

Your Ref : (17) in EP2/N7/A/52Ax(1) Pt.10
Our Ref : (CV/2013/03)/M45/600/B01609

By Hand

16 March 2015

Environmental Impact Assessment Ordinance Register Office
Environmental Protection Department
27/F, Southorn Centre,
130 Hennessy Road,
Wanchai, Hong Kong

Attn.: Mr. Charles Pang

Dear Sirs,

Contract No. CV/2013/03
Liantang / Heung Yuen Wai Boundary Control Point
Site Formation and Infrastructure Works - Contract 5


Environmental Permit No. EP-404/2011/B
Condition 2.12 – Submission of Updated Topsoil Management Plan

Topsoil Management Plan (Rev.01) submitted on 16 October 2013 and 5 November 2013 for the Project titled "Liantang / Heung Yuen Wai Boundary Control Point and Associated Works under the captioned Environmental Permit was approved according to your above reference letter dated 29 November 2013.

Further soil sampling was carried out at different work locations of the captioned contract in November 2013 and November 2014. I would like to submit three hard copies of Updated Topsoil Management Plan with update sampling and testing results for Contract 5 of the Project titled "Liantang / Heung Yuen Wai Boundary Control Point and Associated Works", which had been certified by the ET Leader and verified by the IEC, for your reference.

Should you have any queries, please contact the undersigned or our Mr. Perry Yam at 2171 3350.

Yours faithfully,


Simon Leung
Senior Resident Engineer

Encl.

c.c. CEDD/BCP	- Attn: Mr. Chris Wong / Mr. Michael Chan	- 1 hard copy
AECOM	- Attn: Mr. Francis Leong / Mr. Pat Lam	- 1 CD copy
SMEC(IEC)	- Attn: Mr. Antony Wong	- 1 CD copy
AUES(ET)	- Attn: Mr. T. W. Tam	- 1 CD copy
SRJV	- Attn: Mr. Edwin Au	- w/o encl

CTW/SL/GW/KL/PY/LQR/tc

Liantang / Heung Yuen Wai Boundary Control Point and Associated Works

Environmental Permit (EP No.: EP-404/2011/B)

Updated Topsoil Management Plan

March 2015

Unit A-C, 27/F Ford Glory Plaza
37-39 Wing Hong Street
Cheung Sha Wan, Kowloon, Hong Kong
T +852 3995 8100 F +852 3995 8101 E hongkong@smec.com
www.smec.com
12 March 2015

Our ref: 7076192/L18056/R/AB/AW/FL/rw

AECOM
8/F, Grand Central Plaza, Tower 2
138 Shatin Rural Committee Road
Shatin, N.T.

By Email & Post

Attention: Mr Simon LEUNG

Dear Sirs

Agreement No. CE 45/2008 (CE)
Liantang/Heung Yuen Wai Boundary Control Point and Associated Works
Independent Environmental Checker – Investigation
Updated Topsoil Management Plan (March 2015)

Reference is made to the Updated Topsoil Management Plan dated March 2015 received by email on 9 March 2015 certified by the ET Leader (ET's ref.: TCS00670/13/300/L0335 dated 11 March 2015). Please be noted that we have no adverse comments on the captioned submission. We herewith verify the captioned submission in accordance with Condition 2.12 of the Environmental Permit No. EP-404/2011/B.

Thank you for your attention and please do not hesitate to contact the undersigned on tel. 3995 8120 or by email to antony.wong@smec.com; or our Mr Francis LEE on tel. 3995 8144 or by email to francis.lee@smec.com.

Yours faithfully
For and on behalf of
SMEC Asia Limited



Antony WONG

Independent Environmental Checker

cc	CEDD/BCP	-	Mr Desmond LAM / Mr Eric CHAN / Mr William CHEUNG / Mr CM OR	by fax: 3547 1659
	AECOM	-	Mr Pat LAM / Mr Perry YAM	by email
	AUES	-	Mr TW TAM	by email

Our Ref: TCS00670/13/300/L0335

AECOM
8/f Grand Central Plaza, Tower 2
138 Shatin Rural Committee Road
Shatin, Hong Kong

Attn: Mr. Simon Leung
Engineer's Representative

11 March 2015
By E-mail

Dear Sir,

Re: Agreement No. CE 45/2008 (CE)
Liantang/ Heung Yuen Wai Boundary Control Point and Associated Works
Updated Topsoil Management Plan

With reference to the Update Topsoil Management Plan in March 2015 received on 9 March 2015, please note that we have no adverse comments on this submission. We herewith certify the Update Topsoil Management Plan in accordance with *Condition 2.12* of Environmental Permit (EP) No. EP-404/2011/B.

Should you have any question or require further information, please feel free to contact the undersigned at Tel: 2959-6059 or Fax: 2959-6079 or E-mail: twtam@fordbusiness.com.

Yours sincerely,
For and on Behalf of
Action-United Environmental Services & Consulting



T. W. Tam
Environmental Team Leader

cc SMEC (IEC) Attn: Mr. Antony Wong By e-mail

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1 Introduction

1.1 Purpose of the Plan

The Updated Topsoil Management Plan (the Plan) provides detailed guidance and direction for the management and use of topsoil recovered from the construction of Liantang/ Heung Yuen Wai Boundary Control Point and Associated Works (the Project). This Plan addresses the stripping, transport and re-use of recovered topsoil from construction works. This Plan identifies the different sources of topsoil that may be recovered during construction, and identifies the locations where this soil can be stockpiled. It also identifies the monitoring program to be undertaken to measure ongoing topsoil viability.

1.2 Project Background

Currently, there are four Boundary Control Points (BCP) in the HKSAR providing vehicular crossing at the Hong Kong – Shenzhen boundary. They are namely Shenzhen Bay, Lok Ma Chau, Man Kam To and Sha Tau Kok. On the eastern part of the boundary, the existing vehicular crossing points at Man Kam To and Sha Tau Kok have already reached their limits in the crossing capacity, while scope for the expansion works to enhance their capacities is limited by site constraints and capacity of connecting roads on both Hong Kong and Shenzhen sides. It is anticipated that the volume of cross-boundary traffic will continue to increase with the closer ties of Hong Kong- Shenzhen and the completion of the Eastern Corridor (東部過境通道) in Shenzhen. The establishment of a new BCP in the eastern part of Hong Kong-Shenzhen boundary is thus required to meet the future traffic demand and re-distribute cross-boundary traffic amongst the crossings in the east.

In December 2006, the Hong Kong and Shenzhen governments jointly commissioned a study, namely “Preliminary Planning Study on Developing Liantang/Heung Yuen Wai Control Point” (the Joint Study) (“深港興建蓮塘/ 香園圍口岸前期規劃研究”) to examine the need, benefit and function of a new BCP at Liantang/Heung Yuen Wai (LT/HYW). The Joint Study confirmed the need for a new BCP at LT/HYW.

In January 2007, the Planning Department (PlanD) commissioned a consultancy study “Planning Study on Liantang/Heung Yuen Wai Cross-boundary Control Point and its Associated Connecting Roads in Hong Kong – Feasibility Study” (the Feasibility Study) to examine the land, planning, traffic and engineering implications and its associated connecting road within Hong Kong territory for the LT/HYW BCP. The Feasibility Study put forward the preferred option for the LT/HYW BCP layout and alignment for its connecting road.

Both Hong Kong and Shenzhen Governments at the second meeting of the Hong Kong-Shenzhen Joint Task Force on Boundary District Development on 18 September 2008 endorsed the major findings of the Joint Study and they jointly announced after the meeting to implement the LT/HYW BCP.

CEDD commissioned the investigation and preliminary design (I&PD) and relevant impact assessments for the Project in April 2009 under Agreement No. CE 45/2008 (CE) "Liantang/Heung Yuen Wai Boundary Control Point and Associated Works". The I&PD determined the general layout of the BCP and the alignment of the connecting road. The I&PD also concluded that the Project with the recommended mitigation measures is environmentally acceptable.

1.3 Project Scope

The scope of the Project under this Assignment covers the site formation and infrastructures for the LT/HYW BCP, and comprises:

- (a) site formation of about 23 hectares of land for the development of the BCP;
- (b) provision of a perimeter road at the BCP together with the associated vehicular and pedestrian gates, fencing, etc;
- (c) an approximately 11-kilometre (km) long dual two-lane trunk road (Connecting Road) (with about 1.0 km of at grade road, 4.3 km of viaduct and 5.7 km of tunnels) connecting the BCP with Fanling Highway and the associated traffic control and surveillance system;
- (d) associated diversion/modification works at Lin Ma Hang Road;
- (e) widening of access road to the resite area of Chuk Yuen Village and further modification works to the facilities in the resite area;
- (f) provision of sewage collection, treatment and disposal facilities for the BCP and the resite of Chuk Yuen Village; and
- (g) associated environmental mitigation measures, landscaping works, drainage/sewerage, waterworks, utilities and traffic engineering works.

1.4 Construction Contract Packaging

To facilitate project management and implementation, the Project will be implemented in the following contract packages:

- Contract 2 (CV/2012/08)
- Contract 3 (CV/2012/09)
- Contract 4 (TCSS)
- Contract 5 (CV/2013/03)
- Contract 6 (CV/2013/08)

The details of each contracts are summarized below and the delineation of each contract is shown in **Figure 1.0**.

Contract 2	
Contract No.:	CV/2012/08
Contract Name:	Liantang/ Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 2
Commencement date:	20 December 2013
Major Scope of Works:	<ul style="list-style-type: none"> • construction of an approximately 5.2km long dual two-lane connecting road (with about 0.4km of at-grade road and 4.8km of tunnel) connecting the Fanling Interchange with the proposed Sha Tau Kok Interchange; • construction of a ventilation adit tunnel and the mid-ventilation building; • construction of the north and south portal buildings of the Lung Shan Tunnel and their associated slope works; • provision and installation of ventilation system, E&M works and building services works for Lung Shan tunnel and Cheung Shan tunnel and their portal buildings; • construction of Tunnel Administration Building adjacent to Wo Keng Shan Road and the associated E&M and building services works; and • construction of associated footpath, slopes, retaining structures, drainage, sewerage, waterworks, landscaping works and other ancillary works.

Contract 3	
Contract No.:	CV/2012/09
Contract Name:	Liantang/ Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 3
Commencement date:	31 July 2013
Major Scope of Works:	<ul style="list-style-type: none"> • construction of four link roads connecting the existing Fanling Highway and the south portal of the Lung Shan Tunnel; • realignment of the existing Tai Wo Service Road West and Tai Wo Service Road East; • widening of the existing Fanling Highway (HyD's entrustment works); • demolishing existing Kiu Tau vehicular bridge and Kiu Tau footbridge and reconstruction of the existing Kiu Tau Footbridge (HyD's entrustment works); and • construction of associated footpath, slopes, retaining structures, drainage, sewerage, waterworks, landscaping works and other ancillary works.

