

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

Quarterly EM&A Report

November 2014 to January 2015

**Submitted to**

Environmental Protection Department

**Prepared By**

Meinhardt Infrastructure and Environment Ltd

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**

(November 2014 to January 2015)

Certified by: Fredrick Leong 

Position: Environmental Team Leader

Date: 10 February 2015



Our ref AFK/TK/jn/bw/T329380/22.05/L-0060  
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Your ref

Hyder-Arup-Black & Veatch Joint Venture  
c/o Hyder Consulting Limited  
47/F Hopewell Centre  
183 Queen's Road East  
Wanchai, Hong Kong

10 February 2015  
By Fax (2805 5028) & Post

Dear Sir,

**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/B  
Quarterly EM&A Summary Report for November 2014 to January 2015 for the portion of Stage 2 works entrusted to CEDD under Contract No. CV/2012/09**

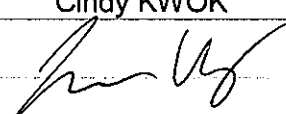
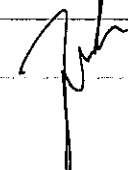

We refer to the Quarterly EM&A Summary Report for November 2014 to January 2015 for the Project received on 6 and 9 February 2015 submitted by ET via email. We confirm we have no comment.

Yours faithfully  
for MOTT MACDONALD HONG KONG LIMITED

A handwritten signature in black ink, appearing to read "Terence Kong".

Terence Kong  
Independent Environmental Checker

c.c. HyD – Mr. Chung Lok Chin (Fax: 2714 5198) / Ms. Jackei Yin (Fax: 2761 4864)  
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 February 2015	0	Ivan TING Cindy KWOK	Fredrick LEONG	Helen COCHRANE
				



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## EXECUTIVE SUMMARY

This report documents the findings of EM&A works conducted in the quarter between 1 November 2014 and 31 January 2015

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-compliances were noted. One environmental complaint, which was concluded that it was unlikely due to the construction works of this Project after investigations, was received. 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, i.e. 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 has to be scheduled in November 2015 after the utilities diversions were completed, and therefore the construction works were temporary suspended. The 4-week post construction water quality monitoring will be conducted after the installation of the base slab finishes, hence the completion of the box culvert works.

As such, impact monitoring for water quality was not necessary in the reporting quarter due to temporary suspension of the construction works and is anticipated to be resumed in November 2015 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.

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/B in accordance with the Updated EM&A Manual (dated October 2013) 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:

- Pile cap construction for Bridge E;
- ADMS installation;
- Cable detection and trial trenches;
- Catch fence erection;
- Filling Works at Tong Hang East;
- Lagging wall and capping beam for bored pile wall;
- Storm drains laying
- Water pipes laying;
- Sewer pipes laying;
- Construction of noise barriers;
- Pier construction;
- Pile cap works;

- Piling works;
- Pre-drilling;
- Construction of valve control and Telemetry House;
- Retaining structure construction;
- Traffic diversion for Fanling Highway;
- Road works at Fanling Highway;
- Socket H-pile installation;
- Utilities duct laying;
- Piling works for Bridge E;
- Erection of temporary support at DSD nullah;
- Abutment construction for Bride E; and
- Tree felling 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	Telephone	Fax
AECOM	Engineer's Representative	Senior Resident Engineer	Mr. Alan Lee	2171 3303	2171 3498
		Resident Engineer (Environmental)	Mr. Perry Yam	2171 3350	
Mott MacDonald	Independent Environmental Checker (IEC)	IEC	Mr. Terence Kong	2828 5919	2827 1823
Chun Wo	Contractor	Site Agent	Mr. Daniel Ho	2638 6144	2638 7077
		Senior Environmental Officer	Mr. Sam Lam	2638 6168	
		Environmental Officer	Mr. Victor Huang	2638 6181	
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 November 2014 and 31 January 2015.

## 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
<b>Air Quality</b>				
1-hour TSP	µg/m <sup>3</sup>	292.7	500	Three times every 6 days
24-hour TSP	µg/m <sup>3</sup>	170.3	260	Once every 6 days
<b>Construction Noise</b>				
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 partially completed by the end of March 2014 except the last construction activity, i.e. 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 has to be scheduled in November 2015 after the utilities diversions were completed, and therefore the construction works are temporary suspended. The 4-week post construction water quality monitoring will be conducted after the installation of the base slab finishes, hence the completion of the box culvert works.
- 2.1.3 As such, impact monitoring for water quality was not necessary in the reporting quarter due to temporary suspension of the construction works and is anticipated to be resumed in November 2015 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
<b>Air Quality</b>			
1 hour Total Suspended Particulate			
SR77	40.4µg/m <sup>3</sup>	130.4µg/m <sup>3</sup>	88.7µg/m <sup>3</sup>
24 hour Total Suspended Particulate			
SR77	49.9µg/m <sup>3</sup>	131.5µg/m <sup>3</sup>	88.8µg/m <sup>3</sup>
<b>Construction Noise</b>			
SR77	63.0dB(A)	74.0dB(A)	70.1dB(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		Number of Exceedances Events	Number of Project Related Exceedance Events
<b>Air Quality</b>			
1-hour Total Suspended Particulates	Action Level	0	0
	Limit Level	0	0
24-hour Total Suspended Particulates	Action Level	0	0
	Limit Level	0	0
<b>Construction Noise</b>			
Leq 30min	Action Level	0	0
	Limit Level	0	0

3.2.2 The Contractor has been reminded to strengthen the mitigation measures including:

- 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;
- Wheel washing facilities should be properly maintained to ensure proper functioning;
- All types of wastes, both on land and floating in the river stream, should be collected and sorted properly, and also be disposed timely and properly;
- Refuse collection bins should be labelled properly;
- Plant and equipment should be properly maintained to avoid excessive dust emission; and
- Provide proper chemical and chemical waste management.

## 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 12,534m<sup>3</sup> of excavated material has been generated. 9,111m<sup>3</sup> of inert C&D materials was disposed of at public fill to Tuen Mun Area 38, while 2,883m<sup>3</sup> of inert C&D materials was reused on site. 275m<sup>3</sup> of general refuse was disposed of at North East New Territories (NENT) Landfill. 10m<sup>3</sup> of plastics and no paper/cardboard packaging and metals were collected by recycling contractor in the reporting quarter. 41m<sup>3</sup> of 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

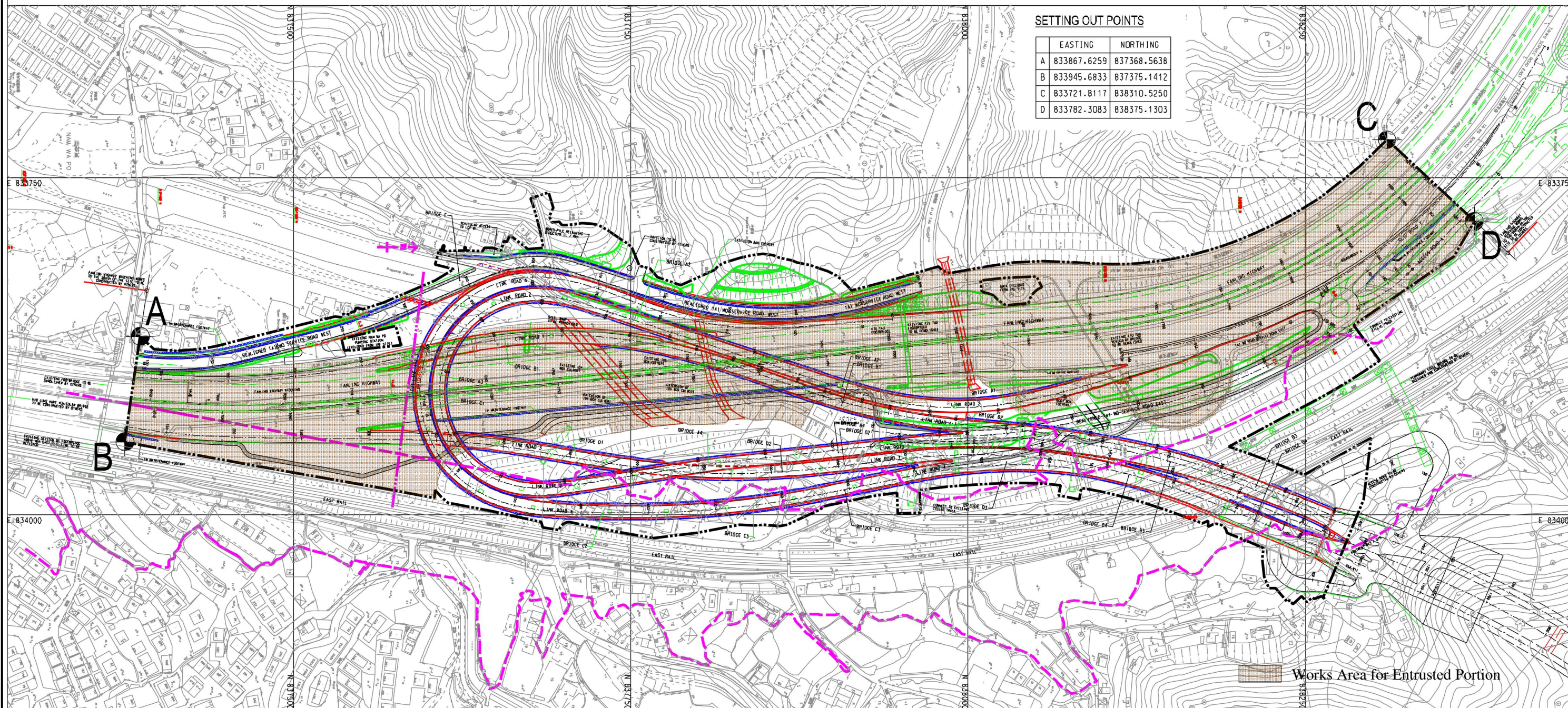
- 5.1.1 No environmental non-compliance was recorded in the reporting quarter. One environmental complaint, which was concluded that it was unlikely due to the construction works of this Project after investigations, was received. No environmental related prosecution or notification of summons was received 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 have been recorded. .
- 6.1.3 No environmental non-compliances were noted. One environmental complaint, which was concluded that it was unlikely due to the construction works of this Project after investigations, was received. 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, i.e. 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 has to be scheduled in November 2015 after the utilities diversions were completed, and therefore the construction works are temporary suspended. The 4-week post construction water quality monitoring will be conducted after the installation of the base slab finishes, hence the completion of the box culvert works.
- 6.1.5 As such, impact monitoring for water quality was not necessary in the reporting quarter due to temporary suspension of the construction works and is anticipated to be resumed in November 2015 during the course of remaining box culvert works.

