

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

Quarterly EM&A Report

February 2016 to April 2016

#### 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

(February 2016 to April 2016)

Certified by:	Fredrick Leong
Position:	Environmental Team Leader
Date:	10 June 2016



Our ref EC/ST/bw/pl/T329380/22.05/L-0123

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Your ref

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

Dear Sir,

10 June 2016 By Fax (2805 5028) & Post

Attn: Mr. James Penny

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/D
Quarterly EM&A Summary Report for February 2016 to April 2016 for the portion of Stage 2 works

Quarterly EM&A Summary Report for February 2016 to April 2016 for the portion of Stage 2 works entrusted to CEDD under Contract No. CV/2012/09

We refer to the revised Quarterly EM&A Summary Report for February 2016 to April 2016 for the Project received on 8 June 2016 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. HyD – Mr. Chung Lok Chin (Fax: 2714 5198)

CEDD/BCP - Mr. Desmond Lam (Fax: 3547 1659)

AECOM - Mr. Alan Lee (Fax: 3922 9797)

Meinhardt Infrastructure and Environment Limited - Mr. Fredrick Leong (Fax: 2540 1580)



Date	Revision	Prepared By	Checked By	Approved By
10 June 2016	0	Ivan TING Cindy KWOK	Fredrick LEONG	Helen CØGHRANE
		forth	Wh.	1h



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#### **EXECUTIVE SUMMARY**

This report documents the findings of EM&A works conducted in the quarter between 1 February 2016 and 30 April 2016.

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, a total of 3 exceedance events were recorded. Investigation for the exceedances have been conducted and none of the exceedances was considered project related. 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 were 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. Due to the loading requirement of a fresh water main under the box culvert, installation of the base slab at Box Culvert ID4 originally scheduled from 19 February 2016. However, the mentioned works were subsequently cancelled and postponed to the next dry season in late 2016 after the utilities diversions complete.

The construction works at the box culvert ID4 are temporarily suspended until the utilities diversion works complete. The 4-week post construction water quality monitoring will be commenced after the installation of the base slab finishes, hence the completion of the box culvert works.

Impact monitoring for water quality was only carried out on 19 February 2016 and 22 February 2016 in the reporting quarter and is anticipated to be resumed in the next dry season during the course of remaining box culvert works.



#### 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 current VEP (EP-324/2008/D) was granted on 27 August 2015.
- 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 guarter are summarized below:

- 1 -

- Decking Construction for Bridge E;
- Cable Detection and Trial Trenches;
- E & M Work for New Valve Control & Telemetry House;
- Filling Works at Tong Hang East;
- FRP Lining on Existing Water Main;
- Storm Drains Laying;
- Noise Barrier Construction;
- Pier / Pier Table Construction;
- Pile Cap Works:
- Portal Beam Construction;



- Pre-drilling;
- Retaining Wall Construction;
- Road Works at Fanling Highway;
- Sewer Works;
- Tree Felling Works;
- Utilities Duct Laying;
- Viaduct Segment Erection;
- Slope Works; and
- Water Main Connection Works.

#### 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 MacDonal d	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	Vo Contractor Environment		Mr. Victor Huang	2638 6181	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 February 2016 and 30 April 2016.

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#### 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, Noise and Water Quality 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
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
	•	Water Qu	ality	
Depth				Three occasions per week
Temperature	°C			Three occasions per week
Salinity	ppt			Three occasions per week
рН				Three occasions per week
DO	mg/L	6.7	4mg/L or 40% saturation at 15 degree Celsius	Three occasions per week
DO Saturation	%			Three occasions per week
Turbidity	NTU	81.9NTU or 120% of upstream control station's Tby of the same day	91.9NTU or 130% of upstream control station's Tby of the same day	Three occasions per week
SS	mg/L	42.6 mg/L or 120% of upstream control station's SS of the same day	46.8 mg/L or 130% of upstream station's SS of the same day and specific sensitive receiver water quality requirements	Three occasions per week

Temporary Suspension of Box Culvert Works and Water Quality Monitoring

- 2.1.2 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. Due to the loading requirement of a fresh water main under the box culvert, installation of the base slab at Box Culvert ID4 originally scheduled from 19 February 2016. However, the mentioned works were subsequently cancelled and postponed to the next dry season in late 2016 after the utilities diversions complete.
- 2.1.3 The construction works at the box culvert ID4 are temporarily suspended until the utilities diversion works complete. The 4-week post construction water quality

- 3 -



- monitoring will be commenced after the installation of the base slab finishes, hence the completion of the box culvert works.
- 2.1.4 Impact monitoring for water quality was only carried out on 19 February 2016 and 22 February 2016 in the reporting quarter and is anticipated to be resumed in the next dry season during the course of remaining box culvert works.

#### 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 Sus	pended Particulate							
SR77									
	24 hour Total Sus	spended Particulate	, , ,						
SR77	22.8μg/m <sup>3</sup>	153.6μg/m <sup>3</sup>	83.8μg/m <sup>3</sup>						
	Construc	ction Noise							
SR77	60.0dB(A)	68.5dB(A)	62.9dB(A)						
	Water	Quality							
	I	00							
15	4.3mg/L	5.4mg/L	4.9mg/L						
C3a	5.2mg/L	7.6mg/L	6.4mg/L						
C3b	8.6mg/L	9.2mg/L	8.9mg/L						
	Tur	bidity							
15	4.9NTU	17.7NTU	11.3NTU						
C3a	4.1NTU	11.1NTU	7.6NTU						
C3b	4.8NTU	46.9NTU	25.9NTU						
	,	SS							
15	3.2mg/L	3.7mg/L	3.4mg/L						
C3a	10.0mg/L	19.0mg/L	14.5mg/L						
C3b	5.1mg/L	27.5mg/L	16.3mg/L						

#### 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**.

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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	tion Noise							
Leg 30min	Action Level	0	0						
Leq 30mm	Limit Level	0	0						
	Water	Quality							
DO	Action Level	2	0						
ВО	Limit Level	0	0						
Turbidity	Action Level	0	0						
Turbidity	Limit Level	1	0						
SS	Action Level	0	0						
33	Limit Level	0	0						

- 3.2.2 Investigation for the exceedance events have been conducted accordingly. No box culvert works have been conducted during the water quality monitoring. As such, the exceedances were not considered project related. The water quality monitoring has been suspended as the box culvert works has been subsequently postponed to the next dry season in late 2016.
- 3.2.3 The Contractor has been reminded to strengthen the mitigation measures including:
  - Water treatment facilities should be properly maintained and avoid untreated water entering storm drain;
  - Proper drainage channels/bunds should be provided at the site boundaries to collect/intercept the surface run-off from works areas;
  - Water spraying or covering of tarpaulin should be properly implemented whenever necessary for the unpaved roads, access roads and construction areas;
  - All vehicles should be washed to remove any dusty materials before leaving the construction site; and
  - Vessels and equipment operating should be checked regularly and properly maintained.

#### 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 3,849m³ of excavated material has been generated. 2,697m³ of inert C&D materials was disposed of at public fill to Tuen Mun Area 38, while 38m³ of inert C&D materials was reused on site. 335m³ of general refuse was disposed of at North East New Territories (NENT) Landfill. 1m³ of plastics and no paper/cardboard packaging were collected by recycling contractor in the

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reporting quarter. No metals were collected by recycling contractor in the reporting quarter. No chemical waste were 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**.

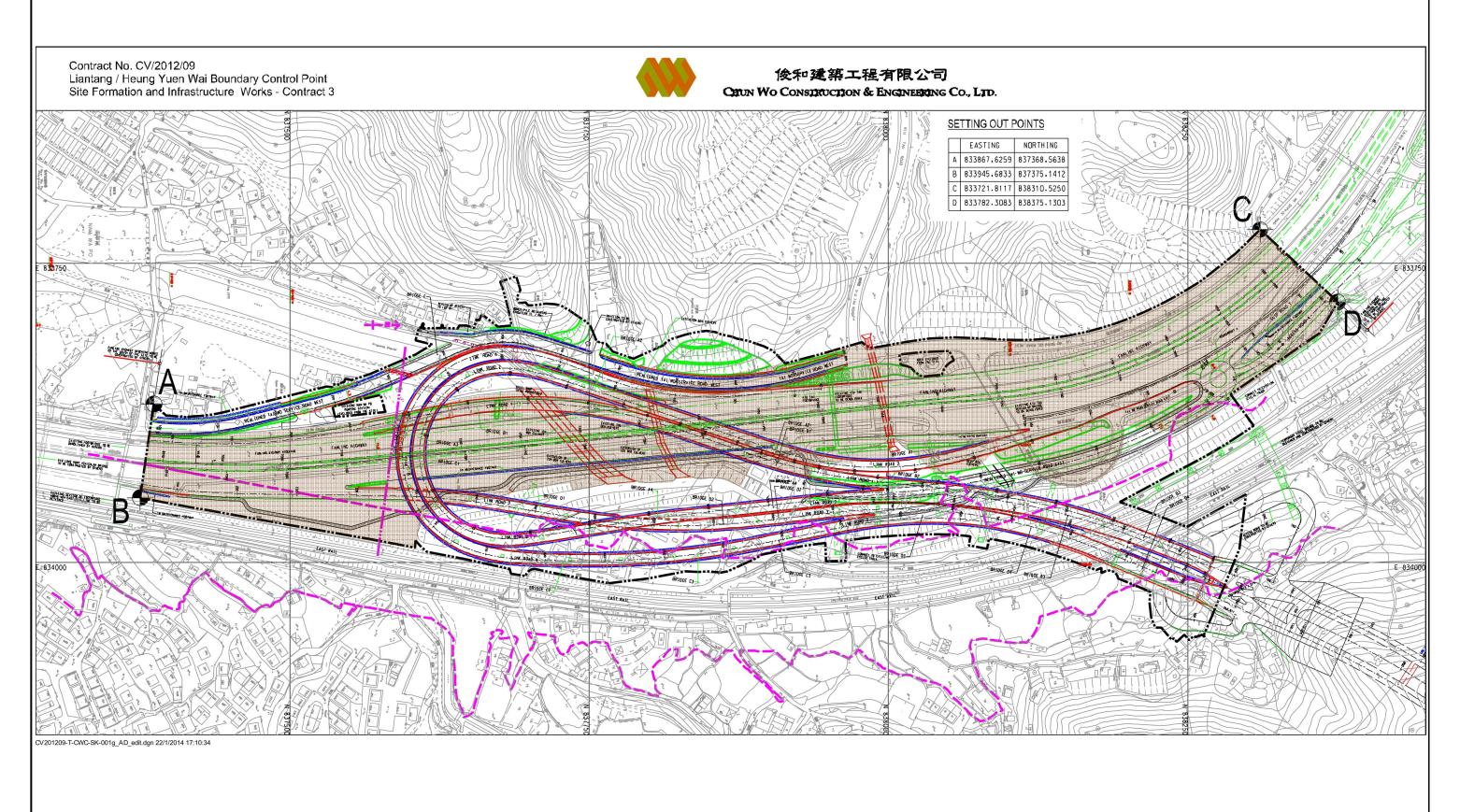
#### 6 CONCLUSION, COMMENTS AND RECOMMENDATIONS

- 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 guarter.
- 6.1.2 In the reporting quarter, a total of 3 exceedance events have been 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 were received in the reporting quarter.
- 6.1.4 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. Due to the loading requirement of a fresh water main under the box culvert, installation of the base slab at Box Culvert ID4 originally scheduled from 19 February 2016. However, the mentioned works were subsequently cancelled and postponed to the next dry season in late 2016 after the utilities diversions complete.
- 6.1.5 The construction works at the box culvert ID4 are temporarily suspended until the utilities diversion works complete. The 4-week post construction water quality monitoring will be commenced after the installation of the base slab finishes, hence the completion of the box culvert works.

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### **Figure**



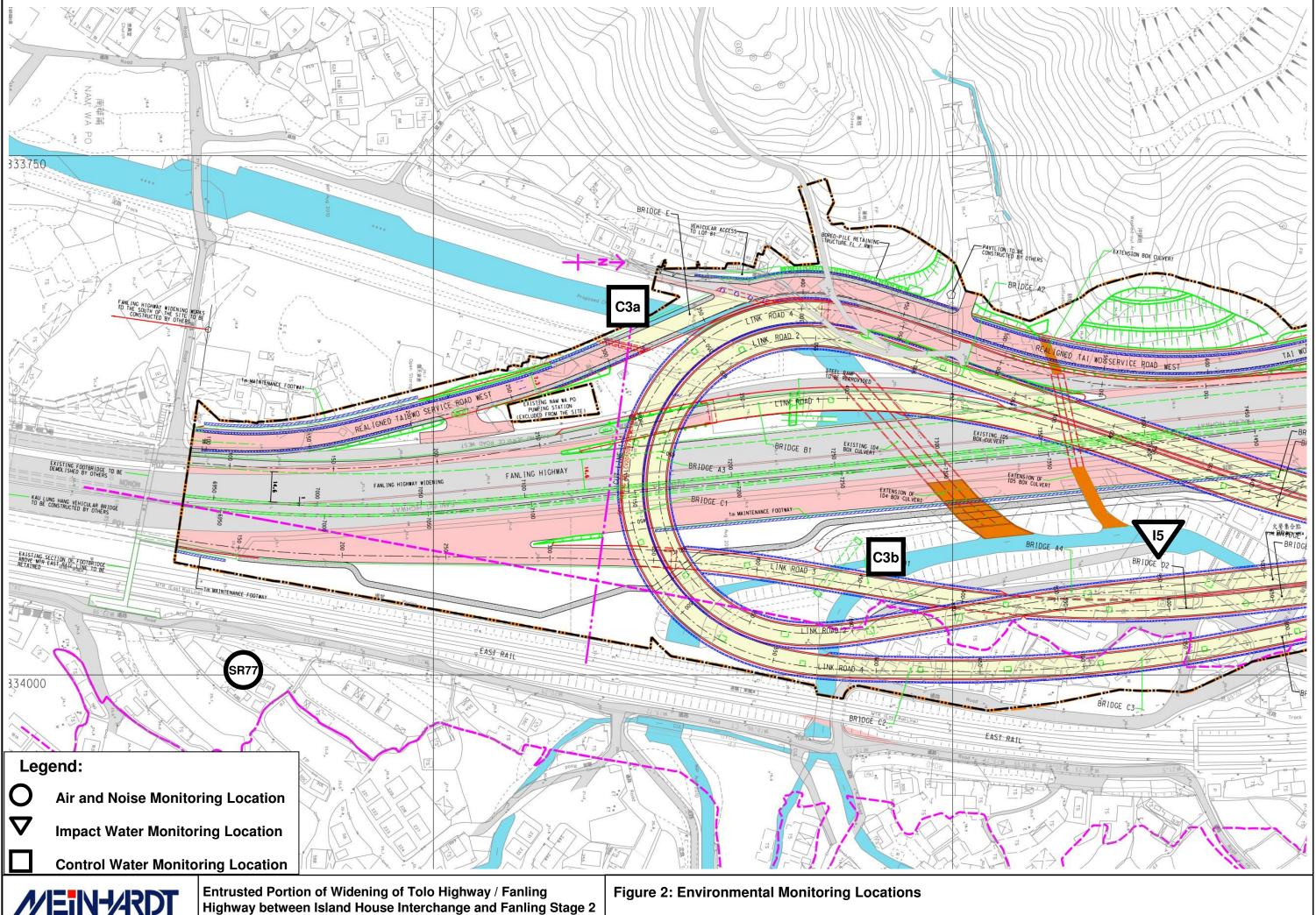
#### Legend:

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

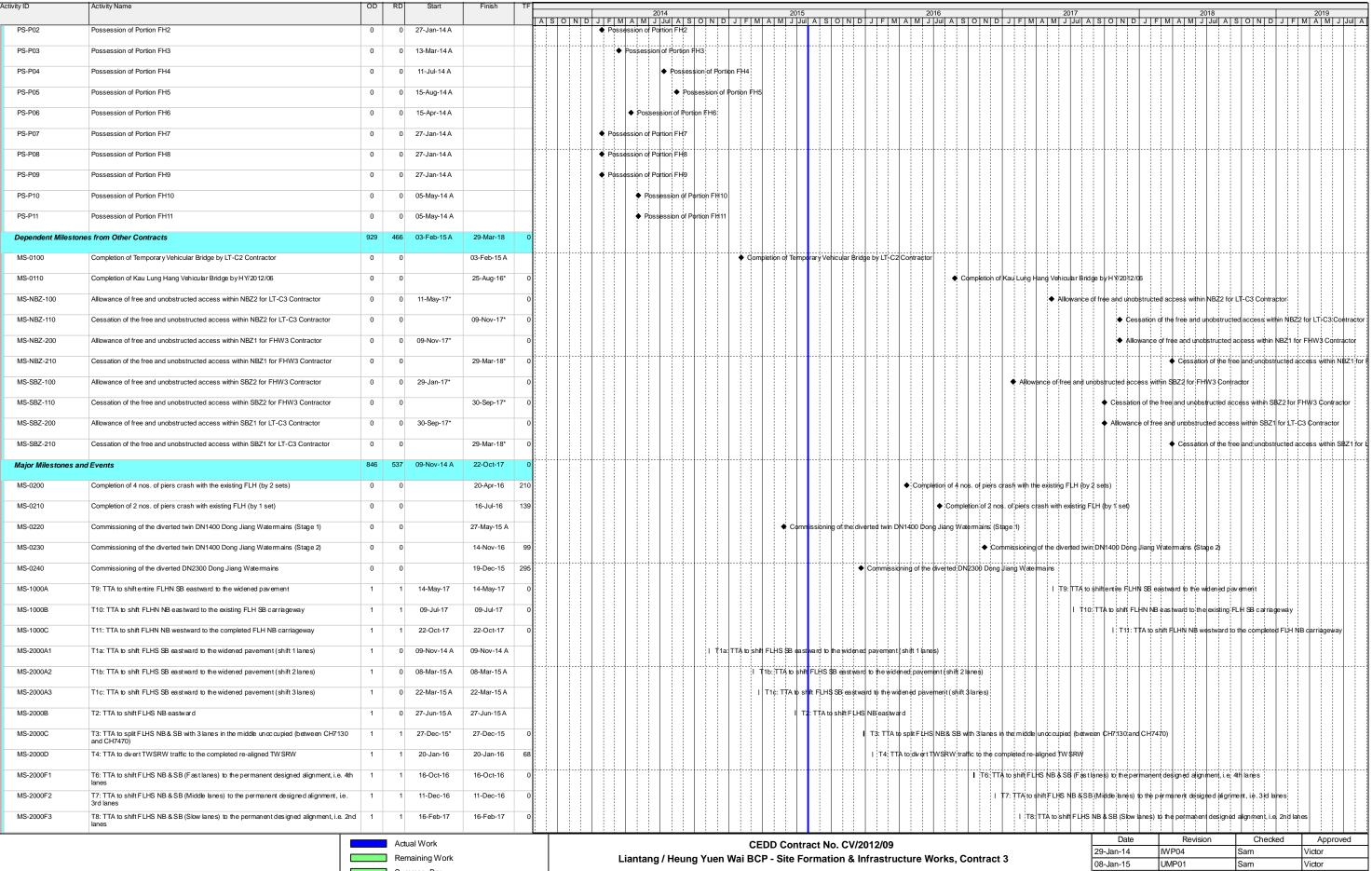
ctivity ID	Activity Name	OD	RD Start	Finish T	TALSIO		LIFIMIA	2014	I S I O I N I I		20		OLNIE			2016			2017	CLOINI			2018	SIGINIT		2019
Updated Master Pro	ogramme (Revision 3B) Data Date: 1 Aug 2015	1786 1	199 31-Jul-13 A	31-Aug-19	0 4 5 0	DINIDI	J F M A	M J Jul A	SONI	DJF	M A M J	Jul A S	ONL	DJF	MAM	J Jul A S	SOND	J F M A I	/ J Jul A	SONL	JJF	MAM	J Jul A	SOND	JIFIMI	A M J Jul
Key Dates (Contract	tual)	1786 1	123 31-Jul-13 A	31-Aug-19	0																					
KD-0010	Commencement of Works	0	0 31-Jul-13 A		Commen	ncement of	f Works																			
KD-0020	Completion of Contract CV/2012/09	0	0	31-Aug-19*	0																					
KD-0100	KD1: Section 1A - al HyD's entrus tment works in Zone3 and SBZ2 excluding Landscape Softworks and Establishment Works	0	0	30-Jan-18*	0																♦ KI	O1: Section 1	1A all HyD's	s entrustmen	tworks in Zo	ne3andSBZ2
KD-0200	KD2: Section 1B - all HyD's entrustment works in NBZ1 excluding Landscape Softworks and Establishment Works	0	0	31-Aug-18*	0				<del>   </del>								1						•	KD2: Sectio	n 1B - all Hyt	's entrustment
KD-0300	KD3: Section 2 - the remainder of the Works	0	0	30-Jan-18*	0																♦ ĸ	J3: Section :	2 - the remai	inder of the W	/orks	
KD-0400	KD4: Section 3 - Remainder of Landscape Softworks not included in Section 3A	0	0	29-Jan-18*	0																♦ KI	J4: Section :	3 - Remainde	er of Landsca	ape Softwork	s not included in
KD-0500	KD4A: Section 3A - Landscape Softworks in NBZ1	0	0	31-Aug-18*	0																		•	KD4A: Secti	on 3A - Land	scape Softwork
KD-0600	KD5: Section 4 - Establishment Works for Landscape Softworks under Section 3	0	0	29-Jan-19*	0																				◆ KD5:	Section 4 - Esta
KD-0700	KD5A: Section 4A - Establishment Works for Landscape Softworks under Section 3A	0	0	31-Aug-19*	0				<del>    -</del>																	
KD-0800	KD6: Section 5 - Preservation and Protection of Trees	0	0	31-Aug-18*	0																		•	KD6: Sectio	n 5 - Preserv	ation and Prote
KD-0900	KD6A: Section 6 - All works in Portion FH9 of the Site but excluding works on the deck surfaces	0	0	27-Apr-17*	0														KD6A Section	6 - All works	in Portion	FH9 of the	Site but exclu	uding works c	n the decks	urfaces
KD-1000	KD6B: Section 7 - All specified geotechnical fieldworks and all associated lab tests	0	0	03-Jul-14 A				♦ KD6E	B: Section 7 - A	All specified	geotechnical	fieldworks a	ndallasiso	so dia te d l	abtests											
KD-1100	KD7: Stage 1A - Completion of the Realigned Tai Wo Service Road West for diversion of vehicular traffic	0	0	18-Jan-16*	0									♦ KI	07: Stage 1A	Completion	of the Realig	ned Tai Wo Servic	e Road West f	or diversion (	of vehicula	ır traffic				
KD-1200	KD9: Stage 1C - Completion of viaduct structures and associated civil provisions for TCSS and allow access for other	0	0	19-May-17*	0				+						<del>   </del>			<del>    -</del>	♦ KD9: Stage	1C - Comple	etion of viar	duct structur	res and asso	ociated civil p	rovisions for	TCSS and allow
KD-1300	kD10: Stage S4 - Completion of road widening of Fanling Highway within SBZ2 and allow access for HY/2012/06	0	0	29-Nov-16*	0												<b>♦</b> F	(D10; Stage S4 - C	completion of re	oad widening	of Fanling	ı Highway wi	ithin SBZ2 ar	nd allow acce	ss for HY/20	12/06
KD-1400	KD11: Stage N4 - Completion of road widening of Fanling Highway within NBZ1 and allow access for HY/2012/06	0	0	11-Sep-17*	0															♦ KD11: Sta	age N4 - Co	ompletion of	road widenii	ng of Fanling	Highway with	nin NBZ1 and al
KD-1500	KD13: Stage N4A - Connection of Access Road A and Slip Road Y at Entrustment Boundary CD	0	0	31-Oct-15*	0								♦ KD1	13: Stage	N4A - Conne	ction of Acce	ess Road A a	ind Slip Road Y at	Entrustment Bo	oundaryCD						
KD-1600	KD14: Stage N4B - Commissioning of Roundabout A by connecting to Slip Rd Y, Access Rd A & the realigned TWSRE	i 0	0	01-Jun-16*	0										•	KD14: Stag	e N4B - Com	nmissioning of Rou	ndabout A by c	onnecting to	Slip Rd Y	Access Rd	A & the reali	gned TWSRE	£ .	
Key Dates (Forecas	<u> </u>	1475 1	123 03-Jul-14 A	31-Aug-19	0																					
KD-0105	KD1: Section 1A - a1 HyD's entrustment works in Zone3 and SBZ2 excluding Landscape Softworks and Establishment Works	0	0	30-Jan-18	0																<b>♦</b> K	J1: Section '	1A al HyDs	s entrustmen	tworks in Zo	ne3 and SBZ2
KD-0205	KD2: Section 1B - all HyD's entrustment works in NBZ1 excluding Landscape Softworks and Establishment Works	0	0	31-Aug-18	0																		•	KD2: Section	n 1B - all Hy[	s entrustment
KD-0305	KD3: Section 2 - the remainder of the Works	0	0	30-Jan-18	0																♦ KI	D3: Section 2	2 - the remai	inder of the W	/orks	
KD-0405	KD4: Section 3 - Remainder of Landscape Softworks not included in Section 3A	0	0	29-Jan-18	0																♦ KI	D4: Section :	3 - Remainde	er of Landsca	ape Softwork	s not included in
KD-0505	KD4A: Section 3A - Landscape Softworks in NBZ1	0	0	31-Aug-18	0				<del>    -</del>														•	KD4A: Secti	on 3A - Land	scape Softwork
KD-0605	KD5: Section 4 - Establishment Works for Landscape Softworks under Section 3	0	0	29-Jan-19	0																				◆ KD5:	Section 4 - Esta
KD-0705	KD5A: Section 4A - Establishment Works for Landscape Softworks under Section 3A	0	0	31-Aug-19	0																					
KD-0805	KD6: Section 5 - Preservation and Protection of Trees	0	0	31-Aug-18	0																		•	KD6: Sectio	n 5 - Preserv	ation and Prote
KD-0905	KD6A: Section 6 - All works in Portion FH9 of the Site but excluding works on the deck surfaces	0	0	27-Apr-17	0													•	KD6A Section	6 - All works	in Portion	FH9 of the	Site but exclu	uding works c	n the decks	urfaces
KD-1005	KD6B: Section 7 - All specified geotechnical fieldworks and all as sociated lab tests	0	0	03-Jul-14 A				♦ KD6E	B: Section 7 - A	All specified	geoterchnicali	fieldworks a	ndallasso	sociated I	ab tests		1	<del>     -</del>								
KD-1105	KD7: Stage 1A - Completion of the Realigned Tai Wo Service Road West for diversion of vehicular traffic	0	0	19-Jan-16 -	-1									♦ KI	D7: Stage 1A	Completion	of the Realig	ned Tai Wo Servic	e Road West f	or diversion	of vehicula	ar traffic				
KD-1205	KD9: Stage 1C - Completion of viaduct structures and associated civil provisions for TCSS and allow access for other	0	0	19-May-17	0														♦ KD9: Stage	1C - Comple	ation of viac	duct structur	res and asso	ociated civil p	rovisions for	TC\$S and allow
KD-1305	KD10: Stage S4 - Completion of road widening of Fanling Highway within SBZ2 and allow access for HY/2012/06	0	0	29-Nov-16	0												<b>♦</b> F	(D10 Stage S4 - C	ompletion of it	oad widening	ı of Fahling	ı Highway wi	thin SBZ2 ar	nd allow acce	ss for HY/20	12/06
KD-1405	KD11: Stage N4 - Completion of road widening of Fanling Highway within NBZ1 and allow access for HY/2012/06	0	0	11-Sep-17	0															♦ KD11: Sta	age N4 - Cr	ompletion of	road widenir	ng of Fanling	Highway with	nin NBZ1 and al
KD-1505	KD13: Stage N41A- Connection of Access Road A and Slip Road Y at Entrustment Boundary CD	0	0	31-Oct-15	0				<del> </del>				♦ KD1	13: Stage	N4A - Conne	ction of Acce	ss Road A a	ind Slip Road Y at	Entrustment Br	oundary CD						
KD-1605	KD14: Stage N4B - Commissioning of Roundabout A by connecting to Slip Rd Y, Access Rd A & the realigned TWSRE	1 0	0	01-Jun-16	0										•	KD14: Stag	e N4B - Com	nmissioning of Rou	ndabout A by c	onnecting to	Slip Rd Y	Access Rd	A & the reali	gned TWSRE	=	
Possession of Site		386	0 31-Jul-13 A	15-Aug-14 A																						
PS-P01	Possession of Portion FH1, NBZ1, SBZ2 and ZONE3	0	0 31-Jul-13 A		Possess	sion of Part	tion FH1, NB	Z1, SBZ2 and Z0	ONE3																	
			Actual Work			1 1	1 1 1	1 1 1 1	<u> </u>		EDD Con	tract N	o CV/	2012/	<u> </u>	1 1 1	1 1 1			Date	e	Revis	sion	Chec	ked	Approved
			Remaining Work				Lia	ntang / He	ung Yuen							Works, (	Contract	: 3	_	29-Jan-14 08-Jan-15		IWP04 UMP01		Sam Sam		rictor rictor
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Updated Master Works Programme (Revision 3B) Programme ID: UMP03B (Data Date: 01-Aug-15) \_\_\_\_ Print Date: 23-Oct-15 Page 1 of 30

Date	Revision	Crieckeu	Approved
29-Jan-14	IWP04	Sam	Victor
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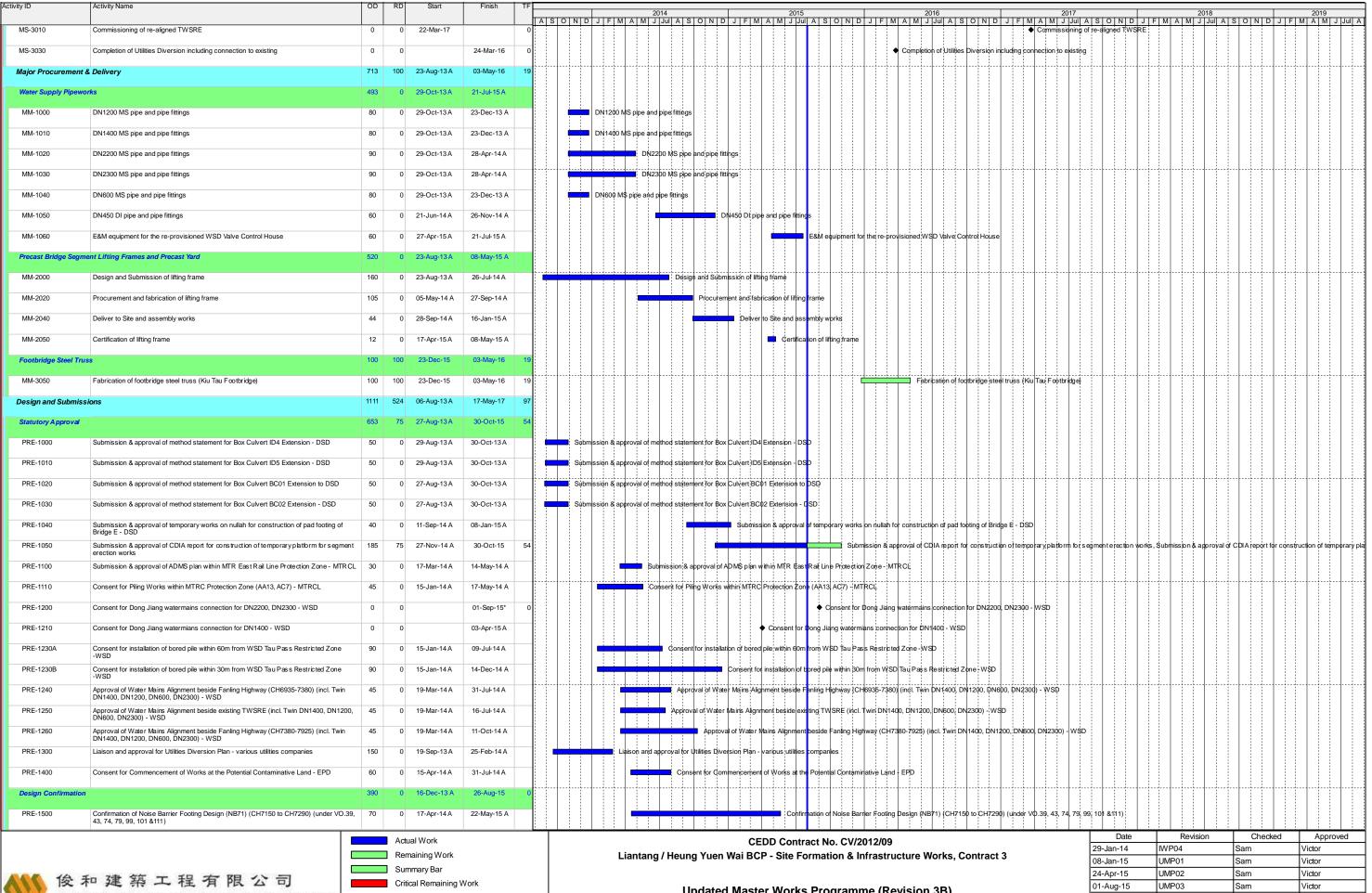


Activity Name



**Updated Master Works Programme (Revision 3B)** Programme ID: UMP03B (Data Date: 01-Aug-15) \_\_\_\_ Print Date: 23-Oct-15 Page 2 of 30

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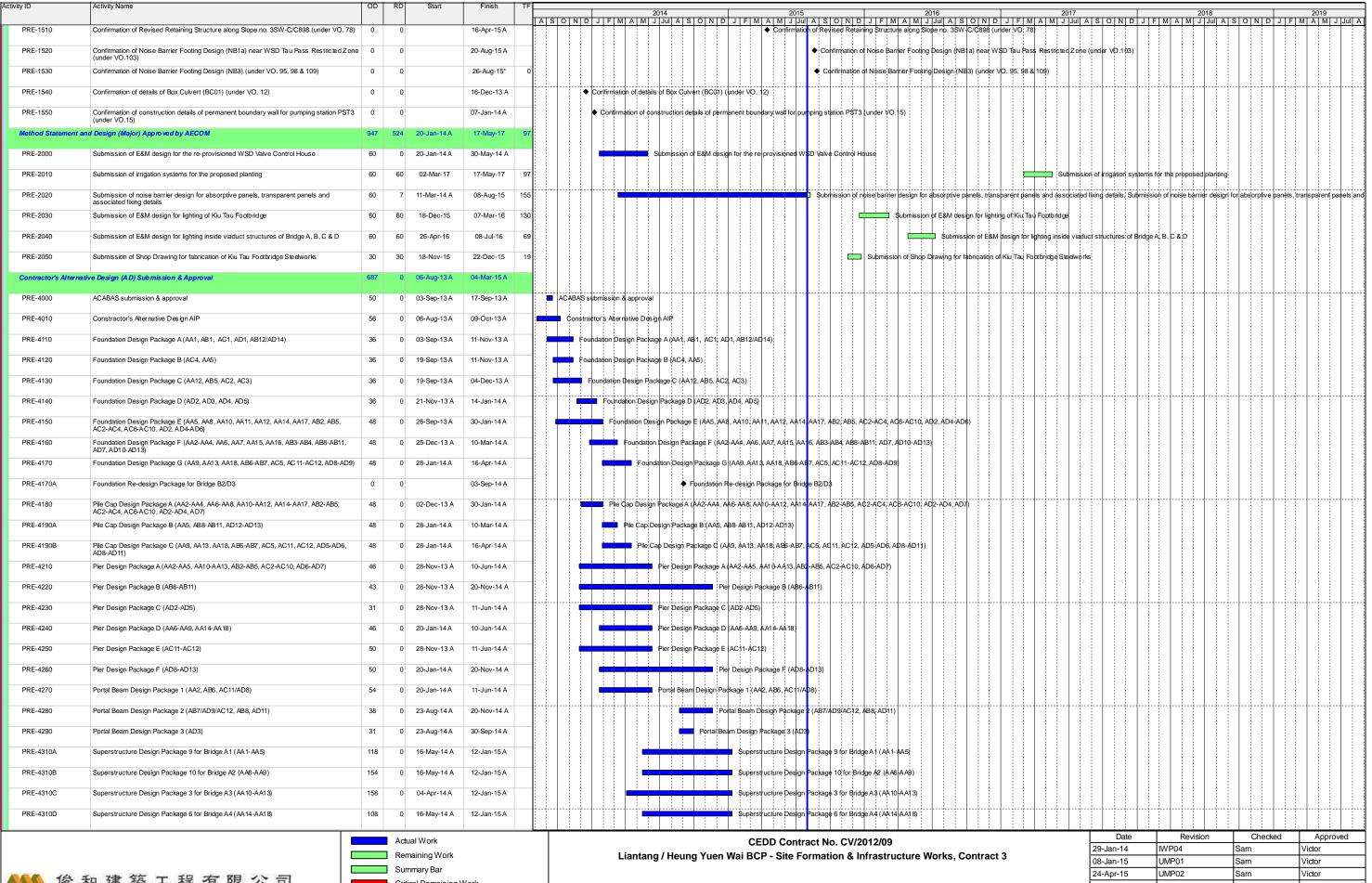


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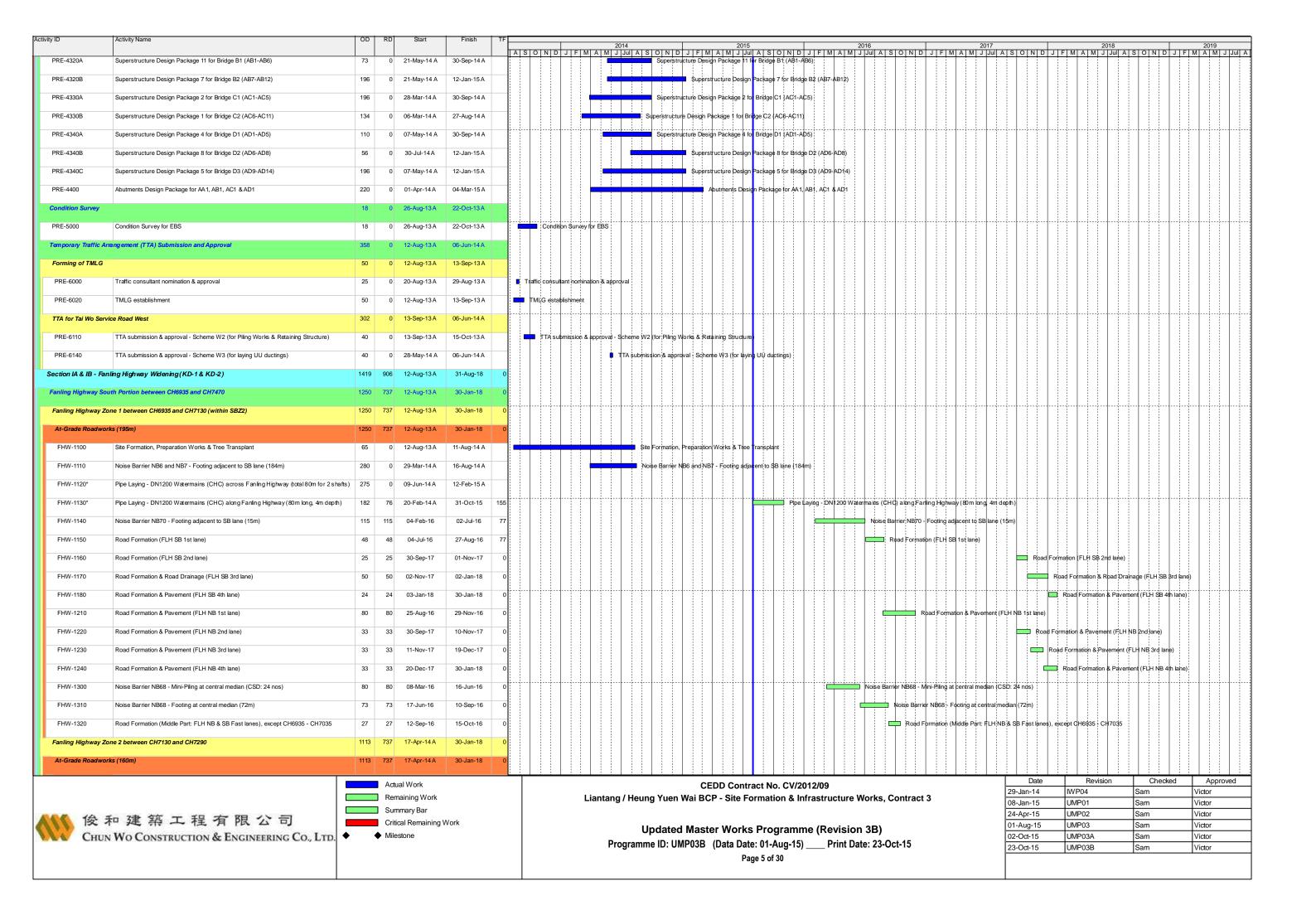


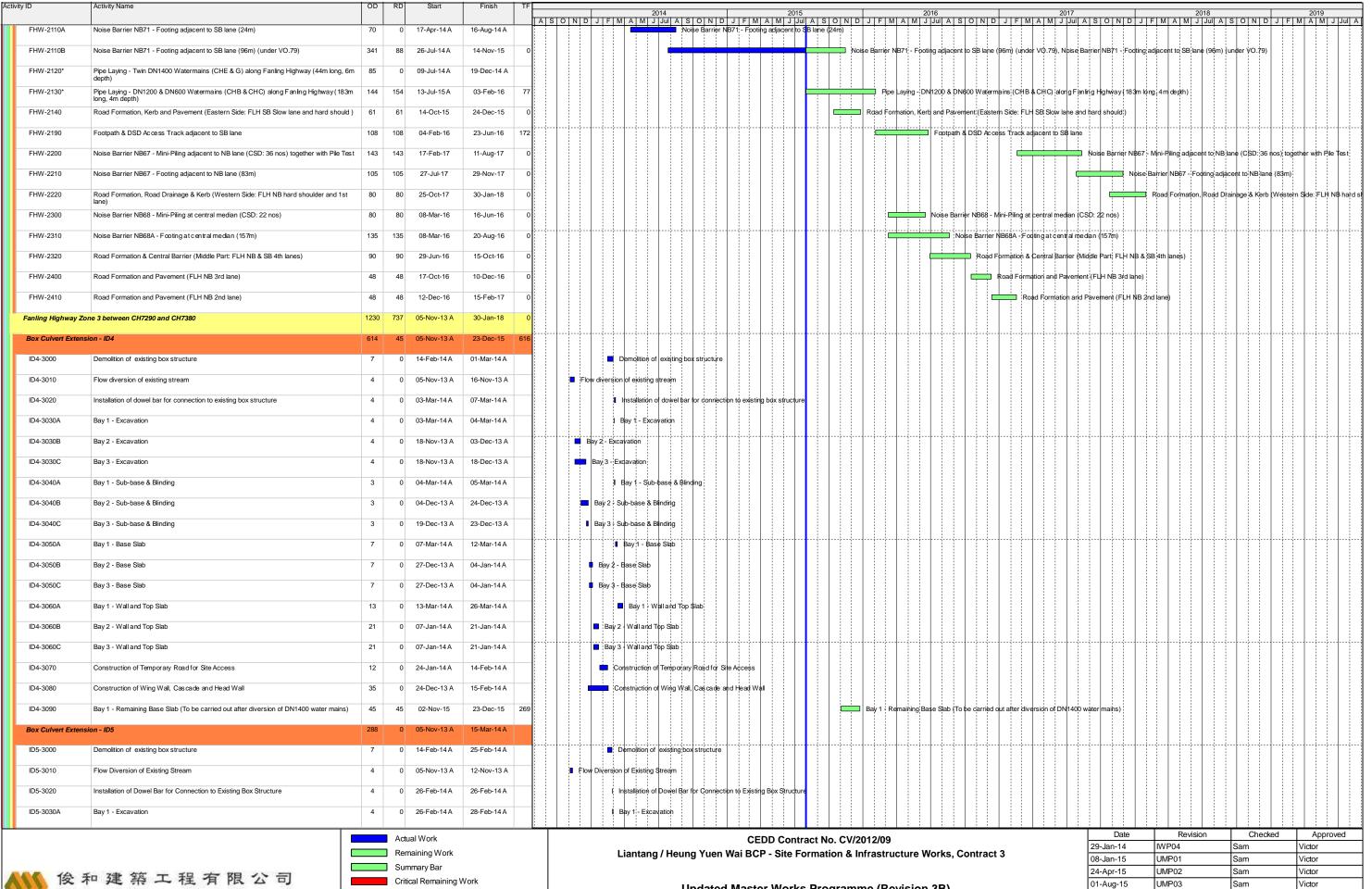




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UMP01	Sam	Victor
UMP02	Sam	Victor
UMP03	Sam	Victor
UMP03A	Sam	Victor
UMP03B	Sam	Victor
	UMP01 UMP02 UMP03 UMP03A	UMP01         Sam           UMP02         Sam           UMP03         Sam           UMP03A         Sam