Contract 4	
Contract No.:	To be assigned
Contract Name:	Liantang/ Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works – TCSS Contract
Commencement date:	The contract is still yet awarded
Major Scope of Works:	<ul style="list-style-type: none"> • The works include provision and installation of Traffic Control and Surveillance System and the associated electrical and mechanical works for the Project.

Contract 5	
Contract No.:	CV/2013/03
Contract Name:	Liantang/ Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 5
Commencement date:	11 April 2013
Major Scope of Works:	<ul style="list-style-type: none"> • site formation of about 23 hectares of land for the development of the BCP; • construction of an approximately 1.6 km long perimeter road at the BCP including a 175m long depressed road; • associated diversion/modification works at existing local roads and junctions including Lin Ma Hang Road; • construction of pedestrian subway linking the BCP to Lin Ma Hang Road; • provision of resite area with supporting infrastructure for reprovisioning of the affected village houses; • construction of associated footpath, slopes, retaining structures, drainage, sewerage, waterworks, landscaping works and other ancillary works.

Contract 6	
Contract No.:	CV/2013/08
Contract Name:	Liantang/ Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 6
Commencement date:	The contract is still yet awarded
Major Scope of Works:	<ul style="list-style-type: none"> • construction of an approximately 4.6km long dual two-lane connecting road (with about 0.6km of at-grade road, 3.3km of viaduct and 0.7km of tunnel) connecting the BCP with the proposed Sha Tau Kok Road Interchange and the associated ventilation buildings; • associated diversion/modification works at access roads to

	<p>the resite of Chuk Yuen Village;</p> <ul style="list-style-type: none">• provision of sewage collection, treatment and disposal facilities for the BCP and the resite of Chuk Yuen Village;• construction of a pedestrian subway linking the BCP to Lin Ma Hang Road;• reprovisioning of the affected facilities including Wo Keng Shan Road garden; and• construction of associated footpath, slopes, retaining structures, drainage, sewerage, waterworks, landscaping works and other ancillary works.
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2 Topsoil Management Strategy

2.1 General

Topsoil management strategy is developed to conserve and reuse the topsoil excavated as much as possible by the Project and other projects in accordance with the Approved EIA Report. The objectives of the Topsoil Management Plan are to: -

- Optimize the recovery of topsoil for reuse as much as possible;
- Identify topsoil resources;
- Develop topsoil stripping and stockpiling guidelines; and
- Develop guidelines for re-spreading of topsoil for use.

2.2 Topsoil Recovery

2.2.1 Definition of Topsoil

Topsoil is the uppermost layer of soil capable of growing and supporting vegetation. Topsoil contains the essential nutrients, organic matter, physical characteristics necessary to grow and sustain permanent vegetation.

- Topsoil shall be evenly textured, fertile, dark brown or black, free draining, sandy loam with the following properties:
- The top 50-300 mm fertile layer immediately below undisturbed vegetation; the thickness of topsoil to be reused would be subject to the habitat of the vegetated areas.
- Containing not less than 7.5% organic matter;
- Having a pH value between 5.5 and 7.0;
- Free from all kinds of pests, toxic material, pernicious and/or perennial weed seed, weeds and roots, grass, clay lumps, non-soil material, brick, cement, concrete and other building materials, foreign matter and contamination;
- Maximum stone content % (m/m) as tested under BS 1377-2; and
- Exchangeable sodium percentage (ESP) %: <15.

2.2.2 Identification of Topsoil for Reuse

Existing vegetated areas within the project boundary shall be surveyed by the Contractor to determine the availability of soil materials for reuse and to formulate topsoil and stockpiling strategies. According to the Habitat Map (Drawing No. 60212563/ER1/901 – 908) within the project boundary, the following areas shall be surveyed to identify topsoil for the reuse:

- Woodland;
- Shrubland;
- Plantation;
- Active Agricultural Land;
- Abandoned Agricultural Land; and
- Hillside Grassland.

The depth of topsoil to be reused for different vegetated areas would be depending on the habitat type. In general, there would be thicker available potential topsoil to be reused in Plantation, Active Agricultural Land and Abandoned Agricultural Land. Relatively, there

would be thinner available potential topsoil to be reused in Hillside Woodland, Shrubland and Grassland.

2.2.3 Stripping

Prior to the commencement of stripping, areas will be cleared of vegetation. At locations where topsoil is to be recovered, soil stripping will be undertaken by conventional earth-moving equipment such as bulldozers, scrapers, graders and off-road trucks where practical, giving consideration to operational safety and accessibility, to maximize the preservation of the quality of the topsoil. In areas where the topsoil is relatively thin, the Contractor shall remove the topsoil using smaller equipment. The Contractor shall provide detailed method statement for the stripping operation according to site condition to the Engineer for approval prior to the commencement of any works.

Initial soil samples have been collected and tested. The test results of organic matter content showed that the soil samples can be classified as “Not Topsoil” according to the definition in the Section 2.2.1. Further soil sampling and testing was carried out at different locations.

2.2.4 Stockpiling

Where possible, topsoil stripped off shall be re-spread directly from stripped areas onto recipient sites. However, based on the anticipated construction sequence and programme, it is likely that topsoil stripped off shall be stored in stockpiles for use at a later stage. General requirements for topsoil handling and stockpiling are listed below: -

- The surface of the completed stockpiles shall be left in a “rough” condition to help promoting water infiltration and minimize erosion prior to vegetation establishment;
- The height of topsoil stockpiles shall not be higher than 3m in order to limit the potential for anaerobic conditions to develop within the topsoil pile;
- The embankment of the topsoil stockpiles shall not be steeper than 3H:1V (to limit the potential for erosion of the outer pile face);
- If the stockpile is to be retained for a period of more than 6 months, the stockpile will be deep ripped and hydroseeded in order to keep the soil viable and to maintain biological activity.
- The establishment of weeds on the stockpiles shall be monitored and weed controlled measures shall be implemented as required.

The Contractor shall provide detailed method statement for the topsoil stockpiling including the proposed locations stockpiling, temporary soil stabilization and erosion treatment to the Engineer for approval prior to the commencement of any works.

2.2.5 Respreading

Prior to the use of any topsoil from each approved stockpiling site for landscaping works, for every 300m³ delivered to Site, the Contractor shall produce certificates of analysis of Topsoil from an approved laboratory within 14 calendar days of taking the samples. An approved laboratory shall mean one of the Employer’s laboratories or a laboratory accredited by the Hong Kong Laboratory Accreditation Scheme (HOKLAS) for the relevant tests in which case the laboratory shall have no affiliation as a legal entity to the Contractor or its sub-contractors. Particulars of the laboratory proposed by the Contractor shall be submitted to the Engineer for approval. Tests shall be carried out according to BS 3882 and BS 1377. Each certificate

shall state the results of test for the properties stipulated for compliance in the topsoil properties listed in Section 2.2.1.

During the removal of the topsoil from the stockpiles, care will be taken to minimise structural degradation of the topsoil. If required, soil conditioner shall be applied to the topsoil before re-spreading to mitigate any deficiencies in the topsoil to meet the requirement for landscaping works.

The detailed method statement for re-spreading works to the designated planting areas would be provided after topsoil identification and based on the estimated volume.

3 Plan Update

The landscape plan submitted separately under EP Condition 2.11 will indicate the approximate landscape areas to accommodate the topsoil.

An implementation programme for maximizing the reuse of the excavated topsoil would be submitted after the volume of topsoil to be generated is estimated.

Under the Engineer’s supervision, topsoil samples were collected in August 2013, in November 2013 and November 2014 at different work locations of the Project. Please refer to **Appendix A** for allocation of the sampling points.

4 Topsoil Sampling and Testing

Analytical testing results are presented in **Appendix B**. Test results are summarized in Table 4.1.

Table 4.1 Summary of topsoil analytical testing results

Sample ID	Testing parameter		Likely to be Topsoil
	Organic Matter Content (%)	pH	
LMH2-S1	3.5	6.4	No
LMH2-S2	1.7	7.4	No
BCP1-S1	0.6	5.9	No
BCP1-S2	1.2	6.4	No
BCP2-S1	0.6	5.9	No
BCP2-S2	0.5	4.6	No
TS1	1.2	5.6	No
TS2	2.8	5.5	No
TS3	0.9	7.0	No
TS4	2.6	6.0	No
TS5	2.9	6.8	No
TS6	1.4	6.8	No
TS7	2.8	6.0	No

