



Lam Geotechnics Limited

Ground Investigation & Instrumentation Professionals

華益土力有限公司

Ref : G1120/CS/L665/FEP-07/356/2009
Date : 14 March 2014

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

Attn: Site Agent, Dr. Dave Chan

Dear Dr. Chan,

Contract No. HY/2010/08
Central – WanChai Bypass Tunnel (Slip Road 8 Section)

Noise Management Plan (Rev. 2)

Referring to the captioned submission dated 11 March 2014 received through email on 11 March 2014, we have reviewed your submitted details and hereby certified this submission in accordance with Condition 2.23 of FEP-07/356/2009.

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

Yours faithfully,

Raymond Dai
Environmental Team Leader

c.c.

HyD	- Mr. Jones Lai	(By Fax: 2714 5289)
CEDD	- Mr. Robert Tsoi	(By Fax: 2577 5040)
AECOM	- Mr. Frankie Fan	(By Fax: 2587 1877)
ENVIRON	- Mr. David Yeung	(By Fax: 3548 6988)



Ref.: AACWBIECEM00_0_5020L.14

18 March 2014

China State Construction Engineering (Hong Kong) Ltd
P.O. Box 35159
King's Road Post Office

By Post

Attention: Dr. Dave Chan

Dear Sir,

Re: FEP-07/356/2009
Contract No. HY/2010/08
Central – Wan Chai Bypass Tunnel (Slip Road 8 Section)
Noise Management Plan (Revision 2)

Reference is made to your submission of the Noise Management Plan to us through E-mail on 11 March 2014 for our review and comment.

Please be informed that we have no adverse comment on the captioned submission. We write to verify the captioned submission in accordance with Condition 2.23 of FEP-07/356/2009.

Please feel free to contact the undersigned should you have any queries.

Yours sincerely,



David Yeung
Independent Environmental Checker

c.c.	HyD	Mr. Jones Lai	by fax: 2714 5289
	CEDD	Mr. Robert Tsoi	by fax: 2577 5040
	AECOM	Mr. Dennis Norton (CRE)	by fax: 3912 3010
	AECOM	Mr. Conrad Ng	by fax: 2691 2649
	LAM	Mr. Raymond Dai (ETL)	by fax: 2882 3331

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

**Central – Wan Chai Bypass Tunnel
(Slip Road Section 8)
Contract No. HY/2010/08**

Noise Management Plan under condition 2.23 of FEP- 07/356/2009

Revision: 2

March 2014

Prepared by: Environmental Officer	C. M Wong	Date: 11 March 2014
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1.0 INTRODUCTION

Under Condition 2.23 of Further Environmental Permit No FEP-07/356/2009, a noise management plan should be prepared and submitted to EPD two weeks before the commencement of the corresponding parts of the Project. In accordance to the Environmental Impact Assessment (EIA) Report and Section 3 of the relevant EM&A Manual, the noise mitigation measures are proposed to alleviate the noise impact due to the project. This noise management plan provides details regarding the works to be conducted at Slip Road 8 Section (marine based).

Noise Management Plan for land based, please refers to separate submission under FEP-10/364/2009/B.

2.0 SCOPE OF WORKS & ENVIRONMENTAL LEGISLATION, POLICIES, PLANS, STANDARDS AND CRITERIA

In accordance with the conditions stipulated in the Environmental Permit No. EP-356/2009 and Further Environmental Permit No. FEP-07/356/2009, silt curtain shall be deployed around seawall dredging and seawall trench filling in reclamation shoreline zone - TCBR.

The scope of works mainly includes:

- i) Temporary reclamation works of around 3 ha in size including associated dredging works at CBTS; and
- ii) Removal of the temporary reclamation after the construction of the Trunk Road; and reinstatement of CBTS.

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) $L_{eq(30 \text{ minutes})}$ 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 Leq (30-minutes), dB(A)

Uses	Noise Level in Leq (30-minutes), dB(A)
Domestic Premises	75
Educational Institution	70
Educational Institution (during examination)	65

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 4.1 of AEIAR-041-2001.