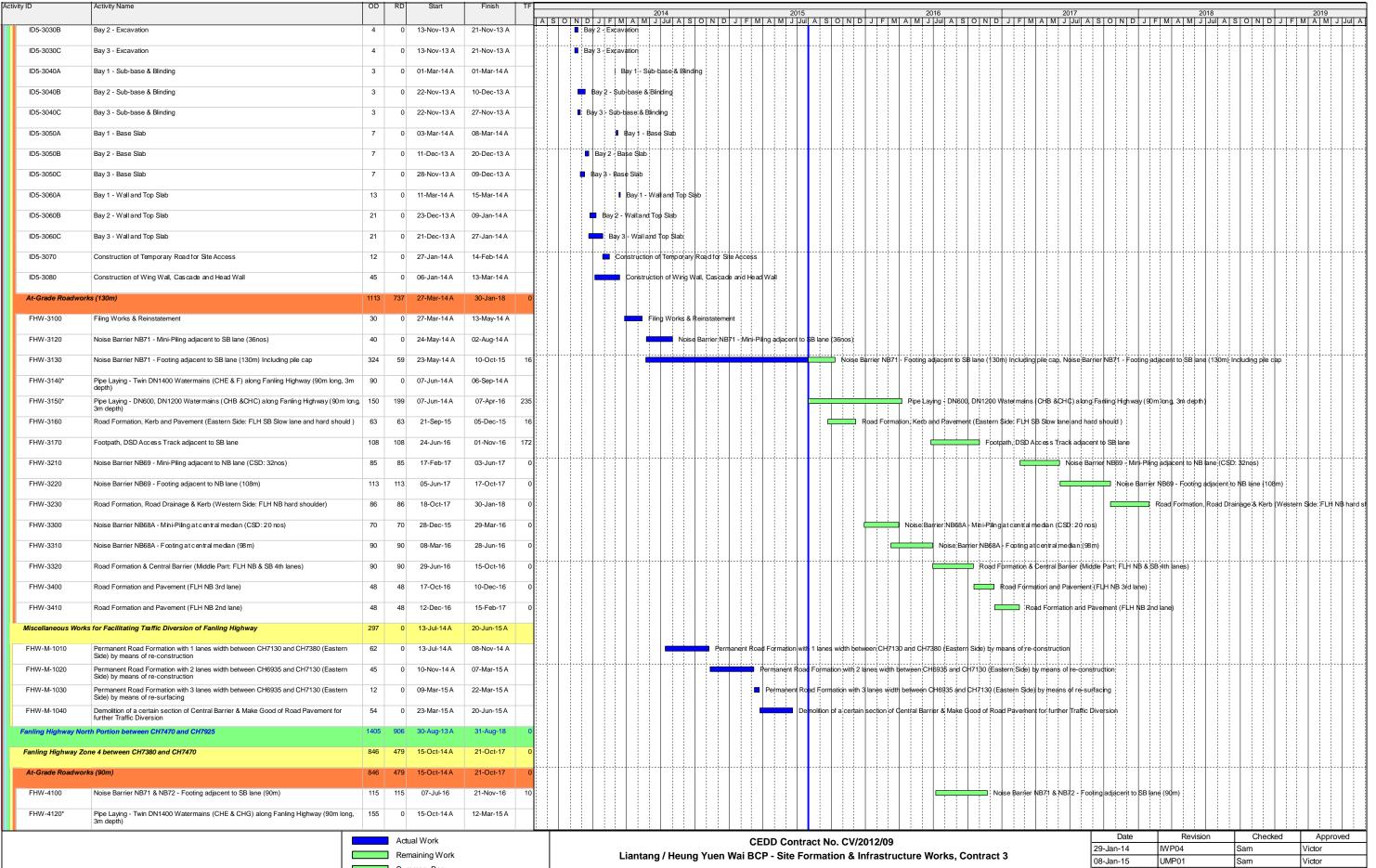


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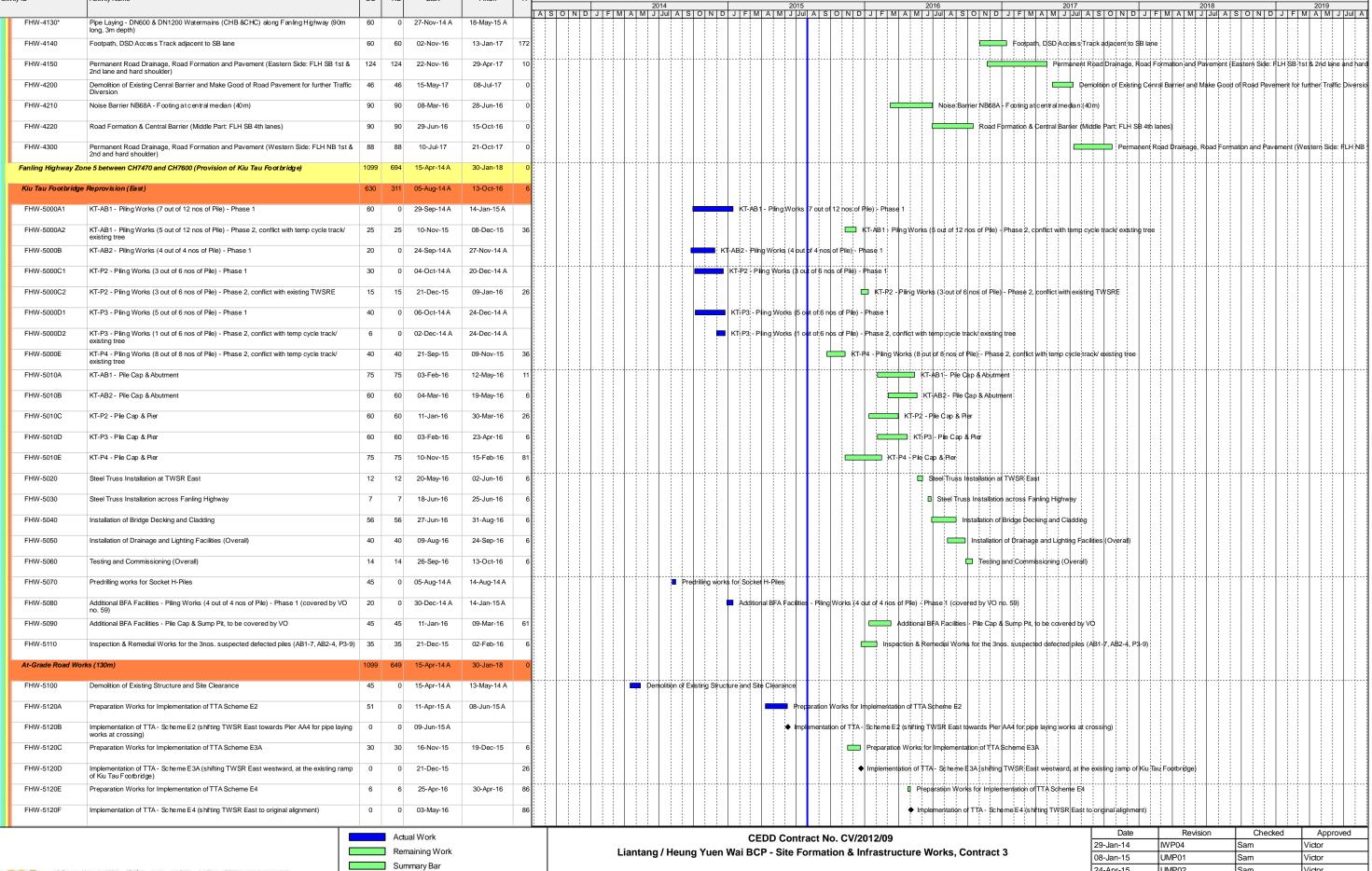


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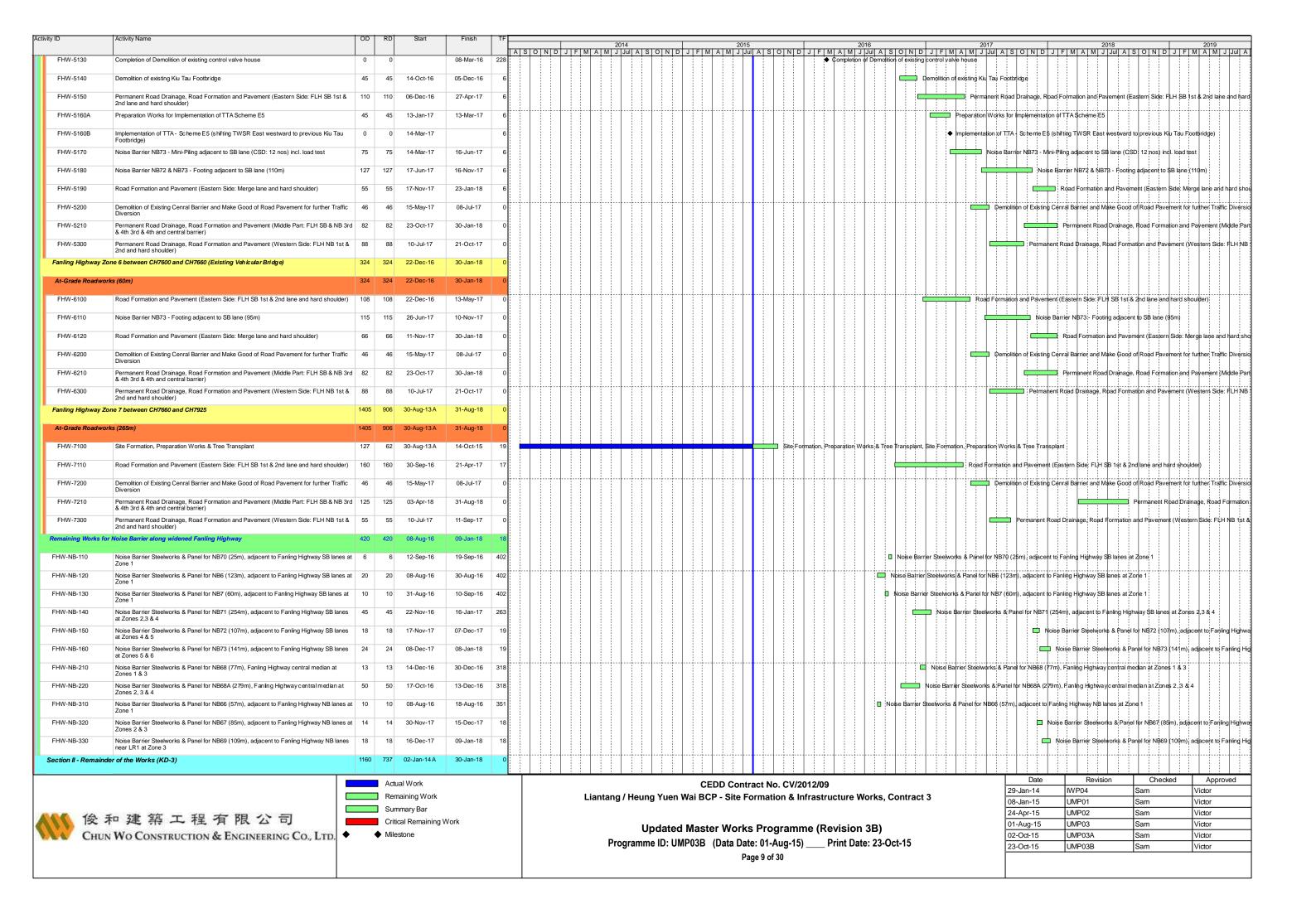
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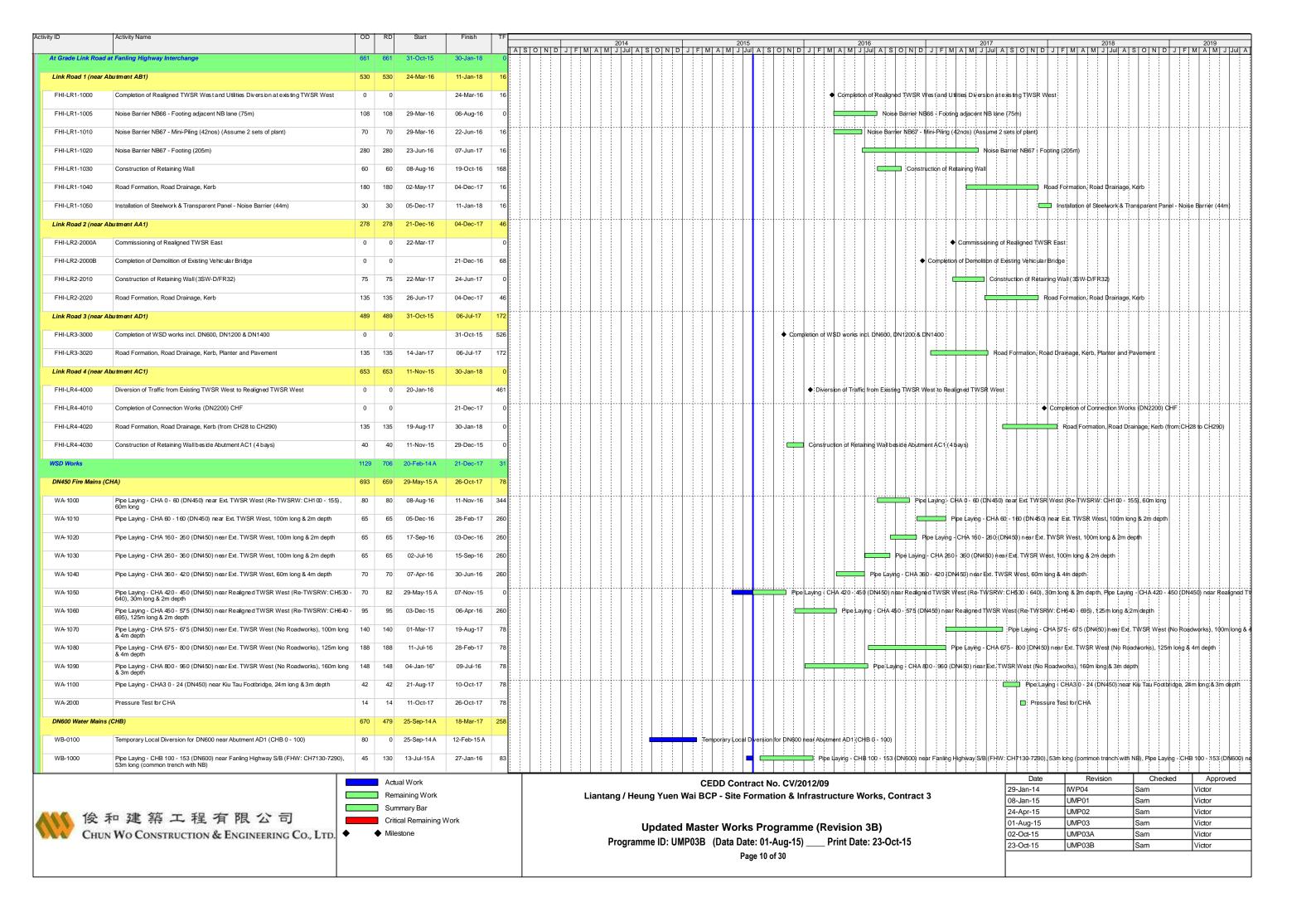
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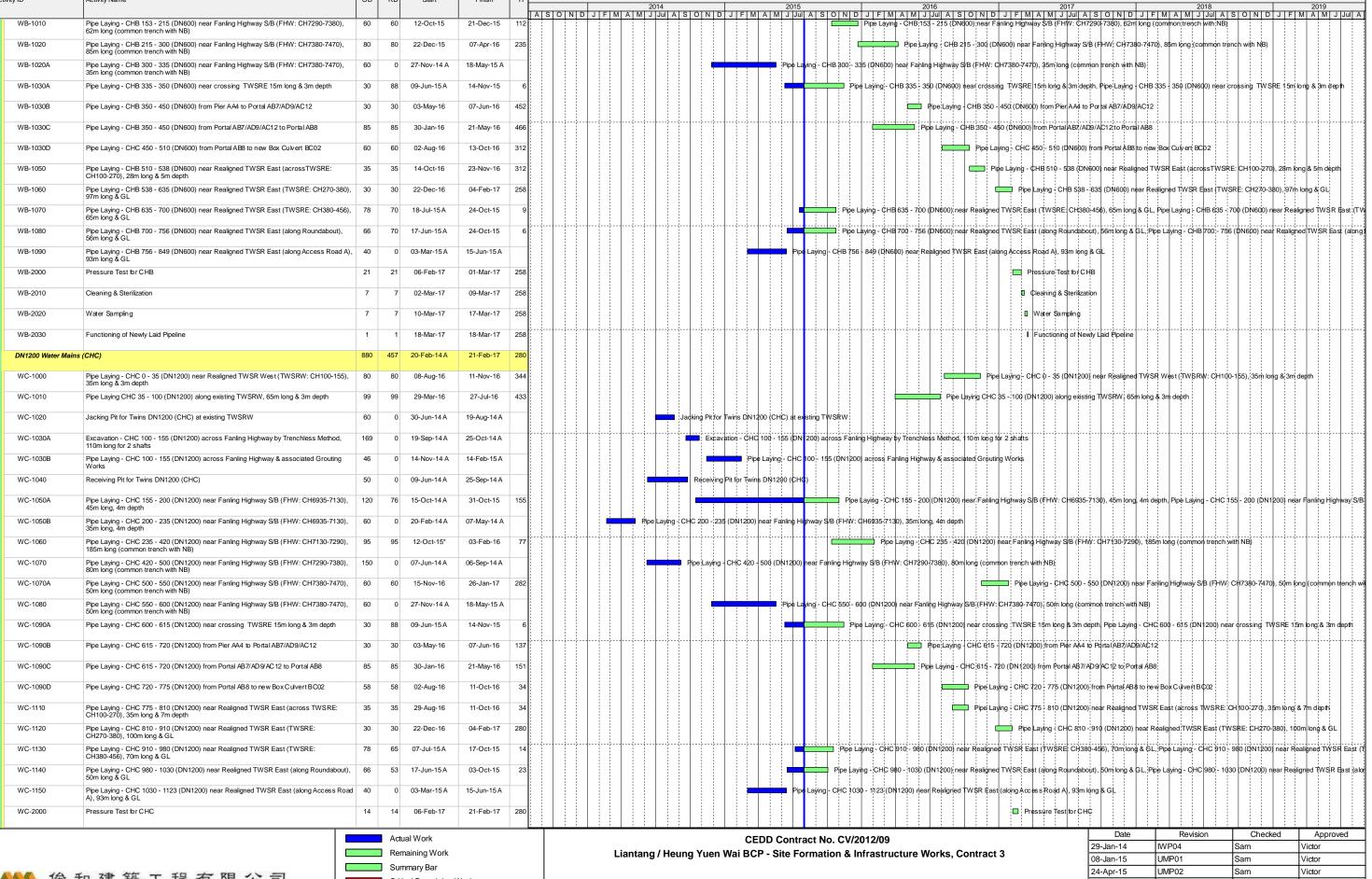


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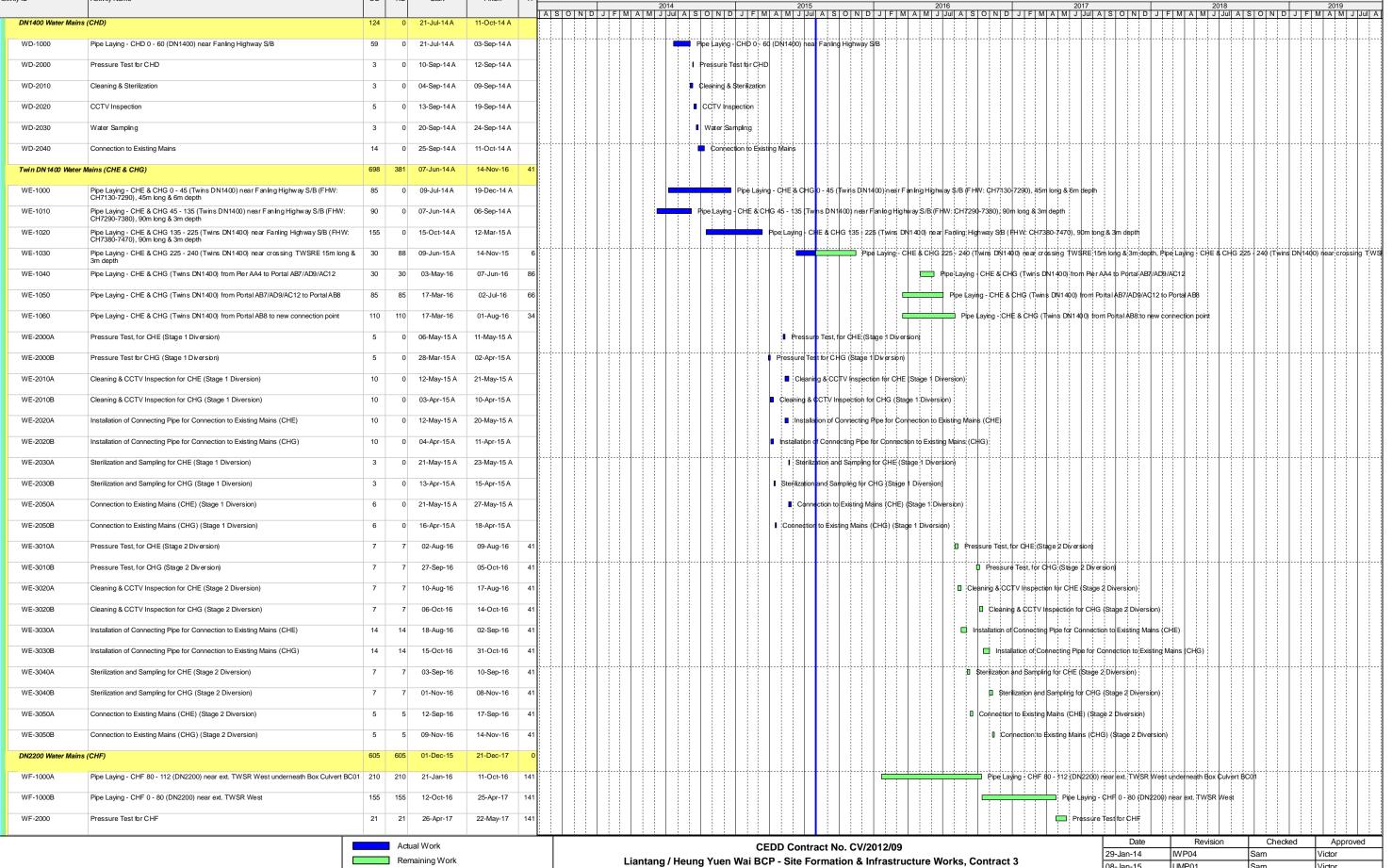
Activity ID

