JOB NO.: TCS00670/13

AGREEMENT NO. CE 45/2008 (CE)
LIANTANG/HEUNG YUEN WAI
BOUNDARY CONTROL POINT AND ASSOCIATED WORKS

MONTHLY ENVIRONMENTAL MONITORING AND AUDIT REPORT (NO.29) – DECEMBER 2015

PREPARED FOR
CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT (CEDD)

Date	Reference No.	Prepared By	Certified By
15 January 2016	TCS00694/13/600/R0093v3		
		Nicola Hon (Environmental Consultant)	Tam Tak Wing (Environmental Team Leader)

Version	Date	Remarks
1	12 January 2016	First Submission
2	15 January 2016	Amended against the IEC's comments on 13 January 2016
3	15 January 2016	Amended against the IEC's comments on 15 January 2016

Local People. Global Experience.

Unit A-C, 27/F Ford Glory Plaza
37-39 Wing Hong Street
Cheung Sha Wan, Kowloon, Hong Kong
T +852 3995 8100 **F** +852 3995 8101 **E** hongkong@smec.com
www.smec.com

15 January 2016

Our ref: 7076192/ L19853 /RY/AB/AW/FL/rw

AECOM
8/F, Grand Central Plaza, Tower 2
138 Shatin Rural Committee Road
Shatin, N.T.

By Email & Post

Attention: Mr Simon LEUNG

Dear Sirs

Agreement No. CE 45/2008 (CE)
Liantang/Heung Yuen Wai Boundary Control Point and Associated Works
Independent Environmental Checker – Investigation
Monthly EM&A Report (No. 29) – December 2015

With reference to the Monthly EM&A Report No. 29 for December 2015 (Version 2) certified by the ET Leader provided to us on 15 January 2016, please be noted that we have no adverse comments on the captioned submission. We herewith verify the captioned submission in accordance with Condition 5.4 of the Environmental Permit No. EP-404/2011/C.

Thank you for your attention and please do not hesitate to contact the undersigned on tel. 3995 8120 or by email to antony.wong@smec.com; or our Mr Francis LEE on tel. 3995 8144 or by email to francis.lee@smec.com.

Yours faithfully
for and on behalf of
SMEC Asia Limited

Antony WONG
Independent Environmental Checker

cc	CEDD/BCP	-	Mr Karl KL KWAN	by fax: 3547 1659
	ArchSD	-	Mr William WL CHENG	by fax: 2804 6805
	AECOM	-	Mr Pat LAM / Mr Perry YAM	by email
	Ronald Lu	-	Mr Peter YAM / Mr Justin CHEUNG	by email
	SRJV	-	Mr Edwin AU	by email
	CW	-	Mr Daniel HO	by email
	DHK	-	Mr Raymond CHENG	by email
	CCKJV	-	Mr Vincent CHAN	by email
	Leighton	-	Mr Jon KITCHING	by email
	AUES	-	Mr TW TAM	by email

EXECUTIVE SUMMARY

ES01 This is the **29th** monthly EM&A report presenting the monitoring results and inspection findings for the reporting period from **1 to 31 December 2015** (hereinafter 'the Reporting Period').

ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES

ES02 To facilitate the project management and implementation, Liantang/Heung Yuen Wai Boundary Control Point and Associated Works of the Project is divided to six CEDD contracts including Contract 2 (CV/2012/08), Contract 3 (CV/2012/09), Contract 4 (TCSS), Contract 5 (CV/2013/03), Contract 6 (CV/2013/08) and Contract 7 (NE/2014/03) and an ArshSD contract (Contract SS C505).

ES03 In the Reporting Period, the construction works for Contract 6 was commenced on 23 October 2015 and therefore the active contracts would be included Contract 2, Contract 3, Contract 5, Contract 6 and Contract SS C505. Environmental monitoring activities under the EM&A programme in the Reporting Period are summarized in the following table.

Environmental Aspect	Environmental Monitoring Parameters / Inspection	Reporting Period	
		Number of Monitoring Locations to undertake	Total Occasions
Air Quality	1-hour TSP	9	147
	24-hour TSP	9	54
Construction Noise	$L_{eq(30min)}$ Daytime	10	55
Water Quality	Water sampling	WM1 & WM1-C, WM3 &WM3-C WM4, WM4-CA &WM4-CB	13(*)
		WM2A, WM2A-C & WM2B-C	12 (*)
		WM2B	15 (*)
Joint Site Inspection / Audit	IEC, ET, the Contractor and RE joint site Environmental Inspection and Auditing	Contract 2	5
		Contract 3	4
		Contract 5	5
		Contract 6	5
		Contract SS C505	5

(*) *Monitoring day*

BREACH OF ACTION AND LIMIT (A/L) LEVELS

ES04 In the Reporting Period, no air quality and construction noise exceedance was registered for the Project. For water quality, a total of thirty-five (35) Action/ Limit Level exceedances, namely eighteen (18) exceedances of turbidity and seventeen (17) exceedances of suspended solids recorded. The summary of exceedance in the Reporting Period is shown below.

Environmental Aspect	Monitoring Parameters	Action Level	Limit Level	Event & Action		
				NOE Issued	Investigation Result	Corrective Actions
Air Quality	1-hour TSP	0	0	0	--	--
	24-hour TSP	0	0	0	--	--
Construction Noise	$L_{eq(30min)}$ Daytime	0	0	0	--	--
Water Quality	DO	0	0	0	--	--
	Turbidity	0	**18**	**18**	The Contractor of C6 was advised to improve the water mitigation measure as per the ISEMM of the EM&A Manual	Improvement works have been undertaken by the Contractor of C6
	SS	0	**17**	**17**		

ENVIRONMENTAL COMPLAINT

ES05 In this Reporting Period, two (2) documented environmental complaint was received and lodged for Contracts 6 regarding construction dust and muddy water discharge on 1 and 16 December 2015 respectively. Follow up actions have been undertaking by the Contractor to resolve the deficiencies and investigation report conducted by ET had submitted to all relevant parties.

NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

ES06 No environmental summons or successful prosecutions were recorded in the Reporting Period.

REPORTING CHANGE

ES07 No reporting changes were made in the Reporting Period.

SITE INSPECTION

ES08 In this Reporting Period, joint site inspection to evaluate the site environmental performance at ***Contract 2*** has been carried out by the RE, IEC, ET and the Contractor on **4, 11, 18, 23 and 30 December 2015**. No non-compliance was noted.

ES09 In the Reporting Period, joint site inspection to evaluate the site environmental performance at ***Contract 3*** has been carried out by the RE, IEC, ET and the Contractor on **7, 16, 21 and 28 December 2015**. No non-compliance was noted.

ES10 In the Reporting Period, joint site inspection to evaluate the site environmental performance at ***Contract 5*** has been carried out by the RE, IEC, ET and the Contractor on **3, 10, 16, 24 and 31 December 2015.** No non-compliance was noted.

ES11 In the Reporting Period, joint site inspection to evaluate the site environmental performance at ***Contract 6*** has been carried out by the RE, IEC, ET and the Contractor on **3, 10, 17, 23 and 30 December 2015.** No non-compliance was noted.

ES12 In the Reporting Period, joint site inspection to evaluate the site environmental performance at ***Contract SS C505*** has been carried out by the RE, IEC, ET and the Contractor on **2, 9, 16, 23 and 30 December 2015**. No non-compliance was noted.

FUTURE KEY ISSUES

ES13 During dry season, special attention should be paid on the potential construction dust impact since most of the construction sites are adjacent to villages. The Contractor should fully implement the construction dust mitigation measures properly.

ES14 The Contractor was also reminded to prevent muddy water or other water pollutants from site surface flow to local stream such as Kong Yiu Channel, Ma Wat Channel, Ping Yuen River or public area. Water quality mitigation measures to prevent surface runoff into nearby water bodies or public areas should paid attention and fully implemented.

ES15 Construction noise would be a key environmental issue during construction work of the Project. Noise mitigation measures such as using quiet plants should be implemented in accordance with the EM&A requirement.

Table of Contents

LIST OF TABLES

LIST OF APPENDICES

1 INTRODUCTION

1.1 PROJECT BACKGROUND

1.1.1 Civil Engineering and Development Department is the Project Proponent and the Permit Holder of *Agreement No. CE 45/2008 (CE) Liantang / Heung Yuen Wai Boundary Control Point and Associated Works*, which is a Designated Project to be implemented under Environmental Permit number EP-404/2011/C granted on 12 March 2015.

1.1.2 The Project consists of two main components: Construction of a Boundary Control Point (hereinafter referred as "BCP"); and Construction of a connecting road alignment. Layout plan of the Project is shown in ***Appendix A***.

1.1.3 The proposed BCP is located at the boundary with Shenzhen near the existing Chuk Yuen Village, comprising a main passenger building with passenger and cargo processing facilities and the associated customs, transport and ancillary facilities. The connecting road alignment consists of six main sections:

1) Lin Ma Hang to Frontier Closed Area (FCA) Boundary – this section comprises at-grade and viaducts and includes the improvement works at Lin Ma Hang Road;
2) Ping Yeung to Wo Keng Shan – this section stretches from the Frontier Closed Area Boundary to the tunnel portal at Cheung Shan and comprises at-grade and viaducts including an interchange at Ping Yeung;
3) North Tunnel – this section comprises the tunnel segment at Cheung Shan and includes a ventilation building at the portals on either end of the tunnel;
4) Sha Tau Kok Road – this section stretches from the tunnel portal at Wo Keng Shan to the tunnel portal south of Loi Tung and comprises at-grade and viaducts including an interchange at Sha Tau Kok and an administration building;
5) South Tunnel – this section comprises a tunnel segment that stretches from Loi Tung to Fanling and includes a ventilation building at the portals on either end of the tunnel as well as a ventilation building in the middle of the tunnel near Lau Shui Heung;
6) Fanling – this section comprises the at-grade, viaducts and interchange connection to the existing Fanling Highway.

1.1.4 Action-United Environmental Services & Consulting has been commissioned as an Independent ET to implement the relevant EM&A program in accordance with the approved EM&A Manual, as well as the associated duties. As part of the EM&A program, the baseline monitoring has carried out between **13 June 2013** and **12 July 2013** for all parameters including air quality, noise and water quality before construction work commencement. The Baseline Monitoring Report summarized the key findings and the rationale behind determining a set of Action and Limit Levels (A/L Levels) from the baseline data. Also, the Project baseline monitoring report which verified by the IEC has been submitted to EPD on **16 July 2013** for endorsement. The major construction works of the Project was commenced on **16 August 2013** in accordance with the EP Section 5.3 stipulation.

1.1.5 This is **29th** monthly EM&A report presenting the monitoring results and inspection findings for reporting period from **1** to **31 December 2015**.

1.2 REPORT STRUCTURE

1.2.1 The Monthly Environmental Monitoring and Audit (EM&A) Report is structured into the following sections:-

Section 1 *Introduction*
Section 2 *Project Organization and Construction Progress*
Section 3 *Summary of Impact Monitoring Requirements*
Section 4 *Air Quality Monitoring*
Section 5 *Construction Noise Monitoring*
Section 6 *Water Quality Monitoring*
Section 7 *Waste Management*

2 PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS

2.1 CONSTRUCTION CONTRACT PACKAGING

2.1.1 To facilitate the project management and implementation, the Project would be divided by the following contracts:

- Contract 2 (CV/2012/08)
- Contract 3 (CV/2012/09)
- Contract 4 (NE/2014/02)
- Contract 5 (CV/2013/03)
- Contract 6 (CV/2013/08)
- Contract 7 (NE/2014/03)
- ArchSD Contract No. SS C505

2.1.2 The details of each contracts is summarized below and the delineation of each contracts is shown in ***Appendix A***.

Contract 2 (CV/2012/08)

2.1.3 Contract 2 has awarded in December 2013 and construction work was commenced on 19 May 2014. Major Scope of Work of the Contract 2 is listed below:

- construction of an approximately 5.2km long dual two-lane connecting road (with about 0.4km of at-grade road and 4.8km of tunnel) connecting the Fanling Interchange with the proposed Sha Tau Kok Interchange;
- construction of a ventilation adit tunnel and the mid-ventilation building;
- construction of the north and south portal buildings of the Lung Shan Tunnel and their associated slope works;
- provision and installation of ventilation system, E&M works and building services works for Lung Shan tunnel and Cheung Shan tunnel and their portal buildings;
- construction of Tunnel Administration Building adjacent to Wo Keng Shan Road and the associated E&M and building services works; and
- construction of associated footpath, slopes, retaining structures, drainage, sewerage, waterworks, landscaping works and other ancillary works.

Contract 3 (CV/2012/09)

2.1.4 Contract 3 was awarded in July 2013 and construction work was commenced on 5 November 2013. Major Scope of Work of the Contract 3 is listed below:

- construction of four link roads connecting the existing Fanling Highway and the south portal of the Lung Shan Tunnel;
- realignment of the existing Tai Wo Service Road West and Tai Wo Service Road East;
- widening of the existing Fanling Highway (HyD's entrustment works);
- demolishing existing Kiu Tau vehicular bridge and Kiu Tau footbridge and reconstruction of the existing Kiu Tau Footbridge (HyD's entrustment works); and
- construction of associated footpath, slopes, retaining structures, drainage, sewerage, waterworks, landscaping works and other ancillary works.

Contract 4 (NE/2014/02)

2.1.5 Contract 4 has not yet been awarded. The work of the Contract 4 includes provision and installation of Traffic Control and Surveillance System and the associated electrical and mechanical works for the Project.

Contract 5 (CV/2013/03)

2.1.6 Contract 5 has awarded in April 2013 and construction work was commenced in August 2013. Major Scope of Work of the Contract 5 is listed below:

- site formation of about 23 hectares of land for the development of the BCP;

- construction of an approximately 1.6 km long perimeter road at the BCP including a 175m long depressed road;
- associated diversion/modification works at existing local roads and junctions including Lin Ma Hang Road;
- construction of pedestrian subway linking the BCP to Lin Ma Hang Road;
- provision of resite area with supporting infrastructure for reprovisioning of the affected village houses; and
- construction of associated footpath, slopes, retaining structures, drainage, sewerage, waterworks, landscaping works and other ancillary works.

Contract 6 (CV/2013/08)

2.1.7 Contract 6 has awarded in June 2015 and construction work was commenced on 23 October 2015. Major Scope of Work of the Contract 6 would be included below:

- construction of an approximately 4.6km long dual two-lane connecting road (with about 0.6km of at-grade road, 3.3km of viaduct and 0.7km of tunnel) connecting the BCP with the proposed Sha Tau Kok Road Interchange and the associated ventilation buildings;
- associated diversion/modification works at access roads to the resite of Chuk Yuen Village;
- provision of sewage collection, treatment and disposal facilities for the BCP and the resite of Chuk Yuen Village;
- construction of a pedestrian subway linking the BCP to Lin Ma Hang Road;
- provisioning of the affected facilities including Wo Keng Shan Road garden; and
- construction of associated footpath, slopes, retaining structures, drainage, sewerage, waterworks, landscaping works and other ancillary works.

Contract 7 (NE/2014/03)

2.1.8 Contract 7 has awarded in December 2015 and the construction works of Contract 7 will tentatively commence in February 2016. Major Scope of Work of the Contract 7 would be included below:

- construction of the Hong Kong Special Administrative Region (HKSAR) portion of four vehicular bridge
- construction of one pedestrian bridge crossing Shenzhen (SZ) River (cross boundary bridges)

ArchSD Contract No. SS C505

2.1.9 SS C505 has awarded in July 2015 and construction work was commenced on 1 September 2015. Major Scope of Work of the SS C505 would be included below:

- passenger-related facilities including processing kiosks and examination facilities for private cars and coaches, passenger clearance building and halls, the interior fitting works for the pedestrian bridge crossing Shenzhen River, etc.;
- cargo processing facilities including kiosks for clearance of goods vehicles, customs inspection platforms, X-ray building, etc.;
- accommodation for the facilities inside of the Government departments providing services in connection with the BCP;
- transport-related facilities inside the BCP including road networks, public transport interchange, transport drop-off and pick-up areas, vehicle holding areas and associated road furniture etc;
- a public carpark; and
- other ancillary facilities such as sewerage and drainage, building services provisions and electronic systems, associated environmental mitigation measure and landscape works.

2.2 PROJECT ORGANIZATION

2.2.1 The project organization is shown in ***Appendix B***. The responsibilities of respective parties are:

Civil Engineering and Development Department (CEDD)

2.2.2 CEDD is the Project Proponent and the Permit Holder of the EP of the development of the Project and will assume overall responsibility for the project. An Independent Environmental Checker (IEC) shall be employed by CEDD to audit the results of the EM&A works carried out by the ET.

Architectural Services Department (ArchSD)

2.2.3 ArchSD acts as the works agent for Development Bureau (DEVB), for Contract SS C505 Liantang/ Heung Yuen Wai Boundary Control Point (BCP) – BCP Buildings and Associated Facilities.

Environmental Protection Department (EPD)

2.2.4 EPD is the statutory enforcement body for environmental protection matters in Hong Kong.

Ronald Lu & Partners (Hong Kong) Ltd (The Architect)

2.2.5 Ronald Lu & Partners (Hong Kong) Ltd is appointed by ArchSD as an Architect for Contract SS C505 Liantang/ Heung Yuen Wai Boundary Control Point (BCP) – BCP Buildings and Associated Facilities. It responsible for overseeing the construction works of Contract SS C505 and for ensuring that the works are undertaken by the Contractor in accordance with the specification and contract requirements. The duties and responsibilities of the Architect with respect to EM&A are:

- Monitor the Contractors' compliance with contract specifications, including the implementation and operation of the environmental mitigation measures and their effectiveness
- Monitor Contractors' and ET's compliance with the requirements in the Environmental Permit (EP) and EM&A Manual
- Facilitate ET's implementation of the EM&A programme
- Participate in joint site inspection by the ET and IEC
- Oversee the implementation of the agreed Event / Action Plan in the event of any exceedance
- Adhere to the procedures for carrying out complaint investigation
- Liaison with DSD, Engineer/Engineer's Representative, ET, IEC and the Contractor of the "Construction of the DSD's Regulation of Shenzhen River Stage 4 (RSR 4)" Project discussing regarding the cumulative impact issues.

Engineer or Engineers Representative (ER)

2.2.6 The ER is responsible for overseeing the construction works and for ensuring that the works are undertaken by the Contractor in accordance with the specification and contract requirements. The duties and responsibilities of the ER with respect to EM&A are:

- Monitor the Contractors' compliance with contract specifications, including the implementation and operation of the environmental mitigation measures and their effectiveness
- Monitor Contractors's, ET's and IEC's compliance with the requirements in the Environmental Permit (EP) and EM&A Manual
- Facilitate ET's implementation of the EM&A programme
- Participate in joint site inspection by the ET and IEC
- Oversee the implementation of the agreed Event / Action Plan in the event of any exceedance
- Adhere to the procedures for carrying out complaint investigation
- Liaison with DSD, Engineer/Engineer's Representative, ET, IEC and the Contractor of the "Construction of the DSD's Regulaiton of Shenzhen River Stage 4 (RSR 4)" Project discussing regarding the cumulative impact issues.

The Contractor(s)

2.2.7 There will be one contractor for each individual works contract. Once the contractors are appointed, EPD, ET and IEC will be notified the details of the contractor.

2.2.8 The Contractor for Contracts under CEDD should report to the ER. For ArchSD Contract, the Contractor should report to the Architect or Architect's Representative (AR). The duties and responsibilities of the Contractor are:

- Comply with the relevant contract conditions and specifications on environmental protection
- Employ an Environmental Team (ET) to undertake monitoring, laboratory analysis and reporting of EM &A Facilitate ET's monitoring and site inspection activities
- Participate in the site inspections by the ET and IEC, and undertake any corrective actions
- Provide information / advice to the ET regarding works programme and activities which may contribute to the generation of adverse environmental impacts
- Submit proposals on mitigation measures in case of exceedances of Action and Limit levels in accordance with the Event / Action Plans
- Implement measures to reduce impact where Action and Limit levels are exceeded
- Adhere to the procedures for carrying out complaint investigation

Environmental Team (ET)

2.2.9 Once the ET is appointed, the EPD, CEDD, ER, Architect and IEC will be notified the details of the ET.

2.2.10 The ET shall not be in any way an associated body of the Contractor(s), and shall be employed by the Project Proponent/Contractor to conduct the EM&A programme. The ET should be managed by the ET Leader. The ET Leader shall be a person who has at least 7 years' experience in EM&A and has relevant professional qualifications. Suitably qualified staff should be included in the ET, and resources for the implementation of the EM&A programme should be allocated in time under the Contract(s), to enable fulfillment of the Project's EM&A requirements as specified in the EM&A Manual during construction of the Project. The ET shall report to the Project Proponent and the duties shall include:

- Monitor and audit various environmental parameters as required in this EM&A Manual
- Analyse the environmental monitoring and audit data, review the success of EM&A programme and the adequacy of mitigation measures implemented, confirm the validity of the EIA predictions and identify any adverse environmental impacts arising
- Carry out regular site inspection to investigate and audit the Contractors' site practice, equipment/plant and work methodologies with respect to pollution control and environmental mitigation, and effect proactive action to pre-empt problems
- Monitor compliance with conditions in the EP, environmental protection, pollution prevention and control regulations and contract specifications
- Audit environmental conditions on site
- Report on the environmental monitoring and audit results to EPD, the ER, the Architect, the lEC and Contractor or their delegated representatives
- Recommend suitable mitigation measures to the Contractor in the case of exceedance of Action and Limit levels in accordance with the Event and Action Plans
- Liaise with the IEC on all environmental performance matters and timely submit all relevant EM&A proforma for approval by IEC
- Advise the Contractor(s) on environmental improvement, awareness, enhancement measures etc., on site
- Adhere to the procedures for carrying out complaint investigation
- Liaison with the client departments, Engineer/Engineer's Representative, ET, lEC and the Contractor(s) of the concurrent projects as listed under Section 2.3 below regarding the cumulative impact issues.

Independent Environmental Checker (IEC)

2.2.11 One IEC will be employed for this Project. Once the IEC is appointed, EPD, ER, the Architect and ET will be notified the details of the IEC.

2.2.12 The Independent Environmental Checker (IEC) should not be in any way an associated body of the Contractor or the ET for the Project. The IEC should be employed by the Permit Holder (i.e., CEDD) prior to the commencement of the construction of the Project. The IEC should have at least 10 years' experience in EM&A and have relevant professional qualifications. The appointment of IEC should be subject to the approval of EPD. The IEC should:

- Provide proactive advice to the ER and the Project Proponent on EM&A matters related to the project, independent from the management of construction works, but empowered to audit the environmental performance of construction
- Review and audit all aspects of the EM&A programme implemented by the ET
- Review and verify the monitoring data and all submissions in connection with the EP and EM&A Manual submitted by the ET
- Arrange and conduct regular, at least monthly site inspections of the works during construction phase, and ad hoc inspections if significant environmental problems are identified
- Check compliance with the agreed Event / Action Plan in the event of any exceedance
- Check compliance with the procedures for carrying out complaint investigation
- Check the effectiveness of corrective measures
- Feedback audit results to ET by signing off relevant EM&A proforma
- Check that the mitigation measures are effectively implemented
- Verify the log-book(s) mentioned in Condition 2.2 of the EP, notify the Director by fax, within one working day of receipt of notification from the ET Leader of each and every occurrence, change of circumstances or non-compliance with the EIA Report and/or the EP, which might affect the monitoring or control of adverse environmental impacts from the Project
- Report the works conducted, the findings, recommendation and improvement of the site inspections, after reviewing ET's and Contractor's works, and advices to the ER and Project Proponent on a monthly basis
- Liaison with the client departments, Engineer/Engineer's Representative, the Architect, ET, lEC and the Contractor of the concurrent projects as listed under Section 2.3 below regarding the cumulative impact issues.

2.3 CONCURRENT PROJECTS

2.3.1 The concurrent construction works that may be carried out include, but not limited to, the following:

(a) Regulation of Shenzhen River Stage IV;

(b) Widening of Fanling Highway – Tai Hang to Wo Hop Shek Interchange – Contract No. HY/2012/06;

(c) Construction of BCP facilities in Shenzhen.

2.4 CONSTRUCTION PROGRESS

2.4.1 In the Reporting Period, the major construction activity conducted under the Project is located in Contracts 2, 3, 5, 6 and SS C505 and they are summarized in below. Moreover, the 3-month rolling construction program of the Contracts 2, 3, 5, 6 and SS C505 is enclosed in ***Appendix C***.

Contract 2 (CV/2012/08)

2.4.2 The contract commenced in May 2014. In this Reporting Period, construction activities conducted are listed below:

Mid-Vent	• Cavern excavation
Portal	• Tube excavation (NB + SB)
	• Adit invert slab
	• Building works foundation
North Portal	• Slope stablilization and retaining wall
	• Northbound top heading excavation
	• Tunnel Boring Machine excavation

South Portal	• Southbound and Northbound Drill and Blast excavation
	• Building works foundation and substructure
Admin Building	• Building works foundation

Contract 3 (CV/2012/09)

2.4.3 The Contract commenced in November 2013. In this Reporting Period, construction activities conducted are listed below:

- Cable detection and trial trenches
- Decking construction for Bridge E
- E&M work for new valve control & Telemetry House
- Filling works at Tong Hang East
- FRP Lining on existing water main
- Storm drain 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

Contract 4 (Contract number to be assigned)

2.4.4 The contract has not yet been awarded.

Contract 5 (CV/2013/03)

2.4.5 The Contract awarded in April 2013 and commenced on August 2013. In this Reporting Period, construction activities conducted are listed below:

- Construction of rising main at existing Lin Ma Hang (LMH) Road
- Drainage works at Road L15
- Filling works for ArchSD Depot
- Construction of Depressed Road at BCP3
- Additional works (Access Works) for Village House at RS4
- Drainage works at existing LMH Road
- Brick laying at footpath of proposed LMH road
- Preparation works for planting at proposed LMH road
- Remaining formation works at BCPB Area
- Installation of Underground Utility (UU) at proposed and existing LMH road
- Road work (kerb laying) for L15 road
- Irrigation at proposed LMH Road
- Water works at existing LMH Road
- Bituminous laying at existing & proposed LMH road
- Construction of Pavilion at Chung Yuen Ha Village

Contract 6 (CV/2013/08)

2.4.6 Contract 6 has awarded in June 2015 and construction work was commenced on 23 October 2015. In this Reporting Period, construction activities conducted are listed below:

- Site Clearance

- Slope Works
- Site Accesses Construction
- Ground Investigation (GI) Works
- Soil nail
- Bored piling

Contract 7 (NE/2014/03)

2.4.7 Construction works of Contract 7 did not commence in the reporting period

Contract SS C505

2.4.8 Contract SS C505 has awarded in July 2015 and construction work was commenced on 1 September 2015. In this Reporting Period, construction activities conducted are listed below:

- Excavation & fill works
- Predrilling
- Percussive piling
- Pre-boring
- Bored piling
- Pile caps
- Site office set-up
- Structural works
- Assembly of crawler crane

2.5 SUMMARY OF ENVIRONMENTAL SUBMISSIONS

2.5.1 In according to the EP, the required documents have submitted to EPD for retention which listed in below:

- Project Layout Plans of Contracts 2, 3, 5, 6 and SS C505
- Landscape Plan
- Topsoil Management Plan
- Environmental Monitoring and Audit Programme
- Baseline Monitoring Report (*TCS00690/13/600/R0030v3*) for the Project
- Waste Management Plan of the Contracts 2, 3, 5, 6 and SS C505
- Contamination Assessment Plan (CAP) for Po Kat Tsai, Loi Tung and the workshops in Fanling
- Contamination Assessment Report (CAR) for Po Kat Tsai, Loi Tung and the workshops in Fanling
- Vegetation Survey Report
- Woodland Compensation Plan
- Habitat Creation Management Plan

2.5.2 Summary of the relevant permits, licenses, and/or notifications on environmental protection for the Project of each contracts are presented in ***Table 2-1***.

Table 2-1 Status of Environmental Licenses and Permits of the Contracts

Item	Description	License/Permit Status		
		Ref. no.	Effective Date	Expiry Date
Contract 2				
1	Air pollution Control (Construction Dust) Regulation	Ref No.: 368864	31 Dec 2013	Till Contract ends
2	Chemical Waste Producer Registration	***North Portal*** Waste Producers Number: No.5213-652-D2523-01	25 Mar 2014	Till Contract ends

Item	Description	License/Permit Status		
		Ref. no.	**Effective Date**	**Expiry Date**
		Mid-Vent Portal Waste Producers Number: No.5213-634-D2524-01	25 Mar 2014	Till Contract ends
		South Portal Waste Producers Number: No.5213-634-D2526-01	9 Apr 2014	Till Contract ends
3	Water Pollution Control Ordinance - Discharge License	No.WT00018374-2014	3 Mar 2014	28 Feb 2019
		No.: W5/1I389	28 Mar 2014	31 Mar 2019
		No.: W5/1I390	19 June 2014	31 Mar 2019
		No.: W5/1I391	28 Mar 2014	17 Dec 2015
		No. WT00023063-2015 (Variation of W5/1I391)	18 Dec 2015	31-Mar -2019
		No.: W5/1I392	28 Mar 2014	31 Mar 2019
4	Waste Disposal Regulation - Billing Account for Disposal of Construction Waste	Account No. 7019105	8 Jan 2014	Till Contract ends
5	Construction Noise Permit	GW-RN0479-15	31 Jul 2015	29 Jan 2016
		GW-RN0562-15	7 Sep 2015	6 Dec 2015
		GW-RN0606-15	25 Sep 2015	24 Nov 2015
		GW-RN0678-15	1 Nov 2015	31 Jan 2016
		GW-RN0718-15	25 Nov 2015	24 Jan 2015
		GW-RN0724-15	17 Nov 2015	16 Dec 2015
		GW-RN0738-15	18 Nov 2015	8 May 2016
		GW-RN0760-15	26 Nov 2015	27 Feb 2016
		GW-RN0761-15	28 Nov 2015	27 Feb 2016
		GW-RN0795-15	7 Dec 2015	6 Jun 2016
		GW-RN0838-15	24-Dec-2015	23-Feb-2016
		GW-RN0875-15	24-Dec-2015	23-Feb-2016
		GW-RN0893-15	01-Jan-2016	27-Jun-2016
Contract 3				
1	Air pollution Control (Construction Dust) Regulation	Ref. No: 362101	17 Jul 2013	Till Contract ends
2	Chemical Waste Producer Registration	Waste Producers Number: No.:5113-634-C3817-01	7 Oct 2013	Till Contract ends
3	Water Pollution Control Ordinance - Discharge License	No.:WT00016832 – 2013	28 Aug 13	31 Aug 2018
4	Waste Disposal Regulation - Billing Account for Disposal of Construction Waste	Account No. 7017914	2 Aug 13	Till Contract ends
5	Construction Noise Permit	GW-RN0334-15	8 Jun 2015	7 Dec 2015
		GW-RN0428-15	9 Ju1 2015	31 Dec 2015
		GW-RN0473-15	29 Jul 2015	17 Dec 2015

Item	Description	License/Permit Status		
		Ref. no.	Effective Date	Expiry Date
		GW-RN0461-15	5 Aug 2015	8 Jan 2016
		GW-RN0495-15	12 Aug 2015	11 Feb 2016
		GW-RN0497-15	14 Aug 2015	13 Feb 2016
		GW-RN0525-15	29 Aug 2015	13 Feb 2016
		GW-RN0542-15	1 Sep 2015	25 Feb 2016
		GW-RN0608-15	28 Sep 2015	29 Feb 2016
		GW-RN0633-15	15 Oct 2015	29 Feb 2016
		GW-RN0655-15	1 Dec 2015	29 Feb 2016
		GW-RN0677-15	26 Oct 2015	29 Feb 2016
		GW-RN0699-15	10 Nov 2015	27 Feb 2016
		GW-RN0695-15	29 Nov 2015	28 Feb 2016
		GW-RN0712-15	16 Nov 2015	29 Feb 2016
		GW-RN0736-15	24 Nov 2015	29 Feb 2016
		GW-RN0765-15	1 Dec 2015	27 Feb 2016
		GW-RN0812-15	20 Dec 2015	29 Feb 2016
		GW-RN0837-15	23 Dec 2015	29 Feb 2016
		GW-RN0892-15	9 Jan 2016	8 July 2016
		GW-RN0894-15	5 Jan 2016	27 Feb 2016
Contract 5				
1	Air pollution Control (Construction Dust) Regulation	Ref. No: 359338	13 May 2013	Till the end of Contract
2	Chemical Waste Producer Registration	Waste Producers Number No.: 5213-642-S3735-01	8 Jun 2013	Till the end of Contract
3	Water Pollution Control Ordinance - Discharge License	No.: W5/1G44/1	8 Jun 13	30 Jun 2018
4	Waste Disposal Regulation - Billing Account for Disposal of Construction Waste	Account No. 7017351	29 Apr 13	Till the end of Contract
Contract 6				
1	Air pollution Control (Construction Dust) Regulation	Ref. No: 390614	29 Jun 2015	Till the end of Contract
2	Chemical Waste Producer Registration	Waste Producers Number No.: 5213-652-C3969-01	31 Aug 2015	Till the end of Contract
3	Waste Disposal Regulation - Billing Account for Disposal of Construction Waste	Account No. 7022707	9 Jul 2015	Till the end of Contract
4	Water Pollution Control Ordinance - Discharge License	Application is processing by EPD		
5	Construction Noise Permit	GW-RN0681-15	26 Oct 2015	25 Apr 2016

Item	Description	License/Permit Status		
		Ref. no.	Effective Date	Expiry Date
6	Construction Noise Permit	GW-RN0683-15	26 Oct 2015	25 Apr 2016
Contract SS C505				
1	Air pollution Control (Construction Dust) Regulation	Ref. No: 390974	13 Jul 2015	Till the end of Contract
2	Chemical Waste Producer Registration	Waste Producer No.: 5213-642-L1048-07	16 Sep 2015	Till the end of Contract
3	Water Pollution Control Ordinance - Discharge License	Licence No.: WT00022774-2015	17 Nov 2015	30 Nov 2020
4	Waste Disposal Regulation - Billing Account for Disposal of Construction Waste	Account No. 7022831	23 Jul 2015	Till the end of Contract
5	Construction Noise Permit	PP-RN0027-15	5 Oct 2015	2 Apr 2016
		PP-RN0032-15	23 Nov 2015	22 Jan 2016
		GW-RN0768-15	27 Nov 2015	22 Dec 2015
		GW-RN0865-15	23 Dec 2015	22 Jan 2016

3 SUMMARY OF IMPACT MONITORING REQUIREMENTS

3.1 GENERAL

3.1.1 The Environmental Monitoring and Audit requirements are set out in the Approved EM&A manual. Environmental issues such as air quality, construction noise and water quality were identified as the key issues during the construction phase of the Project.

3.1.2 A summary of construction phase EM&A requirements are presented in the sub-sections below.

3.2 MONITORING PARAMETERS

3.2.1 The EM&A program of construction phase monitoring shall cover the following environmental issues:

- Air quality;
- Construction noise; and
- Water quality

3.2.2 A summary of the monitoring parameters is presented in ***Table 3-1.***

Table 3-1 Summary of EM&A Requirements

Environmental Issue	Parameters
Air Quality	• 1-hour TSP by Real-Time Portable Dust Meter; and • 24-hour TSP by High Volume Air Sampler.
Noise	• $L_{eq(30min)}$ in normal working days (Monday to Saturday) 07:00-19:00 except public holiday; and • 3 sets of consecutive $L_{eq(5min)}$ on restricted hours i.e. 19:00 to 07:00 next day, and whole day of public holiday or Sunday • Supplementary information for data auditing, statistical results such as L_{10} and L_{90} shall also be obtained for reference.
Water Quality	**In-situ Measurements** • Dissolved Oxygen Concentration (mg/L); • Dissolved Oxygen Saturation (%); • Turbidity (NTU); • pH unit; • Water depth (m); and • Temperature (℃).
	Laboratory Analysis • Suspended Solids (mg/L)

3.3 MONITORING LOCATIONS

3.3.1 The designated monitoring locations as recommended in the *EM&A Manual* are shown in ***Appendix D***. As the access to some of the designated monitoring locations was questionable due to safety reason or denied by the landlords, alternative locations therefore have had proposed. The proposed alternative monitoring locations has updated in the revised EM&A Programme which verified by IEC and certified by ET Leader prior submitted to EPD on 10 July 2013. ***Table 3-2***, ***Table 3-3*** and ***Table 3-4*** are respectively listed the air quality, construction noise and water quality monitoring locations for the Project and a map showing these monitoring stations is presented in ***Appendix E***.

Table 3-2 Impact Monitoring Stations - Air Quality

Station ID	Description	Works Area	Related to the Work Contract
AM1a*	Garden Farm, Tsung Yuen Ha Village	BCP	ArchSD SS C505 Contract 5
AM2	Village House near Lin Ma Hang Road	LMH to Frontier Closed Area	Contract 5, Contract 6
AM3	Ta Kwu Ling Fire Service Station of Ta	LMH to Frontier	Contract 5,

Station ID	Description	Works Area	Related to the Work Contract
	Kwu Ling Village.	Closed Area	Contract 6
AM4b^	House no. 10B1 Nga Yiu Ha Village	LMH to Frontier Closed Area	Contract 6
AM5a^	Ping Yeung Village House	Ping Yeung to Wo Keng Shan	Contract 6
AM6	Wo Keng Shan Village House	Ping Yeung to Wo Keng Shan	Contract 6
AM7b@	Loi Tung Village House	Sha Tau Kok Road	Contract 2 Contract 6
AM8	Po Kat Tsai Village No. 4	Po Kat Tsai	Contract 2
AM9b#	Nam Wa Po Village House No. 80	Fanling	Contract 3

 # Proposal for the change of air quality monitoring location from AM9a to AM9b was submitted to EPD on 4 Nov 2013 after verified by the IEC and it was approved by EPD (EPD's ref.: (15) in EP 2/N7/A/52 Pt.10 dated 8 Nov 2013).
** Proposal for the change of air quality monitoring location from AM1to AM1a was submitted to EPD on 24 March 2014 after verified by the IEC. It was approved by EPD (EPD's ref.: (6) in EP 2/N7/A/52 Pt.12 dated 9 Jun 2014).*
@ Proposal for the change of air quality monitoring location from AM7a to AM7b was submitted to EPD on 4 June 2014 after verified by the IEC. It was approved by EPD (EPD's ref.: (7) in EP 2/N7/A/52 Pt.12 dated 9 Jun 2014).
^ proposal for change of monitoring location are subject to approve by EPD.

Table 3-3 Impact Monitoring Stations - Construction Noise

Station ID	Description	Works Area	Related to the Work Contract
NM1	Tsung Yuen Ha Village House No. 63	BCP	ArchSD SS C505 Contract 5
NM2	Village House near Lin Ma Hang Road	Lin Ma Hang to Frontier Closed Area	Contract 5, Contract 6
NM3	Ping Yeung Village House (facade facing northeast)	Ping Yeung to Wo Keng Shan	Contract 6
NM4	Wo Keng Shan Village House	Ping Yeung to Wo Keng Shan	Contract 6
NM5	Village House, Loi Tung	Sha Tau Kok Road	Contract 2, Contract 6
NM6	Tai Tong Wu Village House 2	Sha Tau Kok Road	Contract 2, Contract 6
NM7	Po Kat Tsai Village	Po Kat Tsai	Contract 2
NM8	Village House, Tong Hang	Fanling	Contract 2 Contract 3
NM9	Village House, Kiu Tau Village	Fanling	Contract 3
NM10	Nam Wa Po Village House No. 80	Fanling	Contract 3

Table 3-4 Impact Monitoring Stations - Water Quality

Station ID	Description	Coordinates of Designated / Alternative Location		Nature of the location	Related to the Work Contract
WM1	Downstream of Kong Yiu Channel	833 679	845 421	Alternative location located at upstream 51m of the designated location	ArchSD SS C505 Contract 5
WM1-Control	Upstream of Kong Yiu Channel	834 185	845 917	NA	ArchSD SS C505 Contract 5

Station ID	Description	Coordinates of Designated / Alternative Location		Nature of the location	Related to the Work Contract
WM2A	Downstream of River Ganges	834 204	844 471	Alternative location located at downstream 81m of the designated location	Contract 6
WM2A-Control	Upstream of River Ganges	835 270	844 243	Alternative location located at upstream 78m of the designated location	Contract 6
WM2B	Downstream of River Ganges	835 433	843 397	NA	Contract 6
WM2B-Control	Upstream of River Ganges	835 835	843 351	Alternative location located at downstream 31m of the designated location	Contract 6
WM3	Downstream of River Indus	836 324	842 407	NA	Contract 2 Contract 6
WM3-Control	Upstream of River Indus	836 763	842 400	Alternative location located at downstream 26m of the designated location	Contract 2 Contract 6
WM4	Downstream of Ma Wat Channel	833 850	838 338	Alternative location located at upstream 11m of the designated location	Contract 2 Contract 3
WM4–Control A	Kau Lung Hang Stream	834 028	837 695	Alternative location located at downstream 28m of the designated location	Contract 2 Contract 3
WM4–Control B	Upstream of Ma Wat Channel	833760	837395	Alternative location located at upstream 15m of the designated location	Contract 2 Contract 3

3.4 MONITORING FREQUENCY AND PERIOD

The requirements of impact monitoring are stipulated in *Sections 2.1.6, 3.1.5* and *4.1.6* of the approved *EM&A Manual* and presented as follows.

Air Quality Monitoring

3.4.1 Frequency of impact air quality monitoring is as follows:

- 1-hour TSP 3 times every six days during course of works
- 24-hour TSP Once every 6 days during course of works.

Noise Monitoring

3.4.2 One set of $L_{eq(30min)}$ as 6 consecutive $L_{eq(5min)}$ between 0700-1900 hours on normal weekdays and once every week during course of works. If construction work necessary to carry out at other time periods, i.e. restricted time period (19:00 to 07:00 the next morning and whole day on public holidays) (hereinafter referred as "the restricted hours"), 3 consecutive $L_{eq(5min)}$ measurement will depended CNP requirements to undertake. Supplementary information for data auditing, statistical results such as L_{10} and L_{90} shall also be obtained for reference.

Water Quality Monitoring

3.4.3 The water quality monitoring frequency shall be 3 days per week during course of works. The interval between two sets of monitoring shall not be less than 36 hours.

3.5 MONITORING EQUIPMENT

Air Quality Monitoring

3.5.1 The 24-hour and 1-hour TSP levels shall be measured by following the standard high volume sampling method as set out in the *Title 40 of the Code of Federal Regulations, Chapter 1 (Part*

50), Appendix B. If the ET proposes to use a direct reading dust meter to measure 1-hour TSP levels, it shall submit sufficient information to the IEC to approve.

3.5.2 The filter paper of 24-hour TSP measurement shall be determined by HOKLAS accredited laboratory.

3.5.3 All equipment to be used for air quality monitoring is listed in ***Table 3-5***.

Table 3-5 Air Quality Monitoring Equipment

Equipment	Model
24-Hr TSP	
High Volume Air Sampler	TISCH High Volume Air Sampler, HVS Model TE-5170*
Calibration Kit	TISCH Model TE-5025A*
1-Hour TSP	
Portable Dust Meter	Sibata LD-3B Laser Dust monitor Particle Mass Profiler & Counter*

** Instrument was used in the Reporting Period and the calibration certificate could be referred in Appendix F.*

Wind Data Monitoring Equipment

3.5.4 According to the approved EM&A Manual, wind data monitoring equipment shall also be provided and set up for logging wind speed and wind direction near the dust monitoring locations. The equipment installation location shall be proposed by the ET and agreed with the IEC. For installation and operation of wind data monitoring equipment, the following points shall be observed:

1) The wind sensors should be installed 10 m above ground so that they are clear of obstructions or turbulence caused by buildings.
2) The wind data should be captured by a data logger. The data shall be downloaded for analysis at least once a month.
3) The wind data monitoring equipment should be re-calibrated at least once every six months.
4) Wind direction should be divided into 16 sectors of 22.5 degrees each.

3.5.5 ET has liaised with the landlords of the successful granted HVS installation premises. However, the owners rejected to provide premises for wind data monitoring equipment installation.

3.5.6 Under this situation, the ET proposed alternative methods to obtain representative wind data. Meteorological information as extracted from "the Hong Kong Observatory Ta Kwu Ling Station" is alternative method to obtain representative wind data. For Ta Kwu Ling Station, it is located nearby the Project site. Moreover, this station is located at 15m above mean sea level while its anemometer is located at 13m above the existing ground which in compliance with the general setting up requirement. Furthermore, this station also can be to provide the humidity, rainfall, and air pressure and temperature etc. meteorological information. In Hong Kong of a lot development projects, weather information extracted from Hong Kong Observatory is common alternative method if weather station installation not allowed.

Noise Monitoring

3.5.7 Sound level meter in compliance with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications shall be used for carrying out the noise monitoring. The sound level meter shall be checked using an acoustic calibrator. The wind speed shall be checked with a portable wind speed meter capable of measuring the wind speed in m/s.

3.5.8 Noise monitoring equipment to be used for monitoring is listed in ***Table 3-6***.

Table 3-6 Construction Noise Monitoring Equipment

Equipment	Model
Integrating Sound Level Meter	B&K Type 2238* or Rion NL-31 or Rion NL-52*
Calibrator	B&K Type 4231* or Cesva CB-5* or Rion NC-74*
Portable Wind Speed Indicator	Testo Anemometer

** Instrument was used in the Reporting Period and the calibration certificate could be referred in Appendix F.*

3.5.9 Sound level meters listed above comply with the *International Electrotechnical Commission Publications 651: 1979 (Type 1)* and *804: 1985 (Type 1)* specifications, as recommended in TM issued under the NCO. The acoustic calibrator and sound level meter to be used in the impact monitoring will be calibrated yearly.

Water Quality Monitoring

3.5.10 DO and water temperature should be measured in-situ by a DO/temperature meter. The instrument should be portable and weatherproof using a DC power source. It should have a membrane electrode with automatic temperature compensation complete with a cable. The equipment should be capable of measuring:

- a DO level in the range of 0-20 mg/l and 0-200% saturation; and
- a temperature of between 0 and 45 degree Celsius.

3.5.11 A portable pH meter capable of measuring a range between 0.0 and 14.0 should be provided to measure pH under the specified conditions accordingly to the APHA Standard Methods.

3.5.12 The instrument should be portable and weatherproof using a DC power source. It should have a photoelectric sensor capable of measuring turbidity between 0-1000 NTU.

3.5.13 A portable, battery-operated echo sounder or tape measure will be used for the determination of water depth at each designated monitoring station as appropriate.

3.5.14 A water sampler e.g. Kahlsico Water Sampler, which is a transparent PVC cylinder with capacity not less than 2 litres, will be used for water sampling if water depth over than 0.5m. For sampling from very shallow water depths e.g. <0.5 m, water sample collection will be directly from water surface below 100mm use sampling plastic bottle to avoid inclusion of bottom sediment or humus. Moreover, Teflon/stainless steel bailer or self-made sampling buckets maybe used for water sampling. The equipment used for sampling will be depended the sampling location and depth situations.

3.5.15 Water samples for laboratory measurement of SS will be collected in high density polythene bottles, packed in ice (cooled to 4 ℃ without being frozen), and delivered to the laboratory in the same day as the samples were collected.

3.5.16 Analysis of suspended solids should be carried out in a HOKLAS or other accredited laboratory. Water samples of about 1L should be collected at the monitoring stations for carrying out the laboratory suspended solids determination. The SS determination work should start within 24 hours after collection of the water samples. The SS analyses should follow the *APHA Standard Methods 2540D* with Limit of Reporting of 2 mg/L.

3.5.17 Water quality monitoring equipment used in the impact monitoring is listed in ***Table 3-7***. Suspended solids (SS) analysis is carried out by a local HOKLAS-accredited laboratory, namely *ALS Technichem (HK) Pty Ltd*.

Table 3-7 Water Quality Monitoring Equipment

Equipment	Model
Water Depth Detector	Eagle Sonar or tape measures
Water Sampler	A 2-litre transparent PVC cylinder with latex cups at both ends or teflon/stainless steel bailer or self-made sampling bucket
Thermometer & DO meter	YSI Professional Plus /YSI PRO20 Handheld Dissolved Oxygen Instrument* / YSI 550A Multifunctional Meter/ YSI Professional DSS*
pH meter	YSI Professional Plus / AZ8685 pH pen-style meter*/ YSI 6820/ 650MDS/ YSI Professional DSS*
Turbidimeter	Hach 2100Q*/ YSI 6820/ 650MDS/ YSI Professional DSS*
Sample Container	High density polythene bottles (provided by laboratory)
Storage Container	'Willow' 33-liter plastic cool box with Ice pad

** Instrument was used in the Reporting Period and the calibration certificate could be referred in Appendix F.*

3.6 MONITORING METHODOLOGY

1-hour TSP Monitoring

3.6.1 The 1-hour TSP monitor was a brand named "Sibata LD-3B Laser Dust monitor Particle Mass Profiler & Counter" which is a portable, battery-operated laser photometer. The 1-hour TSP meter provides a real time 1-hour TSP measurement based on 90^{o} light scattering. The 1-hour TSP monitor consists of the following:

(a.) A pump to draw sample aerosol through the optic chamber where TSP is measured;

(b.) A sheath air system to isolate the aerosol in the chamber to keep the optics clean for maximum reliability; and

(c.) A built-in data logger compatible with Windows based program to facilitate data collection, analysis and reporting.

3.6.2 The 1-hour TSP meter is used within the valid period as follow manufacturer's Operation and Service Manual.

24-hour TSP Monitoring

3.6.3 The equipment used for 24-hour TSP measurement is Tisch Environmental, Inc. Model TE-5170 TSP high volume air sampling system, which complied with *EPA Code of Federal Regulation, Appendix B to Part 50*. The High Volume Air Sampler (HVS) consists of the following:

(a.) An anodized aluminum shelter;

(b.) A 8"x10" stainless steel filter holder;

(c.) A blower motor assembly;

(d.) A continuous flow/pressure recorder;

(e.) A motor speed-voltage control/elapsed time indicator;

(f.) A 7-day mechanical timer, and

(g.) A power supply of 220v/50 Hz

3.6.4 The HVS is operated and calibrated on a regular basis in accordance with the manufacturer's instruction using Tisch Calibration Kit Model TE-5025A. Calibration would carry out in two month interval.

3.6.5 24-hour TSP is collected by the ET on filters of HVS and quantified by a local HOKLAS accredited laboratory, ALS Technichem (HK) Pty Ltd (ALS), upon receipt of the samples. The ET keep all the sampled 24-hour TSP filters in normal air conditioned room conditions, i.e. 70% RH (Relative Humidity) and 25^{o}C, for six months prior to disposal.

Noise Monitoring

3.6.6 Noise measurements were taken in terms of the A-weighted equivalent sound pressure level (L_{eq})

measured in decibels dB(A). Supplementary statistical results (L_{10} and L_{90}) were also obtained for reference.

3.6.7 During the monitoring, all noise measurements would be performed with the meter set to FAST response and on the A-weighted equivalent continuous sound pressure level (L_{eq}). $Leq_{(30min)}$ in six consecutive $Leq_{(5min)}$ measurements will use as the monitoring parameter for the time period between 0700-1900 hours on weekdays; and also $Leq_{(15min)}$ in three consecutive $Leq_{(5min)}$ measurements would be used as monitoring parameter for other time periods (e.g. during restricted hours), if necessary.

3.6.8 Prior of noise measurement, the accuracy of the sound level meter is checked using an acoustic calibrator generating a known sound pressure level at a known frequency. The checking is performed before and after the noise measurement.

Water Quality

3.6.9 Water quality monitoring is conducted at the designated locations. The sampling procedures with the in-situ monitoring are presented as below:

Sampling Procedure

3.6.10 A Digital Global Positioning System (GPS) is used to identify the designated monitoring stations prior to water sampling. A portable, battery-operated echo sounder or tape measurement is used for the determination of water depth at each station. At each station, water sample would be collected from 0.1m below water surface or the water surface to prevent the river bed sediment for stirring.

3.6.11 The sample container will be rinsed with a portion of the water sample. The water sample then will be transferred to the high-density polythene bottles as provided by the laboratory, labeled with a unique sample number and sealed with a screw cap.

3.6.12 Before sampling, general information such as the date and time of sampling, weather condition as well as the personnel responsible for the monitoring would be recorded on the field data sheet.

3.6.13 A 'Willow' 33-liter plastic cool box packed with ice will be used to preserve the water samples prior to arrival at the laboratory for chemical determination. The water temperature of the cool box is maintained at a temperature as close to 4^0C as possible without being frozen. Samples collected are delivered to the laboratory upon collection.

In-situ Measurement

3.6.14 YSI PRO20 Handheld Dissolved Oxygen Instrument or YSI Professional DSS is used for water in-situ measures, which automates the measurements and data logging of temperature, dissolved oxygen and dissolved oxygen saturation.

3.6.15 A portable AZ Model 8685 pH pen-style meter or YSI Professional DSS is used for in-situ pH measurement. The pH meter is capable of measuring pH in the range of 0 – 14 and readable to 0.1.

3.6.16 A portable Hach 2100Q Turbidimeter or YSI Professional DSS is used for in-situ turbidity measurement. The turbidity meter is capable of measuring turbidity in the range of 0 – 1000 NTU.

3.6.17 All in-situ measurement equipment are calibrated by HOKLAS accredited laboratory of three month interval.

Laboratory Analysis

3.6.18 All water samples analyzed Suspended Solids (SS) will be carried out by a local HOKLAS-accredited testing laboratory (ALS Technichem (HK) Pty Ltd HOKLAS registration

no. 66). SS determination using *APHA Standard Methods 2540D* as specified in the *EM&A Manual* will start within 48 hours of water sample receipt.

3.7 EQUIPMENT CALIBRATION

3.7.1 Calibration of the HVS is performed upon installation and thereafter at bimonthly intervals in accordance with the manufacturer's instruction using the certified standard calibrator (TISCH Model TE-5025A). Moreover, the Calibration Kit would be calibrated annually. The calibration data are properly documented and the records are maintained by ET for future reference.

3.7.2 The 1-hour TSP meter was calibrated by the supplier prior to purchase. Zero response of the equipment would be checked before and after each monitoring event. Annually calibration with the High Volume Sampler (HVS) in same condition would be undertaken by the Laboratory.

3.7.3 The sound level meter and calibrator are calibrated and certified by a laboratory accredited under HOKLAS or any other international accreditation scheme at yearly basis.

3.7.4 All water quality monitoring equipment would be calibrated by HOKLAS accredited laboratory of three month intervals.

3.7.5 The calibration certificates of all monitoring equipment used for the impact monitoring program in the Reporting Period and the HOKLAS accredited certificate of laboratory are attached in ***Appendix F***.

3.8 DERIVATION OF ACTION/LIMIT (A/L) LEVELS

3.8.1 The baseline results form the basis for determining the environmental acceptance criteria for the impact monitoring. According to the approved Environmental Monitoring and Audit Manual, the air quality, construction noise and water quality criteria were set up, namely Action and Limit levels are listed in ***Tables 3-8, 3-9*** and ***3-10***.

Table 3-8 Action and Limit Levels for Air Quality Monitoring

Monitoring Station	Action Level (μg /m^3)		Limit Level (μg/m^3)	
	1-hour TSP	24-hour TSP	1-hour TSP	24-hour TSP
AM1a	265	143	500	260
AM2	268	149		
AM3	269	145		
AM4b	267	148		
AM5a	268	143		
AM6	269	148		
AM7b	275	156		
AM8	269	144		
AM9b	271	151		

Table 3-9 Action and Limit Levels for Construction Noise

Monitoring Location	Action Level	Limit Level in dB(A)
	Time Period: 0700-1900 hours on normal weekdays	
NM1, NM2, NM3, NM4, NM5, NM6, NM7, NM8, NM9, NM10	When one or more documented complaints are received	75 dB(A)[Note 1 & Note 2]

Note 1: Acceptable Noise Levels for school should be reduced to 70 dB(A) and65 dB(A) during examination period

Note 2: If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the NCA have to be followed.

Table 3-10 Action and Limit Levels for Water Quality

Parameter	Performance criteria	Monitoring Location				
		WM1	WM2A	WM2B	WM3	WM4
DO (mg/L)	Action Level	(*)4.23	(**)4.00	(*)4.74	(**)4.00	(*)4.14
	Limit Level	(#)4.19	(**)4.00	(#)4.60	(**)4.00	(#)4.08
Turbidity (NTU)	Action Level	51.3	24.9	11.4	13.4	35.2
		AND 120% of upstream control station of the same day				
	Limit Level	67.6	33.8	12.3	14.0	38.4
		AND 130% of upstream control station of the same day				
SS (mg/L)	Action Level	54.5	14.6	11.8	12.6	39.4
		AND 120% of upstream control station of the same day				
	Limit Level	64.9	17.3	12.4	12.9	45.5
		AND 130% of upstream control station of the same day				

Remarks:
(*) *The Proposed **Action Level** of Dissolved Oxygen is adopted to be used 5%-ile of baseline data*
(**) *The Proposed **Action & Limit Level** of Dissolved Oxygen is used 4mg/L*
(#) *The Proposed **Limit Level** of Dissolved Oxygen is adopted to be used 1%-ile of baseline data*

3.8.2 Should non-compliance of the environmental quality criteria occurs, remedial actions will be triggered according to the Event and Action Plan which presented in ***Appendix G.***

3.9 DATA MANAGEMENT AND DATA QA/QC CONTROL

3.9.1 All monitoring data will be handled by the ET's in-house data recording and management system. The monitoring data recorded in the equipment will be downloaded directly from the equipment at the end of each monitoring day. The downloaded monitoring data will input into a computerized database maintained by the ET. The laboratory results will be input directly into the computerized database and checked by personnel other than those who input the data.

3.9.2 For monitoring parameters that require laboratory analysis, the local laboratory shall follow the QA/QC requirements as set out under the HOKLAS scheme for the relevant laboratory tests.

4 AIR QUALITY MONITORING

4.1 GENERAL

4.1.1 In the Reporting Period, construction works under the project have been commenced in Contracts 2, 3, 5, 6 and Contract SS C505 and air quality monitoring was performed at all designated locations.

4.1.2 The air quality monitoring schedule is presented in ***Appendix H*** and the monitoring results are summarized in the following sub-sections.

4.2 AIR QUALITY MONITORING RESULTS IN REPORTING MONTH

4.2.1 In the Reporting Period, a total of ***147*** events of 1-hour TSP and ***54*** events 24-hours TSP monitoring were carried out and the monitoring results are summarized in ***Tables 4-1 to 4-9***. The detailed 24-hour TSP monitoring data are presented in ***Appendix I*** and the relevant graphical plots are shown in ***Appendix J***.

Table 4-1 Summary of 24-hour and 1-hour TSP Monitoring Results – AM1a

Date	24-hour TSP (μg/m³)	1-hour TSP (μg/m³)				
		Date	Start Time	1st reading	2nd reading	3rd reading
3-Dec-15	59	2-Dec-15	10:01	54	60	100
9-Dec-15	27	8-Dec-15	10:09	75	80	93
15-Dec-15	51	14-Dec-15	10:10	41	32	126
21-Dec-15	38	19-Dec-15	8:45	47	51	49
24-Dec-15	37	24-Dec-15	10:13	142	149	118
30-Dec-15	69	30-Dec-15	13:00	247	251	185
Average (Range)	**47 (27-69)**	Average (Range)		**106 (32 – 251)**		

Table 4-2 Summary of 24-hour and 1-hour TSP Monitoring Results – AM2

Date	24-hour TSP (μg/m³)	1-hour TSP (μg/m³)				
		Date	Start Time	1st reading	2nd reading	3rd reading
3-Dec-15	88	2-Dec-15	9:53	50	45	40
9-Dec-15	33	8-Dec-15	10:03	77	70	84
15-Dec-15	72	14-Dec-15	10:02	76	52	35
21-Dec-15	88	19-Dec-15	8:40	59	77	56
24-Dec-15	65	24-Dec-15	10:06	136	155	98
30-Dec-15	78	30-Dec-15	13:00	245	230	201
Average (Range)	**71 (33-88)**	Average (Range)		**99 (35 – 245)**		

Table 4-3 Summary of 24-hour and 1-hour TSP Monitoring Results – AM3

Date	24-hour TSP (μg/m³)	1-hour TSP (μg/m³)				
		Date	Start Time	1st reading	2nd reading	3rd reading
3-Dec-15	56	2-Dec-15	9:39	47	67	73
9-Dec-15	24	8-Dec-15	9:57	68	63	82
15-Dec-15	23	14-Dec-15	9:56	68	59	54
21-Dec-15	78	19-Dec-15	8:34	57	56	61
24-Dec-15	48	24-Dec-15	9:59	190	129	140
30-Dec-15	97	30-Dec-15	13:00	189	161	170
Average (Range)	**54 (23-97)**	Average (Range)		**96 (47 – 190)**		

Table 4-4 Summary of 24-hour and 1-hour TSP Monitoring Results – AM4b

Date	24-hour TSP (μg/m³)	1-hour TSP (μg/m³)				
		Date	Start Time	1st reading	2nd reading	3rd reading
1-Dec-15	60	5-Dec-15	10:42	107	96	142
7-Dec-15	59	11-Dec-15	10:00	50	60	75
12-Dec-15	35	17-Dec-15	10:09	42	43	44
18-Dec-15	63	23-Dec-15	8:07	40	46	54
24-Dec-15	52	29-Dec-15	10:40	169	152	154
30-Dec-15	72					
Average (Range)	**57 (35-72)**	Average (Range)		**85 (40 – 169)**		

Table 4-5 Summary of 24-hour and 1-hour TSP Monitoring Results – AM5a

Date	24-hour TSP (μg/m³)	1-hour TSP (μg/m³)				
		Date	Start Time	1st reading	2nd reading	3rd reading
1-Dec-15	74	5-Dec-15	10:39	88	74	148
7-Dec-15	47	11-Dec-15	9:55	54	61	79
12-Dec-15	42	17-Dec-15	10:10	38	39	40
18-Dec-15	70	23-Dec-15	8:15	43	55	50
24-Dec-15	34	29-Dec-15	10:50	129	176	126
30-Dec-15	40					
Average (Range)	**52 (34-74)**	Average (Range)		**80 (38 – 176)**		

Table 4-6 Summary of 24-hour and 1-hour TSP Monitoring Results – AM6

Date	24-hour TSP (μg/m³)	1-hour TSP (μg/m³)				
		Date	Start Time	1st reading	2nd reading	3rd reading
1-Dec-15	99	5-Dec-15	10:53	130	146	239
7-Dec-15	138	11-Dec-15	9:47	44	63	87
12-Dec-15	105	17-Dec-15	10:00	53	71	49
18-Dec-15	77	23-Dec-15	8:04	46	51	40
24-Dec-15	123	29-Dec-15	10:27	113	102	98
30-Dec-15	142					
Average (Range)	**114 (77-142)**	Average (Range)		**89 (40 – 238)**		

Table 4-7 Summary of 24-hour and 1-hour TSP Monitoring Results – AM7b

Date	24-hour TSP (μg/m³)	1-hour TSP (μg/m³)				
		Date	Start Time	1st reading	2nd reading	3rd reading
3-Dec-15	50	5-Dec-15	9:45	92	104	117
9-Dec-15	29	11-Dec-15	9:15	52	57	66
15-Dec-15	49	17-Dec-15	9:05	86	68	59
21-Dec-15	37	23-Dec-15	9:11	246	253	199
24-Dec-15	77	29-Dec-15	9:23	87	82	93
30-Dec-15	59					
Average (Range)	**50 (29-77)**	Average (Range)		**111 (52 – 253)**		

Table 4-8 Summary of 24-hour and 1-hour TSP Monitoring Results – AM8

Date	24-hour TSP ($\mu g/m^3$)	1-hour TSP ($\mu g/m^3$)				
		Date	Start Time	1st reading	2nd reading	3rd reading
3-Dec-15	56	5-Dec-15	13:09	100	113	117
9-Dec-15	29	11-Dec-15	13:08	55	62	64
15-Dec-15	54	17-Dec-15	13:02	55	57	61
21-Dec-15	17	23-Dec-15	13:06	222	165	150
24-Dec-15	25	29-Dec-15	13:19	100	108	117
30-Dec-15	41					
Average (Range)	**37 (17-56)**	Average (Range)		**103 (55 – 222)**		

Table 4-9 Summary of 24-hour and 1-hour TSP Monitoring Results – AM9b

Date	24-hour TSP ($\mu g/m^3$)	1-hour TSP ($\mu g/m^3$)				
		Date	Start Time	1st reading	2nd reading	3rd reading
3-Dec-15	80	2-Dec-15	9:15	135	130	137
9-Dec-15	34	8-Dec-15	9:34	105	103	120
15-Dec-15	73	14-Dec-15	9:24	188	152	124
21-Dec-15	45	19-Dec-15	9:09	74	57	49
24-Dec-15	40	24-Dec-15	9:01	175	228	98
30-Dec-15	57	30-Dec-15	11:01	192	158	147
Average (Range)	**55 (34-80)**	Average (Range)		**132 (49 – 228)**		

4.2.2 As shown in ***Tables 4-1 to 4-9***, all the 1-hour TSP and 24-hour TSP monitoring results were below the Action/Limit Levels. No Notification of Exceedance (NOE) was issued in this Reporting Period.

4.2.3 The meteorological data during the impact monitoring days are summarized in ***Appendix K***.

5 CONSTRUCTION NOISE MONITORING

5.1 GENERAL

5.1.1 In the Reporting Period, construction works under the project have been commenced in Contracts 2, 3, 5, 6 and Contract SS C505 and noise monitoring was performed at all designated locations.

5.1.2 The noise monitoring schedule is presented in ***Appendix H*** and the monitoring results are summarized in the following sub-sections.

5.2 NOISE MONITORING RESULTS IN REPORTING MONTH

5.2.1 In the Reporting Period, a total of **55** event noise measurements were carried out at the designated locations. The sound level meter was set in 1m from the exterior of the building façade including noise monitoring locations NM1, NM2, NM3, NM4, NM5, NM6, NM7, NM8 and NM9. Therefore, no façade correction (+3 dB(A)) is added according to acoustical principles and EPD guidelines. However, free-field status was performed at NM10 and façade correction (+3 dB(A)) has added according to the requirement in this month. The noise monitoring results at the designated locations are summarized in ***Tables 5-1 and 5-2.*** The detailed noise monitoring data are presented in ***Appendix I*** and the relevant graphical plots are shown in ***Appendix J***.

Table 5-1 Summary of Construction Noise Monitoring Results (Contracts 3 and 5)

Construction Noise Level ($L_{eq30min}$), dB(A)					
Date	**NM1**	**NM2**	**NM8**	**NM9**	**NM10(*)**
2-Dec-15	64	64	61	59	69
8-Dec-15	69	62	55	52	70
14-Dec-15	68	61	58	58	69
19-Dec-15	63	65	58	63	65
24-Dec-15	57	62	53	55	64
30-Dec-15	63	61	63	60	64
Limit Level	**75 dB(A)**				

Remarks

(*) *façade correction (+3 dB(A) is added according to acoustical principles and EPD guidelines*

i bold and underlined indicated Limit Level exceedance.

Table 5-2 Summary of Construction Noise Monitoring Results (Contracts 2 and 6)

Construction Noise Level ($L_{eq30min}$), dB(A)					
Date	**NM3**	**NM4**	**NM5**	**NM6**	**NM7**
5-Dec-15	60	64	53	58	60
11-Dec-15	59	66	52	58	59
17-Dec-15	59	66	65	61	67
23-Dec-15	61	69	58	53	63
29-Dec-15	60	67	53	59	60
Limit Level	**75 dB(A)**				

5.2.1 As shown in ***Tables 5-1 and 5-2***, the noise level measured at all designated monitoring locations were below 75dB(A). Furthermore, there was no noise complaints (Action Level exceedance) received by the RE, Contractors or CEDD in the Reporting Period. Therefore, no Action or Limit Level exceedance was triggered and no corrective action was required.

5.2.2 There was outstanding investigation result for noise exceedance at NM10 in last Reporting Period. The relevant investigation was completed and the result is presented in below.

Investigation Result for Exceedance at NM10 on 14 November 2015 (last Reporting Period)

5.2.3 According to the field data sheet recorded by the ET's monitoring team, it was observed that excavation and lifting works were undertaken near Bridge E under Contract 3 during the course

of noise measurement. Moreover, other noise source from excavation work and air compressor under a DSD project was observed at 40m from the monitoring location NM10 at the last 15 minutes of the course of noise monitoring.

5.2.4 As advised by the Contractor, the construction activities carried out 14 November 2015 were excavation and lifting of construction materials and the Powered Mechanical Equipment (PME) in used near Bridge E included one excavator and one crane. The construction works under the Contract were normal site work which carried out throughout the November 2015 and no exceedances were recorded when similar construction activities carried out.

5.2.5 In view of the subsequent noise monitoring result at NM10 after 14 November 2015, no exceedances were triggered and no noise complaints due to construction work were received. It is considered the exceedance was caused by cumulated noise of the Contract and nearby construction activities of other project.

5.2.6 To minimize the construction noise impact, The Contractor was advised to adopt good site practice as mitigation measures in following.

(a) Do not operate machines continuously, i.e) to take intermittent break.
(b) To avoid operating plants concurrently, such as limit heavy vehicles entering and leaving the site while carrying out concreting near the entrance.
(c) To turn off any idle equipment on site.

6 WATER QUALITY MONITORING

6.1 GENERAL

6.1.1 In the Reporting Period, construction works under the project has been commenced in Contracts 2, 3, 5, 6 and Contract SS C505 and water quality monitoring was performed at all designated locations. The water quality monitoring schedule is presented in ***Appendix H***. The monitoring results are summarized in the following sub-sections.

6.2 RESULTS OF WATER QUALITY MONITORING

6.2.1 In the Reporting Period, there were thirteen (13) sampling days for WM1, WM3 and WM4 and their control stations and twelve (12) sampling days for WM2A and WM2B and their control stations. Moreover, since 24 December 2015, three (3) events of additional water monitoring were carried out at WM2B due to exceedance following to the Event and Action Plan.

6.2.2 The key monitoring parameters including Dissolved Oxygen, Turbidity and Suspended Solids are summarized in ***Tables 6-1 and 6-4***. Breaches of water quality monitoring criteria are shown in ***Table 6-5***. Detailed monitoring database including in-situ measurements and laboratory analysis data are shown in ***Appendix I*** and the relevant graphical plot are shown in ***Appendix J***.

Table 6-1 Summary of Water Quality Monitoring Results for Contracts 2 and 3

Date	Dissolved Oxygen (mg/L)			Turbidity (NTU)			Suspended Solids (mg/L)		
	WM4	WM4-CA	WM4-CB	WM4	WM4-CA	WM4-CB	WM4	WM4-CA	WM4-CB
1-Dec-15	7.6	7.7	7.0	13.6	15.5	11.1	14.0	13.5	8.5
3-Dec-15	5.9	7.7	4.1	**66.4**	9.3	12.6	**56.5**	4.5	10.5
5-Dec-15	7.2	7.4	5.9	25.9	9.0	11.1	23.0	12.0	8.0
8-Dec-15	7.5	8.0	5.4	20.2	12.1	17.9	19.5	7.0	14.5
10-Dec-15	7.3	7.8	6.3	24.7	17.4	32.9	20.5	7.5	18.0
12-Dec-15	7.4	8.2	6.4	17.0	10.3	35.5	22.5	10.0	45.5
14-Dec-15	7.4	8.2	5.6	22.7	22.7	14.4	20.0	5.5	12.5
16-Dec-15	8.7	9.2	7.2	16.5	5.3	15.2	15.5	3.5	22.0
18-Dec-15	8.6	9.3	6.8	16.8	5.9	11.8	10.5	2.5	11.5
22-Dec-15	7.6	8.6	5.8	13.9	7.4	18.2	8.0	5.0	19.5
24-Dec-15	8.0	8.1	6.6	28.5	12.3	15.0	23.5	9.5	20.5
28-Dec-15	8.5	8.9	7.6	18.2	5.6	33.6	13.5	3.0	37.0
30-Dec-15	8.4	9.1	7.5	14.7	6.6	12.4	13.5	3.5	13.0

Remark: bold and underlined indicated Limit Level exceedance.

Table 6-2 Summary of Water Quality Monitoring Results for Contracts 5 and SS C505

Date	Dissolved Oxygen (mg/L)		Turbidity (NTU)		Suspended Solids (mg/L)	
	WM1	WM1-Control	WM1	WM1-Control	WM1	WM1-Control
1-Dec-15	7.1	7.2	**244.5**	13.3	**140.0**	5.0
3-Dec-15	7.3	7.5	24.7	8.8	25.0	5.0
5-Dec-15	8.4	8.0	17.6	12.2	21.0	14.0
8-Dec-15	8.4	8.3	20.1	11.6	22.0	4.0
10-Dec-15	8.0	8.1	**133.5**	29.1	**156.0**	12.5
12-Dec-15	7.2	7.8	**348.0**	9.8	**606.5**	5.0
14-Dec-15	6.0	7.0	**148.0**	10.9	**211.0**	4.5
16-Dec-15	8.8	10.7	50.4	6.9	51.0	2.5
18-Dec-15	8.7	10.1	47.8	13.9	47.5	7.0
22-Dec-15	7.4	8.4	27.8	11.8	27.0	3.5
24-Dec-15	7.2	7.6	48.0	9.9	49.0	10.0
28-Dec-15	6.9	9.0	10.7	33.8	29.5	5.5
30-Dec-15	9.2	9.8	20.5	11.9	14.0	5.0

Remark: bold and underlined indicated Limit Level exceedance.

Table 6-3 Summary of Water Quality Monitoring Results for Contract 6

Date	Dissolved Oxygen (mg/L)				Turbidity (NTU)				Suspended Solids (mg/L)			
	WM2A	WM2A-C	WM2B	WM2B-C	WM2A	WM2A-C	WM2B	WM2B-C	WM2A	WM2A-C	WM2B	WM2B-C
2-Dec-15	8.2	7.3	7.6	7.0	10.4	7.9	**30.3**	4.9	8.5	4.0	**67.5**	4.5
4-Dec-15	8.4	5.9	8.7	7.0	8.3	13.2	**34.1**	7.8	7.0	3.5	**41.0**	2.0
7-Dec-15	9.0	7.9	9.3	7.2	**35.7**	13.3	**28.2**	7.8	**60.0**	3.5	**27.0**	2.0
9-Dec-15	8.0	8.5	7.9	7.4	375.0	782.5	**68.1**	4.0	300.0	461.0	**80.0**	2.0
11-Dec-15	7.9	7.9	8.1	7.2	**52.1**	12.8	18.3	24.1	**21.0**	3.5	10.0	17.0
15-Dec-15	8.5	8.2	8.8	7.6	19.7	10.5	**113.0**	3.5	10.5	4.0	**123.5**	2.0
17-Dec-15	10.0	9.1	9.6	8.0	10.5	15.9	**88.4**	9.0	5.5	5.0	**125.5**	2.0
19-Dec-15	10.3	9.6	9.9	8.0	13.5	8.1	**56.8**	3.7	12.0	6.5	**121.0**	2.0
21-Dec-15	9.3	8.3	9.4	7.9	7.8	14.2	**54.0**	4.3	3.0	6.5	**79.5**	2.0
23-Dec-15	8.7	7.9	8.8	7.5	12.5	10.9	**18.8**	8.6	5.0	2.5	9.5	4.0
24-Dec-15#							6.1				4.0	
28-Dec-15#							10.2				7.0	
29-Dec-15	9.3	8.5	9.9	7.8	7.4	8.3	7.2	5.9	2.5	3.5	5.0	2.0
30-Dec-15#							9.4				8.0	
31-Dec-15	9.4	8.6	9.8	8.0	8.9	11.0	**35.7**	4.8	7.5	5.5	**42.5**	3.5

Remark (i) bold and underlined indicated Limit Level exceedance.
 # Since 24 December 2015, additional water monitoring would be carried out at the exceeded location(s).

