prepared for the use of AECOM's client. It may not be used for any other purpose without the prior written consent of AECOM. All measurements must be obtained from the stated dimensions.

本署檔案
OUR REF : () in EP549/E2/1
來函檔案
YOUR REF : DCCH:wmy:60604728/02.42-2022000222L
電話
TEL NO : 2158 5744
圖文傳真
FAX NO : 2650 6033
網址
HOMEPAGE : <http://www.epd.gov.hk/>

Environmental Protection Department
Environmental Compliance Division
Regional Office (North)
10/F., Sha Tin Government Offices,
No. 1, Sheung Wo Che Road,
Sha Tin, N.T. Hong Kong.



環境保護署
環保法規管理科
區域辦事處(北)
香港新界沙田
上禾輦路1號
沙田政府合署10樓

20 January 2022

AECOM
12/F Grand Central Plaza, Tower 2
138 Shatin Rural Committee Road,
Shatin, Hong Kong
(Attn: Mr. David HO, Executive Director)

Dear Mr. HO,

Agreement No. CE 48/2018 (HY)
Improvement of Lion Rock Tunnel – Investigation
Request for Information of Chemical Waste Producer and Chemical Spillage Accident

I refer to your letter dated 7 January 2022 on the subject matter.

Please be informed that we have nil record of chemical spillage/leakage complaint within the project boundary as shown in the enclosed location plan of your letter. You may wish to check with other relevant parties or departments for the record as appropriate.

As registered chemical waste producers at the location are concerned, a register of chemical waste producers is available for inspection in the Territorial Control Office of this department. If you would like to inspect, please contact Mr. TSANG at 2835 1017 for making appointment to view the records.

While we have made a reasonable effort to ensure the completeness and accuracy of the information provided, you should comprehend that the information is provided as is and the EPD is not responsible or liable for any claim, loss or damage resulting from the use of this information.

Should you have any queries, please feel free to contact the undersigned or our Senior Environmental Protection Inspector, Mr. TONG at 2158 5741.

Yours sincerely,

(Antony C.H. FAN)
for Director of Environmental Protection

Our Ref: DCCH:wmy:60604728/02.42-2022007581L

31 May 2022

By Hand and Fax (Fax No.: 2650 6033)

Environmental Protection Department
Environmental Compliance Division
Regional Office (North)
10th floor, Shatin Government Offices,
No.1 Sheung Wo Che Road,
Shatin, New Territories

Dear Sir/Madam,

Agreement No. CE 48/2018 (HY)
Improvement of Lion Rock Tunnel – Investigation
Request for Information of Chemical Waste Producer and Chemical Spillage Accident

We refer to your letter dated 20 January 2022 (ref.: () in EP549/E2/1) on the captioned. The said letter is enclosed herewith for your ease of reference. Since the Project Boundary has been updated, which is highlighted in the enclosure for your information, we would like to collect historical information listed in below regarding the past and present activities of the site as a part of the land contamination assessment and following the Practice Guide for Investigation and Remediation of Contaminated Land issued by EPD based on the updated Project Boundary.

1. Current and past (as early as the records are available) registered Chemical Waste Producer(s) within the updated Project Boundary (preferably with the registration date, status (moved out or active), nature and quantity of the chemical waste); and
2. Reported accidents of spillage / leakage of chemicals within the updated Project Boundary.

Due to the tight programme of the Assignment, it would be much appreciated if you could reply to the above on or before 14 June 2022. Should you have any queries, please feel free to contact our Mr. Lawrence Tso at 3922-9422 or Mr. Kin Au at 3922-9507. Thank you.

Yours faithfully,
For and on behalf of
AECOM Asia Co. Ltd.

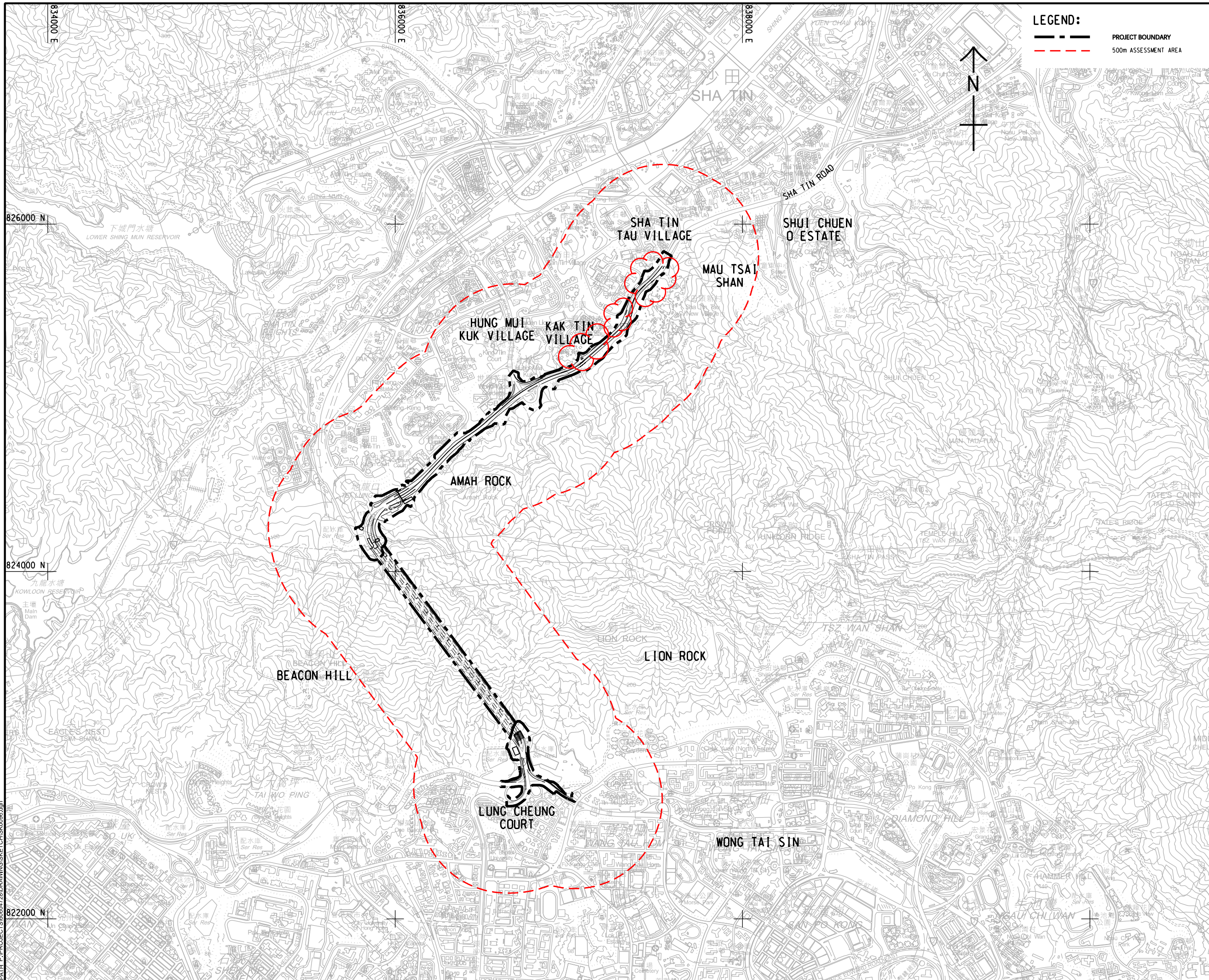


David Ho
Executive Director
Land Supply / Municipal, Hong Kong

Encl.

cc Sr Engr 2/Lion Rock Tunnel Ms. CHEUNG Pui Sai, Emily (Fax: 3525 1450)

ISO A1 594mm x 841mm
 Approved:
 Checked:
 Designer:
 Project Management Initials:
 2022/5/31
 P:\PROJECTS\2020\1728\DRAWINGS\NET\CHSK006.dwg
 Plot File by: ZHANGWFS



LEGEND:
 - - - PROJECT BOUNDARY
 - - - 500m ASSESSMENT AREA



PROJECT
 項目
IMPROVEMENT OF LION ROCK TUNNEL - INVESTIGATION

CLIENT
 業主
HIGHWAYS DEPARTMENT

CONSULTANT
 顧問公司
 AECOM Asia Company Ltd.
 www.aecom.com

SUB-CONSULTANTS
 分判工程師/顧問公司

ISSUE/REVISION
 修訂

| IR | DATE | DESCRIPTION | CHK. |
|----|------|-------------|------|
| | | | |
| | | | |
| | | | |

STATUS
 狀況

SCALE **DIMENSION UNIT**
 比例 單位
 A3 1 : 20000 METRES

KEY PLAN
 索引圖

PROJECT NO. **AGREEMENT NO.**
 項目編號 協議編號
 60604728 CE 48/2018(HY)

SHEET TITLE
 圖紙名稱
 LOCATION PLAN OF THE PROJECT

SHEET NUMBER
 圖紙編號

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本署檔案
OUR REF : () in EP549/E2/1
來函檔案
YOUR REF : DCCH:wmy:60604728/02.42-2022000222L
電話
TEL NO : 2158 5744
圖文傳真
FAX NO : 2650 6033
網址
HOMEPAGE : <http://www.epd.gov.hk/>

Environmental Protection Department
Environmental Compliance Division
Regional Office (North)
10/F., Sha Tin Government Offices,
No. 1, Sheung Wo Che Road,
Sha Tin, N.T. Hong Kong.



環境保護署
環保法規管理科
區域辦事處(北)
香港新界沙田
上禾輦路1號
沙田政府合署10樓

20 January 2022

AECOM
12/F Grand Central Plaza, Tower 2
138 Shatin Rural Committee Road,
Shatin, Hong Kong
(Attn: Mr. David HO, Executive Director)

Dear Mr. HO,

Agreement No. CE 48/2018 (HY)
Improvement of Lion Rock Tunnel – Investigation
Request for Information of Chemical Waste Producer and Chemical Spillage Accident

I refer to your letter dated 7 January 2022 on the subject matter.

Please be informed that we have nil record of chemical spillage/leakage complaint within the project boundary as shown in the enclosed location plan of your letter. You may wish to check with other relevant parties or departments for the record as appropriate.

As registered chemical waste producers at the location are concerned, a register of chemical waste producers is available for inspection in the Territorial Control Office of this department. If you would like to inspect, please contact Mr. TSANG at 2835 1017 for making appointment to view the records.

While we have made a reasonable effort to ensure the completeness and accuracy of the information provided, you should comprehend that the information is provided as is and the EPD is not responsible or liable for any claim, loss or damage resulting from the use of this information.

Should you have any queries, please feel free to contact the undersigned or our Senior Environmental Protection Inspector, Mr. TONG at 2158 5741.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Antony C.H. Fan'.

(Antony C.H. FAN)
for Director of Environmental Protection

本署檔案
OUR REF : () in EP549/E2/1
來函檔案
YOUR REF : DCCH:wmy:60604728/02.42-2022000222L
電話
TEL NO : 2158 5744
圖文傳真
FAX NO : 2650 6033
網址
HOMEPAGE : <http://www.epd.gov.hk/>

Environmental Protection Department
Environmental Compliance Division
Regional Office (North)
10/F., Sha Tin Government Offices,
No. 1, Sheung Wo Che Road,
Sha Tin, N.T. Hong Kong.



環境保護署
環保法規管理科
區域辦事處(北)
香港新界沙田
上禾輦路1號
沙田政府合署10樓

8 June 2022

AECOM
12/F Grand Central Plaza, Tower 2
138 Shatin Rural Committee Road,
Shatin, Hong Kong
(Attn: Mr. David HO, Executive Director)

Dear Mr. HO,

Agreement No. CE 48/2018 (HY)
Improvement of Lion Rock Tunnel – Investigation
Request for Information of Chemical Waste Producer and Chemical Spillage Accident

I refer to your letter dated 31 May 2022 on the subject matter.

Please be informed that we have nil record of chemical spillage/leakage complaint within the project boundary and 500m assessment boundary as shown in the enclosed location plan of your letter. You may wish to check with other relevant parties or departments for the record as appropriate.

As registered chemical waste producers at the location are concerned, a register of chemical waste producers is available for inspection in the Territorial Control Office of this department. If you would like to inspect, please contact Mr. TSANG at 2835 1017 for making appointment to view the records.

While we have made a reasonable effort to ensure the completeness and accuracy of the information provided, you should comprehend that the information is provided as is and the EPD is not responsible or liable for any claim, loss or damage resulting from the use of this information.

Should you have any queries, please feel free to contact the undersigned or our Senior Environmental Protection Inspector, Ms. CHAN at 2158 5741.

Yours sincerely,

(Antony C.H. FAN)
for Director of Environmental Protection

Our Ref: CWN:DCCH:wmy:60604728/04.08-2020000052T

2 January 2020

By Hand & Fax (Fax No. 2367 3631)

Fire Services Department
Licensing and Certification Command
5/F, South Wing, Fire Services HQ Building,
1 Hong Chong Road, Tsim Sha Tsui East,
Kowloon

Dear Sir/Madam,

**Agreement No. CE 48/2018 (HY)
Improvement of Lion Rock Tunnel – Investigation
Request for Information on Dangerous Goods Store and Incidents Records**

We have been commissioned by Highways Department (HyD) to undertake Agreement No. CE 48/2018 (HY) Improvement of Lion Rock Tunnel – Investigation. A copy of the self-explanatory memo on the appointment of consultants issued by HyD is enclosed for your reference.

As a part of the land contamination assessment and following the *Practice Guide for Investigation and Remediation of Contaminated Land* issued by EPD, we have to collect historical information regarding the past and present activities of the site. In order to facilitate our assessment, we would like to request for the following information regarding the captioned site indicated in the figure enclosed:

1. Records of current and past (as early as the records are available) registration of Dangerous Goods storage (with type of dangerous goods, storage method, quantity, licence no., date of issue and storage location) within the Project Boundary;
2. Any records of reported accidents of spillage/leakage of dangerous goods stored within the Project Boundary; and
3. Any records of fire incidents within the Project Boundary.

We would highly appreciate if you could supplement the information by 16 January 2020. Please feel free to contact our Ms. Chloe Ng at 3922 9305 / Ms. Vanni Liu at 3922 9507 should you have any queries.

Thank you very much for your kind assistance.

Yours faithfully,
For and on behalf of
AECOM Asia Co. Ltd.



David Ho
Executive Director
Transportation, Hong Kong

Encl.

[]

By Fax

**MEMO**

| | |
|--|---|
| From CE3/MW, MWPMO, HyD | To Distribution |
| Ref. (JKBY) in HYD MWO 11/1/876TH/7/1 | (Attn. : _____) |
| Tel. No. 2762 3644 | Your Ref. _____ |
| Fax No. 2714 5289 | Dated _____ Fax No. _____ |
| Date 9 April 2019 | Total Pages 2 + Encl. |

**Agreement No. CE 48/2018 (HY)
Improvement of Lion Rock Tunnel - Investigation**

Appointment of Consultants

I write to inform that AECOM Asia Company Limited has been appointed as the Consultant to undertake the captioned Assignment. The Assignment commenced on 29 March 2019 for completion in September 2021. The layout plan of the improvement works is shown in the attached drawings for your reference.

2. The Assignment involves working out feasible options for rehabilitation of the two existing tunnel tubes of the Lion Rock Tunnel (LRT) and the associated road improvement works, conducting preliminary design for the selected option, various impact assessments, associated ground investigation works, public consultation, gazettal of the proposed road scheme, liaison with relevant parties of interfacing projects, etc.

3. During the course of the Assignment, AECOM may contact you for information, assistance or other matters relating to the Assignment. I would like to seek your cooperation and assistance to AECOM in carrying out their services for the Assignment.

4. The Project Manager of AECOM for the Assignment is Mr David C C HO. The contact details are as follows:

Tel : 3922 8421
 Fax : 3922 9797
 e-mail : david.ho@aecom.com
 Address : 8/F Grand Central Plaza, Tower 2, 138 Shatin Rural Committee Road, Shatin, Hong Kong

5. Should you require any further information on the above Assignment, please contact my senior engineer, Mr Bond CP CHOW at 2762 3580 or my engineer Mr W K LO at 2762 3570.

(Stephen WONG)
 Chief Engineer 3/ Major Works
 Major Works Project Management Office
 Highways Department

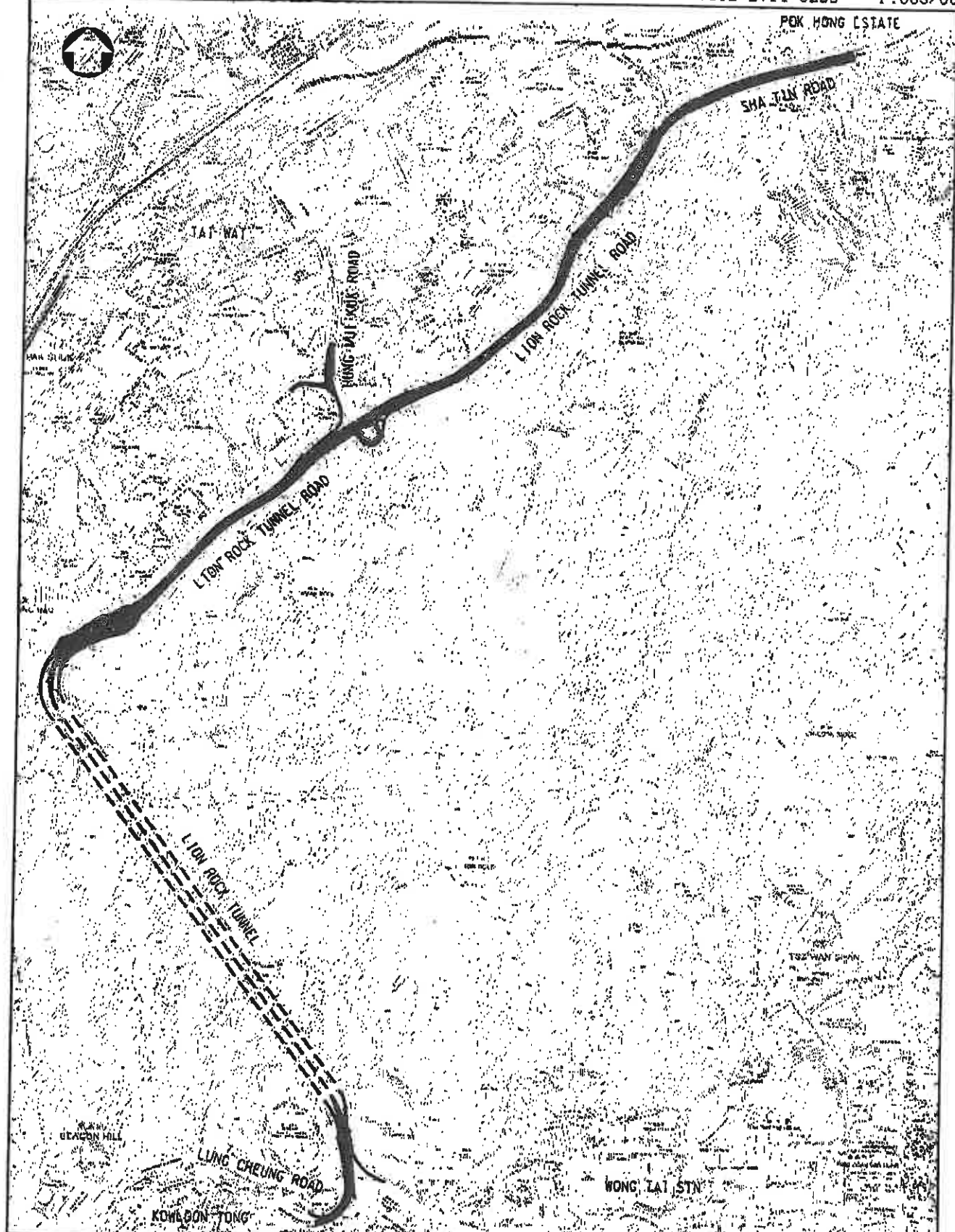
Distribution - w/c


| | |
|---------------------------------|---|
| PEPO(MA), EPD | (Attn: Ms. Eva Y. C. LAU) |
| CTE/K, TD | (Attn: Mr. Edward K. W. CHAN) |
| CTE/NTE, TD | (Attn: Mr. W. H. POON) |
| CE/TP, TD | (Attn: Mr. Andrew P. Y. HUANG) |
| PTO/M, TD | |
| RMO E&C Div (Traffic NTS), HKPF | (Attn: Mr. C. S. LEUNG) |
| RMO E&C Div (Traffic KE), HKPF | (Attn: Mr. Peter K. W. LI) |
| DFS | |
| CE/NTE, WSD | (Attn: Mr. Gary K. C. LEE) |
| CE/K, WSD | (Attn: Mr. Vincent C. W. HA) |
| CE/MS, DSD | (Attn: Mr. C. H. YEE) |
| DLO/ST, LandsD | (Attn: Mr. K. Y. CHUNG) |
| DLO/KE, LandsD | (Attn: Ms. Veronica S. F. LEE) |
| DLM(KC), LCSD | (Attn: Ms. Jos P. L. CHENG) |
| Planning Section, LCSD | (Attn: Ms. Maggie M. K. LAM) |
| PM(N), CEDD | (Attn: Mr. Haven HAR) |
| CGE/MW, GEO, CEDD | (Attn: Mr. Eric S. H. YUNG) |
| CGE/ME, GEO, CEDD | (Attn: Ms. Jennifer C. K. NGAI) |
| CGE/P, GEO, CEDD | (Attn: Mr. W. K. LEUNG) |
| CGE/S&T, GEO, CEDD | (Attn: Ms. Florence L. F. CHU) 27140275 |
| DPO/STN, PlanD | (Attn: Mr. Dino W. L. TANG) |
| DPO/K, PlanD | (Attn: Ms. Johanna W. Y. CHENG) |
| AD(C&MP), AFCD | (Attn: Mr. Y. P. LAU) |
| CE/TSCS, EMSD | (Attn: Mr. George C. K. KWONG) |
| CE/EEA, EMSD | (Attn: Mr. Eric LAU) |
| SPSM/WTS&ST, ArchSD | (Attn: Mr. K. Y. CHIU) |
| DO(ST), HAD | (Attn: Ms. Cornelia CHAN) |
| DO(KC), HAD | (Attn: Ms. Jess LEUNG) |
| DO(WTS), HAD | (Attn: Mr. Daniel CHAN) |