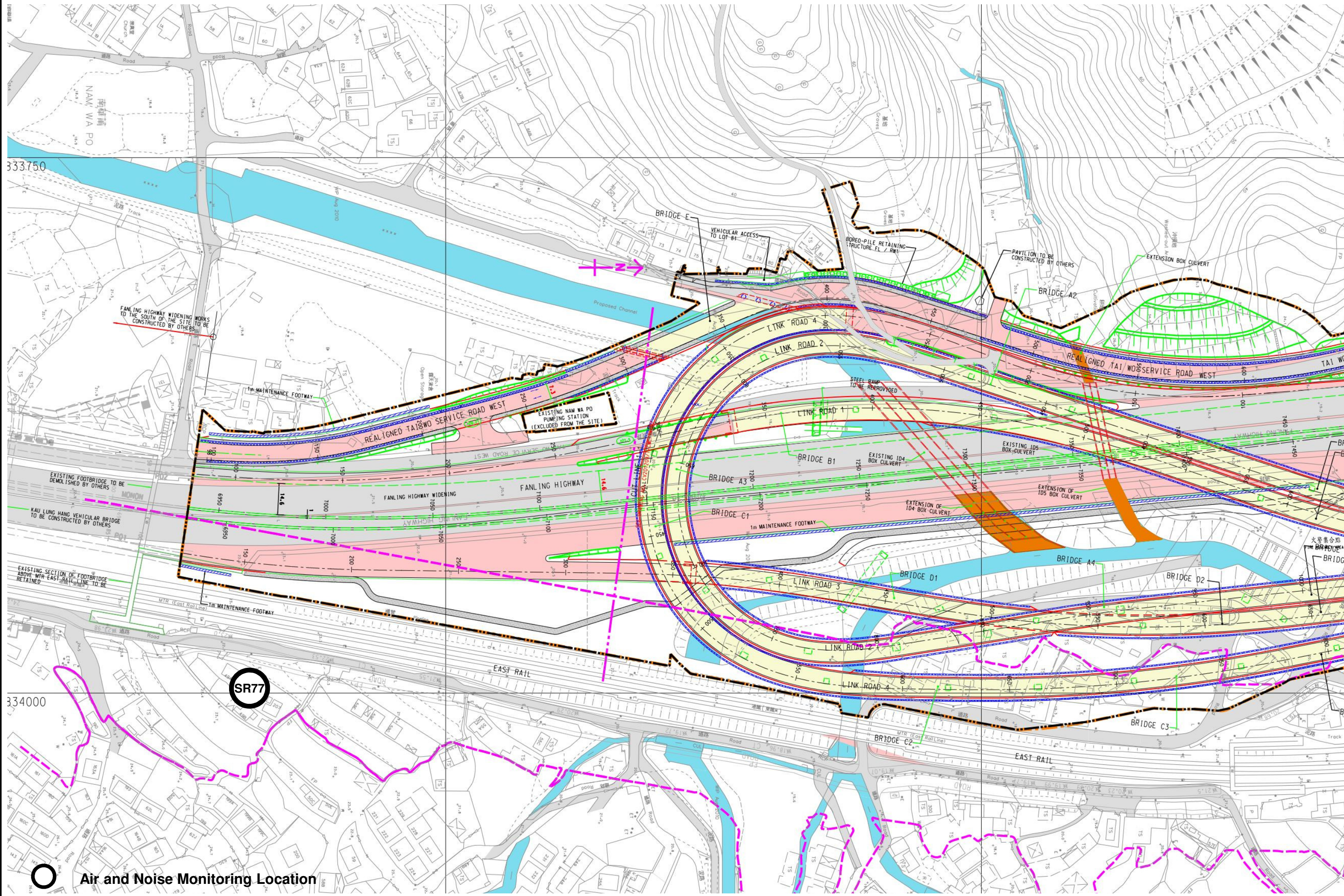
# Figure





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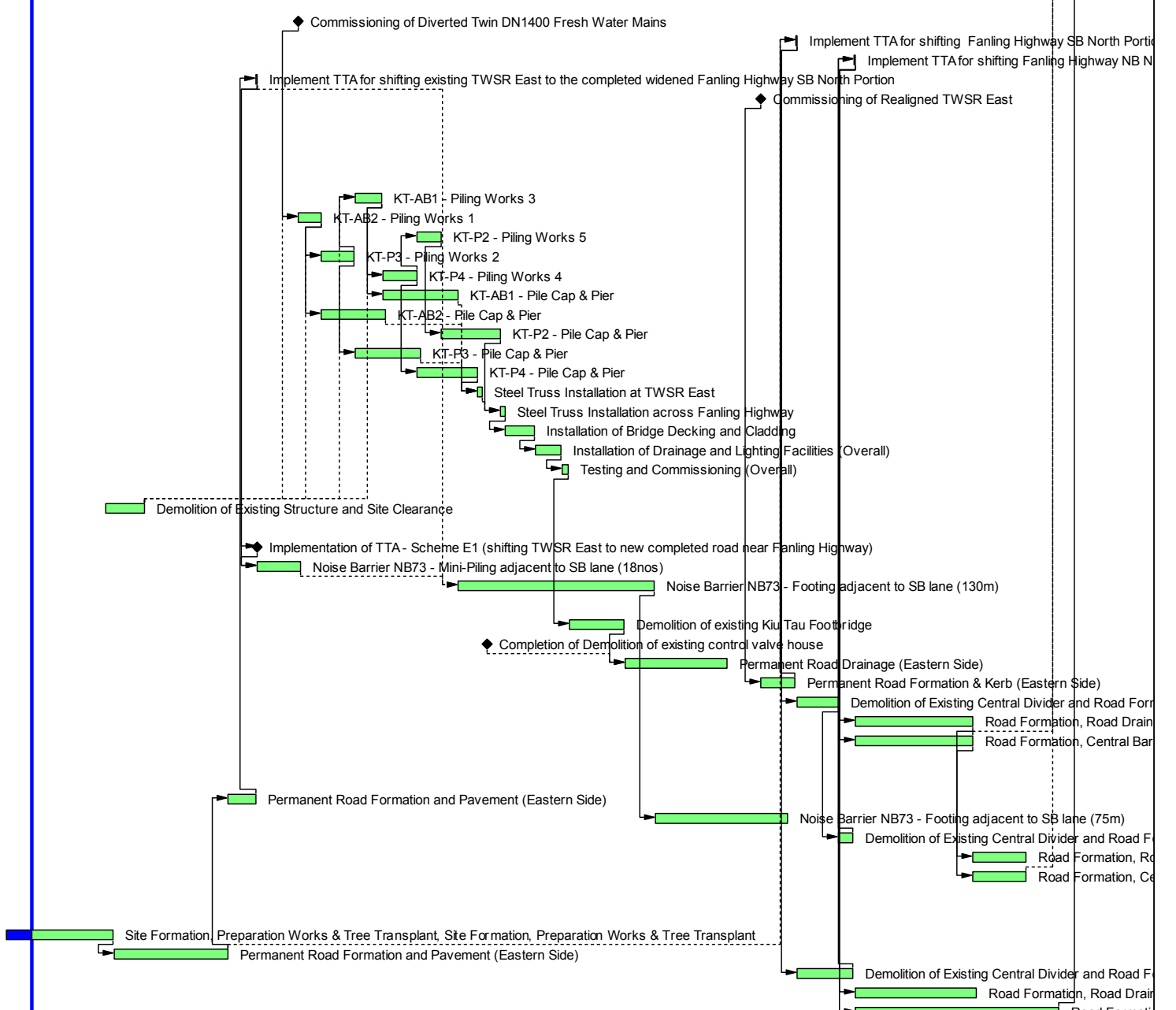




