Noise Management Plan

(Pursuant to the Further Environmental Permit - No. FEP-01/364/2009)

(Revision A)

		Prepared By:	Approved By:
Revision:	A		
Date:	6 Sept 2011	Flora.	
		Environmental Officer Flora Ng	Project Manager Chan Sing Cho

Lam Geotechnics Limited
Ground Investigation & Instrumentation Professionals

華益土力有限公司

Ref : G1001/CS/L458/FEP-01/364/2009
Date : 27 September 2011

Chun Wo – CRGL Joint Venture
5C, Hong Kong Spinners Industrial Building, Phase I,
602 – 603 Tai Nan Street,
Cheung Sha Wan
Kowloon

Attn: Mr. Chan Sing Cho, Project Manager

Dear Sir,

Further Environmental Permit no. FEP-01/364/2009
Contract No. HK/2009/02
Wanchai Development Phase II – Central –Wan Chai Bypass at Wan Chai East
Noise Management Plan (Revision A)

Referring to your submission of the captioned plan (Revision A dated 6 September 2011) received through email on 6 September 2011, we have reviewed your submitted details and hereby certify this submission in accordance with Condition 2.9 of Further Environmental Permit no. FEP-01/364/2009.

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*	*- Mr. Patrick Keung*	*(By Fax: 2577 5040)*
	HyD	*- Mr. Jones Lai*	*(By Fax 2714 5289)*
	AECOM CWB	*- Mr. Peter Poon*	*(By Fax: 3529 2829)*
	AECOM WDII	*- Mr. Frankie Fan*	*(By Fax: 2587 1877)*
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ENVIRON

Ref.: AACWBIECEM00_0_1793L.11 27 September 2011

Chun Wo – CRGL Joint Venture
5C, Hong Kong Spinners Industrial Building Phase 1
601-603 Tai Nan West Street
Cheung Sha Wan
Kowloon

By Post and E-mail

Attention: Mr. Chan Sing Cho (Project Manager)

Dear Sir,

Re: FEP-01/364/2009
Contract No. HK/2009/02
Wan Chai Development Phase II – Central-Wan Chai Bypass at Wan Chai East
Noise Management Plan (Revision A)

Reference is made to Chun Wo – CRGL Joint Venture's submission of Noise Management Plan (Revision A dated 6 September 2011) received through E-mail on 6 September 2011 for our review and comment.

Please be informed that we have no adverse comments on the captioned submission. We write to verify the captioned submission in accordance with Condition 2.9 of FEP-01/364/2009.

Yours sincerely,

David Yeung
Independent Environmental Checker

c.c.	CEDD	Mr. Patrick Keung	by fax: 2577 5040
	AECOM	Mr. Frankie Fan (PRE)	by fax: 2587 1877
	AECOM	Mr. Kelvin Cheng	by fax: 2691 2649
	LAM	Mr. Raymond Dai	by fax: 2882 3331

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1.0 Purpose of this Plan

Pursuant to the Further Environmental Permit (Permit No. FEP-01/364/2009), Special Conditions, Clause 2.9, Noise Management Plan (NMP) is developed by Permit Holder (Chun Wo – CRGL Joint Venture (CW-CRGL)) to demonstrate clearly the management of construction noise nuisance generated in the execution of works for the Project. The mitigation measures specified in this NMP will be implemented on site to reduce and/or minimise the nuisance to the publics and nearest noise sensitive receivers.

2.0 Project Description

The key purpose of Wan Chai Development Phase II (WDII) is to provide land at Wan Chai North and North Point for construction of the Central-Wan Chai Bypass and Island Eastern Corridor Link (CWB). Land formed under the project will be developed as a world-class waterfront promenade joining that at the new Central waterfront for public enjoyment.

Wan Chai Development Phase II – Central – Wan Chai Bypass at Wan Chai East (Project Number: HK/2009/02) is one of the major sub-project of the above mentioned Development. This project was commenced on 28 January 2010 and its project period will be last for 80 months.

2.1 Scope of Works

The scope of this project includes construction of a dual three-lane trunk road tunnel of approximately 550m in length.