Internal - w/c

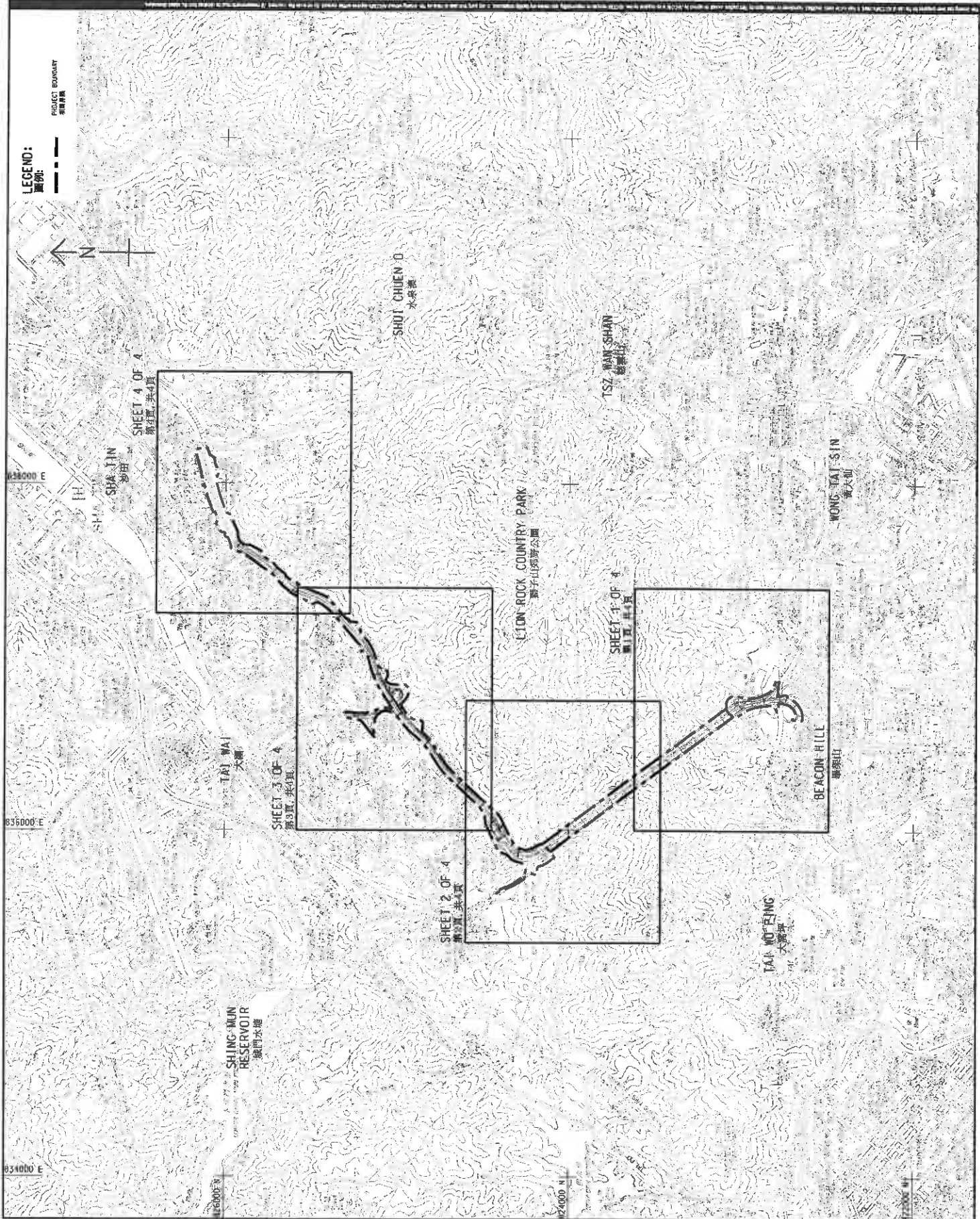
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|------------------|---|
| CHE/NTE, HyD | (Attn: Mr. Wilson T. K. LOK) |
| CHE/K, HyD | (Attn: Mr. Andy M. H. POON) |
| CHE/B&S, HyD | (Attn: Mr. C. M. TSANG) |
| CE/Lighting, HyD | (Attn: Mr. C. H. CHEUNG) |
| SE/P, HyD | (Attn: Mr. William LAU) |
| CLA/LD, HyD | (Attn: Mr. Isaac S. S. SO/ Ms Helen Y. Y. NGAI) |
| LS/MW | (Attn: Mr. Calvin TSE) |

c.c. AECOM Asia Company Limited (Attn: Mr Conrad NG) - Fax no: 3922 9797



| | | | | | | |
|---|--|----------------------|-------------|------------|--|-------------------------------|
| project IMPROVEMENT OF LION ROCK TUNNEL | no. | date | description | initials | drawing no. HNTDM18-104 | scale 1 : 15000 OAD |
| | name date | | | | | |
| drawing title ALIGNMENT OF THE TUNNEL TUBES AND EXTENT OF ROAD WIDENING WORKS | designed | F. H. LOK H/751 | SIGNED | 3-JUL-2018 | copyright reserved office NEW TERRITORIES REGION | |
| | drawn | H. M. FONG T8137E | SIGNED | 3-JUL-2018 | | |
| | checked | F. H. LOK H/751 | SIGNED | 3-JUL-2018 |  THE GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION HIGHWAYS DEPARTMENT | |
| | approved | | | | | |
| | I. M. TANG CHIEF HIGHWAY ENGINEER / HW EAST | | SIGNED | 6-JUL-2018 | | |

| NO. | DATE | DESCRIPTION | CHKD BY |
|-----|------|-------------|---------|
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| DATE | DESCRIPTION | DRW |
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STATUS

SCALE
 AS 1:400

PROJECTION UNIT
 METRES

KEY PLAN

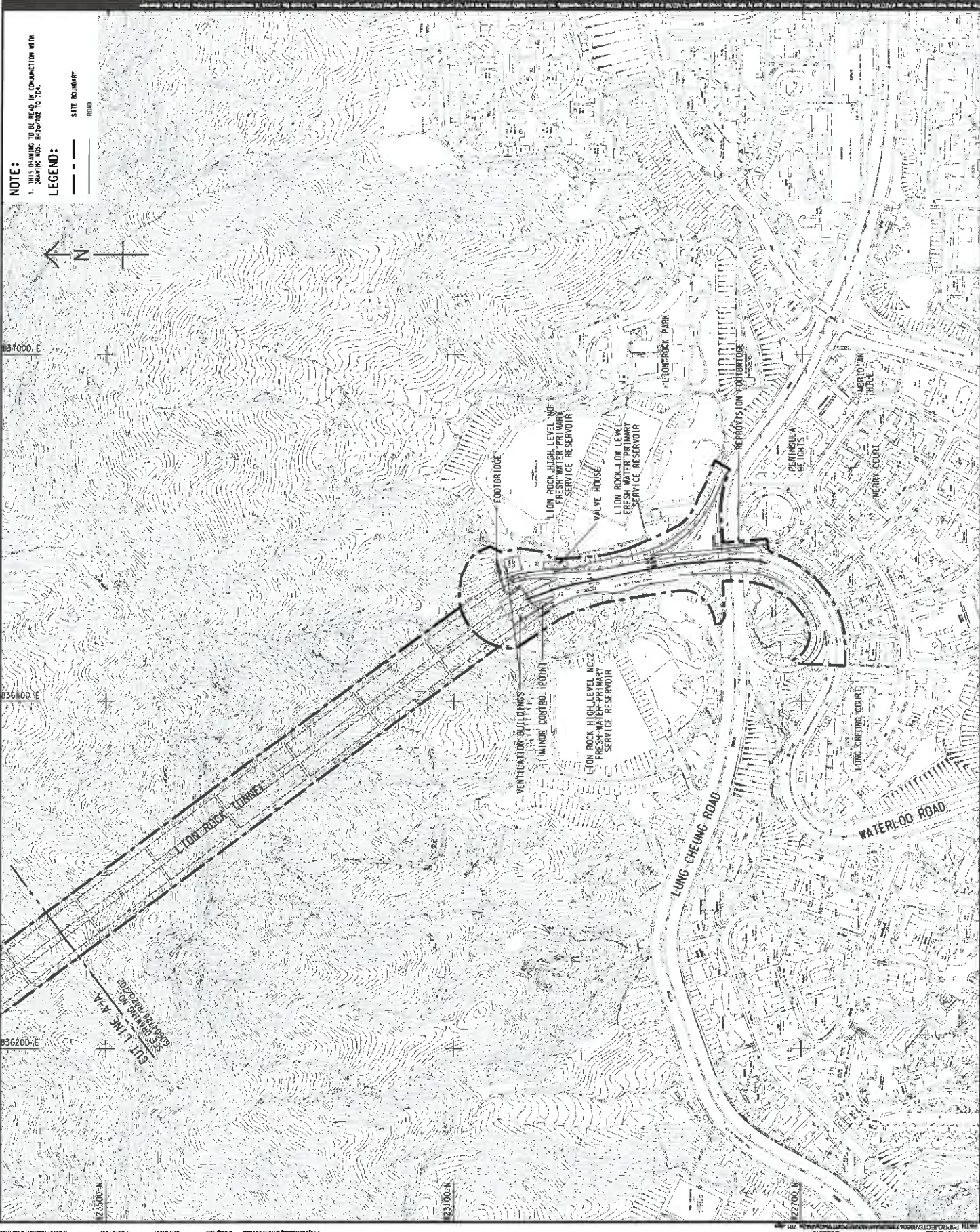
PROJECT NO.
 60304728

AGREEMENT NO.
 CE 482018(M)

SHEET TITLE
 LOCATION PLAN OF THE PROJECT

SHEET NUMBER
 SHEET 1 OF 4

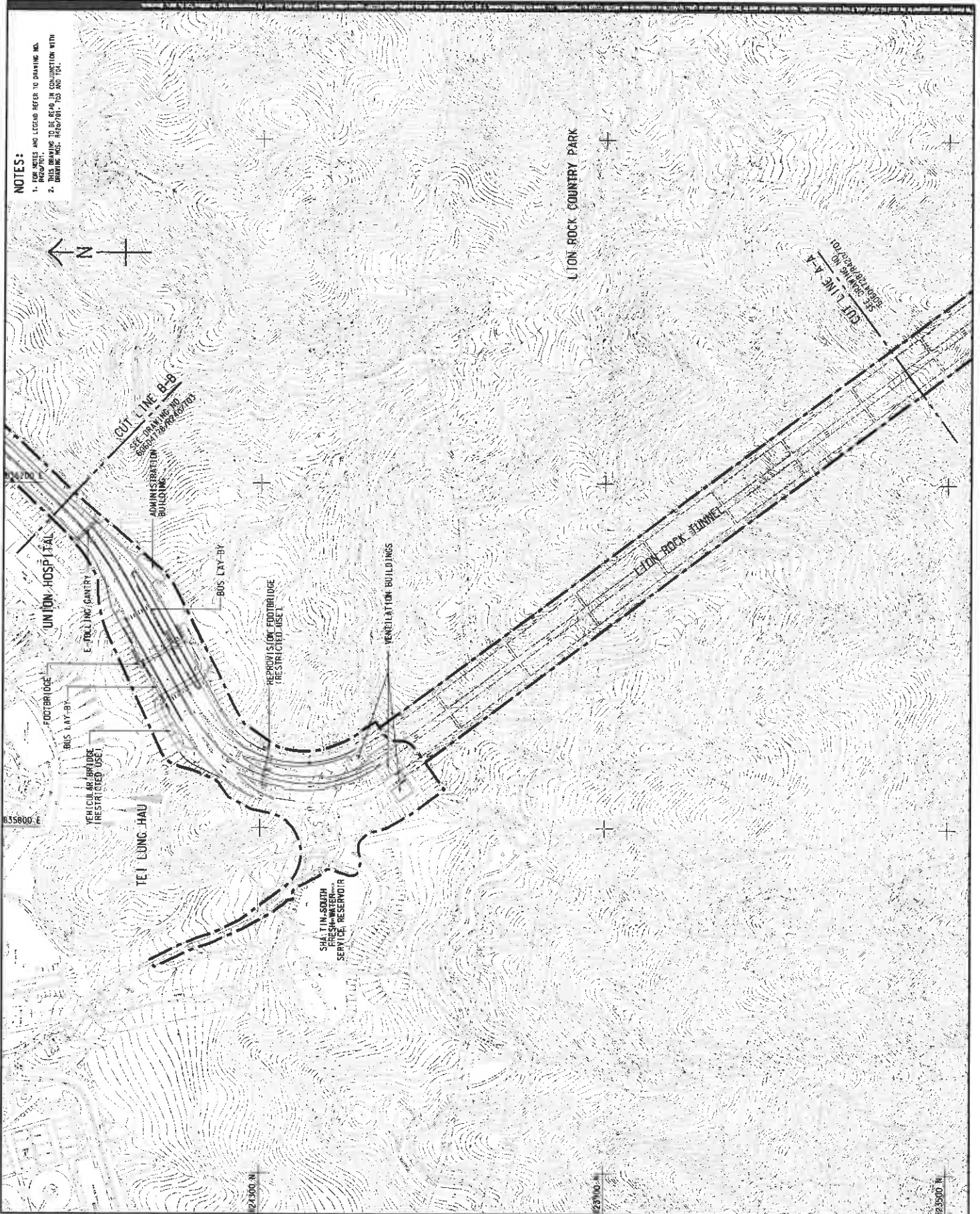
PROJECT NUMBER
 60304728/426/701



| NO. | DATE | DESCRIPTION | BY |
|-----|------|-------------|----|
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NOTES:

- FOR NOTES AND LEGEND REFER TO DRAWING NO. 60804728R-02a702 IN CONNECTION WITH DRAWING NOS. 60804701, 703 AND 704.



| NO. | DATE | DESCRIPTION | BY |
|-----|------|-------------|----|
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NOTES:
 1. FOR NOTES AND LEGEND REFER TO DRAWING NO. 60504728/F428/703.
 2. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60504728/F02 AND 60504728/F03.
 3. 835500 N
 834700 N
 837000 E
 836200 E

消防處
香港九龍尖沙咀東部康莊道1號
消防總部大廈



FIRE SERVICES DEPARTMENT
FIRE SERVICES HEADQUARTERS BUILDING,
No.1 Hong Chong Road,
Tsim Sha Tsui East, Kowloon,
Hong Kong.

本處檔號 OUR REF. : (172) in FSD GR 6-5/4 R Pt. 25
來函檔號 YOUR REF. : CWM: DCCH:wmy:60604728/04.08-2020000052T
電子郵件 E-mail : hkfsdenq@hkfsd.gov.hk
圖文傳真 FAX NO. : 2739 5879
電話 TEL NO. : 2733 7741

2 March 2020

AECOM Asia Co. Ltd
8/F, Grand Central Plaza, Tower 2,
138 Shatin Rural Committee Road,
Shatin, Hong Kong.
(Attn: Mr. David HO, Executive Director)

By fax (3922 9797) only

Dear Mr. HO,

**Agreement No. CE48/2018 (HY)
Improvement of Lion Rock Tunnel - Investigation
Request for Information of Dangerous Goods & Incident Records**

I refer to your email of 16.1.2020 regarding the captioned subject and reply below in response to your questions:-

1. No Dangerous Goods Licence was issued in respect of the captioned address.
2. A total of four incident records were found at the subject location. Please refer to **Appendix A** for details.

Should you have further questions, please feel free to contact the undersigned.

Yours sincerely,

(KONG Wai-chung)
for Director of Fire Services

Appendix A

Agreement No. CE48/2018 (HY)
Improvement of Lion Rock Tunnel – Investigation
Request for Information of Dangerous Goods & Incident Records

| No. | Date | Type of Incident | Address |
|-----|-----------|------------------|---|
| 1. | 10.3.2017 | No.1 Fire Alarm | Unit 602, Transport City Building, 107 Shing Wan Road |
| 2. | 21.1.2018 | Special Service | Near Lamppost N7441, Sha Tin Heights |
| 3. | 5.4.2018 | Late Call | Room 958, Sun Fong House, Sun Chui Estate |
| 4. | 16.6.2018 | Special Service | Near Lamppost EB7948, Fa Sam Hang |

Our Ref: DCCH:wmy:60604728/02.42-2021006552L

5 May 2021

By Hand and Fax (2739 5879)

Fire Services Department
Fire Services Headquarters Command
Management Group (MG)
9th Floor, Fire Services Headquarters Building
1 Hong Chong Road
Tsim Sha Tsui East, Kowloon

Attn: Mr. NG Wing Chit

Dear Sir,

**Agreement No. CE 48/2018 (HY)
Improvement of Lion Rock Tunnel – Investigation
Request for Information – Dangerous Goods Store and Incidents Records**

AECOM Asia Co. Ltd has been commissioned by Highways Department as the Consultant to undertake land contamination assessment for the captioned project. The Project Boundary is indicated in the figure enclosed.

As a part of the land contamination assessment and following the Practice Guide for Investigation and Remediation of Contaminated Land issued by EPD, we have to collect historical information regarding the past and present activities of the site. Further to our request with ref.: CWN:DCCH:wmy:60604728/04.08-2020000052T dated 2 January 2020 and your reply with ref.: (172) in FSD GR 6-5/4 R Pt. 25 dated 2 March 2020, we would like to request for the following information regarding the updated Project Boundary as indicated in the enclosed General Layout Plan:

1. Records of current and past (as early as the records are available) registration of Dangerous Goods storage (with type of dangerous goods, storage method, quantity, licence no., date of issue and storage location) within the updated Project Boundary;
2. Any records of reported accidents of spillage/leakage of dangerous goods stored within the updated Project Boundary; and
3. Any records of fire incidents within the updated Project Boundary.

Due to the tight programme of the Assignment, it would be much appreciated if you could reply to the above on or before 12 May 2021. Should you have any queries, please feel free to contact our Ms. Chloe Ng at 3922 9305 / Mr. Robert Yuen at 3922 9439. Thank you very much for your kind assistance.

Yours faithfully,
For and on behalf of
AECOM Asia Co. Ltd.



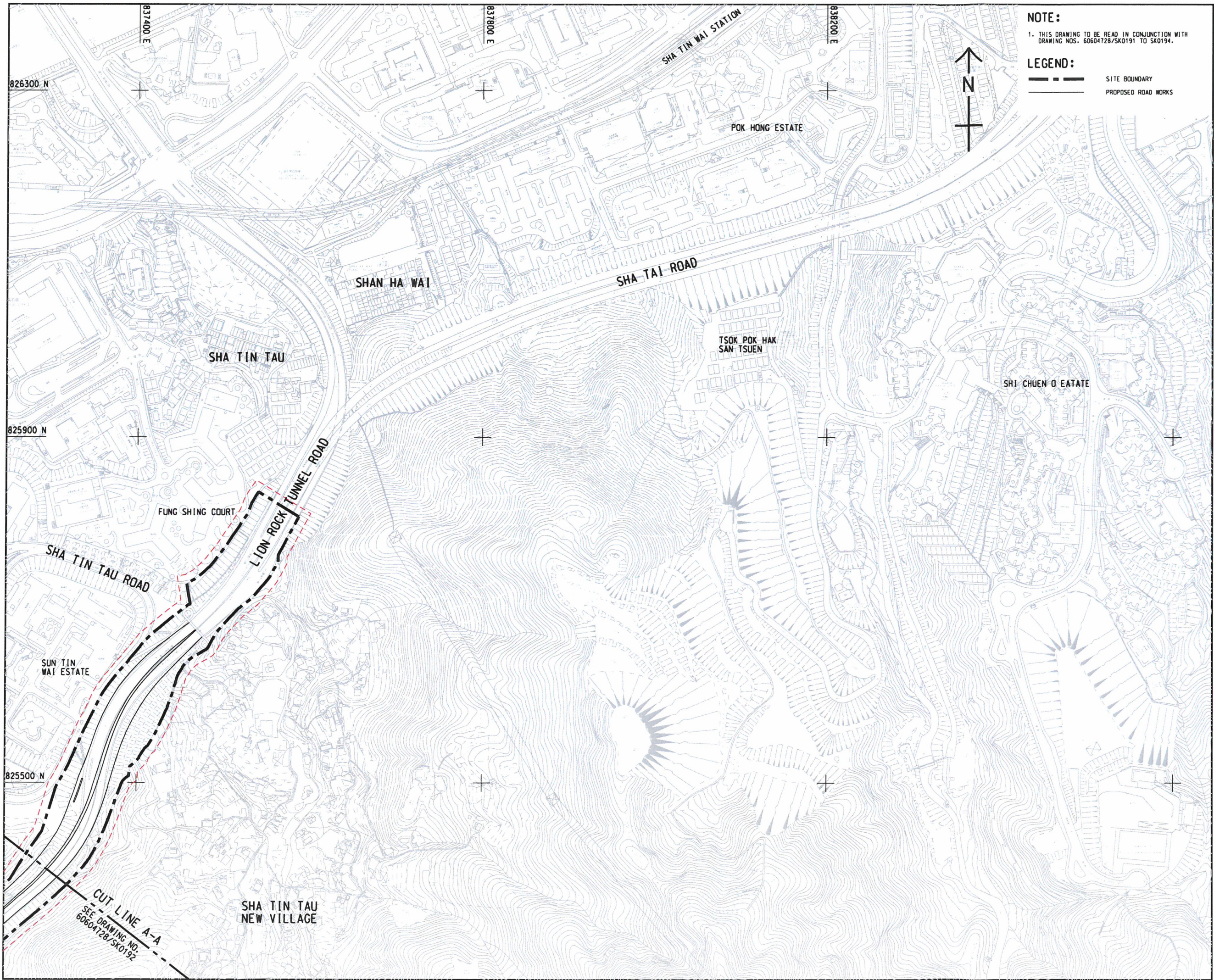
David Ho
Executive Director
Land Supply / Municipal, Hong Kong

Encl.

cc CE3/MW, HyD (Attn: Mr. LEUNG Siu-Kau, Kelvin)

(Fax: 3525 1450)

(w/o)



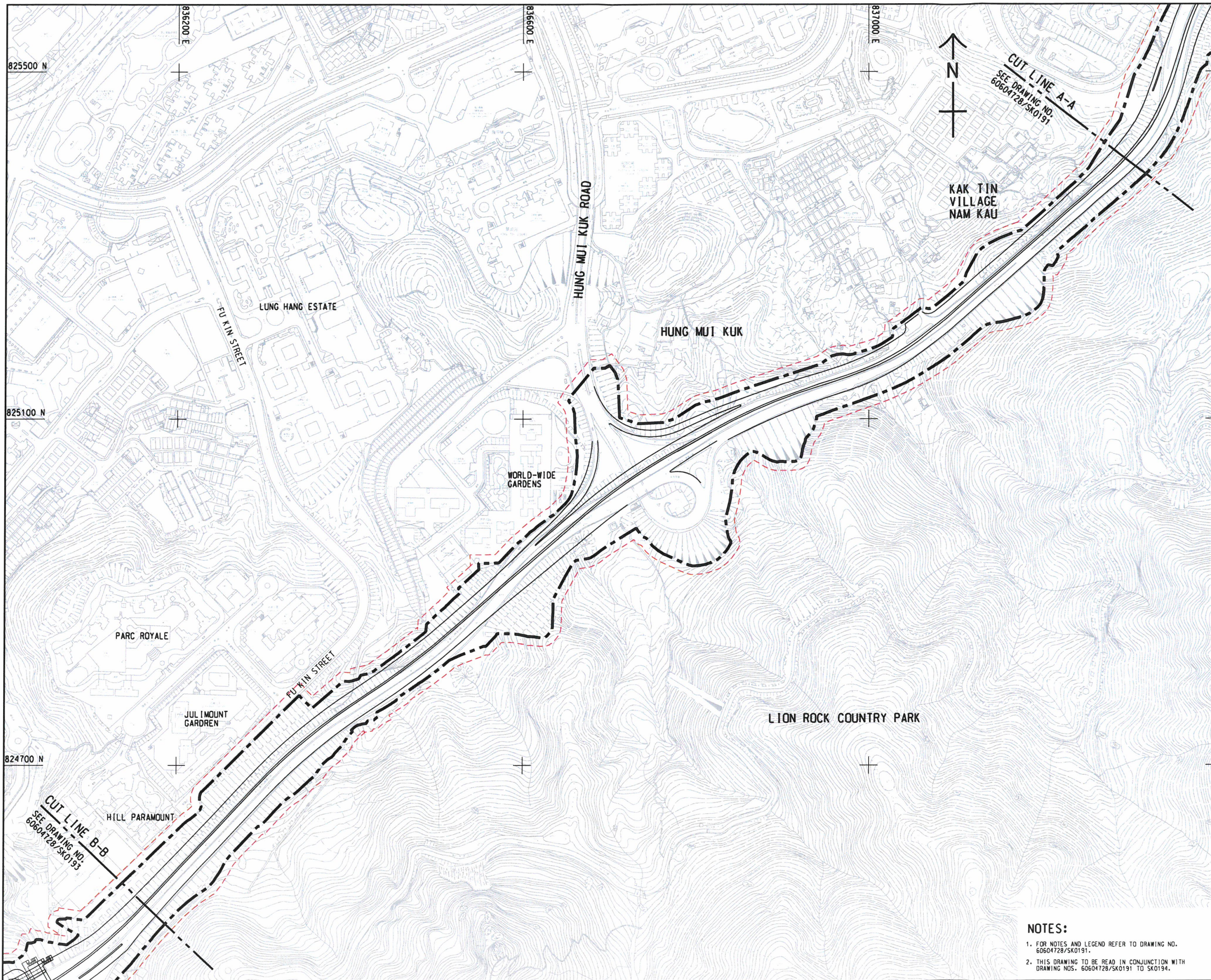
NOTE:

1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60604728/SK0191 TO SK0194.