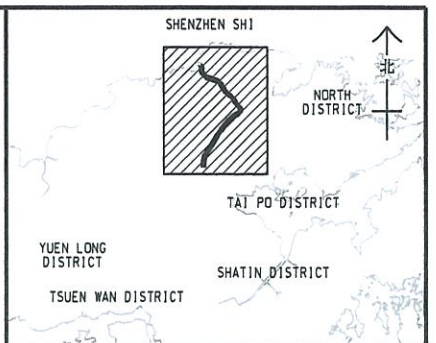
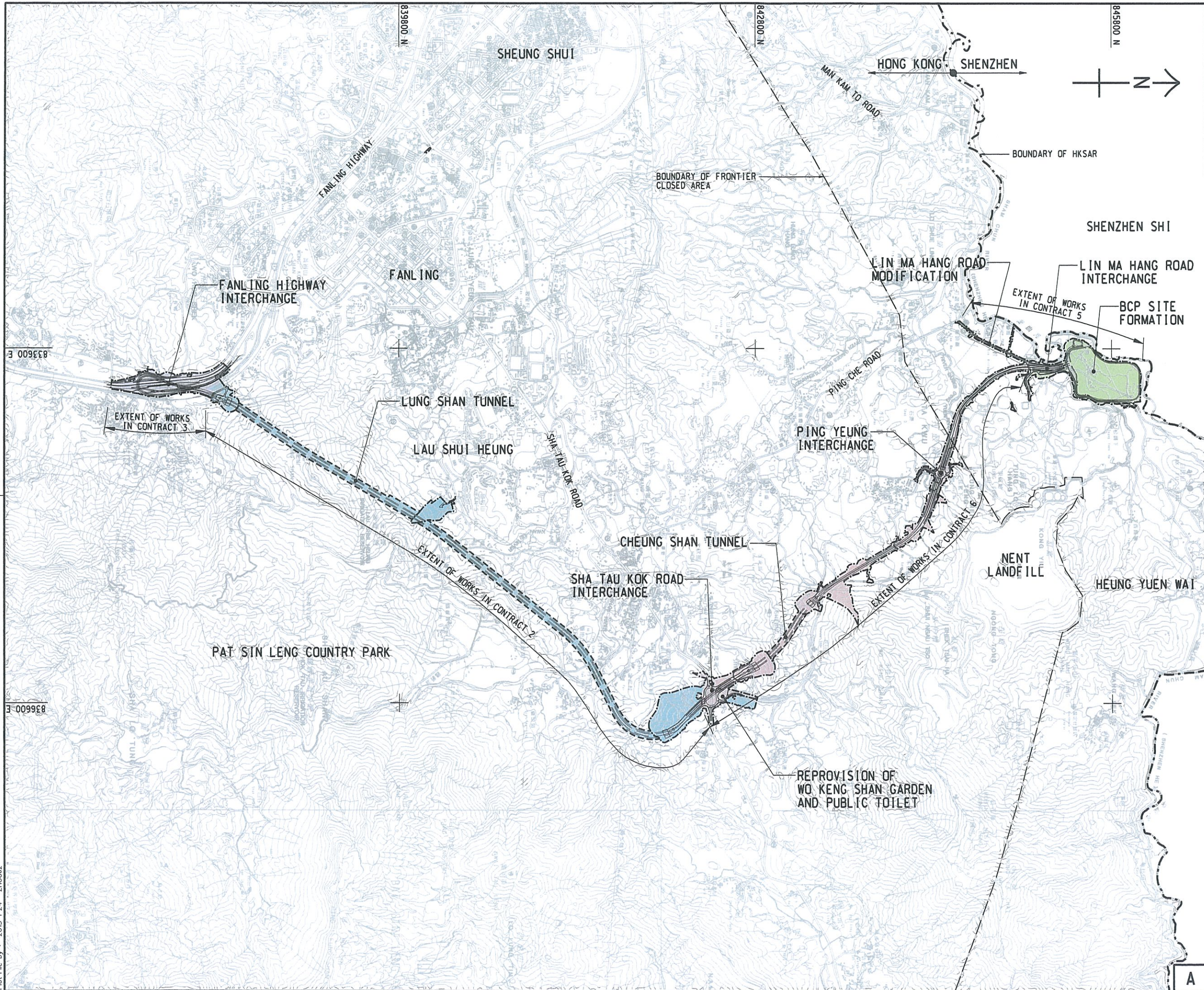
Sample ID	Testing parameter		Likely to be Topsoil
	Organic Matter Content (%)	pH	
TS8	1.5	5.6	No
TS9	3.2	6.3	No
TS10	1.4	6.2	No
TS11	1.3	6.5	No
TS12	2.9	5.5	No
TS13	3.3	5.9	No
TS14	2.4	6.2	No
TS15	5.1	5.7	No

The results indicated that all areas within the Project boundary do not contain any soil that fall into the definition of topsoil as stated in Section 2.2.1 of this Plan.

Therefore, the accommodation of the topsoil and the implementation programme for reuse of the excavated topsoil are not required.

Figure





LOCATION PLAN
SCALE 1 : 30000

LEGEND:
 - - - - - SITE BOUNDARY
 - - - - - UNDERGROUND WORKS SITE BOUNDARY

REV. 修订	DESCRIPTION 内容摘要	DATE 日期

CEDD 土木工程拓展署
Civil Engineering and Development Department

Liantang/Heung Yuen Wai Boundary Control Point and Associated Works (Site Formation and Infrastructures) - Design and Construction

PROJECT LAYOUT PLAN

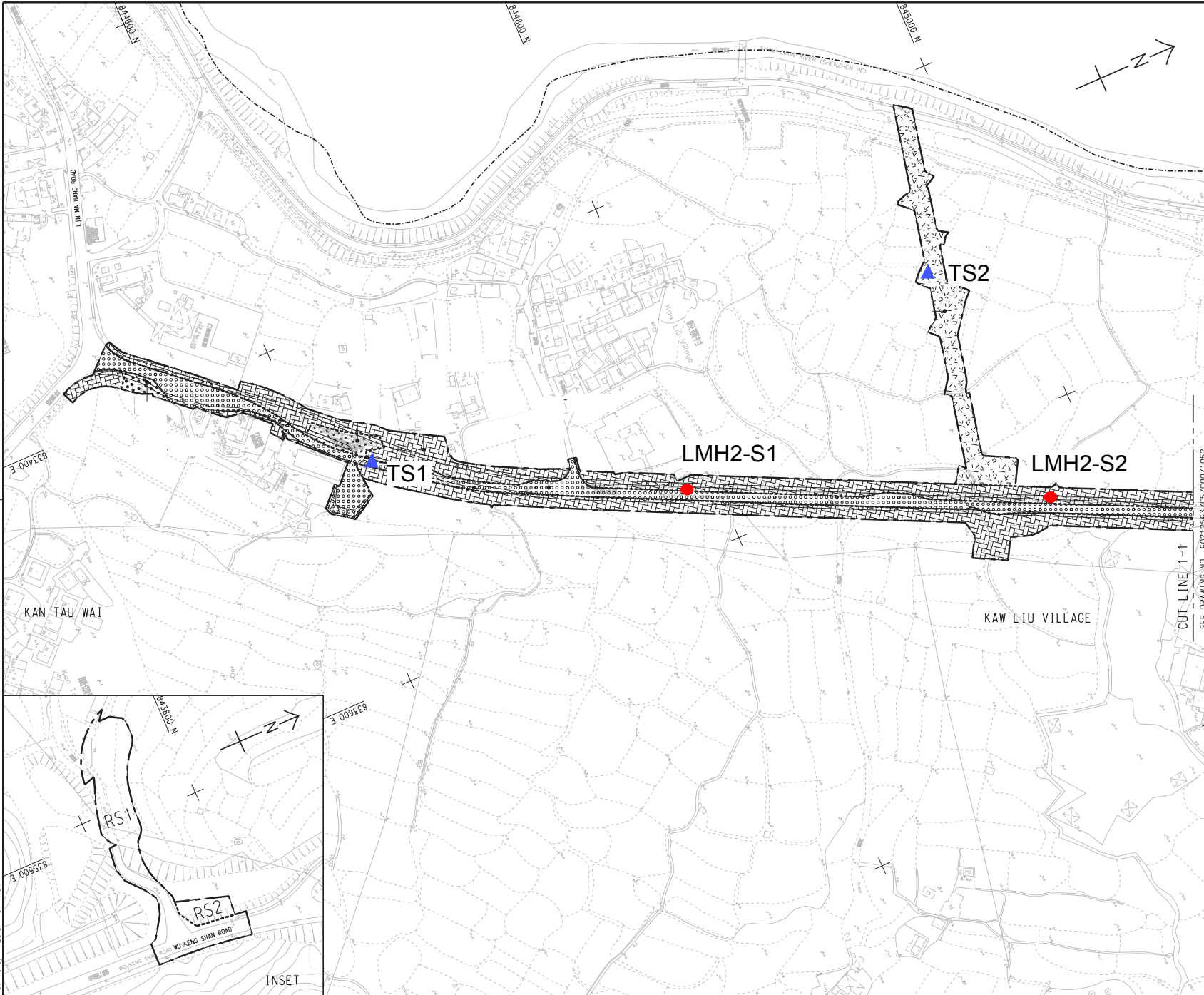


DRG.NO. 圖紙編號 **Figure 1.0**

DESIGNED BY 設計人	CONTRACT NO. 合約編號	P. DIR. APPROVED 署長人
DRAWN BY 繪圖人	STATUS 階段	
ZJ		
SCALE 比例	DIMENSIONS ARE IN METRES 尺寸單位為公尺	
A1 : 15000	© COPYRIGHT RESERVED 版權所有	

Plot File by : 2013-1-24_ZHOUJ2

Appendix A
Sampling Plan



LEGEND:

- SITE BOUNDARY
- [Dotted] PORTION CR2
- [Cross-hatch] PORTION LMH0
- [Diagonal lines] PORTION LMH1
- [Horizontal lines] PORTION LMH2
- [Vertical lines] PORTION LMH4
- [Diagonal lines] PORTION LMH5
- [Dotted] PORTION BCP2
- [Cross-hatch] PORTION BCP3
- [Diagonal lines] PORTION BCP4

● Collected and tested sample (Aug 2013)

▲ Collected and tested sample (Nov 2013)