Table 6-4 Summary of Water Quality Monitoring Results for Contracts 2 and 6

Date	Dissolved Oxygen (mg/L)		Turbidity (NTU)		Suspended Solids (mg/L)	
	WM3	WM3-Control	WM3	WM3-Control	WM3	WM3-Control
2-Dec-15	6.8	6.9	35.8	31.5	47.0	70.5
4-Dec-15	7.7	6.7	13.5	14.4	14.0	14.0
7-Dec-15	7.7	8.2	20.6	27.4	20.0	30.5
9-Dec-15	6.7	7.4	**226.0**	48.3	**148.0**	58.0
11-Dec-15	7.6	7.6	17.0	26.0	8.5	61.5
15-Nov-15	8.2	7.0	13.0	11.8	11.5	14.0
17-Dec-15	8.7	8.9	6.5	18.6	11.5	13.0
19-Dec-15	9.2	9.5	16.6	21.5	11.0	19.5
21-Dec-15	8.6	8.9	21.5	23.2	14.0	24.5
23-Dec-15	8.2	8.3	23.8	26.7	13.0	28.5
26-Dec-15	9.1	10.1	15.7	17.0	13.0	17.0
29-Dec-15	9.1	7.6	15.3	38.7	14.5	40.0
31-Dec-15	8.8	8.8	18.6	30.2	8.5	22.5

Remark: bold and underlined indicated Limit Level exceedance.

Table 6-5 Breaches of Water Quality Monitoring Criteria in Reporting Period

Location	Dissolved Oxygen (mg/L)		Turbidity (NTU)		Suspended Solids (mg/L)		Total Exceedance	
	Action	Limit	Action	Limit	Action	Limit	Action	Limit
WM1	0	0	0	**4**	0	**4**	0	**8**
WM2A	0	0	0	**2**	0	**2**	0	**4**
WM2B	0	0	0	**10**	0	**9**	0	**19**
WM3	0	0	0	**1**	0	**1**	0	**2**
WM4	0	0	0	**1**	0	**1**	0	**2**
No of Exceedance	0	0	0	**18**	0	**17**	0	**35**

6.2.3 In this Reporting Period, a total of thirty-five (35) Limit Level exceedances, namely eighteen (18)

exceedances of turbidity and seventeen (17) exceedances of suspended solids were recorded.

6.2.4 NOE was issued to relevant parties upon confirmation of the monitoring result. The investigation for the cause of exceedance is in progress.

6.2.5 There were outstanding investigation results for water quality exceedances recorded at WM2A and WM2B in last Reporting Period. The relevant investigation was completed and the results are presented in below.

Investigation Result for Exceedance at WM2A on 16 November 2015 (last Reporting Period)

6.2.6 According to the site information provided from the Contractor of C6, construction activities carried out on 16 November 2015 at North Portal near WM2A included site clearance and Ground Investigation (GI) works. As advised by the Contractor, water re-circulation tank was provided for the GI works and no wastewater was discharged.

6.2.7 According to the site record from the monitoring team during monitoring on 16 November 2015, the water quality at WM2A-C is visually clear but cloudy water was observed at WM2A.

6.2.8 During site inspection on 13 November 2015, no excavation either inside the river course or on the land side of the works area was observed. In order to divert the upstream water across the site without contamination by the construction activities, a flow diversion was constructed through the site. However, silt and mud cumulated inside the flow diversion was observed during site inspection. Moreover, exposed surface next to the river stream was observed. According to the rainfall record from the HKO, there were rains on 15 and 16 November 2015. It is considered that the flow diversion was polluted by the silt and mud cumulated inside the channel during rain.

6.2.9 As a prompt remedial action, the Contractor was advised to clean up the silt and sediment in the diversion channel regularly to minimize generation of turbid water. It was completed on 19 November 2015 and the discharge water was visually clear. Moreover, the exposed surface next to the river stream has been covered with impervious sheeting to minimize muddy runoff.

6.2.10 To avoid contamination of the water in the flow diversion right across the site during construction stage, the Contractor was proposed to construct temporary drainage system along the site boundary to collect the upstream water and preventing it passing through the construction site. Moreover, the Contractor was advised to set up a temporary drainage system next to the river stream to prevent the runoff from the site entering the exiting river stream.

6.2.11 There were no exceedances triggered at WM2A after rainy day and removal of silt in the diversion flow undertaken by the Contractor on 19 November 2015. It is considered that the exceedance was a single event due to rain.

Investigation Result for Exceedance at WM2B on 12 and 14 November 2015 (last Reporting Period)

6.2.12 According to the site information provided from the Contractor of C6, construction activities carried out on 12 and 14 November 2015 at North Portal at upstream of WM2B included bored pile works and slope works.

6.2.13 According to the site record from the monitoring team during monitoring on 12 and 14 November 2015, the water at flowing at WM2B was visually clear but very shallow water was measured at WM2B and the water depth was around 0.02m. Moreover, cumulated sediment was observed at the channel bed. Since the water sampling was carried out at the bridge over the drainage channel, the sampled water could not avoid inclusion of the loose sediment and debris at the channel bed which highly affected the monitoring result.

6.2.14 Since discharge license was not yet granted for the Contract, self-monitoring for the effluent

quality would be conducted by the Contractor if discharge is required to ensure the discharge effluent complied with the relevant requirements including the Technical Memorandum - Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters. According to the self-monitoring record by the Contractor on 12 and 14 November 2015, the treated water in the AquaSed was visually acceptable, however, there were no effluent discharges made on 12 and 14 November 2015 due to insufficient treated effluent.

6.2.15 During site inspection at North Portal on 6 November 2015, it was observed that wastewater treatment system has been in place and the water quality in the AquaSed was visually acceptable. Moreover, to minimize the muddy runoff into the existing channel, the slopes adjacent to channel were covered with tarpaulin sheet.

6.2.16 It is considered that the exceedances were likely due to the shallow water and disturbance of sediment at the channel bed during sampling and not related to the works under the project.

Investigation Result for Exceedance at WM2B on 26 and 28 November 2015 (last Reporting Period)

6.2.17 According to the site information provided from the Contractor of C6, construction activities carried out on 26 and 28 November 2015 at North Portal near WM2B included bored pile works and slope works.

6.2.18 According to the site record from the monitoring team during monitoring on 26 and 28 November 2015, very shallow water was measured at WM2B and the water depth was around 0.01m to 0.02m. It was observed that the water flowing at WM2 was visually clear, however, loose sediment was cumulated at the channel bed. Since the water sampling was carried out at the bridge over the drainage channel, the sampled water could not avoid inclusion the sediment and debris at the channel bed.

6.2.19 As advised by the Contractor, the wastewater generated was recirculated for the bored pile work and no wastewater was discharged. Since there were no rainfall record on the exceedance days, runoff from the site is not likely to occur. To minimize muddy runoff under rainy day, the slope adjacent to the channel was covered with impervious sheeting or hard paved. During weekly site inspection in November 2015, it was observed that a wastewater treatment facility has been set up for necessary use.

6.2.20 It is considered that the exceedances were likely due to the shallow water and disturbance of sediment at the channel bed during sampling and not related to the works under the project.

Investigation Result for Exceedance at WM1 on 1 December 2015 (Contract 5)

6.2.21 According to the site information provided by the Contractor, formation work at BCPD area and road works at Lin Ma Hang Road were carried out under Contract 5 on 1 December 2015. As advised by the Contractor, no wastewater discharge was made on 1 December 2015.

6.2.22 According to the field data record by ET on 1 December 2015, muddy water was observed at WM1 which flowing from upstream but the water quality at control station was clear.

6.2.23 Weekly site inspection was carried out by the RE, Contractor, IEC and Contractor on 26 November and 3 December 2015, it was noted that the active construction works were excavation and compaction in Lin Ma Hang Road and these works would not generate wastewater. Site formation work was continued in BCP area and no water quality impact caused by Contract 5 was observed.

6.2.24 Site inspection at areas adjacent to the river course was carried out by the RE and ET on 7 December 2015 to investigation the possible cause of exceedance. During the site inspection, it was observed that formation work at BCPD area and road works at Lin Ma Hang Road were carried out under Contract 5 and no wastewater generated site activities were conducted. There

were some compacted slope surfaces observed however, no rainfall on and before 1 December 2015 as recorded by the Hong Kong Observatory and possible surface runoff from the slopes and BCP open-cut area was unlikely to occur.

6.2.25 In view along the river course during site inspection on 7 December 2015, there were no traces of muddy runoff nor discharge observed throughout the channel adjacent to site. However, there was new private logistic store located adjacent to Kong Yiu Channel which near the area of Contract 5 and a new concrete paved land was observed at the front yard of the logistic store and the concrete work may cause muddy water.

6.2.26 There were no exceedances of Turbidity triggered in subsequent monitoring on 3 and 5 December 2015. Based on the above investigation, no evident of wastewater discharge from the site was found and no turbidity exceedance triggered in subsequent of monitoring days. It is conclude that the exceedances should be a single event and not likely related to the works under Contract 5.

Investigation Result for Exceedance at WM1 on 1 December 2015 (SS C505)

6.2.27 According to the site information provided by the Contractor, the major construction activities carried out on 1 December 2015 included percussive piling, bored piling, pre-boring, backfilling and ground investigation which are illustrated in Figure 1. It is noted that the majority active construction area was conducted at Portion 1 which not closed to Kong Yiu River.

6.2.28 According to the field data record by ET on 1 December 2015, muddy water was observed at WM1 which flowing from upstream but the water quality at control station was clear.

6.2.29 In view of the construction activities on 1 December 2015, wastewater was likely be generated during the bored piling work. As advised by the Contractor, the wastewater generated from the works was recirculated for the piling work used. If water discharge is required, they will follow the temporary site drainage plan in which wastewater would be diverted to the perimeter channel and then collected to the wastewater treatment plant for treatment before discharge. It is noted that the discharge point connecting public drainage was located at the west of the site and the discharge water would not flow to WM1 and its upstream.

6.2.30 During site inspection on 2 December 2015, no wastewater was observed at the perimeter channel near the bored piling area. Moreover, sludge suction truck for sucking the sediment cumulated inside sedimentation tank was observed and regular clearing of the sedimentation tanks could avoid over accumulation of the sludge which affect the treatment capacity and quality. As advised by the Contractor, regular checking the effluent quality by visual test was conducted to ensure effluent quality meets on the discharge requirement.

6.2.31 In view of the topography of the construction site, the formation level of the site is lower than the roads bounding the site (around 2m height difference), it is considered that the wastewater generated on-site is not likely flowing out of the site boundary. As advised by the Contractor, around 90% of treated water is reused on-site (water spread for dust suppression) whereas the rest of the treatment wastewater would be discharge off site at the approval discharge point.

6.2.32 There were no exceedances triggered in the subsequent monitoring result on 3 December 2015. According to the above investigation, it is considered that the exceedance was a single event and not likely related to the works under the Contract.

Investigation Result for Exceedance at WM4 on 3 December 2015 (Contract 2)

6.2.33 According to the site information provided from the Contractor of C2 (DHK), construction activities carried out on 3 December 2015 at South Portal included tunnel excavation, ventilation building formation and superstructure which undertaken away from the Ma Wat River.

6.2.34 According to the site record from the monitoring team during monitoring on 3 December 2015, milky water was observed at WM4 and the water quality at WM4-CA and WM-4B were clear.

6.2.35 As informed by the Contractor of C3 (construction site at upstream of C2), burst of water main was happened within the site area of C3 near box culvert ID4 on 3 December 2015 before the water monitoring work. The burst water main was a 1400mm dia. pipe which generated large amount of water. The welled water from the burst water main cumulated in the catch pit, the Contractor of Contract 3 was immediately diverted to turbid water from the catch pit to the nearby wastewater treatment system No.2 for treatment to prevent the turbid water overflow from the site.

6.2.36 Since the amount of water and the flow is too large to control, part of the water from the burst water main was flowing into the existing channel through the underground pipes and uncompleted extension of box culvert ID4. As water flow in the exiting river channel was increased suddenly and milky-like water was generated throughout the channel by water turbulence and stir up of river bed sediment.

6.2.37 In view of the subsequent monitoring result after 3 December 2015, no exceedances were triggered. It is considered that the exceedances were due to the accident of burst of water main and not related to the works under the Contract. Since the exceedance was concluded as not project related, no increase monitoring frequency was conducted as per the EAP.

Investigation Result for Exceedance at WM4 on 3 December 2015 (Contract 3)

6.2.38 According to the site record from the monitoring team during monitoring on 3 December 2015, milky water was observed at WM4 and the water quality at WM4-CA and WM-4B were clear.

6.2.39 As informed by the Contractor, burst of water main within the site area of both Contract 3 of LT/BCP Project and Entrusted Works for Fanling Highway Widening was happened on 3 December 2015 before the water monitoring work. The burst water main was constructed by the Contractor which has already handed over to WSD and the cause of burst of water main was still under investigation. The location of the accident is located near box culvert ID4.

6.2.40 As advised by the Contractor, the burst water main was a 1400mm dia. pipe which generated large amount of water. The welled water from the burst water main cumulated in the catch pit, the Contractor was immediately diverted to turbid water from the catch pit to the nearby wastewater treatment system No.2 (WWTS No.2) for treatment to prevent the turbid water overflow from the site.

6.2.41 Since the amount of water and the flow is too large to control, part of the water from the burst water main was flowing into the existing channel through the underground pipes and uncompleted extension of box culvert ID4. As water flow in the exiting river channel was increased suddenly and milky-like water was generated throughout the channel by water turbulence and stir up of river bed sediment.

6.2.42 In view of the subsequent monitoring result after 3 December 2015, no exceedances were triggered. It is considered that the exceedances were due to the accident of burst of water main and not related to the works under the Contract. Since the exceedance was concluded as not project related, no increase monitoring frequency was conducted as per the EAP.

Investigation Result for Exceedance at WM1 on 10, 12 and 14 December 2015 (Contract 5)

6.2.43 According to the site information provided by the Contractor, formation work at BCPD area and road works at Lin Ma Hang Road were carried out under Contract 5 on 10, 12 and 14 December 2015. As advised by the Contractor, no wastewater discharge was made on 10, 12 and 14 December 2015.

6.2.44 According to the field data record by ET on 10, 12 and 14 December 2015, cloudy water and accumulation of rubbish were observed at WM1 whereas the water quality at WM1-C was visually clear.

6.2.45 According to the Daily Extract of Meteorological Observations from the Hong Kong Observatory, a total rainfall at 44.6mm was recorded on 9 December 2015. According to the past record, turbid water would be generated by stirring up of loose sediment at the river bed during heavy rainstorm. Since rubbish was flushing from upstream during rainstorm and cumulated at WM1, the water flow near WM1 was retarded and cloudy water would be cumulated at WM1. According to the past experience, the cloudy water generated under rainstorm would take about 5-6 days to settle and completely flow away due to slow water flow.

6.2.46 Weekly site inspection was carried out by the RE, Contractor, IEC and Contractor on 10 December 2015, it was noted that the active construction works were excavation and compaction in Lin Ma Hang Road and these works would not generate wastewater. No water impact raised from the BCPD under Contract 5 was observed as well. However, turbid water was observed throughout the channel including area away from the active construction area under Contract 5

6.2.47 There were no exceedances triggered in the subsequent monitoring result after 14 December 2015. According to the above investigation, it is considered that the exceedances were due to residual impact after rainstorm and not likely related to the works under the Contract.

Investigation Result for Exceedance at WM1 on 10, 12 and 14 December 2015 (SS C505)

6.2.48 According to the site information provided by the Contractor, the major construction activities carried out on 10, 12 and 14 December 2015 included percussive piling, bored piling, pre-boring, backfilling and ground investigation which are illustrated in Figure 1. It is noted that the majority active construction area was conducted at Portion 1 which not closed to Kong Yiu River.

6.2.49 According to the field data record by ET on 10, 12 and 14 December 2015, cloudy water and accumulation of rubbish were observed at WM1 whereas the water quality at WM1-C was visually clear.

6.2.50 According to the Daily Extract of Meteorological Observations from the Hong Kong Observatory, a total rainfall at 44.6mm was recorded on 9 December 2015. According to the past record, turbid water would be generated by stirring up of loose sediment at the river bed during heavy rainstorm. Since rubbish was flushing from upstream during rainstorm and cumulated at WM1, the water flow near WM1 was retarded and cloudy water would be cumulated at WM1. According to the past experience, the cloudy water generated under rainstorm would take about 5-6 days to settle and completely flow away due to slow water flow.

6.2.51 In view of the construction activities on 10, 12 and 14 December 2015 and confirmed by the Contractor, wastewater was generated during the bored piling work only and the wastewater was recirculated for the piling work used. If water discharge is required, they will follow the temporary site drainage plan in which wastewater would be diverted to the perimeter channel and then collected to the wastewater treatment plant for treatment before discharge. It is noted that the discharge point connecting public drainage was located at the west of the site and the discharge water would not flow to WM1 and its upstream.

6.2.52 During site inspection on 16 December 2015, soil and mud cumulated at the perimeter channel was observed and the Contractor was advised to clear the channel regularly. No major water impact was observed during site inspection on 16 December 2015.

6.2.53 In view of the topography of the construction site, the formation level of the site is lower than the roads bounding the site (around 2m height difference), it is considered that the wastewater generated on-site is not likely flowing out of the site boundary. As advised by the Contractor, around 90% of treated water is reused on-site (water spread for dust suppression) whereas the rest of the treatment wastewater would be discharge off site at the approval discharge point.

6.2.54 There were no exceedances triggered in the subsequent monitoring result after 14 December 2015. According to the above investigation, it is considered that the exceedances were due to rainstorm and not likely related to the works under the Contract.

Investigation Result for Exceedance at WM2A on 7 and 11 December 2015 (Contract 6)

6.2.55 According to the site information provided from the Contractor of C6, construction activities carried out on 7 and 11 December 2015 at North Portal at far upstream of WM2A included steel and rebar fixing and bridge footing. As advised by the Contractor, no wastewater was generated from the works mentioned. Moreover, no construction activities were conducted near WM2A.

6.2.56 According to the site record from the monitoring team during monitoring on 7 and 11 December 2015, turbid water was observed at WM2A but the water WM2A-C observed at WM2A-C was visually clear.

6.2.57 During site inspection in early December 2015, it was observed that the Contractor has covered the bare slopes with impervious sheeting to minimize muddy runoff and fencing has been erected to prevent any plant crossing the river. In addition, the Contractor was advised to set up a temporary drainage system as the forthcoming active site area and activities are sensitive which close to the river course.

6.2.58 As advised by the Contractor, laying of rock fill at area adjacent to the river course was completed and concrete bunds will be constructed along the river course in coming stage.

6.2.59 In view of the construction activities undertaken by the Contractor on 7 and 11 December 2015, no wastewater would be generated and discharge. Moreover, there were no rains on both days and surface runoff from the construction site was unlikely to occur. It is considered that the exceedance was not likely due to the contract.

Investigation Result for Exceedance at WM3 on 9 December 2015 (Contract 2)

6.2.60 According to the site information provided from the Contractor of C2 (DHK), construction activities carried out on 9 December 2015 at upstream of WM3 included northbound tunnel excavation, portal formation and permanent drainage whereas the site at admin building was idled.

6.2.61 According to the site record from the monitoring team during monitoring on 9 December 2015, the water monitoring was carried during rain and muddy water was observed at both WM3C and WM3. According to the Daily Extract of Meteorological Observations from the Hong Kong Observatory, a total rainfall at 44.6mm was recorded on 9 December 2015.

6.2.62 During weekly site inspection in November and December 2015, it was observed that temporary drainage system and water treatment system was implemented and operated properly at North Portal. All the wastewater generated from the construction activities as well as the runoff would be collected and diverted to the water treatment facilities for treatment before discharge. Inspection for the discharge quality was also conducted during site inspection and no adverse water impact was observed in November and December 2015.

6.2.63 Apart from the water discharge from the construction site, the monitored drainage channel would also collect the rain water from the road surface via communal channel as well as water from the hill at the vicinity. It is believed that the water quality at monitored channel as WM3 would be deteriorated under influence of rainfall.

6.2.64 There were no exceedances triggered in the subsequent monitoring result after 9 December 2015. According to the above investigation, it is considered that the exceedances were due to rainstorm and not likely related to the works under the Contract.

Investigation Result for Exceedance at WM3 on 9 December 2015 (Contract 6)

6.2.65 According to the site information provided from the Contractor of C6, construction activities carried out on 9 December at upstream of WM3 included bored pile works at Bridge A and steel and rebar fixing at Wo Keng Shan Park.

6.2.66 According to the site record from the monitoring team during monitoring on 9 December 2015, the water monitoring was carried out during rain and muddy water was observed at both WM3C and WM3. According to the Daily Extract of Meteorological Observations from the Hong Kong Observatory, a total rainfall at 44.6mm was recorded on 9 December 2015.

6.2.67 As advised by the Contractor, as water mitigation measures, a temporary drainage channel has been set up to divert wastewater to the wastewater treatment facilities which under normal operation. The effluent from wastewater treatment facilities was recirculated in the wheel washing basin and no discharge was made.

6.2.68 Apart from the water discharge from the construction site, the monitored drainage channel would also collect the rain water from the road surface via communal channel as well as water from the hill at the vicinity. It is believed that the water quality at monitored channel as WM3 would be deteriorated under influence of rainfall.

6.2.69 There were no exceedances triggered in the subsequent monitoring result after 9 December 2015. It is considered that the exceedances were due to rainstorm and not likely related to the works under the Contract.

Investigation Result for Exceedance at WM2B on 2, 4 and 7 December 2015 (Contract 6)

6.2.70 According to the site information provided from the Contractor of C6, construction activities carried out on 2, 4 and 7 December at North Portal near WM2B included bored pile works and slope works.

6.2.71 According to the site record from the monitoring team during monitoring on 2, 4 and 7 December 2015, very shallow water was measured at WM2B and the water depth was around 0.01m. Since the water sampling was carried out at the bridge over the drainage channel, the sampling bucket may readily disturb the channel bed and the sampled water could not avoid inclusion of the loose sediment and debris.

6.2.72 As advised by the Contractor, the wastewater generated from the bored pile works was recirculated and an AquaSed was set up aside for necessary use. Since discharge license was not yet granted for the Contract, self-monitoring for the effluent quality would be conducted by the Contractor if discharge is required to ensure the discharge effluent complied with the relevant requirements including the Technical Memorandum - Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters. According to the self-monitoring record by the Contractor on 2, 4 and 7 December 2015, the treated water in the AquaSed was visually acceptable. However, there were no discharges made on the exceedance days due to insufficient effluent.

6.2.73 During weekly site inspection on 10 December 2015, it was observed that the wastewater treatment system was properly in placed and no discharge was observed. Moreover, to minimize the muddy runoff into the existing channel, the slopes adjacent to channel were covered with tarpaulin sheet.

6.2.74 Based on our investigation, it is considered that the exceedances were likely due to the shallow water and disturbance of sediment at the channel bed during sampling and not related to the works under the Contract.

Investigation Result for Exceedance at WM2B on 9 December 2015 (Contract 6)

6.2.75 According to the site information provided from the Contractor of C6, construction activities carried out on 9 December at North Portal near WM2B included bored pile works and slope works.

6.2.76 According to the site record from the monitoring team during monitoring on 9 December 2015,

the water monitoring was carried out during rain and turbid water was observed at WM2B whereas the water at WM2B-C was clear. The water depth was around 0.04m and higher water flow was observed as compared with non-rainy days. According to the Daily Extract of Meteorological Observations from the Hong Kong Observatory, a total rainfall at 44.6mm was recorded on 9 December 2015. (Figure 1)

6.2.77 During weekly site inspection on 10 December 2015, removal of silt and sediment at the existing channel was undertaken by the Contractor. In view of the site condition, it was believed that the silt and sediment cumulated at the channel was due to the surface runoff from the opened slope at uphill due to the Contract during heavy rainstorm on 9 December 2015.

6.2.78 As water mitigation measures, a catch pit was constructed under the slopes which aimed to temporary intercept and storage of the runoff water from the site for further desilting. Moreover, the slopes adjacent to channel were covered with tarpaulin sheet or hard paved, however, it is considered that these measures were not sufficient to avoid muddy runoff during heavy rain.

6.2.79 In our investigation, the Contractor was advised to improve the capacity of the pit and construct temporary drainage channel to collect the site runoff as recommended in the implementation schedule for environmental mitigation measures in the EM&A Manual.

Investigation Result for Exceedance at WM2B on 15 December 2015 (Contract 6)

6.2.80 According to the site information provided from the Contractor of C6, construction activities carried out on 15 December at North Portal near WM2B included bored pile works and slope works.

6.2.81 According to the site record from the monitoring team during monitoring on 15 December 2015, very shallow water was measured at WM2B and the water depth was around 0.01m. (Photo 1) Since the water sampling was carried out at the bridge over the drainage channel, the sampling bucket may readily disturb the channel bed and the sampled water could not avoid inclusion of the loose sediment and debris.

6.2.82 During weekly site inspection on 10 December 2015, removal of silt and sediment at the existing channel was undertaken by the Contractor. In view of the site condition, it was believed that the silt and sediment cumulated at the channel was due to the surface runoff from the opened slope at uphill when heavy rain on 9 December 2015.

6.2.83 As water mitigation measures, a catch pit was constructed under the slopes which aimed to temporary intercept and storage of the runoff water from the site for further desilting. Moreover, the slopes adjacent to channel were covered with tarpaulin sheet or hard paved, however, it is considered that this measure was not sufficient to avoid runoff during heavy rain.

6.2.84 In our investigation, the Contractor was advised to improve the capacity of the pit and construct temporary drainage channel to collect the site runoff as recommended in the implementation schedule for environmental mitigation measures in the EM&A Manual.

Investigation Result for Exceedance at WM2B on 17, 19, 21 and 23 December 2015 (Contract 6)

6.2.85 During water monitoring at WM2B on 17, 19, 21 and 23 December 2015, it was observed that the water flowing at WM2B was visually clear but there were observable cumulated sediment at the channel bed. Since the water level of WM2B was very shallow (~0.01m), the sampled water could not avoid inclusion of the sediment and silt at the channel bed. It is considered that the exceedances were due to disturbance of sediment and silt at the channel bed when the sample collected under shallow water.

Investigation Result for Exceedance at WM2B on 31 December 2015 (Contract 6)

6.2.86 According to the site information provided from the Contractor of C6, construction activities carried out on 31 December 2015 at North Portal at upstream of WM2B included bored piling and channel clearing.

6.2.87 According to the site record from the monitoring team during monitoring on 31 December 2015, very shallow water was measured at WM2B and the water depth was around 0.01m. Since the water sampling was carried out at the bridge over the drainage channel at shallow water, the sampled water could not avoid inclusion of the loose sediment and debris.

6.2.88 As advised by the Contractor, channel clearing for removal of sediment and muddy water was undertaken by the Contractor on 31 December 2015 after rainfall. In view of the site condition, it was believed that the sediment and muddy water cumulated at the channel was due to the runoff from the opened slope at uphill when heavy rain on 31 December 2015. As water mitigation measures, a sump pit with temporary channel were constructed under the slopes to divert the site runoff for temporary storage and primarily desilting before divert to the AquaSed. Moreover, the slopes adjacent to channel were covered with tarpaulin sheet or hard paved to minimise muddy runoff during rain. The Contract was advised to enhance the water mitigation measures to cope with the runoff due to rain.

6.2.89 During the process of the channel clearing, the Contractor would trap the muddy water by sand bags and pump the muddy water to the wastewater treatment system for de-silting. However, the remaining silt at the river bed was difficult to clear and collect and unavoidably flowing to downstream along with the nature water flow.

6.2.90 The Contractor has enhanced the water mitigation measures in early January 2016 to resolve the runoff problem. Another sump pits with temporary channel were constructed under the slopes Moreover, the slopes adjacent to channel were covered as far as possible with tarpaulin sheet or hard paved to minimise muddy runoff during rain. Moreover, hydro-seeding at the stabilized slope would be applied in forthcoming stage.

6.2.91 There were no exceedance recorded at WM2B on 4 and 5 January 2016. Nevertheless, the Contractor should continue to fully implement the water mitigation measures as recommended in the implementation schedule for environmental mitigation measures in the EM&A Manual.

7 WASTE MANAGEMENT

7.1 GENERAL WASTE MANAGEMENT

7.1.1 Waste management was carried out by an on-site Environmental Officer or an Environmental Supervisor from time to time.

7.2 RECORDS OF WASTE QUANTITIES

7.2.1 All types of waste arising from the construction work are classified into the following:

- Construction & Demolition (C&D) Material;
- Chemical Waste;
- General Refuse; and
- Excavated Soil.

7.2.2 The quantities of waste for disposal in this Reporting Period are summarized in ***Tables 7-1*** and ***7-2*** and the Monthly Summary Waste Flow Table is shown in ***Appendix L***. Whenever possible, materials were reused on-site as far as practicable.

Table 7-1 Summary of Quantities of Inert C&D Materials for the Project

Type of Waste	Contract 2		Contract 3		Contract 5		Contract 6		Contract SS C505		Total Quantity
	Qty.	Disposal location	Qty.	Disposal location	Qty.	Disposal location	Qty.	Disposal location	Qty.	Disposal location	
C&D Materials (Inert) (in '000m^3)	**50.4888**	--	**3.158**	--	0	--	**51.601**	--	**0.663**	--	**105.9108**
Reused in this Contract (Inert) (in '000 m^3)	**0.8455**	--	**1.600**	--	0	--	**11.077**	--	0	--	**13.5225**
Reused in other Contracts/ Projects (Inert) (in '000 m^3)	**49.2509**	C6/ NENT# & other projects approved by the ER	0	--	0	--	**6.827**	C5 & other projects approved by the ER	0	--	**56.0779**
Disposal as Public Fill (Inert) (in '000 m^3)	**0.3925**	Tuen Mun 38	**1.558**	Tuen Mun 38	0	--	**33.697**	Tuen Mun 38	**0.663**	TKO 137	**36.3105**

Remark #: The C&D materials were delivered to NENT for reuse by laying cover of the landfilling area.

Table 7-2 Summary of Quantities of C&D Wastes for the Project

Type of Waste	Contract 2		Contract 3		Contract 5		Contract 6		Contract SS C505		Total Quantity
	Qty.	Disposal location	Qty.	Disposal location	Qty.	Disposal location	Qty.	Disposal location	Qty.	Disposal location	
Recycled Metal ('000kg) #	**5.6100**	Licensed collector	0	-	0	--	0	--	0	--	**5.6100**
Recycled Paper / Cardboard Packing ('000kg) #	**0.4000**	Licensed collector	0	-	0	--	**0.147**	Licensed collector	0	--	**0.547**
Recycled Plastic ('000kg) #	0	--	**0.001**	Licensed collector	0	--	0	--	0	--	**1m^3**
Chemical Wastes ('000kg) #	**0.8800**	Licensed collector	**0.0006**	Licensed collector	0	--	0	--	0	--	**880kg+ 0.6m^3**
General Refuses ('000m^3)	**0.0446**	NENT	**0.145**	NENT	**0.07**	NENT	**0.08**	NENT	**0.111**	NENT	**0.4506**

Remark #: Unit of recycled metal, recycled paper/ cardboard packing, recycled plastic and chemical waste for Contractor 3 was in ('000m^3).

8 SITE INSPECTION

8.1 REQUIREMENTS

8.1.1 According to the approved EM&A Manual, the environmental site inspection shall be formulation by ET Leader. Weekly environmental site inspections should carry out to confirm the environmental performance.

8.2 FINDINGS / DEFICIENCIES DURING THE REPORTING MONTH

Contract 2

8.2.1 In the Reporting Period, joint site inspection for Contract 2 to evaluate the site environmental performance has been carried out by the RE, IEC, ET and the Contractor on **4, 11, 18, 23 and 30 December 2015**. No non-compliance was noted.

8.2.2 The findings / deficiencies of ***Contract 2*** that observed during the weekly site inspection are listed in ***Table 8-1***.

Table 8-1 Site Observations for Contract 2

Date	Findings / Deficiencies	Follow-Up Status
4 December 2015	• Air compressor without drip tray was observed at north bound tunnel. (South Portal)	• Drip tray was provided..
11 December 2015	• No adverse environmental were observed.	• NA
18 December 2015	• Chemical container without drip tray and chemical label was observed. Drip tray and chemical label should be provided for chemical container storage on site. (South Portal)	• Chemical container without drip tray was removed.
23 December 2015	• Oil drum without drip tray was observed. Contractor should provide drip tray for all chemical storage on site. (Admin-building)	• Oil drum was removed from site.
30 December 2015	• Oil drum without drip tray was observed. The contractor should provide drip tray for all chemical storage on site. (South Portal) • As a reminder, the contractor should install the de-silting facilities as soon as possible and make sure all discharge water should comply with discharge license requirement.	• Oil drum was removed from site. • Not required for reminder.

Contract 3

8.2.3 In the Reporting Period, joint site inspection for Contract 3 to evaluate the site environmental performance has been carried out by the RE, IEC, ET and the Contractor on **7, 16, 21 and 28 December 2015**. No non-compliance was noted.

8.2.4 The findings / deficiencies of ***Contract 3*** that observed during the weekly site inspection are listed in ***Table 8-2***.

Table 8-2 Site Observations for Contract 3

Date	Findings / Deficiencies	Follow-Up Status
7 December 2015	• Stagnant water cumulated inside the drip tray was observed, the Contractor should remove the stagnant water after rain regularly. (SA11B) • Muddy water discharge was observed, the Contractor should ensure the wastewater has sufficient sedimentation time for treatment. (SA12)	• Stagnant water cumulated inside the drip tray was removed. • Discharge of muddy water was ceased immediately.
16 December 2015	• Continuous white smoke emitted from the generator was observed. (AB8 Pier) • It was reminded that tarpaulin sheet cover should be provided for storage bagged cement which more than 20 bags. • It was reminded that NRMM label should be displayed within 14 days after the machinery granted the label.	• No white smoke was observed. • Not required for reminder. • Not required for reminder.
21 December 2015	• Chemical container without drip tray was observed, Muddy trails were observed at the site exit, the Contractor should provide wheel washing facility and ensure all vehicles were washed before leaving the site. (SA2) • Milky water generated from construction activities was observed, the Contractor should provide proper mitigation measures to divert the milky water for proper treatment and prevent further water pollution. (Bridge E)	• Water hose was provided at the site exit • No milky water was observed.
28 December 2015	• Muddy water was observed from the outfall of Chun Wo site office. The Contractor should ensure all wastewater was treated before discharge. • The Contractor was reminded to maintain the wheel washing facility and ensure all vehicles were washed before leaving the site to keep the public road clean.	• No muddy water was observed from the outfall. • Not required for reminder.

Contract 5

8.2.5 In the Reporting Period, joint site inspection for Contract 5 to evaluate the site environmental performance has been carried out by the RE, IEC, ET and the Contractor on **3, 10, 16, 24 and 31 December 2015**. No non-compliance was noted.

8.2.6 The findings / deficiencies of ***Contract 5*** that observed during the weekly site inspection are listed in ***Table 8-3***.

Table 8-3 Site Observations for Contract 5

Date	Findings / Deficiencies	Follow-Up Status
3 December 2015	• No adverse environmental were observed.	• NA
10 December 2015	• The Contractor was reminded to provide mitigation measures for open slope to	• Not required for reminder.

Date	Findings / Deficiencies	Follow-Up Status
	prevent runoff and dust control.	
16 December 2015	• Tree protection should be provided to prevent tree damage. • Chemical oil container without drip tray was observed. To prevent land contamination, the Contractor shall provide drip tray or remove it. • It was reminded that dust mitigation measures shall be properly implemented to prevent construction dust emission. during dry and windy season.	• The tree at LMH near Police Station has been fenced off. • The chemical oil container was removed and stored properly and the oil stain was treated as chemical waste. • Not required for reminder.
24 December 2015	• Asphalt material leakage through a container was observed, the Contractor should remove the asphalt material. (Location: LMH Road) • The Contractor was reminded to extend the site fencing and provide sand bags at the site entrance/exit at LMH site office to prevent soil and gravel runoff.	• The asphalt material has been removed from the public road. • Not required for reminder.
31 December 2015	• The Contractor was reminded that all vehicles should be washed off all dusty material before leaving site area.	• Not required for reminder.

Contract 6

8.2.7 In the Reporting Period, joint site inspection for Contract 6 to evaluate the site environmental performance has been carried out by the RE, IEC, ET and the Contractor on **3, 10, 17, 23 and 30 December 2015**. No non-compliance was noted.

8.2.8 The findings / deficiencies of ***Contract 6*** that observed during the weekly site inspection are listed in ***Table 8-4***.

Table 8-4 Site Observations for Contract 5

Date	Findings / Deficiencies	Follow-Up Status
27 November 2015 (last Reporting Month)	• Oil drum without drip tray was observed. (Bridge C Don Don Hill) • Oil leakage on ground was observed. The contractor should clean up to prevent further contamination. (Bridge C Don Don Hill)	• Oil drums have been removed. (Bridge C Don Don Hill) • The oil leakage has been cleaned up as chemical waste
3 December 2015	• NRMM label is not provided for an excavator, the Contractor should provide proper NRMM label before using. (Bridge C) • The Contractor was reminded that all vehicles should be washed before leaving the site. And the site exit/entrance should be kept clean of mud. (BCP)	• The NRMM label for this excavator is under application, the reference number for the application is now provided • Not required for reminder.

Date	Findings / Deficiencies	Follow-Up Status
	• The Contractor was reminded to check the tree's states and provide proper label and protective measures. (BPC)	• Not required for reminder.
10 December 2015	• Gravel and muddy water runoff from the wheel washing bay was observed, the Contractor should improve the vehicle washing system to prevent any runoff to the public road. (Bridge D) • The Contractor should improve the mitigation measures for the internal stream division within the site boundary to avoid surface runoff from the site. (Bridge C)	• Vehicle washing procedure is enhanced. Washing on the public road is also provided to maintain cleanliness • Preliminary cement layer has been fully provided on the exposed surface for the diversion channel and no muddy water was observed afterward.
17 December 2015	• Dusty stockpiles without proper covering were observed, the Contractor should cover the stockpile with impervious sheeting to minimize dust generation. (Bridge C) • Open slope was observed, the Contractor should cover the slope to prevent dust nuisance. (Bridge C) • The Contractor should pave the exposed surface along the drainage-side. (Bridge C) • The Contractor is reminded to provide more water sprinklers along the haul road. • Portal, the Contractor is reminded to clean up the sediment on the channel bed. (North Portal)	• The stockpiles have been removed. • The exposed slope has been covered with tarpaulin. • Exposed surface along the drainage-side has been paved with cement. • Not required for reminder. • Not required for reminder.
23 December 2015	• Mud trace on public road near the site exit was observed. The Contractor should maintain the road leading to the site clean and tidy. (Location: Bridge D) • Earth bund should be provided for the temporary bridge to prevent surface run-off discharge intro the Kong Yiu Channel. • Notice sign should be properly displayed leading site vehicles to wheel washing facilities before leaving from the site. (Location: General & Bridge C & D) • EP and license should be properly displayed at all site entrance/exit. (Location: General & BCP)	• Gravel has be cleared off from public road surface. • Beam barrier has been reconstructed so as to prevent run-off from entering Kong Yiu Rive • Not required for reminder. • Not required for reminder.
30 December 2015	• Lifting eye of the concrete block should be filled with sand to prevent stagnant water accumulation. (Bridge A) • Dust mitigation should be provided for the stockpile storage on-site. (Bridge A)	• The lifting eye of the concrete block was filled with sand. • The stockpile was covered with tarpaulin sheet.

Contract SS C505

8.2.9 In the Reporting Period, joint site inspection for Contract SS C505 to evaluate the site environmental performance has been carried out by the RE, IEC, ET and the Contractor on **2, 9, 16, 23 and 30 December 2015**. No non-compliance was noted.

8.2.10 The findings / deficiencies of ***Contract SS C505*** that observed during the weekly site inspection are listed in ***Table 8-5***.

Table 8-5 Site Observations for Contract SS C505

Date	Findings / Deficiencies	Follow-Up Status
2 December 2015	• As a reminder, all NRMM using on site should gained the label or in under application under the NRMM Regulation.	• Not required for reminder.
9 December 2015	• No adverse environmental were observed.	• NA
16 December 2015	• The Contractor should provide a plug for the drip tray under the generator at Portion 2. • The Contractor was reminded to enhance dust mitigation measures on site to reduce dust generation.	• A stopper was provided for the drip tray under the generator at Portion 2. • Not required for reminder.
23 December 2015	• No adverse environmental were observed.	• NA
30 December 2015	• The Contractor should provide the approval/exception label to the generator at Portion 1 under the NRMM regulation. • Stagnant water was observed at the drip tray under the generation at Portion 2, the Contractor should clear the stagnant water for mosquito breeding prevention. • The Contractor was reminded to cover the cement bags well with impervious sheet on site.	• Approval label was provided. • Stagnant water at drip tray was removed. • Not required for reminder.

8.2.11 Overall, general housekeeping such as daily site tidiness and cleaniness should be maintained for all Contracts. Furthermore, the Contractors were reminded to implement Waste Management Plan of the Project.

Other Contracts

8.2.12 Since the construction works at the Contract 4 and Contract 7 have not yet been commenced, no site inspection is performed for these Contracts.

9 ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

9.1 ENVIRONMENTAL COMPLAINT, SUMMONS AND PROSECUTION

9.1.1 In the Reporting Period, no summons and prosecution under the EM&A Programme was lodged for Contracts 2, 3 and 5. However, two (2) documented environmental complaint was received and lodged for Contracts 6.

9.1.2 Upon receipt of the complaint, follow up action has been undertaken by both Contractor promptly to resolve the complaints and deficiencies. During the complaint investigation work, the Contractor was co-operated with the ET in providing all the necessary information and assistance for completion of the investigation. Follow up actions have been undertaking by the Contractor to resolve the deficiencies The details of complaint are listed below:-

Investigation Result for Complaint on 1 December 2015

9.1.3 On 1 December 2015, EPD received a complaint from a villager in Ping Yeung Village which adjacent to the construction site of Bridge C under Contract 6 regarding the dust emission Site inspection was conducted by EPD and Contractor at Bridge C on 1 and 2 December 2015 to investigate the cause of complaint and an inspection form (yellow ticket) was issued to the Contractor on 2 December 2015. EPD observed that general dust mitigation measures as per the Implementation Schedule of the EM&A Manual have been implemented at Bridge C. However, EPD expressed that the dust emission control should be enhanced as follows:-

a) The remaining exposed surface and the stockpiled soil should be covered entirely with tarpaulin sheet / dust net;
b) Water spraying should be enhanced for the breaking, excavation and loading/unloading works;
c) The site access and the site haul road should be watered more frequently.

9.1.4 A joint site inspection was carried out by the RE, Contractor, IEC and ET on 3 December 2015 at Bridge C for complaint investigation. The observed dust control measures implemented by the Contractor during site inspection are summarized below.

a) The exposed surface was partially covered with tarpaulin sheet / dust net and the Contractor will cover the remaining exposed surface within a week; (Water spraying by site labor and water lorry to maintain the haul road and access road wetted;
b) Continuous water spraying was applied for dusty works to suppress fugitive dust;
c) Water sprinklers were provided for the excavation works to suppress fugitive dust
d) Wheel washing facility with wastewater treatment facility was provided and functioned properly;
e) It is controlled that the site vehicles travelling within the speed limit not more than 10km/hr

9.1.5 Based on the site condition on 3 December 2015, it is considered that the Contractor has implemented the dust suppressive measures appropriately. As advised by the Contractor, they will further enhance the measures as recommended by EPD.

9.1.6 A joint site inspection by the representative of EPD, RE, Contractor was carried out on 16 December 2015 at Bridge C to follow up the status of dust control enhancement work conducted. The observation during the site inspection are summarized as follows:-

a) Water sprinklers were provided for the dusty works such as excavation;
b) Water tanks and pressure pumps was installed for enhancement of water spraying and the water sprinklers;
c) Water spraying with water lorry for the site haul road;
d) The exposed surface was covered entirely with tarpaulin sheet / dust net;
e) Water spraying was carried out for the stockpile material;
f) Wheel washing facility with wastewater treatment facility was provided and functioned properly;
g) The site haul road was paving with rock for dust suppression

9.1.7 Based on the observation during site inspection on 16 December 2015, EPD was satisfied

enhancement work conducted by the Contractor and no further dust complaint was received. Moreover, according to the air quality monitoring result during the recent months, there were no exceedances triggered which implied that the dust mitigation measures implemented by the Contractor are effective.

Investigation Result for Complaint on 16 December 2015

9.1.8 A public complaint was received by EPD on 16 December 2015 regarding muddy water discharge at Bridge C to a fish pond nearby.

9.1.9 According to the information provided by the Contractor and observation during site inspection on 3 and 10 December 2015, the construction activities carried out at Bridge C in early December 2015 include slope cutting and soil stockpiling. No wastewater was generated from the active site activities. As advised by the Contractor, a temporary drainage system was under construction and it will be properly in placed. The water mitigation measures provided on site are summarized in follows:-

(a) Provision of wastewater treatment facilities (AquaSed) for the wastewater generated from the wheel washing basin

(b) Covering the stockpile with impervious sheeting to minimize muddy runoff

9.1.10 A joint site inspection by the EPD, RE and Contractor was carried out on 16 December 2015 at Bridge C for the complaint investigation. During the site inspection, the fish pond by mentioned the complainant was not found. Moreover, no muddy water discharge from the site was observed. Nevertheless, the Contractor was advised to improve the temporary drainage system at Bridge C as follows:-

(a) The temporary drainage system at the slope toe of Bridge C should be constructed so that surface runoff and waste water can be effectively delivered to AquaSed.

(b) Exposed surface should either be paved or well covered.

(c) Temporary drainage channels should be paved by cement or geotextile so as to reduced contamination of water by loose soil

(d) Regular and frequent removal of silt in open channels.

(e) Wastewater treatment facilities should be maintained to ensure they are under normal function.

9.1.11 Further to the EPD site inspection at Bridge C on 16 December 2015, the Contractor has rectified the deficiencies on 28 December 2015. Site inspection was carried out by the RE, IEC, Contractor and ET on 30 December 2015 to follow up the status of rectification works undertaken by the Contractor. The observed water mitigation measures provided by the Contractor was summarized in following:-

(a) The temporary drainage has been constructed at the slope toe of the stockpile soil in order to divert any muddy runoff to the wastewater treatment facilities

(b) The exposed surface has been concreted to minimize muddy runoff

(c) A temporary drainage channels have been concreted

(d) The exposed surface of the temporary system has been covered with geo-textile.

(e) The open channels have been cleaned regularly

9.1.12 It is considered that the Contractor has improved the mitigation measure as advised by the EPD. The ET will closely inspect the implementation of water quality mitigation measure conducted by the Contractor during the construction phase.

9.1.13 The statistical summary table of environmental complaint is presented in ***Tables 9-1, 9-2*** and ***9-3***.

Table 9-1 Statistical Summary of Environmental Complaints

Reporting Period	Contract No	Environmental Complaint Statistics		
		Frequency	Cumulative	Complaint Nature
19 May 2014 – 30 Nov2015	Contract 2	0	**13**	• **(6) Water Quality** • **(5) Construction Dust** • **(2) Noise**
06 Nov 2013 – 30 Nov20152015	Contract 3	0	**3**	• **(1) Construction Dust** • **(2) Water quality**
16 Aug 2013 – 30 Nov20152015	Contract 5	0	**2**	• **(2) Construction Dust**
1 – 31 December 2015	Contract 2	0	**13**	• **(6) Water Quality** • **(5) Construction Dust** • **(2) Noise**
	Contract 3	0	**3**	• **(1) Construction Dust** • **(2) Water quality**
	Contract 5	0	**2**	• **(2) Construction Dust**
	Contract 6	**2**	**3**	• **(2) Water Quality** • **(1) construction Dust**
	SS C505	0	**0**	**N/A**

Table 9-2 Statistical Summary of Environmental Summons

Reporting Period	Contract No	Environmental Summons Statistics		
		Frequency	Cumulative	Complaint Nature
19 May 2014 – 30 Nov2015	Contract 2	0	0	NA
06 Nov 2013 – 30 Nov20152015	Contract 3	0	0	NA
16 Aug 2013 – 30 Nov20152015	Contract 5	0	0	NA
1 – 31 December 2015	Contract 2	0	0	NA
	Contract 3	0	0	NA
	Contract 5	0	0	NA
	Contract 6	0	0	NA
	SS C505	0	0	NA

Table 9-3 Statistical Summary of Environmental Prosecution

Reporting Period	Contract No	Environmental Prosecution Statistics		
		Frequency	Cumulative	Complaint Nature
19 May 2014 – 30 Nov2015	Contract 2	0	0	NA
06 Nov 2013 – 30 Nov20152015	Contract 3	0	0	NA
16 Aug 2013 – 30 Nov20152015	Contract 5	0	0	NA
1 – 31 December 2015	Contract 2	0	0	NA
	Contract 3	0	0	NA
	Contract 5	0	0	NA
	Contract 6	0	0	NA
	SS C505	0	0	NA

The Other Contracts

9.1.14 Since the construction works at the Contract 4 and Contact 7 have not yet commenced, no environmental complaint, summons and prosecution under the EM&A Programme are registered in the Reporting Period.

10 IMPLEMENTATION STATUS OF MITIGATION MEASURES

10.1 GENERAL REQUIREMENTS

10.1.1 The environmental mitigation measures that recommended in the Implementation Schedule for Environmental Mitigation Measures (ISEMM) in the approved EM&A Manual covered the issues of dust, noise, water and waste and they are summarized presented in ***Appendix M.***

10.1.2 All contracts under the Project shall be implementing the required environmental mitigation measures according to the approved EM&A Manual as subject to the site condition. Environmental mitigation measures generally implemented by Contracts 2, 3, 5, 6 and Contract SS C505 in this Reporting Period are summarized in ***Table 10-1***.

Table 10-1 Environmental Mitigation Measures

Issues	Environmental Mitigation Measures
Water Quality	• Wastewater to be treated by the wastewater treatment facilities i.e. sedimentation tank or AquaSed before discharge.
Air Quality	• Maintain damp / wet surface on access road • Keep slow speed in the sites • All vehicles must use wheel washing facility before off site • Sprayed water during breaking works • A cleaning truck was regularly performed on the public road to prevent fugitive dust emission
Noise	• Restrain operation time of plants from 07:00 to 19:00 on any working day except for Public Holiday and Sunday. • Keep good maintenance of plants • Place noisy plants away from residence or school • Provide noise barriers or hoarding to enclose the noisy plants or works • Shut down the plants when not in used.
Waste and Chemical Management	• On-site sorting prior to disposal • Follow requirements and procedures of the "Trip-ticket System" • Predict required quantity of concrete accurately • Collect the unused fresh concrete at designated locations in the sites for subsequent disposal
General	• The site was generally kept tidy and clean.

10.2 TENTATIVE CONSTRUCTION ACTIVITIES IN THE COMING MONTH

10.2.1 Construction activities as undertaken in the coming month for the Project lists below:

Contract 2

Mid-Vent Portal	• Tube excavation (NB+SB) • Adit invert slab • Building works foundation
North Portal	• Retaining walls and slope stabilization • South Bound tunnel internal works and finishes • North top heading enlargement • TBM excavation
South Portal	• Southbound and Northbound D&B excavation • Building works superstructure
Admin Building	• Building works foundation

Contract 3

- Cable detection and trial trenches
- Decking construction for Bridge E
- E&M work for new valve control & Telemetry House
- Filling works at Tong Hang East
- Storm Drains Laying

- Noise barrier construction
- Pier / Pier Table construction
- Pile cap works
- Portal beam erection
- Pre-drilling works and piling works for viaduct
- Retaining Wall construction
- Road works at Fanling Highway
- Slope works
- Socket H-pile installation
- Tree felling works
- Utilities duct laying
- Viaduct segment erection
- Water works
- Sewer works

Contract 5

- Laying of additional rising main at LMH road
- Bituminous laying at proposed and existing LMH road.
- Brick laying at footpath of proposed LMH road
- Road works (kerb and bituminous laying) for proposed LMH road and existing LMH road
- Construction of access road (RS4)
- Drainage works at Depressed Road at BCP3
- Drainage works at existing LMH Road
- Irrigation system at existing LMH Road
- Installation of underground utilities at existing LMH Road
- Construction of Pavilion at Chung Yuen Ha Village

Contract 6

- Site Clearance
- Slope Works
- Site Accesses Construction
- Ground Investigation Works
- Soil Nail
- Bored Piling

Contract SS C505

- Excavation & fill works
- Predrilling
- Percussive piling
- Pre-boring
- Bored piling
- Pile caps
- Site office set-up
- Structural works
- Assembly of crawler crane
- Mock up for curtain wall
- Weighbridge works
- Construction of Prototype A

10.3 KEY ISSUES FOR THE COMING MONTH

10.3.1 Key issues to be considered in the coming month for Contracts 2, 3, 5,6 and SS C505 include:

- Implementation of control measures for rainstorm;
- Regular clearance of stagnant water during wet season;
- Implementation of dust suppression measures at all times;

- Potential wastewater quality impact due to surface runoff;
- Potential fugitive dust quality impact due from the dry/loose/exposure soil surface/dusty material;
- Disposal of empty engine oil containers within site area;
- Ensure dust suppression measures are implemented properly;
- Sediment catch-pits and silt removal facilities should be regularly maintained;
- Management of chemical wastes;
- Discharge of site effluent to the nearby wetland, stockpiling or disposal of materials, and any dredging or construction area at this area are prohibited;
- Follow-up of improvement on general waste management issues; and
- Implementation of construction noise preventative control measures

10.3.2 Contract 4 and Contact 7 have not yet commenced and no environmental issue is presented.

11 CONCLUSIONS AND RECOMMENDATIONS

11.1 CONCLUSIONS

11.1.1 This is **29th** monthly EM&A report presenting the monitoring results and inspection findings for the Reporting Period from **1** to **31 December 2015**.

11.1.2 For air quality monitoring, no 1-hour and 24-hour TSP monitoring results triggered the Action or Limit Levels were recorded. No NOEs or the associated corrective actions were therefore issued.

11.1.3 No noise complaint (which is an Action Level exceedance) was received and no construction noise measurement results that exceeded the Limit Level were recorded in the Reporting Period. No NOEs or the associated corrective actions were therefore issued.

11.1.4 For water quality monitoring, total of thirty-five (35) Limit Level exceedances, namely eighteen (18) exceedances of turbidity and seventeen (17) exceedances of suspended solids recorded The investigations for the cause of exceedances have been conducted by the ET and the associated investigation reports were submitted to relevant parties

11.1.5 No notification of summons or successful prosecution under the EM&A Programme of the Project was received in the reporting period for Contract 2, 3, 5, 6 and SS C505.

11.1.6 In this Reporting Period, two (2) documented environmental complaint was received and lodged for Contracts 6 regarding construction dust and muddy water discharge on 1 and 16 December 2015 respectively. Follow up actions have been undertaking by the Contractor to resolve the deficiencies and investigation report conducted by ET had submitted to all relevant parties.

11.1.7 During the Reporting Period, weekly joint site inspection by the RE, IEC, ET with the relevant Main-contractor were carried out for Contracts 2, 3, 5, 6 and SS C505 in accordance with the EM&A Manual stipulation. No non-compliance observed during the site inspection.

11.2 RECOMMENDATIONS

11.2.1 During dry season, special attention should be paid on the potential construction dust impact since most of the construction sites are adjacent to villages. The Contractor should fully implement the construction dust mitigation measures properly.

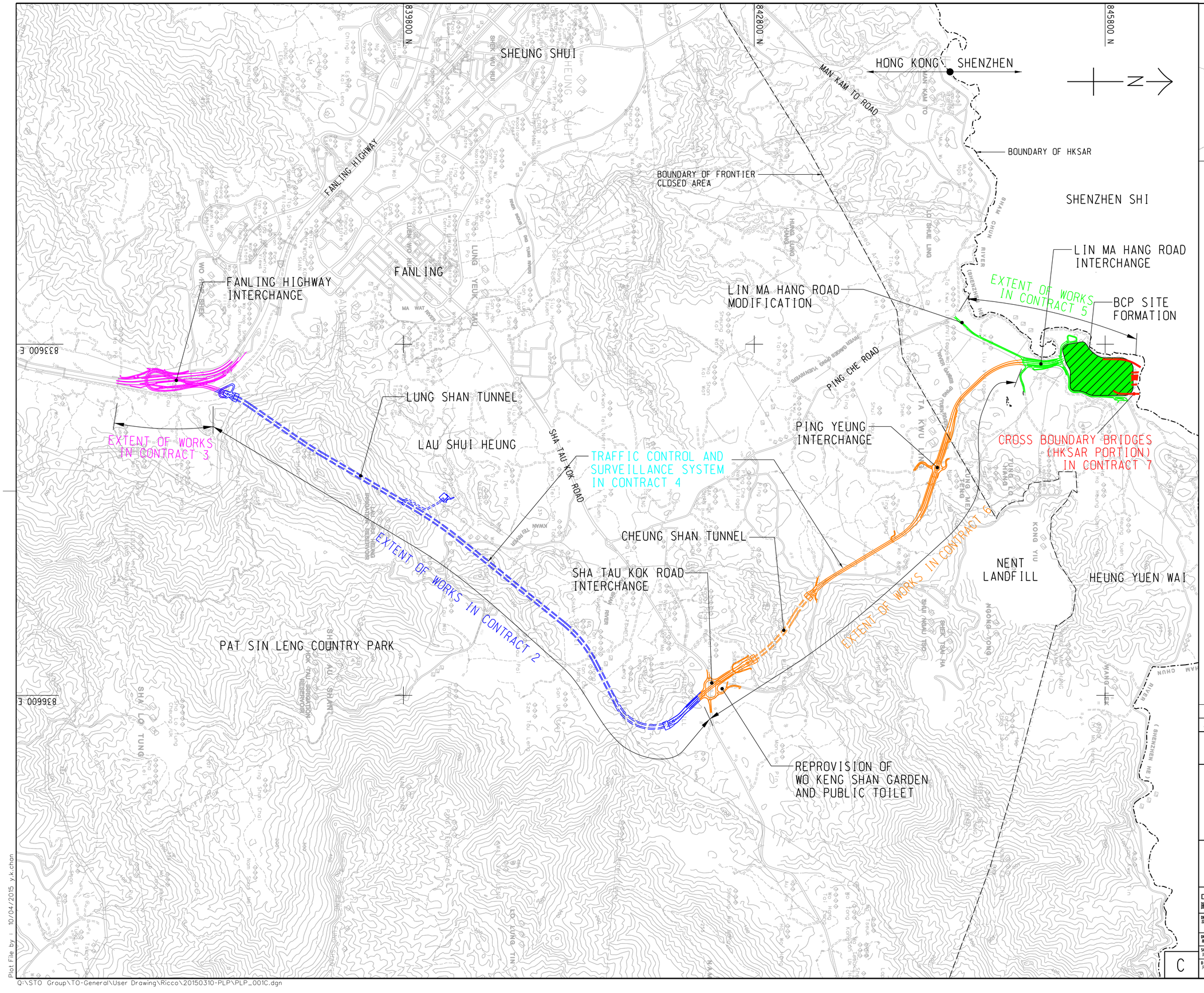
11.2.2 The Contractor was also reminded to prevent muddy water or other water pollutants from site surface flow to local stream such as Kong Yiu Channel, Ma Wat Channel, Ping Yuen River or public area. Water quality mitigation measures to prevent surface runoff into nearby water bodies or public areas should paid attention and fully implemented.

11.2.3 Construction noise should be a key environmental impact during the works. The noise mitigation measures such as use of quiet plants or temporary noise barrier installation at the construction noise predominate area should be implemented as accordance with the EM&A requirement.

11.2.4 Furthermore, daily cleaning and weekly tidiness shall be properly performed and maintained. In addition, mosquito control should be kept to prevent mosquito breeding on site.

Appendix A

Layout plan of the Project



LOCATION PLAN
SCALE 1 : 30000

LEGEND:

UNDERGROUND WORKS

REV. 修訂	DESCRIPTION 內容摘要	D.E.	P.E. CHECKED 審核	DATE 日期

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

LIANTANG/HEUNG YUEN WAI BOUNDARY CONTROL POINT AND ASSOCIATED WORKS (SITE FORMATION AND INFRASTRUCTURES) - DESIGN AND CONSTRUCTION

PROJECT LAYOUT PLAN

AECOM

DRG.NO. 圖紙編號 60212563/PLP/001

DESIGNED BY 設計	CONTRACT NO. 合約編號	P. Dir. APPROVED 批准人
–	–	–
DRAWN BY 繪圖 ZJ	STATUS 階段	
SCALE 比例 A1 1 : 15000 A3 1 : 30000		
DIMENSIONS ARE IN 尺寸單位 METRES		

C

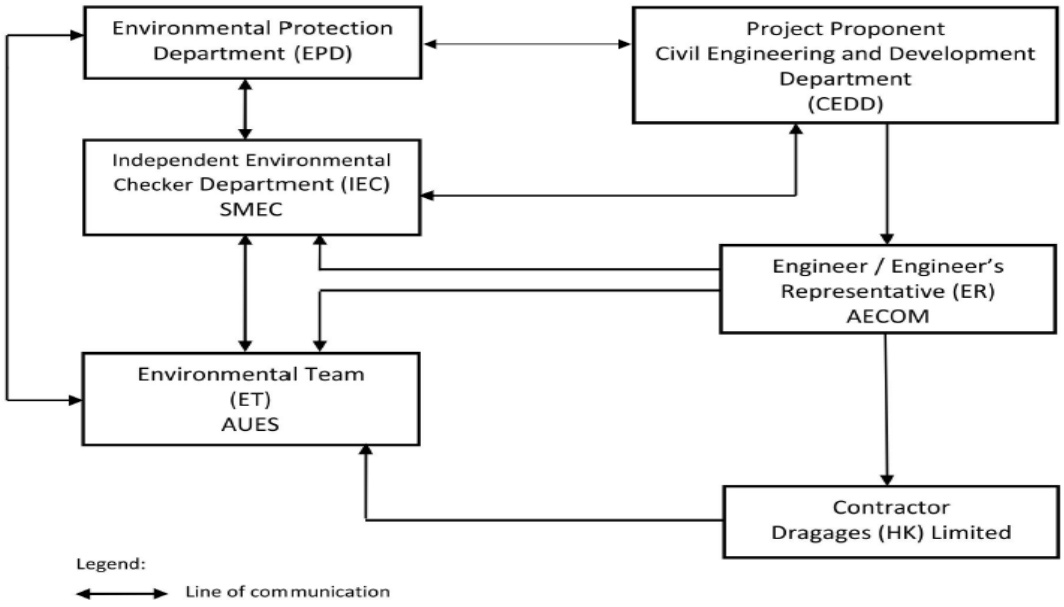
Plot File by : 10/04/2015 y.k.chan

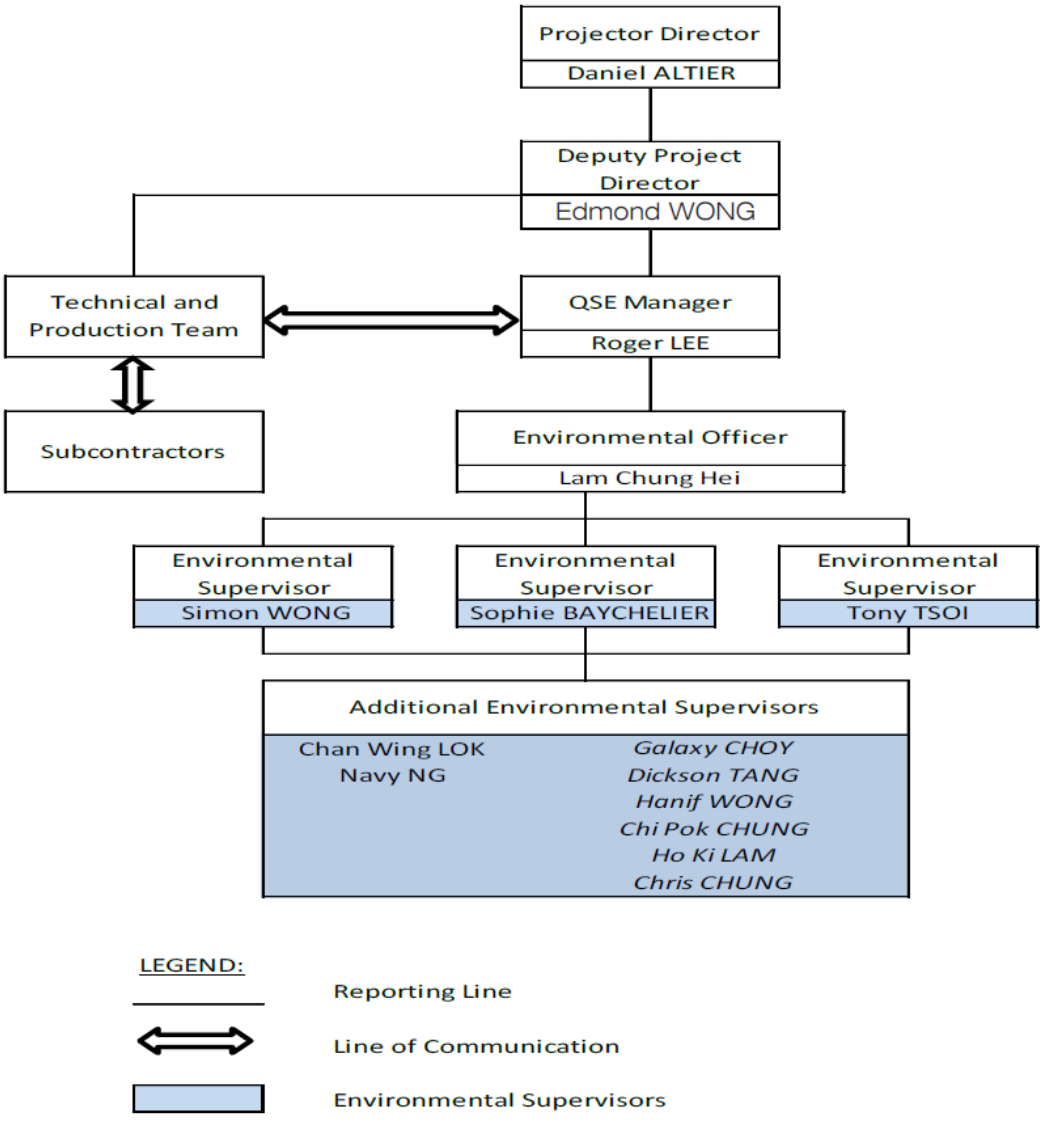
Q:\STO Group\TO-General\User Drawing\Ricco\20150310-PLP\PLP_001C.dgn

Appendix B

Organization Chart

Project Organization Structure





Environmental Management Organization for Contract 2 - (CV/2012/08)

Contact Details of Key Personnel for Contract 2 - CV/2012/08

Organization	Project Role	Name of Key Staff	Tel No	Fax No.
AECOM	Engineer's Representative	Gregory Lo	2171 3300	2171 3498
SMEC	Independent Environmental Checker	Antony Wong	3995 8120	3995 8101
DHK	Project Director	Daniel Altier	2171 3004	2171 3299
DHK	Deputy Project Manager	Edmond Wong	2171 3004	2171 3299
DHK	QSE Manager	Roger Lee	6293 8726	2171 3299
DHK	Environmental Officer	Lam Chung Hei	2171 3004	2171 3299
DHK	Environmental Supervisor	Simon Wong	9281 4346	2171 3299
DHK	Environmental Supervisor	Sophie Baycheuer	6321 5001	2171 3299
DHK	Environmental Supervisor	Tony Tsoi	6028 5623	2171 3299
AUES	Environmental Team Leader	T. W. Tam	2959 6059	2959 6079
AUES	Environmental Consultant	Nicola Hon	2959 6059	2959 6079
AUES	Environmental Consultant	Ben Tam	2959 6059	2959 6079

Legend:

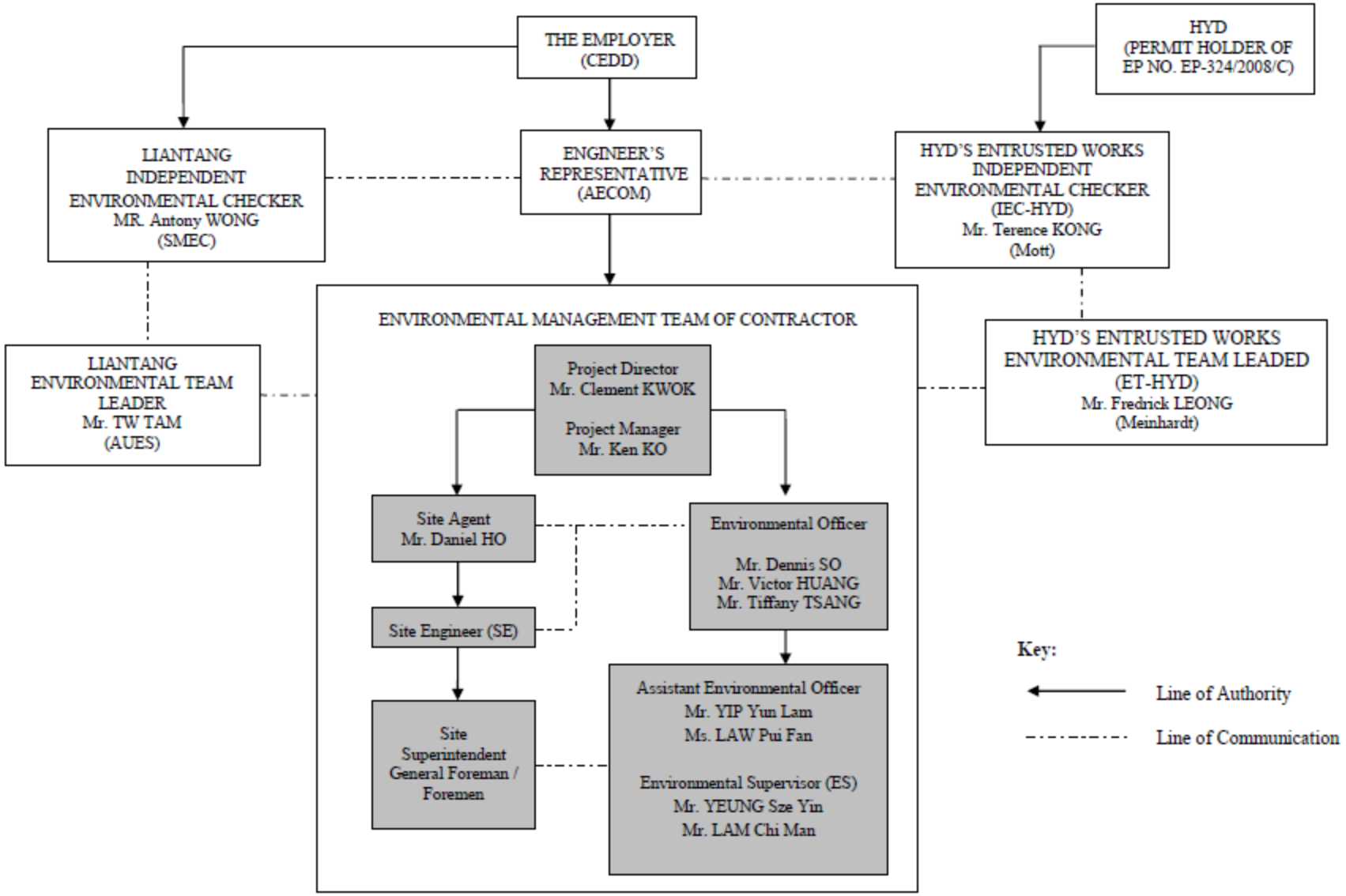
CEDD (Employer) – Civil Engineering and Development Department

AECOM (Engineer) – AECOM Asia Co. Ltd.

DHK(Main Contractor) –Dragages Hong Kong Ltd.

SMEC (IEC) – SMEC Asia Limited

AUES (ET) – Action-United Environmental Services & Consulting



Environmental Management Organization for Contract 3 - CV/2012/09

Contact Details of Key Personnel for Contract 3 - CV/2012/09

Organization	Project Role	Name of Key Staff	Tel No	Fax No.
AECOM	Engineer's Representative	Alan Lee	2171 3300	2171 3498
SMEC	Independent Environmental Checker	Antony Wong	3995 8120	3995 8101
Chun Wo	Project Director	Clement Kwok	3758 8735	2638 7077
Chun Wo	Project Manager	Ken Ko	2638 6136	2638 7077
Chun Wo	Site Agent	Daniel Ho	2638 6144	2638 7077
Chun Wo	Environmental Officer	Victor Huang Tiffany Tsang Dennis So	2638 6115	2638 7077
Chun Wo	Assistant Environmental Officer	Yip Yun Lam Law Pui Fan	2638 6125	2638 7077
AUES	Environmental Team Leader	T. W. Tam	2959 6059	2959 6079
AUES	Environmental Consultant	Nicola Hon	2959 6059	2959 6079
AUES	Environmental Consultant	Ben Tam	2959 6059	2959 6079

Legend:

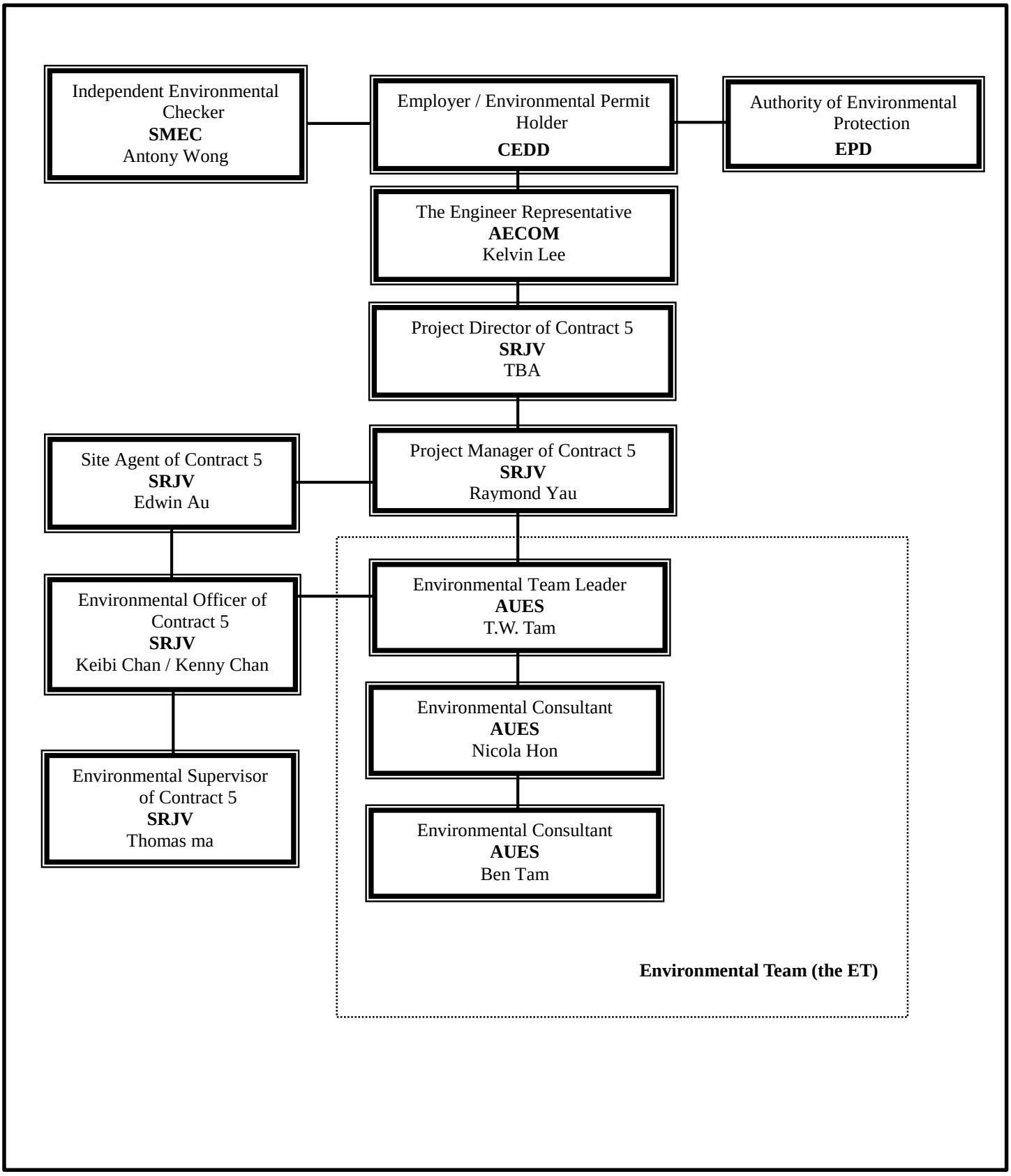
CEDD (Employer) – Civil Engineering and Development Department

AECOM (Engineer) – AECOM Asia Co. Ltd.