# Appendix A

# Construction Programme

Activity ID	Activity Name	OD	Start	Finish	Total Float	2014												2015												2016												2017												2018											
						A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J
<b>CWP - Under Development (Postpone Pipe Jacking)</b>																																																																	
<b>Key Dates (Forecast)</b>																																																																	
<b>Major Works</b>																																																																	
KD-0105	KD1: Complete Section 1A - all HyD's entrustment works in Zone3 and SBZ2 except for landscaping works	0		07-Dec-17	53																																																												
KD-0205	KD2: Complete Section 1B - all HyD's entrustment works in NBZ1 except for landscaping works	0		09-Jan-18	234																																																												
<b>Major Milestones and Events</b>																																																																	
MS-0220	Commissioning of Diverted Twin DN1400 Fresh Water Mains	0		14-Nov-14	132																																																												
MS-1000A	Implement TTA for shifting Fanling Highway SB North Portion (CH7470-7925) eastward to the completed road near TWSI	2	07-Dec-16	08-Dec-16	3																																																												
MS-1000B	Implement TTA for shifting Fanling Highway NB North Portion (CH7470-7925) eastward to the designed alignment	2	06-Mar-17	07-Mar-17	3																																																												
MS-3000	Implement TTA for shifting existing TWSR East to the completed widened Fanling Highway SB North Portion	2	11-Sep-14	12-Sep-14	7																																																												
MS-3010	Commissioning of Realigned TWSR East	0	15-Oct-16		3																																																												
<b>Section IA &amp; IB - Fanling Highway Widening (KD-1 &amp; KD-2)</b>																																																																	
<b>Fanling Highway North Portion between CH7470 and CH7925</b>																																																																	
<b>Fanling Highway Zone 6 between CH7470 and CH7600 (Provision of Kiu Tau Footbridge)</b>																																																																	
<b>Kiu Tau Footbridge Re-provision (East)</b>																																																																	
FHW-5000A	KT-AB1 - Piling Works 3	30	09-Feb-15	21-Mar-15	612																																																												
FHW-5000B	KT-AB2 - Piling Works 1	30	15-Nov-14	19-Dec-14	132																																																												
FHW-5000C	KT-P2 - Piling Works 5	30	14-May-15	18-Jun-15	612																																																												
FHW-5000D	KT-P3 - Piling Works 2	40	20-Dec-14	07-Feb-15	612																																																												
FHW-5000E	KT-P4 - Piling Works 4	40	23-Mar-15	13-May-15	612																																																												
FHW-5010A	KT-AB1 - Pile Cap & Pier	90	23-Mar-15	14-Jul-15	660																																																												
FHW-5010B	KT-AB2 - Pile Cap & Pier	75	20-Dec-14	27-Mar-15	745																																																												
FHW-5010C	KT-P2 - Pile Cap & Pier	75	19-Jun-15	16-Sep-15	612																																																												
FHW-5010D	KT-P3 - Pile Cap & Pier	75	09-Feb-15	19-May-15	705																																																												
FHW-5010E	KT-P4 - Pile Cap & Pier	75	14-May-15	12-Aug-15	635																																																												
FHW-5020	Steel Truss Installation at TWSR East	7	13-Aug-15	20-Aug-15	635																																																												
FHW-5030	Steel Truss Installation across Fanling Highway	7	17-Sep-15	24-Sep-15	612																																																												
FHW-5040	Installation of Bridge Decking and Cladding	35	25-Sep-15	07-Nov-15	612																																																												
FHW-5050	Installation of Drainage and Lighting Facilities (Overall)	35	09-Nov-15	18-Dec-15	612																																																												
FHW-5060	Testing and Commissioning (Overall)	7	19-Dec-15	29-Dec-15	612																																																												
<b>At-Grade Road Works (130m)</b>																																																																	
FHW-5100	Demolition of Existing Structure and Site Clearance	45	27-Jan-14	26-Mar-14	135																																																												
FHW-5110*	Pipe Laying & Connection - Twin DN1400 Watermains (CHE & CHG) adjacent to existing TWSRE (90m, 9m depth)	186	31-Mar-14	14-Nov-14	132																																																												
FHW-5120	Implementation of TTA - Scheme E1 (shifting TWSR East to new completed road near Fanling Highway)	0	13-Sep-14		573																																																												
FHW-5130	Noise Barrier NB73 - Mini-Piling adjacent to SB lane (18nos)	54	13-Sep-14	17-Nov-14	573																																																												
FHW-5140	Noise Barrier NB73 - Footing adjacent to SB lane (130m)	240	14-Jul-15	07-May-16	332																																																												
FHW-5150*	Pipe Laying - DN1200 & DN600 Watermains (CHB & CHC) along existing TWSRE (120m long, 3m depth)	240	04-Sep-15	02-Jul-16	373																																																												
FHW-5160	Demolition of existing Kiu Tau Footbridge	65	30-Dec-15	22-Mar-16	885																																																												
FHW-5170	Completion of Demolition of existing control valve house	0		28-Aug-15	1050																																																												
FHW-5180	Permanent Road Drainage (Eastern Side)	125	23-Mar-16	24-Aug-16	885																																																												
FHW-5190	Permanent Road Formation & Kerb (Eastern Side)	45	15-Oct-16	06-Dec-16	3																																																												
FHW-5200	Demolition of Existing Central Divider and Road Formation (Middle Part, Pavement Only)	45	09-Dec-16	09-Feb-17	3																																																												
FHW-5300	Road Formation, Road Drainage, Kerb, Noise Barrier (Western Side)	145	08-Mar-17	01-Sep-17	520																																																												
FHW-5400	Road Formation, Central Barrier (Remaining Works at Middle Part)	145	08-Mar-17	01-Sep-17	57																																																												
<b>Fanling Highway Zone 7 between CH7600 and CH7660 (Existing Vehicular Bridge)</b>																																																																	
<b>At-Grade Roadworks (60m)</b>																																																																	
FHW-6100	Permanent Road Formation and Pavement (Eastern Side)	35	31-Jul-14	10-Sep-14	7																																																												
FHW-6110	Noise Barrier NB73 - Footing adjacent to SB lane (75m)	166	09-May-16	24-Nov-16	332																																																												
FHW-6200	Demolition of Existing Central Divider and Road Formation (Middle Part, Pavement Only)	20	10-Feb-17	04-Mar-17	3																																																												
FHW-6300	Road Formation, Road Drainage, Kerb (Western Side)	65	02-Sep-17	20-Nov-17	520																																																												
FHW-6400	Road Formation, Central Barrier (Remaining Works at Middle Part)	65	02-Sep-17	20-Nov-17	57																																																												
<b>Fanling Highway Zone 8 between CH7660 and CH7925</b>																																																																	
<b>At-Grade Roadworks (265m)</b>																																																																	
FHW-7100	Site Formation, Preparation Works & Tree Transplant	127	30-Aug-13 A	07-Feb-14	7																																																												
FHW-7110	Permanent Road Formation and Pavement (Eastern Side)	140	08-Feb-14	30-Jul-14	7																																																												
FHW-7200	Demolition of Existing Central Divider and Road Formation (Middle Part, Pavement Only)	65	09-Dec-16	04-Mar-17	3																																																												
FHW-7300	Road Formation, Road Drainage, Kerb (Western Side)	150	08-Mar-17	07-Sep-17	3																																																												
FHW-7400	Road Formation, Central Barrier (Remaining Works at Middle Part)	250	08-Mar-17	09-Jan-18	187																																																												



- █ Actual Work
- █ Remaining Work
- █ Critical Remaining Work
- ◆ Milestone



**CEDD Contract No. CV/2012/09**

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

**Works Sequence for Fanling Highway North Portion**

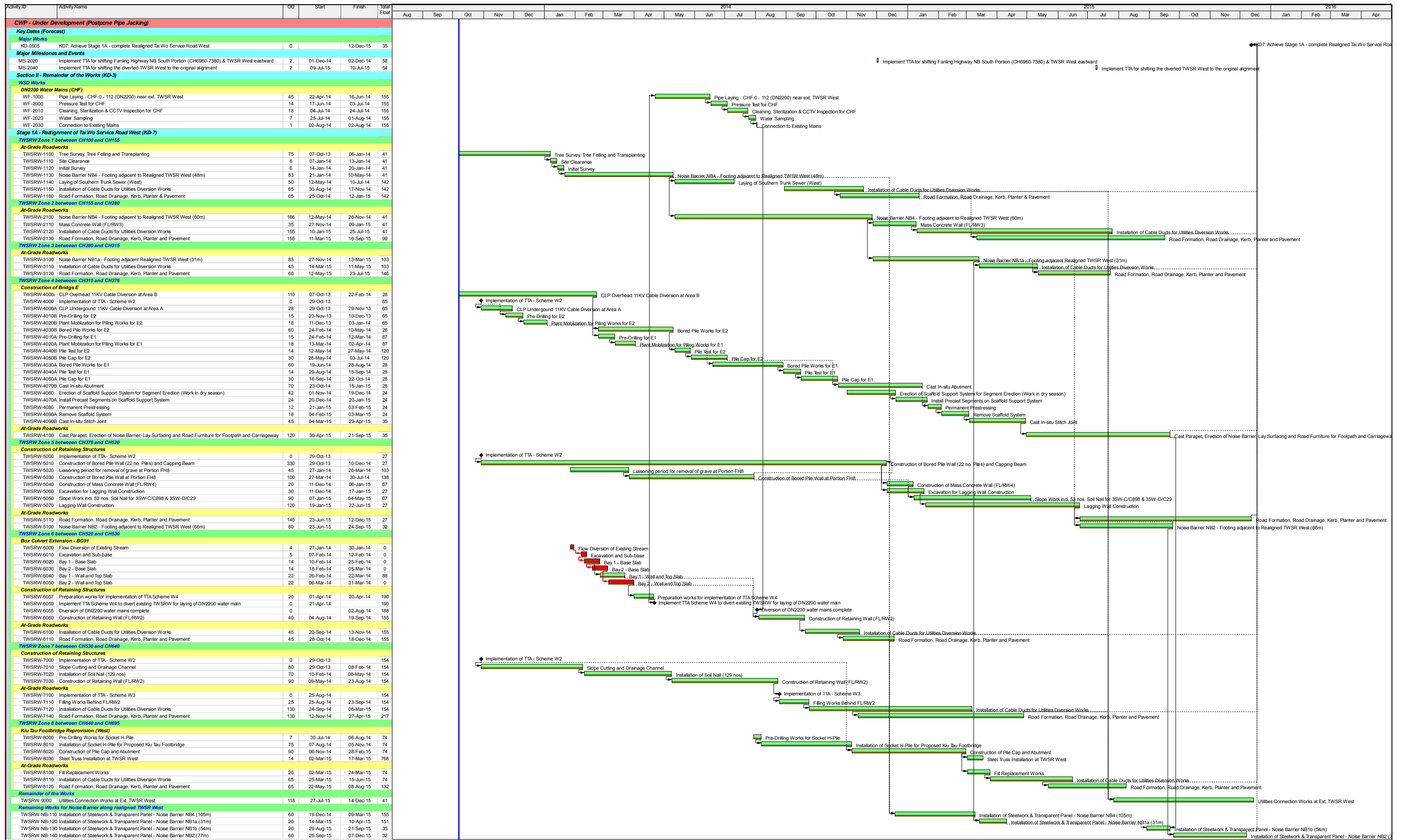
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Date	Revision	Checked	Approved
11-Oct-13		SL	









**俊和建築工程有限公司**  
**CHUN WO CONSTRUCTION & ENGINEERING CO., LTD.**

- █ Actual Work
- █ Remaining Work
- █ Critical Remaining Work
- ◆ Milestone
- █ Project Baseline Bar

