MTR Corporation Limited

HONG KONG SECTION OF GUANGZHOU – SHENZHEN – HONG KONG EXPRESS RAIL LINK

(No. EP-349/2009/B)

Revised Contamination Assessment Plan for Shek Kong Stabling Sidings (SSS) Works Area I (Revision C)

Verified by:	
Position:	Independent Environmental Checker
Date:	28 June 2011

MTR Corporation Limited

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Certified by: Glenn Frommes

Position: Environmental Team Leader

Date: 27 JUN 2011

REPORT

Maeda-China State Joint Venture

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June 2011

Environmental Resources Management
21/F Lincoln House
979 King's Road
Taikoo Place
Island East, Hong Kong
Telephone: (852) 2271 3000
Facsimile: (852) 2723 5660
E-mail: post.hk@erm.com
http://www.erm.com

REPORT

Maeda-China State Joint Venture

Revised Contamination Assessment Plan for Shek Kong Stabling Sidings (SSS) Works Area I (Revision C)

June 2011

Reference 0125309

For and on behalf of
ERM-Hong Kong, Limited

Approved by: Dr. Robin Kennish

Signed: 

Position: Partner

Date: 14 June 2011

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CONTENTS

1	*INTRODUCTION*	*1*
1.1	*BACKGROUND TO THE LAND CONTAMINATION ASSESSMENT*	*1*
1.2	*BACKGROUND OF THIS REVISED CAP*	*1*
2	*LEGISLATIVE AND EVALUATION CRITERIA*	*3*
3	*SITE APPRAISAL FINDINGS*	*4*
3.1	*REVIEW OF HISTORICAL LANDUSE*	*4*
3.2	*REVIEW OF GOVERNMENT RECORDS OF LAND USE AND HISTORICAL SPILLAGE AND LEAKAGE*	*5*
3.3	*FINDINGS OF SITE APPRAISAL*	*5*
4	*STAGE 2 SITE INVESTIGATION PLAN*	*18*
4.1	*PROPOSED SAMPLING LOCATIONS*	*18*
4.2	*PROPOSED SAMPLING PARAMETERS*	*18*
4.3	*SAMPLING METHODOLOGY*	*22*
4.4	*HEALTH AND SAFETY*	*25*
5	*INTERPRETATION OF RESULTS*	*27*
5.1	*LAND USE SCENARIOS*	*27*
6	*CONCLUSION AND RECOMMENDATION*	*28*
6.1	*CONCLUSION*	*28*
6.2	*RECOMMENDATIONS*	*28*

ANNEXES

ANNEX A	*MTRC'S CORRESPONDENCES TO EPD AND DEMARCATIONS OF THREE WORKS AREAS WITHIN SSS DATED 11 APRIL 2011 (PROVIDED BY MTRC)*
ANNEX B	*FIGURES*
ANNEX C	*STANDARD FORM 3.1*
ANNEX D	*APPENDIX F AND G OF THE APPROVED CAP IN EIA REPORT*
ANNEX E	*RELEVANT PAGES EXTRACTED FROM THE APPROVED EIA REPORT*
ANNEX F	*RBRG STANDARDS*

1 INTRODUCTION

1.1 BACKGROUND TO THE LAND CONTAMINATION ASSESSMENT

The Guangzhou-Shenzhen-Hong Kong Express Rail Link (XRL) is an express rail link connecting Hong Kong, Shenzhen and Guangzhou. The terminal of the XRL will be West Kowloon in Hong Kong and Shibi in Guangzhou, with Futian and Longhua in Shenzhen and Humen in Dongguan as intermediate stations. The Hong Kong section of the XRL project will comprise a 26 km long underground rail line on a dedicated track from the proposed West Kowloon terminus to the border at Huanggang, where it will connect with the XRL Mainland section.

The Project is a Designated Project under the Environmental Impact Assessment Ordinance (EIAO). An Environmental Impact Assessment (EIA) for the XRL Hong Kong section was conducted and approved under the Environmental Impact Assessment Ordinance on 28 September 2009 (Register No. AEIAR-143/2009). During the EIA stage, a Land Contamination Assessment (LCA) was conducted to assess the presence and extent of land contamination associated with the historical and current operations along the proposed alignment. A Contamination Assessment Plan, attached as Appendix 9.1 of the EIA Report, has been approved (hereinafter refer as "Approved CAP"). However, access to some areas along the proposed alignment was restricted at the time of EIA study and therefore, further LCA is considered necessary following land resumption and prior to the commencement of construction works.

An Environmental Permit (EP-349/2009) was granted on 16 October 2009 and subsequently varied on 27 September 2010 (EP-349/2009/A) and 24 January 2011 (EP349/2009/B) by the Director of Environmental Protection (DEP). In accordance with Condition 2.21 of the EP, the Permit Holder shall carry out further LCA in accordance with the EIA Report and Approved CAP. Further site appraisal and site investigation shall be carried out when individual site access is granted to ascertain contaminating sources and hotspots of contamination.

1.2 BACKGROUND OF THIS REVISED CAP

Construction works of the XRL within the Shek Kong Stabling Siding (SSS) Works Area are undertaken by two contracts, namely Express Rail Link Contract 823a – Tai Kong Po to Tse Uk Tsuen Tunnels (XRL 823a) and Express Rail Link Contract 823b – Shek Kong Stabling Sidings and Emergency Rescue Siding (XRL 823b). Maeda-China State Joint Venture (MCJV) has been awarded as the main contractor of XRL 823a by MTR Corporation Limited (MTRC) on July 2010.

Owing to the land resumption progress and construction programme, the SSS Works Area was sub-divided into three Works Areas that two of these were found within the project boundary of the XRL 823a contract, namely Works Area I and Works Area II. *Annex A* presents the MTRC's correspondence to EPD dated 11 April 2011 and the proposed alignments of these two Works Areas.

Based on the above mentioned EIA and EP requirements, MCJV has commissioned ERM-Hong Kong, Limited (ERM) to undertake further LCA for Works Area I, covering Sites M, N, O, P, Q and R identified in the Approved CAP. *Figure 1.2, Annex B* shows the locations of these Sites. Site inspection shall be carried out when individual site access is granted to ascertain contaminating sources and hotspots of contamination. Revised Contamination Assessment Plans (Revised CAP), covering the Stage 2 Site Investigation as required in the Approved EIA Report, will be submitted to the EPD for approval. Contamination Assessment Reports (CAR) will be prepared based on the site investigation results. If contamination is found, Remediation Action Plan(s) (RAP) will be submitted to EPD for approval.

As the project is a designated project under the EIAO, the LCA are conducted in accordance with Section 3.4.5.3 of Environmental Study Brief (ESB) No. ESB-197-2008 and Section 3 (Potential Contaminated Land Issues) of Annex 19 "Guidelines for Assessment of Impact on Sites of Cultural Heritage and Other Impacts" of the Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM).

The following key guiding documents are used for the LCA:

- Guidance Manual for Use of Risk-based Remediation Goals for Contaminated Land Management (the RBRGs Guidance Manual);
- Guidance Note for Contaminated Land Assessment and Remediation (the RBRGs Guidance Note), and
- Guidance Notes for Investigation and Remediation of Contaminated Sites of Petrol Filling Stations, Boatyards, and Car Repair/Dismantling Workshop (the EPD's Guidance Notes).

The following legislation, documents and guidelines may cover or have some bearing upon the assessment of contamination and the handling, treatment and disposal of contaminated materials for the Project:.

- Water Pollution Control Ordinance (WPCO) (Cap 358);
- Waste Disposal Ordinance (WDO) (Cap 354);
- Waste Disposal (Chemical Waste) (General) Regulation (Cap 354C); and
- Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.

3 SITE APPRAISAL FINDINGS

This section presented the site appraisal findings of Sites M, N, O, P, Q and R which included a desktop review of historical and current landuses obtained from the Approved CAP and interviews with site owners during land resumption (*Section 3.1*), a review of historical spillage and leakage record obtained from the Approved CAP (*Section 3.2*), and observation of site inspections during both the EIA stage and after land resumption (*Section 3.3*).

3.1 REVIEW OF HISTORICAL LANDUSE

A review of historical landuses was conducted and aerial photographs taken in 1954, 1963, 1973, 1979, 1990, 1999, 2000 and 2009 were reviewed in the Approved CAP during the EIA. *Table 3.1* and *Figure 3.1a-d, Annex A* present the historical landuses identified in the historical aerial photographs taken in 1963, 1973, 1990 and 2000.

Table 3.1 Historical Aerial Photos Obtained During the EIA Stage

Year	Photograph Ref. No.	Findings	Reference from EIA
1963	8506	Farmlands	NOL/ERL/300/C/XRL/ENS/M56/015
1973	3082	Farmlands	NOL/ERL/300/C/XRL/ENS/M56/016
1990	A22893	Farmlands with some housing	NOL/ERL/300/C/XRL/ENS/M56/017
2000	CN27743	structures, Site P appeared as a factory	NOL/ERL/300/C/XRL/ENS/M56/018

The Appendix E, Standard Form 3.1 of the Approved CAP (attached as *Annex C* of this Revised CAP) identified that the Sites M, O, P, Q and R (no information provided for Site N) were previously occupied by farmlands, ponds and village houses since 1949. These Sites were reportedly transformed to industrial uses such as car park, garage, workshop, and factory in the early 2000's. *Figure 3.2a, Annex B* shows the demarcations of these Sites in the Approved CAP. However, detailed information relating to historical and current land uses for these Sites such as site owners, timing of uses, etc were not provided in the Appendix E, Standard Form 3.1 of Approved CAP. Such information was further obtained from interview with site owners during land resumption.

Interviews with the site owners indicated that Site N should be divided into sub-Sites N1, N2, N3 and N4 because of different land ownerships and uses. The site owners reported that the entire Site N was historically a farmland. Site N1 was transformed to a vehicle parking area around 1990, Site N2 was transformed to a pigeon nursery and village house around 1980, Site N3 was transformed to a vehicle repairs workshop around 2005, and Site N4 was transformed to a construction material storage area around 2004. *Figure 3.2b-c, Annex B* shows the new demarcation of Site N1, N2, N3 and N4 (overlaid with base map and aerial photo). These new demarcations also inline with the demarcations on the base map.

Interviews with the site owners also provided relevant information (eg site land uses, year of operations, area of contaminative landuses, etc) relating to Sites M, O, P, Q and R. Standard Form 3.1 in the Approved CAP was updated and attached as *Annex C* of this Revised CAP.

3.2 REVIEW OF GOVERNMENT RECORDS OF LAND USE AND HISTORICAL SPILLAGE AND LEAKAGE

Review of relevant information from government departments was carried out as part of the Approved CAP. *Table 3.2* presents the relevant information obtained. Appendix F and G of the Approved CAP in EIA Report indicated that there was no records of spillage, leakage or fires at Sites M, N1, N2, N3, N4, O, P, Q and R (attached as *Annex D* of this Revised CAP).

Table 3.2 Relevant Information Obtained During the EIA Stage

Date of Letter	Department	Details of Information
5 May 2009	Environmental Protection Department	Chemical Waste Producer and Chemical Spillage Accident
2 January 2009	Fire Services Department	Storage of Dangerous Goods
31 December 2008	Environmental Protection Department	Chemical Waste Producer and Chemical Spillage Accident
10 December 2008	Environmental Protection Department	Previous Land Contamination Assessment

3.3 FINDINGS OF SITE APPRAISAL

According to the Approved CAP, site inspection for SSS was conducted in July, August, November and December 2008 during the EIA stage. However, Sites N1, N2, N3, N4 (previously Site N) and Site O were not inspected as access to these Sites were not available. Land uses of these Sites in the EIA were based on an observation from site surroundings. In accordance with Clause 2.21 of EP, site inspections shall be carried out at Site N1, N2, N3, N4 and O to ascertain contaminative landuse, source and hotspots of contamination when individual site access is granted prior to construction. In addition, site inspection at Site M, P, Q and R shall also be conducted to confirm whether there is any change of site setting/operation within the Sites as reported in the Approved CAP.

Access to Sites M, N1, N2, N3, N4, O, P, Q and R were obtained and site inspection was conducted on 20 December 2010. *Section 3.3.1* to *Section 3.3.6* present the site inspection findings in the Approved CAP and this Revised CAP, review any major changes in site settings from that observed and reported in the Approved CAP, and subsequently review any changes is needed for hotspots identification and the sampling plan.

3.3.1 Site Setting at Site M

Site Appraisal Findings during EIA Stage

Site inspection conducted during the EIA stage found that Site M was mainly a vacant vegetated area (approximately 1,000m^2). There was an aboveground storage tank (AST) of unknown content located at the south-western portion of the Site (Table 5.1 of the Approved CAP is extracted and attached in *Annex E* of this Revised CAP). Hotspot at the AST with unknown content was identified with justification. Four hotspots at locations where aboveground tank with unknown content (M-01 to M-04) and three supplementary sampling locations (M-05 to M-07) were proposed to assess the general condition of the site (Drawing NOL/ERL/300/C/XRL/ENS/M57/018 of the Approved CAP is extracted and attached in *Annex E* of this Revised CAP).

Site Appraisal Findings after Land Resumption

During the site inspection on 20 December 2010, the AST had already been removed. Site M was still observed as an unpaved open area (photos M-1, M-2 and M-3). The Site was used for vehicle parking that some oil stains potentially due to leakage from vehicles were observed in the middle of the Site. The observed oil stains were identified to be caused by general vehicle oil leakages during parking. Interview with site representatives reported that the Site M has been used for vehicle parking for more than 15 years. There were no designated parking demarcations observed on site and vehicles could park at various places at different time within Site M. Therefore, oil leaking from vehicle parking at the Site was not regarded as stationary sources of contamination. No contaminative industrial activities and landuses were observed being carried out within Site M at the time of site inspection.

Figure 3.3a, Annex B presents the selected photographs and proposed sampling locations of the Site. *Table 3.3* summarised the site appraisal findings after the land resumption, and the justification of hotspots identified at Site M.

To conclude, there were no changes in site land use and finding of new potential contamination in Site M. As Stage 1 Site Investigation of the four hotspot locations (M-01 to M-04) was already completed during the EIA stage, the Stage 2 Site Investigation including the remaining three supplementary sampling locations (M-05 to M-07) as per the Table 6.1 of the Approved CAP, Sampling and Testing Plan for Potential Contaminated Area of the Approved CAP (*Annex E* of this Revised CAP) are proposed to confirm presence/absence of contamination in Site M.

3.3.2 Site Setting at Site N (N1, N2, N3 and N4)

Site Appraisal Findings during EIA Stage

Access to Site N was not feasible during the EIA stage. The Site, with an area of approximately 4,500m^2, was identified as suspected vehicle repair/ dismantling workshop based on observation from surroundings (Table 5.7 of the Approved CAP is extracted and attached in *Annex E* of this Revised CAP).

As specific hotspots of contamination could not be identified due to inaccessibility, 0-14 sampling locations were proposed for further site investigation at the EIA stage (Drawing NOL/ERL/300/C/XRL/ENS/M57 /016 of the Approved CAP is extracted and attached in *Annex E* of this Revised CAP).

Site Appraisal Findings after Land Resumption

However, as discussed in Section 3.1 of this Revised CAP, Site N should be divided into sub-Sites N1, N2, N3 and N4 based on different site ownerships, landuses and site activities. The site setting for these sites are described in the following.

Site N1

It was observed that Site N1 comprised of a vehicle repairing workshop and vehicle parking area (photo N1-1). Most of workshop structures (eg freight container) have been removed and some wastes were found scattered around the site. Areas used for vehicle repairing activities were identified by the site representatives (*Figure 3.3b, Annex B*, boundary of usage). The remaining areas were reportedly used as access road. No significant oil stains or signs of spillages were observed at the time of site inspection.

Site N2

It was observed that Site N2 was covered by some trees, access road, a single-storey village house and an abandoned pigeon nursery house (photos N2-1 and N2-2). Site N2 was fenced off (2m high) from the surrounding vehicle repair workshops (eg Site N1 and N3). An interview with the villager indicated that Site N2 was solely used for residential and agricultural purposes in the past and no contaminative industrial activities have been conducted at Site N2.

Site N3

During the site inspection, Site N3 comprised of six groups of freight containers and sheds (photos N3-1, N3-2 and N3-3). However, most of the structures of the freight containers and materials stored on-site had been removed and no industrial activities were being carried out at the time of site inspection. Areas used for vehicle repairing activities were identified by the site representatives (*Figure 3.3b, Annex B* boundary of usage). The remaining areas were reportedly used as access road. No significant oil stains or signs of spillages were observed at the time of site inspection.

Site N4

It was observed that Site N4 comprised of a single-storey village house, a concrete paved open area and trees. Both the village house and the open area were observed being used for storage of construction equipment (eg concrete bucket, supporting steel bars, etc) (photos N4-1 and N4-2). It was observed that Site N4 shared the same vehicle access entrance with Site N3,

and it was not clear that whether Site N4 was fenced off from Site N3 in the past. No contaminative industrial activities were being carried out at Site N4 at the time of the site inspection. No significant oil stains or signs of spillages were observed at the time of site inspection.

By considering the information updated in the Standard From 3.1 (based on interview with site owners), and the above findings, the land use type indicated for Site N during the EIA stage was revised as follows:

- Sites N1 and N3 - vehicle parking with repairing activities;
- Site N2 - village house and pigeon nursery house; and
- Site N4 - construction material storage area.

Figure 3.3b, Annex B presents the selected photographs of these Sites. Summary of the site appraisal results and identification of hotspots with justification for Site N1, N2, N3 and N4 were provided in Table 3.3 of this Revised CAP.

For Site N1 and N3, as most of the structures of vehicle repairing workshops were already removed from sites, areas that involved vehicle repairing activities (ie hotspots) were identified by the site representatives during the site inspection. Overlaying these hotspots with aerial photograph in 2008 (*Figure 3.4, Annex B*) shown that locations of these hotspots coincided with the locations of the freight containers workshops and shed areas. A total of two hotspots (N1-01 and N1-02) and six hotspots (N3-01 to N3-06) were identified at areas having vehicle repairing activities at Sites N1 and N3 respectively. Stage 2 Site Investigation at these hotspots was proposed to confirm presence/absence of contamination in Site N1 and N3.

Further site investigation is deemed not necessary for Site N2 as site appraisal revealed that there was no contaminative industrial activities conducted in the past.

Site N4 was used as construction material storage area in recent four years. No hotspots were identified based on the site appraisal results. However, by considering that Site N4 share same vehicle entrance with Site N3, and it is not clear that whether Site N4 was completely fenced off from Site N3, potential land contamination concern from vehicle repairing activities of Site N3 could not be ruled out. As a result, one supplementary sampling location (N4-01) was proposed at the middle of the storage area (approximately 100m^2) to access the land condition in general.

3.3.3 Site Setting at Site O

Site Appraisal Findings during EIA Stage

Site O was inaccessible during the EIA stage. In accordance with the Approved CAP, the Site was suspected to be an excavator parking area (approximately 300m^2) with some maintenance and refuelling activities and

formed part of the adjacent vehicle repairs workshop (Table 5.7 of the Approved CAP is extracted and attached in *Annex E* of this Revised CAP). As hotspot of contamination could not be identified during the EIA stage, 0-2 sampling locations were proposed in accordance with *Table 3.3* of the EPD's Guidance Note to determine potential land contamination impacts due to the suspected excavator maintenance and refuelling activities (Drawing NOL/ERL/300/C/XRL/ENS/M57/016 of the Approved CAP is extracted and attached in *Annex E* of this Revised CAP).

Site Appraisal Findings after Land Resumption

During the Site inspection on 20 December 2010, the area occupied by Site O was separated from a vehicle repairs workshop located at south-western side of the Site by a newly erected hoarding (photo O-1). The area was left vacant and appeared to have recently been paved with concrete. No contaminative industrial activities and landuses were observed within the site and no significant oil stains or signs of spillages were observed on the new concrete pavement at Site O at the time of the site inspection.

Figure 3.3b, Annex B presents the selected photograph of the Site. *Table 3.3* summarised the site appraisal findings after the land resumption, and the justification of hotspots identified at Site O.

In conclude there were no changes in site land use and finding of new potential contamination in Site O. As Stage 1 Site Investigation at Site O was infeasible during the EIA stage, Stage 2 Site Investigation including two supplementary sampling locations (O-01 and O-02) as per the Table 6.1 of the Approved CAP, Sampling and Testing Plan for Potential Contaminated Area of the Approved CAP (*Annex E* of this Revised CAP) are proposed to confirm the presence/absence of contamination in Site O.

3.3.4 Site Setting at Site P

Site Appraisal Findings during EIA Stage

Site P was used for industrial activities in the past. At the time of site inspection during the EIA stage, the Site was identified as a factory, storage and parking area (approximately 1,500m^2) (Table 5.1 of the Approved CAP is extracted and attached in *Annex E* of this Revised CAP). Two hotspots (P-01 and P-02) at the parking area and five hotspots (P-03 to P-07) at the oil drum storage areas and were identified with justification (Drawing NOL/ERL/300/C/XRL/ENS/M57/017 of the Approved CAP is extracted and attached in *Annex E* of this Revised CAP).

Site Appraisal Findings after Land Resumption

During the Site inspection on 20 December 2010, the site was still observed to be occupied by a two-storey abandoned factory and open area for vehicle parking. The factory was not in operation and no machineries were observed on-site. However, no chemicals or oil drums were observed being stored inside the factory building anymore.

Two suspected machine rooms (photo P-4) and a storage room were located at the northern side of Site P (photo P-3). These rooms/areas were observed being used for oil drums storage during the site inspection of EIA stage. However, both rooms were emptied after land resumption.

A transformer room (photo P-2) with a signage indicated a factory name of Sui Fung Distillery Substation was identified at the Site and therefore the Site was suspected of having been occupied by brewery / distillery industry in the past. The transformer room was empty and constructed with concrete bunding and filled with sand. No sign of historical spillage was observed.

The western portion of the Site P was used for construction materials storage (mainly plastic pipes) (photo P-6 and P-7), which is also observed by the site inspection during EIA stage.

The eastern portion of the Site was a concrete paved area and vehicles were observed parking in this area (photo P-1). However, a sheltered area covering three ASTs were observed along the eastern boundary from the northeast to the southeast of the Site (photo P-8). A few overhead pipelines were observed connecting between the ASTs, the suspected machine rooms and the upper floor of the factory. Oil stains (0.5m x 1m) and signs of spillages were observed in front of and around the ASTs and freight containers, where this area was only identified as parking area during the site inspection in the EIA stage.

In conclude, apart from the three ASTs (not mentioned in the Approved CAP) situated along the eastern boundary of the Site, there appeared to be no major changes to the condition of Site P from that observed and reported in the Approved CAP. Therefore, additional hotspots were identified at where each ASTs situated (P-08, P-09 and P-10).

Figure 3.3c, Annex B presents the selected photographs of the Site. *Table 3.3* summarised the site appraisal findings during the EIA stage and after the land resumption, and the justification of hotspots identified at Site P.

As Stage 1 Site Investigation at Site P was not feasible during the EIA stage, Stage 2 Site Investigation as per Table 6.1 of the Approved CAP, Sampling and Testing Plan for Potential Contaminated Area of the Approved CAP (*Annex E* of this Revised CAP) was proposed to confirm the presence/absence of contamination in Site P. Additional sampling locations P-08, P-09 and P-10 are proposed at the bottom of the three ASTs to assess the potential historical leakage/spillage from these ASTs. In addition, two hotspots (P-01 to P-02) at the parking area and five hotspots (P-03 to P-07) at the oil drum storage areas were identified as per the Approved CAP.

Site inspection revealed that P-03, P-04 and P07 are located at areas with potential headroom constraints (less than 3m height in headroom) because of the reinforced concrete flooring and ceiling. *Section 4.3* of this Revised CAP will further discuss the proposed sampling methodology at these three locations.

3.3.5 Site Setting at Site Q

Site Appraisal Findings during EIA Stage

As mentioned in the Approved CAP, Site Q was a concrete paved parking area with scattered vehicle repair/maintenance activities (approximately 2000m^2). There were also some dismantled vehicles around the repairing area. Used chemical containers were found and some oil stains were observed (Table 5.1 of the Approved CAP is extracted and attached in *Annex E* of this Revised CAP). Hotspots at the vehicle repair area/dismantling area (Q-01, Q-03, Q-04 and Q-05) and waste container disposal area (Q-02) were identified with justification. Area occupied for contaminative land uses was approximately 600m^2. Two supplementary sampling locations (Q-06 and Q-07) were also identified (Drawing NOL/ERL/300/C/XRL/ENS/M57/017 of the Approved CAP is extracted and attached in *Annex E* of this Revised CAP).

