

## 12 Land Contamination Assessment

### 12.1 Introduction

This chapter presents the findings of the land contamination assessment of the impacts from the SCL – Tai Wai to Hung Hom Section (SCL (TAW-HUH)) during the construction phase.

A Contamination Assessment Plan (CAP) has been prepared to set out the requirements for a contamination evaluation of the SCL (TAW-HUH) and works areas, and endorsed by EPD in August 2009. With the subsequent change of design information, a revised CAP has been re-submitted in November 2010 and endorsed by EPD on 10 December 2010. Subsequently, the project boundary, at grade works sites and off site works areas have been updated. A supplementary CAP has been submitted to EPD on 21 January 2011 and endorsed on 11 February 2011 to reflect the latest changes of the project. The final endorsed CAP and Supplementary CAP are attached in **Appendix 12.1**.

A total of 5 trial trenches and 24 drillholes were excavated and drilled for soil and groundwater sampling at 10 identified potentially contaminated sites in accordance with the endorsed CAP and supplementary CAP. So far, a total of 201 soil samples and 22 groundwater samples were collected. All soil and groundwater samples were analysed by a HOKLAS accredited laboratory for all parameters listed in the endorsed CAP and Supplementary CAP.

Available testing results of soil samples indicate that all soil samples are below the value of Risk Base Remediation Goal (RBRG) for industrial purpose, except 1 soil sample collected from 2209/SCL/EDH127 at site L4 (former Tai Hom Village), of which the PCBs concentration exceeded the respective RBRG. Details of the soil remediation method and the disposal criteria of the contaminated soils are described in **Section 12.11**.

Available testing results of groundwater sample at this stage indicate that none of the groundwater samples exceed the RBRGs levels for industrial purpose.

Contamination Assessment Report (CAR) and Remediation Action Plan (RAP) have been prepared to summarise the entire contamination assessment programme, investigation procedures and methodologies, the analytical results of soil and groundwater samples, the scope of any remedial work required, and the particular health and safety requirement that may be required during the works. The CAR and RAP have been endorsed by EPD on 22 Dec 2009. A supplementary CAR has been submitted to EPD on 14 February 2011 to reflect the latest changes of the project. The endorsed CAR and RAP and Supplementary CAR are attached in **Appendix 12.2**.

### 12.2 Legislation and Standards

Legislation and non-statutory guidance for carrying out the land contamination assessment is provided in the following:

- Technical Memorandum on Environmental Impact Assessment Process (TM-EIA);
- Guidance Notes for Investigation and Remediation of Contaminated Sites of Petrol Filling Stations, Boatyards, and Car Repair/Dismantling Workshops.<sup>1</sup>
- Guidance Notes for Contaminated Land Assessment and Remediation; and
- Guidance Manual for Use of Risk-Based Remediation Goals (RBRGs) for Contaminated Land Management, EPD.

<sup>1</sup> The CAP, supplementary CAP and CAR of this Project were carried out under *Guidance Notes for Investigation Remediation of Contaminated Sites of Petrol Filling Stations, Boatyards, and Car Repairing/Dismantling Workshops*. The guideline was however, superseded by the *Practice Guide (PG) for Investigation and Remediation of Contaminated Land* in August 2011. Remediation works, if any, under this Project will be carried out under the new PG

## 12.3 Background Information

The assessment is carried out by reviewing the relevant historical information such as site geological information, ground conditions, aerial photos and site inspection.

All collected information and inspection findings have been reviewed and sampling locations have been selected for evaluating the potential of contamination that might be encountered during the construction period.

### 12.3.1 Ground Conditions

The Geological profile of the alignment is shown in Contamination Assessment Plan (CAP) in **Appendix 12.1**. The approximate ground levels of the potentially contaminated sites are summarised in **Table 12.1**.