Chun Wo (Main Contractor) – Chun Wo Construction Ltd.

SMEC (IEC) – SMEC Asia Limited

AUES (ET) – Action-United Environmental Services & Consulting



Environmental Management Organization – CV/2013/03

Contact Details of Key Personnel for Contract 5 - CV/2013/03

Organization	Project Role	Name of Key Staff	Tel No.	Fax No.
AECOM	Engineer's Representative	Kelvin Lee	2674 2273	2674 7732
SMEC	Independent Environmental Checker	Antony Wong	3995 8120	3995 8101
SRJV	Project Director	TBA	--	--
SRJV	Contract Manager	Raymond Yu	9041 1620	2403 1162
SRJV	Project Manager	Aaron Mak	9464 7095	2403 1162
SRJV	Site Agent	Edwin Au	9208 7329	2403 1162
SRJV	Environmental Officer	Chan Ng jhon-keibi / Kenny Chan	6090 0183	2403 1162
SRJV	Environmental Supervisor	Thomas Ma	-	2403 1162
AUES	Environmental Team Leader	T. W. Tam	2959 6059	2959 6079
AUES	Environmental Consultant	Nicola Hon	2959 6059	2959 6079
AUES	Environmental Consultant	Ben Tam	2959 6059	2959 6079

Legend:

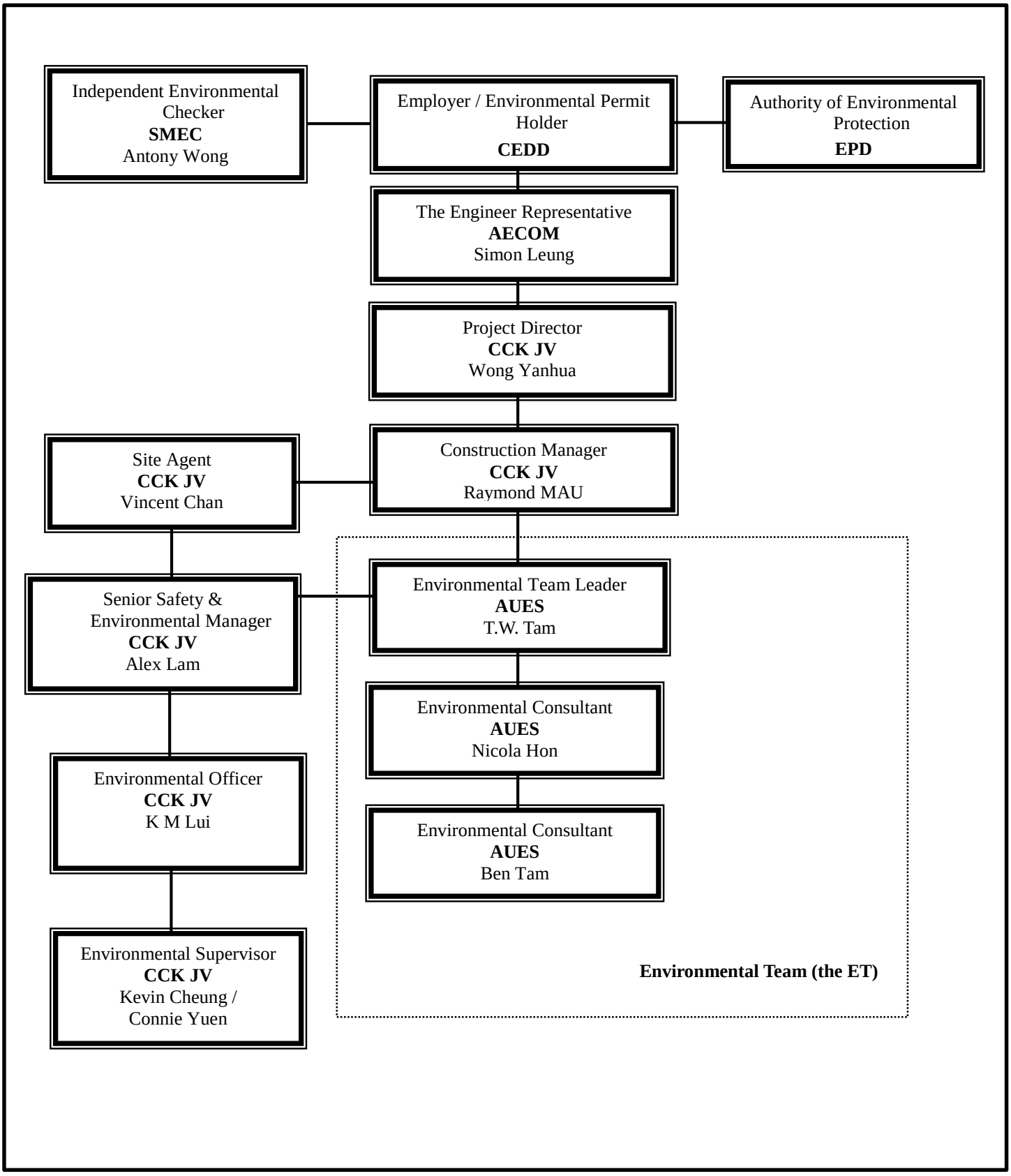
CEDD (Employer) – Civil Engineering and Development Department

AECOM (Engineer) – AECOM Asia Co. Ltd.

SRJV (Main Contractor) – Sang Hing Civil – Richwell Machinery JV

SMEC (IEC) – SMEC Asia Limited

AUES (ET) – Action-United Environmental Services & Consulting



Environmental Management Organization – CV/2013/08

Contact Details of Key Personnel for Contract 6 - CV/2013/03

Organization	Project Role	Name of Key Staff	Tel No.	Fax No.
AECOM	Engineer's Representative	Simon Leung	2674 2273	2674 7732
SMEC	Independent Environmental Checker	Antony Wong	3995 8120	3995 8101
CCK JV	Project Director	Wang Yanhua	6190 4212	
CCK JV	Construction Manager	Raymond Mau Sai-Wai	9011 5340	
CCK JV	Site Agent	Vincent Chan	9655 9404	
CCK JV	Senior Safety & Environmental Manager	Alex Lam	5547 0181	
CCK JV	Environmental Officer	K M Lui	51138223	
CCK JV	Environmental Supervisor	Kevin Cheung/ Connie Yeun	6316 6931 6117 1344	
AUES	Environmental Team Leader	TW Tam	2959 6059	2959 6079
AUES	Environmental Consultant	Ben Tam	2959 6059	2959 6079
AUES	Environmental Consultant	Nicola Hon	2959 6059	2959 6079

Legend:

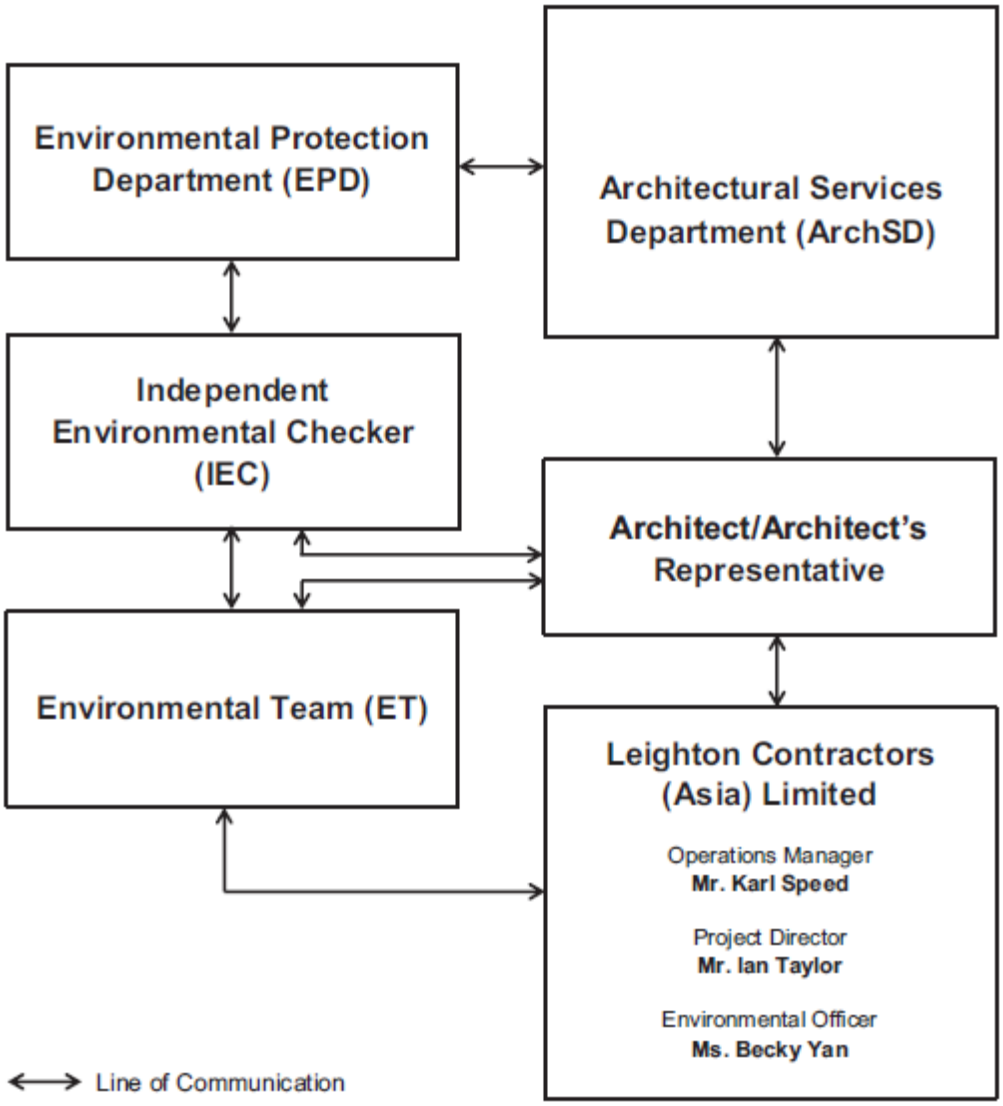
CEDD (Employer) – Civil Engineering and Development Department

AECOM (Engineer) – AECOM Asia Co. Ltd.

CCK JV (Main Contractor) – CRBE-CEC-Kaden Joint Venture

SMEC (IEC) – SMEC Asia Limited

AUES (ET) – Action-United Environmental Services & Consulting



Environmental Management Organigram

Environmental Management Organization for Contract SS C505

Contact Details of Key Personnel for Contract SS C505

Organization	Project Role	Name of Key Staff	Tel No.	Fax No.
ArchSD	Works agent for the Development Bureau (DEVB)	Mr. William Cheng	2867 3904	2804 6805
Ronald Lu & Partners	Architect/ Architect's Representative	Mr. Justin Cheung	3189 9272	2834 5442
SMEC	Independent Environmental Checker	Mr. Antony Wong	3995 8120	3995 8101
Leighton	Operation Manager	Mr. Karl Speed	2823 1433	25298784
Leighton	Project Director	Mr. Ian Taylor	2858 1519	2858 1899
Leighton	Environmental Officer	Ms. Becky Yan	3973 1069	-
Leighton	Assistant Environmental Officer	Ms. Penny Yiu	3973 0818	-
AUES	Environmental Team Leader	Mr. T. W. Tam	2959 6059	2959 6079
AUES	Environmental Consultant	Ms. Nicola Hon	2959 6059	2959 6079
AUES	Environmental Consultant	Mr. Ben Tam	2959 6059	2959 6079

Legend:

ArchSD (Project Proponent) –Architectural Services Department

Ronald Lu & Partners (Architect/ Architect's Representative) –Ronald Lu & Partners (Hong Kong) Ltd

Leighton (Main Contractor) – Leighton Contractors (Asia) Limited

SMEC (IEC) – SMEC Asia Limited

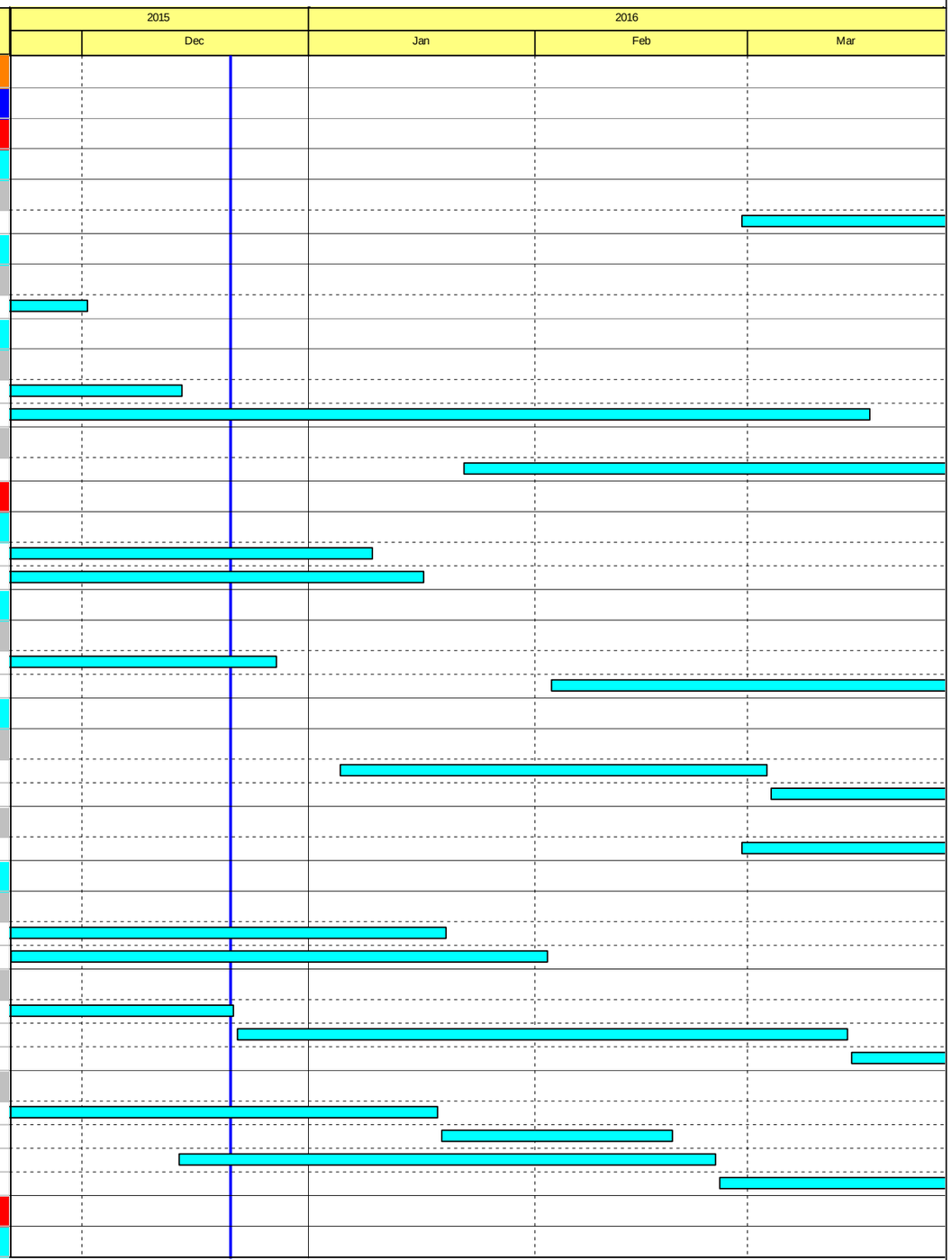
AUES (ET) – Action-United Environmental Services & Consulting

Appendix C

3-month rolling construction program

Contract 2

Activity ID	Activity Name	Working Duration	BL Project Start	BL Project Finish
Total		673	27-Oct-14	04-Mar-17
HKLTH Works Programme update 20-December-2015		673	27-Oct-14	04-Mar-17
2 General		673	27-Oct-14	04-Mar-17
Flexible Barriers		45	29-Feb-16	25-Apr-16
DDA Submission		45	29-Feb-16	25-Apr-16
CONTDS1050	Preparation of DDA for formal submission to ER/ICE/IP	45	29-Feb-16	25-Apr-16
Noise Barriers		28	30-Oct-15	01-Dec-15
DDA Submission		28	30-Oct-15	01-Dec-15
CONTDS1120	ER/IP's Approval	28	30-Oct-15	01-Dec-15
Project Wide E&M		673	27-Oct-14	04-Mar-17
Equipment Selection & Submission		438	27-Oct-14	17-Mar-16
PD.PQ.1080	Electrical Services System Submission and Approval by the Engineer	338	27-Oct-14	14-Dec-15
PD.PQ.2260	ECS System Submission and Approval by the Engineer	263	02-May-15	17-Mar-16
Manufacturing & Delivery of Major Equipment		330	22-Jan-16	04-Mar-17
PD.EC.MD	Manufacturing and Delivery of ECS System	330	22-Jan-16	04-Mar-17
3 South Portal Area		323	13-Jul-15	13-Jun-16
3.1 South Portal Subcontract & Procurement		271	13-Jul-15	16-Jan-16
SPS&P0100	Subcontract : Tunnel Lining Formworks (Design, Fabrication, Delivery, & On-Site Assembly)	150	13-Jul-15	09-Jan-16
SPS&P0120	Subcontract : Tunnel Finishing Works	60	05-Nov-15	16-Jan-16
3.2 South Portal Design Submission		168	29-Oct-15	02-Apr-16
As-Built Drawings [Contractor's Design/ Contractor's Alternative Design]		168	29-Oct-15	02-Apr-16
SC1650	As-Built Drawings Submission - South Portal Ventilation Bldg Foundation	60	29-Oct-15	27-Dec-15
SC1660	As-Built Drawings Submission - South Portal Site Formation incl. Retaining Walls	60	03-Feb-16	02-Apr-16
3.3 South Portal Method Statement Submission		102	05-Jan-16	28-Apr-16
South Portal: Temporary Bridge Dismantling		76	05-Jan-16	09-Apr-16
FL2022077	Prepare Method Statement	48	05-Jan-16	03-Mar-16
FL2022078	Engineer's Comment	28	04-Mar-16	09-Apr-16
South Portal: Lining Works		48	29-Feb-16	28-Apr-16
A25489	Prepare Method Statement	48	29-Feb-16	28-Apr-16
3.5 South Portal Works		223	22-Oct-15	13-Jun-16
South Portal: Superstructure		115	22-Oct-15	02-Feb-16
SV2325	Retaining Walls (LSTSP/ RW3 & LSTSP/ RW4 & S1,S2 & S3)	74	22-Oct-15	19-Jan-16
SV2335	Backfilling to Permanent Slope	60	21-Nov-15	02-Feb-16
South Tunnels: Southbound Tunnel		137	12-Nov-15	13-Jun-16
DB6320	Bottom Bench Excavation (CRP:Ch1,751>Ch1,787)	34	12-Nov-15	21-Dec-15
DB6330cdwp	Full Face D&B Excavation: (CRP: Ch1,787 to Ch2,065)	70	22-Dec-15	14-Mar-16
DB6330edwp	Full Face D&B Excavation: (CRP: Ch2,065 to Ch2,377)	75	15-Mar-16	13-Jun-16
South Tunnels: Northbound Tunnel		159	30-Oct-15	11-May-16
DB6340dwp1	Top Heading Excavation (Canopies) (P20/NB Ch: 139 to 178); 39m; (CRP: Ch1,750>Ch1,789)	67	30-Oct-15	18-Jan-16
DB6340dwp2	Top Heading Excavation (Canopies) (P20/NB Ch: 178 to 200); 22m; (CRP: Ch1,789>Ch1,811)	28	19-Jan-16	19-Feb-16
DB6350	Bottom Bench Excavation (P20/NB - 139>200); 61m; (CRP: Ch1,750>Ch1,811)	62	14-Dec-15	25-Feb-16
DB6360dwp1	Full Face D&B Excavation (P20 Ch: 200 to 466); 266m; (CRP: Ch1,811>Ch2,077)	63	26-Feb-16	11-May-16
4 Middle Portal Area		231	23-Sep-15	19-Apr-16
4.1 Middle Portal Subcontract & Procurement		60	23-Sep-15	04-Dec-15



REV	DESCRIPTION	DATE	PREPARED	CHECKED	APPROVED
A	Monthly Report No.24	20/12/2015	KEC/RAN	RBS/SJO	DAL

MAIN CONTRACTOR
香寶嘉 Dragages HongKong
A member of the Bouygues Construction group

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

THE ENGINEER
AECOM

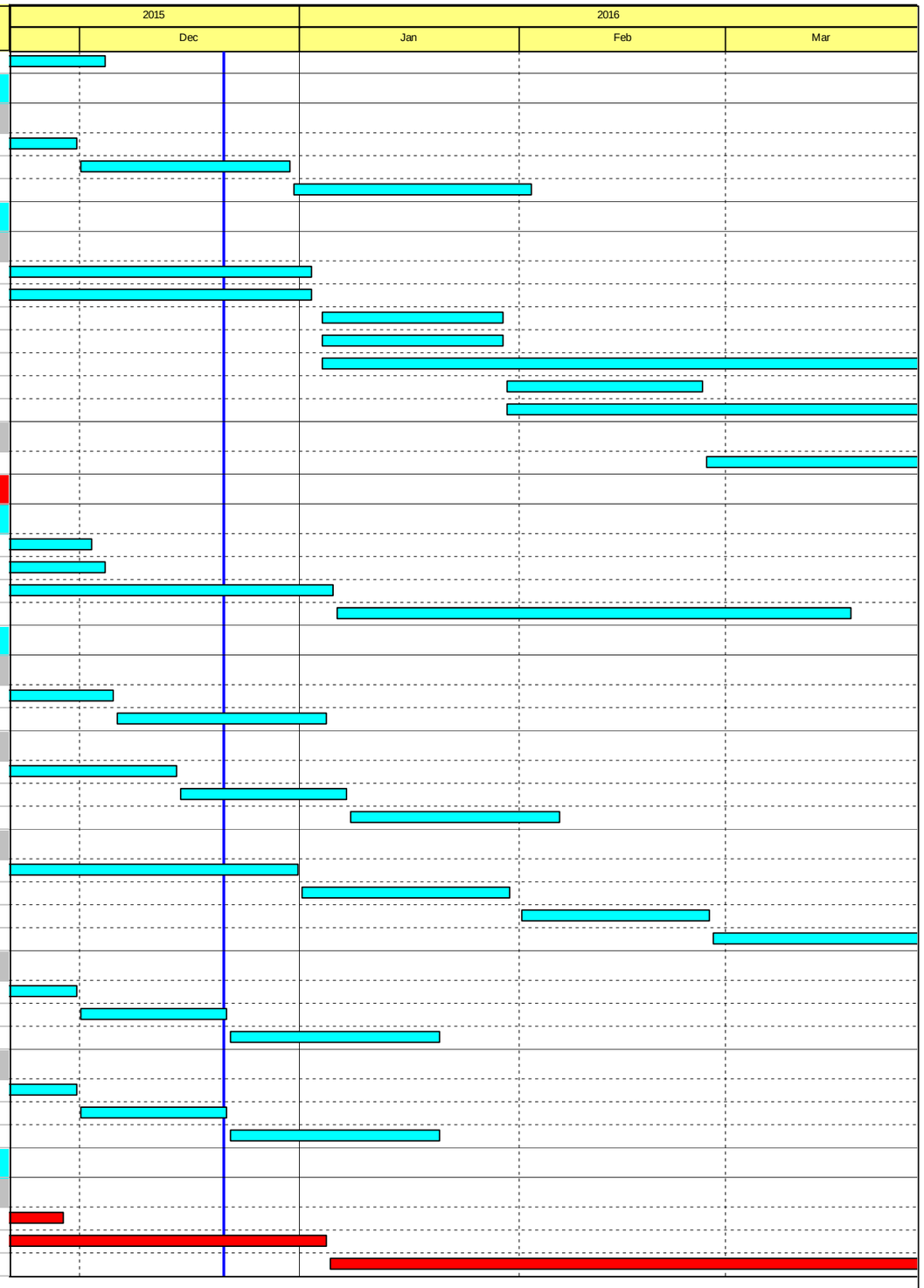
CONTRACTOR'S DESIGNER
ATKINS

PROJECT
Contract No. CV/2012/08
Liantang/Heung Yuen Wai Boundary Control Point
Site Formation and Infrastructure Works Contract 2

TITLE
Monthly Report No.24 3-Months Rolling Programme
(Approved Works Programme Rev. D)

DOCUMENT NO.		
LTH/DHK/PGR/PW/PLP/00105/A		
DOC. STATUS	CREATION DATE	REVISION
FOR INFO.	20-Dec-15	A
PAPER SIZE	SCALE	PAGE
A3	N/A	1 of 3

Activity ID	Activity Name	Working Duration	BL Project Start	BL Project Finish
MPS&P0100	Subcontract : External Works and Landscaping Works	60	23-Sep-15	04-Dec-15
4.3 Middle Portal Method Statement Submission		80	29-Oct-15	02-Feb-16
Middle Ventilation Adit Tunnel Concreting Works (Internal Structures)		80	29-Oct-15	02-Feb-16
A25518	Engineer's Comment	28	29-Oct-15	30-Nov-15
A25519	Re-submission Method Statement	24	01-Dec-15	30-Dec-15
A25520	Engineer's Approval	28	31-Dec-15	02-Feb-16
4.5 Middle Portal Works		186	12-Oct-15	19-Apr-16
Adit Construction - Mid Portal		194	12-Oct-15	02-Apr-16
MV2710	D&B UT Tunneling Ch3,436 to Ch3,586 (NB) - towards North	70	12-Oct-15	02-Jan-16
MV2720	D&B DT Tunneling Ch3,433 to Ch3,561 (SB) - towards North	60	23-Oct-15	02-Jan-16
MV2730	D&B UT Tunneling Ch3,413 to Ch3,313 (NB) - towards South	23	04-Jan-16	29-Jan-16
MV2740	D&B DT Tunneling Ch3,410 to Ch3,313 (SB) - towards South	23	04-Jan-16	29-Jan-16
MV2749	Ground Treatment for TBm Breakthrough	77	04-Jan-16	02-Apr-16
MV2750	De-mobilization of Tunneling plants & equipment	24	30-Jan-16	26-Feb-16
MV2760a	Adit Lining (up to Ch151)	50	30-Jan-16	29-Mar-16
Middle Portal: Foundation & Substructure		41	27-Feb-16	19-Apr-16
MV2240a	Excavation down to +20.5mPD	41	27-Feb-16	19-Apr-16
5 North Portal Area		410	05-Jun-15	13-Jun-16
5.1 North Portal Subcontract & Procurement		207	05-Jun-15	18-Mar-16
NPS&P0090	Subcontract : Tunnel Lining Formworks (Design, Fabrication, Delivery, & On-Site Assembly)	150	05-Jun-15	02-Dec-15
NPS&P0120	Subcontract : Ventilation Building Pile Cap Works	60	23-Sep-15	04-Dec-15
NPS&P0130	Subcontract : Ventilation Building ABWF Works	60	24-Oct-15	05-Jan-16
NPS&P0140	Subcontract : External Works and Landscaping Works	60	06-Jan-16	18-Mar-16
5.3 North Portal Method Statement Submission		186	01-Nov-15	28-Mar-16
MS for TBM Break-out		41	16-Nov-15	04-Jan-16
FL2022564	Prepare & Re-submit Method Statement	18	16-Nov-15	05-Dec-15
FL2022574	ER's Approval for Method Statement	30	06-Dec-15	04-Jan-16
MS for TBM Turn		64	15-Nov-15	06-Feb-16
FL3880	ER's Comment for Method Statement	30	15-Nov-15	14-Dec-15
FL3885	Prepare & Re-submit Method Statement	18	15-Dec-15	07-Jan-16
FL3890	ER's Approval for Method Statement	30	08-Jan-16	06-Feb-16
MS for Removal of Left-in HDC Drill Rods within N/B TBM Excavation		186	13-Nov-15	28-Mar-16
FL2022584	Prepare & Submit Method Statement	40	13-Nov-15	31-Dec-15
FL2022594	ER's Comment for Method Statement	30	01-Jan-16	30-Jan-16
FL2022604	Prepare & Re-submit Method Statement	21	01-Feb-16	27-Feb-16
FL2022614	ER's Approval for Method Statement	30	28-Feb-16	28-Mar-16
North Portal: MS for Cross Passage Excavation in Rock		65	01-Nov-15	20-Jan-16
FL2022070	ER's Comment for Method Statement	30	01-Nov-15	30-Nov-15
FL2022071	Prepare & Re-submit Method Statement	18	01-Dec-15	21-Dec-15
FL2022072	ER's Approval for Method Statement	30	22-Dec-15	20-Jan-16
North Portal: MS for Cross Passage Excavation in Soft		65	01-Nov-15	20-Jan-16
FL2022074	ER's Comment for Method Statement	30	01-Nov-15	30-Nov-15
FL2022075	Prepare & Re-submit Method Statement	18	01-Dec-15	21-Dec-15
FL2022076	ER's Approval for Method Statement	30	22-Dec-15	20-Jan-16
5.5 North Portal Works		267	01-Sep-15	13-Jun-16
Southbound Tunnel (Mined Excavation) inc Enlargement		224	19-Sep-15	11-May-16
TD0930	SB - Crown Grouting	60	19-Sep-15	28-Nov-15
TD0940a	Top Heading Enlargement (Ch6355>Ch6268); 87m; [P21: 4755 to 4668]	47	09-Nov-15	04-Jan-16
TD0940a1	Top Heading Enlargement (Ch6268>Ch6148); 120m; [P21: 4668 to 4548] - WSD Restriction Zone	104	05-Jan-16	06-May-16



REV	DESCRIPTION	DATE	PREPARED	CHECKED	APPROVED
A	Monthly Report No.24	20/12/2015	KEC/RAN	RBS/SJO	DAL

MAIN CONTRACTOR: 香港寶嘉 Dragages HongKong — A member of the Bouygues Construction group

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

THE ENGINEER: AECOM

CONTRACTOR'S DESIGNER: ATKINS

PROJECT: Contract No. CV/2012/08 Liantang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works Contract 2

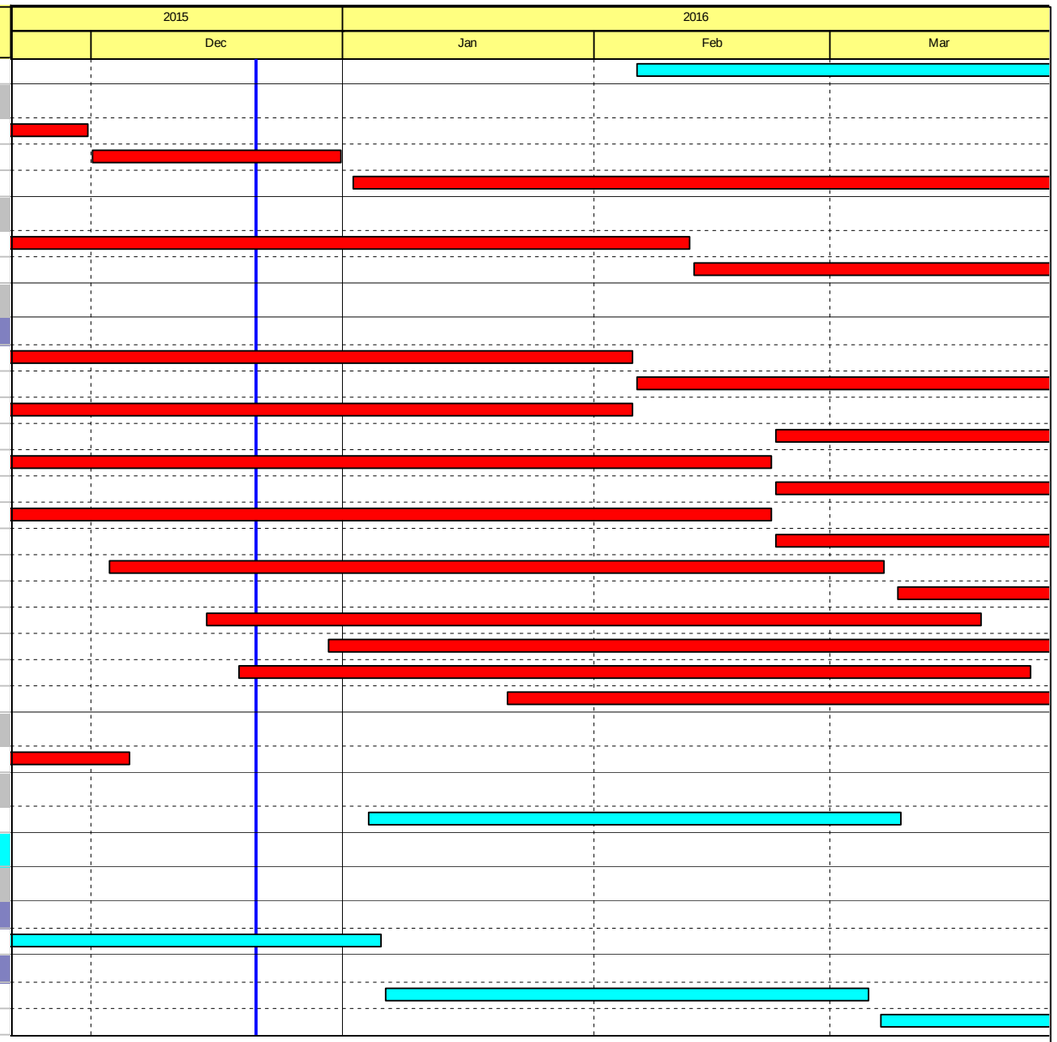
TITLE: Monthly Report No.24 3-Months Rolling Programme (Approved Works Programme Rev. D)

DOCUMENT NO.: LTH/DHK/PGR/PW/PLP/00105/A

DOC. STATUS	CREATION DATE	REVISION
FOR INFO.	20-Dec-15	A

PAPER SIZE	SCALE	PAGE
A3	N/A	2 of 3

Activity ID	Activity Name	Working Duration	BL Project Start	BL Project Finish
TD1695a	Cross Passage Excavation (Mined Tunnels) CP-49	80	06-Feb-16	11-May-16
Northbound Tunnel (Mined Excavation)		178	01-Sep-15	31-Mar-16
DB6400a3	Top Heading Canopies (Ch6350>Ch6284); 66m; [P20: 4728 to 4662]	76	01-Sep-15	30-Nov-15
DB6400a5	Platform Lowering for Bench Excavation	26	01-Dec-15	31-Dec-15
DB6400a6	Bench Excavation (Ch6446>Ch6284); 162m; [P20: 4824 to 4662]	76	02-Jan-16	31-Mar-16
Southbound Tunnel (TBM Tunneling)		149	13-Nov-15	09-May-16
TD1050	TBM DT (Ch5,713>Ch4,904) 809m	77	13-Nov-15	12-Feb-16
TD1090	TBM DT (Ch4,904>Ch4,171) 733m	72	13-Feb-16	09-May-16
Bored Tunnel (S/B & N/B) Internal Works & Finishes		192	28-Oct-15	13-Jun-16
Southbound Tunnel Internal Works & Finishes		192	28-Oct-15	13-Jun-16
TD1470a	Tunnel Backfilling (Ch5,950 >Ch5,153) 797m- (Stage 1)	85	28-Oct-15	05-Feb-16
TD1470b	Tunnel Backfilling (Ch5,153 >Ch4,357) 796m- (Stage 1)	85	06-Feb-16	17-May-16
TD1480a	Bottom Drilling for Cross Passage (fr.Ch5953)	70	14-Nov-15	05-Feb-16
TD1480b	Bottom Drilling for Cross Passage (fr.Ch5155)	71	23-Feb-16	17-May-16
TD1490a	Tunnel Backfilling (Ch5,950 >Ch5,153) 797m- (Stage 2)	80	19-Nov-15	22-Feb-16
TD1490b	Tunnel Backfilling (Ch5,153 >Ch4,357) 796m- (Stage 2)	80	23-Feb-16	27-May-16
TD1500a	Drilling for Cross Passage (Remaining) (Ch5,950 >Ch5,153) 797m	80	19-Nov-15	22-Feb-16
TD1500b	Drilling for Cross Passage (Remaining) (Ch5,153 >Ch4,357) 796m	80	23-Feb-16	27-May-16
TD1520a	Corbel (Ch5,950 >Ch5,153) 797m	80	03-Dec-15	07-Mar-16
TD1520b	Corbel (Ch5,153 >Ch4,357) 796m	80	09-Mar-16	13-Jun-16
TD1523a	OHVD Slab & 132kV Cable Trough (Ch5,950 >Ch5,153) 797m	81	15-Dec-15	19-Mar-16
TD1524a	Walkway Construction Ch5,950 >Ch5,153) 797m	81	30-Dec-15	04-Apr-16
TD1528a	Ground Treatment for Cross Passage Ch5,950 >Ch5,153) 797m	82	19-Dec-15	25-Mar-16
TD1725a	E&M Installation for S/B TBM Tunnel [CRP Ch5,950 to Ch5,650] 300m	77	21-Jan-16	20-Apr-16
North Portal: Retaining Wall & Site Formation		45	14-Oct-15	05-Dec-15
N20940	Retaining Wall & Site Formation (STK/RW3)	45	14-Oct-15	05-Dec-15
North Portal: Noise Barrier (NB5 to NB9)		51	04-Jan-16	09-Mar-16
N20990	Noise Barrier NB 6,8,9	51	04-Jan-16	09-Mar-16
5.6 Administration Building:		251	07-Nov-15	18-Apr-16
5.65 Administration Building: Works		251	07-Nov-15	18-Apr-16
Administration Building: Site Formation		60	07-Nov-15	05-Jan-16
AD2080	Surcharge (2 months Consolidation)	60	07-Nov-15	05-Jan-16
Administration Building: Foundation & Substructure		140	06-Jan-16	18-Apr-16
AD2030	Excavation for Footing	46	06-Jan-16	05-Mar-16
AD2090	Raft Footing	33	07-Mar-16	18-Apr-16



REV	DESCRIPTION	DATE	PREPARED	CHECKED	APPROVED
A	Monthly Report No.24	20/12/2015	KEC/RAN	RBS/SJO	DAL

MAIN CONTRACTOR
香港寶嘉 Dragages HongKong
A member of the Bouygues Construction group

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

THE ENGINEER
AECOM

CONTRACTOR'S DESIGNER
ATKINS

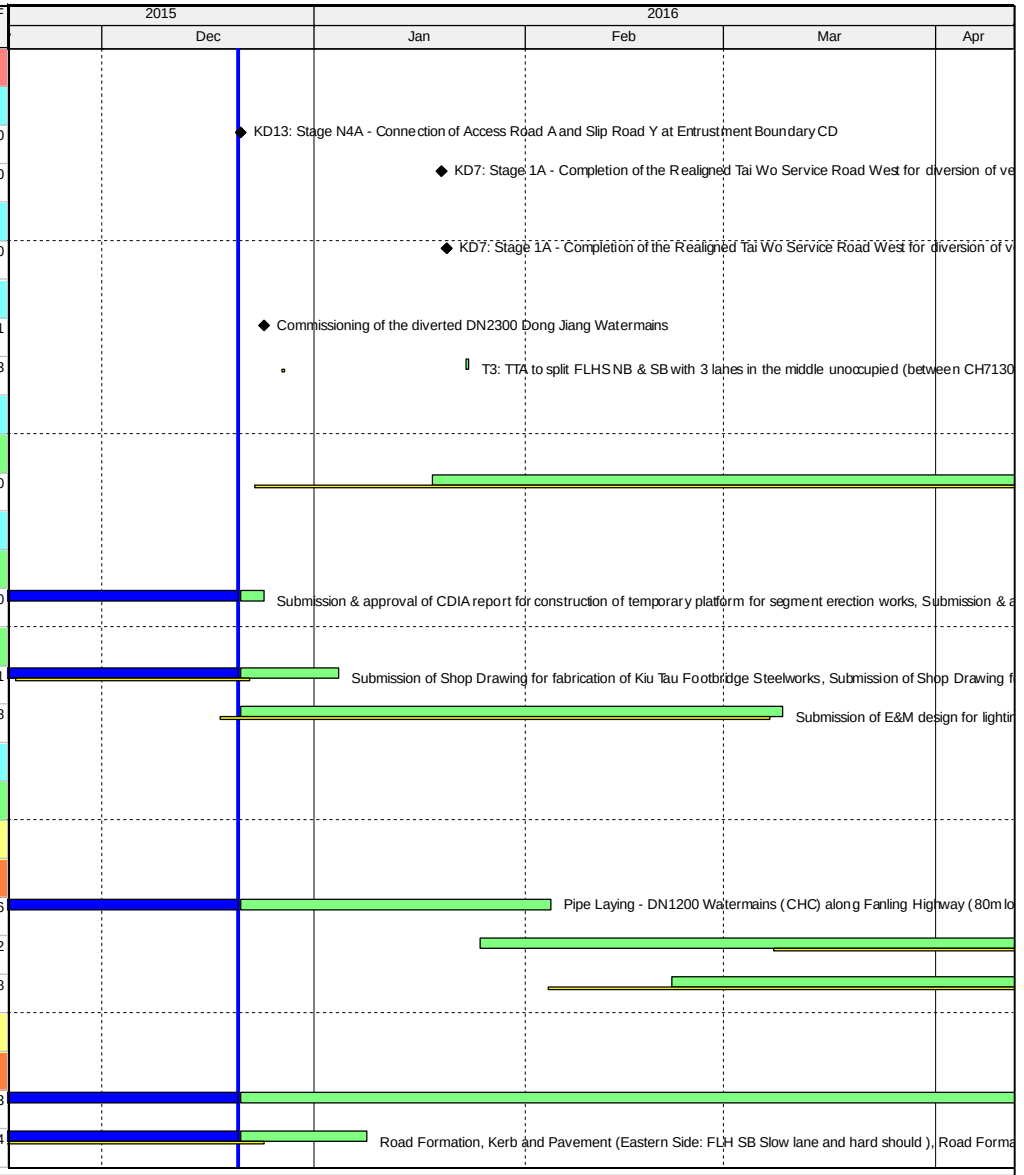
PROJECT
Contract No. CV/2012/08
Liantang/Heung Yuen Wai Boundary Control Point
Site Formation and Infrastructure Works Contract 2

TITLE
Monthly Report No.24 3-Months Rolling Programme
(Approved Works Programme Rev. D)

DOCUMENT NO.		
LTH/DHK/PGR/PW/PLP/00105/A		
DOC. STATUS	CREATION DATE	REVISION
FOR INFO.	20-Dec-15	A
PAPER SIZE	SCALE	PAGE
A3	N/A	3 of 3

Contract 3

Activity ID	Activity Name	OD	RD	Start	Finish	TF
3-Month Rolling Programme 2015-12-21						
Key Dates (Contractual)						
KD-1500	KD13: Stage N4A - Connection of Access Road A and Slip Road Y at Entrustment Boundary CD	0	0		21-Dec-15*	-50
KD-1100	KD7: Stage 1A - Completion of the Realigned Tai Wo Service Road West for diversion of vehicular traffic	0	0		19-Jan-16*	0
Key Dates (Forecast)						
KD-1105	KD7: Stage 1A - Completion of the Realigned Tai Wo Service Road West for diversion of vehicular traffic	0	0		20-Jan-16	0
Major Milestones and Events						
MS-0240	Commissioning of the diverted DN2300 Dong Jiang Watermains	0	0		24-Dec-15	291
MS-2000C	T3: TTA to split FLHS NB & SB with 3 lanes in the middle unoccupied (between CH7130 and CH7470)	1	1	23-Jan-16*	23-Jan-16	3
Major Procurement & Delivery						
Footbridge Steel Truss						
MM-3050	Fabrication of footbridge steel truss (Kiu Tau Footbridge)	100	100	18-Jan-16	26-May-16	0
Design and Submissions						
Statutory Approval						
PRE-1050	Submission & approval of CDIA report for construction of temporary platform for segment erection works	185	4	27-Nov-14 A	24-Dec-15	0
Method Statement and Design (Major) Approved by AECOM						
PRE-2050	Submission of Shop Drawing for fabrication of Kiu Tau Footbridge Steelworks	30	10	02-Nov-15 A	04-Jan-16	11
PRE-2030	Submission of E&M design for lighting of Kiu Tau Footbridge	60	60	21-Dec-15	09-Mar-16	128
Section IA & IB - Fanling Highway Widening (KD-1 & KD-2)						
Fanling Highway South Portion between CH6935 and CH7470						
Fanling Highway Zone 1 between CH6935 and CH7130 (within SBZ2)						
At-Grade Roadworks (195m)						
FHW-1130*	Pipe Laying - DN1200 Watermains (CHC) along Fanling Highway (80m long, 4m depth)	182	37	20-Feb-14 A	04-Feb-16	76
FHW-1300	Noise Barrier NB68 - Mini-Piling at central median (CSD: 24 nos)	80	80	25-Jan-16	09-May-16	42
FHW-1140	Noise Barrier NB70 - Footing adjacent to SB lane (15m)	115	115	22-Feb-16	13-Jul-16	68
Fanling Highway Zone 2 between CH7130 and CH7290						
At-Grade Roadworks (160m)						
FHW-2130*	Pipe Laying - DN1200 & DN600 Watermains (CHB & CHC) along Fanling Highway (183m long, 4m depth)	144	350	12-Oct-15 A	06-Mar-17	233
FHW-2140	Road Formation, Kerb and Pavement (Eastern Side: FLH SB Slow lane and hard should)	61	14	14-Oct-15 A	08-Jan-16	14



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

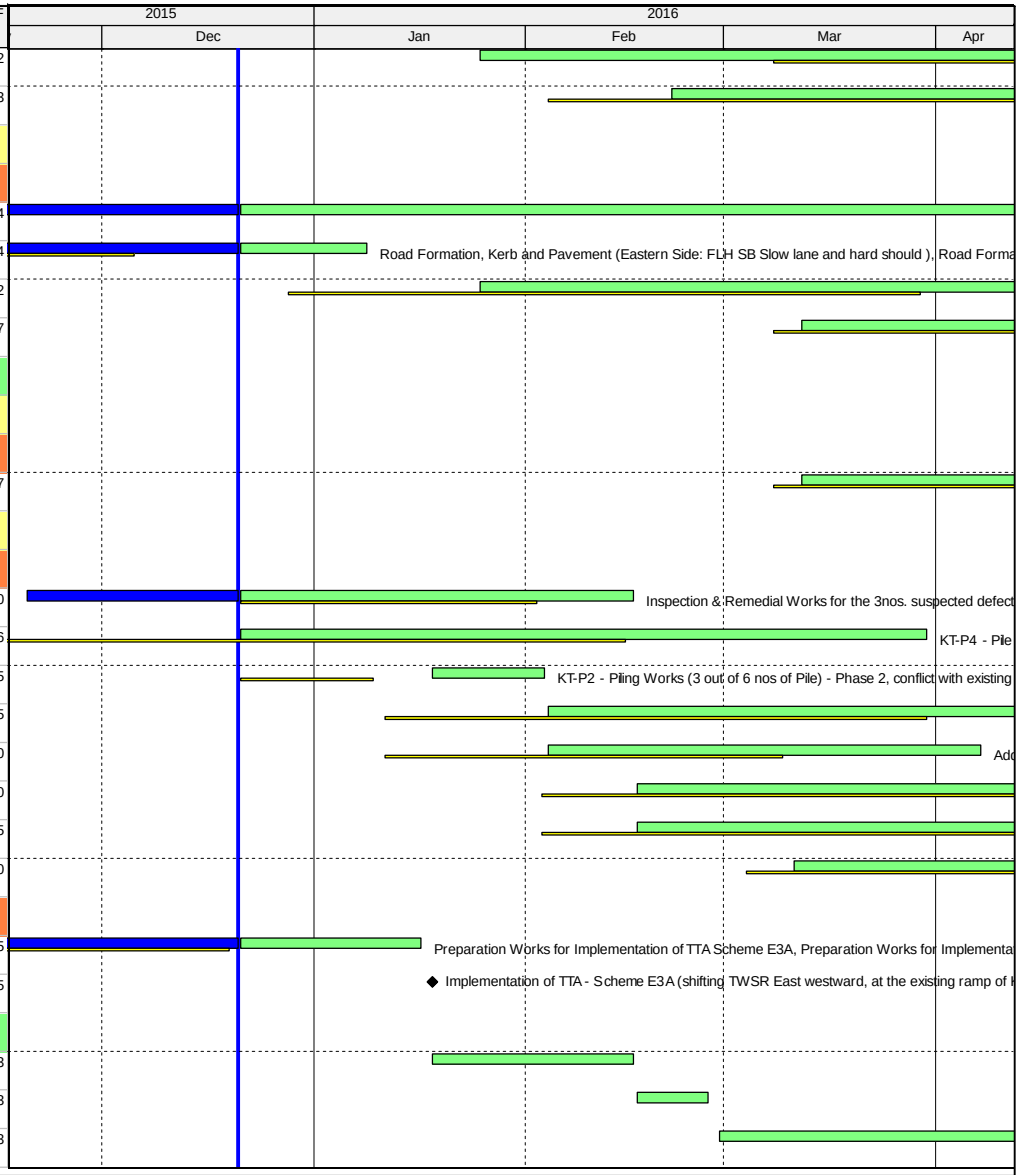
Actual Work
Remaining Work
Summary Bar
Critical Remaining Work
Milestone
Actual Level of Effort
Project Baseline Bar

CEDD Contract No. CV/2012/09
Liantang / Heung Yuen Wai BCP - Site Formation & Infrastructure Works, Contract 3
3-Month Rolling Programme
Programme ID: 3MPR029 (Data Date: 21-Dec-15)
Page 1 of 10

3-Month Rolling Programme updated to 2015-12-20

Date	Revision	Checked	Approved
20-Dec-15	Rev.0	SL	

Activity ID	Activity Name	OD	RD	Start	Finish	TF
FHW-2300	Noise Barrier NB68 - Mini-Piling at central median (CSD: 22 nos)	80	80	25-Jan-16	09-May-16	2
FHW-2190	Footpath & DSD Access Track adjacent to SB lane	108	108	22-Feb-16	05-Jul-16	163
Fanling Highway Zone 3 between CH7290 and CH7380						
At-Grade Roadworks (130m)						
FHW-3150*	Pipe Laying - DN600, DN1200 Watermains (CHB &CHC) along Fanling Highway (90m long, 3m depth)	150	350	07-Jun-14 A	06-Mar-17	74
FHW-3160	Road Formation, Kerb and Pavement (Eastern Side: FLH SB Slow lane and hard should)	63	14	05-Oct-15 A	08-Jan-16	14
FHW-3300	Noise Barrier NB68A - Mini-Piling at central median (CSD: 20 nos)	70	70	25-Jan-16	26-Apr-16	2
FHW-3310	Noise Barrier NB68A - Footing at central median (98m)	90	90	12-Mar-16	04-Jul-16	7
Fanling Highway North Portion between CH7470 and CH7925						
Fanling Highway Zone 4 between CH7380 and CH7470						
At-Grade Roadworks (90m)						
FHW-4210	Noise Barrier NB68A - Footing at central median (40m)	90	90	12-Mar-16	04-Jul-16	7
Fanling Highway Zone 5 between CH7470 and CH7600 (Provision of Kiu Tau Footbridge)						
Kiu Tau Footbridge Reprovision (East)						
FHW-5110	Inspection & Remedial Works for the 3nos. suspected defected piles (AB1-7, AB2-4, P3-9)	35	41	20-Nov-15 A	16-Feb-16	0
FHW-5010E	KT-P4 - Pile Cap & Pier	75	75	21-Dec-15	30-Mar-16	46
FHW-5000C2	KT-P2 - Piling Works (3 out of 6 nos of Pile) - Phase 2, conflict with existing TWSRE	15	15	18-Jan-16	03-Feb-16	5
FHW-5010C	KT-P2 - Pile Cap & Pier	60	60	04-Feb-16	25-Apr-16	5
FHW-5090	Additional BFA Facilities - Pile Cap & Sump Pit, to be covered by VO	45	45	04-Feb-16	07-Apr-16	40
FHW-5010D	KT-P3 - Pile Cap & Pier	60	60	17-Feb-16	30-Apr-16	0
FHW-5010A	KT-AB1 - Pile Cap & Abutment	75	75	17-Feb-16	20-May-16	5
FHW-5010B	KT-AB2 - Pile Cap & Abutment	60	60	11-Mar-16	26-May-16	0
At-Grade Road Works (130m)						
FHW-5120C	Preparation Works for Implementation of TTA Scheme E3A	30	21	07-Nov-15 A	16-Jan-16	5
FHW-5120D	Implementation of TTA - Scheme E3A (shifting TWSR East westward, at the existing ramp of Kiu Tau Footbridge)	0	0	18-Jan-16		5
Remaining Works for Noise Barrier along widened Fanling Highway						
FHW-NB-120	Noise Barrier Steelworks & Panel for NB6 (123m), adjacent to Fanling Highway SB lanes at Zone 1	20	20	18-Jan-16*	16-Feb-16	523
FHW-NB-130	Noise Barrier Steelworks & Panel for NB7 (60m), adjacent to Fanling Highway SB lanes at Zone 1	10	10	17-Feb-16	27-Feb-16	523
FHW-NB-140	Noise Barrier Steelworks & Panel for NB71 (254m), adjacent to Fanling Highway SB lanes at Zones 2,3 & 4	45	45	29-Feb-16	25-Apr-16	523



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

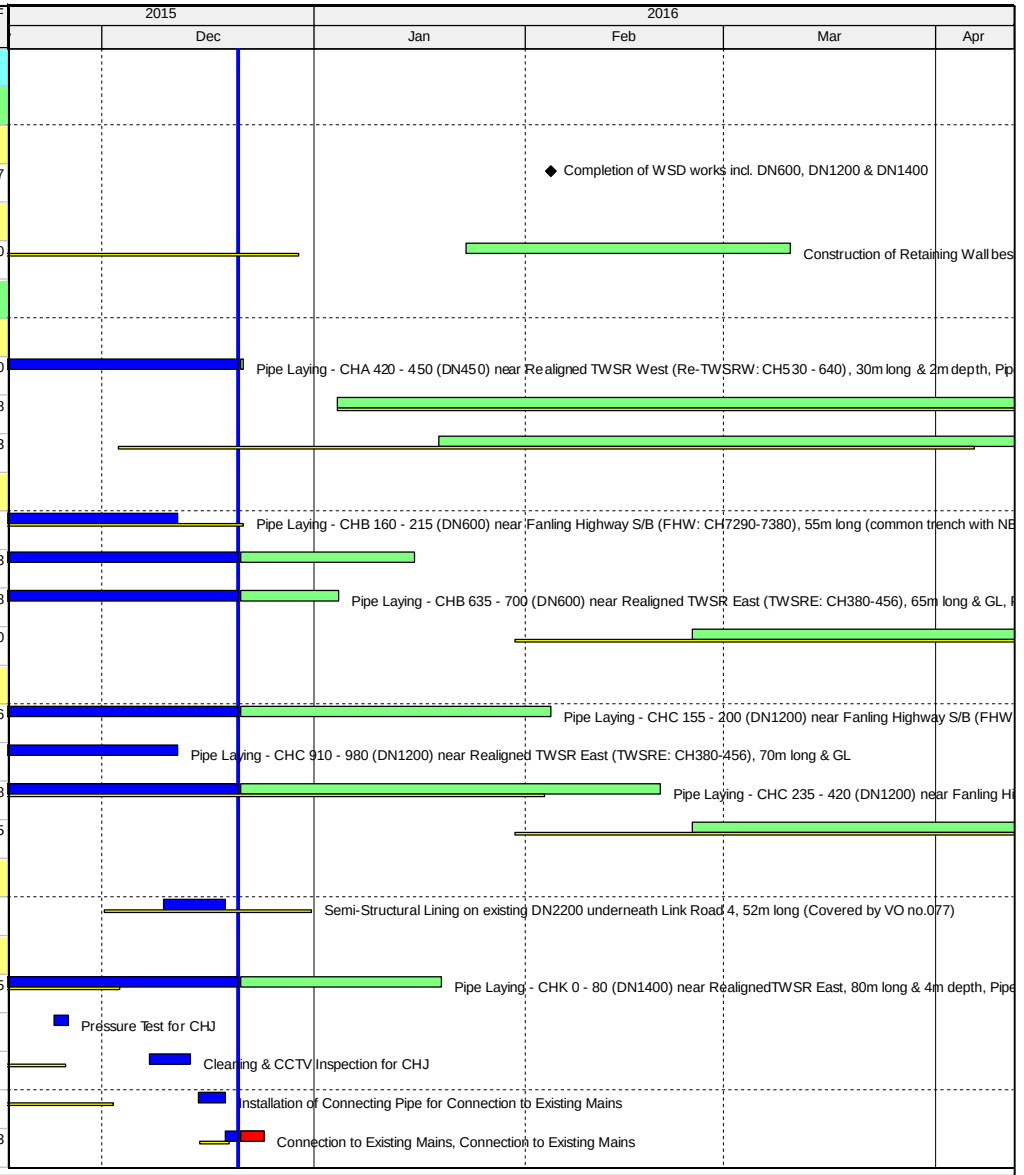
Actual Work
Remaining Work
Summary Bar
Critical Remaining Work
Milestone
Actual Level of Effort
Project Baseline Bar

CEDD Contract No. CV/2012/09
Liantang / Heung Yuen Wai BCP - Site Formation & Infrastructure Works, Contract 3
3-Month Rolling Programme
Programme ID: 3MPR029 (Data Date: 21-Dec-15)

3-Month Rolling Programme updated to 2015-12-20

Date	Revision	Checked	Approved
20-Dec-15	Rev.0	SL	

Activity ID	Activity Name	OD	RD	Start	Finish	TF
	Section II - Remainder of the Works (KD-3)					
	At Grade Link Road at Fanling Highway Interchange					
	Link Road 3 (near Abutment AD1)					
FHI-LR3-3000	Completion of WSD works incl. DN600, DN1200 & DN1400	0	0		04-Feb-16	447
	Link Road 4 (near Abutment AC1)					
FHI-LR4-4030	Construction of Retaining Wall beside Abutment AC1 (4 bays)	35	35	23-Jan-16	10-Mar-16	0
	WSD Works					
	DN450 Fire Mains (CHA)					
WA-1050	Pipe Laying - CHA 420 - 450 (DN450) near Realigned TWSR West (Re-TWSRW: CH530 - 640), 30m long & 2m depth	70	1	29-May-15 A	21-Dec-15	0
WA-1090	Pipe Laying - CHA 800 - 960 (DN450) near Ext. TWSR West (No Roadworks), 160m long & 3m depth	148	148	04-Jan-16*	09-Jul-16	78
WA-1060	Pipe Laying - CHA 450 - 575 (DN450) near Realigned TWSR West (Re-TWSRW: CH640 - 695), 125m long & 2m depth	95	95	19-Jan-16	21-May-16	223
	DN600 Water Mains (CHB)					
WB-1010	Pipe Laying - CHB 160 - 215 (DN600) near Fanling Highway S/B (FHW: CH7290-7380), 55m long (common trench with NB)	60	0	13-Jul-15 A	12-Dec-15 A	
WB-1060	Pipe Laying - CHB 538 - 635 (DN600) near Realigned TWSR East (TWSRE: CH270-380), 97m long & GL	30	20	17-Jul-15 A	15-Jan-16	563
WB-1070	Pipe Laying - CHB 635 - 700 (DN600) near Realigned TWSR East (TWSRE: CH380-456), 65m long & GL	78	10	18-Jul-15 A	04-Jan-16	188
WB-1030C	Pipe Laying - CHB 350 - 450 (DN600) from Portal AB7/AD9/AC12 to Portal AB8	85	85	25-Feb-16	10-Jun-16	450
	DN1200 Water Mains (CHC)					
WC-1050A	Pipe Laying - CHC 155 - 200 (DN1200) near Fanling Highway S/B (FHW: CH6935-7130), 45m long, 4m depth	120	37	15-Oct-14 A	04-Feb-16	76
WC-1130	Pipe Laying - CHC 910 - 980 (DN1200) near Realigned TWSR East (TWSRE: CH380-456), 70m long & GL	78	0	07-Jul-15 A	12-Dec-15 A	
WC-1060	Pipe Laying - CHC 235 - 420 (DN1200) near Fanling Highway S/B (FHW: CH7130-7290), 185m long (common trench with NB)	95	45	12-Oct-15 A	20-Feb-16	68
WC-1090C	Pipe Laying - CHC 615 - 720 (DN1200) from Portal AB7/AD9/AC12 to Portal AB8	85	85	25-Feb-16	10-Jun-16	135
	DN2200 Water Mains (CHF)					
WF-3000	Semi-Structural Lining on existing DN2200 underneath Link Road 4, 52m long (Covered by VO no.077)	25	0	10-Dec-15 A	19-Dec-15 A	
	DN2300 Water Mains and Leakage Collection System (CHJ & CHKA/CHK)					
WJ-1020A	Pipe Laying - CHK 0 - 80 (DN1400) near RealignedTWSR East, 80m long & 4m depth	55	23	05-Oct-15 A	19-Jan-16	155
WJ-2000B	Pressure Test for CHJ	7	0	24-Nov-15 A	26-Nov-15 A	
WJ-2010A	Cleaning & CCTV Inspection for CHJ	7	0	08-Dec-15 A	14-Dec-15 A	
WJ-2020	Installation of Connecting Pipe for Connection to Existing Mains	13	0	15-Dec-15 A	19-Dec-15 A	
WJ-2040	Connection to Existing Mains	7	4	19-Dec-15 A	24-Dec-15*	-3



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

- Actual Work
- Remaining Work
- Summary Bar
- Critical Remaining Work
- Milestone
- Actual Level of Effort
- Project Baseline Bar

CEDD Contract No. CV/2012/09

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

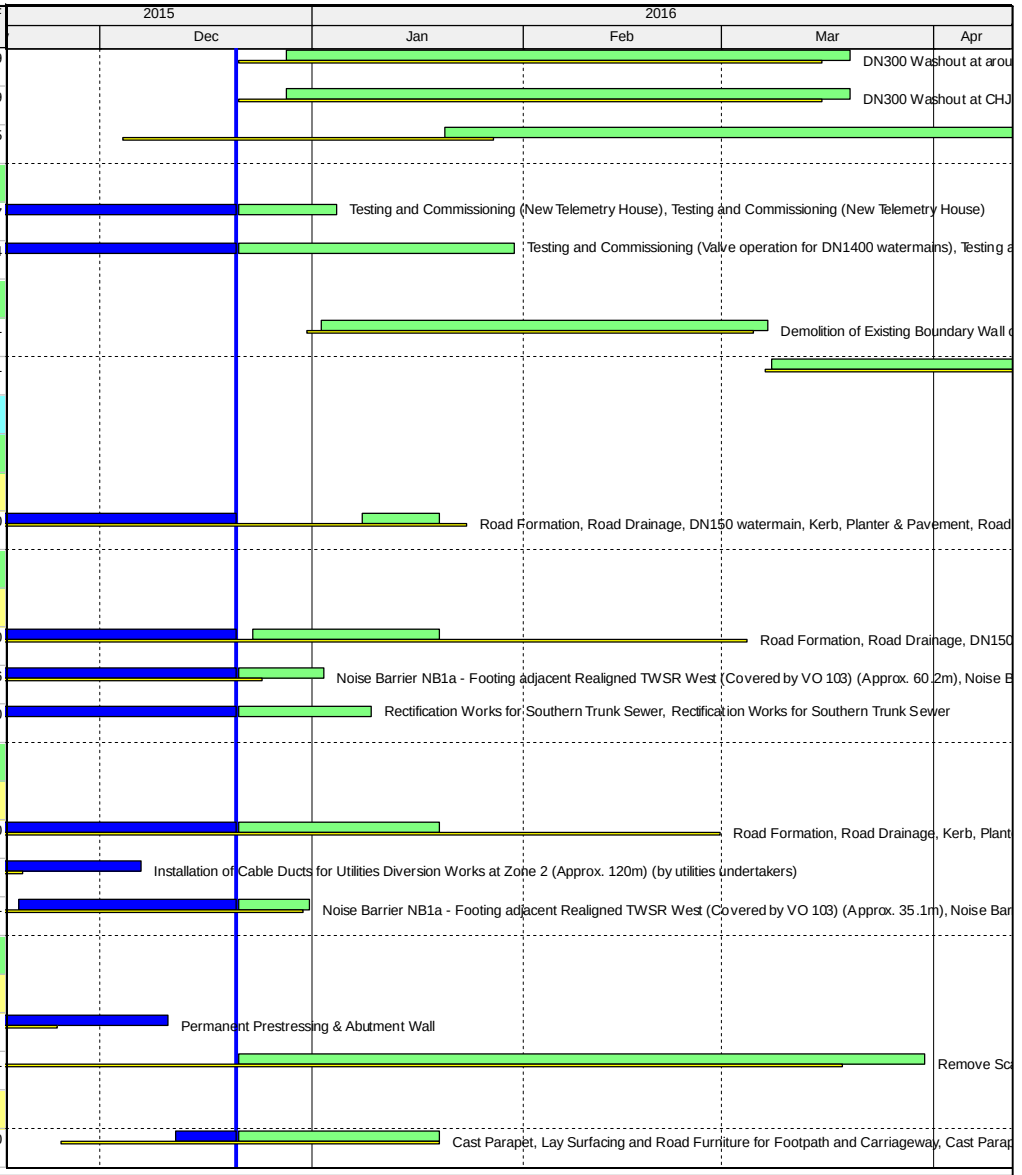
3-Month Rolling Programme

Programme ID: 3MPR029 (Data Date: 21-Dec-15)

3-Month Rolling Programme updated to 2015-12-20

Date	Revision	Checked	Approved
20-Dec-15	Rev.0	SL	

Activity ID	Activity Name	OD	RD	Start	Finish	TF
WJ-1100	DN300 Washout at around CHJ 268	65	65	28-Dec-15	19-Mar-16*	209
WJ-1110	DN300 Washout at CHJ 155	65	65	28-Dec-15	19-Mar-16*	209
WJ-1020B	Pipe Laying - CHKA 0 - 73 (DN1400) near Realigned TWSR East, 73m long & 4m depth	90	90	20-Jan-16	17-May-16	155
Kau Lung Hang Valve Control & Telemetry House Reprovision						
VCTH-1020a	Testing and Commissioning (New Telemetry House)	60	10	10-Oct-15 A	04-Jan-16	187
VCTH-1020c	Testing and Commissioning (Valve operation for DN1400 watermains)	30	33	10-Oct-15 A	30-Jan-16	164
Existing Nam Wa Po Trunk Sewage Pumping Station (PST3)						
PS-1000	Demolition of Existing Boundary Wall of Pumping Station (PST3)	50	50	02-Jan-16*	07-Mar-16	471
PS-1010	Construction of New Boundary Wall for Pumping Station (PST3)	90	90	08-Mar-16	28-Jun-16	471
Stage 1A - Realignment of Tai Wo Service Road West (KD-7)						
TWSRW Zone 1 betweeen CH100 and CH155						
At-Grade Roadworks						
TWSRW-1160	Road Formation, Road Drainage, DN150 watermain, Kerb, Planter & Pavement	286	10	15-Nov-14 A	19-Jan-16	0
TWSRW Zone 2 betweeen CH155 and CH280						
At-Grade Roadworks						
TWSRW-2120	Road Formation, Road Drainage, DN150 watermain, Kerb, Planter & Pavement	165	21	16-Oct-14 A	19-Jan-16	0
TWSRW-2130	Noise Barrier NB1a - Footing adjacent Realigned TWSR West (Covered by VO 103) (Approx. 60.2m)	85	9	14-Sep-15 A	02-Jan-16	6
TWSRW-2140	Rectification Works for Southern Trunk Sewer	48	15	30-Oct-15 A	09-Jan-16	0
TWSRW Zone 3 betweeen CH280 and CH315						
At-Grade Roadworks						
TWSRW-3120	Road Formation, Road Drainage, Kerb, Planter and Pavement	181	23	22-Jun-15 A	19-Jan-16	0
TWSRW-3110	Installation of Cable Ducts for Utilities Diversion Works at Zone 2 (Approx. 120m) (by utilities undertakers)	111	0	21-Jul-15 A	07-Dec-15 A	
TWSRW-3100	Noise Barrier NB1a - Footing adjacent Realigned TWSR West (Covered by VO 103) (Approx. 35.1m)	26	8	19-Nov-15 A	31-Dec-15	1
TWSRW Zone 4 betweeen CH315 and CH376						
Construction of Bridge E						
TWSRW-4090	Permanent Prestressing & Abutment Wall	28	0	23-Oct-15 A	11-Dec-15 A	
TWSRW-4100	Remove Scaffold System and Temporary Work together with Slope Reinstatement	75	75	21-Dec-15*	30-Mar-16*	1
At-Grade Roadworks						
TWSRW-4200	Cast Parapet, Lay Surfacing and Road Furniture for Footpath and Carriageway	35	23	12-Dec-15 A	19-Jan-16	0



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

Actual Work
Remaining Work
Summary Bar
Critical Remaining Work
Milestone
Actual Level of Effort
Project Baseline Bar

CEDD Contract No. CV/2012/09

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

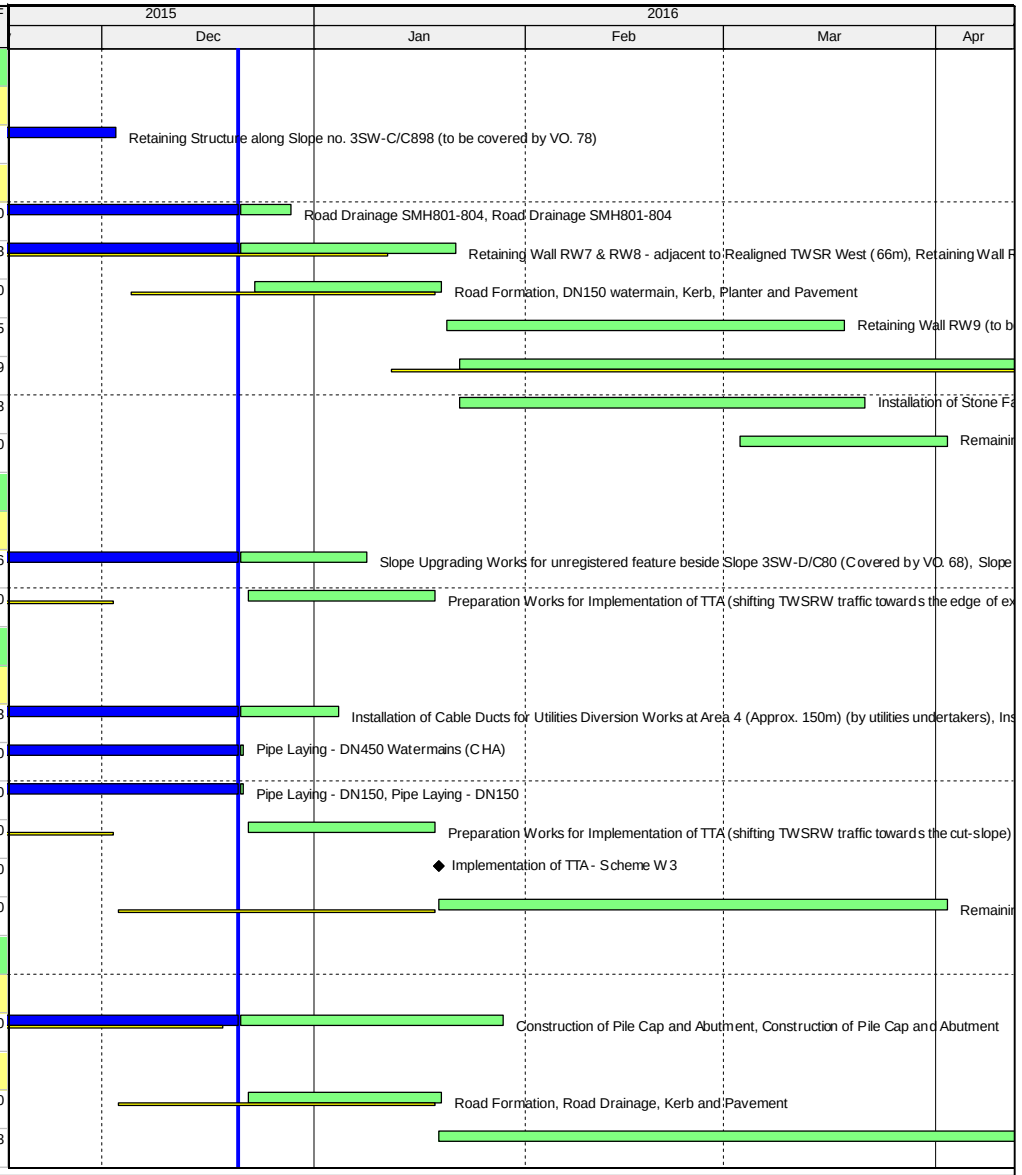
3-Month Rolling Programme

Programme ID: 3MPR029 (Data Date: 21-Dec-15)

