

本署編號 (12) in AX(3) to EP2/G/A/124 (pt.3)  
 OUR REF: Environmental Protection Department  
 來函編號 C/HSD/SCL-NSLI/E1005/03/#0909428  
 YOUR REF: Branch Office  
 電話 2835 1117  
 TEL. NO.: 28th Floor, Southorn Centre,  
 130 Hennessy Road,  
 傳真 2591 0558  
 FAX NO.: Wan Chai, Hong Kong.  
 電子郵件  
 E-MAIL:  
 網頁  
 HOMEPAGE: http://www.epd.gov.hk

環境保護署分處  
 香港灣仔  
 軒尼詩道  
 一百三十一號  
 悠閣中心廿八樓

By Post and Fax (fax: 2145 4269)

08 October 2009

MTR Corporation Limited  
 MTR Headquarters Building,  
 Telford Plaza, Kowloon Bay,  
 Kowloon, Hong Kong  
 (Attn: Mr. Richard KWAN, Manager – Environmental)

Dear Mr. Kwan,

Sustainability Development Department	
SP#	
Rec'd On:	- 8 OCT 2009 Encl 5
Copy To:	
Cir To:	
File Ref:	

**Shatin to Central Link – Cross Harbour Section**  
**(Phase I – Mong Kok East to Hung Hom) EIA Study Brief (ESB-192/2008)**  
**Contamination Assessment Plan (Version C)**

I refer to your referenced letter dated 22.9.2009, submitting a copy of the Contamination Assessment Plan (Version C) for our agreement as per Section 3.4.5.4 of the EIA Study Brief No. ESB-192/2008.

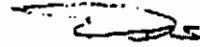
2. For the avoidance of doubt, I extract the relevant requirements of the concerned EIA Study Brief as follow:

3.4.5.4 – *During the course of the EIA study, the Applicant shall submit a Contamination Assessment Plan (CAP) to the Director for endorsement prior to conducting the contamination impact assessment of the relevant land or site(s). The CAP shall include proposal with details on representative sampling and analysis required to determine the nature and the extent of the contamination of the relevant land or site(s).*

3. Please note that our views /comments on the Contamination Assessment Plan (Version C) for Shatin to Central Link – Cross Harbour Section (Phase I – Mong Kok East to Hung Hom) are only provided for the partial fulfillment of the specific requirements for agreement stipulated in the above-mentioned EIA study brief clauses and shall not pre-empt our future decisions to the EIA report approval process for the Shatin to Central Link – Cross Harbour Section (Phase I – Mong Kok East to Hung Hom) EIA under the EIA

Ordinance. Our views below shall not absolve your responsibility to fulfill requirements in other statutory legislation.

4. Subject to the above caveats, I confirm that we have no further comment on the Contamination Assessment Plan (Version C).



(Desmond CHAN)  
Project Engineer (Metro Assessment)  
for Director of Environmental Protection

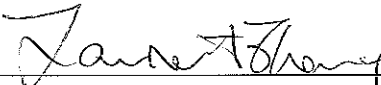

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**MTR Corporation Limited**

Shatin to Central Link -  
 Consultancy Agreement No. NEX/2213

**Environmental Impact Assessment  
 (EIA) of Cross Harbour Section  
 (Phase I – Mong Kok East to Hung Hom)**

**Contamination Assessment Plan**  
 Sep 2009

	Name	Signature
Prepared & Checked:	Laurent Cheung	
Reviewed & Approved:	Freeman Cheung	

Version:	C	Date:	14 Sep 2009
<p>The information contained in this report is, to the best of our knowledge, correct at the time of printing. The interpretation and recommendations in the report are based on our experience, using reasonable professional skill and judgment, and based upon the information that was available to us. These interpretations and recommendations are not necessarily relevant to any aspect outside the restricted requirements of our brief. This report has been prepared for the sole and specific use of our client and AECOM Environment accepts no responsibility for its use by others.</p> <p>This report is copyright and may not be reproduced in whole or in part without prior written permission.</p>			

AECOM Asia Co. Ltd.

11/F, Grand Central Plaza, Tower 2, 138 Shatin Rural Committee Road, Shatin, NT, Hong Kong

Tel: (852) 2893 1551 Fax: (852) 2891 0305 www.aecom.com

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## 1. INTRODUCTION

### Project Background

- 1.1 The Shatin to Central Link (SCL) is one of the ten large-scale infrastructure projects announced by the Chief Executive in his 2007-2008 Policy Address, targeting commencement of construction by 2010. The Executive Council has endorsed on 11 March 2008 the SCL scheme jointly developed by the Corporation to proceed with further planning and design for this line. The SCL scheme as endorsed by the Executive Council has incorporated convenient interchange arrangements as a result of the merger between the MTR Corporation Limited and the Kowloon-Canton Railway Corporation.
- 1.2 There are two phases for the Cross Harbour Section (CHS). Phase I is the modification of existing East Rail Line (EAL) tracks from Mong Kok East Station (MKK) to the new Hung Hom Station. Phase II is a 6-km extension of East Rail Line from a new Hung Hom Station across the harbour to new stations at Exhibition (EXH) and Admiralty (ADM). The construction of Phase I is scheduled to be completed in 2015 with Phase II in 2019. Phase II, however, will have significant program and works interfaces with Wanchai Development Phase II (WDII) and Central Wanchai Bypass (CWB) projects.
- 1.3 The layout plan of the latest design of CHS alignment based on the latest information provided by MTR in June 2009 is shown in **Figure no. NEX2213/C/361/ENS/M50/001**. The demarcation line of Phase I and Phase II CHS alignment is located at the north of the North Flood Gate Building.
- 1.4 Regarding Phase I works, the tunnels at the Hung Hom area will generally be built by cut-and-cover (C & C) methods. The adjoining section of the Phase II cross-harbour tunnels will be constructed using immersed tube (IMT). Various alternative alignments are being investigated in order to align the vertical and horizontal profiles between Phases I and II.
- 1.5 The implementation of the Project requires an environmental permit under the EIAO. Environmental Impact Assessment Study Briefs (ESB) ESB-192/2008 under Section 5(1) of the EIAO was issued by the Environmental Protection Department (EPD).
- 1.6 The ESB requires a land contamination assessment to be carried out, including the submission of a Contamination Assessment Plan (CAP), Contamination Assessment Report (CAR) and, if land contamination is confirmed, a Remediation Action Plan (RAP) to the Director of Environmental Protection (DEP) for endorsement.
- 1.7 This CAP is prepared for Phase I works following the requirements in the ESB.

### Objectives

- 1.8 The objectives of this CAP are to:
  - i. present the findings of the desk study and site appraisal on past and present land use activities that may lead to land contamination,
  - ii. identify potential hotspots of land contamination for intrusive site investigation,
  - iii. propose a sampling and testing strategy for the site investigation if necessary; and
  - iv. obtain EPD endorsement of CAP as required by the ESB.
- 1.9 A Contamination Assessment Report (CAR) will be prepared based on site investigation results after the completion of site investigation works. Should significant contamination be identified within the

works areas, a Remediation Action Plan (RAP) will be submitted as required in *Clause 3.4.5.5 of the ESB-192/2008*, for formulation of necessary remedial measures.

## 2. ENVIRONMENTAL LEGISLATION, POLICIES, PLANS AND STANDARDS

- 2.1 Land Contamination assessment shall be conducted in accordance with Section 3.4.5 of ESB No. ESB-192/2008 and Sections 3.1 and 3.2 (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 the Environmental Impact Assessment Process of the Environmental Impact Assessment Ordinance (EIAO-TM)*”).
- 2.2 Based on the EIAO-TM, the following land uses may have the potential to cause or have caused land contamination:
- Oil installations including oil depots and petrol filling stations;
  - Gas works;
  - Power plants;
  - Shipyards/boatyards;
  - Chemical manufacturing/processing plants;
  - Steel mills/metal workshops;
  - Car repairing and dismantling workshops; and
  - Dumping ground and landfill.
- 2.3 If the above land uses are identified, land contamination assessment shall be conducted with reference to the “*Guidance Note for Contaminated Land Assessment Remediation*” (Guidance Note) and “*Guidance Notes for Investigation and Remediation of Contaminated Sites of Petrol Filling Stations, Boatyards and Car Repair /Dismantling Workshop*” (Guidance Note 2) issued by Environmental Protection Department (EPD). In addition, the Risk-based Remediation Goals (RBRGs) stipulated in the “*Guidance Manual for Use of Risk-based Remediation Goals for Contamination Management*” (Guidance Manual) issued by EPD shall be adopted as the criteria for assessing soil and groundwater contamination.

## 3. ASSESSMENT AREA

- 3.1 According to the information provided by MTR, all the works sites and areas at Hung Hom, except for the Kowloon Freight Building (KFB) and MTR Freight Head Office (MFHO), are a part of Phase I, while the demarcation line between the Phase I and Phase II CHS alignment is located at the north of the North Flood Gate Building (**Figure no. NEX2213/C/361/ENS/M57/001**). Phase II covers the alignment section from the demarcation line through the Victoria Harbour and the works areas on Hong Kong Island.
- 3.2 According to Section 3.4.5.2 of the ESB-192/2008, the “Assessment Area” for the land contamination assessment shall include any potential land contamination site(s) within the Project Area. The Project Areas of the Phase I CHS are based on the latest Land Requirement Plan provided by MTR in September 2009 and are shown in **Figure no. NEX2213/C/361/ENS/M57/001**. The land contamination Assessment Area therefore covers the part of the Project area where intrusive works will be carried out. In addition, the geotechnical profiles along the alignment of Phase I CHS are shown in **Appendix A**.
- 3.3 The Assessment Area for the purposes of the land contamination impact assessment has been broken up into four areas. These areas are shown in **Figure no. NEX2213/C/361/ENS/M57/001** and are detailed below:
- Area 1: the works area north of the covered section of Hung Hom Freight Terminal (HFT);

- Area 2: the works area within the covered section of HFT;
- Area 3: the works area south of the covered section of HFT; and
- Area 4: all associated works areas east of HUH (Hung Hum Station) (4 separate areas).

3.4 Based on the engineering design at this stage, the specific sites for this contaminated land assessment can be described as follows:

i. **Area 1: Works Area North of the Covered Section of HFT**

3.5 This area covers the related section of railway alignment and the associated works areas.

3.6 The railway alignment covered in this area starts from the end of the tunnel near Oi Sen Path and west of Oi Man Estate, extending southeast and ends at the covered portion of HFT (excluding the Locomotive Running Shed or the underground storage tanks (USTs) northeast of the Locomotive Running Shed, which were classified in Area 2).

3.7 The East West Line (EWL) is an interfacing project to this Project. Areas included within the EWL project boundary but not SCL project boundary are not included within the scope of this CAP.

3.8 Works areas in Area 1 are listed in **Table 3.1** below.



**Table 3.1 Works Areas in Area 1**

Land Ref. No.#	Location	Brief Description	Figure Reference
W1	Areas located to the west of the proposed Chatham Rd. ventilation building and northwest of the existing tunnel section near Hau Man St..	<ul style="list-style-type: none"> <li>Tentative works site for railway reprovisioning works</li> </ul>	NEX2213/C/361/ENS/M57/002
H1	An area interfacing W1 from Oi Man Estate extending southeasterly to the covered section of HFT	<ul style="list-style-type: none"> <li>Tentative works site for C&amp;C tunnel construction</li> </ul>	NEX2213/C/361/ENS/M57/002
WS. 101	An area near the Hung Hom Interchange, southeast of the proposed Chatham Rd. ventilation building	<ul style="list-style-type: none"> <li>Tentative works site for C&amp;C tunnel construction</li> </ul>	NEX2213/C/361/ENS/M57/002
WS. 102	A area near Princess Margaret Rd.	<ul style="list-style-type: none"> <li>Tentative works site for stormwater drain diversion, track works and road diversion works</li> </ul>	NEX2213/C/361/ENS/M57/002
WS. 103	An area near Princess Margaret Rd. between Chatham Rd. South and WS. 102	<ul style="list-style-type: none"> <li>Tentative works site for railway refurbishment works</li> </ul>	NEX2213/C/361/ENS/M57/002
WS. 105	Area covering Hung Hom Interchange near Chatham Rd. North	<ul style="list-style-type: none"> <li>Tentative works site for permanent stormwater drain diversion and temporary road bridge construction</li> </ul>	NEX2213/C/361/ENS/M57/002
WS. 106	An area east of the HFT railway tracks and southeast of Hung Hom Interchange, interfacing the C&C area of the Project	<ul style="list-style-type: none"> <li>Tentative works site for Cheong Wan Rd. diversion, culvert diversion and site access</li> </ul>	NEX2213/C/361/ENS/M57/003

#: As provided by MTR, except for W1 and H1. The Land Ref. No. shall be revised as per any amendments of the scheme.

**ii. Area 2: Works Area within the Covered Section of HFT**

3.9 HFT is currently used as a freight terminal, an intermediate station on East Rail Line, the terminus of Intercity Through Train to major cities of the mainland and a terminal providing parking, fuelling and maintenance services to trains.

- 3.10 Works will be carried out at part of HFT to accommodate Hung Hom Station for this Project. The type of works conducted will include modification, reprovisioning, (re)construction, and demolition. The proposed C&C works area in Area 2 is mainly along the proposed alignment. Existing facilities in this area such as the Locomotive Running Shed and the nearby underground storage tanks will be demolished. A traction power feeder station will be built near the existing Locomotive Running Shed; reprovisioning of facilities for the freight office is proposed in the eastern portion of the HFT, as indicated in **Figure no. NEX2213/C/361/ENS/M57/004**.
- 3.11 Works areas in Area 2 are presented in **Table 3.2** below.

**Table 3.2 Works Areas in Area 2**

Land Ref. No.#	Location	Brief Description	Figure Reference
W2	The entire covered section of HFT and an area around the existing Locomotive Running Shed, interfacing Area 1	<ul style="list-style-type: none"> <li>Tentative works areas including the C&amp;C works area along the proposed alignment, areas for demolition and (re)construction of facilities and buildings, and area for non-soil excavation/disturbance works during construction (e.g. traffic)</li> <li>An traction power feeder station is proposed to be constructed in the northeast corner of this area</li> </ul>	NEX2213/C/361/ENS/M57/004

#:The Land Ref. No. shall be revised as per any amendments of the scheme.

**iii. Area 3: Works Area South of the Covered Section of HFT**

- 3.12 This area covers the related section of railway alignment and the associated works areas.
- 3.13 The railway alignment covered in this area starts from the southern end of the covered section of HFT, extending southerly to the Hung Hom waterfront, including the protruding pier of Hung Hom Freight Yard (HFY). KFB and MFHO are proposed to be demolished in Phase II, and are therefore discussed in the CAP of Phase II of the Project.
- 3.14 This area interfaces the works areas of EWL. Overlapping works areas are discussed within this CAP. Works areas within EWL only are not in the scope of this CAP.
- 3.15 Works areas in Area 3 are listed in **Table 3.3**:

**Table 3.3 Works Areas in Area 3**

Land Ref. No.#	Location	Brief Description	Figure Reference
WS. 110	Access road into the International Mail Centre (IMC) south of Area 2	<ul style="list-style-type: none"> <li>Tentative works site for demolition of access ramp and construction of East-West Link (EWL) at ground level</li> </ul>	NEX2213/C/361/ENS/M57/005
WS. 115	An area around IMC	<ul style="list-style-type: none"> <li>Tentative works site for building demolition, railway ramp structure and road works construction of EWL</li> </ul>	NEX2213/C/361/ENS/M57/005
W3	An area covering the HFT and the protruding pier at Hung Hom waterfront	<ul style="list-style-type: none"> <li>Tentative barging point and the associated haul road</li> </ul>	NEX2213/C/361/ENS/M57/006

#: As provided by MTR, except for W3. The Land Ref. No. shall be revised as per any amendments of the scheme.

**iv. Area 4: Supporting Works Areas**

3.16 Supporting works areas are scattered near the HFT and are classified in the **Table 3.4** below.

**Table 3.4 Works Areas in Area 4**

Land Ref. No.#	Location	Brief Description	Figure Reference
WS. 112	An area located northeast of HFT interfacing Area 2	<ul style="list-style-type: none"> <li>Tentative works site for construction of stormwater</li> </ul>	NEX2213/C/361/ENS/M57/007
WA. 102	An area located east of HFT next to WS. 112	<ul style="list-style-type: none"> <li>Tentative works area for contractor's site office/ stockpiling</li> </ul>	NEX2213/C/361/ENS/M57/007
WA. 103	An area east of HFT near Hung Hom waterfront	<ul style="list-style-type: none"> <li>Tentative works area for MTR engineer's site office</li> </ul>	NEX2213/C/361/ENS/M57/007
NSL-034	An area northeast of WA. 103, near Hung Luen Road	<ul style="list-style-type: none"> <li>Tentative works area for contractor's site office/stockpiling</li> </ul>	NEX2213/C/361/ENS/M57/007

#: As provided by MTR. The Land Ref. No. shall be revised as per any amendments of the scheme.

#### 4. SITE APPRAISAL

##### Regional Geological Setting

- 4.1 A review of the Hong Kong Geological Topography (Series: HGM20) – Sheet No. 11, 1: 20,000 Scale (1996) indicated that the generalized regional geological conditions for the southern half of Area 1 (south of Chatham Road North) and Areas 2, 3 and 4 is likely to comprise of the following stratigraphical sequences from youngest to oldest:
- i. **Reclaimed Hang Hau Formation** (Holocene aged), consisting of marine sand, part silty (reclaimed between 1904 and present day).
  - ii. **Hang Hau Formation** (Holocene Aged), consisting of undivided, mainly dark grey marine mud.
  - iii. **Hang Hau Formation** (Holocene aged), consisting of marine sand, part silty (thin layer potentially present at southern end of Assessment Area).
  - iv. **Chek Lap Kok Formation** (Holocene Aged), consisting of undivided; red, yellow and grey clay, silt, sand and gravel.
  - v. **Jurassic-Cretaceous Aged Granite** (bedrock), consisting of medium-grained granite, 2 – 6 mm.
- 4.2 The regional geological conditions in the northern half of Area 1 (north of Chatham Road North) is likely to consist predominantly of outcropping fine to medium grained granite bedrock (Jurassic-Cretaceous aged), with coverage of Quaternary aged Alluvium (clay/silt, sand and gravel; well sorted to semi-sorted) present over a small area immediately north of Chatham Road North.
- 4.3 Reviews of previous ground investigation (GI) reports were conducted at the Civil Engineering and Development Department's (CEDD's) Geotechnical Information Library to obtain information regarding the geological conditions at or in the vicinity of the Assessment Area. The GI reports reviewed are listed below:
- *The Freightyard Superstructure Contract for Goodsyards Building Site Investigation Works Final Field Works Report conducted by Gammon Construction Limited (1998) (CEDD's Geotechnical Information Unit Report No. 41946);*
  - *Hunghom Bypass and Princess Margaret Road Link Site Investigation Final Field Works Report conducted by Enpack (Hong Kong) Limited (1994) Volumes 1 & 2 (CEDD's Geotechnical Information Unit Report No. 19087 & 19088);*
  - *11NW-D/F82, Chatham Road, Ground Investigation Factual Fieldwork Report conducted by Bachy Soletanche Group Limited (2002) (CEDD's Geotechnical Information Unit Report No. 34432);*
  - *10-year Extended LPM Project Phase 4, Package H-Ground Investigation Works for Slopes in Sham Shui Po, Yau Tsim Mong and Kowloon City conducted by Gold Ram Engineering and Development Limited (2005) (CEDD's Geotechnical Information Unit Report No. 43301).*
- 4.4 Review of these reports identified evidence of the importation of reclaimed marine sands (Hang Hau Formation), together with other fill materials across the Assessment Area. A summary of the presence of fill material identified within the reviewed reports across the Assessment Area is presented below:

- i. The majority of Area 1 is covered by a layer of fill material composed either of silty sand or silty clay approximately 8.5 m thick. Highly weathered granite underlies the fill material. No reclamation history is related to this area.
- ii. The majority of Area 2 is covered by a layer of fill material composed of either sandy silt or silty sand approximately 6.5 m thick. The eastern half of Area 2 was a reclaimed area
- iii. The majority of Area 3 is covered by a layer of fill material composed of sand and gravel with cobbles approximately 10 m thick. Part of this area (e.g. the protruding pier at Hung Hom waterfront) was a reclaimed area.
- iv. The majority of Area 4 is covered by a layer of fill material composed of silt, sand and gravel with cobbles and boulders approximately 18 m thick. The majority of Area 4 was a reclaimed area.
- v. Surficial fill material consisting of semi-sorted clay/silt, sand and gravel is found around the Hung Hom Interchange.
- vi. From Princess Margaret Road to Hung Hom Interchange medium-grained granite of Jurassic-Cretaceous age is the principal geological unit.

4.5 The overall reclamation history of the Assessment Area is illustrated in **Appendix B**.

### Site Inspection and Appraisal

#### *Sources of Historical Information*

- 4.6 The assessment was conducted firstly by screening of all works areas by a review of the current and historic land use along with the construction profile. Relevant site history was reviewed based on historical maps of Hong Kong and aerial photography as shown in **Appendix C**. Sites along the alignment considered as having potential land contamination concerns were identified; site inspections were conducted in November and December 2008.
- 4.7 A review of aerial photographs obtained from the Survey and Mapping Office, Lands Department has been undertaken. The aim of the review was to identify land within the project area which may have been contamination through a previous land use. A list of aerial photographs which have been reviewed is provided in **Table 4.1**. Copies of representative aerial photographs are given in **Appendix C**.

**Table 4.1 Review of Aerial Photographs**

Year	Height (Feet)	Photograph Reference Number
1967	4000	5415*
1973	5000	5283*
1989	4000	A17997*
1999	4000	CN25189*
2006	4000	CW71959*

Source: Survey and Mapping Office, Lands Department

\*Copies of aerial photographs are given in **Appendix C**.

- 4.8 Based on the aerial photographs detailed above the development history of the Assessment Area is summarised below.

4.9 The existing land uses of the inspected areas include freight terminal, open storage, railway tracks, car parks, vacant lands, oil storages, electrical substation, pump room, office building and petrol filling station (PFS).

i. **Area 1: Works Area North of the Covered Section of HFT**

*Review of Historic and Current Land Uses*

Area around Hung Hom Interchange near Chatham Road North

4.10 This area was mainly occupied by open storage area, traffic roads and temporary structures in 1967. It was noted as the Hung Hom Interchange from 1973 to 2006. Planted areas and some temporary structures were found scattered around the Hung Hom Interchange during 1973 to 2006. The China Light and Power (CLP) customer substation was noted at north of this area in 2006. No major land use changes were noted since then.

Signal Telecom Automatic Revenue Collection (STA) Building, Workshop and Depot

4.11 This area was mainly occupied by an unknown temporary structure in 1967. The STA Building, a workshop and a depot were noted in this area in 1973. No major land use changes were noted since then.

Area around Gillies Avenue South

4.12 This area was mainly used as an open car park from 1967 to 1973. It was noted as the Gillies Avenue South in 1989. No major land use changes were noted since then.

*Site Inspection*

4.13 Site inspection for Area 1 was conducted in November and December 2008. Most of the areas are vacant, green areas, highway structures, streets and pavements, or recreational park. Land uses with potential contamination concerns, including the emergency generator room and the associated fuel tank room, and previous D.G. storage, and all located at or near the Signal Telecom Automatic Revenue Collection (STA) Building, as indicated in **Table 4.2**. For easy reference, sites with potential contamination concerns have been assigned a letter as a unique Site ID, e.g. 1-01, 1-02, 1-03, etc. in Area 1.