A	WORKING DRAWING	W.C.	M.W.	APR-13
-	TENDER DRAWING	W.C.	M.W.	JAN-13
NO.	DESCRIPTION	DATE	BY	CHK

CEDD 土木工程拓展署
Civil Engineering and Development Department

LIANTANG/HEUNG YIEN WAI BOUNDARY CONTROL POINT
SITE FORMATION AND INFRASTRUCTURE WORKS -
CONTRACT 5

Topsoil Sampling Location Plan

SHEET 1 OF 3

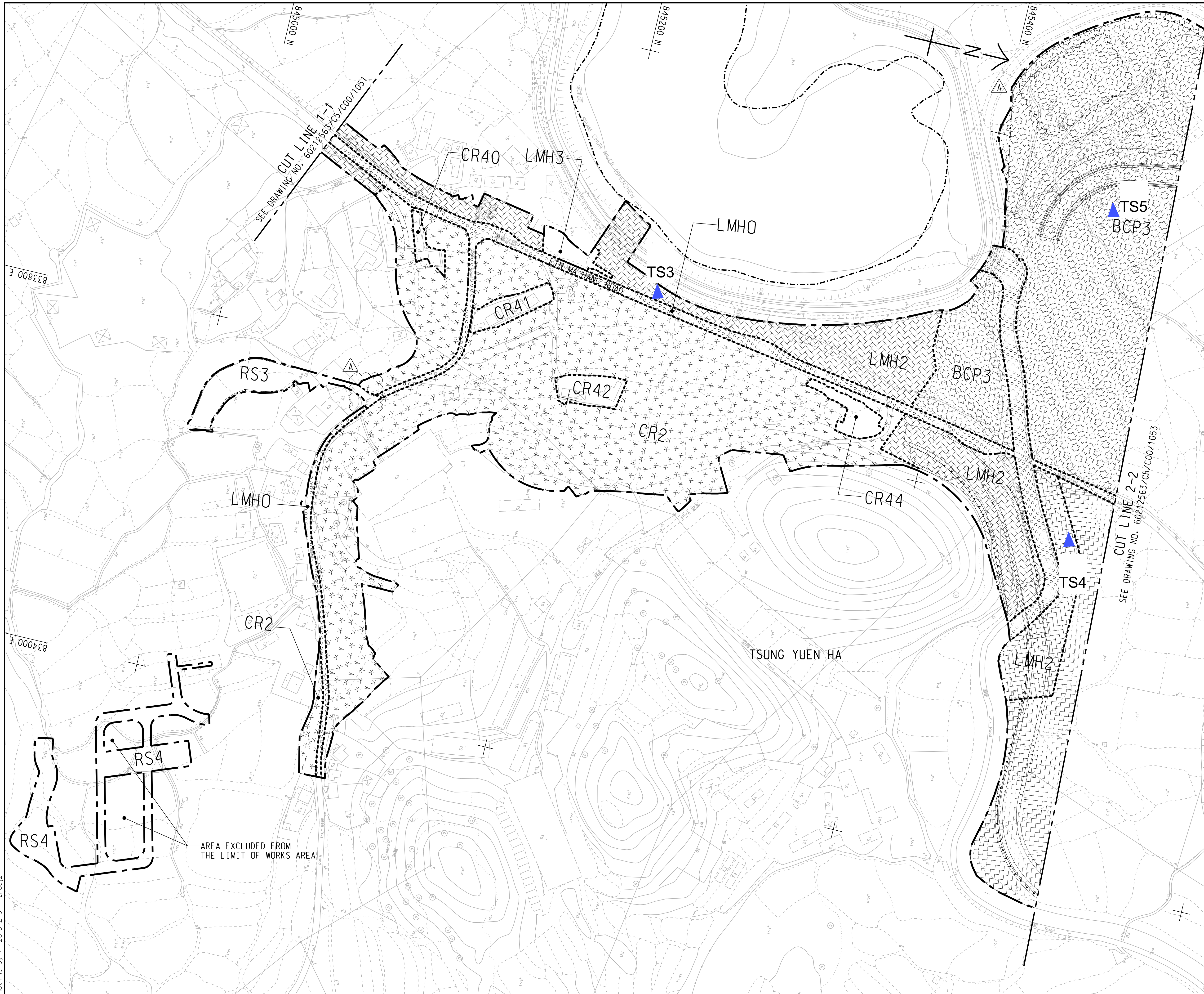
AECOM

DRGNO. 60212563/C5/C00/1051A
圖紙編號

DESIGNED BY W.C.	CHECKED BY CV/2013/03	APPROVED BY J.L.
DRAWN BY Z.J.	STATUS WORKING DRAWING	
SCALE A1 1 : 1000		

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Photo File by : 2013/1/16 WUMT



NOTE :

1. FOR NOTES AND LEGEND REFER TO DRAWING NO. 60212563/C5/C00/1051.

▲ Collected and tested sample
(Nov 2013)

A	TENDER ADDENDUM NO. 2	WLC	KYN	FEB-13
-	TENDER DRAWING	WLC	KYN	JAN-13


土木工程拓展署
Civil Engineering and Development Department
 LIANTANG/HEUNG YUEN WAI BOUNDARY CONTROL POINT
 SITE FORMATION AND INFRASTRUCTURE WORKS -
 CONTRACT 5

PORTION OF THE SITE

SHEET 2 OF 3



DRG. NO. 60212563/C5/C00/1052A
圖紙編號

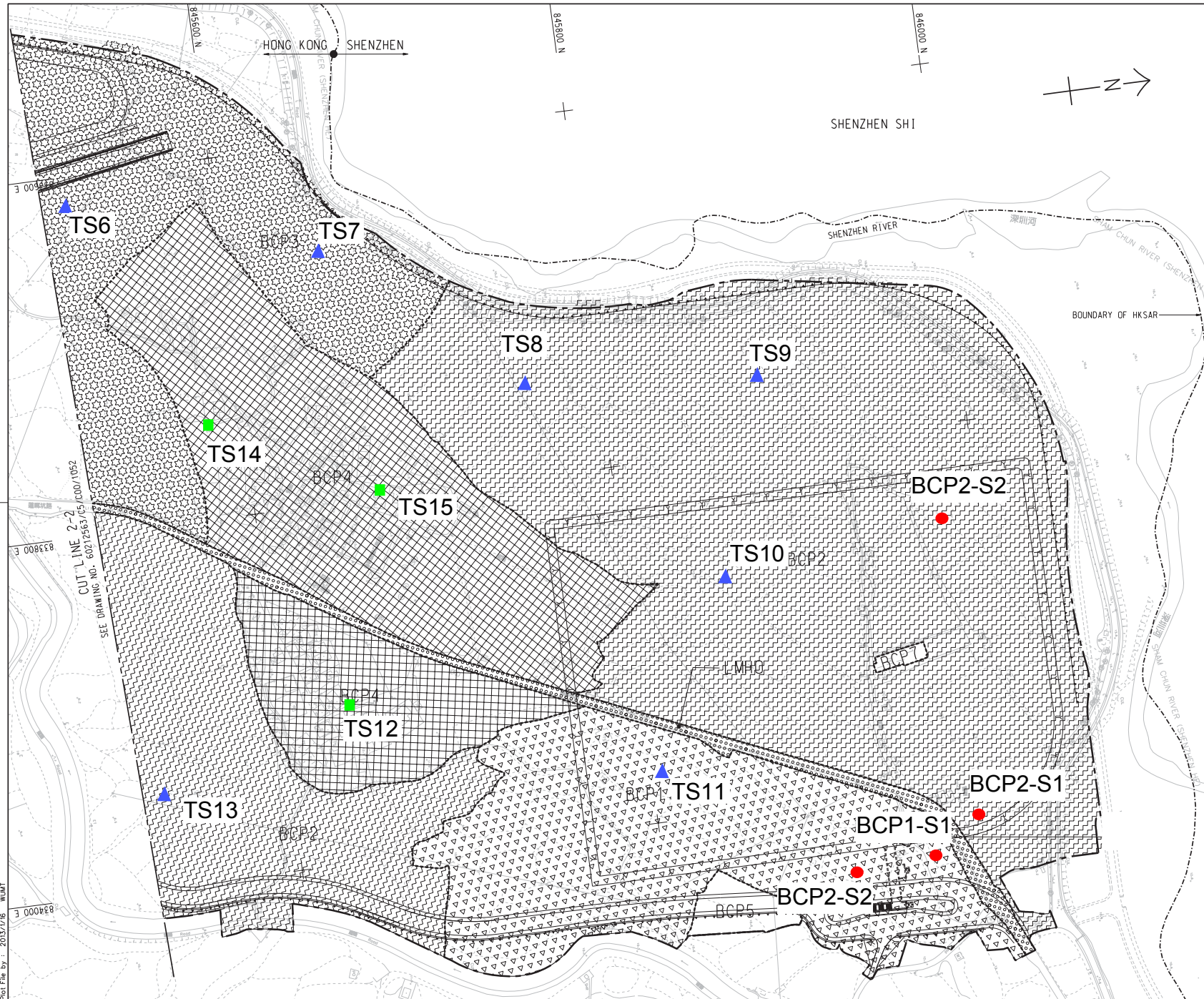
DESIGNED BY WLC	CONTRACT NO. CV/2013/03	P. Dir. APPROVED JULY
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DRAWN BY ZJ	STATUS CHECKED
----------------	-------------------

SCALE 1:1000
DIMENSIONS ARE IN METRES

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Plot File by : 2013-2-6 zhouj2



- NOTE:**
- Collected and tested sample (Aug 2013)
 - ▲ Collected and tested sample (Nov 2013)
 - Collected and tested sample (Nov 2014)

A	WORKING DRAWING	DATE	17/11/13
-	TENDER DRAWING	DATE	13/01/13

CEDD 土木工程發展署
Civil Engineering and Development Department

LIANTANG/HEUNG YIEN WAI BOUNDARY CONTROL POINT SITE FORMATION AND INFRASTRUCTURE WORKS - CONTRACT 5

Topsoil Sampling Location Plan

SHEET 3 OF 3



DRGNO. 60212563/C5/C00/1053A

DESIGNED BY MLC	CHECKED BY CV/2013/03	DATE APPROVED JUL 2013
DRAWN BY ZJ	STATUS WORKING DRAWING	
SCALE A1 : 1 : 1000	DRAWING UNIT IN METRES	

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Plot File by : 2013/1/16 WUMT

Appendix B
Analytical Testing Reports

CASTCO佳力高試驗中心有限公司
CASTCO TESTING CENTRE LTD.

A 00522

香港粉嶺安居街33號
香港粉嶺安全街29A號
E-mail: castco@netvigator.com33, On Kui Street, Fanling, Hong Kong.
29A, On Chuen Street, Fanling, Hong Kong.
Website: www.castco.com.hkTel: 2677 2138
Fax: 2677 0351HOKLAS 032
TESTTEST CERTIFICATE
Chemical Analysis of SoilC5-LST-004 to
009Date of issue: 27-08-2013
Page 1 of 1 pages

Castco LRN: MO0130805-12

Sample Details as Supplied by Customer

PWL TRN: 1322046

Customer : CEDD/BCP

Customer's Ref. No.: C5-LST-004

Address:- 8/F Grand Central Plaza, Tower 2, 138 Shatin Rural Committee Road, Sha Tin, Hong Kong

Job Title: Liatang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 5

Contract No.: CV/2013/03

Sampling Date: --

Sample Location: LMH2

Sample I.D.No.: LMH2-S1

Sample Origin: Unknown

Sample Type: Disturbed

Laboratory Test Results

Sample Received Date: 05-08-2013

Test Period : 12-08-2013 to 17-08-2013

Description of Soil: Moist brown slightly gravelly sandy SILT

Condition of Sample when Received: Natural

Chemical Analysis	Results	
Percentage by dry mass finer than 2 mm in original sample (%)	83	
Organic Matter Content (Geospec 3:2001, Cl.9.1)	Check the presence of sulphides	Absent
	Check the presence of chlorides	Absent
	Organic matter content (%)	3.5
Mass Loss on Ignition (Geospec 3:2001, Cl.9.2)	(%)	--
Total Sulphate Content (Geospec 3:2001, Cl.9.3)	SO ₃ (%)	<0.01
	Water-soluble Sulphate Content (Geospec 3:2001, Cl.9.3)	(%)
Water-soluble Sulphate Content (Geospec 3:2001, Cl.9.3)	SO ₃ (g/L)	<0.01
	Water-Soluble Chloride Content (Geospec 3:2001, Cl.9.4)	Water : soil ratio
Cl (%)		--
pH value (Geospec 3:2001, Cl.9.5)	at 20°C	6.4

Remarks : 1. Test result present in the soil fraction finer than 2 mm.
2. Test result relates to the specimen tested only.

Checked by:

LAM SIU PING

Form No.: CHM GEO3-PWCL-7-24-0009
Assistant Manager

Code:PWCL/00147

End of Report

Approved Signatory:

LI WAI CHING
Technical Manager

CASTCO

佳力高試驗中心有限公司
CASTCO TESTING CENTRE LTD.