3-Month Rolling Programme updated to 2015-12-20

Date	Revision	Checked	Approved
20-Dec-15	Rev.0	SL	

Activity ID	Activity Name	OD	RD	Start	Finish	TF
	TWSRW Zone 5 betweeen CH376 and CH520					
	Construction of Retaining Structures					
TWSRW-5080	Retaining Structure along Slope no. 3SW-C/C898 (to be covered by VO. 78)	50	0	29-Jun-15 A	03-Dec-15 A	
	At-Grade Roadworks					
TWSRW-5110C	Road Drainage SMH801-804	80	5	27-Apr-15 A	28-Dec-15	0
TWSRW-5100	Retaining Wall RW7 & RW8 - adjacent to Realigned TWSR West (66m)	70	25	29-Oct-15 A	21-Jan-16	3
TWSRW-5110A	Road Formation, DN150 watermain, Kerb, Planter and Pavement	21	21	23-Dec-15	19-Jan-16	0
TWSRW-5110	Retaining Wall RW9 (to be covered by VO)	45	45	20-Jan-16	18-Mar-16	5
TWSRW-5120	Permanent Vehicular Access to Lot 81	125	125	22-Jan-16	30-Jun-16	469
TWSRW-5130	Installation of Stone Facing Finish	45	45	22-Jan-16	21-Mar-16	3
TWSRW-5140	Remaining Road Formation, DN150 watermain, Kerb, Planter and Pavement (incl. Zone 5)	24	24	03-Mar-16	02-Apr-16	0
	TWSRW Zone 6 betweeen CH520 and CH530					
	At-Grade Roadworks					
TWSRW-6110	Slope Upgrading Works for unregistered feature beside Slope 3SW-D/C80 (Covered by VO. 68)	65	14	22-May-15 A	08-Jan-16	16
TWSRW-6100	Preparation Works for Implementation of TTA (shifting TWSRW traffic towards the edge of extended box culvert	21	21	22-Dec-15	18-Jan-16	0
	TWSRW Zone 7 betweeen CH530 and CH640					
	At-Grade Roadworks					
TWSRW-7140	Installation of Cable Ducts for Utilities Diversion Works at Area 4 (Approx. 150m) (by utilities undertakers)	233	15	28-Jan-15 A	04-Jan-16	373
TWSRW-7120*	Pipe Laying - DN450 Watermains (CHA)	70	1	29-May-15 A	21-Dec-15	0
TWSRW-7160	Pipe Laying - DN150	70	1	13-Jul-15 A	21-Dec-15	0
TWSRW-7100	Preparation Works for Implementation of TTA (shifting TWSRW traffic towards the cut-slope)	21	21	22-Dec-15	18-Jan-16	0
TWSRW-7110	Implementation of TTA - Scheme W3	0	0	19-Jan-16		0
TWSRW-7150	Remaining Road Drainage, Road Formation, DN150 watermain, Kerb, Planter and Pavement (incl. Zone 6 & Zone 7)	56	56	19-Jan-16	02-Apr-16	0
	TWSRW Zone 8 betweeen CH640 and CH695					
	Kiu Tau Footbridge Reprovision (West)					
TWSRW-8020	Construction of Pile Cap and Abutment	50	31	17-Nov-15 A	28-Jan-16	0
	At-Grade Roadworks					
TWSRW-8120	Road Formation, Road Drainage, Kerb and Pavement	22	22	22-Dec-15	19-Jan-16	0
TWSRW-8110*	Pipe Laying - DN450 Watermains (CHA)	95	95	19-Jan-16	21-May-16	223



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

Actual Work
Remaining Work
Summary Bar
Critical Remaining Work
Milestone
Actual Level of Effort
Project Baseline Bar

CEDD Contract No. CV/2012/09

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

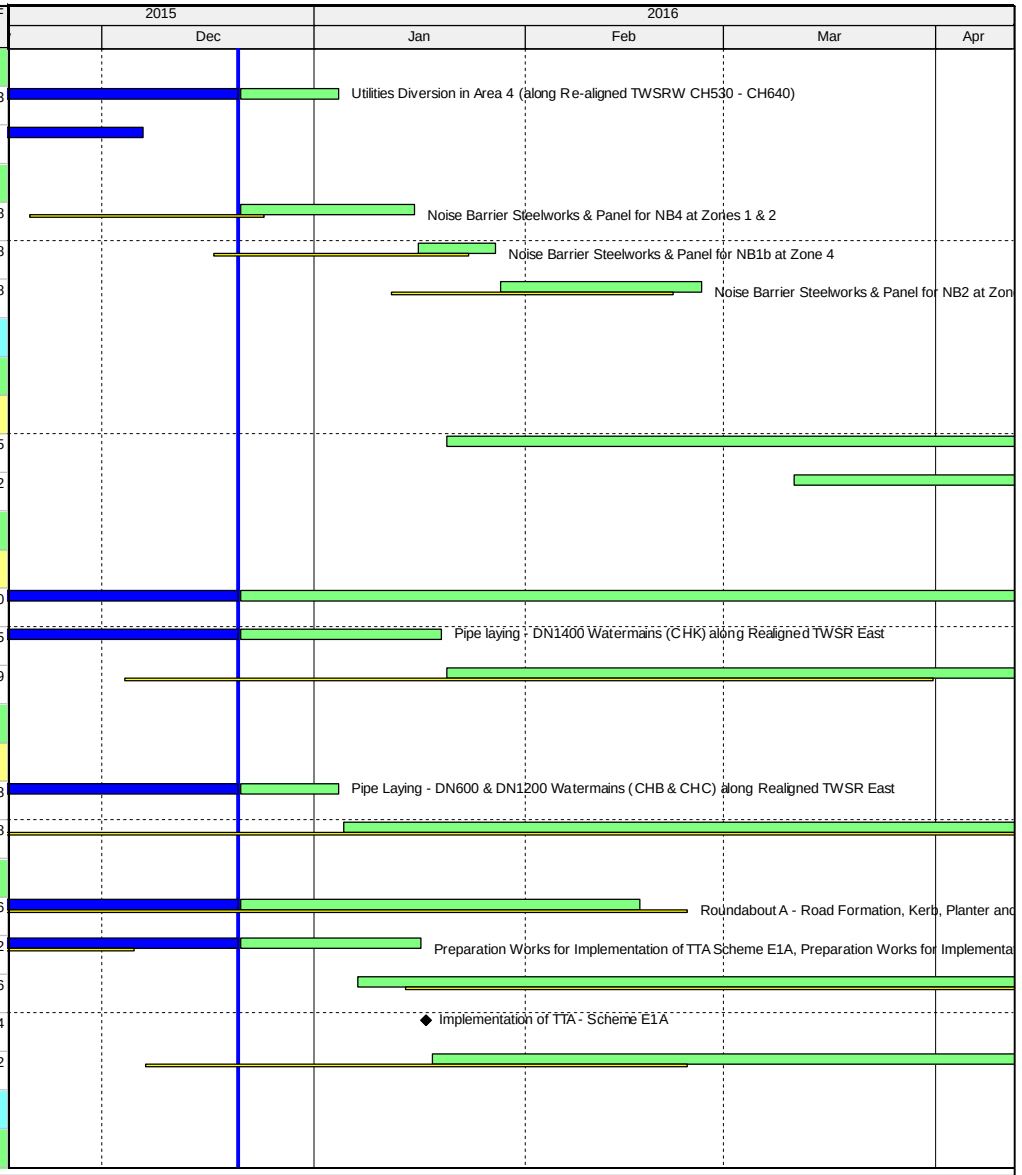
3-Month Rolling Programme

Programme ID: 3MPR029 (Data Date: 21-Dec-15)

3-Month Rolling Programme updated to 2015-12-20

Date	Revision	Checked	Approved
20-Dec-15	Rev.0	SL	

Activity ID	Activity Name	OD	RD	Start	Finish	TF
	Remainder of the Works					
TWSRW-9040*	Utilities Diversion in Area 4 (along Re-aligned TWSRW CH530 - CH640)	233	15	28-Jan-15 A	04-Jan-16	373
TWSRW-9020*	Utilities Diversion in Area 2 (along Re-aligned TWSRW CH 280 - CH315)	111	0	21-Jul-15 A	07-Dec-15 A	
	Remaining Works for Noise Barrier along realigned TWSR West					
TWSRW-NB-110	Noise Barrier Steelworks & Panel for NB4 at Zones 1 & 2	20	20	21-Dec-15*	15-Jan-16	28
TWSRW-NB-130	Noise Barrier Steelworks & Panel for NB1b at Zone 4	10	10	16-Jan-16	27-Jan-16	28
TWSRW-NB-140	Noise Barrier Steelworks & Panel for NB2 at Zone 5	20	20	28-Jan-16	26-Feb-16	28
	Stage N4A & N4B - Realignment of Tai Wo Service Road East (KD-13 & KD-14)					
	TWSRE Zone 1 between CH100 and CH270					
	At-Grade Roadworks					
TWSRE-1140*	Pipe laying - DN1400 Watermains (CHKA) along Realigned TWSR East	90	90	20-Jan-16	17-May-16	155
TWSRE-1170	Remainig Noise Barrier NB3 Stem Wall (a total of 24m long)	30	30	11-Mar-16	19-Apr-16	272
	TWSRE Zone 2 between CH270 and CH380					
	At-Grade Roadworks					
TWSRE-2030A*	Pipe laying - DN600 & DN1200 Watermains (CHB & CHC) along Realigned TWSR East	30	325	17-Jul-15 A	04-Feb-17	280
TWSRE-2030B*	Pipe laying - DN1400 Watermains (CHK) along Realigned TWSR East	55	23	05-Oct-15 A	19-Jan-16	155
TWSRE-2040	Road Formation, Kerb, Footpath, Cycle Track, Planter and Pavement	71	71	20-Jan-16	22-Apr-16	269
	TWSRE Zone 3 between CH380 and CH456					
	At-Grade Roadworks					
TWSRE-3020A*	Pipe Laying - DN600 & DN1200 Watermains (CHB & CHC) along Realigned TWSR East	78	10	07-Jul-15 A	04-Jan-16	188
TWSRE-3040	Road Formation, Kerb, Footpath, Cycle Track, Planter and Pavement (Incl. FL/F10)	165	165	05-Jan-16	30-Jul-16	188
	Roundabout A, Slip Road and Access Road					
TWSRE-4070	Roundabout A - Road Formation, Kerb, Planter and Pavement	90	42	26-Oct-15 A	17-Feb-16	6
TWSRE-4110	Preparation Works for Implementation of TTA Scheme E1A	30	21	26-Oct-15 A	16-Jan-16	102
TWSRE-4020	Slip Road Y (CH260-CH404) - Road Formation, Road Drainage, Kerb, Planter and Pavement	108	108	07-Jan-16	25-May-16	6
TWSRE-4120	Implementation of TTA - Scheme E1A	0	0	17-Jan-16*		134
TWSRE-4030B	Slip Road Y (CH100-CH230) - Road Formation, Remaining Road Drainage, Kerb, Planter and Pavement	120	120	18-Jan-16	20-Jun-16	102
	Stage 1C - Viaduct Structure & TCSS Civil Provisions (KD-9)					
	Preliminaries					



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

- Actual Work
- Remaining Work
- Summary Bar
- Critical Remaining Work
- Milestone
- Actual Level of Effort
- Project Baseline Bar

CEDD Contract No. CV/2012/09

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

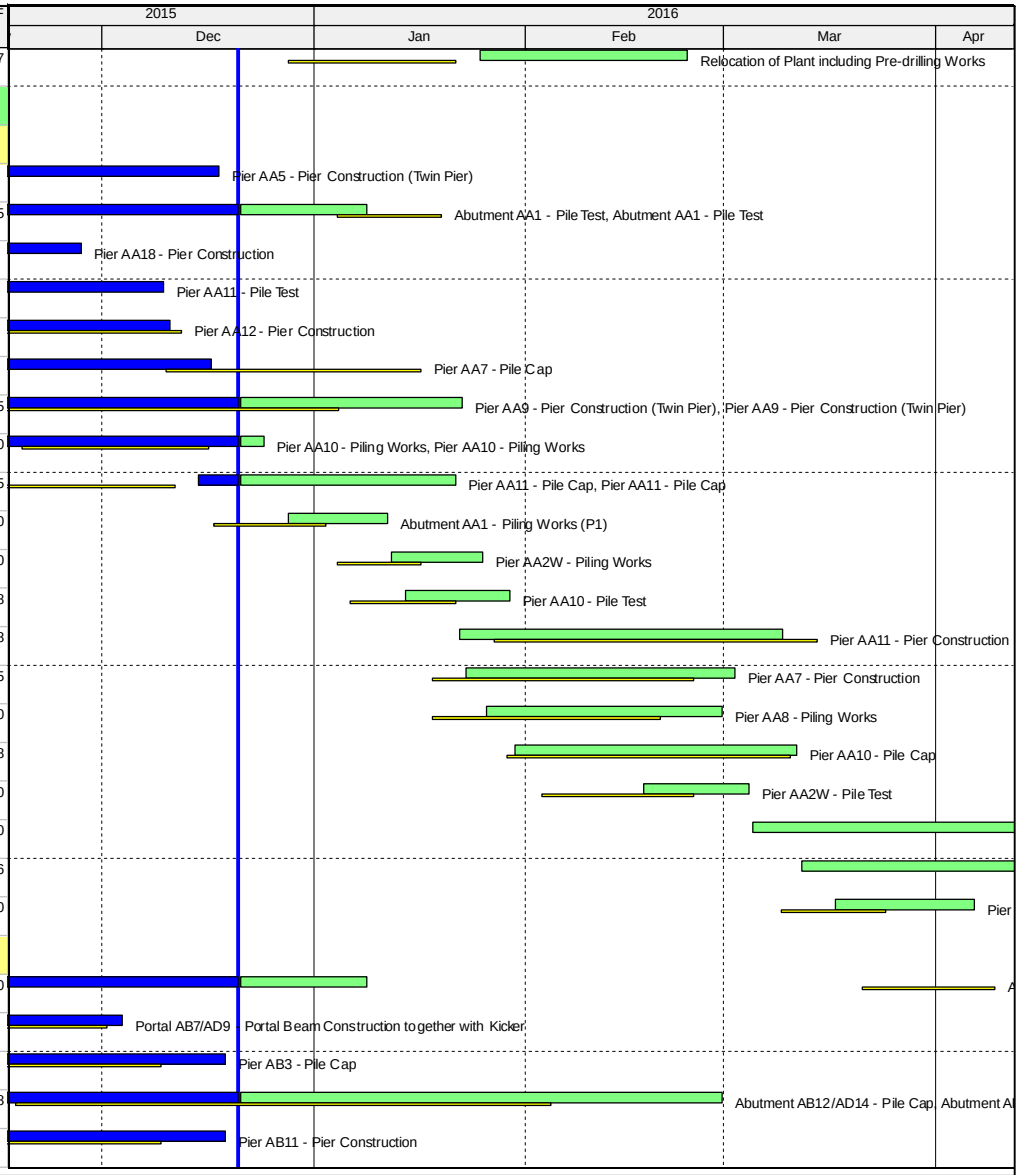
3-Month Rolling Programme

Programme ID: 3MPR029 (Data Date: 21-Dec-15)

3-Month Rolling Programme updated to 2015-12-20

Date	Revision	Checked	Approved
20-Dec-15	Rev.0	SL	

Activity ID	Activity Name	OD	RD	Start	Finish	TF
B-3050	Relocation of Plant including Pre-drilling Works	21	21	25-Jan-16	24-Feb-16	67
Foundation & Pier Construction						
Bridge A						
BA-05-1030	Pier AA5 - Pier Construction (Twin Pier)	27	0	29-Oct-14 A	18-Dec-15 A	
BA-01-1010	Abutment AA1 - Pile Test	14	14	06-May-15 A	08-Jan-16	235
BA-18-1030	Pier AA18 - Pier Construction	56	0	08-May-15 A	28-Nov-15 A	
BA-11-1010	Pier AA11 - Pile Test	14	0	18-Aug-15 A	10-Dec-15 A	
BA-12-1030	Pier AA12 - Pier Construction	35	0	10-Oct-15 A	11-Dec-15 A	
BA-07-1020	Pier AA7 - Pile Cap	30	0	30-Oct-15 A	17-Dec-15 A	
BA-09-1030	Pier AA9 - Pier Construction (Twin Pier)	49	26	07-Nov-15 A	22-Jan-16	35
BA-10-1000	Pier AA10 - Piling Works	24	4	07-Nov-15 A	24-Dec-15	0
BA-11-1020	Pier AA11 - Pile Cap	30	25	15-Dec-15 A	21-Jan-16	25
BA-01-1000b	Abutment AA1 - Piling Works (P1)	12	12	28-Dec-15	11-Jan-16	0
BA-02-1000	Pier AA2W - Piling Works	12	12	12-Jan-16	25-Jan-16	0
BA-10-1010	Pier AA10 - Pile Test	14	14	14-Jan-16	29-Jan-16	18
BA-11-1030	Pier AA11 - Pier Construction	35	35	22-Jan-16	09-Mar-16	38
BA-07-1030	Pier AA7 - Pier Construction	28	28	23-Jan-16	02-Mar-16	35
BA-08-1000	Pier AA8 - Piling Works	24	24	26-Jan-16	29-Feb-16	0
BA-10-1020	Pier AA10 - Pile Cap	30	30	30-Jan-16	11-Mar-16	18
BA-02-1010	Pier AA2W - Pile Test	14	14	18-Feb-16	04-Mar-16	120
BA-02-1020B	Pier AA2W - Pile Cap	30	30	05-Mar-16	13-Apr-16	120
BA-10-1030	Pier AA10 - Pier Construction	30	30	12-Mar-16	20-Apr-16	36
BA-08-1010	Pier AA8 - Pile Test	14	14	17-Mar-16	06-Apr-16	0
Bridge B						
BB-01-1010	Abutment AB1 - Pile Test	14	14	18-Aug-15 A	08-Jan-16	270
BB-07-1040	Portal AB7/AD9 - Portal Beam Construction together with Kicker	60	0	19-Sep-15 A	04-Dec-15 A	
BB-03-1020	Pier AB3 - Pile Cap	30	0	26-Oct-15 A	19-Dec-15 A	
BB-12-1020	Abutment AB12/AD14 - Pile Cap	65	52	28-Oct-15 A	29-Feb-16	18
BB-11-1030	Pier AB11 - Pier Construction	45	0	06-Nov-15 A	19-Dec-15 A	



Actual Work
Remaining Work
Summary Bar
Critical Remaining Work
Milestone
Actual Level of Effort
Project Baseline Bar

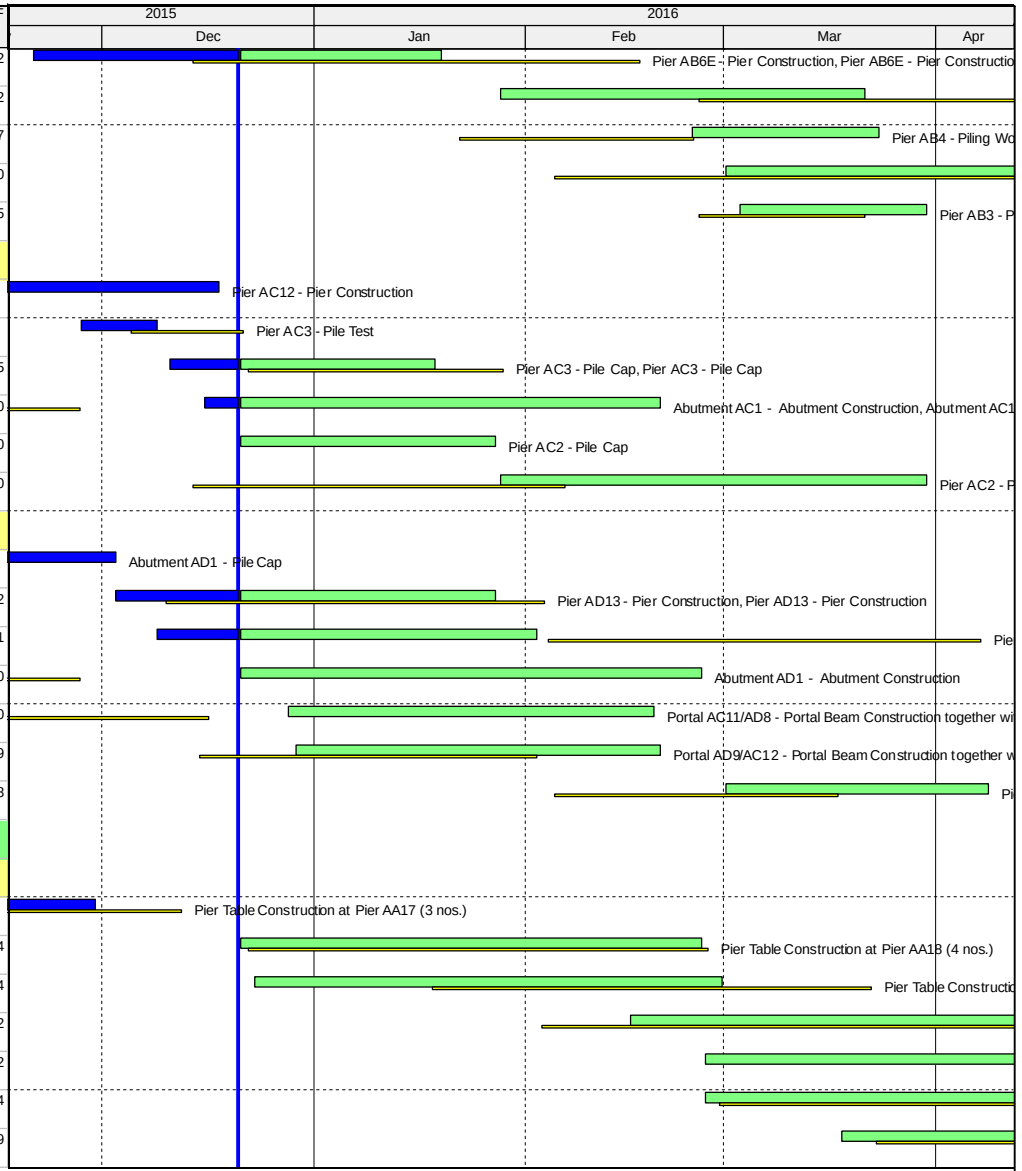
俊和建築工程有限公司
CHUN WO CONSTRUCTION & ENGINEERING CO., LTD.

CEDD Contract No. CV/2012/09
Liantang / Heung Yuen Wai BCP - Site Formation & Infrastructure Works, Contract 3
3-Month Rolling Programme
Programme ID: 3MPR029 (Data Date: 21-Dec-15)
Page 7 of 10

3-Month Rolling Programme updated to 2015-12-20

Date	Revision	Checked	Approved
20-Dec-15	Rev.0	SL	

Activity ID	Activity Name	OD	RD	Start	Finish	TF
BB-06-1030	Pier AB6E - Pier Construction	48	23	21-Nov-15 A	19-Jan-16	22
BB-06-1050	Portal AB6 - Portal Beam Construction together with Kicker	40	40	28-Jan-16	21-Mar-16	22
BB-04-1000	Pier AB4 - Piling Works	24	24	25-Feb-16	23-Mar-16	67
BB-12-1030	Abutment AB12/AD14 - Abutment Construction	75	75	01-Mar-16	02-Jun-16	150
BB-03-1030	Pier AB3 - Pier Construction	21	21	03-Mar-16	30-Mar-16	35
Bridge C						
BC-12-1030	Pier AC12 - Pier Construction	28	0	10-Jun-15 A	18-Dec-15 A	
BC-03-1010	Pier AC3 - Pile Test	14	0	28-Nov-15 A	09-Dec-15 A	
BC-03-1020	Pier AC3 - Pile Cap	30	22	11-Dec-15 A	18-Jan-16	135
BC-01-1030	Abutment AC1 - Abutment Construction	50	45	16-Dec-15 A	20-Feb-16	0
BC-02-1020	Pier AC2 - Pile Cap	30	30	21-Dec-15	27-Jan-16	90
BC-02-1030	Pier AC2 - Pier Construction	45	45	28-Jan-16	30-Mar-16	90
Bridge D						
BD-01-1020	Abutment AD1 - Pile Cap	30	0	04-Nov-15 A	03-Dec-15 A	
BD-13-1030	Pier AD13 - Pier Construction	45	30	03-Dec-15 A	27-Jan-16	92
BD-12-1030	Pier AD12 - Pier Construction	45	35	09-Dec-15 A	02-Feb-16	81
BD-01-1030	Abutment AD1 - Abutment Construction	50	50	21-Dec-15	26-Feb-16	240
BD-08-1040	Portal AC11/AD8 - Portal Beam Construction together with Kicker	40	40	28-Dec-15	19-Feb-16	0
BD-09-1040	Portal AD9/AC12 - Portal Beam Construction together with Kicker	40	40	29-Dec-15	20-Feb-16	19
BD-11-1020A	Pier AD11E - Pile Cap	30	30	01-Mar-16	08-Apr-16	18
Pier Table Construction						
Bridge A						
PA-1170	Pier Table Construction at Pier AA17 (3 nos.)	50	0	17-Oct-15 A	30-Nov-15 A	
PA-1180	Pier Table Construction at Pier AA18 (4 nos.)	50	50	21-Dec-15	26-Feb-16	34
PA-1040	Pier Table Construction at Pier AA4 (3 nos.)	50	50	23-Dec-15	29-Feb-16	64
PA-1050	Pier Table Construction at Pier AA5 (4 nos.)	50	50	16-Feb-16	18-Apr-16	2
PA-1090	Pier Table Construction at Pier AA9 (4 nos.)	50	50	27-Feb-16	29-Apr-16	72
PA-1120	Pier Table Construction at Pier AA12 (3 nos.)	50	50	27-Feb-16	29-Apr-16	34
PA-1110	Pier Table Construction at Pier AA11 (3 nos.)	50	50	18-Mar-16	21-May-16	49



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

- Actual Work
- Remaining Work
- Summary Bar
- Critical Remaining Work
- Milestone
- Actual Level of Effort
- Project Baseline Bar

CEDD Contract No. CV/2012/09

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

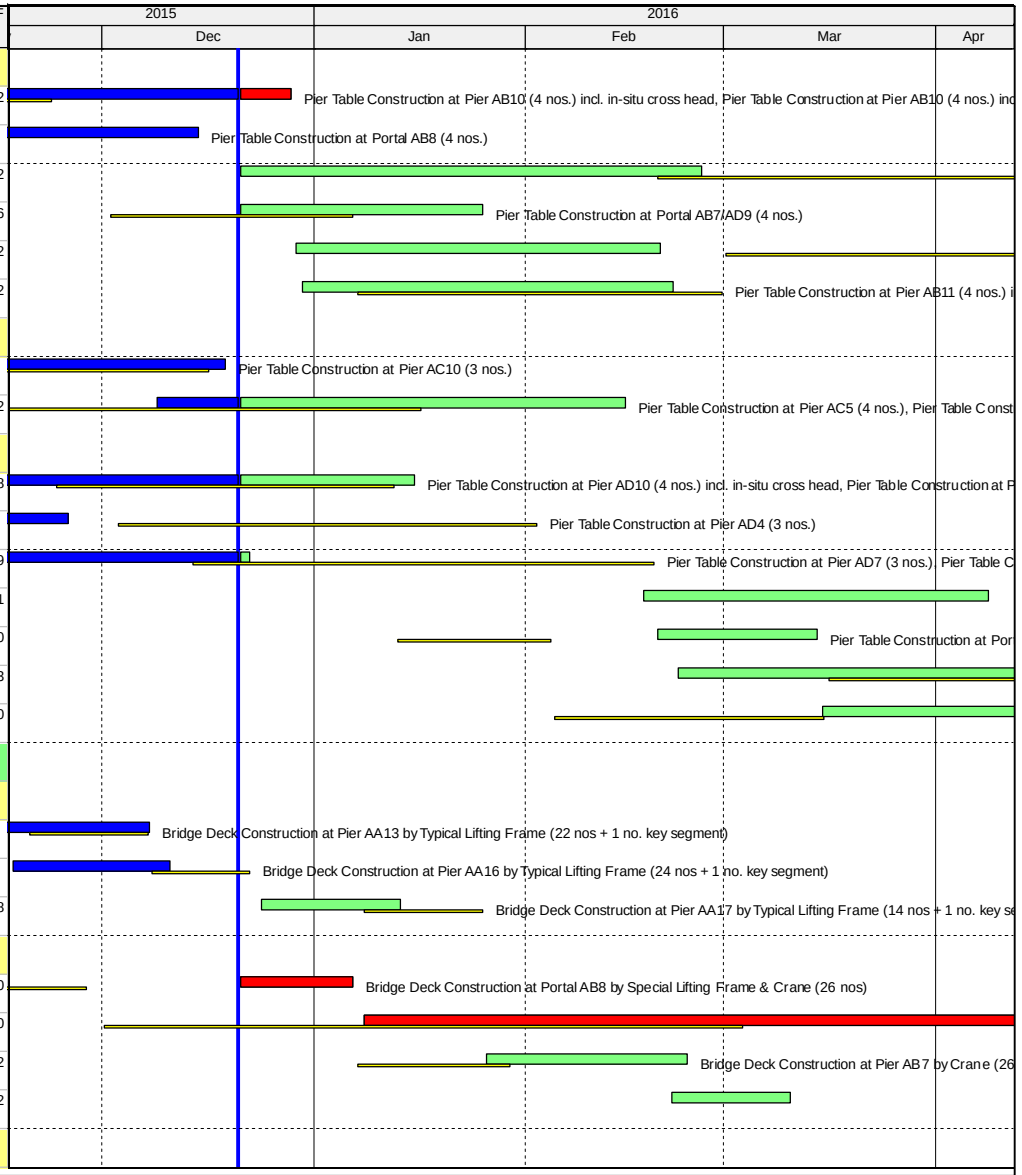
3-Month Rolling Programme

Programme ID: 3MPR029 (Data Date: 21-Dec-15)

3-Month Rolling Programme updated to 2015-12-20

Date	Revision	Checked	Approved
20-Dec-15	Rev.0	SL	

Activity ID	Activity Name	OD	RD	Start	Finish	TF
Bridge B						
PB-1100	Pier Table Construction at Pier AB10 (4 nos.) incl. in-situ cross head	50	5	21-Sep-15 A	28-Dec-15	-22
PB-1080	Pier Table Construction at Portal AB8 (4 nos.)	37	0	08-Oct-15 A	15-Dec-15 A	
PB-1050	Pier Table Construction at Pier AB5 (3 nos.)	50	50	21-Dec-15	26-Feb-16	72
PB-1070	Pier Table Construction at Portal AB7/AD9 (4 nos.)	28	28	21-Dec-15	25-Jan-16	16
PB-1090	Pier Table Construction at Pier AB9 (4 nos.) incl. in-situ cross head	40	40	29-Dec-15	20-Feb-16	272
PB-1110	Pier Table Construction at Pier AB11 (4 nos.) incl. in-situ cross head	40	40	30-Dec-15	22-Feb-16	12
Bridge C						
PC-1100	Pier Table Construction at Pier AC10 (3 nos.)	50	0	17-Nov-15 A	19-Dec-15 A	
PC-1050	Pier Table Construction at Pier AC5 (4 nos.)	50	40	09-Dec-15 A	15-Feb-16	2
Bridge D						
PD-1100	Pier Table Construction at Pier AD10 (4 nos.) incl. in-situ cross head	40	20	06-Oct-15 A	15-Jan-16	48
PD-1040	Pier Table Construction at Pier AD4 (3 nos.)	50	0	22-Oct-15 A	26-Nov-15 A	
PD-1070	Pier Table Construction at Pier AD7 (3 nos.)	50	2	12-Nov-15 A	22-Dec-15	49
PD-1120	Pier Table Construction at Pier AD12 (4 nos.) incl. in-situ cross head	40	40	18-Feb-16	08-Apr-16	81
PD-1080	Pier Table Construction at Portal AC11/AD8 (4 nos.)	20	20	20-Feb-16	14-Mar-16	0
PD-1130	Pier Table Construction at Pier AD13 (4 nos.) incl. in-situ cross head	40	40	23-Feb-16	13-Apr-16	83
PD-1090	Pier Table Construction at Portal AD9/AC12 (4 nos.)	28	28	15-Mar-16	20-Apr-16	0
Viaduct Bridge Segement Erection						
Bridge A						
EA-1130	Bridge Deck Construction at Pier AA13 by Typical Lifting Frame (22 nos + 1 no. key segment)	15	0	14-Nov-15 A	08-Dec-15 A	
EA-1160	Bridge Deck Construction at Pier AA16 by Typical Lifting Frame (24 nos + 1 no. key segment)	13	0	18-Nov-15 A	11-Dec-15 A	
EA-1170	Bridge Deck Construction at Pier AA17 by Typical Lifting Frame (14 nos + 1 no. key segment)	15	15	24-Dec-15	13-Jan-16	8
Bridge B						
EB-1080	Bridge Deck Construction at Portal AB8 by Special Lifting Frame & Crane (26 nos)	12	12	21-Dec-15	06-Jan-16	-30
EB-1100	Bridge Deck Construction at Pier AB10 by Special Lifting Frame (54 nos in which 12 nos above MTRCL Railway)	72	72	08-Jan-16	12-Apr-16	-30
EB-1070	Bridge Deck Construction at Pier AB7 by Crane (26 nos + 2 no. key segment)	20	20	26-Jan-16	24-Feb-16	52
EB-1090	Bridge Deck Construction at Pier AB9 by Crane (36 nos + 2 no. key segment)	16	16	22-Feb-16	10-Mar-16	272
Bridge C						



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

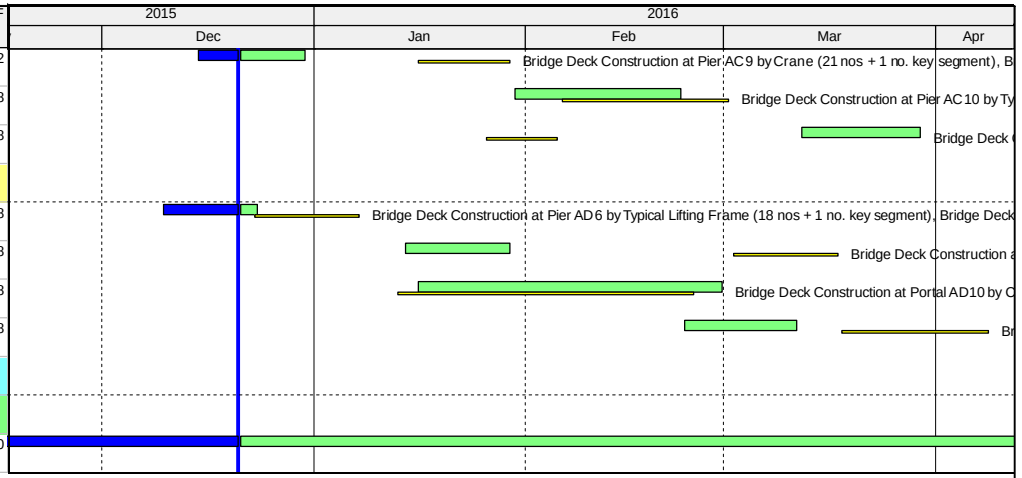
Actual Work
Remaining Work
Summary Bar
Critical Remaining Work
Milestone
Actual Level of Effort
Project Baseline Bar

CEDD Contract No. CV/2012/09
Liantang / Heung Yuen Wai BCP - Site Formation & Infrastructure Works, Contract 3
3-Month Rolling Programme
Programme ID: 3MPR029 (Data Date: 21-Dec-15)
Page 9 of 10

3-Month Rolling Programme updated to 2015-12-20

Date	Revision	Checked	Approved
20-Dec-15	Rev.0	SL	

Activity ID	Activity Name	OD	RD	Start	Finish	TF
EC-1090	Bridge Deck Construction at Pier AC9 by Crane (21 nos + 1 no. key segment)	12	7	15-Dec-15 A	30-Dec-15	162
EC-1100	Bridge Deck Construction at Pier AC10 by Typical Lifting Frame (10 nos + 1 no. key segment)	15	15	30-Jan-16	23-Feb-16	8
EC-1050	Bridge Deck Construction at Pier AC5 by Typical Lifting Frame (20 nos + 2 no. key segment + 3 no. of AC6)	12	12	12-Mar-16	29-Mar-16	8
Bridge D						
ED-1060	Bridge Deck Construction at Pier AD6 by Typical Lifting Frame (18 nos + 1 no. key segment)	11	3	10-Dec-15 A	23-Dec-15	8
ED-1040	Bridge Deck Construction at Pier AD4 by Typical Lifting Frame (14 nos + 2 no. key segment)	14	14	14-Jan-16	29-Jan-16	8
ED-1100	Bridge Deck Construction at Portal AD10 by Crane (52 nos)	32	32	16-Jan-16	29-Feb-16	48
ED-1070	Bridge Deck Construction at Pier AD7 by Typical Lifting Frame (26 nos + 1 no. key segment)	15	15	24-Feb-16	11-Mar-16	8
Section VI - Works in Portion FH9 (KD-6A)						
Major Works						
S6-2000*	Construction of Abutment AB12/AD14 (including Piling, Pile Cap & Abutment construction)	276	127	06-Feb-15 A	02-Jun-16	150



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

Actual Work
Remaining Work
Summary Bar
Critical Remaining Work
Milestone
Actual Level of Effort
Project Baseline Bar

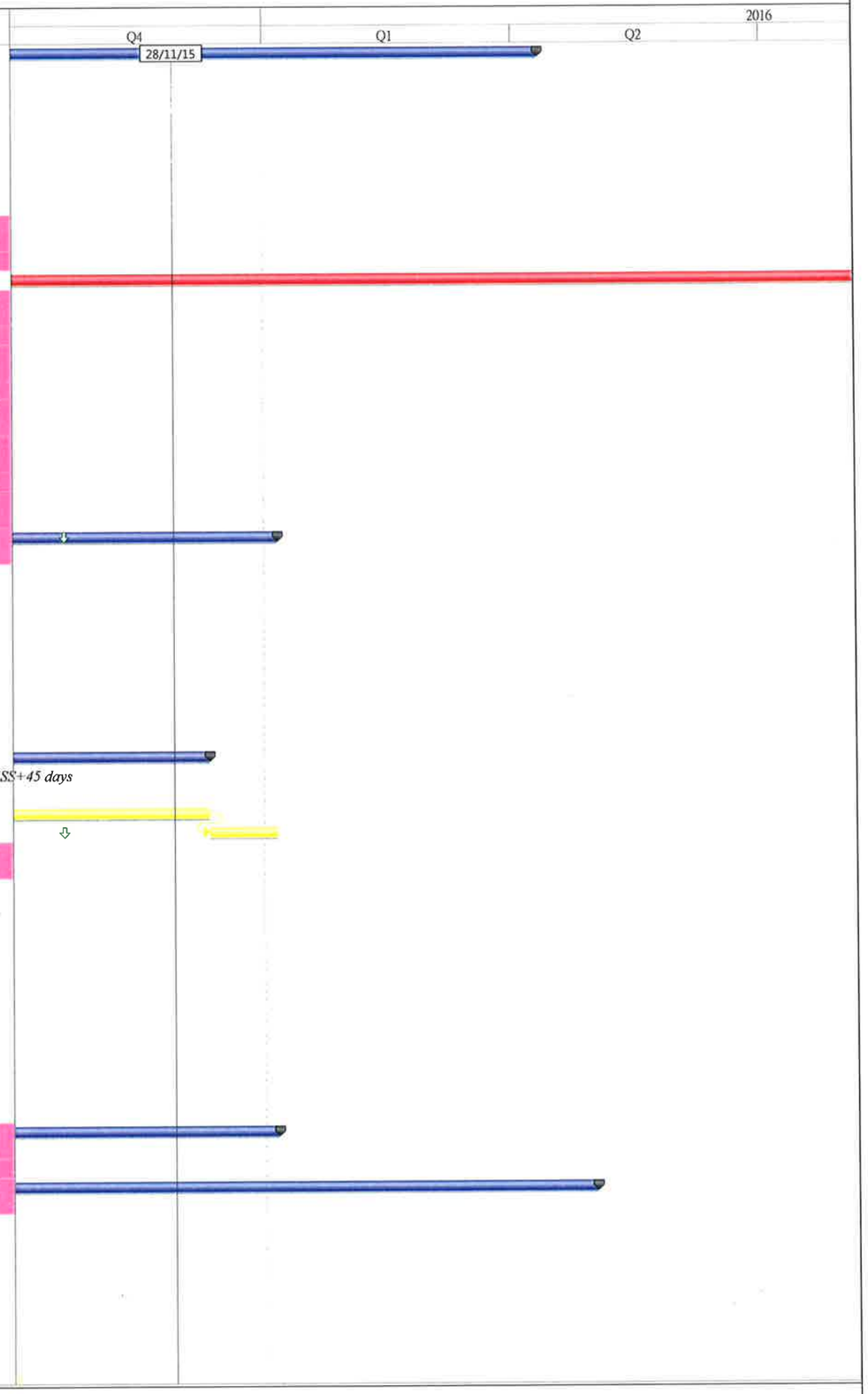
CEDD Contract No. CV/2012/09
Liantang / Heung Yuen Wai BCP - Site Formation & Infrastructure Works, Contract 3
3-Month Rolling Programme
Programme ID: 3MPR029 (Data Date: 21-Dec-15)
Page 10 of 10

3-Month Rolling Programme updated to 2015-12-20

Date	Revision	Checked	Approved
20-Dec-15	Rev.0	SL	

Contract 5

ID	WBS	Task Name	Duration	Start	Finish	Predecessors
1	1	**Key Dates**	1110 days	Thu 28/3/13	Sun 10/4/16	
47	2	**Preliminaries and Statuary / Contractual Submissions**	424 days	Thu 11/4/13	Mon 9/6/14	4
48	2.1	**Site Establishment**	399 days	Thu 11/4/13	Thu 15/5/14	
53	2.2	**Applications to Government Department**	89 days	Fri 12/4/13	Tue 9/7/13	
58	2.3	**Temporary Traffic Arrangement (TTA) Scheme for temp. LMH Rd**	131 days	Fri 12/4/13	Tue 20/8/13	
63	2.4	**Liaison with Utility Undertakers**	363 days	Fri 12/4/13	Wed 9/4/14	
66	2.5	**Environmental Baseline & Impact Monitoring**	132 days	Thu 11/4/13	Wed 21/8/13	
77	2.6	General Site Clearance	424 days	Fri 12/4/13	Mon 9/6/14	5SS
78	3	**Stage of the Works**	180 days	Thu 11/4/13	Mon 7/10/13	
79	3.1	**Stage I of the Works - Temporary vehicular bridge B and temporary Lin Ma Hang Road**	179 days	Fri 12/4/13	Mon 7/10/13	4
90	3.2	**Stage II of the Works - Temporary ArchSD Depot (LMH2)**	78 days	Thu 11/4/13	Thu 27/6/13	
94	4	**Section of the Works**	1511 days	Fri 12/4/13	Wed 31/5/17	
95	4.1	**Section I of the Works - Ground Investigation field works (Drg. 7101A-7111A)**	251 days	Thu 30/5/13	Tue 4/2/14	74SS+13 days
100	4.2	**Section II of the Works - All laboratory tests for Section I**	188 days	Sat 31/8/13	Thu 6/3/14	97
105	4.3	**Section III of the Works - Site formation works for Portions RS1, RS2 & RS3 (seek for certificate of completion in letter ref. SRJV/W47/SO/J5/1308/00416 dated 23/8/2013)**	89 days	Sun 12/5/13	Thu 8/8/13	24,25,26
111	4.4	**Section IV of the Works - Village house within portion RS4 - EOT3 completion 15/5/2014**	399 days	Fri 12/4/13	Thu 15/5/14	4
123	4.5	**Section V of the Works-All works within portion RS4 exclude Section IV - EOT8 completion 28/4/2015**	747 days	Fri 12/4/13	Tue 28/4/15	4
140	4.6	**Section VII of the Works - All works within Area CRD**	249 days	Mon 9/9/13	Thu 15/5/14	8
177	4.7	**Section VIII of the Works - All works within Area BCPA - EOT6 completion 2/1/2015**	571 days	Tue 11/6/13	Fri 2/1/15	6,7,18
211	4.8	**Section IX of the Works - All works within Area BCPB - EOTO11 completion 5 January 2016**	747 days	Fri 20/12/13	Tue 5/1/16	7
212	4.8.1	**Claim No. 009 - Delays due to Delayed Possession of Portion BCP4 of the Site - Orginal 7/3/2014 and possessed on 25/9/2014**	0 days	Fri 26/9/14	Fri 26/9/14	181
213	4.8.2	**Submission for demolition of existing building structures**	37 days	Fri 20/12/13	Sat 25/1/14	
214	4.8.3	**Approval of submission for demolish existing building structures**	41 days	Sun 26/1/14	Fri 7/3/14	213
215	4.8.4	**Demolition of existing building structures UPON instruction (included Asbestos Investigation, Report & Asbestos Abatement Plan)**	76 days	Fri 3/10/14	Wed 17/12/14	212FS+7 days,214
216	4.8.5	**Tree felling/removal works and tree transplanting works at BCP4 (include tree survey etc)**	139 days	Fri 26/9/14	Wed 11/2/15	738SS
217	4.8.6	**Claim No. 007 - Delay due to Non-Possession of Parts of Portion BCP3 due to Resistant by Local Resident (NOT YET)**	0 days	Wed 14/1/15	Wed 14/1/15	181
218	4.8.7	**Site formation works**	405 days	Sun 2/11/14	Fri 11/12/15	
219	*4.8.7.1*	*site formation works (surrounding areas B1-3,B5-6, B9)*	*200 days*	*Sat 7/3/15*	*Tue 22/9/15*	*217FS+52 days,215SS+45 days*
220	4.8.7.2	site formation works (area BCP4 - B4,7,8,10-B17)	330 days	Sun 2/11/14	Sun 27/9/15	215FS-46 days
221	*4.8.7.3*	*site formation works (B18-B22)*	*280 days*	*Sat 7/3/15*	*Fri 11/12/15*	*219SS*
222	*4.8.8*	*chain link fence (Drg.1002C, 1032B, 1033B)*	*25 days*	*Sat 12/12/15*	*Tue 5/1/16*	*221*
223	4.9	**Section X of the Works - All works within Area BCPC**	454 days	Thu 5/6/14	Tue 1/9/15	8
224	4.9.1	**ISSUED EOT5**	125 days	Thu 5/6/14	Tue 7/10/14	
225	4.9.2	**Claim No. 013 - VO No. 028 - Site Possession from DC/2011/06 (Portion A) (from Area C8 to D2)**	0 days	Tue 16/9/14	Tue 16/9/14	180
226	4.9.3	**Received Variation Order No. 035 for CLP Substation**	0 days	Mon 21/7/14	Mon 21/7/14	
227	4.9.4	**Filling Works, Drainage & Irrigation System**	21 days	Tue 16/9/14	Mon 6/10/14	
229	4.9.5	**South West Works for CLP Sub-Station (VO No. 035) (Area C1, C3, C4, C5, C6)**	64 days	Mon 4/8/14	Mon 6/10/14	
233	4.9.6	Handing over CLP Substation Area	0 days	Tue 7/10/14	Tue 7/10/14	228FS+1 day
234	4.9.7	**VO 073 for Secondary Boundary Fencing extend to BCPC**	125 days	Thu 30/4/15	Tue 1/9/15	
235	4.9.7.1	Handing over from CLP for the extended area	0 days	Thu 30/4/15	Thu 30/4/15	
236	*4.9.7.2*	*Construction of Retaining Wall 2A*	*41 days*	*Sat 2/5/15*	*Thu 11/6/15*	*235FS+2 days*
237	4.9.7.3	Construction of soil cement / general fill slope adjacent to CLP Substation	90 days	Sat 2/5/15	Thu 30/7/15	235FS+2 days
238	4.9.7.4	Secondary Boundary Fencing ChA+125 to ChA+250 (Bay 17 to 32)	33 days	Fri 31/7/15	Tue 1/9/15	237
239	4.10	**Section XI of the Works - All works within Area BCPD - EOTO11 completion 5 January 2016**	541 days	Mon 14/7/14	Tue 5/1/16	
322	4.11	**Section XII of the Works - All works within Area LMH**	635 days	Thu 22/8/13	Mon 18/5/15	74
491	4.12	**Section XIII of the Works - Works not covered in any other Sections**	983 days	Thu 22/8/13	Sat 30/4/16	74
492	*4.12.1*	*Submissions*	*70 days*	*Thu 22/8/13*	*Wed 30/10/13*	
493	*4.12.2*	*Approval of Submissions*	*68 days*	*Mon 16/9/13*	*Fri 22/11/13*	*492SS+25 days*
494	*4.12.3*	*VO.080 Additional Footpath adjacent to the Eastern Side of Chuk Yuen Village Re-site Area*	*1 day*	*Tue 5/5/15*	*Tue 5/5/15*	
495	*4.12.4*	*Submissions*	*14 days*	*Wed 6/5/15*	*Tue 19/5/15*	*494*
496	*4.12.5*	*Approval of Submissions*	*7 days*	*Wed 20/5/15*	*Tue 26/5/15*	*495*
497	*4.12.6*	*Temporarty works and excavation*	*20 days*	*Wed 27/5/15*	*Mon 15/6/15*	*496*
498	*4.12.7*	*Base slab*	*50 days*	*Tue 16/6/15*	*Tue 4/8/15*	*496FS+20 days*
499	*4.12.8*	*Wall Stem*	*40 days*	*Thu 20/8/15*	*Mon 28/9/15*	*498FS+15 days*

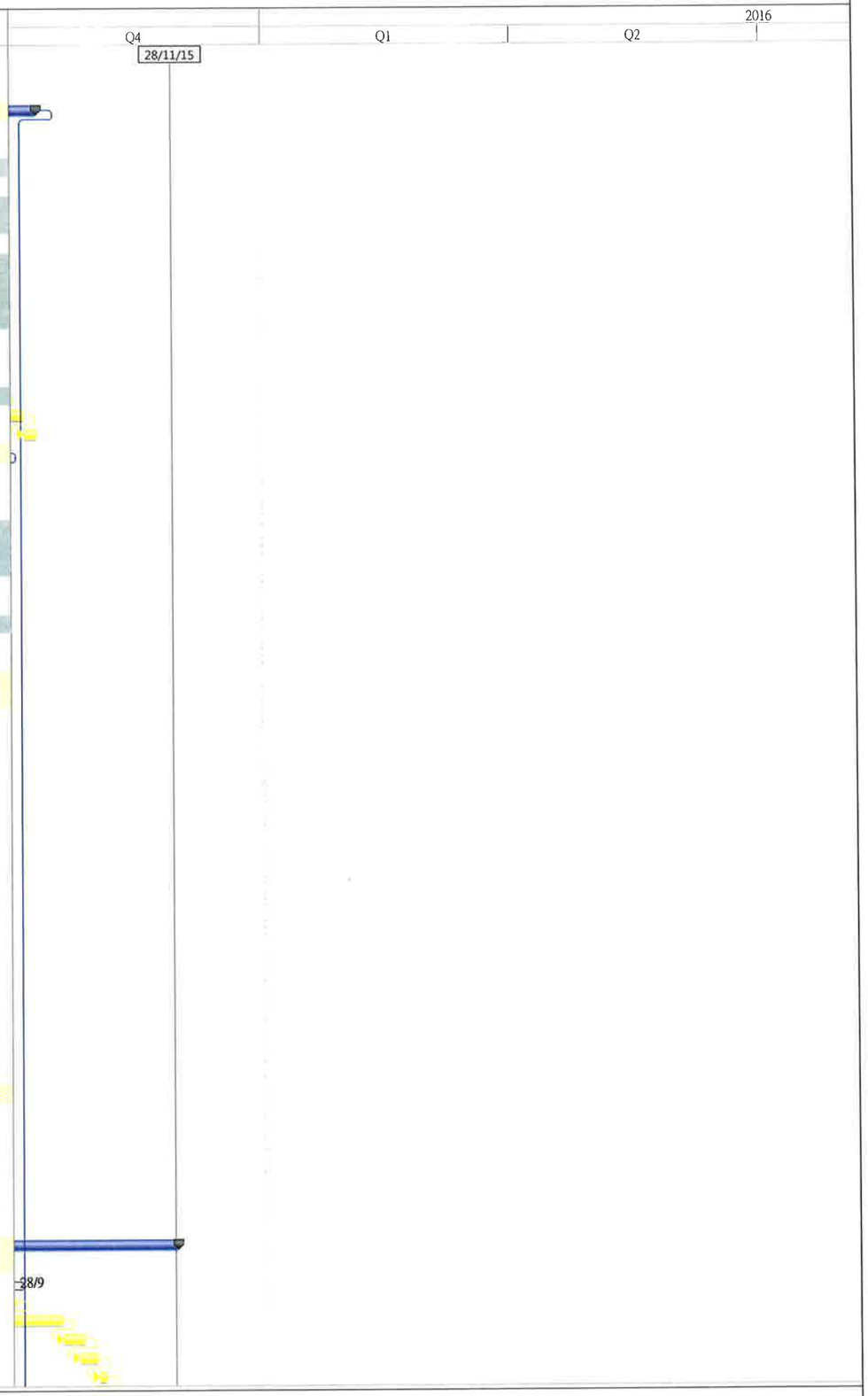


Revision 1
Mon 28/12/15

Task | Milestone | Project Summary | Critical Split | Deadline
Split | Summary | Critical | Progress

ID	WBS	Task Name	Duration	Start	Finish	Predecessors
500	4.12.9	Backfilling	40 days	Tue 29/9/15	Sat 7/11/15	499
501	4.12.10	DN150 watermain & Utilities Laying	20 days	Wed 18/11/15	Mon 7/12/15	500FS+10 days
502	4.12.11	Surfacing & U-Channel	25 days	Tue 8/12/15	Fri 1/1/16	501
503	4.12.12	Reinstatement of Gabion	14 days	Sat 2/1/16	Fri 15/1/16	502
504	4.12.13	Type 2 Railing	4 days	Sat 2/1/16	Tue 5/1/16	502
505	**4.12.14**	**Temporary Traffic Arrangement (TTA) Scheme for Works at existing LMH Rd**	**92 days**	**Fri 23/8/13**	**Fri 22/11/13**	**492SS+1 day**
509	**4.12.15**	**Lin Ma Hang Road Widening Section**	**920 days**	**Thu 24/10/13**	**Sat 30/4/16**	
510	4.12.15.1	PVO - Additional U-Channel along both Side of existing LMH Road 600m x 2) (Advanced works commenced)	91 days	Wed 7/10/15	Tue 5/1/16	
511	**4.12.15.2**	**VO.061 Additional Rising Main at LMH Road**	**0 days**	**Wed 31/12/14**	**Wed 31/12/14**	
512	**4.12.15.3**	**place order for HDPE pipes**	**0 days**	**Tue 6/1/15**	**Tue 6/1/15**	**511FS+2 days**
513	***4.12.15.4***	***arrival of HDPE pipes***	***80 days***	***Tue 6/1/15***	***Thu 26/3/15***	***512***
514	**4.12.15.5**	**RECEIVE VO 053 ADDITIONAL CROSS ROAD DUCTS FOR EXISTING IRRIGATION PIPES**	**0 days**	**Tue 7/10/14**	**Tue 7/10/14**	
515	**4.12.15.6**	**RECEIVE VO 062 CABLE DUCTS LAYING FOR PUBLIC LIGHTING SYSTEM AT LIN MA HANG ROAD**	**0 days**	**Tue 14/10/14**	**Tue 14/10/14**	
516	**4.12.15.7**	**1 Works from chainage 190 to chainage 380 (west side carriageway & footpath)**	**231 days**	**Sun 24/8/14**	**Sat 11/4/15**	
517	4.12.15.7.1	TTA for ch 310-380(west)	0 days	**Sun 24/8/14**	Sun 24/8/14	
518	4.12.15.7.2	earthwork to lay drainage & waterwork	21 days	Sun 24/8/14	Sat 13/9/14	517
519	4.12.15.7.3	drainage & waterwork + backfill for CLP	45 days	Sun 14/9/14	Tue 28/10/14	518
520	***4.12.15.7.4***	***VO053 - crossing no. 1(whole), 2 (west)***	***18 days***	***Wed 29/10/14***	***Sat 15/11/14***	***519,514***
521	***4.12.15.7.5***	***UU for ch 190-380 (132kV,11kV,LV)***	***19 days***	***Sun 16/11/14***	***Thu 4/12/14***	***520***
522	4.12.15.7.6	filling works to formation of road (include SRT98%)	7 days	Fri 5/12/14	Thu 11/12/14	521
523	4.12.15.7.7	street lighting drawpits & crossroads	7 days	Fri 12/12/14	Thu 18/12/14	522
524	4.12.15.7.8	kerb bedding, laying & backing before bituminous material	9 days	Fri 19/12/14	Sat 27/12/14	523
525	4.12.15.7.9	filling works to formation of footpath	4 days	Sun 28/12/14	Wed 31/12/14	524
526	***4.12.15.7.10***	***UU for CLP (lighting)***	***5 days***	***Thu 1/1/15***	***Mon 5/1/15***	***525***
527	***4.12.15.7.11***	***UU for ch 190-380 (PCCW)***	***7 days***	***Tue 6/1/15***	***Mon 12/1/15***	***526***
528	4.12.15.7.12	irrigation system	7 days	Tue 13/1/15	Mon 19/1/15	527
529	4.12.15.7.13	preparation works to formation of footpath	3 days	Mon 19/1/15	Wed 21/1/15	528FS-1 day
530	4.12.15.7.14	footpath paving	9 days	Thu 22/1/15	Fri 30/1/15	529
531	***4.12.15.7.15***	***VO.061 for renewal of rising main***	***6 days***	***Fri 27/3/15***	***Wed 1/4/15***	***513***
532	4.12.15.7.16	sub-base laying for road	5 days	Thu 2/4/15	Mon 6/4/15	531
533	***4.12.15.7.17***	***AC - lay DBM & base course***	***5 days***	***Tue 7/4/15***	**Sat 11/4/15**	***524,532***
534	**4.12.15.8**	**1 Works from chainage 380 to chainage 580 (west side carriageway & footpath)**	**402 days**	**Fri 22/11/13**	**Mon 29/12/14**	**505**
535	4.12.15.8.1	TTA for ch 380-580(west)	0 days	**Fri 22/11/13**	Fri 22/11/13	
536	4.12.15.8.2	watermain (include issue of alignment and laying)	120 days	Sat 23/11/13	Sat 22/3/14	535
537	4.12.15.8.3	drainage (pipe, manholes & gullies)	155 days	Sun 23/3/14	Sun 24/8/14	536
538	**4.12.15.8.4**	**Received Variation Order Nos. 040 & 042**	**0 days**	**Mon 28/4/14**	**Mon 28/4/14**	
539	**4.12.15.8.5**	**construct DN450mm pipe with concrete surround**	**28 days**	Mon 12/5/14	Sun 8/6/14	**537SS+50 days,538FS+14 days**
540	4.12.15.8.5.1	low stream pipe & catchpit at western side	28 days	Mon 12/5/14	Sun 8/6/14	
541	**4.12.15.8.6**	**construct 1900x950 box culvert with manholes SMH8052A & B**	**49 days**	Mon 9/6/14	Sun 27/7/14	**538,540**
542	4.12.15.8.6.1	support existing DN150mm sewer pipe & watermain	7 days	Mon 9/6/14	Sun 15/6/14	
543	4.12.15.8.6.2	construct box culvert	14 days	Mon 16/6/14	Sun 29/6/14	542
544	4.12.15.8.6.3	construct manholes	28 days	Mon 30/6/14	Sun 27/7/14	543
545	4.12.15.8.7	found existing cables affected construction of gullies & discuss with CLP	18 days	Sat 26/7/14	Tue 12/8/14	537FF-12 days,544FS-2 days
546	4.12.15.8.8	complete preparation work & fill footpath for 132kV, 11kV & LV	8 days	Wed 13/8/14	Wed 20/8/14	545
547	**4.12.15.8.9**	**UU - 132kV+11kV & LV**	**35 days**	**Thu 21/8/14**	**Wed 24/9/14**	**546**
548	4.12.15.8.10	temporary connection of cables	3 days	Thu 25/9/14	Sat 27/9/14	547
549	**4.12.15.8.11**	**960x650 box culvert (low stream & west catchpit)**	**7 days**	Sun 28/9/14	Sat 4/10/14	**548**
551	4.12.15.8.12	construct outstanding drainage & gullies	7 days	Wed 1/10/14	Tue 7/10/14	550FS-4 days
552	4.12.15.8.13	filling work to formation of road (include SRT98%)	5 days	Wed 8/10/14	Sun 12/10/14	551
553	***4.12.15.8.14***	***VO053 - crossing no. 3, 4 (west)***	***10 days***	**Mon 13/10/14**	**Wed 22/10/14**	***514FS+6 days***
554	4.12.15.8.15	complete filling work to formation of road (include SRT98%)	5 days	Thu 23/10/14	Mon 27/10/14	553
555	4.12.15.8.16	street lighting drawpits & crossing at ch 523	4 days	Mon 27/10/14	Thu 30/10/14	554FS-1 day
556	***4.12.15.8.17***	***UU for CLP (lighting)***	***5 days***	**Fri 31/10/14**	**Tue 4/11/14**	***555***
557	4.12.15.8.18	sub-base laying for road	4 days	Wed 5/11/14	Sat 8/11/14	556
558	4.12.15.8.19	kerb bedding, laying & backing before bituminous material	12 days	Sat 8/11/14	Wed 19/11/14	557FS-1 day
559	4.12.15.8.20	filling works to formation of footpath	5 days	Thu 20/11/14	Mon 24/11/14	558
560	***4.12.15.8.21***	***UU for ch 380-580 (PCCW)***	***14 days***	**Tue 25/11/14**	**Mon 8/12/14**	***559***
561	4.12.15.8.22	irrigation system	4 days	Tue 9/12/14	Fri 12/12/14	560
562	4.12.15.8.23	preparation works to formation of footpath	3 days	Sat 13/12/14	Mon 15/12/14	561

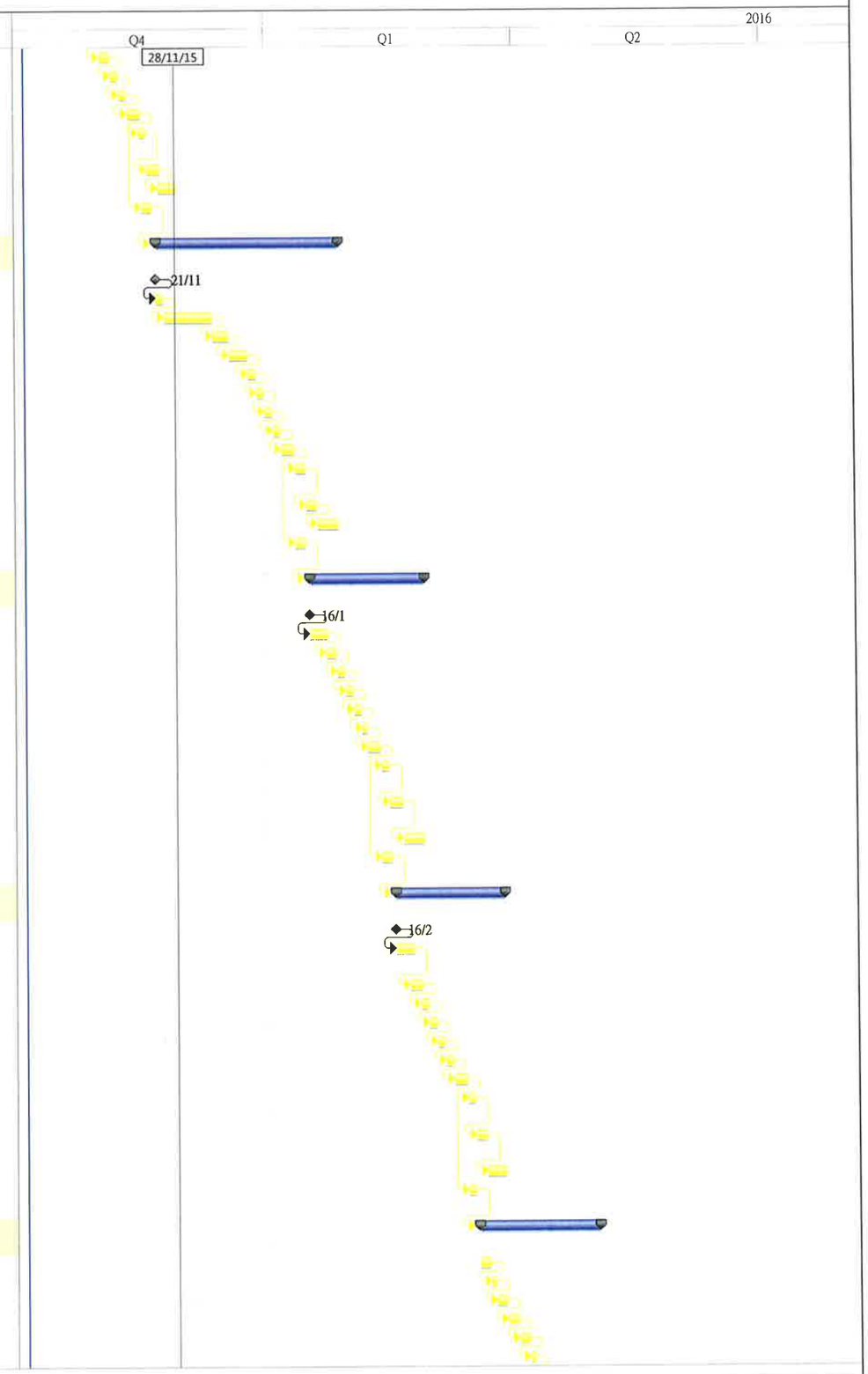
ID	WBS	Task Name	Duration	Start	Finish	Predecessors
563	*4.12.15.8.24*	*footpath paving*	*14 days*	Tue 16/12/14	Mon 29/12/14	*562*
564	***4.12.15.8.25***	***AC - lay DBM & base course***	***5 days***	**Thu 20/11/14**	**Mon 24/11/14**	***558***
565	**4.12.15.9**	**2 Works from ch 380-580 (east side carriageway)**	**318 days**	**Wed 26/11/14**	**Sat 10/10/15**	**564FS+2 days**
566	4.12.15.9.1	TTA for ch 380-580 (east)	0 days	**Wed 26/11/14**	Wed 26/11/14	
567	4.12.15.9.2	remove existing pavement	4 days	*Thu 27/11/14*	*Sun 30/11/14*	566
568	4.12.15.9.3	PVO: 2 nos. U-Channel Drainage Crossing	14 days	Mon 1/12/14	Sun 14/12/14	567
569	***4.12.15.9.4***	***VO.061 for rising main***	***40 days***	***Fri 27/3/15***	***Tue 5/5/15***	***513,568***
570	4.12.15.9.5	Waterworks - 150T FH, 150T Irrigation & 150T	14 days	Wed 6/5/15	Tue 19/5/15	569
571	4.12.15.9.6	VO053 - crossing no. 2, 3, 4, 5 (east)	20 days	Wed 13/5/15	Mon 1/6/15	570FS-7 days
572	***4.12.15.9.7***	***PVO - Revised Design of VO.061 for Rising Mains***	***40 days***	***Fri 19/6/15***	***Tue 28/7/15***	
573	*4.12.15.9.8*	***Re-construction: VO.061 for Rising Mains*	*30 days*	*Wed 29/7/15*	*Thu 27/8/15*	*572*
574	4.12.15.9.9	**Re-construction: Waterworks - 150T FH, 150T Irrigation & 150T	10 days	Fri 28/8/15	Sun 6/9/15	573
575	***4.12.15.9.10***	*****Re-construction: RVO053 - crossing no. 2, 3, 4, 5 (east)***	***10 days***	***Mon 31/8/15***	***Wed 9/9/15***	***574FS-7 days***
576	4.12.15.9.11	**Re-construction: PVO: 2 nos. U-Channel Drainage Crossing	10 days	Fri 28/8/15	Sun 6/9/15	573
577	*4.12.15.9.12*	middle stream box culvert 960x650	*14 days*	*Mon 31/8/15*	*Sun 13/9/15*	*576FS-7 days*
578	*4.12.15.9.13*	middle stream DN450mm pipe	*12 days*	*Mon 7/9/15*	*Fri 18/9/15*	*577FS-7 days*
579	*4.12.15.9.14*	street light crossing at ch 523	*4 days*	*Sat 19/9/15*	*Tue 22/9/15*	*575,578*
580	4.12.15.9.15	SRT Formation level	5 days	Wed 23/9/15	Sun 27/9/15	579
581	*4.12.15.9.16*	sub-base & east kerbing	*8 days*	*Mon 28/9/15*	*Mon 5/10/15*	*575,580*
582	***4.12.15.9.17***	***AC - lay DBM & base course***	***5 days***	***Tue 6/10/15***	**Sat 10/10/15**	***581***
583	**4.12.15.10**	**3 Works from ch 190-380 (east side carriageway)**	**60 days**	**Wed 29/7/15**	**Sat 26/9/15**	**516FS+2 days**
584	4.12.15.10.1	TTA for ch 190-380 (east)	0 days	**Wed 29/7/15**	Wed 29/7/15	
585	*4.12.15.10.2*	remove existing pavement	*4 days*	*Wed 29/7/15*	*Sat 1/8/15*	*584*
586	*4.12.15.10.3*	*VO.061 for rising main*	*25 days*	*Sun 2/8/15*	*Wed 26/8/15*	*585*
587	4.12.15.10.4	Waterworks - 150T FH, 150T x 2	14 days	Thu 27/8/15	Wed 9/9/15	586
588	4.12.15.10.5	RVO053 - crossing no. 1 (east)	6 days	Mon 7/9/15	Sat 12/9/15	587FS-3 days
589	4.12.15.10.6	PVO: 2 nos. U-Channel Drainage Crossing	10 days	Thu 27/8/15	Sat 5/9/15	586
590	*4.12.15.10.7*	street light crossings at ch 287, 350	*4 days*	*Thu 3/9/15*	*Sun 6/9/15*	*589FS-3 days*
591	*4.12.15.10.8*	PCCW crossings at ch 350	2 days	*Sat 5/9/15*	*Sun 6/9/15*	590FF
592	4.12.15.10.9	SRT Formation level	5 days	Mon 7/9/15	Fri 11/9/15	591
593	*4.12.15.10.10*	sub-base & east kerbing	*10 days*	*Sat 12/9/15*	*Mon 21/9/15*	*590,592*
594	**4.12.15.10.11**	**AC - lay DBM & base course**	**5 days**	**Tue 22/9/15**	**Sat 26/9/15**	**593**
595	**4.12.15.11**	**2,3,7 Works from chainage 580 to chainage 785 (west side carriageway & footpath)**	**265 days**	**Sun 5/10/14**	**Fri 26/6/15**	
596	**4.12.15.11.1**	**UU for ch 580-785 (132kV,11kV,LV)**	**21 days**	**Sun 5/10/14**	**Sat 25/10/14**	**549**
597	*4.12.15.11.2*	*VO.091 Water Mains Diversion*	50 days	Fri 8/5/15	Fri 26/6/15	
598	4.12.15.11.3	TTA for ch 580-785(west)	0 days	**Wed 26/11/14**	Wed 26/11/14	565SS
599	*4.12.15.11.4*	*earthwork to lay drainage & waterwork*	*10 days*	*Thu 27/11/14*	*Sat 6/12/14*	*598*
600	*4.12.15.11.5*	*drainage & waterwork*	*120 days*	*Sun 7/12/14*	*Sun 5/4/15*	*599*
601	***4.12.15.11.6***	***VO053 - crossing no. 5, 6, 7&8 & Ducts along ch613-700 (west)***	***14 days***	***Mon 6/4/15***	***Sun 19/4/15***	***600***
602	*4.12.15.11.7*	*filling works to formation of road (include SRT98%)*	*7 days*	*Mon 20/4/15*	*Sun 26/4/15*	*601*
603	*4.12.15.11.8*	*street lighting drawpits & crossings ch760,785*	*5 days*	*Mon 27/4/15*	*Fri 1/5/15*	*602*
604	*4.12.15.11.9*	*sub-base laying for road*	*5 days*	*Sat 2/5/15*	*Wed 6/5/15*	*603*
605	*4.12.15.11.10*	*kerb bedding, laying & backing before bituminous material*	*9 days*	*Thu 7/5/15*	*Fri 15/5/15*	*604*
606	*4.12.15.11.11*	*filling works to formation of footpath*	*4 days*	*Sat 16/5/15*	*Tue 19/5/15*	*605*
607	***4.12.15.11.12***	***UU for CLP (lighting)***	***5 days***	***Wed 20/5/15***	***Sun 24/5/15***	***606***
608	***4.12.15.11.13***	***UU for ch 580-785 (PCCW)***	***14 days***	***Mon 25/5/15***	***Sun 7/6/15***	***606,607***
609	*4.12.15.11.14*	*irrigation system*	*5 days*	*Mon 8/6/15*	*Fri 12/6/15*	*608*
610	*4.12.15.11.15*	*preparation works to formation of footpath*	*3 days*	*Sat 13/6/15*	*Mon 15/6/15*	*609*
611	*4.12.15.11.16*	*footpath paving*	*7 days*	*Tue 16/6/15*	*Mon 22/6/15*	*610*
612	***4.12.15.11.17***	***AC - lay DBM & base course***	***5 days***	***Sat 16/5/15***	**Wed 20/5/15**	***605***
613	**4.12.15.12**	**4,5,6 Works from ch 580-785 (east side carriageway)**	**58 days**	**Fri 22/5/15**	**Sun 19/7/15**	**612FS+2 days**
614	4.12.15.12.1	TTA for ch 580-785 (east)	0 days	**Fri 22/5/15**	Fri 22/5/15	
615	4.12.15.12.2	remove existing pavement	5 days	Sat 23/5/15	Wed 27/5/15	614
616	**4.12.15.12.3**	**VO.061 for rising main**	**20 days**	**Thu 28/5/15**	**Tue 16/6/15**	**615**
617	**4.12.15.12.4**	**VO053 - crossing no. 5, 6, 7&8 (east)**	**14 days**	**Fri 12/6/15**	**Thu 25/6/15**	**616FS-5 days**
618	4.12.15.12.5	street lighting crossings at ch 760, 785	7 days	Wed 24/6/15	Tue 30/6/15	617FS-2 days
619	4.12.15.12.6	sub-base & east kerbing	14 days	Wed 1/7/15	Tue 14/7/15	618
620	**4.12.15.12.7**	**AC - lay DBM & base course**	**5 days**	**Wed 15/7/15**	**Sun 19/7/15**	**619**
621	**4.12.15.13**	**5 Works from chainage 125 to chainage 190 (west side carriageway & footpath)**	**62 days**	**Mon 28/9/15**	**Sun 29/11/15**	**594FS+2 days**
622	4.12.15.13.1	TTA for ch 125-190 (west)	0 days	**Mon 28/9/15**	Mon 28/9/15	
623	*4.12.15.13.2*	*earthwork to lay drainage & waterwork*	*3 days*	*Tue 29/9/15*	*Thu 1/10/15*	*622*
624	*4.12.15.13.3*	*drainage & waterwork + backfill for CLP*	*18 days*	*Thu 1/10/15*	*Sun 18/10/15*	*623FS-1 day*
625	***4.12.15.13.4***	***UU for ch 125-190 (132kV,11kV,LV)***	***8 days***	***Mon 19/10/15***	***Mon 26/10/15***	***624***
626	*4.12.15.13.5*	*filling works to formation of road (include SRT98%)*	*7 days*	*Sun 25/10/15*	*Sat 31/10/15*	*625FS-2 days*
627	*4.12.15.13.6*	*street lighting drawpits & crossing at ch 154*	*3 days*	*Sun 1/11/15*	*Tue 3/11/15*	*626*