LEGEND:

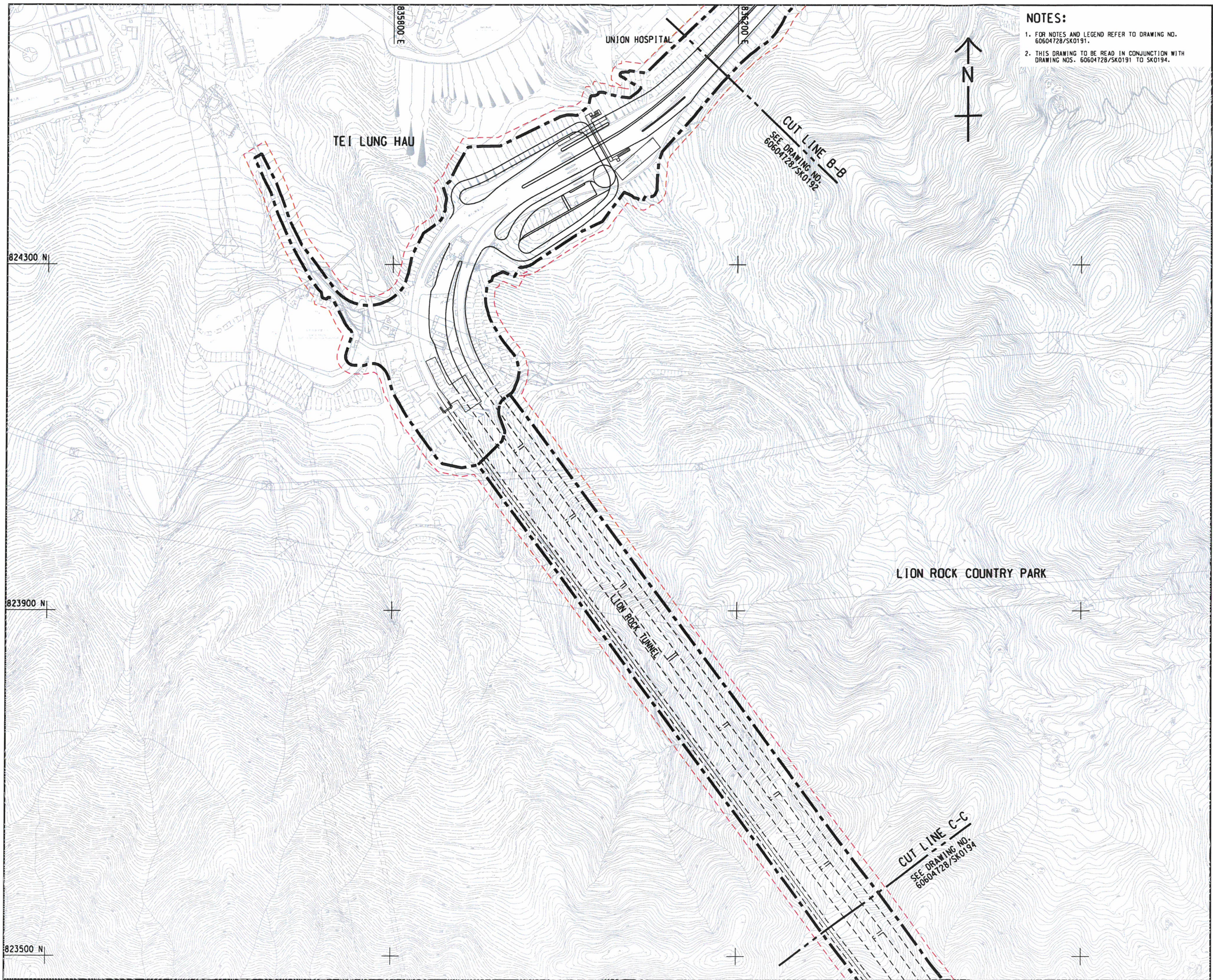
- SITE BOUNDARY
- PROPOSED ROAD WORKS

CUT LINE A-A
SEC. DRAWING NO.
60604728/SK0192



NOTES:

1. FOR NOTES AND LEGEND REFER TO DRAWING NO. 60604728/SK0191.
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60604728/SK0191 TO SK0194.

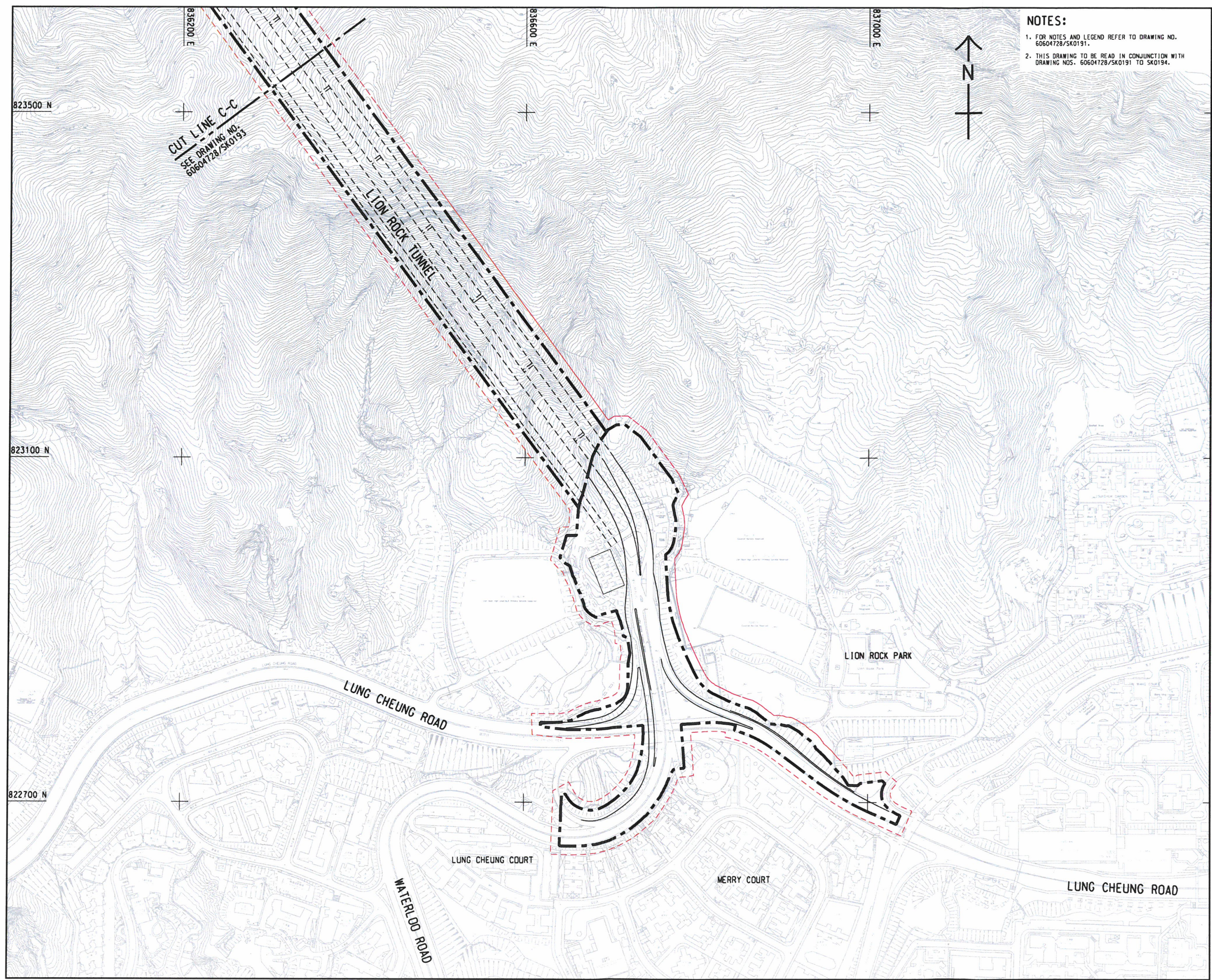
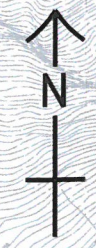


NOTES:

- 1. FOR NOTES AND LEGEND REFER TO DRAWING NO. 60604728/SK0191.
- 2. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60604728/SK0191 TO SK0194.

NOTES:

- 1. FOR NOTES AND LEGEND REFER TO DRAWING NO. 60604728/SK0191.
- 2. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60604728/SK0191 TO SK0194.



消防處

香港九龍尖沙咀東部康莊道 1 號
消防總部大廈



FIRE SERVICES DEPARTMENT
FIRE SERVICES HEADQUARTERS BUILDING,
No.1 Hong Chong Road,
Tsim Sha Tsui East, Kowloon,
Hong Kong.

本處檔號 **OUR REF.** : (47) in FSD GR 6-5/4 R Pt. 33
來函檔號 **YOUR REF.** : DCCH:wmy:60604728/02.42-2021006552L
電子郵件 **E-mail** : hkfsdenq@hkfsd.gov.hk
圖文傳真 **FAX NO.** : 2739 5879
電 話 **TEL NO.** : 2733 7741

4 June 2021

AECOM Asia Co. Ltd
12/F, Grand Central Plaza, Tower 2,
138 Shatin Rural Committee Road,
Shatin, Hong Kong.
(Attn: Mr. David HO, Executive Director)

Dear Mr. HO,

Agreement No. CE48/2018 (HY)
Improvement of Lion Rock Tunnel - Investigation
Request for Information of Dangerous Goods & Incident Records

I refer to your letter of 5.5.2021 and subsequent email of 28.5.2021 regarding the captioned subject and reply below in response to your questions:-

1. No Dangerous Goods Licence was issued in respect of the captioned address.
2. A total of two incident records were found at the subject location. Please refer to **Appendix A** for details.

Should you have further questions, please feel free to contact the undersigned.

Yours sincerely,

(NG Wing-chit)
for Director of Fire Services

Agreement No. CE48/2018 (HY)
Improvement of Lion Rock Tunnel – Investigation
Request for Information of Dangerous Goods & Incident Records

| No. | Date | Type of Incident | Address |
|------------|-------------|-------------------------------|------------------------------------|
| 1. | 29.10.2020 | Special Service (Spillage) | Lung Cheung Road Near LP E6986 |
| 2. | 6.1.2021 | Rubbish Fire | Lung Cheung Road Near LP AA8876 |

Yuen, Robert

From: ado_mg_1@hkfsd.gov.hk
Sent: Wednesday, June 9, 2021 3:05 PM
To: Yuen, Robert
Subject: [EXTERNAL] Re: FW: Re: Agreement No. CE 48/2018 (HY) Improvement of Lion Rock Tunnel – Investigation –

Dear Mr. YUEN,

Below please find the information of the incident for your reference:-

Location: Lung Cheung Road near Lamppost E6986
Details: leakage of diesel from a medium good vehicle

Regards,

(NG Wing-chit)
Assistant Divisional Officer
(Management Group)1
Fire Services Department
Office: 2733 7741
Fax: 2739 5879

From: "Yuen, Robert" <robert.yuen@aecom.com>
To: "ado_mg_1@hkfsd.gov.hk" <ado_mg_1@hkfsd.gov.hk>
Cc: "Tso, Shiu Heng Lawrence" <lawrence.tso@aecom.com>, "Man, Yu Kit Marty" <marty.man@aecom.com>
Date: 09/06/2021 10:38
Subject: FW: [EXTERNAL] Re: Agreement No. CE 48/2018 (HY) Improvement of Lion Rock Tunnel – Investigation –

Dear Mr. Ng,

I refer to your letter dated 4 June 2021 (ref.: (47) in FSD GR 6-5/4 R Pt. 33) regarding our captioned enquiry.

To further assist our land contamination assessment, could you please kindly provide any additional information regarding the "Special Service (Spillage)" incident at Lung Cheung Road near Lamp Post E6986 as detailed in your Appendix A? Any relevant information including but not limited to the material (i.e. the chemical) / detailed location / extent of the spillage of the mentioned incident would greatly assist in our assessment.

Thank you for your assistance. Should you have any queries, please do not hesitate to contact the undersigned.

Regards,
Robert Yuen
Graduate Environmental Consultant, Environment, Hong Kong
D +852-3922-9439
robert.yuen@aecom.com

AECOM
13/F Grand Central Plaza, Tower 2,
138 Shatin Rural Committee Road,
Shatin, Hong Kong

Yuen, Robert

From: ado_mg_1@hkfsd.gov.hk
Sent: Monday, June 28, 2021 11:15 AM
To: Yuen, Robert
Subject: [EXTERNAL] *Restricted: Re: 回覆: Re: FW: Re: Agreement No. CE 48/2018 (HY) Improvement of Lion Rock Tunnel – Investigation –

Dear Mr. YUEN,

In general, minor fuel leakage incident would be handled by frontline members using saw dust/ sand for absorbing the excessive leakage on road.

Regards,

(NG Wing-chit)
Assistant Divisional Officer
(Management Group)1
Fire Services Department
Office: 2733 7741
Fax: 2739 5879

From: "Yuen, Robert" <robert.yuen@aecom.com>
To: "ado_mg_1@hkfsd.gov.hk" <ado_mg_1@hkfsd.gov.hk>
Cc: "Tso, Shiu Heng Lawrence" <lawrence.tso@aecom.com>, "Chung, Yuen Man Anna" <anna.chung@aecom.com>, "Man, Yu Kit Marty" <marty.man@aecom.com>
Date: 28/06/2021 09:22
Subject: 回覆: [EXTERNAL] Re: FW: Re: Agreement No. CE 48/2018 (HY) Improvement of Lion Rock Tunnel – Investigation –

Dear Mr. Ng,

I refer to your email dated 9 June 2021 regarding our captioned enquiry and our telecom conversation dated today.

To further assist our land contamination assessment, regarding the "leakage of diesel from a medium good vehicle" incident, could you please kindly supplement the typical clean-up arrangement after such diesel leakage incident? Due to the tight programme, thankful if your response could be provided by today (28 June 2021).

Thank you for your assistance. Should you have any queries, please do not hesitate to contact the undersigned.

Regards,

Robert Yuen
Graduate Environmental Consultant, Environment, Hong Kong
D +852-3922-9439
robert.yuen@aecom.com

AECOM
13/F Grand Central Plaza, Tower 2,
138 Shatin Rural Committee Road,
Shatin, Hong Kong
T +852 3922 9000 F +852 3922 9797
www.aecom.com/hk/

Our Ref: DCCH:mlpm:60604728/02.42-2022000223L

7 January 2022

By Hand and Fax (Fax No.: 2739 5879)

Fire Services Department
Headquarters Command
Management Group
9th Floor, Fire Services Headquarters Building,
1 Hong Chong Road,
Tsim Sha Tsui East, Kowloon

Attn.: Mr. NG Wing Chit

Dear Sir,

**Agreement No. CE 48/2018 (HY)
Improvement of Lion Rock Tunnel – Investigation
Request for Information on Dangerous Goods Store and Incidents Records**

We refer to your letter dated 4 June 2021 (ref.: (47) in FSD GR 6-5/4 R Pt. 33) on the captioned. The said letter is enclosed herewith for your ease of reference. Since the Project Boundary has been updated, we would like to collect historical information listed in below regarding the past and present activities of the site as a part of the land contamination assessment and following the Practice Guide for Investigation and Remediation of Contaminated Land issued by EPD based on the updated Project Boundary.

1. Records of current and past (as early as the records are available) registration of Dangerous Goods storage (with type of dangerous goods, storage method, quantity, licence no., date of issue and storage location) within the updated Project Boundary;
2. Any records of reported accidents of spillage/leakage of dangerous goods stored within the updated Project Boundary; and
3. Any records of fire incidents within the updated Project Boundary.

Due to the tight programme of the Assignment, it would be much appreciated if you could reply to the above on or before 14 January 2022. Should you have any queries, please feel free to contact our Mr. Lawrence Tso at 3922-9422 or Mr. Kin Au at 3922-9507. Thank you.

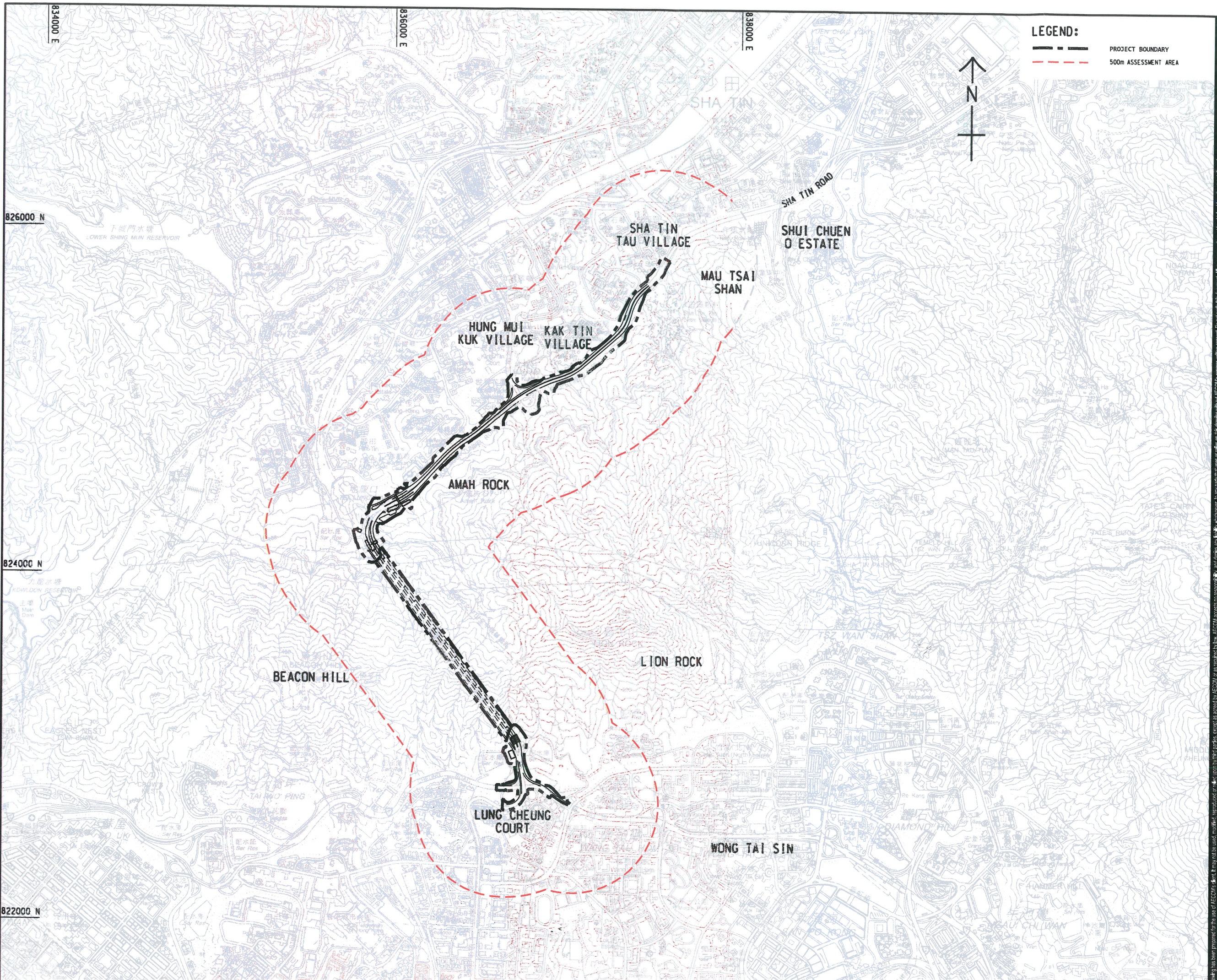
Yours faithfully,
For and on behalf of
AECOM Asia Co. Ltd.



David Ho
Executive Director
Land Supply / Municipal, Hong Kong

Encl.

ISO A1 994mm x 841mm
 Approved:
 Checked:
 Designer:
 Project Management Initials:
 2022/1/6
 Plot File by: ZHANGWRS
 PATH: P:\PROJECTS\60604728\DRAWING\GIS\KETCH\CHKSET\CHKSET0098.dgn



LEGEND:
 - - - PROJECT BOUNDARY
 - - - 500m ASSESSMENT AREA



AECOM

PROJECT
 項目
IMPROVEMENT OF LION ROCK TUNNEL INVESTIGATION

CLIENT
 業主
 **路政署**
HIGHWAYS DEPARTMENT

CONSULTANT
 工程顧問公司
AECOM Asia Company Ltd.
 www.aecom.com

SUB-CONSULTANTS
 分判工程顧問公司

ISSUE/REVISION
 修訂

| IR | DATE | DESCRIPTION | CHK. |
|----|------|-------------|------|
| 修訂 | 日期 | 內容摘要 | 核實 |
| | | | |
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STATUS
 附錄

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
 圖紙名稱
LOCATION PLAN OF THE PROJECT

SHEET NUMBER
 圖紙編號

This drawing has been prepared for the use of AECOM's client. It may not be used, modified, reproduced or distributed without the prior written consent of AECOM. All measurements must be obtained from the stated drawings.

消防處
香港九龍尖沙咀東部康莊道1號
消防總部大廈



160
FIRE SERVICES DEPARTMENT
FIRE SERVICES HEADQUARTERS BUILDING,
No.1 Hong Chong Road,
Tsim Sha Tsui East, Kowloon,
Hong Kong.

本處檔號 OUR REF. : (160) in FSD GR 6-5/4 R Pt. 38
來函檔號 YOUR REF. : DCCH:mlpm:60604728/02.42-2022000223L
電子郵件 E-mail : hkfsdenq@hkfsd.gov.hk
圖文傳真 FAX NO. : 2739 5879
電話 TEL NO. : 2733 7741

8 February 2022

AECOM Asia Co. Ltd
12/F, Grand Central Plaza, Tower 2,
138 Shatin Rural Committee Road,
Shatin, Hong Kong.
(Attn: Mr. David HO, Executive Director)

Dear Mr. HO,

Agreement No. CE48/2018 (HY)
Improvement of Lion Rock Tunnel - Investigation
Request for Information of Dangerous Goods & Incident Records

I refer to your letter of 7.1.2022 regarding the captioned subject and reply below in response to your questions:-

1. No Dangerous Goods Licence was issued in respect of the captioned address.
2. A total of three incident records were found at the subject location. Please refer to **Appendix A** for details.

Should you have further questions, please feel free to contact the undersigned.

Yours sincerely,

(NG Wing-chit)
for Director of Fire Services

Agreement No. CE48/2018 (HY)

Improvement of Lion Rock Tunnel - Investigation

Request for Information of Dangerous Goods & Incident Records

| No. | Date | Type of Incident | Address |
|-----|------------|------------------|--|
| 1. | 1.7.2019 | Vehicle Fire | NEAR LAMPPOST BF1962, NEAR LION ROCK TUNNEL ROAD |
| 2. | 6.1.2021 | Rubbish Fire | NEAR LAMPPOST AA8876, NEAR LUNG CHEUNG ROAD |
| 3. | 20.10.2021 | No. 1 Fire Alarm | LUNG CHEUNG ROAD |

Au, Kin

From: ado_mg_1@hkfsd.gov.hk
Sent: Wednesday, February 16, 2022 2:05 PM
To: Au, Kin
Subject: [EXTERNAL] *Restricted: Re: FW: CE 48/2018 (HY) Improvement of Lion Rock Tunnel - Investigation - Further Enquires on Incident Records

Dear Mr. AU,

In response to you enquiry this morning, please be informed that "KCG Bound" stands for Kwai Chung Bound.

Regards,

(NG Wing-chit)
Assistant Divisional Officer
(Management Group)1
Fire Services Department
Office: 2733 7741
Fax: 2739 5879

Dear Mr. AU,

Below please find the address of the incident:

Lung Cheung Road, KCG Bound near lamppost AA8872B.

Regards,

(NG Wing-chit)
Assistant Divisional Officer
(Management Group)1
Fire Services Department
Office: 2733 7741
Fax: 2739 5879

From: "Au, Kin" <kin.au@aecom.com>
To: "ado_mg_1@hkfsd.gov.hk" <ado_mg_1@hkfsd.gov.hk>
Cc: "Tso, Shiu Heng Lawrence" <lawrence.tso@aecom.com>
Date: 11/02/2022 12:06
Subject: FW: CE 48/2018 (HY) Improvement of Lion Rock Tunnel - Investigation - Further Enquires on Incident Records

Dear Mr. NG,

We refer to your letter dated 8 February 2022 (ref: (160) in FSD GR 6-5/4 R Pt. 38) on the captioned enquiry. The said letter is attached herewith for your ease of reference.

