



Your Ref : (11) in EP2/H4/S3/15 Pt.12  
Our Ref. : CSHK/CCW/GU18/2011/000414  
Date : 24 January 2011

**Environmental Protection Department**

**By Hand**

Branch Office  
28/F Southern Centre  
130 Hennessy Road  
Wanchai  
Hong Kong

**TO WHOM IT MAY CONCERN**

Dear Sir,

**Contract No. HY/2009/15**  
**Central – Wan Chai Bypass – Tunnel (Causeway Bay Typhoon Shelter Section)**  
**Environmental Permit No.: FEP-04/356-2009 – Noise Management Plan (Revision 1)**

Referring to your letter ref (11) in EP2/H4/S3/15 Pt.12 dated 13 December 2010, we would like to submit the amended Noise Management Plan (Rev.1) for your further consideration. Should you have any enquiry, please feel free to contact our Environmental Manager, Ms Anna Yu at 94731945.

Yours faithfully,  
For and on behalf of  
**China State Construction Engineering (Hong Kong) Limited**

K. Y. Leung  
Contractor's Representative

KYL/ST/AY/ew

c.c. AECOM – Mr. Peter Poon (w/e)  
CEDD – Mr. Patrick Keung (w/o)  
HYD – Mr. Jones Lai (w/o)  
ET L – Mr. Raymond Dai (w/e)  
IEC – Mr. Simon Lam (w/e)



# Lam Geotechnics Limited

Ground Investigation & Instrumentation Professionals

華益土力有限公司

Ref : G1001/CS/L272/FEP-04/356/2009  
Date : 25 January 2011

China State Construction Engineering (Hong Kong) Ltd.  
29/F, China Overseas Building,  
139 Hennessy Road, Hong Kong

Attn: Mr. K. Y. Leung

Dear Sir,

**Further Environmental Permit no. FEP-04/356/2009**  
**Contract No. HY/2009/15**  
**Central- Wan Chi Bypass – Tunnel (Causeway Bay Typhoon Shelter Section)**  
**Noise Management Plan (Revision 1)**

Referring to your submission of the captioned plan dated 21 January 2011, we have reviewed your submitted details and hereby certify this submission in accordance with Condition 2.20 of Further Environmental Permit no. FEP-04/356/2009.

Should you have any enquiry, please feel free to contact the undersigned at 2839 5666.

Yours faithfully,

Raymond Dai  
Environmental Team Leader

c.c. CEDD  
HyD  
AECOM CWB  
AECOM WDII  
ENVIRON

- Mr. Patrick Keung (By Fax)  
- Mr. Jones Lai (By Fax)  
- Mr. Peter Poon (By Fax)  
- Mr. Frankie Fan (By Fax)  
- Mr. David Yeung (By Fax)

ENVIRON

Ref.: AACWBIECEM00\_0\_0899L.11

24 January 2011

By Post and Fax (2566 2192)

China State Construction Engineering (Hong Kong) Ltd.  
29/F, China Overseas Building  
139 Hennessy Road  
Hong Kong

Attention: Mr. K. Y. Leung

Dear Sir,

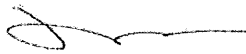
**Re: Contract No. HY/2009/15  
Central – Wan Chai Bypass – Tunnel (Causeway Bay Typhoon Shelter  
Section)  
Noise Management Plan (Revision 1)**

Reference is made to your submission of the Noise Management Plan (Revision 1 dated 21 January 2011) to us through E-mail on 24 January 2011 for our review and comment.

Please be informed that we have no further comments on the captioned submission. We write to verify the captioned submission in accordance with Condition 2.20 of FEP-04/356/2009.

Thank you for your kind attention.

Yours sincerely,



David Yeung  
Independent Environmental Checker

c.c.	HyD	Mr. Jones Lai	by fax: 2714 5289
	CEDD	Mr. Patrick Keung	by fax: 2577 5040
	AECOM (CWB)	Mr. Peter Poon	by fax: 3529 2829
	AECOM	Mr. Kelvin Cheng	by fax: 2691 2649
	LAM	Mr. Raymond Dai (ETL)	by fax: 2882 3331

Q:\Projects\AACWBIECEM00\Corr\AACWBIECEM00\_0\_0899L.11.doc

Contract No. HY/2009/15

Central - Wan Chai Bypass – Tunnel (Causeway Bay Typhoon Shelter Section)

CONTRACT HY/2009/15

**CENTRAL – WAN CHAI BYPASS  
TUNNEL (CAUSEWAY BAY TYPHOON SHELTER SECTION)**

## Noise Management Plan

**Submission Status: For Approval**

Revision	Description	Date
0	1 <sup>st</sup> submission	20 October 2010
1	2 <sup>nd</sup> submission	21 January 2011

Prepared by:	Anna Yu		21/01/2011
	Environmental Manager	Signature	Date
Checked by	Gene Cheung		21/01/2011
	Construction Manager	Signature	Date
Approved by:	K. Y. Leung		21/01/2011
	Contractor's Representative	Signature	Date

9.