A 00523



HOKLAS 032
TEST

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TEST CERTIFICATE
Chemical Analysis of Soil

Date of issue: 27-08-2013
Page 1 of 1 pages

Castco LRN: MO0130805-13

Sample Details as Supplied by Customer

PWL TRN: 1322047

Customer : CEDD/BCP

Customer's Ref. No.: C5-LST-005

Address:- 8/F Grand Central Plaza, Tower 2, 138 Shatin Rural Committee Road, Sha Tin, Hong Kong

Job Title: Liatang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 5

Contract No.: CV/2013/03

Sampling Date: --

Sample Location: LMH2

Sample I.D.No.: LMH2-S2

Sample Origin: Unknown

Sample Type: Disturbed

Laboratory Test Results

Sample Received Date: 05-08-2013

Test Period : 12-08-2013 to 17-08-2013

Description of Soil: Moist brown slightly gravelly sandy SILT

Condition of Sample when Received: Natural

Chemical Analysis	Results	
Percentage by dry mass finer than 2 mm in original sample (%)	86	
Organic Matter Content (Geospec 3:2001, Cl.9.1)	Check the presence of sulphides	Present
	Check the presence of chlorides	Absent
	Organic matter content (%)	1.7
Mass Loss on Ignition (Geospec 3:2001, Cl.9.2)	(%)	--
Total Sulphate Content (Geospec 3:2001, Cl.9.3)	SO ₃ (%)	0.01
	Water-soluble Sulphate Content (Geospec 3:2001, Cl.9.3)	(%)
Water-Soluble Chloride Content (Geospec 3:2001, Cl.9.4)	SO ₃ (g/L)	0.01
	Water : soil ratio	--
pH value (Geospec 3:2001, Cl.9.5)	Cl (%)	--
	at 20°C	7.4

Remarks : 1. Test result present in the soil fraction finer than 2 mm.
2. Test result relates to the specimen tested only.

Checked by:

LAM SIU PING

Assistant Technical Manager

Approved Signatory:

LI WAI CHING

Technical Manager

Form No.: CHEM GE03_PWCL (Rev 29/04/2009) Code: PWCL/00147

End of Report

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CASTCO TESTING CENTRE LTD.

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TEST CERTIFICATE
Chemical Analysis of Soil

Date of issue: 27-08-2013
Page 1 of 1 pages

Castco LRN: MO0130805-14

Sample Details as Supplied by Customer

PWL TRN: 1322048

Customer : CEDD/BCP

Customer's Ref. No.: C5-LST-006

Address:- 8/F Grand Central Plaza, Tower 2, 138 Shatin Rural Committee Road, Sha Tin, Hong Kong

Job Title: Liatang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 5

Contract No.: CV/2013/03

Sampling Date: --

Sample Location: BCP1

Sample I.D.No.: BCP1-S1

Sample Origin: Unknown

Sample Type: Disturbed

Laboratory Test Results

Sample Received Date: 05-08-2013

Test Period : 12-08-2013 to 21-08-2013

Description of Soil: Moist brown slightly gravelly sandy SILT

Condition of Sample when Received: Natural

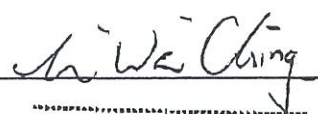
Chemical Analysis	Results	
Percentage by dry mass finer than 2 mm in original sample (%)	96	
Organic Matter Content (Geospec 3:2001, Cl.9.1)	Check the presence of sulphides	Absent
	Check the presence of chlorides	Absent
	Organic matter content (%)	0.6
Mass Loss on Ignition (Geospec 3:2001, Cl.9.2)	(%)	--
Total Sulphate Content (Geospec 3:2001, Cl.9.3)	SO ₃ (%)	<0.01
	Water-soluble Sulphate Content (Geospec 3:2001, Cl.9.3)	SO ₃ (%)
Water-Soluble Chloride Content (Geospec 3:2001, Cl.9.4)	SO ₃ (g/L)	<0.01
	Water : soil ratio	--
pH value (Geospec 3:2001, Cl.9.5)	Cl (%)	--
	at 20°C	5.9

Remarks : 1. Test result present in the soil fraction finer than 2 mm.
2. Test result relates to the specimen tested only.

Checked by: 

LAM SIU PING

Form No.: CHM GE03_PWCL_Ans to VC Technical Manager Code:PWCL/00147

Approved Signatory: 

LI WAI CHING
Technical Manager

End of Report

CASTCO佳力高試驗中心有限公司
CASTCO TESTING CENTRE LTD.

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TEST**TEST CERTIFICATE**
Chemical Analysis of Soil

Date of issue: 27-08-2013

Page 1 of 1 pages

Castco LRN: MO0130805-15

Sample Details as Supplied by Customer

PWL TRN: 1322049

Customer: CEDD/BCP

Customer's Ref. No.: C5-LST-007

Address:- 8/F Grand Central Plaza, Tower 2, 138 Sha Tin Rural Committee Road, Sha Tin, Hong Kong

Job Title: Liatang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 5

Contract No.: CV/2013/03

Sampling Date: --

Sample Location: BCP1

Sample I.D.No.: BCP1-S2

Sample Origin: Unknown

Sample Type: Disturbed

Laboratory Test Results

Sample Received Date: 05-08-2013

Test Period: 12-08-2013 to 21-08-2013

Description of Soil: Moist brown slightly gravelly sandy SILT

Condition of Sample when Received: Natural

Chemical Analysis	Results	
Percentage by dry mass finer than 2 mm in original sample (%)	86	
Organic Matter Content (Geospec 3:2001, Cl.9.1)	Check the presence of sulphides	Absent
	Check the presence of chlorides	Absent
	Organic matter content (%)	1.2
Mass Loss on Ignition (Geospec 3:2001, Cl.9.2)	(%)	--
Total Sulphate Content (Geospec 3:2001, Cl.9.3)	SO ₃ (%)	0.01
	Water-soluble Sulphate Content (Geospec 3:2001, Cl.9.3)	(%)
Water-soluble Sulphate Content (Geospec 3:2001, Cl.9.3)	SO ₃ (g/L)	<0.01
	Water-Soluble Chloride Content (Geospec 3:2001, Cl.9.4)	Water : soil ratio
Cl (%)		--
pH value (Geospec 3:2001, Cl.9.5)	at 20°C	6.4

Remarks : 1. Test result present in the soil fraction finer than 2 mm.
2. Test result relates to the specimen tested only.

Checked by:

LAM SIU PING

Form No.: CHM GE03_PWC (Rev. 2/2009) Manager

Code: PWCL/00147

End of Report

Approved Signatory:

LI WAI CHING
Technical Manager

CASTCO佳力高試驗中心有限公司
CASTCO TESTING CENTRE LTD.

A 00526

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Fax: 2677 0351HOKLAS 032
TESTTEST CERTIFICATE
Chemical Analysis of SoilDate of issue: 27-08-2013
Page 1 of 1 pages

Castco LRN: MO0130805-16

Sample Details as Supplied by Customer

PWL TRN: 1322050

Customer : CEDD/BCP

Customer's Ref. No.: C5-LST-008

Address:- 8/F Grand Central Plaza, Tower 2, 138 Shatin Rural Committee Road, Sha Tin, Hong Kong

Job Title: Liatang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 5

Contract No.: CV/2013/03

Sampling Date: --

Sample Location: BCP2 (Chuk Yuen)

Sample I.D.No.: BCP2-S1

Sample Origin: Unknown

Sample Type: Disturbed

Laboratory Test Results

Sample Received Date: 05-08-2013

Test Period : 12-08-2013 to 21-08-2013

Description of Soil: Moist brown slightly gravelly sandy SILT

Condition of Sample when Received: Natural

Chemical Analysis	Results	
Percentage by dry mass finer than 2 mm in original sample (%)	98	
Organic Matter Content (Geospec 3:2001, Cl.9.1)	Check the presence of sulphides	Absent
	Check the presence of chlorides	Absent
	Organic matter content (%)	0.6
Mass Loss on Ignition (Geospec 3:2001, Cl.9.2)	(%)	--
Total Sulphate Content (Geospec 3:2001, Cl.9.3)	SO ₃ (%)	0.01
	Water-soluble Sulphate Content (Geospec 3:2001, Cl.9.3)	(%)
Water-soluble Sulphate Content (Geospec 3:2001, Cl.9.3)	SO ₃ (g/L)	<0.01
	Water-Soluble Chloride Content (Geospec 3:2001, Cl.9.4)	Water : soil ratio
Cl (%)		--
pH value (Geospec 3:2001, Cl.9.5)	at 20°C	5.9

Remarks : 1. Test result present in the soil fraction finer than 2 mm.
2. Test result relates to the specimen tested only.

Checked by:

LAM SIU PING

Form No.: CHM GEO3_PWCL (Revised 2012) Manager

Code:PWCL/00147

Approved Signatory:

LI WAI CHING
Technical Manager

End of Report

CASTCO佳力高試驗中心有限公司
CASTCO TESTING CENTRE LTD.

A 00527

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TEST**TEST CERTIFICATE**
Chemical Analysis of SoilDate of issue: 27-08-2013
Page 1 of 1 pages

Castco LRN: MO0130805-17

Sample Details as Supplied by Customer

PWL TRN: 1322051

Customer : CEDD/BCP

Customer's Ref. No.: C5-LST-009

Address:- 8/F Grand Central Plaza, Tower 2, 138 Shatin Rural Committee Road, Sha Tin, Hong Kong

Job Title: Liatang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 5

Contract No.: CV/2013/03

Sampling Date: --

Sample Location: BCP2 (Chuk Yuen)

Sample I.D.No.: BCP2-S2

Sample Origin: Unknown

Sample Type: Disturbed

Laboratory Test Results

Sample Received Date: 05-08-2013

Test Period : 12-08-2013 to 21-08-2013

Description of Soil: Moist brown slightly gravelly sandy SILT

Condition of Sample when Received: Natural

Chemical Analysis		Results
Percentage by dry mass finer than 2 mm in original sample	(%)	96
Organic Matter Content (Geospec 3:2001, Cl.9.1)	Check the presence of sulphides	Absent
	Check the presence of chlorides	Absent
	Organic matter content	(%) 0.5
Mass Loss on Ignition (Geospec 3:2001, Cl.9.2)	(%)	--
Total Sulphate Content (Geospec 3:2001, Cl.9.3)	SO ₃	(%) <0.01
	Water-soluble Sulphate Content (Geospec 3:2001, Cl.9.3)	SO ₃
	(g/L)	0.01
Water-Soluble Chloride Content (Geospec 3:2001, Cl.9.4)	Water : soil ratio	--
	Cl	(%) --
pH value (Geospec 3:2001, Cl.9.5)	at 20°C	4.6

Remarks : 1. Test result present in the soil fraction finer than 2 mm.
2. Test result relates to the specimen tested only.