Table 3 Noise Sensitive Receivers nearby

Location	Name of building	Catalogue	Nearest Distance (m) from the construction site
Causeway Bay	Riviera Mansion	Residential	98
Causeway Bay	Marco Polo Mansion	Residential	102
Causeway Bay	Viking Garden	Residential	459
Tin Hau	Victoria Court	Residential	405
Tin Hau	Mayson Garden	Residential	375
Tin Hau	Gordon House	Residential	361
Tin Hau	Belle House	Residential	327

5.0 Construction Noise

5.1 Construction Tasks

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

- Temporary reclamation works of around 3 ha in size including associated dredging works at CBTS;
- Removal of the temporary reclamation after the construction of the Trunk Road; and reinstatement of CBTS;

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 4.13 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)

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 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.

6.3 Other Mitigation Measures

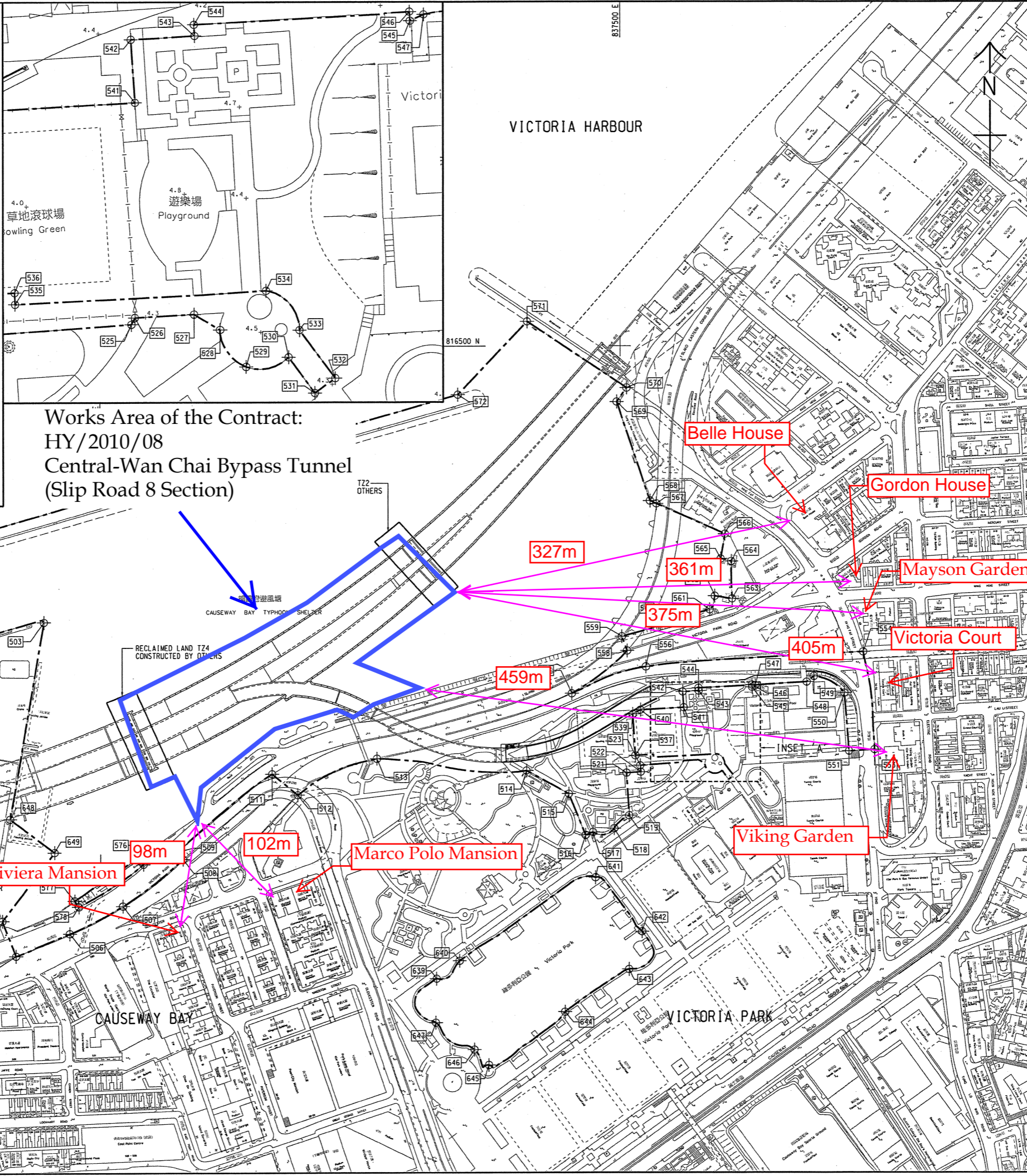
The following good practices will be adopted when practical to alleviate noise impacts:

- 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 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

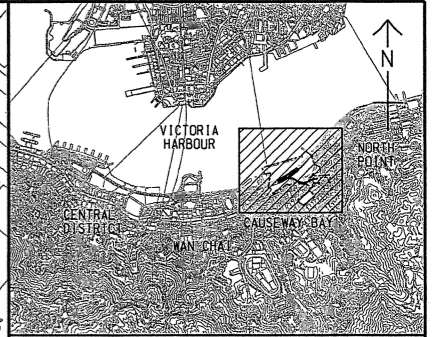
Appendix A

Location Plan for Noise Sensitive Receivers

SETTING OUT POINT	COORDINATE		SETTING OUT POINT	COORDINATE	
	EASTING	NORTHING		EASTING	NORTHING
501	836834.654	816307.053	560	837553.668	816236.393
502	836872.619	816216.508	561	837585.734	816245.792
503	836945.132	816234.375	562	837590.726	816258.832
505	836917.671	815911.415	563	837607.548	816256.268
506	836970.018	815932.954	564	837606.695	816292.565
507	837021.214	815959.576	565	837596.488	816294.986
508	837079.921	816004.859	566	837600.533	816318.981
509	837073.916	816011.852	567	837534.474	816348.401
511	837165.638	816087.100	568	837528.378	816351.116
512	837190.364	816066.670	569	837496.712	816446.217
513	837266.408	816101.801	570	837506.143	816459.701
514	837410.032	816089.928	571	837410.934	816523.765
515	837450.507	816067.349	572	837344.386	816453.325
516	837466.630	816027.453	575	837041.237	816000.027
517	837473.629	816030.282	576	837036.516	816006.971
518	837493.915	816033.802	577	836974.738	815964.852
519	837508.273	816046.332	578	836978.719	815958.996
521	837505.793	816087.606	639	837323.361	815888.727
522	837519.320	816088.530	640	837345.577	815906.101
523	837518.851	816094.820	641	837475.955	815986.456
525	837559.660	816097.721	642	837520.471	815934.035
526	837560.526	816099.355	643	837507.994	815897.484
527	837574.907	816100.135	644	837446.668	815856.474
528	837581.189	816096.430	645	837373.643	815805.415
529	837587.391	816087.496	646	837359.746	815820.364
530	837597.625	816089.774	647	837322.594	815846.270
531	837603.921	816081.148	648	836912.225	816043.885
532	837608.806	816084.714	649	836955.096	816011.630
533	837600.246	816096.314	650	836904.562	815945.321
534	837592.181	816105.802			
535	837531.534	816102.607			
536	837531.442	816105.401			
537	837514.273	816104.428			
539	837511.734	816144.714			
540	837519.057	816148.795			
541	837560.575	816151.097			
542	837559.579	816166.316			
543	837575.057	816167.209			
544	837574.917	816169.930			
545	837626.766	816170.783			
546	837626.621	816173.030			
547	837630.020	816172.310			
548	837679.081	816175.812			
549	837685.893	816181.330			
550	837715.118	816165.153			
551	837719.566	816108.737			
553	837744.174	816110.151			
554	837733.251	816204.909			
556	837524.380	816190.704			
557	837453.512	816164.827			
558	837506.486	816206.018			
559	837501.445	816219.760			



Works Area of the Contract:
HY/2010/08
Central-Wan Chai Bypass Tunnel
(Slip Road 8 Section)



LOCATION PLAN
SCALE A1 1 : 50000
A3 1 : 100000

- NOTES:
- ALL COORDINATES GIVEN ACCORDING TO HONG KONG (1980) GRID IN METERS.
 - COORDINATES TO BE VERIFIED WITH THE ENGINEER ON SITE.
 - THIS DRAWING SHALL BE READ IN CONNECTION WITH DRAWING NO. 60095653/T2/1102 AND 1103