Refer to incident record No. 3 in Appendix A, may I know if the incident "No. 1 Fire Alarm at Lung Cheung Road" had a more detailed location (ie. Nearest lamppost, street no. / Landlot / Slope etc) due to the large scale of the location?

Please do not hesitate to contact the undersigned at 3922-9507 or our Mr. Lawrence Tso at 3922-9422 should you have any queries.

Thank you in advance for your assistance.

Regards,

Kin Au

Graduate Environmental Consultant, Environment, Hong Kong

D +852 3922 9507

kin.au@aecom.com

AECOM

aecom.com

Delivering a better world

[LinkedIn](#) | [Twitter](#) | [Facebook](#) | [Instagram](#)

From: Au, Kin

Sent: Thursday, January 20, 2022 11:59 AM

To: ado_mg_1@hkfsd.gov.hk

Cc: Tso, Shiu Heng Lawrence <lawrence.tso@aecom.com>; Chiu, Samson <Samson.Chiu@aecom.com>

Subject: CE 48/2018 (HY) Improvement of Lion Rock Tunnel - Investigation - Further Enquires on Incident Records

Dear Mr. NG,

We refer to our letter dated 7 January 2022 (ref: DCCH:mlpm:60604728/02.42-2022000223L) on the captioned enquiry. The said letter is attached herewith for your ease of reference.

As per our tele-conversation this morning, please also find attached the drawings highlighting the change in area between the original and updated project boundaries to facilitate in your review.

As the submission our assessment report is imminent, we would be deeply appreciated if you could reply us at your earliest convenience, preferably on or before 27 January 2022.

Please do not hesitate to contact the undersigned at 3922-9507 or our Mr. Lawrence Tso at 3922-9422 should you have any queries.

Thank you in advance for your assistance.

Regards,

Kin Au

Graduate Environmental Consultant, Environment, Hong Kong

D +852 3922 9507

kin.au@aecom.com

AECOM

aecom.com

Delivering a better world

[LinkedIn](#) | [Twitter](#) | [Facebook](#) | [Instagram](#)

[attachment "20210208 FSD reply.pdf" deleted by ADO MG1/FSD/HKSARG]

Our Ref: DCCH:mlpm:60604728/02.42-2022007580L

31 May 2022

By Hand and Fax (Fax No.: 2739 5879)

Fire Services Department
Headquarters Command
Management Group
9th Floor, Fire Services Headquarters Building,
1 Hong Chong Road,
Tsim Sha Tsui East, Kowloon

Attn.: Mr. NG Wing Chit

Dear Sir,

**Agreement No. CE 48/2018 (HY)
Improvement of Lion Rock Tunnel – Investigation
Request for Information on Dangerous Goods Store and Incidents Records**

We refer to your letter dated 8 February 2022 (ref.: (160) in FSD GR 6-5/4 R Pt. 38) on the captioned. The said letter is enclosed herewith for your ease of reference. Since the Project Boundary has been updated, which is highlighted in the enclosure for your information, we would like to collect historical information listed in below regarding the past and present activities of the site as a part of the land contamination assessment and following the Practice Guide for Investigation and Remediation of Contaminated Land issued by EPD based on the updated Project Boundary.

1. Records of current and past (as early as the records are available) registration of Dangerous Goods storage (with type of dangerous goods, storage method, quantity, licence no., date of issue and storage location) within the updated Project Boundary;
2. Any records of reported accidents of spillage/leakage of dangerous goods stored within the updated Project Boundary; and
3. Any records of fire incidents within the updated Project Boundary.

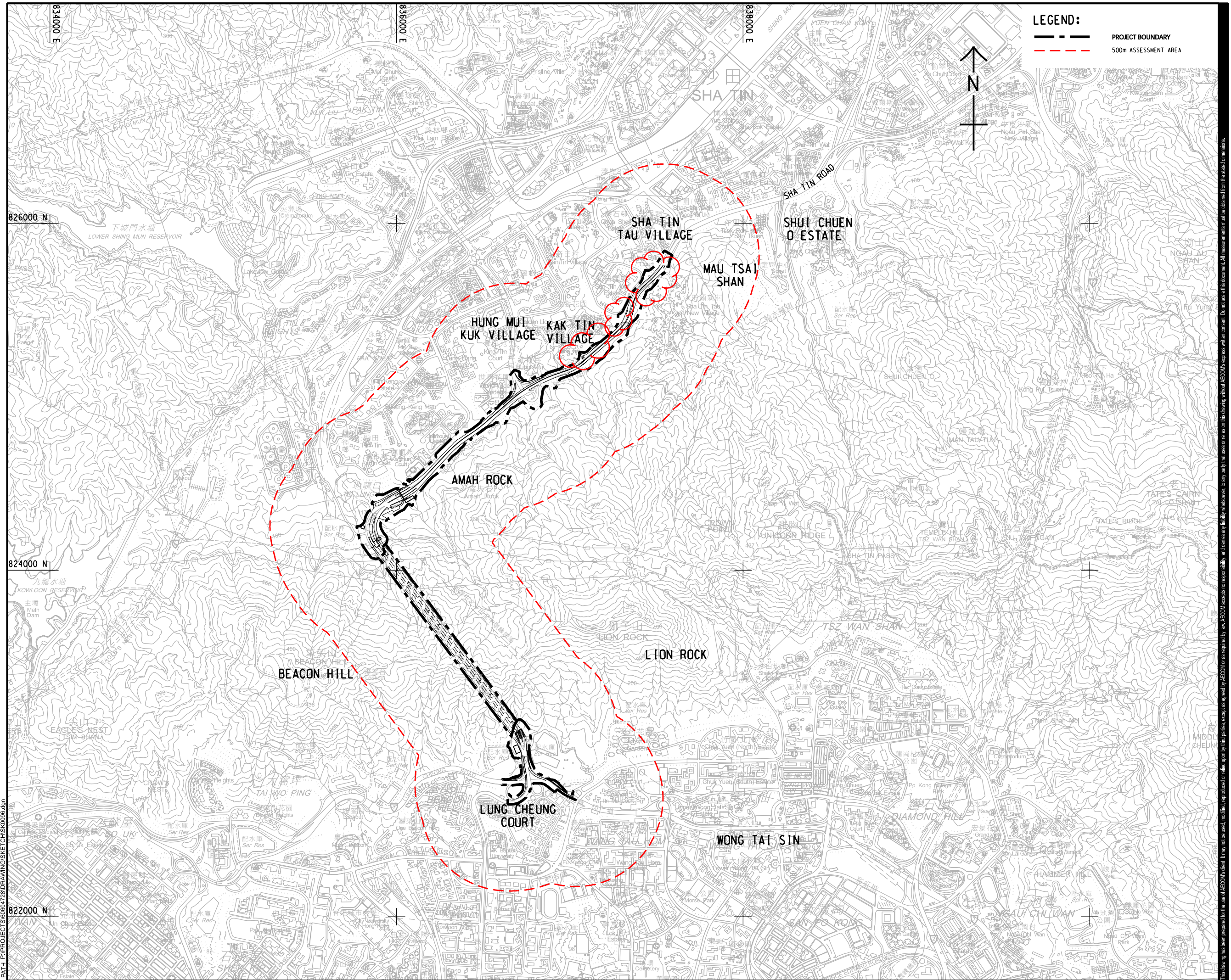
Due to the tight programme of the Assignment, it would be much appreciated if you could reply to the above on or before 14 June 2022. Should you have any queries, please feel free to contact our Mr. Lawrence Tso at 3922-9422 or Mr. Kin Au at 3922-9507. Thank you.

Yours faithfully,
For and on behalf of
AECOM Asia Co. Ltd.



David Ho
Executive Director
Land Supply / Municipal, Hong Kong

Encl.



LEGEND:
 - - - PROJECT BOUNDARY
 - - - 500m ASSESSMENT AREA

AECOM

PROJECT
 項目
IMPROVEMENT OF LION ROCK TUNNEL - INVESTIGATION

CLIENT
 業主
 **HIGHWAYS DEPARTMENT**

CONSULTANT
 顧問公司
 AECOM Asia Company Ltd.
 www.aecom.com

SUB-CONSULTANTS
 分判工程師/顧問公司

ISSUE/REVISION
 修訂

| IR | DATE | DESCRIPTION | CHK. |
|----|------|-------------|------|
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| | | | |

STATUS
 狀況

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
 圖紙名稱
 LOCATION PLAN OF THE PROJECT

SHEET NUMBER
 圖紙編號

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消防處

香港九龍尖沙咀東部康莊道1號
消防總部大廈



FIRE SERVICES DEPARTMENT
FIRE SERVICES HEADQUARTERS BUILDING,
No.1 Hong Chong Road,
Tsim Sha Tsui East, Kowloon,
Hong Kong.

本處檔號 **OUR REF.** : (160) in FSD GR 6-5/4 R Pt. 38
來函檔號 **YOUR REF.** : DCCH:mlpm:60604728/02.42-2022000223L
電子郵件 **E-mail** : hkfsdenq@hkfsd.gov.hk
圖文傳真 **FAX NO.** : 2739 5879
電話 **TEL NO.** : 2733 7741

8 February 2022

AECOM Asia Co. Ltd
12/F, Grand Central Plaza, Tower 2,
138 Shatin Rural Committee Road,
Shatin, Hong Kong.
(Attn: Mr. David HO, Executive Director)

Dear Mr. HO,

Agreement No. CE48/2018 (HY)
Improvement of Lion Rock Tunnel - Investigation
Request for Information of Dangerous Goods & Incident Records

I refer to your letter of 7.1.2022 regarding the captioned subject and reply below in response to your questions:-

1. No Dangerous Goods Licence was issued in respect of the captioned address.
2. A total of three incident records were found at the subject location. Please refer to **Appendix A** for details.

Should you have further questions, please feel free to contact the undersigned.

Yours sincerely,

(NG Wing-chit)

for Director of Fire Services

Agreement No. CE48/2018 (HY)

Improvement of Lion Rock Tunnel - Investigation

Request for Information of Dangerous Goods & Incident Records

| No. | Date | Type of Incident | Address |
|-----|------------|------------------|--|
| 1. | 1.7.2019 | Vehicle Fire | NEAR LAMPPOST BF1962, NEAR LION ROCK TUNNEL ROAD |
| 2. | 6.1.2021 | Rubbish Fire | NEAR LAMPPOST AA8876, NEAR LUNG CHEUNG ROAD |
| 3. | 20.10.2021 | No. 1 Fire Alarm | LUNG CHEUNG ROAD |

消防處
香港九龍尖沙咀東部康莊道1號
消防總部大廈



FIRE SERVICES DEPARTMENT
FIRE SERVICES HEADQUARTERS BUILDING,
No.1 Hong Chong Road,
Tsim Sha Tsui East, Kowloon,
Hong Kong.

本處檔號 OUR REF. : (114) in FSD GR 6-5/4 R Pt. 41
來函檔號 YOUR REF. : DCCH:mlpm:60604728/02.42-2022007580L
電子郵件 E-mail : hkfsdenq@hkfsd.gov.hk
圖文傳真 FAX NO. : 2739 5879
電話 TEL NO. : 2733 7741

17 June 2022

AECOM Asia Co. Ltd
12/F, Grand Central Plaza, Tower 2,
138 Shatin Rural Committee Road,
Shatin, Hong Kong.
(Attn: Mr. David HO, Executive Director)

Dear Mr. HO,

Agreement No. CE 48/2018 (HY)
Improvement of Lion Rock Tunnel - Investigation
Request for Information of Dangerous Goods & Incident Records

I refer to your letter of 31.5.2022 regarding the captioned subject and reply below in response to your questions:-

1. No Dangerous Goods Licence was issued in respect of the captioned address.
2. A total of three incident records were found at the subject location. Please refer to **Appendix A** for details.

Should you have further questions, please feel free to contact the undersigned.

Yours sincerely,

(NG Wing-chit)
for Director of Fire Services

Agreement No. CE 48/2018 (HY)

Improvement of Lion Rock Tunnel - Investigation

Request for Information of Dangerous Goods & Incident Records

| No. | Date | Type of Incident | Address |
|-----|------------|------------------|--|
| 1. | 1.7.2019 | Vehicle Fire | NEAR LAMPPOST BF1962, NEAR LION ROCK TUNNEL ROAD, NT BOUND |
| 2. | 6.1.2021 | Rubbish Fire | NEAR LAMPPOST AA8876, NEAR LUNG CHEUNG ROAD, KCG BOUND |
| 3. | 20.10.2021 | No. 1 Fire Alarm | LUNG CHEUNG ROAD, KCG BOUND, NEAR LAMPPOST AA8872B |

Appendix C
Photographic Records of Site Walkover

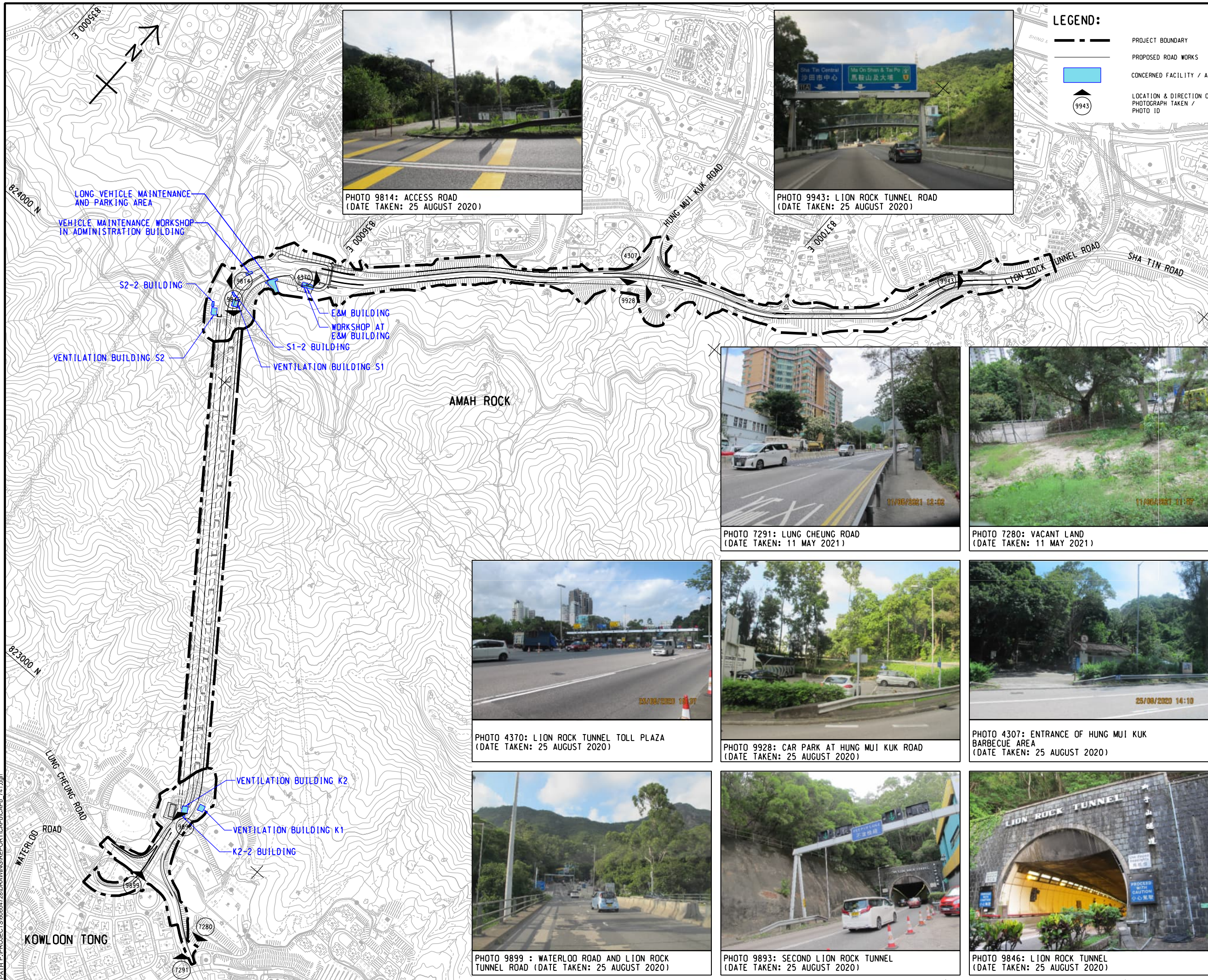


PHOTO 9814: ACCESS ROAD
 (DATE TAKEN: 25 AUGUST 2020)



PHOTO 9943: LION ROCK TUNNEL ROAD
 (DATE TAKEN: 25 AUGUST 2020)



PHOTO 7291: LUNG CHEUNG ROAD
 (DATE TAKEN: 11 MAY 2021)



PHOTO 7280: VACANT LAND
 (DATE TAKEN: 11 MAY 2021)



PHOTO 4370: LION ROCK TUNNEL TOLL PLAZA
 (DATE TAKEN: 25 AUGUST 2020)



PHOTO 9928: CAR PARK AT HUNG MUI KUK ROAD
 (DATE TAKEN: 25 AUGUST 2020)



PHOTO 4307: ENTRANCE OF HUNG MUI KUK BARBECUE AREA
 (DATE TAKEN: 25 AUGUST 2020)



PHOTO 9899: WATERLOO ROAD AND LION ROCK TUNNEL ROAD
 (DATE TAKEN: 25 AUGUST 2020)



PHOTO 9893: SECOND LION ROCK TUNNEL
 (DATE TAKEN: 25 AUGUST 2020)



PHOTO 9846: LION ROCK TUNNEL
 (DATE TAKEN: 25 AUGUST 2020)

LEGEND:

- PROJECT BOUNDARY
- PROPOSED ROAD WORKS
- CONCERNED FACILITY / AREA
- 9943 LOCATION & DIRECTION OF PHOTOGRAPH TAKEN / PHOTO ID

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IMPROVEMENT OF LION ROCK TUNNEL - INVESTIGATION

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路政署 HIGHWAYS DEPARTMENT

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ISSUE/REVISION

| IR | DATE | DESCRIPTION | CHK. |
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STATUS

SCALE **DIMENSION UNIT**

A3 1: 10000 METRES

KEY PLAN

PROJECT NO. **AGREEMENT NO.**

60604728 CE 48/2018(HY)

SHEET TITLE

PHOTOGRAPHIC RECORDS OF SITE WALKOVER

SHEET NUMBER

60604728/CAPb/PR1

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PHOTO 2689: ELECTRONIC COMPONENTS WORKSHOP
 (DATE TAKEN: 25 AUGUST 2020)

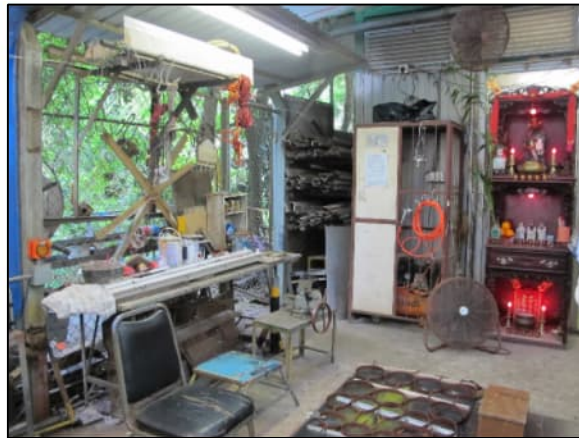


PHOTO 9782: WORKSHOP
 (DATE TAKEN: 25 AUGUST 2020)



PHOTO 2677: WORKSHOP
 (DATE TAKEN: 25 AUGUST 2020)



PHOTO 2683: CHEMICAL STORAGE CABINET IN WORKSHOP
 (DATE TAKEN: 25 AUGUST 2020)



PHOTO 2679: CHEMICAL STORAGE IN WORKSHOP
 (DATE TAKEN: 25 AUGUST 2020)

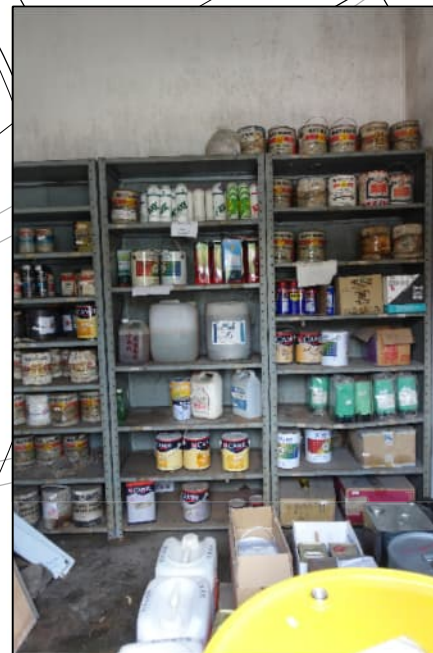


PHOTO 2709: CHEMICAL STORE ROOM
 (DATE TAKEN: 25 AUGUST 2020)



PHOTO 9794: CHEMICAL STORE ROOM
 (DATE TAKEN: 25 AUGUST 2020)



PHOTO 9809: STORE ROOM OF APPLIANCES
 (DATE TAKEN: 25 AUGUST 2020)



PHOTO 9793: CHEMICAL STORE ROOM
 (DATE TAKEN: 25 AUGUST 2020)



PHOTO 4378: GENERATOR
 (DATE TAKEN: 25 AUGUST 2020)

LEGEND:

- PROJECT BOUNDARY
- - - PROPOSED ROAD WORKS
- CONCERNED FACILITY / AREA
- HOTSPOT
- ▲ LOCATION & DIRECTION OF PHOTOGRAPH TAKEN / PHOTO ID

9943

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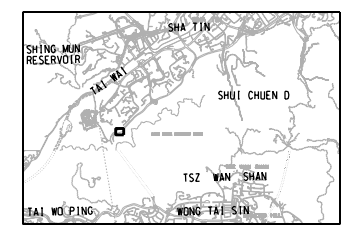
STATUS
 狀態

SCALE
 比例

DIMENSION UNIT
 尺寸單位

A3 1 : 500 METRES

KEY PLAN A3 1 : 160000



PROJECT NO.
 項目編號
 60604728

AGREEMENT NO.
 協議編號
 CE 48/2018(HY)

SHEET TITLE
 圖則名稱
 PHOTOGRAPHIC RECORDS OF SITE WALKOVER (E&M BUILDING AT SHA TIN PORTAL)

SHEET NUMBER
 圖則編號
 60604728/CAPb/PR2

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PHOTO 9713: CHEMICAL WASTE STORAGE AREA IN VEHICLE MAINTENANCE WORKSHOP IN ADMINISTRATION BUILDING (DATE TAKEN: 25 AUGUST 2020)



PHOTO 9731: CHEMICAL STORAGE AREA IN VEHICLE MAINTENANCE WORKSHOP IN ADMINISTRATION BUILDING (DATE TAKEN: 25 AUGUST 2020)



PHOTO 9738: LOBBY OF ADMINISTRATION BUILDING (DATE TAKEN: 25 AUGUST 2020)



PHOTO 2552: CHEMICAL STORAGE AREA IN VEHICLE MAINTENANCE WORKSHOP IN ADMINISTRATION BUILDING (DATE TAKEN: 25 AUGUST 2020)



PHOTO 2506: VEHICLE MAINTENANCE WORKSHOP IN ADMINISTRATION BUILDING (DATE TAKEN: 25 AUGUST 2020)



PHOTO 2518: AIR COMPRESSOR IN VEHICLE MAINTENANCE WORKSHOP IN ADMINISTRATION BUILDING (DATE TAKEN: 25 AUGUST 2020)



PHOTO 2526: CHEMICAL WASTE STORAGE AREA IN VEHICLE MAINTENANCE WORKSHOP IN ADMINISTRATION BUILDING (DATE TAKEN: 25 AUGUST 2020)