**Table 12.1:** Approximate ground levels of potentially contaminated sites

Site ID	Location	Approximate ground levels (Elevation in mPD)
L1	NT South Animal Centre	15
L2	Shatin Water Treatment Works	25
L3	Towngas Offtake Station opposite Hin Keng Estate	30
L4	Former Tai Hom Village <sup>(1)</sup>	10
L5	Former Kai Tak Airport	5
L13	Former petrol station adjacent to Chatham Road North	10
L14	Kerosene Store along Chung Hau Street	30
L15	Shell Petrol Station along Ma Tau Wai Road	12
L16	Caltex Petrol Station along Ma Tau Wai Road	12
L17	International Mail Centre	4
L18	Ex-KCRC Depot	4
SM-1	Fuel/Oil Filling Station inside Shek Mun WSD's works area	6

The materials encountered during the site investigations consists of fill, fill derived from marine deposit, alluvium, residual soil and decomposed granite. The strata of the drillholes/ trial trench are summarised in endorsed CAR and Supplementary CAR.

### 12.3.2 Historical Information

A selection of historical aerial photos and maps has been collated and reviewed. Historical aerial photographs along SCL (TAW-HUH) and the coastline for the year between 1963 and 2008, the historical maps of 1947 and 1964 for Kowloon Peninsula and reclamation history plan are given in the CAP in **Appendix 12.1**. The current and historical contamination concerns along the SCL (TAW-HUH) have been identified.

Historical landuses along SCL (TAW-HUH) is summarized in **Table 12.2**.

**Table 12.2:** Historical landuses along SCL

Year	Ho Man Tin / Hung Hom	To Kwa Wan / Ma Tau Wai	Kai Tak	Diamond Hill	Hin Keng / Tai Wai
1947	Factory buildings along Whampoa dockyards; Whampoa Dockyards in operation; KCR in operation.	Residential building existed along Ma Tau Chung Road and Ma Tau Wai Road	Reclamation of Kai Tak Airport completed.		

Year	Ho Man Tin / Hung Hom	To Kwa Wan / Ma Tau Wai	Kai Tak	Diamond Hill	Hin Keng / Tai Wai
1963	Reclamation of Hung Hom Bay; construction of Valley Road Estate, Hong Chong Road in progress.		Kai Tak Airport in operation. Reclamation of Kai Tak runway completed.	Squatter areas including Tai Hom Tsuen and Diamond Hill.	Construction of Shatin Water Treatment Works in progress. Agricultural and small village houses at Hin Keng and Tai Wai areas.
1973	Reclamation of Hung Hom Bay, construction of Valley Road Estate, Hong Chong Road completed. Hung Hom Railway Terminus in operation.		Reclamation of Kowloon Bay in progress.	Construction of Upper Wong Tai Sin Estate, Widening and Extension of Lung Cheong Road in progress. Squatter areas at Chuk Yuen and Tsz Wan Shan.	Construction of Shatin Water Treatment Works completed
1982	Hung Hom Bay Centre and Whampoa Estate developed. International Mail Centre and Hong Kong Coliseum in operation.	To Kwa Wan Government Office was under construction.	Reclamation of Kowloon Bay completed.	Construction of Upper Wong Tai Sin Estate, Lung Cheong Road completed Squatter areas at Chuk Yuen and Tsz Wan Shan cleared.	Agricultural fields cleared in Tai Wai and Hin Keng. Foundation works for housing estates in progress.
1993	Whampoa Dockyard ceased operation. Reclamation of Hung Hom Bay in progress. Chatham Road North, and Hung Hom developed as residential areas.	To Kwa Wan Government Office was erected.		Developed as residential area. Construction of Tate's Cairn Tunnel in progress.	Tai Wai and Hin Keng developed as residential area. Tai Wai Depot used as recreational uses.
2000	Reclamation of Hung Hom Bay completed.		Kai Tak Airport ceased operation.	Kowloon Wall City demolished. Demolishing of Tai Hom Village in progress.	
2008	Developed as residential and commercial areas.		Kai Tak Airport ceased operation.	Developed as residential areas. Tai Hom Village demolished.	Developed as residential areas. MTR Tai Wai Depot developed.