LEGEND:

--- SITE BOUNDARY

○ SETTING OUT POINT

SETTING OUT POINT	COORDINATE	
	EASTING	NORTHING
652	813055.694	817117.076
653	813099.429	817078.191
654	813125.333	817107.346
655	813103.658	817126.607
656	813083.936	817118.715
657	813068.906	817132.091
662	813272.658	817273.155
663	813267.320	817276.040
664	813263.643	817276.260
665	813174.315	817221.758
666	813126.969	817198.951
667	813136.310	817222.643
668	813141.945	817243.542
669	813174.898	817247.094
670	813262.526	817301.530
671	813280.714	817278.683
674	834794.531	811537.874
675	834827.583	811489.761
676	834969.773	811499.102
677	835088.314	811388.359
678	835077.993	811225.951
679	834986.804	811108.427
680	834992.939	811082.830
681	834985.709	811073.445
682	834797.862	811030.209
683	834791.050	811058.028
684	834780.743	811078.331
685	834748.106	811170.611
686	834730.947	811395.771
687	834713.773	811464.060
688	834617.598	811103.804
689	834699.994	811126.324
690	834740.857	810940.338
691	834654.505	810921.365

B	WORKING DRAWING	JYHC/RPCM/MAR.13
A	TENDER ADDENDUM NO. 1	JYHC/RPCM/AUG.12
-	TENDER DRAWING	JYHC/RPCM/JUL.12
REV.	DESCRIPTION	DATE
01	ISSUED	

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
(SLIP ROAD 8 SECTION)
LIMIT OF SITE BOUNDARY
AND SETTING OUT PLAN
SHEET 1 OF 3




AECOM

DRG.NO. 圖紙編號	60095653/T2/1101 B	
DESIGNED BY 設計	CONTRACT NO. 合約編號	P. OF APPROVED 核准人
JYHC	HY/2010/08	CWN
DRAWN BY 繪圖	STATUS 圖章	WORKING DRAWING
ZNL		
SCALE A1 1 : 2000 比例		
A3 1 : 4000		
DIMENSIONS ARE IN METRES		
COPYRIGHT RESERVED 版權所有		

Appendix B

Construction Schedule

HY/2010/08 Central -Wan Chai Bypass Tunnel (Slip Road 8 Section) TCBR4 Marine Works Programme

