

7 LAND CONTAMINATION

7.1 Introduction

7.1.1 This section presents the potential land contamination implications associated with the Project. The land contamination assessment was conducted in accordance with requirements given in Section 3.4.8 and Appendix F of the EIA Study Brief (ESB-323/2019), as well as Annex 19 of the EIAO-TM.

7.2 Environmental Legislation, Standards and Criteria

7.2.1 The relevant environmental legislation guidelines and standards on land contamination aspect include the following:

- Section 3 (Potential Contaminated Land Issues) of Annex 19 “Guidelines for Assessment of Impact on Sites of Cultural Heritage and Other Impacts” of the Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM).
- 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.

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

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

7.3 Assessment Methodology

7.3.1 Land contamination assessment was carried out according to the abovementioned EIAO-TM, Guidance Note, Practice Guide and Guidance Manual.

7.3.2 A site appraisal, including site walkover and desktop review, was conducted to identify the potentially contaminating activities that may pose adverse impact to the Project. Site walkover was conducted within the Project Area to review the general site conditions and to identify any sources of land contamination (or ‘hotspots’). For the desktop review, the following information was reviewed:

- Aerial photographs and topographic maps held by the Lands Department (LandsD);

- Hong Kong Geological Survey Map (Series HGM20) – Sheet Nos. 7 and 11 (1:20,000 and 1:100,000);
- Records on dangerous goods (DG), chemical wastes, chemical spillage/leakage and fire incidents from the identified potentially contaminated sites from Environmental Protection Department (EPD) and Fire Services Department (FSD); and
- Ground Investigation (GI) Report (Final) under the Project, September 2020.

7.3.3 Based on the site appraisal, soil and groundwater sampling and testing at the potentially contaminated areas have been proposed. A Contamination Assessment Plan (CAP), detailed findings of the site appraisal and the proposed site investigation (SI) works, was prepared and enclosed in **Appendix 7.1**.

7.3.4 As reported in the CAP, all the identified potentially contaminated facilities/areas within the Project Area are currently in operation, 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). For these concerned areas, review of the initial contamination, possible remediation methods, potential insurmountable impacts, SI requirements as well as the tentative timeframe for subsequent submissions were presented in the CAP.

7.4 Description of the Environment

7.4.1 The Project Area covers the entire existing Lion Rock Tunnel (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 **60604728/R42b/Figure 7.1**, the Project Area is located at a mountain terrain while the portal areas and roads were located on generally 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.

7.4.2 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.

7.5 Identification of Potential Land Contamination Concern

General

7.5.1 Site appraisal was carried out in the period from August 2020 to February 2022 with site walkovers conducted in August 2020, May 2021, June 2021, January 2022 and February 2022. Findings of the site appraisal were detailed in the CAP enclosed in **Appendix 7.1** and summarised below.

Review of Historical Land Uses

7.5.2 A review of historical 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 summarised in **Table 7.1** and the historical aerial photographs reviewed are provided in Appendix A of the CAP in **Appendix 7.1**. Based on the review of aerial photographs, apart from the concerned facilities / areas at the tunnel portals (refer to **Section 7.5.11**), no other historical potentially contaminating land uses were identified within the Project Area.

Table 7.1 Aerial Photographs Reviewed

Year	Site Description
1963	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	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	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	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	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	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.

Site Geology

- 7.5.3 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.
- 7.5.4 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.
- 7.5.5 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.

Information from Government Departments

- 7.5.6 The EPD and FSD were contacted for (i) records of any spillage / leakage of chemicals, (ii) records of DG and (iii) records of Chemical Waste Producer(s) (CWPs) within the Project Area.
- 7.5.7 According to the replies given by EPD, there were no records of spillage / leakage of chemicals reported at the Project Area. There are 4 CWP records for the management and maintenance of the LRT within the Project Area. The CWP records are associated with the vehicle maintenance workshop in the Administration Building and the workshop and chemical store room at the E&M Building at the Sha Tin Portal. According to the findings of the site walkover, there are potential land contamination concerns with these facilities / areas (refer to **Table 7.2**). The relevant details are presented in the CAP provided in **Appendix 7.1**.
- 7.5.8 Based on the replies given by FSD, no records of DG licenses were found within the Project Area. However, a total of 8 incident records were reported by FSD. Of the 8 incident records, 5 are outside of the Project Area. The remaining 3 incident records are located on Lung Cheung Road near the lampposts to the east (Lamppost E6986) and west (Lamppost AA8876) of existing vehicular bridge and on Lion Rock Tunnel Road near the lamppost (Lamppost BF1962) to the north of Lung Cheung Road. The incident record near Lamppost E6986 is associated with diesel leakage from an overturned medium good vehicle at Lung Cheung Road near the vehicular bridge. As indicated by FSD, 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, the concerned section of Lung Cheung Road was observed to be paved with intact concrete in good condition and with no stains / spillage observed. The diesel leakage incident was expected to have been properly cleaned up. The incident records near Lamppost AA8876 and Lamppost BF1962 are associated with rubbish fire and vehicle fire. Based on the observations from the site walkover, the concerned sections of Lung Cheung Road and Lion Rock Tunnel Road were also observed to be paved with intact concrete in good condition and with no stains / spillage / burn marks observed. Given the above, the reported incident records were not expected to pose any potential land contamination issues to the Project.

