

Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling Stage 2

**Quarterly EM&A Report** 

May 2017 to July 2017

#### Meinhardt Infrastructure and Environment Limited

# Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling Stage 2

Quarterly EM&A Report

(May 2017 to July 2017)

Certified by:	Fredrick Leong
Position:	Environmental Team Leader
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Date:	15 August 2017



Hyder-Arup-Black & Veatch Joint Venture c/o Arcadis 20/F, AXA Tower, Landmark East, 100 How Ming Street, Kwun Tong, Hong Kong Attn: Mr. James Penny

#### Your Reference

Our Reference JFP/EC/ST/pl/T329380/22 .05/L-0179

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T +852 2828 5757 F +852 2827 1823 mottmac.hk Environmental Monitoring and Audit (EM&A) for Widening of Tolo Highway/Fanling Highway between Island House Interchange and Fanling Stage 2 (between Tai Hang to Wo Hop Shek Interchange) – Entrusted Works Environmental Permit No. EP-324/2008/E Quarterly EM&A Summary Report for May 2017 to July 2017 for the portion of Stage 2 works entrusted to CEDD under Contract No. CV/2012/09

14 August 2017

By Fax (2805 5028) & Hand

We refer to the revised Quarterly EM&A Summary Report for May 2017 to July 2017 for the Project received on 11 August 2017 submitted by ET via email. We confirm we have no comment.

Yours faithfully

for MOTT MACDONALD HONG KONG LIMITED

Steven Tang

Independent Environmental Checker

C.C.

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#### **Contents**

		Pa	ge
EXE	CUTIV	E SUMMARY	i
1	INTRO	DDUCTION AND PROJECT INFORMATION	1
	1.1	Background	1
	1.2	Construction Programme and Activities	1
	1.3	Project Organisation	2
	1.4	Purpose of the Report	3
2	SUMN	MARY OF EM&A REQUIREMENTS	3
	2.1	Monitoring Requirements	3
	2.2	Environmental Mitigation Measures	3
3	SUMN	MARY OF EM&A Monitoring Data	3
	3.1	Monitoring Data	3
	3.2	Summary of Monitoring Exceedances	.4
4	WAST	TE MANAGEMENT	4
5	ENVIE	RONMENTAL NON-CONFORMANCE	5
6	CONC	CLUSION, COMMENTS AND RECOMMENDATIONS	5
List	of Tab	les	
Table	e 1.1	Contact Information of Key Personnel	
Table Table		Monitoring Parameter Summary of Monitoring Data in the Reporting Quarter	
Table		Summary of Exceedance Events in the Reporting Quarter	
List	of Figu	ıres	
Figur	e 1	Demarcation of Entrusted Portion of Widening of Tolo Highway/Fanling Highway	
Figur	e 2	between Island House Interchange and Fanling – Stage 2 Environmental Monitoring Locations	
Ū			
List	of App	pendices	
Appe	ndix A	Construction Programme	
		Project Organization Structure	
		Implementation Schedule of Environmental Mitigation Measures (EMIS)  Meteorological Data Extracted from Hong Kong Observatory	
		Environmental Monitoring Data for Air Quality and Noise	
		Wasta Flow Table	

Appendix G Statistics on Complaints, Notifications of Summons and Successful Prosecutions



#### **EXECUTIVE SUMMARY**

This report documents the findings of EM&A works conducted in the quarter between 1 May 2017 and 31 July 2017.

The impact stage EM&A programme for the Project includes air quality and noise monitoring.

The EM&A programme was carried out by the ET in accordance with the EM&A Manual requirements. It is concluded from the environmental monitoring and audit works that adequate environmental mitigation measures have been implemented by the civil works contractors where appropriate in the reporting quarter.

In the reporting quarter, no exceedance events were recorded. No necessary remedial actions have been taken.

No environmental non-compliance was recorded in the reporting quarter. No environmental complaints were received in the reporting quarter. No environmental related prosecution or notification of summons was received in the reporting quarter.

The box culvert works have been partially completed by the end of March 2014 except the last construction activity, installation of a base slab at Box Culvert ID4. The installation of the base slab at Box Culvert ID4 was commenced in December 2016 and has been completed in March 2017.

The 4-week post construction water quality monitoring has been commenced and completed in April 2017.

- i -



#### 1 INTRODUCTION AND PROJECT INFORMATION

#### 1.1 Background

- 1.1.1 The Project is a Designated Project under the Environmental Impact Assessment Ordinance (EIAO) (Cap. 499). An Environmental Impact Assessment (EIA) Report together with an Environmental Monitoring and Audit (EM&A) Manual were approved on 14 July 2000 (Register Number: EIA-043/2000). The Project is governed by an Environmental Permit (EP) (EP-324/2008) which was granted on 23 December 2008. A variation of EP (VEP) was applied and the VEP (EP-324/2008/A) was subsequently granted on 31 January 2012. An additional VEP has been applied on 24 February 2014 and the VEP (EP-324/2008/B) was subsequently granted on 17 March 2014. Furthermore, an additional VEP has been applied on 9 March 2015 and the VEP (EP-324/2008/C) was subsequently granted on 27 March 2015. The previous VEP (EP-324/2008/D) was granted on 27 August 2015. The current VEP (EP-324/2008/E) was granted on 26 January 2017.
- 1.1.2 Chun Wo Construction & Engineering Co Ltd (Chun Wo) was commissioned by the Civil Engineering and Development Department (CEDD) as the Civil Contractor for the Entrusted Portion of Widening of Tolo Highway/Fanling Highway between Island House Interchange and Fanling Stage 2. Meinhardt Infrastructure & Environment Ltd (MIEL) has been appointed by Chun Wo as the Environmental Team (ET) to fulfill the corresponding EM&A requirements pursuant to Environmental Permit No. EP-324/2008/D in accordance with the Updated EM&A Manual (dated March 2015) for Widening of Tolo Highway/Fanling Highway between Island House Interchange and Fanling Stage 2. The EM&A programme commenced in 5 November 2013.
- 1.1.3 **Figure 1** shows the works areas for the Entrusted Portion of Widening of Tolo Highway/Fanling Highway between Island House Interchange and Fanling Stage 2.

#### 1.2 Construction Programme and Activities

- 1.2.1 The construction programme is presented in **Appendix A**. The major construction activities undertaken in the reporting quarter are summarized below:
  - Boundary wall construction for DSD pumping station;
  - Cable Detection and Trial Trenches:
  - Footbridge Construction;
  - Remaining Works on New Kiu Tau Footbridge;
  - Noise Barrier Construction;
  - Pier Table Construction;
  - Portal Construction;
  - Roadworks;
  - Viaduct Segment Erection;

- 1 -



- Water Main Laying Works;
- Gabion Wall Construction;
- Installation of Noise Barrier Steel Column & Panel;
- Pre-drilling for Noise Barrier;
- · Pit Construction for Heading Works;
- Parapet Installation;
- Planter Wall Construction;
- Drainage Work;
- Mini-pile Installation;
- Construction of Profile Barrier on Viaduct deck;
- Stressing of External Tendon; and
- Construction of Abutment Wall.

#### 1.3 Project Organisation

1.3.1 The project organization structure is shown in **Appendix B**. The key personnel contact names and numbers for the Project, together with the general enquiry hotline, are summarised in **Table 1.1**.

Table 1.1 Contact Information of Key Personnel

Party	Role	Position	Name	Telepho ne	Fax		
	Engineer's	Senior Resident Engineer	Mr. Alan Lee	2171 3303	2171		
AECOM	Representative	Resident Engineer (Environmental)	Mr. Perry Yam	2171 3350	3498		
Mott MacDonald	Independent Environmental Checker (IEC)	IEC	Mr. Steven Tang	2828 5920	2827 1823		
Chun Wo	Contractor	Site Agent	Mr. Daniel Ho	2638 6144	2638		
Chun wo	Contractor	Environmental Officer	Ms. Tiffany Tsang	2638 6150	7077		
Meinhardt	Environmental Team (ET)	ET Leader	Mr. Fredrick Leong	2859 1739	2540 1580		
Enquiry Hotline	General Enquiry		Ms Helena Mak	6355 1731			



#### 1.4 Purpose of the Report

1.4.1 This is the Quarterly EM&A Report which summaries the impact monitoring results and audit findings for the Project during the reporting period between 1 May 2017 and 31 July 2017.

#### 2 SUMMARY OF EM&A REQUIREMENTS

#### 2.1 Monitoring Requirements

2.1.1 In accordance with the Updated EM&A Manual, environmental parameters including Air Quality and Noise have been monitored. The specific parameters, monitoring frequency and the respective Action and Limit Levels are given in **Table 2.1** and the location of the monitoring station is shown in the **Figure 2**.

Table 2.1 Monitoring Parameter

Parameter	Unit	Action Level	Limit Level	Frequency							
Air Quality											
1-hour TSP	μg/m³	292.7	500	Three times every 6 days							
24-hour TSP	μg/m³	170.3	260	Once every 6 days							
		Construction	n Noise								
Leq 30min dB(A)		When one documented valid complaint is received	75	Once every Week							

Temporary Suspension of Box Culvert Works and Water Quality Monitoring

2.1.2 The box culvert works have been completed in the end of March 2017. The 4-week post construction water quality monitoring has been completed in the end of April 2017 in the same manner as the impact monitoring.

#### 2.2 Environmental Mitigation Measures

2.2.1 Environmental mitigation measures have been recommended in the EM&A Manual and are given in **Appendix C**. The implementation status for the reporting quarter is also given in the Appendix.

#### 3 SUMMARY OF EM&A MONITORING DATA

#### 3.1 Monitoring Data

3.1.1 Monitoring has been conducted in accordance with the specification in the EM&A Manual in the reporting quarter. Meteorological data for the reporting quarter have been extracted from Hong Kong Observatory and are given in **Appendix D**. Monitoring data with graphical presentation for the reporting quarter have been given in **Appendix E**. A summary on the monitoring results has also been given in **Table 3.1**.



Table 3.1 Summary of Monitoring Data in the Reporting Quarter

Monitoring Location	Minimum	Maximum	Average							
Air Quality										
1 hour Total Suspended Particulate										
SR77	78.5μg/m <sup>3</sup>	210.0μg/m <sup>3</sup>	130.0μg/m <sup>3</sup>							
	24 hour Total Sus	spended Particulate								
SR77	14.1μg/m <sup>3</sup>	124.3μg/m <sup>3</sup>	56.1μg/m <sup>3</sup>							
Construction Noise										
SR77	65.0dB(A)	68.5dB(A)	67.1dB(A)							

#### 3.2 Summary of Monitoring Exceedances

3.2.1 The number of exceedances event recorded in the reporting quarter is summarized in **Table 3.2**.

Table 3.2 Summary of Exceedance Events in the Reporting Quarter

Parameter	Criteria	Number of Exceedances Events	Number of Project Related Exceedance Events							
Air Quality										
1-hour Total Suspended	Action Level	0	0							
Particulates	Limit Level	0	0							
24-hour Total Suspended	Action Level	0	0							
Particulates	Limit Level	0	0							
	Construc	ction Noise								
Leg 30min	Action Level	0	0							
Leq 30mm	Limit Level	0	0							
	Limit Level	0	0							

- 3.2.2 No exceedance of air monitoring was recorded at SR77 in the reporting quarter.
- 3.2.3 No exceedance of noise monitoring was recorded at SR77 in the reporting quarter.
- 3.2.4 The Contractor has been reminded to strengthen the mitigation measures including:

  Water Quality
  - Implement sufficient mitigation measures to avoid runoff leakage from road works areas and divert site effluent to wastewater treatment facilities

Waste / Chemical Management

- Ensure all chemical drums on site to be placed on drip tray
- Refuse shall be cleared frequently to provide sufficient waste skip for workers and keep site work area clean

#### 4 WASTE MANAGEMENT

4.1.1 The Contractor has registered as a chemical waste producer of the Project. The C&D materials and waste sorting were carried out on-site. Receptacles were provided for general refuse collection.



4.1.2 During the reporting quarter, a total of 3,662m³ of excavated material has been generated. 2,937m³ of inert C&D materials was disposed of at public fill to Tuen Mun Area 38, while 390m³ of inert C&D materials was reused on site. 305m³ of general refuse was disposed of at North East New Territories (NENT) Landfill. No plastics and no paper/cardboard packaging were collected by recycling contractor in the reporting quarter. 767m³ metals were collected by recycling contractor in the reporting quarter. No chemical waste was collected by licensed contractor in the reporting quarter. Details of the waste management data are presented in **Appendix F**.

#### 5 ENVIRONMENTAL NON-CONFORMANCE

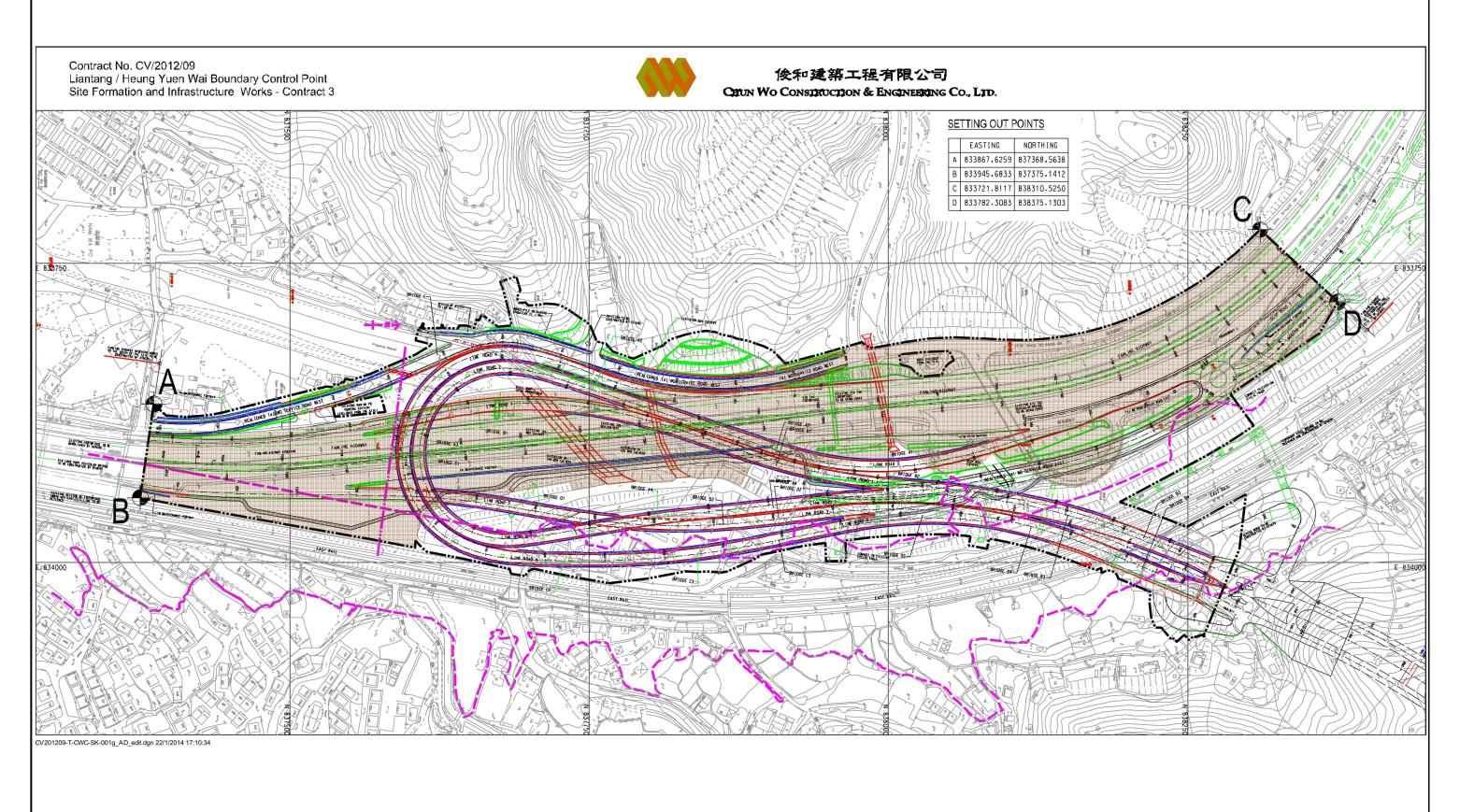
5.1.1 No environmental non-compliance was recorded in the reporting quarter. No environmental complaint was received. No environmental related prosecution or notification of summons was received in the reporting quarter. The summary for the non-compliance, complaints and prosecutions is provided in **Appendix G**.

#### 6 CONCLUSION, COMMENTS AND RECOMMENDATIONS

- 6.1.1 The EM&A programme was carried out by the ET in accordance with the EM&A Manual requirements. It is concluded from the environmental monitoring and audit works that adequate environmental mitigation measures have been implemented by the civil works contractors where appropriate in the reporting quarter.
- 6.1.2 In the reporting quarter, no exceedance events were recorded.
- 6.1.3 No environmental non-compliance was recorded in the reporting quarter. No environmental complaints were received in the reporting quarter. No environmental related prosecution or notification of summons was received in the reporting quarter.
- 6.1.4 The box culvert works have been completed in the end of March 2017. The 4-week post construction water quality monitoring has been completed in the end of April 2017 in the same manner as the impact monitoring



### **Figure**



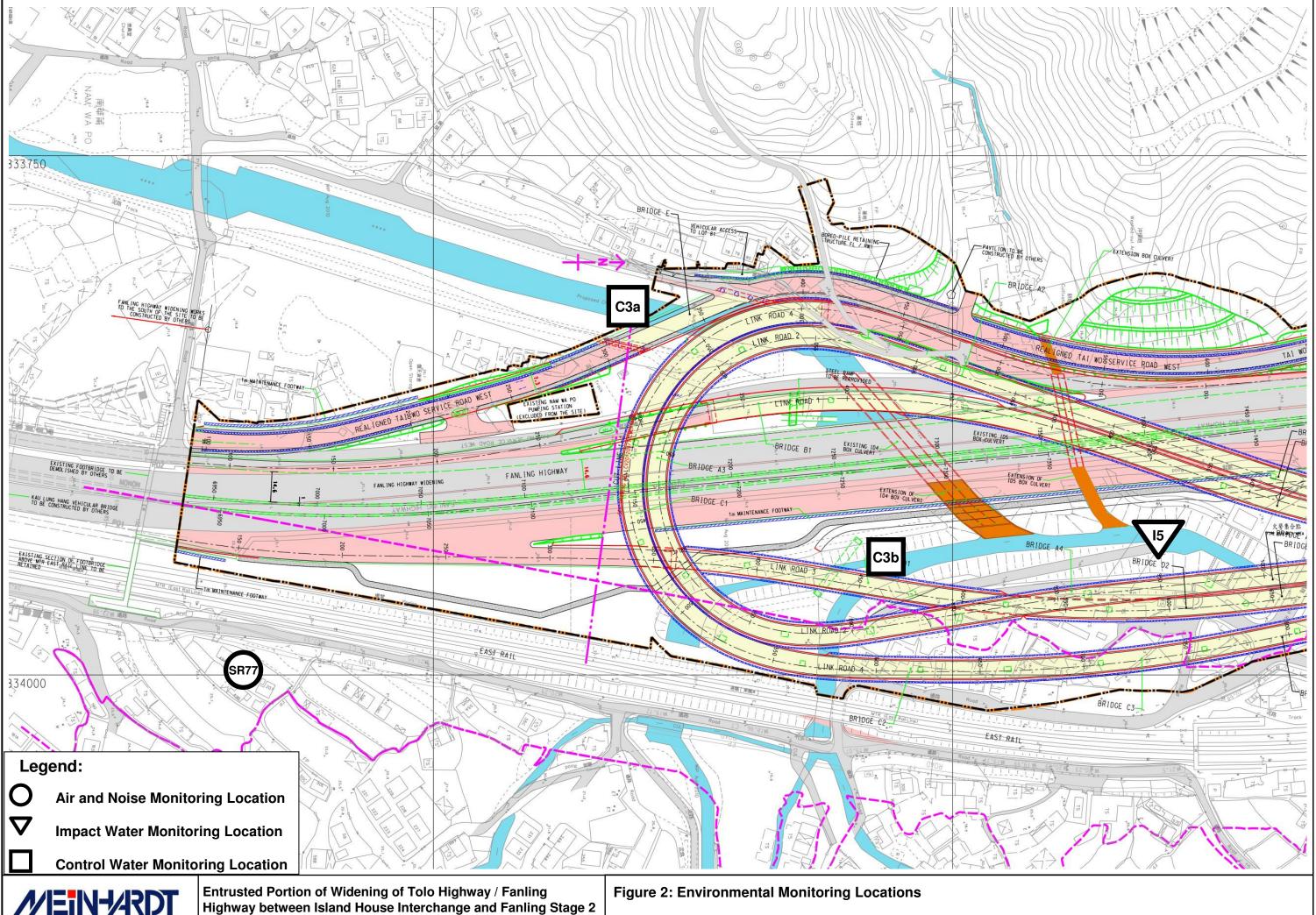
#### Legend:

Works Area for Entrusted Portion



Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling Stage 2

Figure 1: Demarcation of Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling – Stage 2