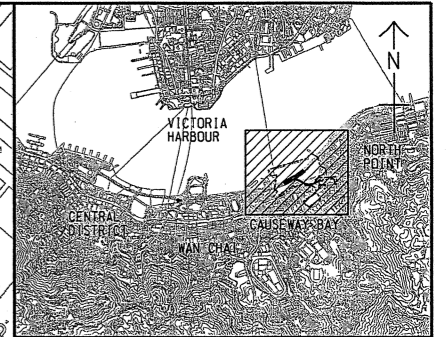
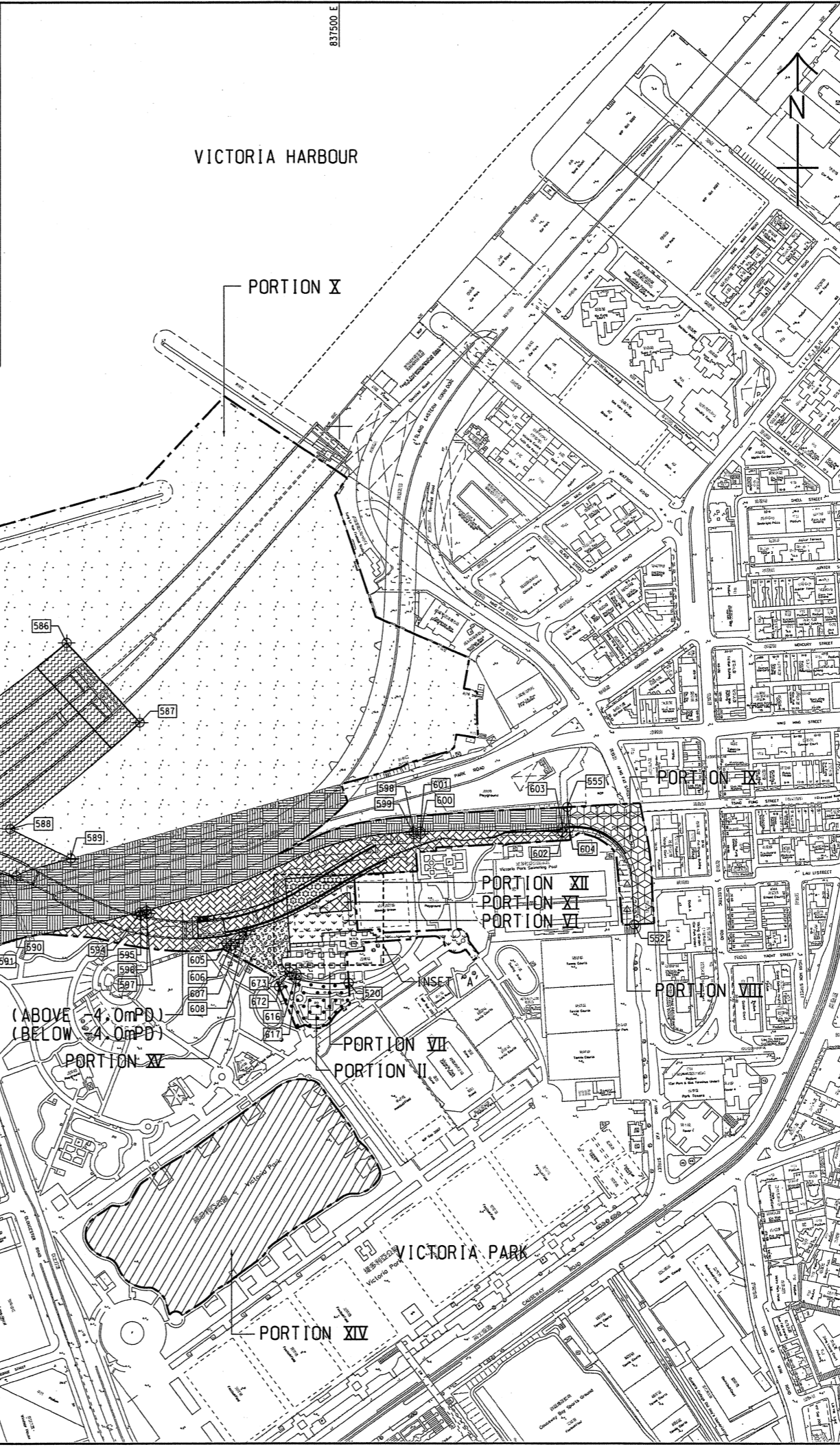
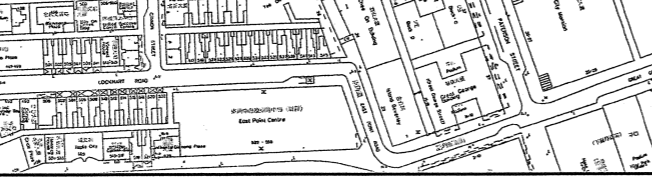
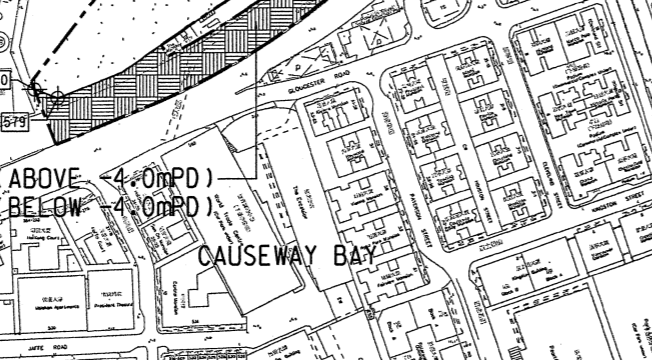
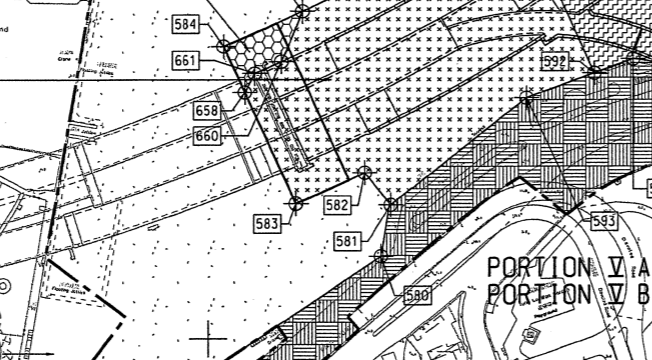
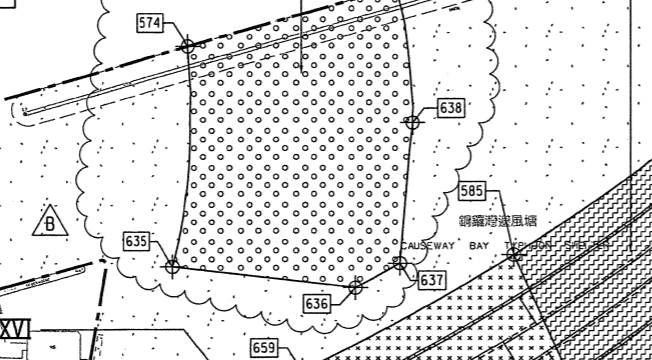
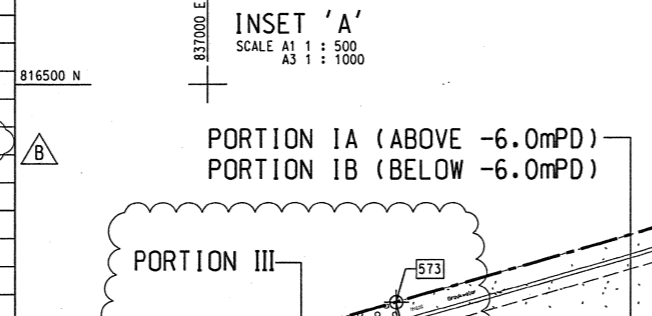
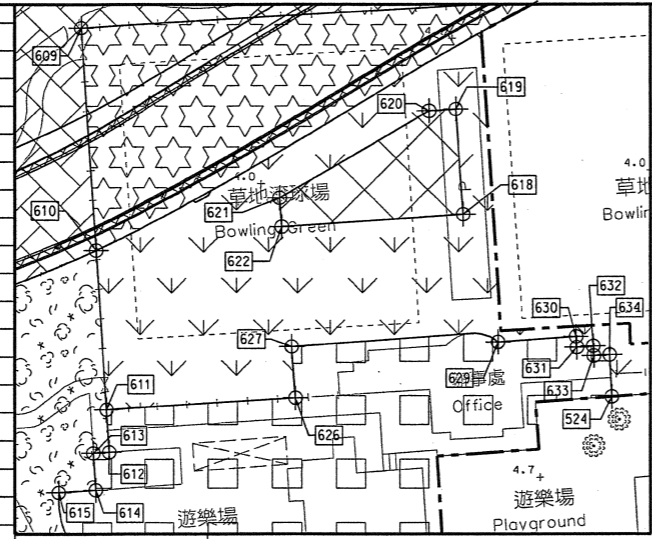
	Task Name	Duration	Start	Finish	2014年				2015年				2016年				2017年			
					Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1		
1	Dredging Works	337 days	15/11/2013	17/10/2014	Dredging Works 															
2	Seawall Construction & Filling Works	252 days	9/5/2014	15/1/2015	Seawall Construction & Filling Works 															
3	Removal of Reclamation Area	512 days	25/8/2015	17/1/2017	Removal of Reclamation Area 															