**CEDD Contract No. CV/2012/09**

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

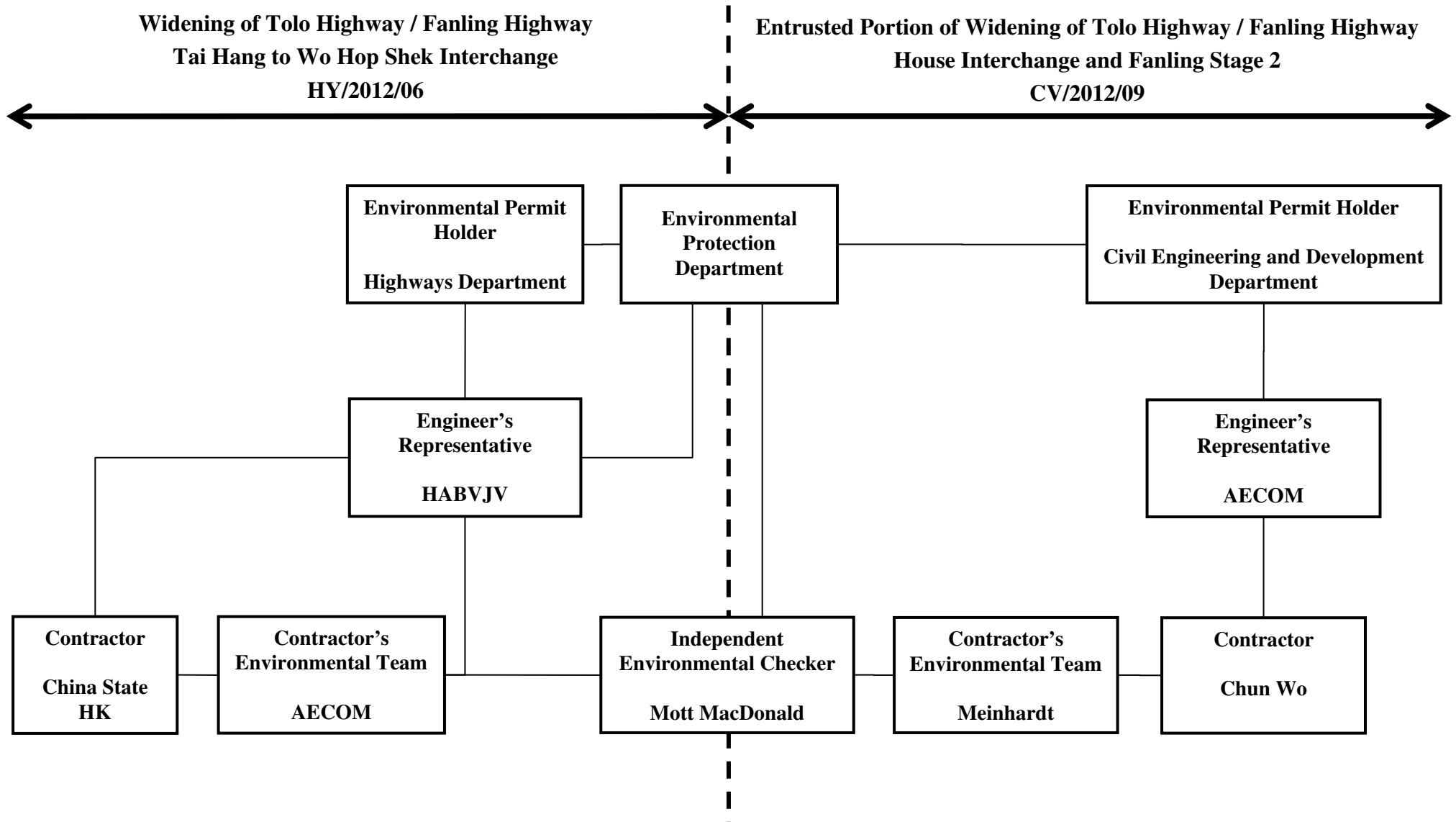
**Works Sequence for TWSRW**

Date	Revision	Checked	Approved
11-Sep-13		SL	

# Appendix B

## Project Organization Structure





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

Impact	Environmental Protection Measures	Timing	Responsibility	Implementation Status #
<b>Air Quality</b>				
Air Quality during Construction	<ul style="list-style-type: none"> <li>Restricting heights from which materials are dropped, as far as practicable to minimize the fugitive dust arising from unloading/loading.</li> <li>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.</li> <li>Effective water sprays shall be used to control potential dust emission sources such as unpaved haul roads and active construction areas.</li> <li>All spraying of materials and surfaces shall avoid excessive water usage.</li> <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> <li>Materials shall be dampened, if necessary, before transportation.</li> <li>Travelling speeds shall be controlled to reduce traffic induced dust dispersion and re-suspension within the site from the operating haul trucks.</li> <li>Vehicle washing facilities shall be provided to minimise the quantity of material deposited on public roads.</li> </ul>	During Construction	Contractor	✓  Rem  ✓  ✓  ✓  ✓  Rem and Obs
Air Quality during Operation	Not required	N/A	N/A	N/A
<b>Noise</b>				
Noise during Construction	<ul style="list-style-type: none"> <li>Use of silenced plant or plant equipped with mufflers or dampers in substitute of ordinary plant.</li> <li>Reduce the number of equipment and their percentage on-time.</li> </ul>	During Construction	Contractor	✓  ✓
Noise during Operation	Not required	N/A	N/A	N/A
<b>Water Quality</b>				
Water Quality during Construction	<u>Road Widening Works, Earthworks and Culvert Extension Works</u> <ul style="list-style-type: none"> <li>Wastewater generated from any concrete batching washdown of equipment or similar activities should be discharged into foul sewers, after the removal of settleable 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.</li> </ul>	During Construction	Contractor	✓

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

Impact	Environmental Protection Measures	Timing	Responsibility	Implementation Status <sup>#</sup>
	<ul style="list-style-type: none"> <li>Sand traps, oil interceptors and other pollution prevention installations should be provided, properly cleaned and maintained.</li> <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> <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> <li>Open stockpiles should be covered with a tarpaulin cover.</li> <li>During the wet season, any exposed top soils should be covered with a tarpaulin, shotcreted or hydroseeded.</li> <li>Sand and silt from wash-water from vehicle washing should be settled out before discharging into storm drains.</li> <li>Fuels should be stored in bunded areas such that spillage can be easily collected.</li> </ul>			<ul style="list-style-type: none"> <li>✓</li> <li>✓</li> <li>✓</li> <li>✓</li> <li>✓</li> <li>✓</li> <li>✓</li> </ul>
Water Quality during Operation	Not required	N/A	N/A	N/A
<b>Waste Management</b>				
Waste Management during Construction	<p><u>General Waste</u></p> <ul style="list-style-type: none"> <li>Transport of wastes off site as soon as possible.</li> <li>Maintenance of accurate waste records.</li> <li>Minimisation of waste generation for disposal (via reduction/recycling/re-use).</li> <li>No on-site burning will be permitted.</li> <li>Use of re-useable metal hoardings/signboards.</li> </ul> <p><u>Vegetation from site clearance</u></p> <ul style="list-style-type: none"> <li>Segregation of materials to facilitate disposal.</li> <li>Mulching to reduce bulk and where possible review opportunities for the possible beneficial use within landscaping areas.</li> </ul>	During Construction        During Construction	Contractor        Contractor	<ul style="list-style-type: none"> <li>✓</li> <li>✓</li> <li>✓</li> <li>✓</li> <li>✓</li> <li>✓</li> <li>✓</li> </ul>

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

Impact	Environmental Protection Measures	Timing	Responsibility	Implementation Status #
	<p><u>Demolition Wastes</u></p> <ul style="list-style-type: none"> <li>• Segregation of materials to facilitate disposal.</li> <li>• Appropriate stockpile management.</li> </ul> <p><u>Excavated Materials</u></p> <ul style="list-style-type: none"> <li>• Segregation of materials to facilitate disposal / reuse.</li> <li>• Appropriate stockpile management.</li> <li>• Re-use of excavated material on or off site (where possible).</li> <li>• Special handling and disposal procedures in the event that contaminated materials are excavated.</li> </ul> <p><u>Construction Wastes</u></p> <ul style="list-style-type: none"> <li>• Segregation of materials to facilitate recycling/reuse (within designated area in appropriate containers/stockpiles).</li> <li>• Appropriate stockpile management.</li> <li>• Planning to reduce over ordering and waste generation.</li> <li>• Recycling and re-use of materials where possible (e.g. metal, wood from formwork)</li> <li>• For material which cannot be re-used/recycled, collection should be carried out by an approved waste contractor for landfill disposal.</li> </ul> <p><u>Bentonite Slurries</u></p> <ul style="list-style-type: none"> <li>• Bentonite slurries should be reused as far as possible.</li> <li>• Disposal in accordance with Practice Note For Professional Persons ProPECC PN 1/94.</li> </ul> <p><u>Chemical Wastes</u></p> <ul style="list-style-type: none"> <li>• Storage within locked, covered and bunded area.</li> <li>• The storage area shall not be located adjacent to sensitive receivers e.g. drains.</li> </ul>	<p>During Construction</p> <p>During Construction</p> <p>During Construction</p> <p>During Construction</p> <p>During Construction</p> <p>During Construction</p>	<p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p>	<p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>N/A</p> <p>✓</p> <p>Obs</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>N/A</p> <p>N/A</p> <p>✓</p> <p>✓</p>

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

Impact	Environmental Protection Measures	Timing	Responsibility	Implementation Status #
	<ul style="list-style-type: none"> <li>• Minimise waste production and recycle oils/solvents where possible.</li> <li>• A spill response procedure shall be in place and absorption material available for minor spillages.</li> <li>• Use appropriate and labelled containers.</li> <li>• Educate site workers on site cleanliness/waste management procedures.</li> <li>• If chemical wastes are to be generated, the contractor must register with EPD as a chemical waste producer.</li> <li>• The chemical wastes shall be collected by a licensed chemical waste collector.</li> </ul> <p><u>Municipal Wastes</u></p> <ul style="list-style-type: none"> <li>• Waste shall be stored within a temporary refuse collection facility, in appropriate containers prior to collection and disposal.</li> <li>• Regular, daily collections are required by an approved waste collector.</li> </ul>	During Construction	Contractor	✓ ✓ ✓ Rem ✓ ✓ ✓ ✓
Waste Management during Operation	Not required.	N/A	N/A	N/A
<b>Ecology</b>				
Ecology during Construction	<p><u>Accurate Delineation of Works Area</u></p> <ul style="list-style-type: none"> <li>• Boundaries of proposed works areas shall be clearly identified and separated from external areas by a physical barrier to prevent encroachment of adjacent habitats.</li> <li>• 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.</li> </ul> <p><u>Dust generation</u></p> <p>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:</p> <ul style="list-style-type: none"> <li>• vehicle washing facilities to be provided at every discernible or designated vehicle exit point;</li> </ul>	During Construction	Contractor	✓ ✓ ✓