Activity Name

Critical Remaining Work

**Updated Master Works Programme (Revision 3B)** Programme ID: UMP03B (Data Date: 01-Aug-15) \_\_\_\_ Print Date: 23-Oct-15 Page 11 of 30

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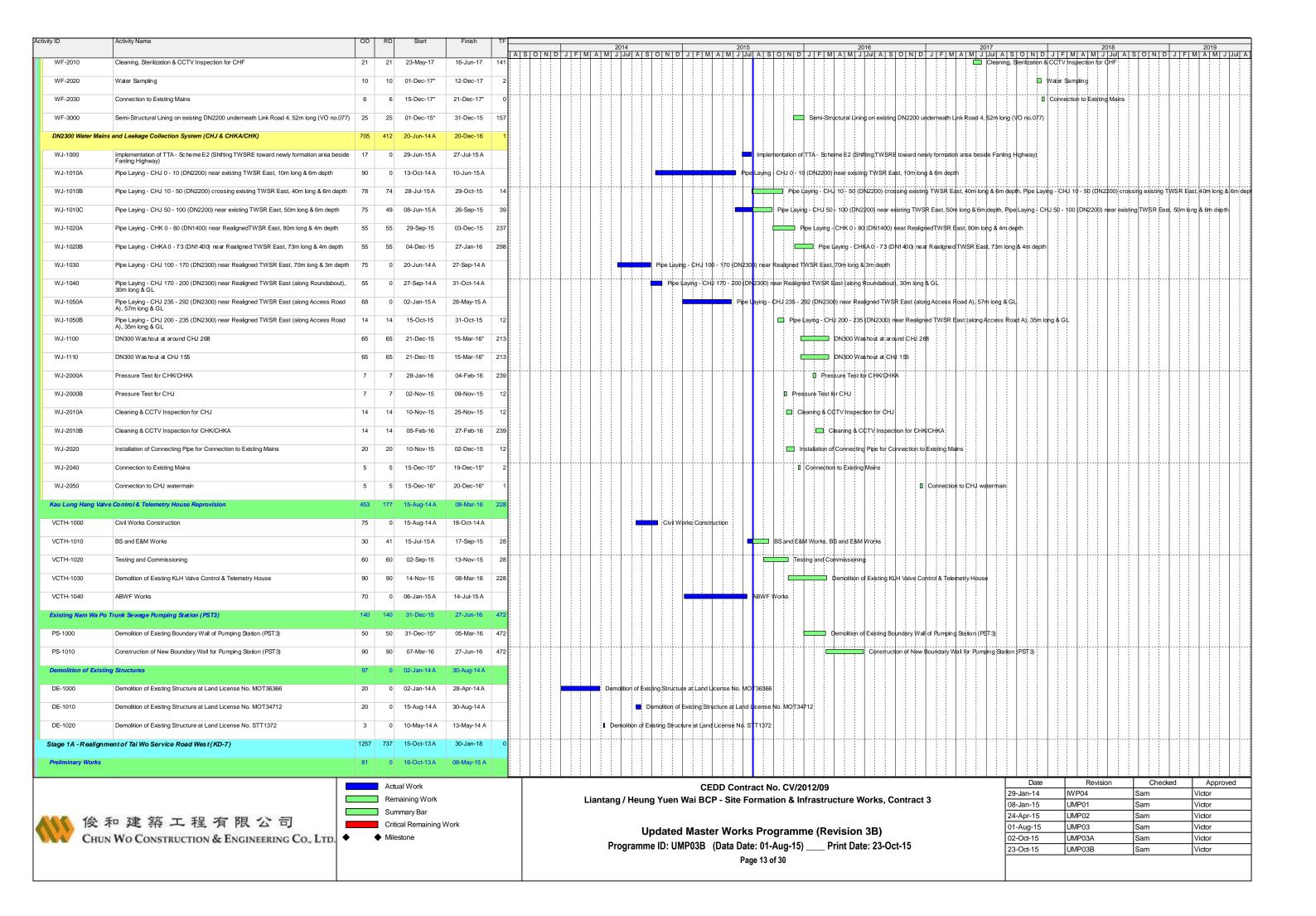


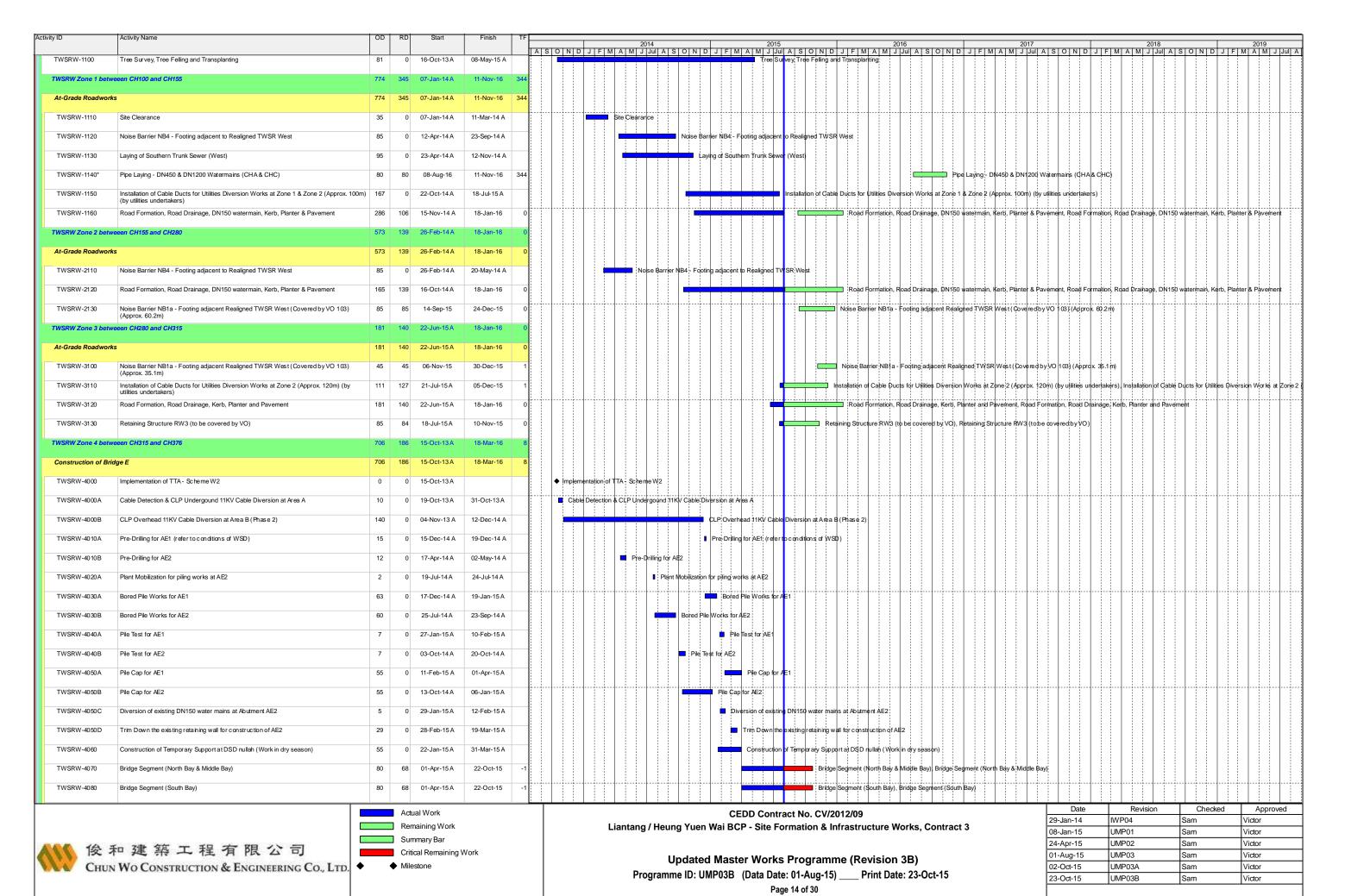
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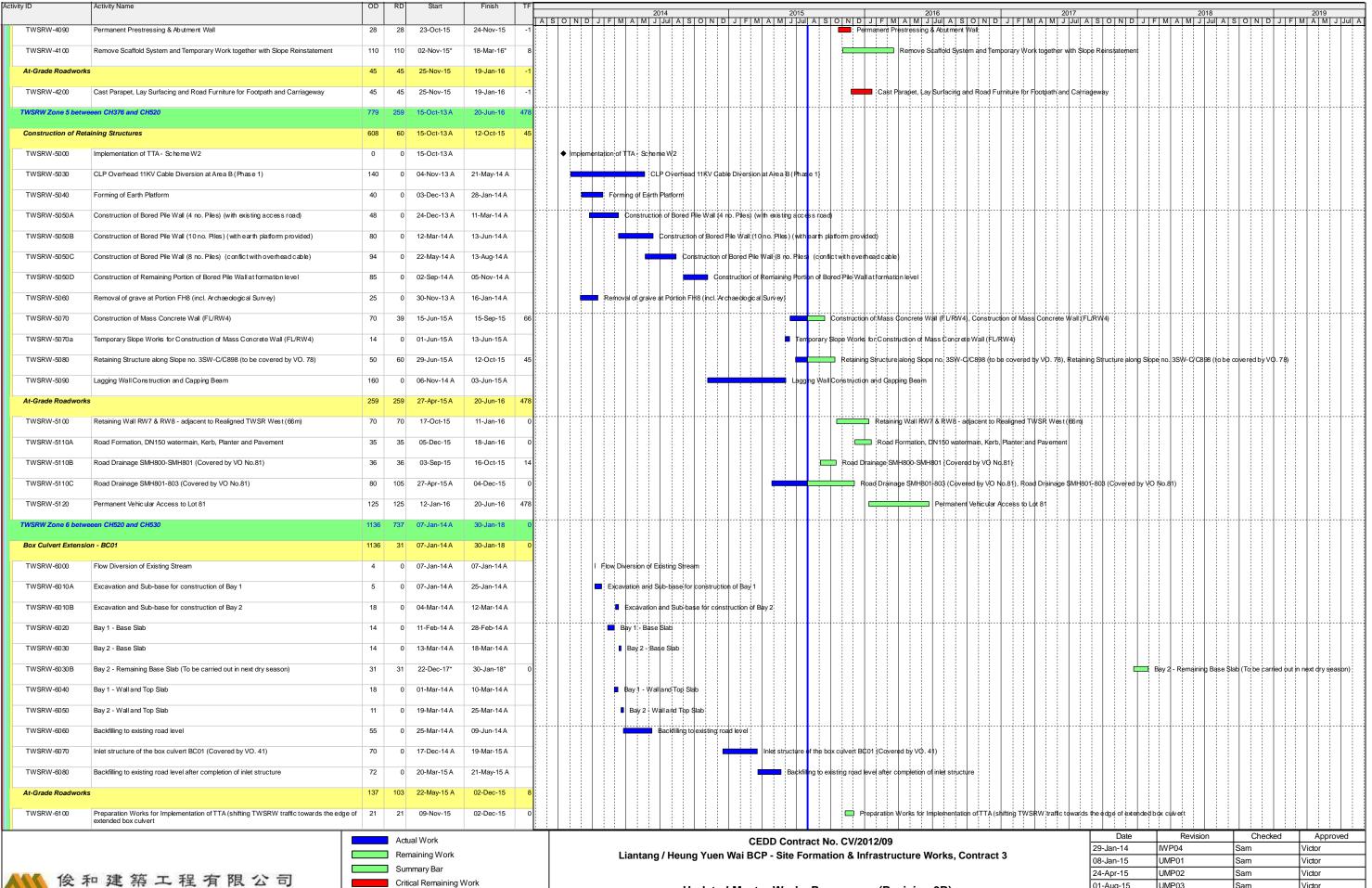
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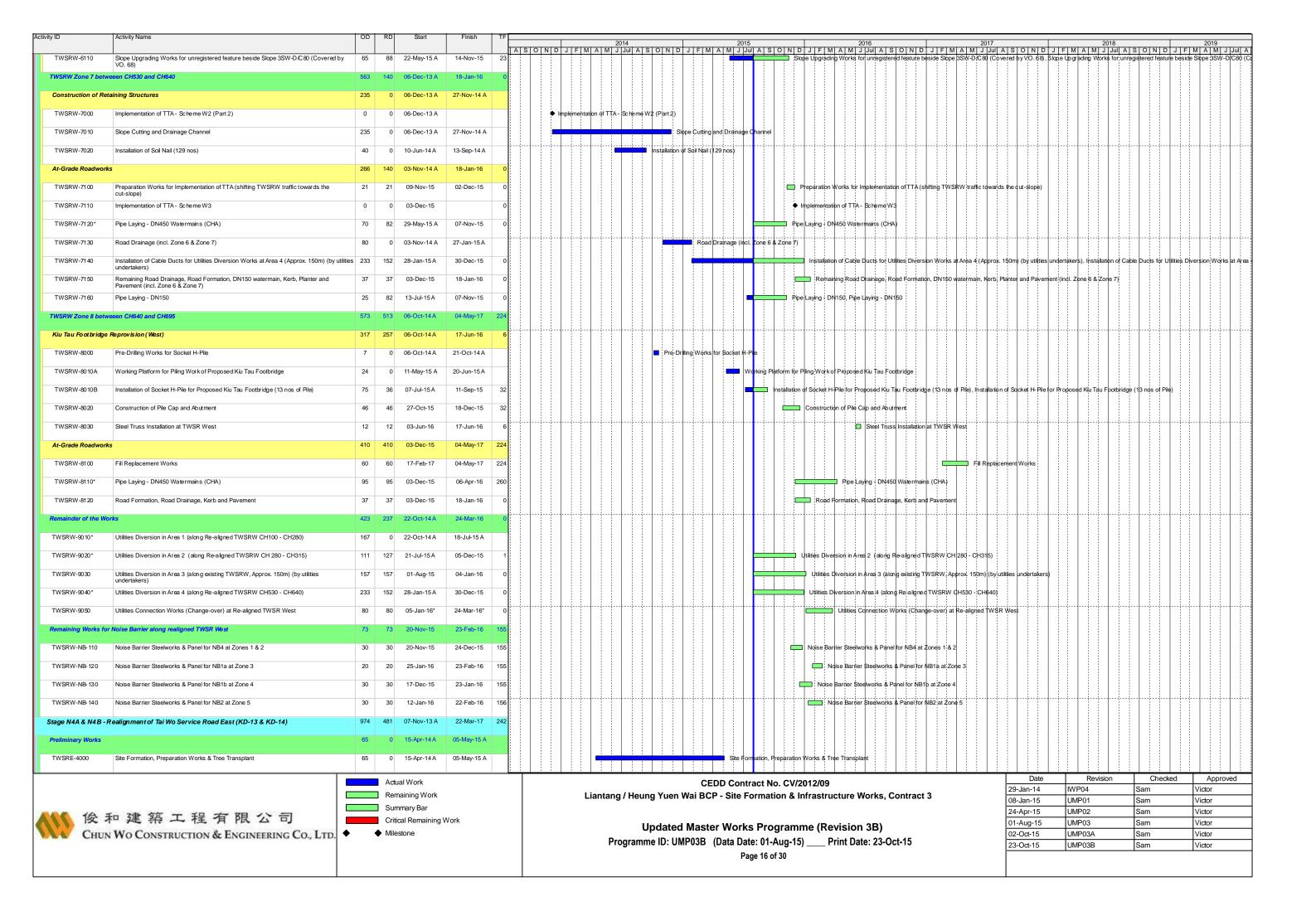


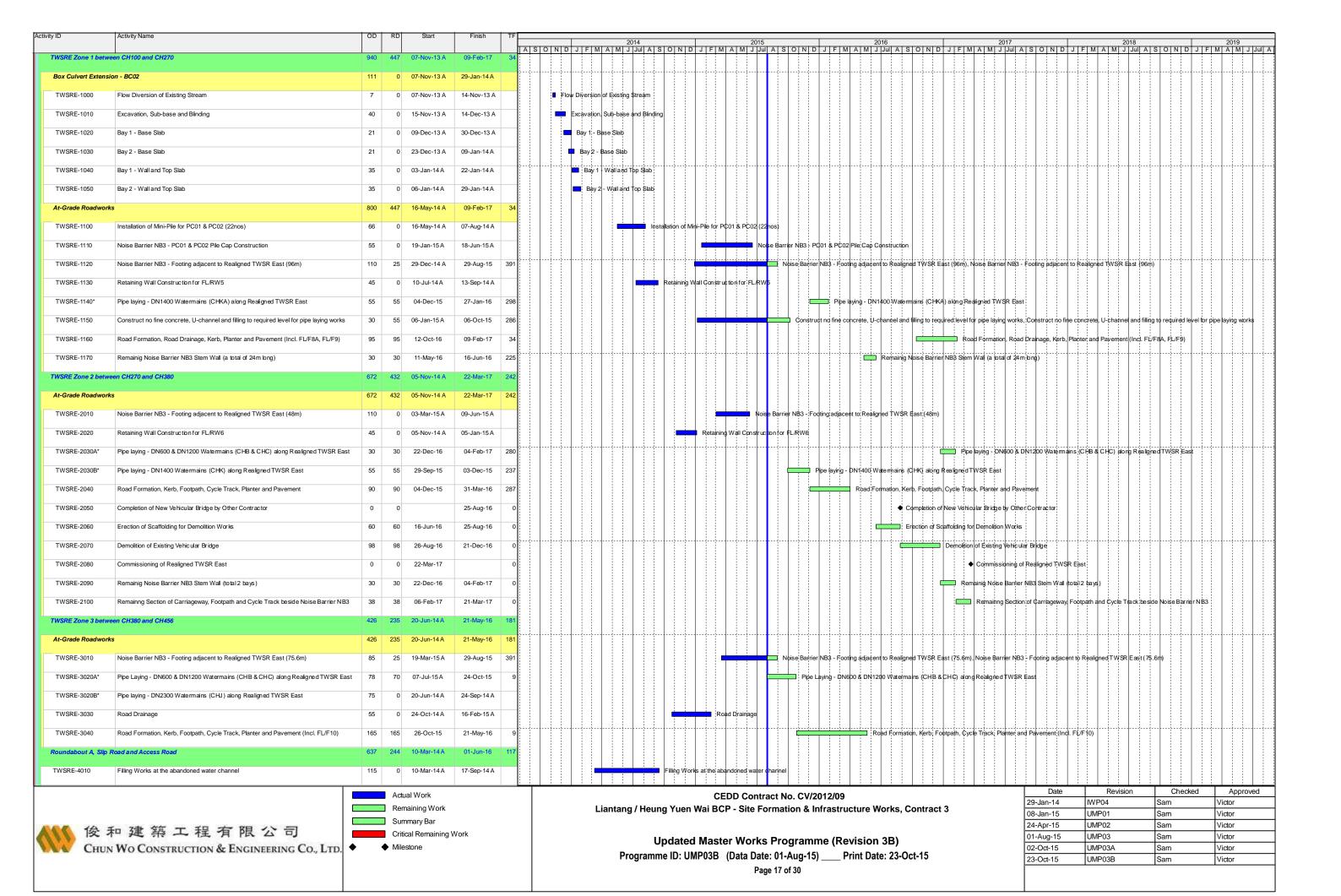
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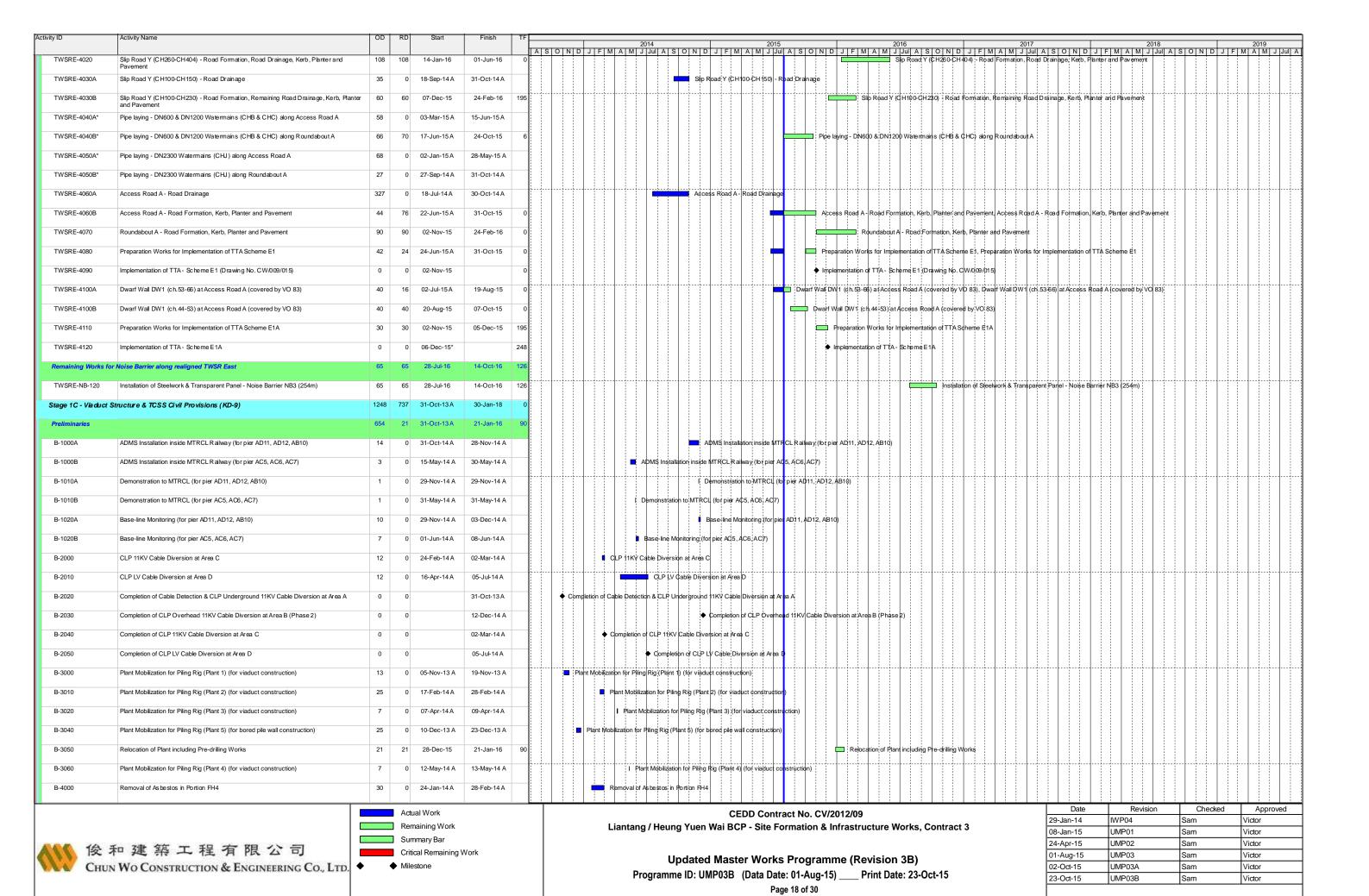