3.0 Environmental Legislation, Policies, Plans, Standards and Criteria

Environmental Impact Assessment Process (EIAO) and Noise Control Ordinance (NCO) provide the statutory framework for noise control. Pursuant to Technical Memorandum of EIA, noise standard for daytime construction activities as list in Table A:

Noise Sources Noise Standards Uses	0700 to 1900 hours on any day not being a Sunday or general holiday Leq (30 mins) dB(A)	1900 to 0700 hours or any time on Sundays or general holiday
All domestic premises including temporary housing accommodation	75	The criteria laid down in the relevant technical memoranda under the Noise Control Ordinance for designated areas and construction works other than percussive piling may be used for planning purpose. A Construction Noise Permit (CNP) shall be required for the carrying out of the construction work during the period.
Hotels and hostels	75	
Educational institutions including kindergartens, nurseries and all others where unaided voice communication is required	70 65 (During examinations)	

Table A: Noise Standard for Daytime Construction Activities

4.0 Noise Sensitive Receivers

The nearest Noise Sensitive Receiver (NSR) as identified in the EIA report of the Project would be N2 – Causeway Centre. Pursuant to TM of EIA, the noise standard for N2 shall be 75 Leq (30mins) dB(A) during 0700 to 1900 hours on any day not being a Sunday or general holiday. **Appendix A** shows the shortest distance between the affected NSR and the working areas of each construction working schedules of the Project.

5.0 Identification of Environmental Impacts

Potential construction impacts of the Project might arise from the following activities:

- Bored Pipe;
- Pre-grouting;
- Pre-drilling of Diaphragm Wall;
- Construction of Diaphragm Wall;
- ELSW Excavation;
- Structure Construction; and
- Backfilling and ELSW Removal.

6.0 Mitigation of Adverse Environmental Impacts

In order to reduce the excessive noise impacts at the affected NSR during normal daytime working hours, mitigation measures such as implementing quiet powered mechanical equipments, movable noise barriers, good site practices and multi-phased construction schedules are recommended.

6.1 Quality Powered Mechanical Equipment (QPME)

Availability of QPME in the market will be sourced out based on EPD QPME's Inventory. Also, adoption of QPME will be considered with reference to Appendix 4.13 of the approved EIA report during different construction tasks:

- Bulldozer, Wheeled;
- Excavator, Wheeled / Tracked;
- Road Roller;
- Crane, Mobile;
- Dump Truck;
- Concrete Lorry Mixer;
- Poker Vibrator; and
- Air Compressor.

6.2 Movable Noise Barrier

To alleviate the construction noise impact on the affected NSR, movable noise barriers are proposed to be provided for particular items of plant and construction works. It is anticipated that a movable noise barrier comprised of minimum 50mm thick sound absorbing lining and 10mm thick plywood (or 1mm thick steel) backing with a cantilevered upper portion located within 5m from any static or mobile plant, that PME will be totally screened when viewed from the NSR, a negative correction of 5 dB(A) noise reduction would be achieved. The actual transmission loss of moveable noise barrier would be measured on substantiate site condition. **Appendix B** illustrates the general layout of the proposed movable noise barrier with section and plan views to be positioned with respect to the PMEs on site. "Guide on Design of Noise Barrier" from EPD would be one of the references during the design of the movable noise barriers.

The following items of plant will be suitable for implementing the movable noise barriers during operation:

- Excavator;
- Air Compressor;
- Bentonite Plants;
- Concrete Pump;
- Poker Vibrator;
- Hand-held Breaker;
- Diaphragm Wall Rigs;
- Breaker; and
- Generator.

6.3 Good Site Practices

The following good site practices should be adopted to further ameliorate the noise impacts:

- Only well-maintained plant shall be operated on-site and plant shall be serviced regularly during the construction program;
- Silencers or mufflers on construction equipment shall be utilized and shall be properly maintained during the construction program;
- Mobile plant, if any, shall be sited as far away from NSR as applicable;
- Machines and plant (such as trucks) that may be in intermittent use must be shut down between works periods or shall be throttled down to a minimum;
- Plant known to emit noise strongly in one direction shall, wherever possible, be orientated so that the noise is directed away from the nearby NSR; and
- Material stockpiles and other structures shall be effectively utilized, wherever practicable, in screening noise from on-site construction activities.