**Table 4.2 Summary of Site Appraisal Results for Area 1**

Land Ref. No.	Site ID	Historical Land Use	Current Land Use*	Site Appraisal Results	Necessary for Further Site Investigation?	Justification and Hotspots Identified	Figure Reference
WS. 101	1-01	Open storage, traffic roads, temporary structures and green areas	Highway structures, streets, green areas	Highway structures, streets, green areas	No	No adverse contaminated land impacts are identified based on site appraisal.	NEX2213/C/361/ENS /M57/002 & NEX2213/C/361/ENS /M57/008
WS. 102	1-02		Highway structures, vacant area, and green area	Vacant area with no specific use and green area	No	No adverse contaminated land impacts are identified based on site appraisal.	NEX2213/C/361/ENS /M57/002 & NEX2213/C/361/ENS /M57/008
WS. 103	1-03		Vacant area and green area	Vacant area adjacent to Princess Margaret Road and green area	No	No adverse contaminated land impacts are identified based on site appraisal.	NEX2213/C/361/ENS /M57/002 & NEX2213/C/361/ENS /M57/008
WS. 105	1-04		Highway structures	Highway/ road structures	No	No adverse contaminated land impacts are identified based on site appraisal.	NEX2213/C/361/ENS /M57/002 & NEX2213/C/361/ENS /M57/008
W1	1-06		Vacant area, and green area, railway tracks	Vacant area, and green area, railway tracks observed in this area	No	No adverse contaminated land impacts are identified based on site appraisal.	NEX2213/C/361/ENS /M57/002 & NEX2213/C/361/ENS /M57/008
W1	1-07		Vacant area, and green area, railway tracks	Railway tracks were observed in this area. The northern end of this area is the entrance of a tunnel	No	No adverse contaminated land impacts are identified based on site appraisal.	NEX2213/C/361/ENS /M57/002 & NEX2213/C/361/ENS /M57/008
H1	1-08	Open storage, traffic roads, temporary structures and green areas	MTR open storage under the highway near Oi Sen Path	<ul style="list-style-type: none"> <li>• A site office was observed onsite</li> <li>• Open area of this site was observed to be used for storage of construction materials, such as road-blocks, metal frames, tires, structural steels, piles of gravels</li> <li>• A long vehicle, a wheel barrow, and several drums filled with gravels or metals were also observed onsite</li> <li>• No chemical storage was observed onsite</li> <li>• The ground of this site is concrete-paved with no observable oil stains</li> </ul>	No	No adverse contaminated land impacts are identified based on site appraisal.	NEX2213/C/361/ENS /M57/002 & NEX2213/C/361/ENS /M57/008
H1	1-09	Open storage,	CLP Substation "Ho Man Tin	<ul style="list-style-type: none"> <li>• Located near Oi Sen Path, north to the Hung Hom Interchange</li> </ul>	No	No adverse contaminated land impacts are identified based on	NEX2213/C/361/ENS /M57/002 &

Land Ref. No.	Site ID	Historical Land Use	Current Land Use*	Site Appraisal Results	Necessary for Further Site Investigation?	Justification and Hotspots Identified	Figure Reference
		traffic roads, temporary structures and green areas	KCR Substation (No. 32934-6)"	<ul style="list-style-type: none"> <li>• Has been operating for 5-10 years and was in operation during the site inspection</li> <li>• There was no UST, D.G. or chemical waste storage in this substation, according to the site representative</li> <li>• Two non-PCB transformers (both 132/25 KV) were situated above ground in the centre of this site.</li> <li>• Stacks of batteries were stored on a shelf in the Battery/ Charger Room on the south eastern portion of this substation; the floor of this room was entirely paved with a layer of tiles. According to the site personnel, no waste batteries were stored onsite</li> <li>• One silicone oil transformer was found in the L.V. Transformer Room located on the south western portion of the substation.</li> <li>• A fire pump powered by electricity was observed in the Fire Pump Room (Electric) located on the south western portion of this substation</li> <li>• An above ground diesel fire pump containing a day tank (on the higher level of a metal shelf) and associated batteries (on the lower level of the shelf) were observed in the south western part of the Fire Pump Room (Diesel) on the south western corner of this site. According to the site personnel, the diesel-powered fire pump serves as the standby fire pump for the one powered by electricity. No diesel refuelling was and would be done for the diesel fire pump</li> <li>• The entire substation is neatly paved by concrete; no oil stain was observed during the site inspection</li> </ul>		site appraisal.	NEX2213/C/361/ENS /M57/008
WS. 106	1-05	Open car park	Streets, pavements and	<ul style="list-style-type: none"> <li>• Street, pavements and green areas</li> </ul>	No	No adverse contaminated land impacts are identified based on	NEX2213/C/361/ENS /M57/003 &



Land Ref. No.	Site ID	Historical Land Use	Current Land Use*	Site Appraisal Results	Necessary for Further Site Investigation?	Justification and Hotspots Identified	Figure Reference
			green areas			site appraisal.	NEX2213/C/361/ENS /M57/008
H1	1-01	-	-	<ul style="list-style-type: none"> <li>This area overlaps with WS. 101; details please refer to WS. 101 in this table</li> </ul>	No	No adverse contaminated land impacts are identified based on site appraisal.	NEX2213/C/361/ENS /M57/003 & NEX2213/C/361/ENS /M57/008
H1	1-11	S&C PEMs (for signal and communication)	S&C PEMs (for signal and communication)	<ul style="list-style-type: none"> <li>Observed at both north and south of the STA Building</li> <li>Container-shaped structure which is lifted above the ground</li> <li>According to the site personnel, only electronic devices are kept inside these modules; no chemical or waste has been stored</li> <li>According to the site personnel, entrance into these modules was strictly prohibited from non-professionals to avoid disturbance of the operations of the electronic apparatus inside</li> </ul>	No	No adverse contaminated land impacts are identified based on site appraisal.	NEX2213/C/361/ENS /M57/003 & NEX2213/C/361/ENS /M57/008
H1	1-12	Temporary structure	Mechanical workshop	<ul style="list-style-type: none"> <li>Located on the ground floor of the STA Building</li> <li>Used for storage of electrical equipment, mechanical parts, hand tools (e.g. hammers, screw drivers), gear wheels and several plastic buckets</li> <li>Covers an area of about 8 m<sup>2</sup></li> <li>No waste or large storage of chemicals was present onsite; except four containers of grease (about 1 L each) and several bottles of detergents held above ground on a shelf</li> <li>The floor of this site was paved and covered by a protective layer with no observable oil stains</li> </ul>	No	No adverse contaminated land impacts are identified based on site appraisal.	NEX2213/C/361/ENS /M57/003 & NEX2213/C/361/ENS /M57/008
H1	1-13	Temporary structure	Relay Room	<ul style="list-style-type: none"> <li>Located on the ground floor of the STA Building</li> <li>Storage of cabinets of electrical equipment,</li> </ul>	No	No adverse contaminated land impacts are identified based on site appraisal.	NEX2213/C/361/ENS /M57/003 & NEX2213/C/361/ENS

Land Ref. No.	Site ID	Historical Land Use	Current Land Use*	Site Appraisal Results	Necessary for Further Site Investigation?	Justification and Hotspots Identified	Figure Reference
				control panels, plastic/ metal parts, hand tools, cardboard boxes and crates <ul style="list-style-type: none"> <li>No chemical or waste was stored</li> <li>The entire floor of this site is paved and covered by a clean protective layer; no oil stain was observed during the site inspection</li> </ul>			/M57/008
H1	1-14	S&C E&M Workshop for signal, communication, electrical and mechanical works for the railway, and a Switch Room	Vacant and abandoned office	<ul style="list-style-type: none"> <li>Room was evacuated and suspended from operation; the room is vacant with furniture only during the site inspection</li> <li>According to the site personnel, only railway mechanical works were conducted in this site</li> <li>A previous office area was observed onsite; a Switch Room was found next to the office</li> <li>Two metal buckets (about 5 L each) for solid waste of oil bottles (油罐) and used cloth for oil (油污布) and three bottles (about 3 L each) for waste paint, waste transformer oil and waste thinner were observed on a shelf kept above ground in the workshop in good condition</li> <li>The concrete-paved floor is intact with no cracks; no oil stains observed onsite</li> </ul>	No	No adverse contaminated land impacts have been identified based on site appraisal. However, as this site is within the hoarding area where demolition is expected to expose soil beneath the structure, it would be beneficial to have a land contamination expert on site during excavation in order to detect any abnormal staining or odors that may indicate further investigation is required.	NEX2213/C/361/ENS /M57/003 & NEX2213/C/361/ENS /M57/008
H1	1-15		Telecom Room for storage of discarded monitors	<ul style="list-style-type: none"> <li>Used for storage of discarded monitors were observed onsite during the site inspection</li> <li>No chemical or waste was stored</li> <li>The floor of the entire room was paved and no oil stains were observed.</li> </ul>	No	No adverse contaminated land impacts are identified based on site appraisal.	NEX2213/C/361/ENS /M57/003 & NEX2213/C/361/ENS /M57/008
H1	1-16		EAL & MOL – SMB BM Sub-Depot – office and storage of tools	<ul style="list-style-type: none"> <li>Half of this site is used as an office, the other half is used as a store room for tools (e.g. hand tools, ladders), materials (e.g. metal ingots, wires, cardboards), equipment (e.g. vacuum machine, cables,</li> </ul>	No	No adverse contaminated land impacts are identified based on site appraisal.	NEX2213/C/361/ENS /M57/003 & NEX2213/C/361/ENS /M57/008

Land Ref. No.	Site ID	Historical Land Use	Current Land Use*	Site Appraisal Results	Necessary for Further Site Investigation?	Justification and Hotspots Identified	Figure Reference
				<p>trolley)</p> <ul style="list-style-type: none"> <li>Several cans (about 250 mL each) of glue and/ or paint/ thinner were kept inside a metal cabinet above ground</li> <li>The floor of the entire room was paved and covered by an anti-slippery layer; the floor is in a clean and tidy condition and no oil stains were observed.</li> </ul>			
H1	1-17		Warehouse for storage of solid goods	<ul style="list-style-type: none"> <li>Located on the ground floor of the STA Building.</li> <li>According to the site personnel, no chemical or waste has been stored in this site; no potentially contaminating activities (e.g. fuel handling, maintenance) were performed in this site.</li> </ul>	No	No adverse contaminated land impacts are identified based on site appraisal.	NEX2213/C/361/ENS /M57/003 & NEX2213/C/361/ENS /M57/008
H1	1-18	Temporary structure	Emergency generator room and an associated fuel tank room	<ul style="list-style-type: none"> <li>Located on the G/F near its north façade of the Signal Telecom Automatic Revenue Collection (STA) Building</li> <li>An above ground diesel tank (450 L) was observed shelved, with a drip beneath, on a metal frame in the room. The fuel tank is connected by above ground pipelines through the wall to the emergency generator in the adjacent room</li> <li>The fuel tank was refilled once per annum by direct connection to the oil filling truck</li> <li>The emergency generator has been operating for more than 10 years; no past spillage or leakage of battery fluids recorded</li> <li>The ground of both rooms were concrete-paved; suspected oil stains were observed</li> </ul>	Yes	<ul style="list-style-type: none"> <li><u>Emergency generator room and fuel tank room</u>: possible spillage/leakage of fuel during handling</li> <li>The total area occupied for potentially contaminating land use is about 30 m<sup>2</sup></li> </ul>	NEX2213/C/361/ENS /M57/003 & NEX2213/C/361/ENS /M57/008
H1	1-19	Temporary structure	Cable yard	<ul style="list-style-type: none"> <li>Located north of the CLP substation</li> <li>The yard was wired during the site visit</li> <li>Several container-shaped mobile site office structures and more than 10 drums of</li> </ul>	No	No adverse contaminated land impacts are identified based on site appraisal.	NEX2213/C/361/ENS /M57/003 & NEX2213/C/361/ENS /M57/008

Land Ref. No.	Site ID	Historical Land Use	Current Land Use*	Site Appraisal Results	Necessary for Further Site Investigation?	Justification and Hotspots Identified	Figure Reference
				<p>cables were observed onsite from the outside</p> <ul style="list-style-type: none"> <li>The ground of this site is entirely concrete-paved and in a tidy condition; there was no observable oil stain</li> </ul>			
H1	1-20	Temporary structure	China Light Power (CLP) customer substation (Hung Hom Complex "A" Substation, No. 04579-9)	<ul style="list-style-type: none"> <li>One battery charge, one large switch supported by the battery charge and one silicone oil transformer were found onsite</li> <li>No chemical or waste was stored and no PCB has been used, even though it has been in operation for more than 10 years, according to the representative</li> <li>The entire substation was concrete-paved and tidy with no observable oil stain.</li> </ul>	No	No adverse contaminated land impacts are identified based on site appraisal.	NEX2213/C/361/ENS /M57/003 & NEX2213/C/361/ENS /M57/008
-	1-10	Temporary structures and D.G. store for paints	Open storage for construction materials	<ul style="list-style-type: none"> <li>This area is located in the Project area with no specific proposed works conducted under Phase II of this Project. It is also under the works area of East West Line (EWL). Considering its close location (&lt; 10 m) to the C&amp;C works area and based on its reported past land use from the previous site inspections, this area is assessed for conservativeness.</li> <li>Previously existed north to the STA Building, but was demolished about 4 years ago as indicated by the site representative</li> <li>The D.G. store had been operated for more than 10 years prior to demolition</li> </ul>	Yes	<ul style="list-style-type: none"> <li><u>Location of the demolished D.G. storage</u>: possible spillage/ leakage of paint in previous operations</li> <li>The area occupied for this potentially contaminating land use is about 100 m<sup>2</sup></li> </ul>	NEX2213/C/361/ENS /M57/003 & NEX2213/C/361/ENS /M57/008
H1	1-21	Temporary structure	P-ways and Works Workshop – office and store room, and a store area nearby	<ul style="list-style-type: none"> <li>The P-ways and Works Workshop is a single-storey building; it has been in existence for more than 10 years</li> <li>The southern section of the building is used as an office for railway track maintenance worker</li> <li>The floor of the office was concrete-paved and in a tidy condition; no observable oil</li> </ul>	No	No adverse contaminated land impacts are identified based on site appraisal.	NEX2213/C/361/ENS /M57/004 & NEX2213/C/361/ENS /M57/008

Land Ref. No.	Site ID	Historical Land Use	Current Land Use*	Site Appraisal Results	Necessary for Further Site Investigation?	Justification and Hotspots Identified	Figure Reference
				stains observed <ul style="list-style-type: none"> <li>• The northern portion of the building is used as a store room of mechanical tools and materials, (e.g. railway ties, ladders, metal frames)</li> <li>• A metal above ground cabinet of flammable chemicals was the only chemical storage observed in the store room</li> <li>• The floor of the store room was concrete-paved and in a clean and tidy condition, with no oil stains observed</li> <li>• A neighbouring (south) store area (approximately 50 m<sup>2</sup>) of inert construction materials (e.g. packaged cement, packaged limestone powder, wooden boards, plastic containers, metal valves) occupied by the subcontractor(s) was found.</li> <li>• The ground surface of the store area was observed as entirely concrete-paved with no observable stains</li> </ul>			

\*: Current land use is identified based on street maps and site inspection.

ii. **Area 2: Works Area within the Covered Section of HFT**

*Review of Historic and Current Land Uses*

Locomotive Running Shed

- 4.14 The Locomotive Running Shed was first noted in this area in 1967. An unknown cylinder structure was noted at the east of the shed from 1973 to 1989. Two above ground tanks with unknown usage were noted at the southeast corner of the shed in 1989. These facilities were removed in 1999. No major land use changes were noted since then.

Hung Hom Freight Terminal

- 4.15 This area was previously sea; reclamation was noted in 1964. It was mainly vacant in 1967. It was used as an open storage in 1973. In 1989 this area was noted as Hung Hom Freight Terminal. No major land use changes were noted since then.

The Metropolis

- 4.16 This area was sea from 1967 to 1973. Reclamation of this area was observed to begin in 1989. Reclamation of this area was completed and building construction of this area was noted in 1999. It was noted as The Metropolis in 2006.

Hung Hom Bus Terminal

- 4.17 This area was mainly vacant from 1967 to 1973. It was noted as the bus terminal in 1989. No major land use changes were noted since then.

Hong Kong Coliseum

- 4.18 This area was mainly vacant in 1967. Open storage was noted in this area in 1973. This area was transformed into the Hong Kong Coliseum as noted in 1989's aerial photograph. No major land use changes were noted since then.

*Site Inspection*

- 4.19 Site inspection for Area 2 was conducted in November and December 2008. The whole area is currently industrial where a number of areas were identified to have land uses with potential contamination concerns, as indicated in **Table 4.3**. For easy reference, these sites have been assigned a letter as a unique Site ID, e.g. 2-01, 2-02, 2-03, etc. in this area.

**Table 4.3 Summary of Site appraisal Results for Area 2**

Land Ref. No.	Site ID	Historical Land Use	Current Land Use*	Site Appraisal Results	Necessary for Further Site Investigation?	Justification and Hotspots Identified	Figure Reference
W2	2-01	Vacant area and open storage	Storage of cargos for the Intercity Through Trains	<ul style="list-style-type: none"> <li>Part of this area is fenced; but according to information provided by the site personnel, this area is used for storage of cargos for the Intercity Through Trains</li> <li>As reported by the site personnel, no D.G. is allowed to be conveyed by freight train or stored at HFT; only low risk chemical goods (mostly solid industrial material, such as salt and plastics) are allowed for transportation in HFT</li> <li>The border of this area overlaps with the railway track G21, which is a concrete-based track. Based on the interview with the site personnel, no recorded chemical spillage/leakage accidents have been recorded in this area.</li> </ul>	No  (Railway track G21 is a concrete-based track for transporting trains loading/unloading cargos; please refer to Site ID 2-08 in <b>Tables 4.3 and 4.6</b> for further site investigation details for such tracks.)	<p>Except for the railway track No. G21 which overlaps this area, no adverse contaminated land impacts are identified based on site appraisal.</p> <p>Sampling rationale for railway tracks in HFT is collectively presented in sections on Site ID 2-08 of <b>Tables 4.3 and 4.6</b>.</p>	NEX2213/C/361/ENS/M57/004 & NEX2213/C/361/ENS/M57/009
W2	2-02	Vacant area and open storage	Locomotive traverser	<ul style="list-style-type: none"> <li>Only the east part of the traverse is within the Assessment Area</li> <li>Used for changing the direction of the first car of the locomotive</li> <li>In operation for more than 10 years; in operation during the site inspection</li> <li>The traverse is powered by electricity and lubricating oil has been used for regular maintenance</li> <li>Oil stains were observed scattered on the ballast ground between railway tracks at the locomotive traverse area</li> </ul>	Yes	<ul style="list-style-type: none"> <li><u>Locomotive traverser:</u> Possible contamination during maintenance where lubricating oil is used.</li> <li>Area occupied for this potentially contaminating land use is about 800 m<sup>2</sup>; approximate area of this site within the cut &amp; cover works area where excavation is expected is &lt; 100 m<sup>2</sup></li> </ul>	NEX2213/C/361/ENS/M57/004 & NEX2213/C/361/ENS/M57/010
W2	2-03	Vacant area and open storage	North Warehouse	<ul style="list-style-type: none"> <li>Used for storage of solid goods and wares (crates, escalators, wooden frames)</li> <li>No chemical or D.G. stored onsite</li> <li>This site is generally tidy and the ground is concrete-paved with no suspected oil stains, according to the site inspection</li> </ul>	No	No adverse contaminated land impacts are identified based on site appraisal.	NEX2213/C/361/ENS/M57/004

Land Ref. No.	Site ID	Historical Land Use	Current Land Use*	Site Appraisal Results	Necessary for Further Site Investigation?	Justification and Hotspots Identified	Figure Reference
W2	2-04	Vacant area.  Historic peripheral land use: Unknown cylinder structure, unknown above ground tanks	Locomotive Running Shed for maintenance of diesel-powered locomotives	<ul style="list-style-type: none"> <li>The Locomotive Running Shed has been in operation for more than 40 years</li> <li>Oil stains were observed on metals decking at the bottom of the services bay.</li> <li>The ground inside the shed is paved. Storage of mechanical parts was ubiquitous in the shed; storage of paint, degreasing agent and grease were observed in cabinets within the shed.</li> <li>Chemical waste storages with secondary containments were found near the entrance of the shed. Oil stains were observed beneath the containments.</li> <li>A workshop was found at the southern end and extending to the outside of the shed. According to the site representative, motor testing and welding were carried out at the workshop inside the shed, while maintenance of the motors were performed at the workshop extension outside (southwest) of the shed. Motors with grease were observed to be placed on cardboard paper or wood shelves above ground in the workshop inside the shed.</li> <li>Locomotive under repair observed at the service bay. Bottom of the service bay covered by metal decking with oil stains observed. Storage of mechanical parts and tools observed along the tracks. Paints, degreasing agent and grease found in cabinets.</li> <li>Chemical waste stored in drums were observed with secondary containments underneath near the entrance of the Locomotive Running Shed. Oil stains beneath containments were observed.</li> </ul>	Yes	<ul style="list-style-type: none"> <li><u>Workshop</u>: possible spillage/leakage of chemicals/ oil during maintenance, welding and testing motors</li> <li>Area occupied for this potentially contaminating land use is about 200 m<sup>2</sup></li> <li><u>Locomotive maintenance area</u>: possible spillage/leakage of paint/ oil/ other chemicals of concern and locomotive maintenance activities</li> <li>Area occupied for this potentially contaminating land use is about 800 m<sup>2</sup></li> <li><u>Chemical waste storage area</u>: possible spillage/leakage of chemical wastes</li> <li>Area occupied for this potentially contaminating land use is about 15 m<sup>2</sup></li> </ul>	NEX2213/C/361/ENS/M57/004 & NEX2213/C/361/ENS/M57/009
W2	2-05	Unknown cylinder structure	Underground Storage Tanks (USTs) for diesel	<ul style="list-style-type: none"> <li>The USTs containing diesel with pipelines connected to the shed is at the close northeast to the shed.</li> <li>The area around the USTs is bounded by fence.</li> <li>The USTs have been in existence for more than 10</li> </ul>	Yes	<ul style="list-style-type: none"> <li><u>USTs and underground pipelines</u>: Potential spillage/leakage of stored fuel. Possible migration of the contaminant plume with</li> </ul>	NEX2213/C/361/ENS/M57/004 & NEX2213/C/361/ENS/M57/009



Land Ref. No.	Site ID	Historical Land Use	Current Land Use*	Site Appraisal Results	Necessary for Further Site Investigation?	Justification and Hotspots Identified	Figure Reference
			storage	years. Volumes of the USTs were not known.		groundwater flow. <ul style="list-style-type: none"> <li>Area occupied for this potentially contaminating land use is about 150 m<sup>2</sup></li> </ul>	
W2	2-06	Vacant area.  Historic peripheral land use: unknown cylinder structure and above ground tanks	Above ground tank for lubricating oil storage	<ul style="list-style-type: none"> <li>A lubricating oil tank (9,092 L) is located above ground between the USTs and the Running Shed.</li> <li>This tank has been in operation for more than 10 years</li> </ul>	Yes	<ul style="list-style-type: none"> <li><u>Above-ground lubricating oil container</u>: potential spillage/leakage when fuelling.</li> <li>Area for this potentially contaminating land use is about 10 m<sup>2</sup></li> </ul>	NEX2213/C/361/ENS/M57/004 & NEX2213/C/361/ENS/M57/009
W2	2-07		Fuel dispenser/pump island	<ul style="list-style-type: none"> <li>Two fuelling points (dispensers) were identified at the north and west of the Running Shed.</li> <li>The ground near both dispensers was paved and oil stains were observed.</li> </ul>	Yes	<ul style="list-style-type: none"> <li><u>Dispensers</u>: Possible spillage/leakage of fuel (diesel) during refuelling/pumping.</li> <li>Area occupied for this potentially contaminating land use is about 10 m<sup>2</sup></li> </ul>	NEX2213/C/361/ENS/M57/004 & NEX2213/C/361/ENS/M57/009
W2	2-09	Vacant area and open storage	Only two D.G. store containers found near the Southern Warehouse	<ul style="list-style-type: none"> <li>Used for Category 5 D.G. store</li> <li>Four 200 L diesel drums and two 200 L lubricating oil drums were observed inside this D.G. store, for fuelling and maintenance of the container stacker, according to the site representative.</li> <li>The D.G.s were stored inside of the containers sitting on a concrete paved ground</li> <li>This D.G. store has been in operation for about three years</li> </ul>	Yes	<ul style="list-style-type: none"> <li><u>D.G. store</u>: possible spillage/leakage of oil during handling.</li> <li>Area occupied for this potentially contaminating land use is about 20 m<sup>2</sup></li> </ul>	NEX2213/C/361/ENS/M57/004 & NEX2213/C/361/ENS/M57/010
W2	2-08	Sea, reclaimed area, vacant area, open storage and railway tracks	Railway tracks for goods yard	<ul style="list-style-type: none"> <li>Only some of the railway tracks in this area were accessible during the site inspection</li> <li>Trains usually parked inside of the HFT, therefore contamination of the railway tracks in the covered section of this area is more likely.</li> <li>Oil stains (suspected to be lubricating oil) were observed along some accessible tracks in HFT. Therefore all the railway tracks within the covered section of HFT were assessed for a conservative approach</li> </ul>	Yes	<ul style="list-style-type: none"> <li><u>Railway tracks area within the works area</u>: G10, G12, G13, G15, G17 and G18 are within the C&amp;C construction area and will be demolished during Phase I.</li> <li>If contamination due to oil leakage is present, ballast-based tracks are more vulnerable to deeper contamination, compared to</li> </ul>	NEX2213/C/361/ENS/M57/005 & NEX2213/C/361/ENS/M57/012

Land Ref. No.	Site ID	Historical Land Use	Current Land Use*	Site Appraisal Results	Necessary for Further Site Investigation?	Justification and Hotspots Identified	Figure Reference
				<ul style="list-style-type: none"> <li>• Railway tracks Nos. G10, G12, G13 and G15 are for parking of the Electrical Multiple Unit (EMU), for which only lubrication of the wheels are involved onsite</li> <li>• The other railway tracks with the initial “G” in this area are for loading/ unloading goods, where goods vehicles are parked.</li> <li>• According to MTR, Tracks T1 through T7 in the western portion of HFT will not be demolished; instead they will continue to operate for Intercity Through Trains.</li> <li>• According to the site personnel, lubricating oil leakage might be possible from wheels of the EMU cars parked on tracks nos. G10, G12, G13 and G15, while such leakage might be possible from the locomotive and wheels of goods wagons parked on the other tracks for goods yard (with the initial “G”)</li> <li>• In the covered section of HFT and within this site, ballast-based railway tracks are: the entire G1 through G4, the northern half of G6 and G7/G8, G10, G12, G13, and G15; concrete-based are G1A, G7, G8, G17, G18, G21 through G23, and the southern half of G6</li> <li>• No D.G. including diesel is allowed to be conveyed by freight train or stored at HFT; only low risk chemical goods (mostly solid industrial material, such as salt and plastics) are allowed for transportation in HFT.</li> <li>• According to the site representative of MTR, no chemical spillage/ leakage accident has been recorded during the operation of HFT</li> </ul>		<p>concrete-based ones where more surface contamination is expected, and therefore ballast-based tracks require a greater sampling depth.</p> <ul style="list-style-type: none"> <li>• Due to random observation of oil stains along some of the railway tracks in HFT, potential land contamination due to demolition and excavation is estimated to be present.</li> <li>• Area occupied for the total area of railway tracks covered in Area 2 is about 15,000 m<sup>2</sup>.</li> </ul>	

\*: Current land use is identified based on street maps and site inspections.

iii. **Area 3: Works Area South of the Covered Section of HFT**

*Review of Historic and Current Land Uses*

International Mail Centre

- 4.20 This area was mainly vacant in 1967. An open storage was noted in this area in 1973. The International Mail Centre was noted in this area in 1989. No major land use changes were observed since then.

Hung Hom Freight Yard

- 4.21 This area was mainly vacant in 1967. It was used as open storage in 1973. This area was noted as the Hung Hom Freight Yard in 1989. No major land use changes were noted since then.

Pier and Its Peripheral South of Hung Hom Freight Terminal at Hung Hom Waterfront

- 4.22 This area was previously sea; it was noted as a reclaimed area in 1964 and was vacant in 1967. An unknown structure was noted in this area in 1973. It has been used as a pier for loading/ unloading cargos since 1989. In 1992, the area was further reclaimed, extending in the southwest direction. No major land use changes were noted since then.

*Site Inspection*

- 4.23 Site inspection for Area 3 was conducted in November and December 2008. Area 3 mainly covers the International Mail Centre (IMC) and the open section of HFT. Sites identified with potentially contaminating land use are indicated in **Table 4.4**. IMC overlaps the works areas for the East-West Line (EWL). For easy reference, these sites have been assigned a letter as a unique Site ID, e.g. 3-01, 3-02, 3-03, etc. in this area.