### 12.3.2.1 Year 1947

The Kowloon Canton Railway (KCR) was in operation with Tsim Sha Tsui the Railway Terminus. Hong Kong & Whampoa Docks was in operation to the south of Baker Road. Hung Hom Bay and To Kwa Wan Island had not been reclaimed. Residential buildings had erected along Ma Tau Chung Road and Ma Tau Wai Road.

Land reclamation for Kai Tak Airport was completed and Kai Tak Airport runway had not been reclaimed. Areas to the north of Kowloon City comprised mainly small farms, agricultural fields and hilly terrain.

**12.3.2.2 Year 1963**

Land Reclamation of To Kwa Wan Island was completed while reclamation of Hung Hom Bay, Kowloon Bay was in progress. Construction of Valley Road Estate, Hong Chong Road, Fat Kwong Street and excavation along hillside was in progress. Ma Tau Wai Estate and Ma Tau Wai Road Playground was previously an open car parking space and the secondary schools along Ma Tau Wai Road had not been built. Residential developments were developed to the south of Chatham Road North.

Reclamation of Kai Tak runway and construction of Wong Tai Sin Estate were completed. Tai Hom Tsuen and areas to the north of Lung Cheung Road comprised mainly agricultural fields and squatter houses and hilly terrain. Lung Cheung Road terminated at Chuk Yuen and widening of Lung Cheung Road was not started. The Tate's Cairn Tunnel had not been constructed.

Construction of Shatin Water Treatment Works was in progress. Hin Keng and Tai Wai Area comprised agricultural fields and small village houses.

**12.3.2.3 Year 1973**

The KCR Railway Terminus was relocated to Hung Hom. The Hong Kong Polytechnic was in operation. Both International Mail Centre and Hong Kong Coliseum were used as open storage areas.

Reclamation of both Hung Hom Bay and Kowloon Bay were completed. Construction of Valley Road Estate, Hong Chong Road, Fat Kwong Street were completed and in operation. Construction of Fat Kwong Street Garden and Oi Man Estate was still in progress. Ma Tau Wai Estate was well established and Ma Tau Wai Road Playground had built. Residential buildings along Ma Tau Wai Road remained unchanged.

Widening works and extension of Lung Cheung Road to the north of Tai Hom Village was in progress. Construction of Upper Wong Tai Sin Estate was in progress. Chuk Yuen and Tsz Wan Shan was undeveloped hilly squatter area along the hillside. The Tate's Cairn Tunnel had not been constructed.

The western side of Tai Hom Village was cleared for the construction of residential buildings (Fung Tak Estate) and extension of Lung Cheung Road. Tai Hom Tsuen comprised mainly squatter houses.

Construction of Shatin Water Treatment Works was completed. Hin Keng and Tai Wai comprised agricultural fields and small village houses.

**12.3.2.4 Year 1982**

Construction works of Fat Kwong Street Garden and Oi Man Estate was completed. To Kwa Wan Government Office was under construction. Residential developments including Wyler Gardens were fully developed at the south of Chatham Road North. Hung Hom Bay Centre and Whampoa Estate were developed. The International Mail Centre and Hong Kong Coliseum were in operation.

Construction of Upper Wong Tai Sin Estate was completed. Widening and Extension works of Lung Cheung Road was completed. The construction of Tate's Cairn Tunnel and Fung Tak Road were in progress. Squatters along hillside of Chuk Yuen and Tsz Wan Shan had been removed and excavation works of Kowloon Hills was in progress. Tai Hom Village comprised mainly squatter houses.

The agricultural fields in Tai Wai and Hin Keng were removed and foundation works for housing estates was in progress.

**12.3.2.5 Year 1993**

Reclamation of Hung Hom Bay was in progress. Residential buildings remained unchanged and To Kwa Wan Government Office was erected. High rise buildings developed along both

sides of Chatham Road North. Whampoa Garden was in place. Whampoa Dockyards was transformed into residential developments.

High-rise residential building developed at Chuk Yuen and Tsz Wan Shan. Construction of Tate's Cairn Tunnel was completed and in operation. Construction of Lung Poon Court, Fung Tak Estate, Plaza Hollywood, Galaxia, Bel Air Heights and Chi Lin Nunnery were in progress. Diamond Hill had developed into residential area. Tai Hom Village comprised mainly squatter houses.