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

Impact	Environmental Protection Measures	Timing	Responsibility	Implementation Status #
	<ul style="list-style-type: none"> <li>• all temporary site access roads shall be sprayed with water to suppress dust as necessary;</li> <li>• all dusty materials should be sprayed with water immediately prior to any handling; and</li> <li>• all debris should be covered entirely by impervious sheeting or stored in a sheltered debris collection area.</li> </ul> <p><u>Surface Run-off</u></p> <p>In general, mitigation measures shall be in accordance with ProPECC PN1/94 on 'Construction Site Drainage'. Key measures include:</p> <ul style="list-style-type: none"> <li>• Bund and cover stockpiles to avoid run-off;</li> <li>• Channel any run-off through a system of oil, grease and sediment / silt traps and reuse water on site where ever practical;</li> <li>• All vehicle maintenance to be undertaken within a bunded area; and</li> <li>• Maximise vegetation retention on-site to maximise absorption (minimise transport).</li> </ul>	During Construction	Contractor	<ul style="list-style-type: none"> <li>✓</li> <li>✓</li> <li>✓</li> <li>✓</li> <li>✓</li> <li>N/A</li> <li>✓</li> </ul>
Ecology during Operation	<ul style="list-style-type: none"> <li>• To conduct compensatory ecological planting as specified in the latest landscape plans approved by EPD (Clause 2.6 of the Environmental Permit refers).</li> </ul>	During Construction and operation	Contractor (during construction) / LCSD* (during operation)	N/A
<b>Landscape and Visual</b>				
Landscape and Visual during Construction	<p><u>Preservation of Existing Vegetation</u></p> <ul style="list-style-type: none"> <li>• Trees identified for retention within the project limit would be protected during the works</li> <li>• The tree transplanting and planting works shall be implemented by approved Landscape Contractors</li> </ul>	During Construction	Contractor	<ul style="list-style-type: none"> <li>✓</li> <li>✓</li> </ul>

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

Impact	Environmental Protection Measures	Timing	Responsibility	Implementation Status #
	<p><u>Temporary Works Areas</u></p> <ul style="list-style-type: none"> <li>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.</li> </ul> <p><u>Hoarding</u></p> <ul style="list-style-type: none"> <li>A hoarding would be erected where practicable in the most visually sensitive locations to screen the temporary construction works from the local VSRs.</li> </ul> <p><u>Top Soils</u></p> <ul style="list-style-type: none"> <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> <p><u>Protection of Important Landscape Features</u></p> <ul style="list-style-type: none"> <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>	During Construction	Contractor	✓
		During Construction	Contractor	✓
		During Construction	Contractor	N/A
		During Construction	Contractor	N/A
Landscape and Visual during Operation	Not required.	N/A	N/A	N/A

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



# **Appendix D**

## **Meteorological Data Extracted from Hong Kong Observatory**

Climatological Information Services &gt; Extracts of Climatological Data &gt; Extract of Automatic Weather Station &gt; Station: Sheung Shui Automatic Weather Station, Year: 2014, Month: November

### Extract of Meteorological Observations for Sheung Shui Automatic Weather Station, November 2014 (Table 1)

Date	Mean Pressure at M.S.L. (hPa)	Air Temperature			Mean Dew Point Temperature (deg C)	Relative Humidity		
		Max. (deg C)	Mean (deg C)	Min. (deg C)		Max. (%)	Mean (%)	Min. (%)
Nov 1	1012.9	32.5	25.7	21.2	21.5	94	79	50
Nov 2	1015.4	27.8	25.1	21.8	18.3	84	67	53
Nov 3	1018.0	21.8	20.7	19.5	12.6	73	60	53
Nov 4	1017.5	24.2	22.4	20.5	17.0	77	71	67
Nov 5	1017.3	26.6	24.0	23.1	19.0	79	74	64
Nov 6	1017.0	27.1	24.1	21.0	19.7	92	77	66
Nov 7	1017.2	23.9	21.6	19.6	19.9	96	90	75
Nov 8	1018.4	21.3	19.3	18.4	17.9	96	91	82
Nov 9	1018.7	24.2	21.3	18.6	17.3	86	78	69
Nov 10	1017.3	26.8	22.9	20.8	18.6	89	77	60
Nov 11	1016.5	27.3	23.4	21.2	19.4	89	79	62
Nov 12	1018.1	22.2	20.6	17.7	16.9	90	80	70
Nov 13	1020.8	21.5	18.7	16.9	13.7	90	73	62
Nov 14	1020.2#	24.7	20.0#	17.9	14.6#	79	71#	58
Nov 15	1019.8	28.5	22.4	19.6	16.4	90	70	45
Nov 16	1017.9	28.6	22.2	17.3	15.9	95	70	42
Nov 17	1019.9	25.5	20.4	17.9	12.3	68	60	46
Nov 18	1021.9	25.2	20.3	17.2	12.0	68	59	47
Nov 19	1020.9	25.7	20.5	17.4	13.1	87	64	44
Nov 20	1018.4	28.0	21.5	17.6	15.5	90	70	43
Nov 21	1017.0	29.2	22.1	18.7	16.5	89	72	44
Nov 22	1016.5	29.5	22.3	17.4	17.6	95	76	46
Nov 23	1016.6	29.8	23.5	20.9	18.4	89	74	50
Nov 24	1015.3	30.6	23.9	20.3	18.6	92	74	51
Nov 25	1013.4	29.9	23.0	18.7	18.9	94	79	54
Nov 26	1013.7	26.3	22.8	20.0	18.7	92	78	64
Nov 27	1015.1	24.2	22.5	21.7	18.3	88	78	65
Nov 28	1014.6	27.7	23.8	22.1	20.2	89	81	66
Nov 29	1013.2	25.7	23.9	22.5	20.8	91	83	68
Nov 30	1012.7	28.4	25.0	23.2	22.4	92	85	70
<b>Mean</b>	1017.1#	26.5	22.3#	19.7	17.4#	87	75#	58
<b>Maximum</b>	1021.9#	32.5	25.7#	23.2	22.4#	96	91#	82
<b>Minimum</b>	1012.7#	21.3	18.7#	16.9	12.0#	68	59#	42

### Extract of Meteorological Observations for Sheung Shui Automatic Weather Station, November 2014 (Table 2)

Date	Total Rainfall (mm)	Prevailing Wind Direction (degrees)	Mean Wind Speed (km/h)
Nov 1	0.0	***	*****
Nov 2	0.0	***	*****
Nov 3	0.0	***	*****
Nov 4	0.0	***	*****
Nov 5	0.0	***	*****
Nov 6	0.0	***	*****
Nov 7	6.0	***	*****
Nov 8	4.0	***	*****
Nov 9	0.0	***	*****
Nov 10	0.0	***	*****
Nov 11	0.0	***	*****
Nov 12	0.5	***	*****
Nov 13	0.0	***	*****
Nov 14	0.0#	***	*****
Nov 15	0.0	***	*****
Nov 16	0.0	***	*****
Nov 17	0.0	***	*****
Nov 18	0.0	***	*****
Nov 19	0.0	***	*****
Nov 20	0.0	***	*****
Nov 21	0.0	***	*****
Nov 22	0.0	***	*****
Nov 23	0.0	***	*****
Nov 24	0.0	***	*****
Nov 25	0.0	***	*****
Nov 26	0.0	***	*****
Nov 27	0.0	***	*****
Nov 28	0.0	***	*****
Nov 29	0.0	***	*****
Nov 30	0.0	***	*****
<b>Mean</b>	-----	***	*****
<b>Total</b>	10.5#	---	-----
<b>Maximum</b>	6.0#	---	*****
<b>Minimum</b>	0.0#	---	*****

\*\*\* unavailable

# missing (less than 24 hourly observations a day)

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

Climatological Information Services &gt; Extracts of Climatological Data &gt; Extract of Automatic Weather Station &gt; Station: Sheung Shui Automatic Weather Station, Year: 2014, Month: December

**Extract of Meteorological Observations for Sheung Shui Automatic Weather Station, December 2014 (Table 1)**

Date	Mean Pressure at M.S.L. (hPa)	Air Temperature			Mean Dew Point Temperature (deg C)	Relative Humidity		
		Max. (deg C)	Mean (deg C)	Min. (deg C)		Max. (%)	Mean (%)	Min. (%)
Dec 1	1017.2	23.8	17.7	13.8	14.0	94	79	63
Dec 2	1020.1	16.3	14.8	13.9	11.3	94	80	70
Dec 3	1017.7	19.3	17.3	14.5	15.5	97	89	78
Dec 4	1022.3	17.3	12.8	11.0	8.8	98	77	58
Dec 5	1022.9	17.2	13.7	11.4	6.3	89	62	41
Dec 6	1020.4	20.7	16.5	12.4	10.4	88	68	49
Dec 7	1019.7	18.3	17.0	15.5	10.3	72	65	59
Dec 8	1021.0	22.8	17.2	13.5	12.0	87	73	50
Dec 9	1021.5	24.9	19.6	15.0	13.3	90	68	45
Dec 10	1019.5	22.6	19.8	17.3	15.4	93	76	61
Dec 11	1020.4	20.4	18.4	15.0	9.6	71	57	49
Dec 12	1025.3	16.5	14.1	12.5	3.1	61	48	32
Dec 13	1026.3	19.7	12.9	9.4	1.7	83	48	31
Dec 14	1023.8	22.1	14.1	9.0	6.5	83	62	33
Dec 15	1021.3	19.7	17.0	13.6	11.0	83	69	51
Dec 16	1025.7	20.8	16.0	13.0	2.9	87	44	22
Dec 17	1028.1	17.1	12.6	9.7	-7.8	39	23	16
Dec 18	1027.0	15.0	12.2	9.3	-0.1	80	45	26
Dec 19	1024.9	13.1	11.5	10.3	9.5	97	88	60
Dec 20	1021.2	22.2	14.4	9.7	6.8	97	62	35
Dec 21	1023.8	20.5	16.1	12.7	5.1	80	50	29
Dec 22	1024.9	19.1	12.7	9.7	1.0	75	47	29
Dec 23	1022.4	15.0	13.5	12.7	7.5	81	68	40
Dec 24	1021.9	22.2	17.7	13.7	12.6	83	73	60
Dec 25	1020.9	18.9	16.9	15.1	12.9	99	79	50
Dec 26	1020.8	17.5	16.1	14.9	14.2	99	89	75
Dec 27	1022.0	16.2	15.5	13.5	13.5	97	88	78
Dec 28	1023.2	15.6	13.3	10.8	10.8	99	86	65
Dec 29	1021.1	21.0	12.6	8.1	5.0	90	63	31
Dec 30	1020.1	22.9	12.2	6.3	6.6	97	74	29
Dec 31	1022.0	24.0	13.5	6.9	5.6	97	67	16
<b>Mean</b>	1022.2	19.4	15.2	12.1	8.2	86	67	46
<b>Maximum</b>	1028.1	24.9	19.8	17.3	15.5	99	89	78
<b>Minimum</b>	1017.2	13.1	11.5	6.3	-7.8	39	23	16