**Table 4.4 Summary of Site Appraisal Results for Area 3**

Land Ref. No.	Site ID	Historical Land Use	Current Land Use*	Site Appraisal Results	Necessary for Further Site Investigation?	Justification and Hotspots Identified	Figure Reference
WS. 110	3-01	Vacant area, open storage, and road	An entry pathway (Hong Wan Path) between the HFT and IMC	A concrete-paved, gently-sloped entry access between the HFT and IMC	No	No adverse contaminated land impacts are identified based on site appraisal.	NEX2213/C/361/ENS/M57/006
WS. 115	L17	Vacant area, open storage, and road	Building for mail sorting, distribution and storage, along with associated facilities, streets	<ul style="list-style-type: none"> <li>• A Category 5 D.G. store and a store room of lubricating oil outside the IMC main building were identified on the north portion onsite. Cans of Kerosene (more than 10 cans, about 5 L each) were stored in a secondary containment in the D.G. store; cans of paint and thinner (more than 10 cans, about 1 L each) were placed in drip trays were observed in the D.G. room</li> <li>• The store room next door contained three 200 L lubricating oil drums (with secondary containment) and containers of used lubricating oil (without secondary containment)</li> <li>• The ground of both rooms is concrete-paved and no apparent oil stain was observed</li> <li>• An emergency generator room and associated fuel tank room, operating for more than 20 years, are located on the ground floor at the southwest corner of the IMC main building. The day tank (above ground) contains about 1,000 L of diesel. The emergency generator was installed on concrete slabs with batteries. The ground of both the emergency generator room and the fuel tank room was concrete-paved and suspected oil stains were observed.</li> <li>• The paved open areas in the centre of</li> </ul>	Yes	<ul style="list-style-type: none"> <li>• <u>D.G. store and chemical storage room</u>: possible spillage/ leakage oil/ chemicals handling and possible migration of the contamination plume into the nearby hoarding area</li> <li>• Area occupied for this potentially contaminating land use is about 20 m<sup>2</sup></li> <li>• <u>Historic unknown open storage</u>: No sufficient information regarding the stored goods/ chemicals and past contamination records</li> <li>• Area of the whole IMC is about 6,978 m<sup>2</sup></li> <li>• Site L17 is the overlapping works area under both this Project and EWL. Sampling locations for potential contamination hotspots for this site are proposed with reference to the approved CAP of this area under EWL, as listed in <b>Table 5.1</b>.</li> </ul>	NEX2213/C/361/ENS/M57/006 & NEX2213/C/361/ENS/M57/010

Land Ref. No.	Site ID	Historical Land Use	Current Land Use*	Site Appraisal Results	Necessary for Further Site Investigation?	Justification and Hotspots Identified	Figure Reference
				<p>IMC were currently used as a car park. The IMC main building situated at the southern portion of this site contains offices and working areas for sorting and storing of the mails on the ground floor. This area is entirely concrete-paved with no observable oil stain</p> <ul style="list-style-type: none"> <li>An accident of aluminium powder spillage near this area was recorded in 2006 by FSD. However, it is considered that spillage of aluminium powder would not cause significant land contamination as the ground around this area is entirely concrete paved</li> </ul>			
W3	3-02	Vacant area, open storage, and road	Hung Hom Freight Yard (HFY)	<ul style="list-style-type: none"> <li>An open area yard for loading, unloading and stacking containers</li> <li>According to the site representative, refuelling (diesel) and lubrication of the container stacker are carried out in the area northeast of KFB, and these activities have been conducted onsite for about 10 years</li> <li>No underground storage tanks or pipelines are present onsite</li> <li>Refuelling is conducted about 2-3 times/ week. Diesel for refuelling is stored in the D.G. store near the South Warehouse. Diesel is pumped into the vehicle from containers (4 x 50 gallons each) on a tray, therefore the source of contamination is most likely mobile.</li> <li>Lubrication is carried out by contractors about once every quarter. Waste lubricating oil is collected by contractors and therefore there is no (waste) lubricating oil stored onsite</li> <li>The entire area is paved. Apparent oil</li> </ul>	Yes	<ul style="list-style-type: none"> <li><u>Container stacker refuelling and maintenance area</u>: part of this area where oil stains were observed were within the proposed cut &amp; cover area for Phase I construction; potential contamination risks from contaminant plume due to possible spillage/ leakage of diesel and/ or lubricating oil during refuelling and maintenance – since the potential contamination hotspot is not located within the hoarding area or works area</li> <li>Area occupied for this potentially contaminating land use is about 700 m<sup>2</sup>.</li> </ul>	NEX2213/C/361/ENS/M57/006 & NEX2213/C/361/ENS/M57/010

Land Ref. No.	Site ID	Historical Land Use	Current Land Use*	Site Appraisal Results	Necessary for Further Site Investigation?	Justification and Hotspots Identified	Figure Reference
				stains were observed in this area around the refuelling area; minor stains were observed on the ground surface north of KFB			
W3	3-03	Sea, reclaimed area, cargo pier	Pier at Hung Hom waterfront for loading/ unloading cargos	<ul style="list-style-type: none"> <li>• Numerous cargo containers were observed at the pier</li> <li>• Ships were loading/ unloading containers during the site inspection</li> <li>• As reported by the site representative, there are no storage of chemicals of concern in this area</li> </ul>	No	No adverse contaminated land impacts are identified based on site appraisal.	NEX2213/C/361/ENS/M57/006 & NEX2213/C/361/ENS/M57/010

\*: Current land use is identified based on street maps and site inspections.

**iv. Area 4: Supporting Works Area**

*Review of Historic and Current Land Uses*

Area around Cheong Tung Road and Hung Lok Road

4.24 This area was sea from 1967 to 1976. Reclamation of this area was noted in 1989 and was completed in 1999. It was noted as the Cheong Tung Road and Hung Lok Road in 1999. No major land use changes were noted since then.

Area South of Royal Peninsula

4.25 This area was sea from 1967 to 1976. Reclamation of this area was noted in 1989. Reclamation of this area was completed and this area was noted as traffic roads in 1999. No major land use changes were noted since then.

Area East of Harbourview Horizon

4.26 This area was sea from 1967 to 1976. Reclamation of this area was noted in 1989. Reclamation of this area was completed and this area was mainly used as an open car park as noted in 1999. No major land use changes were noted since then.

Area Northeast of Harbourview Horizon

4.27 This area was sea from 1967 to 1976. Based on the aerial photograph of 1998, this area was reclaimed and vacant. A low-rise concrete building was observed in the north-western portion of this area from 2002 to 2006. The south-eastern portion of this area was occupied by a low-rise concrete building with open car parks in 2002. No major land use changes were noted since then.

*Site Inspection*

4.28 In addition to Areas 1, 2 and 3, there are four supporting works areas of Phase I under this Project. Land use in Area 4 includes vacant area, site office, open storage, green belts and streets/ highways.

4.29 Site inspection for Area 4 was conducted in November and December 2008. Sites identified with potentially contaminating land use are indicated in **Table 4.5**. For easy reference, these sites have been assigned a letter as a unique Site ID, e.g. 4-01, 4-02 etc, in this area.

**Table 4.5 Summary of Site Appraisal Results for Area 4**

Land Ref. No.	Site ID	Historic Land Use	Current Land Use*	Site Appraisal Results	Necessary for Further Site Investigation?	Justification and Hotspots Identified	Figure Reference
WS. 112	4-01	Sea, and reclaimed area	Highway structures, streets, vacant areas, green areas	<ul style="list-style-type: none"> <li>Highways, streets, vacant areas and green areas are the main land use for this area</li> </ul>	No	No adverse contaminated land impacts are identified based on site appraisal.	NEX2213/C/361/E NS/M57/007
WA. 102	4-02	Sea, reclaimed area, and open car park	Open car park	<ul style="list-style-type: none"> <li>An open car park, based on review of street maps and aerial photos</li> </ul>	No	No adverse contaminated land impacts are identified based on site appraisal.	NEX2213/C/361/E NS/M57/007
WA. 103	4-03	Sea, reclaimed area, and traffic roads	Vacant area covered by vegetation	<ul style="list-style-type: none"> <li>This area was vacant and covered by vegetation during the site inspection</li> <li>It is unpaved and partly covered by vegetation</li> </ul>	No	No adverse contaminated land impacts are identified based on site appraisal.	NEX2213/C/361/E NS/M57/007
NSL-034	4-04	Sea, reclaimed area, low-rise building, open car park	Site office, open car park and open storage	<ul style="list-style-type: none"> <li>A site office of the Drainage Service Department (DSD) was observed on the north-western portion of this area. The site office area includes low-rise buildings, an open car park, and an open storage of construction materials (e.g. concrete pipes, road blocks, soil and stones) and a waste oil storage area, where about eight drums for waste diesel storage were observed shelved on secondary containment</li> </ul>	Yes (for the waste diesel storage area of the DSD site office)	<ul style="list-style-type: none"> <li><b>Oil drums storage area:</b> possible contamination due to spillage/leakage of waste oil.</li> <li>Total area of the DSD site office is about 5,400 m<sup>2</sup>. Area occupied for this oil drums storage area with potential contamination concerns is about 20 m<sup>2</sup></li> </ul>	NEX2213/C/361/E NS/M57/007

Land Ref. No.	Site ID	Historic Land Use	Current Land Use*	Site Appraisal Results	Necessary for Further Site Investigation?	Justification and Hotspots Identified	Figure Reference
				<p>near the northern corner of this area.</p> <ul style="list-style-type: none"> <li>• This site office area of DSD was partly concrete-paved with no observable oil stains except some apparent oil stains were found on unpaved area near the waste diesel storage area.</li> <li>• An open storage occupied by Sun Fook Kong (Civil) Limited (新福港 (土木) 有限公司). Low rise site office buildings, construction materials (e.g. wood plates, iron sticks, metal pipes, bricks, concrete drums) and a portable crane was observed onsite.</li> <li>• Based on the site observation, the ground is generally concrete-paved with no observable oil stains.</li> </ul>			

\*: Current land use is identified based on street maps and site inspection.



**v. Areas Inaccessible for Site Inspection**

4.30 Several areas within the Assessment Area were not able to be accessed due to being locked or access was denied by the occupier; thus they were restricted from onsite inspection and/ or (further) site inspection. Details regarding these sites were summarised in **Table 4.6** below.

**Table 4.6 Areas Restricted from Onsite Inspection**

Site ID of Inaccessible Site	Review of Available Information	Initial Contamination Evaluation of Those Inaccessible Sites and Possible Remediation Methods	Confirmation of whether the contamination problem at this/these site(s) would be surmountable	Sampling and analysis proposal which shall aim at determining the nature and the extent of the contamination of this/these site(s)	Schedule of submission of revised CAP (if necessary), CAR, RAP and RR
2-08 (part of the railway tracks)	<p><u>Site Appraisal</u></p> <p>This area is reportedly to be used as railway tracks for the goods yard. A number of the tracks were restricted for access; hence site inspection could not be performed.</p> <p>For railway tracks that were inspected, oil stains (suspected to be lubricating oil) were observed along the tracks.</p> <p>For railway tracks that were restricted from onsite inspection, they are used as the goods yard. According to the site personnel, lubricating</p>	<p><u>Initial Contamination Evaluation</u></p> <p>According to information provided by the site personnel, lubricating oil leakage from locomotives and/ or wheels of cars/ wagons are possible.</p> <p>Such leakage may cause surface land contamination at concrete-based tracks and deeper contamination at ballast-based tracks, depend on soil properties.</p> <p>Furthermore, this site has been in operation for more than 10 years; land contamination is therefore considered as possible.</p> <p><u>Possible Contaminants</u></p> <p>Petroleum hydrocarbons, heavy metal (lead), BTEX</p> <p><u>Possible Remediation Methods</u></p> <p>Depending on the contaminated</p>	<p>The contamination hotspots of this site mainly concentrate at areas along the railway tracks. Potentially contaminating activities are related to leakage of lubricating oil only, hence the contaminant types are limited.</p> <p>Therefore, land contamination problems are considered surmountable</p> <p>Moreover, there are available and commonly adopted remediation methods for the potential contaminants.</p> <p>Furthermore, should land contamination be identified when this site is demolished, there are readily available and commonly adopted remediation measures available.</p>	<p>A total of 5 sampling locations are proposed for an initial screening of the presence of land contamination in this area where cut &amp; cover railway construction will be adopted, as a preliminary representation of potential contamination within the railway tracks in this area. Sampling will be based on a regular grid pattern (100 m x 100 m) and practical conditions when conducting SI, with reference to Guidance Note 2.</p> <p>If contamination is identified and/ or further SI considered necessary further site investigation would be recommended upon agreement with MTR.</p> <p>Sampling plan and testing parameters are detailed in</p>	<p><u>Revised CAP</u></p> <p>Upon site access is granted, site inspection should be carried out to ascertain any other contaminated hotspots within this site. A CAP should then be submitted to EPD for endorsement.</p> <p><u>CAR and RAP</u></p> <p>Upon completion of SI and laboratory testing, a CAR should be submitted to EPD for endorsement. If contamination is identified, a RAP should also be submitted to EPD for endorsement.</p> <p><u>RR</u></p> <p>A RR should be submitted to demonstrate</p>

Site ID of Inaccessible Site	Review of Available Information	Initial Contamination Evaluation of Those Inaccessible Sites and Possible Remediation Methods	Confirmation of whether the contamination problem at this/these site(s) would be surmountable	Sampling and analysis proposal which shall aim at determining the nature and the extent of the contamination of this/these site(s)	Schedule of submission of revised CAP (if necessary), CAR, RAP and RR
	oil leakage might be possible from wheels of the EMU cars parked on tracks nos. G10, G12, G13 and G15, while such leakage might be possible from the locomotive and wheels of goods wagons parked on the other tracks for goods yard (with the initial "G")  Site appraisal results are detailed in <b>Table 4.3</b> .	soil quantity and quality, possibly:  Cement stabilization/solidification for heavy metals.  Bioremediation such as bio-pile and composting for organic contaminants.		<b>Table 5.2.</b>	completion of remediation works before construction work starts at the site.

**vi. Potentially Contaminated Sites Close to the Assessment Area**

4.31 The migration of pollution within groundwater from sites up hydraulic gradient, may affect the Assessment Area, even if the potential source is not within the designated Project area. Therefore, supplementary to review of potentially contaminating land uses within the Assessment Area, the general environment in close vicinity of the Assessment Area and the Project area was reviewed based on street maps and site inspection. Relevant details were detailed in **Table 4.7** below.

**Table 4.7 Potentially Contaminated Sites Close to the Assessment Area**

Name and Nature of Business	Site Location	Review of Available Information	Initial Contamination Evaluation of the Site
ESSO Petrol Filling Station	Located about 200 m upstream north of the Assessment Area, on the tunnel between Chi Man Street and Princess Margaret Road.	<p><u>Site Appraisal</u></p> <p>Diesel, liquefied petroleum gas (LPG), gasoline (Synergy F-1 and 8000) are stored and served in this PFS.</p> <p>An LPG store was observed southwest of the PFS.</p> <p>The area of the PFS is entirely concrete-paved and is in good condition during site inspection.</p>	<p><u>Initial Contamination Evaluation</u></p> <p>This PFS is located about 200 m north of the nearest boundary of the Assessment Area.</p> <p>It is built on the tunnel where there is rock and a tunnel protection zone and a vertical space above the railway alignment</p> <p>Even if there was a leakage, LPG would have minimal land contamination concerns due to its physical properties.</p> <p>Therefore, potential contamination affecting the Assessment Area due to possible plume migration from this PFS is minimal</p>

### Other Relevant Information

- 4.32 In order to evaluate the potential land contamination concerns from previous land uses, inquiries were made to the Environmental Protection Department (EPD), Fire Services Department (FSD) and the Lands Department (LandsD) on 17 November 2008 for:
- i. records on any chemical and chemical waste releases within the Project Area,
  - ii. records of current and past registration of dangerous goods storages and reported accidents of spillage/leakage and,
  - iii. historical land uses of the Project Area.
- 4.33 A reply letter from FSD dated 2 January 2009 indicates that three accidents of spillage/ leakage of dangerous goods occurred within the assessment area from 1 January 2000 to 31 July 2008. According to the FSD personnel, the three accidents included:
- i. aluminium powder spillage at 80 Salisbury Road on 9 October 2006,
  - ii. acetylene spillage at Metropolis Drive on 13 June 2002 and,
  - iii. oil spillage at KCRC Railway Tracks on 2 April 2005.
- 4.34 However, information regarding the exact location, degree and extend of the spillage was not provided. Metropolis Drive is located on the podium level at the eastern part of the Metropolis. The accident of acetylene spillage at Metropolis Drive is not considered having any land contamination concern. Information regarding chemical waste producers was reviewed on 12 December 2008 and no registration of chemical waste producer was identified within the Project area other than those identified during site inspections in November and December 2008.
- 4.35 In relation to the third incident record, based on further clarification of MTR, it was found that the chimney of a locomotive caught on fire and that the fire was put out in a short time. According to MTR, no oil leakage or spillage was recorded from this accident, and the location of this accident was at the middle portion of the railway track G17. Therefore, this is not considered as causing land contamination concerns in the corresponding area of the Assessment Area.
- 4.36 Owing to the changes in the proposed works areas, further inquiries were made to FSD to identify any spillage/ leakage accidents within these proposed works areas. However, FSD has not yet responded during the time of the submission of this report.
- 4.37 Historical land use information was gathered through reviews of aerial photographs of the potential contaminated areas.
- 4.38 Standard Form Table 3.1 adopted from EPD's Guidance Manual summarising the past, current and future land uses of the potentially contaminating sites is provided in **Appendix D**.

## 5. SAMPLING PLAN FOR SITE INVESTIGATION

### Sampling Locations

- 5.1 Site investigations undertaken in **Section 4** have identified that HFY and some facilities in Areas 1 through 4 may have potential land contamination. A total of 24 boreholes and 4 trial pits are proposed, including both the SI for the present stage and for sites after decommissioning. The location plans of the proposed Site Investigation (SI) sampling locations are illustrated in **Figure nos. NEX2213/C/361/ENS/M57/008** through **NEX2213/C/361/ENS/M57/012**.

### Sampling Parameters

- 5.2 The selection of chemicals of concern (COCs) recommended for laboratory analysis at each of the proposed sampling locations is based on desktop review and site investigation as described in **Sections 3 and 4** and with reference to Guidance Notes 1 and 2 and the Guidance Manual. Where the desktop review and site investigation observed historical land use of a specific industry type, reference was also made to **Appendix E** “*Chemical Contaminants Listed by Industry Type*” of Australian Standard 4482.1-1997 “*Guide to the sampling and investigation of potentially contaminated soil. Part 1: Non-volatile and semi-volatile compounds*”.
- 5.3 The exact sampling locations of the SI shall be determined onsite as it is subject to adjustment based on site conditions encountered (e.g. presence of foundations, underground utilities, delivery pipes and services). The location should be agreed with the land contamination specialist prior to drilling/excavation and sampling.
- 5.4 If unexpected contamination is observed during the SI (i.e. extensive contamination observed beneath the removed concrete), an increased number of sample locations, sample depths or number of analytes would be recommended to MTR in order to further investigate the extent of contamination present. However, further investigation will only be undertaken upon MTR’s written authorisation.
- 5.5 The testing locations, basis for further investigation, investigation techniques, proposed number of samples, together with the analytical regime is summarised in **Table 5.1**.
- 5.6 Sites which may contain contamination but were unable to be investigated due to constraints caused by current railway operation or the land being not yet acquired are listed in **Table 5.2**. SI works shall be carried out once these sites are available for investigation.
- 5.7 The sampling and testing plan is detailed in **Appendix F**.

**Table 5.1 Sampling and Testing Plan for Potentially Contaminated Sites**

Site ID	Hotspot Identified	Sampling Location/ Sampling ID	Sampling Method	Sample Matrix	Parameters to Be Tested	Figure Reference	
<b>Area 1</b>							
1-10	Demolished storage for paints, currently used as an open storage for construction materials  Approx. area of 100 m <sup>2</sup>	At the hotspot to verify any residual contamination  2209/SCL/EDH249(P)	Borehole	Soil	0.5, 1.5, 3.0 and 6.0 m bgs; further with 3.0 m intervals to the bottom of excavation or upon encountering bedrock, whichever is shallower if there is excavation works greater than 6.0 m.	Lead, Zinc VOCs, SVOCs, Cyanide	NEX2213/C/361/ENS/M57/008
				GW	One GW sample per location if encountered.	VOCs, SVOCs	
1-18	Emergency generator room and the associated fuel tank room at STA Building  Approx. area of 30 m <sup>2</sup>	Close to but outside both rooms, due to sampling constraints at this stage.  2209/SCL/ETT103	Trial pit	Soil	Soil samples at depths of 0.5, 1.5 and 3.0 m  Since this site is within the cut & cover works area where excavation/ ground works are expected, visual inspection should be conducted to detect any abnormal colour, smell or other characteristics of the soil during demolition and excavation	Lead, BTEX, TPH, PAHs	NEX2213/C/361/ENS/M57/008
				GW	One GW sample per location if encountered.	BTEX, TPH, PAHs	
<b>Area 2</b>							
2-05	USTs near the Locomotive Running Shed  Approx. area of 150 m <sup>2</sup>	Northwest of the USTs  2209/SCL/EDH246  (Two extra sampling locations at the west, southeast of the USTs are proposed and will be conducted during the decommissioning of this site;	Borehole	Soil	0.5, 1.5, 3.0 and 6.0 m bgs; further with 3.0 m intervals to the bottom of excavation or upon encountering bedrock, whichever is shallower if there is excavation works greater than 6.0 m.	Lead, BTEX, TPH, PAHs	NEX2213/C/361/ENS/M57/009
				GW	One GW sample per location if encountered.	BTEX, TPH, PAHs	

Site ID	Hotspot Identified	Sampling Location/ Sampling ID	Sampling Method	Sample Matrix		Parameters to Be Tested	Figure Reference
		detailed in Table 5.2)					
2-06	Above ground lubricating oil tank near the Locomotive Running Shed  Approx. area of 10 m <sup>2</sup>	Close to and south of the lubricating oil tank  2209/SCL/ETT102	Trial pit	Soil	Soil samples at depths of 0.5, 1.5 and 3.0 m bgs	Lead, BTEX, TPH, PAHs	NEX2213/C/361/ENS/M57/009
				GW	One GW sample per location if encountered.	BTEX, TPH, PAHs	
2-07	Dispenser west of the Locomotive Running Shed  Approx. area of 10 m <sup>2</sup>	Next to the hotspot  2209/SCL/EDH244	Borehole	Soil	0.5, 1.5, 3.0 and 6.0 m bgs; further with 3.0 m intervals to the bottom of excavation or upon encountering bedrock, whichever is shallower if there is excavation works greater than 6.0 m.	Lead, BTEX, TPH, PAHs	NEX2213/C/361/ENS/M57/009
				GW	One GW sample per location if encountered.	BTEX, TPH, PAHs	
2-09	D.G storage containers near the Southern Warehouse  Approx. area of 20 m <sup>2</sup>	Close to but outside of the D.G. storage containers, due to sampling constraints at this stage.  2209/SCL/EDH231	Borehole	Soil	0.5, 1.5, 3.0 and 6.0 m bgs; further with 3.0 m intervals to the bottom of excavation or upon encountering bedrock, whichever is shallower if there is excavation works greater than 6.0 m.  Since this site is within the hoarding area where excavation/ ground works are expected, visual inspection should be conducted to detect any abnormal colour, smell or other characteristics of the soil during demolition and excavation	Lead, BTEX, TPH, PAHs	NEX2213/C/361/ENS/M57/010
				GW	One GW sample per location if encountered.	BTEX, TPH, PAHs	
<b>Area 3</b>							

Site ID	Hotspot Identified	Sampling Location/ Sampling ID	Sampling Method	Sample Matrix		Parameters to Be Tested	Figure Reference
L17*	D.G. store and chemical storage room at the IMC  Approx. area of 20 m <sup>2</sup>	Close to but outside (west) of both rooms, due to sampling constraints at this stage.  2209/SCL/ETT068	Trial pit	Soil	Soil samples at depths of 0.5, 1.5 and 3.0 m bgs.  Since the D.G. store and chemical storage room are within the works area and close to the hoarding area, visual inspection should be conducted to detect any abnormal colour, smell or other characteristics of the soil during demolition and excavation	VOCs, SVOCs, full list of metals, TPH, Cyanide	NEX2213/C/361/ENS/M57/010
				GW	One GW sample per location if encountered.		
	Emergency generator room and the associated fuel tank room  Approx. area of 20 m <sup>2</sup>	Close to but outside (north) of both rooms, due to sampling constraints at this stage.  2209/SCL/ETT106	Trial pit	Soil	Soil samples at depths of 0.5, 1.5 and 3.0 m bgs.  Since the D.G. store and chemical storage room are within the works area and close to the hoarding area, visual inspection should be conducted to detect any abnormal colour, smell or other characteristics of the soil during demolition and excavation	VOCs, SVOCs, full list of metals, TPH	NEX2213/C/361/ENS/M57/010
				GW	One GW sample per location if encountered.		
	Historic unknown open storage  Approx. area of 2000 m <sup>2</sup> ( within the hoarding area)	At the historic open storage area of IMC  2209/SCL/EDH256 and 2209/SCL/EDH257	Borehole	Soil	0.5, 1.5, 3.0 and 6.0 m bgs; further with 3.0 m intervals to the bottom of excavation or upon encountering bedrock, whichever is shallower if there is excavation works greater than 6.0 m.  Since this site is within the works area and partly within the hoarding area where	VOCs, SVOCs, full list of metals, TPH	NEX2213/C/361/ENS/M57/010



Site ID	Hotspot Identified	Sampling Location/ Sampling ID	Sampling Method	Sample Matrix	Parameters to Be Tested	Figure Reference
				excavation/ ground works are expected, visual inspection should be conducted to detect any abnormal colour, smell or other characteristics of the soil during demolition and excavation		
				GW	One GW sample per location if encountered.	VOCs, SVOCs, Mercury, TPH
3-02	Container stacker refuelling and maintenance area at Hung Hom Freight Year (HFY) Approx. area of 700 m <sup>2</sup>	Sampling between this area and the works area for preliminary screening of the presence of contamination plume 2209/SCL/EDH229 and 2209/SCL/EDH124(P)	Borehole	Soil	0.5, 1.5, 3.0 and 6.0 m bgs; further with 3.0 m intervals to the bottom of excavation or upon encountering bedrock, whichever is shallower if there is excavation works greater than 6.0 m.	Lead, BTEX, TPH, PAHs
				GW	One GW sample per location if encountered.	BTEX, TPH, PAHs

Notes:

- \*: Site L17 is the overlapping works area under both this Project and EWL. Sampling locations are proposed for potential contamination hotspots for Site L17 with reference to the approved CAP of this area under EWL.
1. bgs: below ground surface; GW = groundwater
  2. VOCs = The whole list of COCs listed under VOCs in Appendix IV of Guidance Note 1; SVOCs = The whole list of COCs listed under SVOCs in Appendix IV of Guidance Note 1.
  3. BTEX = *Benzene, Toluene, Ethylbenzene* and *Xylene*.
  4. PAHs = The whole of COCs listed under group of SVOCs in the RBRGs Table except *bis-(2-Ethylhexyl)phthalate, Hexachlorobenzene* and *Phenol*. Since RBRGs value of *Benzo(a)anthracene, Benzo(a)pyrene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene* and *Indeno(1,2,3-cd)pyrene* were not available for groundwater, the captioned chemicals parameters would not be tested in groundwater sample.
  5. Heavy Metals - The whole list of COCs listed under Metals in Appendix IV of Guidance Note 1.
  6. Since the RBRGs 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 captioned chemicals parameters would not be tested in the groundwater sample.
  7. If there are any spatial and headroom constraints for the proposed sampling locations, trial pit(s) should be considered as an alternative to collect soil samples. The maximum depth of trial pits should be at least 2m - 3m bgs subject to site conditions.

**vii. Areas with Site Investigation (SI) Constraints at This Stage**

5.8 In addition to areas which are not feasible for inspection or identification of hot spots, sites with constraints for sampling works at current stage are listed in **Table 5.2** below. Supplementary CAP(s) will be prepared and submitted for EPD endorsement; CAR, RAP and RR will be prepared and submitted subsequently, if necessary.