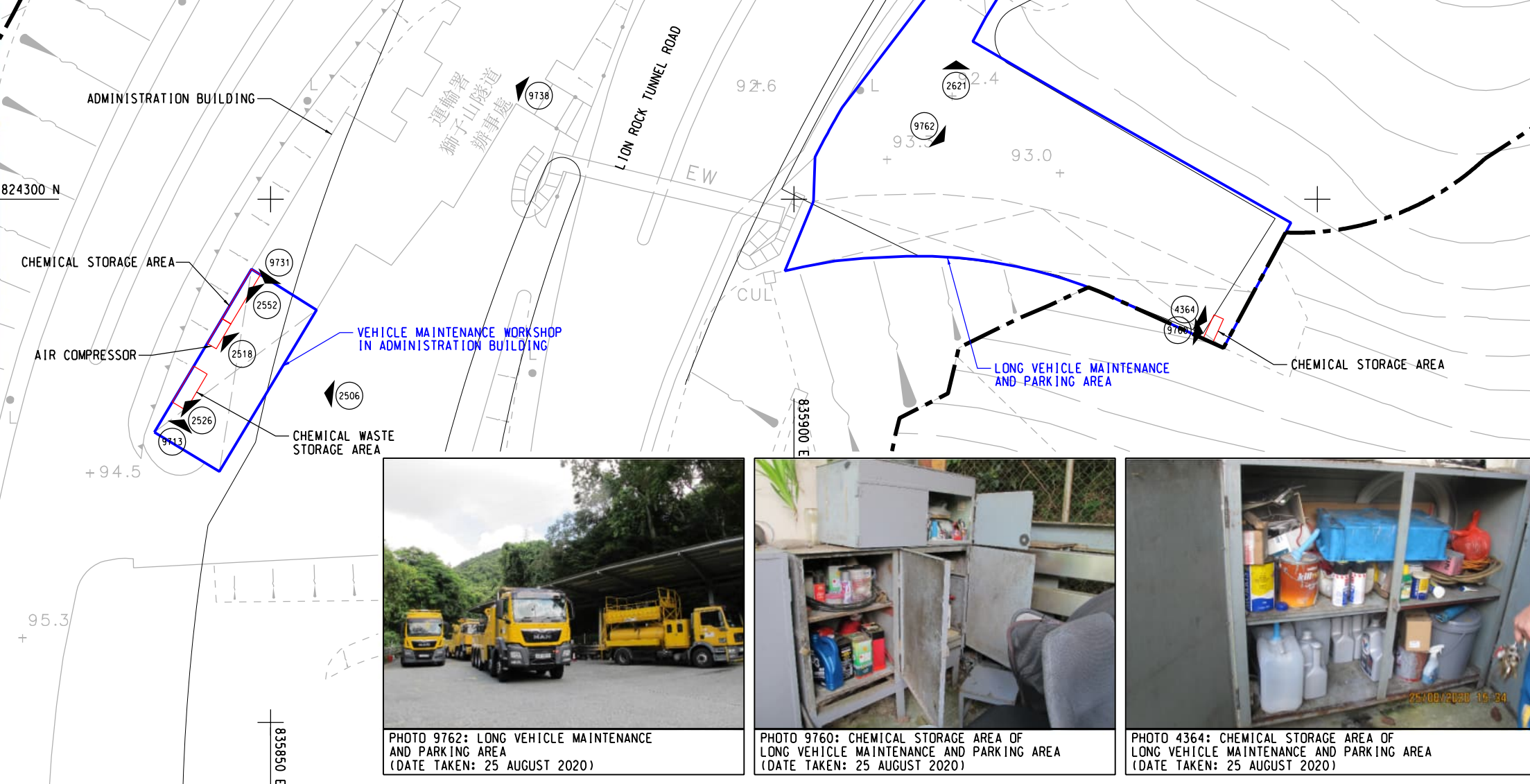


PHOTO 9762: LONG VEHICLE MAINTENANCE AND PARKING AREA (DATE TAKEN: 25 AUGUST 2020)



PHOTO 9760: CHEMICAL STORAGE AREA OF LONG VEHICLE MAINTENANCE AND PARKING AREA (DATE TAKEN: 25 AUGUST 2020)



PHOTO 4364: CHEMICAL STORAGE AREA OF LONG VEHICLE MAINTENANCE AND PARKING AREA (DATE TAKEN: 25 AUGUST 2020)

LEGEND:

- PROJECT BOUNDARY
- PROPOSED ROAD WORKS
- CONCERNED FACILITY / AREA
- HOTSPOT
- LOCATION & DIRECTION OF PHOTOGRAPH TAKEN / PHOTO ID

IMPROVEMENT OF LION ROCK TUNNEL - INVESTIGATION



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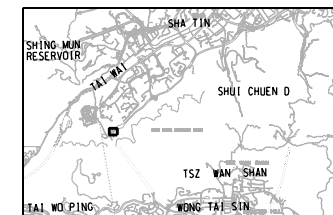
| NO. | DATE | DESCRIPTION | CHK. |
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STATUS

SCALE DIMENSION UNIT

A3 1:500 METRES

KEY PLAN



PROJECT NO. AGREEMENT NO.

60604728 CE 48/2018(HY)

SHEET TITLE

PHOTOGRAPHIC RECORDS OF SITE WALKOVER (ADMINISTRATION BUILDING AT SHA TIN PORTAL)

SHEET NUMBER

60604728/CAPb/PR3

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PHOTO 2752: TRANSFORMER S1-2 IN S1-2 BUILDING (DATE TAKEN: 25 AUGUST 2020)



PHOTO 2783: TRANSFORMER S1 IN VENTILATION BUILDING S1 (DATE TAKEN: 25 AUGUST 2020)



PHOTO 9838: GENERATOR S1 IN VENTILATION BUILDING S1 (DATE TAKEN: 25 AUGUST 2020)



PHOTO 9827: GENERATOR S1-2 IN S1-2 BUILDING (DATE TAKEN: 25 AUGUST 2020)



PHOTO 9840: GENERATOR S1 IN VENTILATION BUILDING S1 (DATE TAKEN: 25 AUGUST 2020)



PHOTO 2784: VENTILATION BUILDING S1 (DATE TAKEN: 25 AUGUST 2020)



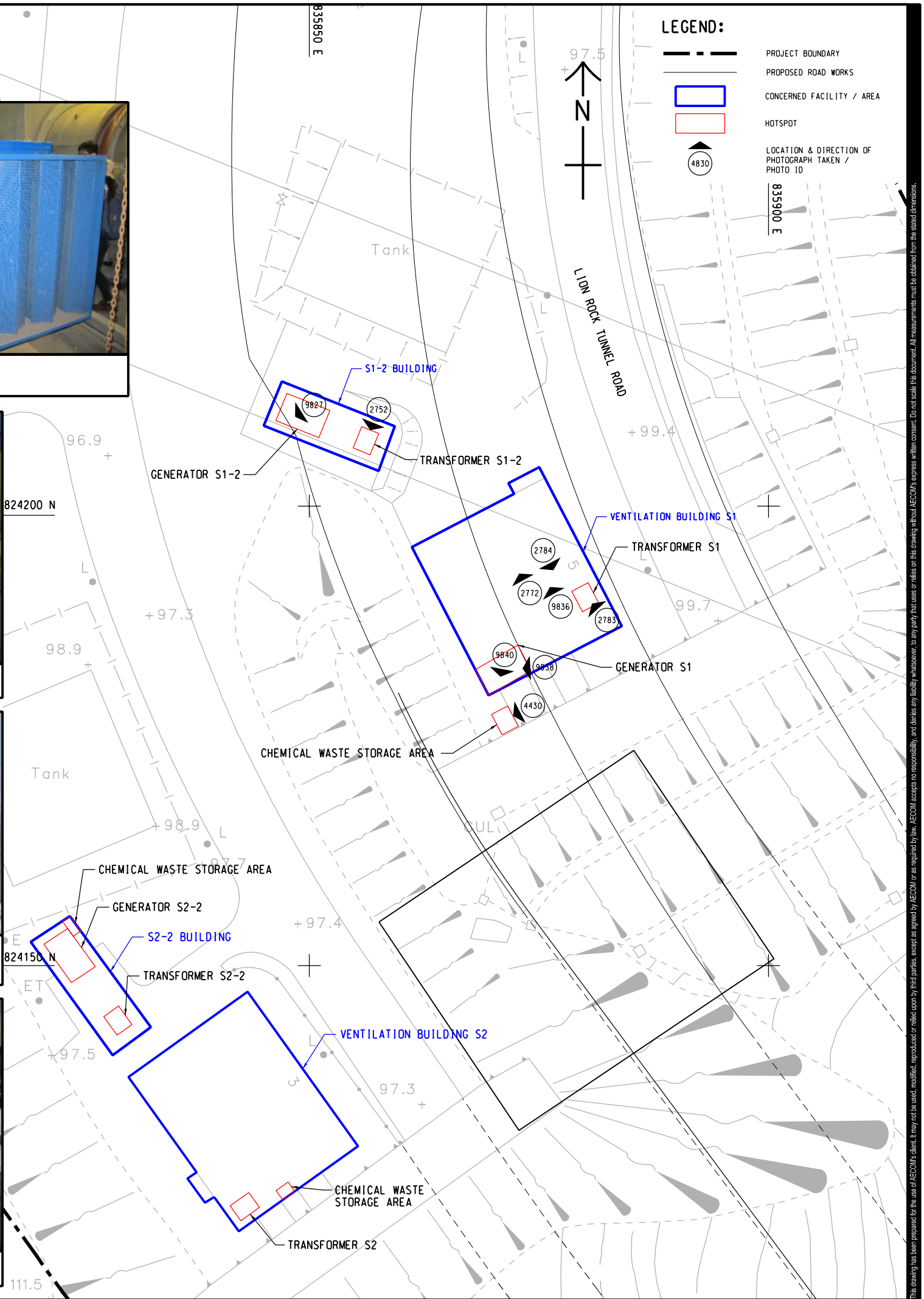
PHOTO 4430: CHEMICAL WASTE STORAGE AREA OF VENTILATION BUILDING S1 (DATE TAKEN: 25 AUGUST 2020)



PHOTO 2772: VENTILATION BUILDING S1 (DATE TAKEN: 25 AUGUST 2020)



PHOTO 9836: VENTILATION BUILDING S1 (DATE TAKEN: 25 AUGUST 2020)



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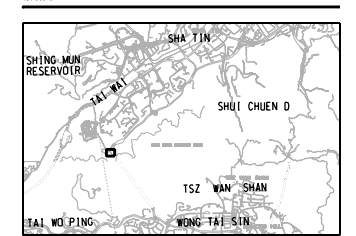
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STATUS
 狀態

SCALE **DIMENSION UNIT**

A3 1 : 500 METRES

KEY PLAN A3 1 : 160000



PROJECT NO. **AGREEMENT NO.**
 項目編號 協議編號
 60604728 CE 48/2018(HY)

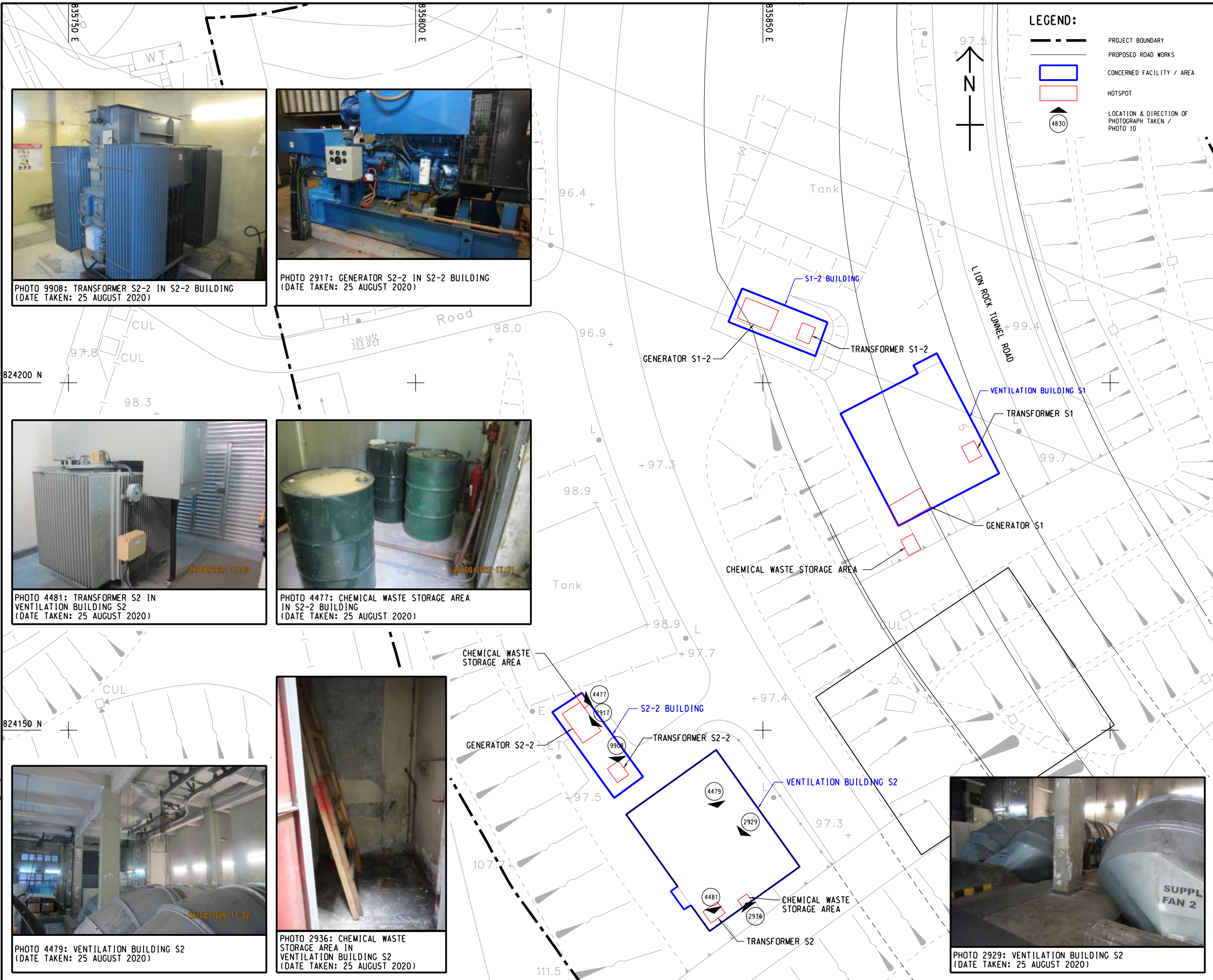
SHEET TITLE
 圖則名稱

PHOTOGRAPHIC RECORDS OF SITE WALKOVER (VENTILATION BUILDING S1 AT SHA TIN PORTAL)

SHEET NUMBER
 圖則編號
 60604728/CAPb/PR4

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 Approved:
 Checked:
 Designer:
 Project Management Initials:



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 項目
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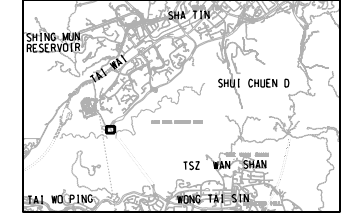
STATUS
 狀況

SCALE
 比例尺

DIMENSION UNIT
 尺寸單位

A3 1:500 METRES

KEY PLAN A3 1:160000



PROJECT NO.
 項目編號
 60604728

AGREEMENT NO.
 協議編號
 CE 48/2018(HY)

SHEET TITLE
 圖則名稱
 PHOTOGRAPHIC RECORDS OF SITE WALKOVER (VENTILATION BUILDING S2 AT SHA TIN PORTAL)

SHEET NUMBER
 圖則編號
 60604728/CAPb/PR5

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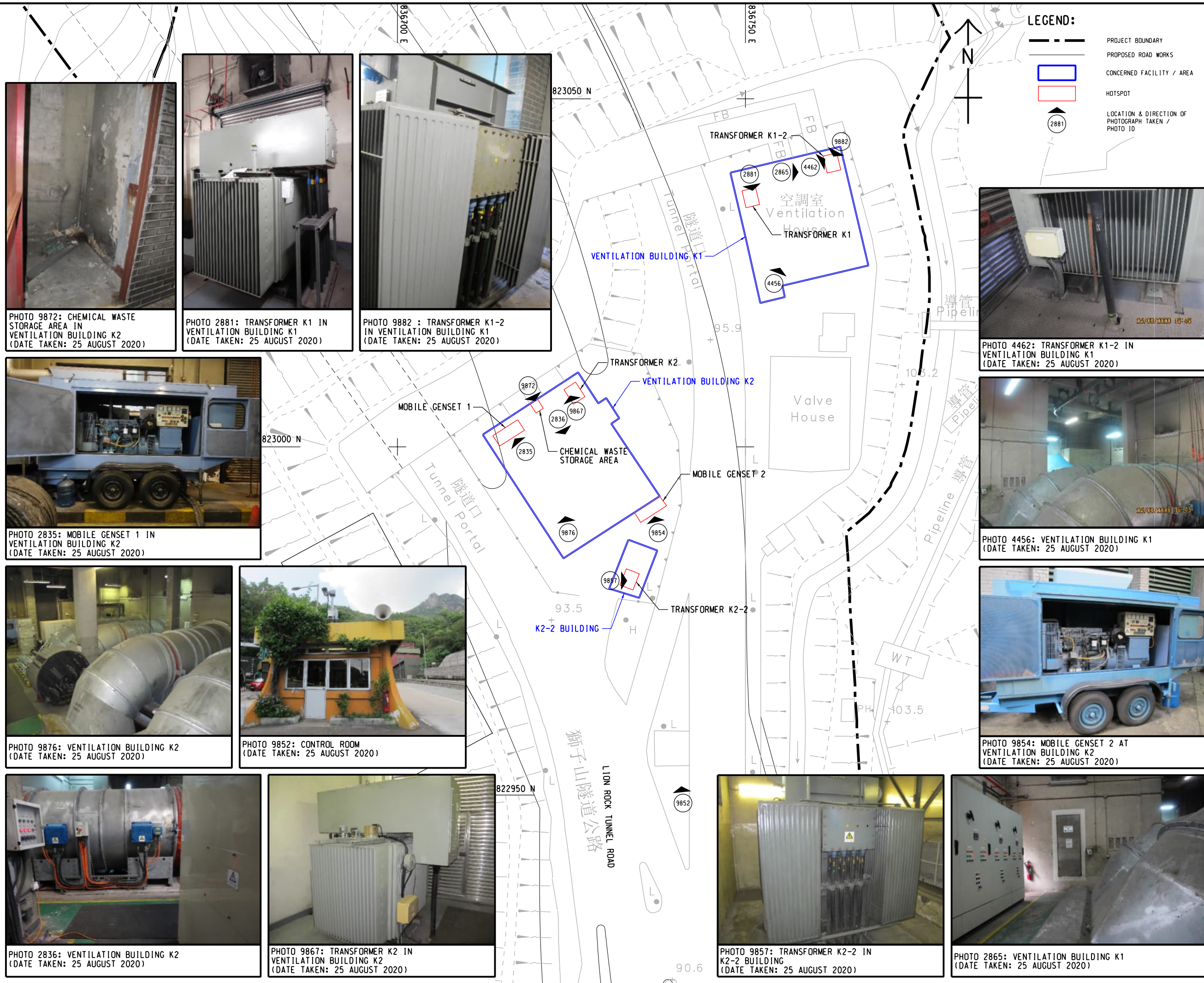


PHOTO 9872: CHEMICAL WASTE STORAGE AREA IN VENTILATION BUILDING K2 (DATE TAKEN: 25 AUGUST 2020)



PHOTO 2881: TRANSFORMER K1 IN VENTILATION BUILDING K1 (DATE TAKEN: 25 AUGUST 2020)



PHOTO 9882: TRANSFORMER K1-2 IN VENTILATION BUILDING K1 (DATE TAKEN: 25 AUGUST 2020)



PHOTO 2835: MOBILE GENSET 1 IN VENTILATION BUILDING K2 (DATE TAKEN: 25 AUGUST 2020)



PHOTO 9876: VENTILATION BUILDING K2 (DATE TAKEN: 25 AUGUST 2020)



PHOTO 9852: CONTROL ROOM (DATE TAKEN: 25 AUGUST 2020)



PHOTO 2836: VENTILATION BUILDING K2 (DATE TAKEN: 25 AUGUST 2020)



PHOTO 9867: TRANSFORMER K2 IN VENTILATION BUILDING K2 (DATE TAKEN: 25 AUGUST 2020)



PHOTO 9857: TRANSFORMER K2-2 IN K2-2 BUILDING (DATE TAKEN: 25 AUGUST 2020)



PHOTO 2865: VENTILATION BUILDING K1 (DATE TAKEN: 25 AUGUST 2020)



PHOTO 4462: TRANSFORMER K1-2 IN VENTILATION BUILDING K1 (DATE TAKEN: 25 AUGUST 2020)

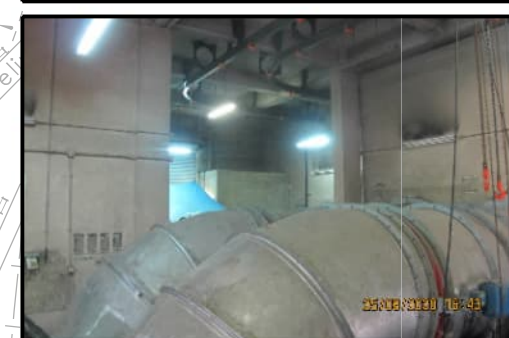


PHOTO 4456: VENTILATION BUILDING K1 (DATE TAKEN: 25 AUGUST 2020)



PHOTO 9854: MOBILE GENSET 2 AT VENTILATION BUILDING K2 (DATE TAKEN: 25 AUGUST 2020)

LEGEND:

- PROJECT BOUNDARY
- PROPOSED ROAD WORKS
- CONCERNED FACILITY / AREA
- HOTSPOT
- LOCATION & DIRECTION OF PHOTOGRAPH TAKEN / PHOTO ID

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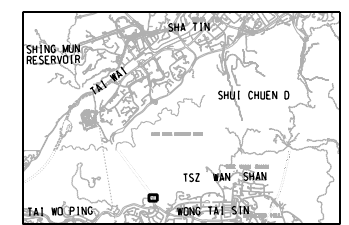
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STATUS

SCALE **DIMENSION UNIT**

A3 1:500 METRES

KEY PLAN A3 1:160000



PROJECT NO. **AGREEMENT NO.**

60604728 CE 48/2018(HY)

SHEET TITLE

PHOTOGRAPHIC RECORDS OF SITE WALKOVER (KOWLOON PORTAL)

SHEET NUMBER

60604728/CAPb/PR6

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Project Management Initials:
2022/6/9
PATH PROJECTS/60604728/DRAWING/REPORT/CAPb/747.dgn