Site Appraisal Findings after Land Resumption

During the Site inspection on 20 December 2010, the freight containers used for vehicle repair workshops/offices have been removed and no vehicle repairing activities were observed. Wastes (eg vehicle parts, tyres, etc) were observed stockpiled in the middle of the Site. The vacant areas were used as access roads (photo Q-1 and Q-2) to Site N3 and to a nearby suspected vehicle repairs workshop northeast of Site Q. The majority of area is paved open area but some trees and shrubs were observed along the boundary of the Site (photo Q-3). No significant oil stains or signs of spillages were observed at the time of site inspection.

Figure 3.3c, Annex B presents the selected photographs of the Site. *Table 3.3* summarised the site appraisal findings after the land resumption, and the justification of hotspots identified at Site Q.

In conclude there were no changes in site land use and finding of new potential contamination in Site Q. As Stage 1 Site Investigation of five hotspot locations (Q-01 to Q-05) were completed during the EIA stage, Stage 2 Site Investigation including the remaining two supplementary sampling locations (Q-06 and Q-07) as per Table 6.1 of the Approved CAP, Sampling and Testing Plan for Potential Contaminated Areas (*Annex E* of this Revised CAP) is therefore proposed to confirm presence/absence of contamination in Site Q.

3.3.6 Site Setting at Site R

Site Appraisal Findings during EIA Stage

Site R was identified as a vehicle repairs workshop in the Approved CAP. Oil stains were found in the repair area located at the southern portion of the Site. In addition, some waste oil drums and chemical containers were found near the entrance, while a storage area of vehicle parts (seats, tyres) was found

at the south western portion of the Site (Table 5.1 of the Approved CAP is extracted and attached in *Annex E* of this Revised CAP). Hotspots at waste container storage area (R-01) and vehicle repairs area (R-02) were identified with justification. Area occupied by potential contaminating land uses was approximately 100m^2. Two supplementary sampling locations (R-03 and R-04) were also identified (Drawing NOL/ERL/300/C/XRL/ENS/M57/016 of the Approved CAP is extracted and attached in *Annex E* of this Revised CAP).

Site Appraisal Findings after Land Resumption

During the site inspection on 20 December 2010, the Site R was still operating as a vehicle repairs workshop (photo R-1). The Site was concrete paved and surrounded by hoardings. The workshop was comprised of a freight container office, covered lube oil storage areas, open vehicle parts storage area and open vehicle repairs area (photo R-2). Some oil stains were observed at the waste oil drums and chemical containers storage area.

Figure 3.3b, Annex B presents the selected photographs of the Site. *Table 3.3* summarised the site appraisal findings after the land resumption, and the justification of hotspots identified at Site R.

To conclude, there were no changes in site land use and finding of new potential contamination in Site R. As Stage 1 Site Investigation at Site R was not feasible during the EIA stage, Stage 2 Site Investigation including two hotspots and two supplementary sampling locations (R-01 to R-04) as per Table 6.1 of the Approved CAP, Sampling and Testing Plan for Potential Contaminated Areas (*Annex E* of this Revised CAP) is therefore proposed to confirm presence/absence of contamination in Site R.

Table 3.3 Summary of Site Appraisal Results for Site M, N, O, P, Q and R after Land Resumption

Location	Site ID	Historical Land Uses	Current Land Uses	Site Appraisal Results	Necessity for Stage 2 Site Investigations?	Justification and Hotspots Identified	Sampling Locations Completed during Stage 1 SI	Sampling Locations Proposed in Stage 2 SI	Drawing Reference
SSS	M	Farmland	Vehicle parking area (over 15 years)	During the site inspection on 20 December 2010, the AST (reportedly empty) had already been removed. Apart from the removal of AST, there appeared to be no major change in the condition of Site M from that observed and reported in the Approved CAP. Site area is around 1,000m2.	Yes	Aboveground tank with unknown content (M-01 to M-04) Supplementary sampling location (M-05 to M-07)	4	3	*Figure 3.3a, Annex B*
SSS	N1	Farmland	Vehicle parking with repairing activities (12 years ago)	During the site inspection on 20 December 2010, it was observed that Site N1 comprised of a vehicle repairing workshop and vehicle parking area. As most of workshop structures (eg freight container) have been removed and some wastes were found scattered around the site, areas used for vehicle repairing activities were identified by the Site representatives. No significant oil stains or signs of spillages were observed at the time of site inspection. Site area is around 500m^2.	Yes	Vehicle repairing area (N1-01 and N1-02) Potential spillage of fuels or chemicals used during repairing activities may cause land contamination concern.	0	2	*Figure 3.3b, Annex B*

Location	Site ID	Historical Land Uses	Current Land Uses	Site Appraisal Results	Necessity for Stage 2 Site Investigations?	Justification and Hotspots Identified	Sampling Locations Completed during Stage 1 SI	Sampling Locations Proposed in Stage 2 SI	Drawing Reference
SSS	N2	Farmland	Village house and pigeon nursery house (more than 30 years)	During the site inspection on 20 December 2010, it was observed that Site N2 comprised of trees, access road, a single-storey village house and an abandoned pigeon nursery house. Site N2 is fenced off (2 meter high) from the surrounding vehicle repairing workshop (eg Site N1 and N3). An interview with the villager indicated that Site N2 was solely used for residential and agricultural purposes in the past and no industrial activities have been conducted in area occupied by Site N2. Site area is around 1,650m^2.	No	-	0	0	*Figure 3.3b, Annex B*
SSS	N3	Farmland	Vehicle parking with repairing activities (5-6 years ago)	During the site inspection on 20 December 2010, it was observed that Site N3 comprised of six groups of vehicle workshops with freight containers and sheds. As most of the structure of the freight containers and materials stored on-site had been removed and no industrial activities were being carried out at the time of site inspection, areas used for vehicle repairing activities were identified by the Site representatives. No significant oil stains or signs of spillages were observed at the time of site inspection. Site area is around 1,850m^2.	Yes	Vehicle repairing area (N3-01 to N3-06) Potential spillage of fuels or chemicals used during repairing activities may cause land contamination concern.	0	6	*Figure 3.3b, Annex B*

Location	Site ID	Historical Land Uses	Current Land Uses	Site Appraisal Results	Necessity for Stage 2 Site Investigations?	Justification and Hotspots Identified	Sampling Locations Completed during Stage 1 SI	Sampling Locations Proposed in Stage 2 SI	Drawing Reference
SSS	N4	Farmland	Construction material storage area (4 years ago)	During the site inspection on 20 December 2010, it was observed that Site N4 comprised of a single-storey village house and a concrete paved open area. Both the village house and the open area were observed being used for storage of construction equipment (eg concrete bucket, supporting steel bars, etc). It was observed that Site N4 shared the same vehicle entrance with Site N3. No industrial activities were being carried out at the time of site inspection. No significant oil stains or signs of spillages were observed at the time of site inspection. Site area is around 500m^2.	Yes	Hotspots cannot be identified. However, as Site N4 share same vehicle entrance with Site N3, potential land contamination concern from industrial activities of Site N3 could not be ruled out. Supplementary sampling location (N4-01)	0	1	*Figure 3.3b, Annex B*
SSS	O	Farmland, and Vehicle repair workshop (2 years ago)	Open land with concrete paving (~two months)	During the Site inspection on 20 December 2010, the area occupied by Site O was separated from a vehicle repairs workshop located at south-western side of the Site by a newly erected hoarding. The area was vacant and appeared to have recently been paved with concrete. No industrial activities were observed within the site and no significant oil stains or signs of spillages were observed on the new concrete pavement at the Site O. Site area is around 300m^2.	Yes	Hotspots cannot be identified. However, historical land uses indicated potential land contamination concern. Supplementary sampling location (O-01 and O-02)	0	2	*Figure 3.3b, Annex B*

Location	Site ID	Historical Land Uses	Current Land Uses	Site Appraisal Results	Necessity for Stage 2 Site Investigations?	Justification and Hotspots Identified	Sampling Locations Completed during Stage 1 SI	Sampling Locations Proposed in Stage 2 SI	Drawing Reference
SSS	P	Farmland	Abandoned Factory (unknown history)	Based on the site inspection during the EIA stage, the abandoned was used for oil drum storage and vehicle parking in recent years. No oil drum storage was observed on site during site inspection conducted on 20 December 2010. Three ASTs were found along the eastern boundary the Site. Oil stains (~0.5m x 1m) and signs of spillages were observed in front of and around the ASTs, where this area was observed being used as vehicle parking area during the EIA stage. Apart from these additional observations, there appeared visually to be no major changes to the condition/site setting of Site P from that observed and reported in the Approved CAP. It was observed that the transformer room has a sign indicating the factory name as Sui Fung Distillery Substation. It was suspected the site may have been occupied by a brewery / distillery in the past. Review of site ownerships shown that the latest owner of the factory was Wofoo Plastics Limited. However, the current site owner could only provide very limit information regarding historical site ownerships. Site area is around 1,500m^2.	Yes	Parking Area (P-01 and P-02) Stains observed, potential leakage/spillage of fuels may cause land contamination concern Oil Drums Storage Area (P-03 to P-07) Potential leakage/Spillage of fuels from containers may cause land contamination concern. Aboveground storage tank (P-08 to P-10) Potential leakage/ Spillage of fuels from containers may cause land contamination concern.	0	10	*Figure 3.3c, Annex B*

Location	Site ID	Historical Land Uses	Current Land Uses	Site Appraisal Results	Necessity for Stage 2 Site Investigations?	Justification and Hotspots Identified	Sampling Locations Completed during Stage 1 SI	Sampling Locations Proposed in Stage 2 SI	Drawing Reference
SSS	Q	Farmland	Parking area with minor vehicle repair/maintenance activities (over 15 years)	Site appraisal results refer to Table 5.1 in the Approved CAP (no updates). Site inspection conducted on 20 December 2010 confirmed that no major change to the site settings since the approval of EIA. Site area is around 2,000m^2.	Yes	Vehicle Repair/Dismantling Area and Waste Container Disposal Area (Q-01 to Q-05) Stains observed. Potential spillage of fuels or chemicals used during repairing activities/from waste container may cause land contamination concern. Supplementary sampling location (Q-06 and Q-07)	5	2	*Figure 3.3c, Annex B*
SSS	R	Farmland	Vehicle repair workshop (12 years ago)	Site appraisal results refer to Table 5.1 in the Approved CAP (no updates). Site inspection conducted on 20 December 2010 confirmed that no major change to the site settings since the approval of EIA. Site area is around 400m^2.	Yes	Waste Container Storage Area (R-01) Potential Leakage/spillage of fuels/chemical from the oil drums/containers may cause land contamination concern. Vehicle Repair Area (R-02) Potential spillage of fuels or chemicals used during repairing activities may cause land contamination Supplementary sampling location (R-03 and R-04)	0	4	*Figure 3.3b, Annex B*

4 STAGE 2 SITE INVESTIGATION PLAN

4.1 PROPOSED SAMPLING LOCATIONS

A total of 27 sampling locations are proposed in accordance with hotspots and supplementary locations recommended in the Approved CAP and *Section 3* of this Revised CAP. *Table 4.1* presents the number of sampling points, the coordinates, the number of samples, and the parameters proposed for chemical analysis. Sampling parameters for both soil and groundwater are proposed with reference to chemicals which may be encountered due to potential contaminative activities in vehicle repair workshops and vehicle parking areas as stipulated in the EPD's Guidance Notes, and as adhere to the recommendation in the Table 6.1 of the Approved CAP.

The exact sampling location may be subjected to fine adjustment due to site specific conditions (eg presence of underground utilities, foundations, not enough headroom, occupied spaces by vehicles, etc) during the actual site investigation. Any changes to the sampling locations will be detailed in the CAR.

4.2 PROPOSED SAMPLING PARAMETERS

Table 4.2 presents the proposed laboratory analytical methods and reporting limits to be used. All laboratory testing method are either Hong Kong Laboratory Accreditation Scheme (HOKLAS) accredited or one of its Mutual Recognition Arrangement Partners, as adhere to the Approved CAP.

Table 4.1 Proposed Sampling and Analysis Plan

Sampling Location ID	Coordinate	Hotspots Identified or Supplementary Locations	Soil		Groundwater	
			Sample Depths (m below base of concrete, m bbc)	Parameters to be Analysed (e, f, g)	Sample Depths (m)	Parameters to be Analysed (,e, f, h)
M-05 (a)	E 826739.464 N 833702.205	Supplementary	0.5, 1.5, 3.0, 4.5, 6.0	Cadmium, Chromium III, Chromium VI, Copper, Mercury, Nickel, Lead, Zinc, Petroleum Carbon Ranges, VOCs, SVOCs, PCBs, Cyanide	At static groundwater level, if encountered.	Mercury, Petroleum Carbon Ranges, VOCs, SVOCs, PCBs
M-06 (a)	E 826718.451 N 833702.516	Supplementary				
M-07 (a)	E 826729.061 N 833702.516	Supplementary				
N1-01 (b)	E 826609.655 N 833862.621	Vehicle Repairs Workshop/Area	0.5, 1.5, 3.0, 4.5, 6.0	Lead, Chromium III, Chromium VI, Copper, Zinc, Petroleum Carbon Ranges, VOCs, SVOCs	At static groundwater level, if encountered.	Petroleum Carbon Ranges, VOCs, SVOCs
N1-02 (b)	E 826625.412 N 833871.156	Vehicle Repairs Workshop/Area				
N3-01 (b)	E 826617.096 N 833829.138	Vehicle Repairs Workshop/Area				
N3-02 (b)	E 826634.603 N 833821.697	Vehicle Repairs Workshop/Area				
N3-03 (b)	E 826637.504 N 833804.024	Vehicle Repairs Workshop/Area				
N3-04 (b)	E 826654.375 N 833817.198	Vehicle Repairs Workshop/Area				
N3-05 (b)	E 826657.580 N 833803.333	Vehicle Repairs Workshop/Area				
N3-06 (b)	E 826647.675 N 833792.747	Vehicle Repairs Workshop/Area				
N4-01 (b)	E 826619.284 N 833806.378	Supplementary				
O-01 (a)	E 826578.901 N 833865.860	Supplementary	0.5, 1.5, 3.0, 4.5, 6.0	Lead, Chromium III, Chromium VI, Copper, Zinc, Petroleum Carbon Ranges, VOCs, SVOCs	At static groundwater level, if encountered.	Petroleum Carbon Ranges, VOCs, SVOCs
O-02 (a)	E 826560.617 N 833885.617	Supplementary				
P-01 (a)	E 826685.371 N 833701.728	Parking Area	0.5, 1.5, 3.0, 4.5, 6.0 (for boreholes) 0.5, 1.5, 3.0 (for trial pits)	Cadmium, Chromium III, Chromium VI, Copper, Mercury, Nickel, Lead, Zinc, Petroleum Carbon Ranges, VOCs, SVOCs, PCBs, Cyanide	For boreholes, at static groundwater level, if encountered. For trial pits, upon encountering of groundwater.	Mercury, Petroleum Carbon Ranges, VOCs, SVOCs, PCBs
P-02 (a)	E 826692.860 N 833717.105	Parking Area				
P-03 (c)	E 826686.700 N 833727.918	Storage Area (oil drums)				
P-04 (c)	E 826683.820 N 833714.535	Storage Area (oil drums)				
P-05 (a)	E 826674.868 N 833740.503	Storage Area (oil drums)				
P-06 (a)	E 826664.986 N 833734.077	Storage Area (oil drums)				
P-07 (c)	E 826667.113 N 833707.001	Storage Area (oil drums)				
P-08 (d)	E 826701.238 N 833721.428	AST				
P-09 (d)	E 826700.029 N 833718.929	AST				
P-10 (d)	E 826698.819 N 833716.430	AST				

Sampling Location ID	Coordinate	Hotspots Identified or Supplementary Locations	Soil		Groundwater	
			Sample Depths (m below base of concrete, m bbc)	Parameters to be Analysed (e, f, g)	Sample Depths (m)	Parameters to be Analysed (,e, f, h)
Q-06 (a)	E 826701.031 N 833748.541	Supplementary	0.5, 1.5, 3.0, 4.5, 6.0	Lead, Chromium III, Chromium VI, Copper, Zinc, Petroleum Carbon Ranges, VOCs, SVOCs	At static groundwater level, if encountered.	Petroleum Carbon Ranges, VOCs, SVOCs
Q-07 (a)	E 826681.372 N 833792.813	Supplementary				
R-01 (a)	E 826588.824 N 833845.817	Waste Container & Storage Area	0.5, 1.5, 3.0, 4.5, 6.0	Lead, Chromium III, Chromium VI, Copper, Zinc, Petroleum Carbon Ranges, VOCs, SVOCs	At static groundwater level, if encountered.	Petroleum Carbon Ranges, VOCs, SVOCs
R-02 (a)	E 826602.217 N 833832.685	Vehicle Repairs Area				
R-03 (a)	E 826596.965 N 833837.098	Supplementary				
R-04 (a)	E 826596.807 N 833852.277	Supplementary				

Notes:

(a) Sampling depths and parameters to be analysis adhere to corresponding recommendation in the Approved CAP.

(b) Sampling parameters for Site N1, N3 and N4 were updated. Parameters are proposed with reference to chemicals/contaminants which may be encountered due to potential contaminative activities in a vehicle repair workshop as stipulated in EPD's Guidance Note.

(c) Sampling depths will be 3.0m bbc for P-03, P-04 and P-07 as these sampling points are located inside the two-storey height abandoned factory, resulting in potential headroom constraints.

(d) P-08, P-09, and P-10 was proposed as hotspots at below the ASTs.

(e) Petroleum Carbon Ranges: C6 to C8, C9 to C16, and C17 to C35.

(f) VOCs: Acetone, Benzene, Bromodichloromethane, 2- Butanone, Chloroform, Ethylbenzene, Methyl tert-Butyl Ether, Methylene Chloride, Styrene, Tetrachloroethene, Toluene, Trichloroethene, and Xylenes (Total).

(g) SVOCs for soil: Acenaphthene, Acenphthylene, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, bis-(2-Ethylhexyl)phthalate, Chrysene, Dibenzo(a,h)anthracene, Fluoranthene, Fluorene, Hexachlorobenzene, Indeno(1,2,3-cd)pyrene, Naphthalene, Phenanthrene, Phenol, and Pyrene.

(h) SVOCs for groundwater: Acenaphthene, Acenphthylene, Anthracene, Benzo(b)fluoranthene, Chrysene, Fluoranthene, Fluorene, Hexachlorobenzene, Naphthalene, Phenanthrene and Pyrene.

Table 4.2 Proposed Laboratory Testing Methods and Reporting Limits

Test Parameters	Soil		Groundwater	
	Method *	Detection Limit (mg/kg)	Method *	Detection Limit (µg/L)
Metals	USEPA 6020		USEPA 6020	
Cadmium		0.2		NA
Chromium III		1		NA
Chromium VI		1		NA
Copper		1		NA
Lead		1		NA [(a)]
Mercury		0.2		0.5
Nickel		1		NA
Zinc		1		NA
Petroleum Carbon Ranges	USEPA 8015		USEPA 8015	
C6-C8		5		20
C9-C16		200		500
C17-C35		500		500
VOCs	USEPA 8260B		USEPA 8260B	
Benzene		0.2		5
Toluene		0.5		5
Ethylbenzene		0.5		5
Stryene		0.5		5
Xylenes (Total)		1.5		15
Acetone		50		50
2-Butanone		5		50
Methylene chloride		5		50
Trichloroethene		0.1		5
Tetrachloroethene		0.04		5
Chloroform		0.04		5
Bromodichloromethane		0.1		5
Methyl tert-Butyl Ether		0.5		5
SVOCs	USEPA 8270D		USEPA 8270D	
Acenaphthene		0.5		2
Acenaphthylene		0.5		2
Anthracene		0.5		2
Benzo(a)anthracene		0.5		NA
Benzo(a)pyrene		0.5		NA
Benzo(b)fluoranthene &		0.5		4
Benzo(k)fluoranthene		0.5		NA
Benzo(g,h,i)perylene		0.5		NA
Bis-(2-Ethylhexyl)phthalate		5		NA
Chrysene		0.5		2
Dibenzo(a,h)anthracene		0.5		NA
Fluoranthene		0.5		2
Fluorene		0.5		2
Hexachlorobenzene		0.2		4
Indeno(1,2,3-cd)pyrene		0.5		NA
Napththalene		0.5		2
Phenanthrene		0.5		2
Phenol		0.5		NA
Pyrene		0.5		2
PCBs	USEPA 8070		USEPA 8070	
PCB		0.1		1
Other Inorganic Compounds	Alpha 4500CD: C&E		Alpha 4500CD: C&E	
Cyanide, Free		1		1

Notes:

NA: Not Applicable. With reference to the RBRGs Guidance Manual, RBRG for some chemicals could not be calculated and therefore no detection limit is proposed.

* All laboratory testing method are either Hong Kong Laboratory Accreditation Scheme (HOKLAS) accredited or one of its Mutual Recognition Arrangement Partners.

4.3 SAMPLING METHODOLOGY

4.3.1 Overview

Borehole drilling or trial pit excavation methods are proposed to investigate and determine the presents of soil and groundwater contamination. Soil boring/excavation and sampling will be supervised by a land contamination specialist. The soil sampling methodologies are based on methods developed by the US EPA, and adapted to Asian standards of operation and practice, as appropriate. These methods include decontamination procedures, sample collection, preparation and preservation, and chain-of-custody documentation as described in the following sections.

4.3.2 Borehole Drilling

The borehole will be advanced by means of dry rotary drilling method, i.e. without the use of a flushing medium, as far as practicable.

For safety reasons and to inspect for underground utilities, utility scanning will be performed at all proposed borehole locations to ensure clearance of underground structures prior to ground disturbance. In addition, an inspection pit will be excavated down to 1.5m below ground level (bgl) to manually perform underground utility clearance at each of the drillhole locations before drilling commences.

Disturbed soil samples will be collected at the depth of 0.5m and 1.5m below base of existing concrete pavement (m bbc) from the excavation pits. Soil boring using rotary drill rigs will then be performed from 1.5m bbc to a maximum depth of 6m bbc.

Soil samples will be retrieved at approximately 1m intervals for inspection of geological characters and for visual inspection for potential contamination (such as visual evidence of discolouration, staining, presence of non-aqueous liquid phase and abnormal odour). The soil profile with evidence of contamination (if any) will be recorded in the drilling log. The log will also include the general stratigraphic description, depth of sampling, sample notation, and level of groundwater (where encountered).

Undistributed soil samples will be collected at depths of 3.0, 4.5, and 6.0 m bbc by using U76 core. Where there are suspected signs of contamination, extra samples will be taken for laboratory analysis.

4.3.3 Trial Pit Excavation

In accordance with Table 6.1 of the Approved CAP, 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 2-3m bbc subject to site conditions.

The trial pit area will be approximately 1.5m by 1.5m. The excavation will proceed by hand digging in a series of shallow cuts, typically between 0.2 and

0.3m thickness. This will allow visual examination of the ground conditions, logging of the soil strata and the collection of soil samples.

For safety reasons, available utility service plans will be checked and the surrounding area for visible covers/service runs. Utility scanning will be performed at all proposed trial pit locations to ensure clearance of underground structures prior to ground disturbance.

Disturbed soil samples will be collected at the depth of 0.5m, 1.5m and 3.0 m bbc from the trial pits. Where there are suspected signs of contamination, extra samples will be taken for laboratory analysis.

The excavated arisings will be positioned away from the immediate edge of the trial pit to avoid collapse. Upon completion, trial pits will be backfilled immediately in reverse order to which they were excavated.