## LIST OF CONTENT

1.0 Introduction

2.0 Environmental Legislation, Policies, Plans, Standards and Criteria

3.0 Noise Limit

4.0 Identified Noise Sensitive Receivers (NSRs)

5.0 Construction Noise

6.0 Mitigation of Environmental Impacts

7.0 Appendices

## **1.0 Introduction**

Central – Wan Chai Bypass – Tunnel (Causeway Bay Typhoon Shelter Section) (Contract No.: HY/2009/15) – as a part of the “temporary reclamation works including associated dredging works in Wan Chai Development Phase II (WDII) area” which is covered in the Environmental Permit No. EP-356/2009. Under the Part C of the EP, a noise management plan in order to fulfill the EP condition. Please refer to the site layout on Appendix A (The scale of layout is 1:1 000).

The purpose of this Noise Management Plan is to provide an evaluation of the potential noise impacts arising during construction phase of the project in the Causeway Bay Typhoon Shelter (CBTS) and ex-Wan Chai Public Cargo Working Area (ex-WCPCWA). Regarding the subsequent staged construction works for the reclamation in the CBTS and ex-WCPCWA, the Noise Management Plan would be updated accordingly.

## **2.0 Environmental Legislation, Policies, Plans, Standards and Criteria**

Noise impacts have been assessed in accordance with the criteria and methodology given in the Technical Memoranda (TM) made under the Noise Control Ordinance (NCO) and the Technical Memorandum on Environmental impact Assessment Process (EIAO-TM)

The NCO provides the statutory framework for noise control. Assessment procedures and standards are set out in the following Technical Memoranda:-

1. Technical Memorandum on Environmental impact Assessment Process (EIAO-TM);
2. Technical Memorandum on Noise from Construction Work other than Percussive Piling (GW-TM);
3. Technical Memorandum on Noise from Construction Work in Designated Areas (DA-TM);  
and
4. Technical Memorandum on Noise from Places other than Domestic Premises, Public Places or construction Sites (IND-TM).

## **3.0 Noise Limit**

The NCO provides the statutory framework for noise control of construction work other than percussive piling using powered mechanical equipment (PME) between the hours of 1900 to 0700 or at any time on Sundays and a general holiday (that is, restricted hours). Noise control on construction activities taking place at other times is subject to the Criteria for Evaluating Noise Impact stated in Table 1B of Annex 5 in the EIAO-TM. The noise limit is 75dB(A)<sub>Leq(30 minutes)</sub> at

the facades of dwellings and 70dB(A)  $L_{eq(30\text{ minutes})}$  at the facades of schools (65dB(A) during examinations). The construction noise criteria are summarized in Table 1.

**Table 1 Daytime Construction Noise Criteria**

Uses	Noise Level in $L_{eq}$ (30-minutes), dB(A)
Domestic Premises	<b>75</b>
Educational Institution	<b>70</b>
Educational Institution (during examination)	<b>65</b>

Between 1900 and 0700 hours and all day on Sundays and public holidays, activities involving the use of powered mechanical equipment (PME) for use purpose of carrying out construction work is prohibited unless a Construction Noise Permit (CNP) has been obtained. A CNP may be granted provided that the Acceptable Noise Level (ANL) for the noise sensitive receivers (NSRs) can be complied with. ANLs are assigned depending upon the Area Sensitivity Ratings (ASRs). The corresponding basic noise levels (BNLs) for evening and night time periods are given in Table 2.

**Table 2 Construction Noise Criteria for Activity other than Percussive Piling**

Time Period	Basic noise Level (BNLs)		
	ASR A	ASR B	ASR C
Evening (1900 to 2300 hours)	60	65	70
Night (2300 to 0700 hours)	45	50	55

#### **4.0 Identified Noise Sensitive Receivers (NSRs)**

In order to evaluate the construction noise impacts from the project, representative noise sensitive receivers (NSRs) for this contract which are identified in the EIA report (Register No. AEIAR-125/2008) were selected for assessment and summarized in Table 3. The distances in below table refer to Appendix 4.1 of AEIAR-125/2008 and Appendix 4.2 of AEIAR-041-2001.

**Table 3 Closest Distances between Noise Sensitive Receivers and Reclamation Zone**

NSRs	Use	Dist. from Dredging Works for Mitigation of Odour (m)	Dist. from Closest Dredging and Seawall Construction Works (m)	Reclamation Zone
Elizabeth House (N6)	Residential	-	220	TPCWAW
Riviera Mansion (N7)	Residential	119	234	TCBR1W
Marco Polo Mansion (N8)	Residential	-	210	TCBR1W
Staff Quarters of FEHD (N15)	Residential	-	125	TCBR1E
Staff Quarters of FEHD (N15)	Residential	-	210	TCBR2
Marco Polo Mansion (N8)	Residential	-	280	TCBR3

## 5.0 Construction Noise

### 5.1 Construction Tasks

Below construction tasks will likely lead to emission of construction noise:

- Temporary sea wall construction, filling behind seawall, for whole of WDII construction;
- Diaphragm wall, excavation, construction of slabs and backfilling in CWB tunnel construction;
- Rock excavation at CWB tunnel (Cross Harbour Tunnel section); and
- Temporary diversion of cooling water pipeline at CBTS 4.