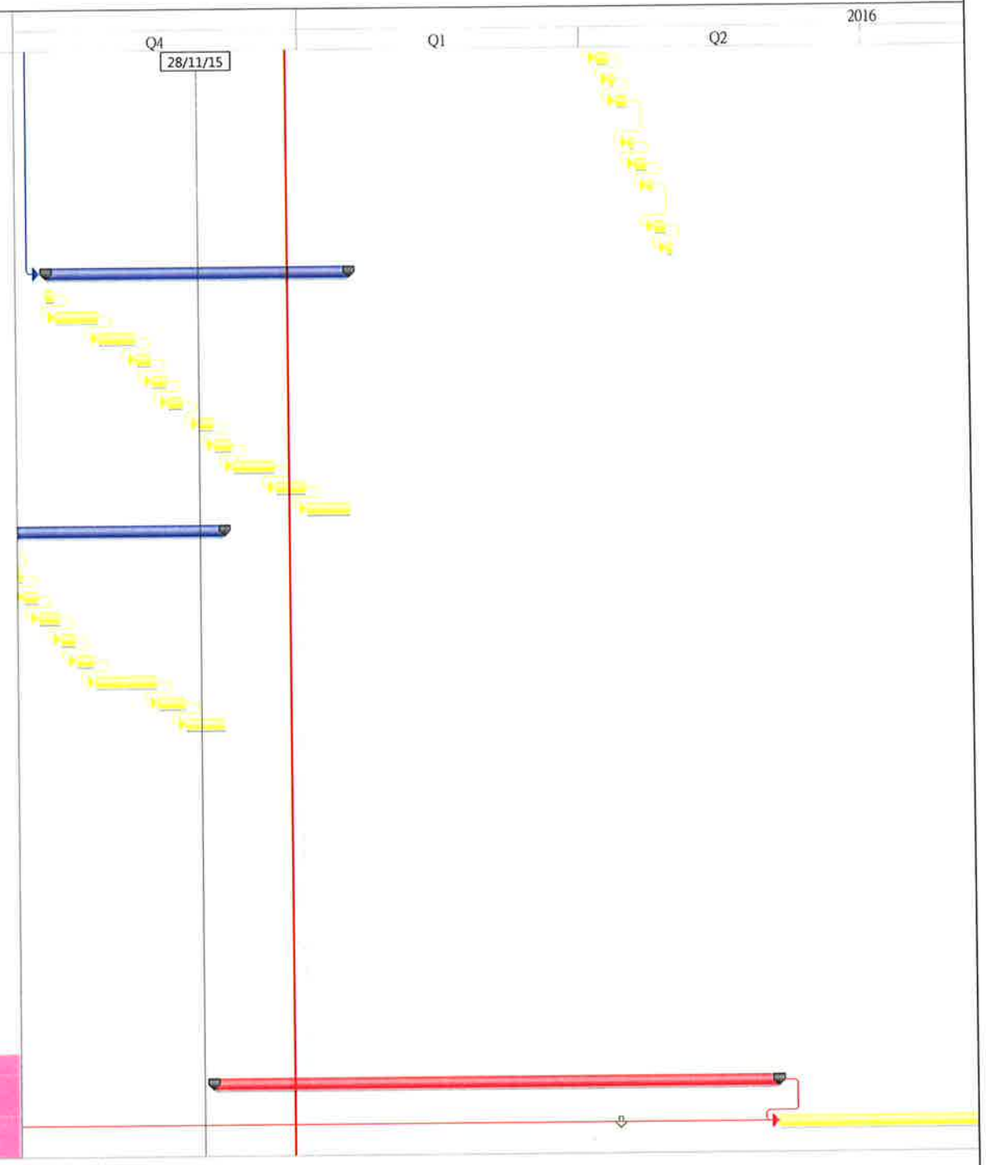
Revision 1
Mon 28/12/15

Task | Milestone | Project Summary | Critical Split | Deadline
Split | Summary | Critical | Progress

ID	WBS	Task Name	Duration	Start	Finish	Predecessors
628	*4.12.15.13.7*	*irrigation system*	*4 days*	*Mon 2/11/15*	*Thu 5/11/15*	*627FS-2 days*
629	***4.12.15.13.8***	***UU for CLP (lighting)***	***3 days***	***Fri 6/11/15***	***Sun 8/11/15***	***628***
630	*4.12.15.13.9*	*sub-base laying*	*3 days*	*Mon 9/11/15*	*Wed 11/11/15*	*629*
631	*4.12.15.13.10*	*kerb bedding, laying & backing before bituminous material*	*5 days*	*Thu 12/11/15*	*Mon 16/11/15*	*630*
632	*4.12.15.13.11*	*filling works to formation of footpath*	*3 days*	*Mon 16/11/15*	*Wed 18/11/15*	*631FS-1 day*
633	***4.12.15.13.12***	***UU for ch 125-190 (PCCW)***	***5 days***	***Thu 19/11/15***	***Mon 23/11/15***	***632***
634	*4.12.15.13.13*	*footpath paving*	*7 days*	*Mon 23/11/15*	*Sun 29/11/15*	*633FS-1 day*
635	***4.12.15.13.14***	***AC - lay DBM & base course***	***4 days***	***Tue 17/11/15***	**Fri 20/11/15**	***631***
636	**4.12.15.14**	**7 Works from chainage 80 to chainage 125 (west side carriageway & footpath)**	**67 days**	**Sat 21/11/15**	**Wed 27/1/16**	**635FS+1 day**
637	4.12.15.14.1	TTA for ch 80-125(west)	0 days	**Sat 21/11/15**	Sat 21/11/15	
638	*4.12.15.14.2*	*earthwork to lay drainage & waterwork*	*3 days*	Sun 22/11/15	Tue 24/11/15	*637*
639	*4.12.15.14.3*	*drainage & waterwork + backfill for CLP*	*18 days*	Wed 25/11/15	Sat 12/12/15	*638*
640	***4.12.15.14.4***	***UU for ch 80-190 (132kV,11kV,LV)***	***6 days***	**Sun 13/12/15**	**Fri 18/12/15**	***639***
641	*4.12.15.14.5*	*filling works to formation of road (include SRT98%)*	*7 days*	Sat 19/12/15	Fri 25/12/15	*640*
642	*4.12.15.14.6*	*street lighting drawpits & crossing at ch 98*	*3 days*	Sat 26/12/15	Mon 28/12/15	*641*
643	*4.12.15.14.7*	*irrigation system*	*3 days*	Tue 29/12/15	Thu 31/12/15	*642*
644	***4.12.15.14.8***	***UU for CLP (lighting)***	***3 days***	**Fri 1/1/16**	**Sun 3/1/16**	***643***
645	*4.12.15.14.9*	*sub-base laying*	*3 days*	Mon 4/1/16	Wed 6/1/16	*644*
646	*4.12.15.14.10*	*kerb bedding, laying & backing before bituminous material*	*5 days*	Thu 7/1/16	Mon 11/1/16	*645*
647	*4.12.15.14.11*	*filling works to formation of footpath*	*4 days*	Tue 12/1/16	Fri 15/1/16	*646*
648	***4.12.15.14.12***	***UU for ch 80-190 (PCCW)***	***4 days***	**Sat 16/1/16**	**Tue 19/1/16**	***647***
649	*4.12.15.14.13*	*footpath paving*	*8 days*	Wed 20/1/16	Wed 27/1/16	*648*
650	***4.12.15.14.14***	***AC - lay DBM & base course***	***4 days***	**Tue 12/1/16**	**Fri 15/1/16**	***646***
651	**4.12.15.15**	**4 Works from chainage 125 to chainage 190 (east side carriageway & footpath)**	**42 days**	**Sat 16/1/16**	**Sat 27/2/16**	**650FS+1 day**
652	4.12.15.15.1	TTA for ch 125-190 (east)	0 days	**Sat 16/1/16**	Sat 16/1/16	
653	***4.12.15.15.2***	***VO.061 for rising main***	***7 days***	**Sun 17/1/16**	**Sat 23/1/16**	***652***
654	*4.12.15.15.3*	*filling works to formation of road (include SRT98%)*	*4 days*	Sat 23/1/16	Tue 26/1/16	*653FS-1 day*
655	*4.12.15.15.4*	*street lighting drawpits & crossing at ch 154*	*3 days*	Wed 27/1/16	Fri 29/1/16	*654*
656	*4.12.15.15.5*	*irrigation system*	*3 days*	Sat 30/1/16	Mon 1/2/16	*655*
657	***4.12.15.15.6***	***UU for CLP (lighting)***	***3 days***	**Tue 2/2/16**	**Thu 4/2/16**	***656***
658	*4.12.15.15.7*	*sub-base laying*	*2 days*	Fri 5/2/16	Sat 6/2/16	*657,656*
659	*4.12.15.15.8*	*kerb bedding, laying & backing before bituminous material*	*5 days*	Sun 7/2/16	Thu 11/2/16	*658*
660	*4.12.15.15.9*	*filling works to formation of footpath*	*3 days*	Fri 12/2/16	Sun 14/2/16	*659*
661	***4.12.15.15.10***	***UU for ch 125-200 (PCCW/HGC)***	***5 days***	**Mon 15/2/16**	**Fri 19/2/16**	***660***
662	*4.12.15.15.11*	*footpath paving*	*8 days*	Sat 20/2/16	Sat 27/2/16	*661*
663	***4.12.15.15.12***	***AC - lay DBM & base course***	***4 days***	**Fri 12/2/16**	**Mon 15/2/16**	***659***
664	**4.12.15.16**	**6 Works from chainage 80 to chainage 125 (east side carriageway & footpath)**	**40 days**	**Tue 16/2/16**	**Sun 27/3/16**	**663FS+1 day**
665	4.12.15.16.1	TTA for ch 80-125 (east)	0 days	**Tue 16/2/16**	Tue 16/2/16	
666	***4.12.15.16.2***	***VO.061 for rising main***	***7 days***	**Wed 17/2/16**	**Tue 23/2/16**	***665***
667	*4.12.15.16.3*	*filling works to formation of road (include SRT98%)*	*5 days*	Mon 22/2/16	Fri 26/2/16	*666FS-2 days*
668	*4.12.15.16.4*	*street lighting drawpits & crossing at ch 98*	*3 days*	Fri 26/2/16	Sun 28/2/16	*667FS-1 day*
669	*4.12.15.16.5*	*irrigation system*	*3 days*	Mon 29/2/16	Wed 2/3/16	*668*
670	***4.12.15.16.6***	***UU for CLP (lighting)***	***3 days***	**Thu 3/3/16**	**Sat 5/3/16**	***669***
671	*4.12.15.16.7*	*sub-base laying*	*3 days*	Sun 6/3/16	Tue 8/3/16	*670*
672	*4.12.15.16.8*	*kerb bedding, laying & backing before bituminous material*	*5 days*	Wed 9/3/16	Sun 13/3/16	*671*
673	*4.12.15.16.9*	*filling works to formation of footpath*	*3 days*	Mon 14/3/16	Wed 16/3/16	*672*
674	***4.12.15.16.10***	***UU for ch 80-125 (PCCW/HGC)***	***4 days***	**Thu 17/3/16**	**Sun 20/3/16**	***673***
675	*4.12.15.16.11*	*footpath paving*	*7 days*	Mon 21/3/16	Sun 27/3/16	*674*
676	***4.12.15.16.12***	***AC - lay DBM & base course***	***3 days***	**Mon 14/3/16**	**Wed 16/3/16**	***672***
677	**4.12.15.17**	**Rising manholes & drawpit covers & Lay wearing course (with TTA)**	**44 days**	**Fri 18/3/16**	**Sat 30/4/16**	**676FS+1 day**
678	*4.12.15.17.1*	*Chainage 80 to Chainage 180 (west side)*	4 days	Fri 18/3/16	Mon 21/3/16	
679	***4.12.15.17.2***	*Chainage 80 to Chainage 180 (east side)*	2 days	Tue 22/3/16	Wed 23/3/16	678
680	*4.12.15.17.3*	*Chainage 180 to Chainage 280 (west side)*	4 days	Thu 24/3/16	Sun 27/3/16	679
681	*4.12.15.17.4*	*Chainage 180 to Chainage 280 (east side)*	4 days	Mon 28/3/16	Thu 31/3/16	680
682	*4.12.15.17.5*	*Chainage 280 to Chainage 380 (west side)*	4 days	Fri 1/4/16	Mon 4/4/16	681
683	***4.12.15.17.6***	*Chainage 280 to Chainage 380 (east side)*	2 days	Tue 5/4/16	Wed 6/4/16	682



ID	WBS	Task Name	Duration	Start	Finish	Predecessors
684	*4.12.15.17.7*	*Chainage 380 to Chainage 480 (west side)*	4 days	Thu 7/4/16	Sun 10/4/16	683
685	*4.12.15.17.8*	*Chainage 380 to Chainage 480 (east side)*	2 days	Mon 11/4/16	Tue 12/4/16	684
686	*4.12.15.17.9*	*Chainage 480 to Chainage 580 (west side)*	4 days	Wed 13/4/16	Sat 16/4/16	685
687	***4.12.15.17.10***	*Chainage 480 to Chainage 580 (east side)*	2 days	Sun 17/4/16	Mon 18/4/16	686
688	*4.12.15.17.11*	*Chainage 580 to Chainage 680 (west side)*	4 days	Tue 19/4/16	Fri 22/4/16	687
689	***4.12.15.17.12***	*Chainage 580 to Chainage 680 (east side)*	2 days	Sat 23/4/16	Sun 24/4/16	688
690	*4.12.15.17.13*	*Chainage 680 to Chainage 785 (west side)*	4 days	Mon 25/4/16	Thu 28/4/16	689
691	***4.12.15.17.14***	*Chainage 680 to Chainage 785 (east side)*	2 days	Fri 29/4/16	Sat 30/4/16	690
692	**4.12.15.18**	**Eastern Footpath from ch 380-580)**	**98 days**	**Sun 11/10/15**	**Sat 16/1/16**	**565**
693	*4.12.15.18.1*	*remove existing pavement*	*3 days*	Sun 11/10/15	Tue 13/10/15	
694	*4.12.15.18.2*	*upper stream box culvert 960x650*	*14 days*	Wed 14/10/15	Tue 27/10/15	*693*
695	*4.12.15.18.3*	*upper stream DN450mm pipe*	*12 days*	Wed 28/10/15	Sun 8/11/15	*694*
696	***4.12.15.18.4***	***VO053 - crossing no. 2, 3, 4, 5 (east footpath)***	***5 days***	**Mon 9/11/15**	**Fri 13/11/15**	***695***
697	*4.12.15.18.5*	*filling works to formation of footpath*	*5 days*	Sat 14/11/15	Wed 18/11/15	*696*
698	*4.12.15.18.6*	*street light crossing at ch523*	*5 days*	Thu 19/11/15	Mon 23/11/15	*697*
699	***4.12.15.18.7***	***UU for CLP (lighting)***	***5 days***	**Sun 29/11/15**	**Thu 3/12/15**	***698FS+5 days***
700	*4.12.15.18.8*	*sub-base & edging*	*6 days*	Fri 4/12/15	Wed 9/12/15	*699*
701	***4.12.15.18.9***	***UU for ch 380-580 (PCCW/HGC)***	***14 days***	**Thu 10/12/15**	**Wed 23/12/15**	***700***
702	*4.12.15.18.10*	*construct edging*	*10 days*	Thu 24/12/15	Sat 2/1/16	*701*
703	*4.12.15.18.11*	*footpath paving*	*14 days*	Sun 3/1/16	Sat 16/1/16	*702*
704	**4.12.15.19**	**Eastern Footpath from ch 190-380)**	**71 days**	**Sun 27/9/15**	**Sun 6/12/15**	**583**
705	*4.12.15.19.1*	*remove existing pavement*	*3 days*	Sun 27/9/15	Tue 29/9/15	
706	***4.12.15.19.2***	***VO053 - crossing no. 2 (east footpath)***	***3 days***	**Wed 30/9/15**	**Fri 2/10/15**	***705***
707	*4.12.15.19.3*	*filling works to formation of footpath*	*5 days*	Sat 3/10/15	Wed 7/10/15	*706*
708	*4.12.15.19.4*	*street light crossings at ch287,350*	*7 days*	Thu 8/10/15	Wed 14/10/15	*707*
709	***4.12.15.19.5***	***UU for CLP (lighting)***	***5 days***	**Thu 15/10/15**	**Mon 19/10/15**	***708***
710	*4.12.15.19.6*	*sub-base & edging*	*6 days*	Tue 20/10/15	Sun 25/10/15	*709*
711	***4.12.15.19.7***	***UU for ch 190-380 (PCCW/HGC)***	***20 days***	**Mon 26/10/15**	**Sat 14/11/15**	***710***
712	*4.12.15.19.8*	*construct edging*	*9 days*	Sun 15/11/15	Mon 23/11/15	*711*
713	*4.12.15.19.9*	*footpath paving*	*13 days*	Tue 24/11/15	Sun 6/12/15	*712*
714	**4.12.15.20**	**Eastern Footpath from ch 580-785)**	**71 days**	**Mon 20/7/15**	**Mon 28/9/15**	**613**
715	*4.12.15.20.1*	*remove existing pavement*	*3 days*	*Mon 20/7/15*	*Wed 22/7/15*	
716	***4.12.15.20.2***	***VO053 - crossing no. 5, 6, 7&8 (east footpath)***	***7 days***	***Thu 23/7/15***	***Wed 29/7/15***	***715***
717	*4.12.15.20.3*	*filling works to formation of footpath*	*5 days*	*Thu 30/7/15*	*Mon 3/8/15*	*716*
718	*4.12.15.20.4*	*street light crossings at ch760,785*	*7 days*	*Tue 4/8/15*	*Mon 10/8/15*	*717*
719	***4.12.15.20.5***	***UU for CLP (lighting)***	***5 days***	***Tue 11/8/15***	***Sat 15/8/15***	***718***
720	*4.12.15.20.6*	*sub-base & edging*	*6 days*	*Sun 16/8/15*	*Fri 21/8/15*	*719*
721	***4.12.15.20.7***	***UU for ch 580-785 (PCCW/HGC)***	***14 days***	***Sat 22/8/15***	***Fri 4/9/15***	***720***
722	*4.12.15.20.8*	*construct edging*	*10 days*	*Sat 5/9/15*	*Mon 14/9/15*	*721*
723	*4.12.15.20.9*	*footpath paving*	*14 days*	*Tue 15/9/15*	*Mon 28/9/15*	*722*
724	**4.12.15.21**	**Construction of retaining wall RW8 - CH0 to 22 (3 bays)**	**70 days**	**Tue 30/12/14**	**Mon 9/3/15**	**534**
726	*4.12.15.22*	*Site Formation works for ArchSD Depot (Drg. 1001B)*	*60 days*	*Tue 10/3/15*	*Fri 8/5/15*	*724*
727	**4.12.15.23**	**Archaeological survey (Sections T1 to T3)(Drg. 6403A)**	**147 days**	**Thu 24/10/13**	**Wed 19/3/14**	
733	**4.13**	**Section XIV of the Works - Trees preservation and protection**	**730 days**	**Fri 12/4/13**	**Sat 11/4/15**	**4**
741	**4.14**	**Section XV of the Works - Landscape soft works (including transplant trees to permanent locations)**	**182 days**	**Wed 2/12/15**	**Tue 31/5/16**	
745	**4.15**	**Section XVI of the Works - Establishment works for landscape soft works**	**365 days**	**Wed 1/6/16**	**Wed 31/5/17**	**733,741**

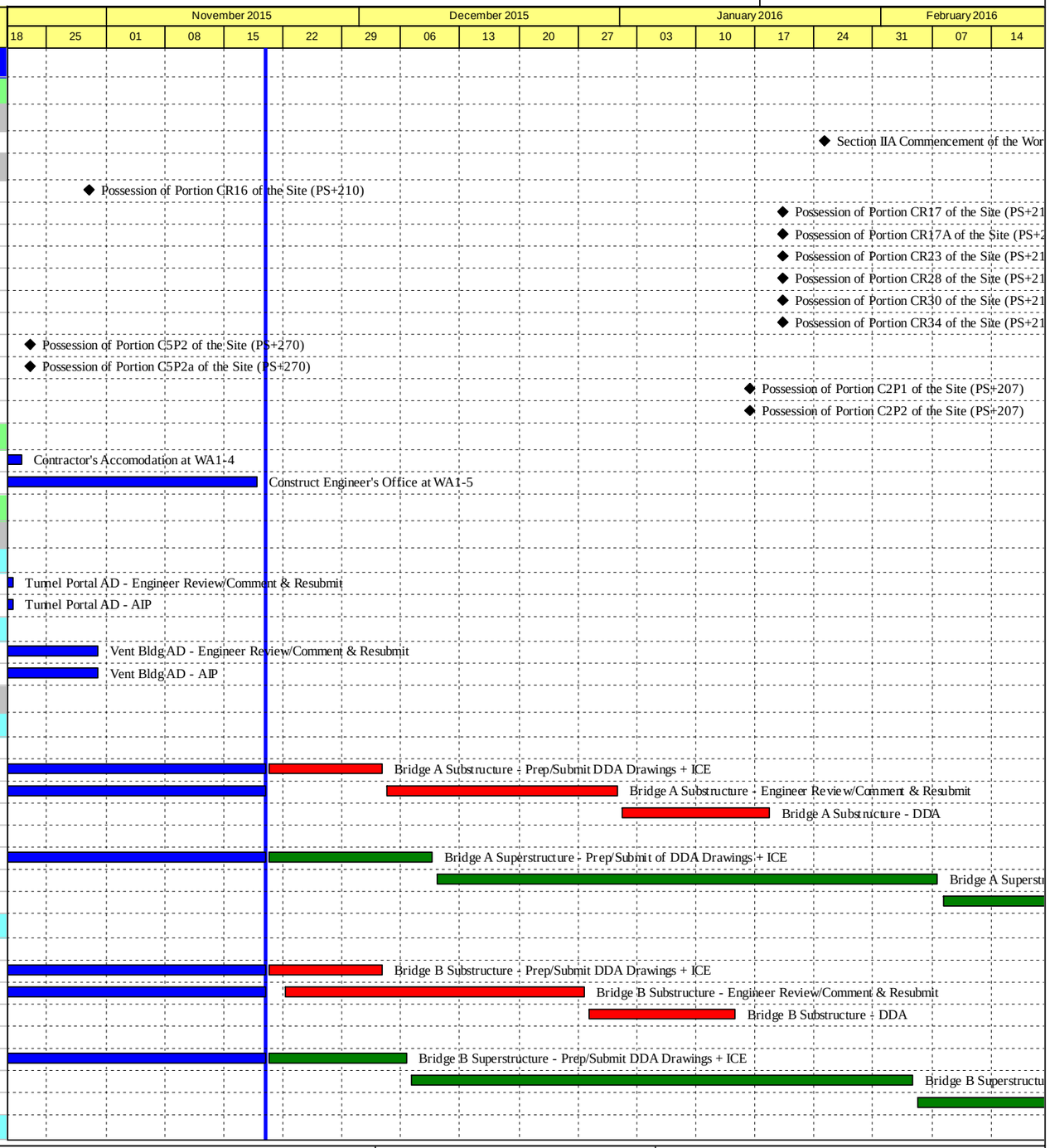


Contract 6

Liantang / Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - CONTRACT 6

AECOM | CEDD

Activity ID	Activity Name	Rem Dur	Start	Finish
LT/HYW BCP Contract 6 - 3MRP Nov 2015				
1.0 - Contract Key Dates				
1.1 - Commencement of the Works				
CKD-1600	Section IIA Commencement of the Works Notification (PS+215d)	0	25-Jan-16	
1.5 - Works Areas Possession Date				
CKD-5300	Possession of Portion CR16 of the Site (PS+210)	0	30-Oct-15 A	
CKD-5310	Possession of Portion CR17 of the Site (PS+210)	0	20-Jan-16	
CKD-5320	Possession of Portion CR17A of the Site (PS+210)	0	20-Jan-16	
CKD-5360	Possession of Portion CR23 of the Site (PS+210)	0	20-Jan-16	
CKD-5380	Possession of Portion CR28 of the Site (PS+210)	0	20-Jan-16	
CKD-5390	Possession of Portion CR30 of the Site (PS+210)	0	20-Jan-16	
CKD-5400	Possession of Portion CR34 of the Site (PS+210)	0	20-Jan-16	
CKD-5420	Possession of Portion C5P2 of the Site (PS+270)	0	23-Oct-15 A	
CKD-5430	Possession of Portion C5P2a of the Site (PS+270)	0	23-Oct-15 A	
CKD-5720	Possession of Portion C2P1 of the Site (PS+207)	0	16-Jan-16	
CKD-5730	Possession of Portion C2P2 of the Site (PS+207)	0	16-Jan-16	
2.0 - Preliminaries				
A1000	Contractor's Accomodation at WA1-4	0	24-Jun-15 A	22-Oct-15 A
A1020	Construct Engineer's Office at WA1-5	0	12-Jul-15 A	19-Nov-15 A
3.0 - Submission and Approval				
3.2 - AIP - Alternative Design				
- AIP Submission - Tunnel Portal Alternative Design				
SUB-2150	Tunnel Portal AD - Engineer Review/Comment & Resubmit	0	08-Aug-15 A	21-Oct-15 A
SUB-2160	Tunnel Portal AD - AIP	0	08-Aug-15 A	21-Oct-15 A
- AIP Submission - Ventilation Building Altenative Design				
SUB-2190	Vent Bldg AD - Engineer Review/Comment & Resubmit	0	12-Oct-15 A	31-Oct-15 A
SUB-2200	Vent Bldg AD - AIP	0	12-Oct-15 A	31-Oct-15 A
3.3 - DDA - Alternative Design				
- DDA Submission - Bridge A				
DDA Submission - Bridge A Substructure				
SUB-3000	Bridge A Substructure - Prep/Submit DDA Drawings + ICE	14	15-Jul-15 A	03-Dec-15
SUB-3010	Bridge A Substructure - Engineer Review/Comment & Resubmit	28	29-Sep-15 A	31-Dec-15
SUB-3030	Bridge A Substructure - DDA	18	01-Jan-16	18-Jan-16
DDA Submission - Bridge A Superstructure				
SUB-3050	Bridge A Superstructure - Prep/Submit of DDA Drawings + ICE	20	27-Jul-15 A	09-Dec-15
SUB-3060	Bridge A Superstructure - Engineer Review/Comment & Resubmit	60	10-Dec-15	07-Feb-16
SUB-3070	Bridge A Superstructure - DDA	18	08-Feb-16	25-Feb-16
- DDA Submission - Bridge B				
DDA Submission - Bridge B Substructure				
SUB-3100	Bridge B Substructure - Prep/Submit DDA Drawings + ICE	14	15-Jul-15 A	03-Dec-15
SUB-3110	Bridge B Substructure - Engineer Review/Comment & Resubmit	36	29-Sep-15 A	27-Dec-15
SUB-3130	Bridge B Substructure - DDA	18	28-Dec-15	14-Jan-16
DDA Submission - Bridge B Superstructure				
SUB-3140	Bridge B Superstructure - Prep/Submit DDA Drawings + ICE	17	15-Jul-15 A	06-Dec-15
SUB-3150	Bridge B Superstructure - Engineer Review/Comment & Resubmit	60	07-Dec-15	04-Feb-16
SUB-3160	Bridge B Superstructure - DDA	18	05-Feb-16	22-Feb-16
- DDA Submission - Bridge C				



CRBC-CEC-KADEN Joint Venture

◆ Milestone
Critical Activity
Non-Critical Activity
Remaining Level of Effort
Actual Work

3-month Rolling Programme (20-Nov-2015)

Data Date: 20-Nov-15 **Run Date: 25-Nov-15**

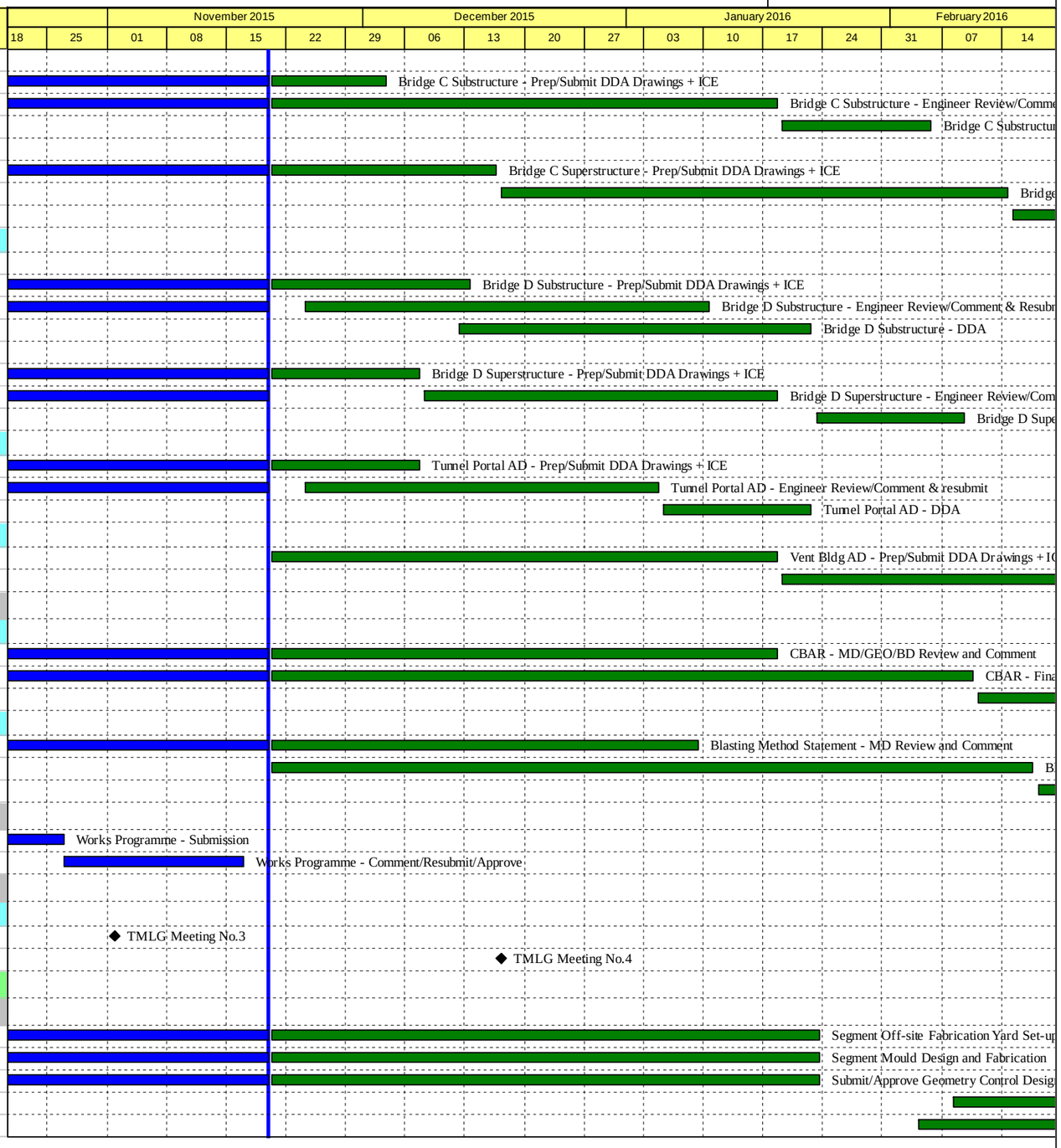
Project ID :LT6-3MRP-05
Layout : LT6IWP 3MRP

3-month Rolling Programme

Date	Revision	Checked	Approved
20-Nov-15	3MRP		

Liantang / Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - CONTRACT 6

Activity ID	Activity Name	Rem Dur	Start	Finish
	DDA Submission - Bridge C Substructure			
SUB-3200	Bridge C Substructure - Prep/Submit DDA Drawings + ICE	14	20-Aug-15 A	03-Dec-15
SUB-3210	Bridge C Substructure - Engineer Review/Comment & Resubmit	60	12-Oct-15 A	18-Jan-16
SUB-3230	Bridge C Substructure - DDA	18	19-Jan-16	05-Feb-16
	DDA Submission - Bridge C Superstructure			
SUB-3240	Bridge C Superstructure - Prep/Submit DDA Drawings + ICE	27	23-Sep-15 A	16-Dec-15
SUB-3250	Bridge C Superstructure - Engineer Review/Comment & resubmit	60	17-Dec-15	14-Feb-16
SUB-3260	Bridge C Superstructure - DDA	18	15-Feb-16	03-Mar-16
	- DDA Submission - Bridge D			
	DDA Submission - Bridge D Substructure			
SUB-3300	Bridge D Substructure - Prep/Submit DDA Drawings + ICE	24	15-Jul-15 A	13-Dec-15
SUB-3310	Bridge D Substructure - Engineer Review/Comment & Resubmit	48	13-Oct-15 A	10-Jan-16
SUB-3330	Bridge D Substructure - DDA	42	12-Dec-15	22-Jan-16
	DDA Submission - Bridge D Superstructure			
SUB-3340	Bridge D Superstructure - Prep/Submit DDA Drawings + ICE	18	08-Aug-15 A	07-Dec-15
SUB-3350	Bridge D Superstructure - Engineer Review/Comment & Resubmit	42	15-Sep-15 A	18-Jan-16
SUB-3360	Bridge D Superstructure - DDA	18	23-Jan-16	09-Feb-16
	- DDA Submission - Tunnel & Portal Alternative Design			
SUB-3400	Tunnel Portal AD - Prep/Submit DDA Drawings + ICE	18	08-Aug-15 A	07-Dec-15
SUB-3410	Tunnel Portal AD - Engineer Review/Comment & resubmit	42	15-Sep-15 A	04-Jan-16
SUB-3420	Tunnel Portal AD - DDA	18	05-Jan-16	22-Jan-16
	- DDA Submission - Ventilation Building Alternative Design			
SUB-3430	Vent Bldg AD - Prep/Submit DDA Drawings + ICE	60	20-Nov-15	18-Jan-16
SUB-3440	Vent Bldg AD - Prep/Submit DDA Drawings + ICE	60	19-Jan-16	18-Mar-16
	3.4 - Statutory Submission and Approval			
	- Contracor Blasting Assessment Report (CBAR)			
SUB-4030	CBAR - MD/GEO/BD Review and Comment	60	15-Aug-15 A	18-Jan-16
SUB-4040	CBAR - Final Submission to MD/GEO/BD/Police/FSD	83	24-Aug-15 A	10-Feb-16
SUB-4050	CBAR - Approval	28	11-Feb-16	09-Mar-16
	- Blasting Method Statement			
SUB-4130	Blasting Method Statement - MD Review and Comment	50	15-Oct-15 A	09-Jan-16
SUB-4140	Blasting Method Statement - Resubmit to MD	90	20-Nov-15	17-Feb-16
SUB-4150	Blasting Method Statement - Approval by MD	28	18-Feb-16	16-Mar-16
	3.6 - Works Programme			
SUB-5820	Works Programme - Submission	0	05-Sep-15 A	27-Oct-15 A
SUB-5830	Works Programme - Comment/Resubmit/Approve	0	27-Oct-15 A	17-Nov-15 A
	3.7 - Coordination Meeting and Liaison Works			
	- TMLG Meeting			
SUB-5910	TMLG Meeting No.3	0	02-Nov-15 A	
SUB-5920	TMLG Meeting No.4	0	17-Dec-15*	
	4.0 - Off-Site Works			
	4.1 - Segment Fabrication			
OSW-1000	Segment Off-site Fabrication Yard Set-up	65	17-Aug-15 A	23-Jan-16
OSW-1050	Segment Mould Design and Fabrication	65	20-Aug-15 A	23-Jan-16
OSW-1100	Submit/Approve Geometry Control Design	65	12-Oct-15 A	23-Jan-16
OSW-1120	Bridge B - Segment Fabrication 183 nos @ 12 nos/week	109	08-Feb-16	26-May-16
OSW-1400	Bridge D - Segment Fabrication 2344 nos @ 32 nos/week	515	04-Feb-16	02-Jul-17



CRBC-CEC-KADEN Joint Venture

◆ ◆ Milestone
Critical Activity
Non-Critical Activity
Remaining Level of Effort
Actual Work

3-month Rolling Programme (20-Nov-2015)

Data Date: 20-Nov-15 **Run Date: 25-Nov-15**

Project ID :LT6-3MRP-05
Layout : LT6IWP 3MRP

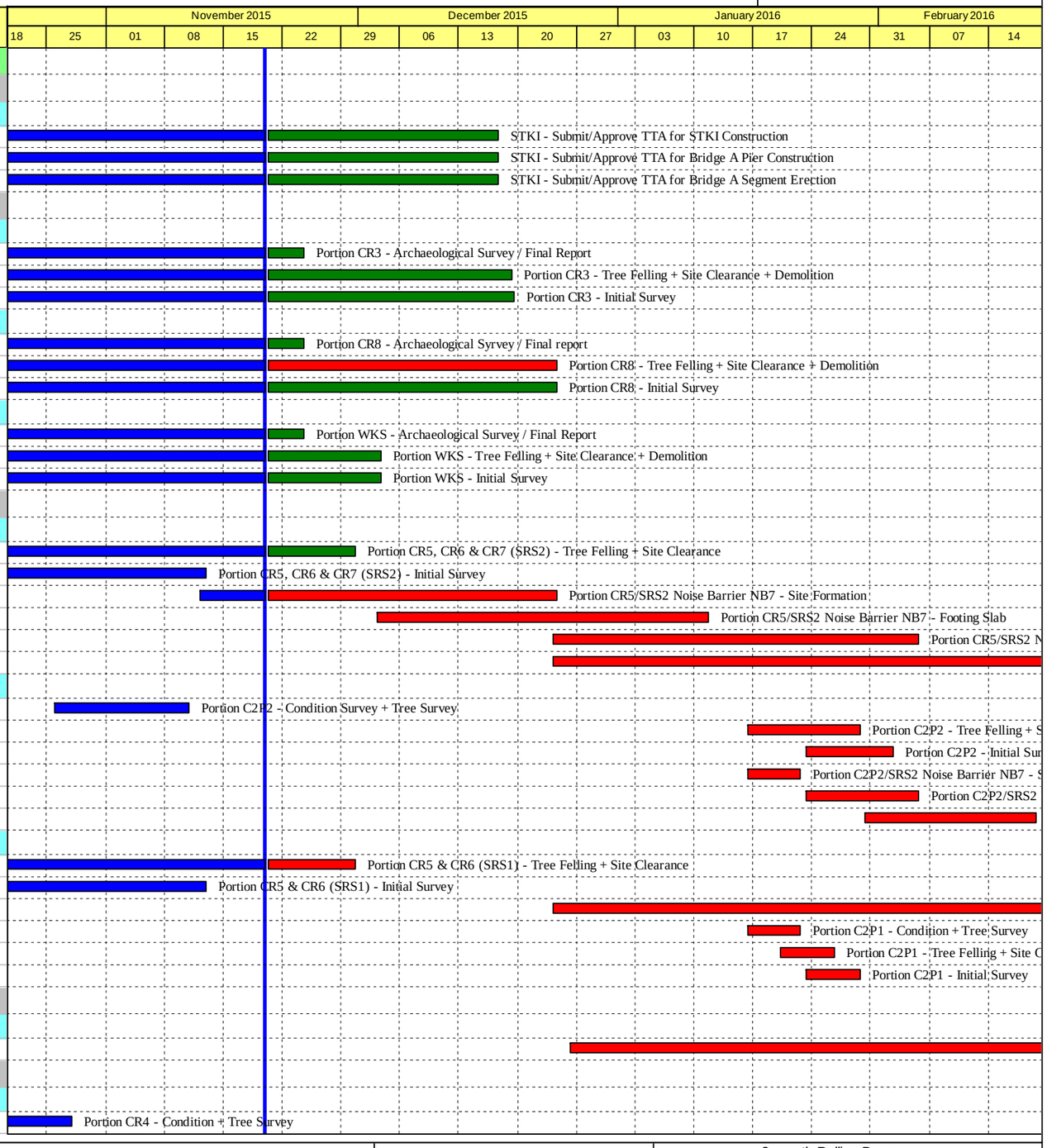
3-month Rolling Programme

Date	Revision	Checked	Approved
20-Nov-15	3MRP		

Liantang / Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - CONTRACT 6

AECOM | CEDD

Activity ID	Activity Name	Rem Dur	Start	Finish
5.0 - Sha Tau Kok Interchange				
5.1 - Preliminary Works				
- Site Possession and Site Establishment Works				
STK-1250	STKI - Submit/Approve TTA for STKI Construction	24	14-Sep-15 A	17-Dec-15
STK-1260	STKI - Submit/Approve TTA for Bridge A Pier Construction	24	30-Sep-15 A	17-Dec-15
STK-1270	STKI - Submit/Approve TTA for Bridge A Segment Erection	24	30-Sep-15 A	17-Dec-15
5.3 - STKI (North) - Portion CR3, WKS & CR8				
- Portion CR3				
STK-3020	Portion CR3 - Archaeological Survey / Final Report	4	16-Sep-15 A	24-Nov-15
STK-3030	Portion CR3 - Tree Felling + Site Clearance + Demolition	25	01-Aug-15 A	19-Dec-15
STK-3040	Portion CR3 - Initial Survey	26	01-Aug-15 A	19-Dec-15
- Portion CR8				
STK-3720	Portion CR8 - Archaeological Syrvey / Final report	4	16-Sep-15 A	24-Nov-15
STK-3730	Portion CR8 - Tree Felling + Site Clearance + Demolition	30	01-Aug-15 A	24-Dec-15
STK-3740	Portion CR8 - Initial Survey	30	01-Aug-15 A	24-Dec-15
- Portion WKS				
STK-3420	Portion WKS - Archaeological Survey / Final Report	4	16-Sep-15 A	24-Nov-15
STK-3430	Portion WKS - Tree Felling + Site Clearance + Demolition	12	26-Aug-15 A	03-Dec-15
STK-3440	Portion WKS - Initial Survey	12	21-Sep-15 A	03-Dec-15
5.4 - STKI (South) - Portion CR5, CR6, CR7 & C2P2				
- STKI Slip Road S2				
STK-4120	Portion CR5, CR6 & CR7 (SRS2) - Tree Felling + Site Clearance	9	23-Sep-15 A	30-Nov-15
STK-4130	Portion CR5, CR6 & CR7 (SRS2) - Initial Survey	0	02-Oct-15 A	13-Nov-15 A
STK-4140	Portion CR5/SRS2 Noise Barrier NB7 - Site Formation	30	12-Nov-15 A	24-Dec-15
STK-4141	Portion CR5/SRS2 Noise Barrier NB7 - Footing Slab	32	03-Dec-15	11-Jan-16
STK-4142	Portion CR5/SRS2 Noise Barrier NB7 - Footing Wall	36	24-Dec-15	05-Feb-16
STK-4150	STKI/SRS2 - Temporary Road	48	24-Dec-15	26-Feb-16
- STKI Portion C2P2				
STK-4210	Portion C2P2 - Condition Survey + Tree Survey	0	26-Oct-15 A	11-Nov-15 A
STK-4220	Portion C2P2 - Tree Felling + Site Clearance	12	16-Jan-16	29-Jan-16
STK-4230	Portion C2P2 - Initial Survey	9	23-Jan-16	02-Feb-16
STK-4235	Portion C2P2/SRS2 Noise Barrier NB7 - Site Formation	6	16-Jan-16	22-Jan-16
STK-4240	Portion C2P2/SRS2 Noise Barrier NB7 - Footing Slab	12	23-Jan-16	05-Feb-16
STK-4245	Portion C2P2/SRS2 Noise Barrier NB7 - Footing Wall	12	30-Jan-16	19-Feb-16
- STKI Slip Road S1				
STK-4301	Portion CR5 & CR6 (SRS1) - Tree Felling + Site Clearance	9	06-Oct-15 A	30-Nov-15
STK-4302	Portion CR5 & CR6 (SRS1) - Initial Survey	0	06-Oct-15 A	13-Nov-15 A
STK-4305	Portion CR5 & CR6 (SRS1) - Temporary Road	48	24-Dec-15	26-Feb-16
STK-4315	Portion C2P1 - Condition + Tree Survey	6	16-Jan-16	22-Jan-16
STK-4320	Portion C2P1 - Tree Felling + Site Clearance	6	20-Jan-16	26-Jan-16
STK-4325	Portion C2P1 - Initial Survey	6	23-Jan-16	29-Jan-16
5.5 - STKI (East) - Portion CR3 & RD				
- Bridge E				
STK-5270	Bridge E - Abutment A022 Bored Piling	60	26-Dec-15	12-Mar-16
5.6 - STKI (West) - Portion CR4 & RD				
- Bridge F				
STK-6010	Portion CR4 - Condition + Tree Survey	0	21-Sep-15 A	28-Oct-15 A



CRBC-CEC-KADEN Joint Venture

◆ Milestone
Critical Activity
Non-Critical Activity
Remaining Level of Effort
Actual Work

3-month Rolling Programme (20-Nov-2015)

Data Date: 20-Nov-15 **Run Date: 25-Nov-15**

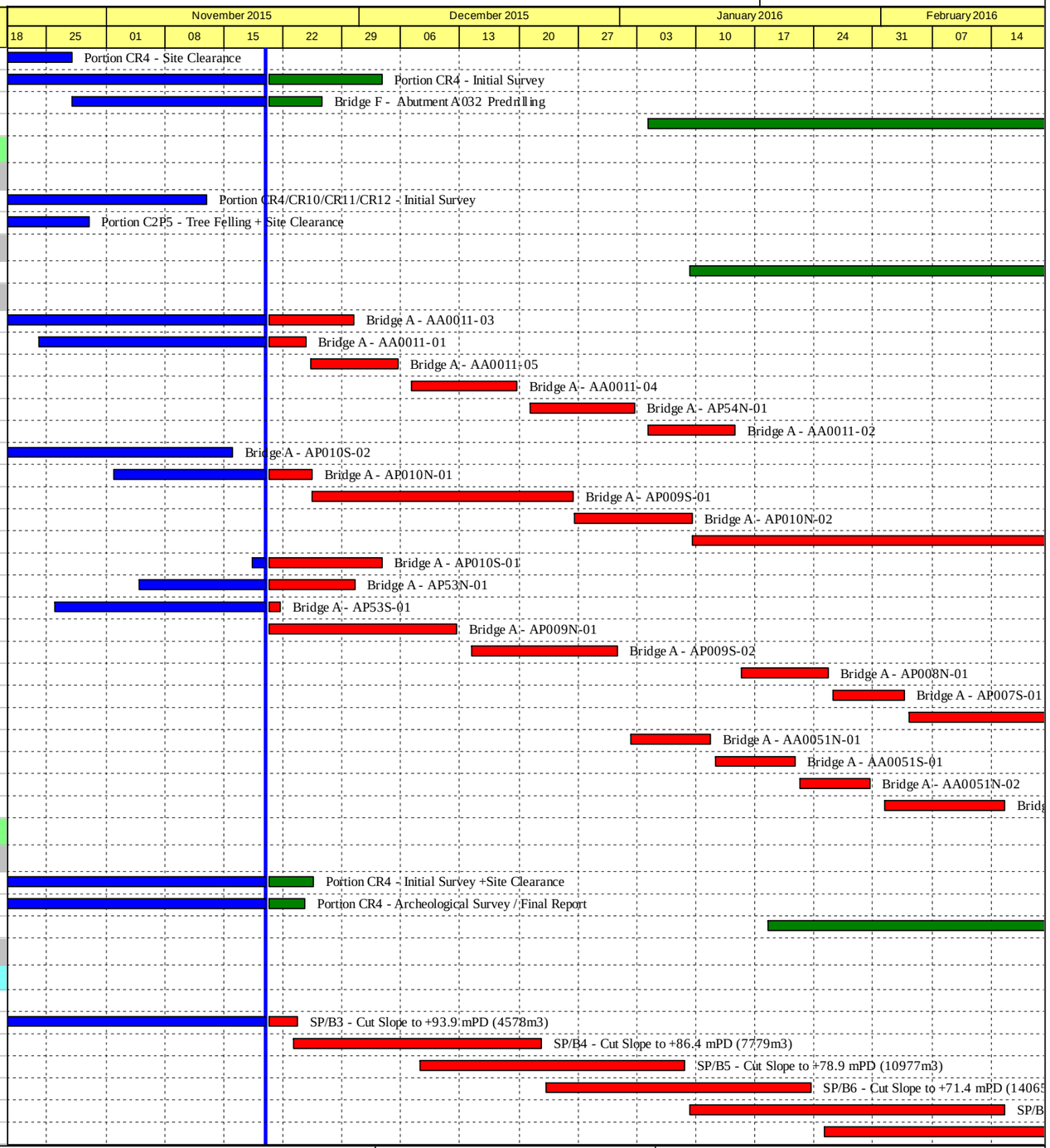
Project ID :LT6-3MRP-05
Layout : LT6IWP 3MRP

3-month Rolling Programme			
Date	Revision	Checked	Approved
20-Nov-15	3MRP		

Liantang / Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - CONTRACT 6

CEDD

Activity ID	Activity Name	Rem Dur	Start	Finish
STK-6012	Portion CR4 - Site Clearance	0	21-Sep-15 A	28-Oct-15 A
STK-6015	Portion CR4 - Initial Survey	12	21-Sep-15 A	03-Dec-15
STK-6150	Bridge F - Abutment A032 Predrilling	6	28-Oct-15 A	26-Nov-15
STK-6200	Bridge F - Abutment A032 Bored Piling	60	04-Jan-16	19-Mar-16
6.0 - Bridge A (Ch6850 to Ch7295)				
6.1 - Site Establisment				
BRA-1030	Portion CR4/CR10/CR11/CR12 - Initial Survey	0	01-Aug-15 A	13-Nov-15 A
BRA-1120	Portion C2P5 - Tree Felling + Site Clearance	0	22-Sep-15 A	30-Oct-15 A
6.2 - Ground Investigation				
BRA-2022	TTA - Wo Keng Shan Rd. Local Diversion for AP006	42	09-Jan-16	04-Mar-16
6.3 - Bored Piles				
BRA-3000.01	Bridge A - AA0011-03	8	10-Oct-15 A	30-Nov-15
BRA-3000.02	Bridge A - AA0011-01	4	24-Oct-15 A	24-Nov-15
BRA-3000.03	Bridge A - AA0011-05	10	25-Nov-15	05-Dec-15
BRA-3000.04	Bridge A - AA0011-04	12	07-Dec-15	19-Dec-15
BRA-3000.05	Bridge A - AP54N-01	10	21-Dec-15	02-Jan-16
BRA-3000.06	Bridge A - AA0011-02	10	04-Jan-16	14-Jan-16
BRA-3000.07	Bridge A - AP010S-02	0	16-Oct-15 A	16-Nov-15 A
BRA-3000.08	Bridge A - AP010N-01	5	02-Nov-15 A	25-Nov-15
BRA-3000.09	Bridge A - AP009S-01	26	25-Nov-15	26-Dec-15
BRA-3000.10	Bridge A - AP010N-02	11	26-Dec-15	09-Jan-16
BRA-3000.11	Bridge A - AP009N-02	33	09-Jan-16	24-Feb-16
BRA-3000.12	Bridge A - AP010S-01	12	18-Nov-15 A	03-Dec-15
BRA-3000.14	Bridge A - AP53N-01	9	05-Nov-15 A	30-Nov-15
BRA-3000.15	Bridge A - AP53S-01	2	26-Oct-15 A	21-Nov-15
BRA-3000.16	Bridge A - AP009N-01	20	20-Nov-15	12-Dec-15
BRA-3000.17	Bridge A - AP009S-02	15	14-Dec-15	31-Dec-15
BRA-3010.18	Bridge A - AP008N-01	9	15-Jan-16	25-Jan-16
BRA-3010.19	Bridge A - AP007S-01	8	26-Jan-16	03-Feb-16
BRA-3010.20	Bridge A - AP008S-01	10	04-Feb-16	22-Feb-16
BRA-3010.24	Bridge A - AA0051N-01	8	02-Jan-16	11-Jan-16
BRA-3010.25	Bridge A - AA0051S-01	9	12-Jan-16	21-Jan-16
BRA-3010.26	Bridge A - AA0051N-02	8	22-Jan-16	30-Jan-16
BRA-3010.27	Bridge A - AA0051S-02	7	01-Feb-16	15-Feb-16
7.0 - South Portal Works				
7.1 - South Portal Preliminary Works				
TSP-1010	Portion CR4 - Initial Survey +Site Clearance	5	24-Jun-15 A	25-Nov-15
TSP-1020	Portion CR4 - Archeological Survey / Final Report	4	17-Sep-15 A	24-Nov-15
TSP-1060	South Portal - Boulder Stabilization (12 nos)	75	18-Jan-16*	26-Apr-16
7.2 - South Portal Formation				
- SP Slope Excavation to 48.9mPD				
-- Cut Slope				
TSP-1230	SP/B3 - Cut Slope to +93.9 mPD (4578m3)	3	12-Oct-15 A	23-Nov-15
TSP-1240	SP/B4 - Cut Slope to +86.4 mPD (7779m3)	26	23-Nov-15	22-Dec-15
TSP-1250	SP/B5 - Cut Slope to +78.9 mPD (10977m3)	26	08-Dec-15	08-Jan-16
TSP-1260	SP/B6 - Cut Slope to +71.4 mPD (14065m3)	26	23-Dec-15	23-Jan-16
TSP-1270	SP/B7 - Cut Slope to +63.9 mPD (17231m3)	26	09-Jan-16	15-Feb-16
TSP-1280	SP/B8 - Cut Slope to +56.4 mPD (19745m3)	26	25-Jan-16	01-Mar-16



CRBC-CEC-KADEN Joint Venture

◆ Milestone
Critical Activity
Non-Critical Activity
Remaining Level of Effort
Actual Work

3-month Rolling Programme (20-Nov-2015)

Data Date: 20-Nov-15 **Run Date: 25-Nov-15**

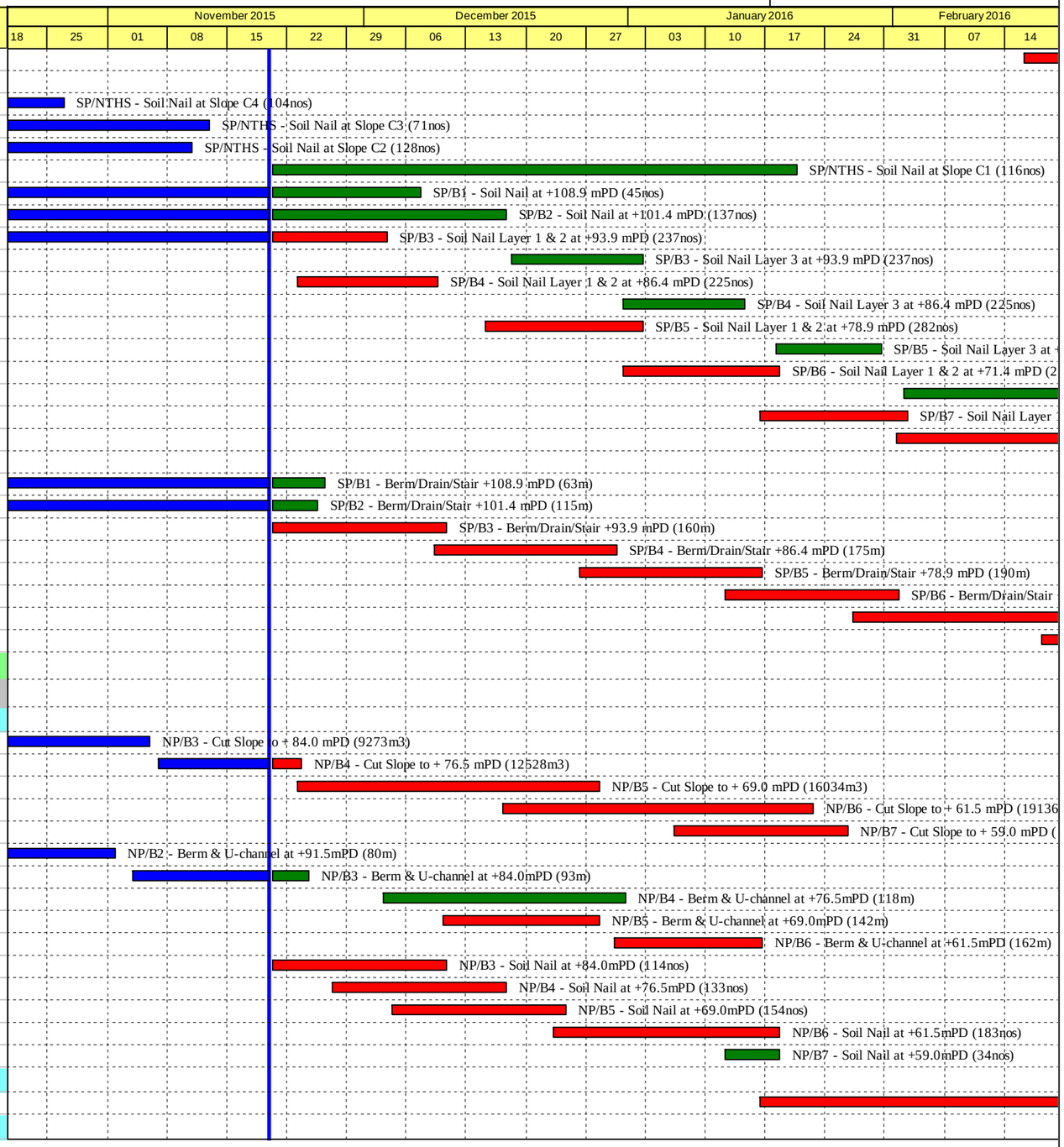
Project ID :LT6-3MRP-05
Layout : LT6IWP 3MRP

3-month Rolling Programme

Date	Revision	Checked	Approved
20-Nov-15	3MRP		

Liantang / Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - CONTRACT 6

Activity ID	Activity Name	Rem Dur	Start	Finish
TSP-1290	SP/B9 - Cut Slope to +48.9 mPD (23489m3)	26	16-Feb-16	16-Mar-16
-- Soil nail				
TSP-1070	SP/NTHS - Soil Nail at Slope C4 (104nos)	0	07-Sep-15 A	27-Oct-15 A
TSP-1075	SP/NTHS - Soil Nail at Slope C3 (71nos)	0	17-Sep-15 A	13-Nov-15 A
TSP-1080	SP/NTHS - Soil Nail at Slope C2 (128nos)	0	03-Oct-15 A	11-Nov-15 A
TSP-1085	SP/NTHS - Soil Nail at Slope C1 (116nos)	51	20-Nov-15	20-Jan-16
TSP-1310	SP/B1 - Soil Nail at +108.9 mPD (45nos)	15	23-Sep-15 A	07-Dec-15
TSP-1320	SP/B2 - Soil Nail at +101.4 mPD (137nos)	24	03-Oct-15 A	17-Dec-15
TSP-1330	SP/B3 - Soil Nail Layer 1 & 2 at +93.9 mPD (237nos)	12	09-Oct-15 A	03-Dec-15
TSP-1335	SP/B3 - Soil Nail Layer 3 at +93.9 mPD (237nos)	12	18-Dec-15	02-Jan-16
TSP-1340	SP/B4 - Soil Nail Layer 1 & 2 at +86.4 mPD (225nos)	15	23-Nov-15	09-Dec-15
TSP-1345	SP/B4 - Soil Nail Layer 3 at +86.4 mPD (225nos)	12	31-Dec-15	14-Jan-16
TSP-1350	SP/B5 - Soil Nail Layer 1 & 2 at +78.9 mPD (282nos)	15	15-Dec-15	02-Jan-16
TSP-1355	SP/B5 - Soil Nail Layer 3 at +78.9 mPD (282nos)	12	18-Jan-16	30-Jan-16
TSP-1360	SP/B6 - Soil Nail Layer 1 & 2 at +71.4 mPD (289nos)	15	31-Dec-15	18-Jan-16
TSP-1365	SP/B6 - Soil Nail Layer 3 at +71.4 mPD (289nos)	12	02-Feb-16	22-Feb-16
TSP-1370	SP/B7 - Soil Nail Layer 1 & 2 at +63.9 mPD (279nos)	15	16-Jan-16	02-Feb-16
TSP-1380	SP/B8 - Soil Nail Layer 1 & 2 at +56.4 mPD (275nos)	18	01-Feb-16	27-Feb-16
-- Berm				
TSP-1410	SP/B1 - Berm/Drain/Stair +108.9 mPD (63m)	5	07-Oct-15 A	26-Nov-15
TSP-1420	SP/B2 - Berm/Drain/Stair +101.4 mPD (115m)	5	09-Sep-15 A	25-Nov-15
TSP-1430	SP/B3 - Berm/Drain/Stair +93.9 mPD (160m)	18	20-Nov-15	10-Dec-15
TSP-1440	SP/B4 - Berm/Drain/Stair +86.4 mPD (175m)	18	09-Dec-15	30-Dec-15
TSP-1450	SP/B5 - Berm/Drain/Stair +78.9 mPD (190m)	18	26-Dec-15	16-Jan-16
TSP-1460	SP/B6 - Berm/Drain/Stair +71.4 mPD (185m)	18	12-Jan-16	01-Feb-16
TSP-1470	SP/B7 - Berm/Drain/Stair +63.9 mPD (180m)	18	27-Jan-16	23-Feb-16
TSP-1480	SP/B8 - Berm/Drain/Stair +56.4 mPD (190m)	18	18-Feb-16	09-Mar-16
8.0 - North Portal Works				
8.2 - North Portal Site Formation				
- NP Slope Excavation to +59.0mPD				
TNP-1120	NP/B3 - Cut Slope to + 84.0 mPD (9273m3)	0	19-Oct-15 A	06-Nov-15 A
TNP-1125	NP/B4 - Cut Slope to + 76.5 mPD (12528m3)	3	07-Nov-15 A	23-Nov-15
TNP-1130	NP/B5 - Cut Slope to + 69.0 mPD (16034m3)	30	23-Nov-15	28-Dec-15
TNP-1135	NP/B6 - Cut Slope to + 61.5 mPD (19136m3)	30	17-Dec-15	22-Jan-16
TNP-1140	NP/B7 - Cut Slope to + 59.0 mPD (14351m3)	18	06-Jan-16	26-Jan-16
TNP-1205	NP/B2 - Berm & U-channel at +91.5mPD (80m)	0	12-Oct-15 A	02-Nov-15 A
TNP-1210	NP/B3 - Berm & U-channel at +84.0mPD (93m)	4	04-Nov-15 A	24-Nov-15
TNP-1220	NP/B4 - Berm & U-channel at +76.5mPD (118m)	24	03-Dec-15	31-Dec-15
TNP-1230	NP/B5 - Berm & U-channel at +69.0mPD (142m)	15	10-Dec-15	28-Dec-15
TNP-1240	NP/B6 - Berm & U-channel at +61.5mPD (162m)	15	30-Dec-15	16-Jan-16
TNP-1310	NP/B3 - Soil Nail at +84.0mPD (114nos)	18	20-Nov-15	10-Dec-15
TNP-1320	NP/B4 - Soil Nail at +76.5mPD (133nos)	18	27-Nov-15	17-Dec-15
TNP-1330	NP/B5 - Soil Nail at +69.0mPD (154nos)	18	04-Dec-15	24-Dec-15
TNP-1340	NP/B6 - Soil Nail at +61.5mPD (183nos)	21	23-Dec-15	18-Jan-16
TNP-1350	NP/B7 - Soil Nail at +59.0mPD (34nos)	6	12-Jan-16	18-Jan-16
- NP 70 Deg. Temporary Slope				
TNP-1160	NP - 70 Deg. Temporary Slope	145	16-Jan-16	18-Jul-16
- NP Remaining Slope Excavation to Road Level				



CRBC-CEC-KADEN Joint Venture

◆ Milestone
Critical Activity
Non-Critical Activity
Remaining Level of Effort
Actual Work

3-month Rolling Programme (20-Nov-2015)

Data Date: 20-Nov-15 **Run Date: 25-Nov-15**

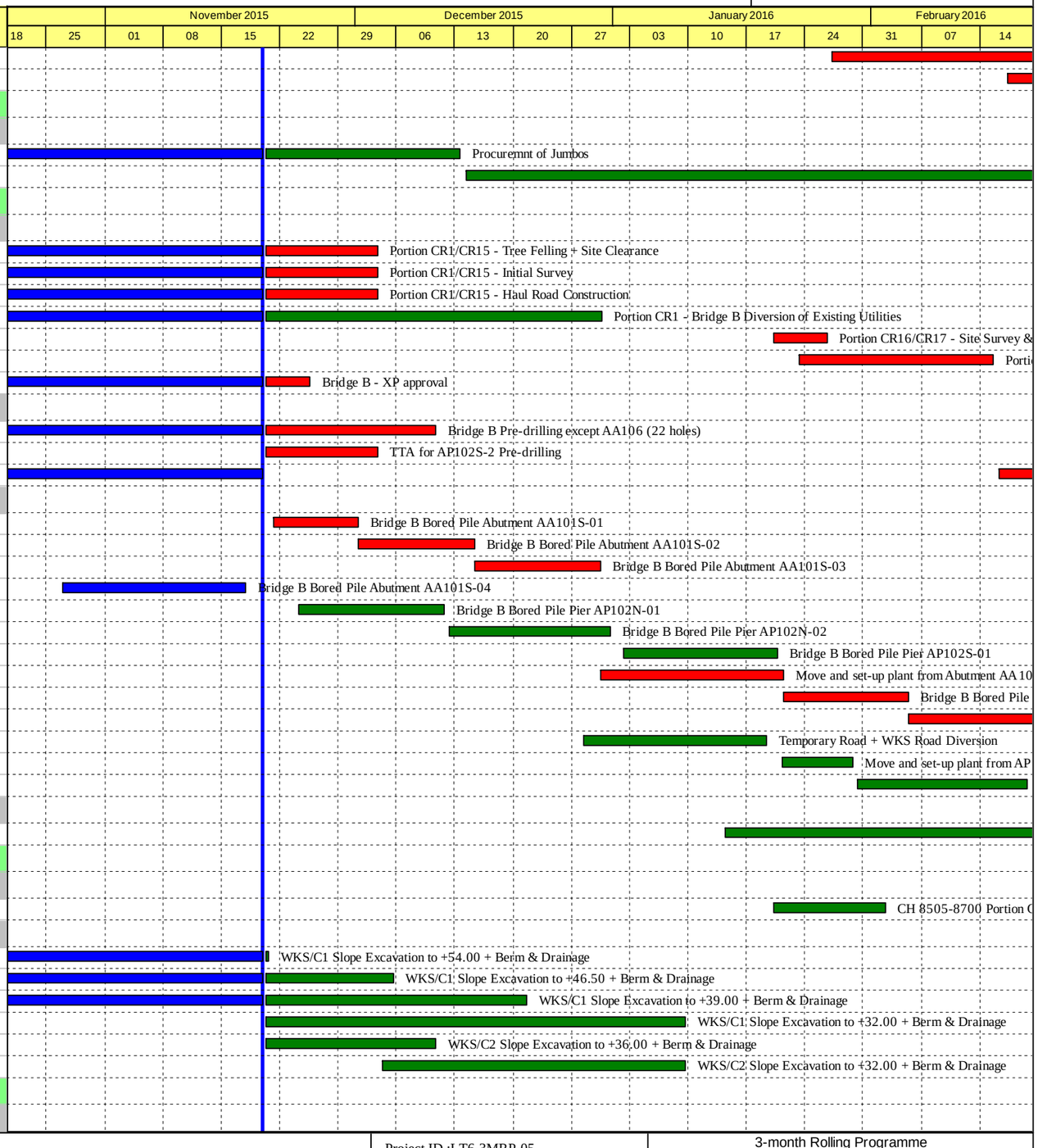
Project ID :LT6-3MRP-05
Layout : LT6IWP 3MRP

3-month Rolling Programme

Date	Revision	Checked	Approved
20-Nov-15	3MRP		

Liantang / Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - CONTRACT 6

Activity ID	Activity Name	Rem Dur	Start	Finish
TNP-1142	NP - Cut Slope to + 54.0 mPD (14351m3)	24	27-Jan-16	01-Mar-16
TNP-1352	NP - Soil Nail at +54.0mPD (41nos)	12	17-Feb-16	01-Mar-16
9.0 - Cheung Shan Tunnel Works				
9.1 - Preliminary Works				
TUN-1000	Procuremnt of Jumbos	24	23-Aug-15 A	13-Dec-15
TUN-1100	Manufacture and delivery of Jumbo	210	14-Dec-15	10-Jul-16
10.0 - Bridge B (Ch8250 to Ch8505)				
10.1 - Preparation Works				
BRB-1020	Portion CR1/CR15 - Tree Felling + Site Clearance	12	02-Jul-15 A	03-Dec-15
BRB-1030	Portion CR1/CR15 - Initial Survey	12	07-Aug-15 A	03-Dec-15
BRB-1040	Portion CR1/CR15 - Haul Road Construction	12	07-Aug-15 A	03-Dec-15
BRB-1080	Portion CR1 - Bridge B Diversion of Existing Utilities	34	17-Jul-15 A	30-Dec-15
BRB-1400	Portion CR16/CR17 - Site Survey & Clearance	6	20-Jan-16	26-Jan-16
BRB-1405	Portion CR17 - Temporary Piling Platform	14	23-Jan-16	15-Feb-16
BRB-1450	Bridge B - XP approval	6	24-Jun-15 A	25-Nov-15
10.2 - Ground Investigation				
BRB-2000	Bridge B Pre-drilling except AA106 (22 holes)	18	31-Jul-15 A	10-Dec-15
BRB-2100	TTA for AP102S-2 Pre-drilling	12	20-Nov-15	03-Dec-15
BRB-2200	Bridge B Pre-drilling AA106 (5 holes)	12	25-Jul-15 A	29-Feb-16
10.3 - Bored piles				
BRB-3010	Bridge B Bored Pile Abutment AA101S-01	8	21-Nov-15	01-Dec-15
BRB-3020	Bridge B Bored Pile Abutment AA101S-02	12	01-Dec-15	15-Dec-15
BRB-3030	Bridge B Bored Pile Abutment AA101S-03	12	15-Dec-15	30-Dec-15
BRB-3050	Bridge B Bored Pile Abutment AA101S-04	0	27-Oct-15 A	18-Nov-15 A
BRB-3051	Bridge B Bored Pile Pier AP102N-01	16	24-Nov-15*	11-Dec-15
BRB-3052	Bridge B Bored Pile Pier AP102N-02	16	12-Dec-15	31-Dec-15
BRB-3053	Bridge B Bored Pile Pier AP102S-01	16	02-Jan-16	20-Jan-16
BRB-3061	Move and set-up plant from Abutment AA101	18	30-Dec-15	21-Jan-16
BRB-3062	Bridge B Bored Pile Pier AP103S-01	13	21-Jan-16	05-Feb-16
BRB-3063	Bridge B Bored Pile Pier AP103S-02	13	05-Feb-16	27-Feb-16
BRB-3071	Temporary Road + WKS Road Diversion	18	28-Dec-15*	19-Jan-16
BRB-3072	Move and set-up plant from AP102	8	21-Jan-16	29-Jan-16
BRB-3073	Bridge B Bored Pile Pier AP103N-R-1	12	30-Jan-16	19-Feb-16
10.4 - Pile Cap & Footing				
BRB-4000	Bridge B Abutment AA101N/AA101S - Pile Cap / Footing	42	14-Jan-16	10-Mar-16
11.0 - Road On Grade (Ch 8505 to Ch 8700)				
11.1 - Preliminary Works				
RBC-1500	CH 8505-8700 Portion CR17A - Site Survey and Clearance	12	20-Jan-16	02-Feb-16
11.2 - Cut Slopes				
RBC-2100	WKS/C1 Slope Excavation to +54.00 + Berm & Drainage	1	23-Aug-15 A	20-Nov-15
RBC-2200	WKS/C1 Slope Excavation to +46.50 + Berm & Drainage	14	15-Sep-15 A	05-Dec-15
RBC-2300	WKS/C1 Slope Excavation to +39.00 + Berm & Drainage	27	30-Sep-15 A	21-Dec-15
RBC-2400	WKS/C1 Slope Excavation to +32.00 + Berm & Drainage	42	20-Nov-15	09-Jan-16
RBC-2500	WKS/C2 Slope Excavation to +36.00 + Berm & Drainage	18	20-Nov-15	10-Dec-15
RBC-2600	WKS/C2 Slope Excavation to +32.00 + Berm & Drainage	30	04-Dec-15	09-Jan-16
12.0 - Bridge C (Ch8700 to Ch9005)				
12.1 - Preparation Works				



CRBC-CEC-KADEN Joint Venture

Milestone
Critical Activity
Non-Critical Activity
Remaining Level of Effort
Actual Work

3-month Rolling Programme (20-Nov-2015)

Data Date: 20-Nov-15 **Run Date: 25-Nov-15**

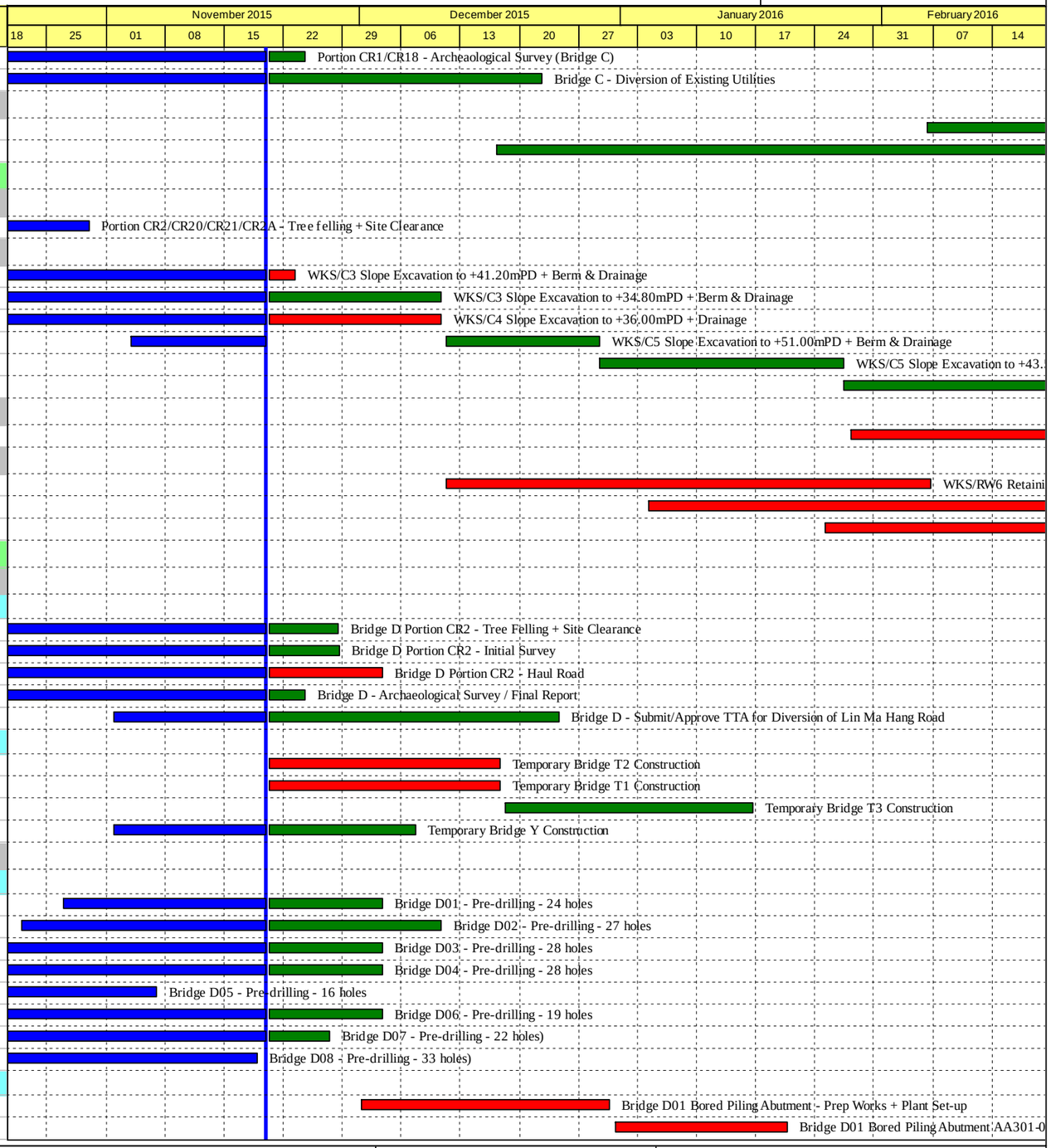
Project ID :LT6-3MRP-05
Layout : LT6IWP 3MRP