4.3.4 Soil Sampling

The sampling programme will be undertaken with strict adherence to appropriate protocols to minimise the potential for cross-contamination between sampling locations. The following will be implemented while sampling:

- A ceramic spoon will be used to collect disturbed soil sampling, which will be cleaned between sampling;
- Where possible, a new set of sampling equipment will be used for each sampling event. If this is not possible then the equipment will be cleaned with a non-phosphate detergent between each sampling event. Larger equipment such as drilling rigs, drill rods, casings, will be steam cleaned where possible, or at a minimum pressure jet washed with water from the mains.
- The ceramic sampling spoon, sampling cores and other sampling equipments that come into direct contact with the samples will be decontaminated first with fresh water and Decon 90 detergent; rinsed with distilled water and air dried prior to the sampling and between samples;
- Clean latex gloves will be worn during sample collection and changed before each sample is collected to prevent cross contamination;
- The presence of volatile organic compounds (VOCs) from the samples will be screened for using a Photo-ionisation Detection (PID) meter. Where PID readings over 20ppm are recorded or where significant visual or olfactory evidence of contamination is present further laboratory analysis may be necessary;
- The thickness of any free product and groundwater if present at locations will be measured with an interface probe.

4.3.5 Groundwater Sampling

Groundwater samples will be collected if groundwater is encountered in the boreholes or trials pits. For boreholes, groundwater monitoring wells shall be installed in accordance with the instructions given by the land contamination specialist. *Figure 4.1, Annex B* presents a schematic diagram of groundwater monitoring well as reference.

After the development of the monitoring wells, the depth to water table at all monitoring wells will be measured in order to delineate the local groundwater table contours at the subject site. Well developments (approximately five well volumes) will be carried out to remove silt and drilling fluid residing from the wells. The wells will then be allowed to stand for a day to permit groundwater conditions to equilibrate.

Groundwater level and thickness of free product layer, if present, will be measured at each well before groundwater samples are taken. One groundwater sample will be collected from each well, using a disposable Teflon bailer.

Groundwater from trial pits should be collected using a decontaminated bucket. Water quality parameters should be recorded where the volume of water is great enough (priority should be placed on collecting a groundwater sampling for laboratory analysis).

4.3.6 Sample Size

Prior to sampling, the laboratory responsible for chemical analysis shall be consulted on the particular sample size and preservation procedures that are necessary for each chemical analysis. *Table 4.3* lists the recommended sample container types, sizes and preservation methods.

Table 4.3 Summary of Sample Container Type, Sizes and Preservation Method

Test Parameters	Container Type, Size and Preservation Method
Soil	
Metals	1 x 250ml glass jar with teflon-lined cap
VOCs / Petroleum Carbon Ranges	1 x 250ml glass jar with teflon-lined cap
SVOCs	1 x 250ml glass jar with teflon-lined cap
Groundwater	
Metals	1 x 250ml white plastic ($Cd(NO_3)_2$ and NaOH)
VOCs / Petroleum Carbon Ranges	2 x 40ml amber vials (hydrochloric acid)
SVOCs	1 x 1,000ml amber glass (none)

4.3.7 Sample Handling and Laboratory Analysis

All samples will be directly collected in laboratory supplied pre-cleaned sample bottles. Chain-of-custody documentation will be initiated immediately after samples are collected. Containers will be labelled in the field with the date, well designation, project name, time of collection and analysis to be performed. If the field work is expected to take several days and soil samples will be kept chilled with ice (at approximately 4°C) on-site

and during transport. Samples will be delivered to a Hong Kong Laboratory Accreditation Scheme (HOKLAS) accredited laboratory or an equivalent laboratory approved by the Engineer, for chemical analyses. All analysis shall be conducted according to the test methods accredited by HOKLAS or one of its Mutual Recognition Arrangement partners, along with laboratory internal Quality Assurance/Quality Control (QA/QC) procedures.

4.3.8 Quality Assurance /Quality Control Samples

QA/QC samples will be collected to allow an assessment of the quality of data collected. The QA/QC samples are listed below.

- One field duplicate sample per 20 samples will be collected for full suite analysis.
- One field blank per 20 samples will be analysed for full suite analysis to account for any potential cross-contamination;
- One equipment blank per 20 samples will be collected and analysed for full suite analysis to account for any potential cross-contamination. De-ionized water is poured onto decontaminated sampling equipment, and collected in appropriate sampling containers; and
- One trip blank per trip will be analysed for VOCs to account for any potential cross-contamination.

4.4 HEALTH AND SAFETY

A site health and safety plan shall be prepared before any site work is performed at the sites. The health and safety plan shall include:

- Instruction of works on work procedures, safe practices, emergency duties, and applicable regulations;
- Regularly scheduled meetings of the workers in which the possible hazards, problems of the job, and related safe practices are emphasized and discussed;
- Good housekeeping practices; and
- Availability of and instruction in the location, use and maintenance of personal protective equipment.

The specific safety measures to be implemented during the site work will depends on the nature and content of contamination, the site conditions and the regulations related to site safety requirements. As a pre-requisite, employee compensation insurance and third party insurance must be obtained for the workers and site work respectively. In general, the site work shall be performed with the following safety measures:

- Maintain proper safety devices, barriers to minimize hazards during performance of the work;
- Prohibit smoking and open flames and the carrying of matches and lighters;
- Develop and maintain a written emergency plan applicable to the Work and Site;
- Maintain equipment in good operating condition and have emergency and first aid equipment ready for immediate use, where applicable;
- Conduct equipment tests to ensure that equipment is properly placed and in good operating condition, and that workers are able to respond to emergency situations;
- Require all workers employed or retained by the Contractor, or a subcontractor, to at all time wear clothing suitable for existing work, weather and environmental conditions; and
- The personnel are required to wear respirator and gloves for vapour exposure protection, if necessary. Safety helmet and protective boots should be worn.

5 INTERPRETATION OF RESULTS

5.1 LAND USE SCENARIOS

With reference to the RBRG Guidance Manual, RBRG (Industrial) Criteria shall be adopted for the interpretation of results, by comparing with the RBRGs stipulated in Table 2.1 and Table 2.2 of the RBRG Guidance Manual. These Tables are extracted and attached as *Annex G*.

RBRGs were developed for four different post-restoration land use scenarios reflecting the typical physical settings in Hong Kong under which people could be exposed to contaminated soil and groundwater. It is anticipated both Site I and L shall be constructed as part of the railway facilities and therefore shall be classified as industrial land use after completion of construction work.

In addition to the RBRGs, Non-aqueous Phase Liquid (NAPL) screening criteria (soil saturation limits, C_{sat} in soil and solubility limits in groundwater) shall also be considered to determine whether a site requires further actions.

Table 5.1 presents the current and future land use classification of the Sites, as per the RBRG's Guidance Manual.

Table 5.1 Current and Future Land Uses of the Sites

Site #	Current Land Use	Corresponding Current RBRGs Land Use	Future Land Use (Operation Phase)	Corresponding Future RBRGs Land Use
Site M	Open Area	Industrial	Railways	Industrial
Site N1	Vehicle Parking and Repairing	Industrial	Railways	Industrial
Site N2	Dwellings and pigeon farming	Rural Residential	Railways	Industrial
Site N3	Vehicle Parking and Repairing	Industrial	Railways	Industrial
Site N4	Construction Material Storage	Industrial	Railways	Industrial
Site O	Vehicle Parking and Repairing	Industrial	Railways	Industrial
Site P	Abandoned Factory	Industrial	Railways	Industrial
Site Q	Vehicle Parking and Repairing	Industrial	Railways	Industrial
Site R	Vehicle Parking and Repairing	Industrial	Railways	Industrial

6 CONCLUSION AND RECOMMENDATION

6.1 CONCLUSION

This Revised CAP proposes an investigation programme which includes 27 sampling locations at Site M, N1, N3, N4, O, P, Q and R. After completion of the Stage 2 Site Investigation, a supplementary CAR corresponding to this Revised CAP will be submitted to EPD for endorsement.

6.2 RECOMMENDATIONS

The supplementary CAR shall report findings of the intrusive site investigation works during Stage 1 and Stage 2 which includes the detailed methodology of site investigation, assessment criteria, on-site observations and the analytical results. The supplementary CAR will also establish whether potential exposure pathways exist between the contaminants identified and potential sensitive receptors during the construction and operation phases of the project. The analytical results will be compared against the RBRGs (Industrial) standards.

If land contamination is confirmed in Site Investigation, the supplementary CAR will be supported by a supplementary RAP and will be submitted to EPD for approval. The supplementary RAP will describe contamination types, concentrations and extent, examine remedial options of soil and/or groundwater treatment, and propose any further site investigation required during the execution of the remediation work. Additional sampling locations shall be considered to confirm the extent of contamination zone and the area shall be demarcated as a "no-works area". The demarcated contaminated zone shall be cleaned up in accordance with the approved supplementary RAP and no works shall be carried out within the demarcated contaminated zone until removal of the contamination soil/groundwater and completion of the closure assessment.

A Technical Note summarizing the findings of the closure assessment shall be prepared and submitted to EPD for endorsement. Upon completion of remediation work (if necessary), a Remediation Report (RR) will be prepared and submitted to EPD to demonstrate that the decontamination work is adequate and is carried out in accordance with the supplementary CAR and supplementary RAP.

Annex A

MTRC's Correspondence to EPD and Demarcations of Three Works Areas within SSS Dated 11 April 2011 (provided by MTRC)

MTR Corporation Limited
香港鐵路有限公司
www.mtr.com.hk

Environmental Protection Department
28th Floor, Southorn Centre
130 Hennessy Road
Wan Chai, Hong Kong

Our ref: C806-COR-HSD-ENV-020880

11 April 2011

Attn: Mr C C Chiu

By Fax and Hand

Dear Mr Chiu,

Dear Mr Chiu,

Hong Kong Section of Guangzhou-Shenzhen Hong Kong Express Rail Link (XRL)
Environmental Permit (No.EP-349/2009/B)
Revised Contamination Assessment Plan for Shek Kong Stabling Sidings (SSS)

Further to our meeting on 6 April 2011, we would like to advise you on the current demarcation of works areas within the Shek Kong Stabling Sidings.

Please be advised that construction works within the SSS works area are to be undertaken by two contracts, namely Contract 823A and Contract 823B. Due to the contractual arrangement, land resumption progress and the latest construction programme, the SSS works area is sub-divided into 3 works areas. The demarcations of the works areas are as follows (please also refer to attached drawing):

Works Area for 823A
Works Area I (Orange)
Works Area II (Blue)

Works Area for 823B
Works Area III (Yellow)

Please be advised that Stage 2 of the land contamination assessment on the hotspots within works areas I, II, and III is being carried. The relevant land contamination submissions (i.e. revised CAP, supplementary CAR/RAP) for the respective works areas would be submitted separately for EPD's individual endorsement.

In addition, please be advised that as the findings of Stage 1 of the land contamination assessment presented in the approved CAP/CAR/RAP have been already presented in the approved EIA report. The proposed remediation works will be carried out in accordance with the approved RAP and EIA Report.

I would be grateful if you would take into consideration of above proposal in the process of vetting the revised CAP and subsequent supplementary CAR and RAP.

MTR Headquarters Building, Telford Plaza, Kowloon Bay,
Kowloon, Hong Kong. GPO Box 9916, Hong Kong
Tel (852) 2993 2111 Fax (852) 2798 8822

香港九龍灣德福廣場港鐵總部大樓
香港郵政總局信箱9916號
電話 (852) 2993 2111 傳真 (852) 2798 8822

Direct Line: 2688-1179
Direct Fax: 2145-4269

For any queries regarding the above, please feel free to contact our Natalie Ip (Tel: 2688 1260) or Michelle Chau (Tel:2688 1954).

Yours sincerely,

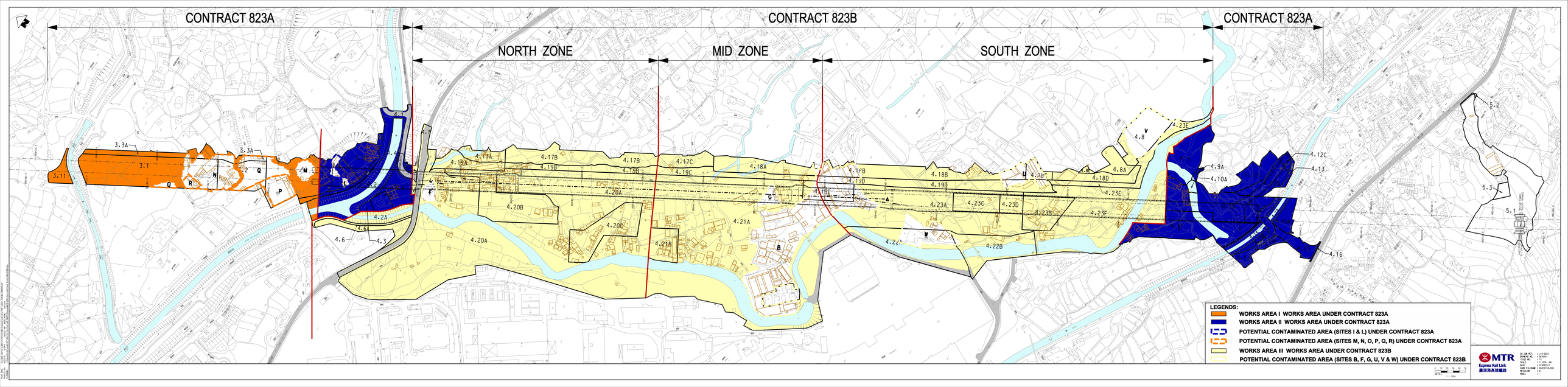
Richard Kwan
Manager - Environmental

Encl.

c.c. Mott MacDonald (Attn: Dr Anne Kerr)
THB – Fletch Chan (Fax: 2136-8016)
RDO – Patrick Lai (Fax: 2761-1508)
MTR, Construction Manager – Andy Fok
MTR, Senior Construction Engineer – Thomas Li
MTR, Senior Construction Engineer – Edmond So
MTR, Senior Construction Engineer – Dennis Tsu

RK/HL/NI/MC/wc

Direct Line: 2688-1179
Direct Fax: 2145-4269


CONTRACT 823A
CONTRACT 823B
CONTRACT 823A
NORTH ZONE
MID ZONE
SOUTH ZONE
LEGENDS:
WORKS AREA I WORKS AREA UNDER CONTRACT 823A
WORKS AREA II WORKS AREA UNDER CONTRACT 823A
POTENTIAL CONTAMINATED AREA (SITES I & L) UNDER CONTRACT 823A
POTENTIAL CONTAMINATED AREA (SITES M, N, O, P, Q, R) UNDER CONTRACT 823A
WORKS AREA III WORKS AREA UNDER CONTRACT 823B
POTENTIAL CONTAMINATED AREA (SITES B, F, G, U, V & W) UNDER CONTRACT 823B
MTR
Express Rail Link
廣深港高速鐵路

Annex B

Figures

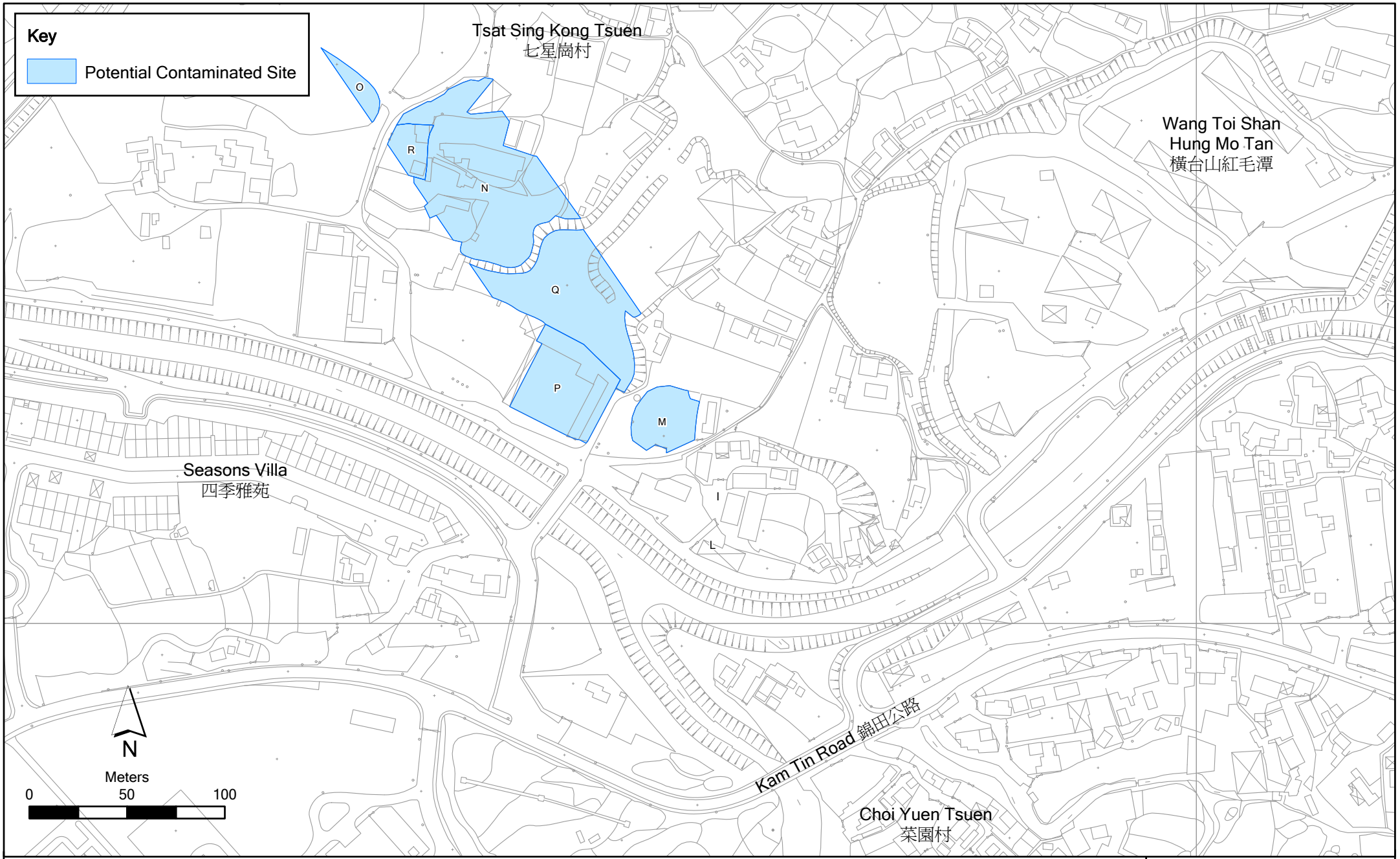


Figure 1.2

Locations of Site M, N, O, P, Q and R

The Express Rail Link Contract 823A-
Tai Kong Po to Tse Uk Tsuen Tunnels (XRL 823A)

File: 0125309_Contaminated site_MNOPQR.mxd
Date: 30/03/2011

Environmental Resources Management

ERM

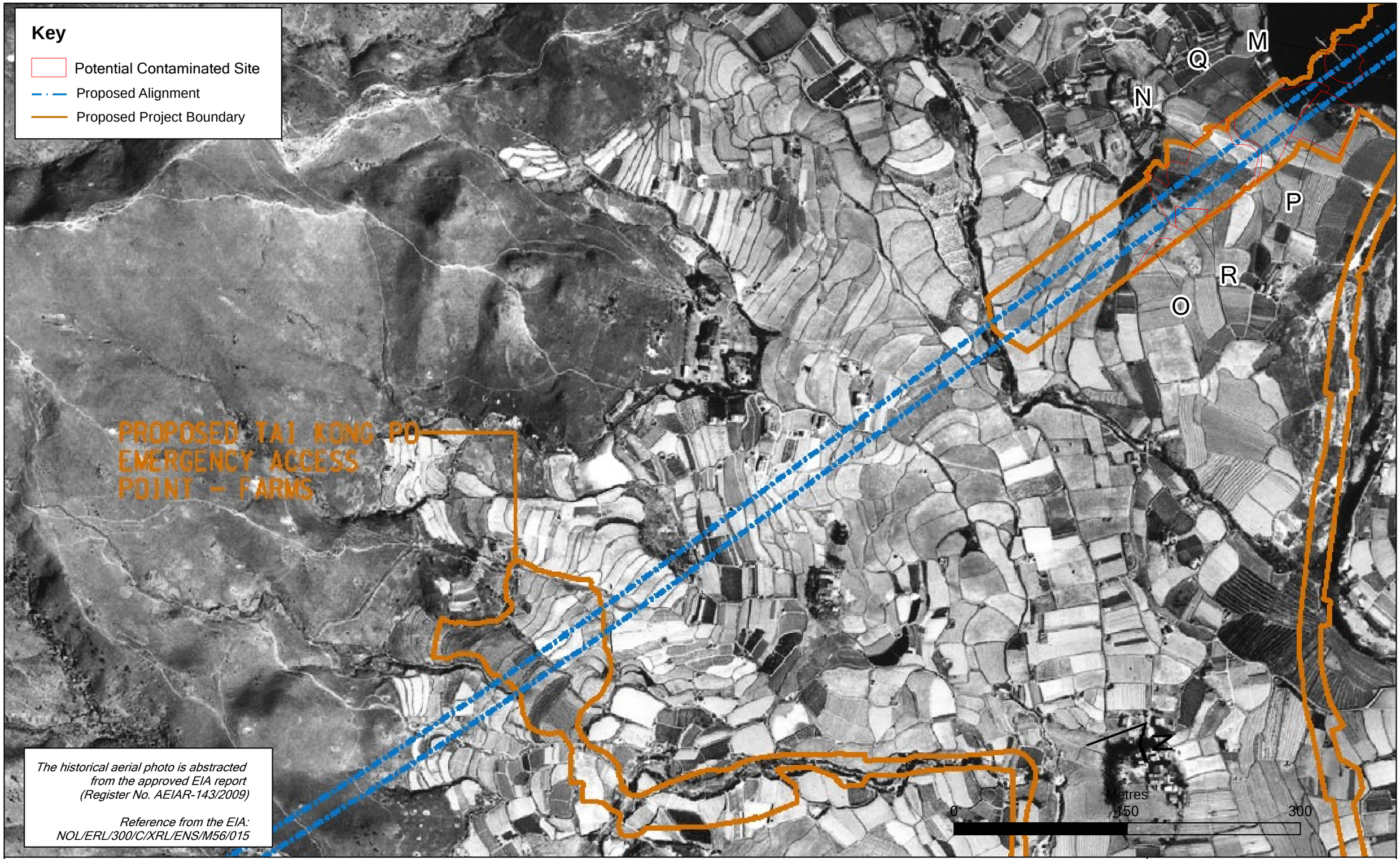


Figure 3.1a

Historical Aerial Photo of Shek Kong Stabling Sidings in 1963

The Express Rail Link Contract 823A –
Tai Kong Po to Tse Uk Tsuen Tunnels (XRL 823A)