MEIN-ARDT



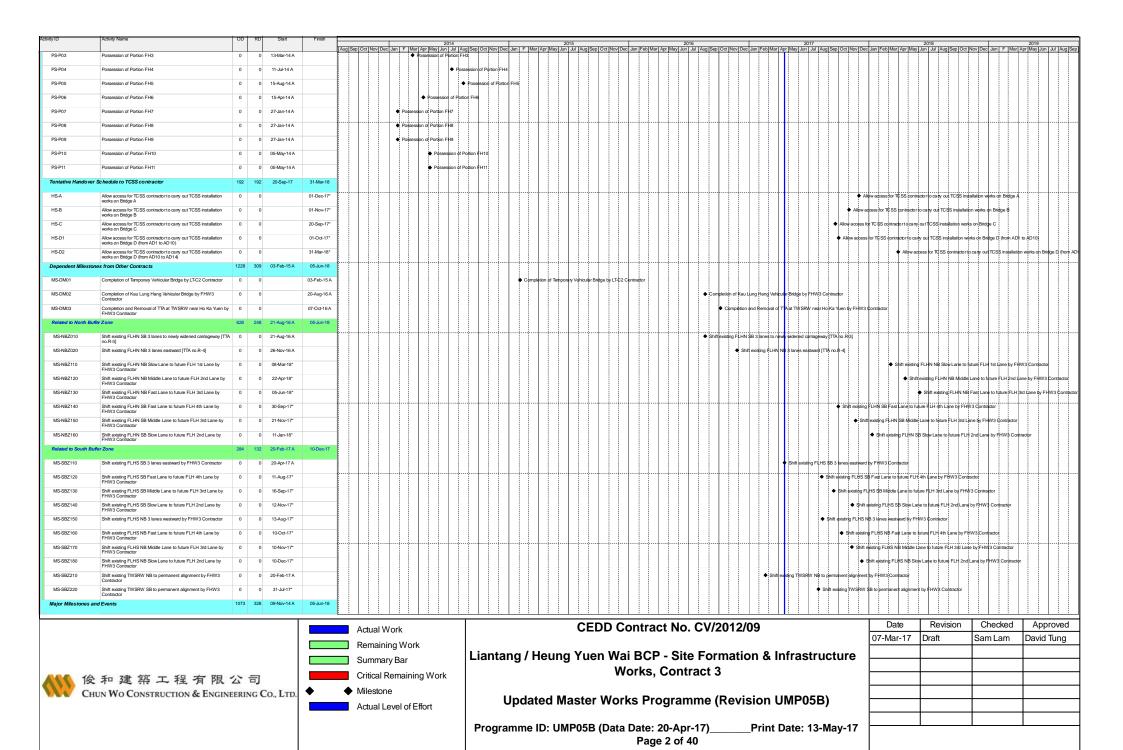
## Appendix A Construction Programme

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MS-0110	Completion of 4 nos. of piers crash with the existing FLH NB (by 2 sets)	0	20-Apr-16 A	-g Sta Nov State State I mai Apri may Juli Juli J	roug Dep Dist prior Dec. 3 ml r i med rus priory Jun 3 at rough get put to the care prior prior prin
MS-0120	Completion of 2 nos. of piers crash with existing FLH (by 1 set) 1073	3 0 09-Nov-14 A	18-Feb-17 A		Company of a ross of general gainst Hardward (Supplementary of a ross of general gains) with ejecting FT Hardward (Supplementary of a ross of general gains) which ejecting FT Hardward (Supplementary of a ross of general gains) which ejecting FT Hardward (Supplementary of a ross of general gains) which ejecting FT Hardward (Supplementary of a ross of general gains) which ejecting FT Hardward (Supplementary of a ross of general gains) which ejecting FT Hardward (Supplementary of a ross of general gains) which ejecting FT Hardward (Supplementary of a ross of general gains) which ejecting FT Hardward (Supplementary of a ross of general gains) which ejecting FT Hardward (Supplementary of a ross of general gains) which ejecting FT Hardward (Supplementary of a ross of general gains) which ejecting FT Hardward (Supplementary of a ross of general gains) which every supplementary of a ross of general gain (Supplementary of a ross of general gains) which every supplementary of general gains (Supplementary of general gains) which every supplementary of general gains (Supplementary of general gains) which every supplementary of general gains (Supplementary of general gains) which every supplementary of general gains (Supplementary of general gains) which every supplementary of general gains (Supplementary of general gains) which every supplementary of general gains (Supplementary of general gains) which every supplementary of general gains (Supplementary of general gains) which every supplementary of general gains (Supplementary of general gains) which every supplementary of general gains (Supplementary of general gains) which every supplementary of general gains (Supplementary of general gains) which every supplementary of general gains (Supplementary of general gains) which every supplementary of general gains (Supplementary of general gains) which every supplementary of general gains (Supplementary of general gains) which every supplementary of general gains (Supplementary of general gains) which every supplementary of g
MS-0210	Commissioning of the diverted twin DN1400 Dong Jiang 0 Watermains (Stage 1)	0	27-May-15 A		■ Commissioning of the dijenteig twin DN1400 Dong Jang Walermains (\$tage;1)    Commissioning of the dijenteig twin DN1400 Dong Jang Walermains (\$tage;1)
MS-0220	Commissioning of the diverted twin DN1400 Dong Jiang 0 Watermains (Stage 2)	0	05-Sep-17*		◆ Commissioning of the liverled twin DN1400 Dong Jiding Watermains (Stagle 2)
MS-0230	Commissioning of the diverted DN2300 Dong Jiang Watermains 0	0	24-Dec-15 A		● Compressioning of the disjoint ON 2000 Ford Junip Weightnamen.
MS-0310	Demolition of the whole Kiu Tau Vehicular Bridge 0	0	22-Mar-17 A		◆ Definition of the weight Tay Vertical Excellent
MS-0320	Commissioning of re-aligned TWSRE 0	0 18-Sep-17			Decimalization of contractions of the contraction of the contract
MS-0410	TTA to divert TWSRW traffic to the completed re-aligned TWSRW (excl. South Buffer Zone)	0 26-Apr-16 A	26-Apr-16 A		II TTG to de n TWSTRV raffer in the completed on edigrand T VERW (seed South Baller 25no)
MS-1010A	T1a: TTA to shift FLHS SB eastward to the widened pavement (shift 1 lane)	0 09-Nov-14 A	09-Nov-14 A		I Tha TRuban Furt SB based at the foliation of the control from the food
MS-1010B	T1b: TTA to shift FLHS SB eastward to the widened pavement (shift 2 lanes)	0 08-Mar-15 A	08-Mar-15 A		I Tib: TTA to shift FLHS SB 4estwent of the Midened powerment (shift 2 lanes)
MS-1010C	T1c: TTA to shift FLHS SB eastward to the widened pavement (shift 1 3 lanes)	0 22-Mar-15 A	22-Mar-15 A		1 Tri_Tru- and Fulls Sel customatic the water comment (and States)
MS-1020	T2: TTA to shift FLHS NB eastward 1	0 27-Jun-15 A	27-Jun-15 A		I T2:TTA to shift FLHS NB eastward:
MS-1030A	T3a: TTA to shift FLHS SB eastward to unoccupy the middle (between CH7130 & CH7470) [TTA no.R-2]	0 07-Mar-16 A	07-Mar-16 A		I T3s: TTA to shift FLHS SB easward to unoccupy the iniddle (behweel CH7130 B CH747d) (TTA no.R-2)
MS-1030B	T3b: TTA to split FLHS NB & SB with 3 Lanes in the middle unoccupied (between CH7130 & CH7470) [TTA no.R 2]	0 20-Mar-16 A	20-Mar-16 A		I   T30::TTA10 split FLHS NB & SB with 3 Lisnes in the middle unbodupied (between CH7120 & CH7470) (TTA10.R-2)
MS-1040	T4: TTA to shift partial FLHN SB eastward to Temp. Pavement connecting FHW3's TTA Scheme [TTA no.R-3]	0 21-Aug-16 A	21-Aug-16 A		1 TA: TTA to shift partial FLHN SB eathward to Temp. Pavement contecting FHW3 st TTA Schieme [TTA rib, R-3]
MS-1050	T5: TTA to shift partial FLHN NB eastward to existing SB connecting FHW3's TTA Scheme [TTA no.R-4]	0 26-Nov-16 A	26-Nov-16 A		
MS-1060a	T6a: TTA to shift FLH SB eastward (shift 2 lanes) (North Portion)	1 23-Apr-17*	23-Apr-17		Too TITA to ship File SB passions plant to be a) (North Portion)
MS-1060c	T6c: TTA to shift FLH SB Fast Lane eastward (North Portion)	1 30-Jun-17	30-Jun-17		(I TBit TUT to shift FEH SB Fast Lanie esistment (Noth Portion)
MS-1060c1	T6c1: TTA to shift FLH SB eastward (shift 3 lanes at Zone 5)	1 06-Oct-17	06-Oct-17		I Triệnt: Tặ An Quan F Euri Sa depated quốt 3 lanced az Ziọna S)
MS-1060d	T6d: TTA to shift FLH SB eastward (shift 3 Lanes) (South Portion) 1	1 22-Sep-17	22-Sep-17		I   Teal TTA jo and F. Feb State amount of sinh is Lampas) (Sozoni Pronton)
MS-1060e	T6e: TTA to shift FLH SB Fast Lane to the Permanent Alignment (4th lane) (South Portion)	1 03-Nov-17	03-Nov-17		
MS-1060f	T6f: TTA to shift FLH SB Middle Lane to the Permanent Alignment (3rd lane) (South Portion)	1 03-Dec-17	03-Dec-17		T TRE TTG to date FLH SB Medias Lines to the Premiorand Allegrands (South Fiscos)
MS-1060h	T6h: TTA to shift FLH SB Slow Lane to the Permanent Alignment (2nd lane) (South Portion)	1 05-Jan-18	05-Jan-18		II Tight: TTA to Shift FLH SB Slight Lighte 1to the Permianent Alignment (2nd land) (South Portion)
MS-1070a	T7a: TTA to shift FLHS SB eastward (shift 3 lanes), within SBZ	0 20-Apr-17 A	20-Apr-17 A		T72=TTA to draft FLHS SB explanation of States, where SSZ
MS-1070b	T7b: TTA to shift FLH SB Fast Lane to the Permanent Alignment (4th lane), within SBZ	1 11-Aug-17	11-Aug-17		I the Wasiani Flat Se Figu Line th make the companied Adjamain (set) and, welfan Set 2
MS-1070c	T7c: TTA to shift FLH SB Middle Lane to the Permanent Alignment 1 (3rd lane), within SBZ	1 16-Sep-17	16-Sep-17		1 T7c: TYAto shift FLH:SB Middle Large to the Permanent Alignment (3rd lane), within SSE
MS-1070d	T7d: TTA to shift FLH SB Slow Lane to the Permanent Alignment (2nd lane), within SBZ	1 12-Nov-17	12-Nov-17		1 fizz. Tixas draini FLHESS Storu Liane to the Premiument Adjamente Cod towns, within SSZ
MS-1080a	T8a: TTA to shift FLH NB Fast Lane to the Permanent Alignment (4th lane) (South Portion)	0 24-Mar-17 A	24-Mar-17 A		Tab TTAG of the FLF1ND Face Love to the Permodern Algorithm of the Nation (Bount Protein)
MS-1080b	T8b: TTA to shift FLH NB Middle Lane to the Permanent Alignment 1 (3rd lane) (South Portion)	1 16-May-17	16-May-17		I Tiss: TTA is shall FLH ND Redding Lame to the Fernanders Republicant Strating in Stratin
MS-1080c	T8c: TTA to shift FLH NB Slow Lane to the Permanent Alignment (2nd lane) (South Portion)	1 11-Jun-17	11-Jun-17		I TBc: TTA to brift FLH NB Stow Line to this; Permanent Alignment (chit laine) (South Portion)
MS-1090a	T9a: TTA to shift FLHS NB westward (shift 3 lanes), within SBZ	1 13-Aug-17	13-Aug-17		I Tea: TEAts shift-FLHS NB westward shift, 3 lares), within SBZ
MS-1090b	T9b: TTA to shift FLHS NB Fast Lane to the Permanent Alignment (4th lane), within SBZ	1 10-Oct-17	10-Oct-17		I 1750: 171A to Parti FLH\$ NB Fast Lane(to the Permanent Algoment (4th Iane), within \$82
MS-1090c	T9c: TTA to shift FLHS NB Middle Lane to the Permanent Alignment (3rd lane), within SBZ	1 10-Nov-17	10-Nov-17		I TBc: TTA to shift FLH\$ NB Middle Late to the Permahent Alignment (3rd lane), within SB2
MS-1090d	T9d: TTA to shift FLHS NB Slow Lane to the Permanent Alignment (2nd lane), within SBZ	1 10-Dec-17	10-Dec-17		I TBct TRAtoSnit FLH\$ NB SlowLand to the Permanent Algoment (2nd sine), within SB2
MS-1110a	T11a: TTA to shift FLHN NB Slow Lane to the Permanent 1 Alignment (1st lane), within NBZ	1 08-Mar-18	08-Mar-18		I T11a: T1xtg shift FLHn NB Slow Lane to the Permanent Alignment (1st laine), within/NBZ
MS-1110b	T11b: TTA to shift FLHN NB Middle Lane to the Permanent Alignment (2nd lane), within NBZ	1 22-Apr-18	22-Apr-18		1 Trits: TT/ to shift FEHN NS MiddleLane to the Pelmonient Algoment (2nd lare), within
MS-1110c	T11c: TTA to shift FLHN NB Fast Lane to the Permanent Alignment (3rd lane), within NBZ	1 05-Jun-18	05-Jun-18		js Tftc: TDA oshit FLHN NBFast Lane to the Permanent Algorithm (did laire), w
MS-1120a	T12a: TTA to shift FLHN SB Fast Lane to the Permanent 1 Alignment (4th lane), with NBZ	1 30-Sep-17	30-Sep-17		T12a:TFA1o shift FLHN SB Fast Lane to the Permanent Allorment (4th lane), with NBZ
MS-1120b	T12b: TTA to shift FLHN SB Middle Lane to the Permanent Alignment (3rd lane), with NBZ	1 21-Nov-17	21-Nov-17		I *1125: TTAto shift FLH SB Middle Land to the Permanent Algoment (Sid lake), with NBZ
MS-1120c	T12c: TTA to shift FLHN SB Slow Lane to the Permanent 1 Alignment (2nd lane), witin NBZ	1 11-Jan-18	11-Jan-18		I 1 Ti 2c: TTAth shit FLHN SB Stot Lark to the Permahent Alignment 2nd lane); witn NSZ
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				Remaining Work	07-Mar-17 Draft Sam Lam David Tung
				Summary Bar	Liantang / Heung Yuen Wai BCP - Site Formation & Infrastructure
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俊和建築工程有限公司 CHUN WO CONSTRUCTION & ENGINEERING Co., LTD. ◆

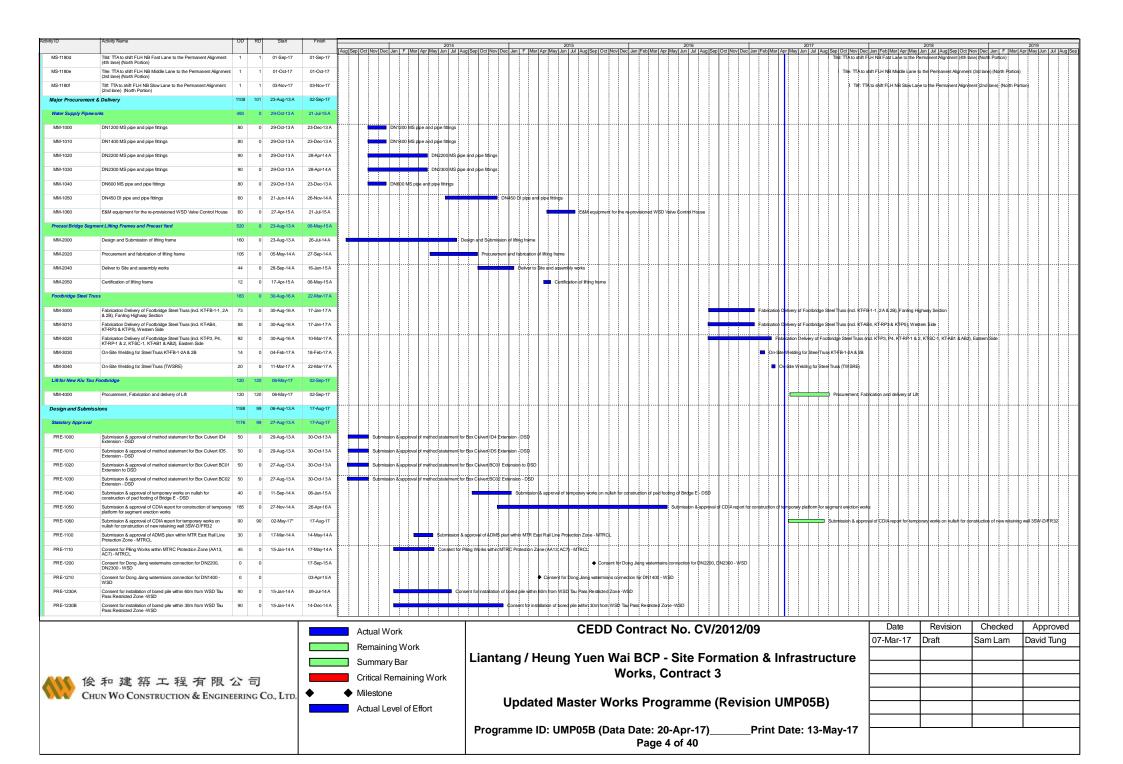
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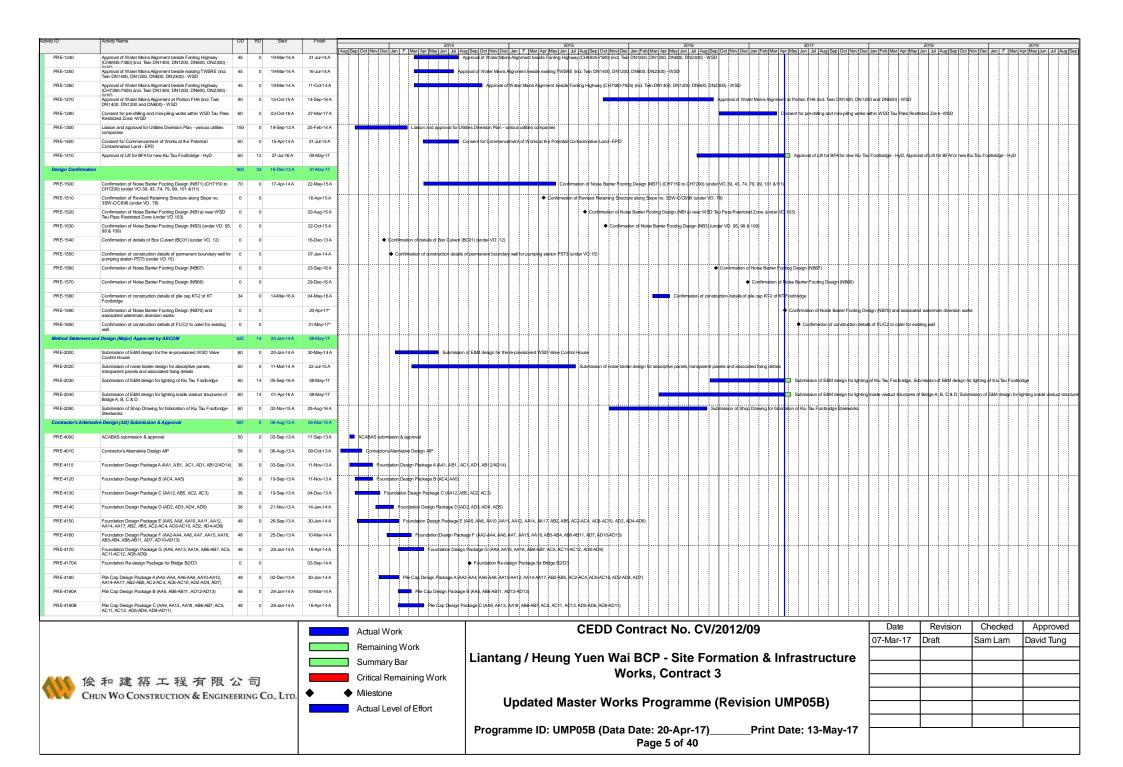
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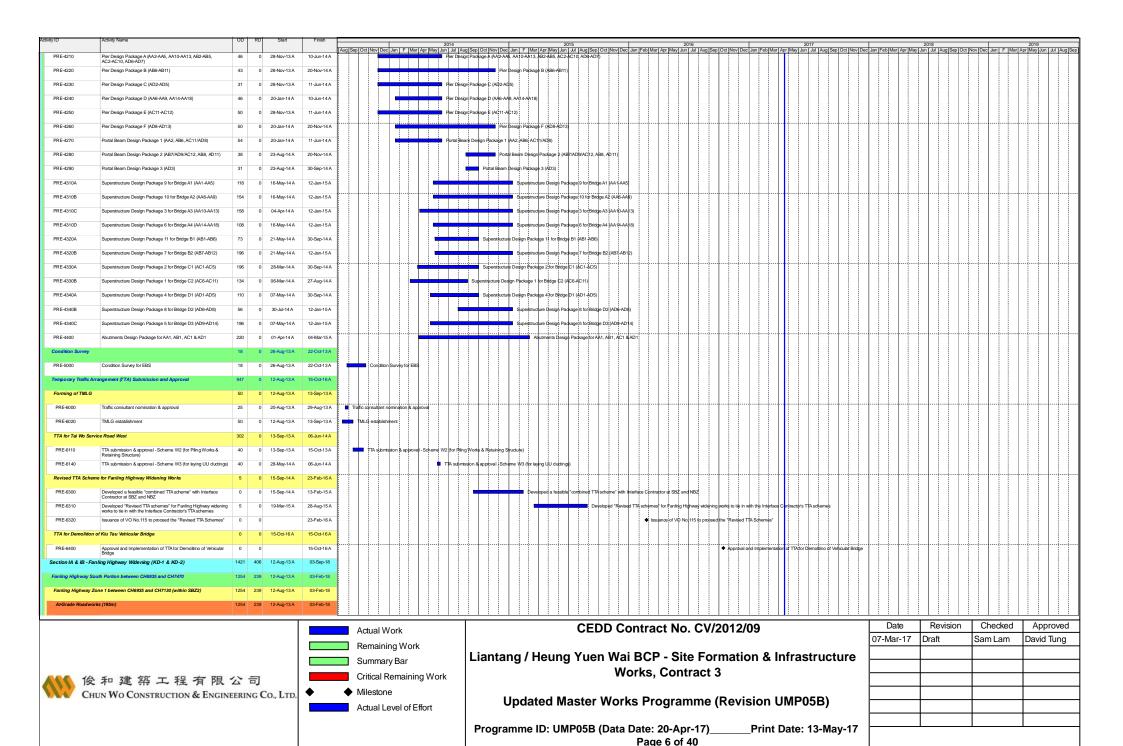
**Updated Master Works Programme (Revision UMP05B)** 