6.4 Multi-Phase Construction Schedules

Appendix A and Table B demonstrate that multi-phase construction schedules will be implemented for the project. Proactive planning of working sequences could minimize the total sound power levels generated by PMEs during normal daytime working hours.

Phase	Working Sequence
1	• Construct diaphragm wall and barrette pile of tunnel "Portion 1" • Construct tunnel "Portion 1" structures including excavation and backfilling with ELSW.
2	• Construct diaphragm wall and barrette pile of tunnel "Portion 2" • Construct tunnel "Portion 2" structures including excavation and backfilling with ELSW • Construct bulkhead diaphragm wall at eastern end tunnel "Portion 3" • Construct diaphragm wall and barrette pile for support of steel bridge no. 1 on tunnel "Portion 4"
3	• Construct diaphragm wall and barrette pile of tunnel "Portion 3 & 4" • Construct tunnel "Portion 2 & 3" structures including excavation and backfilling with ELSW
4	• Construct diaphragm wall and barrette pile of tunnel "Portion 5" • Construct tunnel "Portion 4 & 5" structures including excavation and backfilling with ELSW.
5	• Construct diaphragm wall and barrette pile of tunnel "Portion 6" • Construct tunnel "Portion 5 & 6" structures including excavation and backfilling with ELSW.

Table B: Construction working sequence in different phases of construction schedule

7.0 Impact Monitoring during Construction

7.1 External Monitoring

Environmental Monitoring and Audit (EM&A) Manual will serve as a guideline to set up of an EM&A programme to ensure compliance with the Environmental Impact Assessment (EIA) study recommendations, to assess the effectiveness of the recommended mitigation measures and to identify any further need for additional mitigation measures or remedial action.

The Environmental Team Leader and his team member will be responsible for the set up, implement and maintain of EM&A system.

Enhances remedy mitigation measures will be immediately implemented once the construction noise level exceeded the limit and action levels under the Manual's requirement.

7.2 Internal Monitoring

Daily and weekly site monitoring, inspections and audits will be conducted in order to ensure the effectiveness of implemented noise mitigation measures and construction noise levels generated are fully complied with requirements.

俊和－中國中鐵聯營

CHUN WO – CRGL JOINT VENTURE

NOISE MANAGEMENT PLAN

Appendix A

Location Plan of Noise Sensitive Receiver And Different Working Schedules

OVERALL WORKING SCHEDULE

ACTIVITY	DURATION	START	FINISH
OVERALL STAGE 1 (Days 1 to 830)	830	28/01/10	06/05/12
DREDGING & RECLAMATIONS PHASE 1 (WCR1)	146	22/05/10	07/04/11
DREDGING & LAYING OF SUBMARINE OUTFALL PIPE ON SEA	410	21/09/10	02/02/12

Stage 1 : Overall Working Sequence on Reclamation Area of WCR1 and Associated Area (Days 1 to 830)

Section of Works		Major Work at Area WCR1
XI	A1	Construct western and eastern temporary seawall
XI	A2	Dredging and construct new seawall
XI	A3	Reclamation to level +3.5mPD
IXB	A4	Construct diaphragm wall and barrette pile of tunnel "Portion 1"
IXB	A5	Construct tunnel "Portion 1" structures including excavation and backfilling with ELSW
IVA, IVB, IVC V, VI, VII	A6	Construct all drainage system, pipeworks of intakes and cooling system within Area WCR1
Section of Works	**B**	**Major Work in Associated Area**
IVA, IVB, IVC	B1	Construct P7, P8 and P9 new pumping stations
V	B2	Construct WSD's pumping station
VI	B3	Construct connection chamber in Wan Chai East Preliminary Treatment Plant
IVA, IVB, IVC V, VI, VII	B4	Construct all drainage system, pipeworks of intakes and cooling system on public road
VI	B5	Dredging and construct the submarine outfall pipes
VIIIA	B6	Construct new Wan Chai Ferry Pier
III	B7	Construct new permanent helipad at Expo Drive
III	B8	Construct new public toilet and passenger terminal building at Expo Drive