### 5.2 Uses of Powered Mechanical Equipment (PME)

Type and number of powered mechanical equipment which would be used on site are referred to Appendix 4.5 of AEIAR-125/2008 and grouped according to different stage of works. Detailed list of PME and specific noise impact of individual construction task will be reviewed in relevant method statement(s) via submission to Engineer.

## 6.0 Mitigation of Environmental Impacts

In order of further reduce the noise impacts to NSRs during normal daytime working hours, it is still recommended that the following noise reduction measures shall be considered as far as practicable during construction.



## **6.1 Quality Powered Mechanical Equipment (QPME)**

For the following construction tasks of the project, it is considered necessary to adopt quiet PME:

- Temporary sea wall construction, filling behind seawall, for whole of WDII construction;
- Diaphragm wall, excavation, construction of slabs and backfilling in CWB tunnel construction;
- Rock excavation at CWB tunnel (Cross Harbour Tunnel section); and
- Temporary diversion of cooling water pipeline at CBTS 4.

Uses of the following types of QPME will be considered during the construction phase of this project to reduce noise impacts:

- Bulldozer, wheeled/tracked
- Excavator, wheel/tracked
- Loader, wheeled/tracked
- Asphalt paver
- Road roller
- Roller, vibratory
- Power rammer (petro)
- Compactor, vibratory
- Crane, mobile
- Generator

## **6.2 Diaphragm Walls Construction**

For the construction of diaphragm walls within Portions I, II, IV and VI (see Appendix C), temporary noise barriers (5 m in height) with cantilevered upper portion (3.5 m in length) within 5 m from any static or mobile plant. Unless otherwise agreed by the Engineer Representative, the temporary noise barriers shall consist of barrier material with a surface mass of not less than 14 kg/m<sup>2</sup> with 25 mm thick internal sound absorptive lining to achieve the maximum screening effect.

## **6.3 Construction Details and Mounting Details of the Acoustic Screen**

Acoustic screen will be deployed if required to shield the noise sensitive receivers from the sources of noisy activities. The acoustic screen and sound insulation materials mounting for percussion breakers of excavators are shown in Appendix D.

## **6.4 Other Mitigation Measures**

The following good practices will be adopted when practical to alleviate noise impacts:

- All PMEs to be used on site should be properly maintained;
- Mobile plants should be sited as far as away from NSRs as possible;
- Plants shall be avoided to start up all engines simultaneously;
- Install direct noise mitigation measures including silencers, acoustic louvers and movable acoustics enclosure where necessary; and
- PMEs known to emit noise strongly in one direction should, where possible, be orientated so that the noise is directed away from the nearby NSRs.

## **7.0 Appendices**

Appendix A – Location Plan for Noise Sensitive Receivers

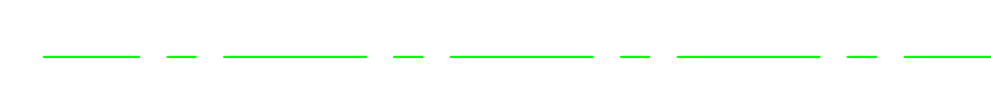
Appendix B – Construction Schedule

Appendix C – Portions of Site

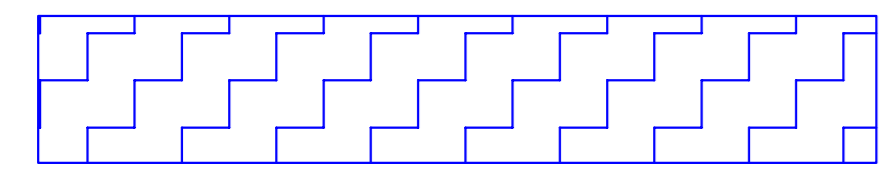
Appendix D – Acoustic Screen and Sound Insulation Materials Mounting for Percussion Breakers of Excavators

# **Appendix A – Location Plan for Noise Sensitive Receivers**

LEGEND:



WORKS AREA

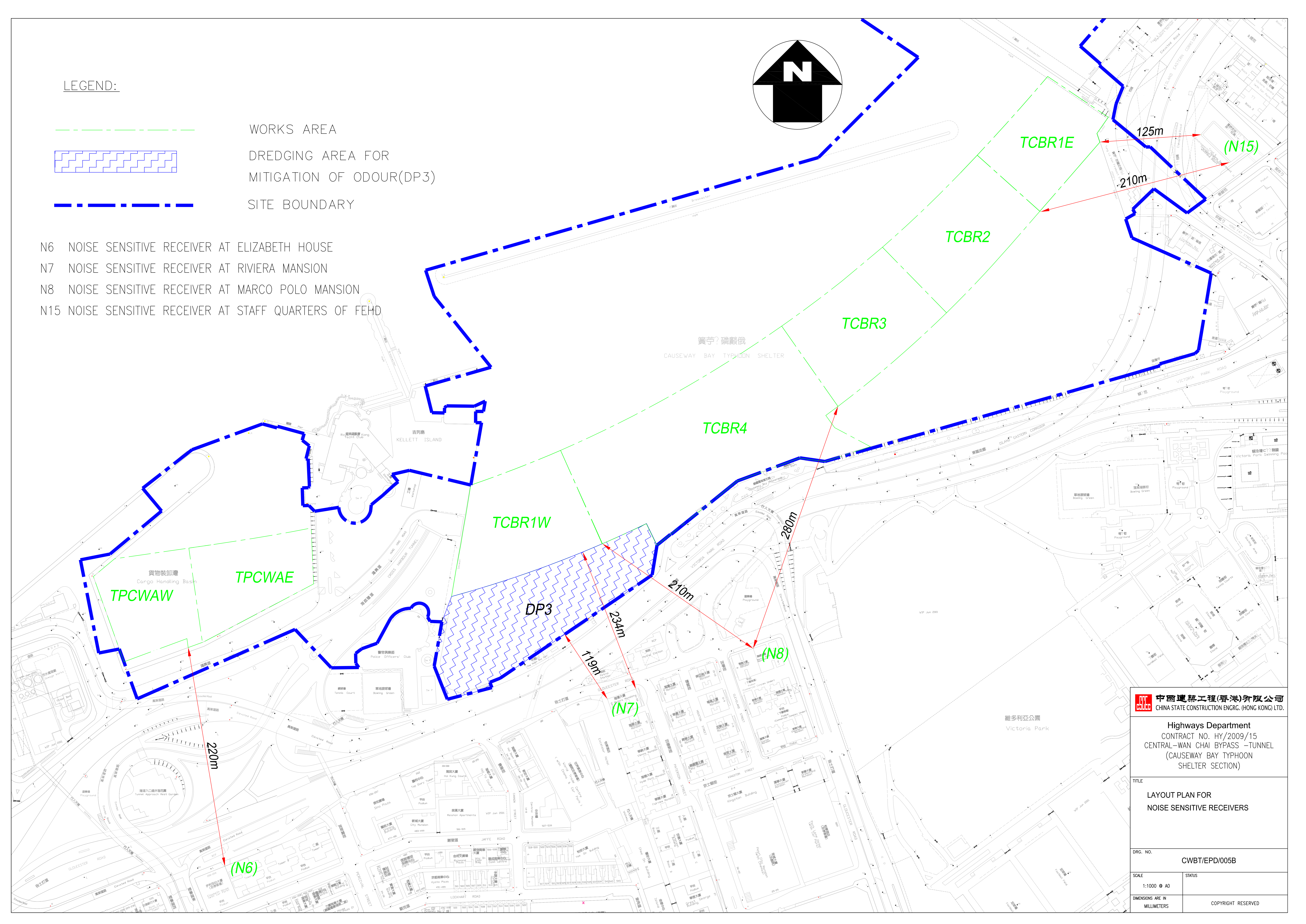
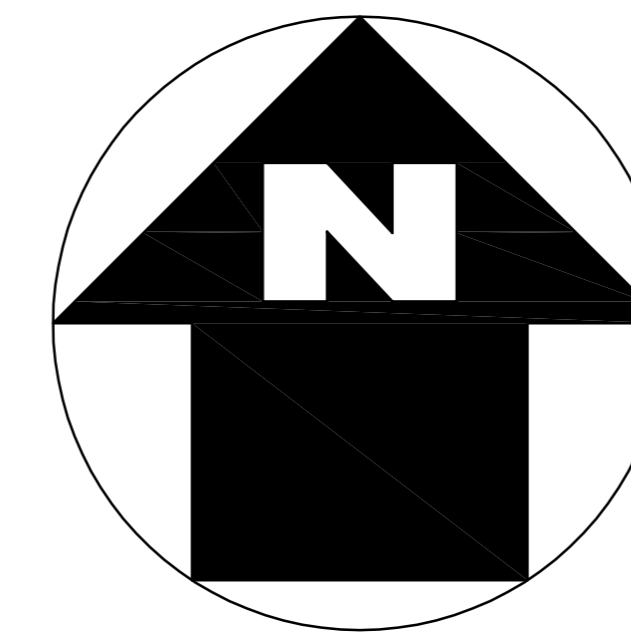


DREDGING AREA FOR  
MITIGATION OF ODOUR(DP3)



SITE BOUNDARY

- N6 NOISE SENSITIVE RECEIVER AT ELIZABETH HOUSE
- N7 NOISE SENSITIVE RECEIVER AT RIVIERA MANSION
- N8 NOISE SENSITIVE RECEIVER AT MARCO POLO MANSION
- N15 NOISE SENSITIVE RECEIVER AT STAFF QUARTERS OF FEHD



**CSCEC** 中國建築工程(香港)有限公司  
CHINA STATE CONSTRUCTION ENGRG. (HONG KONG) LTD.

Highways Department  
CONTRACT NO. HY/2009/15  
CENTRAL-WAN CHAI BYPASS -TUNNEL  
(CAUSEWAY BAY TYPHOON  
SHELTER SECTION)