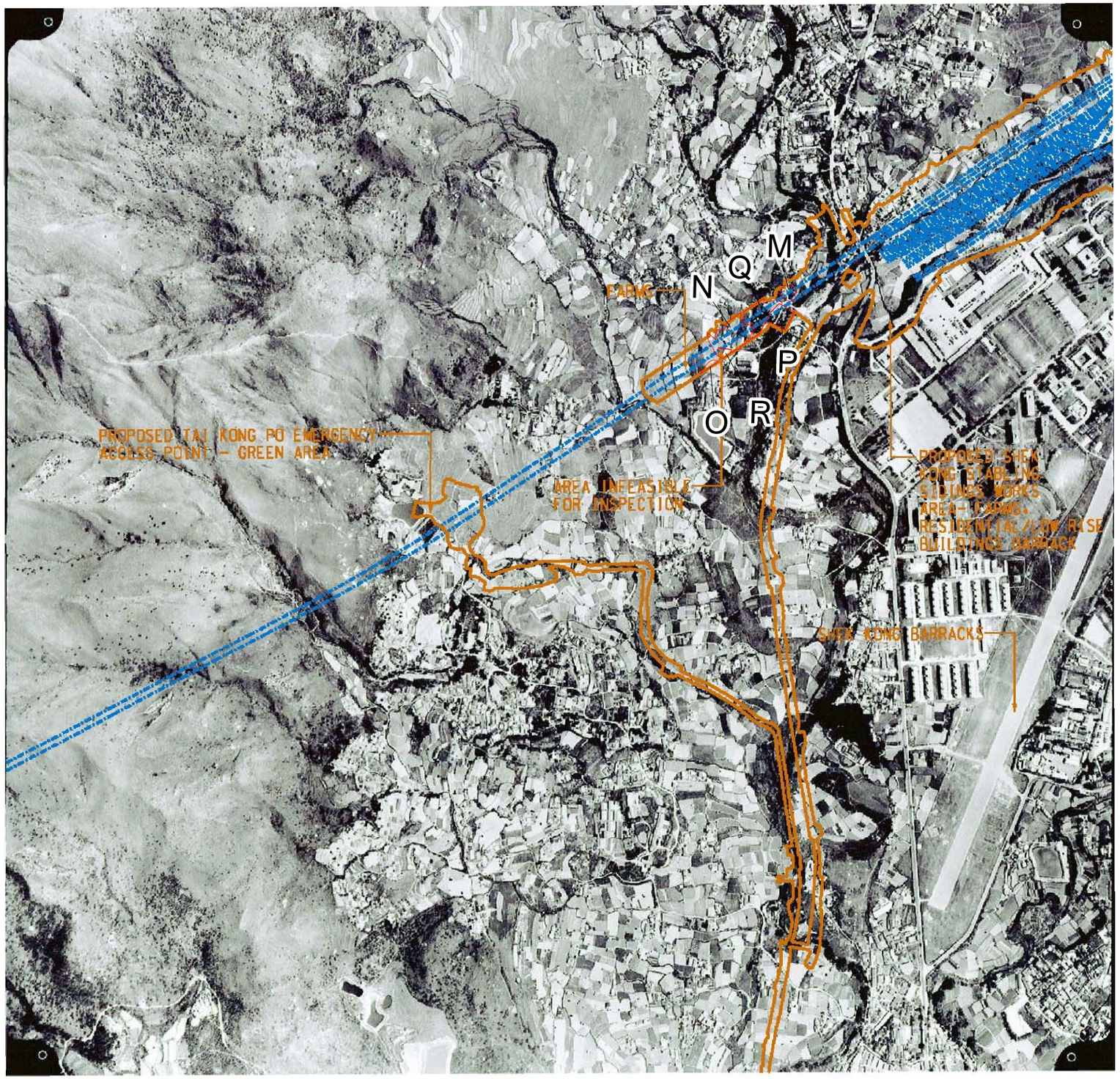
File: 0125309_site_old photos_4.mxd
Date: 31/03/2011

Environmental Resources Management

ERM

Key

- Potential Contaminated Site
- Proposed Alignment
- Proposed Project Boundary



The historical aerial photo is abstracted from the approved EIA report (Register No. AEIAR-143/2009) Reference from the EIA: NOL/ERL/300/C/XRL/ENS/M56/016

N

Metres

0 150 300 600

Figure 3.1b

Historical Aerial Photo of Shek Kong Stabling Sidings in 1973

The Express Rail Link Contract 823A –
Tai Kong Po to Tse Uk Tsuen Tunnels (XRL 823A)

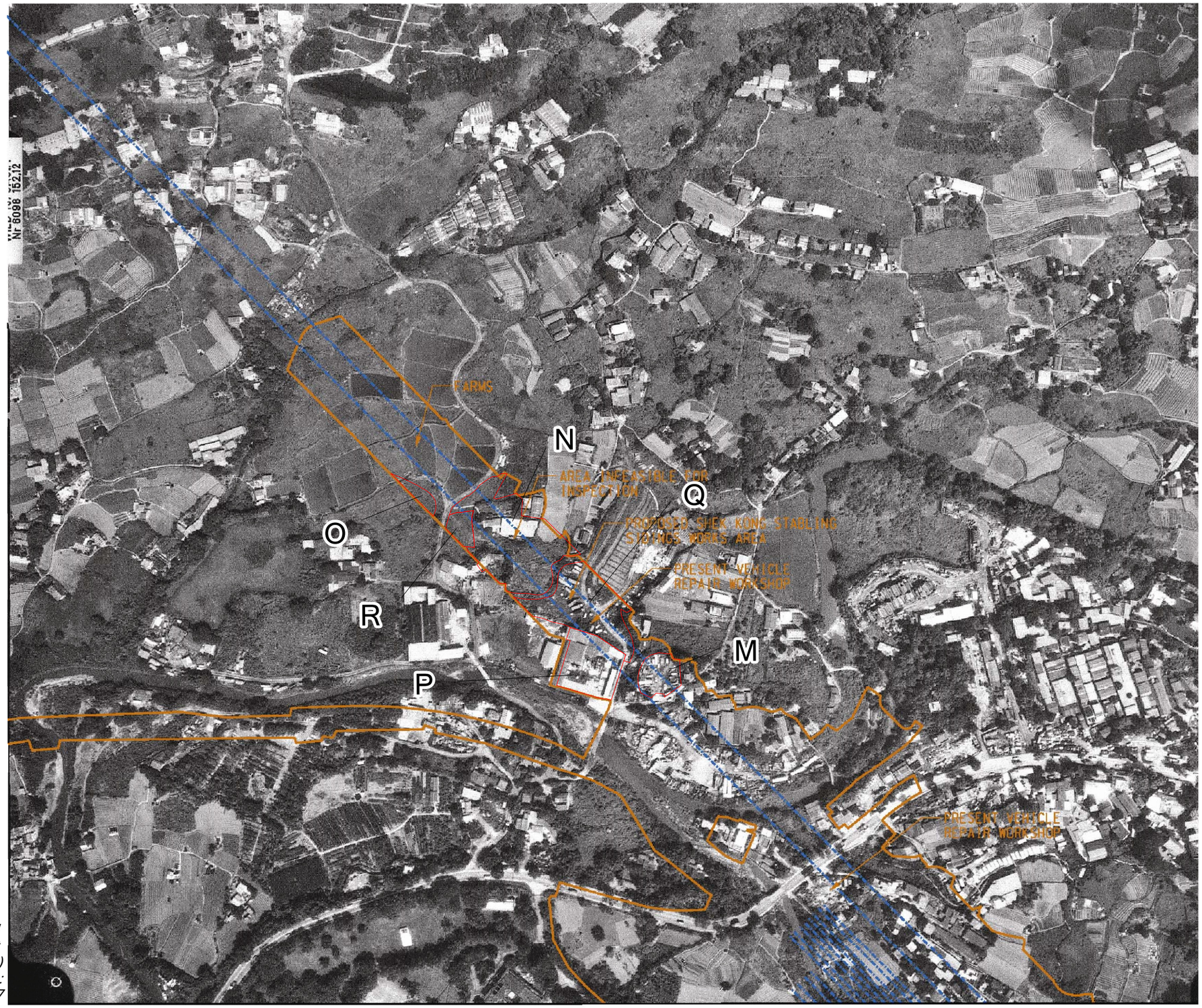
File: 0125309_site_old photos_a.mxd
Date: 31/03/2011

Environmental Resources Management

ERM

Key

- Potential Contaminated Site
- Proposed Alignment
- Proposed Project Boundary



N

Metres

0 100 200

The historical aerial photo is abstracted from the approved EIA report (Register No. AEIAR-143/2009) Reference from the EIA: NOL/ERL/300/C/XRL/ENS/M56/017

Figure 3.1c

Historical Aerial Photo of Shek Kong Stabling Sidings in 1990

The Express Rail Link Contract 823A –
Tai Kong Po to Tse Uk Tsuen Tunnels (XRL 823A)

File: 0125309_site_old photos_2a.mxd
Date: 31/03/2011

Environmental Resources Management

ERM

Key

- Potential Contaminated Site
- Proposed Alignment
- Proposed Project Boundary



The historical aerial photo is abstracted from the approved EIA report (Register No. AEIAR-143/2009) Reference from the EIA: NOL/ERL/300/C/XRL/ENS/M56/018

N

Metres

0 150 300

Figure 3.1d

Historical Aerial Photo of Shek Kong Stabling Sidings in 2000

The Express Rail Link Contract 823A –
Tai Kong Po to Tse Uk Tsuen Tunnels (XRL 823A)

File: 0125309_site_old photos_3a.mxd
Date: 31/03/2011

Environmental Resources Management

ERM

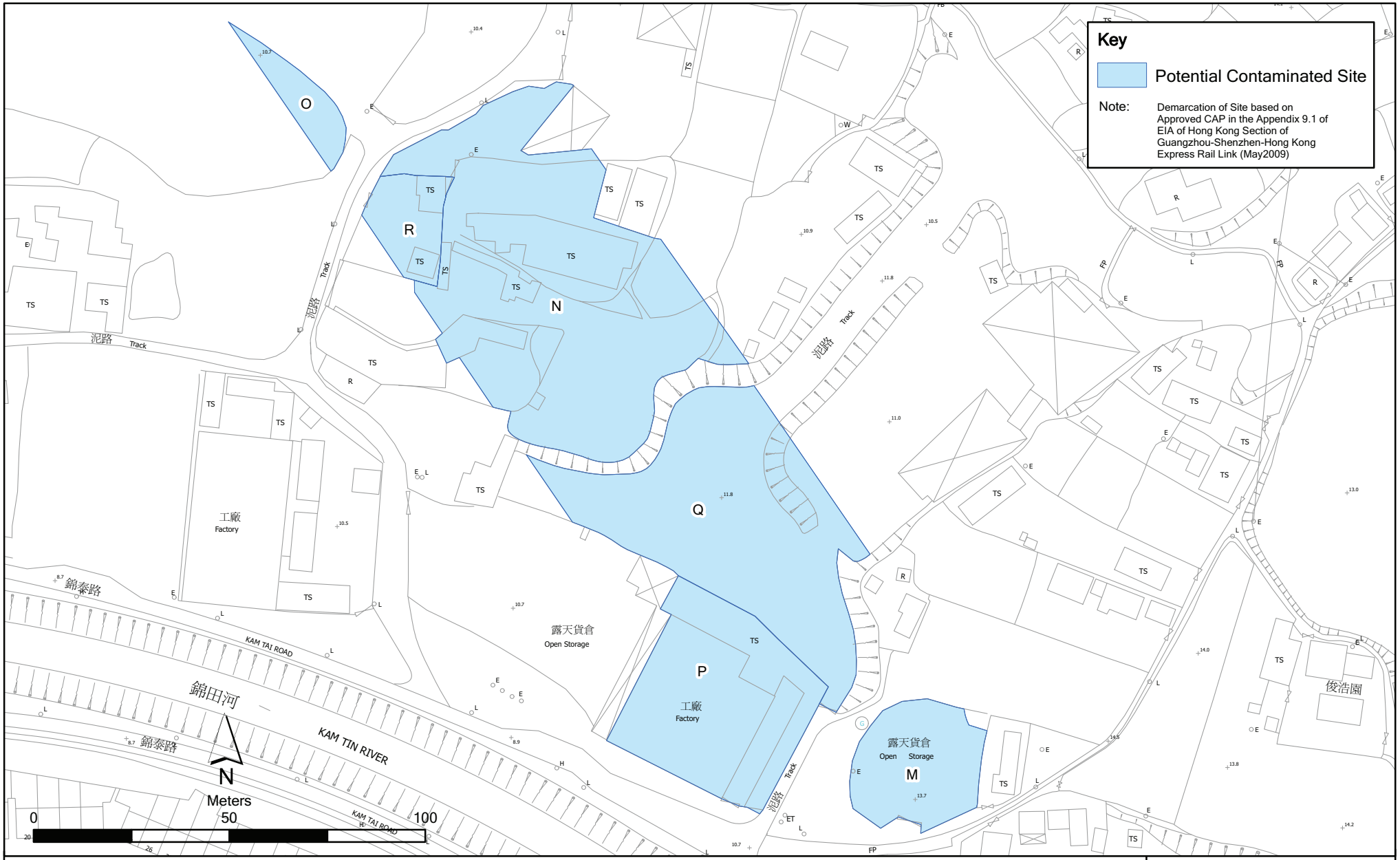


Figure 3.2a

Original Demarcation of Sites M, N, O, P, Q and R

The Express Rail Link Contract 823A-
Tai Kong Po to Tse Uk Tsuen Tunnels (XRL 823A)

File: 0125309_Demarcation site_MNOPQR.mxd
Date: 30/03/2011

Environmental Resources Management

ERM

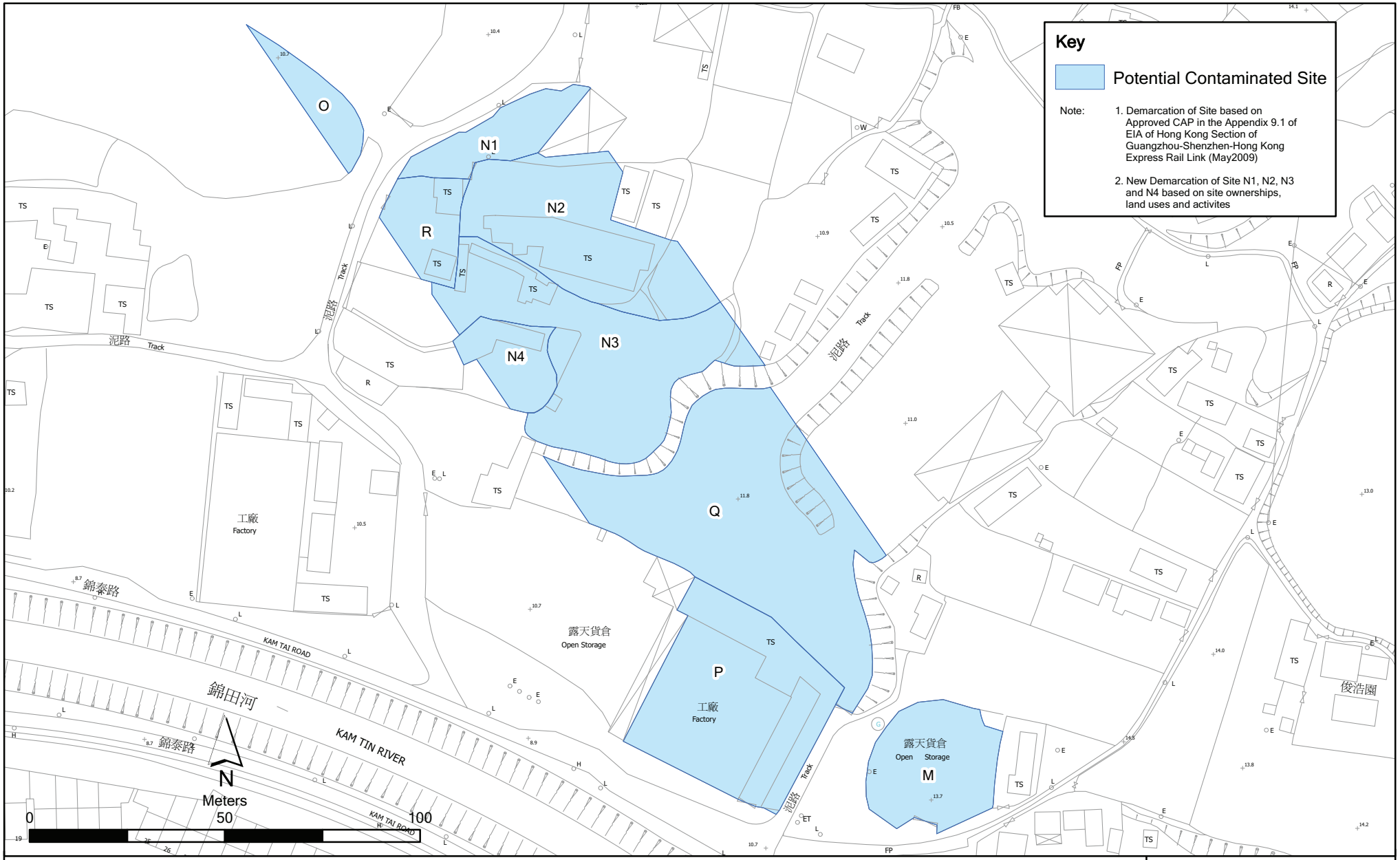


Figure 3.2b

Updated Demarcation of Sites M, N1, N2, N3, N4, O, P, Q and R (Base Map)

The Express Rail Link Contract 823A-
Tai Kong Po to Tse Uk Tsuen Tunnels (XRL 823A)

File: 0125309_Updated Demarcation site_MNOPQR.mxd
Date: 30/03/2011

Environmental Resources Management

ERM



Figure 3.2c

Updated Demarcation of Sites M, N1, N2, N3, N4, O, P, Q and R (Aerial Photograph)

The Express Rail Link Contract 823A-
Tai Kong Po to Tse Uk Tsuen Tunnels (XRL 823A)

File: 0125309_Updated Demarcation site_MNOPQR_aerial.mxd
Date: 30/03/2011

Environmental Resources Management

ERM

Key

- Boundary of Usage
- Proposed Supplementary Sampling Location
- Completed Borehole During EIA Stage
- Potential Contaminated Site

Site M

M-01
M-02
M-03
M-04
M-05
M-06
M-07



Open Area



Open Area



Open Area

Metres
0 5 10 20

Borehole ID	Coordinate	Hotspots Identified or Supplementary Locations	Soil		Groundwater	
			Sample Depths (m below base of concrete, m bbc)	Parameters to be Analysed	Sample Depths (m)	Parameters to be Analysed
M-05	E 826739.464 N 833702.205	Supplementary	0.5, 1.5, 3.0, 4.5, 6.0	Cadmium, Chromium III, Chromium VI, Copper, Mercury, Nickel, Lead, Zinc, Petroleum Carbon Ranges, VOCs, SVOCs, PCB, Cyanide	At static groundwater level, if encountered	Mercury, Petroleum Carbon Ranges, VOCs, SVOCs, PCB
M-06	E 826718.451 N 833702.516	Supplementary				
M-07	E 826729.061 N 833702.516	Supplementary				

Figure 3.3a

Proposed Supplementary Site Investigation Locations at Site M

The Express Rail Link Contract 823A –
Tai Kong Po to Tse Uk Tsuen Tunnels (XRL 823A)

FILE: 0125309e
DATE: 13/01/2011

Environmental Resources Management

ERM

Key

- Boundary of Usage
- Supplementary Sampling Location
- Hotspot
- Potential Contaminated Site
- Trees

Site O

Site N1

Site N2

Site N3

Site N4

Site R

O-01
O-02
N1-01
N1-02
N3-01
N3-02
N3-03
N3-04
N3-05
N3-06
N4-01
R-01
R-02
R-03
R-04

Access Road



Photo O-1: Concrete Paved Area with New Hoarding



Photo R-1: Vehicle Repairing Workshop



Photo R-2: Waste Oil Storage Area



Photo N1-1: Previous Vehicle Repairing Workshop



Photo N2-1: Village House



Photo N2-1: Abandoned Pigeon Nursery House



Photo N3-1: Previous Vehicle Repairing Workshop



Photo N3-2: Previous Vehicle Repairing Workshop



Photo N3-3: Previous Vehicle Repairing Workshop



Photo N4-1: Construction Material Storage Area



Photo N4-2: Previous Vehicle Repairing Workshop

Metres

0 10 20 40

Borehole ID	Coordinate	Hotspots Identified or Supplementary Locations	Soil		Groundwater	
			Sample Depths (m below base of concrete, m bbc)	Parameters to be Analysed	Sample Depths (m)	Parameters to be Analysed
N1-01	E 826609.655 N 833862.621	Vehicle Repairing Workshop	0.5, 1.5, 3.0, 4.5, 6.0	Lead, Chromium III, Chromium VI, Copper, Zinc, Petroleum Carbon Ranges, VOCs, SVOCs	At static groundwater level, if encountered	Petroleum Carbon Ranges, VOCs, SVOCs, PCB
N1-02	E 826625.412 N 833871.156	Vehicle Repairing Workshop				
N3-01	E 826617.096 N 833829.138	Vehicle Repairing Workshop				
N3-02	E 826634.603 N 833821.697	Vehicle Repairing Workshop				
N3-03	E 826637.504 N 833804.024	Vehicle Repairing Workshop				
N3-04	E 826654.375 N 833817.198	Vehicle Repairing Workshop				
N3-05	E 826657.580 N 833803.333	Vehicle Repairing Workshop				
N3-06	E 826647.675 N 833792.747	Vehicle Repairing Workshop				
N4-01	E 826619.284 N 833806.378	Supplementary				
O-01	E 826578.901 N 833865.860	Supplementary	0.5, 1.5, 3.0, 4.5, 6.0	Lead, Chromium III, Chromium VI, Copper, Zinc, Petroleum Carbon Ranges, VOCs, SVOCs	At static groundwater level, if encountered	Petroleum Carbon Ranges, VOCs, SVOCs
O-02	E 826560.617 N 833885.617	Supplementary				
R-01	E 826588.824 N 833845.817	Waste Container & Storage Area	0.5, 1.5, 3.0, 4.5, 6.0	Lead, Chromium III, Chromium VI, Copper, Zinc, Petroleum Carbon Ranges, VOCs, SVOCs	At static groundwater level, if encountered	Petroleum Carbon Ranges, VOCs, SVOCs
R-02	E 826602.217 N 833832.685	Vehicle Repairing Area				
R-03	E 826596.965 N 833837.098	Supplementary				
R-04	E 826596.807 N 833852.277	Supplementary				

Figure 3.3b

Hotspots and Supplementary Site Investigation Locations at Site N1, N2, N3, N4, O and R

The Express Rail Link Contract 823A –
Tai Kong Po to Tse Uk Tsuen Tunnels (XRL 823A)

FILE: 0125309e2
DATE: 16/06/2011

Environmental Resources Management

ERM

Key

- Boundary of Usage
- Supplementary Sampling Location
- Proposed Hotspots by Borehole Drilling
- # Proposed Hotspots by Trial Pit Excavation
- Completed Borehole During EIA Stage
- Potential Contaminated Site

Site Q

Q-07
Q-03
Q-02
Q-05
Q-04
Q-01
Q-06

Site P

P-05
P-06
P-03 #
P-08
P-02
P-04 #
P-09
P-10
P-07 #
P-01



Photo Q-2: Access Road



Photo Q-3: Open Area



Photo Q-1: Access Road



Photo P-5: Previous Oil Drums Storage Area



Photo P-3: Previous Oil Drums Storage Room



Photo P-4: Suspected Machine Room, previously used as Oil Drums Storage



Photo P-8: Aboveground Storage Tanks



Photo P-1: Parking Area



Photo P-6: Previous Oil Drums Stoage Area



Photo P-7: Abandoned Factory used as Storage Area of Construction Material



Photo P-2: Transformer Room

Metres
0 10 20 40

Sampling Location ID	Coordinate	Hotspots Identified or Supplementary Locations	Soil		Groundwater	
			Sample Depths (m below base of concrete, m bbc)	Parameters to be Analysed	Sample Depths (m)	Parameters to be Analysed
P-01	E 826685.371 N 833701.728	Parking Area	0.5, 1.5, 3.0, 4.5, 6.0 (for boreholes) 0.5, 1.5, 3.0 (for trial pits)	Cadmium, Chromium III, Chromium VI, Copper, Mercury, Nickel, Lead, Zinc, Petroleum Carbon Ranges, VOCs, SVOCs, PCBs, Cyanide	For boreholes, at static groundwater level, if encountered. For trial pits, upon encountering of groundwater.	Mercury, Petroleum Carbon Ranges, VOCs, SVOCs, PCBs
P-02	E 826692.860 N 833717.105	Parking Area				
P-03	E 826686.700 N 833727.918	Storage Area (oil drums)				
P-04	E 826683.820 N 833714.535	Storage Area (oil drums)				
P-05	E 826674.868 N 833740.503	Storage Area (oil drums)				
P-06	E 826664.986 N 833734.077	Storage Area (oil drums)				
P-07	E 826667.113 N 833707.001	Storage Area (oil drums)				
P-08	E 826701.238 N833721.428	AST				
P-09	E 826700.029 N833718.929	AST				
P-10	E 826698.819 N833716.430	AST				
Q-06	E 826701.031 N 833748.541	Supplementary	0.5, 1.5, 3.0, 4.5, 6.0	Lead, Chromium III, Chromium VI, Copper, Zinc, Petroleum Carbon Ranges, VOCs, SVOCs	At static groundwater level, if encountered.	Petroleum Carbon Ranges, VOCs, SVOCs
Q-07	E 826681.372 N 833792.813	Supplementary				

Figure 3.3c

Hotspots and Supplementary Site Investigation Locations at Site P and Q

The Express Rail Link Contract 823A –
Tai Kong Po to Tse Uk Tsuen Tunnels (XRL 823A)