3-month Rolling Programme

Date	Revision	Checked	Approved
20-Nov-15	3MRP		

Liantang / Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - CONTRACT 6

Activity ID	Activity Name	Rem Dur	Start	Finish
BRC-1250	Portion CR1/CR18 - Archeaological Survey (Bridge C)	4	17-Sep-15 A	24-Nov-15
BRC-9610	Bridge C - Diversion of Existing Utilities	28	31-Jul-15 A	22-Dec-15
12.3 - Bored piles				
BRC-3000	Bridge C - Bored Piling for Abut AA201 - 4 nos	48	06-Feb-16	13-Apr-16
BRC-9620	Bridge C - Bored Piling for Abut AA207 - 6 nos	72	17-Dec-15	18-Mar-16
13.0 - Road On Grade (Ch 9005 to Ch 9260)				
13.1 - Preliminary Works				
RCD-1120	Portion CR2/CR20/CR21/CR2A - Tree felling + Site Clearance	0	14-Aug-15 A	30-Oct-15 A
13.2 - Cut Slopes				
RCD-2010	WKS/C3 Slope Excavation to +41.20mPD + Berm & Drainage	2	18-Sep-15 A	23-Nov-15
RCD-2020	WKS/C3 Slope Excavation to +34.80mPD + Berm & Drainage	18	08-Oct-15 A	10-Dec-15
RCD-2030	WKS/C4 Slope Excavation to +36.00mPD + Drainage	18	18-Sep-15 A	10-Dec-15
RCD-2090	WKS/C5 Slope Excavation to +51.00mPD + Berm & Drainage	14	04-Nov-15 A	29-Dec-15
RCD-2100	WKS/C5 Slope Excavation to +43.50mPD + Berm & Drainage	24	29-Dec-15	27-Jan-16
RCD-2200	WKS/C5 Slope Excavation to +36.00mPD + Soil Nail + Berm & Drainage	36	27-Jan-16	16-Mar-16
13.3 - Fill Slopes				
RCD-3000	WKS/F8 Fill Slope	75	28-Jan-16	05-May-16
13.4 - Retaining Walls				
RCD-4000	WKS/RW6 Retaining Wall Excavation	48	11-Dec-15	06-Feb-16
RCD-4100	WKS/RW6 Retaining Wall Base Slab	60	04-Jan-16	19-Mar-16
RCD-4200	WKS/RW6 Retaining Wall Stem Wall	60	25-Jan-16	14-Apr-16
14.0 - Bridge D (Ch9269 to Ch11369)				
14.1 - Bridge D - Preliminary Works				
- Site Establishment				
BRD-1020	Bridge D Portion CR2 - Tree Felling + Site Clearance	8	31-Jul-15 A	28-Nov-15
BRD-1030	Bridge D Portion CR2 - Initial Survey	8	21-Aug-15 A	28-Nov-15
BRD-1180	Bridge D Portion CR2 - Haul Road	12	08-Sep-15 A	03-Dec-15
BRD-1300	Bridge D - Archaeological Survey / Final Report	4	16-Sep-15 A	24-Nov-15
BRD-7739	Bridge D - Submit/Approve TTA for Diversion of Lin Ma Hang Road	30	02-Nov-15 A	24-Dec-15
- Temporary Bridges				
BRD-1190	Temporary Bridge T2 Construction	24	20-Nov-15	17-Dec-15
BRD-1200	Temporary Bridge T1 Construction	24	20-Nov-15	17-Dec-15
BRD-1220	Temporary Bridge T3 Construction	24	18-Dec-15	16-Jan-16
BRD-1230	Temporary Bridge Y Construction	15	02-Nov-15 A	07-Dec-15
14.2 - Bored Piles				
- Pre-drilling				
BRD-2010	Bridge D01 - Pre-drilling - 24 holes	12	27-Oct-15 A	03-Dec-15
BRD-2020	Bridge D02 - Pre-drilling - 27 holes	18	22-Oct-15 A	10-Dec-15
BRD-2030	Bridge D03 - Pre-drilling - 28 holes	12	24-Sep-15 A	03-Dec-15
BRD-2040	Bridge D04 - Pre-drilling - 28 holes	12	30-Sep-15 A	03-Dec-15
BRD-2050	Bridge D05 - Pre-drilling - 16 holes	0	09-Oct-15 A	07-Nov-15 A
BRD-2060	Bridge D06 - Pre-drilling - 19 holes	12	08-Sep-15 A	03-Dec-15
BRD-2070	Bridge D07 - Pre-drilling - 22 holes)	7	19-Aug-15 A	27-Nov-15
BRD-2080	Bridge D08 - Pre-drilling - 33 holes)	0	12-Aug-15 A	19-Nov-15 A
- Bored Piling				
BRD-2101	Bridge D01 Bored Piling Abutment - Prep Works + Plant Set-up	25	01-Dec-15*	30-Dec-15
BRD-2102	Bridge D01 Bored Piling Abutment AA301-01	17	31-Dec-15	20-Jan-16



CRBC-CEC-KADEN Joint Venture

◆ Milestone
Critical Activity
Non-Critical Activity
Remaining Level of Effort
Actual Work

3-month Rolling Programme (20-Nov-2015)

Data Date: 20-Nov-15 **Run Date: 25-Nov-15**

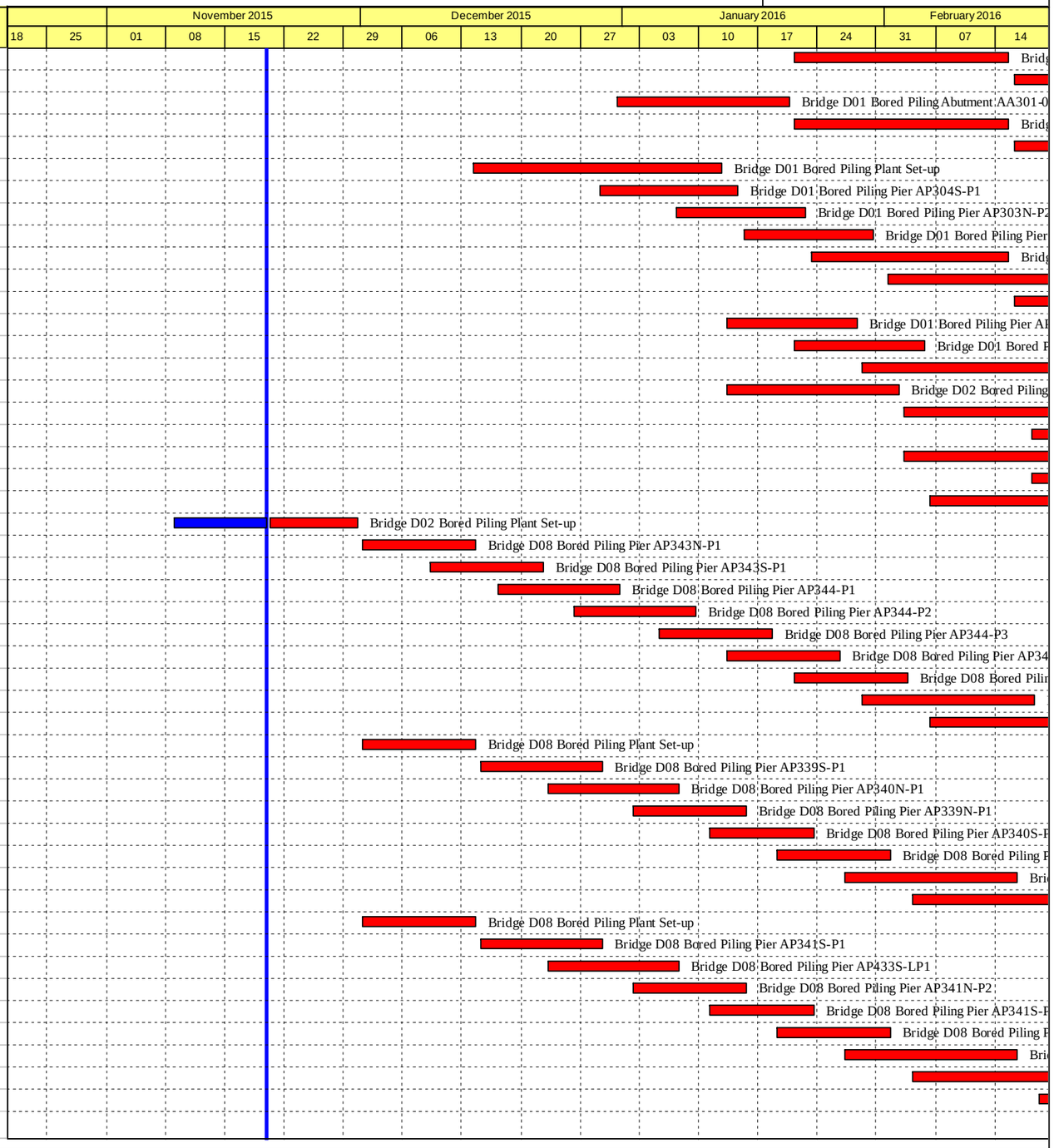
Project ID :LT6-3MRP-05
Layout : LT6IWP 3MRP

3-month Rolling Programme

Date	Revision	Checked	Approved
20-Nov-15	3MRP		

Liantang / Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - CONTRACT 6

Activity ID	Activity Name	Rem Dur	Start	Finish
BRD-2103	Bridge D01 Bored Piling Abutment AA301-02	16	21-Jan-16	15-Feb-16
BRD-2104	Bridge D01 Bored Piling Abutment AA301-03	15	16-Feb-16	03-Mar-16
BRD-2106	Bridge D01 Bored Piling Abutment AA301-05	17	31-Dec-15	20-Jan-16
BRD-2107	Bridge D01 Bored Piling Abutment AA301-06	16	21-Jan-16	15-Feb-16
BRD-2108	Bridge D01 Bored Piling Abutment AA301-07	15	16-Feb-16	03-Mar-16
BRD-2151	Bridge D01 Bored Piling Plant Set-up	24	14-Dec-15*	12-Jan-16
BRD-2152	Bridge D01 Bored Piling Pier AP304S-P1	14	29-Dec-15	14-Jan-16
BRD-2153	Bridge D01 Bored Piling Pier AP303N-P2	14	07-Jan-16	22-Jan-16
BRD-2154	Bridge D01 Bored Piling Pier AP304N-P1	14	15-Jan-16	30-Jan-16
BRD-2155	Bridge D01 Bored Piling Pier AP304S-P2	14	23-Jan-16	15-Feb-16
BRD-2156	Bridge D01 Bored Piling Pier AP303N-P1	14	01-Feb-16	23-Feb-16
BRD-2157	Bridge D01 Bored Piling Pier AP302N-L-P2	14	16-Feb-16	02-Mar-16
BRD-2162	Bridge D01 Bored Piling Pier AP303S-L-P1	14	13-Jan-16	28-Jan-16
BRD-2163	Bridge D01 Bored Piling Pier AP403N-P1	14	21-Jan-16	05-Feb-16
BRD-2164	Bridge D01 Bored Piling Pier AP404N-P1	14	29-Jan-16	20-Feb-16
BRD-2201	Bridge D02 Bored Piling Plant Set-up	18	13-Jan-16	02-Feb-16
BRD-2202	Bridge D02 Bored Piling Pier AP305S-P1	14	03-Feb-16	25-Feb-16
BRD-2203	Bridge D02 Bored Piling Pier AP306S-P1	14	18-Feb-16	04-Mar-16
BRD-2209	Bridge D02 Bored Piling Pier AP406N-P1	14	03-Feb-16	25-Feb-16
BRD-2210	Bridge D02 Bored Piling Pier AP307N-P2	14	18-Feb-16	04-Mar-16
BRD-2215	Bridge D02 Bored Piling Pier AP405N-P1	14	06-Feb-16	29-Feb-16
BRD-2981	Bridge D02 Bored Piling Plant Set-up	9	09-Nov-15 A	30-Nov-15
BRD-2982	Bridge D08 Bored Piling Pier AP343N-P1	12	01-Dec-15	14-Dec-15
BRD-2983	Bridge D08 Bored Piling Pier AP343S-P1	12	09-Dec-15	22-Dec-15
BRD-2984	Bridge D08 Bored Piling Pier AP344-P1	12	17-Dec-15	31-Dec-15
BRD-2985	Bridge D08 Bored Piling Pier AP344-P2	12	26-Dec-15	09-Jan-16
BRD-2986	Bridge D08 Bored Piling Pier AP344-P3	12	05-Jan-16	18-Jan-16
BRD-2987	Bridge D08 Bored Piling Pier AP344-P4	12	13-Jan-16	26-Jan-16
BRD-2988	Bridge D08 Bored Piling Pier AP344-P5	12	21-Jan-16	03-Feb-16
BRD-2989	Bridge D08 Bored Piling Pier AP344-P6	12	29-Jan-16	18-Feb-16
BRD-2990	Bridge D08 Bored Piling Pier AP344-P7	12	06-Feb-16	26-Feb-16
BRD-2995	Bridge D08 Bored Piling Plant Set-up	12	01-Dec-15	14-Dec-15
BRD-2996	Bridge D08 Bored Piling Pier AP339S-P1	12	15-Dec-15	29-Dec-15
BRD-2997	Bridge D08 Bored Piling Pier AP340N-P1	12	23-Dec-15	07-Jan-16
BRD-2998	Bridge D08 Bored Piling Pier AP339N-P1	12	02-Jan-16	15-Jan-16
BRD-2999	Bridge D08 Bored Piling Pier AP340S-P1	12	11-Jan-16	23-Jan-16
BRD-3001	Bridge D08 Bored Piling Pier AP342S-P1	12	19-Jan-16	01-Feb-16
BRD-3002	Bridge D08 Bored Piling Pier AP337N-P1	12	27-Jan-16	16-Feb-16
BRD-3003	Bridge D08 Bored Piling Pier AP337S-P1	12	04-Feb-16	24-Feb-16
BRD-3004	Bridge D08 Bored Piling Plant Set-up	12	01-Dec-15	14-Dec-15
BRD-3005	Bridge D08 Bored Piling Pier AP341S-P1	12	15-Dec-15	29-Dec-15
BRD-3006	Bridge D08 Bored Piling Pier AP433S-LP1	12	23-Dec-15	07-Jan-16
BRD-3007	Bridge D08 Bored Piling Pier AP341N-P2	12	02-Jan-16	15-Jan-16
BRD-3008	Bridge D08 Bored Piling Pier AP341S-P2	12	11-Jan-16	23-Jan-16
BRD-3009	Bridge D08 Bored Piling Pier AP338S-P2	12	19-Jan-16	01-Feb-16
BRD-3010	Bridge D08 Bored Piling Pier AP338S-P1	12	27-Jan-16	16-Feb-16
BRD-3011	Bridge D08 Bored Piling Pier AA432S-P2	12	04-Feb-16	24-Feb-16
BRD-3012	Bridge D08 Bored Piling Pier AP341S-P1	12	19-Feb-16	03-Mar-16
BRD-3013	Bridge D08 Bored Piling Pier AP433S-LP1	12	27-Feb-16	11-Mar-16



CRBC-CEC-KADEN Joint Venture

◆ Milestone
Critical Activity
Non-Critical Activity
Remaining Level of Effort
Actual Work

3-month Rolling Programme (20-Nov-2015)

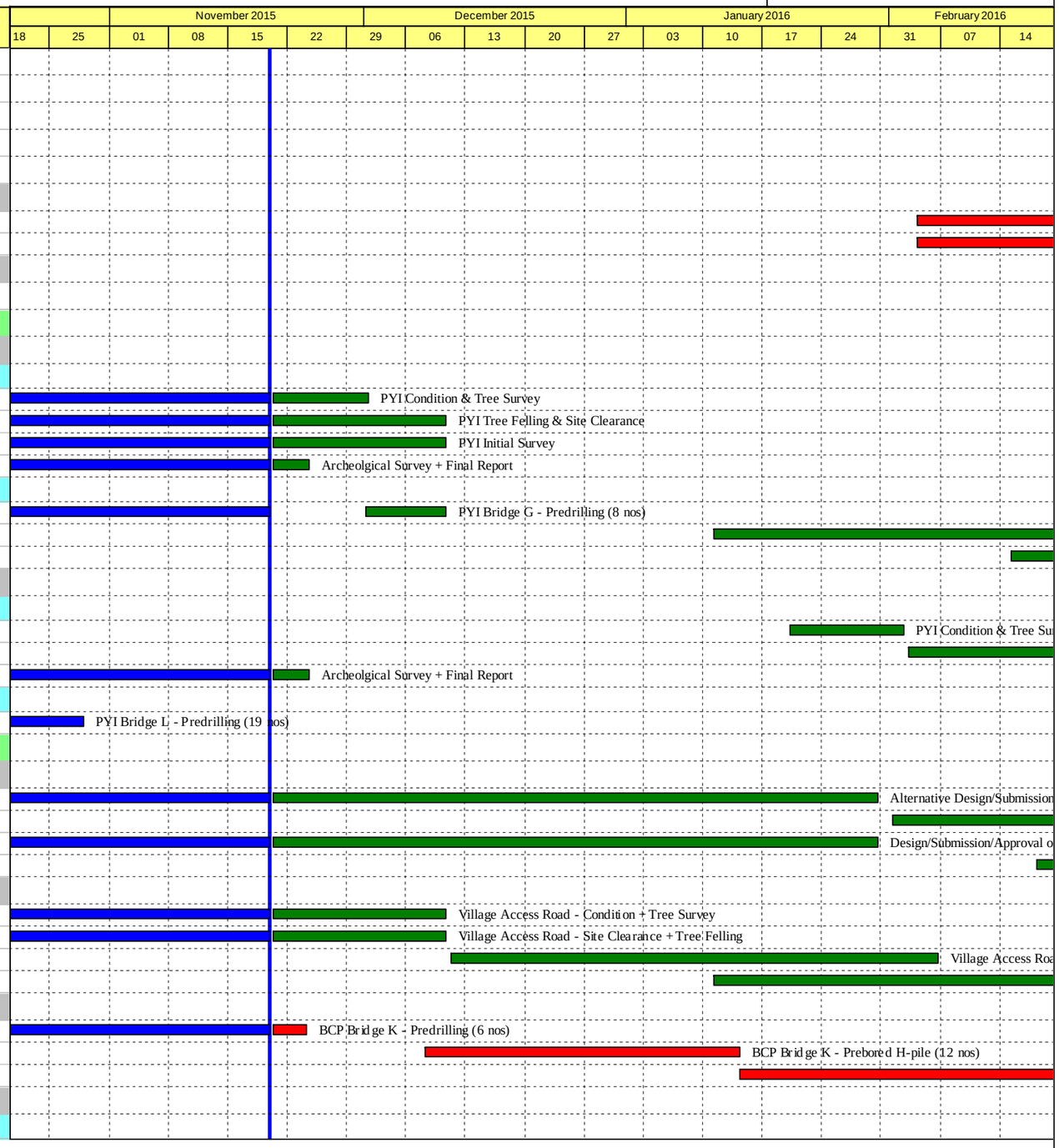
Data Date: 20-Nov-15 **Run Date: 25-Nov-15**

Project ID :LT6-3MRP-05
Layout : LT6IWP 3MRP

3-month Rolling Programme			
Date	Revision	Checked	Approved
20-Nov-15	3MRP		

Liantang / Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - CONTRACT 6

Activity ID	Activity Name	Rem Dur	Start	Finish
BRD-3014	Bridge D08 Bored Piling Pier AP341N-P2	12	07-Mar-16	19-Mar-16
BRD-3015	Bridge D08 Bored Piling Pier AP341S-P2	12	15-Mar-16	31-Mar-16
BRD-3016	Bridge D08 Bored Piling Pier AP338S-P2	12	23-Mar-16	09-Apr-16
BRD-3017	Bridge D08 Bored Piling Pier AP338S-P1	12	05-Apr-16	18-Apr-16
BRD-3018	Bridge D08 Bored Piling Pier AA432S-P2	12	13-Apr-16	26-Apr-16*
14.3 - Pile Caps				
BRD-3750	Bridge D08 - Pilecap (2P), 5 nos (2 sets)	72	04-Feb-16	09-May-16
BRD-3775	Bridge D08 - Pilecap (1P), 11 nos (3 sets)	72	04-Feb-16	09-May-16
14.4 - Piers and Abutments				
BRD-4750	Bridge D08 - Pier 16 nos (3 sets)	60	10-May-16	21-Jul-16*
15.0 - Ping Yeung Interchange (PYI)				
15.1 - PYI Local Road - South				
- Preparation Works				
PYI-1010	PYI Condition & Tree Survey	10	24-Jun-15 A	01-Dec-15
PYI-1015	PYI Tree Felling & Site Clearance	18	07-Aug-15 A	10-Dec-15
PYI-1020	PYI Initial Survey	18	11-Sep-15 A	10-Dec-15
PYI-1030	Archeolgical Survey + Final Report	4	21-Sep-15 A	24-Nov-15
- Bridge G				
PYI-1040	PYI Bridge G - Predrilling (8 nos)	9	08-Oct-15 A	10-Dec-15
PYI-1050	PYI Bridge G - Prebored H-pile - 16 nos	30	11-Jan-16	20-Feb-16
PYI-1100	PYI Bridge G - Construct Abutments	42	15-Feb-16	07-Apr-16
15.2 - PYI Local Road - North				
- Preparation Works				
PYI-2010	PYI Condition & Tree Survey	12	20-Jan-16	02-Feb-16
PYI-2020	PYI Tree Felling & Site Clearance	18	03-Feb-16	01-Mar-16
PYI-2040	Archeolgical Survey + Final Report	4	21-Sep-15 A	24-Nov-15
- Bridge L				
PYI-2050	PYI Bridge L - Predrilling (19 nos)	0	08-Oct-15 A	29-Oct-15 A
16.0 - Border Control Point (BCP)				
16.1 - Proposed Lin Ma Hang Road				
BCP-1010	Alternative Design/Submission/Approval for BCP/RW4A	60	02-Sep-15 A	30-Jan-16
BCP-1050	C5P1/Lin Ma Hang Rd - Retaining Wall BCP/RW4 & RW4A	118	01-Feb-16	30-Jun-16
BCP-1110	Design/Submission/Approval of CSD Proposal for BCP/RW3	60	02-Sep-15 A	30-Jan-16
BCP-1150	C5P1/Lin Ma Hang Rd - CSD Proposal BCP/RW3	40	18-Feb-16	08-Apr-16
16.2 - Village Access Road (VAR)				
BCP-6010	Village Access Road - Condition + Tree Survey	18	02-Sep-15 A	10-Dec-15
BCP-6020	Village Access Road - Site Clearance + Tree Felling	18	02-Oct-15 A	10-Dec-15
BCP-6050	Village Access Road E/B - Site Formation + BCP/C1 + BCP/C2	48	11-Dec-15	06-Feb-16
BCP-6100	Village Access Road - Gabion Channel	90	11-Jan-16	05-May-16
16.4 - Bridge K				
BCP-4050	BCP Bridge K - Predrilling (6 nos)	3	02-Oct-15 A	24-Nov-15
BCP-4100	BCP Bridge K - Prebored H-pile (12 nos)	30	08-Dec-15	14-Jan-16
BCP-4150	BCP Bridge K - Construct Abutments	48	14-Jan-16	17-Mar-16
16.5 - BCP Underpass				
- Depressed Road Structure				



CRBC-CEC-KADEN Joint Venture

◆ Milestone
Critical Activity
Non-Critical Activity
Remaining Level of Effort
Actual Work

3-month Rolling Programme (20-Nov-2015)

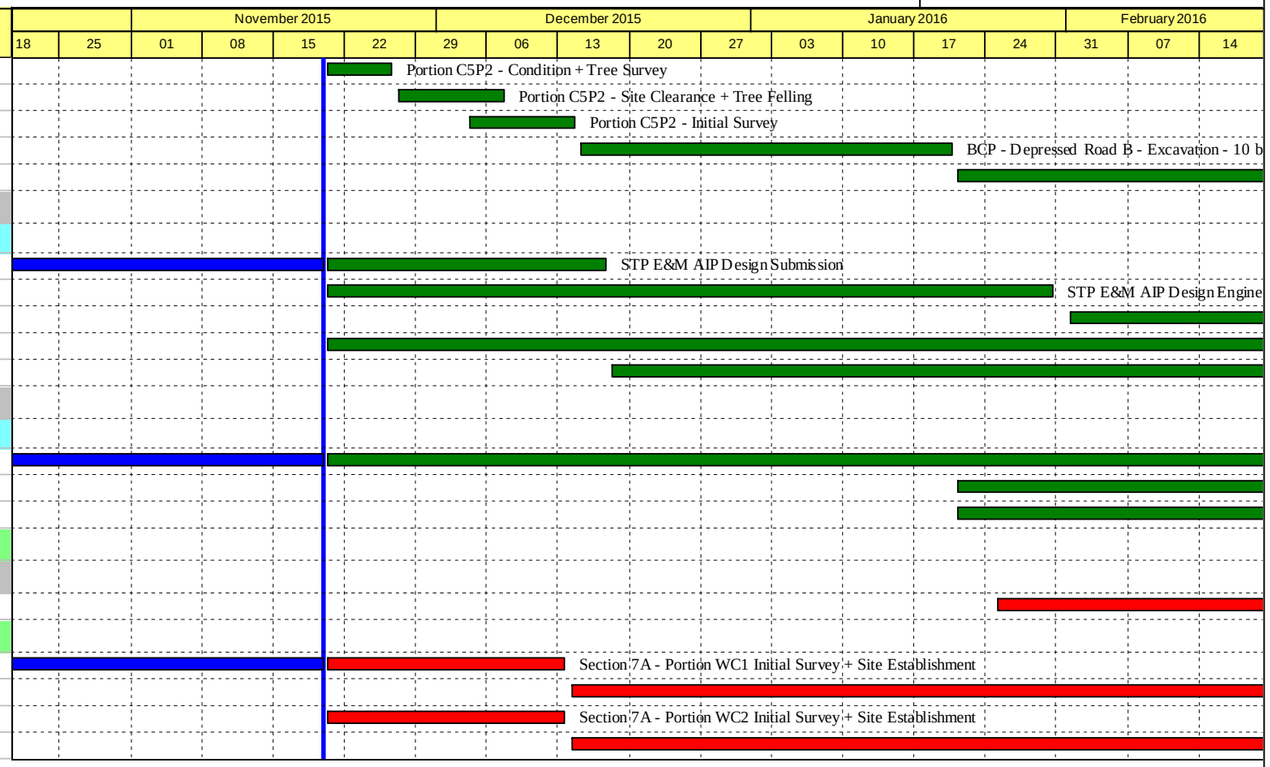
Data Date: 20-Nov-15 **Run Date: 25-Nov-15**

Project ID :LT6-3MRP-05
Layout : LT6IWP 3MRP

3-month Rolling Programme			
Date	Revision	Checked	Approved
20-Nov-15	3MRP		

Liantang / Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - CONTRACT 6

Activity ID	Activity Name	Rem Dur	Start	Finish
BCP-2150	Portion C5P2 - Condition + Tree Survey	6	20-Nov-15	26-Nov-15
BCP-2160	Portion C5P2 - Site Clearance + Tree Felling	9	27-Nov-15	07-Dec-15
BCP-2170	Portion C5P2 - Initial Survey	9	04-Dec-15	14-Dec-15
BCP-2200	BCP - Depressed Road B - Excavation - 10 bays	30	15-Dec-15	20-Jan-16
BCP-2250	BCP - Depressed Road B - Base Slab - 10 bays	54	21-Jan-16	02-Apr-16
16.8 - Sewage Treatment Plant				
- Contractor's Design Approval				
BCP-7005	STP E&M AIP Design Submission	24	24-Jul-15 A	17-Dec-15
BCP-7010	STP E&M AIP Design Engineer Review + Approval	60	20-Nov-15	30-Jan-16
BCP-7015	STP E&M AIP Design Review by Relevant Govt. Dept.	70	01-Feb-16	03-May-16
BCP-7020	STP E&M DDA Design Submission	130	20-Nov-15	03-May-16
BCP-7030	STP Civil and Structure Design Submission	90	18-Dec-15	14-Apr-16
16.9 - Reclaimed Water Facilities (Provisional)				
- Contractor's Design Approval				
BCP-8780	RWF E&M AIP Design Submission	75	05-Oct-15 A	24-Feb-16
BCP-8790	RWF E&M AIP Design Engineer Review + Approval	60	21-Jan-16	11-Apr-16
BCP-8810	RWF E&M DDA Design Submission	130	21-Jan-16	05-Jul-16
17.0 - Works Subject to Excision				
17.6 - Section IIA of the Works				
WSE-6000	Pipe Jacking HV001 and HV002	475	25-Jan-16	13-May-17
18.0 - Landscaping and Establishment Works				
LEW-1000	Section 7A - Portion WC1 Initial Survey + Site Establishment	24	24-Jul-15 A	13-Dec-15
LEW-1100	Section 7A - Portion WC1 Initial Planting	220	14-Dec-15	20-Jul-16
LEW-1200	Section 7A - Portion WC2 Initial Survey + Site Establishment	24	20-Nov-15	13-Dec-15
LEW-1300	Section 7A - Portion WC2 Initial Planting	220	14-Dec-15	20-Jul-16



CRBC-CEC-KADEN Joint Venture

◆ Milestone
Critical Activity
Non-Critical Activity
Remaining Level of Effort
Actual Work

3-month Rolling Programme (20-Nov-2015)

Data Date: 20-Nov-15 **Run Date: 25-Nov-15**

Project ID :LT6-3MRP-05
Layout : LT6IWP 3MRP

3-month Rolling Programme			
Date	Revision	Checked	Approved
20-Nov-15	3MRP		

Contract SS C505

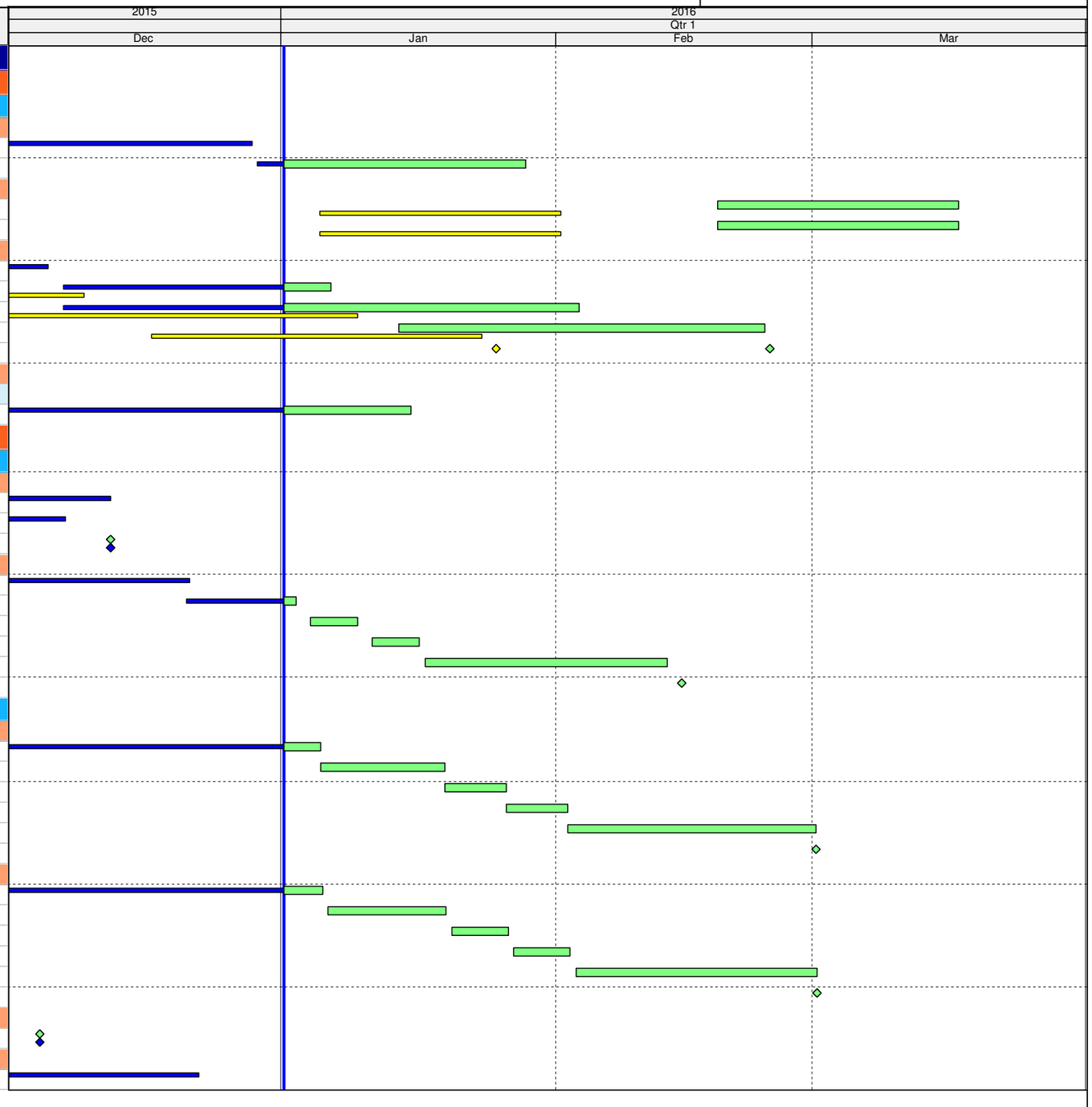
Data Date: 01-Jan-16
Print Date: 07-Jan-16 14:28

Liantang/Heung Yuen Wai Boundary Control Point

BCP Buildings and Associated Facilities

LEIGHTON 禮頓

Activity ID	Activity Name	Orig	Start	Finish	Finish Variance
LHYW Boundary Control Point - Works Programme Rev		361	09-Jul-15 A	26-Sep-16	35
PRELIMINARIES AND GENERAL REQUIREMENTS		213	09-Jul-15 A	17-Mar-16	-33
Submission and Approvals		213	09-Jul-15 A	17-Mar-16	-33
Programme		60	30-Nov-15 A	28-Jan-16	
1086a	Prepare and submit Works Programme Rev 1A	29	30-Nov-15 A	28-Dec-15 A	
1086b	Architect review and approval on Works Programme Rev 1A	31	29-Dec-15 A	28-Jan-16	
Other Submissions		24	19-Feb-16	17-Mar-16	-33
1161	Prepare and submit Ironmongery Schedule for PTB	24	19-Feb-16	17-Mar-16	-33
8796	Prepare and submit Ironmongery Schedule for Ancillary Buildings	24	19-Feb-16	17-Mar-16	-33
CSD / CBWD Submission		194	09-Jul-15 A	25-Feb-16	-21
8807	Prepare and submit 1st Batch of CSD / CBWD	105	09-Jul-15 A	05-Dec-15 A	-21
8808	Comment by Consultant	24	07-Dec-15 A	06-Jan-16	-21
8809	Review By ArchSD	48	07-Dec-15 A	03-Feb-16	-21
8810	Address to Comments and Resubmission	30	14-Jan-16	24-Feb-16	-21
8811	Approval Obtained	0	25-Feb-16		-21
Permit		90	21-Jul-15 A	15-Jan-16	-59
Environmental Permit EP-404/2011		90	21-Jul-15 A	15-Jan-16	-59
1176	EP - Prepare and submit Environmental Monitoring and Audit (EM&A) Pro	90	21-Jul-15 A	15-Jan-16	-59
DETAILED DESIGN OF WORKS		343	24-Jul-15 A	26-Sep-16	35
Foundations for Passenger Terminal Building		152	07-Aug-15 A	15-Feb-16	-100
Driven H-Piles (Outside Hall Block)		30	08-Oct-15 A	12-Dec-15 A	-65
8959	19 - Architect review final submission	6	08-Oct-15 A	12-Dec-15 A	-89
8961	19 - SCU review	28	03-Nov-15 A	07-Dec-15 A	-74
8960	19 - Architect issue consent to commence construction	0		12-Dec-15 A	-65
Piles adjacent to CEDD Subway		152	07-Aug-15 A	15-Feb-16	-100
8214	19 - Prepare design submission	12	07-Aug-15 A	21-Dec-15 A	-102
8218	19 - Architect review design submission	6	21-Dec-15 A	02-Jan-16	-104
8220	19 - Response to Architect comments	6	04-Jan-16	09-Jan-16	-104
8222	19 - Architect review final submission	6	11-Jan-16	16-Jan-16	-104
8223	19 - SCU review	28	17-Jan-16	13-Feb-16	-128
8224	19 - Architect issue consent to commence construction	0		15-Feb-16	-100
Foundation for Ancillary Buildings (Portion 1)		173	24-Jul-15 A	01-Mar-16	-77
Driven H-Piles - 02 HKPF Building		172	24-Jul-15 A	01-Mar-16	-103
8226	Prepare design submission	24	24-Jul-15 A	05-Jan-16	-106
8230	Architect review design submission	12	05-Jan-16	19-Jan-16	-106
8232	Response to Architect comments	6	19-Jan-16	26-Jan-16	-106
8234	Architect review final submission	6	26-Jan-16	02-Feb-16	-106
8235	SCU review	28	02-Feb-16	01-Mar-16	-131
8236	Architect issue consent to commence construction	0		01-Mar-16	-103
Driven H-Piles - 03 Fire Station		149	24-Jul-15 A	01-Mar-16	-77
8517	Prepare design submission	24	24-Jul-15 A	05-Jan-16	-83
8519	Architect review design submission	12	06-Jan-16	19-Jan-16	-83
8520	Response to Architect comments	6	20-Jan-16	26-Jan-16	-83
8521	Architect review final submission	6	27-Jan-16	02-Feb-16	-83
8522	SCU review	28	03-Feb-16	01-Mar-16	-101
8523	Architect issue consent to commence construction	0		01-Mar-16	-77
Driven H-Piles - 05 CEB (Outbound)		0	04-Dec-15 A	04-Dec-15 A	-38
8529	Architect issue consent to commence construction	0		04-Dec-15 A	-38
Driven H-Piles - 07 FXRVIS Building (Outbound)		139	24-Jul-15 A	18-Feb-16	-67
8530	Prepare design submission	24	24-Jul-15 A	22-Dec-15 A	-74



- Actual Milestone
- Milestone
- Baseline Milestone
- Actual Work
- Critical Remaining Work
- Remaining Work
- Project Baseline

3 Months Lookahead Works Programme

Progress to 01-Jan-16

Project ID: H2634-P7
Baseline: Works Programme Rev 1A

Layout: 3 Month Lookahead Works Programme
Filter: TASK filter: Date range DD-1M to DD+3M.

Page 1 of 7

Progress Update			
Date	Revision	Checked	A
31-Dec-15	Progress update		

Activity ID	Activity Name	Orig	Start	Finish	Finish Variance
8531	Architect review design submission	12	22-Dec-15 A	07-Jan-16	-73
8532	Response to Architect comments	6	08-Jan-16	14-Jan-16	-73
8533	Architect review final submission	6	15-Jan-16	21-Jan-16	-73
8534	SCU review	28	22-Jan-16	18-Feb-16	-89
8535	Architect issue consent to commence construction	0		18-Feb-16	-67
Foundation for Ancillary Buildings (Portion 2) and Elevated		109	24-Jul-15 A	29-Mar-16	-19
Driven H-Piles - 04 CEB (Inbound)		24	12-Nov-15 A	22-Dec-15 A	19
8491	SCU review	28	12-Nov-15 A	09-Dec-15 A	38
8492	Architect issue consent to commence construction	0		22-Dec-15 A	19
Driven H-Piles - 06 FXRVIS Building (Inbound)		66	24-Jul-15 A	02-Mar-16	0
8536	Prepare design submission	24	24-Jul-15 A	06-Jan-16	0
8537	Architect review design submission	12	07-Jan-16	20-Jan-16	0
8538	Response to Architect comments	6	21-Jan-16	27-Jan-16	0
8539	Architect review final submission	6	28-Jan-16	03-Feb-16	0
8540	SCU review	28	04-Feb-16	02-Mar-16	0
8541	Architect issue consent to commence construction	0		02-Mar-16	0
Driven H-Piles - Elevated Walkways 1, 3 & 4		109	24-Jul-15 A	29-Mar-16	-37
8547	Prepare design submission	24	24-Jul-15 A	22-Jan-16	-38
8549	Architect review design submission	12	23-Jan-16	05-Feb-16	-38
8550	Response to Architect comments	6	06-Feb-16	19-Feb-16	-38
8551	Architect review final submission	6	20-Feb-16	26-Feb-16	-38
8551a	SCU review	28	26-Feb-16	25-Mar-16	-51
8552	Architect issue consent to commence construction	0		29-Mar-16	-37
Foundation for Bridges B1 - B5		89	13-Nov-15 A	16-Feb-16	-52
DDA (B4/B5)		0	01-Dec-15 A	01-Dec-15 A	-32
8932	B4/B5 - Architech Consent to Commence Construction	0		01-Dec-15 A	-32
DDA (B1/B2/B3)		33	13-Nov-15 A	16-Feb-16	-52
8258	B1/B2/B3 - Response to comments	6	13-Nov-15 A	29-Dec-15 A	-53
8260	B1/B2/B3 - Architect 2nd Review	6	29-Dec-15 A	05-Jan-16	-52
8955	B1/B2/B3 - Submit Design to HyD / GEO	0		05-Jan-16	-52
8950	B1/B2/B3 - HyD Review and Comment	12	06-Jan-16	19-Jan-16	-52
8943	B1/B2/B3 - GEO Auditing Period	35	06-Jan-16	09-Feb-16	-64
8801	B1/B2/B3 - Response to comments from HyD incl. IDC Check	6	20-Jan-16	26-Jan-16	-52
8944	B1/B2/B3 - HyD "No Comment"	12	27-Jan-16	16-Feb-16	-52
8262	B1/B2/B3 - Architech Consent to Commence Construction	0		16-Feb-16	-52
Architectural & Others		286	29-Oct-15 A	26-Sep-16	-33
Curtain Walls, Glass Wall & Aluminum Claddings		115	29-Oct-15 A	29-Feb-16	-36
VMU Design		6	29-Oct-15 A	06-Dec-15 A	-45
8636	Incorporate comments	6	29-Oct-15 A	06-Dec-15 A	-45
PMU Design		88	01-Dec-15 A	20-Feb-16	-29
1488	Prepare shop drawings	18	01-Dec-15 A	27-Dec-15 A	-29
1556	Submit for comment	21	28-Dec-15 A	21-Jan-16	-29
1558	Incorporate comments	6	22-Jan-16	28-Jan-16	-29
8656	Resubmit and approval	14	29-Jan-16	20-Feb-16	-29
Prototypes and Mockups		44	28-Dec-15 A	29-Feb-16	-120
1572	Performance Prototype & Prototype Trial Assemblies Submissions (A11-1.	24	28-Dec-15 A	25-Jan-16	-121
1576	Architect Review and comment on Performance Prototype & prototype tr	21	25-Jan-16	15-Feb-16	-149
1570	Mock up Submission for Curtain Wall, Glass Wall and Aluminum Cladding	24	26-Jan-16	29-Feb-16	-121
1578	Re-submit Performance prototype & prototype trial assemblies submission	7	15-Feb-16	23-Feb-16	-114
Roofing		180	19-Feb-16	26-Sep-16	-33
1410	Metal Roofing & Roof Fall Arrest System Design Submission Review & Ap	180	19-Feb-16	26-Sep-16	-33
1414	Skylight/Glazed Canopies/Glazed Roofing & Sun Shades Design Submissio	180	19-Feb-16	26-Sep-16	-33
1416	Green Roof System Design Submission Review & Approval	150	19-Feb-16	20-Aug-16	-33
Suspended Ceiling, Steel Windows, Louvre and Door		180	19-Feb-16	26-Sep-16	-45
1408	Steel Windows, Louvre and Door Design Submission Review & Approval	150	19-Feb-16	20-Aug-16	-33
1418	Suspended Ceiling System Design Submission Review & Approval	180	19-Feb-16	26-Sep-16	-45
Others		124	30-Nov-15 A	16-Jul-16	-33

Actual Milestone
Milestone
Baseline Milestone
Actual Work
Critical Remaining Work
Remaining Work
Project Baseline

3 Months Lookahead Works Programme

Progress to 01-Jan-16

Project ID: H2634-P7
Baseline: Works Programme Rev 1A

Layout: 3 Month Lookahead Works Programme
Filter: TASK filter: Date range DD-1M to DD+3M.

Page 2 of 7

Progress Update			
Date	Revision	Checked	A
31-Dec-15	Progress update		

Activity ID	Activity Name	Orig	Start	Finish	Finish Variance
8686	Steel Maintenance and Support Platforms Design Submission Review & A	120	30-Nov-15 A	03-May-16	28
8666	Glass and Metal Balustrades Design Submission Review & Approval	120	19-Feb-16	16-Jul-16	-33
8676	Minor Structural Steelworks Design Submission Review & Approval	120	19-Feb-16	16-Jul-16	-33
8706	Glass Cladding Design Submission Review & Approval	120	19-Feb-16	16-Jul-16	-33
8716	X-ray Shielding Doors Design Submission Review & Approval	90	19-Feb-16	10-Jun-16	-33
8726	Hoisting and Beams Installation Design Submission Review & Approval	90	19-Feb-16	10-Jun-16	-33
Bridge Bearing Design Submission (Bridge 4 & 5)		84	20-Nov-15 A	11-Feb-16	-21
A1092	Prepare Submission	21	20-Nov-15 A	10-Dec-15 A	0
A1093	Architech 1st Review	14	01-Jan-16	14-Jan-16	-21
A1094	Response to Architech Comment	14	15-Jan-16	28-Jan-16	-21
A1095	Architect 2nd Review	14	29-Jan-16	11-Feb-16	-21
A1096	Architech Approval	0		11-Feb-16	-21
Bridge Movement Joint Design Submission (Bridge 4 & 5)		63	01-Jan-16	03-Mar-16	-42
A1097	Prepare Submission	21	01-Jan-16*	21-Jan-16	-42
A1098	Architech 1st Review	14	22-Jan-16	04-Feb-16	-42
A1099	Response to Architech Comment	14	05-Feb-16	18-Feb-16	-42
A1100	Architect 2nd Review	14	19-Feb-16	03-Mar-16	-42
A1101	Architech Approval	0		03-Mar-16	-42
Bridge Bearing Design Submission (Bridge 1-3)		63	01-Jan-16	03-Mar-16	-28
A1082	Prepare Submission	21	01-Jan-16*	21-Jan-16	-28
A1083	Architech 1st Review	14	22-Jan-16	04-Feb-16	-28
A1084	Response to Architech Comment	14	05-Feb-16	18-Feb-16	-28
A1085	Architect 2nd Review	14	19-Feb-16	03-Mar-16	-28
A1086	Architech Approval	0		03-Mar-16	-28
Bridge Movement Joint Design Submission (Bridge 1-3)		63	01-Jan-16	03-Mar-16	-28
A1087	Prepare Submission	21	01-Jan-16*	21-Jan-16	-28
A1088	Architech 1st Review	14	22-Jan-16	04-Feb-16	-28
A1089	Response to Architech Comment	14	05-Feb-16	18-Feb-16	-28
A1090	Architect 2nd Review	14	19-Feb-16	03-Mar-16	-28
A1091	Architech Approval	0		03-Mar-16	-28
MEP Systems		205	07-Oct-15 A	13-Sep-16	45
Shop Drawings		156	07-Oct-15 A	10-May-16	-15
3100	Combined BWIC & Concealed Conduit / Services Drawings	120	07-Oct-15 A	05-Mar-16	0
3102	Combined Services Drawings & shop Drawings	120	07-Dec-15 A	10-May-16	-15
Fuel Tank		100	01-Feb-16	10-Jun-16	45
DD.BS82	Fuel Tank Submission/Review & Approval	100	01-Feb-16	10-Jun-16	45
Air Conditioning		100	01-Feb-16	10-Jun-16	45
DD.BS0010	Chiller Design Submission/Review & Approval	100	01-Feb-16	10-Jun-16	45
DD.BS0012	Chiller Package Pumps Design Submission/Review & Approval	100	01-Feb-16	10-Jun-16	45
DD.BS0016	VRV/VAV Design Submission Review & Approval	100	01-Feb-16	10-Jun-16	45
Electrical		100	01-Feb-16	10-Jun-16	45
DD.BS0030	MCC Design Submission/Review & Approval	100	01-Feb-16	10-Jun-16	45
DD.BS0032	Armoured Cable Design Submission/Review & Approval	100	01-Feb-16	10-Jun-16	45
DD.BS0034	MCB/ MCCB Design Submission/Review & Approval	100	01-Feb-16	10-Jun-16	45
Fire Services		100	01-Feb-16	10-Jun-16	45
DD.BS0040	FS Pumps Design Submission/Review & Approval	100	01-Feb-16	10-Jun-16	45
DD.BS0058	Fire Shutters, Folding Gates & Smoke Curtain Design Submission Review	100	01-Feb-16	10-Jun-16	45
Diesel Generators		100	01-Feb-16	10-Jun-16	45
DD.BS0050	Diesel Generators Design Submission/Review & Approval	100	01-Feb-16	10-Jun-16	45
Low Voltage Cubicle Switchboards		100	01-Feb-16	10-Jun-16	45
DD.BS0060	LVSB Design Submission/Review & Approval	100	01-Feb-16	10-Jun-16	45
Broadcast Reception & Burglar Alarm System		100	01-Feb-16	10-Jun-16	45
DD.BS0070	Broadcast Reception Design Submission/Review & Approval	100	01-Feb-16	10-Jun-16	45
DD.BS0072	Burglar Alarm & Security System Design Submission/Review & Approval	100	01-Feb-16	10-Jun-16	45
Catering Equipment		180	01-Feb-16	13-Sep-16	45
DD.BS0080	Catering Equipment Design Submission/Review & Approval	180	01-Feb-16	13-Sep-16	45
LPG		100	01-Feb-16	10-Jun-16	45

Actual Milestone
Milestone
Baseline Milestone
Actual Work
Critical Remaining Work
Remaining Work
Project Baseline

3 Months Lookahead Works Programme

Progress to 01-Jan-16

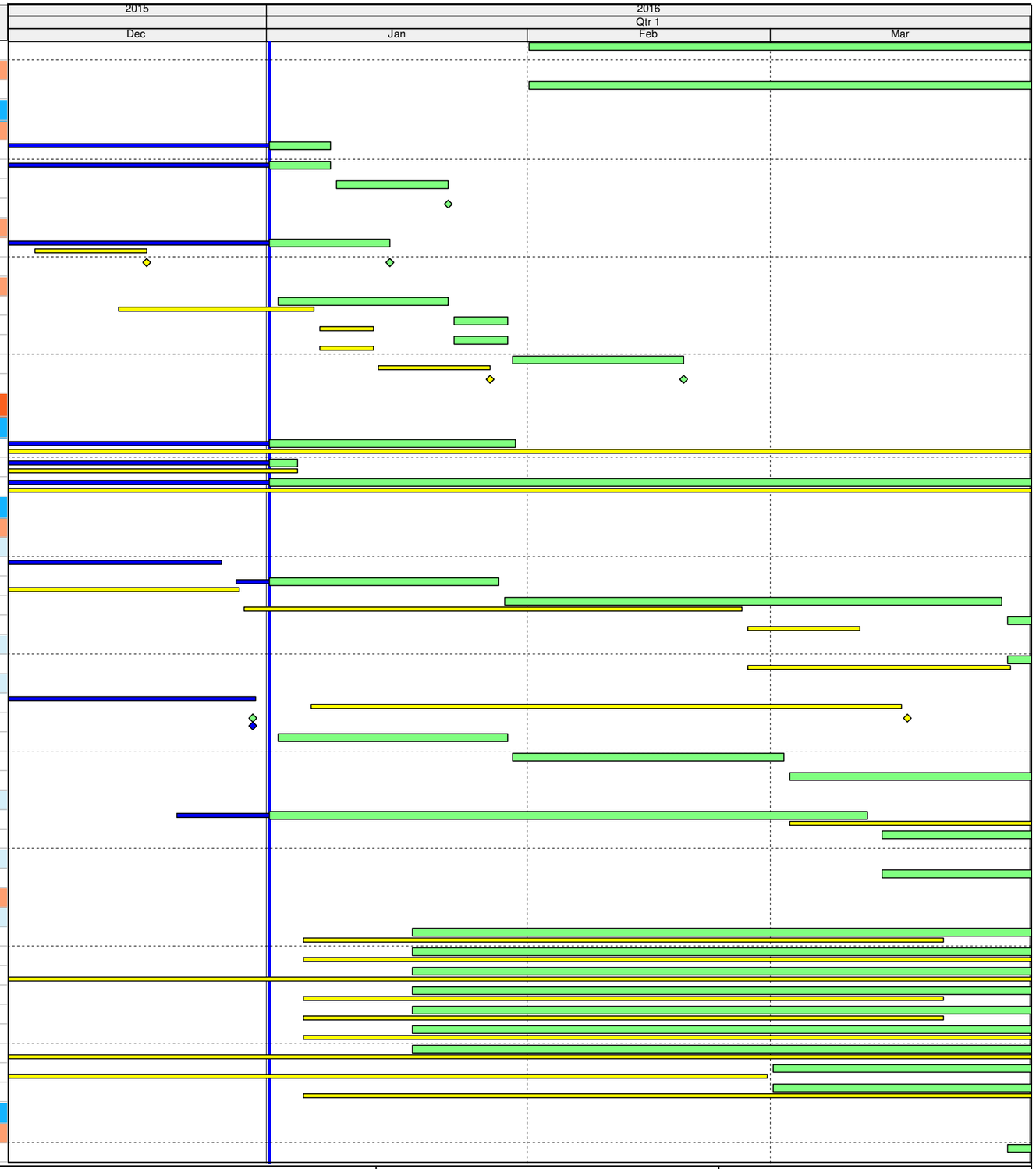
Project ID: H2634-P7
Baseline: Works Programme Rev 1A

Layout: 3 Month Lookahead Works Programme
Filter: TASK filter: Date range DD-1M to DD+3M.

Page 3 of 7

Progress Update			
Date	Revision	Checked	A
31-Dec-15	Progress update		

Activity ID	Activity Name	Orig	Start	Finish	Finish Variance
DD.BS80	Liquified Petroleum Gas Design Submission/Review & Approval	100	01-Feb-16	10-Jun-16	45
Drainage		100	01-Feb-16	10-Jun-16	45
DD.BS81	Drainage and plumbing Design Submission/Review & Approval	100	01-Feb-16	10-Jun-16	45
Temporary Works Design & Engineering		36	29-Oct-15 A	19-Feb-16	-14
ELS for u/g Water / Fuel Tanks		30	29-Oct-15 A	22-Jan-16	-68
1492	TW2 - ICE review and issue check certificate	6	29-Oct-15 A	08-Jan-16	-68
1494	TW2 - Prepare 1st submission; incl. Method Statement, Temp works Desi	6	29-Oct-15 A	08-Jan-16	-68
1496	TW2 - Submit to Architect for review	12	09-Jan-16	22-Jan-16	-68
1498	TW2 - Architect Issue Consent	0		22-Jan-16	-68
Formwork and Falsework		12	27-Nov-15 A	15-Jan-16	-22
1588	TW8 - Submit to Architect for review	12	27-Nov-15 A	15-Jan-16	-22
1590	TW8 - Architect Issue Consent	0		15-Jan-16	-22
Formwork and Falsework - Bridge		36	02-Jan-16	19-Feb-16	-14
8802	TW9 - Prepare design for Formworks and Falseworks	18	02-Jan-16	22-Jan-16	-14
8803	TW9 - ICE review and issue check certificate	6	23-Jan-16	29-Jan-16	-14
8804	TW9 - Prepare 1st submission; incl. Method Statement	6	23-Jan-16	29-Jan-16	-14
8805	TW9 - Submit to Architect for review	12	30-Jan-16	19-Feb-16	-14
8806	TW9 - Architect Issue Consent	0		19-Feb-16	-14
PROCUREMENT MOCK-UPS MANUFACTURING & DELIVE		259	28-Jul-15 A	27-Jul-16	49
Procurement of Major Subcontracts		296	28-Jul-15 A	03-May-16	0
3778	Building Services	150	28-Jul-15 A	30-Jan-16	64
3776	Architectural / fitting Out	120	07-Sep-15 A	04-Jan-16	0
3774	Builder's Works	180	06-Nov-15 A	03-May-16	0
Mock-Ups, Prototypes & Performance Test		164	30-Oct-15 A	27-Jul-16	-3
Facade		111	30-Oct-15 A	24-May-16	50
VMU		70	02-Nov-15 A	11-Apr-16	-22
A1000	Procurement and Fabrication	25	02-Nov-15 A	26-Dec-15 A	-23
A1010	Installation	24	28-Dec-15 A	28-Jan-16	-25
A1020	1st stage inspection	60	29-Jan-16	28-Mar-16	-31
A1030	Incorporate comments	12	29-Mar-16	11-Apr-16	-24
PMU		25	29-Mar-16	26-Apr-16	-24
A1060	Procurement including extrusion and glazing	25	29-Mar-16	26-Apr-16	-24
GV Kiosk (Prototype A)		69	30-Oct-15 A	01-Apr-16	49
PT.1040	Prepare shop drawings and structural calculations	60	30-Oct-15 A	30-Dec-15 A	64
PT.1050	Submit to Architect	0	30-Dec-15 A		77
PT.1051	RC Structure	24	02-Jan-16	29-Jan-16	
PT.1060	Fabricate prototype	28	30-Jan-16	02-Mar-16	52
PT.1070	Install prototype	24	03-Mar-16	01-Apr-16	52
Double Curved Aluminum Cladding (Prototype B)		78	21-Dec-15 A	05-Apr-16	51
PT.1130	Prepare shop drawings and structural calculations	60	21-Dec-15 A	12-Mar-16	51
PT.1140	Submit to Architect	18	14-Mar-16	05-Apr-16	51
PTB Passenger Hall Interior (Prototype D)		60	14-Mar-16	24-May-16	51
PT.1310	Prepare shop drawings and structural calculations	60	14-Mar-16	24-May-16	51
Mock-ups		151	18-Jan-16	27-Jul-16	-42
Other Specified Mockups (PS.A01)		151	18-Jan-16	27-Jul-16	-42
MU.1110	Acoustic Panel System	60	18-Jan-16*	07-Apr-16	-11
MU.1170	Dog Kennel Partitions and Doors	120	18-Jan-16*	20-Jun-16	-11
MU.1210	Fairface Concrete Works	120	18-Jan-16*	20-Jun-16	-59
MU.1240	Floor Self Smoothing System	60	18-Jan-16*	07-Apr-16	-11
MU.1250	Flooring System	60	18-Jan-16*	07-Apr-16	-11
MU.1360	Toilet Cubicle and Changing Cubicle (incl fittings etc)	120	18-Jan-16*	20-Jun-16	-11
MU.1370	Structural Steel works	120	18-Jan-16*	20-Jun-16	-59
MU.1120	Aluminium Windows Louvres and Doors	120	01-Mar-16	27-Jul-16	-120
MU.1130	Aluminium Standing Seam Metal Roofing	120	01-Mar-16	27-Jul-16	-42
Procurement Architectural & Others		115	03-Mar-16	23-Jul-16	52
Walls, Windows & Claddings		96	29-Mar-16	23-Jul-16	52
1574	Bulk material procurement	96	29-Mar-16	23-Jul-16	52



- Actual Milestone
- Milestone
- Baseline Milestone
- Actual Work
- Critical Remaining Work
- Remaining Work
- Project Baseline

3 Months Lookahead Works Programme

Progress to 01-Jan-16

Project ID: H2634-P7
Baseline: Works Programme Rev 1A

Layout: 3 Month Lookahead Works Programme
Filter: TASK filter: Date range DD-1M to DD+3M.

Page 4 of 7

Progress Update			
Date	Revision	Checked	A
31-Dec-15	Progress update		

Activity ID	Activity Name	Orig	Start	Finish	Finish Variance
Interior and Others		96	03-Mar-16	30-Jun-16	28
8756	Steel Maintenance and Support Platforms order manufacture and delivery	96	03-Mar-16	30-Jun-16	28
Elavated Walkway Type A & B Steel Trusses		60	11-Mar-16	26-May-16	-37
Elavated Walkway 1		60	11-Mar-16	26-May-16	-37
8901	Subcontracting / Prepare Shop Drawings / Matierial Submission	60	11-Mar-16	26-May-16	-37
CONSTRUCTION		303	09-Jul-15 A	18-Jun-16	43
Establishment Mobilisation & Advance Works		303	09-Jul-15 A	15-Apr-16	77
Site Establishment Works		72	05-Oct-15 A	31-Dec-15 A	157
Portion 2		72	05-Oct-15 A	31-Dec-15 A	157
Offices Welfare and other Facilities		72	05-Oct-15 A	31-Dec-15 A	157
8502	Setup main Site Compound with Office and Welfare Facilities	72	05-Oct-15 A	24-Dec-15 A	161
8504	Setup main Engineer's Office	72	05-Oct-15 A	31-Dec-15 A	157
Temporary Utilities		214	09-Jul-15 A	31-Mar-16	-66
8508	Obtain permit for electric connection and build sub-station	180	09-Jul-15 A	31-Mar-16	-87
1288	Fire Hydrant connection for site use	0		26-Dec-15 A	6
1296	Temporary Site Power ready	0		31-Mar-16	-66
Tower Cranes		80	29-Oct-15 A	15-Apr-16	11
19 Passenger Terminal Building (PTB)		51	29-Oct-15 A	05-Jan-16	51
1360	TC - Construct Tower Crane Footing (TC1 & TC2)	30	29-Oct-15 A	11-Dec-15 A	57
1366	TC - Construct Tower Crane Footing (TC3 & TC4)	30	16-Nov-15 A	29-Dec-15 A	53
1362	TC - Setup Tower Crane TC1 & TC2; Test & Cert. by ICE	3	16-Dec-15 A	19-Dec-15 A	53
1368	TC - Setup Tower Crane TC3 & TC4; Test & Cert. by ICE	3	02-Jan-16	05-Jan-16	51
05 Cargo Examination Building (Outbound)		30	08-Mar-16	15-Apr-16	11
1378	TC - Concrete Tower Crane Footing (TC7 & TC8)	30	08-Mar-16	15-Apr-16	11
Passenger Terminal Building (PTB)		211	12-Sep-15 A	18-Jun-16	-58
19/20 Milestones		0	04-Mar-16	04-Mar-16	-54
19.MS20	PTB Building - Pilecaps Works Start	0	04-Mar-16		-54
19 - PTB (Podium)		211	12-Sep-15 A	18-Jun-16	-58
19 - Foundations		160	12-Sep-15 A	16-Apr-16	-37
19 - Foundations Portion C1		126	12-Sep-15 A	04-Mar-16	-54
19.802	19C1a - H-Piles Under Tower (300 no)	30	12-Sep-15 A	19-Dec-15 A	-41
19.804	19C1b - H Piles Outside Tower(177 no)	18	27-Oct-15 A	21-Jan-16	-54
19.806	19C1 Submit Piling Record & Load Test Under Tower	18	21-Dec-15 A	13-Jan-16	-41
19.808	19C1 Architect review Piling Record and Load Test Under Tower	12	14-Jan-16	27-Jan-16	-41
19.810	19C1 Submit Piling Record & Load Test Outside Tower	18	22-Jan-16	18-Feb-16	-54
19.812	19C1 Architect review Piling Record and Load Test Outside Tower	12	19-Feb-16	03-Mar-16	-54
19.116	19C1 - Start to construct Pilecaps at Portion C1	0	04-Mar-16		-54
19 - Foundations Portion C2		132	17-Sep-15 A	11-Mar-16	-63
19.814	19C2a - H Piles Under Tower (261 no)	27	17-Sep-15 A	05-Jan-16	-55
19.816	19C2b - H Piles Outside Tower (165 no)	18	23-Oct-15 A	28-Jan-16	-63
19.818	19C2 Submit Piling Record & Load Test Under Tower	18	06-Jan-16	26-Jan-16	-55
19.820	19C2 Architect Review Piling Record and Load Test Under Tower	12	27-Jan-16	16-Feb-16	-55
19.822	19C2 Submit Piling Record & Load Test Outside Tower	18	29-Jan-16	25-Feb-16	-63
19.824	19C2 Architect Review Piling Record and Load Test Outside Tower	12	26-Feb-16	10-Mar-16	-63
19.218	19C2 - Start to construct Pilecaps at Portion C2	0	11-Mar-16		-63
19 - Foundations Portion B1		127	02-Oct-15 A	05-Mar-16	-55
19.826	19B1a - H Piles Under Tower (295 no)	30	02-Oct-15 A	05-Jan-16	-52
19.830	19B1b - H Piles Outside Tower (182 no)	18	27-Oct-15 A	22-Jan-16	-55
19.828	19B1 Submit Piling Record & Load Test Under Tower	18	06-Jan-16	26-Jan-16	-52
19.834	19B1 Submit Piling Record & Load Test Outside Tower	18	23-Jan-16	19-Feb-16	-55
19.832	19B1 Architect Review Piling Record and Load Test Under Tower	12	27-Jan-16	16-Feb-16	-52
19.836	19B1 Architect Review Piling Record and Load Test Outside Tower	12	20-Feb-16	04-Mar-16	-55
19.372	19B1 - Start to construct Pilecaps at Portion B1	0	05-Mar-16		-55
19 - Foundations Portion B2		136	28-Sep-15 A	18-Mar-16	-16
19.838	19B2a - H Piles Under Tower (236 no)	25	28-Sep-15 A	05-Jan-16	-54
19.842	19B2c - H Piles Outside Tower (116 no)	25	24-Oct-15 A	30-Jan-16	-57
19.844	19B2 Submit Piling Record & Load Test Under Tower	18	06-Jan-16	26-Jan-16	-54

Actual Milestone
Milestone
Baseline Milestone
Actual Work
Critical Remaining Work
Remaining Work
Project Baseline

3 Months Lookahead Works Programme

Progress to 01-Jan-16

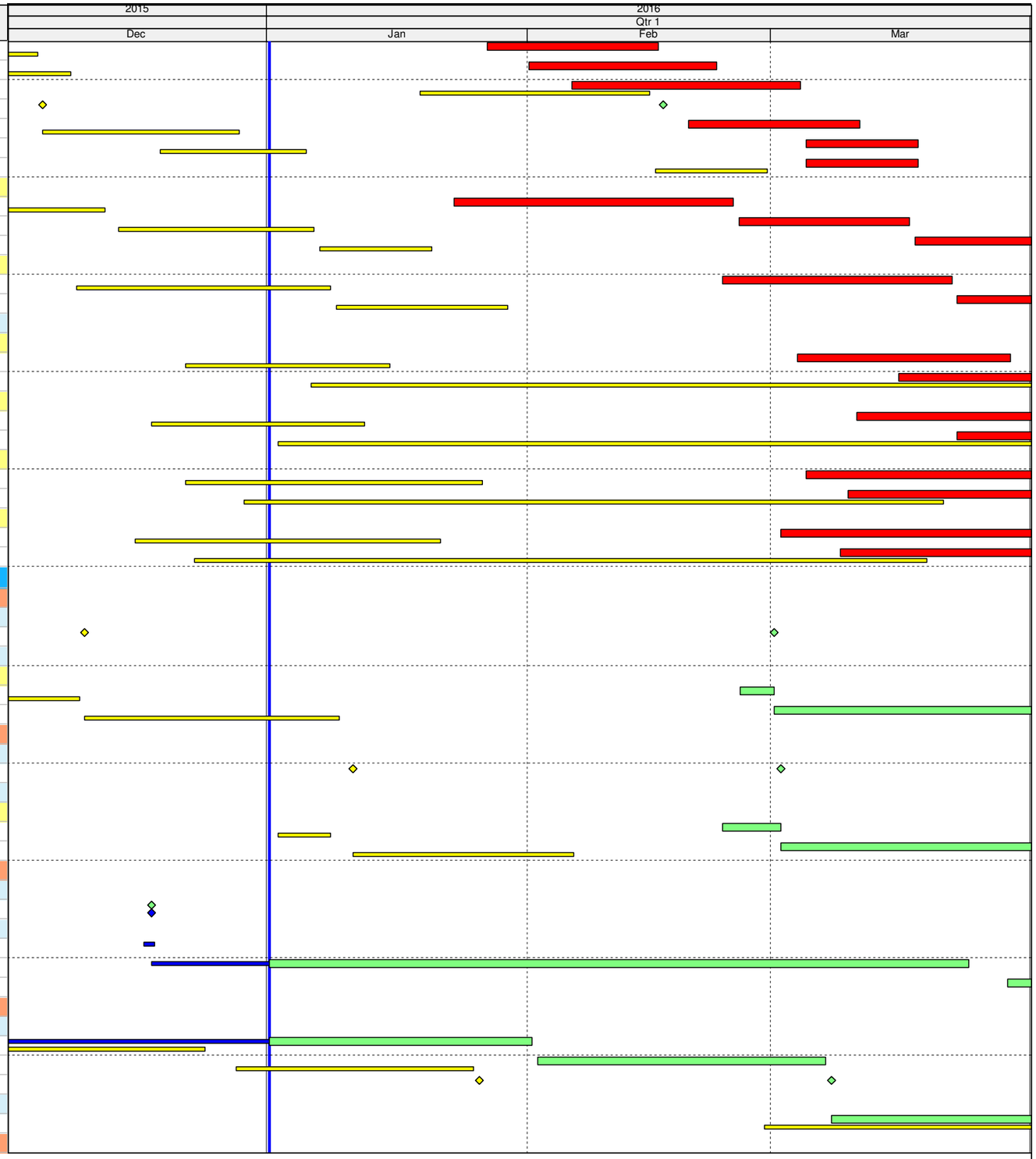
Project ID: H2634-P7
Baseline: Works Programme Rev 1A

Layout: 3 Month Lookahead Works Programme
Filter: TASK filter: Date range DD-1M to DD+3M.

Page 5 of 7

Progress Update			
Date	Revision	Checked	A
31-Dec-15	Progress update		

Activity ID	Activity Name	Orig	Start	Finish	Finish Variance
19.846	19B2 Architect Review Piling Record and Load Test Under Tower	12	27-Jan-16	16-Feb-16	-54
19.870	19B2b - H Piles Outside Tower adjacent to CEDD subway (49 no)	14	01-Feb-16	23-Feb-16	-57
19.852	19B2 Submit Piling Record & Load Test for piles Outside Tower adjacent	18	06-Feb-16	04-Mar-16	-16
19.382	19B2 - Start to construct Pilecaps at Portion B2	0	17-Feb-16		-54
19.848	19B2 Submit Piling Record & Load Test Outside Tower	18	20-Feb-16	11-Mar-16	-57
19.850	19B2 Architect Review Piling Record and Load Test Outside Tower	12	05-Mar-16	18-Mar-16	-57
19.854	19B2 Architect Review Piling Record and Load Test Outside Tower	12	05-Mar-16	18-Mar-16	-16
19 - Foundations Portion A1		53	23-Jan-16	05-Apr-16	-55
19.856	19A1 - H Piles Outside Tower (240 no)	23	23-Jan-16	25-Feb-16	-55
19.858	19A1 Submit Piling Record & Load Test Outside Tower	18	26-Feb-16	17-Mar-16	-55
19.860	19A1 Architect Review Piling Record and Load Test Outside Tower	12	18-Mar-16	05-Apr-16	-55
19 - Foundations Portion A2		42	24-Feb-16	16-Apr-16	-57
19.862	19A2 - H Piles Outside Tower (260 no)	24	24-Feb-16	22-Mar-16	-57
19.864	19A2 Submit Piling Record & Load Test Outside Tower	18	23-Mar-16	16-Apr-16	-57
19 - Substructures		87	02-Mar-16	18-Jun-16	-58
19 - Substructures Portion C1		81	04-Mar-16	14-Jun-16	-54
19.118	19C1 - Excavation down to FL	19	04-Mar-16	29-Mar-16	-54
19.120	19C1 - Prepare Pile heads and construct pilecaps	71	16-Mar-16	14-Jun-16	-54
19 - Substructures Portion C2		79	11-Mar-16	18-Jun-16	-63
19.220	19C2 - Excavation down to FL	19	11-Mar-16	06-Apr-16	-63
19.222	19C2 - Prepare Pile heads and construct pilecaps	69	23-Mar-16	18-Jun-16	-63
19 - Substructures Portion B1		69	05-Mar-16	31-May-16	-55
19.374	19B1 - Excavation down to FL	28	05-Mar-16	11-Apr-16	-55
19.376	19B1 - Prepare Pile heads and construct pilecaps	65	10-Mar-16	31-May-16	-55
19 - Substructures Portion B2		73	02-Mar-16	01-Jun-16	-57
19.384	19B2 - Excavation down to FL	29	02-Mar-16	08-Apr-16	-57
19.386	19B2 - Prepare Pile heads and construct pilecaps	67	09-Mar-16	01-Jun-16	-57
Associated Buildings		195	24-Nov-15 A	10-May-16	75
02 HKPF Building and Observation Tower		27	26-Feb-16	01-Apr-16	-61
02 - Milestones		0	01-Mar-16	01-Mar-16	-61
02.MS10	HKPF Building & Observation Tower Construction Works Start	0	01-Mar-16		-61
02 - HKPF Building		27	26-Feb-16	01-Apr-16	-61
02 - Foundations		27	26-Feb-16	01-Apr-16	-61
02.102	02 - Mobilisation	3	26-Feb-16	01-Mar-16	-61
02.104	02 - Install Driven H-piles (64 nos)	24	01-Mar-16	01-Apr-16	-61
03 Fire Station and Drill Tower		30	24-Feb-16	01-Apr-16	-38
03 - Milestones		0	02-Mar-16	02-Mar-16	-38
03.MS10	Fire Station & Drill Tower Construction Works Start	0	02-Mar-16		-38
03 Fire Station		30	24-Feb-16	01-Apr-16	-38
03 - Foundations		30	24-Feb-16	01-Apr-16	-38
03.102	03 - Mobilisation	6	24-Feb-16	02-Mar-16	-39
03.104	03 - Install driven H-piles (75 nos)	24	02-Mar-16	01-Apr-16	-38
04 Cargo Examination Building (Inbound)		86	17-Dec-15 A	26-Apr-16	86
04 - Milestones		0	18-Dec-15 A	18-Dec-15 A	115
04.MS10	Cargo Examination Bldg. Inbound (CBI) Contruction Works Start (Site Pos	0	18-Dec-15 A		115
04 - Foundations		86	17-Dec-15 A	26-Apr-16	86
04.104	04 - Mobilisation	8	17-Dec-15 A	18-Dec-15 A	114
04.106	04 - Install driven H-piles (560 nos)	46	18-Dec-15 A	24-Mar-16	86
04.108	04 - Proof drilling / Loading Test	24	29-Mar-16	26-Apr-16	86
05 Cargo Examination Building (Outbound)		144	24-Nov-15 A	10-May-16	-7
05 - Foundations		94	24-Nov-15 A	08-Mar-16	-30
05.106	05 - Install driven H-piles (353 nos)	40	24-Nov-15 A	01-Feb-16	-30
05.108	05 - Proof drilling / Loading Test	24	02-Feb-16	07-Mar-16	-30
05.110	05 - Start to construct the pilecaps	0	08-Mar-16		-30
05 - Pilecaps / Tie Beams		50	08-Mar-16	10-May-16	-7
05.114	05 - Construct pilecaps and tie beams	50	08-Mar-16	10-May-16	-7
06 Fixed X-ray Vehicle Inspection System (FXRVIS) Buildings (Inbo		82	01-Dec-15 A	26-Apr-16	86



Actual Milestone
Milestone
Baseline Milestone
Actual Work
Critical Remaining Work
Remaining Work
Project Baseline

3 Months Lookahead Works Programme

Progress to 01-Jan-16

Project ID: H2634-P7
Baseline: Works Programme Rev 1A

Layout: 3 Month Lookahead Works Programme
Filter: TASK filter: Date range DD-1M to DD+3M.