Checked by: 

LAM SIU PING

Form No.: CHM GB03_PWCL_A 0052707 Technical Manager Code: PWCL/00147

Approved Signatory: LI WAI CHING
Technical Manager

End of Report

TEST CERTIFICATE
Chemical Analysis of SoilDate of issue: 14-01-2014
Page 1 of 1 pages

Castco LRN: MO0131128-6

Sample Details as Supplied by Customer

PWL TRN: 1322145

Customer : CEDD/BCP

Customer's Ref. No.: C5-LST-017

Address:- 8/F Grand Central Plaza, Tower 2, 138 Shatin Rural Committee Road, Sha Tin, Hong Kong

Job Title: Liatang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 5

Contract No.: CV/2013/03

Sampling Date: --

Sample Location: LMH2

Sample I.D.No.: TS1

Sample Origin: Unknown

Sample Type: Disturbed

Laboratory Test Results

Sample Received Date: 28-11-2013

Test Period : 02-01-2014 to 11-01-2014

Description of Soil: Moist brown slightly gravelly sandy SILT

Condition of Sample when Received: Natural

Chemical Analysis		Results
Percentage by dry mass finer than 2 mm in original sample	(%)	92
Organic Matter Content (Geospec 3:2001, Cl.9.1)	Check the presence of sulphides	Absent
	Check the presence of chlorides	Absent
	Organic matter content	(%) 1.2
Mass Loss on Ignition (Geospec 3:2001, Cl.9.2)	(%)	--
Total Sulphate Content (Geospec 3:2001, Cl.9.3)	SO ₃	(%) 0.01
	Water-soluble Sulphate Content (Geospec 3:2001, Cl.9.3)	SO ₃
Water-Soluble Chloride Content (Geospec 3:2001, Cl.9.4)	Water : soil ratio	(g/L) 0.02
	Cl	(%) 2
pH value (Geospec 3:2001, Cl.9.5)	at 20°C	(%) <0.01
		5.6

Remarks : 1. Test result present in the soil fraction finer than 2 mm.
2. Test result relates to the specimen tested only.

Checked by: _____

CHENG CHI FAI
Senior Manager

Approved Signatory: _____

LEE STEPHEN SHU HANG
Ph.D.
Technical DirectorForm No.: CHM GEO3_PWCL_T d3 25/04/2010
Code:PWCL/00147

End of Report



TEST CERTIFICATE
Chemical Analysis of Soil

Date of issue: 14-01-2014
Page 1 of 1 pages

Castco LRN: MO0131128-7

Sample Details as Supplied by Customer

Customer : CEDD/BCP

PWL TRN: 1322146

Customer's Ref. No.: C5-LST-018

Address:- 8/F Grand Central Plaza, Tower 2, 138 Shatin Rural Committee Road, Sha Tin, Hong Kong

Job Title: Liatang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 5

Contract No.: CV/2013/03

Sampling Date: --

Sample Location: LMH1

Sample I.D.No.: TS2

Sample Origin: Unknown

Sample Type: Disturbed

Laboratory Test Results

Sample Received Date: 28-11-2013

Test Period : 02-01-2014 to 11-01-2014

Description of Soil: Moist brown slightly gravelly sandy SILT

Condition of Sample when Received: Natural

Chemical Analysis			Results
Percentage by dry mass finer than 2 mm in original sample	(%)		96
Organic Matter Content (Geospec 3:2001, Cl.9.1)	Check the presence of sulphides		Absent
	Check the presence of chlorides		Absent
	Organic matter content	(%)	2.8
Mass Loss on Ignition (Geospec 3:2001, Cl.9.2)	(%)		--
Total Sulphate Content (Geospec 3:2001, Cl.9.3)	SO ₃	(%)	<0.01
	Water-soluble Sulphate Content (Geospec 3:2001, Cl.9.3)	SO ₃	<0.01
Water-Soluble Chloride Content (Geospec 3:2001, Cl.9.4)		(g/L)	<0.01
	Water : soil ratio		2
pH value (Geospec 3:2001, Cl.9.5)	Cl	(%)	<0.01
	at 20°C		5.5

Remarks : 1. Test result present in the soil fraction finer than 2 mm.
2. Test result relates to the specimen tested only.

Checked by:
CHENG CHI FAI

Approved Signatory:
LEE STEPHEN SHU HANG

TEST CERTIFICATE
Chemical Analysis of SoilDate of issue: 14-01-2014
Page 1 of 1 pages

Castco LRN: MO0131128-8

Sample Details as Supplied by Customer

PWL TRN: 1322147

Customer : CEDD/BCP

Customer's Ref. No.: C5-LST-019

Address:- 8/F Grand Central Plaza, Tower 2, 138 Shatin Rural Committee Road, Sha Tin, Hong Kong

Job Title: Liatang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 5

Contract No.: CV/2013/03

Sampling Date: --

Sample Location: LMH2

Sample I.D.No.: TS3

Sample Origin: Unknown

Sample Type: Disturbed

Laboratory Test Results

Sample Received Date: 28-11-2013

Test Period : 02-01-2014 to 11-01-2014

Description of Soil: Moist brown slightly gravelly sandy SILT

Condition of Sample when Received: Natural

Chemical Analysis		Results
Percentage by dry mass finer than 2 mm in original sample	(%)	79
Organic Matter Content (Geospec 3:2001, Cl.9.1)	Check the presence of sulphides	Absent
	Check the presence of chlorides	Absent
	Organic matter content	(%) 0.9
Mass Loss on Ignition (Geospec 3:2001, Cl.9.2)	(%)	--
Total Sulphate Content (Geospec 3:2001, Cl.9.3)	SO ₃	(%) <0.01
	Water-soluble Sulphate Content (Geospec 3:2001, Cl.9.3)	SO ₃
Water-Soluble Chloride Content (Geospec 3:2001, Cl.9.4)		(g/L) 0.10
	Water : soil ratio	2
pH value (Geospec 3:2001, Cl.9.5)	Cl	(%) <0.01
	at 20°C	7.0

Remarks : 1. Test result present in the soil fraction finer than 2 mm.
2. Test result relates to the specimen tested only.

Checked by: _____

CHENG CHI FAI
Senior Manager

Approved Signatory: _____

LEE STEPHEN SHU HANGPh.D.
Technical Director

Form No.: CHM GEO3_PWCL_1 of 2 (04/2009) Code:PWCL/00147

End of Report

TEST CERTIFICATE
Chemical Analysis of SoilDate of issue: 14-01-2014
Page 1 of 1 pages

Castco LRN: MO0131128-9

Sample Details as Supplied by Customer

Customer : CEDD/BCP

Address:- 8/F Grand Central Plaza, Tower 2, 138 Shatin Rural Committee Road, Sha Tin, Hong Kong

Job Title: Liatang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 5

Contract No.: CV/2013/03

Sample Location: LMH2-TYH

Sample Origin: Unknown

PWL TRN: 1322148

Customer's Ref. No.: C5-LST-020

Sampling Date: --

Sample I.D.No.: TS4

Sample Type: Disturbed

Laboratory Test Results

Sample Received Date: 28-11-2013

Test Period : 02-01-2014 to 11-01-2014

Description of Soil: Moist brown slightly gravelly sandy SILT

Condition of Sample when Received: Natural

Chemical Analysis		Results
Percentage by dry mass finer than 2 mm in original sample	(%)	95
Organic Matter Content (Geospec 3:2001, Cl.9.1)	Check the presence of sulphides	Absent
	Check the presence of chlorides	Absent
	Organic matter content	(%) 2.6
Mass Loss on Ignition (Geospec 3:2001, Cl.9.2)	(%)	--
Total Sulphate Content (Geospec 3:2001, Cl.9.3)	SO ₃	(%) <0.01
	Water-soluble Sulphate Content (Geospec 3:2001, Cl.9.3)	SO ₃
Water-Soluble Chloride Content (Geospec 3:2001, Cl.9.4)	Water : soil ratio	(g/L) <0.01
	Cl	(%) <0.01
pH value (Geospec 3:2001, Cl.9.5)	at 20°C	6.0

Remarks : 1. Test result present in the soil fraction finer than 2 mm.
2. Test result relates to the specimen tested only.

Checked by:

Approved Signatory:

Form No.: CHM GE03_PWCL/00147
CHENG CHI FAI
Senior Manager

Code:PWCL/00147

End of Report

LEE STEPHEN SHU HANG
Ph.D.
Technical Director

TEST CERTIFICATE
Chemical Analysis of SoilDate of issue: 14-01-2014
Page 1 of 1 pages

Castco LRN: MO0131128-10

Sample Details as Supplied by Customer

PWL TRN: 1322149

Customer : CEDD/BCP

Customer's Ref. No.: C5-LST-021

Address:- 8/F Grand Central Plaza, Tower 2, 138 Shatin Rural Committee Road, Sha Tin, Hong Kong

Job Title: Liatang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 5

Contract No.: CV/2013/03

Sampling Date: --

Sample Location: BCP3

Sample I.D.No.: TS5

Sample Origin: Unknown

Sample Type: Disturbed

Laboratory Test Results

Sample Received Date: 28-11-2013

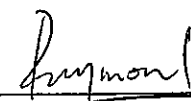
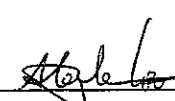
Test Period : 06-01-2014 to 11-01-2014

Description of Soil: Moist brown slightly gravelly sandy SILT

Condition of Sample when Received: Natural

Chemical Analysis	Results
Percentage by dry mass finer than 2 mm in original sample (%)	93
Organic Matter Content (Geospec 3:2001, Cl.9.1)	Check the presence of sulphides Absent
	Check the presence of chlorides Absent
	Organic matter content (%) 2.9
Mass Loss on Ignition (Geospec 3:2001, Cl.9.2)	(%) --
Total Sulphate Content (Geospec 3:2001, Cl.9.3)	SO ₃ (%) 0.01
Water-soluble Sulphate Content (Geospec 3:2001, Cl.9.3)	(%) <0.01
	(g/L) 0.01
Water-Soluble Chloride Content (Geospec 3:2001, Cl.9.4)	Water : soil ratio 2
	Cl (%) <0.01
pH value (Geospec 3:2001, Cl.9.5)	at 20°C 6.8

Remarks : 1. Test result present in the soil fraction finer than 2 mm.
2. Test result relates to the specimen tested only.