TITLE  
LAYOUT PLAN FOR  
NOISE SENSITIVE RECEIVERS





DRG. NO.  
CWBT/EPD/005B

SCALE  
1:1000 @ A0

STATUS  
DIMENSIONS ARE IN  
MILLIMETERS  
COPYRIGHT RESERVED

## **Appendix B – Construction Schedule**

Activity ID	Activity Name	Original Duration	Start	Finish	2010		2011				2012				2013				2014				2015				2016				2017
					Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
<b>SUBMISSIONS COMPLYING WITH EPs</b>																															
002	EM&A Manual (rely on the master EP's submission, EP-356/2009 condition 2.5)																														
004	Baseline Monitoring Report (rely on the master EP's submission, EP-356/2009 condition 3.3)																														
006	Monthly EM&A (rely on the master EP's submission, EP-356/2009 condition 3.4)																														
008	A dedicated web site (rely on the master EP's submission, EP-356/2009 condition 4.2)																														
010	Management organization of main construction companies (FEP condition 2.6)	1	02-Oct-10*	02-Oct-10																											
012	Work schedule and location plans (FEP condition 2.7)	1	27-Oct-10*	27-Oct-10																											
014	Silt curtain deployment plan (FEP condition 2.8)	1	27-Oct-10*	27-Oct-10																											
020	Silt screen deployment plan (FEP condition 2.9)	1	27-Oct-10*	27-Oct-10																											
030	Noise management plan (FEP condition 2.20)	1	27-Oct-10*	27-Oct-10																											
040	Proposal for the removal of odorous sediment and slime in CBTS (FEP condition 2.18)	1	10-Jan-11*	10-Jan-11																											
050	Landscape plan (FEP condition 2.21)	1	31-Jan-11*	31-Jan-11																											
<b>TCBR4</b>																															
100	Maintenance dredging for navigation safety for relocation of RHKYC mooring at Area B	7	20-Nov-10*	26-Nov-10																											
<b>TCBR2 + TCBR3 (TS2 Area)</b>																															
115	TCBR2&TCBR3(TS2) - Maintenance dredging for navigation safety at Area A for relocation of commercial vessels	5	15-Nov-10*	19-Nov-10																											
117	TCBR2&TCBR3(TS2) - dredging & place rockfill below seabed in preparation for seawall block installation	64	16-Dec-11*	17-Feb-12																											
120	TCBR2&TCBR3(TS2) - temporary reclamation	115	26-Feb-12*	19-Jun-12																											
160	TCBR2&TCBR3(TS2) - removal of temporary reclamation	57	18-Aug-13*	13-Oct-13																											
<b>TCBR1E (TS1 Area)</b>																															
105	TCBR1E(TS1) - dredging & place rockfill below seabed in preparation for seawall block installation	86	03-Dec-10*	26-Feb-11																											
110	TCBR1E (TS1) - temporary reclamation	69	28-Jan-11*	06-Apr-11																											
155	TCBR1E (TS1) - removal of temporary reclamation	27	30-Jan-12*	25-Feb-12																											
<b>TCBR1W (TS4 Area)</b>																															
123	TCBR1W(TS4) - removal of odorous sediment and slime	10	17-Jan-11*	26-Jan-11																											
125	TCBR1W(TS4) - dredging & place rockfill below seabed in preparation for seawall block installation	40	28-Jan-11*	08-Mar-11																											
130	TCBR1W(TS4) - temporary reclamation	68	09-Mar-11	15-May-11																											
165	TCBR1W(TS4)- removal of temporary reclamation	26	27-Oct-13*	21-Nov-13																											
<b>TPCWAE</b>																															
135	TPCWAE - dredging & place rockfill below seabed in preparation for seawall block installation	55	03-Dec-10*	26-Jan-11																											
140	TPCWAE - temporary reclamation	77	27-Jan-11	13-Apr-11																											
170	TPCWAE- removal of temporary reclamation	28	28-Sep-13*	25-Oct-13																											

 Actual Work  
 Remaining Work  
 Critical Remaining Work  
 Milestone

**CHINA STATE CONSTRUCTION ENGG LTD**

**HY/2009/15 : Central-Wan Chai Bypass Tunnel (CBTS Section)**

Date	Revision	Checked	Approved
06-Jan-11	Revision B		
	(File EP03)		
	(Layout EP03)		

Activity ID	Activity Name	Original Duration	Start	Finish	2010		2011				2012				2013				2014				2015				2016				2017
					Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
<b>TPCWAW</b>					<div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="width: 60%;"></div> <div style="width: 35%;"> <p><span style="color: green;">■</span> TPCWAW - dredging &amp; place rockfill below seabed in preparation for seawall block installation</p> <p><span style="color: lightgreen;">■</span> TPCWAW - temporary reclamation</p> <p><span style="color: red;">■</span> TPCWAW - removal of temporary reclamation</p> </div> </div>																										
145	TPCWAW - dredging & place rockfill below seabed in preparation for seawall block installation	47	28-Oct-13*	13-Dec-13																											
150	TPCWAW - temporary reclamation	83	14-Dec-13	06-Mar-14																											
175	TPCWAW - removal of temporary reclamation	50	02-Jul-15*	20-Aug-15																											