**Extract of Meteorological Observations for Sheung Shui Automatic Weather Station, December 2014 (Table 2)**

Date	Total Rainfall (mm)	Prevailing Wind Direction (degrees)	Mean Wind Speed (km/h)
Dec 1	7.5	***	*****
Dec 2	1.5	***	*****
Dec 3	1.5	***	*****
Dec 4	9.5	***	*****
Dec 5	1.0	***	*****
Dec 6	0.0	***	*****
Dec 7	0.0	***	*****
Dec 8	0.5	***	*****
Dec 9	0.0	***	*****
Dec 10	0.5	***	*****
Dec 11	0.0	***	*****
Dec 12	0.0	***	*****
Dec 13	0.0	***	*****
Dec 14	0.0	***	*****
Dec 15	0.0	***	*****
Dec 16	0.0	***	*****
Dec 17	0.0	***	*****
Dec 18	0.0	***	*****
Dec 19	7.5	***	*****
Dec 20	0.0	***	*****
Dec 21	0.0	***	*****
Dec 22	0.0	***	*****
Dec 23	0.0	***	*****
Dec 24	0.0	***	*****
Dec 25	3.0	***	*****
Dec 26	2.0	***	*****
Dec 27	3.0	***	*****
Dec 28	3.0	***	*****
Dec 29	0.0	***	*****
Dec 30	0.0	***	*****
Dec 31	0.0	***	*****
<b>Mean</b>	-----	***	*****
<b>Total</b>	40.5	---	-----
<b>Maximum</b>	9.5	---	*****
<b>Minimum</b>	0.0	---	*****

\*\*\* unavailable

# missing (less than 24 hourly observations a day)

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

Climatological Information Services &gt; Extracts of Climatological Data &gt; Extract of Automatic Weather Station &gt; Station: Sheung Shui Automatic Weather Station, Year: 2015, Month: January

### Extract of Meteorological Observations for Sheung Shui Automatic Weather Station, January 2015 (Table 1)

Date	Mean Pressure at M.S.L. (hPa)	Air Temperature			Mean Dew Point Temperature (deg C)	Relative Humidity		
		Max. (deg C)	Mean (deg C)	Min. (deg C)		Max. (%)	Mean (%)	Min. (%)
Jan 1	1024.9	22.4	13.8	7.9	6.4	94	66	28
Jan 2	1025.1	21.9	14.5	9.3	7.7	95	66	35
Jan 3	1022.3	22.5	15.4	10.0	8.0	89	64	33
Jan 4	1016.9	24.0	17.5	12.8	12.7	92	75	49
Jan 5	1014.3	22.7	19.8	17.7	16.4	88	81	69
Jan 6	1014.7	26.6	20.8	17.5	17.2	95	81	58
Jan 7	1020.1	19.9	17.6	14.7	12.0	98	71	50
Jan 8	1025.5	20.7	14.6	11.4	7.0	89	61	43
Jan 9	1025.3	21.5	13.8	9.5	7.8	92	70	34
Jan 10	1023.6	23.3	15.2	9.2	8.3	95	67	35
Jan 11	1022.5	19.8	16.1	12.9	8.9	86	64	40
Jan 12	1022.3	16.4	12.6	11.1	10.4	97	88	58
Jan 13	1021.6	13.6	11.7	9.8	10.8	100	95	84
Jan 14	1022.9	19.3	13.4	9.5	6.6	93	66	39
Jan 15	1023.2	21.2	13.1	7.4	6.9	89	68	38
Jan 16	1022.7	24.3	15.6	10.9	9.7	95	71	36
Jan 17	1024.2	21.6	15.9	12.6	7.8	82	59	40
Jan 18	1024.0	21.1	15.5	12.1	8.3	91	65	30
Jan 19	1022.7	22.0	15.3	11.2	4.2	87	50	24
Jan 20	1021.2	24.0	15.6	11.0	8.4	88	64	31
Jan 21	1021.1	23.9	15.5	9.9	9.9	95	73	35
Jan 22	1021.7	24.9	16.0	10.8	5.3	91	54	23
Jan 23	1020.5	22.3	15.5	10.5	8.5	87	65	38
Jan 24	1019.0	21.0	17.5	15.3	12.7	84	74	61
Jan 25	1018.7	22.7	19.1	16.5	15.4	93	80	65
Jan 26	1018.3	24.4	19.1	15.5	15.5	94	80	61
Jan 27	1017.8	22.7	18.8	16.3	15.1	95	80	63
Jan 28	1018.8	19.7	16.9	16.0	12.1	82	73	60
Jan 29	1019.5	23.6	17.3	14.1	12.2	92	73	51
Jan 30	1022.0	22.3	16.0	13.1	11.5	94	76	49
Jan 31	1026.1	16.2	14.0	12.2	9.7	91	75	67
<b>Mean</b>	1021.4	21.7	15.9	12.2	10.1	91	71	46
<b>Maximum</b>	1026.1	26.6	20.8	17.7	17.2	100	95	84
<b>Minimum</b>	1014.3	13.6	11.7	7.4	4.2	82	50	23

**Extract of Meteorological Observations for Sheung Shui Automatic Weather Station, January 2015 (Table 2)**

Date	Total Rainfall (mm)	Prevailing Wind Direction (degrees)	Mean Wind Speed (km/h)
Jan 1	0.0	***	*****
Jan 2	0.0	***	*****
Jan 3	0.0	***	*****
Jan 4	0.0	***	*****
Jan 5	0.0	***	*****
Jan 6	0.0	***	*****
Jan 7	0.0	***	*****
Jan 8	0.0	***	*****
Jan 9	0.0	***	*****
Jan 10	0.0	***	*****
Jan 11	0.0	***	*****
Jan 12	36.0	***	*****
Jan 13	23.0	***	*****
Jan 14	0.0	***	*****
Jan 15	0.0	***	*****
Jan 16	0.0	***	*****
Jan 17	0.0	***	*****
Jan 18	0.0	***	*****
Jan 19	0.0	***	*****
Jan 20	0.0	***	*****
Jan 21	0.0	***	*****
Jan 22	0.0	***	*****
Jan 23	0.0	***	*****
Jan 24	0.0	***	*****
Jan 25	0.0	***	*****
Jan 26	0.0	***	*****
Jan 27	0.0	***	*****
Jan 28	0.0	***	*****
Jan 29	0.0	***	*****
Jan 30	0.0	***	*****
Jan 31	0.0	***	*****
<b>Mean</b>	-----	***	*****
<b>Total</b>	59.0	---	-----
<b>Maximum</b>	36.0	---	*****
<b>Minimum</b>	0.0	---	*****

\*\*\* unavailable

# missing (less than 24 hourly observations a day)

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

# **Appendix E Environmental Monitoring Data for Air and Noise**



Appendix E  
Air Quality Monitoring Results and their Graphical Presentation

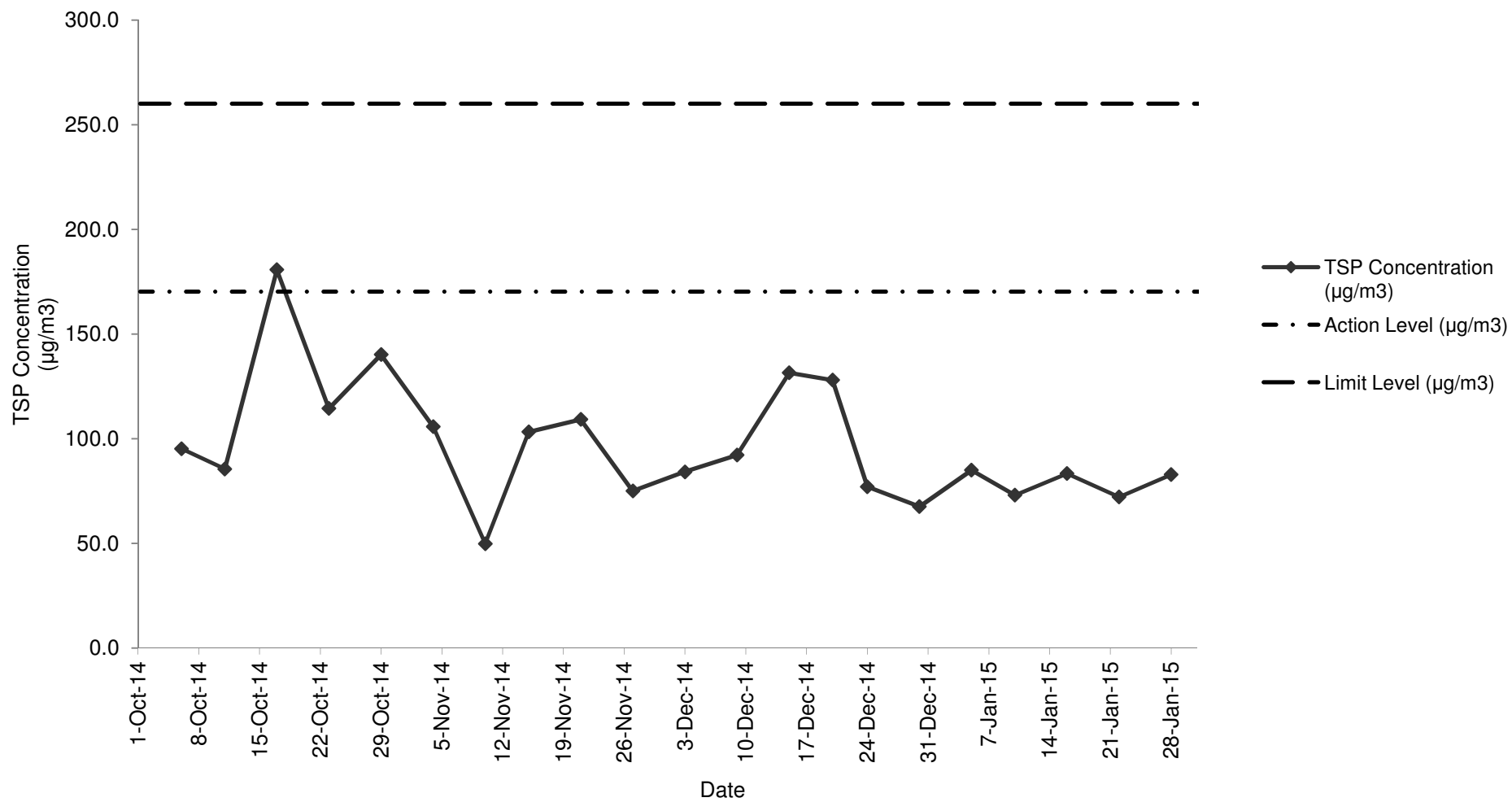
24-Hour TSP Monitoring Result at Station: SR77