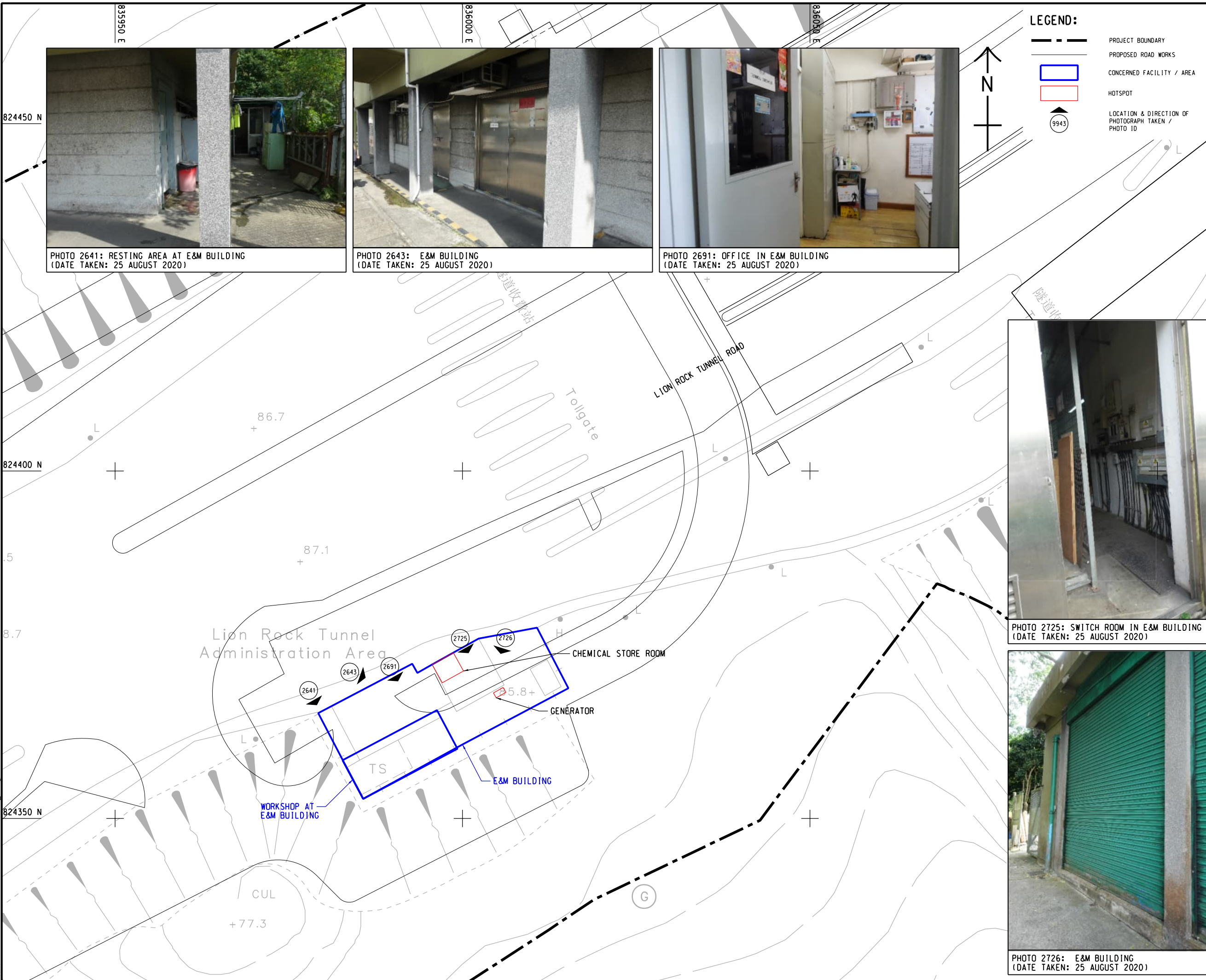


PHOTO 2641: RESTING AREA AT E&M BUILDING
(DATE TAKEN: 25 AUGUST 2020)



PHOTO 2643: E&M BUILDING
(DATE TAKEN: 25 AUGUST 2020)



PHOTO 2691: OFFICE IN E&M BUILDING
(DATE TAKEN: 25 AUGUST 2020)

LEGEND:

- PROJECT BOUNDARY
- PROPOSED ROAD WORKS
- CONCERNED FACILITY / AREA
- HOTSPOT
- ↑
9943 LOCATION & DIRECTION OF PHOTOGRAPH TAKEN / PHOTO ID



PHOTO 2725: SWITCH ROOM IN E&M BUILDING
(DATE TAKEN: 25 AUGUST 2020)



PHOTO 2726: E&M BUILDING
(DATE TAKEN: 25 AUGUST 2020)

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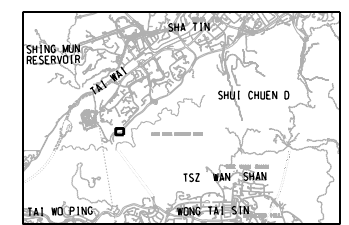
狀態

SCALE

比例尺

A3 1 : 500 METRES

KEY PLAN A3 1 : 160000



PROJECT NO. **AGREEMENT NO.**

60604728 CE 48/2018(HY)

SHEET TITLE

PHOTOGRAPHIC RECORDS OF SITE WALKOVER (E&M BUILDING AT SHA TIN PORTAL)

SHEET NUMBER

60604728/CAPb/PR7

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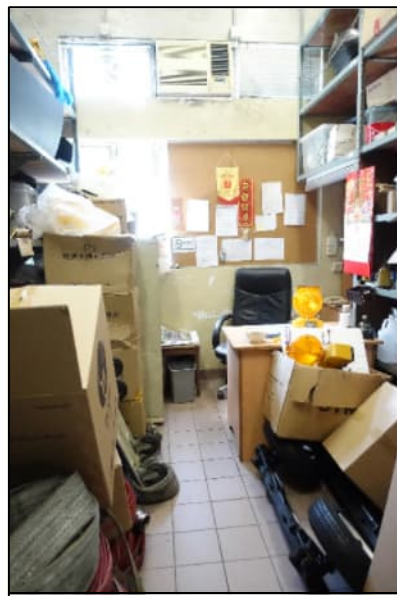


PHOTO 2496: OFFICE ROOM IN ADMINISTRATION BUILDING (DATE TAKEN: 25 AUGUST 2020)



PHOTO 2473: OFFICE ROOM IN ADMINISTRATION BUILDING (DATE TAKEN: 25 AUGUST 2020)



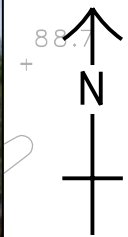
PHOTO 2489: CANTEEN IN ADMINISTRATION BUILDING (DATE TAKEN: 25 AUGUST 2020)



PHOTO 2616: LION ROCK TUNNEL ROAD AND NORTHERN WING OF ADMINISTRATION BUILDING (DATE TAKEN: 25 AUGUST 2020)

LEGEND:

- PROJECT BOUNDARY
- PROPOSED ROAD WORKS
- CONCERNED FACILITY / AREA
- HOTSPOT
- LOCATION & DIRECTION OF PHOTOGRAPH TAKEN / PHOTO ID



IMPROVEMENT OF LION ROCK TUNNEL - INVESTIGATION



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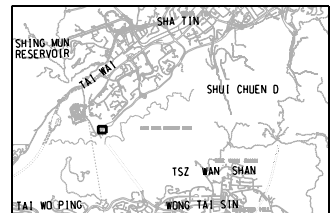
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STATUS

SCALE DIMENSION UNIT

A3 1 : 500 METRES

KEY PLAN A3 1 : 160000



PROJECT NO. AGREEMENT NO.

60604728 CE 48/2018(HY)

SHEET TITLE

PHOTOGRAPHIC RECORDS OF SITE WALKOVER (ADMINISTRATION BUILDING AT SHA TIN PORTAL)

SHEET NUMBER

60604728/CAPb/PR8

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824300 N

824250 N

824390 N

835850 E

91.0

92.1

92.6

92.4

93.3

93.0

+94.5

+95.3

+97.5

+77.3

80

LION ROCK TUNNEL ROAD

運輸署
獅子山隧道
辦事處

EW

CUL

835900 E

835950 E



PHOTO 4351: CAR PARK OF ADMINISTRATION BUILDING (DATE TAKEN: 25 AUGUST 2020)



PHOTO 2458: ADMINISTRATION BUILDING (DATE TAKEN: 25 AUGUST 2020)

ADMINISTRATION BUILDING

CHEMICAL STORAGE AREA

AIR COMPRESSOR

CHEMICAL WASTE STORAGE AREA

VEHICLE MAINTENANCE WORKSHOP IN ADMINISTRATION BUILDING

LONG VEHICLE MAINTENANCE AND PARKING AREA

CHEMICAL STORAGE AREA

ISO A1 594mm x 841mm
 Approved:
 Checked:
 Designer:
 Project Management Initials:

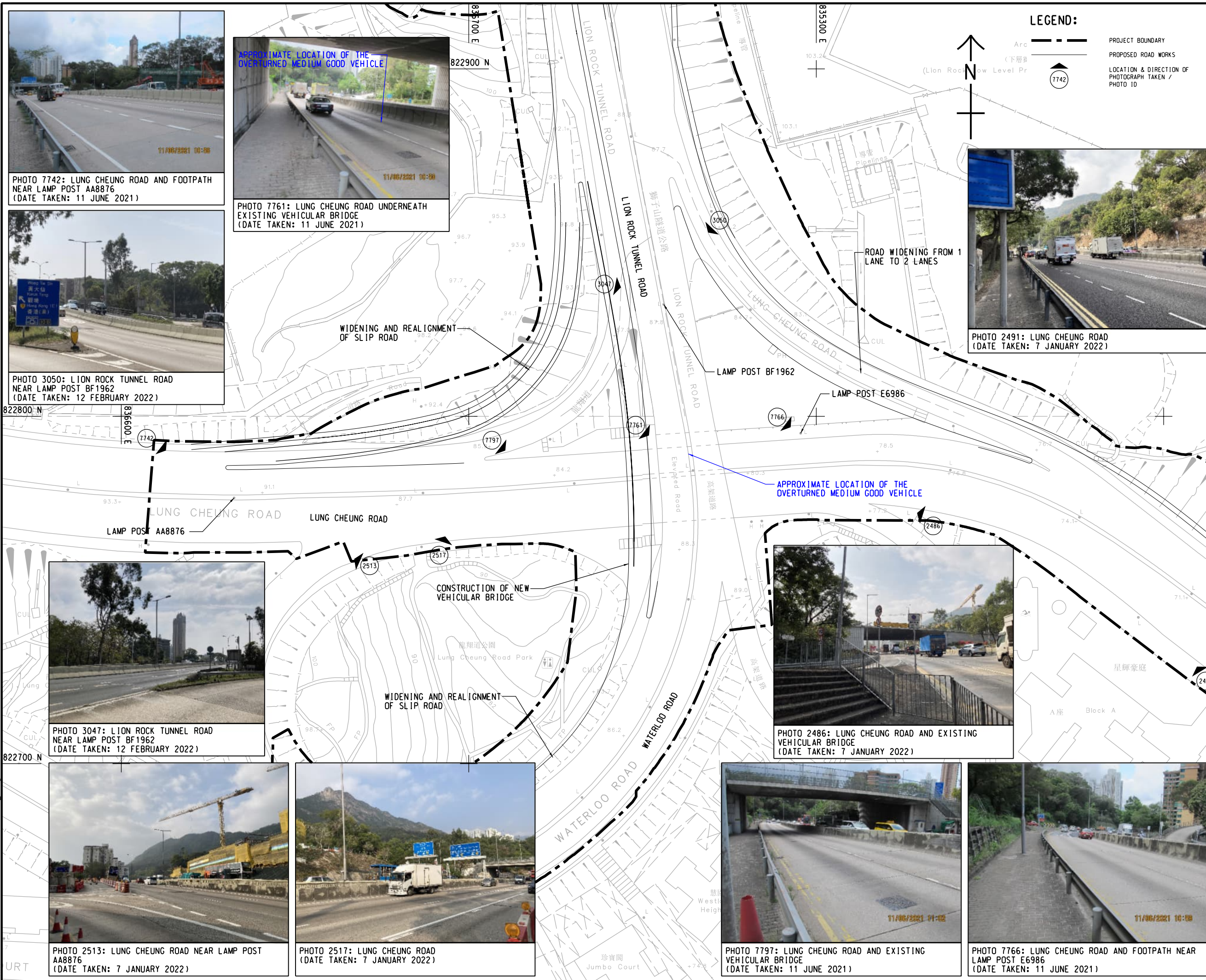


PHOTO 7742: LUNG CHEUNG ROAD AND FOOTPATH NEAR LAMP POST AA8876 (DATE TAKEN: 11 JUNE 2021)



PHOTO 7761: LUNG CHEUNG ROAD UNDERNEATH EXISTING VEHICULAR BRIDGE (DATE TAKEN: 11 JUNE 2021)



PHOTO 3050: LION ROCK TUNNEL ROAD NEAR LAMP POST BF1962 (DATE TAKEN: 12 FEBRUARY 2022)

PHOTO 7761: LUNG CHEUNG ROAD UNDERNEATH EXISTING VEHICULAR BRIDGE (DATE TAKEN: 11 JUNE 2021)

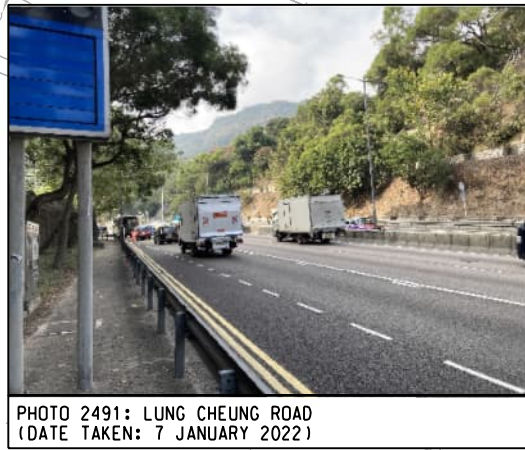


PHOTO 2491: LUNG CHEUNG ROAD (DATE TAKEN: 7 JANUARY 2022)



PHOTO 3047: LION ROCK TUNNEL ROAD NEAR LAMP POST BF1962 (DATE TAKEN: 12 FEBRUARY 2022)



PHOTO 2486: LUNG CHEUNG ROAD AND EXISTING VEHICULAR BRIDGE (DATE TAKEN: 7 JANUARY 2022)



PHOTO 2513: LUNG CHEUNG ROAD NEAR LAMP POST AA8876 (DATE TAKEN: 7 JANUARY 2022)



PHOTO 2517: LUNG CHEUNG ROAD (DATE TAKEN: 7 JANUARY 2022)



PHOTO 7797: LUNG CHEUNG ROAD AND EXISTING VEHICULAR BRIDGE (DATE TAKEN: 11 JUNE 2021)



PHOTO 7766: LUNG CHEUNG ROAD AND FOOTPATH NEAR LAMP POST E6986 (DATE TAKEN: 11 JUNE 2021)

LEGEND:

- Arc (下層線) PROJECT BOUNDARY
- PROPOSED ROAD WORKS
- LOCATION & DIRECTION OF PHOTOGRAPH TAKEN / PHOTO ID



PROJECT
 項目
IMPROVEMENT OF LION ROCK TUNNEL - INVESTIGATION



CONSULTANT
 顧問公司
 AECOM Asia Company Ltd.
 www.aecom.com

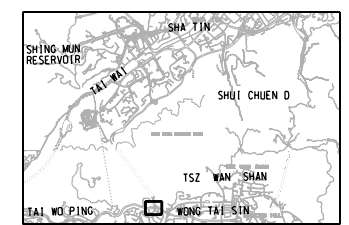
SUB-CONSULTANTS
 分判工程師/公司

ISSUE/REVISION

| NO. | DATE | DESCRIPTION | CHK. |
|-----|------|-------------|------|
| | | | |
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| | | | |

SCALE
 比例尺
 A3 1:1000 METRES

KEY PLAN A3 1:160000



PROJECT NO.
 項目編號
 60604728

AGREEMENT NO.
 協議編號
 CE 48/2018(HY)

SHEET TITLE
 圖紙名稱
 PHOTOGRAPHIC RECORDS OF SITE WALKOVER (LUNG CHEUNG ROAD)

SHEET NUMBER
 圖紙編號
 60604728/CAPb/PR9

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 2022/6/9

Appendix D
Site Walkover Checklist

Appendix D-1

Site Walkover Checklist for Lion Rock Tunnel

Annex C1

Site Walkover Checklist

DATE OF INSPECTION 25 August 2020

GENERAL SITE DETAILS

SITE OWNER/CLIENT Highways Department

PROPERTY ADDRESS Lion Rock Tunnel

PERSON CONDUCTING THE QUESTIONNAIRE

NAME Ms. Chloe Ng, Mr. Robert Yuen, Mr. Kin Au

POSITION Project / Graduate Environmental Consultant, AECOM

AUTHORIZED OWNER/CLIENT REPRESENTATIVE (IF APPLICABLE)

NAME Mr. Jacky Li Wai Leung

POSITION Chief Engineering Controller, Chun Wo Tunnel Management Limited

TELEPHONE 2692 1236

SITE ACTIVITIES

Briefly describe activities carried out on site, including types of products/chemicals/materials handled. Obtain a flow schematic if possible.

Number of employees: Full-time: ~140

Part-time: N/A

Temporary/Seasonal: N/A

Maximum no. of people on site at any time: ~40

Typical hours of operation: 24 hours

Number of shifts: 3

Days per week: 7

Weeks per year: 52

Scheduled plant shut-down: N/A

Detail the main sources of energy at the site:

Gas ~~Yes~~/No
Electricity Yes/~~No~~
Coal ~~Yes~~/No
Oil Yes/~~No~~
Other ~~Yes~~/No

SITE DESCRIPTION

This section is intended to gather information on site setting and environmental receptors on, adjacent or close to the site.

What is the total site area: approx. 38.1 hectares

What area of the site is covered by buildings (%): ~1 %

Please list all current and previous owners/occupiers if possible. Highways Department, Water Supplies Department, Chun Wo Tunnel Management Limited (current operator), Greater Lucky (H.K.) Company (past operator), Serco Group (HK) Limited (past operator), Serco Guardian (past operator)

Is a site plan available? If yes, please attach. Yes/~~No~~ Refer to Appendix C of the CAP

Are there any other parties on site as tenants or sub-tenants? ~~Yes~~/No

If yes, identify those parties: _____

Describe surrounding land use (residential, industrial, rural, etc.) and identify neighbouring facilities and types of industry.

North: Fung Shing Court, Sun Tin Wai Estate (Residential), Sha Tin Road

South: Broadcast Drive Garden (Open Space)

Lion Rock Low Level Primary Service Reservoir (Government)

East: Lion Rock Country Park

West: Beacon Hill Site of Special Scientific Interest,

Shatin South Fresh Water Service Reservoir (Government)

Annex C1

Site Walkover Checklist

Describe the topography of the area (flat terrain, rolling hills, mountains, by a large body of water, vegetation, etc.).

Mountains at the tunnel area; generally flat at the portal areas and Lion Rock Tunnel Road within the north of the Project boundary.

State the size and location of the nearest residential communities.

World-wide Gardens (approx. 10 m north west of the site, area of about 2.6 ha).

Are there any sensitive habitats nearby, such as nature reserves, parks, wetlands or sites of special scientific interest?

Yes, the Lion Rock Country Park (partially within the Project Area); and

the Beacon Hill Site of Special Scientific Interest (adjacent to the west of the Project Area).

Questionnaire with Existing/Previous Site Owner or Occupier

| | Yes/No | Notes |
|--|--------|---|
| 1. What are the main activities/operations at the above address? | -- | Tunnel management and maintenance |
| 2. How long have you been occupying the site? | -- | 2 years, since 2018/8/1 |
| 3. Were you the first occupant on site? (If yes, what was the usage of the site prior to occupancy.) | No | |
| 4. Prior to your occupancy, who occupied the site? | -- | Greater Lucky (H.K.) Company, Serco Group (HK) Limited, Serco Guardian |
| 5. What were the main activities/operations during their occupancy? | | Tunnel management and maintenance |
| 6. Have there been any major changes in operations carried out at the site in the last 10 years? | No | |
| 7. Have any polluting activities been carried out in the vicinity of the site in the past? | Yes | Maintenance of tunnel operation vehicles since at least 1993 |
| 8. To the best of your knowledge, has the site ever been used as a petrol filling station/car service garage? | Yes | 2 vehicle maintenance workshop / area were located at the Sha Tin Portal. |
| 9. Are there any boreholes/wells or natural springs either on the site or in the surrounding area? | Yes | |
| 10. Do you have any registered hazardous installations as defined under relevant ordinances? (If yes, please provide details.) | No | |
| 11. Are any chemicals used in your daily operations? (If yes, please provide details.) | Yes | Cleaning solvents (kerosene and naphtha); lubricating oils, anti-corrosive paints, hydraulic fluids and thinners are used for vehicle and equipment maintenance. Chemical uses in ventilation buildings are restricted at generators and transformers, only general cleaning and minor maintenance of electronics are conducted at the air vents and no chemicals were used. Diesel is used as fuel for generators. |

| | | |
|--|-----|---|
| <ul style="list-style-type: none"> Where do you store these chemicals? | N/A | Cleaning solvents, lubricating oils, anti-corrosive paints, hydraulic fluids and thinners are stored in the vehicle maintenance workshop /area, workshop and chemical store room in the E&M building; spent lubricating oils are stored in designated chemical waste storage area in the vehicle maintenance workshop; diesel oil are stored within the fuel tanks of the generators. |
| 12. Material inventory lists, including quantities and locations available? (If yes, how often are these inventories updated?) | No | |
| 13. Has the facility produced a separate hazardous substance inventory? | No | |
| 14. Have there ever been any incidents or accidents (e.g. spills, fires, injuries, etc.) involving any of these materials? (If yes, please provide details.) | No | |
| 15. How are materials received (e.g. rail, truck, etc.) and stored on site (e.g. drums, tanks, carboys, bags, silos, cisterns, vaults and cylinders)? | N/A | Materials (including chemicals) were received by trucks and stored in bags or drums. |
| 16. Do you have any underground storage tanks? (If yes, please provide details.) | Yes | A septic tank near the Administration Building |
| <ul style="list-style-type: none"> How many underground storage tanks do you have on site? | N/A | 1 |
| <ul style="list-style-type: none"> What are the tanks constructed of? | N/A | Concrete |
| <ul style="list-style-type: none"> What are the contents of these tanks? | N/A | Wastewater and sewage |
| <ul style="list-style-type: none"> Are the pipelines above or below ground? | N/A | Below |
| <ul style="list-style-type: none"> If the pipelines are below ground, has any leak and integrity testing been performed? | Yes | |
| <ul style="list-style-type: none"> Have there been any spills associated with these tanks? | No | |
| 17. Are there any disused underground storage tanks? | No | |
| 18. Do you have regular check for any spillage and monitoring of chemicals handled? (If yes, please provide details.) | Yes | The Labour Department conducts regular checks on chemical handling. |
| 19. How are the wastes disposed of? | N/A | General wastes are collected and disposed to the landfill. Spent lubricating oil is stored in drums and transported off-site regularly by a licensed collector. |
| 20. Have you ever received any notices of violation of environmental regulations or received public complaints? (If yes, please provide details.) | Yes | Noise complaints by nearby residents due to usage of public address (PA) system. |
| 21. Have any spills occurred on site? (If yes, please provide details.) | Yes | Minor oil spillages due to car accidents |
| <ul style="list-style-type: none"> When did the spill occur? | N/A | Several times a year |
| <ul style="list-style-type: none"> What were the substances spilled? | N/A | Fuels (Petrol, diesel) |
| <ul style="list-style-type: none"> What was the quantity of material spilled? | N/A | Minor |
| <ul style="list-style-type: none"> Did you notify the relevant departments of the spill? | Yes | Transport Department was notified upon any car accidents. |
| <ul style="list-style-type: none"> What were the actions taken to clean up the spill? | N/A | Apply sawdust on areas of spillage to soak and clean up the spills. |
| <ul style="list-style-type: none"> What were the areas affected? | N/A | Tunnel and paved roads |
| 22. Do you have any records of major renovation of your site or re-arrangement of underground utilities, pipe work/underground tanks (If yes, please provide details.) | Yes | Pipe work by past operator in 2012 |
| 23. Have disused underground tanks been removed or otherwise secured (e.g. concrete, sand, etc.)? | No | |
| 24. Are there any known contaminations on site? (If yes, please provide details.) | No | |
| 25. Has the site ever been remediated? (If yes, please provide details.) | No | |

Annex C1

Site Walkover Checklist

Observations

| | Yes/No | Notes |
|---|--------|---|
| 1. Are chemical storage areas provided with secondary containment (i.e. bund walls and floors)? | Yes | The chemical storage areas were concrete paved. Chemicals were mainly stored on shelves or in cabinets within the chemical storage areas. |
| 2. What are the conditions of the bund walls and floors? | N/A | The concrete paved floors were in good conditions. |
| 3. Are any surface water drains located near to drum storage and unloading areas? | No | |
| 4. Are any solid or liquid waste (other than wastewater) generated at the site? (If yes, please provide details.) | Yes | Spent lubricating oils and general refuse. |
| 5. Is there a storage site for the wastes? | Yes | Spent lubricating / diesel oils are in stored in designated chemical waste storage areas. Waste bins for general refuse are observed at the car park south of the Administration Building. |
| 6. Is there an on-site landfill? | No | |
| 7. Were any stressed vegetation noted on site during the site reconnaissance? (If yes, please indicate location and approximate size.) | No | |
| 8. Were any stained surfaces noted on-site during the site reconnaissance? (If yes, please provide details.) | No | |
| 9. Are there any potential off-site sources of contamination? | No | |
| 10. Does the site have any equipment which might contain polychlorinated biphenyls (PCBs)? | Yes | Transformers |
| 11. Are there any sumps, effluent pits, interceptors or lagoons on site? | No | |
| 12. Any noticeable odours during site walkover? | No | |
| 13. Are any of the following chemicals used on site: fuels, lubricating oils, hydraulic fluids, cleaning solvents, used chemical solutions, acids, anti-corrosive paints, thinners, coal, ash, oily tanks and bilge sludge, metal wastes, wood preservatives and polyurethane foam? | Yes | Fuels (diesel), cleaning solvents (kerosene, naphtha), lubricating oils, hydraulic fluids, anti-corrosive paints and thinners. |

Appendix D-2

**Site Walkover Checklist for Land south of Slope
11NW-B/FR 65, north of Meridian Hill within Project Area**

Annex C1

Site Walkover Checklist

DATE OF INSPECTION 11 May 2021

GENERAL SITE DETAILS

SITE OWNER/CLIENT Highways Department

PROPERTY ADDRESS Land south of Slope 11NW-B/FR 65, north of Meridian Hill within Project Area

PERSON CONDUCTING THE QUESTIONNAIRE

NAME Mr. Lawrence Tso, Mr. Robert Yuen

POSITION Associate / Graduate Environmental Consultant, AECOM

AUTHORIZED OWNER/CLIENT REPRESENTATIVE (IF APPLICABLE)

NAME N/A

POSITION N/A

TELEPHONE N/A

SITE ACTIVITIES

Briefly describe activities carried out on site, including types of products/chemicals/materials handled. Obtain a flow schematic if possible.