Tai Wai and Hin Keng had developed into a new town. Hin Keng Estate, Carado Garden, Hin Keng Playground were in place. Tai Wai Depot was used as School of Motoring, bicycle park, and football court.

#### **12.3.2.6 Year 2000**

Land reclamation of Hung Hom Bay was completed. Majestic Park along Ma Tau Wai Road was under construction and residential developments had been erected along Chatham Road North. Hung Hom was developed into a residential area.

Kai Tak Airport was closed and parts of the administration buildings were demolished. Diamond Hill had developed into residential area. Kowloon Wall City was demolished and developed into Kowloon Wall City Park.

Construction of Plaza Hollywood, Galaxia, Bel Air Heights and Chi Lin Nunnery were completed. The demolition of Tai Hom Village was in progress with the southern part of the village cleared.

Hin Keng Estate, Carado Garden, Hin Keng Playground were in place. Tai Wai Depot was used as School of Motoring, bicycle park, and football court.

#### **12.3.2.7 Existing landuse**

The majority of the existing landuse along the alignment and stations are mainly commercial, residential and community facilities.

Tai Hom Village has been cleared and Kai Tak Airport closed. The MTR Tai Wai depot has been developed and construction of residential development on top is in progress.

### **12.4 Site Inspection**

Site surveys were conducted on 1 November 2008, 8 and 10 December 2008 to confirm findings of desktop study and to identify any other land uses along the alignment which may have the potential for causing soil and groundwater contamination. Additional surveys have also been conducted for the off-site temporary works sites and works areas in September 2009, October 2009, February 2010 and August 2010. Possible contaminants were identified in accordance with Annex B of EPD's *Guidance Notes for Investigation and Remediation of Contaminated Sites of Petrol Filling Stations, Boatyards, and Car Repairing/Dismantling Workshops*.

Tai Hom Village has been cleared and closed for public. Kai Tak Airport is no longer in use. A kerosene store is located at the slope between Chung Hau Street and Chatham Road North.

Two petrol stations have been identified along and in the vicinity of SCL:

- Caltex Petrol Station along Ma Tau Wai Road, and
- Shell Petrol Station along Ma Tau Wai Road.

A WSD' works area used for storage of construction materials has been identified at Shek Mun off-site works area. Unpaved fuel filling station was identified inside the works area and heavy oil stains on unpaved ground surface was observed.

In the vicinity of the identified potential contaminated sites, there are residential and commercial buildings.

## 12.5 Future Landuse and Activities

The RBRGs have categorised four different post-restoration land uses, namely Urban Residential, Rural Residential, Industrial and Public Parks, to reflect the actual settings which people could be exposed to contaminated soil or groundwater. Definition of post-restoration land uses are given in EPD's *Guidance Note for Contaminated Land Assessment and Remediation and RBRGs Guidance Manual*.

The future land use of SCL (TAW-HUH) including the tunnels, station, ventilation buildings and plant room etc would be classified as "Railway" and classified as "Industrial" under RBRGs landuse category. Corresponding RBRGs landuse for other associated facilities are also identified and given in **Table 12.3**.

**Table 12.3:** Post-restoration land use and RBRGs land use

Landuse	Corresponding RBRGs Landuse
Railway	Industrial
Open Space	Public Park
Pedestrian Walkway	Lower of Industrial or Public Park
Road	Lower of Industrial or Public Park

## 12.6 Potentially Contaminated Sites

Potentially contaminated sites along SCL (TAW-HUH) have been identified based on historical maps, selected aerial photos, information collected during site survey. Potentially contaminated landuses along the SCL (TAW-HUH) are chemical/ oil storage, fuelling area/ fuel storage, vehicle repair, airport, reclaimed area and gas works. Locations of these potentially contaminated sites are summarised in **Table 12.4**. Current conditions of these potentially contaminated are shown in CAP in **Appendix 12.1**.