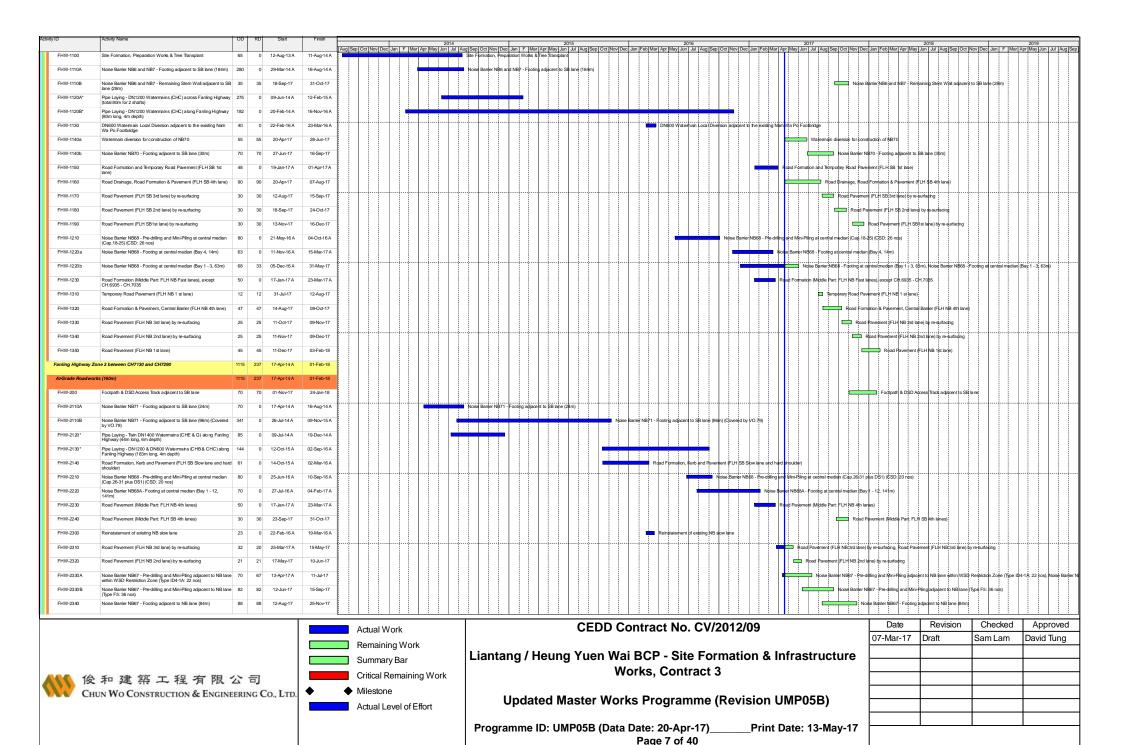
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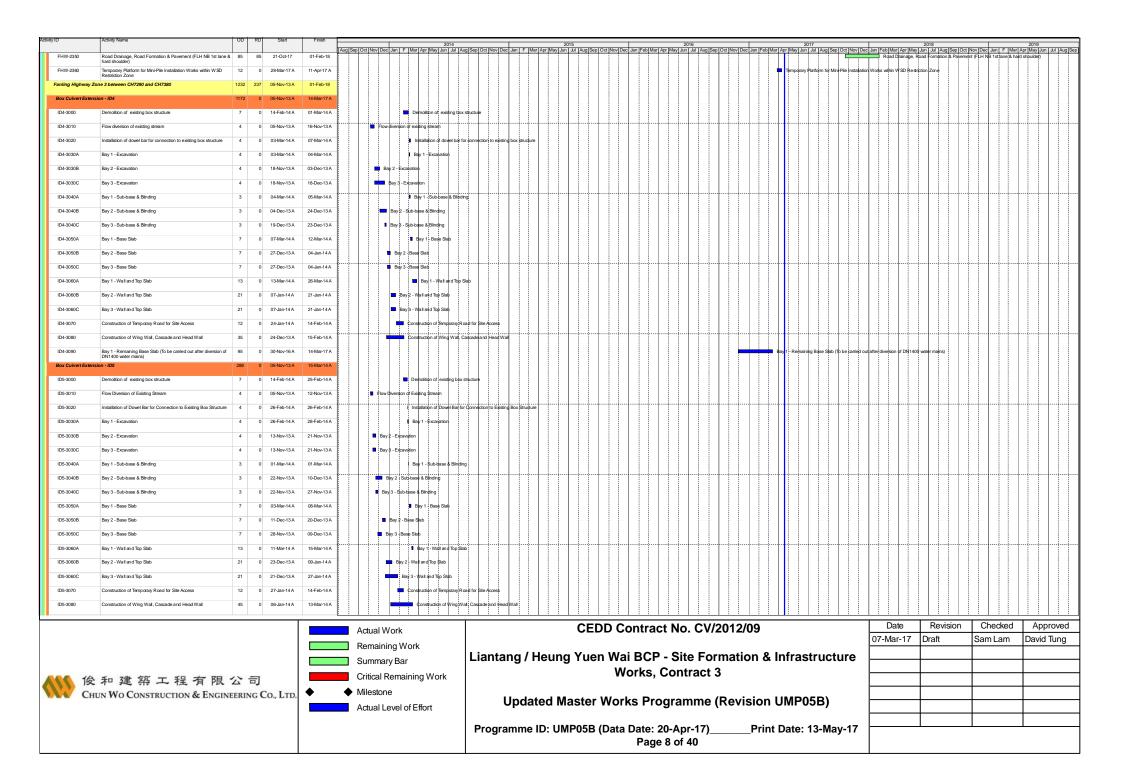
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7-Mar-17	Draft	Sam Lam	David Tung

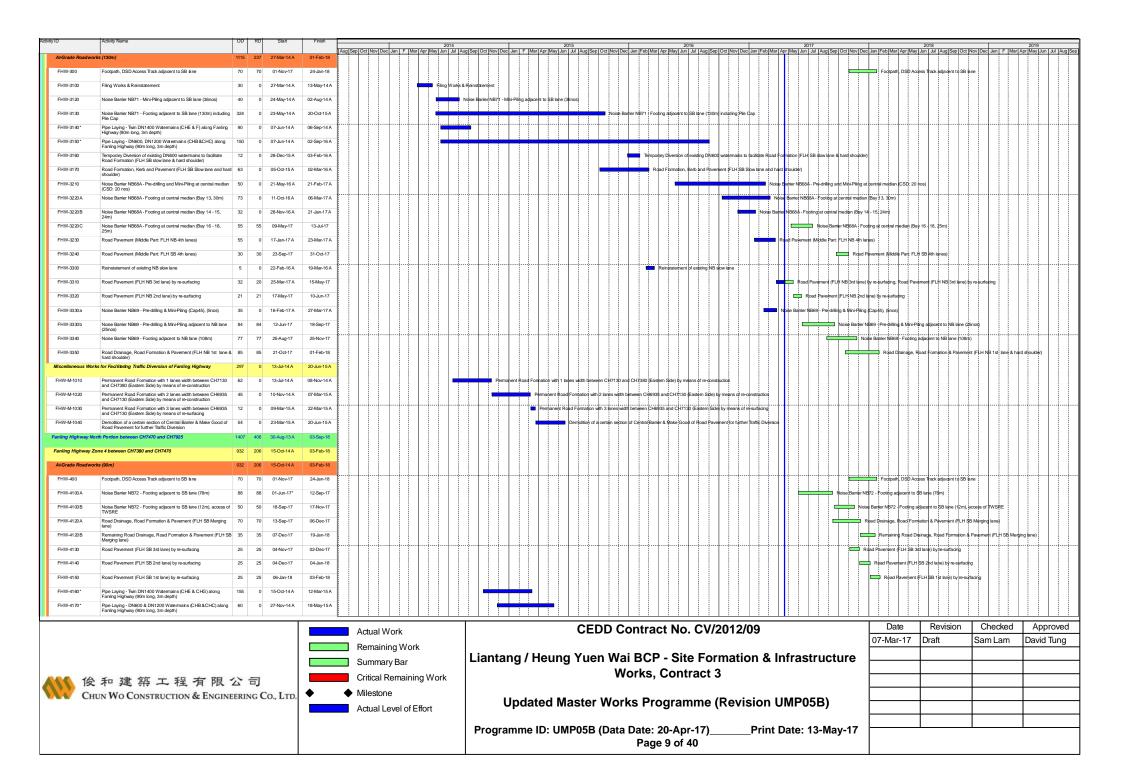


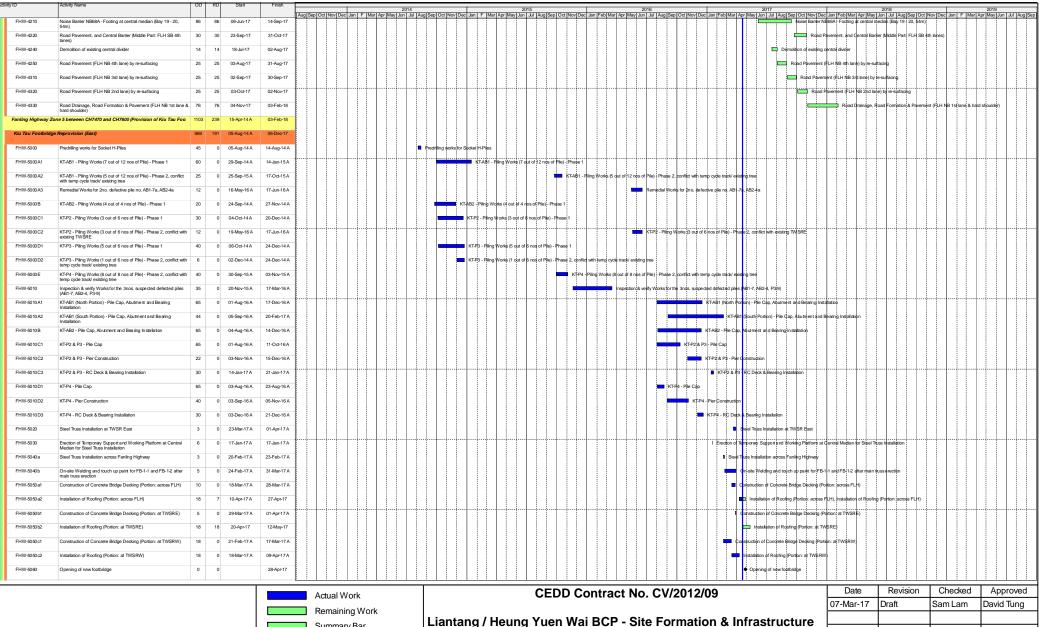
















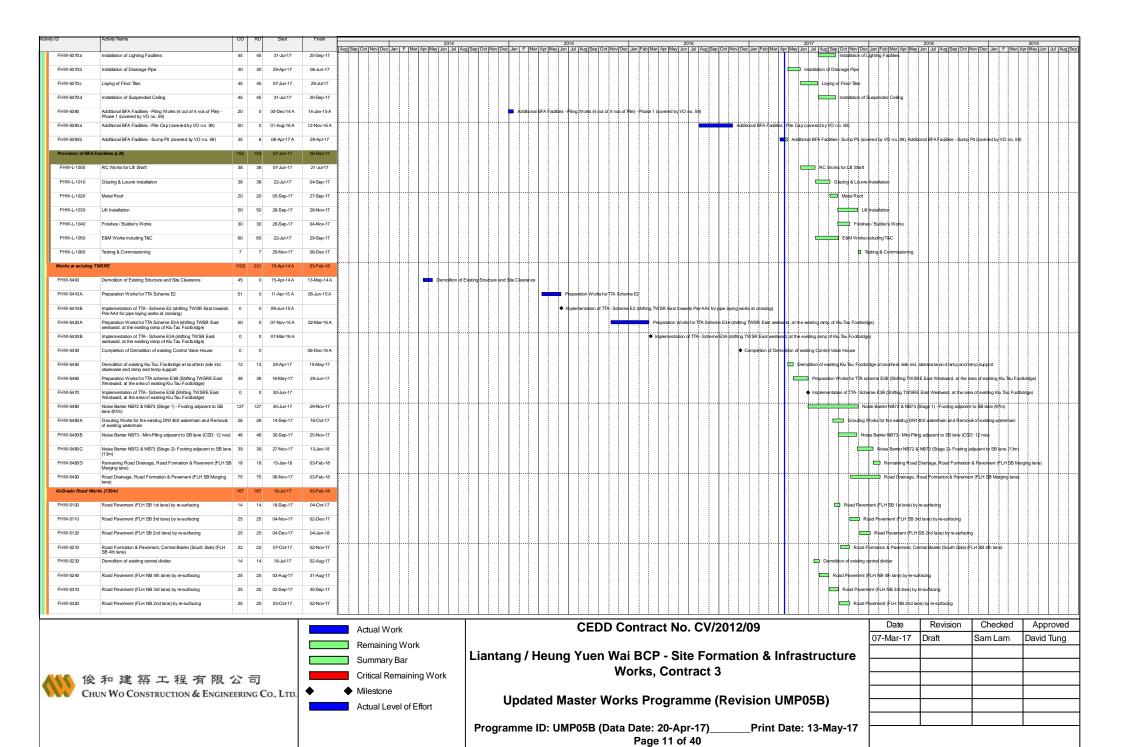
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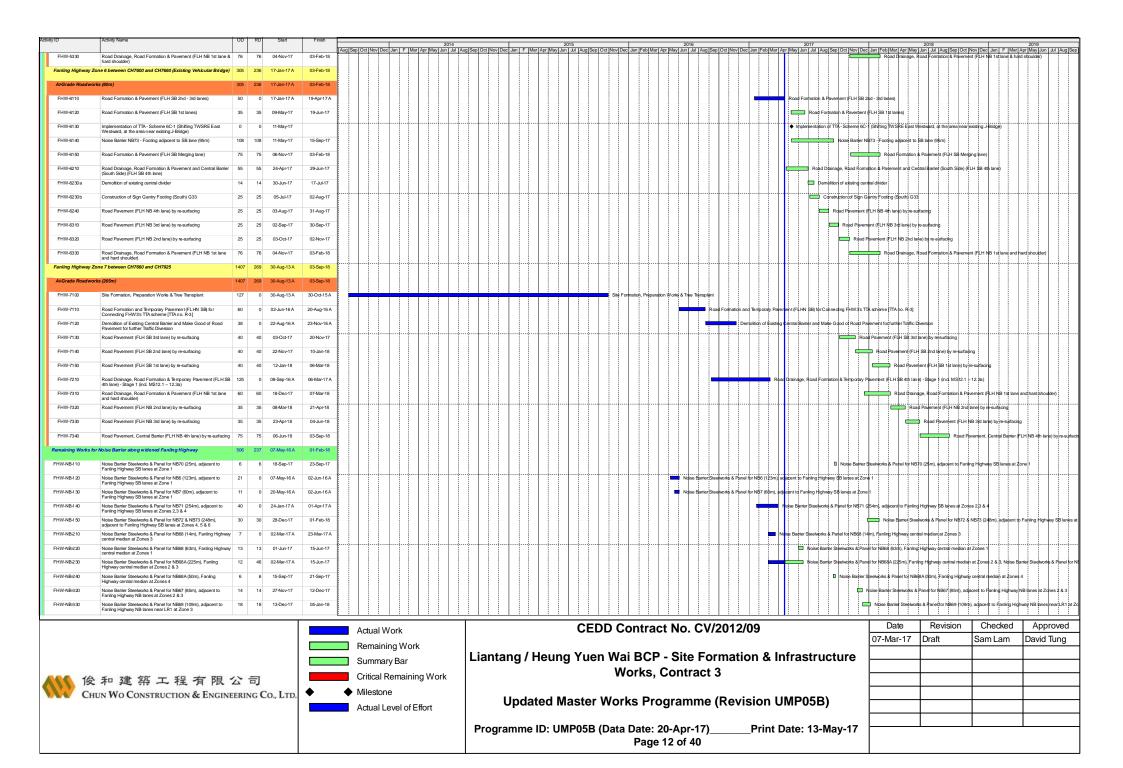
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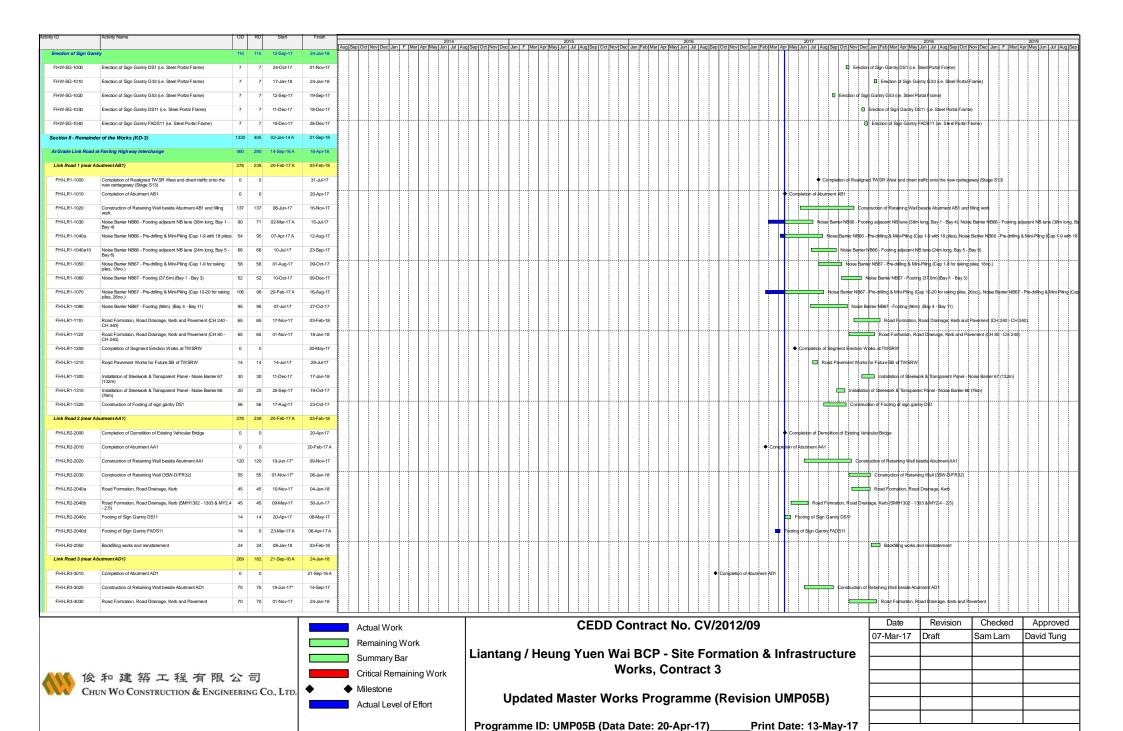
**Updated Master Works Programme (Revision UMP05B)** 

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Page 10 of 40

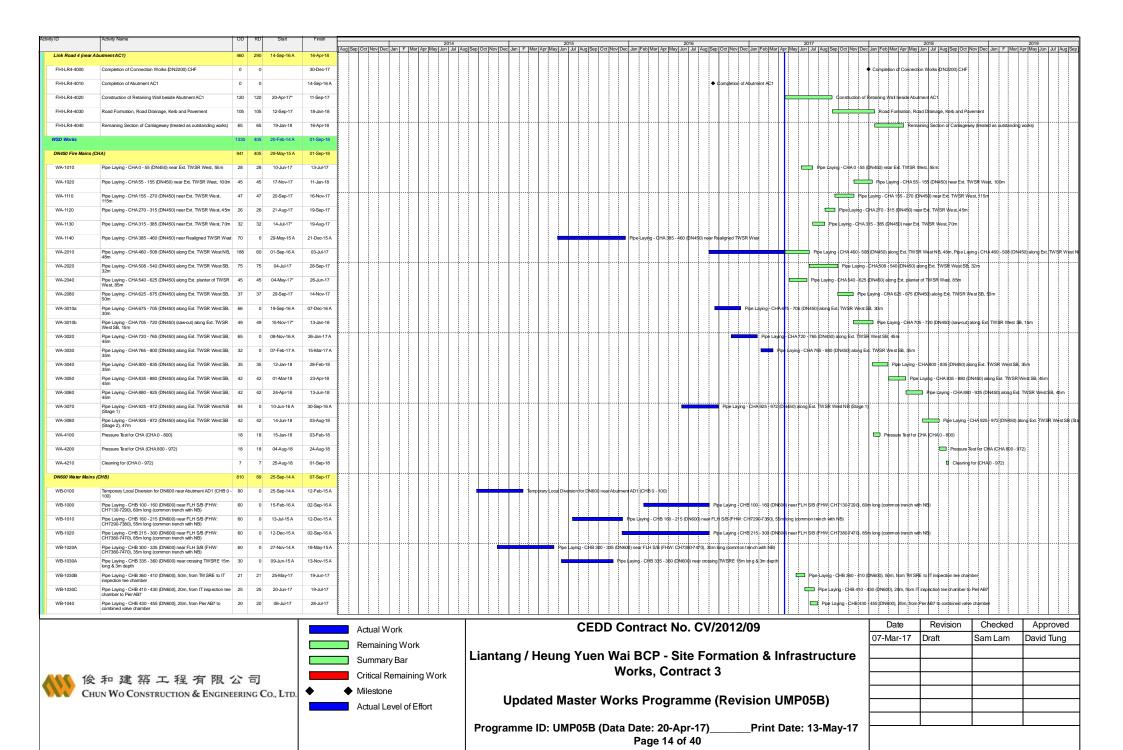
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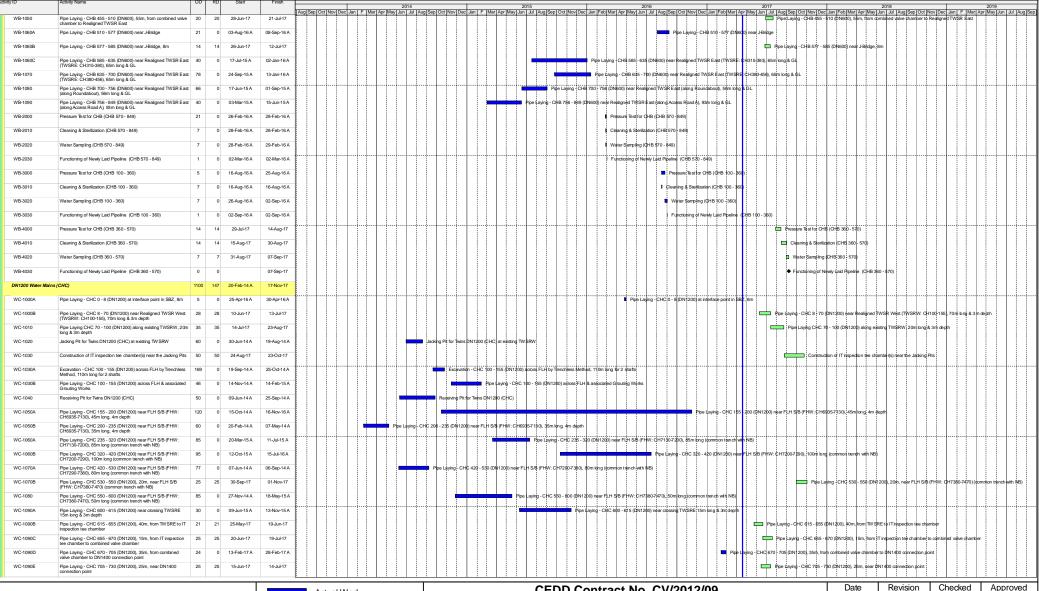