Sampling Date	Weather Condition	Paper No.	Wt. of paper (g)			Elapse Time			Flow Rate (CFM)			Flow Rate (m <sup>3</sup> /min)			Total Volume (m <sup>3</sup> )	TSP Concentration (µg/m <sup>3</sup> )	Action Level (µg/m <sup>3</sup> )	Limit Level (µg/m <sup>3</sup> )	Wind speed m/s	Wind direction
			Initial Wt.	Final Wt.	Wt. of Dust	Initial	Final	Sampling Hour	Initial	Final	Avg Flow Rate	Initial	Final	Avg Flow Rate						
6-Oct-14	Fine	93	2.7227	2.9208	0.1981	0.00	24.00	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	95.3	170.3	260.0	<5	N
11-Oct-14	Sunny	94	2.6914	2.8693	0.1779	0.00	24.00	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	85.5	170.3	260.0	<5	N
17-Oct-14	Sunny	97	2.8002	3.1761	0.3759	0.00	24.00	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	<b>180.8</b>	170.3	260.0	<5	N
23-Oct-14	Sunny	101	2.7829	3.0210	0.2381	0.00	24.00	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	114.5	170.3	260.0	<5	N
29-Oct-14	Fine	100	2.7114	3.0030	0.2916	0.00	24.00	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	140.2	170.3	260.0	<5	N
4-Nov-14	Fine	102	2.7809	3.0010	0.2201	0.00	24.00	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	105.8	170.3	260.0	<5	N
10-Nov-14	Cloudy	122	2.7744	2.8781	0.1037	0.00	24.00	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	49.9	170.3	260.0	<5	N
15-Nov-14	Fine	121	2.7538	2.9686	0.2148	0.00	24.00	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	103.3	170.3	260.0	<5	N
21-Nov-14	Fine	114	2.7122	2.9394	0.2272	0.00	24.00	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	109.3	170.3	260.0	<5	N
27-Nov-14	Cloudy	A15	2.8003	2.9564	0.1561	0.00	24.00	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	75.1	170.3	260.0	<5	N
3-Dec-14	Cloudy	A13	2.7920	2.9671	0.1751	0.00	24.00	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	84.2	170.3	260.0	<5	N
9-Dec-14	Fine	A16	2.7614	2.9531	0.1917	0.00	24.00	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	92.2	170.3	260.0	<5	N
15-Dec-14	Fine	114	2.7845	3.0580	0.2735	0.00	24.00	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	131.5	170.3	260.0	<5	N
20-Dec-14	Fine	A12	2.7752	3.0414	0.2662	0.00	24.00	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	128.0	170.3	260.0	<5	N
24-Dec-14	Fine	B4	2.8108	2.9710	0.1602	0.00	24.00	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	77.0	170.3	260.0	<5	N
30-Dec-14	Fine	B3	2.8015	2.9420	0.1405	0.00	24.00	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	67.6	170.3	260.0	<5	N
5-Jan-15	Fine	B15	2.8047	2.9814	0.1767	0.00	24.00	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	85.0	170.3	260.0	<5	N
10-Jan-15	Fine	B13	2.8025	2.9544	0.1519	0.00	24.00	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	73.0	170.3	260.0	<5	N
16-Jan-15	Fine	B11	2.8099	2.9833	0.1734	0.00	24.00	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	83.4	170.3	260.0	<5	N
22-Jan-15	Fine	B8	2.7922	2.9423	0.1501	0.00	24.00	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	72.2	170.3	260.0	<5	N
28-Jan-15	Fine	B7	2.7973	2.9697	0.1724	0.00	24.00	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	82.9	170.3	260.0	<5	N

Summary For the Reporting Quarter (Nov 2014 - Jan 2015)	
Average	88.8
Minimum	49.9
Maximum	131.5

Note: No major dust source observed during the monitoring period  
Data in **Bold** denotes exceedance of respective Action Level  
Data in **Bold Underline** denotes exceedance of respective Limit Level

### 24-Hour TSP Monitoring Result at Station: SR77 (October 2014 - January 2015)



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

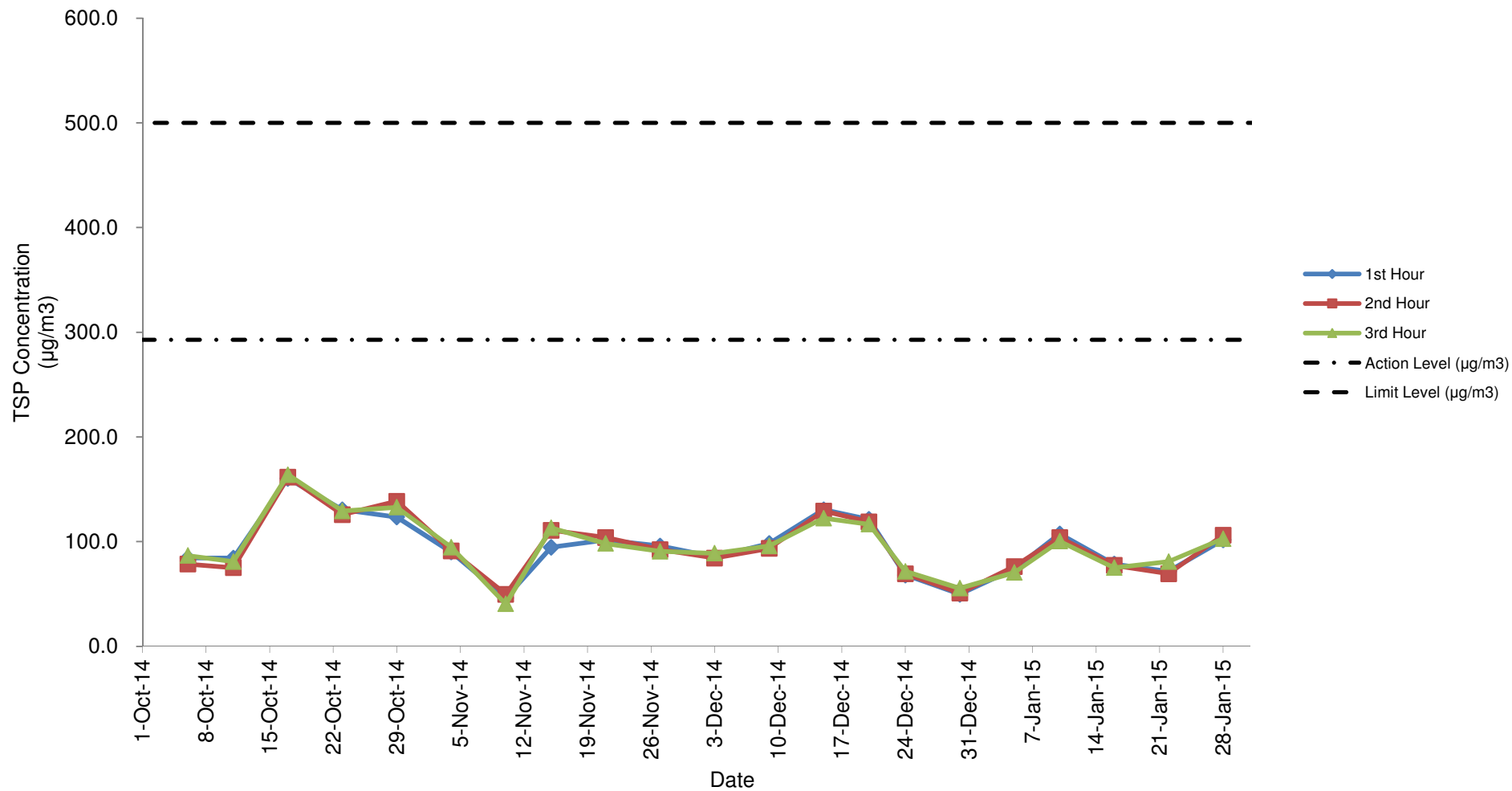
**1-Hour TSP Monitoring Result at Station: SR77**