**Table 12.4:** Potentially contaminated landuse

Site ID	Location	Landuse	Potentially sources of contamination	SI Requirement	Remarks
L1	NT South Animal Centre	Store room for chemical	Possible spillage/ leakage of chemicals	Yes	
L2	Shatin Water Treatment Works	Chemical/ Oil storage	Possible spillage/ leakage of chemicals from sewage works or discharge of contaminated wastewater	No	Low potential for migration of contaminants with large separation
L3	Towngas Offtake Station opposite Hin Keng Estate	Oil storage	Possible leakage of gaseous fuels from towngas pipeline and offtake station.	Yes	
L4	Former Tai Hom Village	Fuelling area/ Fuel storage	Potential for contamination from historical land uses such as metal workshops, car repair yards, dye works and plastics company	Yes	
L5	Former Kai Tak Airport	Fuelling area/ Fuel storage, vehicle repair, airport,	Historical spillage/ Leakage of aviation fuel	No	Site clean up by CEDD (former TDD)

Site ID	Location	Landuse	Potentially sources of contamination	SI Requirement	Remarks
		reclaimed area			
L13	Former petrol station adjacent to Chatham Road North	Fuelling area/ Fuelling storage	Potential for contamination from past activities	Yes	
L14	Kerosene Store along Chung Hau Street	Oil storage	Potential spillage/ Leakage of fuel	Yes	
L15	Shell Petrol Station along Ma Tau Wai Road	Fuelling area/ Fuel storage, vehicle repair	Possible spillage/ Leakage of fuel	Yes	
L16	Caltex Petrol Station along Ma Tau Wai Road	Fuelling area/ Fuel storage, vehicle repair	Possible spillage/ Leakage of fuel	Yes	
L17	International Mail Centre	Fuelling area/ Carpark/ Storage area	Possible spillage/ Leakage of fuel	Yes	
L18	Ex-KCRC Depot	Existing Chatham Road North	Possible accumulation of spillage/ leakage of fuel within the boundary of KCRC Depot in the past.	Yes	
SM-1	Fuel/Oil Filling Station inside Shek Mun WSD's works area	Fuelling area/ Fuelling storage	Possible spillage/ Leakage of fuel	Yes	

## 12.7 Contamination Assessment Plan and Supplementary Contamination Assessment Plan

The CAP and Supplementary CAP have specified the requirements on the following aspects:

- Sampling locations
- Depth of sampling points
- Sampling methodology for soil and groundwater
- Sample size and handling criteria
- Analytical parameters & methodology
- Quality control

The draft CAP was submitted to EPD in February 2009 for endorsement. The CAP was endorsed in August 2009. Owing to the subsequent change of design information, a revised CAP has been re-submitted in November 2009 and re-endorsed by EPD on 10 December 2009. A supplementary CAP has been submitted to EPD on 21 January 2011 and endorsed on 11 February 2011 to reflect the latest changes of the project. The final endorsed CAP and Supplementary CAP are shown in **Appendix 12.1**.

## 12.8 Site Investigation

Site investigation (SI) works were commenced in February 2009 and completed in November 2010, and carried out by the GI Contractor. A total of 5 trial trenches and 24 drillholes were excavated and drilled for soil and groundwater sampling in accordance with the endorsed CAP for SCL (TAW-HUH) and the supplementary CAP. The exact locations

and depths for sampling are determined by the on-site Contamination Specialist to suit condition and constraints during the investigation. All soil and groundwater samples were analysed by a HOKLAS accredited laboratory for all parameters listed in the CAP and Supplementary CAP. A CAR and RAP has been prepared to summarise the entire contamination assessment programme, investigation procedures and methodologies, the analytical results of soil and groundwater samples, the scope of any remedial work required, and the particular health and safety requirement that may be required during the works. The revised CAR and RAP have been endorsed by EPD on 22 December 2009. A supplementary CAR has also been submitted to EPD on 14 February 2011 to reflect the latest changes of the project (**Appendix 12.2**).