FILE: 0125309e4
DATE: 22/06/2011

Environmental Resources Management

ERM



Figure 3.4

Aerial Photo in Year 2008 Indicating the Proposed Hotspot Locations for Site N

The Express Rail Link Contract 823A-
Tai Kong Po to Tse Uk Tsuen Tunnels (XRL 823A)

File: 0125309_Contaminated site_ sampling point_SiteN.mxd
Date: 31/03/2011

Environmental Resources Management

ERM

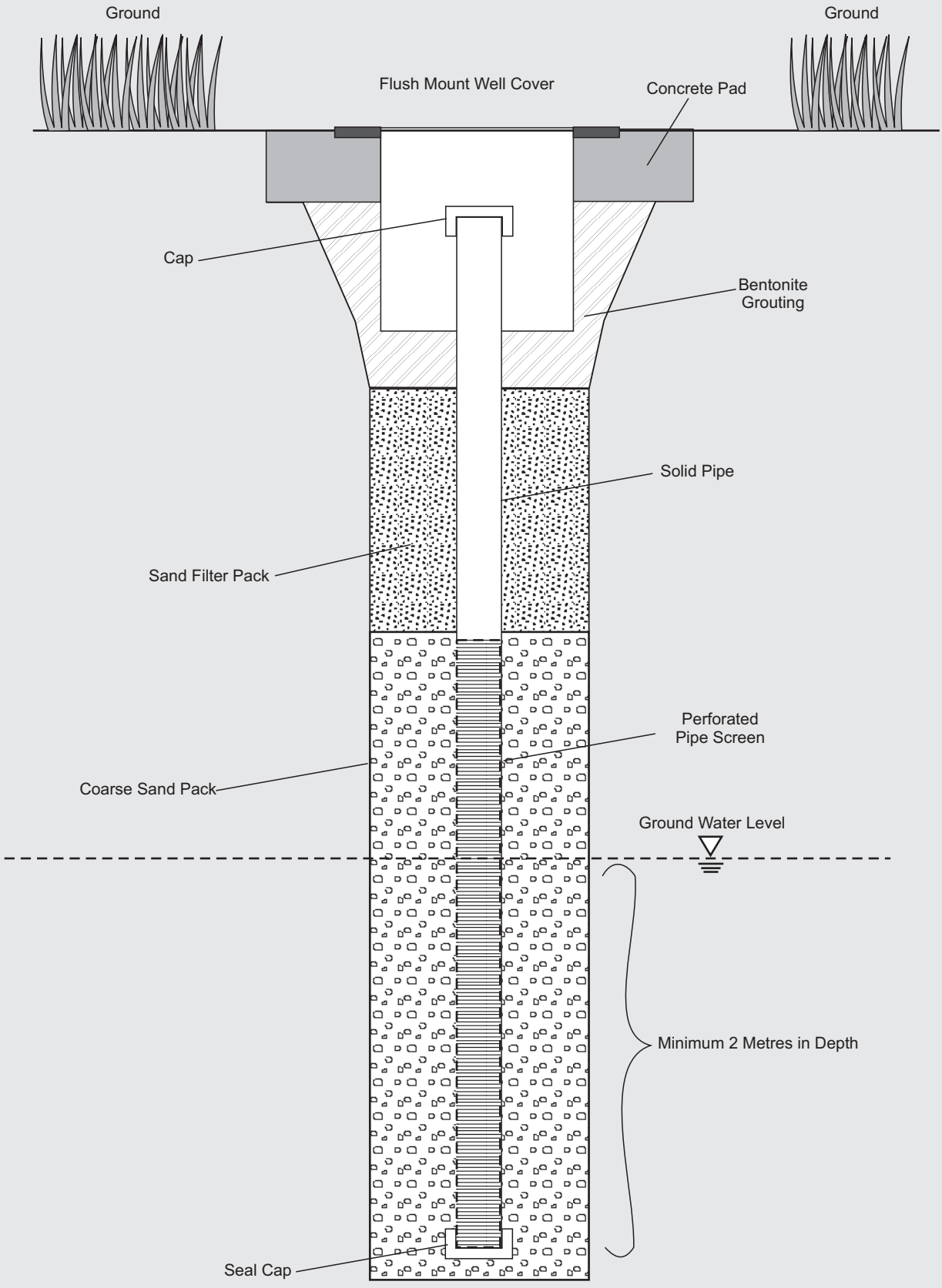


Figure 4.1 Schematic Drawing of Groundwater Monitoring Well

FILE: 0125309b
DATE: 30/11/2010

Environmental Resources Management

ERM

Annex C

Standard Form 3.1

Appendix E 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:_____XRL Alignment ___

Current Use

ID	Type of facility/business	On-site property land use	Date began[1]^	Description of business process/primary products	Owner or Occupier	Approximately size of on-site property	Off-site property affected? ___ Yes ____ No
A	Recycling	Industrial	-	Recycling*	-	5,000m^2	No
C	Vehicle Repair Workshop	Industrial		Truck parking and repairing*	-	3,000 m^2	No
D	Vehicle Repair Workshop	Industrial	-	Truck parking and car repairing	招商局	7,500m^2	No
E	Vehicle Repair Workshop	Industrial	-	Truck parking, car washing and painting	泰泉	6,000m^2	No
F	Vehicle Repair Workshop	Industrial	>10 years	Fork lift truck parking and repairing	東和機械	900m^2	No
G	Scrap Yard	Industrial	~2005	Scrap yard	-	800m^2	No
H	Scrap Yard	Industrial	-	Scrap yard	-	2,000m^2	No
I	Vehicle Repair Workshop	Industrial	-	Car repairing*	-	500m^2	No
J	Container Yard	Industrial	-	Container Storage	-	25,000m^2	No
K	Open Area	Vacant	-	Vacant (affected by operation of Fesso's Building nearby)	-	300 m^2	No
L	Vehicle Repair Workshop	Industrial	3 years	Vehicle maintenance	-	200m^2	No
M	Open Area	Vacated with an above ground tank of unknown content	-	Unknown	-	1,000 m^2	No
O	Excavator Parking Area	Industrial	-	Excavator parking and maintenance*	-	300m^2	No
P	Factory	Industrial	-	Wood and plastic pipe storage	-	1,500m^2	No
Q	Vehicle Repair Workshop	Industrial	-	Vehicle maintenance	-	2,000m^2	No
R	Vehicle Repair Workshop	Industrial	-	Vehicle maintenance	-	400m^2	No
S	Vehicle Repair Workshop	Industrial	2 years	Vehicle maintenance	-	250m^2	No
T	Car Park	Industrial	-	Car parking	-	4000m^2	No

*** The business process within the site is based on general observation from the surrounding.**

[1] Specify the approximate year in which the current use of the on-site property began

Appendix E 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

^ The date began for the business process is based on information provided by site representative.

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[2]*	Date ended[3]	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
A, C	Industrial	Industrial	1992	-	Open storage, recycling industry and garages	-	-	No
D, E	Residential	Rural Residential	1945	1989	Farmlands, ponds and villages	-	-	No
F-G,	Industrial	Industrial/ Vacant	1974	-	Open storage, garages, car park, scrap yard	-	-	No
L-M, O-S	Residential	Rural Residential	1949	1970	Farmlands, ponds and villages	-	-	No
H	Industrial	Industrial	1976	-	Godown, storage area, car park and scrap yard	-	-	No
	Residential	Rural Residential	1963	1967	Farmlands, ponds and villages	-	-	No
J	Industrial	Industrial	2002	-	Open storage, car park area, container yard	-	-	No
K	Public Facilities	Vacant	1992	-	Parks, roads, vegetation	-	-	No
T	Industrial	Industrial	1991	-	Car park	-	-	No
	Industrial	Industrial	1945		Oil Depot	-	-	No

*** Based on aerial photograph reviewed.**

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 use4	Description of business process/primary products	Owner or Occupier	Approximately size of on-site property
A,C to M, O to T	Railway	Industrial	Railway	MTRC	60,650m^2

[2] Specify the approximate year in which the past use of the on-site property began
[3] Specify the approximate year in which the past use of the on-site property ended
[4] Specify all applicable land use including urban residential, rural residential, industrial or public parks

ANNEX C – UPDATED STANDARD FORM 3.1

Summary of On-Site Landuse adopted from Guidance Manual of Use of Risk-based Remediation Goals for Contaminated Land Management - Current Use

ID	Type of facility/business	On-site property land use	Date Began	Description of business process/ primary products	Owner or Occupier	Approximately size of on-site property #	Off-site property affected? Yes/ No	Reference figures and photos
M *	Open Area	Industrial	Over 15 years ago	Vehicle parking and material storage (including an empty AST)	Mr Fung Kwok Wing	1,000 m^2	No	*Figure 3.2a, Annex B*
N1*	Vehicle Repairs Workshop	Industrial	12 years ago	Vehicle maintenance	Mr Tang Kwun Yau	Vehicle repair area – 100 m^2 Parking area –400 m^2	No	*Figure 3.2b, Annex B*
N2*	Village House and Pigeon Nursery House	Rural Residential Agricultural	30 years ago	Pigeon nursery	Mr Chan Pok Shum	1,650 m^2	No	*Figure 3.2b, Annex B*
N3*	Vehicle Repairs Workshop	Industrial	5-6 years ago	Vehicle repair and parking	Ms Ng Mei To	Vehicle repair area – 800 m^2 Parking area and access road – 1,050 m^2	No	*Figure 3.2b, Annex B*
N4*	Construction Material Storage Area	Industrial	4 years ago	Construction material storage	Mr Tang Kwun Yau	Village house – 150 m^2 Storage area – 100 m^2 Tree – 250 m^2	No	*Figure 3.2b, Annex B*
O *	Excavator Parking Area (Vacant)	Industrial	2 years ago	Parking (Vacant)	China Auction (中國拍賣)	300 m^2	No	*Figure 3.2b, Annex B*
P *	Factory	Industrial	Unknown	Wood and plastic pipe storage	WoFoo Plastic (和富塑膠)	1,500 m^2	No	*Figure 3.2c, Annex B*
Q *	Vehicle Repair Workshop	Industrial	Over 15 years ago	Vehicle maintenance	Man Cheong Vehicle (萬昌汽車)	2,000 m^2	No	*Figure 3.2c, Annex B*
R *	Vehicle Repair Workshop	Industrial	12 years ago	Vehicle maintenance	Ah Tai (occupier)	400 m^2	No	*Figure 3.2b, Annex B*

Note:

* Updated with new desktop review of historical information and findings of site inspection after EIA stage.

Approximate size of on-site property estimated by site owner, on-site observation and measurement on map.

Summary of On-Site Landuse adopted from Guidance Manual of Use of Risk-based Remediation Goals for Contaminated Land Management – Past Use

ID	Type of facility/business	On-site property land use	Date Began	Description of business process/ primary products	Owner or Occupier	Approximately size of on-site property	Off-site property affected? Yes/ No	Reference figures and photos
M	Residential	Rural Residential	1949	Farmlands, ponds and villages	-	-	No	-
N1 *	Residential	Rural Residential	1949	Farmlands, ponds and villages	-	-	No	-
N2 *	Residential	Rural Residential	1949	Farmlands, ponds and villages	-	-	No	-
N3 *	Residential	Rural Residential	1949	Farmlands, ponds and villages	-	-	No	-
N4 *	Residential	Rural Residential	1949	Farmlands, ponds and villages	-	-	No	-
O *	Residential	Rural Residential	1949	Farmlands, ponds and villages	-	-	No	-
P	Residential	Rural Residential	1949	Farmlands, ponds and villages	-	-	No	-
Q	Residential	Rural Residential	1949	Farmlands, ponds and villages	-	-	No	-
R	Residential	Rural Residential	1949	Farmlands, ponds and villages	-	-	No	-

Note:
* Updated with new desktop review of historical information and findings of site inspection after EIA stage.

Annex D

Appendix F and G of the Approved CAP in EIA Report

Appendix F

Letters from Fire Services Department

消 防 處
香港九龍尖沙咀東部康莊道 1 號
消防總部大廈

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

本處檔號 **OUR REF.** : (48) in FSD/GR AI 4/07 II
來函檔號 **YOUR REF.** : 60046742/C/pohm812024
電子郵件 **E-mail:** : hkfsdenq@hkfsd.gov.hk
圖文傳真 **FAX:** : 852-2739 5879
電　話 **TEL NO.** : 852-2733 7741

ENSR Asia (HK) Ltd.
Received 15 JAN 2009
Reg. No. 90115-07
File No. 60046742
M Chan AYK FCCM TYUT / JLAM Sign Off
Env. Consultant TKLA, PoHM
Others
Copied To
Reply Date

12 January 2009

ENSR Asia (HK) Ltd.
11/F, Grand Central Plaza, Tower 2
138 Shatin Rural Committee Road,
Shatin, New Territories,
Hong Kong

Dear Sir,

GuangZhou-Shenzhen-Hong Kong Express Rail Link (XRL) – Environmental Impact Assessment

Request for Information of Dangerous Goods

I refer to your letter regarding the captioned subject and the following information is enclosed for your reference:-

1. There is no dangerous goods licence issued to the site under study.

2. According to our incident logs, there were 68 records of incidents reported within the period from 1 June 2000 to present. Please refer to **Annex A** for details of the incidents.

Should you have any questions, please feel free to contact the undersigned at 2733 7741.

Yours faithfully,

(TSANG Wing-hung)
for Director of Fire Services

Annex A

Serial No.	Incident No.	Date/Time	Incident Type	Incident Address
1	035155/2000	09.06.2000 05:50:49	Special Service	Texaco Road Flyover near Lamppost No.FA1821 4, Tsuen Wan.
2	039310/2000	28.06.2000 15:17:18	Special Service	Open Ground near Block C, C & E Training School, 10 Tai Lam Chung Road.
3	040393/2000	04.07.2000 09:01:15	Special Service	Kam Tin Road, Yuen Long Bound, Yuen Long.
4	043272/2000	19.07.2000 11:11:51	Special Service	Tsuen Wan Road Kowloon Bound near Lamppost No.FC5205, Tsuen Wan
5	045168/2000	28.07.2000 17:06:17	Special Service	Rm 3012-4 W, 3/F, Centre B Berth 3, Asia Terminal Ltd, Lai Chi Kok.
6	048554/2000	13.08.2000 15:02:09	Special Service	Rm 801, 8/F, Winsor Centre, 168 Yeung Uk Road, Tsuen Wan.
7	060746/2000	13.10.2000 14:16:55	Special Service	15/F, 585 Castle Peak Road, Kwai Chung
8	063110/2000	24.10.2000 09:02:43	Special Service	Mong Kok Road junction of Canton Road, Mongkok..
9	068898/2000	21.11.2000 19:49:40	Special Service	Check Point D3, Lok Ma Chau Border Control Point, Mei Po.
10	069576/2000	25.11.2000 12:33:29	Special Service	Tsuen Tsing Interchange, Texaco Road North Bound, Tsuen Wan.
11	071015/2000	02.12.2000 23:50:25	Special Service	Roadside outside 79B Waterloo Road, Yau Ma Tei.
12	007007/2001	04.02.2001 07:09:42	Special Service	"Scandia" Berth at Pier 6, Kwai Chung Container Terminal 6.
13	011721/2001	27.02.2001 21:44:10	Special Service	Roadside Tai Lin Pai Road junction of Kwai On Road, Kwai Chung.
14	017590/2001	31.03.2001 12:28:21	Special Service	Public Carpark adjacent to Ho Yeung Street, Pillar Point.
15	020283/2001	11.04.2001 23:16:37	Special Service	Pavement outside 30 Nullah Road, Mongkok
16	029540/2001	27.05.2001 16:47:37	Special Service	Filtration Plant Room, 7/F, Panda Hotel, 3 Tsuen Wah Street, Tsuen Wan
17	048540/2001	18.08.2001 07:53:52	Special Service	Rm 1414, Cheong Him House, Nam Cheong Estate, Mongkok.
18	048678/2001	19.08.2001 00:59:49	Special Service	Flat E, 5/F, Tak Cheong Building, 1001 Kwai Chung Road,

Serial No.	Incident No.	Date/Time	Incident Type	Incident Address
19	050122/2001	25.08.2001 15:29:11	Special Service	Division C & E Cargo Examination Area, River Trade Terminal, Pillar Point.
20	061802/2001	22.10.2001 09:28:25	Special Service	Hoi Wang Road junction of Slip Road to Lin Cheung Road near Lamppost No.1969-5
21	071793/2001	06.12.2001 15:29:08	Special Service	Rm K, 28/F, 84 Chai Wan Kok Street, Tsuen Wan
22	072170/2001	08.12.2001 11:52:56	Special Service	Rm G40A, G/F, Block 12, Kwai Shing East Estate, Kwai Chung.
23	074403/2001	19.12.2001 21:34:22	Special Service	2/F, 601 Reclamation Street, Mongkok
24	075627/2001	24.12.2001 14:23:51	Special Service	G/F, 122 Yee Kuk Street, Sham Shui Po.
25	075854/2001	25.12.2001 13:11:38	Special Service	Rm 606, Kwai On House,Kwai Fong Estate,
26	000975/2002	05.01.2002 13:29:54	Special Service	Shop No. 2G, G/F, 155 Camp Street, Sham Shui Po.
27	012409/2002	02.03.2002 12:17:15	Special Service	Rm 14, 1/F, Block C, 489 Castle Peak Road, Lai Chi Kok
28	014991/2002	15.03.2002 18:05:18	Special Service	Tuen Mun Road near So Kwun Wat, Kowloon Bound.
29	018191/2002	29.03.2002 16:35:17	Special Service	G/F Carpark, Kwai Shing East Shopping Centre, Kwai Chung.
30	022190/2002	17.04.2002 09:44:41	Special Service	Bay No.133, Street Z, Stacking Area, Depot 5. MTL, Kwai Chung.
31	023605/2002	24.04.2002 14:37:12	Special Service	Mid-stream Terminal S, Lot 479 Stonecutters Island.
32	025443/2002	04.05.2002 09:33:00	Special Service	Outside 2 Kwai Lok Street, Kwai Chung.
33	031058/2002	31.05.2002 05:57:39	Special Service	Block M2 69 Hong Kong International Ltd Terminal 4, Container Port Road South.
34	034575/2002	17.06.2002 19:47:23	Special Service	Basement, Mong Kok Divisional Police Station, 142 Prince Edward Road West.
35	035258/2002	21.06.2002 13:17:08	Special Service	Roadside opposite 26-38 Sha Tsui Road, Tsuen Wan
36	035660/2002	23.06.2002 14:48:54	Special Service	Pavement of Tonkin Street outside Block 2, Cheung Sha Wan Factory Estate.
37	036423/2002	27.06.2002 09:39:35	Special Service	Cargo Examination Area, C & E Department, River Trade Terminal, Pillar Point

Serial No.	Incident No.	Date/Time	Incident Type	Incident Address
38	049596/2002	02.09.2002 20:51:18	Special Service	Tsuen House No.160, Pak Long, Pillar Point.
39	058199/2002	15.10.2002 22:41:33	Special Service	Ching Cheung Road, Kwun Tong bound near Lamp post No B-FA4265
40	059655/2002	23.10.2002 20:41:30	Special Service	House No. 133B, Kut Hing Village, Kam Tin Road, Pat Heung.
41	060195/2002	27.10.2002 12:07:27	Special Service	Open Ground at Stack 8 Road 5-1 Kwai Chung Container Terminal 3
42	065528/2002	27.11.2002 13:48:28	Special Service	Lung Mun Road near River Trade Terminal Gate 1.
43	065565/2002	27.11.2002 16:38:11	Special Service	Room 1, 5/F, Block A, Ocean Court, 31 Ka Shin Sreet, Mongkok
44	066725/2002	03.12.2002 23:12:38	Special Service	Unit 1118, 11/F, 68 Ta Chuen Ping Street, Kwai Chung.
45	069927/2002	20.12.2002 12:55:12	Special Service	Depot 5, MTL, Kwai Chung Terminal 5.
46	012177/2003	08.03.2003 16:11:49	Special Service	Texaco Road North near Kwan Mun Hau Tsuen, Tsuen Kam Bound, Tsuen Wan.
47	026121/2003	13.05.2003 14:19:55	Special Service	Open ground outside 71 Hing Wah Street, Lai Chi Kok, Kln
48	032981/2003	18.06.2003 10:22:42	Special Service	Openground Kwai Chung Container Terminal 3
49	036953/2003	09.07.2003 15:36:34	Special Service	Roadside, Kwai Shun Street junction of Kwai Tak Street, Kwai Chung.
50	040164/2003	26.07.2003 10:28:26	Special Service	Zone 1 Street 5, River Trade Terminal, Pillar Point.
51	042689/2003	09.08.2003 14:00:40	Special Service	Enclosed ground near Electric Post, Wang Toi Shan Shan Tsuen, Wang Toi Shan.
52	043175/2003	11.08.2003 20:57:37	Special Service	Openground, Kwai Chung Container Terminal 2, Kwai Chung.
53	045301/2003	22.08.2003 21:38:01	Special Service	G/F, Wing Loi Industrial Building, 8 Wing Lap Street, Kwai Chung.
54	018001/2004	08.04.2004 15:58:36	Special Service	Open Ground near Zone Z4, Depot 1, MTL, Kwai Chung Container Terminal 1
55	022929/2004	07.05.2004 10:32:57	Special Service	Roof, Long Life Industrial Building, 15 Ko Fai Road, Yau Tong.
56	034849/2004	13.07.2004 14:30:20	Special Service	Roadside, Reclamation Street junction of Public Square Street, Yau Ma Tei.

Serial No.	Incident No.	Date/Time	Incident Type	Incident Address
57	035878/2004	19.07.2004 15:25:00	Special Service	Laundry Room, 23/F, 21 Canton Road, Tsim Sha Tsui.
58	054633/2004	31.10.2004 17:13:27	Special Service	9/F, 8 Kwai Hei Street, Kwai Chung.
59	056065/2004	09.11.2004 18:27:35	Special Service	21/F, Cable TV Tower, 9 Hoi Shing Road, Tsuen Wan.
60	S06070301575/ 2006	03.07.2006 16:30:23	Special Service	Roadside near Lamppost FA8643 Ngau Tam Mei Road, Ngau Tam Mei, Yuen Long.
61	S07070401461/ 2007	04.07.2007 17:06:55	Special Service	Berth No.5 Container Terminal Depot 1, Container Port Road, Kwai Chung
62	S07072401386/ 2007	24.07.2007 16:48:15	Special Service	Carpark No.F52-F54 Moral Well Open Ground Carpark, Container Terminal 8
63	S07080300440/ 2007	03.08.2007 07:43:17	Special Service	Lung Wah Carpark, Kwai Chung Terminal 1, opposite Container Port Road
64	S08041201401/ 2008	12.04.2008 16:33:39	Special Service	2/F, Laundry, Butterfly Beach, Ho Suen Street, Tuen Mun.
65	S08061300352/ 2008	13.06.2008 07:27:35	Special Service	Roadside, 2-8 Wang Wo Chai Street, Tsuen Wan.
66	S08061901478/ 2008	19.06.2008 16:56:43	Special Service	Unit 4, 4/F, Fuk Keung Industrial Building, 66-68 Tong Mi Road.
67	S08092701035/ 2008	27.09.2008 13:43:59	Special Service	Yard Area 1Q outside parking area 10 of Asia Container Terminal ltd, Kwai Chung.
68	S08111101494/ 2008	11.11.2008 17:10:17	Special Service	Unit G, 9/F, 35-41 Tai Lin Pai Road, Kwai Chung.

消 防 處
香港九龍尖沙咀東部康莊道 1 號
消防總部大廈

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

本處檔號 OUR REF. : (74) in FSD/GR AI 4/07 II
來函檔號 YOUR REF. : 60046742/C/pohm902041
電子郵件 E-mail: : hkfsdenq@hkfsd.gov.hk
圖文傳真 FAX: : 852-2739 5879
電 話 TEL NO. : 852-2733 7741

19 February 2009

ENSR Asia (HK) Ltd.
11/F Grand Central Plaza, Tower 2
138 Shatin Rural Committee Road,
Shatin, New Territories,
Hong Kong

Dear Sir,

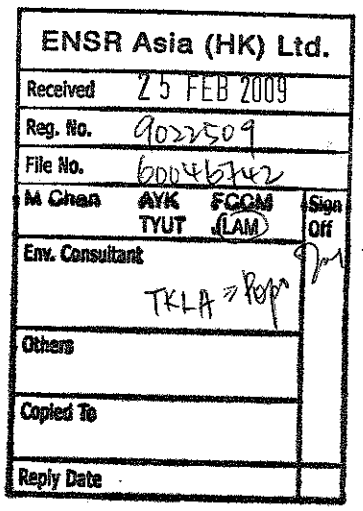
Guangzhou-Shenzhen-Hong Kong Express Rail Link (XRL) – Environmental Impact Assessment

Request for Further Information of Dangerous Goods

I refer to your letter dated 4 February 2009 regarding the captioned subject and the following information is enclosed for your reference:-

According to our incident logs, there were 4 records of incidents reported close to the area you stated. Please refer to **Annex A** for details of the incidents.