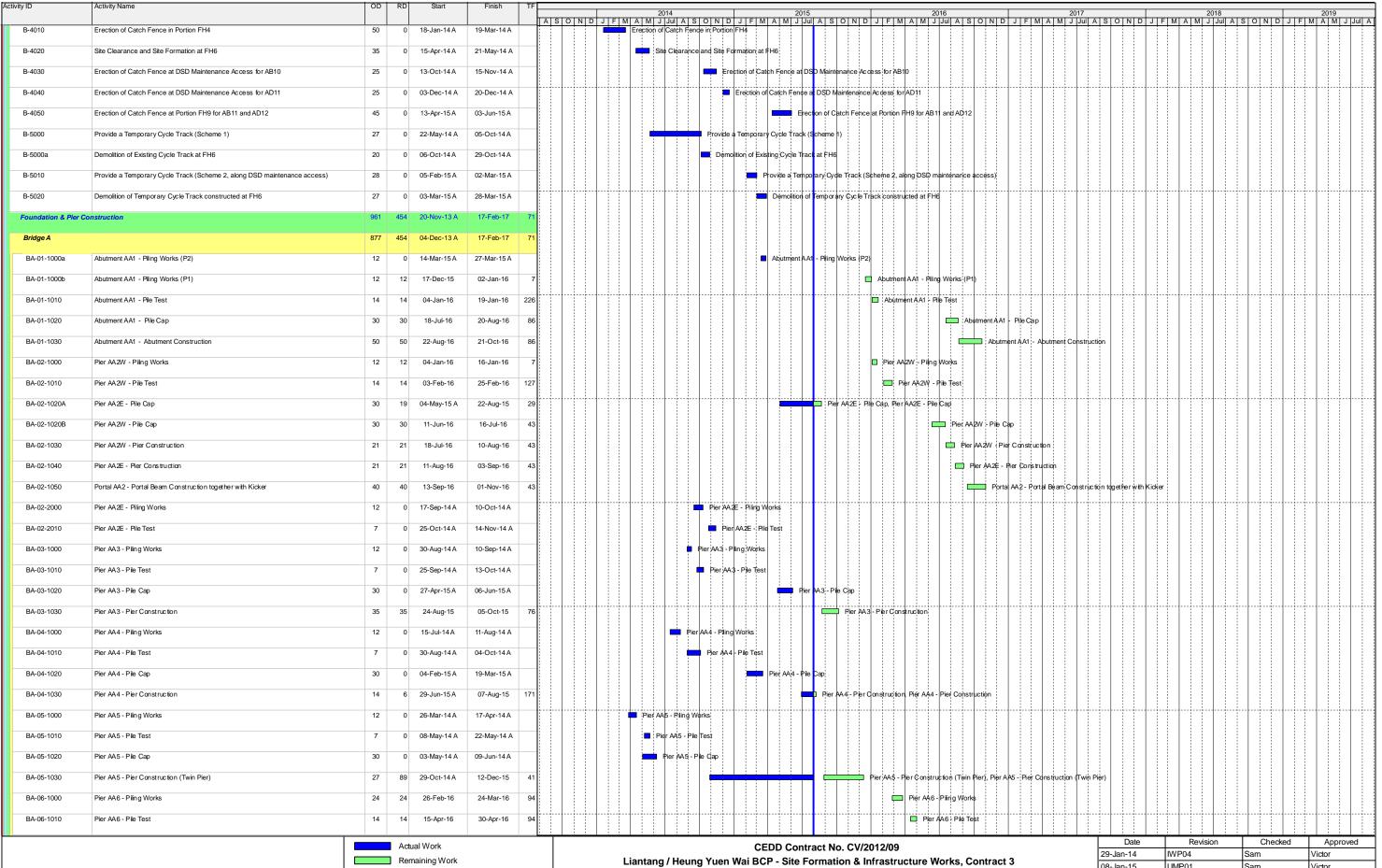
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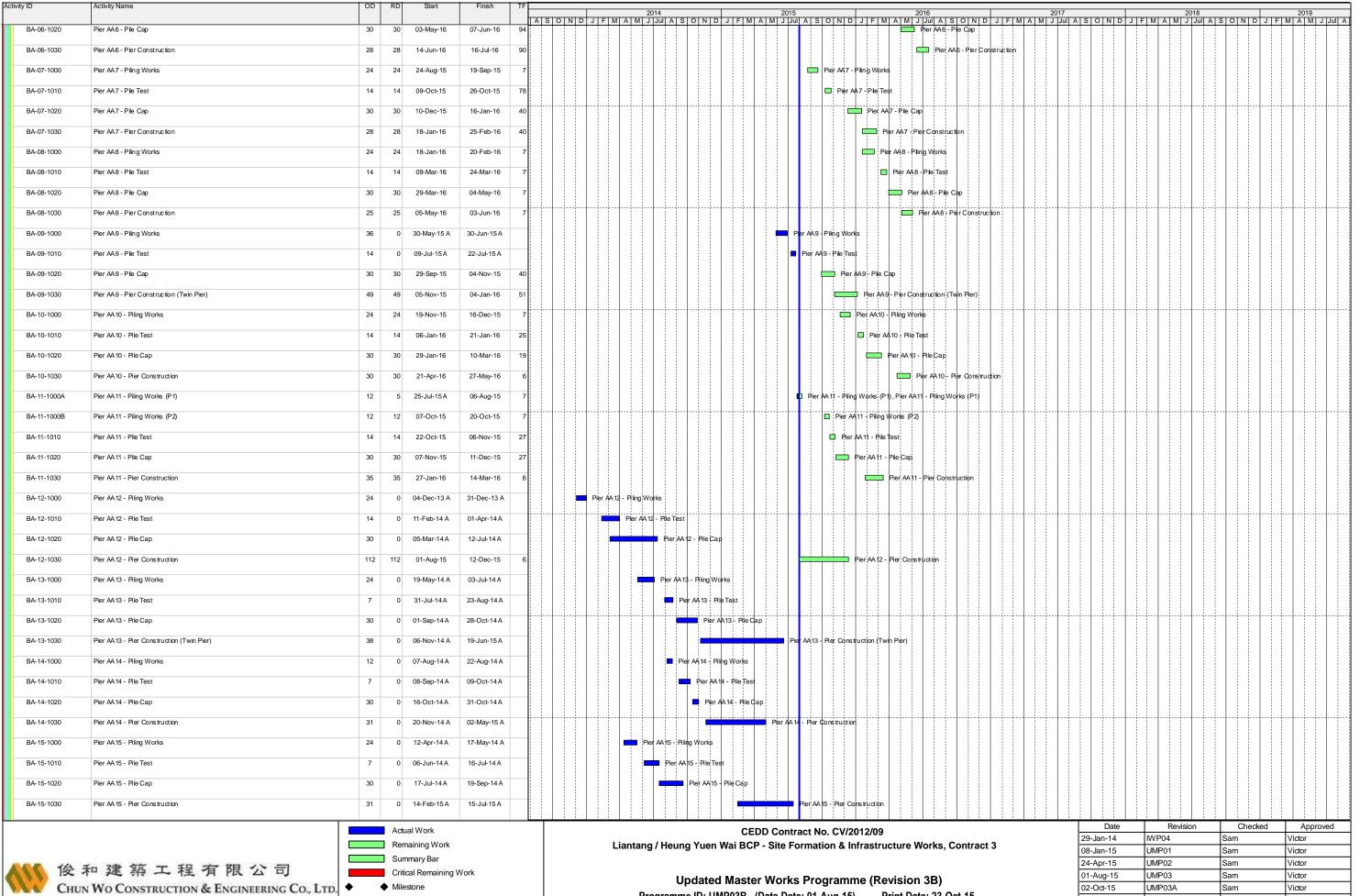


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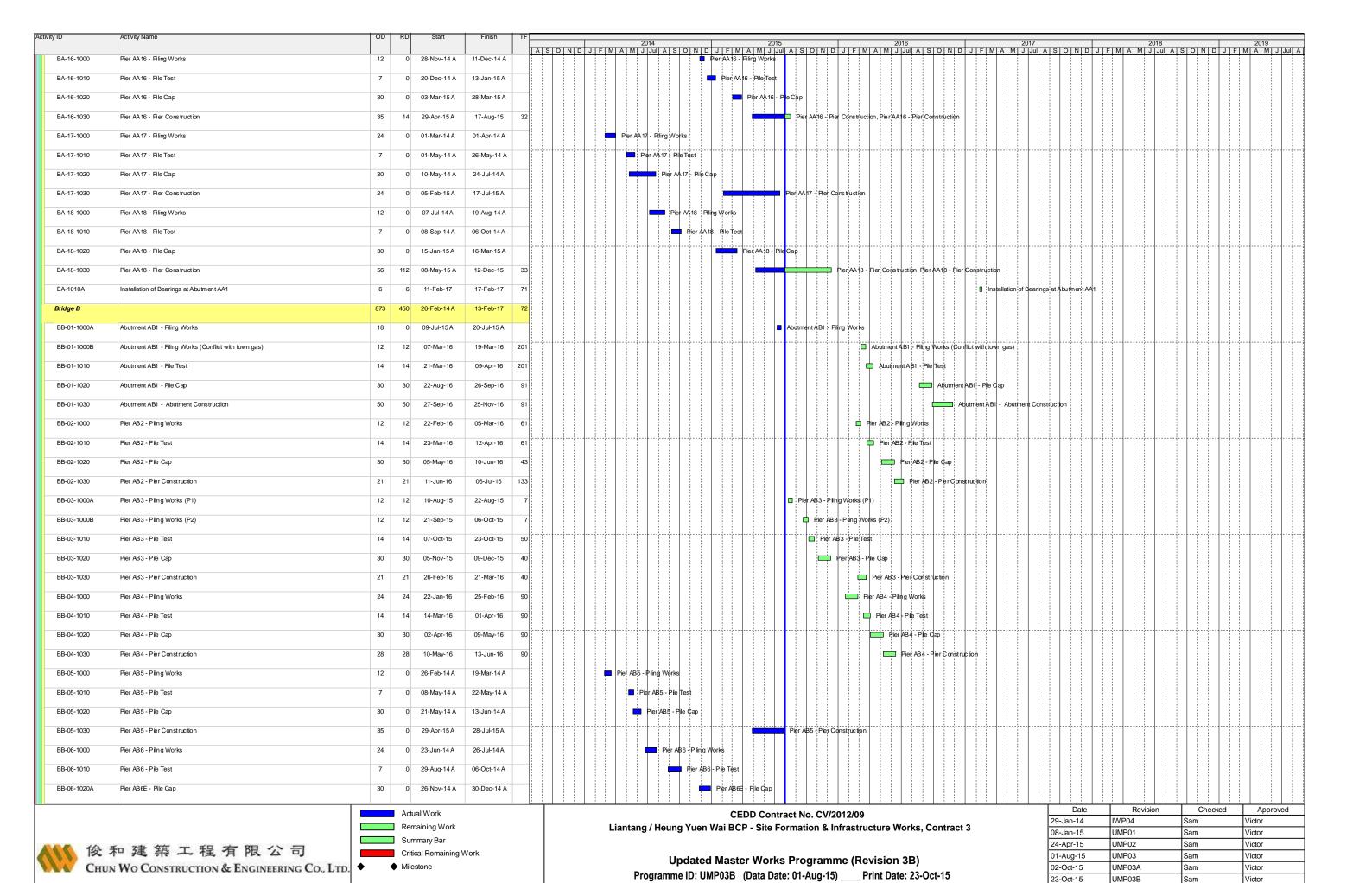


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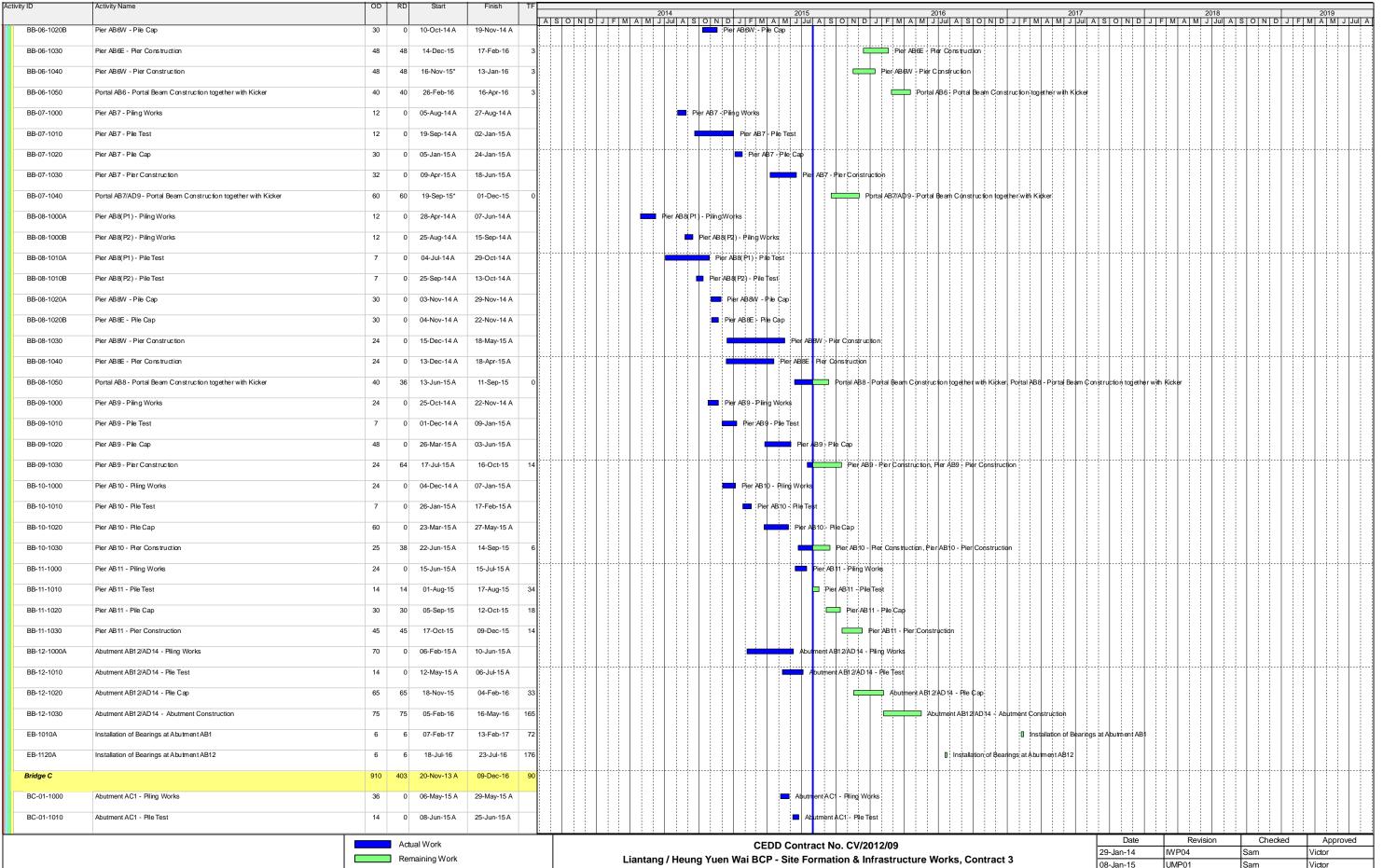
Critical Remaining Work Milestone

**Updated Master Works Programme (Revision 3B)** Programme ID: UMP03B (Data Date: 01-Aug-15) \_\_\_\_ Print Date: 23-Oct-15 Page 20 of 30

IWP04	Sam	Victor
UMP01	Sam	Victor
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UMP03	Sam	Victor
UMP03A	Sam	Victor
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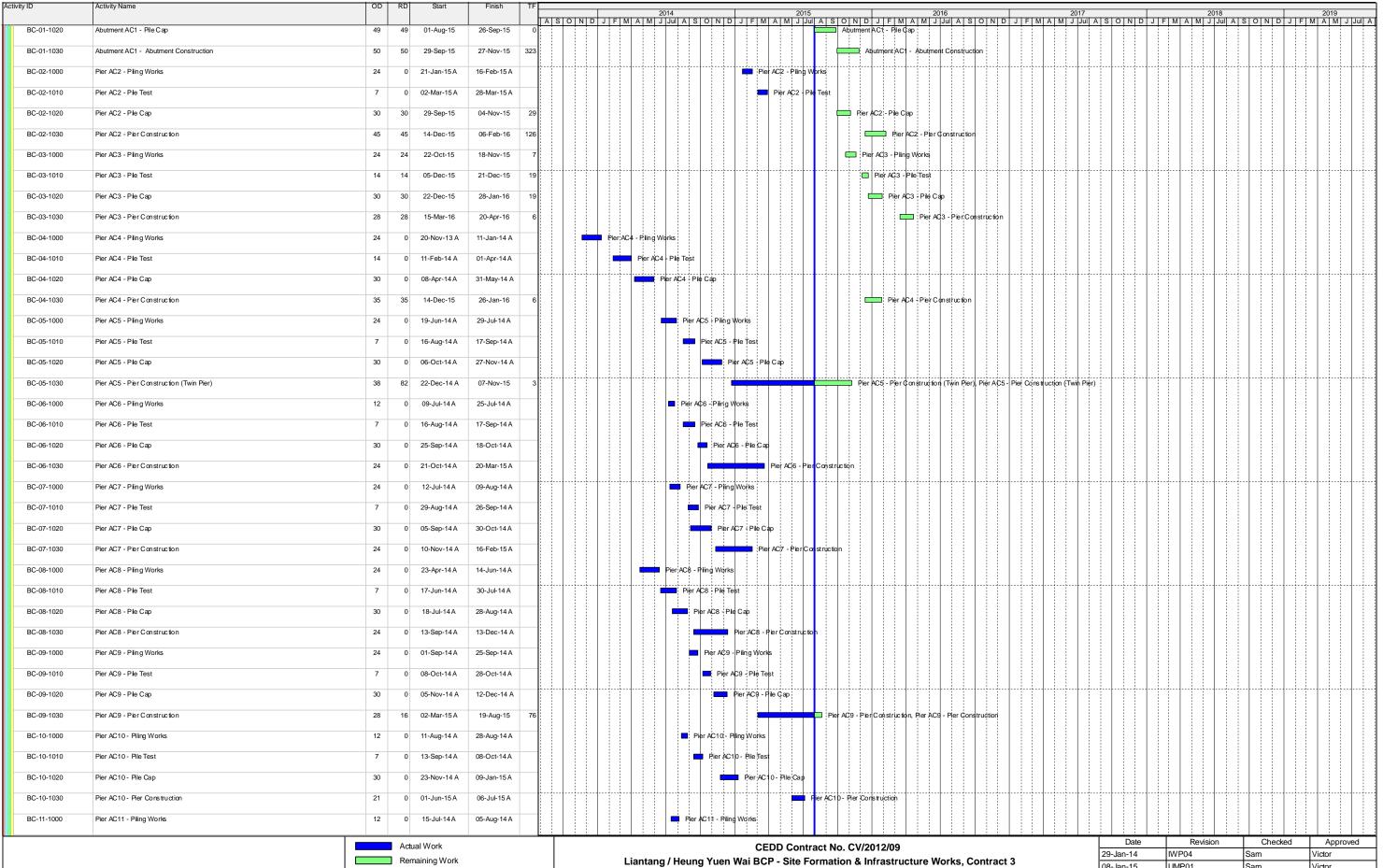


Activity Name

Summary Bar Critical Remaining Work Milestone

**Updated Master Works Programme (Revision 3B)** Programme ID: UMP03B (Data Date: 01-Aug-15) \_\_\_\_ Print Date: 23-Oct-15 Page 22 of 30