## 12.9 Assessment Criteria

The results of soil and groundwater analysis were compared to RBRGs for Industrial Purpose as given in *Guidance Manual for Use of Risk-Based Remediation Goals (RBRGs) for Contaminated Land Management, EPD*, which have been adopted as the land contamination assessment criteria in HKSAR since December 2007.

## 12.10 Interpretation of Results

201 soil samples have been collected from 24 drillholes and 5 trial trenches.

Available results indicate that all collected soil samples are below the value of RBRGs for industrial purpose, except 1 soil sample collected from 2209/SCL/EDH127, of which the PCBs concentration exceeded the respective RBRG. The analytical results exceeding the RBRGs are given in **Table 12.5**. The location of borehole with contamination is shown in **Figure 12.1.1**.

**Table 12.5:** Summary of soil samples exceeding RBRGs for "Industrial" category

Site ID	Drillhole reference	Depth	Contaminant	Concentration (mg/kg dry soil)	RBRGs (mg/kg dry soil)
L4 (Former Tai Hom Village)	2209/SCL/EDH127	0.5m	PCBs	1.3	0.748

The nature and distribution of the contaminated soil samples indicate that contamination is present at discrete hotspot. The finding is supported by the pattern of landuse on this site, which involved a historical metal workshop at former Tai Hom Village. Analytical results suggest that contamination is not spatially continuous, and is generally limited in depth.

However, it is Government policy that soils containing contaminants in exceedance of the RBRGs should be remediated. Details of the soil remediation method and the disposal criteria of the contaminated soils are described in **Section 12.11**.

Groundwater samples were taken from 22 drillholes. The groundwater level of drillhole 2209/SCL/EDH118 at Site L14 (Kerosene Store along Chung Hau Street) was below rock-head level and therefore no groundwater sample was collected. Groundwater table was not encountered in those five 3m-depth trial trenches, hence no groundwater sample was collected. Available results at this stage indicate that none of the groundwater samples exceed the RBRGs levels for industrial purpose.

## 12.11 Soil Remediation and Disposal

A summary of evaluation of soil remediation options is given below.

- Only a small quantity of 39m<sup>3</sup> of soil (0.0 - 1.0m below ground level) has been contaminated by PCBs at drillhole 2209/SCL/EDH127 of Site L4 - former Tai Hom Village (see **Figure 12.1.1**);



- Remediation options including solidification and stabilisation, soil-washing, physical separation and excavation and landfill disposal (i.e. considered as the last resort), have been investigated with respect to their associated advantages and disadvantages;
- Landfill disposal has been recommended, and the contaminated soil has been tested to be acceptable for landfill disposal in accordance with the TCLP testing (see **Table 12.6**); and
- Specifications for the remedial works (including disposal methodology, requirements for compliance testing, and the need for protective and safety measures) will be given in the endorsed CAR which is attached in **Appendix 12.2**.

Details of various soil remediation options had been given in the endorsed CAR attached in **Appendix 12.2**.

**Table 12.6:** TCLP testing results for 2209/SCL/EDH127 at 0.5m

Parameters	TCLP testing results (ppm)	TCLP limit (ppm)
Cadmium	<0.2	10
Chromium	<1	50
Copper	<1	250
Nickel	<1	250
Lead	<1	50
Zinc	5	250
Mercury	<0.2	1
Tin	<1	250
Silver	<1	50
Antimony	<1	150
Arsenic	<1	50
Beryllium	<1	10
Thallium	<1	50
Vanadium	<1	250
Selenium	<0.2	1
Barium	<1	1000

## 12.12 Recommendations

The remediation area for contaminated soil should be clearly marked out on site and excavated to an extent of 3.5m radius from the sample location. Excavation should be undertaken by dedicated earth-moving plant.

The excavated contaminated soils should not be stockpiled on site, but should immediately be loaded onto trucks and taken to the chosen landfill site. All trucks carrying contaminated material should be adequately covered by sheets to prevent dispersion of contamination.

Although the contaminated soils is situated above the groundwater table, due to the fluctuation of the groundwater table, the remediation contractor should pay attention to the selection of suitable groundwater lowering schemes and discharge points if the contaminated soils is situated below the groundwater table during the excavation. The remediation contractor should also obtain a valid Water Pollution Control Ordinance (WPCO) discharge licence from EPD where applicable.