Should you have any questions, please feel free to contact Mr. Joe CHAU at 2733 5848 or the undersigned at 2733 7741.



Yours faithfully,

(TSANG Wing-hung)
for Director of Fire Services

Annex A

Serial No.	Incident No.	Date/Time	Incident Type	Incident Address
1	F004171/2002	20.01.2002 04:11:11	Leakage of LPG	CRC Kwai Chung LPG Filling Station, Kwai Chung Road junction of Kwai On Road, Kwai Chung, N.T.
2	S05043000846 /2005	30.04.2005 21:15:25	Leakage of LPG	Shell Kwai Chung Filling Station, 682-688 Castle Peak Road, Kwai Chung, N.T.
3	S06032201281 /2006	22.03.2006 16:39:14	Leakage of LPG	CRC LPG Filling Station, 2 Kwai On Road, N.T.
4	S06091601141 /2006	16.09.2006 15:33:38	Leakage of LPG	CRC LPG Filling Station, 2 Kwai On Road, N.T.

Appendix G

Letters from Environmental Protection Department

本署檔號 Our Ref.: ( ) in EP743/E3/2
來函檔號 Your Ref.: 60046742/C/pohm812022
電　話 Tel. No.: 2417 6673
圖文傳真 Fax No.: 2417 4991
電子郵件 E-Mail:
網　址 Homepage: http://www.epd.gov.hk/

Environmental Protection Department
Environmental Compliance Division
Regional Office (West)
8/F., Tsuen Wan Government Offices,
38 Sai Lau Kok Road,
Tsuen Wan, N.T.

環境保護署
環保法規管理科
區域辦事處(西)
新界荃灣
西樓角路 38 號
荃灣政府合署八樓

ENSR Asia (HK) Ltd.
Received - 2 JAN 2009
Reg. No. 9010203
File No. 6e046742
M Chan | AYK TYUT FCCM JLAM | Sign Off
Env. Consultant LMLT, TKLA
Others
Copied To
Reply Date

By fax: 2891 0305
31 December 2008

ENSR Asia (HK) Ltd.
11/F Grand Central Plaza, Tower 2,
138 Shatin Rural Committee Road,
Shatin, N.T. Hong Kong.
(Attn.: Mr. Laurence Tsui)

Dear Sir/Madam,

GuangZhou-Shenzhen-Hong Kong Express Rail Link (XRL)
- Environmental Impact Assessment
Request for Information of Chemical Waste Producer and Chemical Spillage Accident

I refer to your letter of 2 December 2008 requesting for the above information within the concerned sites for the captioned project in Tuen Mun, Kwai Chung , Mei Fu, Lai Chi Kok and Nam Cheong.

In so far as chemical waste producers are concerned, a registry of chemical waste producers is available in the Territory Control Office of this Department. Please contact Mr. LEUNG King-chung at 2835 1017 for an appointment to view the records.

Please note that this office has no record of chemical spillage / leakage at your mentioned areas (as shown in the maps attached in your above letter) since 2001. For records before 2001 or chemical spillage/leakage that has not been reported to this office, you may need to check with other related Government departments.

Yours faithfully,

(K T MA)
Environmental Protection Officer,
Regional Office (West)
for Director of Environmental Protection

c.c. TCG (Attn.: Mr. K C LEUNG) Fax: 2305 0453
MTRC (Attn.: Mr. Richard Kwan) Fax: 2993 7577

再造紙 RECYCLED PAPER

本署檔案
OUR REF : ( ) in EP491/O1/1-23
來函檔案
YOUR REF :
電 話
TEL NO : 2150 8021
圖文傳真
FAX NO : 2402 8275
網 址
HOMEPAGE : http://www.epd.gov.hk/

Environmental Protection Department
Environmental Compliance Division
Regional Office (East)
8/F., Cheung Sha Wan Government Offices
303 Cheung Sha Wan Road
Kowloon

環境保護署
環保法規管理科
區域辦事處(東)
九龍長沙灣道 303 號
長沙灣政府合署 8 樓

(By Fax: 2891 0305)

10 December 2008

ENSR Asia (HK) Ltd.
11/F, Grand Central Plaza, Tower 2
138 Shatin Rural Committee Road
Shatin, NT
(Attn: Mr. Lawrence Tsui/Ms. HM Po)

Dear Sirs,

GuangZhou-Shenzhen-Hong Kong Express Rail Link (XRL)
Environmental Impact Assessment
Request Information for Land Contamination Assessment

Thank you for your letter, ref. 60046742/C/pohm812023 dated 2/12/2008.

Regarding your request for information on chemical waste producers and chemical spillage accidents in the assessment area as marked in your said letter, please find our response as follow:

1. A registry of chemical waste producers is available in the Territory Control Office. Please contact Mr. LEUNG King-chung at 2835 1017 for making an appointment to view the records. However, neither this office nor the Territory Control Office can furnish you information on the quantity of chemical waste and the storage location.
2. As far as this office is concerned, we are not aware of any record of chemical spillage / leakage in the said assessment area. You may need to seek further advice from other EPD offices and relevant government departments on this issue.

Thank you for your attention.

Yours faithfully,

(P C Yip)
Environmental Protection Officer
Regional Office (East)
for Director of Environmental Protection

cc: TCG (Attn: Mr. LEUNG King-chung) EPD (J)(a)

本署檔號 Our Ref.: ( ) in EP/RW/0000305599
來函檔號 Your Ref.: 60046742/C/pohm904283
電　話 Tel. No.: 2417 6086
圖文傳真 Fax No.: 2411 3073
電子郵件 E-Mail:
網　址 Homepage: http://www.epd.gov.hk/

Environmental Protection Department
Environmental Compliance Division
Regional Office (West)
8/F., Tsuen Wan Government Offices,
38 Sai Lau Kok Road,
Tsuen Wan, N.T.

環境保護署
環保法規管理科
區域辦事處（西）
新界荃灣
西樓角路 38 號
荃灣政府合署八樓

ENSR Asia (HK) Ltd.			
Received	07 MAY 2009		
Reg. No.	9050701		
File No.	60046742		
M Chan	AYK TYUT	FCCM (FLAM	Sign Off
Env. Consultant	TKLA		
Others			
Copied To			
Reply Date			

By fax: 2891 0305
5 May 2009

ENSR Asia (HK) Ltd.
11/F., Grand Central Plaza,
Tower 2,
138 Shatin Rural Committee Road,
Shatin, N. T.
(Attn.: Mr. Josh Lam)

Dear Sir/Madam,

GuangZhou-Shenzhen-Hong Kong Express Rail Link-EIA
Information of Chemical Waste Producer and Chemical Spillage Accident
Tsing Chau Wan, Lantau Island

I refer to your letter of 28 April 2009 and subsequent telecon between Ms. Po - ENSR and Mr. Lai - EPD on 4 May 2009 regarding the captioned.

In so far as chemical waste producers are concerned, a registry of chemical waste producers is available in the Territory Control Office of this Department. Please contact Mr. LEUNG King-chung at 2835 1017 for an appointment to view the records.

As advised by Ms. Po, you are interested in the land contamination issue only. Please be informed that this office has no record of chemical spillage / leakage at your mentioned areas (as shown in the map attached in your above letter) since 2001. For records before 2001 or chemical spillage/leakage that has not been reported to this office, you may need to check with other related Government departments.

Yours faithfully,

(LAI Koon-lam)
Environmental Protection Officer,
Regional Office (West)
for Director of Environmental Protection

c.c. TCG (Attn.: Mr. K C LEUNG)　　Fax: 2305 0453

再造紙
RECYCLED PAPER

Annex E

Relevant Information Extracted from the Approved CAP of EIA Report

Table 5.1 Summary of Site Appraisal Results for Potential Contaminated Sites Identified at SSS

Location	Site ID	Historical Land Uses	Current Land Uses*	Site Inspection Results	Necessity for Further Site Investigation?	Justification and Hotspots Identified	Drawing Reference
SSS	F	Farms, workshop, car park and garage	Construction Equipment Repair & Maintenance Workshop (東和機械)	As reported by site staff, this construction equipment repair workshop has been operated for over 10 years. Stains were found at the repair area located at the south-eastern portion of the site. A container office was observed next to the repair area. Oil drums were found near the office without secondary containment. Forklift trucks were found parking at the east and the west of the site. The ground was generally well paved with concrete. Site area is around 900 m^2.	Yes	• <u>Oil Drum Storage Area</u> Oil drums were found near the office without secondary containment. Leakage/ spillage of fuels from the oil drums containers may cause contamination concern. • <u>Vehicle Repair Area</u> Stains were found at the repairing workshop. Spillage of fuels or chemicals used during repairing activities may cause contamination concern. • Area occupied for contaminative land uses is around 600m^2.	**NOL/ERL/300/C /XRL/M57/014**
SSS	G	Farms, workshop, car park and garage	Scrap Yard	Scraps were found scattered on the ground around the site without any secondary containment. Storage of waste materials consist of mainly plastic and papers. A scrap baler located at the south of the scrap yard site was found and compressed bales of waste next to the scrap baler were observed. It was observed that the entire scrap yard site is concrete paved. However, the conditions of the concrete paving are uncertain as nearly half of the site area is covered by storage of waste materials.	Yes	• Different types of scraps were found at site. Contamination is likely if the scraps are not handled properly and also the potential leaching from the scraps. • Area occupied for contaminative land uses is around 800m^2.	**NOL/ERL/300/C /XRL/M57/015**

Location	Site ID	Historical Land Uses	Current Land Uses*	Site Inspection Results	Necessity for Further Site Investigation?	Justification and Hotspots Identified	Drawing Reference
				Site area is around 800 m^2.			
SSS	L	Farms, workshop, car park and garage	Vehicle Repair Workshop	Concrete paved ground where truck repairing was observed on site. As revealed from site representative, the workshop has been operating for around 3 years. Significant stains were not observed during site inspection. Site area is around 200 m^2.	Yes	• <u>Vehicle Repair Area</u> Potential spillage of fuels or chemicals used during repairing activities may cause land contamination concern • <u>Lube Oil Storage Area</u> Potential spillage/ leakage from containers may cause land contamination concern • Area occupied for contaminative land uses is around 150m^2.	**NOL/ERL/300/C /XRL/M57/018**
SSS	M	Farms, workshop, car park and garage	Open Area	Based on observation at the surrounding, the site was mainly vacated vegetative area. An aboveground tank with unknown content was found at the south-western portion of the site. Site area is around 1,000 m^2	Yes	• Existing aboveground tank with unknown content	**NOL/ERL/300/C /XRL/M57/018**
SSS	P	Farms, workshop, Factory	Storage Area ("Factory")	During site inspection, this area was found to be occupied for wood and plastic pipes storage. Based on the survey map, this area is denoted as "Factory". However, no information regarding any past industrial operation would be obtained from the site staff.. Moreover, some oil drums and chemical containers were observed within this area and oil stains were found at the concrete paved parking area during site inspection. With unknown historical operation of this area (the "Factory"), the site is considered to have potential contamination concern.	Yes	• Unknown historical industrial activities • Existing oil drums storage • <u>Parking Area</u> Stains observed. Potential leakage/spillage of fuels may cause land contamination concern • <u>Oil Drums Storage</u>	**NOL/ERL/300/C /XRL/M57/017**

Location	Site ID	Historical Land Uses	Current Land Uses*	Site Inspection Results	Necessity for Further Site Investigation?	Justification and Hotspots Identified	Drawing Reference
				Site area is around 1,500 m^2.		Area: Potential Leakage/ Spillage of fuels from containers may cause land contamination concern	
SSS	Q	Farms, workshop, car park and garage	Parking area with minor vehicle repair /maintenance activities	Concrete paved ground where scattered vehicle repair activities were observed on site. There were also some dismantled vehicles around the repairing area. Used chemical containers were found at the site. Some stains were observed during site inspection, there may be potential contamination concern at the garage. Site area within the scheme boundary is around 2,000 $m^{2.}$	Yes	• Vehicle Repair/Dismantling Area and Waste Container Disposal Area: Stains observed. Potential spillage of fuels or chemicals used during repairing activities/ from waste container may cause land contamination concern. • Area occupied for contaminative land uses is around 600$m^{2.}$	**NOL/ERL/300/C /XRL/M57/017**
SSS	R	Farms, workshop, car park and garage	Vehicle Repair Workshop	Stains were found at the repairing area located at the southern portion of the site. In addition some waste oil drums and chemical containers were found near the entrance of the site. Site investigation is proposed at the location of vehicle repair activities and at the oil drum storage area. A storage area of vehicle parts (seats, tyres) was found at the south western portion of the site which was found to be outside the works area of SSS. Site area within the scheme boundary is around 400 m^2	Yes	• Waste Container Storage Area: Potential Leakage/ spillage of fuels/chemical from the oil drums/ containers may cause land contamination concern. • Vehicle Repair Area: Potential spillage of fuels or chemicals used during repairing activities may cause land contamination	**NOL/ERL/300/C /XRL/M57/016**

Location	Site ID	Historical Land Uses	Current Land Uses*	Site Inspection Results	Necessity for Further Site Investigation?	Justification and Hotspots Identified	Drawing Reference
						concern. • Area occupied for contaminative land uses is around 100m^2.	
SSS	S	Farms, workshop, car park and garage	Vehicle Repair Workshop	Concrete paved ground where vehicle repair activities was observed on site. Some oil drums were found at the east of the site and some oil stains were found on ground surface around the repairing area. A chemical storage area was found to be located at the east of the site next to car repairing area. Chemicals were found to be located in a metal cabinet where land contamination concern is unlikely. According to the site representative, the site has been operating for around 2 years. Site area within the scheme boundary is around 250 m^2.	Yes	• <u>Oil Drums Storage Area:</u> Potential leakage/ spillage of fuels from the oil drums containers may cause land contamination concern • <u>Vehicle Repair Area:</u> Potential spillage of fuels or chemicals used during repairing activities may cause land contamination concern. • Area occupied for contaminative land uses is around 100m^2.	**NOL/ERL/300/C /XRL/M57/016**

Notes:
* Current landuses are identified based on street maps and site inspections.

Table 5.7 Summary of Areas Infeasible for On-Site Inspection and Site Investigation

Site ID of Inaccessible Site	Review of the 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
West Kowloon Cut and Cover (WKCC) Section					
X **(NOL/ERL/300/C/XRL/ENS/M57/025)**	Site Appraisal The site was located on reclaimed land. The site is currently occupied by City Golf Club as a golf course. Access to the site was attempted but was refused by the reception.	Initial Contamination Evaluation The site was inaccessible for site inspection. The potential of land contamination is uncertain. As the site was occupied as a golf course where pesticide might have been used, land contamination concern cannot be neglected. Possible Contaminants Heavy metals, organic compounds particularly pesticides. Possible Remediation Methods Depending on the contaminated soil quantity and quality, possibly: • Bioremediation such as bio-pile and composting for organic contaminants. • Stabilization/solidification for heavy metals.	The site was occupied as a golf course during site inspection. The site area is around 13,500m^2. Considering the potential presence of contaminants, there would not be insurmountable impacts associated, but the future work programme should be allowed time for remediation works (if contamination is found).	0-41 boreholes based on a regular grid pattern at this stage (subject to review) across the site are proposed with reference to Guidance Note 2 across the golf course. Proposed parameters to be tested are given in **Table 6.1**.	Revised CAP Upon site access is granted, site inspection should be carried out to ascertain any contaminative sources and hotspot of contamination within the site. A revised CAP should then be submitted to EPD for endorsement. For the CAP, the site appraisal exercise should re-conduct the assessment and work out the exact sampling and testing requirement if necessary. The area that is potential affected by the use of pesticides should be determined in order to formulate the sampling plan. The number of sampling locations may be significantly reduced. CAR and RAP Upon completion of SI and laboratory testing, a

Site ID of Inaccessible Site	Review of the 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
					CAR should be submitted to EPD for endorsement. If contamination is identified, a RAP should also be submitted to EPD for endorsement. RR A RR should be submitted to demonstrate completion of remediation works before construction work starts at the site.
Shek Kong Stabling Sidings (SSS)					
I **(NOL/ERL/300/C/XRL/ENS/M57/018)**	Site Appraisal Past land uses of the site were observed to be farms, workshop and garage. Inspection inside the site was not possible. The site was suspected as a vehicle repair/dismantling workshop based on observation from surrounding.	Initial Contamination Evaluation Potential concern related to current operation with vehicle repair/maintenance activities. Possible Contaminants Petroleum hydrocarbons, metals and organic solvents. Possible Remediation Methods Depending on the contaminated soil quantity and quality, possibly: • Cement stabilization/solidification for heavy metals. • Bioremediation such as bio-pile and composting for organic contaminants.	The site has a small area ($500m^2$) and would have only been used for vehicle maintenance/dismantling. Land contamination causing insurmountable impacts would not be likely. Moreover, there are available and commonly adopted remediation methods for the potential contaminants.	As specific hotspots of contamination cannot be identified due to inaccessibility, 0-4 boreholes based on a regular grid pattern at this stage (subject to review) across the site are proposed with reference to Guidance Note 2. Proposed parameters are given in **Table 6.1**..	Revised CAP Upon site access is granted, site inspection should be carried out to ascertain any contaminative sources and hotspot of contamination within the site. A revised CAP should then be submitted to EPD for endorsement. CAR and RAP Upon completion of SI and laboratory testing, a CAR should be submitted

Site ID of Inaccessible Site	Review of the 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
					to EPD for endorsement. If contamination is identified, a RAP should also be submitted to EPD for endorsement. <u>RR</u> A RR should be submitted to demonstrate completion of remediation works before construction work starts at the site.
O **(NOL/ERL/300/C/XRL/ENS/M57/016)**	<u>Site Appraisal</u> Past land uses of the site were observed to be farms, workshop and garage. Inspection inside the site was not possible. The site was suspected to be an excavator parking area with some maintenance and refueling activities based on limited observation from outside.	<u>Initial Contamination Evaluation</u> Potential land contamination due to suspected excavator maintenance and refueling. <u>Possible Contaminants</u> Metals, petroleum hydrocarbons and organic solvents. <u>Possible Remediation Methods</u> Depending on the contaminated soil quantity and quality, possibly: • Cement stabilization/solidification for heavy metals. • Bioremediation such as bio-pile and composting for organic contaminants.	The site has a small area (300 m^2) and would have only been used for vehicle maintenance. Land contamination causing insurmountable impacts would not be likely. Moreover, there are available and commonly adopted remediation methods for the potential contaminants.	As hotspot of contamination cannot be identified due to inaccessibility, 0-2 boreholes are proposed with reference to Guidance Note 2. Proposed parameters to be tested are given in **Table 6.1**.	Same as Site I above
B	<u>Site Appraisal</u>	<u>Initial Contamination Evaluation</u>	The site was only	The site activities are not	Same as Site I above.

Site ID of Inaccessible Site	Review of the 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
(NOL/ERL/300/C/XRL/ENS/M57/015)	The site was occupied by farms and some low-rise building structure in the past. Currently, the site is occupied by temporary structures with unknown usage. Access to those temporary structures was attempted but this was refused by tenants. Some forms of industrial activities observed in the temporary structures. However, nature and type of industry were not known.	Site inspection inside the site was not possible. The site was suspected to have some forms of industrial activities. Possible Contaminants Not able to determine at this stage. Possible Remediation Methods Depending on the contaminated soil quantity and quality, possibly: • Bioremediation such as bio-pile and composting for organic contaminants. • Stabilization/solidification for heavy metals.	suspected with industrial activities at this stage based on the very limited information. The site area is around 17,000 m^2. Considering its scale of activities, there would not be insurmountable impacts associated, but the future work programme should be allowed time for remediation works (if contamination is found).	known. As hotspot of contamination cannot be identified due to inaccessibility, 0-51 boreholes based on a regular grid pattern at this stage (subject to review) across the site are proposed with reference to Guidance Note 2. Since the potential contaminants were not known, a broad list of parameters to be tested. Details of the sampling and analysis for this site are given in **Table 6.1**.	For the CAP, the site appraisal exercise should re-conduct the assessment and work out the exact sampling and testing requirement if necessary.
N **(NOL/ERL/300/C/XRL/ENS/M57/016)**	Site Appraisal The site was occupied by farms and some low-rise building structure in the past. The site is currently occupied by temporary structures with unknown usage. Access to those temporary structures was attempted but this was refused by tenants. Some forms of industrial activities	Initial Contamination Evaluation The site was inaccessible for site inspection. The potential of land contamination is uncertain. However, as the site is suspected be occupied for industrial use, there might be of land contaminative concern due to contaminative industrial activities. Possible Contaminants Not able to determine at this stage. Possible Remediation Methods	The site was only suspected with industrial activities at this stage based on the very limited information. The site area is around 4,500m^2. Considering its scale of activities, there would not be insurmountable impacts associated, but the future work programme should be allowed time for	The site activities are not known. As hotspot of contamination cannot be identified due to inaccessibility, 0-14 boreholes based on a regular grid pattern at this stage (subject to review) across the site are proposed with reference to Guidance Note 2. Since the potential contaminants were not	Same as Site I above. For the CAP, the site appraisal exercise should re-conduct the assessment and work out the exact sampling and testing requirement if necessary.

Site ID of Inaccessible Site	Review of the 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
	observed in the temporary structures. However, nature and type of industry were not known.	Depending on the contaminated soil quantity and quality, possibly: • Bioremediation such as bio-pile and composting for organic contaminants and cyanide. • Stabilization/solidification for heavy metals and PCBs.	remediation works (if contamination is found).	known, a broad list of parameters to be tested. Details of the sampling and analysis for this site are given in **Table 6.1**.	
U **(NOL/ERL/300/C/XRL/ENS/M57/024)**	Site Appraisal The site was occupied by farms and some low-rise building structure in the past. The site is currently occupied by temporary structures with unknown usage. Access to those temporary structures was attempted but this was refused by tenants. Some forms of industrial activities observed in the temporary structures. However, nature and type of industry were not known.	Initial Contamination Evaluation The site was inaccessible for site inspection. The potential of land contamination is uncertain. However, as the site is suspected be occupied for industrial use, there might be of land contaminative concern due to contaminative industrial activities. Possible Contaminants Not able to determine at this stage. Possible Remediation Methods Depending on the contaminated soil quantity and quality, possibly: • Bioremediation such as bio-pile and composting for organic contaminants and cyanide. • Stabilization/solidification for heavy metals and PCBs.	The site was only suspected with industrial activities at this stage based on the very limited information. The site area is around 2,000 m^2. Considering its scale of activities, there would not be insurmountable impacts associated, but the future work programme should be allowed time for remediation works (if contamination is found).	The site activities are not known. As hotspot of contamination cannot be identified due to inaccessibility, 0-6 boreholes based on a regular grid pattern at this stage (subject to review) across the site are proposed with reference to Guidance Note 2. Since the potential contaminants were not known, a broad list of parameters to be tested. Details of the sampling and analysis for this site are given in **Table 6.1**.	Same as Site I above. For the CAP, the site appraisal exercise should re-conduct the assessment and work out the exact sampling and testing requirement if necessary.