Page 6 of 7

Progress Update			
Date	Revision	Checked	A
31-Dec-15	Progress update		

Activity ID	Activity Name	Orig	Start	Finish	Finish Variance
06 - Milestones		0	29-Mar-16	29-Mar-16	86
06.MS10	Fixed X-ray Vehicle Inspection System (FXRVIS) Buildings (Inbound) Cons	0	29-Mar-16		86
06 - SI Works		18	01-Dec-15 A	14-Dec-15 A	154
06.100	06 - Site Investigation	18	01-Dec-15 A	14-Dec-15 A	154
06 - Foundations		30	18-Mar-16	26-Apr-16	86
06.110	06 - Mobilisation	6	18-Mar-16	29-Mar-16	86
06.112	06 - Install driven H-piles (92 nos)	24	29-Mar-16	26-Apr-16	86
07 Fixed X-ray Vehicle Inspection System (FXRVIS) Buildings (Outb		48	19-Feb-16	19-Apr-16	3
07 - Milestones		0	19-Feb-16	19-Feb-16	3
07.MS10	Fixed X-ray Vehicle Inspection System (FXRVIS) Buildings (Outbound) Cor	0	19-Feb-16		3
07 - Foundations		48	19-Feb-16	19-Apr-16	3
07.112	07 - Install driven H-piles (84 nos)	24	19-Feb-16	17-Mar-16	3
07.114	07 - Proof drilling / Loading Test	24	18-Mar-16	19-Apr-16	3
Other Associated Buildings for C&ED		82	19-Oct-15 A	13-Apr-16	-34
09 - MXRVSS (Outbound)		82	19-Oct-15 A	13-Apr-16	-34
09 - Structures		82	19-Oct-15 A	13-Apr-16	-34
09.200	09 - Construct RC footing (x10)	30	19-Oct-15 A	18-Mar-16	-34
09.202	09 - Backfilling and construct G/F Slab	18	19-Mar-16	13-Apr-16	-34
External Civil Works		160	16-Nov-15 A	16-May-16	51
37-40 Elevated Walkways		104	02-Jan-16	16-May-16	51
37 Elevated Walkway E1		104	02-Jan-16	16-May-16	51
37 - Milestones		0	02-Jan-16	02-Jan-16	82
37.MS10	Elevated Walkway E1 Construction Works Start	0	02-Jan-16		82
37 - SI Works		28	02-Jan-16	03-Feb-16	82
37.100	37 - Site Investigation (11 nos)	28	02-Jan-16	03-Feb-16	82
37 - Foundations		45	18-Mar-16	16-May-16	51
37.104	37 - Mobilisation	6	18-Mar-16	29-Mar-16	51
37.106	37 - Install driven of H-piles (39 nos)	39	29-Mar-16	16-May-16	51
39 Elevated Walkway E3		3	04-Feb-16	06-Feb-16	82
39 - Milestones		0	04-Feb-16	04-Feb-16	82
39.MS10	Elevated Walkway E3 Construction Works Start	0	04-Feb-16		82
39 - SI Works		3	04-Feb-16	06-Feb-16	82
39.100	39 - Site investigation (1 nos)	3	04-Feb-16	06-Feb-16	82
40 Elevated Walkway E4		10	15-Feb-16	25-Feb-16	82
40 - Milestones		0	15-Feb-16	15-Feb-16	82
40.MS10	Elevated Walkway E4 Construction Works Start	0	15-Feb-16		82
40 - SI Works		10	15-Feb-16	25-Feb-16	82
40.100	40 - Site investigation (4 nos)	10	15-Feb-16	25-Feb-16	82
Vehicular Bridges		152	16-Nov-15 A	05-May-16	-4
Bridge 4		44	21-Dec-15 A	15-Feb-16	22
B4 - Foundations		44	21-Dec-15 A	15-Feb-16	22
B4.102	B4 - Construction of Borepiles	44	21-Dec-15 A	11-Jan-16	22
B4.104	B4 - Core test, full core, sonic test	24	12-Jan-16	15-Feb-16	22
Bridge 5		152	16-Nov-15 A	05-May-16	-4
B5 - Foundations		80	16-Nov-15 A	15-Jan-16	-2
B5.102	B5 - Construction of Bored piles	42	16-Nov-15 A	15-Dec-15 A	-2
B5.104	B5 - Core test, full core, sonic test	24	16-Dec-15 A	15-Jan-16	-2
B5 - Pilecaps / Piers / Abutment / Retaining Walls / Portal		96	02-Jan-16	05-May-16	-4
B5.106	B5 - Excavation for retaining wall / abutment	10	02-Jan-16	13-Jan-16	-14
B5.108	B5 - Plate Load test	6	14-Jan-16	20-Jan-16	-14
B5.110	B5 - Excavation for Pilecaps	48	16-Jan-16	18-Mar-16	-2
B5.112	B5 - Construction of Retaing walls 5W10A-5W7A, 5W10B-5W7B	64	21-Jan-16	15-Apr-16	-14
B5.118	B5 - Construct Pilecaps 5P1-5P8	38	20-Feb-16	08-Apr-16	-4
B5.116	B5 - Construct Abutment A5 and Install bearing	30	04-Mar-16	12-Apr-16	-25
B5.120	B5 - Construct Piers 5P1-5P8	36	19-Mar-16	05-May-16	-4

- Actual Milestone
- Milestone
- Baseline Milestone
- Actual Work
- Critical Remaining Work
- Remaining Work
- Project Baseline

3 Months Lookahead Works Programme

Progress to 01-Jan-16

Project ID: H2634-P7
Baseline: Works Programme Rev 1A

Layout: 3 Month Lookahead Works Programme
Filter: TASK filter: Date range DD-1M to DD+3M.

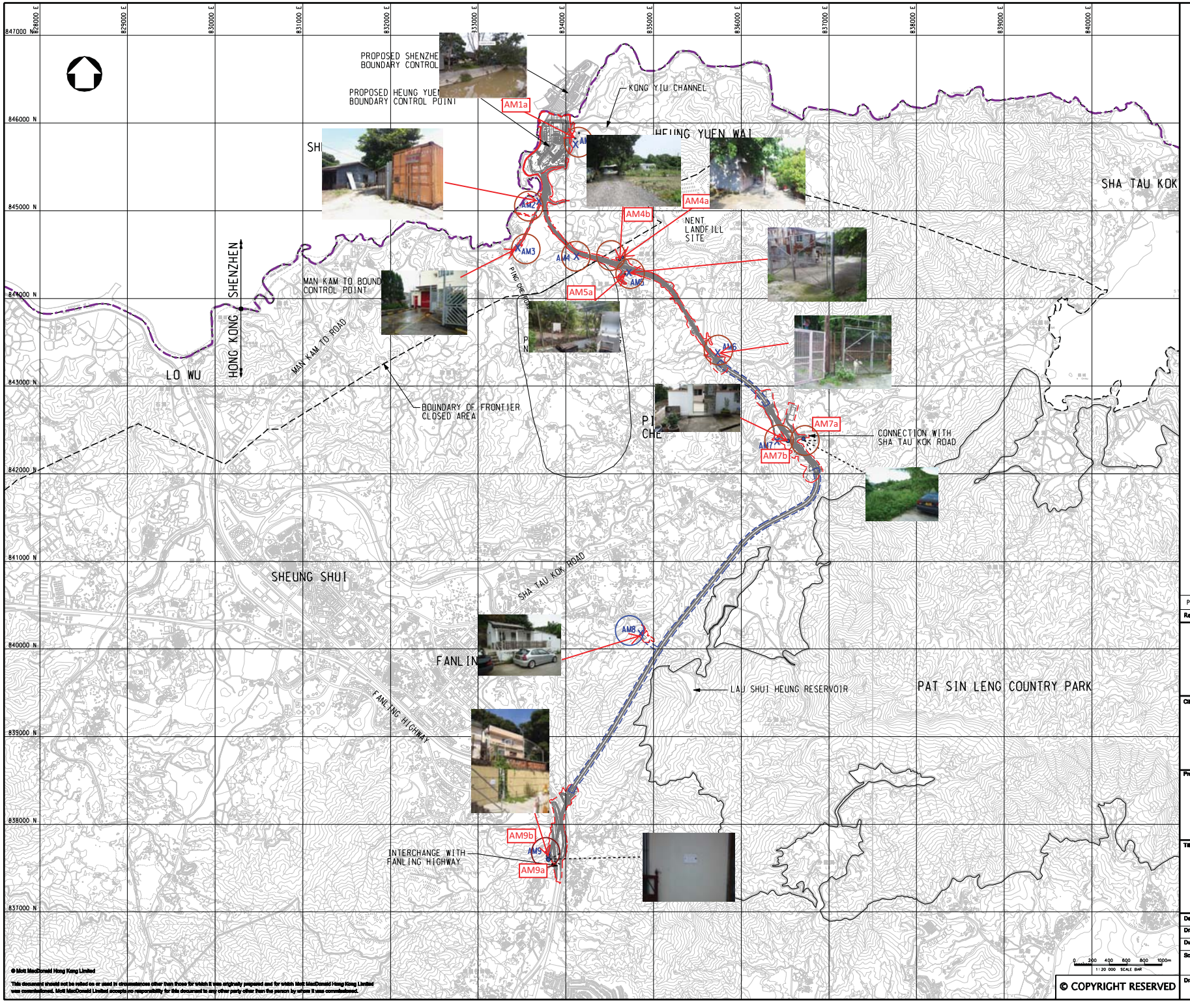
Page 7 of 7

Progress Update

Date	Revision	Checked	A
31-Dec-15	Progress update		

Appendix D

Designated Monitoring Locations as Recommended in the Approved EM&A Manual



LEGEND:

- BOUNDARY OF HKSAR
- WORKS AREA (ABOVE GROUND)
- WORKS AREA (TUNNEL)
- X Air Monitoring Stations in the EM&A Manual
- Proposed Air Monitoring Stations

Rev	Date	Drawn	Description	Ch'k'd	App'd
P1	AUG 10	MING	FIRST ISSUE	DC	HT

Mott MacDonald
20/F Two Landmark East
100 How Ming Street
Kwun Tong, Kowloon
Hong Kong
T +852 2828 5757
F +852 2827 1823
W www.mottmac.com.hk

Client

CEDD
CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Project

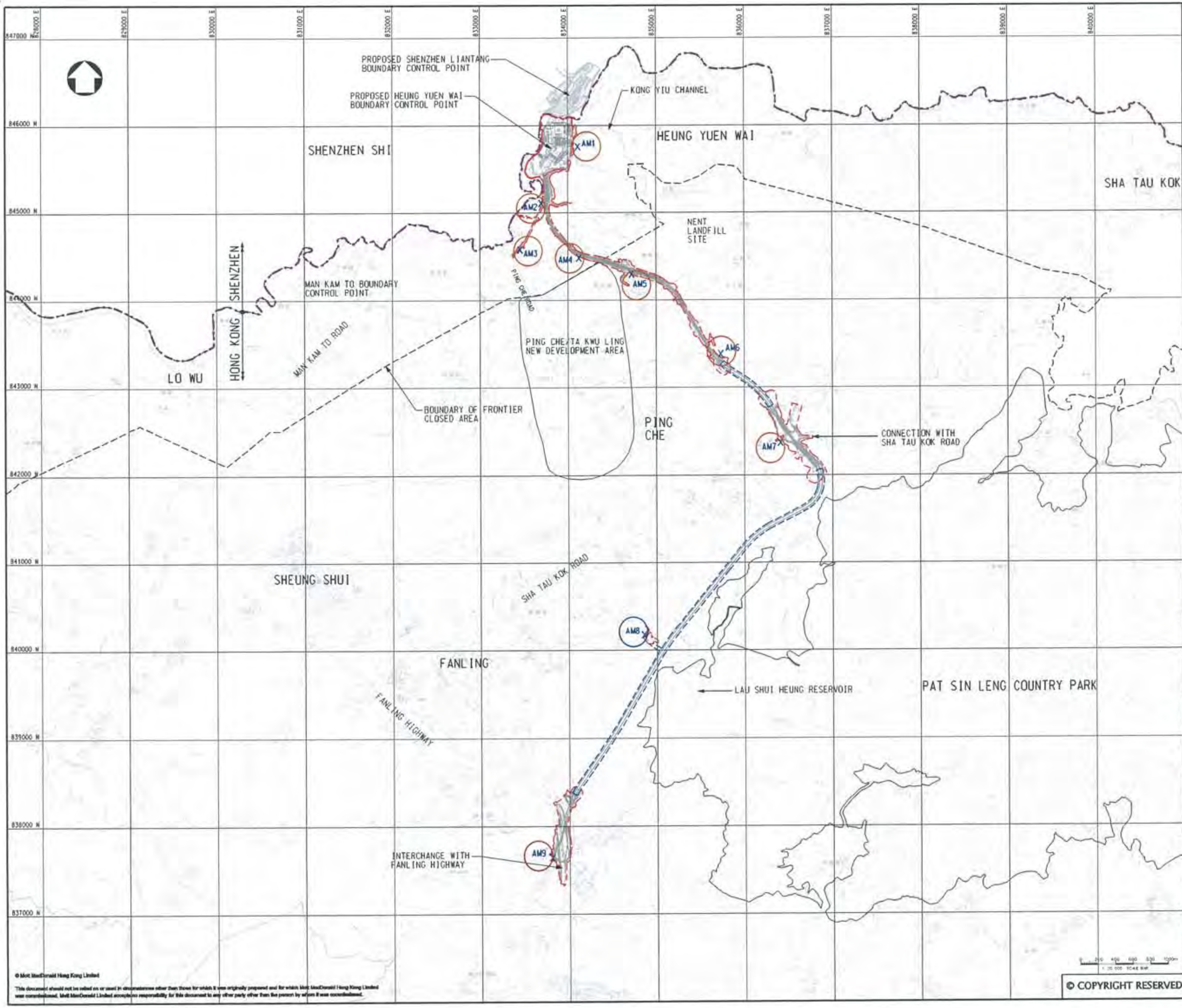
AGREEMENT NO. CE45/2008(CE)
LIANTANG/HEUNG YUEN WAI BOUNDARY CONTROL POINT AND ASSOCIATED WORKS

Title

PROPOSED LOCATION OF CONSTRUCTION AIR QUALITY MONITORING STATIONS

Designed	DC		Eng.Chk.	EC	
Drawn	MING		Coordination	EC	
Dwg.Chk.	DC		Approved	HT	
Scale at A1	1:20000	Project	255228	Status	PRE
		CAD file	j:\255228\report\env\em&a\00883\FIG 2-1.dgn		
Drawing No	FIGURE 2.1			Rev	P1

0 200 400 600 800 1000m
1:20 000 SCALE BAR



LEGEND:
- BOUNDARY OF HKSAR
- WORKS AREA (ABOVE GROUND)
- WORKS AREA (TUNNEL)
- X AIR MONITORING STATIONS

Rev	Date	Drawn	Description	Ch'k'd	App'd
P1	AUG 10	WING	FIRST ISSUE	DC	HT

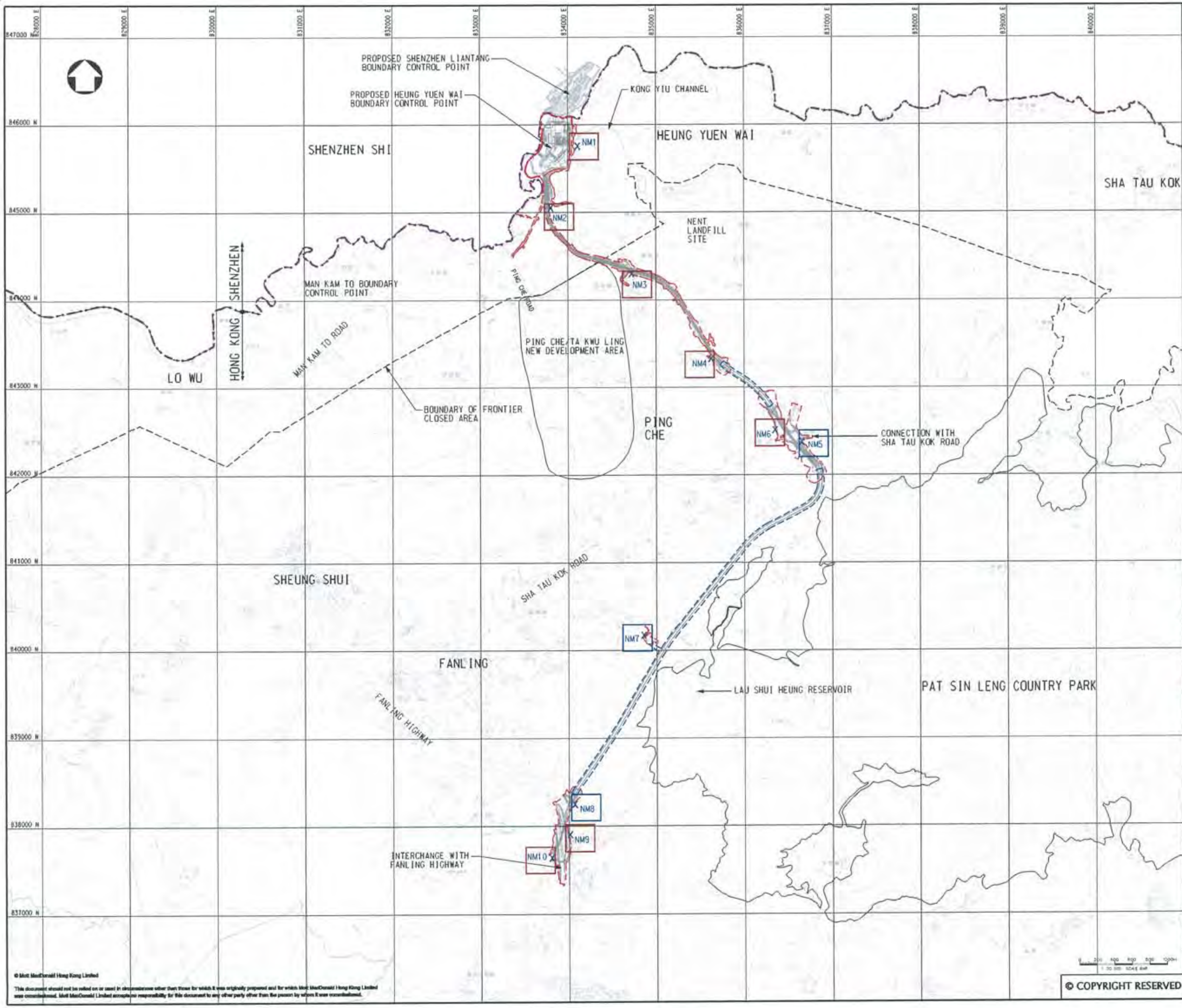
Mott MacDonald

Client: CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT (CEDD)

Project: AGREEMENT NO. CE45/2008(CE) LIANTANG/HEUNG YUEN WAI BOUNDARY CONTROL POINT AND ASSOCIATED WORKS

Title: PROPOSED LOCATION OF CONSTRUCTION AIR QUALITY MONITORING STATIONS

Designed	DC	Eng.Chk.	EC		
Drawn	WING	Coordination	EC		
Dwg.Chk.	DC	Approved	HT		
Scale at A1	1:20000	Project	255228	Status	PRE
Drawing No	FIGURE 2.1			Rev	P1



Rev	Date	Drawn	Description	Ch'k'd	App'd
P1	AUG 10	WING	FIRST ISSUE	DC	HT

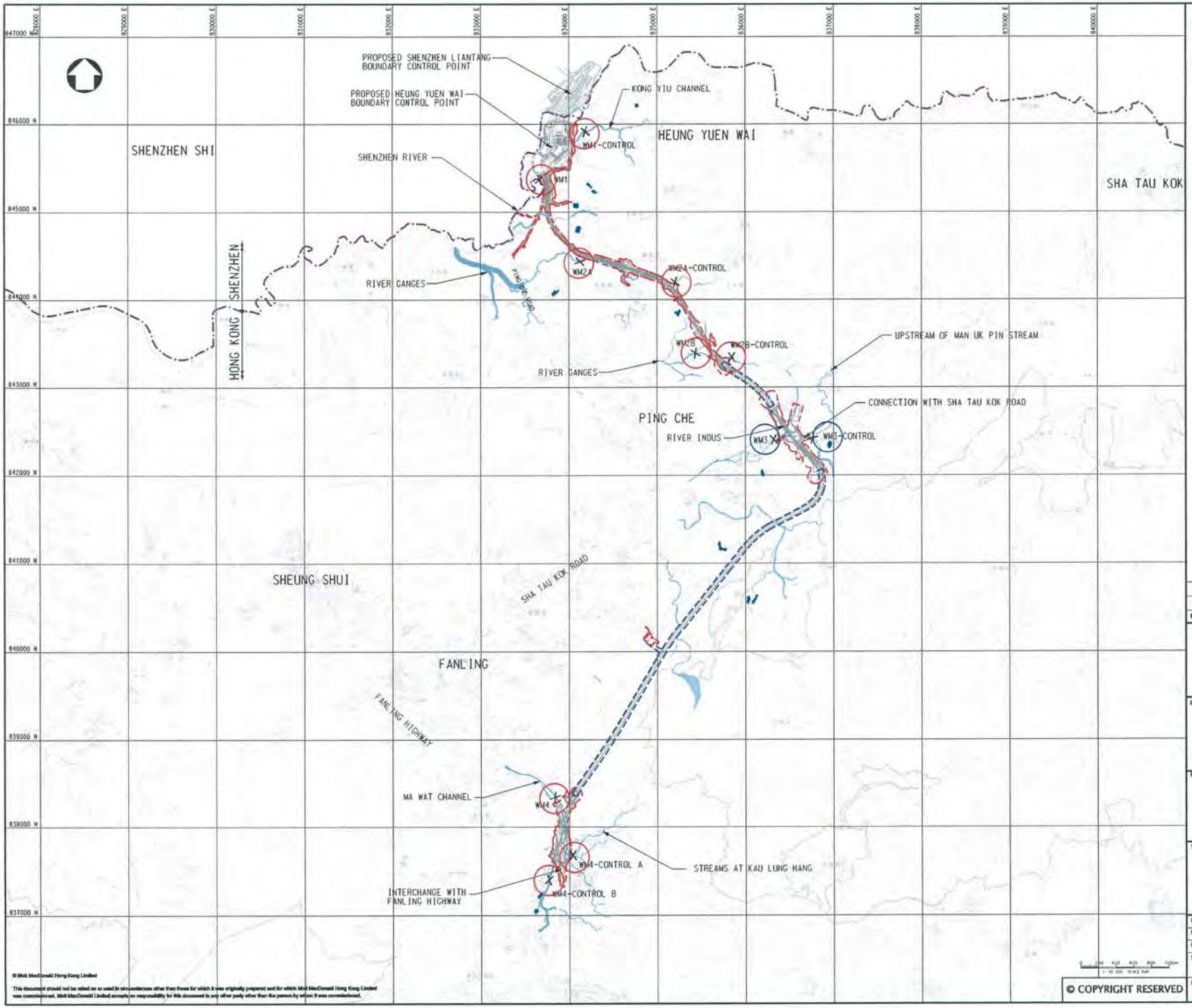
Mott MacDonald

Client: CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT (CEDD)

Project: AGREEMENT NO. CE45/2008(CE) LIANTANG/HEUNG YUEN WAI BOUNDARY CONTROL POINT AND ASSOCIATED WORKS

Title: PROPOSED LOCATION OF CONSTRUCTION NOISE MONITORING STATIONS

Designed	DC		Eng.Chk.	EC
Drawn	WING		Coordination	EC
Dwg.Chk.	DC		Approved	HT
Scale at A1	1:20000	Project	255228	Status PRE
Drawing No	FIGURE 3.1			Rev P1



LEGEND:

- BOUNDARY OF HKSAR
- LAND REQUIREMENT LIMIT (ABOVE GROUND)
- LAND REQUIREMENT LIMIT (TUNNEL)
- X PROPOSED WATER QUALITY MONITORING STATION

MONITORING STATION	CO-ORDINATES	
	EAST(NG(m)	NORTHING(m)
WM1	833668.635	845371.097
WM1-CONTROL	834185.480	845916.662
WM2A	834132.193	844432.910
WM2A-CONTROL	835205.329	844200.151
WM2B	835434.744	843394.606
WM2B-CONTROL	835845.878	843343.625
WM3	836323.622	842404.977
WM3-CONTROL	836763.419	842425.507
WM4	833840.783	838344.842
WM4-CONTROL A	834038.937	837688.995
WM4-CONTROL B	833769.123	837406.936

Rev	Date	Drawn	Description	Ch'k'd	App'd
P2	NOV 10	WING	GENERAL REVISION	HC	HT
P1	OCT 10	WING	FIRST ISSUE	HC	HT

Mott MacDonald

Client: CEDD — CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

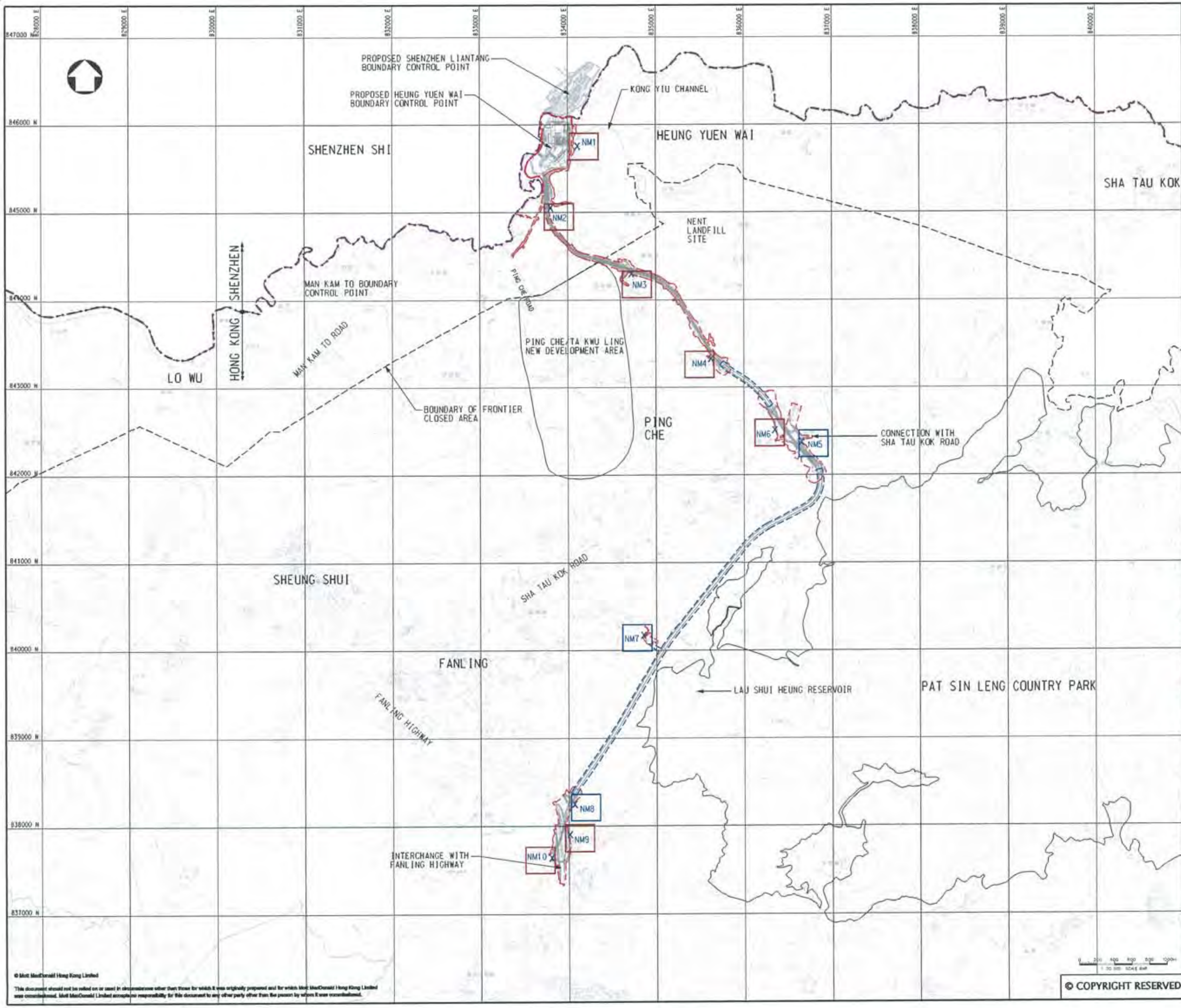
Project: AGREEMENT NO. CE45/2008(CE) LIANTANG/HEUNG YUEN WAI BOUNDARY CONTROL POINT AND ASSOCIATED WORKS

Title: LOCATIONS OF PROPOSED WATER QUALITY MONITORING STATIONS

Designed	HC		Eng.Chk.	EC	
Drawn	WING		Coordination	EC	
Eng.Chk.	HC		Approved	HT	
Scale at A1	1:20000	Project	255228		Status PRE
Drawing No	FIGURE 4.1				Rev P2

Appendix E

Monitoring Locations for Impact Monitoring



LEGEND:

- BOUNDARY OF HKSAR
- WORKS AREA (ABOVE GROUND)
- WORKS AREA (TUNNEL)
- X CONSTRUCTION NOISE MONITORING STATIONS

Rev	Date	Drawn	Description	Ch'k'd	App'd
P1	AUG 10	WING	FIRST ISSUE	DC	HT

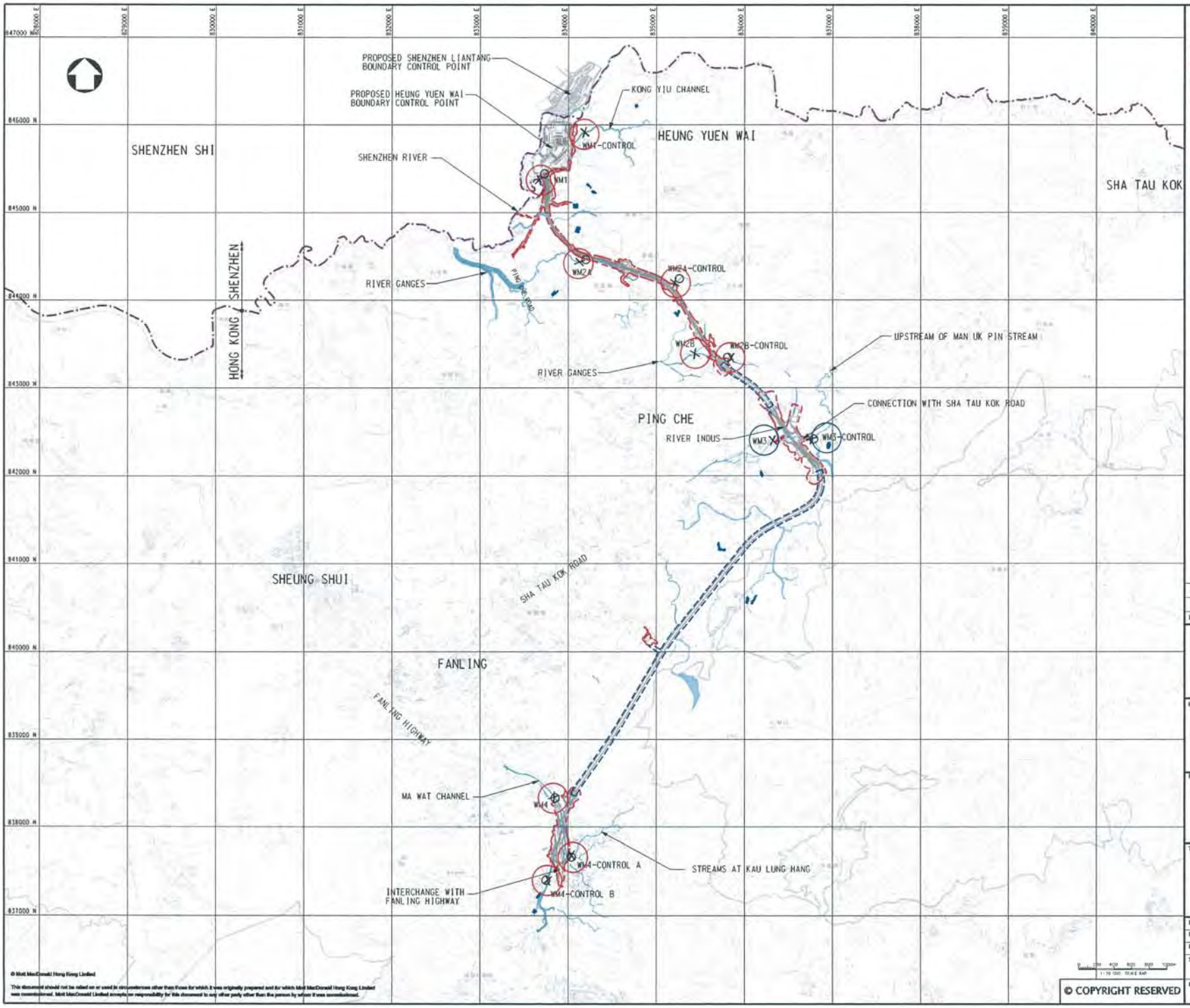
Mott MacDonald

Client: CEDD CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Project: AGREEMENT NO. CE45/2008(CE) LIANTANG/HEUNG YUEN WAI BOUNDARY CONTROL POINT AND ASSOCIATED WORKS

Title: PROPOSED LOCATION OF CONSTRUCTION NOISE MONITORING STATIONS

Designed	DC	Eng.Chk.	EC
Drawn	WING	Coordination	EC
Dwg.Chk.	DC	Approved	HT
Scale at A1	1:20000	Project	255228
Status	PRE		
Drawing No	FIGURE 3.1	Rev	P1



LEGEND:

- BOUNDARY OF HKSAR
- LAND REQUIREMENT LIMIT (ABOVE GROUND)
- LAND REQUIREMENT LIMIT (TUNNEL)
- X — Water Quality Monitoring Location Recommended in EM&A Manual
- O — Alternative Water Quality Monitoring Location for EM&A Programme

Station ID	Location recommended in EM&A Manual – Coordinates		Location found during site visit – Coordinates	
	Easting	Northing	Easting	Northing
WM1	833668.635	845371.097	833679	845423
WM1-Control	834185.480	845916.662	834185	845917
WM2A	834132.193	844432.910	834204	844471
WM2A-Control	835205.529	844200.151	835270	844243
WM2B	835434.744	843394.606	835433	843397
WM2B-Control	835845.878	843343.625	835835	843351
WM3	836523.622	842404.977	836524	842407
WM3-Control	836763.419	842425.507	836763	842400
WM4	833840.785	838344.842	833850	838358
WM4-Control A	834038.937	837668.995	834028	837695
WM4-Control B	833769.123	837406.936	833760	837395

Rev	Date	Drawn	Description	Ch'k'd	App'd
P2	NOV 10	MING	GENERAL REVISION	HC	HT
P1	OCT 10	MING	FIRST ISSUE	HC	HT

Mott MacDonald
35/F Two Landmark East
100 How Ming Street
Kwun Tong, Kowloon
Hong Kong
t +852 3638 8787
f +852 3607 1825
w www.mottmac.com.hk

Client

CEDD
CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Project

AGREEMENT NO. CE45/2008(CE)
LIANTANG/HEUNG YUEN WAI BOUNDARY CONTROL POINT AND ASSOCIATED WORKS

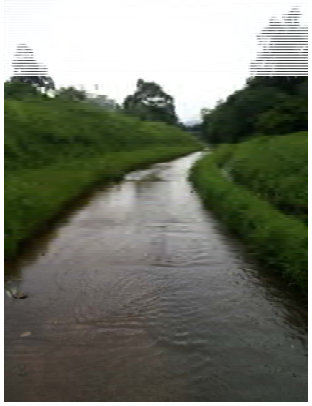
Title

LOCATIONS OF PROPOSED WATER QUALITY MONITORING STATIONS

Designed	HC		Eng.Chk.	EC	
Drawn	MING		Coordination	EC	
Dwg.Chk.	HC		Approved	HT	
Scale at A1	1:20000	Project	255228	Status	PRE
		CAD file	A1\255228\REPORT\EMY-EM&A MANUAL\FIG 4-1.dgn		
Drawing No	FIGURE 4.1			Rev	P2

Photographic Records for Water Quality Monitoring Location

	
Alternative Location of WM1	**Co-ordinates of Alternative Location of WM1**
	
Alternative Location of WM1 - Control	**Co-ordinates of Alternative Location of WM1 - Control**
	
Alternative Location of WM2A	**Co-ordinates of Alternative Location of WM2A**
	
Alternative Location of WM2-Control A	**Co-ordinates of Alternative Location of WM2 – Control**

	
Location of WM2B-Control	**Co-ordinates of WM2B-Control**
	
Location of WM2B	**Co-ordinates of WM2B**
	
Location of WM3-Control	**Co-ordinates of WM3-Control**
	
Location of WM3	**Co-ordinates of WM3**

	
Location of WM4–Control A	**Co-ordinates of WM4-Control A**
	
Location of WM4–Control B	**Co-ordinates of WM4-Control B**
	
Location of WM4	**Co-ordinates of WM4**

Appendix F

Calibration Certificate of Monitoring Equipment and HOKLAS-accreditation Certificate of the Testing Laboratory

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Garden Farm, Tsung Yuen Ha Village
Location ID : AM1a

Date of Calibration: 24/10/2015
Next Calibration Date: 24/12/2015
Technician: Keung Chi Young

CONDITIONS

Sea Level Pressure (hPa)	1015	Corrected Pressure (mm Hg)	761.25
Temperature (°C)	26.8	Temperature (K)	300

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10265
Model->	5025A	Qstd Intercept ->	-0.00335
Serial # ->	1941		

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.1	6.1	12.2	1.659	50	49.89	Slope = 32.7807
13	5	5	10.0	1.502	44	43.90	Intercept = -4.9623
10	3.7	3.7	7.4	1.293	37	36.92	Corr. coeff. = 0.9992
7	2.6	2.6	5.2	1.084	31	30.93	
5	1.6	1.6	3.2	0.850	23	22.95	

Calculations :

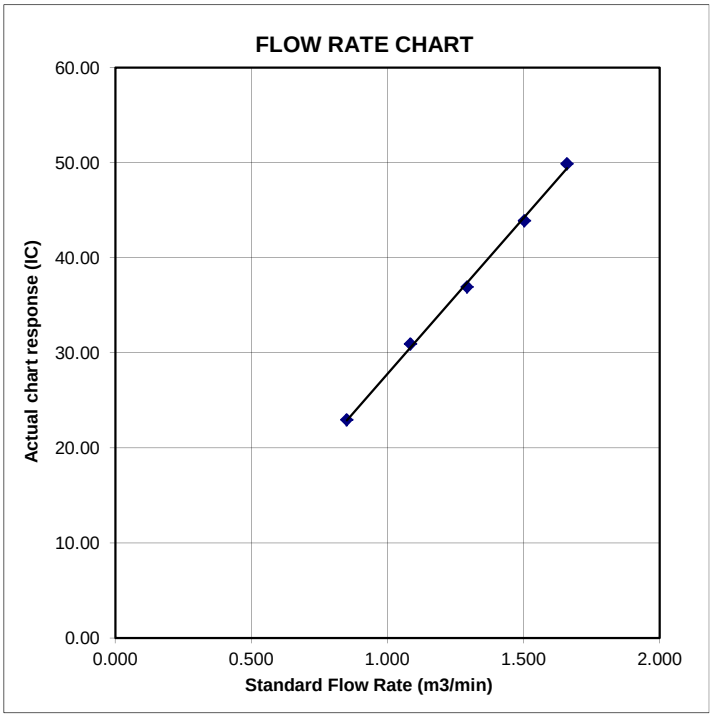
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart respones
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Village House near Lin Ma Hang Road
Location ID : AM2

Date of Calibration: 24/10/2015
Next Calibration Date: 24/12/2015
Technician: Keung Chi Young

CONDITIONS

Sea Level Pressure (hPa)	1015	Corrected Pressure (mm Hg)	761.25
Temperature (°C)	26.8	Temperature (K)	300

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10265
Model->	5025A	Qstd Intercept ->	-0.00335
Serial # ->	1941		

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.5	6.5	13.0	1.713	52	51.89	Slope = 28.1280
13	5.5	5.5	11.0	1.575	47	46.90	Intercept = 3.4387
10	4.2	4.2	8.4	1.377	43	42.91	Corr. coeff. = 0.9982
7	2.6	2.6	5.2	1.084	34	33.93	
5	1.7	1.7	3.4	0.877	28	27.94	

Calculations :

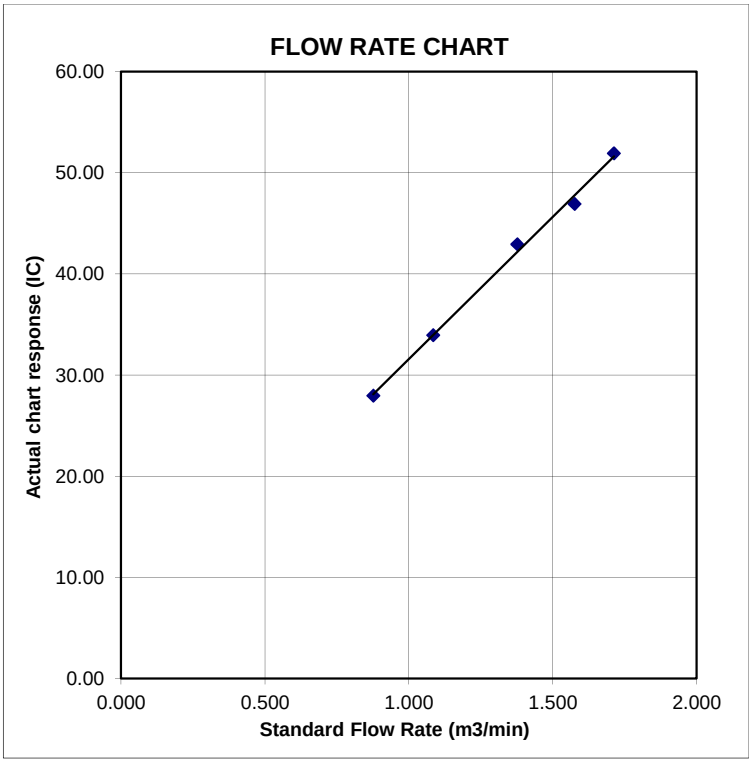
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart respones
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Ta Kwu Ling Fire Service Station
Location ID : AM3

Date of Calibration: 24/10/2015
Next Calibration Date: 24/12/2015
Technician: Keung Chi Young

CONDITIONS

Sea Level Pressure (hPa)	1015	Corrected Pressure (mm Hg)	761.25
Temperature (ºC)	26.8	Temperature (K)	300

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10265
Model->	5025A	Qstd Intercept ->	-0.00335
Serial # ->	1941		

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.4	6.4	12.8	1.699	54	53.88	Slope = 29.9170
13	5.1	5.1	10.2	1.517	49	48.89	Intercept = 3.3351
10	4	4	8.0	1.344	44	43.90	Corr. coeff. = 0.9997
7	2.5	2.5	5.0	1.063	35	34.92	
5	1.5	1.5	3.0	0.824	28	27.94	

Calculations :

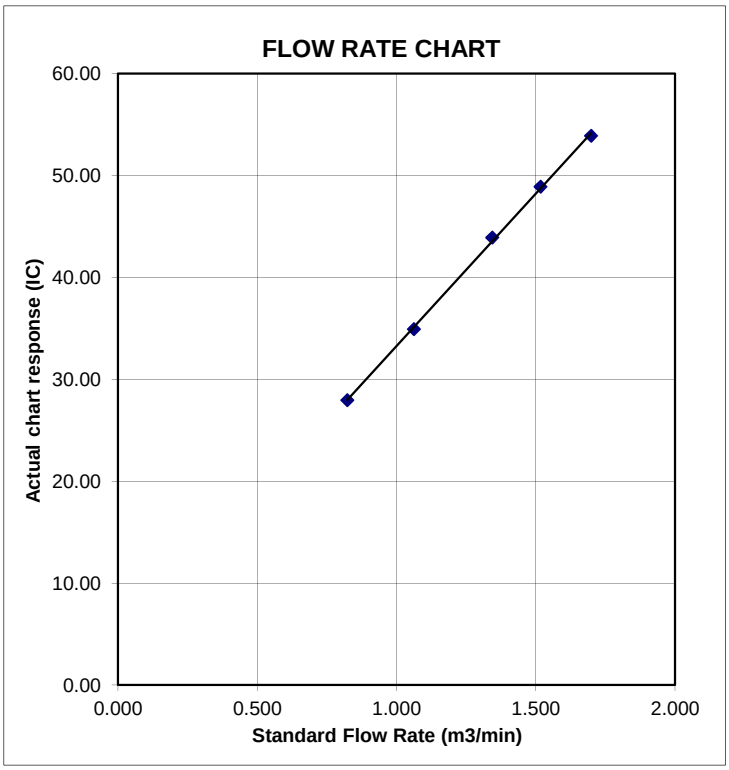
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart respones
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Ping Yeung Village House
Location ID : AM4a

Date of Calibration: 22/10/2015
Next Calibration Date: 22/12/2015
Technician: Keung Chi Young

CONDITIONS

Sea Level Pressure (hPa)	1012	Corrected Pressure (mm Hg)	759
Temperature (°C)	27.0	Temperature (K)	300

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10265
Model->	5025A	Qstd Intercept ->	-0.00335
Serial # ->	1941		

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.2	6.2	12.4	1.670	59	58.76	Slope = 30.5692
13	4.8	4.8	9.6	1.469	53	52.79	Intercept = 8.0481
10	3.8	3.8	7.6	1.307	49	48.80	Corr. coeff. = 0.9990
7	2.4	2.4	4.8	1.039	40	39.84	
5	1.5	1.5	3.0	0.822	33	32.87	

Calculations :

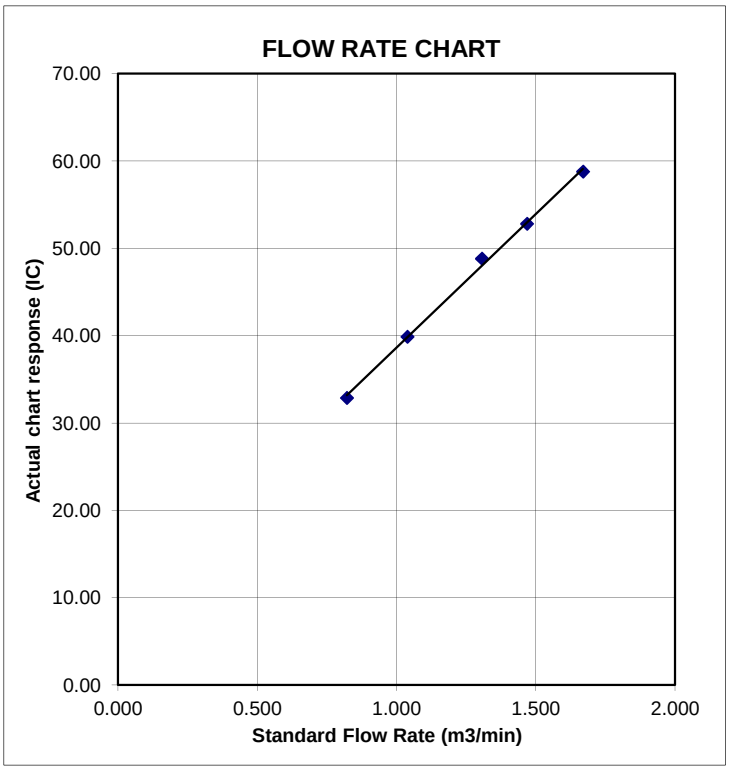
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart respones
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Ping Yeung Village House
Location ID : AM5

Date of Calibration: 22/10/2015
Next Calibration Date: 22/12/2015
Technician: Keung Chi Young

CONDITIONS

Sea Level Pressure (hPa)	1012	Corrected Pressure (mm Hg)	759
Temperature (ºC)	27.0	Temperature (K)	300

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10265
Model->	5025A	Qstd Intercept ->	-0.00335
Serial # ->	1941		

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.6	6.6	13.2	1.723	55	54.78	Slope = 30.5936
13	5.2	5.2	10.4	1.529	50	49.80	Intercept = 2.6401
10	4	4	8.0	1.341	44	43.82	Corr. coeff. = 0.9983
7	2.5	2.5	5.0	1.061	36	35.86	
5	1.6	1.6	3.2	0.849	28	27.89	

Calculations :

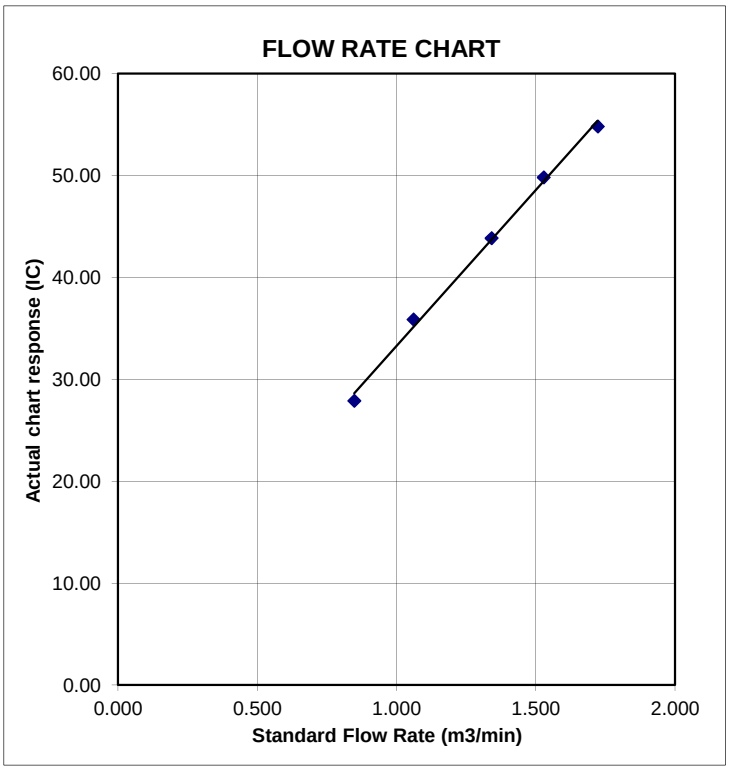
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart respones
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Wo Keng Shan Village House
Location ID : AM6

Date of Calibration: 22/10/2015
Next Calibration Date: 22/12/2015
Technician: Keung Chi Young

CONDITIONS

Sea Level Pressure (hPa)	1012	Corrected Pressure (mm Hg)	759
Temperature (ºC)	27.0	Temperature (K)	300

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10265
Model->	5025A	Qstd Intercept ->	-0.00335
Serial # ->	1941		

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.9	5.9	11.8	1.629	52	51.79	Slope = 32.9273
13	4.6	4.6	9.2	1.438	47	46.81	Intercept = -1.1511
10	3.5	3.5	7.0	1.255	40	39.84	Corr. coeff. = 0.9954
7	2.3	2.3	4.6	1.018	34	33.86	
5	1.4	1.4	2.8	0.794	24	23.90	

Calculations :

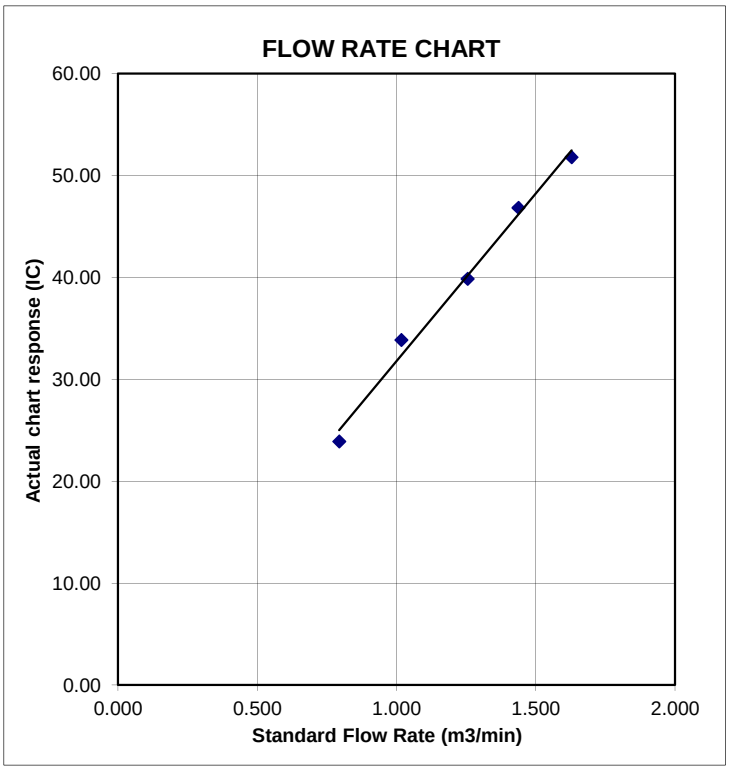
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart respones
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Village House of Loi Tung Village
Location ID : AM7b

Date of Calibration: 24/10/2015
Next Calibration Date: 24/12/2015
Technician: C Y Keung

CONDITIONS

Sea Level Pressure (hPa)	1015	Corrected Pressure (mm Hg)	761.25
Temperature (°C)	26.8	Temperature (K)	300

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10265
Model->	5025A	Qstd Intercept ->	-0.00335
Serial # ->	1941		

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.4	6.4	12.8	1.699	59	58.87	Slope = 36.2413
13	5	5	10.0	1.502	52	51.89	Intercept = -2.7887
10	4.1	4.1	8.2	1.360	46	45.90	Corr. coeff. = 0.9995
7	2.6	2.6	5.2	1.084	37	36.92	
5	1.5	1.5	3.0	0.824	27	26.94	

Calculations :

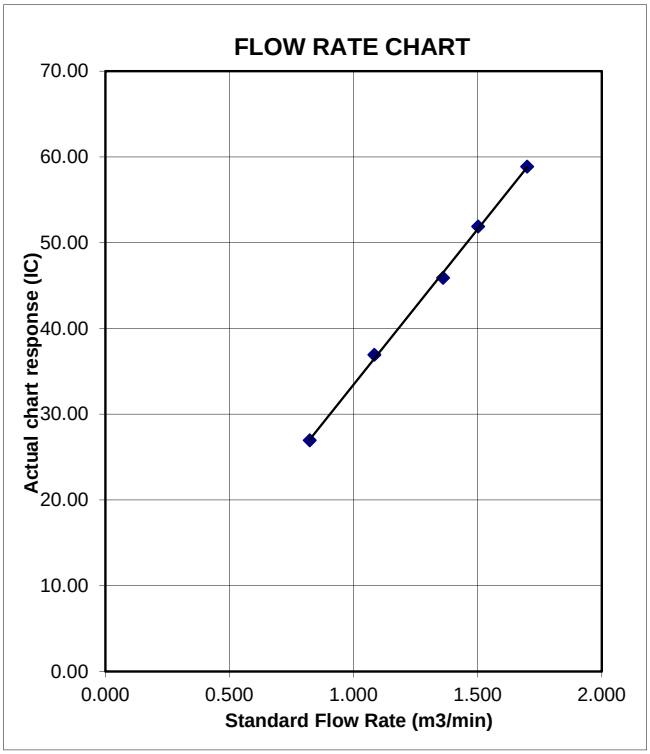
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart respones
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Po Kat Tsai Village No. 4
Location ID : AM8

Date of Calibration: 24/10/2015
Next Calibration Date: 24/12/2015
Technician: C Y Keung

CONDITIONS

Sea Level Pressure (hPa)	1015	Corrected Pressure (mm Hg)	761.25
Temperature (°C)	26.8	Temperature (K)	300

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10265
Model->	5025A	Qstd Intercept ->	-0.00335
Serial # ->	1941		

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.1	6.1	12.2	1.659	60	59.87	Slope = 34.5865
13	5	5	10.0	1.502	55	54.88	Intercept = 2.8024
10	3.9	3.9	7.8	1.327	49	48.89	Corr. coeff. = 0.9996
7	2.5	2.5	5.0	1.063	40	39.91	
5	1.5	1.5	3.0	0.824	31	30.93	

Calculations :

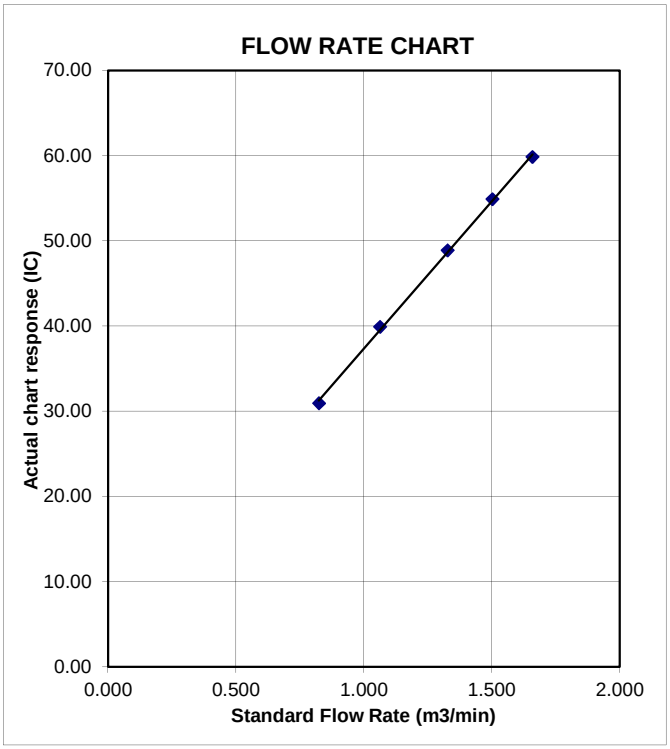
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart respones
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Nam Wa Po Village House No. 80		Date of Calibration:	24/10/2015
Location ID : AM9b		Next Calibration Date:	24/12/2015
		Technician:	Keung Chi Young

CONDITIONS

Sea Level Pressure (hPa)	1015	Corrected Pressure (mm Hg)	761.25
Temperature (ºC)	26.8	Temperature (K)	300

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10265
Model->	5025A	Qstd Intercept ->	-0.00335
Serial # ->	1941		

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION	
18	6.5	6.5	13.0	1.713	54	53.88	Slope =	32.3467
13	5.3	5.3	10.6	1.547	48	47.90	Intercept =	-2.1528
10	4.1	4.1	8.2	1.360	41	40.91	Corr. coeff. =	0.9982
7	2.8	2.8	5.6	1.125	34	33.93		
5	1.6	1.6	3.2	0.850	26	25.94		

Calculations :

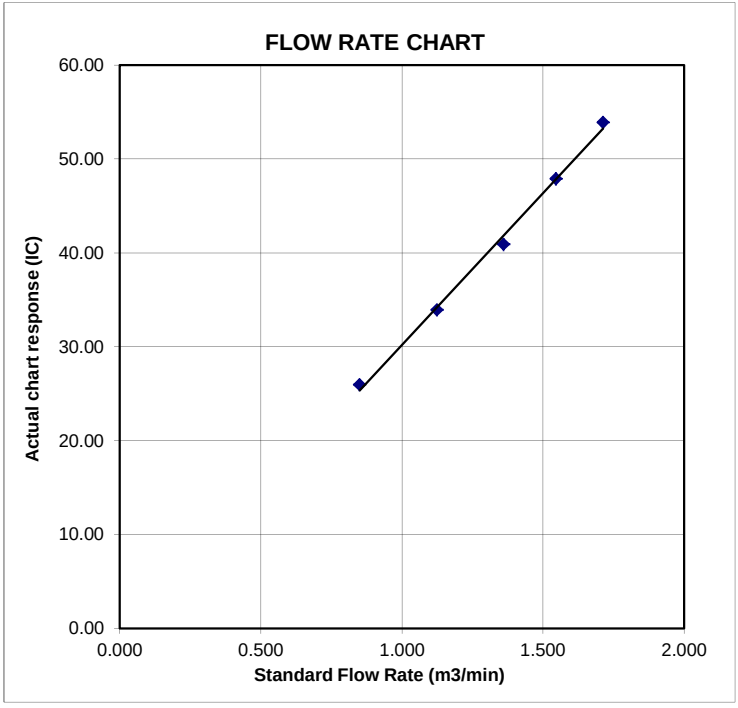
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart respones
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Garden Farm, Tsung Yuen Ha Village		Date of Calibration:	23/12/2015
Location ID : AM1a		Next Calibration Date:	23/2/2016
		Technician:	K.C. Cheung

CONDITIONS

Sea Level Pressure (hPa)	1017.8	Corrected Pressure (mm Hg)	763.35
Temperature (°C)	21.1	Temperature (K)	294

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10265
Model->	5025A	Qstd Intercept ->	-0.00335
Serial # ->	1941		

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected
18	6.9	6.9	13.8	1.784	50	50.44
13	5.3	5.3	10.6	1.564	45	45.40
10	4.1	4.1	8.2	1.375	39	39.34
7	2.7	2.7	5.4	1.117	31	31.27
5	1.6	1.6	3.2	0.860	22	22.19

LINEAR REGRESSION

Slope = 30.8553
Intercept = -3.6127
Corr. coeff. = 0.9975

Calculations :

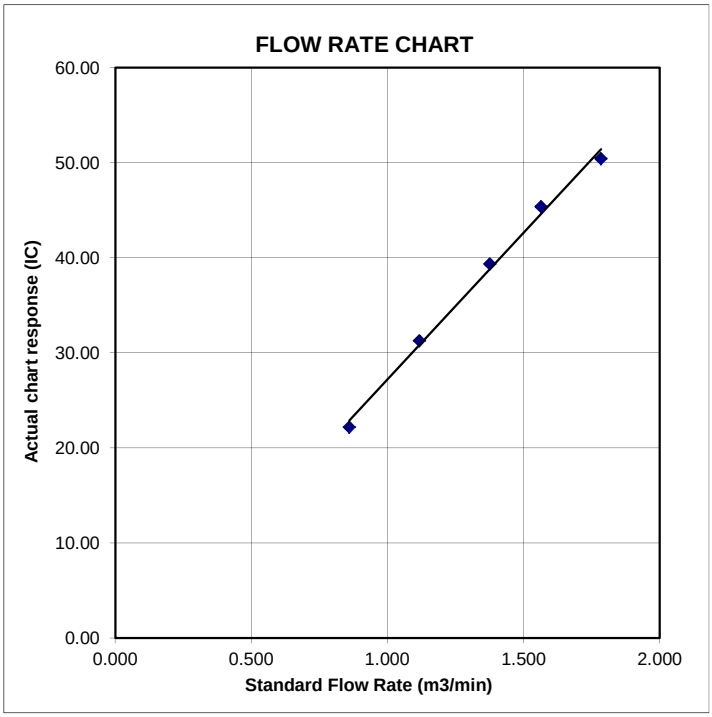
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart respones
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Village House near Lin Ma Hang Road		Date of Calibration:	23/12/2015
Location ID : AM2		Next Calibration Date:	23/2/2016
		Technician:	K.C. Cheung

CONDITIONS

Sea Level Pressure (hPa)	1017.8	Corrected Pressure (mm Hg)	763.35
Temperature (°C)	21.1	Temperature (K)	294

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10265
Model->	5025A	Qstd Intercept ->	-0.00335
Serial # ->	1941		

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	7.2	7.2	14.4	1.822	55	55.49	Slope = 29.7487
13	6.3	6.3	12.6	1.705	50	50.44	Intercept = 0.8876
10	4.3	4.3	8.6	1.409	43	43.38	Corr. coeff. = 0.9960
7	2.7	2.7	5.4	1.117	35	35.31	
5	1.7	1.7	3.4	0.886	26	26.23	

Calculations :

Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]

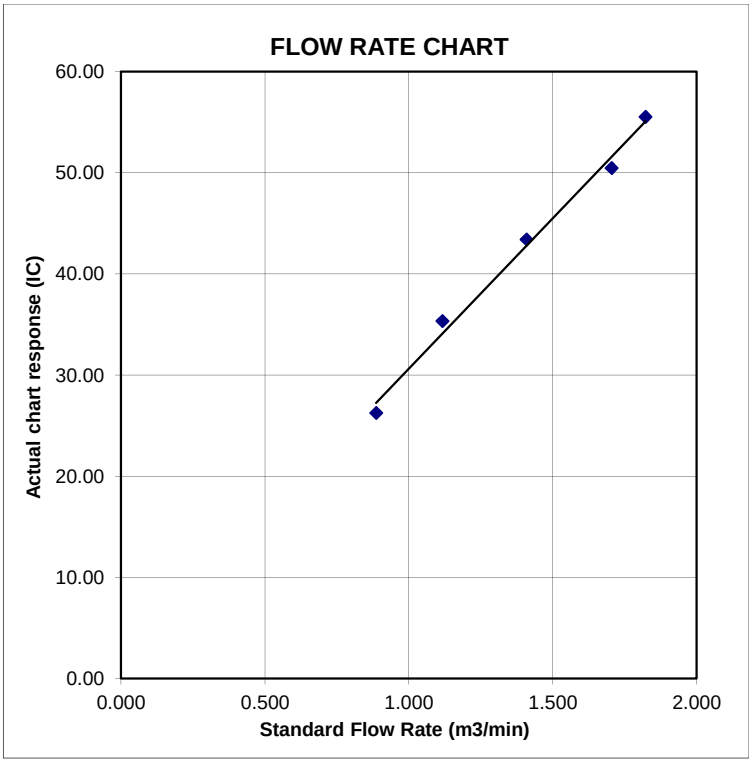
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart respones
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Ta Kwu Ling Fire Service Station
Location ID : AM3

Date of Calibration: 23/12/2015
Next Calibration Date: 23/2/2016
Technician: K.C. Cheung

CONDITIONS

Sea Level Pressure (hPa)	1017.8	Corrected Pressure (mm Hg)	763.35
Temperature (°C)	21.1	Temperature (K)	294

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10265
Model->	5025A	Qstd Intercept ->	-0.00335
Serial # ->	1941		

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.1	6.1	12.2	1.677	54	54.48	Slope = 29.9474
13	4.8	4.8	9.6	1.488	49	49.43	Intercept = 4.5899
10	3.8	3.8	7.6	1.324	44	44.39	Corr. coeff. = 0.9996
7	2.4	2.4	4.8	1.053	36	36.32	
5	1.5	1.5	3.0	0.833	29	29.26	

Calculations :

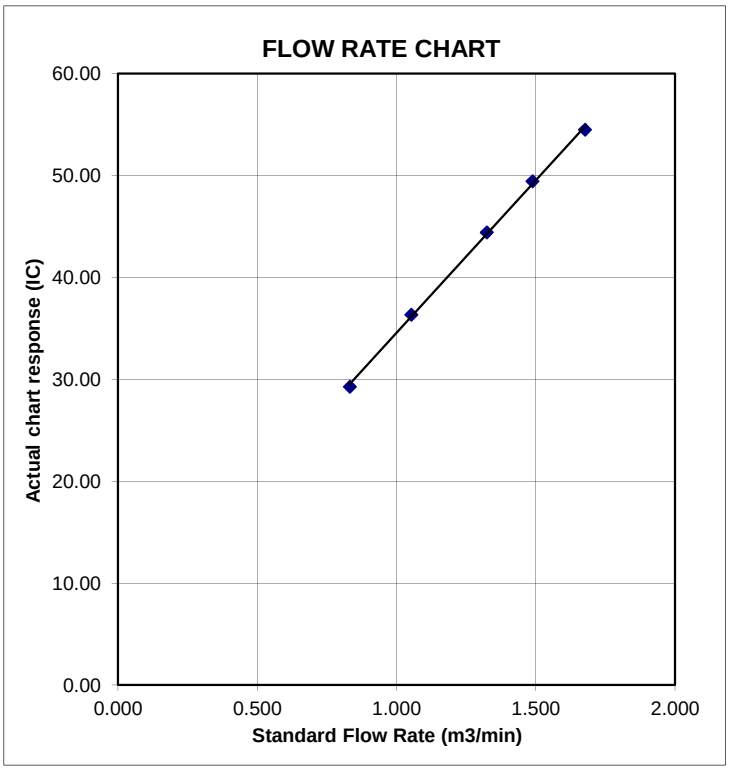
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart respones
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Ping Yeung Village House
Location ID : AM4a

Date of Calibration: 23/12/2015
Next Calibration Date: 23/2/2016
Technician: K.C. Cheung

CONDITIONS

Sea Level Pressure (hPa)	1017.8	Corrected Pressure (mm Hg)	763.35
Temperature (°C)	21.1	Temperature (K)	294

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10265
Model->	5025A	Qstd Intercept ->	-0.00335
Serial # ->	1941		

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6	6	12.0	1.664	60	60.53	Slope = 29.3221
13	5.3	5.3	10.6	1.564	54	54.48	Intercept = 10.4729
10	3.8	3.8	7.6	1.324	49	49.43	Corr. coeff. = 0.9923
7	2.4	2.4	4.8	1.053	42	42.37	
5	1.5	1.5	3.0	0.833	34	34.30	

Calculations :

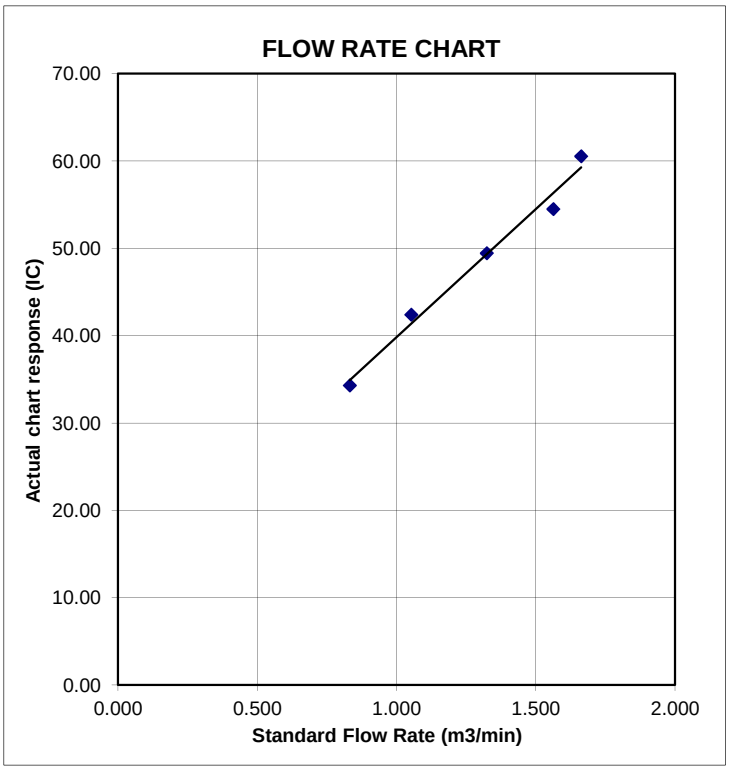
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart respones
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Ping Yeung Village House		Date of Calibration:	23/12/2015
Location ID : AM5		Next Calibration Date:	23/2/2016
		Technician:	K.C. Cheung

CONDITIONS

Sea Level Pressure (hPa)	1017.8	Corrected Pressure (mm Hg)	763.35
Temperature (°C)	21.1	Temperature (K)	294

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10265
Model->	5025A	Qstd Intercept ->	-0.00335
Serial # ->	1941		

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.7	6.7	13.4	1.758	54	54.48	Slope = 33.5609
13	5.3	5.3	10.6	1.564	49	49.43	Intercept = -3.4935
10	4.1	4.1	8.2	1.375	43	43.38	Corr. coeff. = 0.9965
7	2.6	2.6	5.2	1.096	34	34.30	
5	1.6	1.6	3.2	0.860	24	24.21	

Calculations :

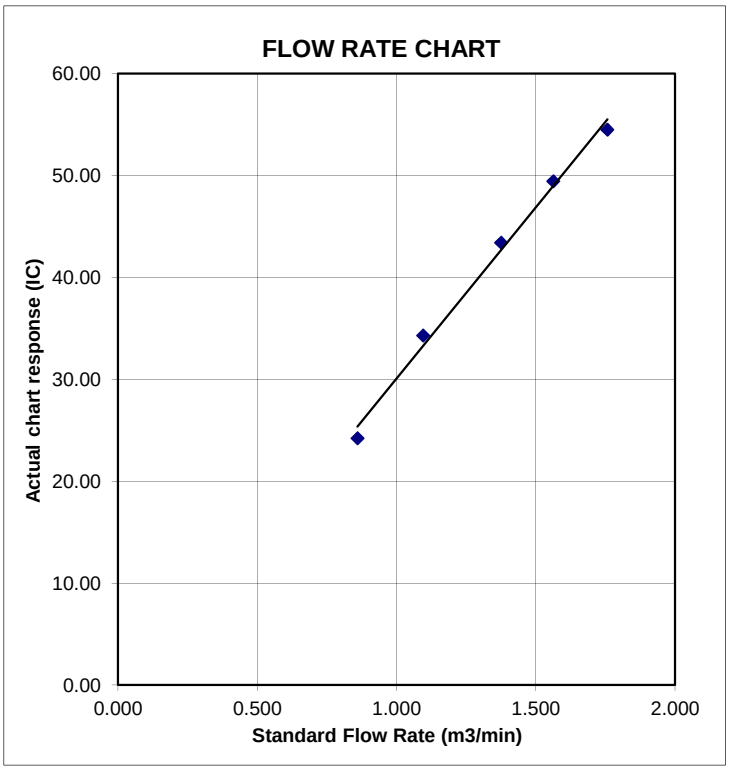
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart respones
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Wo Keng Shan Village House		Date of Calibration:	23/12/2015
Location ID : AM6		Next Calibration Date:	23/2/2016
		Technician:	K.C. Cheung

CONDITIONS

Sea Level Pressure (hPa)	1017.8	Corrected Pressure (mm Hg)	763.35
Temperature (ºC)	21.1	Temperature (K)	294

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10265
Model->	5025A	Qstd Intercept ->	-0.00335
Serial # ->	1941		

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.6	6.6	13.2	1.745	55	55.49	Slope = 30.4315
13	5.2	5.2	10.4	1.549	51	51.45	Intercept = 3.5616
10	3.9	3.9	7.8	1.342	45	45.40	Corr. coeff. = 0.9966
7	2.5	2.5	5.0	1.074	36	36.32	
5	1.5	1.5	3.0	0.833	28	28.25	

Calculations :

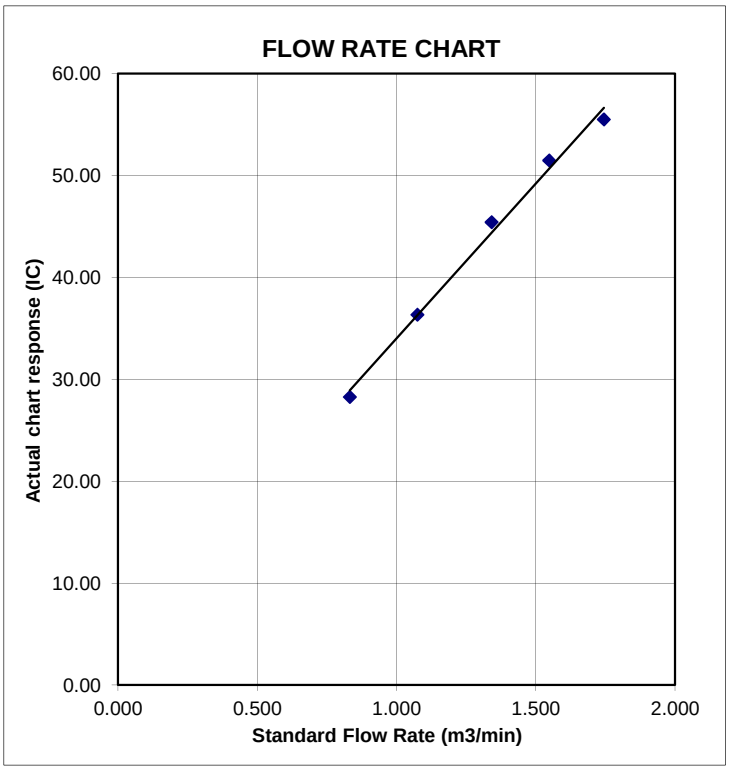
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart respones
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Village House of Loi Tung Village
Location ID : AM7b