Section of Works		Other Miscellaneous Works
III	C1	Construct new taxi and coach bus parking space at Expos Drive East
III	C2	Modification work on existing seawall and provide new EVA at Expo Drive
III	C3	Road re-alignment work on existing PTI at Expo Drive
II	C4	Road improvement work at junction of Harbour Road / Tonnochy Road and Fleming Road / Gloucester Road
III	C5	Demolition of existing above ground structure at Expo Drive
V	C6	Demolition of existing staircase of footbridge at Wan Shing Street
IXA	C7	Demolition of existing temporary helipad at ex-PCWA
Section of Works	**D**	**Other Temporary Works**
XI	D1	Divert existing 1800 mm diameter drain pipe

N

N 816230

N 816030

N 815830

GOLDEN BAUHINIA SQUARE

VICTORIA HARBOUR

RECLAMATION WORKS BY OTHERS

TUNNEL WORKS BY OTHERS

35m CLEAR SPACE

P7 P8 P9

EXISTING WATER INTAKES

DIRECTION OF TUNNEL WORKS

DRAINAGE DIVERSION OF 1800 PIPE

EXISTING SUBMARINE OUTFALL (SEWAGE)

EXISTING DISCHARGE

~ 270 m

NSR - Causeway Centre

0 20 40 60m

1 : 2000 SCALE BAR

REV	DATE	DESCRIPTION
D	13/06/2011	WORKING SCHEDULE UPDATED
C	19/05/2010	WORKING SCHEDULE UPDATED & TEMPORARY SEAWALL LAYOUT REVISED
B	14/04/2010	SECTION OF WORKS ADDED
A	08/04/2010	AS MARKED & TITLE BLOCK UPDATED

CLIENT

ENGINEER'S REPRESENTATIVE

CONTRACTOR

俊和－中國中鐵聯營
CHUN WO - CRGL JOINT VENTURE

PROJECT

CONTRACT NO. HK/2009/02
WAN CHAI DEVELOPMENT PHASE II
CENTRAL - WAN CHAI BYPASS AT WAN CHAI EAST

DRAWING TITLE

DETAILED WORKS SCHEDULE AND LOCATION PLAN - STAGE 1

	DESIGN	DRAWN	CHECKED
INITIAL	-	M.S. SIN	-
DATE	-	07/04/2010	-

DRAWING NO. CWCRJV/HK200902/SK0031

REV D

SCALE 1 : 2000 (A3)

P:\15_Outgoing Drawings\SKETCHES\01_DWG 001-100\DWG-0031D\CWCRJV-HK200902-SK0031D.dwg, 06/13/11 17:41:10

OVERALL WORKING SCHEDULE			
ACTIVITY	DURATION	START	FINISH
OVERALL STAGE 2	259	07/02/10	23/10/12
DREDGING & RECLAMATIONS PHASE 2 (WCR2)	149	01/03/12	27/07/12
DREDGING & RECLAMATIONS PHASE 3 (WCR4 & TWCR4)	98	28/04/12	03/08/12