The remediation programme should be supervised by the on-site Decontamination Specialist (to be appointed by the Contractor) with at least 7 years experience in

contamination assessment or decontamination. All relevant method statements prepared by the remediation contractor should be reviewed and approved by the Decontamination Specialist before proceeding with the works.

- A confirmatory testing will be carried out following excavation at each location, in order to confirm that all contaminated material has been removed.
- Following completion of excavation to the specified depth, at least one sample from the base of the excavation and three samples evenly distributed along the boundary of the excavation shall be taken for carrying out the compliance testing. The compliance testing requirements are shown in **Table 12.7**.

**Table 12.7:** Requirements for compliance testing

Locations	Testing Requirement	Acceptance Criteria
2209/SCL/EDH127	PCBs	RBRGs (Industrial category)

- If the results of analysis are less than the RBRGs (Industrial category) of PCBs, no further excavation will be required.
- If the analysis indicates continued presence of contamination, the excavation shall be extended a further 0.5m depth or 1m wide with material disposed of as described above, and a further sample taken for compliance testing. The process of excavation, sampling and compliance testing should continue until all contaminated material is removed. The excavated hole should then be backfilled by using suitable clean fill material.
- Prior to the commencement of proposed construction works, a Remediation Report (RR) should be prepared and submitted to EPD to demonstrate that the decontamination work is adequate and is carried out in accordance with the endorsed CAR and RAP. Information such as soil treatment/disposal records (including trip tickets), confirmatory sampling results, photographs, etc should be included in the RR. No construction works shall be carried out at the contaminated area prior to the endorsement of RR given by EPD.

### **12.13 Contamination Assessment for HOM and Former Hung Hom Freight Yard**

The contamination assessments for HOM and former Hung Hom Freight Yard have been conducted by the EIA Consultants responsible for the Kwun Tong Line Extension and SCL – Mong Kok to Hung Hom Section (SCL (MKK-HUH)) respectively. The CAP and CAR of SCL (MKK-HUH) are given in **Appendix 12.3** while the CAP and CAR for Kwun Tong Line Extension can be referred to the approved EIA Report under EIAO website. (ref.: [http://www.epd.gov.hk/eia/register/report/eiareport/eia\\_1842010/EIA/html/EIA\\_index.htm](http://www.epd.gov.hk/eia/register/report/eiareport/eia_1842010/EIA/html/EIA_index.htm)) As stipulated in the aforementioned CARs, no soil and groundwater contamination was detected in both HOM and former Hung Hom Freight Yard.

### **12.14 Conclusion**

A land contamination assessment has been conducted for the project. Historical information such as site geological information, ground condition, aerial photos has been reviewed.

A total of 5 trial trenches and 24 drillholes were excavated and drilled for soil and groundwater sampling at 10 identified potentially contaminated sites in accordance with the endorsed CAP and supplementary CAP. A total of 201 soil samples and 22 groundwater samples were collected. The testing results indicate that only one soil sample (i.e. 2209/SCL/EDH127 at former Tai Hom Village) needs to be remediated. A total volume of 39m<sup>3</sup> (i.e. 0.0m – 1.0m with a 7m diameter) is recommended to be disposed of at the landfill after consideration of other remediation options. The remediation action plan and

specification for remediation works have been detailed in the CAR and RAP in **Appendix 12.2**.

The soil re-sampling and analysis of cyanide (free) at Site L1 was supposed to be carried out with SI at Site L3. However, the re-sampling at Site L1 is still unable to carry out during the course of this EIA study due to site access problem. The re-sampling would be conducted after the site is resumed and handed over to the Project Proponent. Following the completion of re-sampling and lab testing works of this site, a second Supplementary CAR and Supplementary RAP (if contamination is confirmed) shall be prepared and submitted to EPD for agreement. Supplementary Remediation Report (RR) shall also be prepared and submitted to EPD for endorsement prior to the commencement of any construction/ development works at Site L1, if contamination is identified.