**Table 5.2 Sampling and Testing Plan of SI Works for Sites upon Decommissioning**

Site ID	Hotspot Identified	Sampling Location/ Sampling ID	Sampling Method	Sample Matrix	Parameters to Be Tested	Figure Reference
<b>Area 2</b>						
2-04	The following hotspots are all located in the Locomotive Running Shed:  Workshop, approx. area of 300 m <sup>2</sup>  Servicing area, approx. area of 500 m <sup>2</sup>  Chemical storage area, approx. area of 20 m <sup>2</sup>  Waste oil storage area, approx. area of 20 m <sup>2</sup>	Workshop: HUH-2 (section inside the running shed), HUH-9 (section outside the running shed):  Servicing area: HUH-3, HUH-5  Chemical storage area: HUH-4  Waste oil storage area: HUH-6	Borehole	Soil	Workshop: Lead, Chromium, Copper, TPH, VOCs, SVOCs  Servicing area: Lead, Chromium, Copper, TPH, VOCs, SVOCs  Chemical storage area: Lead, TPH, VOCs, SVOCs  Waste oil storage area: Lead, BTEX, TPH, PAHs	NEX2213/C/361/ENS/M57/009
				GW	One GW sample per location if encountered.  Workshop: VOCs, SVOCs, TPH  Servicing area: VOCs, SVOCs, TPH  Chemical storage area: VOCs, SVOCs, TPH  Waste oil storage area: BTEX, TPH,	

Site ID	Hotspot Identified	Sampling Location/ Sampling ID	Sampling Method	Sample Matrix		Parameters to Be Tested	Figure Reference
						PAHs	
2-05	USTs near the Locomotive Running Shed  Approx. area of 150 m <sup>2</sup>	West of the USTs: HUH-8  Southeast of the USTs: HUH-10	Borehole	Soil	Soil samples at depths of 0.5, 1.5, 3.0 and 6.0 m bgs; further with 3.0 m intervals to the bottom of excavation or upon encountering bedrock, whichever is shallower if there is excavation works greater than 6.0 m	Lead, BTEX, TPH, PAHs	NEX2213/C/361/ENS/M57/009
				GW	One GW sample per location if encountered.	BTEX, TPH, PAHs	
2-07	North dispenser of the Locomotive Running Shed  Approx. area of 10 m <sup>2</sup>	Exactly at this hotspot  HUH-7	Borehole	Soil	Soil samples at depths of 0.5, 1.5, 3.0 and 6.0 m bgs; further with 3.0 m intervals to the bottom of excavation or upon encountering bedrock, whichever is shallower if there is excavation works greater than 6.0 m	Lead, BTEX, TPH, PAHs,	NEX2213/C/361/ENS/M57/009
				GW	One GW sample per location if encountered.	BTEX, TPH, PAHs	
2-02	Traverser and the ground underneath  Total approx. area of 800 m <sup>2</sup> ; approx. area within the cut & cover works area where excavation is expected is < 100 m <sup>2</sup>	At the hotspot for preliminary screening of the presence of potential land contamination  HUH-1  Should contamination be confirmed, deeper and more extensive sampling will be proposed with reference to Guidance Note 2, upon agreement with MTR.	Borehole	Soil	Soil samples at depths of 0.5, 1.5, 3.0 and 6.0 m bgs; further with 3.0 m intervals to the bottom of excavation or upon encountering bedrock, whichever is shallower if there is excavation works greater than 6.0 m	Lead, BTEX, TPH, PAHs	NEX2213/C/361/ENS/M57/010
				GW	One GW sample per location if encountered.	BTEX, TPH, PAHs	
2-08	Railway tracks in W2  Total approx. area of 15,000 m <sup>2</sup>	Sampling based on grid (100 m x 100 m).  Total sampling locations in this area: 5 (RWT-1 through RWT-5)  Five locations in Area W2: Railway tracks nos. G10, G12, G13, G15,	Borehole  If contamination is confirmed, further SI would be recommended and conducted,	Soil	For concrete-based railway tracks in this area (G17 and G18): soil samples at depths of 0.5, 1.5 3.0, 4.5 and 6.0 m bgs.  For ballast-based railway tracks in this area (G10, G12 G13, G15 and the northern section of G6): soil	Lead, BTEX, PAHs, TPH	NEX2213/C/361/ENS/M57/012

Site ID	Hotspot Identified	Sampling Location/ Sampling ID	Sampling Method	Sample Matrix		Parameters to Be Tested	Figure Reference
		G17 and G18, based on a 100 m x 100 m grid pattern, between two neighbouring tracks: RWT-1 through RWT-5  Exact sampling locations and number shall also depend on the practical conditions when sampling is conducted	upon agreement with MTR		samples at depths of 0.5, 1.5, 3.0 and 6.0 m; further with 3.0 m intervals to the bottom of excavation or upon encountering bedrock, whichever is shallower if there is excavation works greater than 6.0 m.  If contamination is confirmed, further (smaller grid, e.g. 50 m interval) and deeper (sampling until the bedrock or the bottom of excavation, whichever is shallower) site inspection would be conducted upon agreement with MTR		
				GW	One GW sample per location if encountered.	BTEX, PAHs, TPH	
<b>Area 4</b>							
4-04	Waste diesel storage area at DSD site office	Exactly at the hotspot DSD-1	Borehole	Soil	Soil samples at depths of 0.5, 1.5, 3.0 and 6.0 m bgs; further with 3.0 m intervals to the bottom of excavation or upon encountering bedrock, whichever is shallower if there is excavation works greater than 6.0 m	Lead, BTEX, PAHs, TPH	NEX2213/C/361/ENS/M57/011
				GW	One GW sample per location if encountered.	BTEX, PAHs, TPH	

Notes:

- bgs = below ground surface; GW = groundwater
- VOCs = The whole list of COCs listed under VOCs in Appendix IV of Guidance Note 1; SVOCs = The whole list of COCs listed under SVOCs in Appendix IV of Guidance Note 1.
- BTEX = *Benzene, Toluene, Ethylbenzene* and *Xylene*.
- PAHs = The whole of COCs listed under group of SVOCs in the RBRGs Table except *bis-(2-Ethylhexyl)phthalate, Hexachlorobenzene* and *Phenol*. Since RBRGs value of *Benzo(a)anthracene Benzo(a)pyrene, Benzo(g,h,i)perylene Benzo(k)fluoranthene Dibenzo(a,h)anthracene and Indeno(1,2,3-cd)pyrene* were not available for groundwater, the captioned chemicals parameters would not be tested in groundwater sample.
- Heavy Metals - The whole list of COCs listed under Metals in Appendix IV of Guidance Note 1.
- Since the RBRGs 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 captioned chemicals parameters would not be tested in the groundwater sample.

7. If there are any spatial and headroom constraints for the proposed sampling locations, trial pit(s) should be considered as an alternative to collect soil samples. The maximum depth of trial pits should be at least 2m - 3m bgs subject to site conditions

- 5.9 Through an initial site assessment consisting of the desktop review and site walkover detailed in **Section 4**, it is considered likely that remediation of impacted soil and or groundwater may be required at one or more locations. SI results will be discussed in the CAR; if land contamination is confirmed, possible remedial techniques will be provided in the subsequent RAP.
- 5.10 SI works shall be carried out by the main contractor of the Project upon decommission or acquisition of the above listed sites at a later stage. AECOM will submit one revised CAP including all further identified contamination. One revised CAR, RAP and RR will also be prepared once the status of contamination status of these sites has been determined.

**Soil Sampling Method and Depth of Sampling**

- 5.11 All soil boring / excavation and sampling should be supervised by a land contamination specialist.
- 5.12 Boreholes should be advanced by means of dry rotary drilling method, i.e. without the use of flushing medium as far as applicable. For safety reasons, an inspection pit should be excavated down to 1.5 m below ground to inspect for underground utilities at the proposed borehole location. If necessary, other forms (e.g. ground penetration radar, metal detection) of utilities checking should be performed to ensure clearance of underground structures. Disturbed soil samples should be collected at the depth of 0.5 m below ground surface (bgs), and 1.5 m bgs if inspection pit was excavated.
- 5.13 In areas with no excavation works or excavation works not more than 6 m of soil boring should be undertaken to a depth of 6.0 m bgs. For sites where excavation deeper than 6 m is planned, drilling should be undertaken to the specified depth or upon encountering bedrock, whichever is shallower.
- 5.14 Soil boring using drill rigs should then be performed for depth from 1 m to the maximum boring depth. Undisturbed soil samples shall be collected by sampler (e.g. U100/U76) made of stainless steel or other materials considered appropriate at 0.5 m, 1.5 m, 3 m and 6 m bgs and at 3 m intervals for deeper excavations. Where there are suspected signs of contamination, extra samples should be taken for laboratory analysis. If there are any spatial and/ or headroom constraints for the proposed borehole(s), trial pit(s) should be considered as an alternative to collecting the soil samples.
- 5.15 At each sampling location/ depth, sufficient quantity of soil sample (as specified by the laboratory) should be taken. All soil samples should be uniquely labelled and documented on a Chain of Custody form. Backup samples should be retained and stored at 0 - 4 °C in laboratory. Guidelines on sample size and handling for soil sample are given in **Table 5.3** below.

**Table 5.3 Guidelines of Sample Size and Handling for Soil Sample**

Matrix			Soil		
Container Per Sample			Parameters	Preservation	Temperature
No. of Bottles	Size	Type			
1	1 kg	Amber Glass	Full list of metals, VOCs & SVOCs, PAHs, PCBs, TPH, MTBE, BTEX, cyanide	None	0-4°C

**Strata Logging**

- 5.16 Strata logging for boreholes should be undertaken during the course of drilling/ digging 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.

### **Free Product and Groundwater Level Measurement**

- 5.17 The thickness of any free product and ground water level if present at sampling locations should be measured with an interface probe. The free product if encountered in sufficient amount should be collected for laboratory analysis to determine the composition.

### **Groundwater Sampling**

- 5.18 It is proposed to collect groundwater samples if groundwater is encountered at the sampling locations.
- 5.19 For each proposed borehole sampling location of which groundwater is encountered, a groundwater well should be installed into the borehole if it is feasible upon considerations of engineering constraints. A typical design of the groundwater sampling well as shown in **Appendix G**, however installation of the well should take into account local conditions.
- 5.20 Each well should first be developed by removing approximately five well volumes of groundwater to remove silt and drilling fluid residue (if present) from the wells. The wells should then be allowed to stand for 24 hours to permit groundwater conditions to equilibrate. Groundwater levels and thickness of free product layer, if present, should be measured at each well before groundwater samples are taken.
- 5.21 In the case of more than one groundwater well being installed, the top of the casing of each groundwater well should first be surveyed to a recognized height datum. All groundwater wells should then be gauged at the same time in order to map the groundwater flow regime present at the site.
- 5.22 Prior to groundwater sampling, the monitoring wells should be purged (at least three well volumes) to remove fine-grained materials and to collect freshly refilled representative groundwater samples. Time for each groundwater purging/recharge should be recorded as well as the estimated groundwater flow.
- 5.23 After purging, one groundwater sample should first be collected using a decontaminated stainless steel or Teflon bailer and placed into a decontaminated container with the following water quality parameters recorded using a water quality meter; temperature, pH, total dissolved solids, dissolved oxygen, and Redox potential.
- 5.24 One groundwater sample should then be collected at each well using a decontaminated stainless steel bailer and decanted into appropriate sample vials or bottles in a manner that minimizes agitation and volatilization of VOCs from the samples. All samples should be uniquely labelled.
- 5.25 Trial pits are to be considered as an alternative for sampling due to any constraints such as overhead access. Groundwater samples should also be collected at all trial pits if it is encountered during excavation. Groundwater from trial pits should be collected using a decontaminated bucket. Water quality parameters should also be recorded where the volume of water is great enough (priority should be placed on collecting a groundwater sampling for laboratory analysis).
- 5.26 Immediately after collection, groundwater samples should be transferred to new, clean, laboratory-supplied glass jars for sample storage/ transport. The sampling glass jars should be of “darken” type. Groundwater samples should be placed in the glass jars with zero headspace and promptly sealed with a septum-lined cap. Immediately following collection, samples should be placed in ice chests, cooled and maintained at a temperature of about 4°C until delivered to the analytical laboratory.

### **Sample Size and Decontamination Procedures**

- 5.27 All equipment in contact with the ground or groundwater should be thoroughly decontaminated between each excavation, drilling and sampling event to minimize the potential for cross

contamination. The equipment (including drilling pit, digging tools and soil/groundwater samplers) should be decontaminated by steam cleaning or high-pressure hot water jet, then washed by phosphate-free detergent and finally rinsed by distilled/ deionised water.

- 5.28 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.
- 5.29 The sample containers should be laboratory cleaned, sealable, water-tight, made of glass or other suitable materials with aluminium 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 analyzed for VOCs, Total Petroleum Hydrocarbon (TPH) fractions or other volatile chemicals.
- 5.30 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 laboratory within 24 hours of the samples being collected and analyzed within the respective retention period for the requested analysis but should not more than 10 days. Guidelines on sample sizes and handling for groundwater samples are given in **Table 5.4** below.

**Table 5.4 Guidelines on Sample Size and Handling for Groundwater Sample**

Matrix			Groundwater		
Container Per Sample			Parameters	Preservation	Temperature
No. of Bottles	Size (mL)	Type			
1	250	Plastic bottle	Full list of metals	HNO <sub>3</sub>	0-4°C
1	1000	Amber Glass	PAHs	None	0-4°C
1	1000	Amber Glass	PCBs	None	0-4°C
1	1000	Amber Glass	TPH	None	0-4°C
2	40	Brown vial	BTEX, Full list of VOCs & SVOCs	HCl	0-4°C
1	250	Plastic bottle	Cyanide	NaOH	0-4°C

**QA/QC Procedures**

- 5.31 QA/QC samples should be collected with reference to the following frequency criteria where appropriate during the SI Chain of Custody protocol should be adopted.
- 1 duplicate per 20 samples for the full suite analysis ;
  - 1 equipment blank per 20 samples for the full suite analysis;
  - 1 field blank per 20 samples for the full suite analysis; and
  - 1 trip blank per trip for the analysis of volatile parameters.

**Laboratory Analysis**

- 5.32 Laboratory analysis is proposed in order to screen the presence of potential contaminants that are of concern at the Assessment Area. **Table 5.5** summarises the parameters, the minimum requirement of the reporting limits and reference methods for the laboratory analyses of soil and groundwater samples for this land contamination study.



**Table 5.5 Parameters, Reporting Limits and Reference Methods for Laboratory Analyses**

Item	Parameter	Soil		Groundwater	
		Reporting Limit (mg/kg) or Otherwise Stated	Reference Method	Reporting Limit (µg/L) or Otherwise Stated	Reference Method
<b>VOCs</b>					
1	Acetone	5 <sup>^</sup>	USEPA 8260	50 <sup>^</sup>	USEPA 8260
2	Benzene	0.5		5	
3	Bromodichloromethane	0.5		5	
4	2-Butanone	5		50	
5	Chloroform	0.5		5	
6	Ethylbenzene	0.5		5	
7	Methyl tert-Butyl Ether	0.5 <sup>^</sup>		5 <sup>^</sup>	
8	Methylene Chloride	5 <sup>^</sup>		50 <sup>^</sup>	
9	Styrene	0.5		5	
10	Tetrachloroethene	0.5		5	
11	Toluene	0.5		5	
12	Trichloroethene	0.5		5	
13	Xylenes (Total)	1.5		15	
<b>SVOCs</b>					
14	Acenaphthene	0.5	USEPA 8270	2	USEPA 8270
15	Acenaphthylene	0.5		2	
16	Anthracene	0.5		2	
17	Benzo(a)anthracene	0.5		NA	
18	Benzo(a)pyrene	0.5		NA	
19	Benzo(b)fluoranthene& Benzo(k)fluoranthene	1		4	
20	Benzo(g,h,i)perylene	0.5		NA	
21	bis-(2-Ethylhexyl) phthalate	5		NA	
22	Chrysene	0.5		2	
23	Dibenzo(a,h)anthracen	0.5		NA	
24	Fluoranthene	0.5		2	
25	Fluorene	0.5		2	
26	Hexachlorobenzene	0.2 <sup>^</sup>		4	
27	Indeno(1,2,3-cd)pyrene	0.5		NA	
28	Naphthalene	0.5		2	
29	Phenanthrene	0.5		2	
30	Phenol	0.5	NA		
31	Pyrene	0.5	2		
<b>Metals</b>					

Item	Parameter	Soil		Groundwater	
		Reporting Limit (mg/kg) or Otherwise Stated	Reference Method	Reporting Limit (µg/L) or Otherwise Stated	Reference Method
32	Antimony	1	USEPA 6020	NA	USEPA 6020
33	Arsenic	1		NA	
34	Barium	1		NA	
35	Cadmium	0.2		NA	
36	Chromium III	0.5 <sup>^</sup>		NA	
37	Chromium VI	0.5		NA	
38	Cobalt	1		NA	
39	Copper	1		NA	
40	Lead	1		NA	
41	Manganese	1		NA	
42	Mercury	0.05		APHA 3112 Hg: B	
43	Molybdenum	1	USEPA 6020	NA	
44	Nickel	1		NA	
45	Tin	1		NA	
46	Zinc	1		NA	
<b>Petroleum Carbon Ranges</b>					
47	C6 - C8	5	USEPA 8015	20	USEPA 8015
48	C9 - C16	200		500	
49	C17 - C35	500		500	
<b>PCBs</b>					
50	PCBs	0.1	USEPA 8270	1	USEPA 8270
<b>Other Inorganic Compounds</b>					
51	Cyanide, free	1 <sup>^</sup>	APHA 4500 CN	NA	APHA 4500 CN
<b>Organometallics</b>					
52	TBTO**	5	Krone <i>et al.</i> – Marine Environmental Research, 27, 1 – 18, 1989	0.1	Krone <i>et al.</i> – Marine Environmental Research, 27, 1 – 18, 1989

Notes:

<sup>^</sup>: The HOKLAS accreditation of the testing method of the COC not available in major laboratories in Hong Kong; analyses will be done with reference to the established protocol of the individual lab.

NA= Not Applicable

5.33 For sampling and laboratory analyses, Chain of Custody procedure should be included as QA/QC procedure.

5.34 All laboratory analyses for soil and groundwater samples should be conducted by a Hong Kong Laboratory Accreditation Scheme (HOKLAS) accredited laboratory. All laboratory test methods should be accredited by the HOKLAS or one of its Mutual Recognition Arrangement partners with reference to the Guidance Manual as far as possible, unless otherwise specified in **Table 5.6** or as agreed by EPD. It should be noted that alternative methods or similar reporting limits may be

used subject to the laboratory availability and capability. The relevant supporting document of the laboratory to be employed for this study should be given in the future CAP or CAR/RAP.

- 5.35 Extra soil samples shall be stored at 0-4 °C and tested for Toxicity Characteristics Leaching Procedure (TCLP) before submission of Remediation Action Plan (RAP) if excavation and landfill disposal is identified as the last resort.
- 5.36 The criteria are set primarily in terms of TCLP limits shown in **Table 5.6**.

**Table 5.6 Laboratory Testing Requirements for TCLP Analysis**

Parameter	Test Methods*	Reporting Limit (mg/L)	Landfill Disposal Criteria TCLP Limit (ppm)
TCLP Leachate Preparation allowed by analysis for:			
Antimony (Sb)	USEPA1311 USEPA6020 & USEPA 7112	1	150
Arsenic (As)		1	50
Barium (Ba)		1	1,000
Beryllium (Be)		1	10
Cadmium (Cd)		0.2	10
Chromium (Cr)		1	50
Copper (Cu)		1	250
Lead (Pb)		1	50
Nickel (Ni)		1	250
Selenium (Se)		0.2	1
Silver (Ag)		1	50
Thallium (Tl)		1	50
Tin (Sn)		1	250
Vanadium (V)		1	250
Zinc (Zn)		1	250
Mercury (Hg)		0.2	1

\* Equivalent internationally recognised standard methods could also be used.

## 6. INTERPRETATION OF RESULTS

- 6.1 With reference to the Guidance Note 1, interpretation of results should make reference to the Guidance Manual. The soil and groundwater samples collected for this study will be compared with Risk-based Remediation Goals (RBRGs) as stipulated in Table 2.1 and Table 2.2 of the Guidance Manual.
- 6.2 The RBRGs are 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. Four types of land use scenarios are set under RBRGs to reflect the typical physical settings in Hong Kong under which people could be exposed to contaminated soil and groundwater. A description of each land use is as follows:
- Urban residential – Sites located in an urban area where main activities involve habitation by individuals. The typical physical setting is a high rise residential building situated in a housing estate that has amenity facilities such as landscaped yards and children's playgrounds. The receptors are residents who stay indoors most of the time except for a short period each day, during which they are outdoors and have the chance of being in direct contact with soil at landscaping or play areas within the estate.
  - Rural residential – Sites located in a rural area where the main activities involve habitation by individuals. These sites typically have village-type houses or low rise residential blocks surrounded by open space. The receptors are rural residents who stay at home and spend some time each day outdoors on activities such as gardening or light sports. The degree of contact with the soil under the rural setting is more than that under the urban setting both in terms of the intensity and frequency of contact.
  - Industrial – Any site where activities involve manufacturing, chemical or petrochemical processing, storage of raw materials, transport operations, energy production or transmission, etc. Receptors include those at sites where part of the operation is carried out directly on land and the workers are more likely to be exposed to soil than those working in multi-storey factory buildings.
  - Public parks – Receptors include individuals and families who frequent parks and play areas where there is contact with soil present in lawns, walkways, gardens and play areas. Parks are considered to be predominantly hard covered with limited areas of predominantly landscaped soil. Furthermore, public parks are not considered to have buildings present on them.
- 6.3 In addition to the RBRGs, screening criteria (soil saturation limits, Csat, developed for Non-aqueous Phase Liquid [NAPL] in soil and water solubility limits for NAPL in groundwater) for the more mobile organic chemicals must be considered to determine whether a site requires further action.
- 6.4 Since this Project involves the construction of a new railway, the Assessment Area is considered to be occupied for industrial purpose in the future and therefore RBRGs for Industrial Land Use will be adopted as the assessment criteria for this land contamination assessment. Relevant soil and groundwater RBRGs for this land contamination study including the Soil Saturation and Solubility Limits are presented in **Table 6.1**.

**Table 6.1 Relevant RBRGs for Soil and Groundwater**

Chemical	Soil (mg/kg)		Groundwater (µg/L)	
	RBRGs for Industrial	Soil Saturation Limit	RBRGs for Industrial	Solubility Limit
<b>VOCs</b>				
Acetone	10,000	***	10,000,000	***
Benzene	9.21	336	54,000	1,750,000
Bromodichloromethane	2.85	1,030	26,200	6,740,000
2-Butanone	10,000	***	10,000,000	***
Chloroform	1.54	1,100	11,300	7,920,000
Ethylbenzene	8,240	138	10,000,000	169,000
Methyl tert-Butyl Ether	70.1	2,380	1,810,000	***
Methylene Chloride	13.9	921	224,000	***
Styrene	10,000	497	10,000,000	310,000
Tetrachloroethene	0.777	97.1	2,950	200,000
Toluene	10,000	235	10,000,000	526,000
Trichloroethene	5.68	488	14,200	1,100,000
Xylenes (Total)	1,230	150	1,570,000	175,000
<b>SVOCs</b>				
Acenaphthene	10,000	60.2	10,000,000	4,240
Acenaphthylene	10,000	19.8	10,000,000	3,930
Anthracene	10,000	2.56	10,000,000	43.4
Benzo(a)anthracene	91.8	NA	NA	NA
Benzo(a)pyrene	9.18	NA	NA	NA
Benzo(b)fluoranthene	17.8	NA	7,530	1.5
Benzo(g,h,i)perylene	10,000	NA	NA	NA
Benzo(k)fluoranthene	918	NA	NA	NA
bis-(2-Ethylhexyl)phthalate	91.8	NA	NA	NA
Chrysene	1,140	NA	812,000	1.6
Dibenzo(a,h)anthracene	9.18	NA	NA	NA
Fluoranthene	10,000	NA	10,000,000	206
Fluorene	10,000	54.7	10,000,000	1,980
Hexachlorobenzene	0.582	NA	695	6,200
Indeno(1,2,3-cd)pyrene	91.8	NA	NA	NA
Naphthalene	453	125	862,000	31,000
Phenanthrene	10,000	28	10,000,000	1000
Phenol	10,000	7,260	NA	NA
Pyrene	10,000	NA	10,000,000	135
<b>Metals</b>				

Chemical	Soil (mg/kg)		Groundwater (µg/L)	
	RBRGs for Industrial	Soil Saturation Limit	RBRGs for Industrial	Solubility Limit
Cadmium	653	NA	NA	NA
Chromium III	10,000	NA	NA	NA
Chromium VI	1,960	NA	NA	NA
Copper	10,000	NA	NA	NA
Lead	2,290	NA	NA	NA
Mercury	38.4	NA	6,790	NA
Nickel	10,000	NA	NA	NA
Zinc	10,000	NA	NA	NA
<b>Petroleum Carbon Ranges</b>				
C6 - C8	10,000	1000	1,150,000	5,230
C9 - C16	10,000	3000	9,980,000	2,800
C17 - C35	10,000	5000	178,000	2,800
<b>PCB</b>				
PCB	0.748	NA	5,110	31
<b>Other Inorganic Compound</b>				
Cyanide, Free	10,000	NA	NA	NA
Note: NA - Not Available *** indicates that the Csat value /solubility limit exceeds the 'ceiling limit' therefore the RBRGs applies)				

## 7. REPORTING

- 7.1 After completion of the site investigation, a CAR which summarises the detailed methodology of site investigation, assessment criteria, onsite observations and the analytical results from the site investigation works will be prepared for EPD endorsement.
- 7.2 Should significant contamination be identified within the works areas, a Remediation Action Plan (RAP) will be prepared. The RAP will set out:
- i. the objectives of remediation action,
  - ii. evaluation of different remediation alternatives and,
  - iii. the design and operation of the proposed remediation method.
- 7.3 The RAP will be submitted either separately or together with the CAR under different sections for EPD endorsement. Site cleanup will commence once the CAR/RAP are vetted and approved by EPD.
- 7.4 A Remediation Report (RR) for demonstration of adequate clean-up should be prepared and submitted to EPD for endorsement prior to the commencement of any construction/development works within the site(s)/ area(s). Construction/development works will only be carried out upon obtaining the endorsement of this RR from EPD.

- 7.5 If contamination is found and landfill disposal is identified as the last resort to remediate the contaminated soil, three impacted soil samples shall be conducted for TCLP test to determine whether they comply with the criteria for landfill disposal in accordance with the Guidance Notes for Investigation and Remediation of Contaminated Sites of Petrol Filling Stations, Boatyards, and Car Repair/Dismantling Workshops before landfill disposal.