■ Actual Work  
■ Remaining Work  
■ Critical Remaining Work  
◆ ◆ Milestone

**CHINA STATE CONSTRUCTION ENGG LTD**

**HY/2009/15 : Central-Wan Chai Bypass Tunnel (CBTS Section)**

Date	Revision	Checked	Approved
06-Jan-11	Revision B		
	(File EP03)		
	(Layout EP03)		

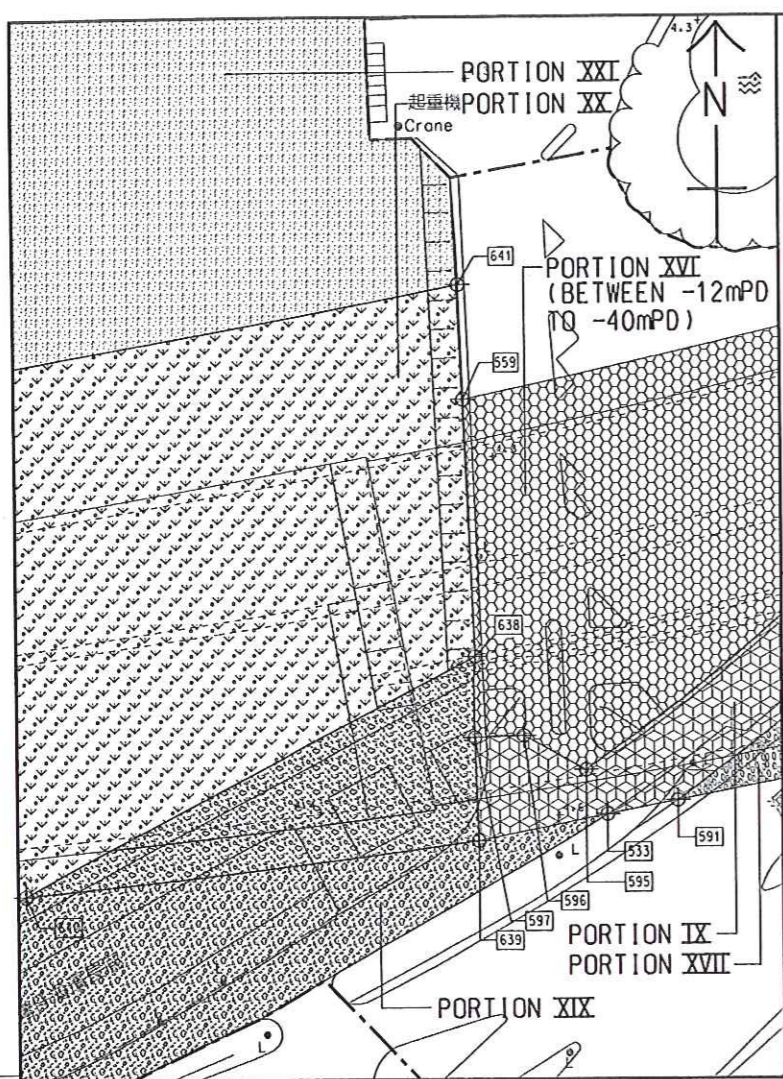
**Contract No. HY/2009/15**

**Central -Wan Chai Bypass – Tunnel (Causeway Bay Typhoon Shelter Section)**

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## **Appendix C – Portions of Site**



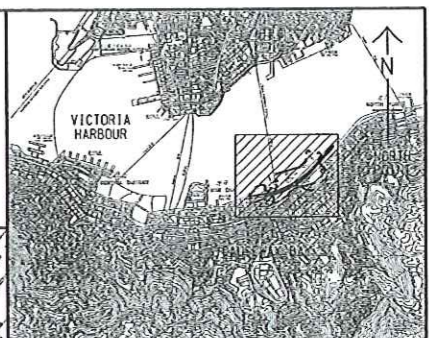


**SETTING OUT TABLE**

SETTING OUT POINT	COORDINATES		SETTING OUT POINT	COORDINATES	
	EASTING	NORTHING		EASTING	NORTHING
510	837513.213	816459.562	616	837448.946	816494.635
532	836906.849	816039.640	617	836781.898	816071.794
533	836804.724	816016.848	618	836778.621	816033.592
535	836613.393	815957.865	619	836738.340	816012.453
559	836785.748	816072.558	620	836898.346	815964.070
560	836866.859	816091.900	621	836906.232	815941.018
561	836901.826	816102.210	622	836918.629	815936.415
562	836923.715	816109.289	623	836955.036	816011.630
579	837356.196	816557.044	625	836912.225	816043.885
580	837394.450	816601.057	631	837479.213	816484.867
581	837473.505	816478.110	632	837488.808	816478.353
589	837496.712	816446.217	633	837490.705	816481.238
590	837467.249	816509.512	634	837494.867	816478.401
591	836814.181	816018.689	635	837492.949	816475.496
592	836877.999	816090.137	636	837507.069	816465.603
593	836901.024	816078.037	637	837504.453	816457.285
594	836915.185	816074.194	638	836787.101	816038.031
595	836801.868	816022.852	639	836787.425	816013.280
596	836793.533	816027.336	640	836726.919	816006.420
597	836787.441	816027.109	641	836785.182	816087.750
607	836921.201	816098.947	642	836689.060	815966.319
614	837486.101	816493.127	643	836622.837	815931.497
615	837507.092	816461.059	644	836619.483	815940.862