Appendix C

Portions of Site

SETTING OUT POINT	COORDINATE	
	EASTING	NORTHING
510	836906.232	815941.018
520	837507.255	816063.282
524	837529.054	816095.546
552	837728.916	816109.274
555	837677.140	816201.792
573	837100.070	816383.057
574	836989.271	816351.422
579	836918.629	815936.415
580	837091.645	816044.312
581	837096.925	816072.092
582	837082.970	816089.370
583	837046.334	816072.704
584	837008.240	816157.660
585	837162.490	816239.057
586	837287.829	816330.928
587	837344.505	816268.317
588	837244.050	816184.704
589	837291.013	816161.358
590	837248.874	816147.576
591	837226.101	816150.869
592	837205.337	816143.217
593	837169.187	816129.812
594	837344.657	816119.046
595	837345.278	816116.621
596	837350.145	816117.922
597	837349.523	816120.248
598	837557.674	816182.142
599	837557.785	816180.245
600	837562.879	816180.492
601	837562.769	816182.389
602	837673.495	816182.042
603	837673.495	816185.710
604	837678.744	816185.342
605	837412.495	816094.344
606	837416.062	816092.511
607	837422.657	816097.462
608	837428.292	816103.996
609	837458.276	816145.251
610	837460.234	816115.285
611	837461.643	816093.831
612	837462.082	816088.160

SETTING OUT POINT	COORDINATE	
	EASTING	NORTHING
613	837459.870	816088.030
614	837460.183	816083.093
615	837455.236	816082.766
616	837466.543	816070.558
617	837466.517	816066.149
618	837509.265	816120.125
619	837508.288	816134.292
620	837504.747	816134.048
621	837484.856	816122.327
622	837485.122	816118.461
626	837486.954	816095.396
627	837486.441	816102.298
629	837513.918	816102.928
630	837524.261	816103.636
631	837524.378	816102.195
632	837526.559	816102.368
633	837526.648	816101.081
634	837528.751	816101.194
635	836981.009	816232.657
636	837078.087	816221.321
637	837102.006	816234.487
638	837108.959	816318.331
658	837019.410	816132.749
659	837049.847	816176.643
660	837038.732	816149.359
661	837024.680	816143.036
672	837453.409	816060.171
673	837461.512	816071.792



LOCATION PLAN
SCALE A1 1 : 50000
A3 1 : 100000

NOTE:
1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NO. 60095653/T2/1202 AND 1203.
2. FOR SETTING OUT POINTS OF SITE BOUNDARY, REFER TO DRAWING NO. 60095653/T2/1101.

LEGEND:

[Dashed line]	SITE BOUNDARY
[Diagonal hatching]	PORTION I
[Stippled pattern]	PORTION II
[Cross-hatching]	PORTION III
[Vertical hatching]	PORTION IV
[Horizontal hatching]	PORTION V
[Diagonal hatching (top-left to bottom-right)]	PORTION VI
[Diagonal hatching (top-right to bottom-left)]	PORTION VII
[Dotted pattern]	PORTION VIII
[Square grid pattern]	PORTION IX
[Diagonal hatching (top-left to bottom-right)]	PORTION X
[Diagonal hatching (top-right to bottom-left)]	PORTION XI
[Stippled pattern]	PORTION XII
[Cross-hatching]	PORTION XIII
[Vertical hatching]	PORTION XIV
[Horizontal hatching]	PORTION XV
[Diagonal hatching (top-left to bottom-right)]	PORTION XVI

C	WORKING DRAWING	JYHC/RPCM/MAR.13
B	TENDER ADDENDUM NO. 3	JYHC/RPCM/SEP.12
A	TENDER ADDENDUM NO. 1	JYHC/RPCM/AUG.12
-	TENDER DRAWING	JYHC/RPCM/JUL.12
REV.	DESCRIPTION	DATE
01	ISSUED FOR TENDER	12/07/12
02	ISSUED FOR TENDER	12/07/12

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 (SLIP ROAD 8 SECTION)

PORTIONS OF SITE
SHEET 1 OF 3

AECOM

DRG.NO. 60095653/T2/1201 C
圖紙編號

DESIGNED BY JYHC CONTRACT NO. HY/2010/08 P. DIR. APPROVED CTV
CHECKED BY ZNL STATUS 核准人 CWN

SCALE A1 1 : 2000 A3 1 : 4000
DIMENSIONS ARE IN METRES

WORKING DRAWING
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Appendix D

Acoustic Screen and Sound Insulation Materials Mounting



Photo 1 – Noise Barrier



Photo 2 – Partial Enclosure