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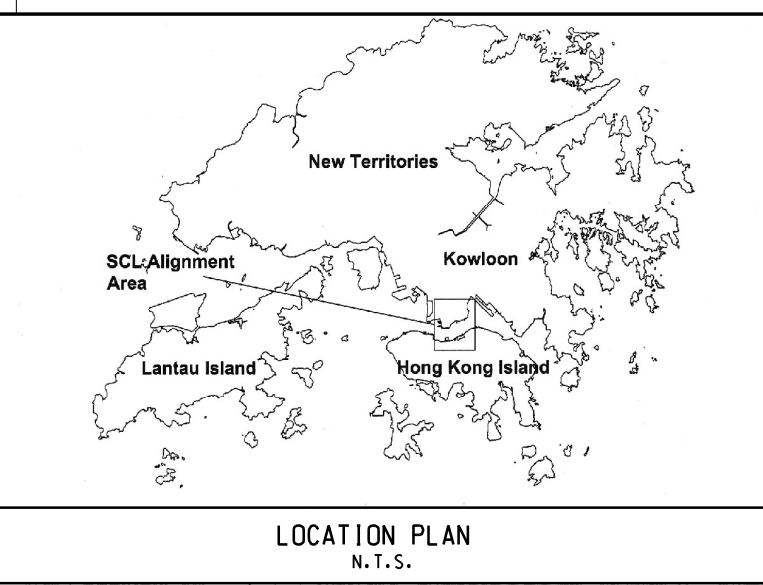
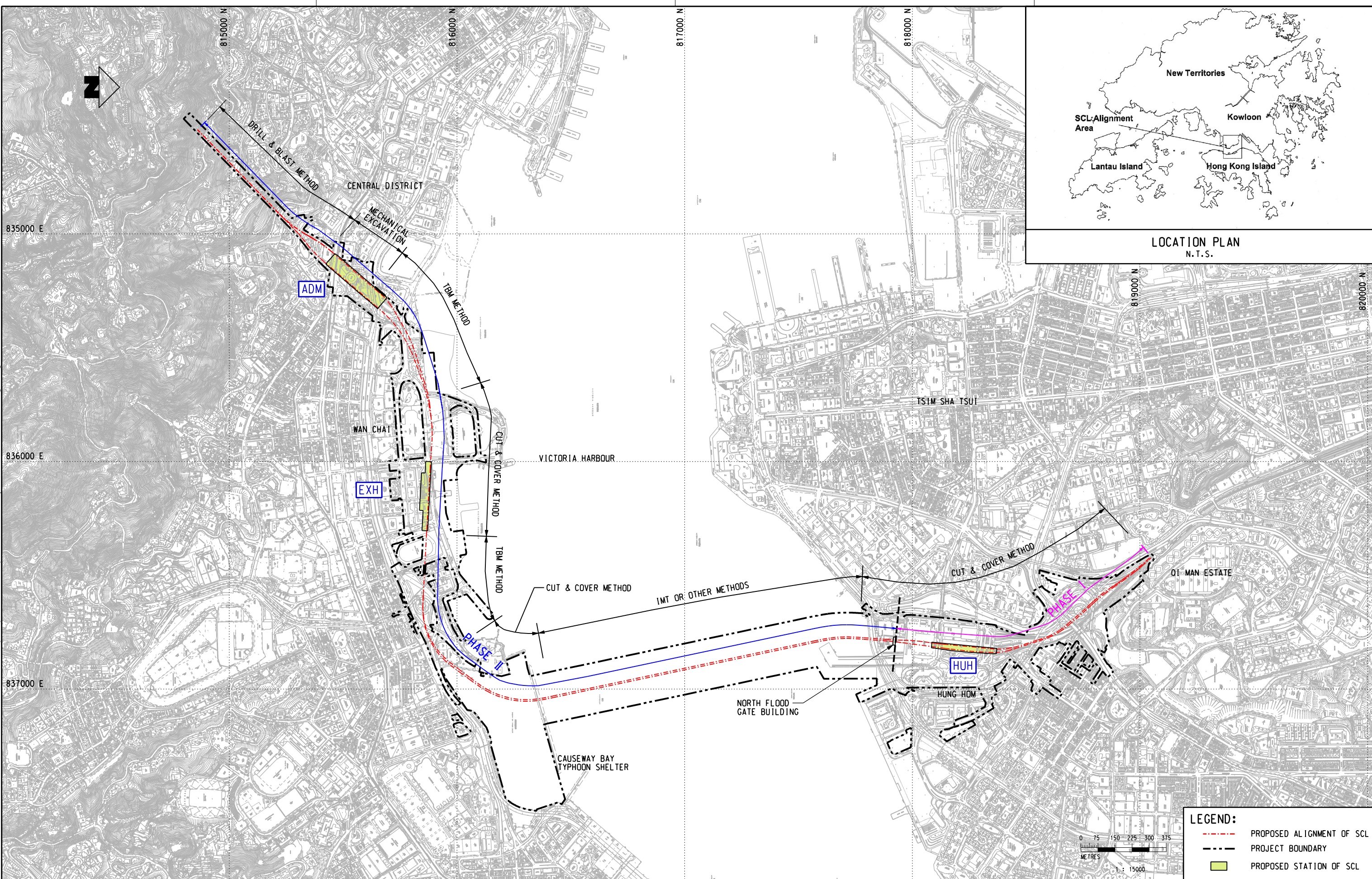
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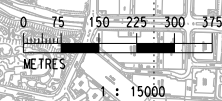
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**LEGEND:**

- - - PROPOSED ALIGNMENT OF SCL
- PROJECT BOUNDARY
- PROPOSED STATION OF SCL



REV	DESCRIPTION	BY	DATE	APPROVED	REV	DESCRIPTION	BY	DATE	APPROVED

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DESIGNED	---
CHECKED	LCR
APPROVED	---
DATE	14/MAY/2009

**MTR**

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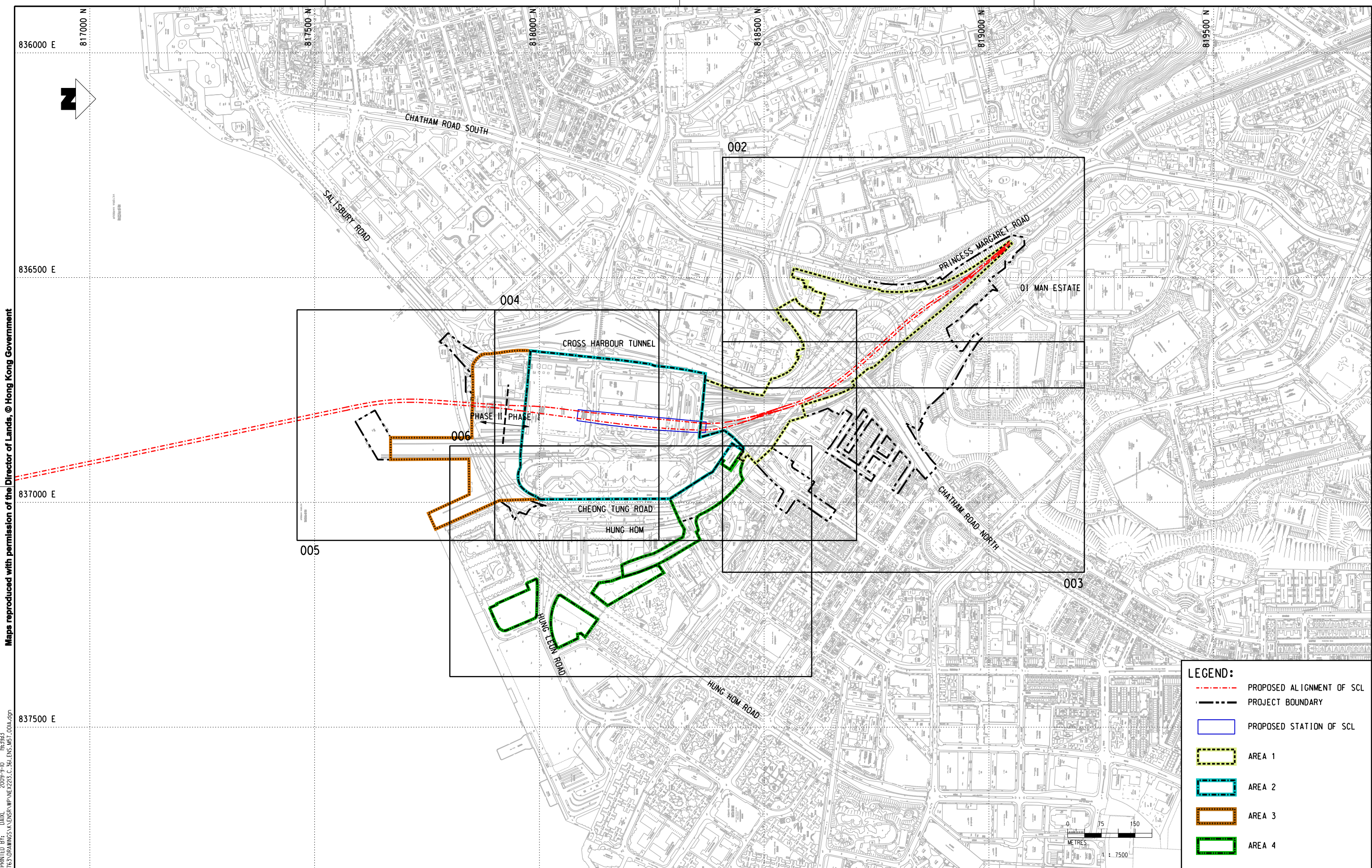
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EIA STUDY		SCL OVERALL ALIGNMENT (PHASE I & PHASE II)	
SCALE	FIGURE NO.	REV.	
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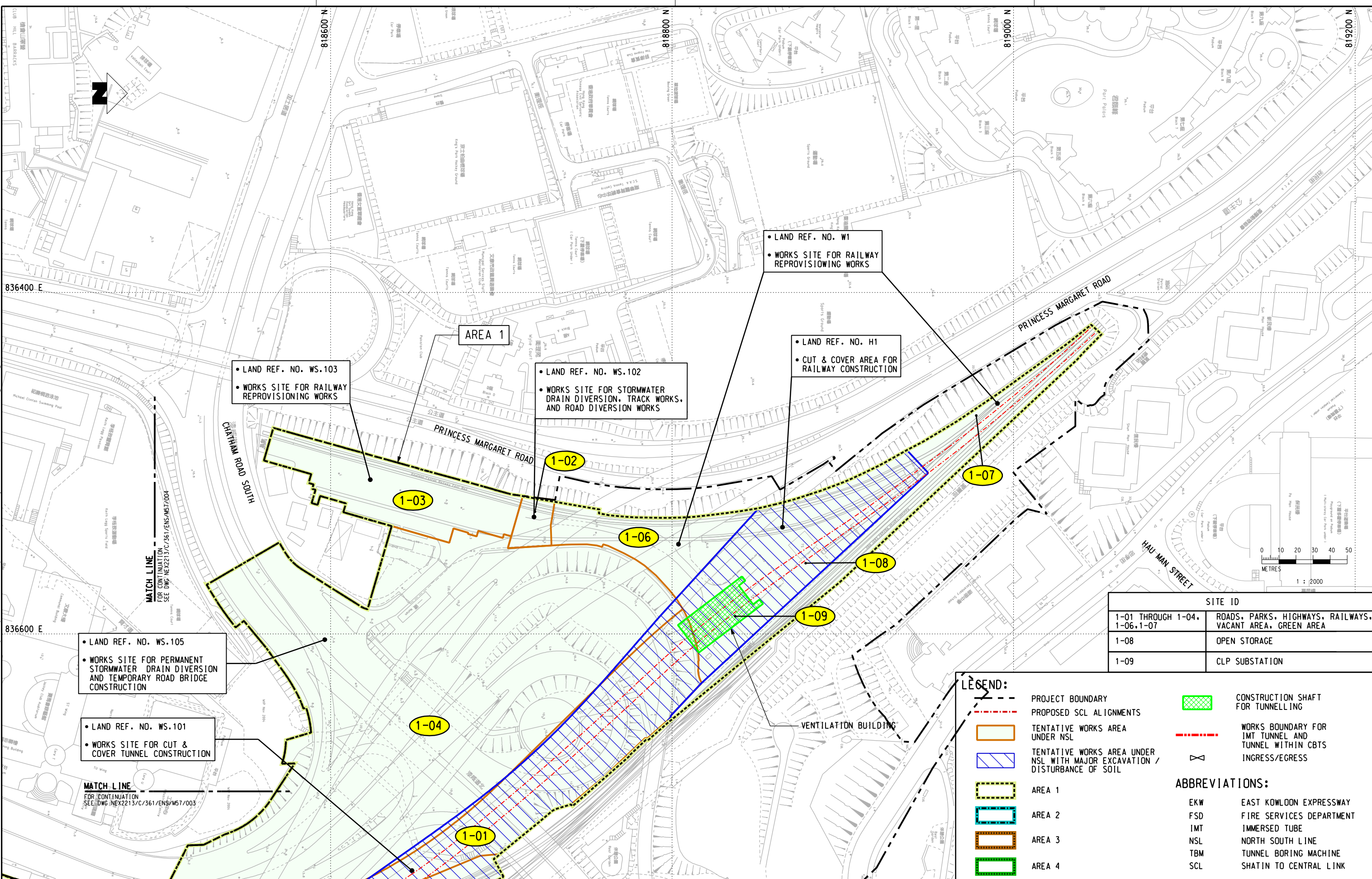
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• LAND REF. NO. WS.103  
 • WORKS SITE FOR RAILWAY REPROVISIONING WORKS

• LAND REF. NO. WS.102  
 • WORKS SITE FOR STORMWATER DRAIN DIVERSION, TRACK WORKS, AND ROAD DIVERSION WORKS

• LAND REF. NO. W1  
 • WORKS SITE FOR RAILWAY REPROVISIONING WORKS

• LAND REF. NO. H1  
 • CUT & COVER AREA FOR RAILWAY CONSTRUCTION

• LAND REF. NO. WS.105  
 • WORKS SITE FOR PERMANENT STORMWATER DRAIN DIVERSION AND TEMPORARY ROAD BRIDGE CONSTRUCTION

• LAND REF. NO. WS.101  
 • WORKS SITE FOR CUT & COVER TUNNEL CONSTRUCTION

MATCH LINE  
 FOR CONTINUATION  
 SEE DWG NEX2213/C/361/ENS/M57/003

SITE ID	
1-01 THROUGH 1-04, 1-06, 1-07	ROADS, PARKS, HIGHWAYS, RAILWAYS, VACANT AREA, GREEN AREA
1-08	OPEN STORAGE
1-09	CLP SUBSTATION

**LEGEND:**

- PROJECT BOUNDARY
- PROPOSED SCL ALIGNMENTS
- TENTATIVE WORKS AREA UNDER NSL
- TENTATIVE WORKS AREA UNDER NSL WITH MAJOR EXCAVATION / DISTURBANCE OF SOIL
- AREA 1
- AREA 2
- AREA 3
- AREA 4
- CONSTRUCTION SHAFT FOR TUNNELLING
- WORKS BOUNDARY FOR IMT TUNNEL AND TUNNEL WITHIN CBTS
- INGRESS/EGRESS

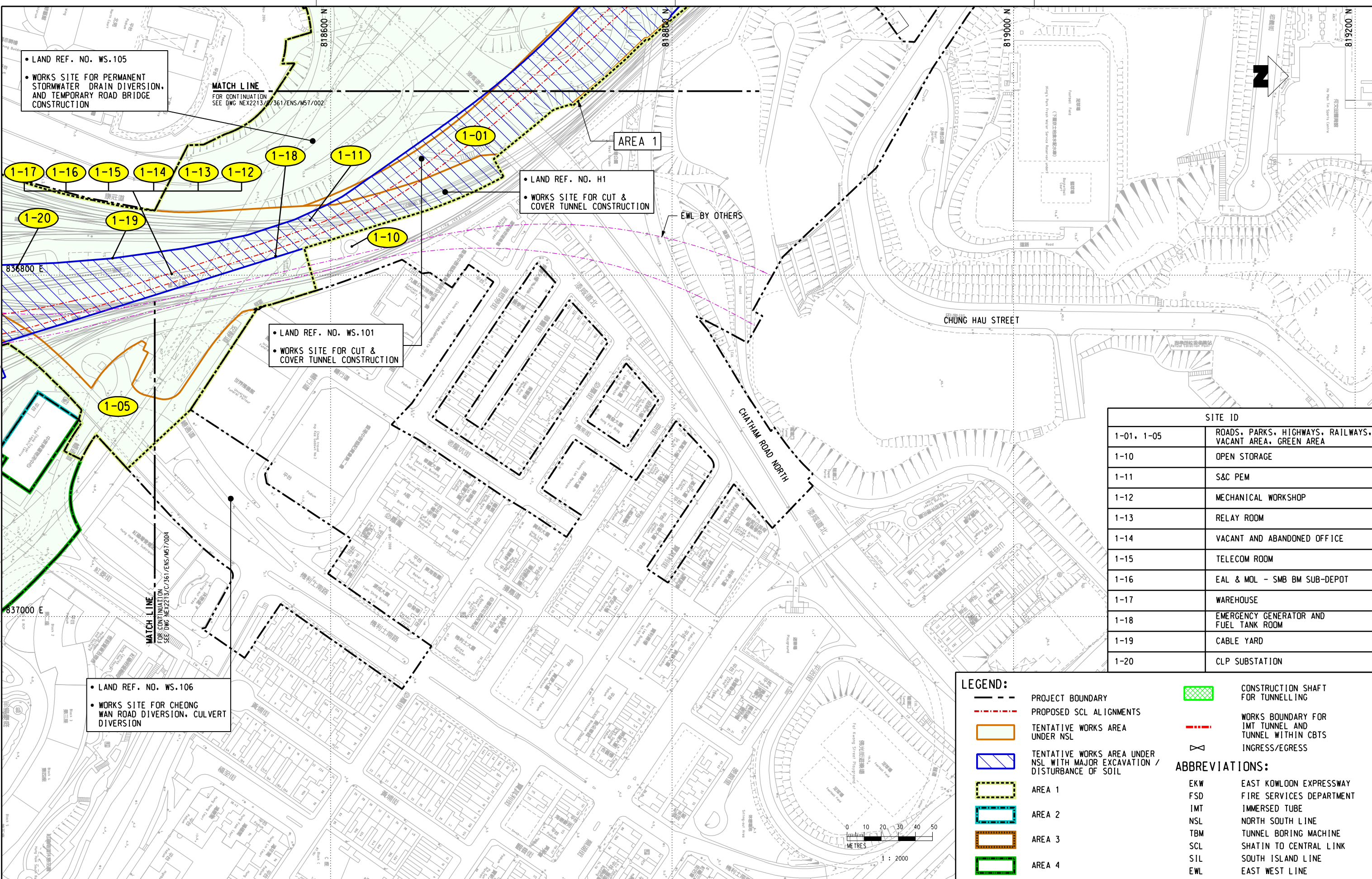
**ABBREVIATIONS:**

- EKW EAST KOWLOON EXPRESSWAY
- FSD FIRE SERVICES DEPARTMENT
- IMT IMMERSED TUBE
- NSL NORTH SOUTH LINE
- TBM TUNNEL BORING MACHINE
- SCL SHATIN TO CENTRAL LINK

DRAWN: HY				DESIGNED: ---				CHECKED: LCR				APPROVED: ---				DATE: 05/MAY/2009				ORIGINATOR: MTR															
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• LAND REF. NO. WS.105  
 • WORKS SITE FOR PERMANENT STORMWATER DRAIN DIVERSION AND TEMPORARY ROAD BRIDGE CONSTRUCTION

MATCH LINE  
 FOR CONTINUATION  
 SEE DWG. NEX2213/C/361/ENS/M57/002

• LAND REF. NO. H1  
 • WORKS SITE FOR CUT & COVER TUNNEL CONSTRUCTION

• LAND REF. NO. WS.101  
 • WORKS SITE FOR CUT & COVER TUNNEL CONSTRUCTION

• LAND REF. NO. WS.106  
 • WORKS SITE FOR CHEONG WAN ROAD DIVERSION, CULVERT DIVERSION

MATCH LINE  
 FOR CONTINUATION  
 SEE DWG. NEX2213/C/361/ENS/M57/004

SITE ID	
1-01, 1-05	ROADS, PARKS, HIGHWAYS, RAILWAYS, VACANT AREA, GREEN AREA
1-10	OPEN STORAGE
1-11	S&C PEM
1-12	MECHANICAL WORKSHOP
1-13	RELAY ROOM
1-14	VACANT AND ABANDONED OFFICE
1-15	TELECOM ROOM
1-16	EAL & MOL - SMB BM SUB-DEPOT
1-17	WAREHOUSE
1-18	EMERGENCY GENERATOR AND FUEL TANK ROOM
1-19	CABLE YARD
1-20	CLP SUBSTATION

**LEGEND:**

- PROJECT BOUNDARY
- PROPOSED SCL ALIGNMENTS
- TENTATIVE WORKS AREA UNDER NSL
- TENTATIVE WORKS AREA UNDER NSL WITH MAJOR EXCAVATION / DISTURBANCE OF SOIL
- AREA 1
- AREA 2
- AREA 3
- AREA 4
- CONSTRUCTION SHAFT FOR TUNNELLING
- WORKS BOUNDARY FOR IMT TUNNEL AND TUNNEL WITHIN CBTS
- INGRESS/EGRESS

**ABBREVIATIONS:**

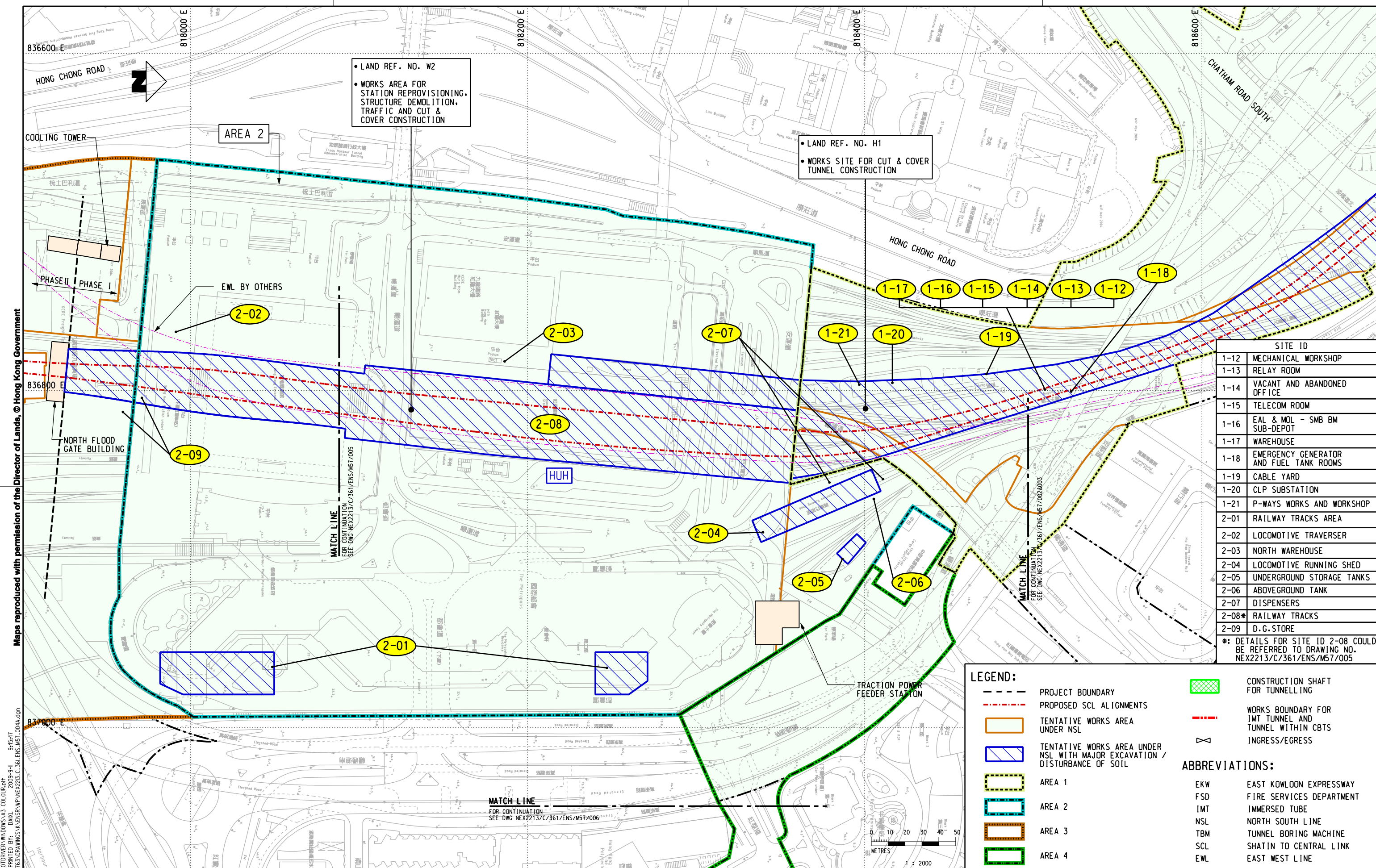
- EKW EAST KOWLOON EXPRESSWAY
- FSD FIRE SERVICES DEPARTMENT
- IMT IMMERSED TUBE
- NSL NORTH SOUTH LINE
- TBM TUNNEL BORING MACHINE
- SCL SHATIN TO CENTRAL LINK
- SIL SOUTH ISLAND LINE
- EWL EAST WEST LINE

REV	DESCRIPTION	BY	DATE	APPROVED	REV	DESCRIPTION	BY	DATE	APPROVED

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DESIGNED	---	
CHECKED	LCR	
APPROVED	---	
DATE	05/MAY/2009	ORIGINATOR
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**TITLE**  
 NEX/2213 - CROSS HARBOUR SECTION  
 EIA STUDY  
 AREA 1 (PART)  
 PHASE 1 - MONG KOK EAST TO HUNG HOM  
 CONTAMINATION ASSESSMENT PLAN

SCALE 1 : 2000 (A3)    FIGURE NO. NEX2213/C/361/ENS/M57/003    REV. A



• LAND REF. NO. W2  
 • WORKS AREA FOR STATION REPROVISIONING, STRUCTURE DEMOLITION, TRAFFIC AND CUT & COVER CONSTRUCTION

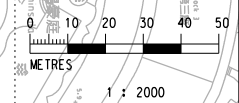
• LAND REF. NO. H1  
 • WORKS SITE FOR CUT & COVER TUNNEL CONSTRUCTION

SITE ID	
1-12	MECHANICAL WORKSHOP
1-13	RELAY ROOM
1-14	VACANT AND ABANDONED OFFICE
1-15	TELECOM ROOM
1-16	EAL & MOL - SMB BM SUB-DEPOT
1-17	WAREHOUSE
1-18	EMERGENCY GENERATOR AND FUEL TANK ROOMS
1-19	CABLE YARD
1-20	CLP SUBSTATION
1-21	P-WAYS WORKS AND WORKSHOP
2-01	RAILWAY TRACKS AREA
2-02	LOCOMOTIVE TRAVERSER
2-03	NORTH WAREHOUSE
2-04	LOCOMOTIVE RUNNING SHED
2-05	UNDERGROUND STORAGE TANKS
2-06	ABOVEGROUND TANK
2-07	DISPENSERS
2-08*	RAILWAY TRACKS
2-09	D.G.STORE