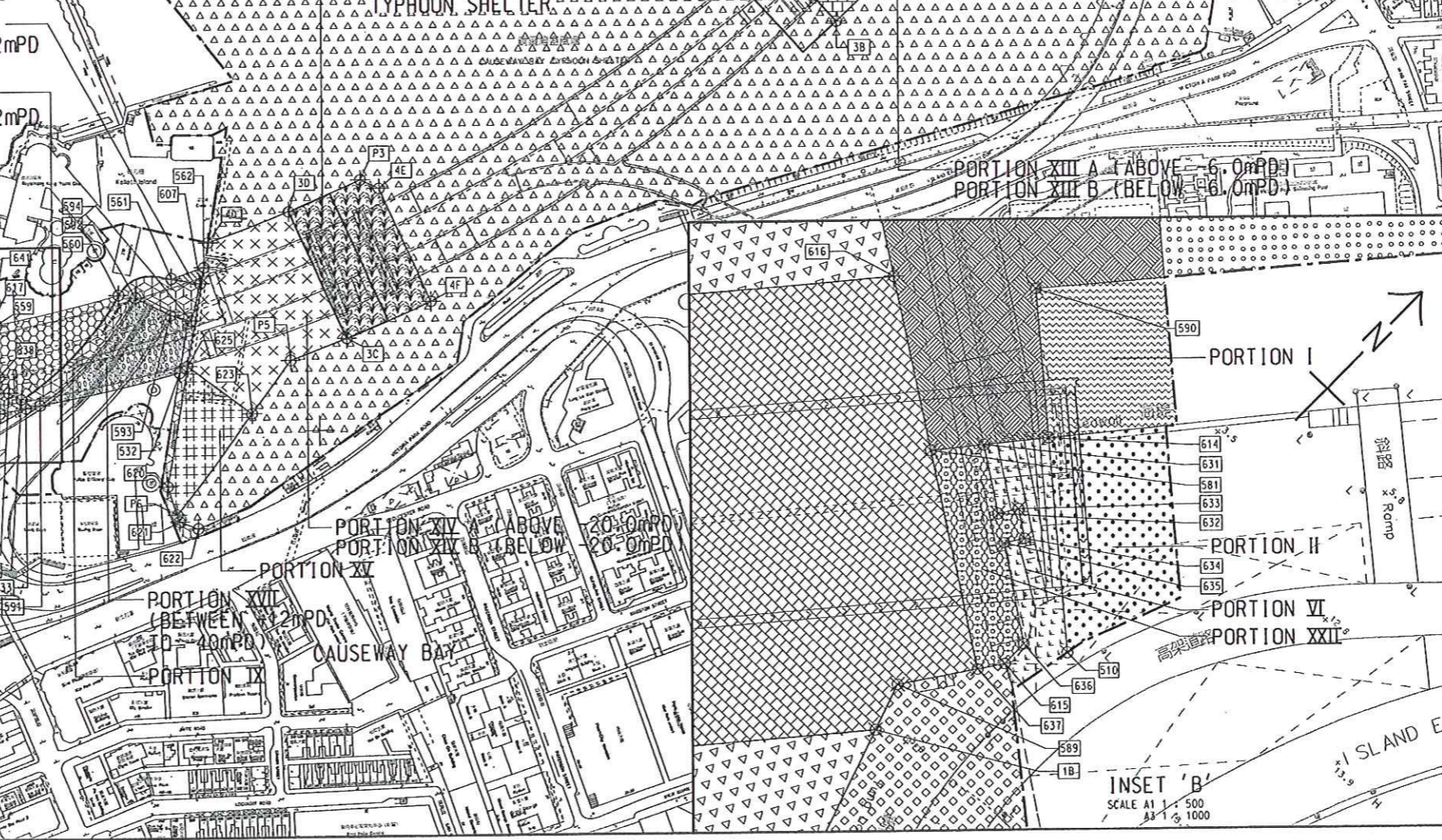
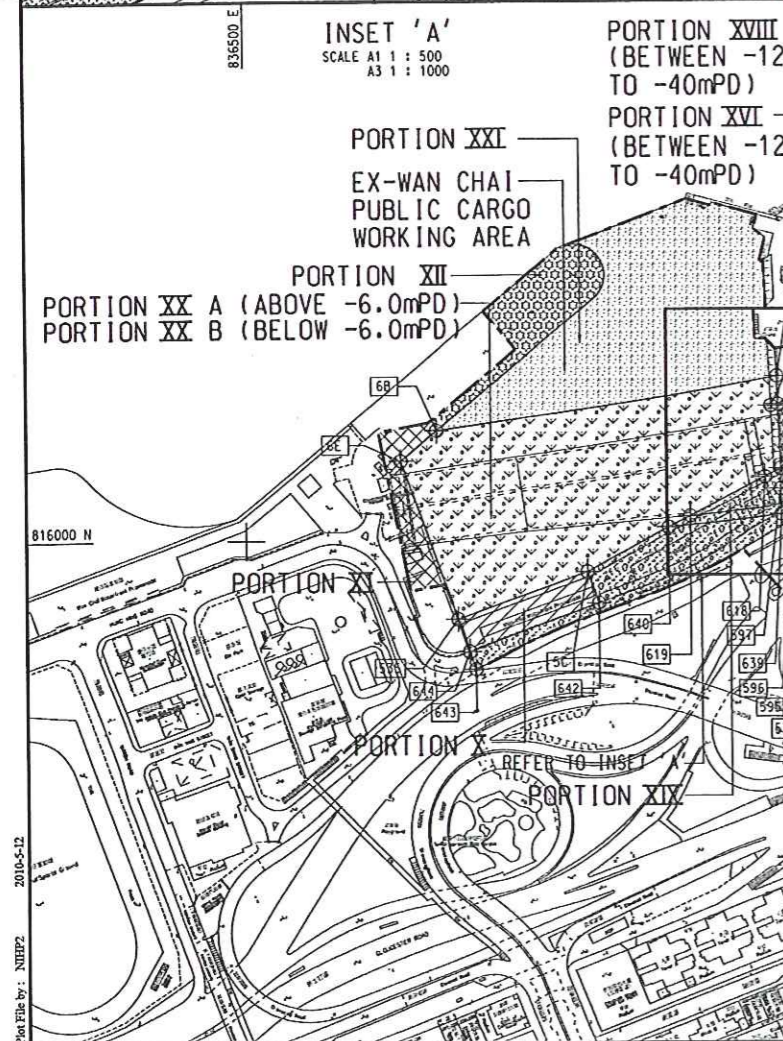
**CONTROLLED COPY  
FOR CONSTRUCTION**