Site Reconnaissance

- 7.5.9 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.
- 7.5.10 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 land contamination issues were identified in these areas. However, there were potential land contamination issues associated with 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, 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 stressed vegetation were observed during the site walkover.
- 7.5.11 Based on findings of the site appraisal, the following 11 facilities / areas were identified with potential land contamination concerns:-
- Vehicle maintenance workshop in Administration Building (with a chemical storage area and a chemical waste storage area);
 - Long vehicle maintenance and parking area (with a chemical storage area);
 - Workshop at E&M Building;

- E&M Building (with a chemical store room and a generator);
 - Ventilation Building S1 (with a generator, a transformer and a chemical waste storage area);
 - S1-2 Building (with a generator and a transformer);
 - Ventilation Building S2 (with a transformer and a chemical waste storage area);
 - S2-2 Building (with a generator, a transformer and a chemical waste storage area);
 - Ventilation Building K1 (with 2 transformers);
 - Ventilation Building K2 (with 2 generators, a transformer and a chemical waste storage area);
 - K2-2 Building (with a transformer)
- 7.5.12 Further SI works is considered necessary for confirming any land contamination in the above concerned facilities / areas. The corresponding sampling and testing strategies are presented in **Section 7.6**.
- 7.5.13 Site appraisal findings of the facilities / areas with land contamination concerns are shown in **Table 7.2**. The photographic records, including the site layout plans, are shown in Appendix C of the CAP provided in **Appendix 7.1**.

Table 7.2 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 the CAP in <u>Appendix 7.1</u>	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 of the CAP).</p>	Photo 2506 in 60604728/CAPb/PR3	N/A	Metals, SVOCs and PCR	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, SVOCs and PCR	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 the CAP in <u>Appendix 7.1</u>	Other Past Potential Contaminating Land Use / Activities	Potential COCs	Future Land Uses	RBRGs Land Use Scenario
	Chemical Waste Storage Area (approx. 6 m ²)	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 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.	Photo 2526 & 9713 in 60604728/CAPb/PR3	N/A	Metals, SVOCs and PCRs	Roads	Lower of Industrial 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, 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, 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, SVOCs and PCRs	Roads / Car Park	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 the CAP in Appendix 7.1	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, VOCs, SVOCs and PCRs	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. No stains were observed in the vicinity of the generator. The concrete paved floors and the concrete slabs were in good condition.	Photo 9838 & 9840 in 60604728/CAPb/PR4	N/A	Metals, VOCs, SVOCs and PCRs	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 the CAP in <u>Appendix 7.1</u>	Other Past Potential Contaminating Land Use / Activities	Potential COCs	Future Land Uses	RBRGs Land Use Scenario
	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
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.	Photo 4481 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 the CAP in <u>Appendix 7.1</u>	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 transformer. All the concrete paved floors and concrete slabs were in good condition.					
	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, 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, 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, PCBs and PCRs	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 the CAP in Appendix 7.1	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, VOCs, SVOCs, PCR, and	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, PCR, 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, VOCs, SVOCs, PCR, and	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 the CAP in Appendix 7.1	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 7.8**), the most stringent set of RBRGs should be adopted for the concerned area(s).

Future Land Uses

- 7.5.14 Land contamination assessment on the potentially contaminated sites would need to be evaluated against the Risk-based Remediation Goals (RBRGs) and if there were presence of non-aqueous phase liquid (NAPL), soil saturation limits (C_{sat}) / solubility limits, as stipulated in Table 2.1 and Table 2.2 of the Guidance Manual.
- 7.5.15 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; and
 - Public park.
- 7.5.16 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 7.8**). 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).