\*: DETAILS FOR SITE ID 2-08 COULD BE REFERRED TO DRAWING NO. NEX2213/C/361/ENS/M57/005

**LEGEND:**

- PROJECT BOUNDARY
  - PROPOSED SCL ALIGNMENTS
  - TENTATIVE WORKS AREA UNDER NSL
  - TENTATIVE WORKS AREA UNDER NSL WITH MAJOR EXCAVATION / DISTURBANCE OF SOIL
  - AREA 1
  - AREA 2
  - AREA 3
  - AREA 4
  - CONSTRUCTION SHAFT FOR TUNNELING
  - WORKS BOUNDARY FOR IMT TUNNEL AND TUNNEL WITHIN CBTS
  - INGRESS/EGRESS
- ABBREVIATIONS:**
- EKW EAST KOWLOON EXPRESSWAY
  - FSD FIRE SERVICES DEPARTMENT
  - IMT IMMERSED TUBE
  - NSL NORTH SOUTH LINE
  - TBM TUNNEL BORING MACHINE
  - SCL SHATIN TO CENTRAL LINK
  - EWL EAST WEST LINE



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DRAWN	HY
DESIGNED	---
CHECKED	LCR
APPROVED	---
DATE	05/MAY/2009

**MTR**

SHATIN TO CENTRAL LINK

**AECOM**

CADD REF. NEX2213\_C\_361\_ENS\_M57\_004A.dgn

TITLE		NEX/2213 - CROSS HARBOUR SECTION	
EIA STUDY		AREA 1 (PART) AND AREA 2	
PHASE 1 - MONG KOK EAST TO HUNG HOM		CONTAMINATION ASSESSMENT PLAN	
SCALE	FIGURE NO.	REV.	
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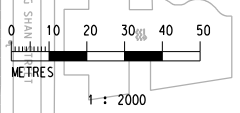
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• LAND REF. NO. W2  
 • WORKS AREA FOR STATION REPROVISIONING, STRUCTURE DEMOLITION, TRAFFIC AND CUT & COVER CONSTRUCTION

**LEGEND:**

- PROJECT BOUNDARY
- - - PROPOSED SCL ALIGNMENTS
- TENTATIVE WORKS AREA UNDER NSL
- ▨ TENTATIVE WORKS AREA UNDER NSL WITH MAJOR EXCAVATION / DISTURBANCE OF SOIL
- AREA 1
- AREA 2
- AREA 3
- AREA 4
- POTENTIALLY CONTAMINATED AREA
- ⊘ INGRESS/EGRESS



SITE ID	
2-08	RAILWAY TRACKS

REV	DESCRIPTION	BY	DATE	APPROVED	REV	DESCRIPTION	BY	DATE	APPROVED

DRAWN	GXH
DESIGNED	---
CHECKED	LCR
APPROVED	---
DATE	20/JAN/2009

**MTR**

SHATIN TO CENTRAL LINK

**AECOM**

ORIGINATOR

CADD REF. NEX2213\_C\_361\_ENS\_M57\_005A.dgn

TITLE

NEX/2213 - CROSS HARBOUR SECTION  
 EIA STUDY  
 AREA 2 (RAILWAY TRACKS)  
 PHASE 1 - MONKG KOK EAST TO HUNG HOM  
 CONTAMINATION ASSESSMENT PLAN

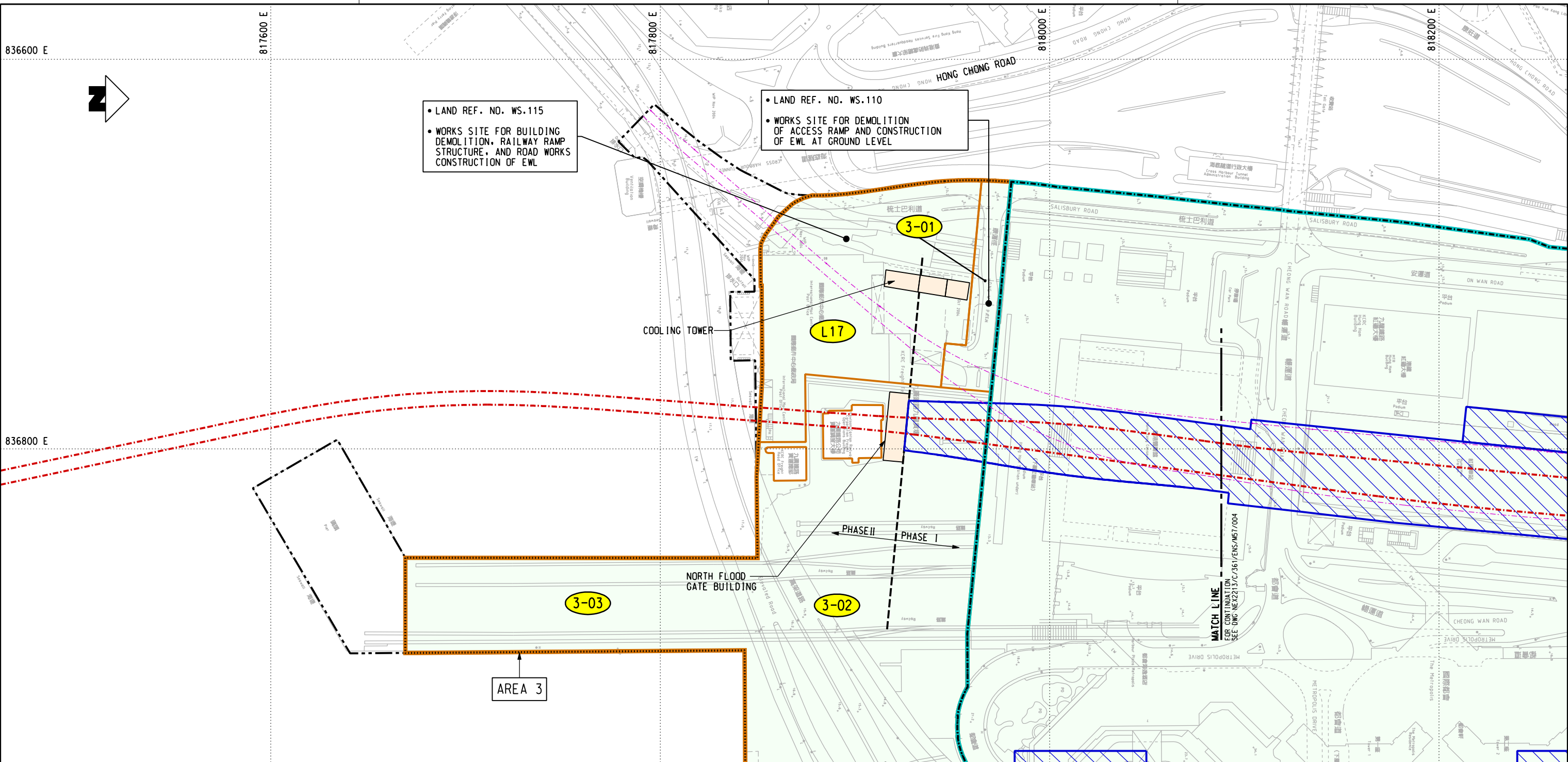
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FIGURE NO. NEX2213/C/361/ENS/M57/005

REV. A

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• LAND REF. NO. WS.115  
 • WORKS SITE FOR BUILDING DEMOLITION, RAILWAY RAMP STRUCTURE, AND ROAD WORKS CONSTRUCTION OF EWL

• LAND REF. NO. WS.110  
 • WORKS SITE FOR DEMOLITION OF ACCESS RAMP AND CONSTRUCTION OF EWL AT GROUND LEVEL

• LAND REF. NO. W3  
 • WORKS SITE FOR BARGING POINT AND THE ASSOCIATED HAUL ROAD

**MATCH LINE**  
 FOR CONTINUATION  
 SEE DWG. NEX2213/C/361/ENS/M57/006

**LEGEND:**

- PROJECT BOUNDARY
- - - - PROPOSED SCL ALIGNMENTS
- TENTATIVE WORKS AREA UNDER NSL
- TENTATIVE WORKS AREA UNDER NSL WITH EXCAVATION / DISTURBANCE OF SOIL
- AREA 1
- AREA 2
- AREA 3
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**ABBREVIATIONS:**

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- SCL SHATIN TO CENTRAL LINK
- EWL EAST WEST LINE

REV	DESCRIPTION	BY	DATE	APPROVED	REV	DESCRIPTION	BY	DATE	APPROVED
	SITE ID								
	L17					INTERNATIONAL MAIL CENTRE			
	3-01					ROAD			
	3-02					HUNG HOM FREIGHT YARD, ROADS			
	3-03					PIER AND PIER FINGER			

DRAWN	HY
DESIGNED	---
CHECKED	LCR
APPROVED	---
DATE	05/MAY/2009

**MTR**

SHATIN TO CENTRAL LINK

**AECOM**

ORIGINATOR

CADD REF. NEX2213\_C\_361\_ENS\_M57\_006A.dgn

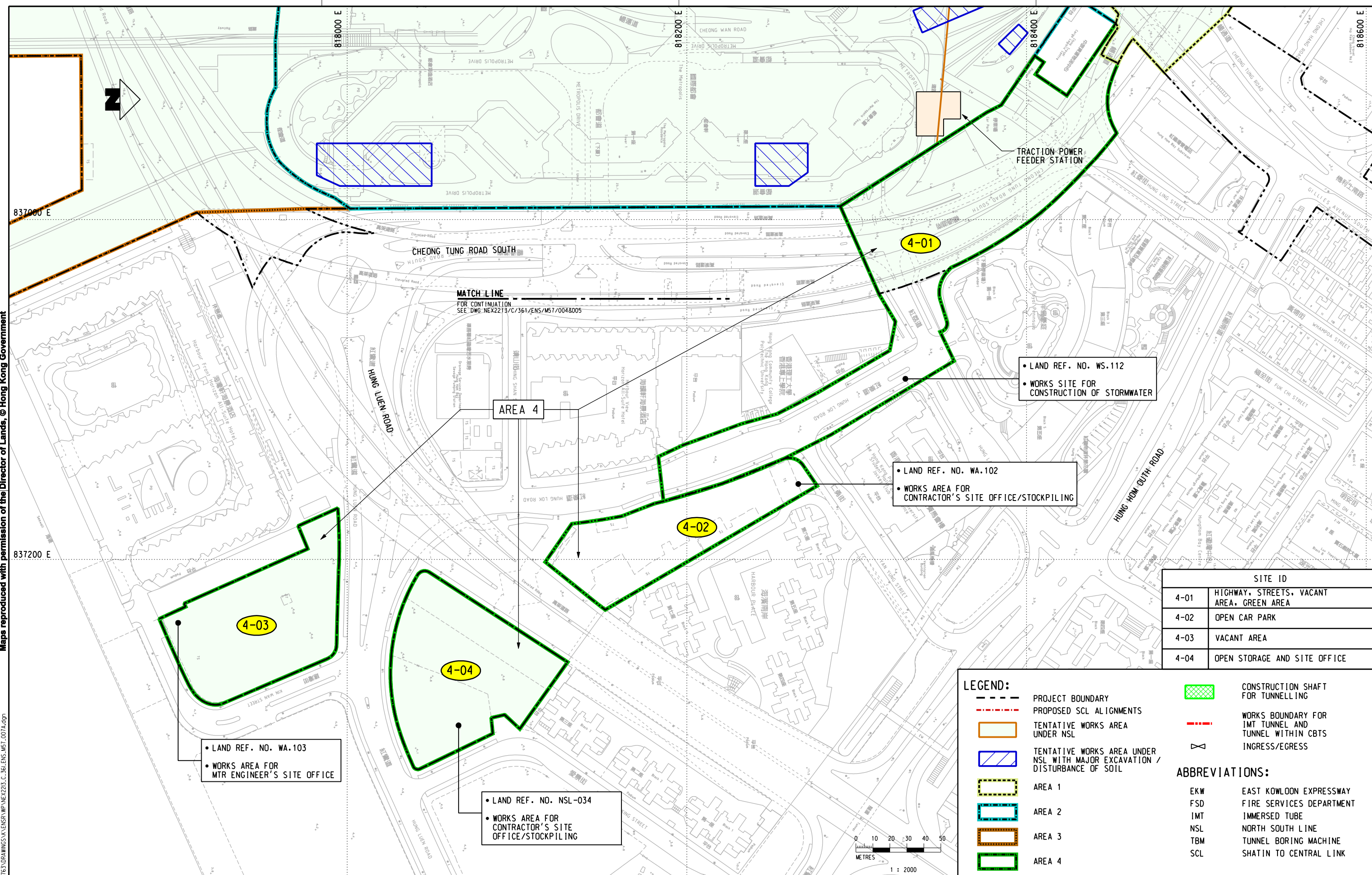
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NEX/2213 - CROSS HARBOUR SECTION  
 EIA STUDY  
 AREA 3  
 PHASE 1 - MONG KOK EAST TO HUNG HOM  
 CONTAMINATION ASSESSMENT PLAN

SCALE 1 : 2000 (A3)

FIGURE NO. NEX2213/C/361/ENS/M57/006

REV. A



SITE ID	
4-01	HIGHWAY, STREETS, VACANT AREA, GREEN AREA
4-02	OPEN CAR PARK
4-03	VACANT AREA
4-04	OPEN STORAGE AND SITE OFFICE

REV	DESCRIPTION	BY	DATE	APPROVED	REV	DESCRIPTION	BY	DATE	APPROVED

DRAWN	HY
DESIGNED	---
CHECKED	LCR
APPROVED	---
DATE	05/MAY/2009

**MTR**

SHATIN TO CENTRAL LINK

**AECOM**

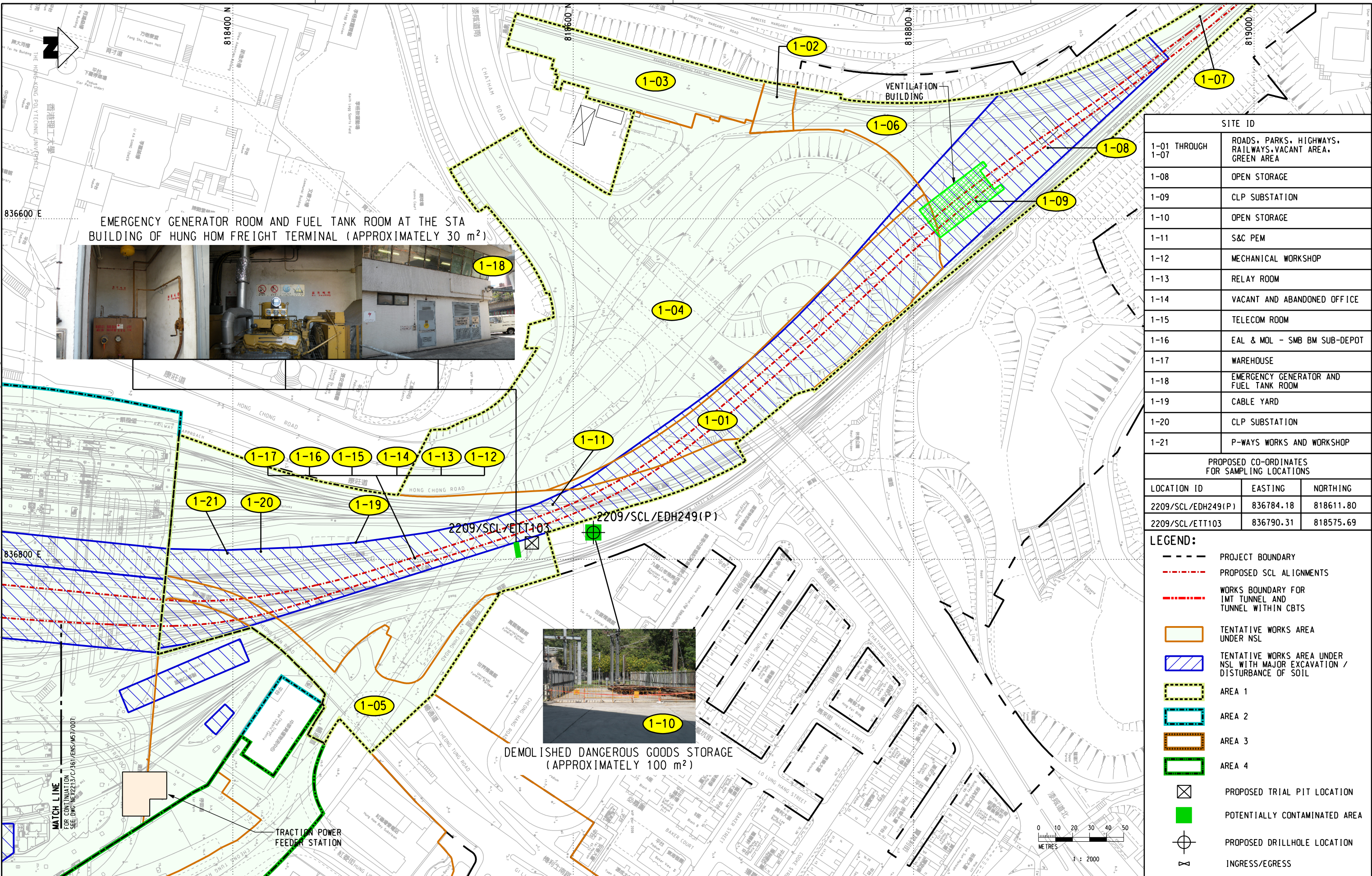
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EIA STUDY		AREA 4	
PHASE 1 - MONG KOK EAST TO HUNG HOM		CONTAMINATION ASSESSMENT PLAN	
SCALE	FIGURE NO.	REV.	
1 : 2000 (A3)	NEX2213/C/361/ENS/M57/007	A	



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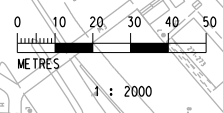
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 DATE: 2009-09-11 09:47:29



SITE ID	
1-01 THROUGH 1-07	ROADS, PARKS, HIGHWAYS, RAILWAYS, VACANT AREA, GREEN AREA
1-08	OPEN STORAGE
1-09	CLP SUBSTATION
1-10	OPEN STORAGE
1-11	S&C PEM
1-12	MECHANICAL WORKSHOP
1-13	RELAY ROOM
1-14	VACANT AND ABANDONED OFFICE
1-15	TELECOM ROOM
1-16	EAL & MOL - SMB BM SUB-DEPOT
1-17	WAREHOUSE
1-18	EMERGENCY GENERATOR AND FUEL TANK ROOM
1-19	CABLE YARD
1-20	CLP SUBSTATION
1-21	P-WAYS WORKS AND WORKSHOP

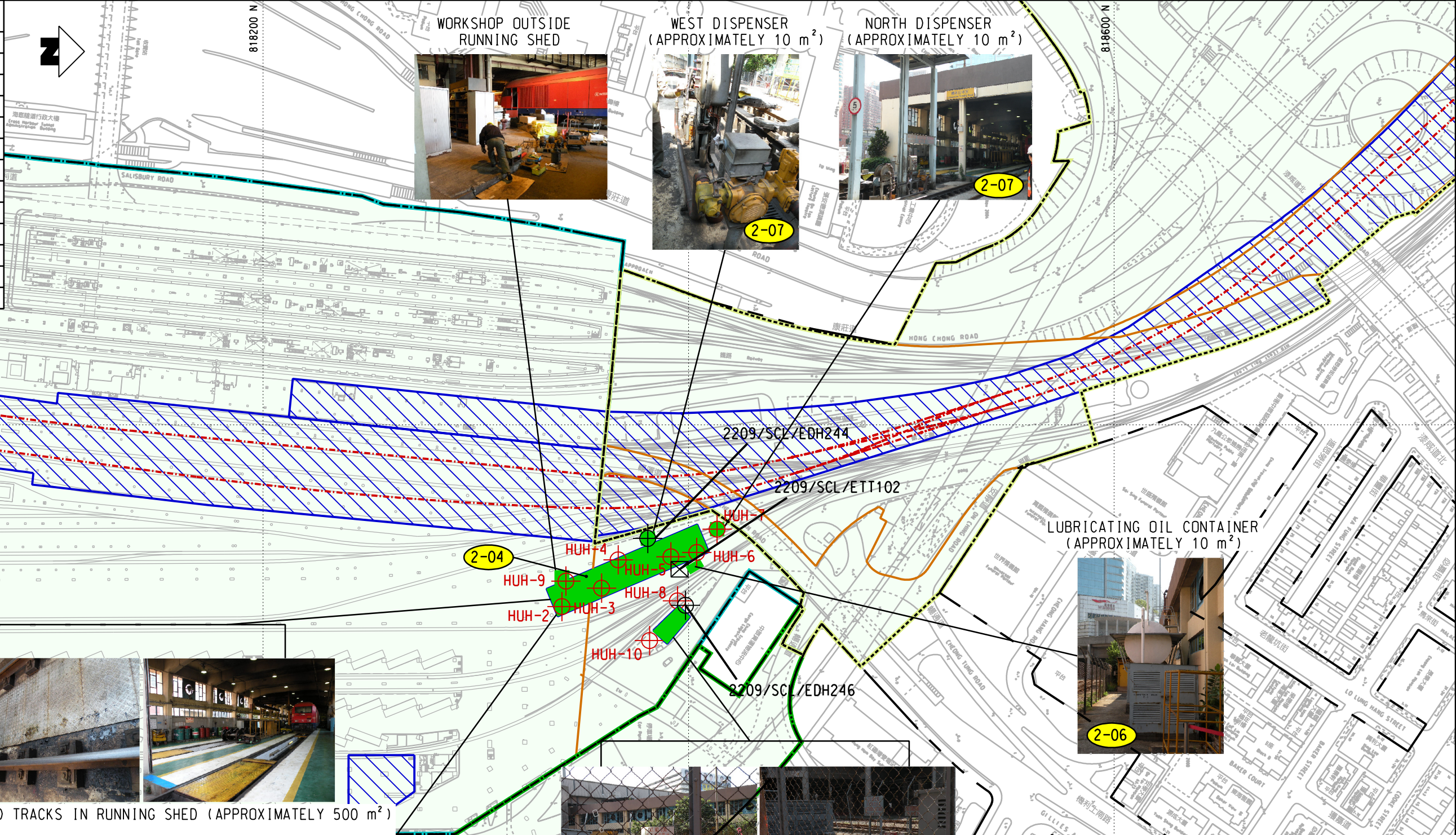
PROPOSED CO-ORDINATES FOR SAMPLING LOCATIONS		
LOCATION ID	EASTING	NORTHING
2209/SCL/EDH249(P)	836784.18	818611.80
2209/SCL/ETT103	836790.31	818575.69

- LEGEND:**
- PROJECT BOUNDARY
  - PROPOSED SCL ALIGNMENTS
  - WORKS BOUNDARY FOR IMT TUNNEL AND TUNNEL WITHIN CBTS
  - TENTATIVE WORKS AREA UNDER NSL
  - TENTATIVE WORKS AREA UNDER NSL WITH MAJOR EXCAVATION / DISTURBANCE OF SOIL
  - AREA 1
  - AREA 2
  - AREA 3
  - AREA 4
  - X PROPOSED TRIAL PIT LOCATION
  - POTENTIALLY CONTAMINATED AREA
  - + PROPOSED DRILLHOLE LOCATION
  - X INGRESS/EGRESS



DRAWN: GXH DESIGNED: --- CHECKED: LCR APPROVED: --- DATE: 20/JAN/2009								<b>TITLE</b> NEX/2213 - CROSS HARBOUR SECTION EIA STUDY PROPOSED SAMPLING LOCATIONS AT AREA 1 PHASE I - MONKG KOK EAST TO HUNG HOM CONTAMINATION ASSESSMENT PLAN			
ORIGINATOR 				SCALE 1 : 2000 (A3)				FIGURE NO. NEX2213/C/361/ENS/M57/008			
CADD REF. NEX2213_C_361_ENS_M57_008A.dgn				REV. A							

PROPOSED CO-ORDINATES FOR SAMPLING LOCATIONS		
LOCATION ID	EASTING	NORTHING
2209/SCL/EDH244	836853.33	818380.84
2209/SCL/EDH246	836884.75	818398.59
2209/SCL/ETT102	836867.78	818395.79
HUH-2	836885.33	818340.53
HUH-3	836876.66	818359.14
HUH-4	836863.38	818366.93
HUH-5	836861.94	818391.74
HUH-6	836859.92	818403.88
HUH-7	836849.00	818413.45
HUH-8	836882.62	818394.82
HUH-9	836873.35	818342.38
HUH-10	836901.31	818381.69



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SITE ID	
2-04	LOCOMOTIVE RUNNING SHED
2-05	UNDERGROUND STORAGE TANKS
2-06	ABOVEGROUND TANK
2-07	DISPENSERS

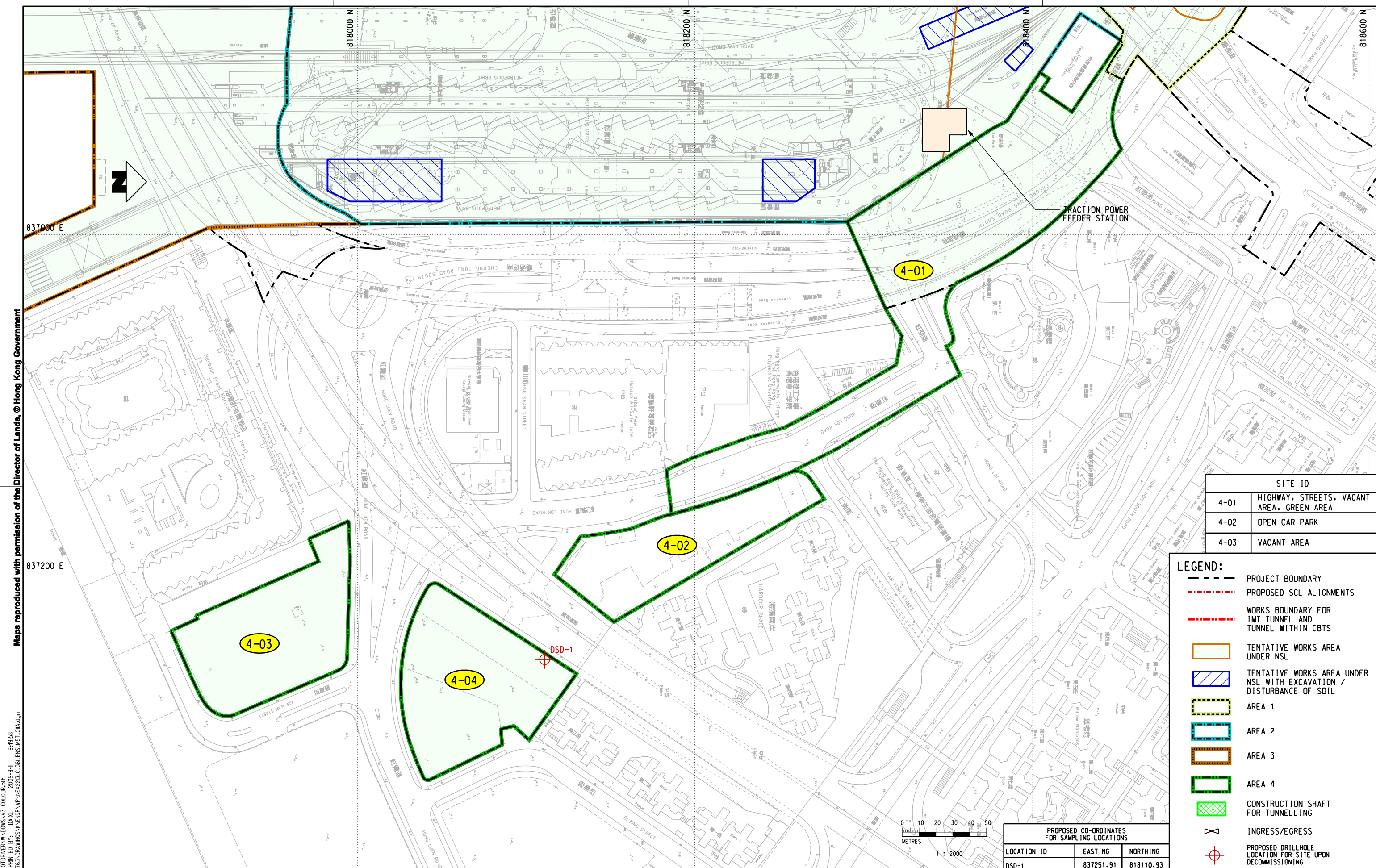
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- PROJECT BOUNDARY
- - - - PROPOSED SCL ALIGNMENTS
- · - · - WORKS BOUNDARY FOR IMT TUNNEL AND TUNNEL WITHIN CBTS
- · - · - TENTATIVE WORKS AREA UNDER NSL
- ▨ TENTATIVE WORKS AREA UNDER NSL WITH MAJOR EXCAVATION / DISTURBANCE OF SOIL
- ▨ AREA 1
- ▨ AREA 2
- ▨ AREA 3
- ▨ AREA 4
- ⊗ PROPOSED TRIAL PIT LOCATION
- POTENTIALLY CONTAMINATED AREA
- ⊕ PROPOSED DRILLHOLE LOCATION
- ⊕ PROPOSED DRILLHOLE LOCATION FOR SITE UPON DECOMMISSIONING
- ⊕ INGRESS/EGRESS