Page 13 of 40









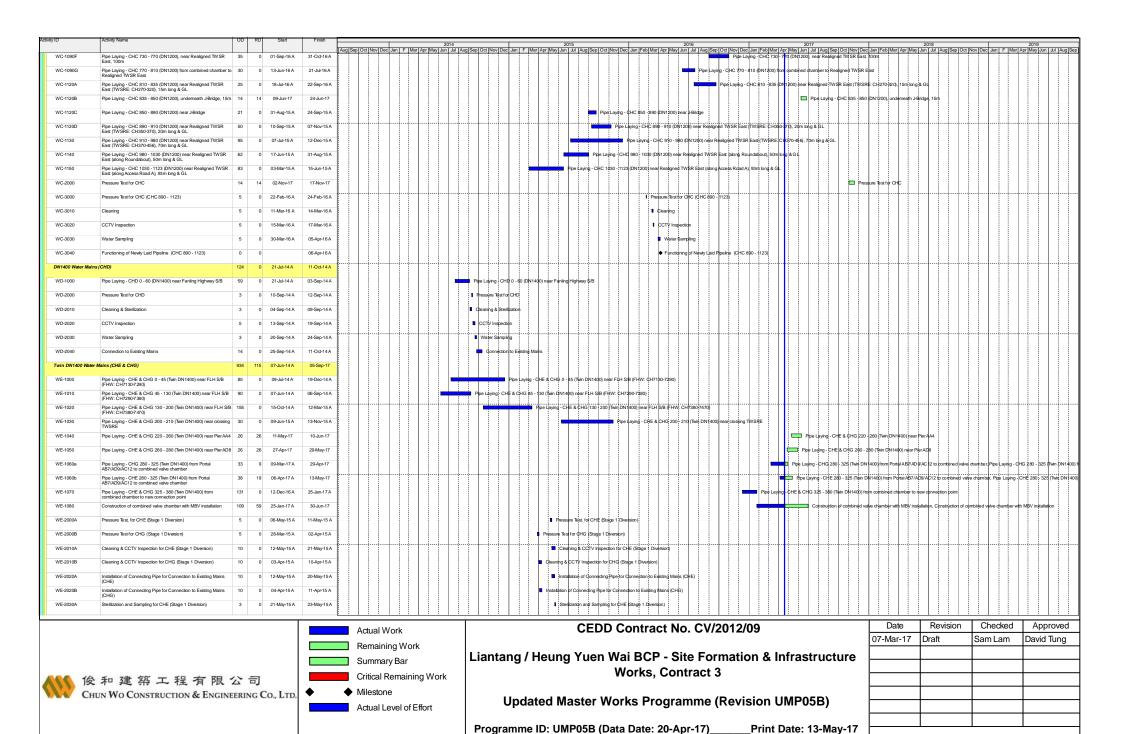
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Liantang / Heung Yuen Wai BCP - Site Formation & Infrastructure Works, Contract 3

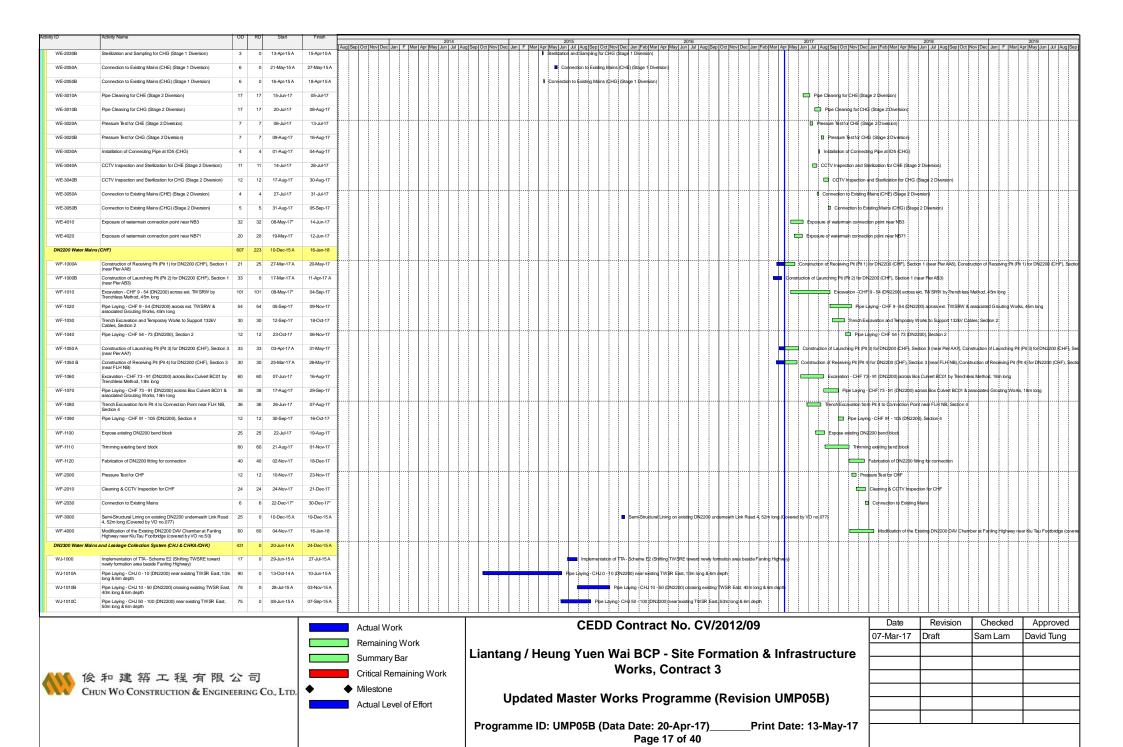
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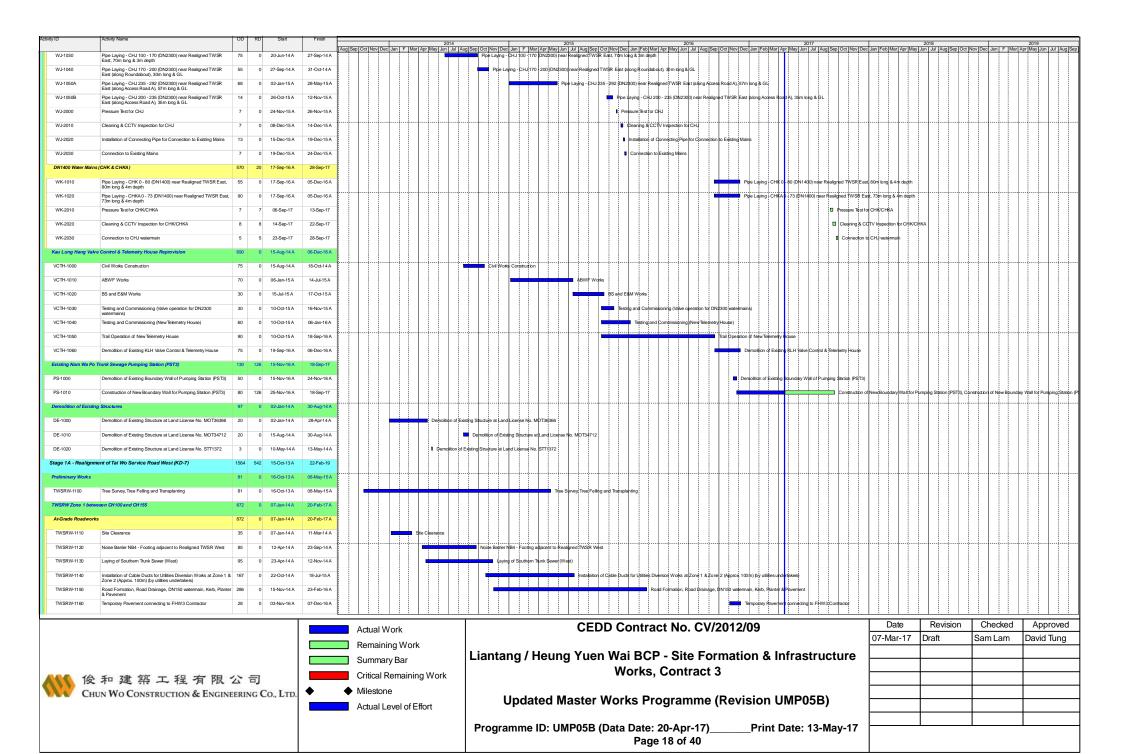
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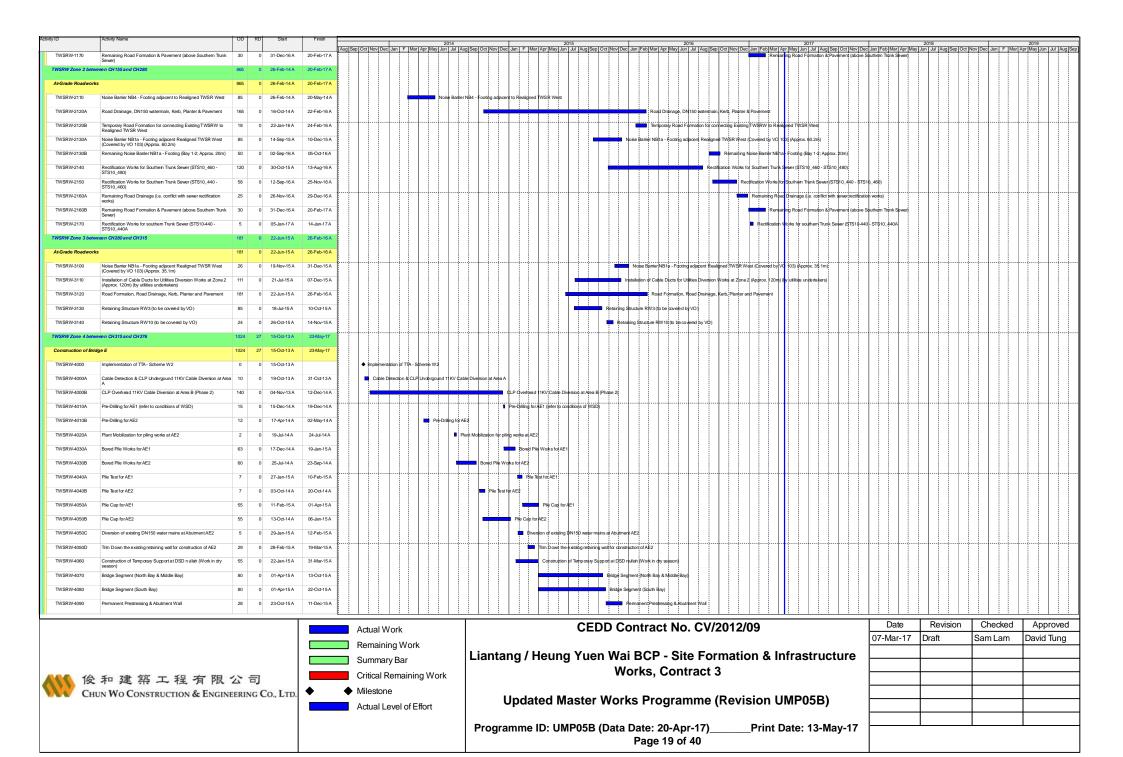
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7-Mar-17	Draft	Sam Lam	David Tung

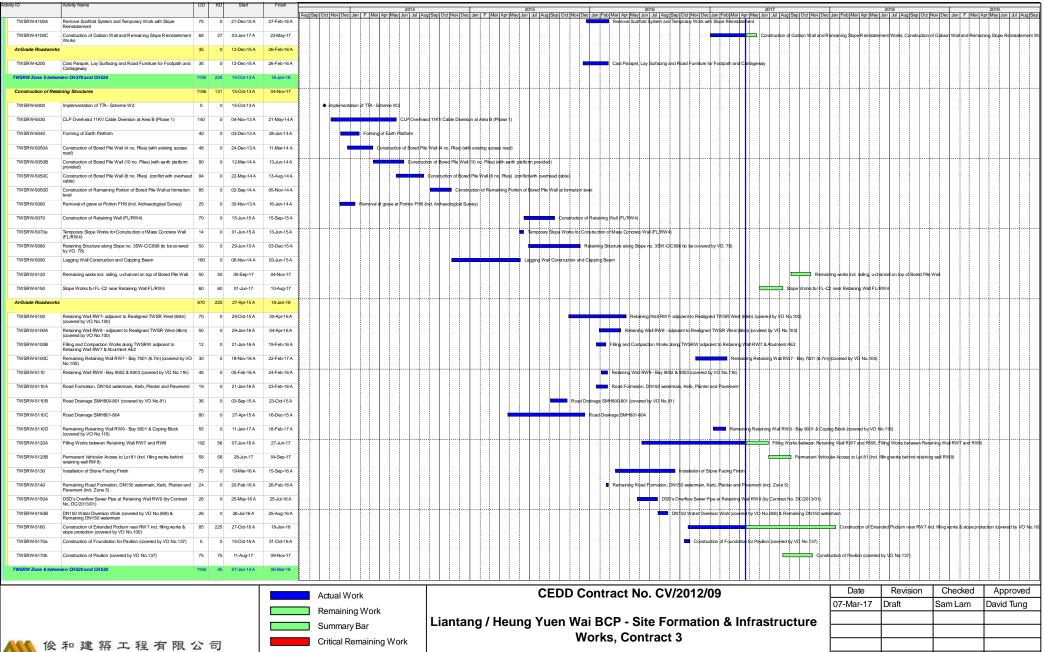


Page 16 of 40









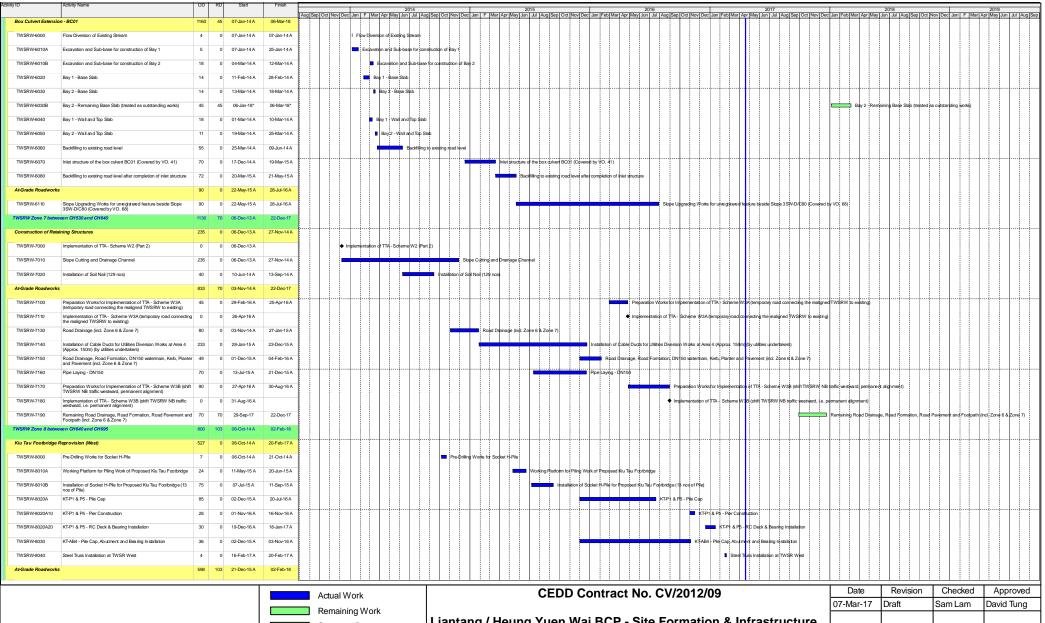
CHUN WO CONSTRUCTION & ENGINEERING CO., LTD.

 Milestone Actual Level of Effort

**Updated Master Works Programme (Revision UMP05B)** 

Programme ID: UMP05B (Data Date: 20-Apr-17) Print Date: 13-May-17 Page 20 of 40

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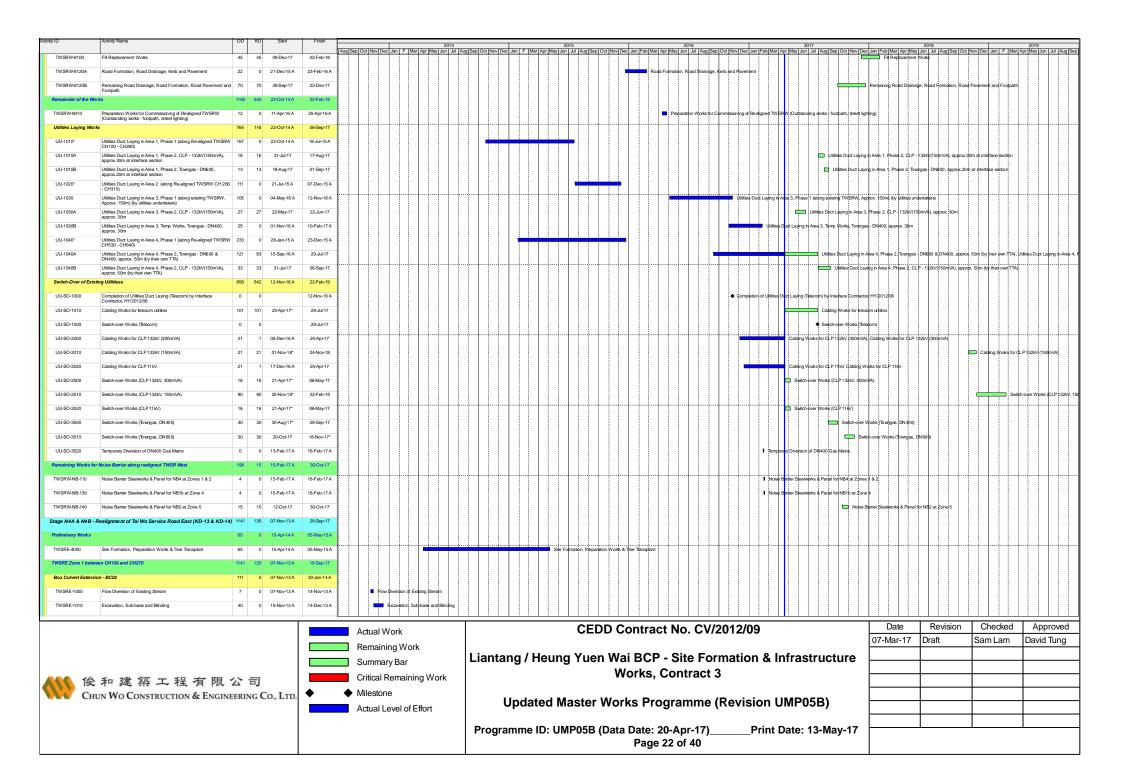