Stage 2 : Overall Working Sequence on Reclamation Area of WCR2, WCR4, TWCR4 and Associated Area (Days 741 to 1000)			
A	**Major Work at Area WCR2**	**C**	**Major Work in Associated Area**
A1	Construct western temporary seawall of Area WCR2	C1	Superstructure and E&M work on new Wan Chai Ferry Pier
A2	Dredging of Area WCR2	**D**	**Other Miscellaneous Works**
A3	Reclamation of Area WCR2 to +3.5mPD	D1	Modification work on existing seawall to provide new landing step at temporary helipad
A4	Construct diaphragm wall and barrette pile of tunnel "Portion 2"	D2	Demolition of existing WSD's cooling water pumping station
A5	Construct tunnel "Portion 2" structures including excavation and backfilling with ELSW	D3	Demolition of existing Sun Hung Kai Centre cooling water pumping station
B	**Major Work at Area WCR4 & TWCR4**	**E**	**Other Temporary Works**
B1	Construct northern temporary seawall of Area TWCR4	E1	Provide drainage discharge diversion of existing Bowrington Box Culvert "O" to the basin of ex-PCWA
B2	Dredging of Area WCR4 and TWCR4	E2	Removal of portion "1" and "2" of existing Bowrington Box Culvert "O" over tunnel "Portion 3'
B3	Reclamation of Area WCR4 and TWCR4 to +3.5mPD	E3	Provide temporary steel bridge no.1
B4	Construct bulkhead diaphragm wall at eastern end of tunnel "Portion 3"	E4	Provide temporary at-grade road on temporary reclamation in Area TWCR4
B5	Construct diaphragm wall and barrette pile for support of steel bridge no. 1 on tunnel "Portion 4"	E5	Provide temporary steel deck over space of Box Culvert "O" discharge point

N

N 816230

N 816030

N 815830

GOLDEN BAUHINIA SQUARE

VICTORIA HARBOUR

VICTORIA HARBOUR

RECLAMATION WORKS BY OTHERS

TUNNEL WORKS BY OTHERS

TUNNEL WORKS BY OTHERS

C1

35m CLEAR SPACE

AREA OF WCR2

SHADED AREA FOR COMPLETED STRUCTURE

NEW WATER INTAKES

NEW DISCHARGE

EXISTING SUBMARINE OUTFALL (SEWAGE)

EXISTING WATER BALANCING CULVERT

EXISTING DISCHARGE

15m WIDTH WATER CHANNEL

ANTICIPATED TEMPORARY RECLAIMED AREA AT ADJACENT SITE

D1

E4

B2 B3

B1

E2

E5

A1

A5

B4

E1

B5

E3

A2 A3

D2

A4

D3

"1"

"2"

NEW SHEETPILE TO RETAIN NEWLY CONSTRUCTED UTILITIES

~ 210 m

NSR - Causeway Centre

0 20 40 60m

1 : 2000 SCALE BAR

REV	DATE	DESCRIPTION
A	08/04/2010	TITLE BLOCK UPDATED

CLIENT

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

ENGINEER'S REPRESENTATIVE

AECOM

CONTRACTOR

俊和－中國中鐵聯營 CHUN WO - CRGL JOINT VENTURE

PROJECT

CONTRACT NO. HK/2009/02
WAN CHAI DEVELOPMENT PHASE II
CENTRAL - WAN CHAI BYPASS AT WAN CHAI EAST

DRAWING TITLE

DETAILED WORKS SCHEDULE AND LOCATION PLAN - STAGE 2

	SURVEY	DRAWN	CHECKED
INITIAL	-	M.S. SIN	-
DATE	-	07/04/2010	-

DRAWING NUMBER: CWCRJV/HK200902/SK0032

REV: A

SCALE: 1 : 2000 (A3)

OVERALL WORKING SCHEDULE			
ACTIVITY	DURATION	START	FINISH
OVERALL STAGE 3 (Days 950 to 1440)	490	03/09/12	06/01/14

Stage 3 : Overall Working Sequence on Reclamation Area of WCR2, WCR4, TWCR4 and Associated Area (Days 950 to 1440)	
A	**Major Work at Area WCR2**
A1	Construct tunnel "Portion 2" structures including excavation and backfilling with ELSW
A2	Construct temporary covered walkway in linking new Wan Chai Ferry Pier
B	**Major Work at Area WCR4 & TWCR4**
B1	Construct diaphragm wall and barrette pile of tunnel "Portion 3"
B2	Construct tunnel "Portion 3" structures including excavation and backfilling with ELSW
B3	Construct diaphragm wall and barrette pile of tunnel "Portion 4"
C	**Major Work in Associated Area**
C1	Superstructure and E&M work on new Wan Chai Ferry Pier
D	**Other Temporary Works**
D1	Provide temporary pipe piles wall between tunnel "Portion 3" and "Portion 4"
D2	Reinstate the temporary removal portion of box culvert "O" upon tunnel "Portion 3" completion
D3	Reinstate seawall at basin of ex-PCWA upon resuming the original Bowrington Box Culvert "O" discharge position
D4	Provide temporary steel bridge no.2 on top of tunnel "Portion 3" and Box Culvert "O"
D5	Re-alignment of temporary road for Hung Hing Road flyover traffic
D6	Remove the existing approach ramp of Hung Hing Road flyover over tunnel "Portion 4"