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REV	DESCRIPTION	BY	DATE	APPROVED	REV	DESCRIPTION	BY	DATE	APPROVED																																				
DRAWN	GXH																																												
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DATE	20/JAN/2009																																												
SCALE 1 : 2000 (A3)		FIGURE NO. NEX2213/C/361/ENS/M57/009		REV. A																																									

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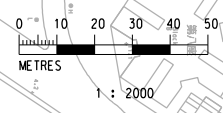




SITE ID	
4-01	HIGHWAY, STREETS, VACANT AREA, GREEN AREA
4-02	OPEN CAR PARK
4-03	VACANT AREA

LEGEND:	
	PROJECT BOUNDARY
	PROPOSED SCL ALIGNMENTS
	WORKS BOUNDARY FOR IMT TUNNEL AND TUNNEL WITHIN CBTS
	TENTATIVE WORKS AREA UNDER NSL
	TENTATIVE WORKS AREA UNDER NSL WITH EXCAVATION / DISTURBANCE OF SOIL
	AREA 1
	AREA 2
	AREA 3
	AREA 4
	CONSTRUCTION SHAFT FOR TUNNELLING
	INGRESS/EGRESS
	PROPOSED DRILLHOLE LOCATION FOR SITE UPON DECOMMISSIONING

PROPOSED CO-ORDINATES FOR SAMPLING LOCATIONS		
LOCATION ID	EASTING	NORTHING
DSD-1	837251.91	818110.93



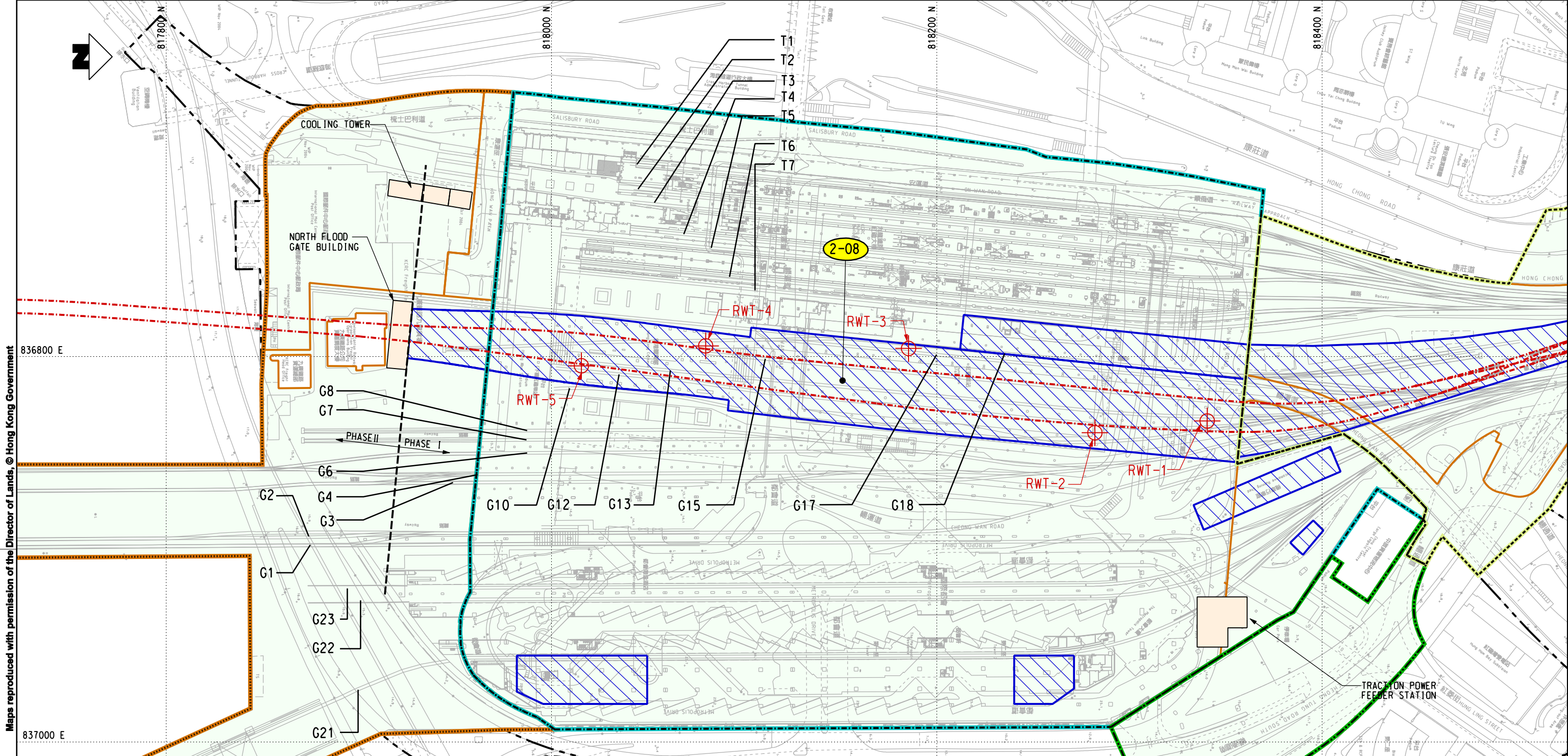
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REV	DESCRIPTION	BY	DATE	APPROVED	REV	DESCRIPTION	BY	DATE	APPROVED

DRAWN	GXH
DESIGNED	---
CHECKED	LCR
APPROVED	---
DATE	20/JAN/2009

**SHATIN TO CENTRAL LINK**
  
  
 ORIGINATOR

TITLE		
NEX/2213 - CROSS HARBOUR SECTION		
EIA STUDY		
PROPOSED SAMPLING LOCATIONS AT AREA 4		
PHASE 1 - MONKG KOK EAST TO HUNG HOM		
CONTAMINATION ASSESSMENT PLAN		
SCALE	FIGURE NO.	REV.
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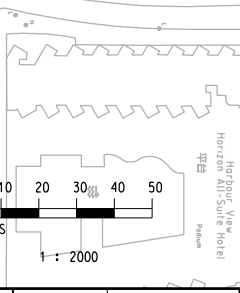


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 FILENAME: M57\_012A.dgn  
 PRINTED BY: DANKI  
 DATE: 2009-9-11  
 95620

SITE ID	
2-08	RAILWAY TRACKS

REV	DESCRIPTION	BY	DATE	APPROVED	REV	DESCRIPTION	BY	DATE	APPROVED



PROPOSED CO-ORDINATES FOR SAMPLING LOCATIONS		
LOCATION ID	EASTING	NORTHING
RWT-1	836833.39	818340.37
RWT-2	836839.54	818282.08
RWT-3	836795.80	818185.38
RWT-4	836794.46	818080.07
RWT-5	836804.79	818015.57

**LEGEND:**

- PROJECT BOUNDARY
- PROPOSED SCL ALIGNMENTS
- WORKS BOUNDARY FOR IMT TUNNEL AND TUNNEL WITHIN CBTS
- TENTATIVE WORKS AREA UNDER NSL
- TENTATIVE WORKS AREA UNDER NSL WITH MAJOR EXCAVATION / DISTURBANCE OF SOIL
- AREA 1
- AREA 2
- AREA 3
- AREA 4
- X PROPOSED TRIAL PIT LOCATION
- POTENTIALLY CONTAMINATED AREA
- + PROPOSED DRILLHOLE LOCATION
- + PROPOSED DRILLHOLE LOCATION FOR SITE UPON DECOMMISSIONING
- X INGRESS/EGRESS

DRAWN	GXH
DESIGNED	---
CHECKED	LCR
APPROVED	---
DATE	20/JAN/2009

**MTR**

**SHATIN TO CENTRAL LINK**

**AECOM**

CADD REF. NEX2213\_C\_361\_ENS\_M57\_012A.dgn

**TITLE**

**NEX/2213 - CROSS HARBOUR SECTION  
EIA STUDY  
PROPOSED SAMPLING LOCATIONS WITHIN RAILWAY TRACKS  
PHASE I - MONKG KOK EAST TO HUNG HOM  
CONTAMINATION ASSESSMENT PLAN**

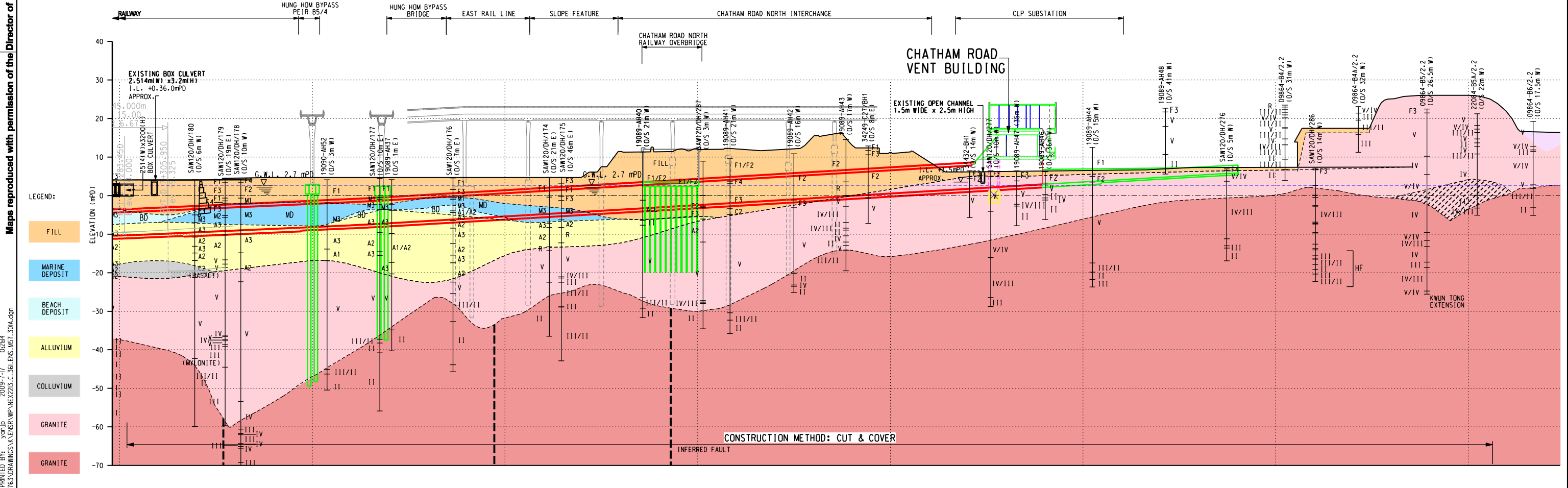
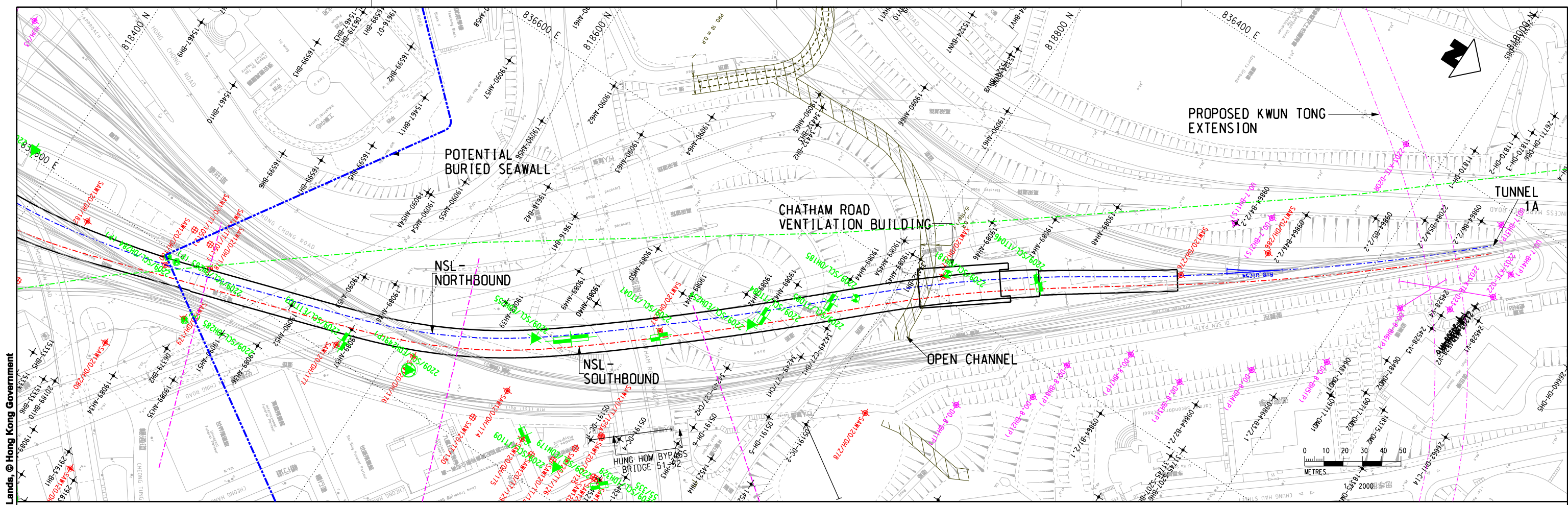
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**Appendix A**  
**Geotechnical Profile**

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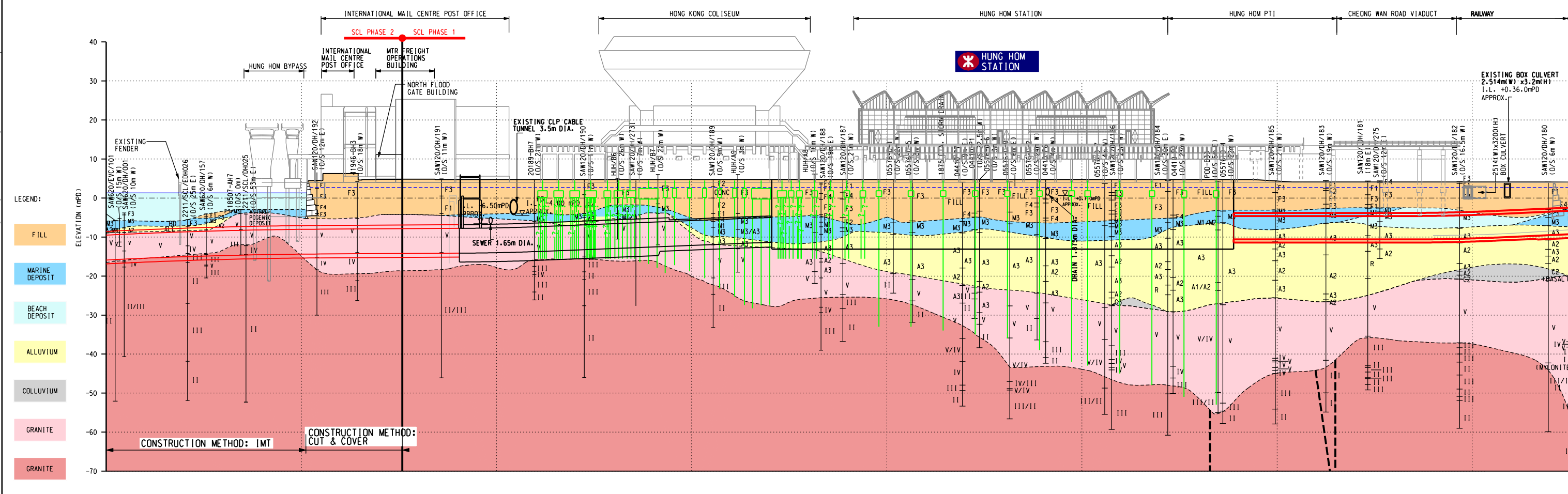
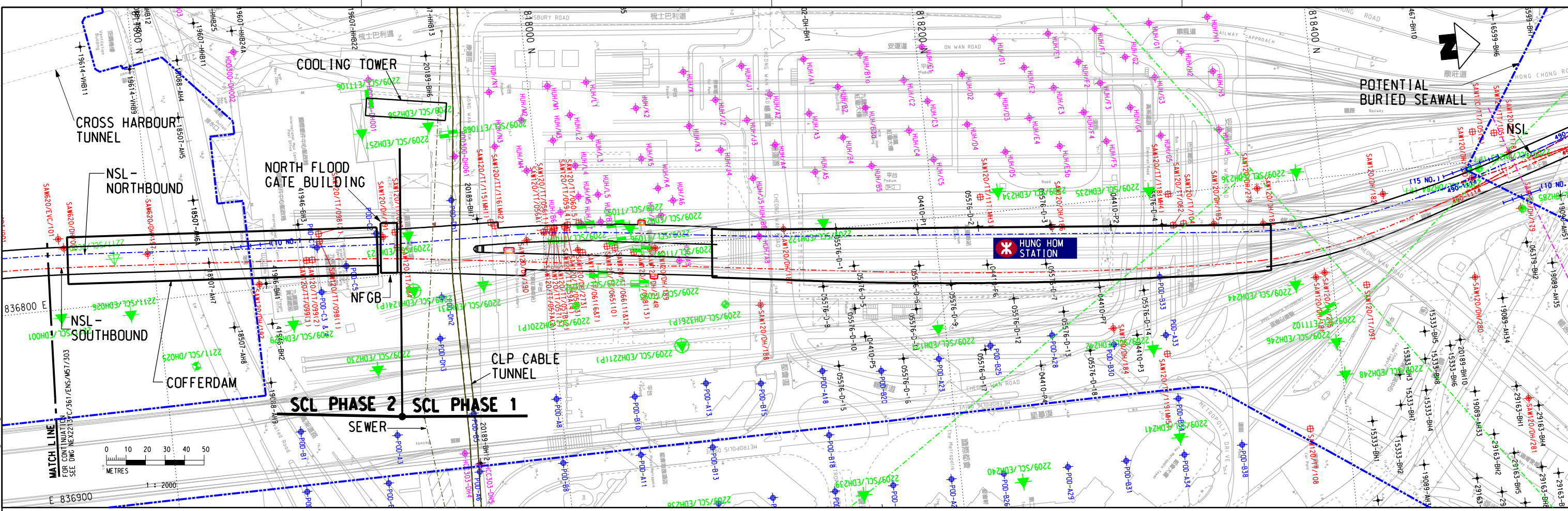


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TITLE <b>NEX/2213 - CROSS HARBOUR SECTION          EIA STUDY          GEOTECHNICAL PROFILE          (SHEET 1 OF 3)</b>	
SCALE	1 : 2000 (A3)
FIGURE NO.	NEX2213/C/361/ENS/M57/301
REV.	A

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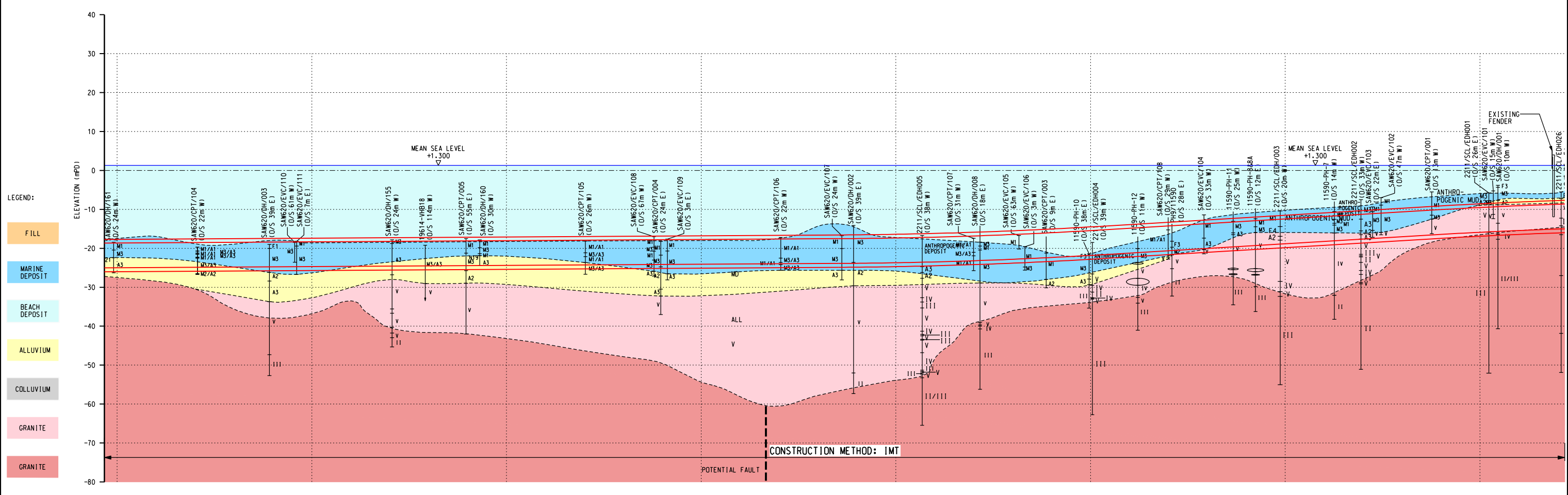
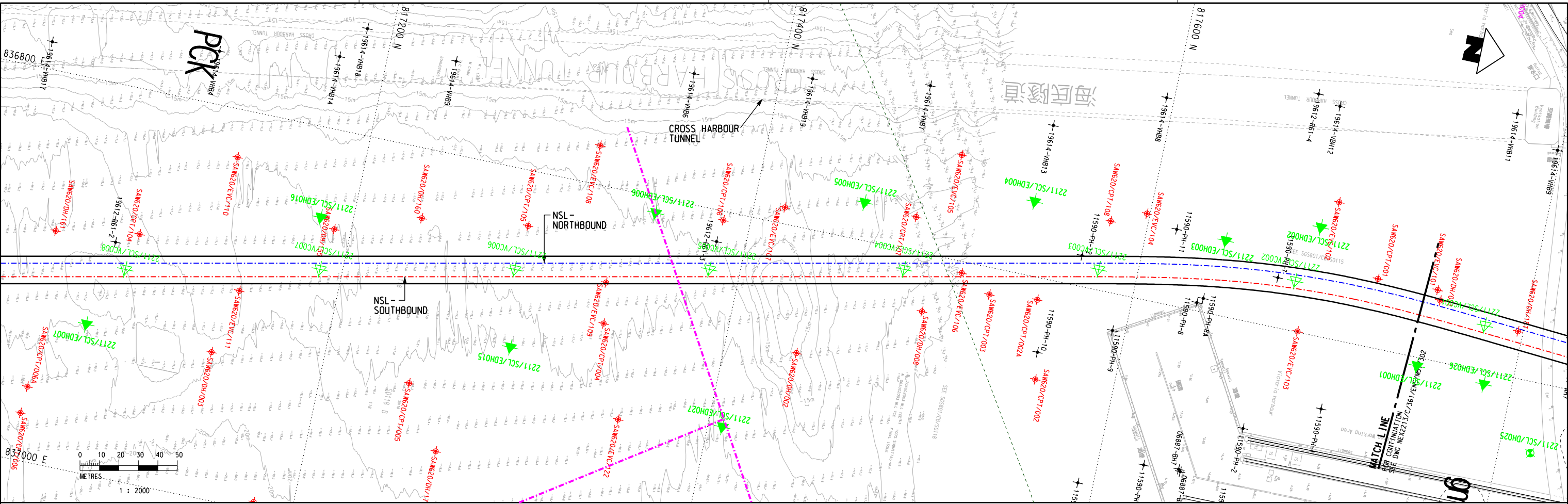
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DRAWN	DXL		<b>SHATIN TO CENTRAL LINK</b> 
DESIGNED	LCLL		
CHECKED	LCLL		
APPROVED	IMW		
DATE	16/JUL/2009	ORIGINATOR	
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CADD REF.	NEX2213.C_361.ENS_M57_302A.dgn		

TITLE	NEX/2213 - CROSS HARBOUR SECTION EIA STUDY GEOTECHNICAL PROFILE (SHEET 2 OF 3)		
SCALE	1 : 2000 (A3)	FIGURE NO.	NEX2213/C/361/ENS/M57/302
REV.	A		





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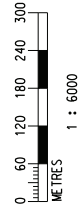
  

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CHECKED	LCLL				
APPROVED	IMW				
DATE	16/JUL/2009	ORIGINATOR			
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**Appendix B**  
**Reclamation History**

---



**NOTE:**

LOCATION: HUNG HOM  
YEAR: 2006  
PHOTO NO: CW71959

DRAWING IS INDICATIVE ONLY.  
THE LAYOUT MAY BE NOT TO SCALE

**LEGEND:**

- PROPOSED SCL ALIGNMENTS
  - 1904
  - 1924
  - 1964
  - 1992
- RECLAMATION YEAR



DRAWN		NO	TITLE	
DESIGNED	---	---	NEX/2213 - CROSS HARBOUR SECTION	
CHECKED	---	---	EIA STUDY	
APPROVED	---	---	RECLAMATION HISTORY	
DATE	30/APR/2009	---	PHASE I - MONG KOK EAST TO HUNG HOM	
DO NOT SCALE DRAWINGS. ALL DIMENSIONS SHALL BE AS SHOWN UNLESS OTHERWISE SPECIFIED. THIS DRAWING IS THE PROPERTY OF MTR CORPORATION LIMITED. NO PART OF THIS DRAWING IS TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, WITHOUT THE WRITTEN PERMISSION OF MTR CORPORATION LIMITED.			CONTAMINATION ASSESSMENT PLAN	
BY	DATE	APPROVED	SCALE	FIGURE NO.
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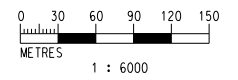
SHATIN TO CENTRAL LINK