7.6 Site Investigation Plan

- 7.6.1 Based on findings of the site appraisal, a total of 35 sampling locations are proposed to study the vertical profile of possible contamination within the Project Area. The sampling locations are illustrated in **60604728/R42b/Figure 7.2** and **7.3**. 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. The COCs proposed for laboratory analysis included metals, VOCs, SVOCs, PCRs and PCBs. The sampling and testing plan with rationale is presented in **Table 7.3**.

Table 7.3 Sampling and Testing Plan

Concerned Facility / 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	-

Concerned Facility / 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		
Air Compressor (approx. 3 m ²)	ENV-BH06	-	-	Target potential hotspot area at air compressor (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	-	
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	-	
	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 (100 m ²)	-	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	-	

Concerned Facility / 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	
	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	-
	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	-

Concerned Facility / 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 S1-2 (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	✓
	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	✓

Concerned Facility / 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-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	✓	
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	-	

Concerned Facility / 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	
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 **60604728/R42b/Figure 7.2** and **7.3** 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.

7.7 Prediction and Evaluation of Environmental Impacts

- 7.7.1 Based on the site appraisal, 11 facilities / areas within the Project Area 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.
- 7.7.2 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.
- 7.7.3 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 7.8** 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 there are proven commercially available technologies (e.g. biopiling and cement solidification / stabilization) that could tackle these COCs.
- 7.7.4 Given the above, land contamination impacts are considered not insurmountable to the Project if the recommended actions as outlined in **Section 7.8** 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.

7.8 Mitigation of Adverse Environmental Impacts

Recommended Further Works

- 7.8.1 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, as the demolition of 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).
- 7.8.2 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 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.

- 7.8.3 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).
- 7.8.4 A tentative programme for land contamination assessment is shown in **Table 7.4**. 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 7.4 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

Mitigation Measures for Remediation Works

- 7.8.5 Mitigation measures for the remediation works would depend on the nature / extent of contamination and the method of treatment. The mitigation measures will be recommended in the RAP and would typically include the following:
- Excavation profiles must be properly designed and executed with attention to the relevant requirements for environment, health and safety;
 - Excavation shall be carried out during dry season as far as possible to minimise contaminated runoff from contaminated soils;
 - Supply of suitable clean backfill material (or treated soil) after excavation;
 - Stockpiling site(s) shall be lined with impermeable sheeting and banded. Stockpiles shall be fully covered by impermeable sheeting to reduce dust emission. If this is not practicable due to frequent usage, regular watering shall be applied. However, watering shall be avoided on stockpiles of contaminated soil to minimise contaminated runoff.
 - Vehicles containing any excavated materials shall be suitably covered to limit potential dust emissions or contaminated wastewater run-off, and truck bodies and tailgates shall be sealed to prevent any discharge during transport or during wet conditions;
 - Speed control for the trucks carrying contaminated materials shall be enforced;
 - Vehicle wheel and body washing facilities at the site's exist points shall be established and used; and
 - Pollution control measures for air emissions (e.g. from biopile blower and handling of cement), noise emissions (e.g. from blower or earthmoving equipment), and water discharges (e.g. runoff control from treatment facility) shall be implemented and complied with relevant regulations and guidelines.

7.9 Evaluation of Residual Impacts

- 7.9.1 The recommended further land contamination assessment and, if required, remediation works for the Project site would follow EPD's Guidance Manual, Guidance Note and Practice Guide and any soil/groundwater contamination would be identified and properly treated prior to the commencement of construction works under the Project. Land contamination impacts are therefore considered acceptable if the follow up actions as outlined in **Section 7.8** were followed and contaminated soil and groundwater (if any) were properly treated using appropriate remediation methods and according to the RAP to be agreed by EPD. No unacceptable residual impacts are anticipated.

7.10 Environmental Monitoring and Audit Requirements

- 7.10.1 Remediation works, if necessary, would be carried out based on the recommended further works outlined in **Section 7.8**. Mitigation measures as recommended in the future EPD approved RAP should be implemented during the remediation works. The Environmental Monitoring and Audit (EM&A) requirements should be carried out in the form of regular site inspection during construction phase to ensure the recommended mitigation measures are properly implemented.

7.11 Conclusion

- 7.11.1 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.
- 7.11.2 A sampling and testing programme, targeting the concerned facilities / areas identified within the Project Area had been proposed and documented in the CAP. 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, PCBs and PCRs).
- 7.11.3 As the concerned facilities of the LRT are still in operation and the demolition and construction works 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.
- 7.11.4 With the implementation of the recommended further 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.