N

N 816230

N 816030

N 815830

E 836040

GOLDEN BAUHINIA SQUARE

VICTORIA HARBOUR

RECLAMATION WORKS BY OTHERS

TUNNEL WORKS BY OTHERS

INSTALL TEMPORARY SEAWALL

C1

INSTALL NEW SUBMARINE OUTFALL PIPE

TUNNEL PORTION 2

TUNNEL PORTION 1

TUNNEL PORTION 4

TUNNEL PORTION 3

SHADED AREA FOR COMPLETED STRUCTURE

EXISTING SUBMARINE OUTFALL (SEWAGE)

AREA OF WCR4 & TWCR4

AREA TO BE HANDOVER TO OTHERS

RESUME DRAINAGE DISCHARGE

TENTATIVE TEMPORARY RECLAIMED AREA AT ADJACENT SITE

TUNNEL WORKS BY OTHERS

DIRECTION OF TUNNEL WORKS

A1

A2

D1

D2

D3

D4

D5

D6

B1

B2

TEMPORARY SHEETPILE

TEMPORARY STEEL BRIDGE NO. 1

~ 370 m

NSR - Causeway Centre

RE-ALIGNED TEMPORARY ACCESS ROAD

TEMPORARY FLYOVER STEEL BRIDGE WITH FOOTING ON GROUND

REINSTATED BOX CULVERT 'O' PORTION

TUNNEL PORTION 3

TEMPORARY PIPE PILE 800ø

AREA TO BE HANDOVER TO OTHERS

BULKHEAD DIAPHRAGM WALL

SECTION A
1:1500

0 20 40 60m
1 : 2000 SCALE BAR

REV	DATE	DESCRIPTION
A	08/04/2010	TITLE BLOCK UPDATED

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

ENGINEER'S REPRESENTATIVE
AECOM

CONTRACTOR
俊和－中國中鐵聯營 CHUN WO - CRGL JOINT VENTURE

PROJECT
CONTRACT NO. HK/2009/02
WAN CHAI DEVELOPMENT PHASE II
CENTRAL - WAN CHAI BYPASS AT WAN CHAI EAST

DRAWING TITLE
DETAILED WORKS SCHEDULE AND LOCATION PLAN - STAGE 3

	SURVEY	DRAWN	CHECKED
INITIAL	-	M.S. SIN	-
DATE	-	07/04/2010	-

DRAWING NUMBER: CWCRJV/HK200902/SK0033 REV: A

SCALE: 1 : 2000 (A3)

OVERALL WORKING SCHEDULE			
ACTIVITY	DURATION	START	FINISH
OVERALL STAGE 4 (Days 1300 to 1925)	625	19/08/13	06/05/15
DREDGING & RECLAMATIONS PHASE 4 (WCR3)	294	18/03/14	05/01/15

Stage 4 : Overall Working Sequence on Reclamation Area of WCR3, WCR4, TWCR4 and Associated Area (Days 1300 to 1925)	
A	**Major Work at Area WCR3**
A1	Dredging and construct new seawall of Area WCR3
A2	Reclamation of Area WCR3 to +3.5mPD
A3	Construct diaphragm wall and barrette pile of tunnel "Portion 5"
A4	Construct tunnel "Portion 5" structures including excavation and backfilling with ELSW
B	**Major Work at Area WCR4 & TWCR4**
B1	Construct tunnel "Portion 4" structures including excavation and backfilling with ELSW
C	**Major Work in Associated Area**
C1	E&M, soft landscape and establishment works on new Wan Chai Ferry Pier
D	**Other Miscellaneous Works**
D1	Demolition of existing un-used Wan Chai Ferry Pier
D2	Removal of un-used top portion of diaphragm wall at tunnel "Portion 4" at Area WCR4
E	**Other Temporary Works**
E1	Reinstate the approach ramp of Hung Hing Road flyover upon tunnel "Portion 4" completion
E2	Removal of temporary steel bridge no. 1 & 2 and to reinstate the original road work on Hung Hing Road
E3	Removal of temporary seawall at Area TWCR4