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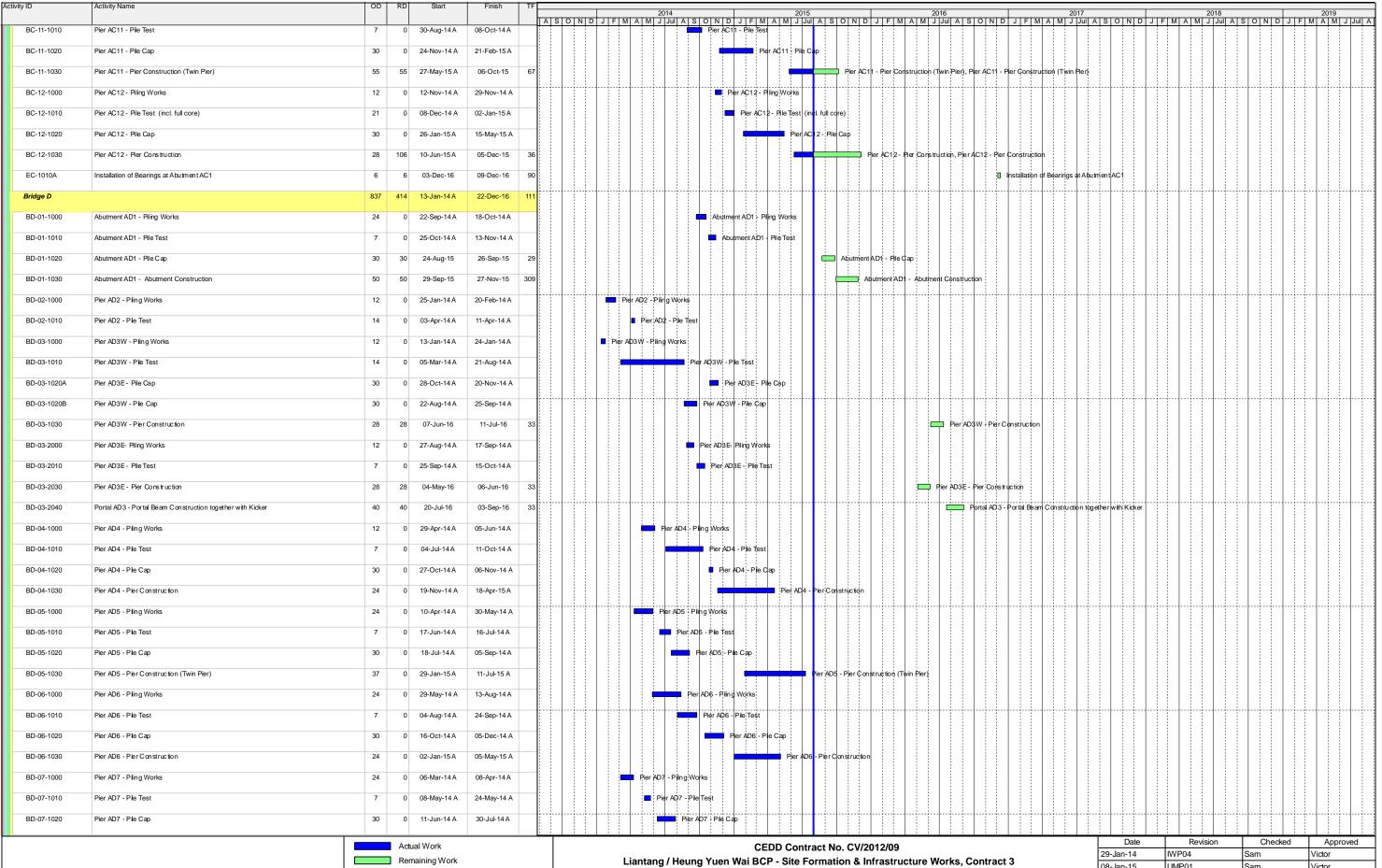


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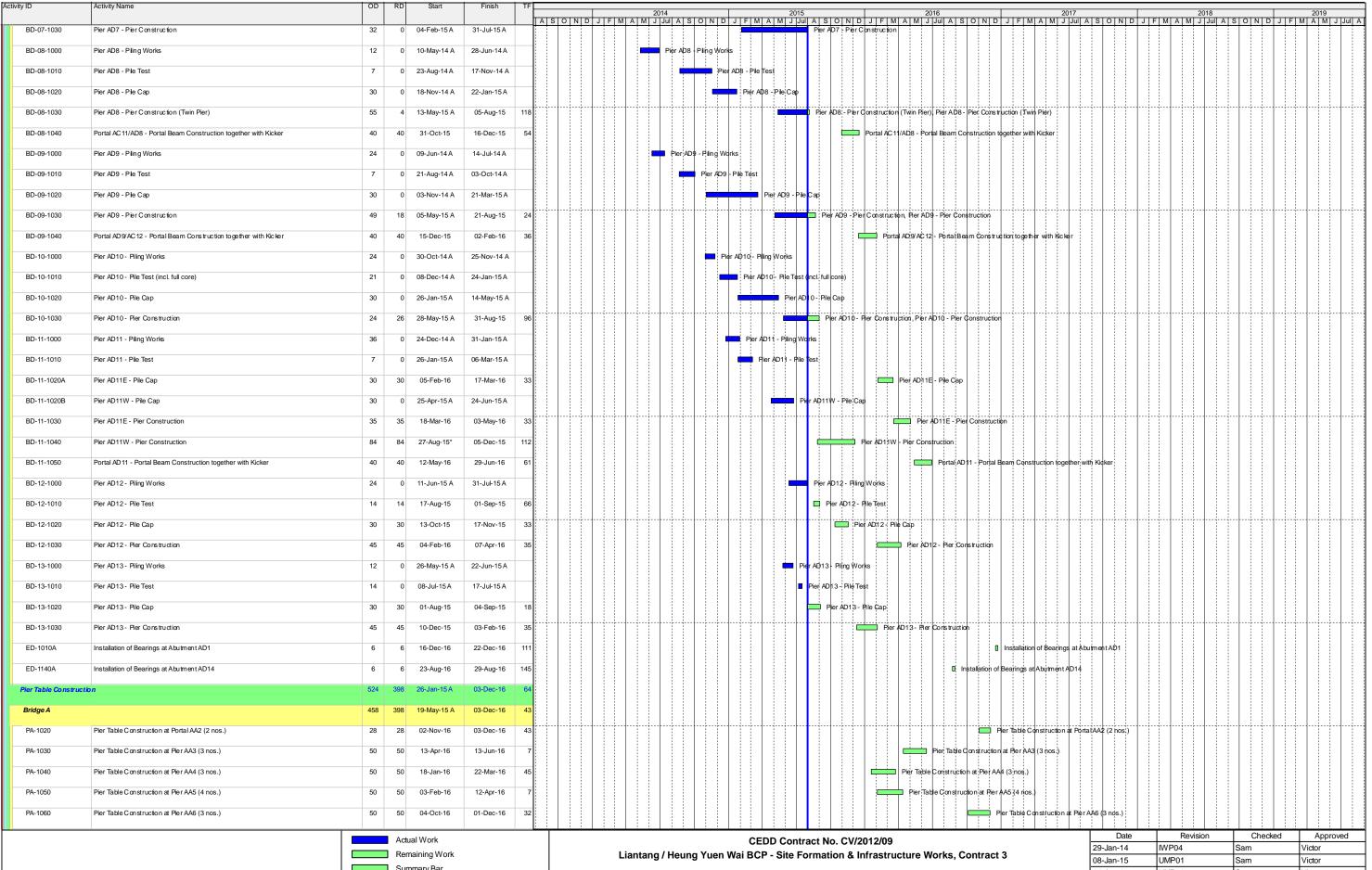


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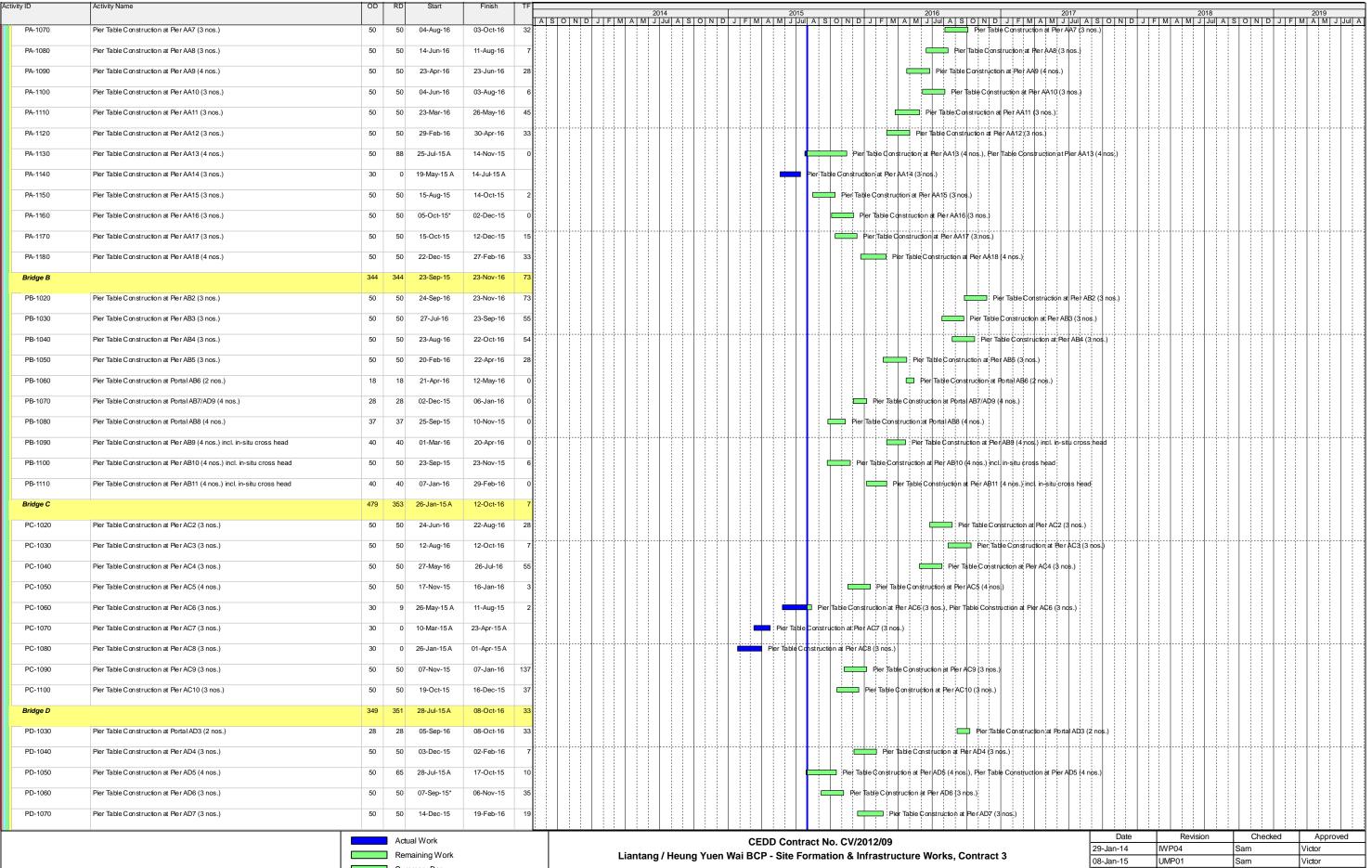


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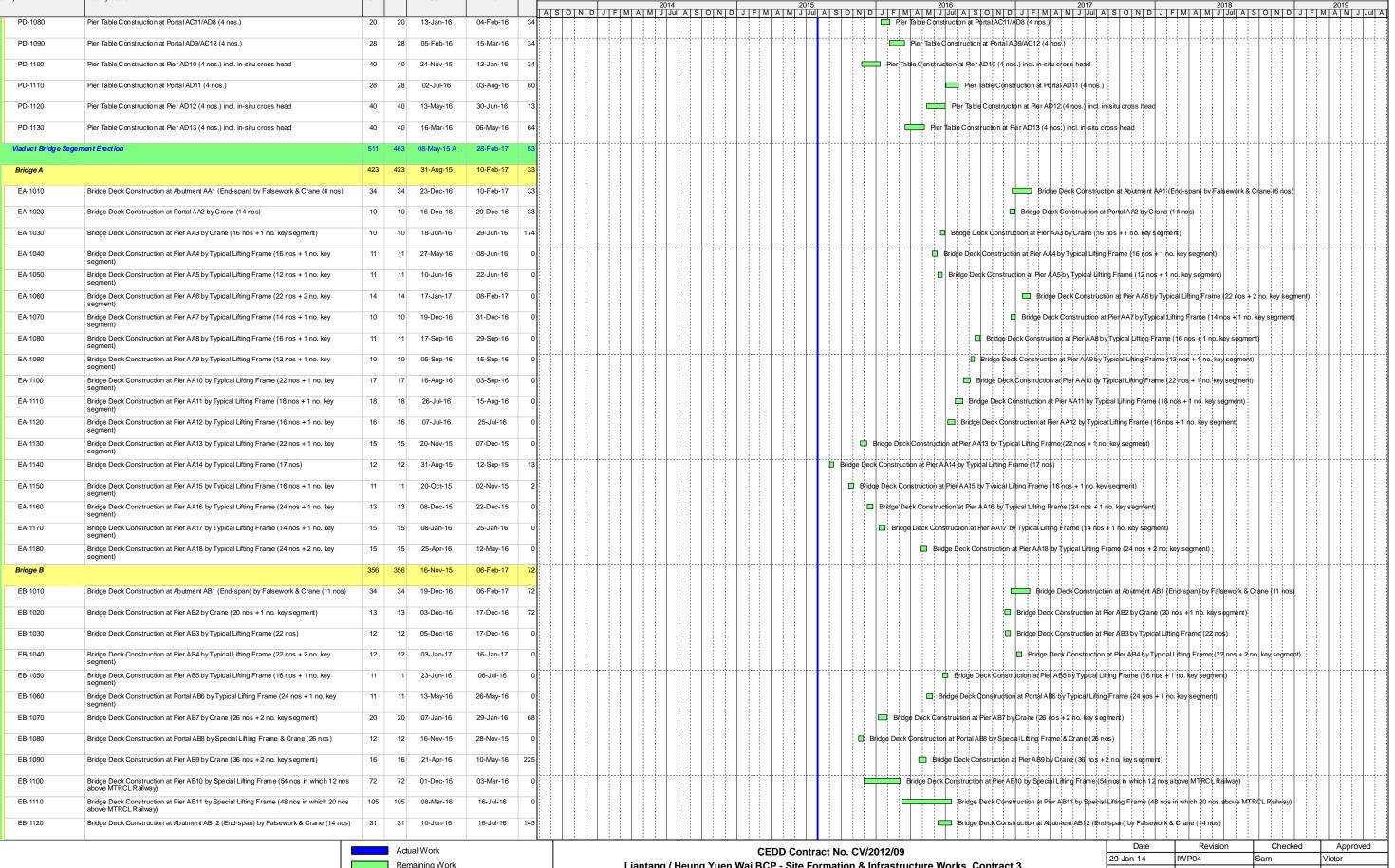


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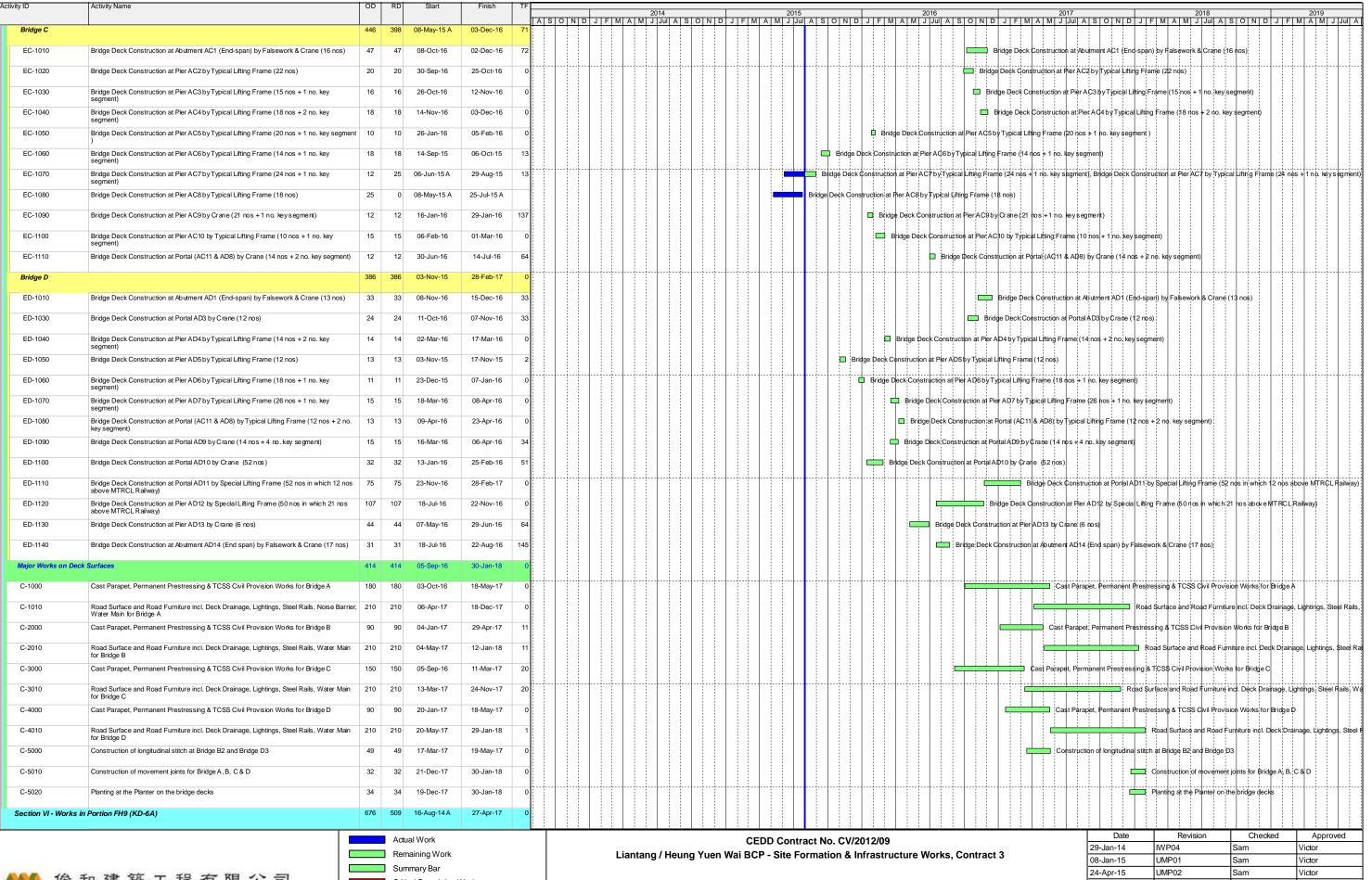
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Liantang / Heung Yuen Wai BCP - Site Formation & Infrastructure Works, Contract 3

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			11
29-Jan-14	IWP04	Sam	Victor
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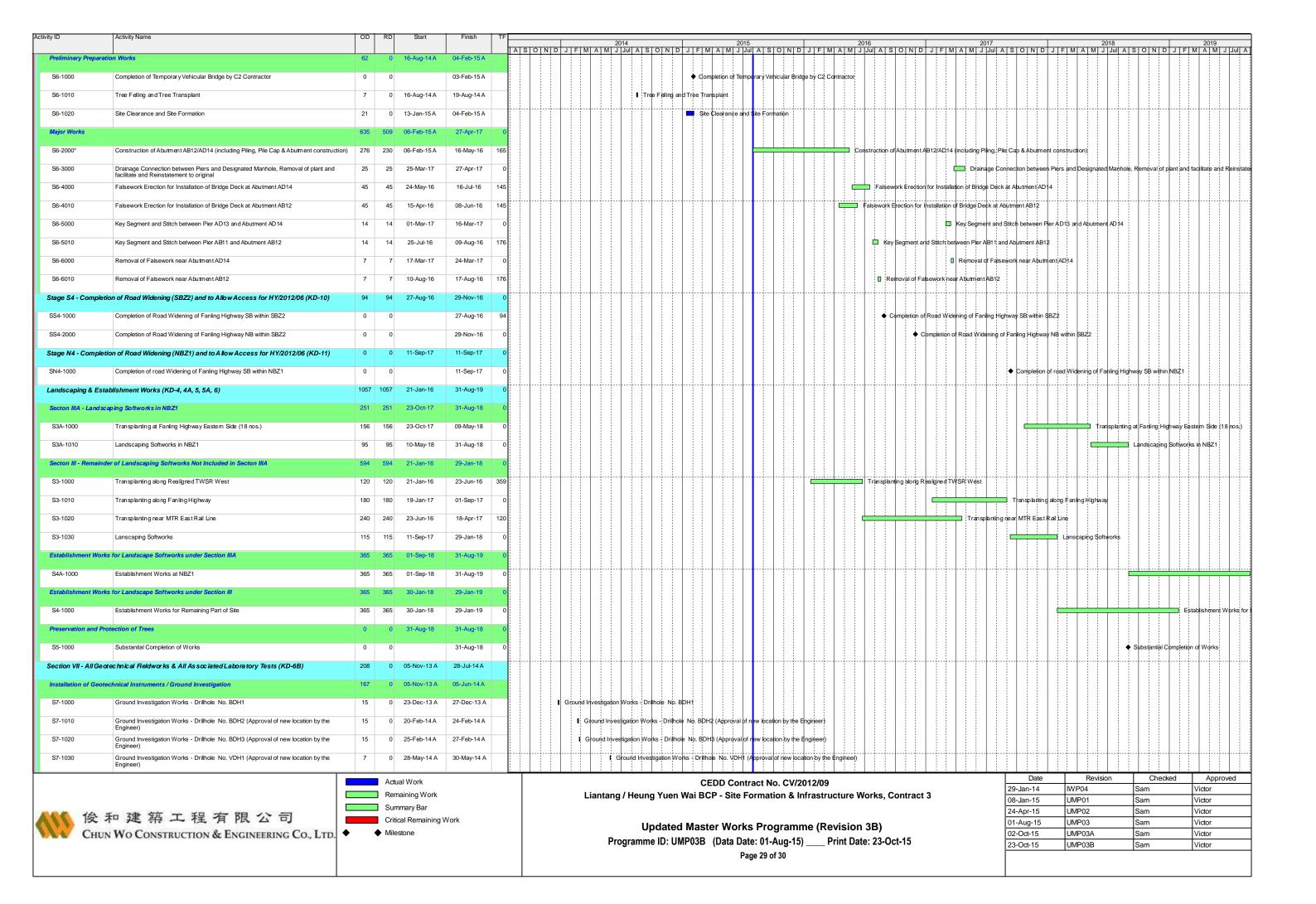
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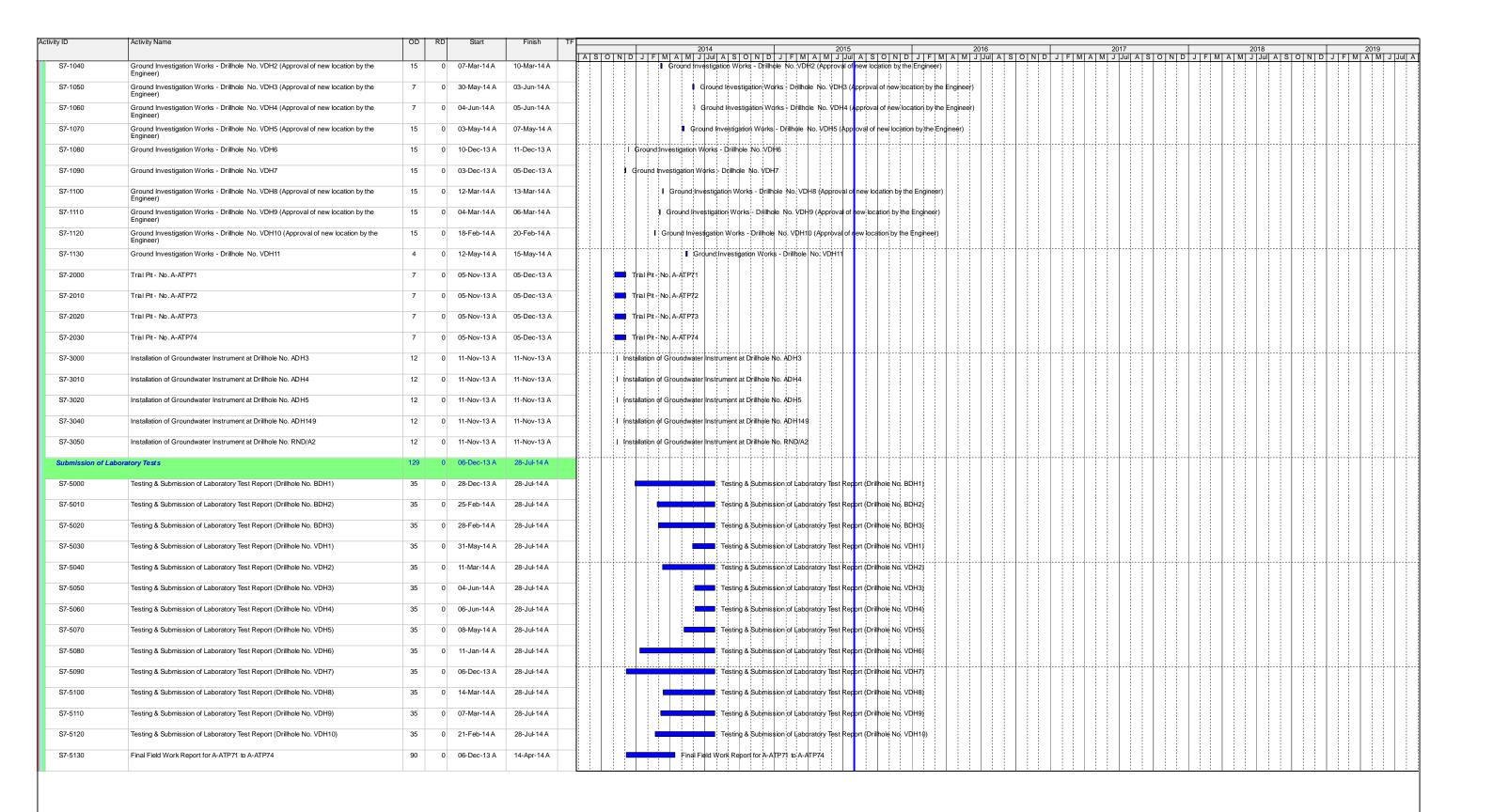
俊和建築工程有限公司 Chun Wo Construction & Engineering Co., Ltd. ◆