- NOTES:**
- ALL COORDINATES GIVEN ACCORDING TO HONG KONG (1980) GRID IN METERS.
  - COORDINATES TO BE VERIFIED WITH THE ENGINEER ON SITE.
  - THE COORDINATES OF SITE BOUNDARY SHALL REFER TO DRAWING 60095653/T1/1101.
  - THE COORDINATES OF 3A, 3B, 3C, 3D, 4D, 5C, 6B, 6E SHALL REFER TO DRAWING 60095653/T1/1221.
  - THE COORDINATES OF P3, 4E, 4F, P5, P6 REFER TO DRG. 60095653/T1/6000.



**LOCATION PLAN**  
SCALE A1 1 : 5000  
A3 1 : 10000

- LEGEND:**
- SITE BOUNDARY
  - PORTION I
  - PORTION II
  - PORTION III
  - PORTION IV
  - PORTION V
  - PORTION VI
  - PORTION VII
  - PORTION VIII
  - PORTION IX
  - PORTION X
  - PORTION XI
  - PORTION XII
  - PORTION XIII A, PORTION XIII B
  - PORTION XIV A, PORTION XIV B
  - PORTION XV
  - PORTION XVI
  - PORTION XVII
  - PORTION XVIII
  - PORTION XIX
  - PORTION XX A, PORTION XX B
  - PORTION XXI
  - PORTION XXII
  - PORTION XXIII



12 OCT 2010

B	WORKING DRAWING	REVISED	OCT 10
B	TENDER DRAWING	ISSUED	MAY 10

Highways Department 路政署  
Major Works Project Management Office

CENTRAL - WAN CHAI BYPASS AND IEC LINK

PWP ITEM NO. 579 TH  
工務計劃項目編號

CENTRAL WAN CHAI BYPASS - TUNNEL  
(CAUSEWAY BAY TYPHOON SHELTER SECTION)

PORTIONS OF SITE

**AECOM**

DRG NO. 60095653/T1/1201C  
圖紙編號

DESIGNED BY: VLK  
SCALE: A1 1 : 2000  
A3 1 : 4000  
DIMENSIONS ARE IN METRES

CONTRACT NO. HY/2009/15  
STATUS: WORKING DRAWING  
% BY APPROVED: CW  
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**Appendix D – Acoustic Screen and Sound Insulation  
Materials Mounting for Percussion  
Breakers of Excavators**

**Contract No. HY/2009/15**

**Central -Wan Chai Bypass – Tunnel (Causeway Bay Typhoon Shelter Section)**

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The acoustic wrapping for the percussion breakers of excavators and the noise barrier comprise of minimum 50mm thick sound absorbing lining with a hard backing plate for the noise barrier.