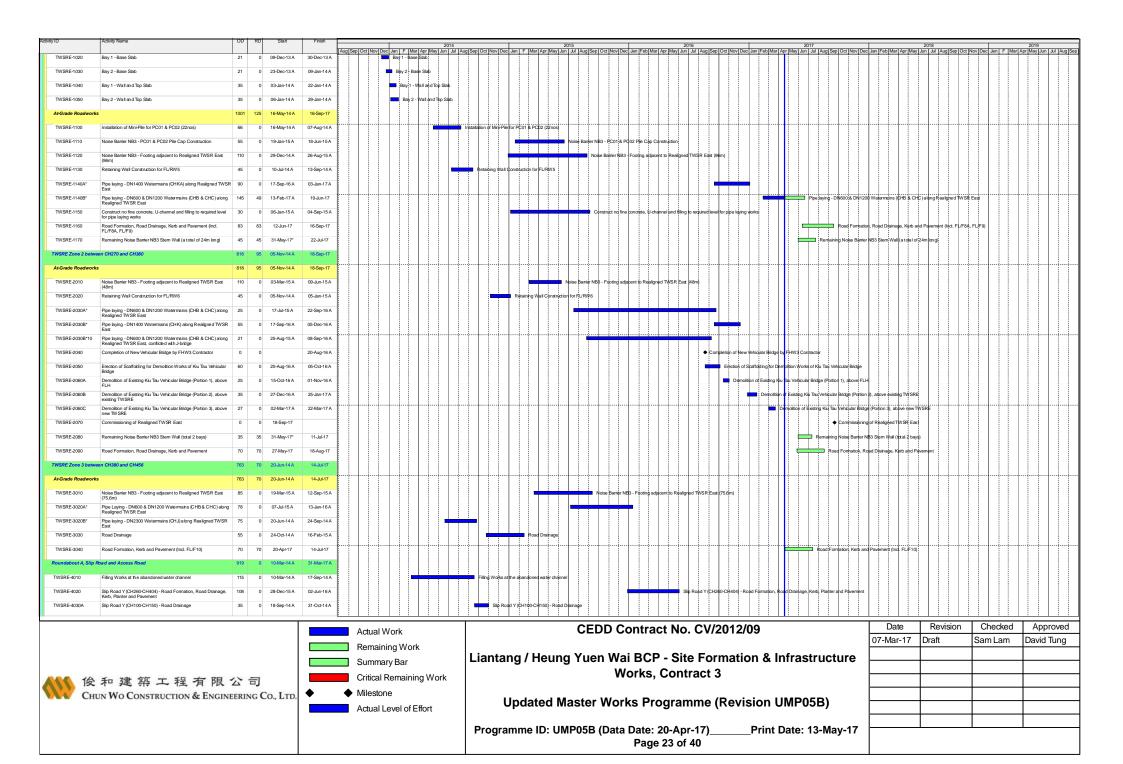
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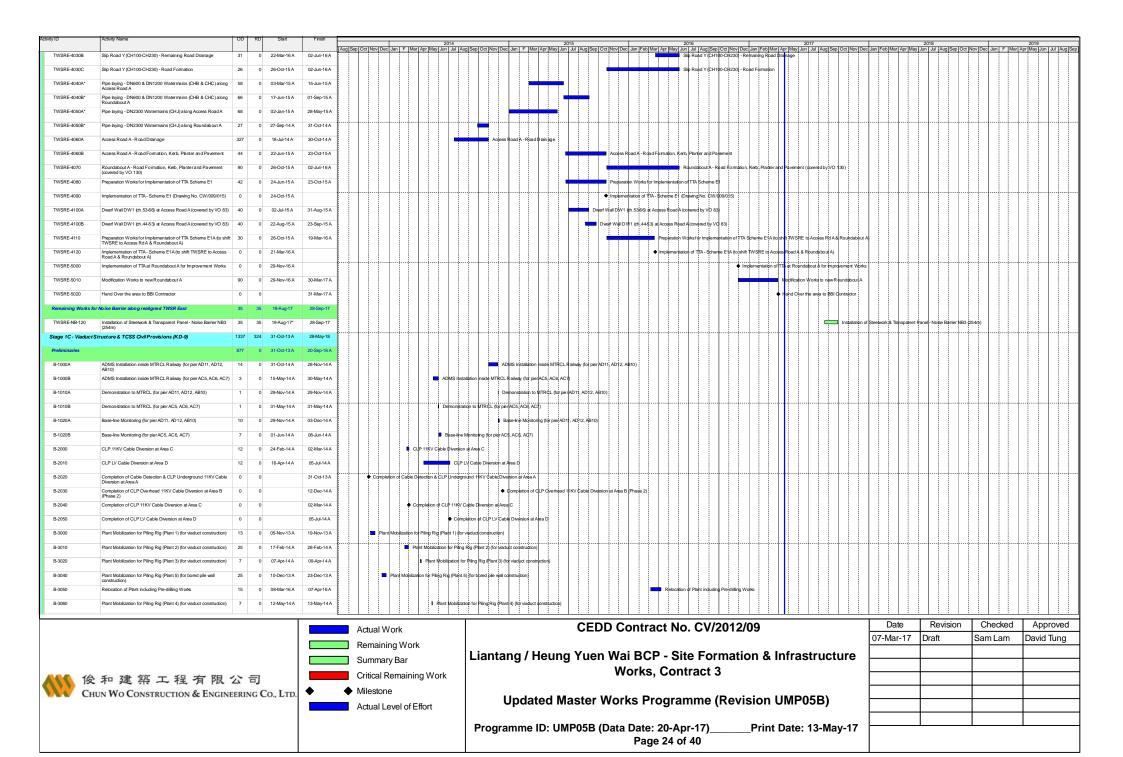
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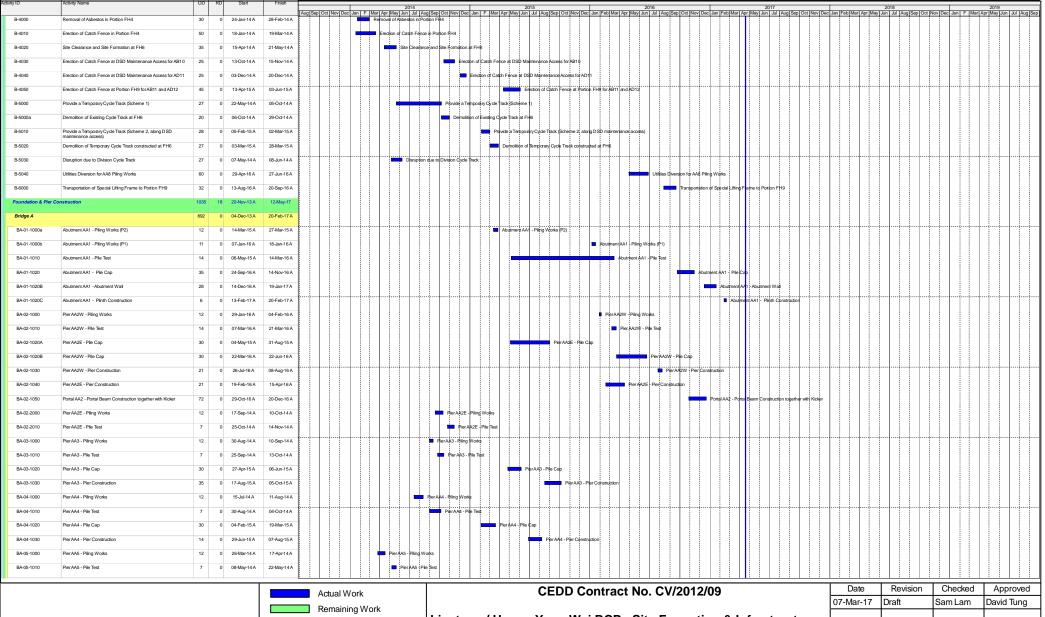
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Page 21 of 40

7-Mar-17	Draft	Sam Lam	David Tung









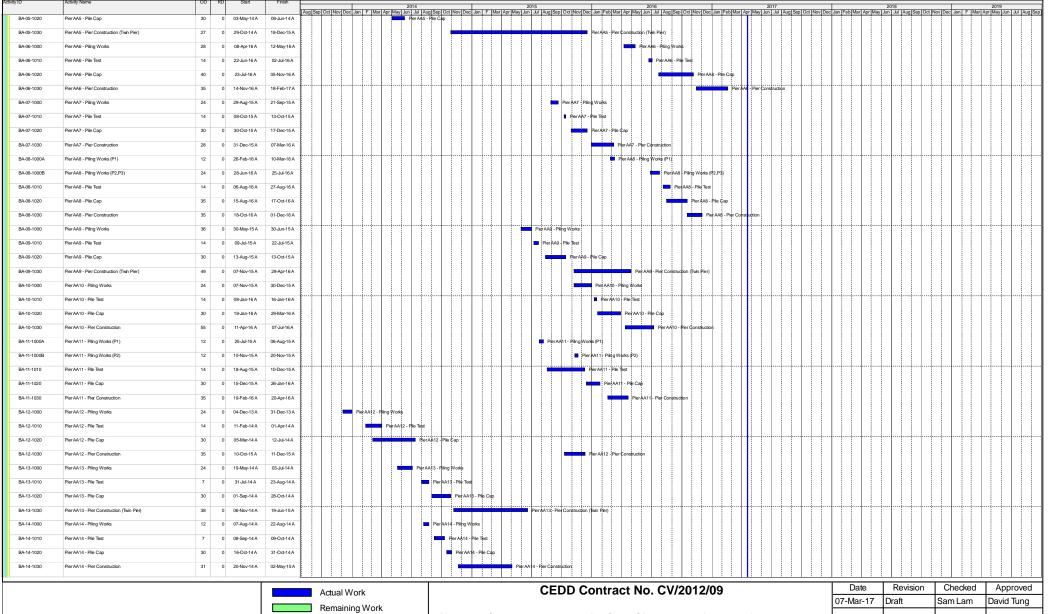




**Updated Master Works Programme (Revision UMP05B)** 

Programme ID: UMP05B (Data Date: 20-Apr-17)\_\_\_\_\_Print Date: 13-May-17 Page 25 of 40

7-Mar-17	Draft	Sam Lam	David Tung



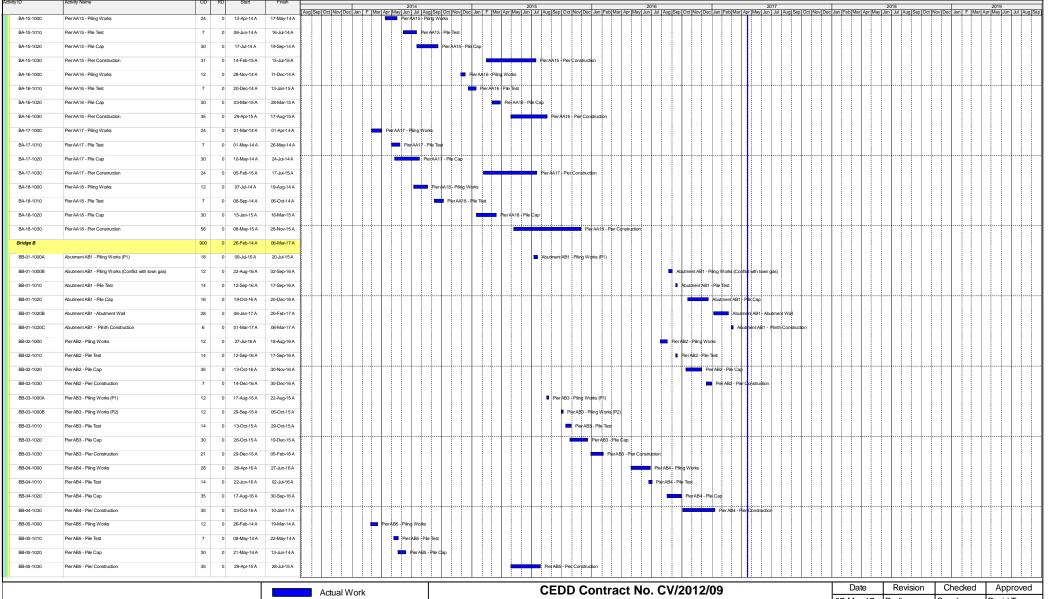




**Updated Master Works Programme (Revision UMP05B)** 

Programme ID: UMP05B (Data Date: 20-Apr-17)\_\_\_\_\_Print Date: 13-May-17 Page 26 of 40

'-Mar-17	Draft	Sam Lam	David Tung



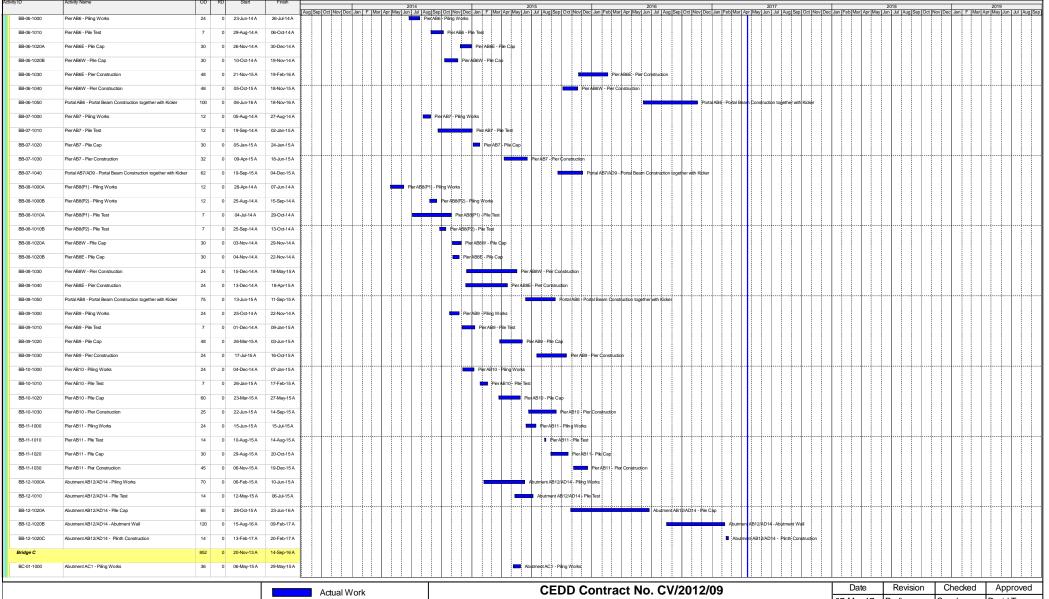




**Updated Master Works Programme (Revision UMP05B)** 

Programme ID: UMP05B (Data Date: 20-Apr-17)\_\_\_\_\_Print Date: 13-May-17 Page 27 of 40

7-Mar-17	Draft	Sam Lam	David Tung



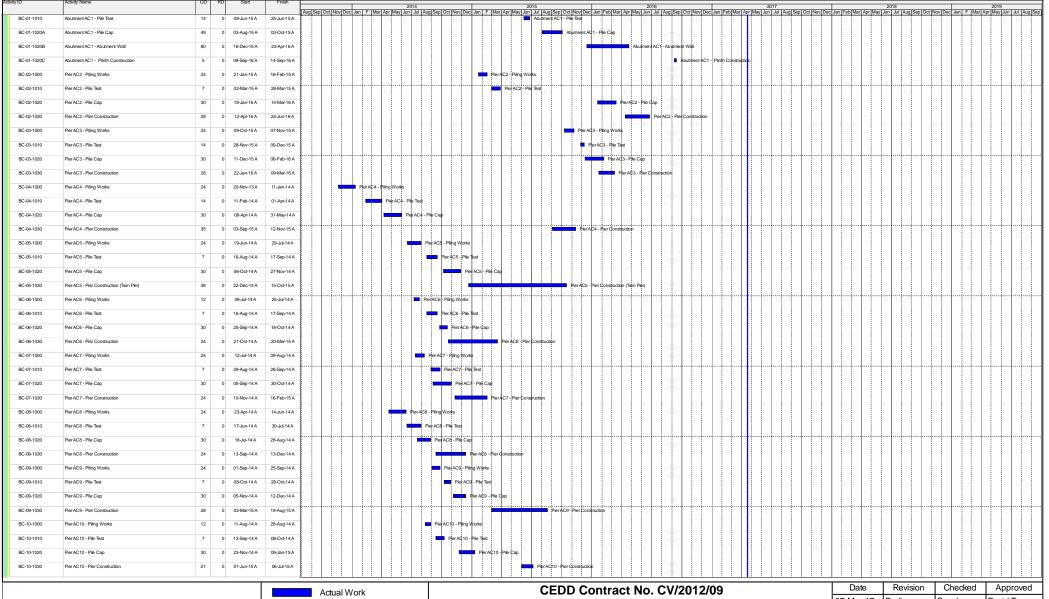




**Updated Master Works Programme (Revision UMP05B)** 

Programme ID: UMP05B (Data Date: 20-Apr-17)\_\_\_\_\_Print Date: 13-May-17 Page 28 of 40

7-Mar-17	Draft	Sam Lam	David Tung



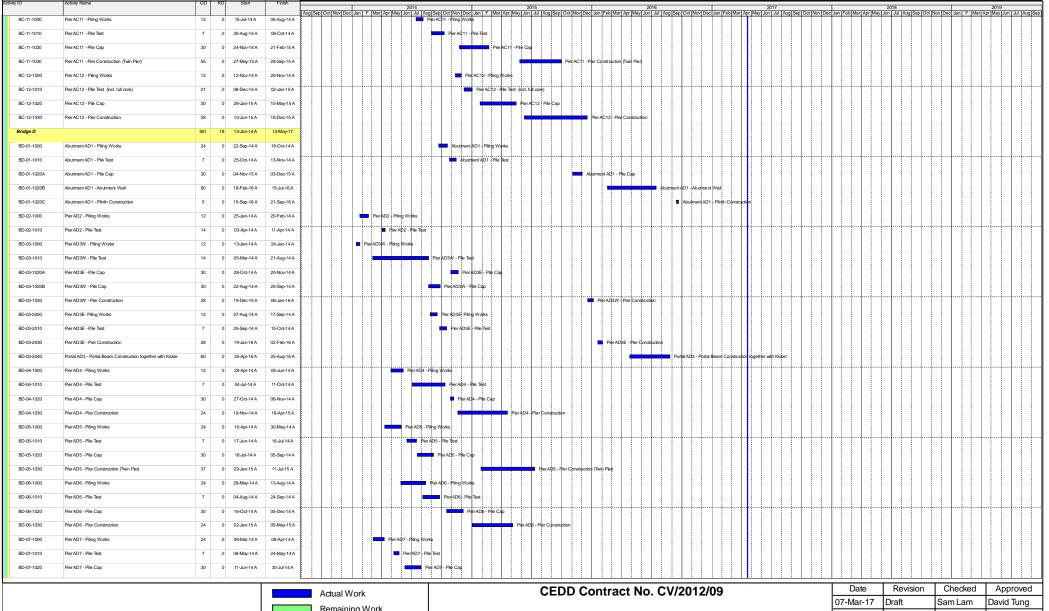




**Updated Master Works Programme (Revision UMP05B)** 

Programme ID: UMP05B (Data Date: 20-Apr-17)\_\_\_\_\_Print Date: 13-May-17
Page 29 of 40

7-Mar-17	Draft	Sam Lam	David Tung



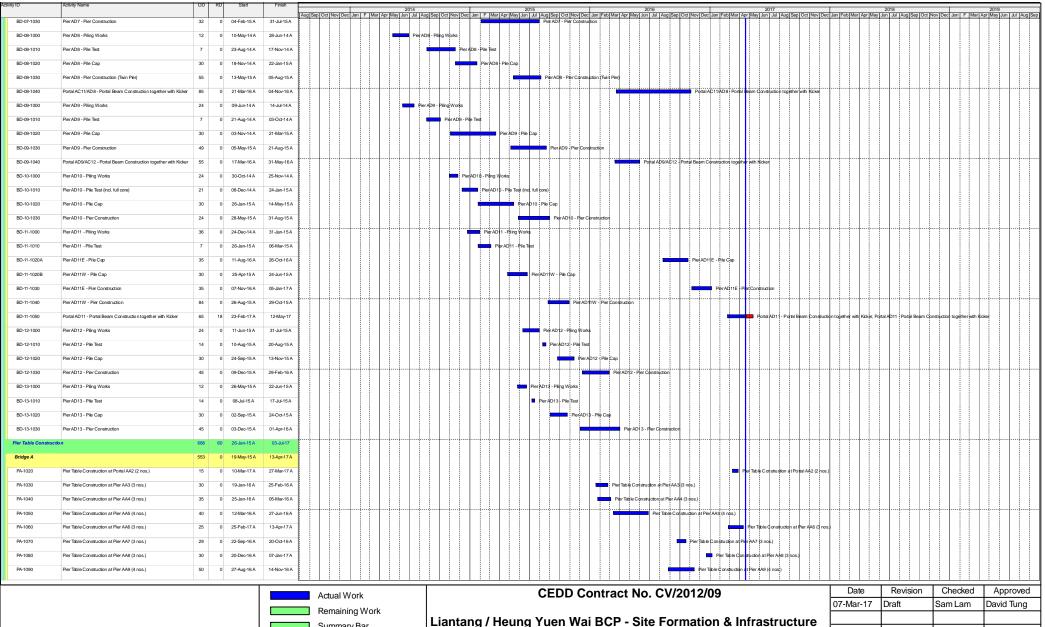




**Updated Master Works Programme (Revision UMP05B)** 

Programme ID: UMP05B (Data Date: 20-Apr-17)\_\_\_\_\_Print Date: 13-May-17
Page 30 of 40

7-Mar-17	Draft	Sam Lam	David Tung



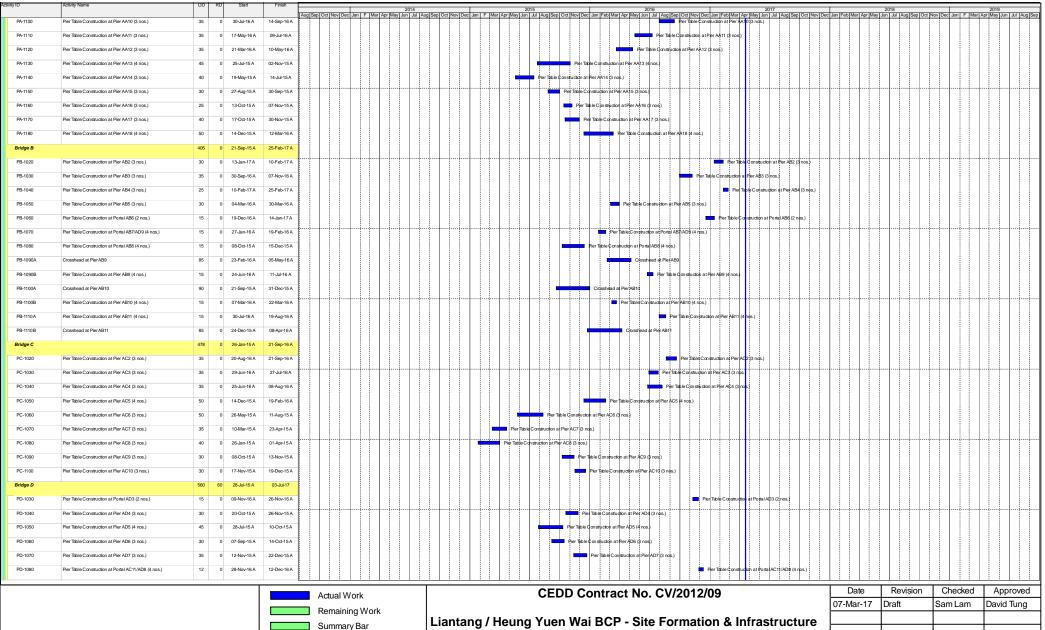




**Updated Master Works Programme (Revision UMP05B)** 

Programme ID: UMP05B (Data Date: 20-Apr-17)\_\_\_\_\_Print Date: 13-May-17 Page 31 of 40