Site ID of Inaccessible Site	Review of the 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
V **(NOL/ERL/300/C/XRL/ENS/M57/024)**	Site Appraisal The site was occupied by farms and some low-rise building structure in the past. The site is currently as a vacant area with construction waste material found.	Initial Contamination Evaluation The site was inaccessible for site inspection. The potential of land contamination is uncertain. However, as the site share similar nature as a scrap yard, there might be of land contaminative concern due to contaminative industrial activities. Possible Contaminants Not able to determine at this stage. Possible Remediation Methods Depending on the contaminated soil quantity and quality, possibly: • Bioremediation such as bio-pile and composting for organic contaminants and cyanide. • Stabilization/solidification for heavy metals and PCBs.	The site was only suspected with industrial activities at this stage based on the very limited information. The site area is around 4,000 m^2. Considering its scale of activities, there would not be insurmountable impacts associated, but the future work programme should be allowed time for remediation works (if contamination is found).	The site activities are not known. As hotspot of contamination cannot be identified due to inaccessibility, 0-12 boreholes based on a regular grid pattern at this stage (subject to review) across the site are proposed with reference to Guidance Note 2. Since the potential contaminants were not known, a broad list of parameters to be tested. Details of the sampling and analysis for this site are given in **Table 6.1**.	Same as Site I above. For the CAP, the site appraisal exercise should re-conduct the assessment and work out the exact sampling and testing requirement if necessary.
W **(NOL/ERL/300/C/XRL/ENS/M57/024)**	Site Appraisal The site was occupied by farms and some low-rise building structure in the past. The site is currently occupied by temporary structures with unknown usage. Access to those	Initial Contamination Evaluation The site was inaccessible for site inspection. The potential of land contamination is uncertain. However, as the site is suspected be occupied for industrial use, there might be of land contaminative concern due to contaminative industrial activities.	The site was only suspected with industrial activities at this stage based on the very limited information. The site area is around 3,000 m^2. Considering its scale of activities, there would not be	The site activities are not known. As hotspot of contamination cannot be identified due to inaccessibility, 0-9 boreholes based on a regular grid pattern at this stage (subject to review) across the site are	Same as Site I above. For the CAP, the site appraisal exercise should re-conduct the assessment and work out the exact sampling and testing requirement if necessary.

Site ID of Inaccessible Site	Review of the 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
	temporary structures was attempted but this was refused by tenants. Some forms of industrial activities observed in the temporary structures. However, nature and type of industry were not known.	Possible Contaminants Not able to determine at this stage. Possible Remediation Methods Depending on the contaminated soil quantity and quality, possibly: • Bioremediation such as bio-pile and composting for organic contaminants and cyanide. • Stabilization/solidification for heavy metals and PCBs.	insurmountable impacts associated, but the future work programme should be allowed time for remediation works (if contamination is found).	proposed with reference to Guidance Note 2. Since the potential contaminants were not known, a broad list of parameters to be tested. Details of the sampling and analysis for this site are given in **Table 6.1**.	
Ventilation Building Sites and Emergency Access Point					
A **(NOL/ERL/300/C/XRL/ENS/M57/013)**	Site Appraisal Past land uses of the site were observed as farms, fish ponds and garages. Inspection inside the site not possible, suspected waste recycling facility based on observations from the surroundings.	Initial Contamination Evaluation Potential concern due to current suspected current operation with waste handling/recycling. Possible Contaminants Petroleum hydrocarbons, metals, PCB, cyanide and organic solvents. Possible Remediation Methods Depending on the contaminated soil quantity and quality, possibly: • Cement stabilization/solidification for heavy metals and PCB. • Bioremediation such as bio-pile and composting for organic contaminants.	The site has an area of 5,000m^2 and would have only been used for waste handling/recycling. Land contamination causing insurmountable impacts would not be likely. Moreover, there are available and commonly adopted remediation methods for the potential contaminants.	As specific hotspots of contamination cannot be identified due to inaccessibility, 0-15 boreholes based on a regular grid pattern across the site are proposed at this stage (subject to review) with reference to Guidance Note 2. Proposed parameters to be tested are given in **Table 6.1**.	Same as Site I above

Site ID of Inaccessible Site	Review of the 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
C **(NOL/ERL/300/C/XRL/ENS/M57/013)**	Site Appraisal Past land uses of the site were observed as farms, fish ponds and garages. Inspection inside the site not possible, suspected having vehicle repair/maintenance activities based on observations from the surroundings.	Initial Contamination Evaluation Potential concern due to current suspected current operation as a vehicle repair workshop. Possible Contaminants Petroleum hydrocarbons, metals and organic solvents. Possible Remediation Methods Depending on the contaminated soil quantity and quality, possibly: • Cement stabilization/solidification for heavy metals. • Bioremediation such as bio-pile and composting for organic contaminants.	The site has an area of 3,000m^2 and would have only been used for vehicle maintenance. Land contamination causing insurmountable impacts would not be likely. Moreover, there are available and commonly adopted remediation methods for the potential contaminants.	As specific hotspots of contamination cannot be identified due to inaccessibility, 0-9 boreholes based on a regular grid pattern at this stage (subject to review) across the site are proposed with reference to Guidance Note 2. Proposed parameters are given in **Table 6.1**.	Same as Site I above.
WSW **(NOL/ERL/300/C/XRL/ENS/M57/013)**	Site Appraisal Past land uses of the site were observed as fish ponds, open storage and garages. Inspection inside the site not possible. Review of WSW EIA indicated the site to be occupied for lorry parking and vehicle and container storage area.	Under WSW EIA, the site was identified to be contaminated with Pb and/or Zn based on Dutch B criteria.	The site has an area of approximately 8,000m^2 and would have only been used for lorry parking and vehicle and container storage. Land contamination causing insurmountable impacts would not be likely. Moreover, there are available and commonly adopted remediation	NA	According to WSW EP Condition 3.14, the Project Proponent of the WSW development shall prepare and submit CAR/RAP to EPD within 2 months after commencement of construction of the WSW development and the recommendations in the endorsed CAR/RAP shall

Site ID of Inaccessible Site	Review of the 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
	Review of aerial photo suggested no significant changes in the site layout with the described land use in WSW EIA.		methods for the potential contaminants.		be fully implemented before the commencement of any construction works that may disturb the ground of the relevant sites. Details have been delineated at **Section 5.22.**

Table 6.1 Sampling and Testing Plan for Potential Contaminated Areas

Proposed Sampling Location	Hotspots identified and/or Respective Sample ID	Sampling Method	Sample Matrix		Parameters to be Tested								Rationale of Sampling and Testing Parameters	Reference Figures
					Metals	Petroleum Carbon Ranges	VOC		SVOC#		PCB	Cyanide		
							BTEX only	Full List	PAH only	Full List				
Railway Alignment														
Ngau Tam Mei Landfill	**Landfill Boundary**	**LF-01 LF-02**	Borehole to bedrock	Soil	at top of the tunnel section	Cd, CrIII, CrVI, Cu, Hg, Ni, Pb, Zn	X	-	X	-	X	X	X	In order to assess potential land contamination impacts from past landfill activities, 2 boreholes are proposed at close proximity to the landfill site. Metal parameters proposed are considered to be commonly found in industrial activities in Hong Kong. Other parameters are proposed considering that they are common toxic substance found in waste. According to the information provided by Preliminary Design Consultant in January 2009, the use of a TBM in conduction with an "undrained" tunnel lining effectively precludes the ingress of water into the tunnel during and following construction, and therefore it is anticipated that groundwater will not be collected from the area along the alignment immediately adjacent to the restored Ngau Tam Mei Landfill. Therefore, groundwater sampling is not proposed.	**NOL/ERL/ 300/C/XRL/M57/023**

Proposed Sampling Location	Hotspots identified and/or Respective Sample ID		Sampling Method	Sample Matrix		Parameters to be Tested								Rationale of Sampling and Testing Parameters	Reference Figures
						Metals	Petroleum Carbon Ranges	VOC		SVOC#		PCB	Cyanide		
								BTEX only	Full List	PAH only	Full List				
SSS															
Site F (Construction Equipment Repair/ Maintenance Workshop): Area occupied for contaminative land uses: ~600m^2	**Parking Area**	**F-01 F-02**	Borehole to 6m BBC	Soil	0.5, 1.5, 3.0, 4.5, 6.0 m BBC	Pb	X	X	-	-	-	-	-	To assess potential land contamination impacts from (i) spillage/leakage of fuels from fork lift trucks when waiting for maintenance and assess the general ground condition of the site (ii) leakage / spillage of oils during maintenance activities in vehicle repair area, and (iii) leakage / spillage of oils at the storage area, 2 boreholes are proposed in the parking area while 1 borehole is proposed at the repair area and oil drum storage area respectively. For parking area, parameters are proposed with reference to fuelling area in a vehicle repair workshop as stipulated in Guidance Note 2 for similar chemical of concern and potential land contamination from fuels. For vehicle repair area, parameters are proposed with reference to Guidance Note 2. For oil drum storage, area, parameters are proposed with reference to the locations of fuelling areas in Guidance Note 2 for similar chemical of concern and potential land contamination from fuels. 3 supplementary SI locations are proposed to assess other areas of the site.	**NOL/ERL/300/C/XRL/M57/014**
				G.W.	If present	-	X	X	-	-	-	-	-		
	Vehicle Repair Area	**F-03**	Borehole to 6m BBC	Soil	0.5, 1.5, 3.0, 4.5, 6.0 m BBC	Pb, CrIII, CrVI, Cu, Zn	X	-	X	-	X	-	-		
				G.W.	If present	-	X	-	X	-	X	-	-		
	Oil Drums Storage Area	**F-04**	Borehole to 6m BBC	Soil	0.5, 1.5, 3.0, 4.5, 6.0 m BBC	Pb	X	X	-	-	-	-	-		
				G.W.	If present	-	X	X	-	-	-	-	-		
	Supplementary SI: F-05 – F-07		Borehole to 6m BBC	Soil	0.5, 1.5, 3.0, 4.5, 6.0 m BBC	Pb, CrIII, CrVI, Cu, Zn	X	X	-	-	-	-	-		
				G.W.	If present	-	X	X	-	-	-	-	-		

Proposed Sampling Location	Hotspots identified and/or Respective Sample ID		Sampling Method	Sample Matrix		Parameters to be Tested							Rationale of Sampling and Testing Parameters	Reference Figures
						Metals	Petroleum Carbon Ranges	VOC		SVOC#		PCB	Cyanide	
								BTEX only	Full List	PAH only	Full List			
Site G (Scrap yard) Area occupied for contaminative land uses:~800m^2	**Scrap Storage Area**	**G-01 G-02 G-03 G-04**	Borehole to 6m BBC	Soil	0.5, 1.5, 3.0, 4.5, 6.0 m BBC	Cd, CrIII, CrVI, Cu, Hg, Ni, Pb, Zn	X	-	X	-	X	X	X	4 boreholes are proposed to access the potential land contamination impacts aroused from scrap storage and the general ground condition of the site. As the scrap could be from various industrial sources, various heavy metals are proposed as testing parameters together with VOCs and SVOCs. Cyanide is also included for screening. 2 supplementary SI locations are proposed to assess other areas of the site.	**NOL/ERL/300/C/XRL/M57/015**
	Supplementary SI: G-05 – G-06			G.W.	If present	Hg only	X	-	X	-	X	X	-		
North SSS															
Site L (Vehicle Repair Workshop): Area occupied for contaminative land uses: ~150m^2	**Vehicle Repair Area**	**L-01**	Borehole / Trial pit*	Soil	0.5, 1.5, 3.0, 4.5, 6.0 m BBC	Pb, CrIII, CrVI, Cu, Zn	X	-	X	-	X	-	-	In order to assess potential land contamination impacts from (i) leakage / spillage of oils during maintenance activities at site and (ii) lube oil /chemical storage at site, 1 borehole is proposed at the repairing area and the storage area respectively. Parameters are proposed with reference to Guidance Note 2. SI locations at hotspots are considered to be sufficient to assess the site condition and supplementary SI is not proposed within the site.	**NOL/ERL/300/C/XRL/M57/018**
	Lube oil storage area	**L-02**		G.W.	If present	-	X	-	X	-	X	-	-		

Proposed Sampling Location	Hotspots identified and/or Respective Sample ID		Sampling Method	Sample Matrix		Parameters to be Tested							Rationale of Sampling and Testing Parameters	Reference Figures
						Metals	Petroleum Carbon Ranges	VOC		SVOC#		PCB	Cyanide	
								BTEX only	Full List	PAH only	Full List			
Site M (open area): Area occupied for contaminative land uses: ~1,000m^2	**Above ground tank with unknown content**	**M-01 M-02 M-03 M-04**	Borehole to 6m BBC	Soil	0.5, 1.5, 3.0, 4.5, 6.0 m BBC	Cd, CrIII, Cr VI, Cu, Hg, Ni, Pb, Zn	X	-	X	-	X	X	X	The site is a vegetative land with above ground tank with unknown content, 4 boreholes are proposed around this site to assess the general condition of the site. A screening of heavy metals, TPH, VOC and SOC together with PCB and Cyanide are included for this site with unknown activities. 3 supplementary SI locations are proposed to assess other areas of the site.	**NOL/ERL/300/C/XRL/M57/018**
				G.W.	If present	Hg only	X	-	X	-	X	X	-	
	Supplementary SI: M-05 – M-07													
Site P (storage area): Area occupied for contaminative land uses: ~1,500m^2	**Parking Area**	**P-01 P-02**	Borehole / Trial pit*	Soil	0.5, 1.5, 3.0, 4.5, 6.0 m BBC	Cd, CrIII, CrVI, Cu, Hg, Ni, Pb, Zn	X	-	X	-	X	X	X	In order to assess the potential land contamination impacts due to spillage/leakage of fuels, 2 boreholes are proposed within the parking area. In addition, 3 boreholes (P-03 – P-05) are proposed at oil drums storage areas to assess the potential land contamination impacts due to oil spillage/leakage and 2 proposed to assess the general conditions within the site. Since the site was suspected to be occupied for industrial activities, a screening of heavy metals, TPH, VOC and SOC together with PCB and Cyanide are included for this site with unknown activities. SI locations at hotspots are considered to be sufficient to assess the site condition and supplementary SI are not proposed within the site	**NOL/ERL/300/C/XRL/M57/017**
	Storage area	**P-03 P-04 P-05 P-06 P-07**		G.W.	If present	Hg only	X	-	X	-	X	X	-	

Proposed Sampling Location	Hotspots identified and/or Respective Sample ID		Sampling Method	Sample Matrix		Parameters to be Tested								Rationale of Sampling and Testing Parameters	Reference Figures
						Metals	Petroleum Carbon Ranges	VOC		SVOC#		PCB	Cyanide		
								BTEX only	Full List	PAH only	Full List				
Site Q (Parking Area with Minor Vehicle Repair/ Maintenance Activities): Area occupied for contaminative land uses: ~600m^2	**Scattered Vehicle Repair Area**	**Q-01 Q-03 Q-04 Q-05**	Borehole to 6m BBC	Soil	0.5, 1.5, 3.0, 4.5, 6.0 m BBC	Pb, CrIII, CrVI, Cu, Zn	X	-	X	-	X	-	-	In order to assess potential land contamination impacts from leakage / spillage of oils during maintenance activities and from waste container disposed, 5 boreholes are proposed at the repairing area. Parameters are proposed with reference to Guidance Note 2. 2 supplementary SI locations are proposed to assess other areas of the site.	**NOL/ERL/300/C/XRL/M57/017**
	Waste Container Disposal Area	**Q-02**		G.W.	If present	-	X	-	X	-	v	-	-		
	Supplementary SI: Q-06 – Q-07														
Site R (Vehicle Repair Workshop): Area occupied for contaminative land uses: ~100m^2	**Waste Containers Storage Area**	**R-01**	Borehole / Trial pit*	Soil	0.5, 1.5, 3.0, 4.5, 6.0 m BBC	Pb, CrIII, CrVI, Cu, Zn	X	-	X	-	X	-	-	In order to assess potential land contamination impacts from leakage / spillage of oils/ chemicals during (i) storage and (ii) maintenance activities, 1 borehole is proposed at the oil drums/ chemical storage area and vehicle repair area respectively. For oil drum/ chemicals storage area, parameters are proposed with reference to chemicals/ contaminants which may be encountered due to potential contaminative activities in a vehicle repair workshop as stipulated in Guidance Note 2. For vehicle repair area, parameters are proposed with reference to Guidance Note 2. 2 supplementary SI locations are proposed to assess other areas of the site.	**NOL/ERL/300/C/XRL/M57/016**
	Vehicle Repair Area	**R-02**													
	Supplementary SI: R-03 – R-04			G.W.	If present	-	X	-	X	-	X	-	-		

Proposed Sampling Location	Hotspots identified and/or Respective Sample ID		Sampling Method	Sample Matrix		Parameters to be Tested								Rationale of Sampling and Testing Parameters	Reference Figures
						Metals	Petroleum Carbon Ranges	VOC		SVOC#		PCB	Cyanide		
								BTEX only	Full List	PAH only	Full List				
Site S (Vehicle Repair Workshop): Area occupied for contaminative land uses: ~100m^2	**Vehicle Repair Area**	**S-01**	Borehole / Trial pit*	Soil	0.5, 1.5, 3.0, 4.5, 6.0 m BBC	Pb, CrIII, CrVI, Cu, Zn	X	-	X	-	X	-	-	In order to assess potential land contamination impacts from leakage / spillage of oils/ chemicals during (i) storage and (ii) maintenance activities, 1 borehole is proposed at the oil drums/ chemical storage area and vehicle repair area respectively. For oil drum/ chemicals storage area, parameters are proposed with reference to chemicals/ contaminants which may be encountered due to potential contaminative activities in a vehicle repair workshop as stipulated in Guidance Note 2. For vehicle repair area, parameters are proposed with reference to Guidance Note 2. SI locations at hotspots are considered to be sufficient to assess the site condition and supplementary SI are not proposed within the site	**NOL/ERL/300/C/XRL/M57/016**
	Oil drums storage area	**S-02**		G.W.	If present	-	X	-	X	-	X	-	-		

Proposed Sampling Location	Hotspots identified and/or Respective Sample ID		Sampling Method	Sample Matrix		Parameters to be Tested							Rationale of Sampling and Testing Parameters	Reference Figures
						Metals	Petroleum Carbon Ranges	VOC		SVOC#		PCB	Cyanide	
								BTEX only	Full List	PAH only	Full List			
Ventilation Buildings/ Emergency Access Points														
MPV														
Site D (Container Truck Parking Area with Minor Repair/ Maintenance Activities): Area occupied for contaminative land uses: ~150m^2	**Vehicle Repair Area**	**D-01 D-02**	Borehole to 6m BBC	Soil	0.5, 1.5, 3.0, 4.5, 6.0 m BBC	Pb, CrIII, CrVI, Cu, Zn	X	-	X	-	X	-	-	In order to assess potential land contamination impacts from (i) maintenance activities and (ii) container dumping, 2 boreholes are proposed at the maintenance area and 1 borehole is proposed at the container dumping area. For vehicle repair area, parameters are proposed with reference to Guidance Note 2 For container dumping area, parameters are proposed with reference to chemicals/ contaminants which may be encountered due to potential contaminative activities in a vehicle repair workshop as stipulated in Guidance Note 2. 4 supplementary SI locations are proposed to assess other areas of the site.	**NOL/ERL/300/C/XRL/M57/013**
	Area with Used Containers Found	**D-03**												
	Supplementary SI: D-04 – D-07			G.W.	If present	-	X	-	X	-	X	-	-	

Proposed Sampling Location	Hotspots identified and/or Respective Sample ID		Sampling Method	Sample Matrix		Parameters to be Tested								Rationale of Sampling and Testing Parameters	Reference Figures
						Metals	Petroleum Carbon Ranges	VOC		SVOC#		PCB	Cyanide		
								BTEX only	Full List	PAH only	Full List				
Site E (Suspected Container Truck Parking area with Car Wash and Paint Booth): Area occupied for contaminative land uses: ~150m^2	**Paint Booth**	**E-01 E-02**	Borehole to 6m BBC	Soil	0.5, 1.5, 3.0, 4.5, 6.0 m BBC	Pb, Zn	-	-	X	-	X	-	-	In order to assess potential land contamination impacts from spillage during the painting process, 2 boreholes are proposed at the painting area. Parameters are proposed with reference to Guidance Note 2. 3 supplementary SI locations are proposed to assess other areas of the site.	**NOL/ERL/300/C/XRL/M57/013**
	Supplementary SI: E-03 – E-05			G.W.	If present	-	-	-	X	-	X	-	-		

Proposed Sampling Location	Hotspots identified and/or Respective Sample ID		Sampling Method	Sample Matrix		Parameters to be Tested							Rationale of Sampling and Testing Parameters	Reference Figures
						Metals	Petroleum Carbon Ranges	VOC		SVOC#		PCB	Cyanide	
								BTEX only	Full List	PAH only	Full List			
KCV														
Site H (Scrap yard) Area occupied for contaminative land uses: ~1,000m^2	**Access Road**	**H-01**	Borehole to 6m BBC	Soil	0.5, 1.5, 3.0, 4.5, 6.0 m BBC	Cd, CrIII, CrVI, Cu, Hg, Ni, Pb, Zn	X	-	X	-	X	X	X	To assess potential land contamination impacts during (i) transportation of scrap to the site and general ground condition, (ii) scrap storage and (iii) scrap packing process and the potential contamination from the storage of oil drums close the baler, 1 borehole is proposed near the entrance of the yard as a conservative approach, 2 boreholes are proposed near the scrap storage area and 1 borehole is proposed near the packing machine. As the scrap could be from various industrial sources, various heavy metals are proposed as testing parameters together with VOCs and SVOCs. Cyanide is also included for screening. 2 supplementary SI locations are proposed to assess other areas of the site.	**NOL/ERL/300/C/XRL/M57/019**
	Scrap Storage Area	**H-02 H-03**												
	Scrape Packing Area	**H-04**												
	Supplementary SI: H-05 – H-06			G.W.	If present	Hg only	X	-	X	-	X	X	-	

Proposed Sampling Location	Hotspots identified and/or Respective Sample ID		Sampling Method	Sample Matrix		Parameters to be Tested								Rationale of Sampling and Testing Parameters	Reference Figures
						Metals	Petroleum Carbon Ranges	VOC		SVOC#		PCB	Cyanide		
								BTEX only	Full List	PAH only	Full List				
NCB															
Site J (Container Yard): Area occupied for contaminative land uses: ~200m^2	**Mobile Generators Location**	**J-01**	Borehole to 6m BBC	Soil	0.5, 1.5, 3.0, 4.5, 6.0 m BBC	Pb	X	X	-	-	-	-	-	In order to assess potential land contamination impacts due to, (i) spillage/leakage of fuels during the operation of the suspected mobile generators, (ii) fuelling activities and (iii) oil drum storage, 1 borehole is proposed at the suspected mobile generator location and fuelling area respectively whereas 2 boreholes are proposed at the oil drum storage area identified . Parameters are proposed with reference to locations of fuelling areas in Guidance Note 2 due to similar nature of chemical of concern and potential land contamination impacts from fuels. 4 supplementary SI locations are proposed to assess other areas of the site.	**NOL/ERL/300/C/XRL/M57/022**
	Fuelling area	**J-02**													
	Scattered oil drum storage area	**J-03 J-04**													
	Supplementary SI: J-05 – J-08			G.W.	If present	-	X	X	-	-	-	-	-		

Proposed Sampling Location	Hotspots identified and/or Respective Sample ID	Sampling Method	Sample Matrix		Parameters to be Tested								Rationale of Sampling and Testing Parameters	Reference Figures
					Metals	Petroleum Carbon Ranges	VOC		SVOC#		PCB	Cyanide		
							BTEX only	Full List	PAH only	Full List				
Ventilation Buildings/ Emergency Access Points														
Site T at MLW (Car Parking) 4,000m^2	**T-01 – T-08****	Borehole to excavation level or bedrock whichever shallower	Soil	0.5, 1.5, 3.0, 4.5, 6.0 m BBC and 3m thereafter	Pb	X	X	-	-	-	-	-	In order to assess potential land contamination impacts from historical land uses as oil depot, 8 boreholes are proposed within the site with reference to Guidance Note 2. Parameters are proposed with reference to locations of fuelling areas in Guidance Note 2 due to similar nature of chemical of concern and potential land contamination impacts from oils.	**NOL/ERL/300/C/XRL/M57/020**
			G.W.	If present	-	X	X	-	-	-	-	-		