Critical Remaining Work Milestone

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29-Jan-14	IWP04	Sam	Victor
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CEDD Contract No. CV/2012/09
Liantang / Heung Yuen Wai BCP - Site Formation & Infrastructure Works, Contract 3

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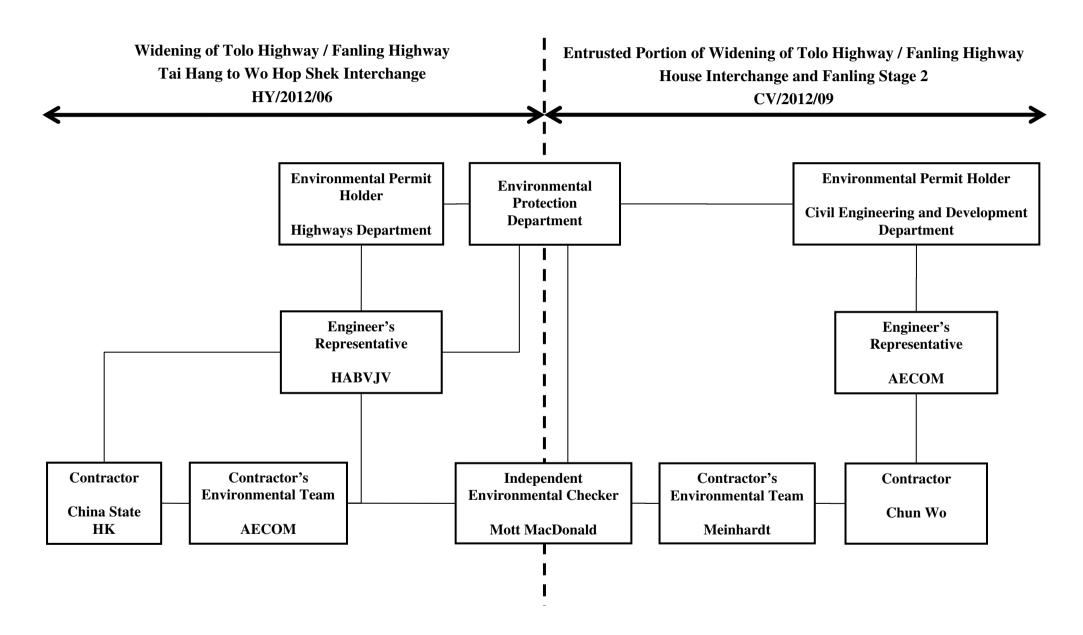
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Date	Revision	Checked	Approved
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4-Apr-15	UMP02	Sam	Victor
1-Aug-15	UMP03	Sam	Victor
2-Oct-15	UMP03A	Sam	Victor
3-Oct-15	UMP03B	Sam	Victor



## 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 50m³ 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.			Rem
	All spraying of materials and surfaces shall avoid excessive water usage.			<b>✓</b>
	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.			<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.			Rem and Obs
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			•	<b>,</b>
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.			Obs
	Sand traps, oil interceptors and other pollution prevention installations should be provided, properly cleaned and maintained.			<b>✓</b>

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



Impact	Environmental Protection Measures	Timing	Responsibility	Implementation Status #
	<ul> <li>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.</li> </ul>			Rem
	<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.			<b>✓</b>
	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	T =			
Waste Management during Construction	<ul><li>General Waste</li><li>Transport of wastes off site as soon as possible.</li></ul>	During Construction	Contractor	<b>*</b>
	Maintenance of accurate waste records.			✓
	Minimisation of waste generation for disposal (via reduction/recycling/re-use).			✓
	No on-site burning will be permitted.			✓
	Use of re-useable metal hoardings/signboards.			✓
	<u>Vegetation from site clearance</u>	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.			✓

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



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>			✓
	• For material which cannot be re-used/recycled, collection should be carried out by an approved waste contractor for landfill disposal.			✓
	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.			<b>~</b>
	• The storage area shall not be located adjacent to sensitive receivers e.g. drains.			✓
	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>			<b>✓</b>
	Use appropriate and labelled containers.			✓

Notes (<sup>#</sup>): ✓ – 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				
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;			✓
	all dusty materials should be sprayed with water immediately prior to any handling; and			<b>✓</b>

Notes (#):

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



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;			<b>✓</b>
	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			N/A
	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 TCW No. 2/2004.)	N/A
Landscape and Visual during	Drocoviation of Evicting Vacatation	During Construction	Contractor	<u> </u>
Landscape and Visual during Construction	Preservation of Existing Vegetation     Trees identified for retention within the project limit would be protected during the works	During Construction	Contractor	<b>✓</b>
	The tree transplanting and planting works shall be implemented by approved Landscape Contractors			✓



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.			✓
	<u>Top Soils</u>	During Construction	Contractor	
	<ul> <li>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.</li> </ul>			N/A
	Protection of Important Landscape Features	During Construction	Contractor	N/A
	<ul> <li>Important features such as temples, Island House and kilns within the study area, although remote from the proposed works retained and adequately protected.</li> </ul>			
Landscape and Visual during Operation	Not required.	N/A	N/A	N/A



## Appendix D Meteorological Data Extracted from Hong Kong Observatory

### Daily Extract of Meteorological Observations , February 2016 - Sheung Shui

		Air	Fempera	iture					
Day	Mean Pressure (hPa)	Absolute Daily Max (deg. C)	Mean (deg. C)	Absolute Daily Min (deg. C)	Mean Dew Point (deg. C)	Mean Relative Humidity (%)	Total Rainfall (mm)	Prevailing Wind Direction (degrees)	Mean Wind Speed (km/h)
01	1023.2	15.1	10.6	8.6	8.8	89	16.5	***	***
02	1025.4	9.5	8.4	7.1					***
03	1024.2	13.4	10.7	8.1	0.1			***	***
04	1022.0	20.3	14.5	11.0	9.8	74	0.0	***	***
05	1021.8	20.9	14.1	10.7	7.1	64	0.0	***	***
06	1025.7	19.4	13.8	10.5	-3.2	32	0.0	***	***
07	1026.5	20.2	12.8	7.9	-4.1	33	0.0	***	***
08	1024.0	22.8	12.2	4.5	1.4	56	0.0	***	***
09	1020.9	24.4	14.7	6.6	8.3	68	0.0	***	***
10	1017.3	18.0	16.3	13.1	10.8	70	0.0	***	***
11	1014.5	27.1	19.9	16.0	16.9	83	0.0	***	***
12	1012.8	24.8	20.7	18.5	19.0	90	0.0	***	***
13	1012.0	27.6	23.0	19.3	20.2	85	0.0	***	***
14	1015.0	25.4	20.7	15.3	15.9	75	0.0	***	***
15	1025.2	15.3	11.5	9.4	3.6	59	0.5	***	***
16	1026.2	13.6	11.2	9.2	3.1	58	0.0	***	***
17	1024.5	12.9	11.7	10.1	6.5	72	1.0	***	***
18	1022.1	14.3	12.7	10.4	11.2	91	1.0	***	***
19	1020.7	15.8	14.3	13.4	13.3	94	12.5	***	***
20	1023.6	22.1	15.7	11.9	7.9	63	2.0	***	***
21	1022.0	15.4	14.9	11.7	9.6	71	0.0	***	***
22	1020.5	18.4	16.4	15.3	14.6	89	0.0	***	***
23	1023.0			85	0.0	***	***		
24	1028.2	14.9	12.9	11.3	8.2	73	0.0	***	***
25	1029.4	16.8	14.0	12.3	9.5	74	0.0	***	***
26	1027.8	17.1	14.6	12.9	11.2	80	0.0	***	***
27	1024.9	20.4	15.7 11.7		11.4 76 0.0		76 0.0		***
28	1024.0	23.7	15.1	8.9	10.6	77	0.0	***	***
29	1024.4	27.1	17.6	9.7	8.9	62	0.0	***	***

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

Rainfall measured in increment of 0.5 mm. Amount of < 0.5 mm cannot be detected

## Daily Extract of Meteorological Observations , March 2016 - Sheung Shui

		Air	Гетрега	ture					
Day	Mean Pressure (hPa)	Absolute Daily Max (deg. C)	Mean (deg. C)	Absolute Daily Min (deg. C)	Mean Dew Point (deg. C)	Mean Relative Humidity (%)	Total Rainfall (mm)	Prevailing Wind Direction (degrees)	Mean Wind Speed (km/h)
01	1024.4	23.9	17.2	14.3	10.5	66	0.0	***	***
02	1023.6	24.6	17.2	14.0	9.4	62	0.0	***	***
03	1020.7	24.9	18.3	12.4	13.7	76	0.0	***	***
04	1017.9	24.8	19.6	15.0	16.4	83	0.0	***	***
05	1016.5	25.0	20.8	17.5	17.2	81	0.0	***	***
06	1015.5	27.1	21.6	17.5	18.2	83	0.0	***	***
07	1014.7	22.3	19.2	16.2	17.6	91	0.0	***	***
08	1012.2	22.6	20.7	19.2	18.8	89	0.0	***	***
09	1012.1	23.2	21.1	17.7	20.0	94	7.5	***	***
10	1020.3	17.7	12.1	9.0	9.7	85	5.5	***	***
11	1023.5	12.8	10.1	8.3	5.7	74	0.5	***	***
12	1017.9	14.8	13.0	10.6	10.6	85	0.0	***	***
13	1014.7	18.2	15.9	14.7	15.2	96	7.0	***	***
14	1018.4	15.6	14.6	13.3	11.0	80	0.0	***	***
15	1017.3	15.7	14.3	13.2	10.8	80	0.5	***	***
16	1014.8	16.6	15.7	14.1	13.7	88	0.0	***	***
17	1013.8	18.7	17.6	16.3	16.3	92	0.0	***	***
18	1011.5	24.8	21.3	18.5	19.8	91	0.0	***	***
19	1012.6	27.9	23.1	19.9	21.3	90	4.5	***	***
20	1013.9	22.4	20.0	19.0	17.5	86	0.0	***	***
21	1014.2	19.1	17.8	16.8	16.6	93	67.0	***	***
22	1012.8	17.9	17.3	16.7	16.3	94	3.5	***	***
23	1012.5	21.4	19.3	17.5	18.8	96	13.5	***	***
24	1020.2	19.2	15.2	12.3	14.1	93	20.5	***	***
25	1024.1	16.8	13.3	10.4	8.5	74	1.0	***	***
26	1023.5	23.6	15.1	7.6	8.3	68	0.0	***	***
27	1024.1	24.1	16.8	10.9	7.7	60	0.0	***	***
28	1024.0	21.6	16.5	11.4	8.5	63	0.0	***	***
29	1021.3	22.2	18.0 13.8		10.8 64 0.0		0.0	***	***
30	1018.1	24.1	20.5	18.4	17.0	17.0 81 0.0		***	***
31	1015.0	28.8	22.3	17.9	18.8	83	0.0	***	***

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

Rainfall measured in increment of 0.5 mm. Amount of < 0.5 mm cannot be detected

### Daily Extract of Meteorological Observations , April 2016 - Sheung Shui

		Air '	Fempera	iture		3.7		D 11	2.5
Day	Mean Pressure (hPa)	Absolute Daily Max (deg. C)	Mean (deg. C)	Absolute Daily Min (deg. C)	Mean Dew Point (deg. C)	Mean Relative Humidity (%)	Total Rainfall (mm)	Prevailing Wind Direction (degrees)	Mean Wind Speed (km/h)
01	1014.0	27.7	23.1	20.7	19.8	83	0.0	***	***
02	1015.2	25.5#	22.2	20.1#	19.7	86	0.0	***	***
03	1014.0	28.4#	23.8	20.6#	20.8	84	0.0	***	***
04	1012.0	30.0#	23.9	21.1#	21.2	86	21.5	***	***
05	1012.8	25.6#	22.9	20.3#	21.1	90	0.0	***	***
06	1012.6	29.0#	24.4	21.0#	21.1	83	0.0	***	***
07	1012.7	29.6	25.3	22.4	22.0	83	0.0	***	***
08	1012.7	30.5	26.1	22.6	22.3	81	0.0	***	***
09	1011.0	29.0#	25.7	22.9#	22.9	85	0.0	***	***
10	1008.7	26.3	23.3	21.3	21.6	91	40.0	***	***
11	1009.6	23.7#	22.0	21.0#	20.0	89	0.0	***	***
12	1008.5	21.9	21.0	20.0	19.2	90	4.0	* * *	***
13	1005.2	25.1#	22.0	21.0#	21.6	98	51.0	***	***
14	1007.8	24.8	23.3	22.0	23.0	98	1.5	***	***
15	1010.7	24.1#	22.1	21.4#	21.1	94	0.0	***	***
16	1009.8	29.6#	25.3	21.2#	22.6	86	0.0	* * *	***
17	1010.2	30.0#	26.5	23.0#	23.7	85	0.0	***	***
18	1014.1	26.7	23.4	20.7	20.2	83	14.5	***	***
19	1016.7	21.7#	20.9	19.5#	17.3	80	0.5	***	***
20	1014.0	24.9	22.5	20.7	20.1	86	0.0	***	***
21	1011.9	28.4	24.4	21.8	22.6	90	1.5	***	***
22	1010.2	25.3#	22.6	20.1#	21.8	95	36.0	***	***
23	1007.6	29.0	24.7	21.6	22.9	90	1.0	***	***
24	1008.1	29.7	24.6	22.0	22.8	90	4.5	***	***
25	1009.2	30.3#	26.1	22.9#	24.3	91	8.0	***	***
26	1008.8	30.2#	27.4	25.6#	24.3	84	1.0	***	***
27	1007.6	31.2#	27.5	23.7#	24.1	83	4.5	***	***
28	1010.0	30.0#			21.6 74		0.0	***	***
29	1013.4	27.5#	24.6	22.5#	18.8	71	0.5	***	***
30	1011.7	24.4#	22.8	20.2#	18.1	75	16.5	***	***

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

# data incomplete

Rainfall measured in increment of 0.5 mm. Amount of < 0.5 mm cannot be detected



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

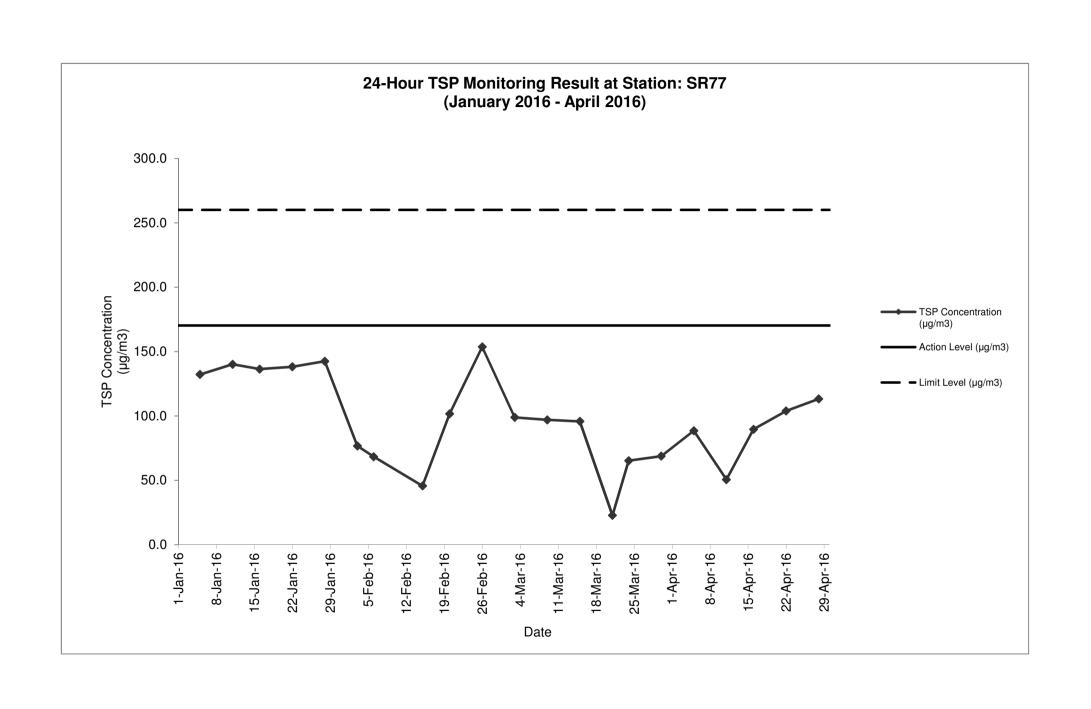
#### Appendix E Air Quality Monitoring Results and their Graphical Presentation

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

Sampling Date	Weather Condition	Paper No.	W	/t. of pape	r (g)	E	Elapse Tim	е	Flo	w Rate (C	FM)	Flov	v Rate (m³	³/min)	Total Volume	TSP Concentratio	Action Level (µ	Limit Level (µ	Wind speed	Wind direction
Date	Condition		Initial Wt.	Final Wt.	Wt. of Dust	Initial	Final	Sampling Hour	Initial	Final	Avg Flow Rate	Initial	Final	Avg Flow Rate	(m³)	 (μg/m³)	g/m3)	g/m3)	m/s	uncotion
5-Jan-16	Cloudy	C144	2.8221	3.0971	0.2750	4252.67	4276.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	132.2	170.3	260.0	<5	N
11-Jan-16	Fine	C146	2.8195	3.1110	0.2915	4279.67	4303.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	140.2	170.3	260.0	<5	N
16-Jan-16	Cloudy	C148	2.8049	3.0886	0.2837	4306.67	4330.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	136.4	170.3	260.0	<5	N
22-Jan-16	Cloudy	C150	2.8134	3.1009	0.2875	4333.67	4357.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	138.2	170.3	260.0	<5	N
28-Jan-16	Cloudy	C152	2.8114	3.1078	0.2964	4360.67	4384.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	142.5	170.3	260.0	<5	N
3-Feb-16	Cloudy	C154	2.8024	2.9620	0.1596	4387.67	4411.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	76.7	170.3	260.0	<5	N
6-Feb-16	Cloudy	C156	2.7981	2.9403	0.1422	4414.67	4438.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	68.4	170.3	260.0	<5	N
15-Feb-16	Cloudy	C158	2.7951	2.8902	0.0951	4441.67	4465.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	45.7	170.3	260.0	<5	N
20-Feb-16	Cloudy	C160	2.8210	3.0325	0.2115	4468.67	4492.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	101.7	170.3	260.0	<5	N
26-Feb-16	Fine	C162	2.8027	3.1222	0.3195	4495.67	4519.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	153.6	170.3	260.0	<5	N
3-Mar-16	Sunny	C164	2.7614	2.9671	0.2057	4522.67	4546.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	98.9	170.3	260.0	<5	N
9-Mar-16	Cloudy	C166	2.8872	3.0889	0.2017	4549.67	4573.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	97.0	170.3	260.0	<5	N
15-Mar-16	Cloudy	C168	2.8043	3.0036	0.1993	4576.67	4600.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	95.8	170.3	260.0	<5	N
21-Mar-16	Rainy	C170	2.8121	2.8596	0.0475	4603.67	4627.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	22.8	170.3	260.0	<5	N
24-Mar-16	Rainy	C172	2.8087	2.9445	0.1358	4630.67	4654.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	65.3	170.3	260.0	<5	N
30-Mar-16	Cloudy	C174	2.8006	2.9438	0.1432	4657.67	4681.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	68.9	170.3	260.0	<5	N
5-Apr-16	Sunny	C176	2.8221	3.0062	0.1841	4684.67	4708.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	88.5	170.3	260.0	<5	N
11-Apr-16	Rainy	C178	2.8817	2.9870	0.1053	4711.67	4735.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	50.6	170.3	260.0	<5	N
16-Apr-16	Cloudy	C180	2.8874	3.0738	0.1864	4738.67	4762.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	89.6	170.3	260.0	<5	N
22-Apr-16	Rainy	C182	2.8541	3.0701	0.2160	4765.67	4789.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	103.9	170.3	260.0	<5	N
28-Apr-16	Fine	C184	2.8314	3.0668	0.2354	4792.67	4816.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	113.2	170.3	260.0	<5	N