'-Mar-17	Draft	Sam Lam	David Tung





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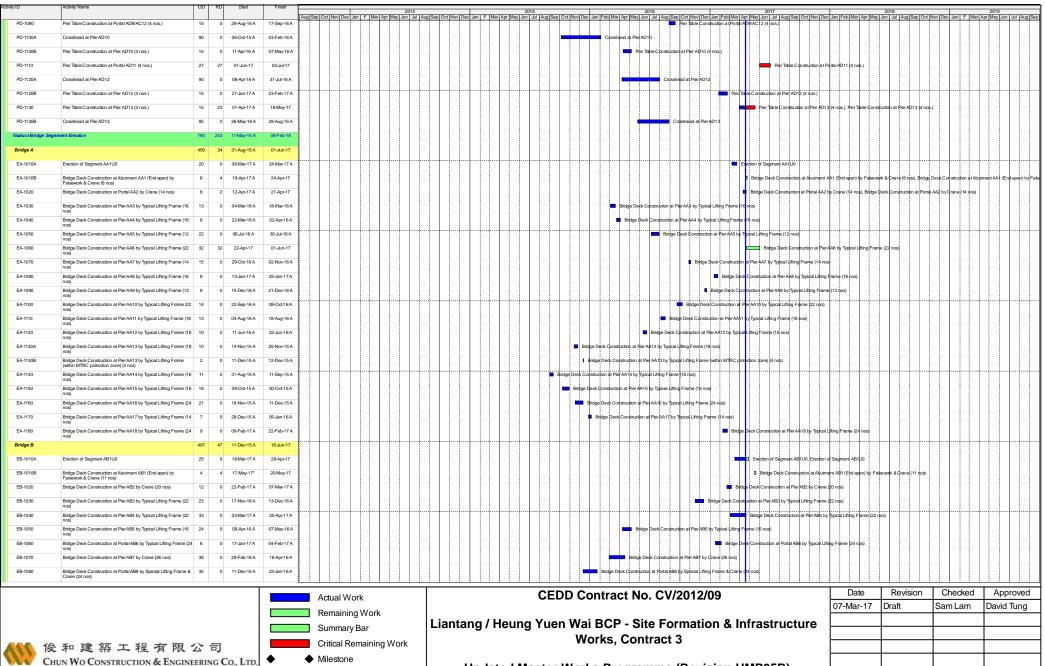


Works, Contract 3

**Updated Master Works Programme (Revision UMP05B)** 

Programme ID: UMP05B (Data Date: 20-Apr-17) Print Date: 13-May-17 Page 32 of 40

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7-Mar-17	Draft	Sam Lam	David Tung
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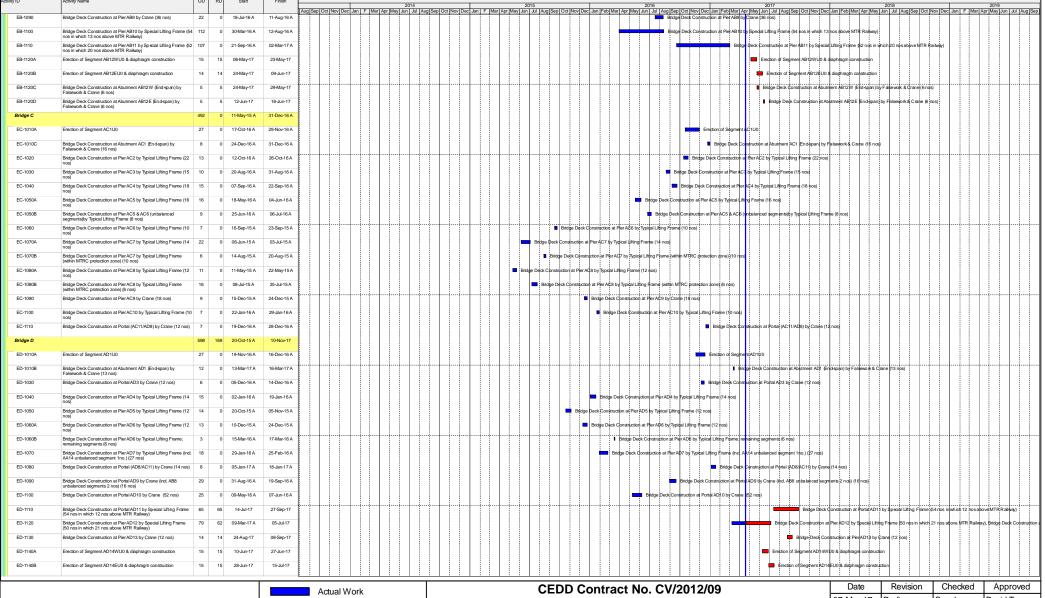


Actual Level of Effort

**Updated Master Works Programme (Revision UMP05B)** 

Programme ID: UMP05B (Data Date: 20-Apr-17) Print Date: 13-May-17 Page 33 of 40

-Mar-17	Draft	Sam Lam	David Tung



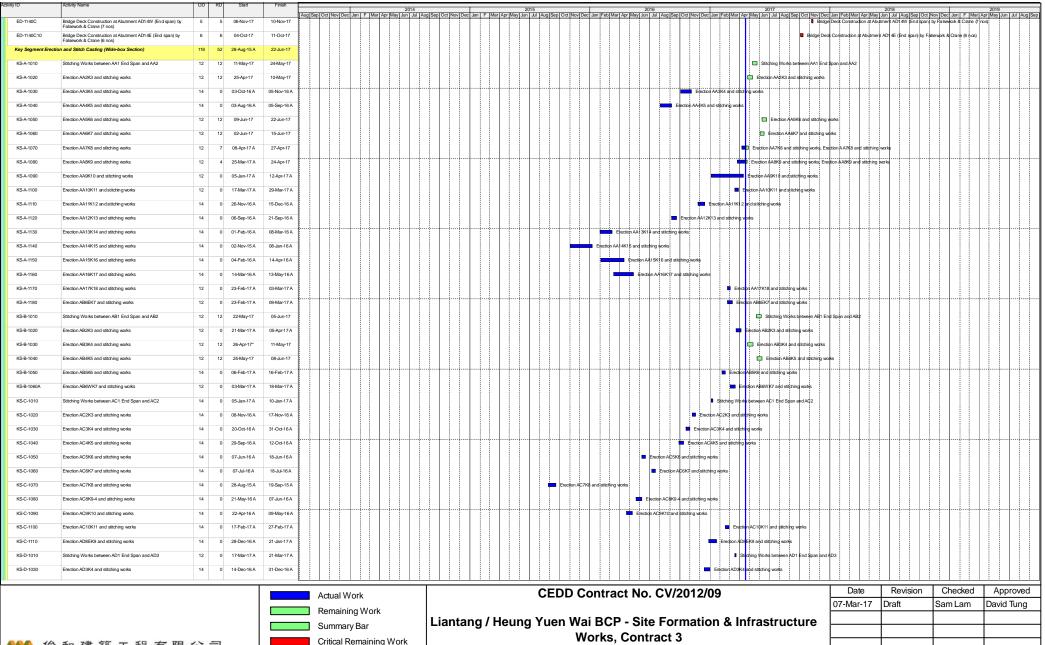




**Updated Master Works Programme (Revision UMP05B)** 

Programme ID: UMP05B (Data Date: 20-Apr-17) Print Date: 13-May-17 Page 34 of 40

Date	1101101011	Oncoroa	rippiorou
7-Mar-17	Draft	Sam Lam	David Tung



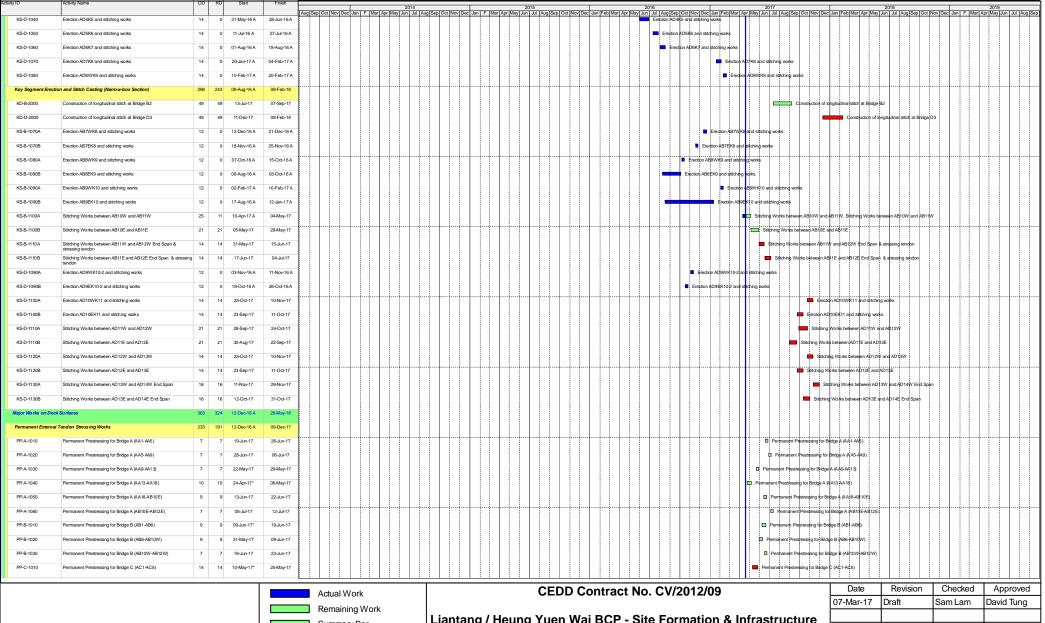
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Critical Remaining Work • Milestone Actual Level of Effort

**Updated Master Works Programme (Revision UMP05B)** 

Programme ID: UMP05B (Data Date: 20-Apr-17) Print Date: 13-May-17 Page 35 of 40

-Mar-17	Draft	Sam Lam	David Tung



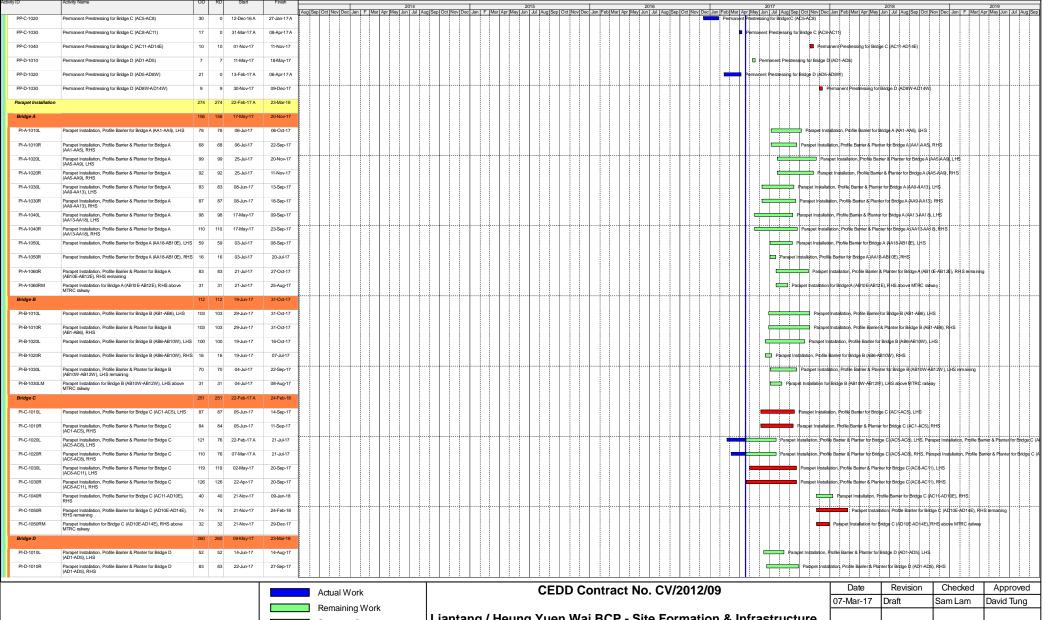


	Actual Work
	Remaining Work
	Summary Bar
	Critical Remaining Work
<b>* *</b>	Milestone
	Actual Level of Effort

**Updated Master Works Programme (Revision UMP05B)** 

Programme ID: UMP05B (Data Date: 20-Apr-17)\_\_\_\_\_Print Date: 13-May-17
Page 36 of 40

Date	1101101011	Oncoroa	rippiovou
'-Mar-17	Draft	Sam Lam	David Tung





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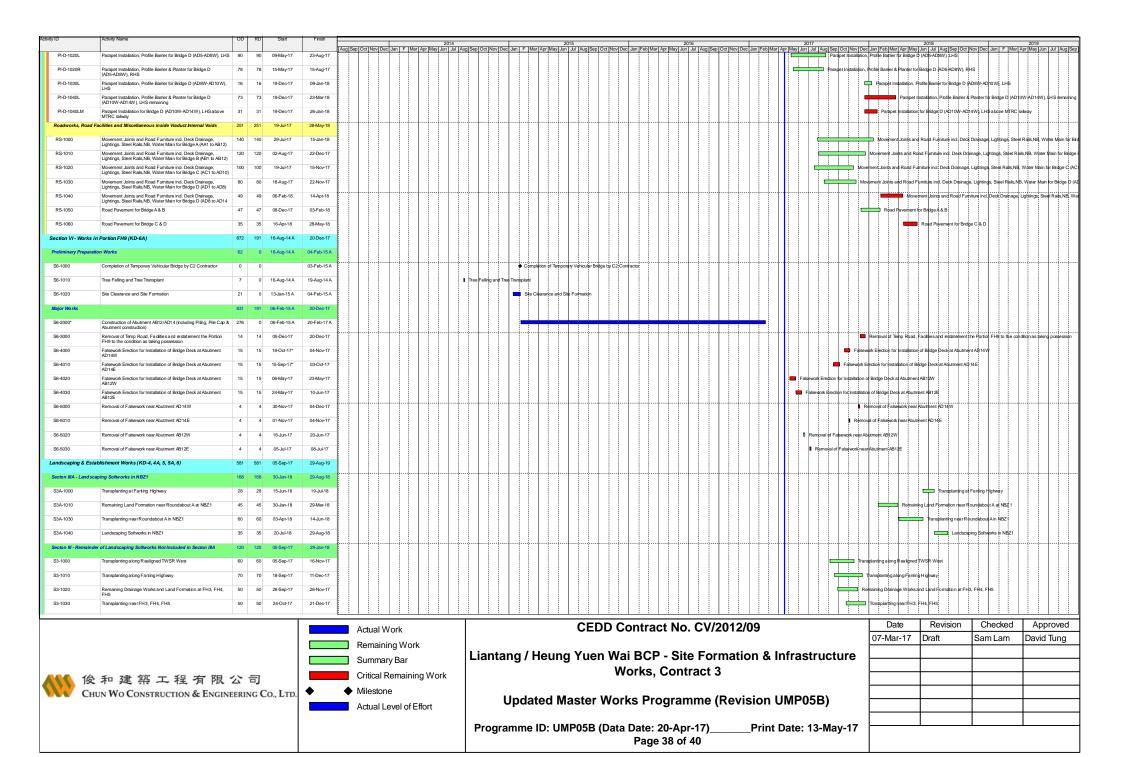
	Actual Work
	Remaining Work
	Summary Bar
	Critical Remaining Work
•	Milestone
	Actual Level of Effort

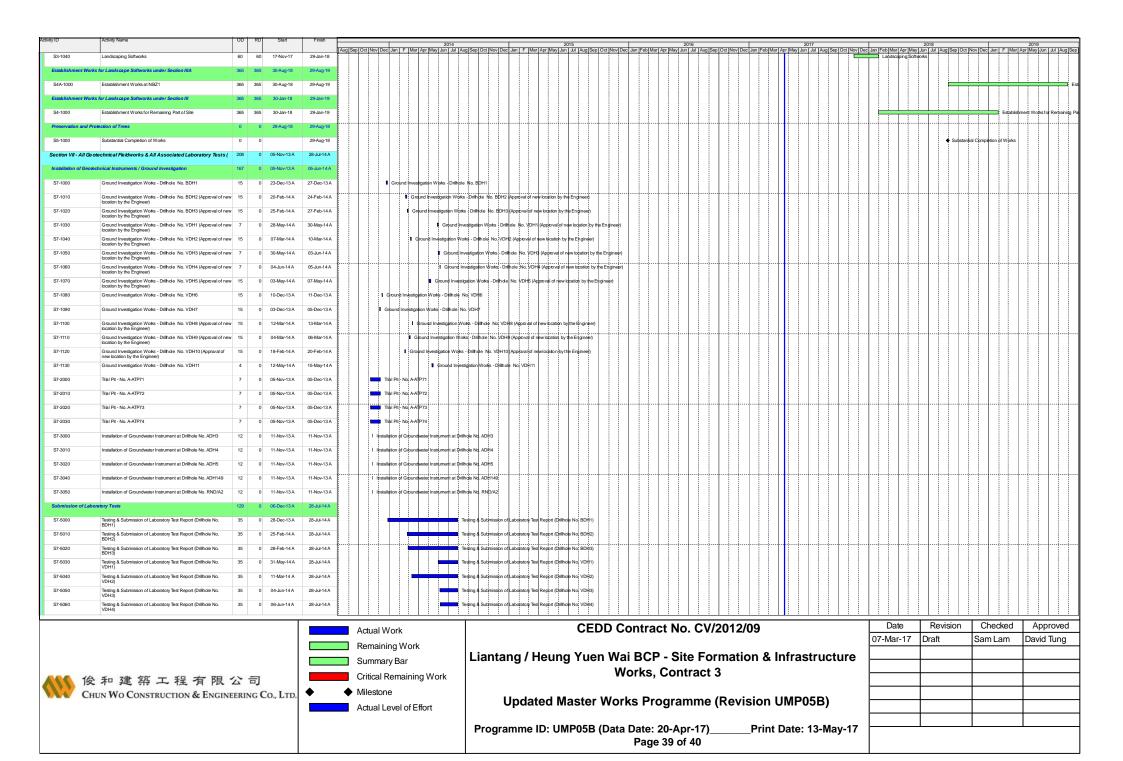
Liantang / Heung Yuen Wai BCP - Site Formation & Infrastructure Works, Contract 3

**Updated Master Works Programme (Revision UMP05B)** 

Programme ID: UMP05B (Data Date: 20-Apr-17) Print Date: 13-May-17 Page 37 of 40

Date	Revision	Checked	Approved
'-Mar-17	Draft	Sam Lam	David Tung





Activity ID	Activity Name	OD	RD Start	Finish									
							014	2015		2016	2017	2018	2019
					Aug Sep Oct Nov De	Jan F Mar Apr May Ju	Jul Aug Sep Oct Nov I	Dec Jan F Mar Apr May Jun Jul Aug Sep	Oct Nov Dec Jan Fe'	Mar Apr May Jun Jul Aug Sep Oct Nov	Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov	Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov I	Dec Jan F Mar Apr May Jun Jul Aug Sep
S7-5070	Testing & Submission of Laboratory Test Report (Drillhole No. VDH5)	35	0 08-May-14 A	28-Jul-14 A				n of Laboratory Test Report (Drillhole No. VDH5)					
S7-5080	Testing & Submission of Laboratory Test Report (Drillhole No. VDH6)	35	0 11-Jan-14 A	28-Jul-14 A			Testing & Submissip	n of Laboratory Test Report (Drillhole No. VDH6)					
S7-5090	Testing & Submission of Laboratory Test Report (Drillhole No. VDH7)	35	0 06-Dec-13 A	28-Jul-14 A	-		Testing & Submission	n of Laboratory Test Report (Drillhole No. VDH7)					
S7-5100	Testing & Submission of Laboratory Test Report (Drillhole No. VDH8)	35	0 14-Mar-14 A	28-Jul-14 A			Testing & Submission	n of Laboratory Test Report (Drillhole No. VDH8)					
S7-5110	Testing & Submission of Laboratory Test Report (Drillhole No. VDH9)	35	0 07-Mar-14 A	28-Jul-14 A				n of Laboratory Test Report (Drillhole No. VDH9)					
S7-5120	Testing & Submission of Laboratory Test Report (Drillhole No. VDH10)	35	0 21-Feb-14 A	28-Jul-14 A			Testing & Submissip	n of Laboratory Test Report (Drillhole No. VDH10)					
S7-5130	Final Field Work Report for A-ATP71 to A-ATP74	90	0 06-Dec-13 A	14-Apr-14 A		Final Fie	Work Report for A-ATP71 to	AATP74					

後和建築工程有限公司 CHUN Wo CONSTRUCTION & ENGINEERING Co., LTD.