Checked by: Approved Signatory: Form No.: CHM GEO. CHEN 15/04/2009
CHENG CHI FAI
Senior Manager

Code:PWCL/00147

End of Report

LEE STEPHEN SHU HANG
Ph.D.
Technical Director



TEST CERTIFICATE
Chemical Analysis of Soil

Date of issue: 14-01-2014
Page 1 of 1 pages

Castco LRN: MO0131128-11

Sample Details as Supplied by Customer

Customer : CEDD/BCP

Address:- 8/F Grand Central Plaza, Tower 2, 138 Shatin Rural Committee Road, Sha Tin, Hong Kong

Job Title: Liatang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 5

Contract No.: CV/2013/03

Sample Location: BCP3

Sample Origin: Unknown

PWL TRN: 1322150

Customer's Ref. No.: C5-LST-022

Sampling Date: --

Sample I.D.No.: TS6

Sample Type: Disturbed

Laboratory Test Results

Sample Received Date: 28-11-2013

Test Period : 06-01-2014 to 11-01-2014

Description of Soil: Moist brown slightly gravelly sandy SILT

Condition of Sample when Received: Natural

Chemical Analysis		Results
Percentage by dry mass finer than 2 mm in original sample	(%)	94
Organic Matter Content (Geospec 3:2001, Cl.9.1)	Check the presence of sulphides	Absent
	Check the presence of chlorides	Absent
	Organic matter content	(%) 1.4
Mass Loss on Ignition (Geospec 3:2001, Cl.9.2)	(%)	--
Total Sulphate Content (Geospec 3:2001, Cl.9.3)	SO ₃	(%) 0.01
	Water-soluble Sulphate Content (Geospec 3:2001, Cl.9.3)	SO ₃
Water-Soluble Chloride Content (Geospec 3:2001, Cl.9.4)		(g/L) <0.01
	Water : soil ratio	2
pH value (Geospec 3:2001, Cl.9.5)	Cl	(%) <0.01
	at 20°C	6.8

Remarks : 1. Test result present in the soil fraction finer than 2 mm.
2. Test result relates to the specimen tested only.

Checked by:

CHENG CHI FAI

Approved Signatory:

LEE STEPHEN SHU HANG
Ph.D.
Technical Director

TEST CERTIFICATE Chemical Analysis of Soil

Date of issue: 14-01-2014
Page 1 of 1 pages

Castco LRN: MO0131128-12

Sample Details as Supplied by Customer

PWL TRN: 1322151

Customer : CEDD/BCP

Customer's Ref. No.: C5-LST-023

Address:- 8/F Grand Central Plaza, Tower 2, 138 Shatin Rural Committee Road, Sha Tin, Hong Kong

Job Title: Liatang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 5

Contract No.: CV/2013/03

Sampling Date: --

Sample Location: BCP3

Sample I.D.No.: TS7

Sample Origin: Unknown

Sample Type: Disturbed

Laboratory Test Results

Sample Received Date: 28-11-2013

Test Period : 06-01-2014 to 11-01-2014

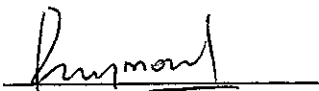
Description of Soil: Moist brown slightly gravelly sandy SILT

Condition of Sample when Received: Natural

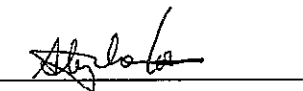
Chemical Analysis		Results
Percentage by dry mass finer than 2 mm in original sample	(%)	96
Organic Matter Content (Geospec 3:2001, Cl.9.1)	Check the presence of sulphides	Absent
	Check the presence of chlorides	Absent
	Organic matter content	(%) 2.8
Mass Loss on Ignition (Geospec 3:2001, Cl.9.2)	(%)	--
Total Sulphate Content (Geospec 3:2001, Cl.9.3)	SO ₃ (%)	0.01
	Water-soluble Sulphate Content (Geospec 3:2001, Cl.9.3)	(%)
Water-Soluble Chloride Content (Geospec 3:2001, Cl.9.4)	(g/L)	<0.01
	Water : soil ratio	2
pH value (Geospec 3:2001, Cl.9.5)	Cl (%)	<0.01
	at 20°C	6.0

Remarks : 1. Test result present in the soil fraction finer than 2 mm.
2. Test result relates to the specimen tested only.

Checked by:



Approved Signatory:



Form No.: CHM GEOS_PWCLE_1 dd 25/04/2009
Senior Manager

Code:PWCL/00147

End of Report

LEE STEPHEN SHU HANG
Ph.D.
Technical Director

TEST CERTIFICATE
Chemical Analysis of SoilDate of issue: 14-01-2014
Page 1 of 1 pages

Castco LRN: MO0131128-13

Sample Details as Supplied by Customer

Customer : CEDD/BCP

PWL TRN: 1322152

Customer's Ref. No.: C5-LST-024

Address:- 8/F Grand Central Plaza, Tower 2, 138 Shatin Rural Committee Road, Sha Tin, Hong Kong

Job Title: Liatang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 5

Contract No.: CV/2013/03

Sampling Date: --

Sample Location: BCP2-CY

Sample I.D.No.: TS8

Sample Origin: Unknown

Sample Type: Disturbed

Laboratory Test Results

Sample Received Date: 28-11-2013

Test Period : 06-01-2014 to 11-01-2014

Description of Soil: Moist brown slightly gravelly sandy SILT

Condition of Sample when Received: Natural

Chemical Analysis		Results
Percentage by dry mass finer than 2 mm in original sample	(%)	97
Organic Matter Content (Geospec 3:2001, Cl.9.1)	Check the presence of sulphides	Absent
	Check the presence of chlorides	Absent
	Organic matter content	(%) 1.5
Mass Loss on Ignition (Geospec 3:2001, Cl.9.2)	(%)	--
Total Sulphate Content (Geospec 3:2001, Cl.9.3)	SO ₃ (%)	0.01
Water-soluble Sulphate Content (Geospec 3:2001, Cl.9.3)	(%)	<0.01
	(g/L)	<0.01
Water-Soluble Chloride Content (Geospec 3:2001, Cl.9.4)	Water : soil ratio	2
	Cl (%)	<0.01
pH value (Geospec 3:2001, Cl.9.5)	at 20°C	5.6

Remarks : 1. Test result present in the soil fraction finer than 2 mm.
2. Test result relates to the specimen tested only.

Checked by: _____

CHENG CHI FAI
Senior Manager

Approved Signatory: _____

.....
LEE STEPHEN SHU HANG
Ph.D.
Technical Director

Form No.: CHM GEO3_PWCL_T (ed 25/04/2009)

Code:PWCL/00147

End of Report

TEST CERTIFICATE
Chemical Analysis of SoilDate of issue: 14-01-2014
Page 1 of 1 pages

Castco LRN: MO0131128-14

Sample Details as Supplied by Customer

Customer : CEDD/BCP

PWL TRN: 1322153

Customer's Ref. No.: C5-LST-025

Address:- 8/F Grand Central Plaza, Tower 2, 138 Shatin Rural Committee Road, Sha Tin, Hong Kong

Job Title: Liatang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 5

Contract No.: CV/2013/03

Sampling Date: --

Sample Location: BCP2-CY

Sample I.D.No.: TS9

Sample Origin: Unknown

Sample Type: Disturbed

Laboratory Test Results

Sample Received Date: 28-11-2013

Test Period : 09-01-2014 to 11-01-2014

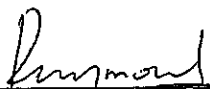
Description of Soil: Moist brown slightly gravelly sandy SILT

Condition of Sample when Received: Natural

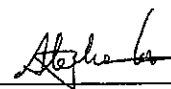
Chemical Analysis		Results
Percentage by dry mass finer than 2 mm in original sample	(%)	96
Organic Matter Content (Geospec 3:2001, Cl.9.1)	Check the presence of sulphides	Absent
	Check the presence of chlorides	Absent
	Organic matter content	(%) 3.2
Mass Loss on Ignition (Geospec 3:2001, Cl.9.2)	(%)	--
Total Sulphate Content (Geospec 3:2001, Cl.9.3)	SO ₃	(%) 0.01
	Water-soluble Sulphate Content (Geospec 3:2001, Cl.9.3)	(%) SO ₃
	(g/L)	<0.01
Water-Soluble Chloride Content (Geospec 3:2001, Cl.9.4)	Water : soil ratio	2
	Cl	(%) <0.01
pH value (Geospec 3:2001, Cl.9.5)	at 20°C	6.3

Remarks : 1. Test result present in the soil fraction finer than 2 mm.
2. Test result relates to the specimen tested only.

Checked by: _____



Approved Signatory: _____

Form No.: CHM GB03_PWCL (Rev. 25/04/2009)
CHENG CHI FAI
Senior Manager

Code:PWCL/00147

End of Report

.....
LEE STEPHEN SHU HANG
Ph.D.
Technical Director

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 香港粉嶺安全街29A號 29A, On Chuen Street, Fanling, Hong Kong. Fax: 2677 0351
 E-mail: castco@netvigator.com Website: www.castco.com.hk

TEST CERTIFICATE Chemical Analysis of Soil

Date of issue: 14-01-2014
Page 1 of 1 pages

Castco LRN: MO0131128-15

Sample Details as Supplied by Customer

Customer : CEDD/BCP

PWL TRN: 1322154

Customer's Ref. No.: C5-LST-026

Address:- 8/F Grand Central Plaza, Tower 2, 138 Shatin Rural Committee Road, Sha Tin, Hong Kong

Job Title: Liatang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 5

Contract No.: CV/2013/03

Sampling Date: --

Sample Location: BCP2-CY

Sample I.D.No.: TS10

Sample Origin: Unknown

Sample Type: Disturbed

Laboratory Test Results

Sample Received Date: 28-11-2013

Test Period : 09-01-2014 to 11-01-2014

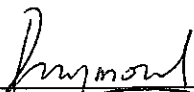
Description of Soil: Moist brown slightly gravelly sandy SILT

Condition of Sample when Received: Natural

Chemical Analysis		Results
Percentage by dry mass finer than 2 mm in original sample	(%)	97
Organic Matter Content (Geospec 3:2001, Cl.9.1)	Check the presence of sulphides	Absent
	Check the presence of chlorides	Absent
	Organic matter content	(%) 1.4
Mass Loss on Ignition (Geospec 3:2001, Cl.9.2)	(%)	--
Total Sulphate Content (Geospec 3:2001, Cl.9.3)	SO ₃	(%) <0.01
	Water-soluble Sulphate Content (Geospec 3:2001, Cl.9.3)	SO ₃
		(g/L) <0.01
Water-Soluble Chloride Content (Geospec 3:2001, Cl.9.4)	Water : soil ratio	2
	Cl	(%) <0.01
pH value (Geospec 3:2001, Cl.9.5)	at 20°C	6.2

Remarks : 1. Test result present in the soil fraction finer than 2 mm.
2. Test result relates to the specimen tested only.

Checked by:



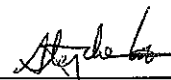
CHENG CHI FAI

Form No.: CHM GEO3_PWCL_T04 25/04/2009
Senior Manager

Code:PWCL/00147

End of Report

Approved Signatory:



LEE STEPHEN SHU HANG

Ph.D.