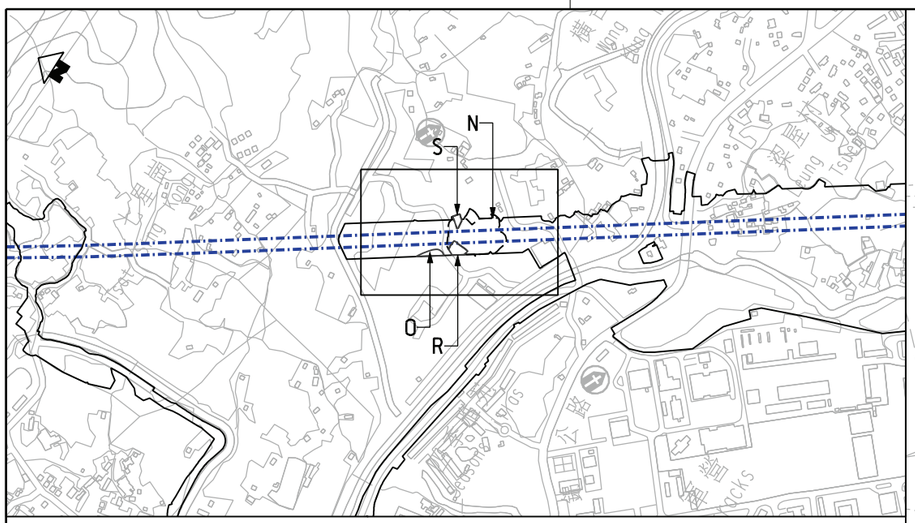
Proposed Sampling Location	Hotspots identified and/or Respective Sample ID	Sampling Method	Sample Matrix		Parameters to be Tested								Rationale of Sampling and Testing Parameters	Reference Figures
					Metals	Petroleum Carbon Ranges	VOC		SVOC#		PCB	Cyanide		
							BTEX only	Full List	PAH only	Full List				
Potential Contaminated Area Outside Project Boundary														
Area Close to LCW														
Site K (Open Area):	**Chemical (Dye) Storage Area nearby**	**K-01**	Borehole to 6m BBC	Soil	0.5, 1.5, 3.0, 4.5, 6.0 m BBC	Cd, CrIII, CrVI, Cu, Hg, Ni, Pb, Zn	-	-	X	-	X	X	X	In order to assess the potential land contamination impacts due to chemical spillage of chemicals stored at Feoso's building at close proximity to the site, 1 borehole is proposed. Heavy metals commonly found in dyes are included, together with solvents and cyanide.	**NOL/ERL/300/C/XRL /M57/021**
				G.W.	If present	Hg only	-	-	X	-	X	X	-		
Areas Not Feasible for On-Site Inspection and Site Investigation at this Stage														
West Kowloon Cut and Cover (WKCC) Section														
Site X at WKCC Occupied as Golf course 13,500m^2	**		Borehole/ Trial pit*	Soil	0.5, 1.5, 3.0, 4.5, 6.0 m BBC	Cd, CrIII, CrVI, Cu, Hg, Ni, Pb, Zn	-	-	X	-	X	-	-	In order to assess potential land contamination impacts from pesticide, 0-41 boreholes are proposed within the site with reference to Guidance Note 2. Parameters are proposed with reference to Guidance Note 2.	**NOL/ERL/300/C/XRL/M57/025**
				G.W.	If present	Hg only	-	-	X	-	X	-	-		

Proposed Sampling Location	Hotspots identified and/or Respective Sample ID	Sampling Method	Sample Matrix		Parameters to be Tested								Rationale of Sampling and Testing Parameters	Reference Figures
					Metals	Petroleum Carbon Ranges	VOC		SVOC#		PCB	Cyanide		
							BTEX only	Full List	PAH only	Full List				
Shek Kong Stabling and Sidings (SSS)														
Site I at SSS Suspected Container Truck Parking Area with Repair/ Maintenance Activities: 500m^2	**	Borehole/ Trial pit*	Soil	0.5, 1.5, 3.0, 4.5, 6.0 m BBC	Pb, CrIII, CrVI, Cu, Zn	X	-	X	-	X	-	-	In order to assess potential land contamination impacts from suspected vehicle maintenance/dismantling activities, 0-4 boreholes are proposed within the site. Parameters are proposed with reference to Guidance Note 2.	**NOL/ERL/300/C/XRL/M57/018**
			G.W.	If present	-	X	-	X	-	X	-	-		
Site O at SSS Suspected to be occupied for Excavator Parking and Repairing 300m^2	**	Borehole/ Trial pit*	Soil	0.5, 1.5, 3.0, 4.5, 6.0 m BBC	Pb, CrIII, CrVI, Cu, Zn	X	-	X	-	X	-	-	In order to assess potential land contamination impacts due to suspected maintenance activities of excavators, 0-2 boreholes are proposed. Parameters are proposed with reference to Guidance Note 2.	**NOL/ERL/300/C/XRL/M57/016**
			G.W.	If present	-	X	-	X	-	X	-	-		
Site B at SSS Suspected to be occupied for Industrial Uses 17,000m^2	**	Borehole/ Trial pit*	Soil	0.5, 1.5, 3.0, 4.5, 6.0 m BBC	Cd, CrIII, CrVI, Cu, Hg, Ni, Pb, Zn	X	-	X	-	X	X	X	In order to assess potential land contamination impacts from suspected industrial activities, 0-51 boreholes are proposed within the site with reference to Guidance Note 2. Parameters are proposed with reference to Guidance Note 2.	**NOL/ERL/300/C/XRL/M57/015**
			G.W.	If present	Hg only	X	-	X	-	X	X	-		

Proposed Sampling Location	Hotspots identified and/or Respective Sample ID	Sampling Method	Sample Matrix		Parameters to be Tested								Rationale of Sampling and Testing Parameters	Reference Figures
					Metals	Petroleum Carbon Ranges	VOC		SVOC#		PCB	Cyanide		
							BTEX only	Full List	PAH only	Full List				
Site N at SSS Suspected to be occupied for Industrial Uses 4,500m^2	**	Borehole/ Trial pit*	Soil	0.5, 1.5, 3.0, 4.5, 6.0 m BBC	Cd, CrIII, CrVI, Cu, Hg, Ni, Pb, Zn	X	-	X	-	X	X	X	In order to assess potential land contamination impacts from suspected industrial activities, 0-14 boreholes are proposed within the site with reference to Guidance Note 2. Parameters are proposed with reference to Guidance Note 2.	**NOL/ERL/300/C/XRL/M57/015**
			G.W.	If present	Hg only	X	-	X	-	X	X	-		
Site U at SSS Suspected to be occupied for Industrial Uses 2,000m^2	**	Borehole/ Trial pit*	Soil	0.5, 1.5, 3.0, 4.5, 6.0 m BBC	Cd, CrIII, CrVI, Cu, Hg, Ni, Pb, Zn	X	-	X	-	X	X	X	In order to assess potential land contamination impacts from suspected industrial activities, 0-6 boreholes are proposed within the site with reference to Guidance Note 2. Parameters are proposed with reference to Guidance Note 2.	**NOL/ERL/300/C/XRL/M57/024**
			G.W.	If present	Hg only	X	-	X	-	X	X	-		
Site V at SSS Suspected to be occupied for Industrial Uses 4,000m^2	**	Borehole/ Trial pit*	Soil	0.5, 1.5, 3.0, 4.5, 6.0 m BBC	Cd, CrIII, CrVI, Cu, Hg, Ni, Pb, Zn	X	-	X	-	X	X	X	In order to assess potential land contamination impacts from suspected industrial activities, 0-12 boreholes are proposed within the site with reference to Guidance Note 2. Parameters are proposed with reference to Guidance Note 2.	**NOL/ERL/300/C/XRL/M57/024**
			G.W.	If present	Hg only	X	-	X	-	X	X	-		

Proposed Sampling Location	Hotspots identified and/or Respective Sample ID	Sampling Method	Sample Matrix		Parameters to be Tested								Rationale of Sampling and Testing Parameters	Reference Figures
					Metals	Petroleum Carbon Ranges	VOC		SVOC#		PCB	Cyanide		
							BTEX only	Full List	PAH only	Full List				
Site W at SSS Suspected to be occupied for Industrial Uses 3,000m^2	**	Borehole/ Trial pit*	Soil	0.5, 1.5, 3.0, 4.5, 6.0 m BBC	Cd, CrIII, CrVI, Cu, Hg, Ni, Pb, Zn	X	-	X	-	X	X	X	In order to assess potential land contamination impacts from suspected industrial activities, 6-9 boreholes are proposed within the site with reference to Guidance Note 2. Parameters are proposed with reference to Guidance Note 2.	**NOL/ERL/300/C/XRL/M57/024**
			G.W.	If present	Hg only	X	-	X	-	X	X	-		
Ventilation Building Sites and Emergency Access Point (VB/EAP)														
Site A at MPV (Suspected to be occupied for recycling activities) 5,000m^2	**	Borehole/ Trial pit*	Soil	0.5, 1.5, 3.0, 4.5, 6.0 m BBC	Pb, CrIII, CrVI, Cu, Zn	X	-	X	-	X	X	X	In order to assess potential land contamination impacts from suspected recycling activities, 0-15 boreholes are proposed within the site with reference to Guidance Note 2. Parameters are proposed considering the nature of recycling industry as involving different kinds of waste which have similar nature to scrap yard.	**NOL/ERL/300/C/XRL/M57/013**
			G.W.	If present	-	X	-	X	-	X	X	-		
Site C at MPV Suspected to be occupied for Vehicle Maintenance: 3,000m^2	**	Borehole/ Trial pit*	Soil	0.5, 1.5, 3.0, 4.5, 6.0 m BBC	Pb, CrIII, CrVI, Cu, Zn	X	-	X	-	X	-	-	In order to assess potential land contamination impacts from suspected vehicle maintenance activities, 0-9 boreholes are proposed within the site with reference to Guidance Note 2. Parameters are proposed with reference to Guidance Note 2.	**NOL/ERL/300/C/XRL/M57/013**
			G.W.	If present	-	X	-	X	-	X	-	-		

Note:



PROPOSED SHEK KONG STABLING SIDINGS (SSS) WORKS AREA

SCALE 1:10000

826700 E

833900 N

833800 N

826600 E

826500 E



VEHICLE REPAIR AREA



CHEMICAL STORAGE AREA
(WITH SECONDARY CONTAINMENT)



OIL DRUM STORAGE AREA



SITE OFFICE/TOOL STORAGE AREA



VACANT AREA



VEHICLE REPAIR AREA



WASTE CONTAINER STORAGE AREA

S

S-01

S-02

N

O

R-04

VACANT AREA

R-02

R-01

R-03

R

工廠 Factory

露天堆填 Open Storage

0 8 16 24 32 40

METRES

1 : 800

LOCATION	SITE ID	POTENTIAL CONTAMINATIVE LAND USES IDENTIFIED	HOTSPOTS OBSERVED	APPROXIMATE AREA OF THE SITE	APPROXIMATE AREA OF CONTAMINATIVE ACTIVITIES	PROPOSED HOTSPOT SAMPLING LOCATION(S)	PROPOSED SUPPLEMENTARY SITE SAMPLING LOCATION(S)	TOTAL NUMBER OF SAMPLING LOCATION(S) PROPOSED WITHIN THE SITE
SSS	N	INFEASIBLE FOR INSPECTION	NA	4500m²*	NA	NA	NA	0-14**
	O	SUSPECTED EXCAVATOR PARKING AREA WITH REPAIR/MAINTENANCE ACTIVITIES	NA	300m²*	NA	NA	NA	0-2**
	R	VEHICLE REPAIR WORKSHOP	VEHICLE REPAIR AREA WASTE CONTAINER STORAGE AREA	400m²	100m²	2	2	4
	S	VEHICLE REPAIR WORKSHOP	VEHICLE REPAIR AREA OIL DRUM/ CHEMICAL STORAGE AREA	250m²	100m²	2	NA	2

NOTE:

1. THE LAYOUTS ARE NOT TO SCALE.

* SINCE THE SITE IS INACCESSIBLE / INFEASIBLE FOR INSPECTION THE AREA OF CONTAMINATIVE ACTIVITIES ARE CONSIDERED TO BE THE SAME AS THE AREA OF THE SITE. IF HOTSPOTS WERE IDENTIFIED IN THE LATER STAGE, THE AREA OF CONTAMINATIVE ACTIVITIES COULD BE CHANGED.

** THE NUMBER OF SAMPLING POINTS IS PROPOSED WITH REFERENCE TO THE (GUIDANCE NOTES FOR INVESTIGATION AND REMEDIATION OF CONTAMINATED SITES OF PETROL FILLING STATIONS, BOATYARDS AND CAR REPAIR / DISMANTLING WORKSHOP). IN CASE THE SITE IS ACCESSIBLE IN LATER STAGE, THE NUMBER OF SAMPLING POINT WOULD BE SUBJECTED TO CHANGE UPON EPD'S AGREEMENT.

LEGEND:

- CONSTRUCTION WORKS SITES BOUNDARY
- BOUNDARY OF USAGE
- PROPOSED ALIGNMENT
- POTENTIAL CONTAMINATED SITE
- PROPOSED SAMPLING LOCATION
- PROPOSED SUPPLEMENTARY SAMPLING LOCATION
- INACCESSIBLE SITE FOR INSPECTION
- SITE OFFICE / TOOL STORAGE AREA

REV	DESCRIPTION	BY	DATE	APPROVED

DRAWN	YJP
DESIGNED	TWF
CHECKED	KCC
APPROVED	PL
DATE	27/APR./2009

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TITLE

NOL / ERL-300
ENVIRONMENTAL IMPACT ASSESSMENT
PROPOSED SI LOCATIONS AT POTENTIAL CONTAMINATED SITES - SSS

SCALE	FIGURE NO.	REV.
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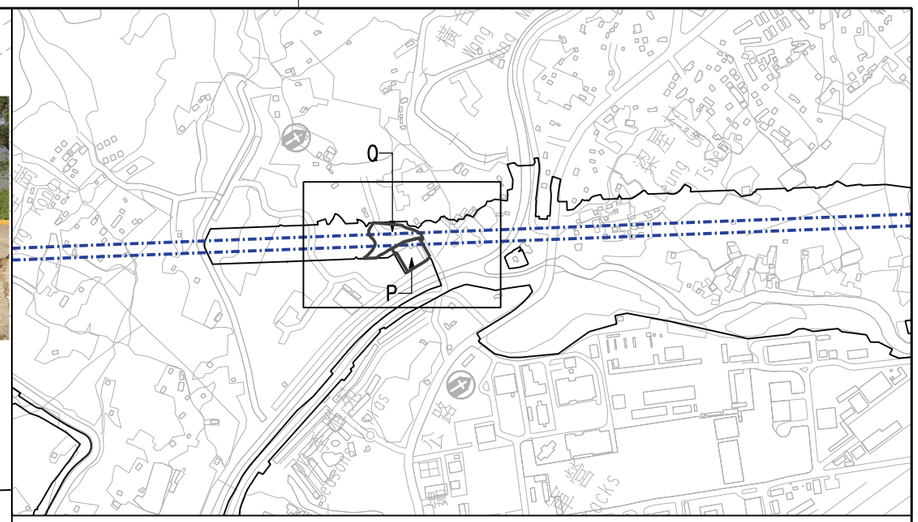
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SCATTERED VEHICLE REPAIR AREA


WASTE CONTAINER DISPOSAL AREA


ACCESS TO ANOTHER REPAIR AREA


PARKING AREA



PROPOSED SHEK KONG STABLING SIDINGS (SSS) WORKS AREA
SCALE 1:10000

826700 E
833800 N
826600 E
833700 N
833600 N

LOCATION OF ANOTHER REPAIR AREA

Q

Q-07
PARKING AREA
Q-02
Q-06
PARKING AREA
Q-03
Q-01
Q-04
Q-05
VEGETATIVE AREA

P-03
P-02
P-05
P-04
P-06
P-01
P-07
P


PARKING AREA


PLASTIC PIPE STORAGE AREA



OIL DRUM/STORAGE AREA


WOOD PILE STORAGE AREA


VEGETATIVE AREA


PLASTIC PIPE STORAGE AREA


ACCESS TO SITE P


WOOD PILE STORAGE AREA

0 4 8 12 16 20
METRES
1 : 800

LOCATION	SITE ID	POTENTIAL CONTAMINATIVE LAND USES IDENTIFIED	HOTSPOTS OBSERVED	APPROXIMATE AREA OF THE SITE	APPROXIMATE AREA OF CONTAMINATIVE ACTIVITIES	PROPOSED HOTSPOT SAMPLING LOCATION(S)	PROPOSED SUPPLEMENTARY SITE SAMPLING LOCATION(S)	TOTAL NUMBER OF SAMPLING LOCATION(S) PROPOSED WITHIN THE SITE
SSS	P	STORAGE AREA	PARKING AREA	1500m²*	NA	NA	NA	7
			OIL DRUM STORAGE AREA					
	Q	VEHICLE PARKING AREA WITH MINOR VEHICLE REPAIR/ MAINTENANCE ACTIVITIES	VEHICLE REPAIR AREA	2000m²	600m²	5	2	7
			WASTE CONTAINER DISPOSAL AREA					

NOTE:
1. THE LAYOUTS ARE NOT TO SCALE.
* SINCE THE SITE WAS LABELED AS FACTORY, THE AREA OF CONTAMINATIVE ACTIVITIES IS CONSIDERED TO BE THE SAME AS THE AREA OF THE SITE.

LEGEND:
- CONSTRUCTION WORKS SITES BOUNDARY
- BOUNDARY OF USAGE
- PROPOSED ALIGNMENT
- POTENTIAL CONTAMINATED SITE
- PROPOSED SAMPLING LOCATION
- PROPOSED SUPPLEMENTARY SAMPLING LOCATION
- SITE OFFICE / TOOL STORAGE AREA

REV	DESCRIPTION	BY	DATE	APPROVED

DRAWN	YJP
DESIGNED	TWF
CHECKED	KCC
APPROVED	PL
DATE	27/APR./2008

DO NOT SCALE DRAWINGS. ALL DIMENSIONS SHALL BE VERIFIED ON SITE.
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TITLE
NOL / ERL-300
ENVIRONMENTAL IMPACT ASSESSMENT
PROPOSED SI LOCATIONS AT POTENTIAL CONTAMINATED SITES - SSS

SCALE 1 : 800 (A3) | FIGURE NO. NOL/ERL/300/C/XRL/ENS/M57/017 | REV. C

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826750 E

826700 E

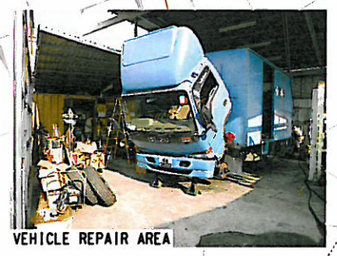
833550 N

833600 N


VACANT AREA


LUBE OIL STORAGE AREA

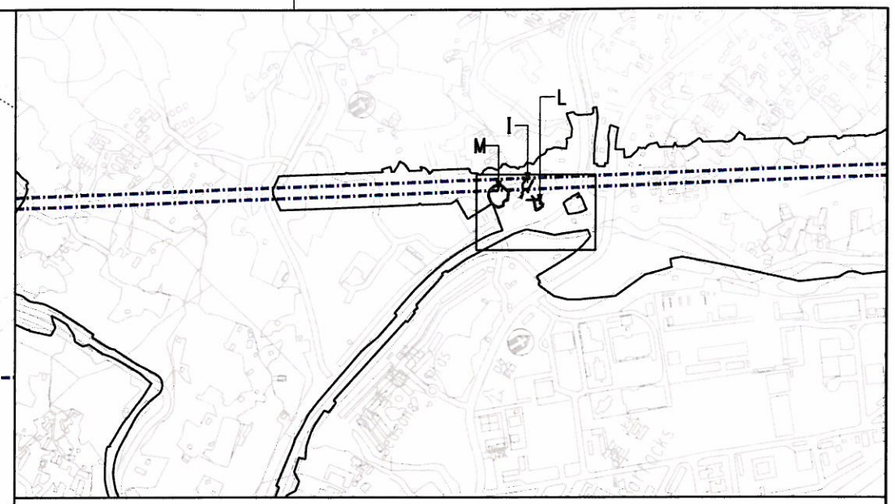
TANK WITH UNKNOWN CONTENT


VEHICLE REPAIR AREA

M-04
M-05
M-03
M-02
M-07
M-06
M-01
M

I

L-02
L-01
L



PROPOSED SHEK KONG STABLING SIDINGS(SSS) WORKS AREA
SCALE 1:10000

LOCATION	SITE ID	POTENTIAL CONTAMINATIVE LAND USES IDENTIFIED	HOTSPOTS OBSERVED	APPROXIMATE AREA OF THE SITE	APPROXIMATE AREA OF CONTAMINATIVE ACTIVITIES	PROPOSED HOTSPOT SAMPLING LOCATION(S)	PROPOSED SUPPLEMENTARY SITE SAMPLING LOCATION(S)	TOTAL NUMBER OF SAMPLING LOCATION(S) PROPOSED WITHIN THE SITE
SSS	I	SUSPECTED CAR PARKING AREA WITH REPAIR / MAINTENANCE ACTIVITIES	NA	500m²*	NA	NA	NA	0-4**
	L	VEHICLE REPAIR WORKSHOP	VEHICLE REPAIR AREA	200m²	150m²	2	NA	2
			LUBE OIL STORAGE AREA					
	M	OPEN AREA	ABOVEGROUND TANK	1000m²	NA***	NA	3	7

NOTES:

1. THE LAYOUTS ARE NOT TO SCALE.

* SINCE THE SITE IS INACCESSIBLE / INFEASIBLE FOR INSPECTION, THE AREA OF CONTAMINATIVE ACTIVITIES ARE CONSIDERED TO BE THE SAME AS THE AREA OF THE SITE. IF HOTSPOTS WERE IDENTIFIED IN THE LATER STAGE, THE AREA OF CONTAMINATIVE ACTIVITIES COULD BE CHANGED.

** THE NUMBER OF SAMPLING POINTS IS PROPOSED WITH REFERENCE TO THE "GUIDANCE NOTES FOR INVESTIGATION AND REMEDIATION OF CONTAMINATED SITES OF PETROL FILLING STATIONS, BOATYARDS AND CAR REPAIR /DISMANTLING WORKSHOP" . IN CASE THE SITE IS ACCESSIBLE IN LATER STAGE, THE NUMBER OF SAMPLING POINT WOULD BE SUBJECTED TO CHANGE UPON EPD'S AGREEMENT.

*** SITE M WAS FOUND TO BE AN OPEN AREA WITH SOME VEGETATION AND AN ABOVEGROUND TANK WITH UNKNOWN CONTENT. SITE INVESTIGATION WAS PROPOSED TO ASSESS THE GENERAL CONDITION OF THE SITE AND POTENTIAL LAND CONTAMINATION IMPACT FROM THE ABOVEGROUND TANK.

0 2.5 5 7.5 10 12.5
METRES
1 : 500

LEGEND:
- CONSTRUCTION WORKS SITES BOUNDARY
- BOUNDARY OF USAGE
- PROPOSED ALIGNMENT
- POTENTIAL CONTAMINATED SITE
- PROPOSED SAMPLING LOCATION
- INACCESSIBLE SITE FOR INSPECTION
- SITE OFFICE

REV	DESCRIPTION	BY	DATE	APPROVED	REV	DESCRIPTION	BY	DATE	APPROVED

DRAWN	YJP
DESIGNED	TWF
CHECKED	KCC
APPROVED	PL
DATE	27/APR./2008

DO NOT SCALE DRAWINGS. ALL DIMENSIONS SHALL BE VERIFIED ON SITE.
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MTR

EXPRESS RAIL LINK

ORIGINATOR

ENSR | AECOM

CADD REF. NOL_ERL_300_C_XRL_ENS_M57_018C.dgn

TITLE

NOL / ERL-300
ENVIRONMENTAL IMPACT ASSESSMENT
PROPOSED SI LOCATIONS AT POTENTIAL CONTAMINATED SITES - SSS

SCALE	FIGURE NO.	REV.
1 : 500 (A3)	NOL/ERL/300/C/XRL/ENS/M57/018	C

PLOT DRV: R:\ustnser\MTR\PLOTDRV\ERVWMOD\PS\A3 COLOUR.plt
MODELNAME: Default PRINTED BY: DAIXL 2009-5-18 15:57:59
FILENAME: p:\projects\60046742\DRAWING\FIGURE\EXCAVATION\NOL_ERL_300_C_XRL_ENS_M57_018C.dgn

Annex F

RBRG Standards

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

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

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

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

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

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