Number of employees: Full-time: N/A

Part-time: N/A

Temporary/Seasonal: N/A

Maximum no. of people on site at any time: N/A

Typical hours of operation: N/A

Number of shifts: N/A

Days per week: N/A

Weeks per year: N/A

Scheduled plant shut-down: N/A

Detail the main sources of energy at the site:

Gas ~~Yes~~/No
Electricity ~~Yes~~/No
Coal ~~Yes~~/No
Oil ~~Yes~~/No
Other ~~Yes~~/No

SITE DESCRIPTION

This section is intended to gather information on site setting and environmental receptors on, adjacent or close to the site.

What is the total site area: _____ approx. 400 m²

What area of the site is covered by buildings (%): _____ Nil

Please list all current and previous owners/occupiers if possible. _____ N/A

Is a site plan available? If yes, please attach. Yes/~~No~~ Refer to Appendix C of the CAP

Are there any other parties on site as tenants or sub-tenants? ~~Yes~~/No

If yes, identify those parties: _____

Describe surrounding land use (residential, industrial, rural, etc.) and identify neighbouring facilities and types of industry.

North: Lion Rock Park _____

South: Lung Cheung Road _____

East: Access Road _____

West: Lung Cheung Road _____

Annex C1

Site Walkover Checklist

Describe the topography of the area (flat terrain, rolling hills, mountains, by a large body of water, vegetation, etc.).

Generally flat terrain.

State the size and location of the nearest residential communities.

Meridian Hill (approx. 40 m south of the site, area of about 0.4 ha).

Are there any sensitive habitats nearby, such as nature reserves, parks, wetlands or sites of special scientific interest?

Yes, the Lion Rock Country Park and the Beacon Hill Site of Special Scientific Interest to the north.

Questionnaire with Existing/Previous Site Owner or Occupier

| | Yes/No | Notes* |
|--|--------|---|
| 1. What are the main activities/operations at the above address? | -- | Vacant land |
| 2. How long have you been occupying the site? | N/A | |
| 3. Were you the first occupant on site? (If yes, what was the usage of the site prior to occupancy.) | N/A | |
| 4. Prior to your occupancy, who occupied the site? | N/A | |
| 5. What were the main activities/operations during their occupancy? | N/A | |
| 6. Have there been any major changes in operations carried out at the site in the last 10 years? | N/A | |
| 7. Have any polluting activities been carried out in the vicinity of the site in the past? | N/A | |
| 8. To the best of your knowledge, has the site ever been used as a petrol filling station/car service garage? | N/A | No petrol filling station/car service garage observed |
| 9. Are there any boreholes/wells or natural springs either on the site or in the surrounding area? | N/A | No boreholes/wells or natural springs observed |
| 10. Do you have any registered hazardous installations as defined under relevant ordinances? (If yes, please provide details.) | N/A | No registered hazardous installations observed |
| 11. Are any chemicals used in your daily operations? (If yes, please provide details.) | N/A | No chemicals observed |
| • Where do you store these chemicals? | N/A | |

* No interview was able to be conducted. Notes shown are based on observation from site walkover.

| | | |
|--|-----|---------------------------------------|
| 12. Material inventory lists, including quantities and locations available? (If yes, how often are these inventories updated?) | N/A | |
| 13. Has the facility produced a separate hazardous substance inventory? | N/A | |
| 14. Have there ever been any incidents or accidents (e.g. spills, fires, injuries, etc.) involving any of these materials? (If yes, please provide details.) | N/A | |
| 15. How are materials received (e.g. rail, truck, etc.) and stored on site (e.g. drums, tanks, carboys, bags, silos, cisterns, vaults and cylinders)? | N/A | No materials observed |
| 16. Do you have any underground storage tanks? (If yes, please provide details.) | N/A | No underground storage tanks observed |
| • How many underground storage tanks do you have on site? | N/A | |
| • What are the tanks constructed of? | N/A | |
| • What are the contents of these tanks? | N/A | |
| • Are the pipelines above or below ground? | N/A | |
| • If the pipelines are below ground, has any leak and integrity testing been performed? | N/A | |
| • Have there been any spills associated with these tanks? | N/A | |
| 17. Are there any disused underground storage tanks? | N/A | |
| 18. Do you have regular check for any spillage and monitoring of chemicals handled? (If yes, please provide details.) | N/A | |
| 19. How are the wastes disposed of? | N/A | |
| 20. Have you ever received any notices of violation of environmental regulations or received public complaints? (If yes, please provide details.) | N/A | |
| 21. Have any spills occurred on site? (If yes, please provide details.) | N/A | |
| • When did the spill occur? | N/A | |
| • What were the substances spilled? | N/A | |
| • What was the quantity of material spilled? | N/A | |
| • Did you notify the relevant departments of the spill? | N/A | |
| • What were the actions taken to clean up the spill? | N/A | |
| • What were the areas affected? | N/A | |
| 22. Do you have any records of major renovation of your site or re-arrangement of underground utilities, pipe work/underground tanks (If yes, please provide details.) | N/A | |
| 23. Have disused underground tanks been removed or otherwise secured (e.g. concrete, sand, etc.)? | N/A | |
| 24. Are there any known contaminations on site? (If yes, please provide details.) | N/A | |
| 25. Has the site ever been remediated? (If yes, please provide details.) | N/A | |

* No interview was able to be conducted. Notes shown are based on observation from site walkover.

Annex C1

Site Walkover Checklist

Observations

| | Yes/No | Notes |
|---|--------|-----------------------|
| 1. Are chemical storage areas provided with secondary containment (i.e. bund walls and floors)? | N/A | No chemicals observed |
| 2. What are the conditions of the bund walls and floors? | N/A | |
| 3. Are any surface water drains located near to drum storage and unloading areas? | No | |
| 4. Are any solid or liquid waste (other than wastewater) generated at the site? (If yes, please provide details.) | No | |
| 5. Is there a storage site for the wastes? | No | No wastes observed |
| 6. Is there an on-site landfill? | No | |
| 7. Were any stressed vegetation noted on site during the site reconnaissance? (If yes, please indicate location and approximate size.) | No | |
| 8. Were any stained surfaces noted on-site during the site reconnaissance? (If yes, please provide details.) | No | |
| 9. Are there any potential off-site sources of contamination? | No | |
| 10. Does the site have any equipment which might contain polychlorinated biphenyls (PCBs)? | No | |
| 11. Are there any sumps, effluent pits, interceptors or lagoons on site? | No | |
| 12. Any noticeable odours during site walkover? | No | |
| 13. Are any of the following chemicals used on site: fuels, lubricating oils, hydraulic fluids, cleaning solvents, used chemical solutions, acids, anti-corrosive paints, thinners, coal, ash, oily tanks and bilge sludge, metal wastes, wood preservatives and polyurethane foam? | No | No chemicals observed |

Appendix D-3

**Site Walkover Checklist for Section of Lung Cheung Road
within Project Area (near Lamppost E6986)
(Address of FSD Incident record No. 6)**

Annex C1

Site Walkover Checklist

DATE OF INSPECTION 11 June 2021

GENERAL SITE DETAILS

SITE OWNER/CLIENT Highways Department

PROPERTY ADDRESS Section of Lung Cheung Road within Project Area (near Lamppost E6986)
(Address of FSD Incident record No. 6)

PERSON CONDUCTING THE QUESTIONNAIRE

NAME Mr. Robert Yuen

POSITION Graduate Environmental Consultant, AECOM

AUTHORIZED OWNER/CLIENT REPRESENTATIVE (IF APPLICABLE)

NAME N/A

POSITION N/A

TELEPHONE N/A

SITE ACTIVITIES

Briefly describe activities carried out on site, including types of products/chemicals/materials handled. Obtain a flow schematic if possible.

Number of employees: Full-time: N/A

Part-time: N/A

Temporary/Seasonal: N/A

Maximum no. of people on site at any time: N/A

Typical hours of operation: N/A

Number of shifts: N/A

Days per week: N/A

Weeks per year: N/A

Scheduled plant shut-down: N/A

Detail the main sources of energy at the site:

Gas ~~Yes~~/No
Electricity Yes/~~No~~
Coal ~~Yes~~/No
Oil ~~Yes~~/No
Other ~~Yes~~/No

SITE DESCRIPTION

This section is intended to gather information on site setting and environmental receptors on, adjacent or close to the site.

What is the total site area: approx. 50 m section of Lung Cheung Road

What area of the site is covered by buildings (%): Nil

Please list all current and previous owners/occupiers if possible. N/A

Is a site plan available? If yes, please attach. Yes/~~No~~ Refer to Appendix C of the CAP

Are there any other parties on site as tenants or sub-tenants? ~~Yes~~/No

If yes, identify those parties: _____

Describe surrounding land use (residential, industrial, rural, etc.) and identify neighbouring facilities and types of industry.

North: Lion Rock Tunnel Road

South: Broadcast Drive Garden (Open Space)

East: Lung Cheung Road

West: Lung Cheung Road

Annex C1

Site Walkover Checklist

Describe the topography of the area (flat terrain, rolling hills, mountains, by a large body of water, vegetation, etc.).

Generally flat terrain.

State the size and location of the nearest residential communities.

Peninsula Heights (approx. 30 m south of the site, area of about 0.5 ha).

Are there any sensitive habitats nearby, such as nature reserves, parks, wetlands or sites of special scientific interest?

Yes, the Lion Rock Country Park and the Beacon Hill Site of Special Scientific Interest to the north.

Questionnaire with Existing/Previous Site Owner or Occupier

| | Yes/No | Notes* |
|--|--------|---|
| 1. What are the main activities/operations at the above address? | -- | Lung Cheung Road |
| 2. How long have you been occupying the site? | N/A | |
| 3. Were you the first occupant on site? (If yes, what was the usage of the site prior to occupancy.) | N/A | |
| 4. Prior to your occupancy, who occupied the site? | N/A | |
| 5. What were the main activities/operations during their occupancy? | N/A | |
| 6. Have there been any major changes in operations carried out at the site in the last 10 years? | N/A | |
| 7. Have any polluting activities been carried out in the vicinity of the site in the past? | N/A | |
| 8. To the best of your knowledge, has the site ever been used as a petrol filling station/car service garage? | N/A | No petrol filling station/car service garage observed |
| 9. Are there any boreholes/wells or natural springs either on the site or in the surrounding area? | N/A | No boreholes/wells or natural springs observed |
| 10. Do you have any registered hazardous installations as defined under relevant ordinances? (If yes, please provide details.) | N/A | No registered hazardous installations observed |
| 11. Are any chemicals used in your daily operations? (If yes, please provide details.) | N/A | No chemicals observed |
| • Where do you store these chemicals? | N/A | |

* No interview was able to be conducted. Notes shown are based on observation from site walkover.

| | | |
|--|-----|--|
| 12. Material inventory lists, including quantities and locations available? (If yes, how often are these inventories updated?) | N/A | |
| 13. Has the facility produced a separate hazardous substance inventory? | N/A | |
| 14. Have there ever been any incidents or accidents (e.g. spills, fires, injuries, etc.) involving any of these materials? (If yes, please provide details.) | N/A | |
| 15. How are materials received (e.g. rail, truck, etc.) and stored on site (e.g. drums, tanks, carboys, bags, silos, cisterns, vaults and cylinders)? | N/A | No materials observed |
| 16. Do you have any underground storage tanks? (If yes, please provide details.) | N/A | No underground storage tanks observed |
| • How many underground storage tanks do you have on site? | N/A | |
| • What are the tanks constructed of? | N/A | |
| • What are the contents of these tanks? | N/A | |
| • Are the pipelines above or below ground? | N/A | |
| • If the pipelines are below ground, has any leak and integrity testing been performed? | N/A | |
| • Have there been any spills associated with these tanks? | N/A | |
| 17. Are there any disused underground storage tanks? | N/A | |
| 18. Do you have regular check for any spillage and monitoring of chemicals handled? (If yes, please provide details.) | N/A | |
| 19. How are the wastes disposed of? | N/A | |
| 20. Have you ever received any notices of violation of environmental regulations or received public complaints? (If yes, please provide details.) | N/A | |
| 21. Have any spills occurred on site? (If yes, please provide details.) | N/A | Spills previously occurred on site. Refer to FSD Incident record No. 6 and CAP for details |
| • When did the spill occur? | N/A | |
| • What were the substances spilled? | N/A | |
| • What was the quantity of material spilled? | N/A | |
| • Did you notify the relevant departments of the spill? | N/A | |
| • What were the actions taken to clean up the spill? | N/A | |
| • What were the areas affected? | N/A | |
| 22. Do you have any records of major renovation of your site or re-arrangement of underground utilities, pipe work/underground tanks (If yes, please provide details.) | N/A | |
| 23. Have disused underground tanks been removed or otherwise secured (e.g. concrete, sand, etc.)? | N/A | |
| 24. Are there any known contaminations on site? (If yes, please provide details.) | N/A | |
| 25. Has the site ever been remediated? (If yes, please provide details.) | N/A | |

* No interview was able to be conducted. Notes shown are based on observation from site walkover.

Annex C1

Site Walkover Checklist

Observations

| | Yes/No | Notes |
|---|--------|-----------------------|
| 1. Are chemical storage areas provided with secondary containment (i.e. bund walls and floors)? | N/A | No chemicals observed |
| 2. What are the conditions of the bund walls and floors? | N/A | |
| 3. Are any surface water drains located near to drum storage and unloading areas? | No | |
| 4. Are any solid or liquid waste (other than wastewater) generated at the site? (If yes, please provide details.) | No | |
| 5. Is there a storage site for the wastes? | No | No waste observed |
| 6. Is there an on-site landfill? | No | |
| 7. Were any stressed vegetation noted on site during the site reconnaissance? (If yes, please indicate location and approximate size.) | No | |
| 8. Were any stained surfaces noted on-site during the site reconnaissance? (If yes, please provide details.) | No | |
| 9. Are there any potential off-site sources of contamination? | No | |
| 10. Does the site have any equipment which might contain polychlorinated biphenyls (PCBs)? | No | |
| 11. Are there any sumps, effluent pits, interceptors or lagoons on site? | No | |
| 12. Any noticeable odours during site walkover? | No | |
| 13. Are any of the following chemicals used on site: fuels, lubricating oils, hydraulic fluids, cleaning solvents, used chemical solutions, acids, anti-corrosive paints, thinners, coal, ash, oily tanks and bilge sludge, metal wastes, wood preservatives and polyurethane foam? | No | No chemicals observed |

Appendix D-4

**Site Walkover Checklist for Section of Lung Cheung Road
within Project Area (near Lamppost AA8876)
(Address of FSD Incident record No. 7)**

Annex C1

Site Walkover Checklist

DATE OF INSPECTION 7 January 2022

GENERAL SITE DETAILS

SITE OWNER/CLIENT Highways Department

PROPERTY ADDRESS Section of Lung Cheung Road within Project Area (near Lamppost AA8876)
(Address of FSD Incident record No. 7)

PERSON CONDUCTING THE QUESTIONNAIRE

NAME Mr. Lawrence Tso, Mr. Kin Au

POSITION Associate / Graduate Environmental Consultant, AECOM

AUTHORIZED OWNER/CLIENT REPRESENTATIVE (IF APPLICABLE)

NAME N/A

POSITION N/A

TELEPHONE N/A

SITE ACTIVITIES

Briefly describe activities carried out on site, including types of products/chemicals/materials handled. Obtain a flow schematic if possible.

Number of employees: Full-time: N/A

Part-time: N/A

Temporary/Seasonal: N/A

Maximum no. of people on site at any time: N/A

Typical hours of operation: N/A

Number of shifts: N/A

Days per week: N/A

Weeks per year: N/A

Scheduled plant shut-down: N/A

Detail the main sources of energy at the site:

Gas ~~Yes~~/No
Electricity Yes/~~No~~
Coal ~~Yes~~/No
Oil ~~Yes~~/No
Other ~~Yes~~/No

SITE DESCRIPTION

This section is intended to gather information on site setting and environmental receptors on, adjacent or close to the site.

What is the total site area: approx. 50 m section of Lung Cheung Road

What area of the site is covered by buildings (%): Nil

Please list all current and previous owners/occupiers if possible. N/A

Is a site plan available? If yes, please attach. Yes/~~No~~ Refer to Appendix C of the CAP

Are there any other parties on site as tenants or sub-tenants? ~~Yes~~/No

If yes, identify those parties: _____

Describe surrounding land use (residential, industrial, rural, etc.) and identify neighbouring facilities and types of industry.

North: Lion Rock Tunnel Road

South: Lung Cheung Road Park

East: Lung Cheung Road

West: Lung Cheung Road

Annex C1

Site Walkover Checklist

Describe the topography of the area (flat terrain, rolling hills, mountains, by a large body of water, vegetation, etc.).

Generally flat terrain.

State the size and location of the nearest residential communities.

Peninsula Heights (approx. 150 m east of the site, area of about 0.5 ha).

Are there any sensitive habitats nearby, such as nature reserves, parks, wetlands or sites of special scientific interest?

Yes, the Lion Rock Country Park and the Beacon Hill Site of Special Scientific Interest to the north.

Questionnaire with Existing/Previous Site Owner or Occupier

| | Yes/No | Notes* |
|--|--------|---|
| 1. What are the main activities/operations at the above address? | -- | Lung Cheung Road |
| 2. How long have you been occupying the site? | N/A | |
| 3. Were you the first occupant on site? (If yes, what was the usage of the site prior to occupancy.) | N/A | |
| 4. Prior to your occupancy, who occupied the site? | N/A | |
| 5. What were the main activities/operations during their occupancy? | N/A | |
| 6. Have there been any major changes in operations carried out at the site in the last 10 years? | N/A | |
| 7. Have any polluting activities been carried out in the vicinity of the site in the past? | N/A | |
| 8. To the best of your knowledge, has the site ever been used as a petrol filling station/car service garage? | N/A | No petrol filling station/car service garage observed |
| 9. Are there any boreholes/wells or natural springs either on the site or in the surrounding area? | N/A | No boreholes/wells or natural springs observed |
| 10. Do you have any registered hazardous installations as defined under relevant ordinances? (If yes, please provide details.) | N/A | No registered hazardous installations observed |
| 11. Are any chemicals used in your daily operations? (If yes, please provide details.) | N/A | No chemicals observed |
| • Where do you store these chemicals? | N/A | |

* No interview was able to be conducted. Notes shown are based on observation from site walkover.

| | | | |
|-----|--|-----|---------------------------------------|
| 12. | Material inventory lists, including quantities and locations available? (If yes, how often are these inventories updated?) | N/A | |
| 13. | Has the facility produced a separate hazardous substance inventory? | N/A | |
| 14. | Have there ever been any incidents or accidents (e.g. spills, fires, injuries, etc.) involving any of these materials? (If yes, please provide details.) | N/A | |
| 15. | How are materials received (e.g. rail, truck, etc.) and stored on site (e.g. drums, tanks, carboys, bags, silos, cisterns, vaults and cylinders)? | N/A | No materials observed |
| 16. | Do you have any underground storage tanks? (If yes, please provide details.) | N/A | No underground storage tanks observed |
| | • How many underground storage tanks do you have on site? | N/A | |
| | • What are the tanks constructed of? | N/A | |
| | • What are the contents of these tanks? | N/A | |
| | • Are the pipelines above or below ground? | N/A | |
| | • If the pipelines are below ground, has any leak and integrity testing been performed? | N/A | |
| | • Have there been any spills associated with these tanks? | N/A | |
| 17. | Are there any disused underground storage tanks? | N/A | |
| 18. | Do you have regular check for any spillage and monitoring of chemicals handled? (If yes, please provide details.) | N/A | |
| 19. | How are the wastes disposed of? | N/A | |
| 20. | Have you ever received any notices of violation of environmental regulations or received public complaints? (If yes, please provide details.) | N/A | |
| 21. | Have any spills occurred on site? (If yes, please provide details.) | N/A | |
| | • When did the spill occur? | N/A | |
| | • What were the substances spilled? | N/A | |
| | • What was the quantity of material spilled? | N/A | |
| | • Did you notify the relevant departments of the spill? | N/A | |
| | • What were the actions taken to clean up the spill? | N/A | |
| | • What were the areas affected? | N/A | |
| 22. | Do you have any records of major renovation of your site or re-arrangement of underground utilities, pipe work/underground tanks (If yes, please provide details.) | N/A | |
| 23. | Have disused underground tanks been removed or otherwise secured (e.g. concrete, sand, etc.)? | N/A | |
| 24. | Are there any known contaminations on site? (If yes, please provide details.) | N/A | |
| 25. | Has the site ever been remediated? (If yes, please provide details.) | N/A | |

* No interview was able to be conducted. Notes shown are based on observation from site walkover.

Annex C1

Site Walkover Checklist

Observations

| | Yes/No | Notes |
|---|--------|-----------------------|
| 1. Are chemical storage areas provided with secondary containment (i.e. bund walls and floors)? | N/A | No chemicals observed |
| 2. What are the conditions of the bund walls and floors? | N/A | |
| 3. Are any surface water drains located near to drum storage and unloading areas? | No | |
| 4. Are any solid or liquid waste (other than wastewater) generated at the site? (If yes, please provide details.) | No | |
| 5. Is there a storage site for the wastes? | N/A | No wastes observed |
| 6. Is there an on-site landfill? | No | |
| 7. Were any stressed vegetation noted on site during the site reconnaissance? (If yes, please indicate location and approximate size.) | No | |
| 8. Were any stained surfaces noted on-site during the site reconnaissance? (If yes, please provide details.) | No | |
| 9. Are there any potential off-site sources of contamination? | No | |
| 10. Does the site have any equipment which might contain polychlorinated biphenyls (PCBs)? | No | |
| 11. Are there any sumps, effluent pits, interceptors or lagoons on site? | No | |
| 12. Any noticeable odours during site walkover? | No | |
| 13. Are any of the following chemicals used on site: fuels, lubricating oils, hydraulic fluids, cleaning solvents, used chemical solutions, acids, anti-corrosive paints, thinners, coal, ash, oily tanks and bilge sludge, metal wastes, wood preservatives and polyurethane foam? | No | No chemicals observed |

Appendix D-5

**Site Walkover Checklist for Section of Lion Rock Tunnel
Road within Project Area (near Lamppost BF1962)
(Address of FSD Incident record No. 5)**

Annex C1

Site Walkover Checklist

DATE OF INSPECTION 12 February 2022

GENERAL SITE DETAILS

SITE OWNER/CLIENT Highways Department

PROPERTY ADDRESS Section of Lion Rock Tunnel Road within Project Area (near Lamppost BF1962)
(Address of FSD Incident record No. 5)

PERSON CONDUCTING THE QUESTIONNAIRE

NAME Mr. Kin Au

POSITION Graduate Environmental Consultant, AECOM

AUTHORIZED OWNER/CLIENT REPRESENTATIVE (IF APPLICABLE)

NAME N/A

POSITION N/A

TELEPHONE N/A

SITE ACTIVITIES

Briefly describe activities carried out on site, including types of products/chemicals/materials handled. Obtain a flow schematic if possible.