N

E 836040

N 816230

N 816030

N 815830

GOLDEN BAUHINIA SQUARE

VICTORIA HARBOUR

35m CLEAR SPACE)

35m CLEAR SPACE)

TUNNEL PORTION 6

TUNNEL PORTION 5

TUNNEL PORTION 2

TUNNEL PORTION 1

TUNNEL PORTION 4

TUNNEL PORTION 3

AREA OF WCR3

RECLAMATION WORKS BY OTHERS

SHADED AREA FOR COMPLETED STRUCTURE

EXISTING SUBMARINE OUTFALL (SEWAGE)

TENTATIVE TEMPORARY RECLAIMED AREA AT ADJACENT SITE

TUNNEL WORKS BY OTHERS

RECLAMATION AND SEAWALL WORKS BY OTHERS

TUNNEL WORKS BY OTHERS

DIRECTION OF TUNNEL WORKS

TEMPORARY SHEETPILE

~ 200 m

NSR - Causeway Centre

A1 A2 A3 A4 B1 C1 D1 D2 E1 E2 E3

0 20 40 60m

1 : 2000 SCALE BAR

REV	DATE	DESCRIPTION
A	08/04/2010	TITLE BLOCK UPDATED

CLIENT: 土木工程拓展署 Civil Engineering and Development Department (CEDD)

ENGINEER'S REPRESENTATIVE: AECOM

CONTRACTOR: 俊和－中國中鐵聯營 CHUN WO - CRGL JOINT VENTURE

PROJECT: CONTRACT NO. HK/2009/02
WAN CHAI DEVELOPMENT PHASE II
CENTRAL - WAN CHAI BYPASS AT WAN CHAI EAST

DRAWING TITLE: DETAILED WORKS SCHEDULE AND LOCATION PLAN - STAGE 4

	SURVEY	DRAWN	CHECKED
INITIAL	-	M.S. SIN	-
DATE	-	07/04/2010	-

DRAWING NUMBER: CWCRJV/HK200902/SK0034 REV: A

SCALE: 1 : 2000 (A3)

OVERALL WORKING SCHEDULE			
ACTIVITY	DURATION	START	FINISH
OVERALL STAGE 4A (Days 1925 to 2190)	265	06/05/15	26/01/16
DREDGING & RECLAMATIONS PHASE 5 (REMOVE TWCR4 & CONSTRUCT NEW SEAWALL)	105	15/04/15	28/07/15

Stage 4A : Overall Working Sequence on Reclamation Area of WCR3 and Associated Area (Days 1925 to 2 190)	
A	**Major Work at Area WCR3**
A1	Construct tunnel "Portion 5" structures including excavation and backfilling with ELSW
A2	Construct the temporary pipe piles and ground treatment work next to the existing 2m diameter pipe pile wall
A3	Construct diaphragm wall and barrette pile of tunnel "Portion 6"
A4	Construct tunnel "Portion 6" structures including excavation and backfilling with ELSW
A5	Breaking bulkhead diaphragm wall inside tunnel box for tunnel western end connection
B	**Major Work at Area WCR4 & TWCR4**
B2	Construct permanent seawall at Area WCR4
B3	Remove temporary seawall& r einstate seabed at temporary reclaimed Area TWCR4
B4	Breaking bulkhead diaphragm wall inside tunnel box for tunnel eastern end connection