CEDD Contract No. CV/2012/09

Liantang / Heung Yuen Wai BCP - Site Formation & Infrastructure Works, Contract 3

**Updated Master Works Programme (Revision UMP05B)** 

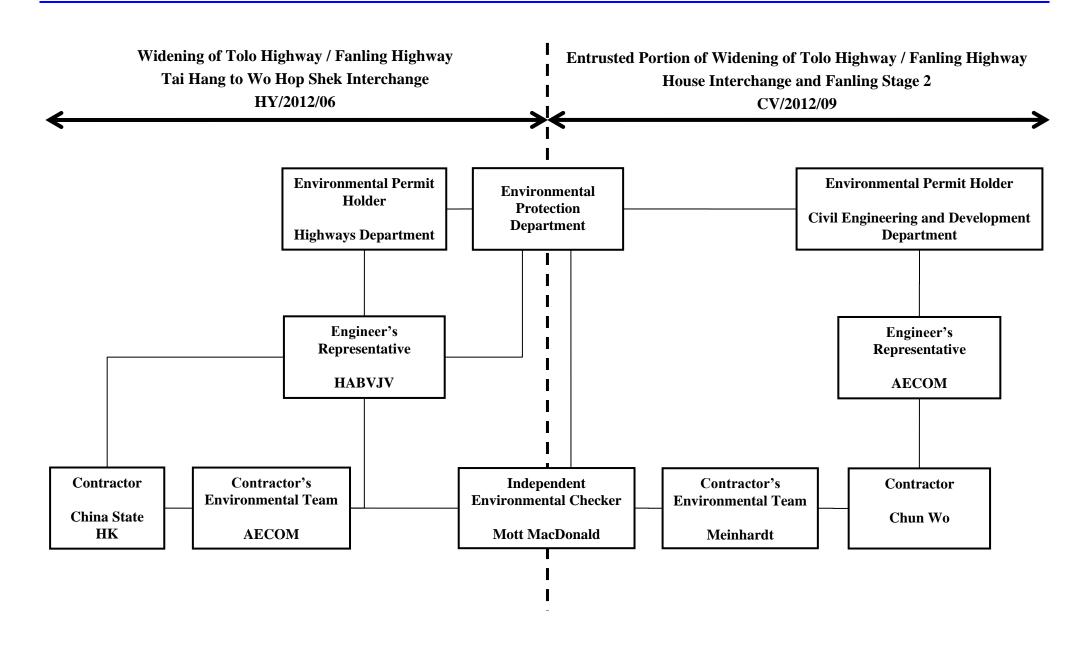
Programme ID: UMP05B (Data Date: 20-Apr-17)\_\_\_\_\_Print Date: 13-May-17
Page 40 of 40

Date	Revision	Checked	Approved
7-Mar-17	Draft	Sam Lam	David Tung



## Appendix B Project Organization Structure







#### Appendix C Implementation Schedule of Environmental Mitigation Measures (EMIS)



Impact	Environmental Protection Measures	Timing	Responsibility	Implementation Status #
Air Quality				•
Air Quality during Construction	Restricting heights from which materials are dropped, as far as practicable to minimize the fugitive dust arising from unloading/loading.	During Construction	Contractor	<b>√</b>
	• All stockpiles of excavated materials or spoil of more than 50m <sup>3</sup> shall be enclosed, covered or dampened during dry or windy conditions.			✓
	Effective water sprays shall be used to control potential dust emission sources such as unpaved haul roads and active construction areas.			<b>✓</b>
	All spraying of materials and surfaces shall avoid excessive water usage.			✓
	<ul> <li>Vehicles that have the potential to create dust while transporting materials shall be covered, with the cover properly secured and extended over the edges of the side and tail boards.</li> </ul>			<b>✓</b>
	Materials shall be dampened, if necessary, before transportation.			✓
	Travelling speeds shall be controlled to reduce traffic induced dust dispersion and re-suspension within the site from the operating haul trucks.			✓
	Vehicle washing facilities shall be provided to minimise the quantity of material deposited on public roads.			<b>✓</b>
Air Quality during Operation	Not required	N/A	N/A	N/A
Noise				
Noise during Construction	Use of silenced plant or plant equipped with mufflers or dampers in substitute of ordinary plant.	During Construction	Contractor	<b>√</b>
	Reduce the number of equipment and their percentage on-time.			✓
Noise during Operation	Not required	N/A	N/A	N/A
Water Quality				
Water Quality during	Road Widening Works, Earthworks and Culvert Extension Works	During Construction	Contractor	✓
Construction	Wastewater generated from any concrete batching washdown of equipment or similar activities should be discharged into foul sewers, after the removal of settable solids, and pH adjustment as necessary. All sewage discharges from the study area should meet the TM standards and approval from EPD through the licensing process is required.			
	Sand traps, oil interceptors and other pollution prevention installations should be provided, properly cleaned and maintained.			<b>✓</b>

Notes (\*):

✓ - Compliance; Rem - Reminder; Obs - Observation; N/C - Non Compliance; N/A - Not Applicable



Impact	Environmental Protection Measures	Timing	Responsibility	Implementation Status #
	Runoff from exposed working areas, unfinished slopes and from unlined temporary channels should be directed to stilling basins and/or silt traps before discharging to the drainage outfalls.			Obs.
	<ul> <li>Regular inspections of stilling basins and/or silt traps is required to ensure that sediment is not conveyed into the existing drainage system.</li> </ul>			<b>✓</b>
	Open stockpiles should be covered with a tarpaulin cover.			✓
	During the wet season, any exposed top soils should be covered with a tarpaulin, shotcreted or hydroseeded.			✓
	Sand and silt from wash-water from vehicle washing should be settled out before discharging into storm drains.			<b>✓</b>
	Fuels should be stored in bunded areas such that spillage can be easily collected.			<b>✓</b>
Water Quality during Operation	Not required	N/A	N/A	N/A
Waste Management		1		
Waste Management during Construction	<ul><li>General Waste</li><li>Transport of wastes off site as soon as possible.</li></ul>	During Construction	Contractor	Obs.
	Maintenance of accurate waste records.			✓
	Minimisation of waste generation for disposal (via reduction/recycling/re-use).			<b>✓</b>
	No on-site burning will be permitted.			✓
	Use of re-useable metal hoardings/signboards.			✓
	Vegetation from site clearance	During Construction	Contractor	
	Segregation of materials to facilitate disposal.			✓
	<ul> <li>Mulching to reduce bulk and where possible review opportunities for the possible beneficial use within landscaping areas.</li> </ul>			<b>✓</b>
	<u>Demolition Wastes</u>	During Construction	Contractor	
	Segregation of materials to facilitate disposal.			✓
	Appropriate stockpile management.			<b>✓</b>

Notes (<sup>#</sup>): ✓ – Compliance; Rem – Reminder; Obs – Observation; N/C – Non Compliance; N/A – Not Applicable

- 2 - August 2017



Impact	Environmental Protection Measures	Timing	Responsibility	Implementation Status #
	Excavated Materials	During Construction	Contractor	
	Segregation of materials to facilitate disposal / reuse.			✓
	Appropriate stockpile management.			✓
	Re-use of excavated material on or off site (where possible).			✓
	Special handling and disposal procedures in the event that contaminated materials are excavated.			N/A
	Construction Wastes	During Construction	Contractor	
	Segregation of materials to facilitate recycling/reuse (within designated area in appropriate containers/stockpiles).			<b>✓</b>
	Appropriate stockpile management.			✓
	Planning to reduce over ordering and waste generation.			✓
	<ul> <li>Recycling and re-use of materials where possible (e.g. metal, wood from formwork)</li> </ul>			<b>✓</b>
	For material which cannot be re-used/recycled, collection should be carried out by an approved waste contractor for landfill disposal.			<b>✓</b>
	Bentonite Slurries	During Construction	Contractor	
	Bentonite slurries should be reused as far as possible.			N/A
	Disposal in accordance with Practice Note For Professional Persons ProPECC PN 1/94.			N/A
	Chemical Wastes	During Construction	Contractor	
	Storage within locked, covered and bunded area.			Rem.
	• The storage area shall not be located adjacent to sensitive receivers e.g. drains.			<b>✓</b>
	Minimise waste production and recycle oils/solvents where possible.			✓
	<ul> <li>A spill response procedure shall be in place and absorption material available for minor spillages.</li> </ul>			✓
	Use appropriate and labelled containers.			✓

- 3 -

Notes (\*):

✓ - Compliance; Rem - Reminder; Obs - Observation; N/C - Non Compliance; N/A - Not Applicable



Impact	Environmental Protection Measures	Timing	Responsibility	Implementation Status #
	Educate site workers on site cleanliness/waste management procedures.			✓
	If chemical wastes are to be generated, the contractor must register with EPD as a chemical waste producer.			✓
	The chemical wastes shall be collected by a licensed chemical waste collector.			✓
	Municipal Wastes	During Construction	Contractor	
	Waste shall be stored within a temporary refuse collection facility, in appropriate containers prior to collection and disposal.			<b>✓</b>
	Regular, daily collections are required by an approved waste collector.			✓
Waste Management during Operation	Not required.	N/A	N/A	N/A
Ecology				T-
Ecology during Construction	Accurate Delineation of Works Area	During Construction	Contractor	
	Boundaries of proposed works areas shall be clearly identified and separated from external areas by a physical barrier to prevent encroachment of adjacent habitats.			<b>✓</b>
	• Individual trees which fall within the works areas but which work plans show do not require removal are to be retained and fenced off to maximise protection.			<b>✓</b>
	<u>Dust generation</u>	During Construction	Contractor	
	There are a number of measures which shall be taken as specified in the Air Pollution Control (Construction Dust) Regulation on 'Dust Control Requirements, including the following key measures to be applied during construction:			
	<ul> <li>vehicle washing facilities to be provided at every discernible or designated vehicle exit point;</li> </ul>			<b>✓</b>
	all temporary site access roads shall be sprayed with water to suppress dust as necessary;			<b>✓</b>
	all dusty materials should be sprayed with water immediately prior to any handling; and			✓

- 4 -

Notes (\*):

✓ - Compliance; Rem - Reminder; Obs - Observation; N/C - Non Compliance; N/A - Not Applicable

August 2017



Impact	Environmental Protection Measures	Timing	Responsibility	Implementation Status #
	• all debris should be covered entirely by impervious sheeting or stored in a sheltered debris collection area.			<b>✓</b>
	Surface Run-off	During Construction	Contractor	
	In general, mitigation measures shall be in accordance with ProPECC PN1/94 on 'Construction Site Drainage'. Key measures include:			
	Bund and cover stockpiles to avoid run-off;			✓
	Channel any run-off through a system of oil, grease and sediment / silt traps and reuse water on site where ever practical;			✓
	All vehicle maintenance to be undertaken within a bunded area; and			✓
	Maximise vegetation retention on-site to maximise absorption (minimise transport).			<b>✓</b>
Ecology during Operation	To conduct compensatory ecological planting as specified in the latest landscape plans approved by EPD (Clause 2.6 of the Environmental Permit refers).	During Construction and operation	Contractor (during construction) / LCSD* (during operation)  (Note: * The division of vegetation planting and maintenance responsibilities shall follow the guidelines stipulated in ETWB	N/A
Landscape and Visual			TCW No. 2/2004.)	
Landscape and Visual during	Preservation of Existing Vegetation	During Construction	Contractor	
Construction	Trees identified for retention within the project limit would be protected during the works			✓
	The tree transplanting and planting works shall be implemented by approved Landscape Contractors			<b>✓</b>



Impact	Environmental Protection Measures	Timing	Responsibility	Implementation Status #
	Temporary Works Areas	During Construction	Contractor	
	Where feasible the works areas would be screened using hoarding and existing vegetation would be retained where possible to reduce the landscape and visual impacts arising from the construction activity. The landscape of these works areas would be restored following the completion of the construction phase.			<b>✓</b>
	<u>Hoarding</u>	During Construction	Contractor	
	A hoarding would be erected where practicable in the most visually sensitive locations to screen the temporary construction works from the local VSRs.			✓
	Top Soils	During Construction	Contractor	
	The works will result in disturbance to extensive areas of topsoil. Topsoil worthy of retention should be stockpiled for use following completion of the civil engineering works. It should either be temporarily vegetated with hydroseeded grass or turned over on a regular basis.			N/A
	Protection of Important Landscape Features	During Construction	Contractor	N/A
	• Important features such as temples, Island House and kilns within the study area, although remote from the proposed works retained and adequately protected.			
Landscape and Visual during Operation	Not required.	N/A	N/A	N/A

- 6 -



# Appendix D Meteorological Data Extracted from Hong Kong Observatory

#### Daily Extract of Meteorological Observations , May 2017

			Но	ng Kong O	bserva	itory			King's Park	Waglan Is	land^
Day	Mean Pressure (hPa)	Air T Absolute Daily Max (deg. C)	Mean (deg. C)	Absolute Daily Min (deg. C)	Mean Dew Point (deg. C)	Mean Relative Humidity (%)	Mean Amount of Cloud (%)	Total Rainfall (mm)	Total Bright Sunshine (hours)	Prevailing Wind Direction (degrees)	Mean Wind Speed (km/h)
01	1012.6	29.5	25.0	22.6	21.4	81	58	0.0	7.5	***	***
02	1011.9	28.1	26.1	24.3	23.3	85	83	0.0	2.4	***	***
03	1011.4	31.3	27.5	25.6	24.0	82	79	Trace	3.9	***	***
04	1011.9	27.6	24.9	22.9	23.2	90	84	42.5	0.2	***	***
05	1013.7	29.8	26.1	23.4	22.4	81	59	0.0	5.4	***	***
06	1014.8	31.1	27.5	25.3	23.4	79	65	Trace	7.1	***	***
07	1014.6	27.7	25.6	24.8	23.0	86	82	1.8	2.5	***	***
08	1012.0	28.6	25.9	23.1	22.9	83	87	9.2	5.3	***	***
09	1012.4	29.3	25.9	22.6	22.3	81	77	10.8	6.8	***	***
10	1013.8	29.6	27.1	25.3	23.5	81	84	0.0	1.3	***	***
11	1013.8	31.6	27.5	25.7	23.9	81	77	0.0	6.4	***	***
12	1010.9	30.7	27.5	26.0	22.8	76	86	Trace	5.6	***	***
13	1010.2	26.6	25.8	24.5	22.1	80	85	4.7	0.0	***	***
14	1010.4	29.5	26.7	24.8	23.9	85	76	Trace	3.1	***	***
15	1008.7	27.0	25.5	24.6	24.3	94	86	38.5	0.1	***	***
16	1007.6	26.6	25.0	23.6	22.3	85	84	3.0	1.0	***	***
17	1009.7	29.9	26.0	23.8	21.5	77	76	0.0	9.0	***	***
18	1012.0	27.4	25.5	24.3	20.5	74	86	0.1	1.4	***	***
19	1011.0	26.0	24.6	23.7	21.0	80	88	0.7	0.1	***	***
20	1008.7	24.8	23.9	22.7	21.8	88	88	0.3	0.0	***	***
21	1007.7	24.9	23.9	23.0	22.2	90	88	4.4	0.1	***	***
22	1008.1	25.2	24.6	23.8	23.4	93	88	5.6	0.1	***	***
23	1007.8	28.5	26.1	24.6	24.9	93	86	4.1	4.8	***	***
24	1006.8	26.2	25.3	24.2	24.5	95	92	273.6	0.0	***	***
25	1008.7	28.5	25.5	23.9	21.6	79	84	0.0	3.4	***	***
26	1010.2	26.8	25.0	23.9	20.3	76	72	0.0	0.1	***	***
27	1010.0	30.4	26.1	24.0	18.6	65	56	Trace	7.5	***	***
28	1009.6	30.5	26.7	24.8	20.0	68	43	0.0	11.5	***	***
29	1009.9	30.3	26.6	24.9	21.4	74	48	0.0	10.5	***	***
30	1009.4	30.9	27.0	25.1	23.2	80	70	Trace	7.4	***	***
31	1006.6	31.3	28.2	25.6	24.1	79	69	0.0	11.5	***	***
Mean/Total	1010.5	28.6	26.0	24.2	22.5	82	77	399.3	126.0	***	***
Normal <sup>§</sup>	1009.3	28.4	25.9	24.1	22.6	83	76	304.7	140.4	080	19.7

<sup>\*\*\*</sup> unavailable

<sup>^</sup> Information of wind direction and wind speed for Waglan Island are based on automatic weather station data since January 1989

#### Daily Extract of Meteorological Observations , June 2017

			Но	ng Kong O	bserva	atory			King's Park	Waglan Is	land^
Day	Mean Pressure (hPa)	Air T Absolute Daily Max (deg. C)	Mean (deg. C)	Absolute Daily Min (deg. C)	Mean Dew Point (deg. C)	Mean Relative Humidity (%)	Mean Amount of Cloud (%)	Total Rainfall (mm)	Total Bright Sunshine (hours)	Prevailing Wind Direction (degrees)	Mean Wind Speed (km/h)
01	1003.2	30.6	29.1	27.8	26.0	83	88	Trace	1.3	***	***
02	1002.6	30.6	29.4	28.6	26.6	85	88	Trace	0.5	***	***
03	1002.7	32.5	30.0	28.5	26.6	83	84	0.0	6.2	***	***
04	1003.6	31.2	30.0	29.3	26.5	81	88	Trace	1.5	***	***
05	1006.2	33.5	30.3	28.8	26.3	80	67	Trace	5.2	***	***
06	1009.2	33.8	30.4	28.5	26.0	78	59	Trace	6.5	***	***
07	1010.0	34.0	30.0	27.2	26.0	80	50	4.3	10.3	***	***
08	1009.9	32.5	29.8	28.3	25.9	80	63	0.0	8.3	***	***
09	1009.2	31.9	29.5	28.1	25.8	81	81	1.1	7.8	***	***
10	1008.3	33.8	29.9	28.0	25.7	79	77	Trace	8.7	***	***
11	1007.0	34.1	29.8	28.1	25.6	78	47	Trace	8.7	***	***
12	1001.9	30.0	27.6	25.3	25.2	87	80	37.7	4.4	***	***
13	1006.2	28.9	26.4	24.3	25.1	93	91	219.4	0.0	***	***
14	1008.6	29.5	28.3	25.5	25.5	85	88	15.6	0.0	***	***
15	1007.6	31.1	29.2	26.8	25.7	81	88	14.5	3.0	***	***
16	1005.1	29.6	29.0	27.8	26.1	85	88	13.5	0.0	***	***
17	1003.7	28.4	25.5	24.4	24.8	96	93	138.0	0.0	***	***
18	1004.7	27.3	26.2	24.7	24.6	91	91	24.2	0.0	***	***
19	1005.3	28.3	26.2	25.3	24.8	92	86	32.6	0.3	***	***
20	1005.1	28.2	26.5	25.2	24.9	91	88	24.8	0.2	***	***
21	1005.3	29.2	27.4	25.2	25.5	90	89	95.9	0.4	***	***
22	1007.8	32.4	29.3	28.0	25.7	81	80	Trace	5.6	***	***
23	1007.7	31.6	28.9	27.5	25.8	84	80	10.5	5.2	***	***
24	1006.3	30.8	28.5	26.4	25.8	85	79	18.3	6.1	***	***
25	1006.9	31.5	29.2	26.8	25.1	79	81	4.2	8.4	***	***
26	1008.4	32.0	29.8	28.6	25.4	78	85	0.1	6.3	***	***
27	1009.5	31.5	29.5	28.6	25.5	79	83	1.3	5.1	***	***
28	1010.2	32.3	29.7	28.2	25.2	77	58	0.0	10.7	***	***
29	1009.7	32.8	29.6	27.9	25.4	78	62	0.0	8.8	***	***
30	1007.8	33.7	29.9	27.6	24.8	75	64	0.0	9.4	***	***
Mean/Total	1006.7	31.3	28.8	27.2	25.6	83	78	656.0	138.9	***	***
Normal <sup>5</sup>	1006.1	30.2	27.9	26.2	24.6	82	77	456.1	146.1	220	22.9

<sup>\*\*\*</sup> unavailable

Trace means rainfall less than 0.05 mm

§ 1981-2010 Climatological Normal, unless otherwise specified

<sup>^</sup> Information of wind direction and wind speed for Waglan Island are based on automatic weather station data since January 1989

#### Daily Extract of Meteorological Observations , July 2017

			Но	ng Kong O	)bserva	itory			King's Park Waglar		n Island^	
Day	Mean Pressure (hPa)	Absolute	Mean (deg. C)	Absolute Daily Min (deg. C)	Mean Dew Point (deg. C)	Mean Relative Humidity (%)	Mean Amount of Cloud (%)	Total Rainfall (mm)	Total Bright Sunshine (hours)	Prevailing Wind Direction (degrees)	Mean Wind Speed (km/h)	
01	1006.3	31.7	29.2	26.7	25.2	79	82	7.4	5.5	***	***	
02	1005.8	30.3	28.9	26.2	25.9	84	88	8.8	0.9	***	***	
03	1006.1	30.7	28.5	26.7	25.4	83	87	8.4	1.3	***	***	
04	1008.4	28.6	26.5	25.3	25.0	92	84	32.3	2.3	***	***	
05	1009.3	31.0	27.8	26.5	25.7	89	85	27.5	5.9	***	***	
06	1008.1	28.7	27.0	25.8	25.9	93	88	16.3	1.0	***	***	
07	1008.5	29.8	27.3	26.0	24.9	87	88	35.8	2.4	***	***	
08	1009.9	28.9	27.5	26.3	25.9	91	88	12.8	0.1	***	***	
09	1009.7	32.3	29.3	27.1	25.5	81	77	1.2	7.4	***	***	
10	1008.5	32.1	29.4	27.5	24.9	77	83	0.6	5.9	***	***	
11	1010.1	32.7	29.5	27.6	25.3	78	68	0.0	9.6	***	***	
12	1011.0	32.9	29.6	27.9	25.6	79	76	Trace	7.4	***	***	
13	1008.8	33.5	30.2	28.2	26.0	79	67	Trace	9.7	***	***	
14	1007.6	32.8	29.3	27.4	25.8	82	72	2.3	8.3	***	***	
15	1007.4	32.1	28.7	27.0	25.6	84	82	8.8	5.1	***	***	
16	1007.8	28.5	27.4	26.1	25.6	90	88	21.0	0.6	***	***	
17	1008.9	28.8	26.2	24.4	25.2	95	88	184.6	0.3	***	***	
18	1011.2	27.8	25.7	24.6	25.0	96	91	134.3	0.0	***	***	
19	1009.3	30.8	27.4	24.5	25.4	89	84	12.6	7.1	***	***	
20	1008.6	30.8	28.6	27.2	25.8	85	88	2.0	6.3	***	***	
21	1009.4	32.2	29.3	27.6	25.6	81	79	0.2	7.2	***	***	
22	1008.8	33.1	29.2	26.5	25.4	81	75	3.3	8.4	***	***	
23	1005.7	28.8	27.2	25.6	24.8	87	86	46.5	0.1	***	***	
24	1005.5	31.2	27.9	25.8	25.8	89	74	3.3	4.6	***	***	
25	1005.1	33.1	29.6	27.7	25.6	80	55	Trace	10.4	***	***	
26	1004.1	34.4	29.8	27.1	25.2	77	60	0.0	10.1	***	***	
27	1003.4	30.6	29.0	28.0	25.3	80	80	Trace	2.9	***	***	
28	1003.6	34.4	30.3	28.1	24.7	73	57	0.0	10.2	***	***	
29	999.9	33.8	30.8	28.8	25.2	72	69	0.0	7.3	***	***	
30	996.0	34.8	31.8	29.6	26.4	74	69	0.0	11.0	***	***	
31	997.9	32.4	30.7	29.8	26.7	79	83	0.0	3.6	***	***	
Mean/Total	1006.8	31.4	28.7	26.9	25.5	83	79	570.0	162.9	***	***	
Normal <sup>5</sup>	1005.7	31.4	28.8	26.8	25.1	81	69	376.5	212.0	230	21.3	