Number of employees: Full-time: N/A

Part-time: N/A

Temporary/Seasonal: N/A

Maximum no. of people on site at any time: N/A

Typical hours of operation: N/A

Number of shifts: N/A

Days per week: N/A

Weeks per year: N/A

Scheduled plant shut-down: N/A

Detail the main sources of energy at the site:

Gas ~~Yes~~/No
Electricity Yes/~~No~~
Coal ~~Yes~~/No
Oil ~~Yes~~/No
Other ~~Yes~~/No

SITE DESCRIPTION

This section is intended to gather information on site setting and environmental receptors on, adjacent or close to the site.

What is the total site area: approx. 50 m section of Lion Rock Tunnel Road

What area of the site is covered by buildings (%): Nil

Please list all current and previous owners/occupiers if possible. N/A

Is a site plan available? If yes, please attach. Yes/~~No~~ Refer to Appendix C of the CAP

Are there any other parties on site as tenants or sub-tenants? ~~Yes~~/No

If yes, identify those parties: _____

Describe surrounding land use (residential, industrial, rural, etc.) and identify neighbouring facilities and types of industry.

North: Lion Rock Tunnel Road

South: Lung Cheung Road

East: Lung Cheung Road

West: Lung Cheung Road

Annex C1

Site Walkover Checklist

Describe the topography of the area (flat terrain, rolling hills, mountains, by a large body of water, vegetation, etc.).

Generally flat terrain.

State the size and location of the nearest residential communities.

Peninsula Heights (approx. 120 m southeast of the site, area of about 0.5 ha).

Are there any sensitive habitats nearby, such as nature reserves, parks, wetlands or sites of special scientific interest?

Yes, the Lion Rock Country Park and the Beacon Hill Site of Special Scientific Interest to the north.

Questionnaire with Existing/Previous Site Owner or Occupier

| | Yes/No | Notes* |
|--|--------|---|
| 1. What are the main activities/operations at the above address? | -- | Lion Rock Tunnel Road |
| 2. How long have you been occupying the site? | N/A | |
| 3. Were you the first occupant on site? (If yes, what was the usage of the site prior to occupancy.) | N/A | |
| 4. Prior to your occupancy, who occupied the site? | N/A | |
| 5. What were the main activities/operations during their occupancy? | N/A | |
| 6. Have there been any major changes in operations carried out at the site in the last 10 years? | N/A | |
| 7. Have any polluting activities been carried out in the vicinity of the site in the past? | N/A | |
| 8. To the best of your knowledge, has the site ever been used as a petrol filling station/car service garage? | N/A | No petrol filling station/car service garage observed |
| 9. Are there any boreholes/wells or natural springs either on the site or in the surrounding area? | N/A | No boreholes/wells or natural springs observed |
| 10. Do you have any registered hazardous installations as defined under relevant ordinances? (If yes, please provide details.) | N/A | No registered hazardous installations observed |
| 11. Are any chemicals used in your daily operations? (If yes, please provide details.) | N/A | No chemicals observed |
| • Where do you store these chemicals? | N/A | |

* No interview was able to be conducted. Notes shown are based on observation from site walkover.

| | | |
|--|-----|---------------------------------------|
| 12. Material inventory lists, including quantities and locations available? (If yes, how often are these inventories updated?) | N/A | |
| 13. Has the facility produced a separate hazardous substance inventory? | N/A | |
| 14. Have there ever been any incidents or accidents (e.g. spills, fires, injuries, etc.) involving any of these materials? (If yes, please provide details.) | N/A | |
| 15. How are materials received (e.g. rail, truck, etc.) and stored on site (e.g. drums, tanks, carboys, bags, silos, cisterns, vaults and cylinders)? | N/A | No materials observed |
| 16. Do you have any underground storage tanks? (If yes, please provide details.) | N/A | No underground storage tanks observed |
| • How many underground storage tanks do you have on site? | N/A | |
| • What are the tanks constructed of? | N/A | |
| • What are the contents of these tanks? | N/A | |
| • Are the pipelines above or below ground? | N/A | |
| • If the pipelines are below ground, has any leak and integrity testing been performed? | N/A | |
| • Have there been any spills associated with these tanks? | N/A | |
| 17. Are there any disused underground storage tanks? | N/A | |
| 18. Do you have regular check for any spillage and monitoring of chemicals handled? (If yes, please provide details.) | N/A | |
| 19. How are the wastes disposed of? | N/A | |
| 20. Have you ever received any notices of violation of environmental regulations or received public complaints? (If yes, please provide details.) | N/A | |
| 21. Have any spills occurred on site? (If yes, please provide details.) | N/A | |
| • When did the spill occur? | N/A | |
| • What were the substances spilled? | N/A | |
| • What was the quantity of material spilled? | N/A | |
| • Did you notify the relevant departments of the spill? | N/A | |
| • What were the actions taken to clean up the spill? | N/A | |
| • What were the areas affected? | N/A | |
| 22. Do you have any records of major renovation of your site or re-arrangement of underground utilities, pipe work/underground tanks (If yes, please provide details.) | N/A | |
| 23. Have disused underground tanks been removed or otherwise secured (e.g. concrete, sand, etc.)? | N/A | |
| 24. Are there any known contaminations on site? (If yes, please provide details.) | N/A | |
| 25. Has the site ever been remediated? (If yes, please provide details.) | N/A | |

* No interview was able to be conducted. Notes shown are based on observation from site walkover.

Annex C1

Site Walkover Checklist

Observations

| | Yes/No | Notes |
|---|--------|-----------------------|
| 1. Are chemical storage areas provided with secondary containment (i.e. bund walls and floors)? | N/A | No chemicals observed |
| 2. What are the conditions of the bund walls and floors? | N/A | |
| 3. Are any surface water drains located near to drum storage and unloading areas? | No | |
| 4. Are any solid or liquid waste (other than wastewater) generated at the site? (If yes, please provide details.) | No | |
| 5. Is there a storage site for the wastes? | N/A | No wastes observed |
| 6. Is there an on-site landfill? | No | |
| 7. Were any stressed vegetation noted on site during the site reconnaissance? (If yes, please indicate location and approximate size.) | No | |
| 8. Were any stained surfaces noted on-site during the site reconnaissance? (If yes, please provide details.) | No | |
| 9. Are there any potential off-site sources of contamination? | No | |
| 10. Does the site have any equipment which might contain polychlorinated biphenyls (PCBs)? | No | |
| 11. Are there any sumps, effluent pits, interceptors or lagoons on site? | No | |
| 12. Any noticeable odours during site walkover? | No | |
| 13. Are any of the following chemicals used on site: fuels, lubricating oils, hydraulic fluids, cleaning solvents, used chemical solutions, acids, anti-corrosive paints, thinners, coal, ash, oily tanks and bilge sludge, metal wastes, wood preservatives and polyurethane foam? | No | No chemicals observed |

Appendix E
Risk-Based Remediation Goals (RBRGs)
for Soil and Soil Saturation Limit
and for Groundwater and Solubility Limit

**Table 2.1
Risk-Based Remediation Goals (RBRGs) for Soil & Soil Saturation Limit**

| Chemical | Risk-Based Remediation Goals for Soil | | | | Soil Saturation Limit (C _{sat}) (mg/kg) |
|----------------------------------|---------------------------------------|---------------------------|--------------------|----------------------|---|
| | Urban Residential (mg/kg) | Rural Residential (mg/kg) | Industrial (mg/kg) | Public Parks (mg/kg) | |
| VOCs | | | | | |
| Acetone | 9.59E+03 | 4.26E+03 | 1.00E+04* | 1.00E+04* | *** |
| Benzene | 7.04E-01 | 2.79E-01 | 9.21E+00 | 4.22E+01 | 3.36E+02 |
| Bromodichloromethane | 3.17E-01 | 1.29E-01 | 2.85E+00 | 1.34E+01 | 1.03E+03 |
| 2-Butanone | 1.00E+04* | 1.00E+04* | 1.00E+04* | 1.00E+04* | *** |
| Chloroform | 1.32E-01 | 5.29E-02 | 1.54E+00 | 2.53E+02 | 1.10E+03 |
| Ethylbenzene | 7.09E+02 | 2.98E+02 | 8.24E+03 | 1.00E+04* | 1.38E+02 |
| Methyl tert-Butyl Ether | 6.88E+00 | 2.80E+00 | 7.01E+01 | 5.05E+02 | 2.38E+03 |
| Methylene Chloride | 1.30E+00 | 5.29E-01 | 1.39E+01 | 1.28E+02 | 9.21E+02 |
| Styrene | 3.22E+03 | 1.54E+03 | 1.00E+04* | 1.00E+04* | 4.97E+02 |
| Tetrachloroethene | 1.01E-01 | 4.44E-02 | 7.77E-01 | 1.84E+00 | 9.71E+01 |
| Toluene | 1.44E+03 | 7.05E+02 | 1.00E+04* | 1.00E+04* | 2.35E+02 |
| Trichloroethene | 5.23E-01 | 2.11E-01 | 5.68E+00 | 6.94E+01 | 4.88E+02 |
| Xylenes (Total) | 9.50E+01 | 3.68E+01 | 1.23E+03 | 1.00E+04* | 1.50E+02 |
| SVOCs | | | | | |
| Acenaphthene | 3.51E+03 | 3.28E+03 | 1.00E+04* | 1.00E+04* | 6.02E+01 |
| Acenaphthylene | 2.34E+03 | 1.51E+03 | 1.00E+04* | 1.00E+04* | 1.98E+01 |
| Anthracene | 1.00E+04* | 1.00E+04* | 1.00E+04* | 1.00E+04* | 2.56E+00 |
| Benzo(a)anthracene | 1.20E+01 | 1.14E+01 | 9.18E+01 | 3.83E+01 | |
| Benzo(a)pyrene | 1.20E+00 | 1.14E+00 | 9.18E+00 | 3.83E+00 | |
| Benzo(b)fluoranthene | 9.88E+00 | 1.01E+01 | 1.78E+01 | 2.04E+01 | |
| Benzo(g,h,i)perylene | 1.80E+03 | 1.71E+03 | 1.00E+04* | 5.74E+03 | |
| Benzo(k)fluoranthene | 1.20E+02 | 1.14E+02 | 9.18E+02 | 3.83E+02 | |
| bis-(2-Ethylhexyl)phthalate | 3.00E+01 | 2.80E+01 | 9.18E+01 | 9.42E+01 | |
| Chrysene | 8.71E+02 | 9.19E+02 | 1.14E+03 | 1.54E+03 | |
| Dibenzo(a,h)anthracene | 1.20E+00 | 1.14E+00 | 9.18E+00 | 3.83E+00 | |
| Fluoranthene | 2.40E+03 | 2.27E+03 | 1.00E+04* | 7.62E+03 | |
| Fluorene | 2.38E+03 | 2.25E+03 | 1.00E+04* | 7.45E+03 | 5.47E+01 |
| Hexachlorobenzene | 2.43E-01 | 2.20E-01 | 5.82E-01 | 7.13E-01 | |
| Indeno(1,2,3-cd)pyrene | 1.20E+01 | 1.14E+01 | 9.18E+01 | 3.83E+01 | |
| Naphthalene | 1.82E+02 | 8.56E+01 | 4.53E+02 | 9.14E+02 | 1.25E+02 |
| Phenanthrene | 1.00E+04* | 1.00E+04* | 1.00E+04* | 1.00E+04* | 2.80E+01 |
| Phenol | 1.00E+04* | 1.00E+04* | 1.00E+04* | 1.00E+04* | 7.26E+03 |
| Pyrene | 1.80E+03 | 1.71E+03 | 1.00E+04* | 5.72E+03 | |
| Metals | | | | | |
| Antimony | 2.95E+01 | 2.91E+01 | 2.61E+02 | 9.79E+01 | |
| Arsenic | 2.21E+01 | 2.18E+01 | 1.96E+02 | 7.35E+01 | |
| Barium | 1.00E+04* | 1.00E+04* | 1.00E+04* | 1.00E+04* | |
| Cadmium | 7.38E+01 | 7.28E+01 | 6.53E+02 | 2.45E+02 | |
| Chromium III | 1.00E+04* | 1.00E+04* | 1.00E+04* | 1.00E+04* | |
| Chromium VI | 2.21E+02 | 2.18E+02 | 1.96E+03 | 7.35E+02 | |
| Cobalt | 1.48E+03 | 1.46E+03 | 1.00E+04* | 4.90E+03 | |
| Copper | 2.95E+03 | 2.91E+03 | 1.00E+04* | 9.79E+03 | |
| Lead | 2.58E+02 | 2.55E+02 | 2.29E+03 | 8.57E+02 | |
| Manganese | 1.00E+04* | 1.00E+04* | 1.00E+04* | 1.00E+04* | |
| Mercury | 1.10E+01 | 6.52E+00 | 3.84E+01 | 4.56E+01 | |
| Molybdenum | 3.69E+02 | 3.64E+02 | 3.26E+03 | 1.22E+03 | |
| Nickel | 1.48E+03 | 1.46E+03 | 1.00E+04* | 4.90E+03 | |
| Tin | 1.00E+04* | 1.00E+04* | 1.00E+04* | 1.00E+04* | |
| Zinc | 1.00E+04* | 1.00E+04* | 1.00E+04* | 1.00E+04* | |
| Dioxins / PCBs | | | | | |
| Dioxins (I-TEQ) | 1.00E-03 | 1.00E-03 | 5.00E-03 | 1.00E-03 | |
| PCBs | 2.36E-01 | 2.26E-01 | 7.48E-01 | 7.56E-01 | |
| Petroleum Carbon Ranges | | | | | |
| C6 - C8 | 1.41E+03 | 5.45E+02 | 1.00E+04* | 1.00E+04* | 1.00E+03 |
| C9 - C16 | 2.24E+03 | 1.33E+03 | 1.00E+04* | 1.00E+04* | 3.00E+03 |
| C17 - C35 | 1.00E+04* | 1.00E+04* | 1.00E+04* | 1.00E+04* | 5.00E+03 |
| Other Inorganic Compounds | | | | | |
| Cyanide, free | 1.48E+03 | 1.46E+03 | 1.00E+04* | 4.90E+03 | |
| Organometallics | | | | | |
| TBTO | 2.21E+01 | 2.18E+01 | 1.96E+02 | 7.35E+01 | |

Notes:

- (1) For Dioxins, the cleanup levels in USEPA Office of Solid Waste and Emergency Response (OSWER) Directive of 1998 have been adopted. The OSWER Directive value of 1 ppb for residential use has been applied to the scenarios of "Urban Residential", "Rural Residential", and "Public Parks", while the low end of the range of values for industrial, 5 ppb, has been applied to the scenario of "Industrial".
- (2) Soil saturation limits for petroleum carbon ranges taken from the Canada-Wide Standards for Petroleum Hydrocarbons in Soil, CCME 2000.
- (3) * indicates a 'ceiling limit' concentration.
- (4) *** indicates that the C_{sat} value exceeds the 'ceiling limit' therefore the RBRG applies.

**Table 2.2
Risk-Based Remediation Goals (RBRGs) for Groundwater and Solubility Limit**

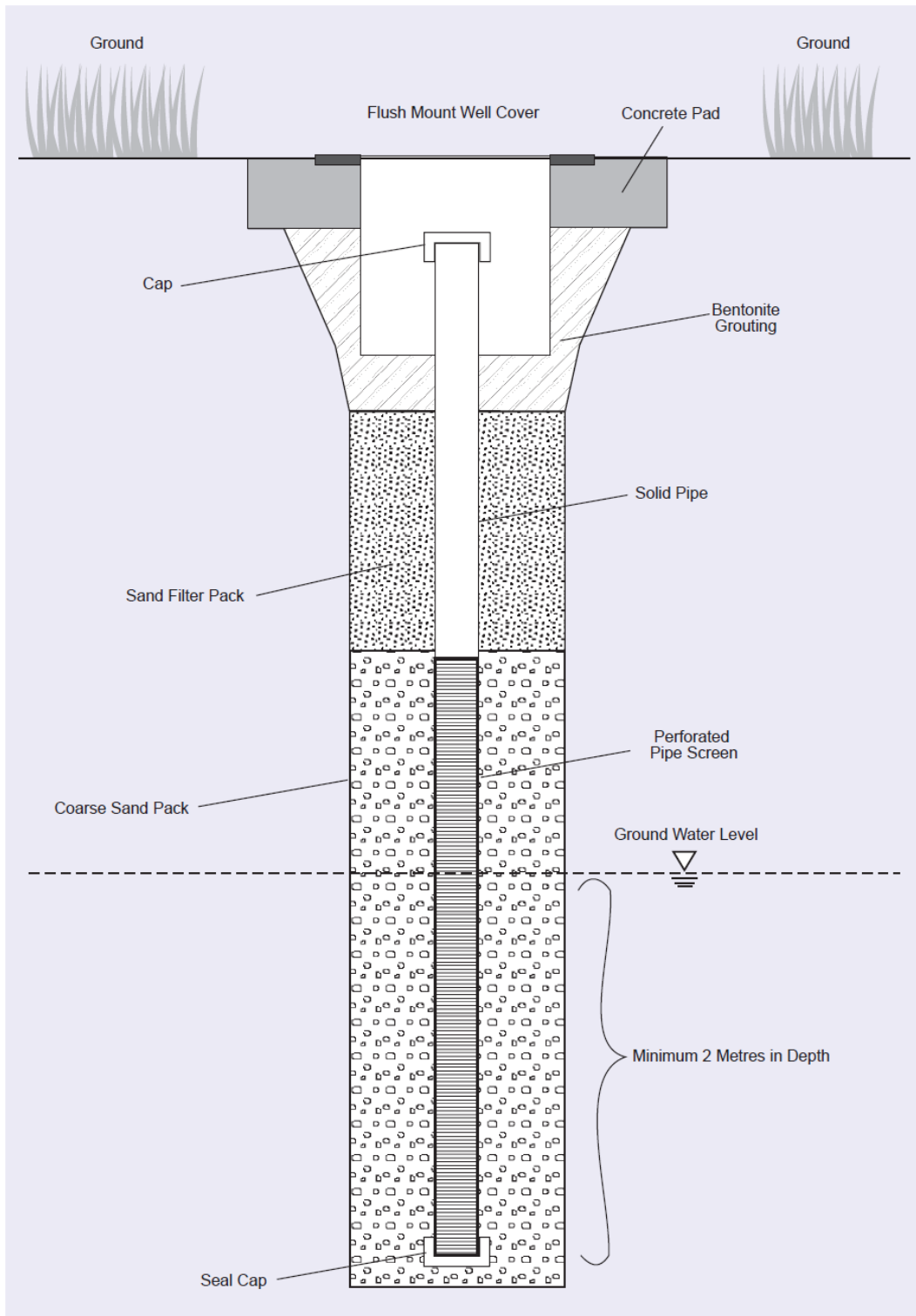
| Chemical | Risk-Based Remediation Goals for Groundwater | | | Solubility Limit (mg/L) |
|----------------------------------|--|--------------------------|-------------------|-------------------------|
| | Urban Residential (mg/L) | Rural Residential (mg/L) | Industrial (mg/L) | |
| VOCs | | | | |
| Acetone | 1.00E+04* | 1.00E+04* | 1.00E+04* | *** |
| Benzene | 3.86E+00 | 1.49E+00 | 5.40E+01 | 1.75E+03 |
| Bromodichloromethane | 2.22E+00 | 8.71E-01 | 2.62E+01 | 6.74E+03 |
| 2-Butanone | 1.00E+04* | 1.00E+04* | 1.00E+04* | *** |
| Chloroform | 9.56E-01 | 3.82E-01 | 1.13E+01 | 7.92E+03 |
| Ethylbenzene | 1.02E+03 | 3.91E+02 | 1.00E+04* | 1.69E+02 |
| Methyl tert-Butyl Ether | 1.53E+02 | 6.11E+01 | 1.81E+03 | *** |
| Methylene Chloride | 1.90E+01 | 7.59E+00 | 2.24E+02 | *** |
| Styrene | 3.02E+03 | 1.16E+03 | 1.00E+04* | 3.10E+02 |
| Tetrachloroethene | 2.50E-01 | 9.96E-02 | 2.95E+00 | 2.00E+02 |
| Toluene | 5.11E+03 | 1.97E+03 | 1.00E+04* | 5.26E+02 |
| Trichloroethene | 1.21E+00 | 4.81E-01 | 1.42E+01 | 1.10E+03 |
| Xylenes (Total) | 1.12E+02 | 4.33E+01 | 1.57E+03 | 1.75E+02 |
| SVOCs | | | | |
| Acenaphthene | 1.00E+04* | 7.09E+03 | 1.00E+04* | 4.24E+00 |
| Acenaphthylene | 1.41E+03 | 5.42E+02 | 1.00E+04* | 3.93E+00 |
| Anthracene | 1.00E+04* | 1.00E+04* | 1.00E+04* | 4.34E-02 |
| Benzo(a)anthracene | | | | |
| Benzo(a)pyrene | | | | |
| Benzo(b)fluoranthene | 5.39E-01 | 2.03E-01 | 7.53E+00 | 1.50E-03 |
| Benzo(g,h,i)perylene | | | | |
| Benzo(k)fluoranthene | | | | |
| bis-(2-Ethylhexyl)phthalate | | | | |
| Chrysene | 5.81E+01 | 2.19E+01 | 8.12E+02 | 1.60E-03 |
| Dibenzo(a,h)anthracene | | | | |
| Fluoranthene | 1.00E+04* | 1.00E+04* | 1.00E+04* | 2.06E-01 |
| Fluorene | 1.00E+04* | 1.00E+04* | 1.00E+04* | 1.98E+00 |
| Hexachlorobenzene | 5.89E-02 | 2.34E-02 | 6.95E-01 | 6.20E+00 |
| Indeno(1,2,3-cd)pyrene | | | | |
| Naphthalene | 6.17E+01 | 2.37E+01 | 8.62E+02 | 3.10E+01 |
| Phenanthrene | 1.00E+04* | 1.00E+04* | 1.00E+04* | 1.00E+00 |
| Phenol | | | | |
| Pyrene | 1.00E+04* | 1.00E+04* | 1.00E+04* | 1.35E-01 |
| Metals | | | | |
| Antimony | | | | |
| Arsenic | | | | |
| Barium | | | | |
| Cadmium | | | | |
| Chromium III | | | | |
| Chromium VI | | | | |
| Cobalt | | | | |
| Copper | | | | |
| Lead | | | | |
| Manganese | | | | |
| Mercury | 4.86E-01 | 1.84E-01 | 6.79E+00 | |
| Molybdenum | | | | |
| Nickel | | | | |
| Tin | | | | |
| Zinc | | | | |
| Dioxins / PCBs | | | | |
| Dioxins (I-TEQ) | | | | |
| PCBs | 4.33E-01 | 1.71E-01 | 5.11E+00 | 3.10E-02 |
| Petroleum Carbon Ranges | | | | |
| C6 - C8 | 8.22E+01 | 3.17E+01 | 1.15E+03 | 5.23E+00 |
| C9 - C16 | 7.14E+02 | 2.76E+02 | 9.98E+03 | 2.80E+00 |
| C17 - C35 | 1.28E+01 | 4.93E+00 | 1.78E+02 | 2.80E+00 |
| Other Inorganic Compounds | | | | |
| Cyanide, free | | | | |
| Organometallics | | | | |
| TBTO | | | | |

Notes:

- (1) Blank indicates that RBRG could not be calculated because the toxicity or physical/chemical values were unavailable, or the condition of Henry's Law Constant > 1.00E-05 was not met for the inhalation pathway.
- (2) Water solubilities for Petroleum Carbon Range aliphatic C9-C16 and greater than C16 generally are considered to be effectively zero and therefore the aromatic solubility for C9-C16 is used.
- (3) * indicates a 'ceiling limit' concentration.
- (4) *** indicates that the solubility limit exceeds the 'ceiling limit' therefore the RBRG applies.

Appendix F
Typical Design of a Groundwater Monitoring Well

Typical Design of a Groundwater Monitoring Well



Source: Practice Guide for Investigation and Remediation of Contaminated Land, EPD, Aug. 2011