AECOM

---

**Appendix C**  
**Aerial Photographs**

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- NOTE:**  
 LOCATION: HUNG HOM  
 YEAR: 1967  
 PHOTO NO: 5415  
 DRAWING IS INDICATIVE ONLY.  
 THE LAYOUT MAY NOT BE TO SCALE
- LEGEND:**
- - - PROPOSED SCL ALIGNMENTS
  - TENTATIVE WORKS AREA UNDER NSL
  - TENTATIVE WORKS AREA UNDER NSL WITH MAJOR EXCAVATION / DISTURBANCE OF SOIL
  - AREA 1
  - AREA 2
  - AREA 3
  - AREA 4

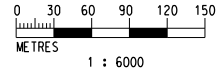
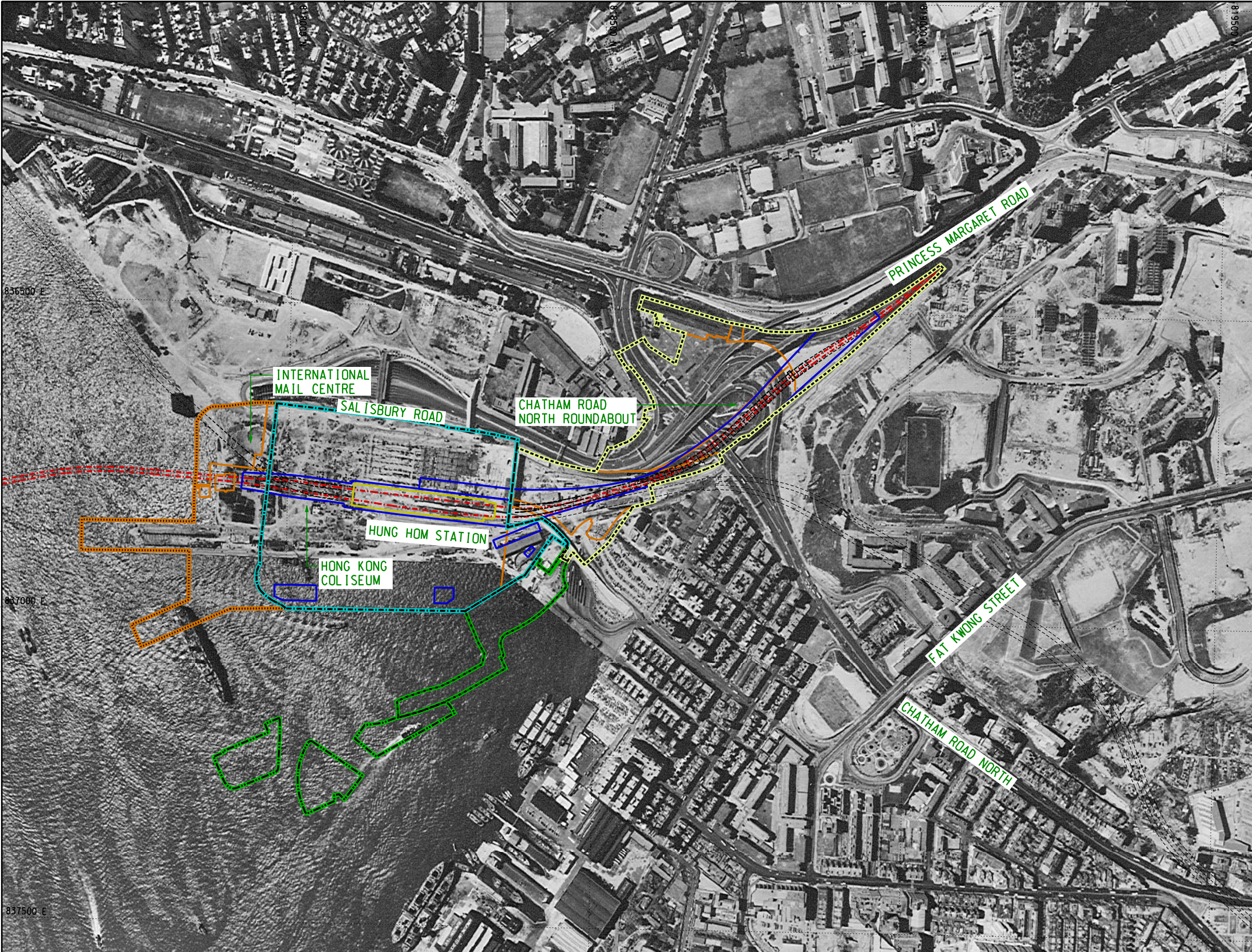
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TITLE: NEX/2213 - CROSS HARBOUR SECTION EIA STUDY AERIAL PHOTOGRAPHS PHASE I - MONG KOK EAST TO HUNG HOM CONTAMINATION ASSESSMENT PLAN	
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- NOTE :**  
 LOCATION: HUNG HOM  
 YEAR: 1973  
 PHOTO NO: 5283  
 DRAWING IS INDICATIVE ONLY.  
 THE LAYOUT MAY NOT BE TO SCALE
- LEGEND:**
- - - PROPOSED SCL ALIGNMENTS
  - TENTATIVE WORKS AREA UNDER NSL
  - TENTATIVE WORKS AREA UNDER NSL WITH MAJOR EXCAVATION / DISTURBANCE OF SOIL
  - AREA 1
  - AREA 2
  - AREA 3
  - AREA 4

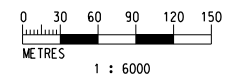
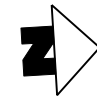
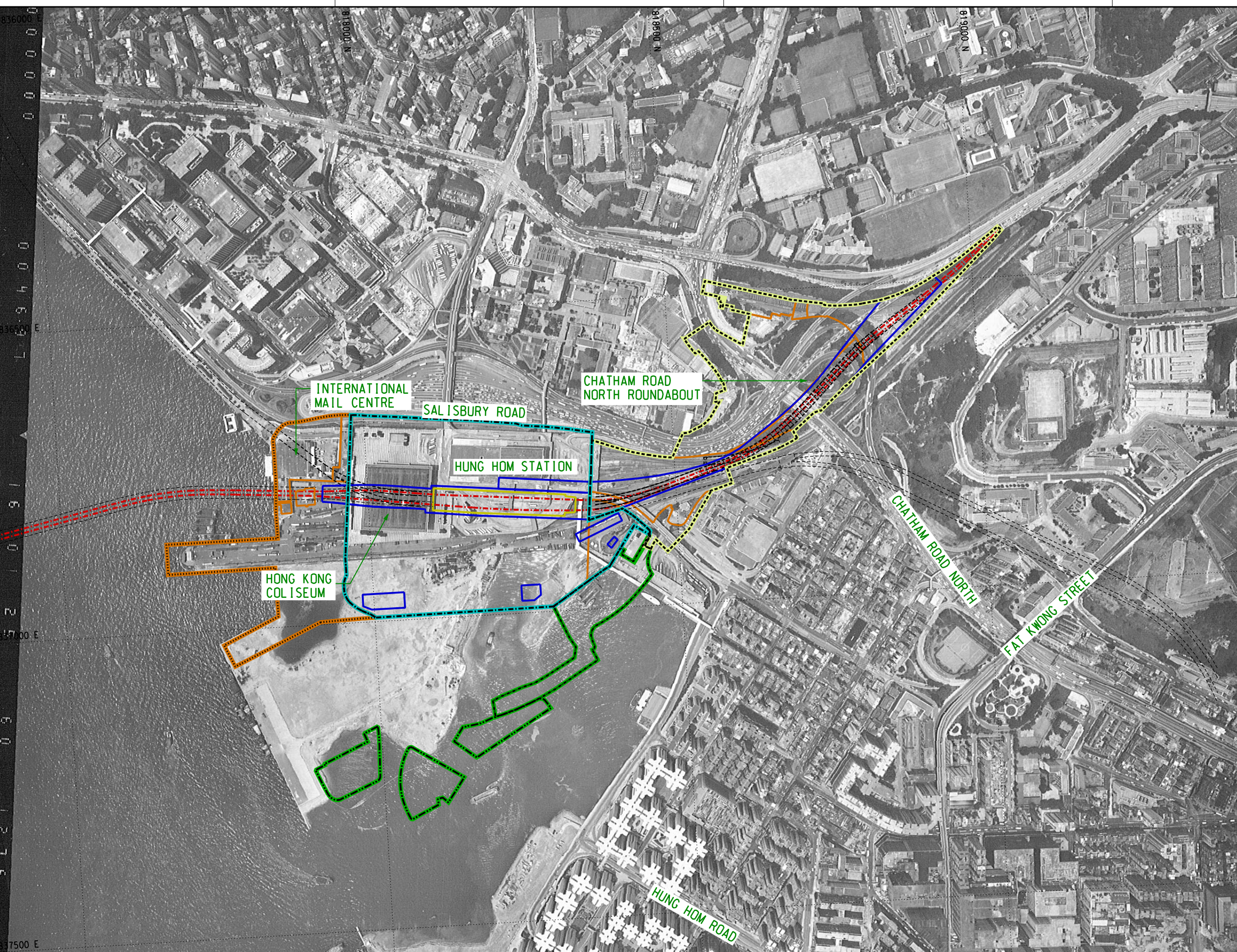
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DRAWN	WO	 <b>SHATIN TO CENTRAL LINK</b>  
DESIGNED	---	
CHECKED	LCR	
APPROVED	---	
DATE	30/APR/2009	ORIGINATOR
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TITLE		NEX/2213 - CROSS HARBOUR SECTION EIA STUDY AERIAL PHOTOGRAPHS PHASE I - MONG KOK EAST TO HUNG HOM CONTAMINATION ASSESSMENT PLAN
SCALE	FIGURE NO.	REV.
1 : 6000 (A3)	NEX2213/C/361/ENS/M57/102	A

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**NOTE:**  
 LOCATION: HUNG HOM  
 YEAR: 1989  
 PHOTO NO: A17997  
 DRAWING IS INDICATIVE ONLY.  
 THE LAYOUT MAY NOT BE TO SCALE

- LEGEND:**
- - - PROPOSED SCL ALIGNMENTS
  - TENTATIVE WORKS AREA UNDER NSL
  - TENTATIVE WORKS AREA UNDER NSL WITH MAJOR EXCAVATION / DISTURBANCE OF SOIL
  - AREA 1
  - AREA 2
  - AREA 3
  - AREA 4

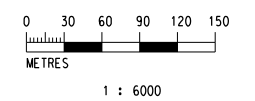
REV	DESCRIPTION	BY	DATE	APPROVED	REV	DESCRIPTION	BY	DATE	APPROVED

DRAWN	WO	
DESIGNED	---	
CHECKED	LCR	
APPROVED	---	
DATE	30/APR/2009	ORIGINATOR
DO NOT SCALE DRAWINGS. ALL DIMENSIONS SHALL BE VERIFIED ON SITE. © MTR CORPORATION LIMITED 2008. COPYRIGHT IN RESPECT OF THIS DRAWING / DOCUMENT IS OWNED BY THE MTR CORPORATION LIMITED OF HONG KONG. NO REPRODUCTION OF THE DRAWING / DOCUMENT OR ANY PART BY WHATEVER MEANS IS PERMITTED WITHOUT THE PRIOR WRITTEN CONSENT OF THE MTR CORPORATION LIMITED.		
CADD REF.		NEX2213_C_361_ENS_M57_103A.dgn

TITLE		NEX/2213 - CROSS HARBOUR SECTION EIA STUDY AERIAL PHOTOGRAPHS PHASE I - MONG KOK EAST TO HUNG HOM CONTAMINATION ASSESSMENT PLAN
SCALE	FIGURE NO.	REV.
1 : 6000 (A3)	NEX2213/C/361/ENS/M57/103	A







**NOTE:**  
 LOCATION: HUNG HOM  
 YEAR: 2006  
 PHOTO NO: CW71959  
 DRAWING IS INDICATIVE ONLY.  
 THE LAYOUT MAY NOT BE TO SCALE

**LEGEND:**

- - - PROPOSED SCL ALIGNMENTS
- TENTATIVE WORKS AREA UNDER NSL
- TENTATIVE SORKS AREA UNDER NSL WITH MAJOR EXCAVATION / DISTURBANCE OF SOIL
- AREA 1
- AREA 2
- AREA 3
- AREA 4

REV	DESCRIPTION	BY	DATE	APPROVED	REV	DESCRIPTION	BY	DATE	APPROVED

DRAWN	WO
DESIGNED	---
CHECKED	LCR
APPROVED	---
DATE	30/APR/2009

**MTR**

SHATIN TO CENTRAL LINK

**AECOM**

CADD REF. NEX2213\_C\_361\_ENS\_M57\_105A.dgn

TITLE: NEX/2213 - CROSS HARBOUR SECTION  
 EIA STUDY  
 AERIAL PHOTOGRAPHS  
 PHASE I - MONG KOK EAST TO HUNG HOM  
 CONTAMINATION ASSESSMENT PLAN

SCALE: 1 : 6000 (A3)      FIGURE NO. NEX2213/C/361/ENS/M57/105      REV. A

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**Appendix D**

**Standard Form 3.1 - Summary of On-Site Land Use Adopted  
from Guidance Manual for Use of Risk-based Remediation  
Goals for Contaminated Land Management**

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Appendix D Standard Form 3.1- Summary of On-Site Land Use Adopted from Guidance Manual for Use of Risk-based Remediation Goals for Contaminated Land Management

Property Name: SCL Alignment

**Current Use**

ID	Type of facility/business	On-site property land use	Date began <sup>1</sup>	Description of business process/primary products	Owner or Occupier	Approximately size of on-site property	Off-site property affected?	
							Yes	No
1-10	Open storage for construction materials	Industrial	1982	Open storage of construction materials	MTR	100 m <sup>2</sup>		No
1-18	Emergency generator room and fuel tank	Industrial	1982	Emergency generator and associated fuel tank (diesel)	MTR	30 m <sup>2</sup>		No
2-02	Locomotive traverser	Industrial	-	Traversing the first car of the train and certain maintenance works (e.g. lubrication)	MTR	800 m <sup>2</sup>		No
2-04	Locomotive running shed for locomotive maintenance	Industrial	1973	Maintenance and repair of locomotives; welding and testing motors	MTR	1100 m <sup>2</sup> (whole running shed area)		No
2-05	Underground storage tanks	Industrial	1973	Storage of diesel and connected to the running shed through underground pipelines	MTR	150 m <sup>2</sup>		No
2-06	Aboveground lubricating oil tank	Industrial	-	Storage of lubricating oil	MTR	10 m <sup>2</sup>		No
2-07	Pumping areas (dispensers) for locomotive running shed	Industrial	1973	Pump station/ dispensers serving the running shed	MTR	20 m <sup>2</sup> (two dispensers in total)		No
2-08	Railway tracks	Industrial	-	For depot, platform and cargo transport in the freight terminal	MTR	15,000 m <sup>2</sup>		No
2-09	D.G. store	Industrial	-	Storage of Category 5 D.G., including diesel and lubricating oil	MTR	20 m <sup>2</sup>		No
L17	International Mail Centre	Industrial	1982	Loading, sorting and dispatching mail; car park; Emergency generator and associated fuel tank (diesel)	Hongkong Post	6978 m <sup>2</sup>		No
3-02	Freight yard and maintenance area for container stackers	Industrial	1973	Loading, unloading and stacking containers; maintenance of the container stacker	MTR	700 m <sup>2</sup>		No
4-04	Waste diesel storage area at DSD site office	Industrial	-	Storage of waste diesel	DSD	5400 m <sup>2</sup> (Total area of the DSD site office)		No

<sup>1</sup> Specify the approximate year in which the current use of the on-site property began

Appendix D Standard Form 3.1- Summary of On-Site Land Use Adopted from Guidance Manual for Use of Risk-based Remediation Goals for Contaminated Land Management

**Past Use**

Are past uses different from current uses?  Yes  No If Yes, complete this section.

Complete this table with each different operation, use or status of the on-site property. Include all operations back to pre-commercial or pre-industrial time if this information is necessary to characterize the site. Specify the status of the property at each stage, including times it may have been vacant. Start with the most recent use and list in chronological order backwards through time.

ID	Type of facility/business	On-site property land use	Date began <sup>2</sup>	Date ended <sup>3</sup>	Description of business process/primary products	Owner or Occupier	Approximately size of on-site property (if different from current size)	Off-site property affected?	
								Yes	No
1-10, 1-18	Industrial	Industrial	1973	1982	Open storage	-	-	No	
2-02, 2-08, 2-09	Industrial	Industrial	1964	1989	Vacant, open storage	-	-	No	
L17	Industrial	Industrial	1973	1982	Open Storage	-	-	No	
3-02	Vacant	Public Park	1967	1989	Vacant	-	-	No	
4-04	Vacant	Public Park	1998	2002	Vacant	-	-	No	
	Low-rise buildings	Rural Residential	2002	2006	Low-rise buildings and open car park	-	-	No	

**Future Use**

Will future uses be different from current uses?  Yes  No If Yes, complete this section.

ID	Type of facility/business	On-site property land use	Description of business process/primary products	Owner or Occupier	Approximately size of on-site property
1-10, 1-18, 2-02, 2-04 through 2-09, L17, 3-02, 4-04	Railway	Industrial	Railway operations	MTR	30,308 m <sup>2</sup>

<sup>2</sup> Specify the approximate year in which the past use of the on-site property began

<sup>3</sup> Specify the approximate year in which the past use of the on-site property ended

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**Appendix E**

**Chemical Contaminants Listed by Industry Type, of Australian  
Standard 4482.1-1997 “Guide to the sampling and  
investigation of potentially contaminated soil. Part 1:  
Non-volatile and semi-volatile compounds”**

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APPENDIX I  
CHEMICAL CONTAMINANTS LISTED BY INDUSTRY TYPE

Table II lists chemicals used in various industries. The exact nature of the contaminant associated with the particular industry is site specific, depending on the standard of management and the practice and safety procedures employed at each site.

This is not an all inclusive list of industries using chemicals and some of the chemicals mentioned are no longer used (e.g. carbon tetrachloride in the dry cleaning industry).

**TABLE II**  
**LIST OF INDUSTRIES**

Industry	Type of chemical	Associated chemicals
Agricultural/horticultural activities		See fertilizer, insecticides, fungicides, herbicides under chemicals manufacture and use
Airports	Hydrocarbons Metals	Aviation fuels Particularly aluminium, magnesium, chromium
Asbestos production and disposal		Asbestos
Battery manufacture and recycling	Metals Acids	Lead, manganese, zinc, cadmium, nickel, cobalt, mercury, silver, antimony Sulfuric acid
Breweries/distilleries	Alcohol	Ethanol, methanol, esters

*(continued)*

TABLE II (continued)

Industry	Type of chemical	Associated chemicals
Chemicals manufacture and use	Acid/alkali	Mercury (chlor/alkali), sulfuric, hydrochloric and nitric acids, sodium and calcium hydroxides
	Adhesives/resins	Polyvinyl acetate, phenols, formaldehyde, acrylates, phthalates
	Dyes	Chromium, titanium, cobalt, sulfur and nitrogen organic compounds, sulfates, solvents
	Explosives	Acetone, nitric acid, ammonium nitrate, pentachlorophenol, ammonia, sulfuric acid, nitroglycerine, calcium cyanamide, lead, ethylene glycol, methanol, copper, aluminium, bis(2-ethylhexyl) adipate, dibutyl phthalate, sodium hydroxide, mercury, silver
	Fertilizer	Calcium phosphate, calcium sulfate, nitrates, ammonium sulfate, carbonates, potassium, copper, magnesium, molybdenum, boron, cadmium
	Flocculants	Aluminium
	Foam production	Urethane, formaldehyde, styrene
	Fungicides	Carbamates, copper sulfate, copper chloride, sulfur, chromium, zinc
	Herbicides	Ammonium thiocyanate, carbamates, organochlorines, organophosphates, arsenic, mercury, triazines
	Paints	
	Heavy metals	Arsenic, barium, cadmium, chromium, cobalt, lead, manganese, mercury, selenium, zinc
	Solvents	Titanium
	Pesticides	Toluene oils natural (e.g. pine oil) or synthetic
	Active ingredients	Arsenic, lead, organochlorines, organophosphates, sodium tetraborate, carbamates, sulfur, synthetic pyrethroids
	Solvents	Xylene, kerosene, methyl isobutyl ketone, amyl acetate, chlorinated solvents
	Pharmaceutical	
	Solvents	Acetone, cyclohexane, methylene chloride, ethyl acetate, butyl acetate, methanol, ethanol, isopropanol, butanol, pyridine methyl ethyl ketone, methyl isobutyl ketone, tetrahydrofuran
	Photography	Hydroquinone, sodium carbonate, sodium sulfite, potassium bromide, monomethyl para-aminophenol sulfate, ferricyanide, chromium, silver, thiocyanate, ammonium compounds, sulfur compounds, phosphate, phenylene diamine, ethyl alcohol, thiosulfates, formaldehyde
	Plastics	Sulfates, carbonates, cadmium, solvents, acrylates, phthalates, styrene
	Rubber	Carbon black
Soap/detergent		
General	Potassium compounds, phosphates, ammonia, alcohols, esters, sodium hydroxide, surfactants (sodium lauryl sulfate), silicate compounds	
Acids	Sulfuric acid and stearic acid	
Oils	Palm, coconut, pine, teatree	
Solvents		
General	Ammonia	
Hydrocarbons	e.g. BTEX (benzene, toluene, ethylbenzene, xylene)	
Chlorinated organics	e.g., trichloroethane, carbon tetrachloride, methylene chloride	

(continued)

TABLE 11 (continued)

Industry	Type of chemical	Associated chemicals
Defence works		See explosives under chemicals manufacture and use, foundries, engine works, service stations
Drum reconditioning		See chemicals manufacture and use
Dry cleaning		Trichloroethylene and 1, 1, 1 - trichloroethane Carbon tetrachloride Perchloroethylene
Electrical		PCBs (transformers and capacitors), solvents, tin, lead, copper, mercury
Engine works	Hydrocarbons Metals Solvents Acids/alkalis Refrigerants  Antifreeze	Chlorofluorocarbons, hydrochlorofluorocarbons, hydrofluorocarbons Ethylene glycol, nitrates, phosphates, silicates
Foundries	Metals  Acids	Particularly aluminium, manganese, iron, copper, nickel, chromium zinc, cadmium and lead and oxides, chlorides, fluorides and sulfates of these metals Sulfuric and phosphoric Phenolics and amines Coke/graphite dust
Gas works	Inorganics  Organics	Ammonia, cyanide, nitrate, sulfide, thiocyanate Aluminium, antimony, arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, selenium, silver, vanadium, zinc BTEX, phenolics, PAHs and coke
Iron and steel works		BTEX, phenolics, PAHs, Metals and oxides of iron, nickel, copper, chromium, magnesium manganese and graphite
Landfill sites		Alkanes and ammonia, sulfides, heavy metals, organic acids
Marinas	Antifouling paints	See engine works, electroplating metals under metal treatments Copper, tributyltin (TBT)
Metal treatments	Electroplating Metals Acids General Liquid carburizing baths	Nickel, chromium, zinc, aluminium, copper, lead, cadmium, tin Sulfuric, hydrochloric, nitric, phosphoric Sodium hydroxide, 1,1,1-trichloroethane, tetrachloroethylene, toluene, ethylene glycol, cyanide compounds Sodium, cyanide, barium, chloride, potassium chloride, sodium chloride, sodium carbonate, sodium cyanate
Mining and extractive industries		Arsenic, mercury and cyanides and also refer to explosives. Aluminium, arsenic, copper, chromium, cobalt, lead, manganese, nickel, selenium, zinc and radio-radionuclides. The list of heavy metals should be decided according to the composition of the deposit and known impurities

(continued)



TABLE II (continued)

Industry	Type of chemical	Associated chemicals
Power stations		Asbestos, PCBs, fly ash metals, water treatment chemicals
Printing shops		Acids, alkalis, solvents, chromium (see photography)
Railway yards		Hydrocarbons, arsenic, phenolics (creosote), heavy metals, nitrates and ammonia
Scrap yards		Hydrocarbons, metals, solvents
Service stations and fuel storage facilities		Aliphatic hydrocarbons BTEX (i.e., benzene, toluene, ethylbenzene, xylene) PAHs Phenols Lead
Sheep and cattle dips		Arsenic, organochlorines and organophosphates, carbamates, and synthetic pyrethroids
Smelting and refining		Metals and the fluorides, chlorides and oxides of copper, tin, silver, gold, selenium, lead, aluminium
Tanning and associated trades	Metals General	Chromium, manganese, aluminium Ammonium sulfate, ammonia, ammonium nitrate, arsenic phenolics, formaldehyde, sulfide, tannic acid
Water and sewerage treatment plant	Metals	Aluminium, arsenic, cadmium, chromium, cobalt, lead, nickel, fluoride, lime and zinc
Wood preservation	Metals General	Chromium, copper, arsenic Naphthalene, ammonia, pentachlorophenol, dibenzofuran, anthracene, biphenyl, ammonium sulfate, quinoline, boron, creosote, organochlorine pesticides

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**Appendix F**  
**Sampling and Testing Schedule**

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**Locations and Testing Parameters of Soil Sampling for Phase I at Current Stage**

Sample ID	Lead	Zinc	BTEX	TPH	PAHs	Full List of VOCs	Full List of SVOCs	Full List of Metals	Cyanide
2209/SCL/EDH249(P)	✓	✓				✓	✓		✓
2209/SCL/ETT103	✓		✓	✓	✓				
2209/SCL/EDH246	✓		✓	✓	✓				
2209/SCL/ETT102	✓		✓	✓	✓				
2209/SCL/EDH244	✓		✓	✓	✓				
2209/SCL/EDH231	✓		✓	✓	✓				
2209/SCL/ETT068				✓		✓	✓	✓	✓
2209/SCL/ETT106				✓		✓	✓	✓	
2209/SCL/EDH256				✓		✓	✓	✓	
2209/SCL/EDH257				✓		✓	✓	✓	
2209/SCL/EDH229	✓		✓	✓	✓				
2209/SCL/EDH124(P)	✓		✓	✓	✓				

**Locations and Testing Parameters of Soil Sampling for Phase I upon Decommissioning**

Sample ID	Lead	Chromium	Copper	BTEX	TPH	PAHs	Full List of VOCs	Full List of SVOCs
HUH-1	✓			✓	✓	✓		
HUH-2	✓	✓	✓		✓		✓	✓
HUH-3	✓	✓	✓		✓		✓	✓
HUH-4	✓				✓		✓	✓
HUH-5	✓	✓	✓		✓		✓	✓
HUH-6	✓			✓	✓	✓		
HUH-7	✓			✓	✓	✓		
HUH-8	✓			✓	✓	✓		
HUH-9	✓	✓	✓		✓		✓	✓
HUH-10	✓			✓	✓	✓		
RWT-1 through RWT-5	✓			✓	✓	✓		
DSD-1	✓			✓	✓	✓		



**Appendix G**

**Typical Design of the Groundwater Monitoring Well**