<sup>\*\*\*</sup> unavailable

Trace means rainfall less than 0.05 mm

- § 1981-2010 Climatological Normal, unless otherwise specified

<sup>^</sup> Information of wind direction and wind speed for Waglan Island are based on automatic weather station data since January 1989

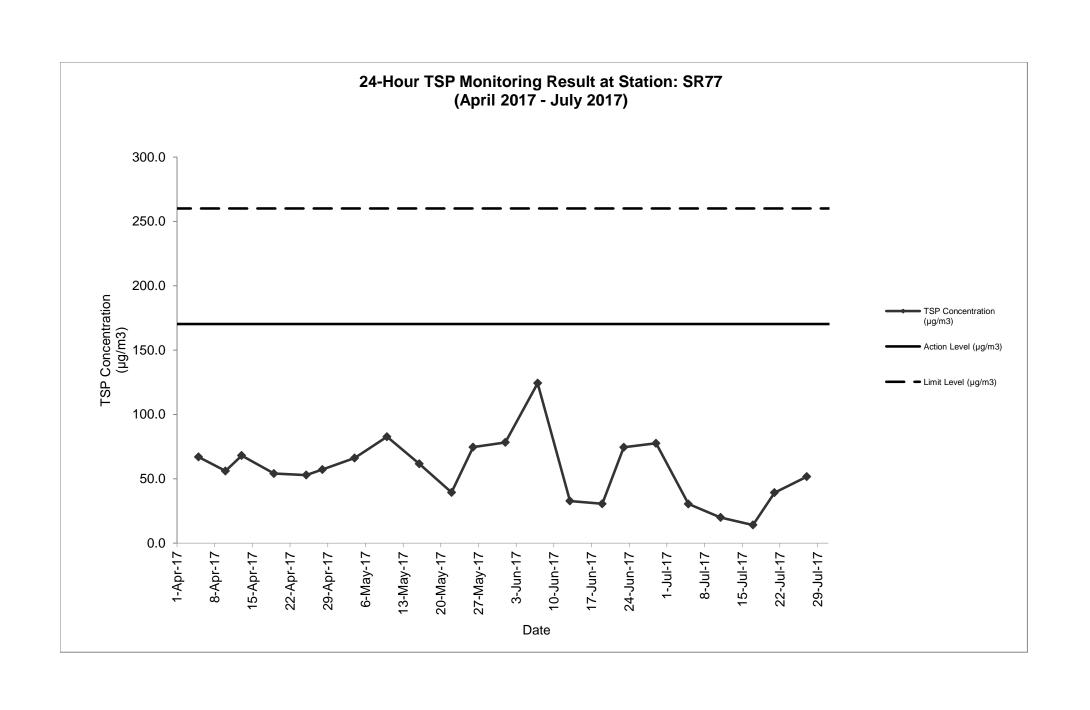


# Appendix E Environmental Monitoring Data for Air, Noise and Water Quality

#### 24-Hour TSP Monitoring Result at Station: SR77

Sampling Date	mpling Weather Condition Paper No.		· (g)	Elapse Time Flow Rate (CFM)			FM)	Flow Rate (m³/min)		Total Volume	TSP Concentratio	Action Level	Limit Level	Wind speed	Wind direction					
Dato	Gondida		Initial Wt.	Final Wt.	Wt. of Dust	Initial	Final	Sampling Hour	Initial	Final	Avg Flow Rate	Initial	Final	Avg Flow Rate	(m³)	(µg/m³)	(µg/m3)	(µg/m3)	m/s	direction
5-Apr-17	Fine	CC28	2.9007	3.0399	0.1392	6277.67	6301.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	66.9	170.3	260.0	<5	N
10-Apr-17	Cloudy	CC30	2.8960	3.0126	0.1166	6304.67	6328.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	56.1	170.3	260.0	<5	N
13-Apr-17	Fine	CC32	2.8663	3.0079	0.1416	6331.67	6355.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	68.1	170.3	260.0	<5	N
19-Apr-17	Sunny	CC34	2.8840	2.9965	0.1125	6358.67	6382.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	54.1	170.3	260.0	<5	N
25-Apr-17	Cloudy	CC36	2.8690	2.9790	0.1100	6385.67	6409.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	52.9	170.3	260.0	<5	N
28-Apr-17	Sunny	CC38	2.8575	2.9765	0.1190	6412.67	6436.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	57.2	170.3	260.0	<5	N
4-May-17	Rainy	CC40	2.8544	2.9920	0.1376	6439.67	6463.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	66.2	170.3	260.0	<5	N
10-May-17	Cloudy	CC42	2.8358	3.0078	0.1720	6466.67	6490.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	82.7	170.3	260.0	<5	N
16-May-17	Cloudy	CC44	2.8647	2.9930	0.1283	6493.67	6517.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	61.7	170.3	260.0	<5	N
22-May-17	Cloudy	CC46	2.8895	2.9715	0.0820	6520.67	6544.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	39.4	170.3	260.0	<5	N
26-May-17	Fine	CC48	2.8533	3.0084	0.1551	6547.67	6571.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	74.6	170.3	260.0	<5	N
1-Jun-17	Cloudy	CC50	2.8966	3.0594	0.1628	6574.67	6598.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	78.3	170.3	260.0	<5	N
7-Jun-17	Fine	CC52	2.8798	3.1383	0.2585	6601.67	6625.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	124.3	170.3	260.0	<5	N
13-Jun-17	Cloudy	CC54	2.8783	2.9464	0.0681	6628.67	6652.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	32.7	170.3	260.0	<5	N
19-Jun-17	Rainy	CC56	2.8614	2.9250	0.0636	6655.67	6679.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	30.6	170.3	260.0	<5	N
23-Jun-17	Fine	CC58	2.8628	3.0177	0.1549	6682.67	6706.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	74.5	170.3	260.0	<5	N
29-Jun-17	Fine	CC60	2.8487	3.0101	0.1614	6709.67	6733.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	77.6	170.3	260.0	<5	N
5-Jul-17	Cloudy	CC62	2.8226	2.8859	0.0633	6736.67	6760.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	30.4	170.3	260.0	<5	N
11-Jul-17	Cloudy	CC64	2.8430	2.8845	0.0415	6763.67	6787.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	20.0	170.3	260.0	<5	N
17-Jul-17	Rainy	CC66	2.8421	2.8715	0.0294	6790.67	6814.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	14.1	170.3	260.0	<5	N
21-Jul-17	Fine	CC68	2.8264	2.9080	0.0816	6817.67	6841.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	39.2	170.3	260.0	<5	N
27-Jul-17	Fine	CC70	2.8542	2.9617	0.1075	6844.67	6868.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	51.7	170.3	260.0	<5	N

Summary For the Re (May 2017 - July 201	
Average	56.1
Minimum	14.1
Maximum	124.3



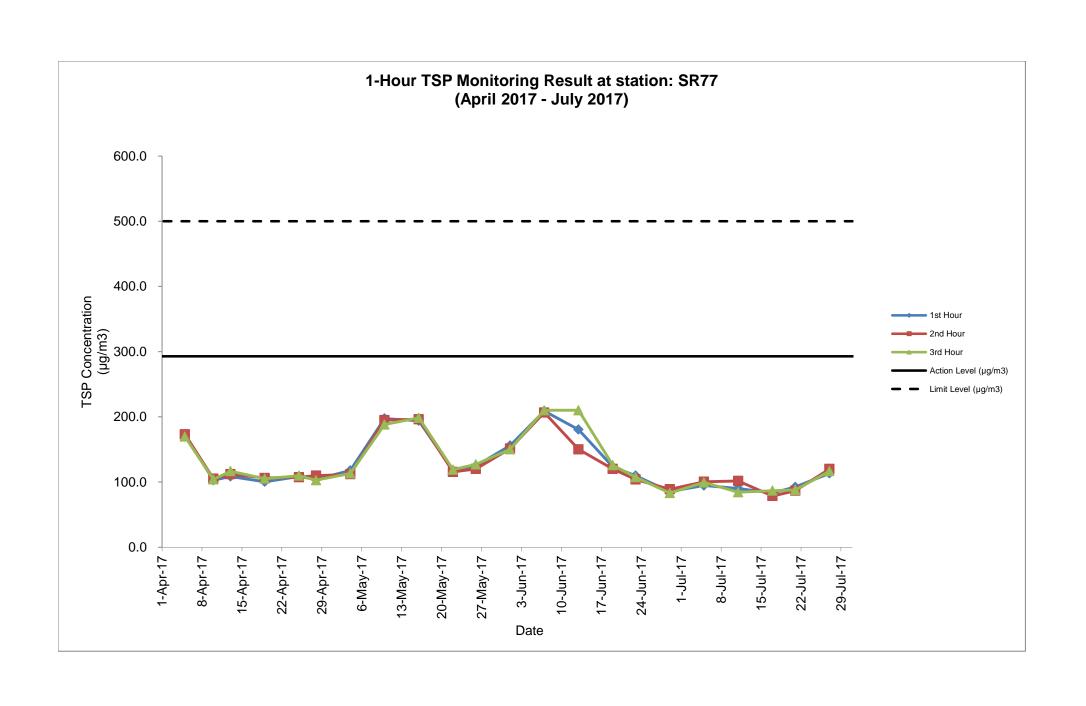
#### Appendix E Air Quality Monitoring Results and their Graphical Presentation

1-Hour TSP Monitoring Result at Station: SR77

1-110ui 13	Weather					Conc.(µg/m³)	1	Action Level	Limit Level
Date	Condition		Time		1 <sup>st</sup> Hour	2 <sup>nd</sup> Hour	3 <sup>rd</sup> Hour	(µg/m3)	(µg/m3)
5-Apr-17	Sunny	9:00	-	12:05	172.0	173.1	169.6	292.7	500.0
10-Apr-17	Fine	9:00	-	12:06	102.7	105.0	103.9	292.7	500.0
13-Apr-17	Cloudy	9:00	-	12:08	108.5	111.9	116.6	292.7	500.0
19-Apr-17	Sunny	9:00	-	12:08	100.4	106.2	105.0	292.7	500.0
25-Apr-17	Cloudy	9:00	-	12:08	108.5	107.3	109.6	292.7	500.0
28-Apr-17	Sunny	9:00	-	12:08	103.9	109.6	102.7	292.7	500.0
4-May-17	Rainy	9:00	-	12:06	117.7	111.9	113.1	292.7	500.0
10-May-17	Cloudy	9:00	-	12:08	197.3	195.0	188.1	292.7	500.0
16-May-17	Cloudy	9:00	-	12:09	193.9	196.2	198.5	292.7	500.0
22-May-17	Cloudy	9:00	-	12:07	117.7	115.4	118.9	292.7	500.0
26-May-17	Fine	9:00	-	12:09	124.6	120.0	126.9	292.7	500.0
1-Jun-17	Cloudy	9:00	-	12:06	155.8	151.2	150.0	292.7	500.0
7-Jun-17	Fine	9:00	-	12:08	208.9	206.6	210.0	292.7	500.0
13-Jun-17	Cloudy	9:00	-	12:07	180.4	150.0	210.0	292.7	500.0
19-Jun-17	Rainy	9:00	-	12:08	123.5	120.0	125.8	292.7	500.0
23-Jun-17	Fine	9:00	-	12:08	109.6	103.9	107.3	292.7	500.0
29-Jun-17	Fine	9:00	-	12:07	85.4	88.9	83.1	292.7	500.0
5-Jul-17	Cloudy	9:00	-	12:07	94.6	100.4	99.3	292.7	500.0
11-Jul-17	Cloudy	9:00	_	12:08	90.0	101.6	84.2	292.7	500.0
17-Jul-17	Rainy	9:00	-	12:08	83.1	78.5	86.6	292.7	500.0
21-Jul-17	Fine	9:00	-	12:07	92.3	86.6	87.7	292.7	500.0
27-Jul-17	Fine	9:00	-	12:08	113.1	120.0	116.6	292.7	500.0

Summary For the Reporting Quarter (May 2017 - July 2017)							
Average 130.0							
Minimum 78.5							
Maximum	210.0						

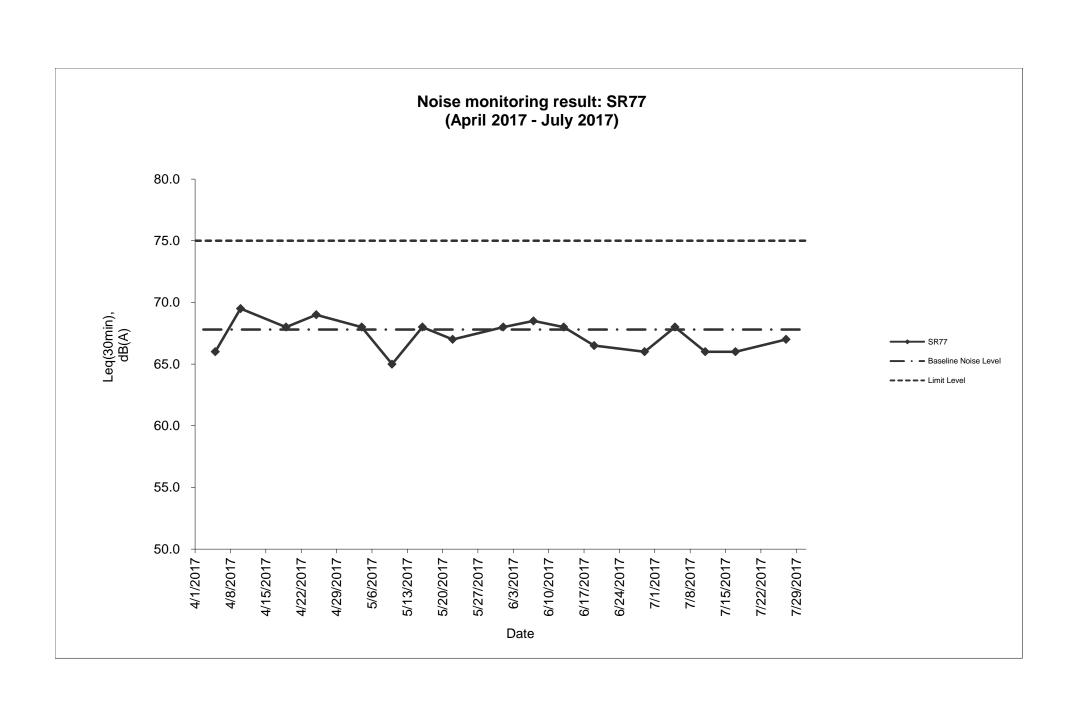
Note: No major dust source observed during the monitoring period



#### Noise Monitoring Result at SR77

Date	Weather	Start	End	Measure	ed Noise Level	(dB(A))*	Baseline Corrected	Baseline Noise Level	Limit Level	Exceedance
	Condition	Time	Time	L10(30min)	L90(30min)	Leq(30min)	Level, dB(A)**	(dB(A)), Leq(30min)	dB(A)	(Y / N)
2017/04/05	Sunny	11:30	12:00	93.5	58.0	66.0	-	67.8	75.0	N
2017/04/10	Fine	11:30	12:00	95.0	63.0	69.5	-	67.8	75.0	N
2017/04/19	Sunny	11:30	12:00	98.0	65.0	68.0	-	67.8	75.0	N
2017/04/25	Cloudy	11:30	12:00	89.0	59.0	69.0	-	67.8	75.0	N
2017/05/04	Rainy	11:30	12:00	88.0	66.5	68.0	-	67.8	75.0	N
2017/05/10	Cloudy	11:30	12:00	91.0	60.0	65.0	-	67.8	75.0	N
2017/05/16	Cloudy	11:30	12:00	93.0	61.5	68.0	-	67.8	75.0	N
2017/05/22	Cloudy	11:30	12:00	92.0	62.0	67.0	-	67.8	75.0	N
2017/06/01	Cloudy	11:30	12:00	95.0	59.5	68.0	1	67.8	75.0	N
2017/06/07	Fine	11:30	12:00	93.0	56.0	68.5	-	67.8	75.0	N
2017/06/13	Cloudy	11:30	12:00	97.0	62.5	68.0	1	67.8	75.0	N
2017/06/19	Rainy	11:30	12:00	93.5	58.0	66.5	1	67.8	75.0	N
2017/06/29	Fine	11:30	12:00	89.0	57.5	66.0	1	67.8	75.0	N
2017/07/05	Cloudy	11:30	12:00	89.0	57.0	68.0	1	67.8	75.0	N
2017/07/11	Cloudy	11:30	12:00	90.0	62.0	66.0	-	67.8	75.0	N
2017/07/17	Cloudy	11:30	12:00	93.0	60.0	66.0	-	67.8	75.0	N
2017/07/27	Fine	11:30	12:00	93.5	57.0	67.0	-	67.8	75.0	N

Summary For the Reporting Quarter (May 2017 - July 2017)						
Average	67.1					
Minimum 65.0						
Maximum	68.5					





### Appendix F Waste Flow Table

#### **Monthly Summary Waste Flow Table**

		Actual C	Quantities of Inc	ert C&D Materia	als Generated	Monthly		Actual	Quantities of	C&D Wastes	Generated M	lonthly
		Hard Rock							Paper/			
	Total	and Large		Soil Reused	Soil Reused				cardboard			General
	Quantity	Broken		in the	in other	Soil Disposed			packaging		Chemical	Refuse
Month	Generated	Concrete	Soil	Contract	Projects	as Public Fill	Imported Fill	Metals	(Note 3)	Plastics	Waste	(Note 2)
Unit	(in '000m <sup>3</sup> )	(in m <sup>3</sup> )	(in '000m <sup>3</sup> )									
May-17	0.497	0.005	0.492	0.120	1	0.372	0.050	0.767	ı	-	-	0.105
Jun-17	1.248	0.150	1.098	0.150	-	0.948	0.008	-	-	-	-	0.135
Jul-17	1.917	0.180	1.737	0.120	-	1.617	0.542	-	-	-	-	0.065
Total	3.662	0.335	3.327	0.390	-	2.937	0.600	0.767	-	-	-	0.305

Note:

- 1. Assume the density of soil fill is 2 ton/m<sup>3</sup>.
- 2. Assume the density of rock and broken concrete is 2.5 ton/m<sup>3</sup>.
- 3. Assume each truck of C&D wastes is 5m<sup>3</sup>.
- 4. The inert C&D materials except slurry and bentonite are disposed at Tuen Mun 38.
- 5. The slurry and bentonite are disposed at Tseung Kwun O 137.
- 6. The non-inert C&D wastes are disposed at NENT.
- 7. Assume the density of metal is 7,850 kg/m<sup>3</sup>.



# Appendix G Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions



#### **Cumulative Complaint Log**

Complaint Log No.	Date of Complaint	Received From and Received By	Location of Complainant	Nature of Complaint	Outcome	Status
C131126	26, November, 2013	Mr. Tony Hung from WWF	Mat Wat River (works sites for box culvert extension)	Suspected unauthorised discharge of water from a construction site to Ma Wat River, Tai Wo Service Road East, Tai Po	It was found that the water leaving the end of the steel pipes was the diverted water from the upstream of the existing box culverts, instead of being discharged from the construction works sites.  An EM&A Programme is being undertaken to monitoring the environmental performance of the construction works, and the Contractor has also implemented appropriate mitigation measures to avoid silt-laden runoff discharging from the works sites into the river.  The complaint is considered an invalid complaint under this Project.	Completed



Complaint Log No.	Date of Complaint	Received From and Received By	Location of Complainant	Nature of Complaint	Outcome	Status
C141120	20 November, 2014	EPD	Ng Tung River and Ma Wat River nearby the site of the Liantang/ Heung Yuen Wai BCP Project (Contract Number CV/2012/09)	At Bridge NF426 in Fanling, the whole Ng Tung River showed milky and suspected illegal discharge by nearby factory has undertaken. (粉嶺近天橋編號 NF426 梧桐河整條河河水呈奶白色懷疑附近有工廠非法排放污水)	Water Supplies Department (WSD) conducted a washout procedure on 20 November 2014 at about 9:30am to flush the newly installed water pipe of diameter of 1400mm which has recently finished disinfection. It is understood that the procedure has lasted for about 1 hour and large amount of freshwater has been discharged into the Ma Wat River through a washout port.  Although water was observed seeping from the gantry switch and flew into the works sites, the area is a sump pit and the water was unlikely to run off and entered the river directly. As such, it is anticipated that only freshwater has been discharged into Ma Wat River through the washout port.  Both site inspections conducted by the ET before the complaint (19 November 2014), and after the complaint (24 November 2014) did not identify any deficiencies on environmental mitigation measures. Also, there were no rains during the period and the risk of construction site run-off is considered minimal.	Completed

- 2 -



Complaint Log No.	Date of Complaint	Received From and Received By	Location of Complainant	Nature of Complaint	Outcome	Status
					The water from the Ma Wat Channel adjoins the Ng Tung River before passing through the complaint location, so other pollution sources may also occur at upstream of Ng Tung River	
					The complaint is considered unlikely due to the construction works of this project.	