Technical Director

TEST CERTIFICATE Chemical Analysis of Soil

Date of issue: 14-01-2014
Page 1 of 1 pages

Castco LRN: MO0131128-16

Sample Details as Supplied by Customer

PWL TRN: 1322155

Customer : CEDD/BCP

Customer's Ref. No.: C5-LST-027

Address:- 8/F Grand Central Plaza, Tower 2, 138 Shatin Rural Committee Road, Sha Tin, Hong Kong

Job Title: Liatang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 5

Contract No.: CV/2013/03

Sampling Date: --

Sample Location: BCP1-TYH

Sample I.D.No.: TS11

Sample Origin: Unknown

Sample Type: Disturbed

Laboratory Test Results

Sample Received Date: 28-11-2013

Test Period : 09-01-2014 to 11-01-2014

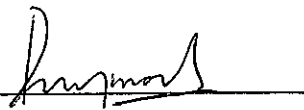
Description of Soil: Moist brown slightly gravelly sandy SILT

Condition of Sample when Received: Natural

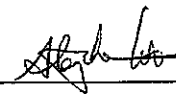
Chemical Analysis	Results	
Percentage by dry mass finer than 2 mm in original sample (%)	95	
Organic Matter Content (Geospec 3:2001, Cl.9.1)	Check the presence of sulphides	Absent
	Check the presence of chlorides	Absent
	Organic matter content (%)	1.3
Mass Loss on Ignition (Geospec 3:2001, Cl.9.2) (%)	--	
Total Sulphate Content (Geospec 3:2001, Cl.9.3)	SO ₃ (%)	<0.01
	Water-soluble Sulphate Content (Geospec 3:2001, Cl.9.3) (%)	<0.01
Water-Soluble Chloride Content (Geospec 3:2001, Cl.9.4)	SO ₃ (g/L)	0.01
	Water : soil ratio	2
pH value (Geospec 3:2001, Cl.9.5) at 20°C	Cl (%)	<0.01
		6.5

Remarks : 1. Test result present in the soil fraction finer than 2 mm.
2. Test result relates to the specimen tested only.

Checked by:



Approved Signatory:



Form No.: CHM GEO3_PWCL_01 25/04/2009
Senior Manager

Code:PWCL/00147

End of Report

LEE STEPHEN SHU HANG
Ph.D.
Technical Director

TEST CERTIFICATE
Chemical Analysis of Soil

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Date of issue: 09-12-2014
Page 1 of 1 pages

Castco LRN: MO0141103-5

Sample Details as Supplied by Customer

PWL TRN: 1417209

Customer : CEDD/BCP

Customer's Ref. No.: C5-LST-037

Address:- 8/F Grand Central Plaza, Tower 2, 138 Shatin Rural Committee Road, Sha Tin, Hong Kong

Job Title: Liatang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 5

Contract No.: CV/2013/03

Sampling Date: --

Sample Location: BCP4

Sample I.D.No.: TS12

Sample Origin: Unknown

Sample Type: Disturbed

Laboratory Test Results

Sample Received Date: 03-11-2014

Test Period : 19-11-2014 to 24-11-2014

Description of Soil: Moist brown silty/clayey gravelly SAND

Condition of Sample when Received: Natural

Chemical Analysis		Results
Percentage by dry mass finer than 2 mm in original sample	(%)	73
Organic Matter Content (Geospec 3:2001, Cl.9.1)	Check the presence of sulphides	Absent
	Check the presence of chlorides	Absent
	Organic matter content	(%) 2.9
Mass Loss on Ignition (Geospec 3:2001, Cl.9.2)	(%)	--
Total Sulphate Content (Geospec 3:2001, Cl.9.3)	SO ₃	(%) 0.01
	Water-soluble Sulphate Content (Geospec 3:2001, Cl.9.3)	(%) <0.01
Water-soluble Sulphate Content (Geospec 3:2001, Cl.9.3)	SO ₃	(g/L) <0.01
	Water-Soluble Chloride Content (Geospec 3:2001, Cl.9.4)	Water : soil ratio
pH value (Geospec 3:2001, Cl.9.5)	Cl	(%) --
	at 19°C	5.5

Remarks : 1. Test result present in the soil fraction finer than 2 mm.
2. Test result relates to the specimen tested only.

Checked by: _____

LAM SIU PING

Form No.: CHM GEO3_PWCL/00147/0001 Technical Manager Code:PWCL/00147

Approved Signatory: _____

CHENG CHI FAI
Senior Manager

End of Report

TEST CERTIFICATE
Chemical Analysis of SoilDate of issue: 14-01-2014
Page 1 of 1 pages

Castco LRN: MO0131128-17

Sample Details as Supplied by Customer

PWL TRN: 1322156

Customer : CEDD/BCP

Customer's Ref. No.: C5-LST-028

Address:- 8/F Grand Central Plaza, Tower 2, 138 Shatin Rural Committee Road, Sha Tin, Hong Kong

Job Title: Liatang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 5

Contract No.: CV/2013/03

Sampling Date: --

Sample Location: BCP2-TYH

Sample I.D.No.: TS13

Sample Origin: Unknown

Sample Type: Disturbed

Laboratory Test Results

Sample Received Date: 28-11-2013

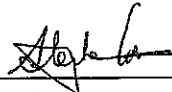
Test Period : 09-01-2014 to 11-01-2014

Description of Soil: Moist brown slightly gravelly sandy SILT

Condition of Sample when Received: Natural

Chemical Analysis		Results
Percentage by dry mass finer than 2 mm in original sample	(%)	68
Organic Matter Content (Geospec 3:2001, Cl.9.1)	Check the presence of sulphides	Absent
	Check the presence of chlorides	Absent
	Organic matter content	(%) 3.3
Mass Loss on Ignition (Geospec 3:2001, Cl.9.2)	(%)	--
Total Sulphate Content (Geospec 3:2001, Cl.9.3)	SO ₃	(%) <0.01
	Water-soluble Sulphate Content (Geospec 3:2001, Cl.9.3)	SO ₃
Water-Soluble Chloride Content (Geospec 3:2001, Cl.9.4)	Water : soil ratio	(g/L) <0.01
	Cl	(%) 2
pH value (Geospec 3:2001, Cl.9.5)	at 20°C	(%) <0.01
		5.9

Remarks : 1. Test result present in the soil fraction finer than 2 mm.
2. Test result relates to the specimen tested only.

Checked by: Approved Signatory: Form No.: CHM GEO3_PWL_1 on 25/04/2008
Senior Manager

Code:PWCL/00147

End of Report

LEE STEPHEN SHU HANG
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TEST CERTIFICATE
Chemical Analysis of Soil

RECEIVED 29 DEC 2014

Date of issue: 09-12-2014
Page 1 of 1 pages

Castco LRN: MO0141103-6

Sample Details as Supplied by Customer

PWL TRN: 1417210

Customer : CEDD/BCP

Customer's Ref. No.: C5-LST-038

Address:- 8/F Grand Central Plaza, Tower 2, 138 Shatin Rural Committee Road, Sha Tin, Hong Kong

Job Title: Liatang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 5

Contract No.: CV/2013/03

Sampling Date: --

Sample Location: BCP4

Sample I.D.No.: TS14

Sample Origin: Unknown

Sample Type: Disturbed

Laboratory Test Results

Sample Received Date: 03-11-2014

Test Period : 19-11-2014 to 24-11-2014

Description of Soil: Moist brown slightly gravelly sandy SILT

Condition of Sample when Received: Natural

Chemical Analysis	Results
Percentage by dry mass finer than 2 mm in original sample (%)	94
Organic Matter Content (Geospec 3:2001, Cl.9.1)	Check the presence of sulphides Absent
	Check the presence of chlorides Absent
	Organic matter content (%) 2.4
Mass Loss on Ignition (Geospec 3:2001, Cl.9.2)	(%) --
Total Sulphate Content (Geospec 3:2001, Cl.9.3)	SO ₃ (%) 0.01
Water-soluble Sulphate Content (Geospec 3:2001, Cl.9.3)	SO ₃ (%) <0.01
	(g/L) 0.01
Water-Soluble Chloride Content (Geospec 3:2001, Cl.9.4)	Water : soil ratio --
	Cl (%) --
pH value (Geospec 3:2001, Cl.9.5)	at 19°C 6.2

Remarks : 1. Test result present in the soil fraction finer than 2 mm.
 2. Test result relates to the specimen tested only.

Checked by: _____

LAM SIU PING

Approved Signatory: _____

CHENG CHI FAI
Senior Manager

Form No.: CHM GE03_PWCL_T 8825/04/2009 Technical Manager Code:PWCL/00147

End of Report

CASTCO佳力高試驗中心有限公司
CASTCO TESTING CENTRE LTD.

A 06731



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 香港粉嶺安全街29A號 29A, On Chuen Street, Fanling, Hong Kong. Fax: 2677 0351
 E-mail: castco@netvigator.com Website: www.castco.com.hk

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Chemical Analysis of Soil

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Date of issue: 09-12-2014
Page 1 of 1 pages

Castco LRN: MO0141103-7

Sample Details as Supplied by Customer

PWL TRN: 1417211

Customer : CEDD/BCP

Customer's Ref. No.: C5-LST-039

Address:- 8/F Grand Central Plaza, Tower 2, 138 Shatin Rural Committee Road, Sha Tin, Hong Kong

Job Title: Liatang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 5

Contract No.: CV/2013/03

Sampling Date: --

Sample Location: BCP4

Sample I.D.No.: TS15

Sample Origin: Unknown

Sample Type: Disturbed

Laboratory Test Results

Sample Received Date: 03-11-2014

Test Period : 19-11-2014 to 24-11-2014

Description of Soil: Moist brown silty/clayey gravelly SAND

Condition of Sample when Received: Natural

Chemical Analysis		Results
Percentage by dry mass finer than 2 mm in original sample	(%)	83
Organic Matter Content (Geospec 3:2001, Cl.9.1)	Check the presence of sulphides	Absent
	Check the presence of chlorides	Absent
	Organic matter content	(%) 5.1
Mass Loss on Ignition (Geospec 3:2001, Cl.9.2)	(%)	--
Total Sulphate Content (Geospec 3:2001, Cl.9.3)	SO ₃	(%) <0.01
	Water-soluble Sulphate Content (Geospec 3:2001, Cl.9.3)	(%) <0.01
Water-soluble Sulphate Content (Geospec 3:2001, Cl.9.3)	SO ₃	(g/L) 0.01
	Water-Soluble Chloride Content (Geospec 3:2001, Cl.9.4)	Water : soil ratio
Cl		(%) --
pH value (Geospec 3:2001, Cl.9.5)	at 19°C	5.7

Remarks : 1. Test result present in the soil fraction finer than 2 mm.
 2. Test result relates to the specimen tested only.

Checked by:

LAM SIU PING

Approved Signatory:

CHENG CHI FAI
Senior Manager

Form No.: CHM GEO3_PWCL_A 01.25/04.2009 Technical Manager Code:PWCL/00147

End of Report