Summary For the Re (Feb 2016 - Apr 2016										
Average 83.8										
Minimum	22.8									
Maximum	153.6									

Note: No major dust source observed during the monitoring period



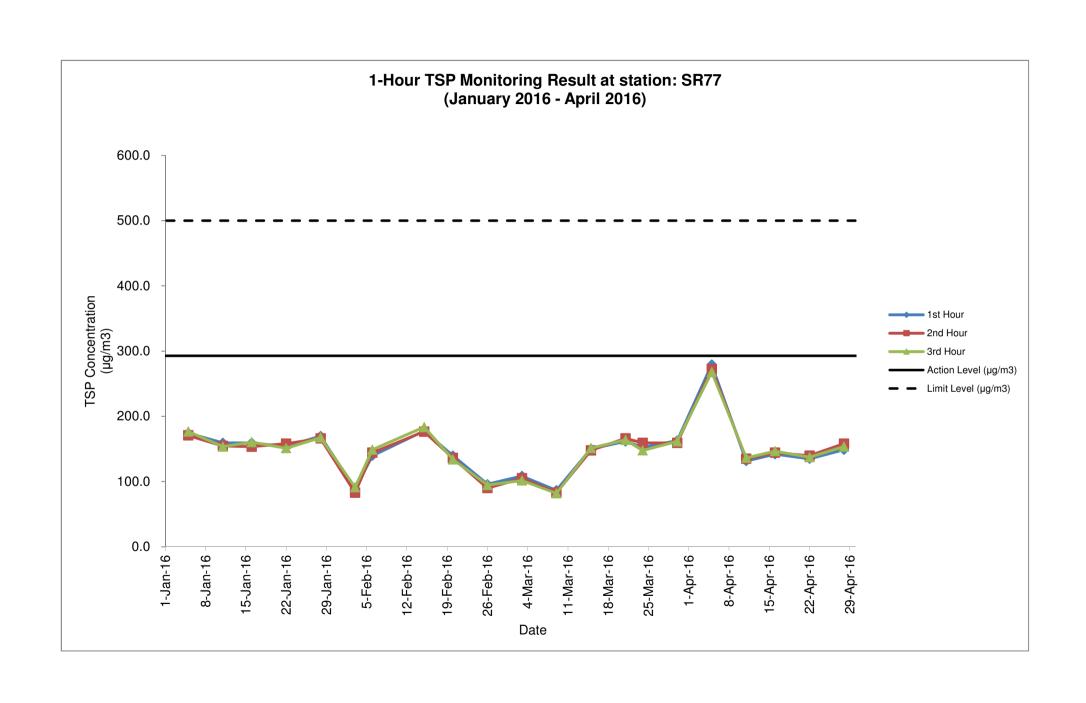
#### Appendix E Air Quality Monitoring Results and their Graphical Presentation

1-Hour TSP Monitoring Result at Station: SR77

Data	Weather		T:			Conc.(µg/m³)	)	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-Jan-16	Fine	9:00	-	12:07	174.3	170.8	176.6	292.7	500.0
11-Jan-16	Fine	9:00	-	12:06	159.3	154.6	153.5	292.7	500.0
16-Jan-16	Cloudy	9:00	-	12:06	159.3	153.5	160.4	292.7	500.0
22-Jan-16	Cloudy	9:00	-	12:07	153.5	158.1	151.2	292.7	500.0
28-Jan-16	Rainy	9:00	-	12:07	169.6	166.2	167.3	292.7	500.0
3-Feb-16	Cloudy	9:00	-	12:07	88.9	83.1	91.2	292.7	500.0
6-Feb-16	Cloudy	9:00	-	12:08	139.6	144.3	148.9	292.7	500.0
15-Feb-16	Cloudy	9:00	-	12:07	177.7	176.6	183.5	292.7	500.0
20-Feb-16	Cloudy	9:00	-	12:07	139.6	136.2	133.9	292.7	500.0
26-Feb-16	Fine	9:00	-	12:06	95.8	90.0	94.6	292.7	500.0
3-Mar-16	Sunny	9:00	-	12:07	108.5	105.0	101.6	292.7	500.0
9-Mar-16	Cloudy	9:00	-	12:06	86.6	83.1	81.9	292.7	500.0
15-Mar-16	Cloudy	9:00	-	12:08	150.0	147.7	151.2	292.7	500.0
21-Mar-16	Rainy	9:00	-	12:07	161.6	166.2	163.9	292.7	500.0
24-Mar-16	Rainy	9:00	-	12:06	152.3	159.3	147.7	292.7	500.0
30-Mar-16	Cloudy	9:00	-	12:06	162.7	159.3	161.6	292.7	500.0
5-Apr-16	Sunny	9:00	-	12:06	279.3	272.4	267.7	292.7	500.0
11-Apr-16	Cloudy	9:00	-	12:07	131.6	135.0	136.2	292.7	500.0
16-Apr-16	Cloudy	9:00	-	12:06	142.0	144.3	146.6	292.7	500.0
22-Apr-16	Cloudy	9:00	-	12:06	135.0	139.6	137.3	292.7	500.0
28-Apr-16	Fine	9:00	-	12:06	148.9	158.1	153.5	292.7	500.0

Summary For the Reporting Quarter (Feb 2016 - Apr 2016)										
Average 143.8										
Minimum	81.9									
Maximum	279.3									

Note: No major dust source observed during the monitoring period



**Project Name:** 

Contract No. CV/2012/09 Liantang / Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure works - Contract 3

**Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange** 

and Fanling - Stage 2

#### Noise Monitoring Result at SR77

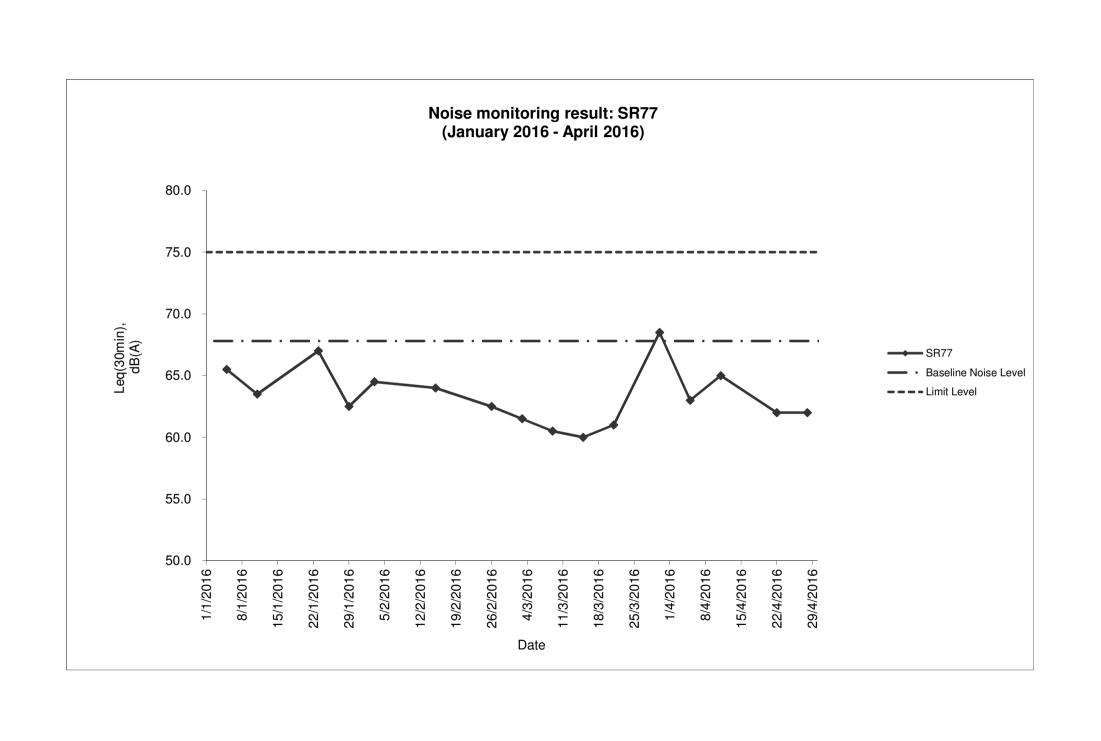
Date	Weather	Start	End	Measure	ed Noise Level	(dB(A))*	Baseline Corrected	Baseline Noise Level	Limit Level	Exceedance
	Condition	Time	Time	L10(30min)	L90(30min)	Leq(30min)	Level, dB(A)**	(dB(A)), Leq(30min)	dB(A)	(Y / N)
2016/01/05	Fine	15:00	15:30	87.0	57.5	65.5	-	67.8	75.0	N
2016/01/11	Fine	14:30	15:00	87.0	57.0	63.5	-	67.8	75.0	N
2016/01/23	Cloudy	11:00	11:30	76.0	63.0	67.0	-	67.8	75.0	N
2016/01/29	Cloudy	15:00	15:30	85.5	57.5	62.5	•	67.8	75.0	N
2016/02/03	Cloudy	14:30	15:00	90.0	57.5	64.5	•	67.8	75.0	N
2016/02/15	Cloudy	15:00	15:30	87.0	56.5	64.0	•	67.8	75.0	N
2016/02/26	Fine	15:30	16:00	96.0	57.0	62.5	•	67.8	75.0	N
2016/03/03	Sunny	10:30	11:00	75.0	54.5	61.5	-	67.8	75.0	N
2016/03/09	Cloudy	10:00	10:30	78.5	56.0	60.5	-	67.8	75.0	N
2016/03/15	Cloudy	14:00	14:30	96.0	57.5	60.0	-	67.8	75.0	N
2016/03/21	Rainy	14:30	15:00	69.0	53.5	61.0	-	67.8	75.0	N
2016/03/30	Cloudy	15:30	16:00	77.5	65.5	68.5	-	67.8	75.0	N
2016/04/05	Sunny	13:30	14:00	85.0	60.0	63.0	-	67.8	75.0	N
2016/04/11	Cloudy	13:30	14:00	88.5	54.0	65.0	-	67.8	75.0	N
2016/04/22	Cloudy	14:00	14:30	67.0	60.0	62.0	-	67.8	75.0	N
2016/04/28	Fine	13:30	14:00	88.0	60.0	62.0	-	67.8	75.0	N

Summary For the Rep (Feb 2016 - Apr 2016)	orting Quarter
Average	62.9
Minimum	60.0
Maximum	68.5

#### Remarks

<sup>\* +3</sup>dB(A) Façade effect correction included

<sup>\*\*</sup> Baseline corrected level is only calculated when measured noise level (Leq) > limit level.



Contract No. CV/2012/09 Liantang / Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure works - Contract 3
Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling - Stage 2 Project Name:

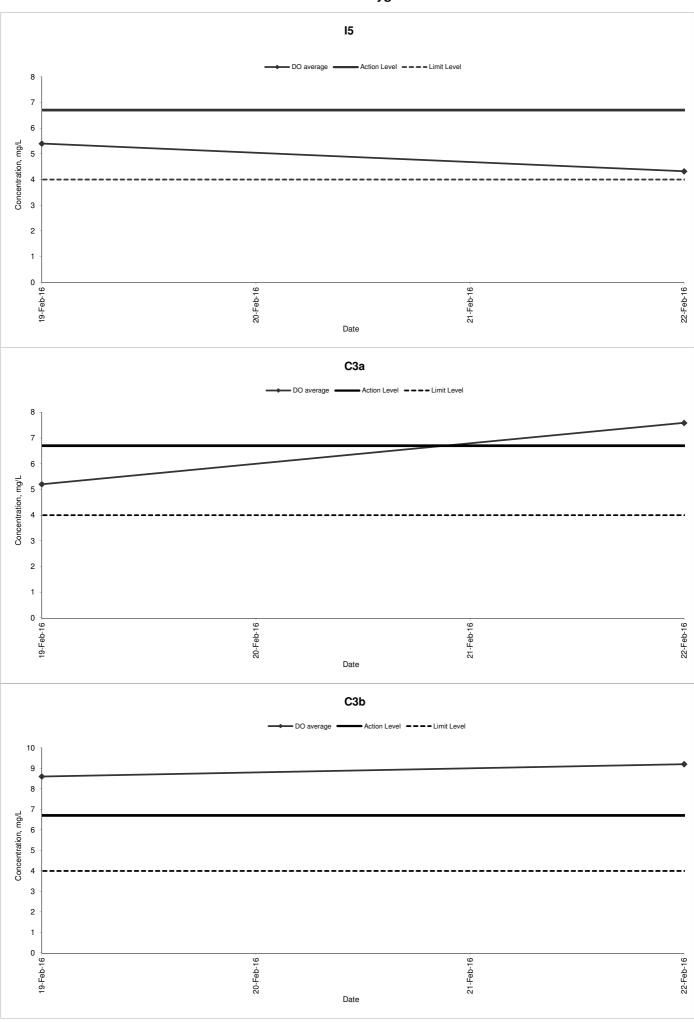
Date of Monitoring 19/2/2016 Weather: Cloudy

Monitoring	Time	Water	Temper	ature (oC)		pН		DO (mg/L)		DO (% saturation)		Turbidity (NTU)		Salinity (g/L)		(mg/L)
Location		Depth (m)	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
C3a	14:53	<0.5	16.8	16.8	7.2	7.2	5.2	5.2	54.6	54.6	11.1	11.1	0.1	0.1	10.0	10.0
OJa	14.55	<b>CO.</b> 5	16.8	10.0	7.2	7.2	5.2	5.2	54.6	34.0	11.1	11.1	0.1	0.1	10.0	10.0
C3b	14:36	<0.5	15.7	15.7	7.3	7.0	8.6	8.6	87.0	87.0	46.9	46.9	< 0.1	<0.1	26.0	27.5
CSD	14.30	<0.5	15.7	15.7	7.3	7.3	8.6	0.0	87.0	67.0	46.9	40.9	<0.1	<0.1	29.0	27.5
15	14:26	<0.5	16.6	16.6	7.3	7.0	5.4	E 4	55.6	55.4	4.9	4.9	0.1	0.1	3.7	3.7
15	14.20	<0.5	16.6	10.0	7.3	7.3	5.4	5.4	55.2	55.4	4.9	4.9	0.1	0.1	3.6	3.7

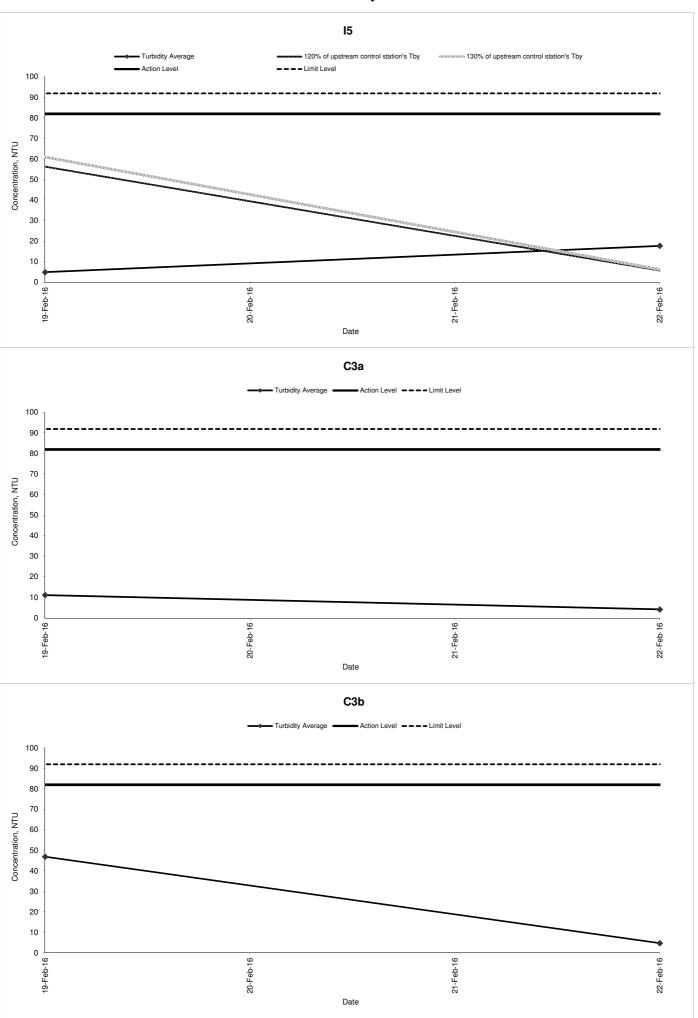
Date of Monitoring 22/2/2016 Weather: Cloudy

Monitoring	Time	Water	Temper	ature (oC)	ŗ	Н	DO	(mg/L)	DO (% s	aturation)	Turbio	dity (NTU)	Salir	nity (g/L)	SS	(mg/L)
Location		Depth (m)	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
C3a	11:09	<0.5	17.5	17.5	7.5	7.5	7.6	7.6	79.3	79.3	4.1	4.1	<0.1	<0.1	18.0	19.0
			17.5	17.5	7.5	7.5	7.6	7.0	79.3	79.5	4.1	4.1	< 0.1	<0.1	20.0	19.0
C3b	11:25	<0.5	16.7	16.7	7.7	7.7	9.2	9.2	94.1	94.1	4.8	4.8	<0.1	<0.1	4.9	5.1
			16.7	16.7	7.7	7.7	9.2	9.2	94.1	94.1	4.8	4.6	<0.1	<0.1	5.3	5.1
15	11:47	< 0.5	17.5	17.5	7.2	7.2	4.3	4.3	45.2	45.2	17.7	17.7	<0.1	<0.1	3.1	3.2
			17.5	17.5	7.2	1.2	4.3	4.3	45.2	40.2	17.7	17.7	<0.1	<0.1	3.2	3.2

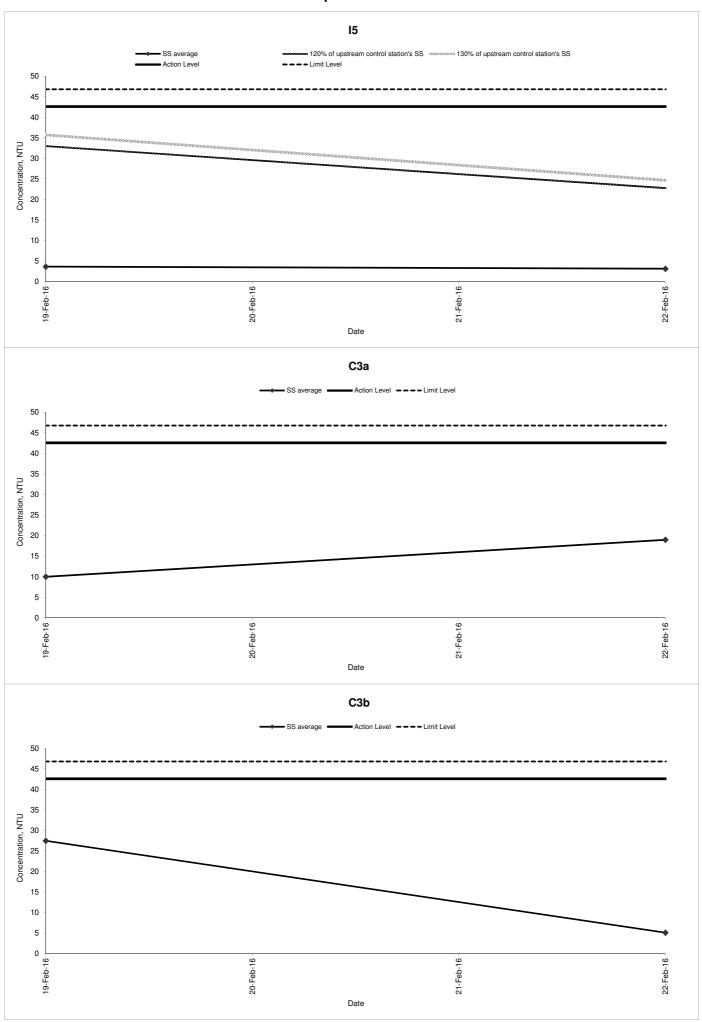
#### **Dissolved Oxygen**



#### **Turbidity**



#### Suspended Solid





## **Appendix F Waste Flow Table**

#### **Quarterly Summary Waste Flow Table**

		Actual Quantities of Inert C&D Materials Generated Monthly								Actual Quantities of C&D Wastes Generated Monthly				
		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 '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in m³)	(in '000m <sup>3</sup> )		
Feb-16	1.876	0.651	1.225	0.020	1	1.205	1.141	-	-	-	-	0.110		
Mar-16	1.501	0.417	1.084	-	-	1.084	0.831	-	-	0.001	-	0.090		
Apr-16	0.472	0.046	0.426	0.018	1	0.408	0.647	-	-	-	-	0.135		
Total	3.849	1.114	2.735	0.038	-	2.697	2.619	-	-	0.001	-	0.335		

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 5m3.
- 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



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.	



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