Date	Weather Condition	Time	Conc.(µg/m <sup>3</sup> )			Action Level (µg/m3)	Limit Level (µg/m3)
			1 <sup>st</sup> Hour	2 <sup>nd</sup> Hour	3 <sup>rd</sup> Hour		
6-Oct-14	Fine	09:00 - 12:00	84.2	78.5	86.6	292.7	500.0
11-Oct-14	Sunny	09:00 - 12:00	84.2	75.0	80.8	292.7	500.0
17-Oct-14	Sunny	09:00 - 12:00	160.4	161.6	163.9	292.7	500.0
23-Oct-14	Sunny	09:00 - 12:00	130.4	125.8	129.3	292.7	500.0
29-Oct-14	Fine	09:00 - 12:00	123.5	138.5	132.7	292.7	500.0
4-Nov-14	Fine	09:00 - 12:00	90.0	91.2	94.6	292.7	500.0
10-Nov-14	Cloudy	09:00 - 12:00	46.2	49.6	40.4	292.7	500.0
15-Nov-14	Fine	09:00 - 12:00	94.6	110.8	113.1	292.7	500.0
21-Nov-14	Fine	09:00 - 12:00	101.6	103.9	98.1	292.7	500.0
27-Nov-14	Cloudy	09:00 - 12:00	95.8	92.3	90.7	292.7	500.0
3-Dec-14	Cloudy	09:00 - 12:00	85.4	84.2	88.9	292.7	500.0
9-Dec-14	Fine	09:00 - 12:00	98.1	93.5	95.8	292.7	500.0
15-Dec-14	Fine	09:00 - 12:00	130.4	129.3	122.3	292.7	500.0
20-Dec-14	Fine	09:00 - 12:00	121.2	118.9	116.6	292.7	500.0
24-Dec-14	Fine	09:00 - 12:00	68.1	69.2	71.6	292.7	500.0
30-Dec-14	Fine	09:00 - 12:00	49.6	50.8	55.4	292.7	500.0
5-Jan-15	Fine	09:00 - 12:00	73.9	76.2	70.4	292.7	500.0
10-Jan-15	Fine	09:00 - 12:00	107.3	103.9	100.4	292.7	500.0
16-Jan-15	Fine	09:00 - 12:00	78.5	77.3	75.0	292.7	500.0
22-Jan-15	Fine	09:00 - 12:00	71.6	69.2	80.8	292.7	500.0
28-Jan-15	Fine	09:00 - 12:00	101.6	106.2	102.7	292.7	500.0

<b>Summary For the Reporting Quarter (Nov 2014 - Jan 2015)</b>	
<b>Average</b>	88.7
<b>Minimum</b>	40.4
<b>Maximum</b>	130.4

Note: No major dust source observed during the monitoring period

### 1-Hour TSP Monitoring Result at station: SR77 (October 2014 - January 2015)



**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 Condition	Start Time	End Time	Measured Noise Level (dB(A))*			Baseline Corrected Level, dB(A)**	Baseline Noise Level (dB(A)), Leq(30min)	Limit Level dB(A)	Exceedance (Y / N)
				L10(30min)	L90(30min)	Leq(30min)				
2014/10/06	Fine	11:00	11:30	73.0	61.5	69.9	-	67.8	75.0	N
2014/10/17	Sunny	11:30	12:00	73.0	60.5	68.5	-	67.8	75.0	N
2014/10/23	Sunny	11:30	12:00	76.0	63.5	71.5	-	67.8	75.0	N
2014/10/29	Fine	10:30	11:00	74.0	65.0	71.2	-	67.8	75.0	N
2014/11/04	Fine	10:30	11:00	78.0	63.5	70.5	-	67.8	75.0	N
2014/11/10	Cloudy	15:00	15:30	77.0	64.0	71.0	-	67.8	75.0	N
2014/11/21	Fine	14:00	14:30	77.5	64.5	71.5	-	67.8	75.0	N
2014/11/27	Cloudy	14:30	15:00	78.5	58.5	66.5	-	67.8	75.0	N
2014/12/03	Cloudy	15:00	15:30	72.5	60.5	63.0	-	67.8	75.0	N
2014/12/09	Fine	10:20	10:50	74.0	61.5	70.5	-	67.8	75.0	N
2014/12/15	Fine	14:00	14:30	76.0	63.0	66.0	-	67.8	75.0	N
2014/12/24	Fine	11:00	11:30	74.5	60.0	71.0	-	67.8	75.0	N
2014/12/30	Fine	16:00	16:30	78.5	64.0	74.0	-	67.8	75.0	N
2015/01/05	Fine	15:30	16:00	76.5	62.0	71.0	-	67.8	75.0	N
2015/01/16	Fine	14:00	14:30	75.0	65.0	72.0	-	67.8	75.0	N
2015/01/22	Fine	14:30	15:00	76.5	62.5	72.5	-	67.8	75.0	N
2015/01/28	Fine	14:00	14:30	78.5	63.5	72.0	-	67.8	75.0	N

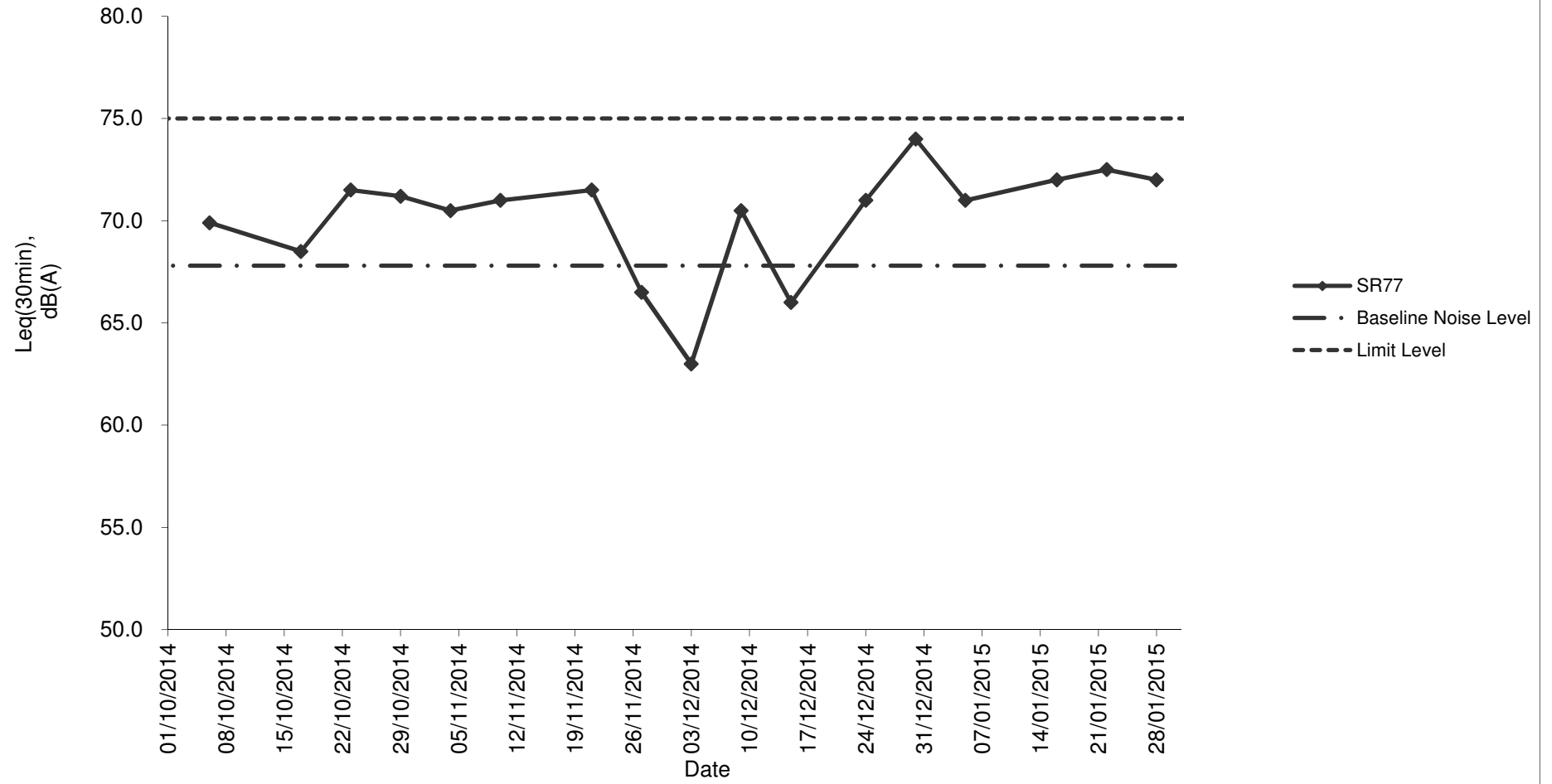
Summary For the Reporting Quarter (Nov 2014 - Jan 2015)	
Average	70.1
Minimum	63.0
Maximum	74.0

**Remarks**

\* +3dB(A) Façade effect correction included

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

**Noise monitoring result: SR77  
(October 2014 - January 2015)**



# Appendix F

## Waste Flow Table

### Monthly Summary Waste Flow Table

Month	Actual Quantities of Inert C&D Materials Generated Monthly							Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Soil	Soil Reused in the Contract	Soil Reused in other Projects	Soil Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging (Note 3)	Plastics	Chemical Waste	General Refuse (Note 2)
Unit	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)	(in '000m3)
Nov-14	4.295	-	4.295	0.645	-	3.650	-	-	-	0.010	0.001	0.110
Dec-14	4.270	0.435	3.835	1.590	-	2.245	-	-	-	-	-	0.085
Jan-15	3.969	0.105	3.864	0.648	-	3.216	0.118	-	-	-	0.040	0.080
<b>Total</b>	<b>12.534</b>	<b>0.540</b>	<b>11.994</b>	<b>2.883</b>	<b>-</b>	<b>9.111</b>	<b>0.118</b>	<b>-</b>	<b>-</b>	<b>0.010</b>	<b>0.041</b>	<b>0.275</b>

- Note:
1. Assume the density of soil fill is 2 ton/m3.
  2. Assume the density of rock and broken concrete is 2.5 ton/m3.
  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/m3.



# **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	<p>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.</p> <p>An EM&amp;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.</p> <p>The complaint is considered an invalid complaint under this Project.</p>	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)	<p>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.</p> <p>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.</p> <p>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.</p>	

Complaint Log No.	Date of Complaint	Received From and Received By	Location of Complainant	Nature of Complaint	Outcome	Status
					<p>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</p> <p>The complaint is considered unlikely due to the construction works of this project.</p>	



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