N
E 836040
E 836240
N 816230
N 816030
N 815830
GOLDEN BAUHINIA SQUARE
VICTORIA HARBOUR
VICTORIA HARBOUR
INSTALL NEW SUBMARINE OUTFALL PIPE
EXISTING SUBMARINE OUTFALL (SEWAGE)
TUNNEL PORTION 6
TUNNEL PORTION 5
TUNNEL PORTION 2
TUNNEL PORTION 1
TUNNEL PORTION 4
TUNNEL PORTION 3
AREA OF WCR3
RECLAMATION WORKS BY OTHERS
RECLAMATION AND SEAWALL WORKS BY OTHER
TUNNEL WORKS BY OTHERS
SHADED AREA FOR COMPLETED STRUCTURE
CUT SLOPE PROTECTED WITH ROCK FILL ON TOP
CONSTRUCT NEW SEAWALL
TENTATIVE TEMPORARY RECLAIMED AREA AT ADJACENT SITE
TUNNEL WORKS BY OTHERS
A1
A2
A3
A4
A5
B2
B3
B4
DIRECTION OF TUNNEL WORKS
DIRECTION OF TUNNEL WORKS
AREA RECLAIMED BY OTHERS
DEMOLISH BULKHEAD WALL INSIDE TUNNEL BOX
DEMOLISH BULKHEAD WALL INSIDE TUNNEL BOX
TEMPORARY SHEETPILE
~ 230 m
NSR - Causeway Centre
0 20 40 60m
1 : 2000 SCALE BAR

REV	DATE	DESCRIPTION
A	08/04/2010	TITLE BLOCK UPDATED

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

ENGINEER'S REPRESENTATIVE
AECOM

CONTRACTOR
俊和－中國中鐵聯營
CHUN WO - CRGL JOINT VENTURE

PROJECT
CONTRACT NO. HK/2009/02
WAN CHAI DEVELOPMENT PHASE II
CENTRAL - WAN CHAI BYPASS AT WAN CHAI EAST

DRAWING TITLE
DETAILED WORKS SCHEDULE AND LOCATION PLAN - STAGE 4A

	SURVEY	DRAWN	CHECKED
INITIAL	-	M.S. SIN	-
DATE	-	07/04/2010	-

DRAWING NUMBER CWCRJV/HK200902/SK0035 REV A
SCALE 1 : 2000 (A3)

俊和－中國中鐵聯營

CHUN WO – CRGL JOINT VENTURE

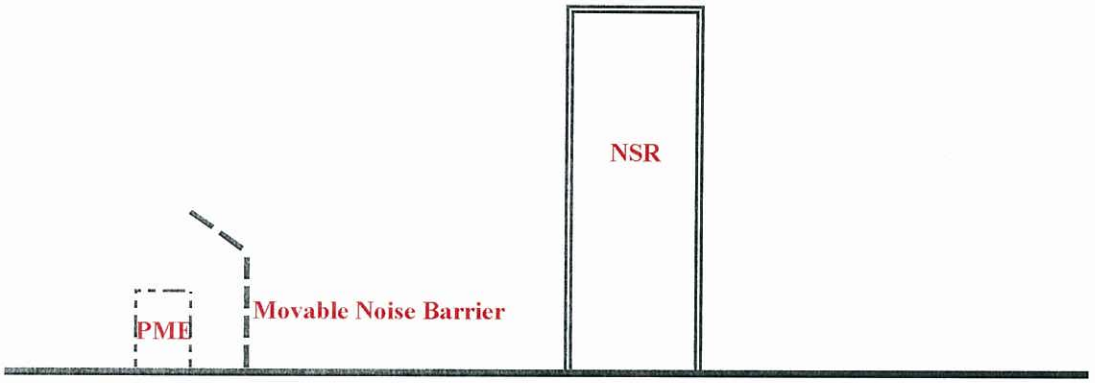
NOISE MANAGEMENT PLAN

Appendix B

Layout Plan of Movable Noise Barrier

Contract: HK/2009/02 - Wan Chai Development Phase II - Central - Wan Chai Bypass at Wan Chai East

Section View of Movable Noise Barrier



Movable noise barrier comprised of minimum 50mm thick sound absorbing lining and 10mm thick plywood (or 1mm thick steel) backing with a cantilevered upper portion located within 5m from any static or mobile plant that PME will be totally screened when viewed from the NSR

Plan View of Movable Noise Barrier

Any static or mobile plant that PME will be totally screened when viewed from the NSR