Date of Calibration: 23/12/2015
Next Calibration Date: 23/2/2016
Technician: K.C. Cheung

CONDITIONS

Sea Level Pressure (hPa)	1017.8	Corrected Pressure (mm Hg)	763.35
Temperature (°C)	21.1	Temperature (K)	294

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10265
Model->	5025A	Qstd Intercept ->	-0.00335
Serial # ->	1941		

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	4.7	4.7	9.4	1.473	52	52.46	Slope = 35.7639
13	3.8	3.8	7.6	1.324	47	47.41	Intercept = -0.2606
10	3.2	3.2	6.4	1.215	43	43.38	Corr. coeff. = 0.9963
7	2.3	2.3	4.6	1.031	35	35.31	
5	1.5	1.5	3.0	0.833	30	30.26	

Calculations :

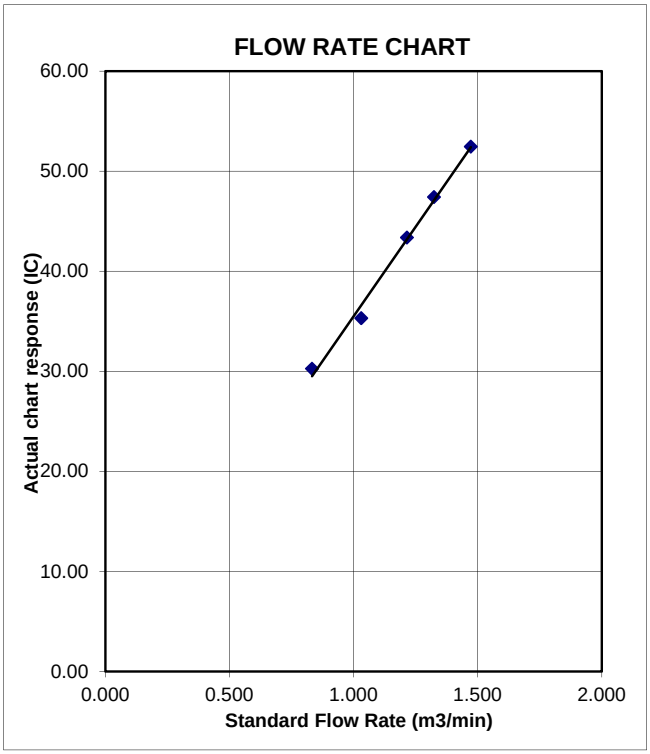
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart respones
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Po Kat Tsai Village No. 4
Location ID : AM8

Date of Calibration: 23/12/2015
Next Calibration Date: 23/2/2016
Technician: K.C. Cheung

CONDITIONS

Sea Level Pressure (hPa)	1017.8	Corrected Pressure (mm Hg)	763.35
Temperature (°C)	21.1	Temperature (K)	294

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10265
Model->	5025A	Qstd Intercept ->	-0.00335
Serial # ->	1941		

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.2	6.2	12.4	1.691	64	64.56	Slope = 33.0787
13	5	5	10.0	1.519	59	59.52	Intercept = 9.2931
10	3.6	3.6	7.2	1.289	53	53.47	Corr. coeff. = 0.9968
7	2.5	2.5	5.0	1.074	44	44.39	
5	1.6	1.6	3.2	0.860	37	37.33	

Calculations :

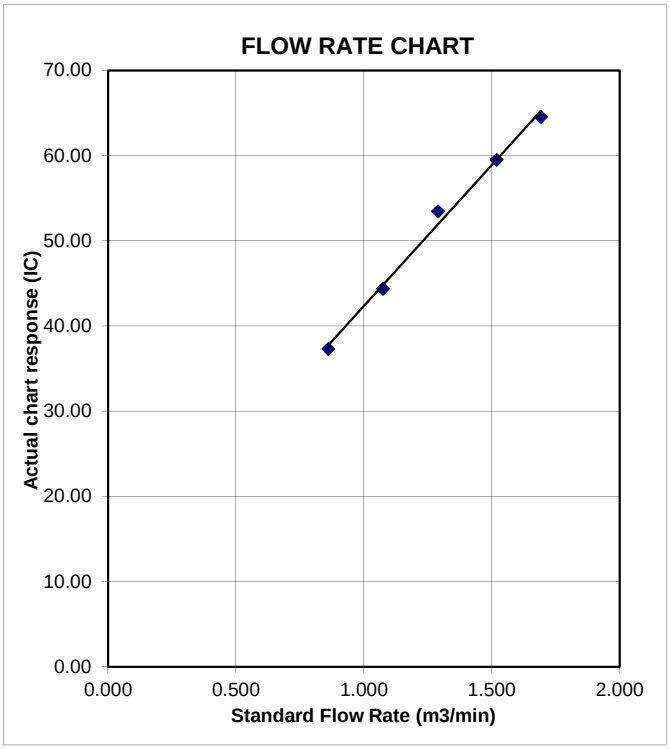
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart respones
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Nam Wa Po Village House No. 80		Date of Calibration:	23/12/2015
Location ID : AM9b		Next Calibration Date:	23/2/2016
		Technician:	K.C. Cheung

CONDITIONS

Sea Level Pressure (hPa)	1017.8	Corrected Pressure (mm Hg)	763.35
Temperature (ºC)	21.1	Temperature (K)	294

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10265
Model->	5025A	Qstd Intercept ->	-0.00335
Serial # ->	1941		

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected
18	6.6	6.6	13.2	1.745	56	56.49
13	5.2	5.2	10.4	1.549	51	51.45
10	3.8	3.8	7.6	1.324	46	46.41
7	2.5	2.5	5.0	1.074	37	37.33
5	1.4	1.4	2.8	0.804	30	30.26

LINEAR REGRESSION

Slope =	28.3457
Intercept =	7.5574
Corr. coeff. =	0.9973

Calculations :

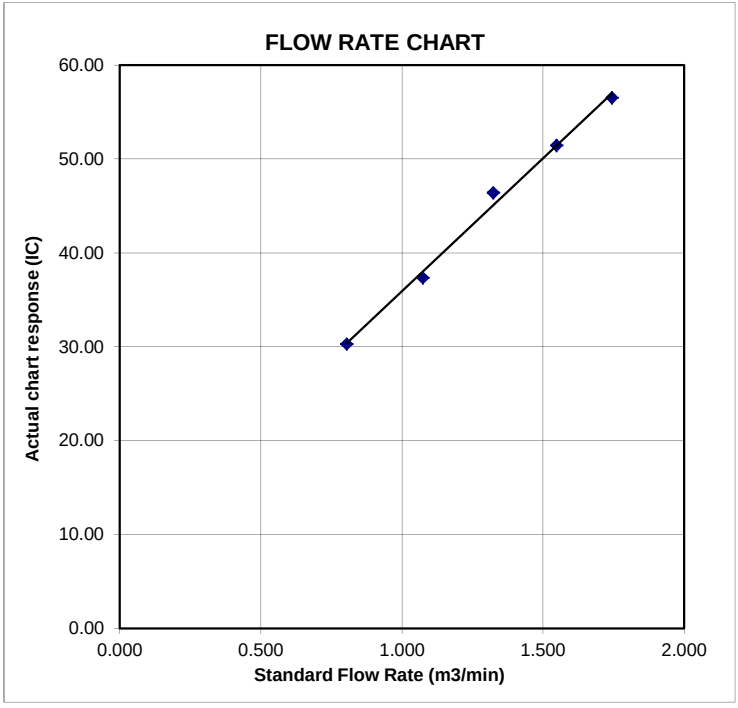
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart respones
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure



TISCH Environmental

TISCH ENVIRONMENTAL, INC.
145 SOUTH MIAMI AVE
VILLAGE OF CLEVES, OH
45002
513.467.9000
877.263.7610 TOLL FREE
513.467.9009 FAX

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Mar 24, 2015 Rootsmeter S/N 0438320 Ta (K) - 292
Operator Tisch Orifice I.D. - 1941 Pa (mm) - 756.92

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.4880	3.2	2.00
2	NA	NA	1.00	1.0510	6.4	4.00
3	NA	NA	1.00	0.9360	7.9	5.00
4	NA	NA	1.00	0.8920	8.8	5.50
5	NA	NA	1.00	0.7360	12.7	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
1.0121	0.6802	1.4258		0.9958	0.6692	0.8784
1.0078	0.9589	2.0163		0.9916	0.9434	1.2422
1.0057	1.0745	2.2543		0.9895	1.0571	1.3888
1.0046	1.1262	2.3644		0.9884	1.1080	1.4566
0.9993	1.3578	2.8515		0.9832	1.3358	1.7568
Qstd slope (m) =		2.10265		Qa slope (m) =		1.31664
intercept (b) =		-0.00335		intercept (b) =		-0.00206
coefficient (r) =		0.99999		coefficient (r) =		0.99999
y axis = SQRT[H2O(Pa/760)(298/Ta)]				y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

Vstd = Diff. Vol[(Pa-Diff. Hg)/760](298/Ta)
Qstd = Vstd/Time

Va = Diff Vol [(Pa-Diff Hg)/Pa]
Qa = Va/Time

For subsequent flow rate calculations:

Qstd = 1/m{[SQRT(H2O(Pa/760)(298/Ta))]- b}
Qa = 1/m{[SQRT H2O(Ta/Pa)]- b}

Equipment Calibration Record

Equipment Calibrated:

Type:	Laser Dust monitor
Manufacturer:	Sibata LD-3B
Serial No.	2X6146
Equipment Ref:	EQ 106
Job Order	HK1500837

Standard Equipment:

Standard Equipment:	Higher Volume Sampler
Location & Location ID:	AUES office (calibration room)
Equipment Ref:	HVS 018
Last Calibration Date:	10 Nov 2014

Equipment Calibration Results:

Calibration Date: 4 January 2015

Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in mg/m^3 (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/60min)
1hr19min	10:00 ~ 11:19	17.3	1017.0	0.076	2677	33.8
2hr15min	11:25 ~ 13:40	17.3	1017.0	0.111	6875	50.9
2hr06min	15:40 ~ 17:46	17.3	1017.0	0.047	2399	19.0

Sensitivity Adjustment Scale Setting (Before Calibration) 594 (CPM)

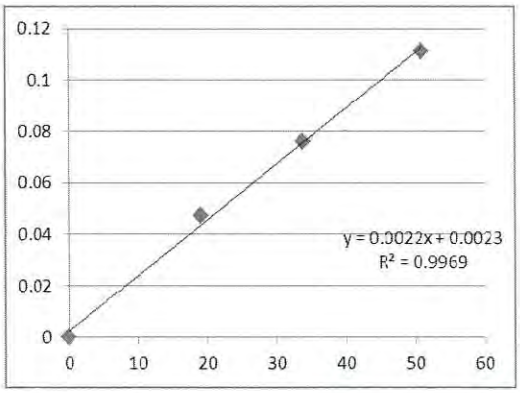
Sensitivity Adjustment Scale Setting (After Calibration) 588 (CPM)

Linear Regression of Y or X

Slope (K-factor): 0.0022

Correlation Coefficient 0.9969

Date of Issue 6 January 2015



Operator : Donald Kwok Signature : Date : 6 January 2015

QC Reviewer : Ben Tam Signature : Date : 6 January 2015

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location :	Gold King Industrial Building, Kwai Chung	Date of Calibration:	10-Nov-14
Location ID :	Calibration Room	Next Calibration Date:	10-Feb-15

CONDITIONS

Sea Level Pressure (hPa)	1017.3	Corrected Pressure (mm Hg)	762.975
Temperature (°C)	23.3	Temperature (K)	296

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.00757
Model->	5025A	Qstd Intercept ->	-0.01628
Calibration Date->	7-Apr-14	Expiry Date->	7-Apr-15

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION	
18	3.6	3.6	7.2	1.351	58	58.28	Slope =	33.8083
13	2.8	2.8	5.6	1.193	54	54.26	Intercept =	12.9642
10	2.2	2.2	4.4	1.058	48	48.23	Corr. coeff. =	0.9976
8	1.5	1.5	3.0	0.875	42	42.20		
5	0.9	0.9	1.8	0.680	36	36.17		

Calculations :

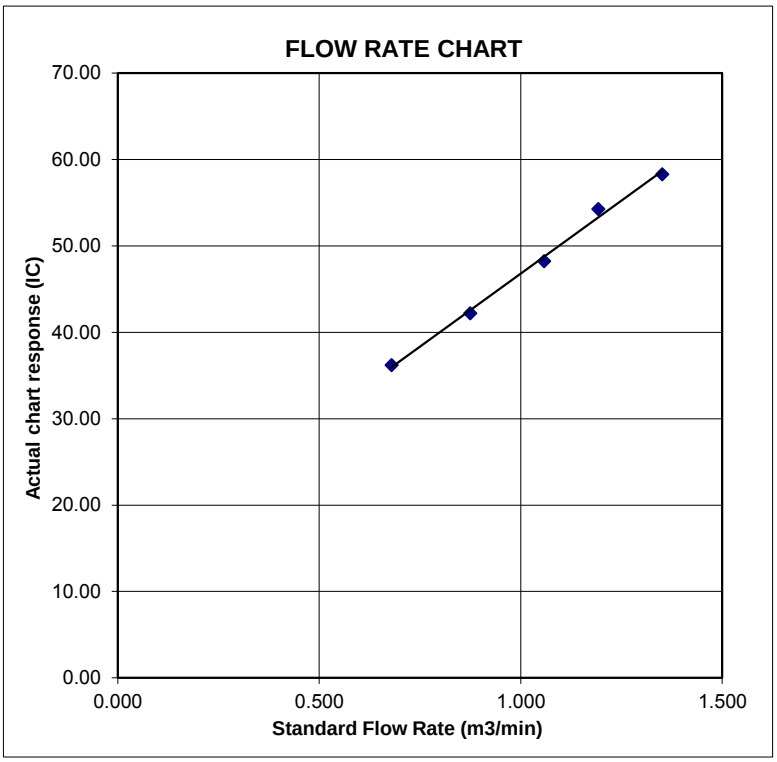
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart respones
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure



Equipment Calibration Record

Equipment Calibrated:

Type:	Laser Dust monitor
Manufacturer:	Sibata LD-3B
Serial No.	366409
Equipment Ref:	EQ 109
Job Order	HK1500973

Standard Equipment:

Standard Equipment:	Higher Volume Sampler
Location & Location ID:	AUES office (calibration room)
Equipment Ref:	HVS 018
Last Calibration Date:	10 Nov 2014

Equipment Calibration Results:

Calibration Date: 4 January 2015

Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in mg/m^3 (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/60min)
1hr19min	10:00 ~ 11:19	17.3	1017.0	0.076	2615	33.0
2hr15min	11:25 ~ 13:40	17.3	1017.0	0.111	6854	50.8
2hr06min	15:40 ~ 17:46	17.3	1017.0	0.047	2319	18.4

Sensitivity Adjustment Scale Setting (Before Calibration) 538 (CPM)

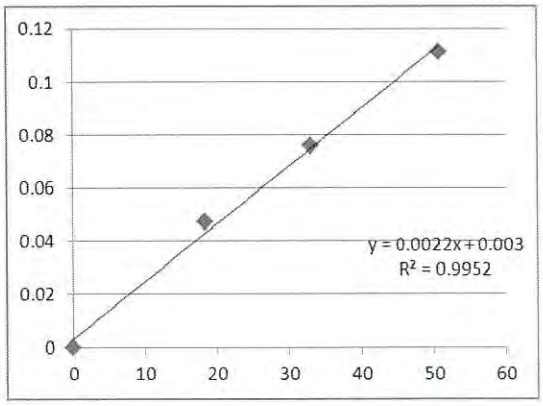
Sensitivity Adjustment Scale Setting (After Calibration) 533 (CPM)

Linear Regression of Y or X

Slope (K-factor): 0.0022

Correlation Coefficient 0.9952

Date of Issue 6 January 2015



Operator : Donald Kwok Signature : Date : 6 January 2015

QC Reviewer : Ben Tam Signature : Date : 6 January 2015

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location :	Gold King Industrial Building, Kwai Chung	Date of Calibration:	10-Nov-14
Location ID :	Calibration Room	Next Calibration Date:	10-Feb-15

CONDITIONS

Sea Level Pressure (hPa)	1017.3	Corrected Pressure (mm Hg)	762.975
Temperature (°C)	23.3	Temperature (K)	296

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.00757
Model->	5025A	Qstd Intercept ->	-0.01628
Calibration Date->	7-Apr-14	Expiry Date->	7-Apr-15

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION	
18	3.6	3.6	7.2	1.351	58	58.28	Slope =	33.8083
13	2.8	2.8	5.6	1.193	54	54.26	Intercept =	12.9642
10	2.2	2.2	4.4	1.058	48	48.23	Corr. coeff. =	0.9976
8	1.5	1.5	3.0	0.875	42	42.20		
5	0.9	0.9	1.8	0.680	36	36.17		

Calculations :

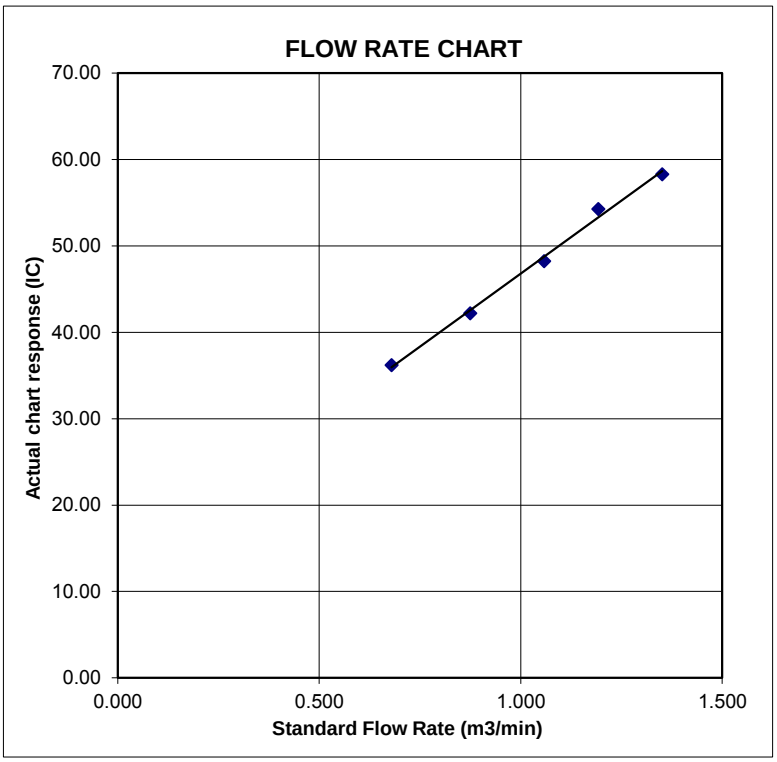
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart respones
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure



Equipment Verification Report (TSP)

Equipment Calibrated:

Type:	Laser Dust monitor
Manufacturer:	Sibata LD-3B
Serial No.	456660
Equipment Ref:	EQ117
Job Order	

Standard Equipment:

Standard Equipment:	Higher Volume Sampler
Location & Location ID:	AUES office (calibration room)
Equipment Ref:	HVS 018
Last Calibration Date:	6 February 2015

Equipment Verification Results:

Testing Date: 5 April 2015

Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in mg/m^3 (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/60min)
2hr11min	10:00 ~ 12:11	26.0	1011.3	0.041	2344	17.9
2hr21min	12:20 ~ 14:41	26.0	1011.3	0.038	2104	14.9
2hr17min	14:50 ~ 17:07	26.0	1011.3	0.057	3514	25.7

Sensitivity Adjustment Scale Setting (Before Calibration) 607 (CPM)

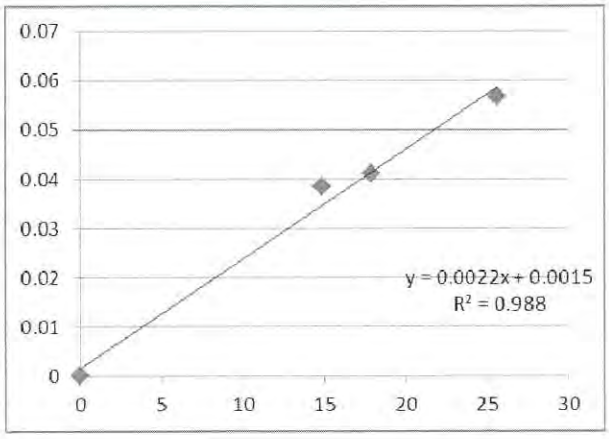
Sensitivity Adjustment Scale Setting (After Calibration) 602 (CPM)

Linear Regression of Y or X

Slope (K-factor): 0.0022

Correlation Coefficient 0.9940

Date of Issue 20 April 2015



Remarks:

1. **Strong** Correlation (R>0.8)
2. Factor 0.0022 should be apply for TSP monitoring

*If R<0.5, repair or re-verification is required for the equipment

Operator : Donald Kwok Signature : Date : 20 April 2015

QC Reviewer : Ben Tam Signature : Date : 20 April 2015

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location :	Gold King Industrial Building, Kwai Chung	Date of Calibration:	6-Feb-15
Location ID :	Calibration Room	Next Calibration Date:	6-May-15

CONDITIONS

Sea Level Pressure (hPa)	1024.5	Corrected Pressure (mm Hg)	768.375
Temperature (°C)	13.4	Temperature (K)	286

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.00757
Model->	5025A	Qstd Intercept ->	-0.01628
Calibration Date->	7-Apr-14	Expiry Date->	7-Apr-15

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	3.8	3.8	7.6	1.417	56	57.44	Slope = 30.5075
13	3	3	6.0	1.260	52	53.33	Intercept = 14.6821
10	2.3	2.3	4.6	1.104	48	49.23	Corr. coeff. = 0.9974
8	1.7	1.7	3.4	0.950	42	43.08	
5	1.0	1.0	2.0	0.731	36	36.92	

Calculations :

Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]

IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate

IC = corrected chart respones

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

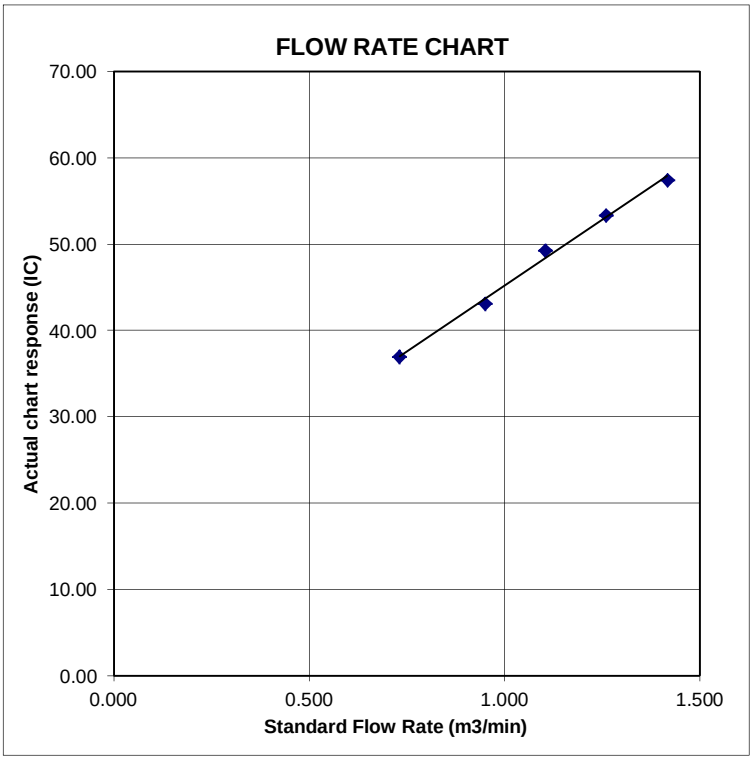
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



Equipment Verification Report (TSP)

Equipment Calibrated:

Type:	Laser Dust monitor
Manufacturer:	Sibata LD-3B
Serial No.	456658
Equipment Ref:	EQ115
Job Order	

Standard Equipment:

Standard Equipment:	Higher Volume Sampler
Location & Location ID:	AUES office (calibration room)
Equipment Ref:	HVS 018
Last Calibration Date:	6 February 2015

Equipment Verification Results:

Testing Date: 5 April 2015

Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in mg/m^3 (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/60min)
2hr11min	10:00 ~ 12:11	26.0	1011.3	0.041	2407	18.4
2hr21min	12:20 ~ 14:41	26.0	1011.3	0.038	2219	15.7
2hr17min	14:50 ~ 17:07	26.0	1011.3	0.057	3644	26.6

Sensitivity Adjustment Scale Setting (Before Calibration) 698 (CPM)

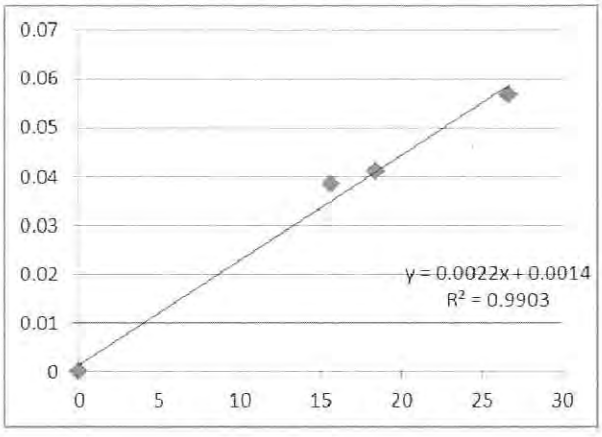
Sensitivity Adjustment Scale Setting (After Calibration) 701 (CPM)

Linear Regression of Y or X

Slope (K-factor): 0.0022

Correlation Coefficient 0.9951

Date of Issue 20 April 2015



Remarks:

1. **Strong** Correlation (R>0.8)
2. Factor 0.0022 should be apply for TSP monitoring

*If R<0.5, repair or re-verification is required for the equipment

Operator : Donald Kwok Signature : Date : 20 April 2015

QC Reviewer : Ben Tam Signature : Date : 20 April 2015

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location :	Gold King Industrial Building, Kwai Chung	Date of Calibration:	6-Feb-15
Location ID :	Calibration Room	Next Calibration Date:	6-May-15

CONDITIONS

Sea Level Pressure (hPa)	1024.5	Corrected Pressure (mm Hg)	768.375
Temperature (°C)	13.4	Temperature (K)	286

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.00757
Model->	5025A	Qstd Intercept ->	-0.01628
Calibration Date->	7-Apr-14	Expiry Date->	7-Apr-15

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	3.8	3.8	7.6	1.417	56	57.44	Slope = 30.5075
13	3	3	6.0	1.260	52	53.33	Intercept = 14.6821
10	2.3	2.3	4.6	1.104	48	49.23	Corr. coeff. = 0.9974
8	1.7	1.7	3.4	0.950	42	43.08	
5	1.0	1.0	2.0	0.731	36	36.92	

Calculations :

Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]

IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate

IC = corrected chart respones

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

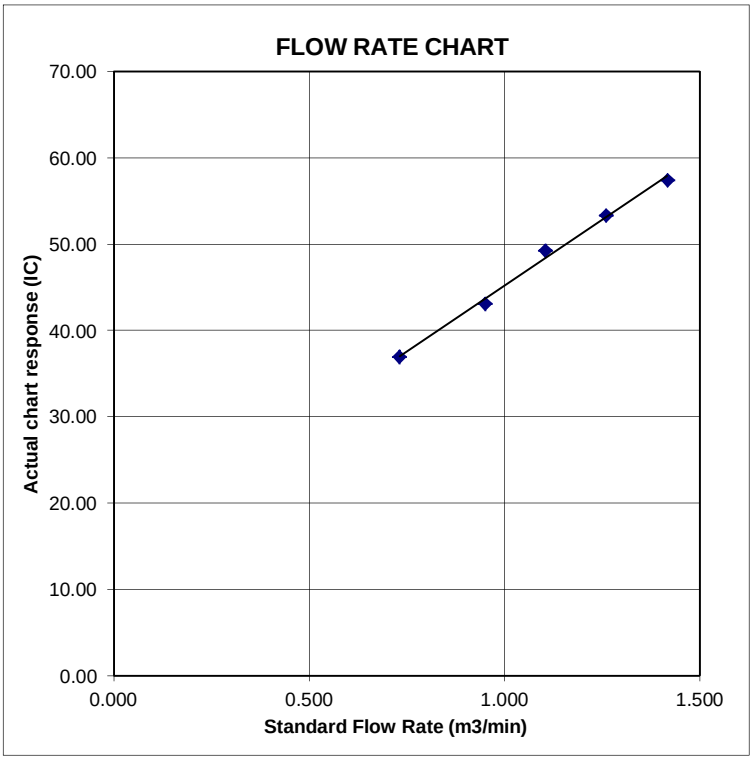
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



SIBATA (EQ111)

SIBATA SCIENTIFIC TECHNOLOGY LTD.
1-1-62, Nakane, Soka, Saitama, 340-0005 Japan
TEL : 048-933-1582 FAX : 048-933-1591

CALIBRATION CERTIFICATE

Date: May 11, 2015

Equipment Name	:	Digital Dust Indicator, Model LD-3B
Code No.	:	080000-42
Quantity	:	1 unit
Serial No.	:	3Y6501
Sensitivity	:	0.001 mg/m3
Sensitivity Adjustment	:	656CPM
Scale Setting	:	April 24, 2015

We hereby certify that the avobe mentioned instrment has been calibrated satisfactory.

Sincerely

SIBATA SCIENTIFIC TECHNOLOGY LTD.

Hong

For Kentaro Togo
Overseas Sales Division

輝創工程有限公司
Sun Creation Engineering Limited
Calibration and Testing Laboratory

Certificate of Calibration
校正證書

Certificate No. : C151969
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC15-0720) Date of Receipt / 收件日期 : 24 March 2015

Description / 儀器名稱	:	Integrating Sound Level Meter (EQ006)
Manufacturer / 製造商	:	Brüel & Kjær
Model No. / 型號	:	2238
Serial No. / 編號	:	2285762
Supplied By / 委託者	:	Action-United Environmental Services and Consulting Unit A, 20/F., Gold King Industrial Building, 35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Relative Humidity / 相對濕度 : (55 ± 20)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 11 April 2015

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
All results are within manufacturer's specification.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By 測試 : K C Lee, Project Engineer

Certified By 核證 : K M Wu, Engineer

Date of Issue 簽發日期 : 14 April 2015

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

Certificate of Calibration
校正證書

Certificate No. : C151969
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.

2. Self-calibration using laboratory acoustic calibrator was performed before the test from 6.1.1.2 to 6.4.

3. The results presented are the mean of 3 measurements at each calibration point.

4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C150014
CL281	Multifunction Acoustic Calibrator	DC130171

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

6.1.1.1 Before Self-calibration

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
50 - 130	L_{AFP}	A	F	94.00	1	94.3

6.1.1.2 After Self-calibration

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
50 - 130	L_{AFP}	A	F	94.00	1	94.1	± 0.7

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
50 - 130	L_{AFP}	A	F	94.00	1	94.1 (Ref.)
				104.00		104.0
				114.00		114.0

IEC 60651 Type 1 Spec. : ± 0.4 dB per 10 dB step and ± 0.7 dB for overall different.

Sun Creation Engineering Limited - Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 - 校正及檢測實驗所
c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

Certificate of Calibration
校正證書

Certificate No. : C151969
證書編號

6.2 Time Weighting

6.2.1 Continuous Signal

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
50 - 130	L_{AFP}	A	F	94.00	1	94.1	Ref.
	L_{ASP}		S			94.1	± 0.1
	L_{AIP}		I			94.1	± 0.1

6.2.2 Tone Burst Signal (2 kHz)

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Burst Duration		
30 - 110	L_{AFP}	A	F	106.0	Continuous	106.0	Ref.
	L_{AFMax}				200 ms	104.9	-1.0 ± 1.0
	L_{ASP}		S		Continuous	106.0	Ref.
	L_{ASMax}				500 ms	101.9	-4.1 ± 1.0

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 130	L_{AFP}	A	F	94.00	31.5 Hz	55.1	-39.4 ± 1.5
					63 Hz	68.0	-26.2 ± 1.5
					125 Hz	77.9	-16.1 ± 1.0
					250 Hz	85.4	-8.6 ± 1.0
					500 Hz	90.8	-3.2 ± 1.0
					1 kHz	94.1	Ref.
					2 kHz	95.3	+1.2 ± 1.0
					4 kHz	95.1	+1.0 ± 1.0
					8 kHz	93.0	-1.1 (+1.5 ; -3.0)
					12.5 kHz	89.9	-4.3 (+3.0 ; -6.0)

Certificate of Calibration
校正證書

Certificate No. : C151969
證書編號

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 130	L_{CFP}	C	F	94.00	31.5 Hz	91.4	-3.0 ± 1.5
					63 Hz	93.4	-0.8 ± 1.5
					125 Hz	93.9	-0.2 ± 1.0
					250 Hz	94.1	0.0 ± 1.0
					500 Hz	94.1	0.0 ± 1.0
					1 kHz	94.1	Ref.
					2 kHz	93.9	-0.2 ± 1.0
					4 kHz	93.3	-0.8 ± 1.0
					8 kHz	91.1	-3.0 (+1.5 ; -3.0)
					12.5 kHz	88.0	-6.2 (+3.0 ; -6.0)

6.4 Time Averaging

UUT Setting				Applied Value					UUT Reading (dB)	IEC 60804 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Integrating Time	Frequency (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)		
30 - 110	L_{Aeq}	A	10 sec.	4	1	1/10	110.0	100	100.0	± 0.5
						$1/10^2$		90	90.1	± 0.5
			60 sec.			$1/10^3$		80	79.4	± 1.0
			5 min.			$1/10^4$		70	69.2	± 1.0

Remarks : - UUT Microphone Model No. : 4188 & S/N : 2812705

- Mfr's Spec. : IEC 60651 Type 1 & IEC 60804 Type 1

- Uncertainties of Applied Value :

94 dB	: 31.5 Hz - 125 Hz	: ± 0.35 dB
	250 Hz - 500 Hz	: ± 0.30 dB
	1 kHz	: ± 0.20 dB
	2 kHz - 4 kHz	: ± 0.35 dB
	8 kHz	: ± 0.45 dB
	12.5 kHz	: ± 0.70 dB
104 dB : 1 kHz		: ± 0.10 dB (Ref. 94 dB)
114 dB : 1 kHz		: ± 0.10 dB (Ref. 94 dB)
Burst equivalent level		: ± 0.2 dB (Ref. 110 dB continuous sound level)

- The uncertainties are for a confidence probability of not less than 95 %.

Note :
The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

輝創工程有限公司
Sun Creation Engineering Limited
Calibration and Testing Laboratory

Certificate of Calibration
校正證書

Certificate No. : C153055
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC15-0720) Date of Receipt / 收件日期 : 15 May 2015

Description / 儀器名稱 : Integrating Sound Level Meter (EQ065)
Manufacturer / 製造商 : Brüel & Kjær
Model No. / 型號 : 2238
Serial No. / 編號 : 2337676
Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Relative Humidity / 相對濕度 : (55 ± 20)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 4 June 2015

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
All results are within manufacturer's specification.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By 測試 : K C Lee, Project Engineer

Certified By 核證 : K M Wu, Engineer

Date of Issue 簽發日期 : 5 June 2015

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

Certificate of Calibration
校正證書

Certificate No. : C153055
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.

2. The results presented are the mean of 3 measurements at each calibration point.

3. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C150014
CL281	Multifunction Acoustic Calibrator	DC130171

4. Test procedure : MA101N.

5. Results :

5.1 Sound Pressure Level

UUT Setting				Applied Value		UUT	IEC 60651
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Type 1 Spec. (dB)
50 - 130	L_{AFP}	A	F	94.00	1	94.0	± 0.7

5.1.2 Linearity

UUT Setting				Applied Value		UUT
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)
50 - 130	L_{AFP}	A	F	94.00	1	94.0 (Ref.)
				104.00		104.0
				114.00		114.0

IEC 60651 Type 1 Spec. : ± 0.4 dB per 10 dB step and ± 0.7 dB for overall different.

5.2 Time Weighting

5.2.1 Continuous Signal

UUT Setting				Applied Value		UUT	IEC 60651
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Type 1 Spec. (dB)
50 - 130	L_{AFP}	A	F	94.00	1	94.0	Ref.
	L_{ASP}		S			94.0	± 0.1
	L_{AIP}		I			94.0	± 0.1

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

Certificate of Calibration
校正證書

Certificate No. : C153055
證書編號

5.2.2 Tone Burst Signal (2 kHz)

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Burst Duration		
30 - 110	L_{AFP}	A	F	106.0	Continuous	106.0	Ref.
	L_{AFMax}				200 ms	105.0	-1.0 ± 1.0
	L_{ASP}		S		Continuous	106.0	Ref.
	L_{ASMax}				500 ms	102.0	-4.1 ± 1.0

5.3 Frequency Weighting

5.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 130	L_{AFP}	A	F	94.00	31.5 Hz	54.8	-39.4 ± 1.5
					63 Hz	67.9	-26.2 ± 1.5
					125 Hz	77.8	-16.1 ± 1.0
					250 Hz	85.3	-8.6 ± 1.0
					500 Hz	90.8	-3.2 ± 1.0
					1 kHz	94.0	Ref.
					2 kHz	95.2	+1.2 ± 1.0
					4 kHz	95.0	+1.0 ± 1.0
					8 kHz	92.9	-1.1 (+1.5 ; -3.0)
					12.5 kHz	89.8	-4.3 (+3.0 ; -6.0)

5.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 130	L_{CFP}	C	F	94.00	31.5 Hz	91.1	-3.0 ± 1.5
					63 Hz	93.2	-0.8 ± 1.5
					125 Hz	93.8	-0.2 ± 1.0
					250 Hz	93.9	0.0 ± 1.0
					500 Hz	94.0	0.0 ± 1.0
					1 kHz	94.0	Ref.
					2 kHz	93.8	-0.2 ± 1.0
					4 kHz	93.2	-0.8 ± 1.0
					8 kHz	91.0	-3.0 (+1.5 ; -3.0)
					12.5 kHz	87.9	-6.2 (+3.0 ; -6.0)

Certificate of Calibration
校正證書

Certificate No. : C153055
證書編號

5.4 Time Averaging

UUT Setting				Applied Value					UUT Reading (dB)	IEC 60804 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Integrating Time	Frequency (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)		
30 - 110	L_{Aeq}	A	10 sec.	4	1	1/10	110.0	100	100.0	± 0.5
						$1/10^2$		90	89.7	± 0.5
			60 sec.			$1/10^3$		80	79.8	± 1.0
			5 min.			$1/10^4$		70	69.7	± 1.0

Remarks : - UUT Microphone Model No. : 4188 & S/N : 2812708

- Mfr's Spec. : IEC 60651 Type 1 & IEC 60804 Type 1

- Uncertainties of Applied Value :

94 dB	: 31.5 Hz - 125 Hz	: ± 0.35 dB
	250 Hz - 500 Hz	: ± 0.30 dB
	1 kHz	: ± 0.20 dB
	2 kHz - 4 kHz	: ± 0.35 dB
	8 kHz	: ± 0.45 dB
	12.5 kHz	: ± 0.70 dB
104 dB	: 1 kHz	: ± 0.10 dB (Ref. 94 dB)
114 dB	: 1 kHz	: ± 0.10 dB (Ref. 94 dB)
Burst equivalent level		: ± 0.2 dB (Ref. 110 dB continuous sound level)

- The uncertainties are for a confidence probability of not less than 95 %.

Note :
The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

輝創工程有限公司
Sun Creation Engineering Limited
Calibration and Testing Laboratory

Certificate of Calibration
校正證書

Certificate No. : C152552
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC15-0720) Date of Receipt / 收件日期 : 17 April 2015

Description / 儀器名稱 : Sound Level Meter (EQ011)
Manufacturer / 製造商 : Rion
Model No. / 型號 : NL-52
Serial No. / 編號 : 01121362
Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Relative Humidity / 相對濕度 : (55 ± 20)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 8 May 2015

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
All results are within manufacturer's specification.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By 測試 : K C Lee, Project Engineer

Certified By 核證 : K M Wu, Engineer

Date of Issue 簽發日期 : 12 May 2015

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

Certificate of Calibration
校正證書

Certificate No. : C152552
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.

2. Self-calibration was performed before the test.

3. The results presented are the mean of 3 measurements at each calibration point.

4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C150014
CL281	Multifunction Acoustic Calibrator	DC130171

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L_A	A	Fast	94.00	1	93.6	± 1.1

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
30 - 130	L_A	A	Fast	94.00	1	93.6 (Ref.)
				104.00		103.6
				114.00		113.6

IEC 61672 Class 1 Spec. : ± 0.6 dB per 10 dB step and ± 1.1 dB for overall different.

6.2 Time Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L_A	A	Fast	94.00	1	93.6	Ref.
			Slow			93.6	± 0.3

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

Certificate of Calibration
校正證書

Certificate No. : C152552
證書編號

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L_A	A	Fast	94.00	63 Hz	67.3	-26.2 ± 1.5
					125 Hz	77.4	-16.1 ± 1.5
					250 Hz	84.9	-8.6 ± 1.4
					500 Hz	90.3	-3.2 ± 1.4
					1 kHz	93.6	Ref.
					2 kHz	94.8	+1.2 ± 1.6
					4 kHz	94.6	+1.0 ± 1.6
					8 kHz	92.6	-1.1 (+2.1 ; -3.1)
					12.5 kHz	89.2	-4.3 (+3.0 ; -6.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L_C	C	Fast	94.00	63 Hz	92.7	-0.8 ± 1.5
					125 Hz	93.4	-0.2 ± 1.5
					250 Hz	93.6	0.0 ± 1.4
					500 Hz	93.6	0.0 ± 1.4
					1 kHz	93.6	Ref.
					2 kHz	93.4	-0.2 ± 1.6
					4 kHz	92.8	-0.8 ± 1.6
					8 kHz	90.7	-3.0 (+2.1 ; -3.1)
					12.5 kHz	87.2	-6.2 (+3.0 ; -6.0)

Remarks : - UUT Microphone Model No. : UC-59 & S/N : 07459

- Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value :

94 dB	: 63 Hz - 125 Hz	: ± 0.35 dB
	250 Hz - 500 Hz	: ± 0.30 dB
	1 kHz	: ± 0.20 dB
	2 kHz - 4 kHz	: ± 0.35 dB
	8 kHz	: ± 0.45 dB
	12.5 kHz	: ± 0.70 dB
104 dB	: 1 kHz	: ± 0.10 dB (Ref. 94 dB)
114 dB	: 1 kHz	: ± 0.10 dB (Ref. 94 dB)

- The uncertainties are for a confidence probability of not less than 95 %.

Note :
The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

輝創工程有限公司
Sun Creation Engineering Limited
Calibration and Testing Laboratory

Certificate of Calibration
校正證書

Certificate No. : C151967
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC15-0720) Date of Receipt / 收件日期 : 24 March 2015

Description / 儀器名稱 : Sound Level Calibrator (EQ084)
Manufacturer / 製造商 : Cesva
Model No. / 型號 : CB-5
Serial No. / 編號 : 030023
Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Relative Humidity / 相對濕度 : (55 ± 20)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration

DATE OF TEST / 測試日期 : 11 April 2015

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
All results are within manufacturer's specification. (after adjustment)
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By 測試 : K C Lee, Project Engineer

Certified By 核證 : K M Wu, Engineer

Date of Issue 簽發日期 : 14 April 2015

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

Certificate of Calibration
校正證書

Certificate No. : C151967
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.

2. The results presented are the mean of 3 measurements at each calibration point.

3. Test equipment :

Equipment ID	Description	Certificate No.
CL130	Universal Counter	C143868
CL281	Multifunction Acoustic Calibrator	DC130171
TST150A	Measuring Amplifier	C141558

4. Test procedure : MA100N.

5. Results :

5.1 Sound Level Accuracy

5.1.1 Before Adjustment

UUT Nominal Value	Measured Value (dB)	Mfr's Spec. (dB)	Uncertainty of Measured Value (dB)
94 dB, 1 kHz	* 94.4	± 0.3	± 0.2
104 dB, 1 kHz	* 104.4		± 0.3

Out of Mfr's Spec.

5.1.2 After Adjustment

UUT Nominal Value	Measured Value (dB)	Mfr's Spec. (dB)	Uncertainty of Measured Value (dB)
94 dB, 1 kHz	94.0	± 0.3	± 0.2
104 dB, 1 kHz	104.0		± 0.3

5.2 Frequency Accuracy

5.2.1 Before Adjustment

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	1.002	1 kHz ± 1.5 %	± 1

5.2.2 After Adjustment

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	1.001	1 kHz ± 1.5 %	± 1

Certificate of Calibration
校正證書

Certificate No. : C151967
證書編號

Remark : The uncertainties are for a confidence probability of not less than 95 %.

Note :
The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

輝創工程有限公司
Sun Creation Engineering Limited
Calibration and Testing Laboratory

Certificate of Calibration
校正證書

Certificate No. : C152550
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC15-0720) Date of Receipt / 收件日期 : 16 April 2015

Description / 儀器名稱 : Acoustical Calibrator (EQ081)
Manufacturer / 製造商 : Brüel & Kjær
Model No. / 型號 : 4231
Serial No. / 編號 : 2326408
Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Relative Humidity / 相對濕度 : (55 ± 20)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 7 May 2015

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
All results are within manufacturer's specification.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By 測試 : K C Lee, Project Engineer

Certified By 核證 : K M Wu, Engineer

Date of Issue 簽發日期 : 12 May 2015

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

輝創工程有限公司
Sun Creation Engineering Limited
Calibration and Testing Laboratory

Certificate of Calibration
校正證書

Certificate No. : C152550
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.

2. The results presented are the mean of 3 measurements at each calibration point.

3. Test equipment :

Equipment ID	Description	Certificate No.
CL130	Universal Counter	C143868
CL281	Multifunction Acoustic Calibrator	DC130171
TST150A	Measuring Amplifier	C141558

4. Test procedure : MA100N.

5. Results :

5.1 Sound Level Accuracy

UUT Nominal Value	Measured Value (dB)	Mfr's Spec. (dB)	Uncertainty of Measured Value (dB)
94 dB, 1 kHz	94.0	± 0.2	± 0.2
114 dB, 1 kHz	114.0		

5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	1.000 0	1 kHz ± 0.1 %	± 0.1

Remark : The uncertainties are for a confidence probability of not less than 95 %.

Note :
The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

輝創工程有限公司
Sun Creation Engineering Limited
Calibration and Testing Laboratory

Certificate of Calibration
校正證書

Certificate No. : C151968
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC15-0720) Date of Receipt / 收件日期 : 24 March 2015

Description / 儀器名稱 : Sound Calibrator (EQ083)
Manufacturer / 製造商 : Rion
Model No. / 型號 : NC-74
Serial No. / 編號 : 34246492
Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Relative Humidity / 相對濕度 : (55 ± 20)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 11 April 2015

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
All results are within manufacturer's specification.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By 測試 : K C Lee, Project Engineer

Certified By 核證 : K M Wu, Engineer

Date of Issue 簽發日期 : 14 April 2015

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

輝創工程有限公司
Sun Creation Engineering Limited
Calibration and Testing Laboratory

Certificate of Calibration
校正證書

Certificate No. : C151968
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.

2. The results presented are the mean of 3 measurements at each calibration point.

3. Test equipment :

Equipment ID	Description	Certificate No.
CL130	Universal Counter	C143868
CL281	Multifunction Acoustic Calibrator	DC130171
TST150A	Measuring Amplifier	C141558

4. Test procedure : MA100N.

5. Results :

5.1 Sound Level Accuracy

UUT Nominal Value	Measured Value (dB)	Mfr's Spec. (dB)	Uncertainty of Measured Value (dB)
94 dB, 1 kHz	94.0	± 0.3	± 0.2

5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	1.001	1 kHz ± 1 %	± 1

Remark : The uncertainties are for a confidence probability of not less than 95 %.

Note :
The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

ALS Technichem (HK) Pty Ltd
11/F, Chung Shun Knitting Centre
1-3 Wing Yip Street
Kwai Chung, N.T., Hong Kong
T: +852 2610 1044
F: +852 2610 2021
www.alsglobal.com

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR BEN TAM	**WORK ORDER:**	HK1538189
CLIENT:	ACTION UNITED ENVIRO SERVICES	**SUB-BATCH:**	0
ADDRESS:	RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T., HONG KONG	**LABORATORY:**	HONG KONG
		DATE RECEIVED:	07/10/2015
		DATE OF ISSUE:	15/10/2015

COMMENTS

The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.
The "Tolerance Limit" quoted is the acceptance criteria applicable for similar equipment used by the ALS Hong Kong laboratory or quoted from relevant international standards.
The "Next Calibration Date" is recommended according to best practice principals as practised by the ALS Hong Kong laboratory or quoted from relevant international standards.

Scope of Test:	Turbidity
Equipment Type:	Turbidimeter
Brand Name:	HACH
Model No.:	2100Q
Serial No.:	12060C018266
Equipment No.:	--
Date of Calibration:	14 October, 2015

NOTES

This is the Final Report and supersedes any preliminary report with this batch number.
Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

Mr. Fung Lim Chee, Richard
General Manager -
Greater China & Hong Kong

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1538189
Sub-batch: 0
Date of Issue: 15/10/2015
Client: ACTION UNITED ENVIRO SERVICES

Equipment Type: Turbidimeter
Brand Name: HACH
Model No.: 2100Q
Serial No.: 12060C018266
Equipment No.: --
Date of Calibration: 14 October, 2015 Date of next Calibration: 14 January, 2016

Parameters:

Turbidity

Method Ref: APHA 21st Ed. 2130B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.15	--
4	4.17	+4.3
40	43.9	+9.8
80	86.8	+8.5
400	430	+7.5
800	852	+6.5
	Tolerance Limit (%)	±10.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Mr. Fung Lim Chee, Richard
General Manager -
Greater China & Hong Kong

ALS Technichem (HK) Pty Ltd
11/F, Chung Shun Knitting Centre
1-3 Wing Yip Street
Kwai Chung, N.T., Hong Kong
T: +852 2610 1044
F: +852 2610 2021
www.alsglobal.com

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR BEN TAM
CLIENT:	ACTION UNITED ENVIRO SERVICES
ADDRESS:	RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T., HONG KONG.

WORK ORDER:	HK1535681
SUB-BATCH:	0
LABORATORY:	HONG KONG
DATE RECEIVED:	18/09/2015
DATE OF ISSUE:	24/09/2015

COMMENTS

The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.
The "Tolerance Limit" quoted is the acceptance criteria applicable for similar equipment used by the ALS Hong Kong laboratory or quoted from relevant international standards.
The "Next Calibration Date" is recommended according to best practice principals as practised by the ALS Hong Kong laboratory or quoted from relevant international standards.

Scope of Test:	Conductivity, Dissolved Oxygen, pH, Salinity, Temperature and Turbidity
Equipment Type:	Multifunctional Meter
Brand Name:	YSI
Model No.:	Professional DSS
Serial No.:	15H102620
Equipment No.:	EQW018
Date of Calibration:	23 September, 2015

NOTES

This is the Final Report and supersedes any preliminary report with this batch number.
Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

Mr. Fung Lim Chee, Richard
General Manager -
Greater China & Hong Kong

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1535681
Sub-Batch: 0
Date of Issue: 24/09/2015
Client: ACTION UNITED ENVIRO SERVICES

Equipment Type: Multifunctional Meter
Brand Name: YSI
Model No.: Professional DSS
Serial No.: 15H102620
Equipment No.: EQW018
Date of Calibration: 23 September, 2015 Date of next Calibration: 23 December, 2015

Parameters:

Conductivity

Method Ref: APHA (21st edition), 2510B

Expected Reading (uS/cm)	Displayed Reading (uS/cm)	Tolerance (%)
146.9	155.1	+5.6
6667	6999	+5.0
12890	13472	+4.5
58670	62654	+6.8
	Tolerance Limit (%)	±10.0

Dissolved Oxygen

Method Ref: APHA (21st edition), 4500O: G

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
3.24	3.32	+0.08
5.41	5.49	+0.08
7.91	7.96	+0.05
	Tolerance Limit (mg/L)	±0.20

pH Value

Method Ref: APHA 21st Ed. 4500H:B

Expected Reading (pH Unit)	Displayed Reading (pH Unit)	Tolerance (pH unit)
4.0	4.10	+0.10
7.0	7.09	+0.09
10.0	9.95	-0.05
	Tolerance Limit (pH unit)	±0.20

Salinity

Method Ref: APHA (21st edition), 2520B

Expected Reading (ppt)	Displayed Reading (ppt)	Tolerance (%)
0	0.00	--
10	10.62	+6.2
20	21.13	+5.7
30	32.87	+9.6
	Tolerance Limit (%)	±10.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Mr. Fung Lim Chee, Richard
General Manager
Greater China & Hong Kong

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1535681
Sub-Batch: 0
Date of Issue: 24/09/2015
Client: ACTION UNITED ENVIRO SERVICES

Equipment Type: Multifunctional Meter
Brand Name: YSI
Model No.: Professional DSS
Serial No.: 15H102620
Equipment No.: EQW018
Date of Calibration: 23 September, 2015 Date of next Calibration: 23 December, 2015

Parameters:

Temperature

Method Ref: Section 6 of International Accreditation New Zealand Technical Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

Expected Reading (°C)	Displayed Reading (°C)	Tolerance (°C)
10	10.1	+0.1
20	20.0	+0.0
40	40.2	+0.2
	Tolerance Limit (°C)	±2.0

Turbidity

Method Ref: APHA (21st edition), 2130B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.6	--
4	4.1	+2.5
40	39.4	-1.5
80	82.2	+2.8
400	404.6	+1.2
800	800.2	0.0
	Tolerance Limit (%)	±10.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Mr. Fung Lim Chee, Richard
General Manager
Greater China & Hong Kong

ALS Technichem (HK) Pty Ltd
11/F, Chung Shun Knitting Centre
1-3 Wing Yip Street
Kwai Chung, N.T., Hong Kong
T: +852 2610 1044
F: +852 2610 2021
www.alsglobal.com

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR BEN TAM	**WORK ORDER:**	HK1548853
CLIENT:	ACTION UNITED ENVIRO SERVICES	**SUB-BATCH:**	0
ADDRESS:	RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T., HONG KONG.	**LABORATORY:**	HONG KONG
		DATE RECEIVED:	16/12/2015
		DATE OF ISSUE:	24/12/2015

COMMENTS

The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.
The "Tolerance Limit" quoted is the acceptance criteria applicable for similar equipment used by the ALS Hong Kong laboratory or quoted from relevant international standards.
The "Next Calibration Date" is recommended according to best practice principals as practised by the ALS Hong Kong laboratory or quoted from relevant international standards.

Scope of Test:	Dissolved Oxygen and Temperature
Equipment Type:	Dissolved Oxygen Meter
Brand Name:	YSI
Model No.:	YSI Pro 20
Serial No.:	12C100570
Equipment No.:	--
Date of Calibration:	23 December, 2015

NOTES

This is the Final Report and supersedes any preliminary report with this batch number.
Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

Mr. Fung Lim Chee, Richard
General Manager
Greater China & Hong Kong

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1548853
Sub-Batch: 0
Date of Issue: 24/12/2015
Client: ACTION UNITED ENVIRO SERVICES

Equipment Type: Dissolved Oxygen Meter
Brand Name: YSI
Model No.: YSI Pro 20
Serial No.: 12C100570
Equipment No.: --
Date of Calibration: 23 December, 2015 Date of next Calibration: 23 March, 2016

Parameters:

Dissolved Oxygen **Method Ref: APHA (21st edition), 4500O: G**

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
1.80	1.75	-0.05
4.86	4.73	-0.13
8.59	8.69	+0.10
	Tolerance Limit (mg/L)	±0.20

Temperature **Method Ref: Section 6 of International Accreditation New Zealand Technical Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.**

Expected Reading (°C)	Displayed Reading (°C)	Tolerance (°C)
10	10.4	+0.4
20	20.6	+0.6
40	39.2	-0.8
	Tolerance Limit (°C)	±2.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Mr. Fung Lim Chee, Richard
General Manager -
Greater China & Hong Kong

ALS Technichem (HK) Pty Ltd
11/F, Chung Shun Knitting Centre
1-3 Wing Yip Street
Kwai Chung, N.T., Hong Kong
T: +852 2610 1044
F: +852 2610 2021
www.alsglobal.com

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR BEN TAM	**WORK ORDER:**	HK1548854
CLIENT:	ACTION UNITED ENVIRO SERVICES	**SUB-BATCH:**	0
ADDRESS:	RM A 20/F., GOLDEN KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T., HONG KONG	**LABORATORY:**	HONG KONG
		DATE RECEIVED:	16/12/2015
		DATE OF ISSUE:	24/12/2015

COMMENTS

The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.
The "Tolerance Limit" quoted is the acceptance criteria applicable for similar equipment used by the ALS Hong Kong laboratory or quoted from relevant international standards.

Scope of Test:	pH and Temperature
Description:	pH Meter
Brand Name:	AZ
Model No.:	8685
Serial No.:	212632
Equipment No.:	--
Date of Calibration:	23 December, 2015

NOTES

This is the Final Report and supersedes any preliminary report with this batch number.
Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

Mr Fung Lim Chee, Richard
General Manager -
Greater China & Hong Kong

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1548854
Sub-batch: 0
Date of Issue: 24/12/2015
Client: ACTION UNITED ENVIRO SERVICES

Description: pH Meter
Brand Name: AZ
Model No.: 8685
Serial No.: 212632
Equipment No.: --
Date of Calibration: 23 December, 2015

Parameters:

pH Value

Method Ref: APHA (21st edition), 4500H:B

Expected Reading (pH Unit)	Displayed Reading (pH Unit)	Tolerance (pH unit)
4.0	3.9	-0.10
7.0	6.8	-0.20
10.0	8.6	-1.40
	Tolerance Limit (pH Unit)	±0.20

Temperature

Method Ref: Section 6 of International Accreditation New Zealand Technical Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

Expected Reading (°C)	Displayed Reading (°C)	Tolerance (°C)
10	9.6	-0.4
20	21.2	+1.2
40	39.6	-0.4
	Tolerance Limit (°C)	±2.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Mr Fung Lim Chee, Richard
General Manager -
Greater China & Hong Kong

Hong Kong Accreditation Service
香港認可處

Certificate of Accreditation
認可證書

This is to certify that
特此證明

ALS TECHNICHEM (HK) PTY LIMITED

11/F., Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, New Territories, Hong Kong
香港新界葵涌永業街1-3號忠信針織中心11樓

has been accepted by the HKAS Executive, on the recommendation of the Accreditation Advisory Board, as a
為香港認可處執行機關根據認可諮詢委員會建議而接受的

HOKLAS Accredited Laboratory
「香港實驗所認可計劃」認可實驗所

This laboratory meets the requirements of ISO / IEC 17025 : 2005 – General requirements for the competence of testing and calibration laboratories and it has been accredited for performing specific tests or calibrations as listed in the HOKLAS Directory of Accredited Laboratories within the test category of
此實驗所符合ISO / IEC 17025 : 2005 –《測試及校正實驗所能力的通用規定》所訂的要求，獲認可進行載於香港實驗所認可計劃《認可實驗所名冊》內下述測試類別中的指定測試或校正工作

Environmental Testing
環境測試

This laboratory is accredited in accordance with the recognised International Standard ISO / IEC 17025 : 2005.
本實驗所乃根據公認的國際標準 ISO / IEC 17025 : 2005 獲得認可。
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (see joint IAF-ILAC-ISO Communiqué).
這項認可資格演示在指定範疇所需的技術能力及實驗所質量管理體系的運作（見國際認可論壇、國際實驗所認可合作組織及國際標準化組織的聯合公報）。

The common seal of the Hong Kong Accreditation Service is affixed hereto by the authority of the HKAS Executive
香港認可處根據認可處執行機關的權限在此蓋上通用印章

CHAN Sing Sing, Terence, Executive Administrator
執行幹事 陳成城
Issue Date : 5 May 2009
簽發日期：二零零九年五月五日

Registration Number : HOKLAS 066
註冊號碼：

Date of First Registration : 15 September 1995
首次註冊日期：一九九五年九月十五日

This certificate is issued subject to the terms and conditions laid down by HKAS
本證書按照香港認可處訂立的條款及條件發出

L 000552

Appendix G

Event and Action Plan

Event and Action Plan for Air Quality

Event	ET	IEC	ER	Action Contractor
Action Level				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC and ER; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
2. Exceedance for two or more consecutive samples	1. Identify source; 2. Inform IEC and ER; 3. Advise the ER on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IEC and Contractor on remedial actions required; 7. If exceedance continues, arrange meeting with IEC and ER; 8. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ET on the effectiveness of the proposed remedial measures; 5. Monitor the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Submit proposals for remedial to ER within 3 working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.
Limit Level				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform ER, Contractor and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Monitor theimplementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.
2. Exceedance for two or more consecutive samples	1. Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 4. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 5. Monitor the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Event and Action Plan for Construction Noise

Event	ET	IEC	ER	Action Contractor
Action Level	1. Notify ER, IEC and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the IEC and Contractor on remedial measures required; 5. Increase monitoring frequency to check mitigation effectiveness.	1. Review the investigation results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Advise the ER on the effectiveness of the proposed remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise the implementation of remedial measures.	1. Submit noise mitigation proposals to IEC and ER; 2. Implement noise mitigation proposals.
Limit Level	1. Inform IEC, ER, Contractor and EPD; 2. Repeat measurements to confirm findings; 3. Increase monitoring frequency; 4. Identify source and investigate the cause of exceedance; 5. Carry out analysis of Contractor's working procedures; 6. Discuss with the IEC, Contractor and ER on remedial measures required; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise the implementation of remedial measures; 5. If exceedance continues, consider stopping the Contractor to continue working on that portion of work which causes the exceedance until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC and ER within 3 working days of notification; 3. Implement the agreed proposals; 4. Submit further proposal if problem still not under control; 5. Stop the relevant portion of works as instructed by the ER until the exceedance is abated.

Event and Action Plan for Water Quality

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action level being exceeded by one sampling day	1. Repeat in-situ measurement to confirm findings; 2. Identify reasons for non-compliance and sources of impact; 3. Inform IEC and Contractor; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC and Contractor; 6. Repeat measurement on next day of exceedance.	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures	1. Discuss with IEC on the proposed mitigation measures; 2. Make agreement on the mitigation measures to be implemented; 3. Assess the effectiveness of the implemented mitigation measures	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET and IEC and propose mitigation measures to IEC and ER; 6. Implement the agreed mitigation measures.
Action Level being exceeded by more than two consecutive sampling days	1. Repeat in-situ measurement to confirm findings; 2. Identify reasons for non-compliance and sources of impact; 3. Inform IEC and Contractor; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC and Contractor; 6. Ensure mitigation measures are implemented; 7. Prepare to increase the monitoring frequency to daily; 8. Repeat measurement on next day of exceedance.	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures	1. Discuss with IEC on the proposed mitigation measures; 2. Make agreement on the mitigation measures to be implemented; 3. Assess the effectiveness of the implemented mitigation measures	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET and IEC and propose mitigation measures to IEC and ER within 2 working days; 6. Implement the agreed mitigation measures.
Limit Level being exceeded by one sampling day	1. Repeat in-situ measurement to confirm findings; 2. Identify reasons for non-compliance and sources of impact; 3. Inform IEC, Contractor and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit Level.	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures	1. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 2. Request Contractor to critically review the working methods; 3. Make agreement on the mitigation measures to be implemented; 4. Assess the effectiveness of the implemented mitigation measures	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 3 working days; 6. Implement the agreed mitigation measures.
Limit level being exceeded by more than one consecutive sampling days	1. Repeat in-situ measurement to confirm findings; 2. Identify reasons for non-compliance and sources of impact; 3. Inform IEC, Contractor and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit Level for two consecutive days.	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures.	1. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 2. Request Contractor to critically review the working methods; 3. Make agreement on the mitigation measures to be implemented; 4. Assess the effectiveness of the implemented mitigation measures; 5. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the construction activities until no exceedance of Limit Level.	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 3 working days; 6. Implement the agreed mitigation measures; 7. As directed by the ER, to slow down or to stop all or part of the construction activities.

Appendix H

Impact Monitoring Schedule

Impact Monitoring Schedule for the Reporting Period – December 2015

Date		Dust Monitoring		Noise Monitoring	Water Quality
		1-hour TSP	24-hour TSP		
Tue	1-Dec-15		C6		C2&C3&C5& SSC505
Wed	2-Dec-15	C3&C5 & SSC505		C3&C5 & SSC505	C2 & C6
Thu	3-Dec-15		C2&C3&C5& SSC505		C2&C3&C5& SSC505
Fri	4-Dec-15				C2 & C6
Sat	5-Dec-15	C2&C6		C2&C6	C2&C3&C5& SSC505
Sun	6-Dec-15				
Mon	7-Dec-15		C6		C2 & C6
Tue	8-Dec-15	C3&C5 & SSC505		C3&C5& SSC505	C2&C3&C5& SSC505
Wed	9-Dec-15		C2&C3&C5& SSC505		C2 & C6
Thu	10-Dec-15				C2&C3&C5& SSC505
Fri	11-Dec-15	C2&C6		C2&C6	C6
Sat	12-Dec-15		C6		C2&C3&C5& SSC505
Sun	13-Dec-15				
Mon	14-Dec-15	C3&C5 & SSC505		C3&C5& SSC505	C2&C3&C5& SSC505
Tue	15-Dec-15		C2&C3&C5& SSC505		C2 & C6
Wed	16-Dec-15				C2&C3&C5& SSC505
Thu	17-Dec-15	C2&C6		C2&C6	C2 & C6
Fri	18-Dec-15		C6		C2&C3&C5& SSC505
Sat	19-Dec-15	C3&C5 & SSC505		C3&C5& SSC505	C2 & C6
Sun	20-Dec-15				
Mon	21-Dec-15		C3&C5 & SSC505		C2 & C6
Tue	22-Dec-15				C2&C3&C5& SSC505
Wed	23-Dec-15	C2&C6		C2&C6	C2 & C6
Thu	24-Dec-15	C3&C5 & SSC505	C3&C5 & SSC505 & C6	C3&C5 & SSC505	C2&C3&C5& SSC505
Fri	25-Dec-15				
Sat	26-Dec-15				C2 #
Sun	27-Dec-15				
Mon	28-Dec-15				C2&C3&C5& SSC505
Tue	29-Dec-15	C2&C6		C2&C6	C2 & C6
Wed	30-Dec-15	C3&C5 & SSC505	C3&C5 & SSC505 & C6	C3&C5 & SSC505	C2&C3&C5& SSC505
Thu	31-Dec-15				C2 & C6

water monitoring will be carried out at WM3 and WM3-C.

	Monitoring Day
	Sunday or Public Holiday

Monitoring Location

Contract 2 (C2)	Air Quality	AM7b & AM8
	Construction Noise	NM5, NM6, NM7
	Water Quality	WM3, WM3-Control, WM4, WM4-Control A & WM4-Control B
Contract 3 (C3)	Air Quality	AM9b
	Construction Noise	NM8, NM9 & NM10
	Water Quality	WM4, WM4-Control A & WM4-Control B
Contract 5 (C5)	Air Quality	AM1a, AM2 & AM3
	Construction Noise	NM1, NM2
	Water Quality	WM1 & WM1-Control
Contract SS C505	Air Quality	AM1a
	Construction Noise	NM1, NM2
	Water Quality	WM1 & WM1-Control
Contract 6 (C6)	Air Quality	AM2, AM3, AM4b, AM5 & AM6
	Construction Noise	NM2,NM3, NM4, NM5 & NM6
	Water Quality	WM2a, WM2A-C, WM2B, WM2B-C, WM3, WM3-C

Impact Monitoring Schedule for next Reporting Period – January 2016

Date		Dust Monitoring		Noise Monitoring	Water Quality
		1-hour TSP	24-hour TSP		
Fri	1-Jan-16				
Sat	2-Jan-16		C2&C6		C2 & C3&C5& SSC505
Sun	3-Jan-16				
Mon	4-Jan-16	C2&C6	C3&C5 & SSC505	C2&C6	C2 & C6
Tue	5-Jan-16	C3&C5 & SSC505		C3&C5 & SSC505	C2 & C3&C5& SSC505
Wed	6-Jan-16				C2 & C6
Thu	7-Jan-16		C2&C6		C2 & C3&C5& SSC505
Fri	8-Jan-16	C2&C6		C2&C6	C2 & C6
Sat	9-Jan-16		C3&C5 & SSC505		C2 & C3&C5& SSC505
Sun	10-Jan-16				
Mon	11-Jan-16	C3&C5 & SSC505		C3&C5 & SSC505	C2 & C3&C5& SSC505
Tue	12-Jan-16				C2 & C6
Wed	13-Jan-16		C2&C6		C2 & C3&C5& SSC505
Thu	14-Jan-16	C2&C6		C2&C6	C2 & C6
Fri	15-Jan-16		C3&C5 & SSC505		C2 & C3&C5& SSC505
Sat	16-Jan-16	C3&C5 & SSC505		C3&C5 & SSC505	C2 & C6
Sun	17-Jan-16				
Mon	18-Jan-16				C2 & C6
Tue	19-Jan-16		C2&C6		C2 & C3&C5& SSC505
Wed	20-Jan-16	C2&C6		C2&C6	C2 & C6
Thu	21-Jan-16		C3&C5 & SSC505		C2 & C3&C5& SSC505
Fri	22-Jan-16	C3&C5 & SSC505		C3&C5 & SSC505	C2 & C6
Sat	23-Jan-16				C2 & C3&C5& SSC505
Sun	24-Jan-16				
Mon	25-Jan-16		C2&C6		C2 & C3&C5& SSC505
Tue	26-Jan-16	C2&C6		C2&C6	C2 & C6
Wed	27-Jan-16		C3&C5 & SSC505		C2 & C3&C5& SSC505
Thu	28-Jan-16	C3&C5 & SSC505		C3&C5 & SSC505	C2 & C6
Fri	29-Jan-16				C2 & C3&C5& SSC505
Sat	30-Jan-16		C2&C6		C2 & C6
Sun	31-Jan-16				

	Monitoring Day
	Sunday or Public Holiday

Monitoring Location

Contract 2 (C2)	Air Quality	AM7b & AM8
	Construction Noise	NM5, NM6, NM7
	Water Quality#	WM3, WM3-Control, WM4, WM4-Control A & WM4-Control B
Contract 3 (C3)	Air Quality	AM9b
	Construction Noise	NM8, NM9 & NM10
	Water Quality	WM4, WM4-Control A & WM4-Control B
Contract 5 (C5)	Air Quality	AM1a, AM2 & AM3
	Construction Noise	NM1, NM2
	Water Quality	WM1 & WM1-Control
Contract SS C505	Air Quality	AM1a
	Construction Noise	NM1, NM2
	Water Quality	WM1 & WM1-Control
Contract 6 (C6)	Air Quality	AM2, AM3, AM4b, AM5 & AM6
	Construction Noise	NM2,NM3, NM4, NM5 & NM6
	Water Quality	WM2a, WM2A-C, WM2B, WM2B-C, WM3, WM3-C

Appendix I

Database of Monitoring Result

24-hour TSP Monitoring Data

DATE	SAMPLE NUMBER	ELAPSED TIME			CHART READING			AVG TEMP	AVG AIR PRESS	STANDARD FLOW RATE	AIR VOLUME	FILTER WEIGHT (g)		DUST WEIGHT COLLECTED	24-HR TSP (μg/m³)
		INITIAL	FINAL	(min)	MIN	MAX	AVG	(℃)	(hPa)	(m³/min)	(std m³)	INITIAL	FINAL	(g)	
AM1a - Garden Farm, Tsung Yuen Ha Village															
3-Dec-15	28777	10810.31	10833.92	1416.60	35	36	35.5	20.8	1019.4	1.25	1764	2.7913	2.8961	0.1048	59
9-Dec-15	28643	10833.92	10857.50	1414.80	35	36	35.5	17.9	1016.8	1.25	1768	2.8292	2.8776	0.0484	27
15-Dec-15	28711	10857.59	10881.14	1413.00	44	48	46.0	18.4	1019	1.57	2225	2.7917	2.9058	0.1141	51
21-Dec-15	28793	10881.14	10904.68	1412.40	27	27	27.0	19.4	1021.3	0.99	1393	2.7663	2.8187	0.0524	38
24-Dec-15	28873	10904.68	10928.29	1416.60	38	40	39.0	22.3	1016.8	1.39	1968	2.8039	2.8768	0.0729	37
30-Dec-15	28847	10928.30	10951.88	1414.80	41	42	41.5	16.8	1020.2	1.49	2102	2.8669	3.0123	0.1454	69
AM2 - Village House near Lin Ma Hang Road															
3-Dec-15	28778	6357.70	6381.57	1432.20	36	37	36.5	20.8	1019.4	1.19	1702	2.7972	2.9474	0.1502	88
9-Dec-15	28609	6381.57	6405.42	1431.00	37	37	37.0	17.9	1016.8	1.21	1734	2.8133	2.8710	0.0577	33
15-Dec-15	28719	6405.44	6429.37	1435.80	30	32	31.0	18.4	1019	1.00	1429	2.8075	2.9111	0.1036	72
21-Dec-15	28792	6429.37	6453.12	1425.00	33	34	33.5	19.4	1021.3	1.08	1546	2.7691	2.9054	0.1363	88
24-Dec-15	28814	6453.12	6476.92	1428.00	34	36	35.0	22.3	1016.8	1.15	1648	2.8840	2.9912	0.1072	65
30-Dec-15	28848	6476.92	6500.75	1429.80	32	34	33.0	16.8	1020.2	1.10	1571	2.8456	2.9677	0.1221	78
AM3 - Ta Kwu Ling Fire Service Station of Ta Kwu Ling Village															
3-Dec-15	28771	7466.95	7490.95	1440.00	43	43	43.0	20.8	1019.4	1.34	1930	2.8024	2.9107	0.1083	56
9-Dec-15	28772	7490.98	7514.98	1440.00	40	42	41.0	17.9	1016.8	1.28	1840	2.8076	2.8523	0.0447	24
15-Dec-15	28718	7514.99	7538.99	1440.00	40	42	41.0	18.4	1019	1.28	1841	2.7971	2.8394	0.0423	23
21-Dec-15	28794	7539.00	7563.00	1440.00	40	42	41.0	19.4	1021.3	1.28	1840	2.7700	2.9131	0.1431	78
24-Dec-15	28813	7563.01	7587.01	1440.00	36	36	36.0	22.3	1016.8	1.06	1521	2.8935	2.9662	0.0727	48
30-Dec-15	28853	7587.04	7611.04	1440.00	35	35	35.0	16.8	1020.2	1.04	1492	2.8479	2.9922	0.1443	97
AM4 - House no. 10B1 Nga Yiu Ha Village															
1-Dec-15	28738	9450.66	9474.66	1440.00	32	32	32.0	22.9	1017.6	0.79	1137	2.7941	2.8624	0.0683	60
7-Dec-15	28647	9474.67	9498.67	1440.00	37	37	37.0	17.3	1023.1	0.97	1395	2.7995	2.8813	0.0818	59
12-Dec-15	28809	9498.68	9522.68	1440.00	29	30	29.5	20	1016.2	0.71	1024	2.8835	2.9191	0.0356	35
18-Dec-15	28835	9522.68	9546.68	1440.00	34	35	34.5	13.9	1026.4	0.89	1288	2.8787	2.9596	0.0809	63
24-Dec-15	28797	9546.71	9570.71	1440.00	33	33	33.0	22.3	1016.8	0.78	1116	2.7710	2.8291	0.0581	52
30-Dec-15	28866	9570.72	9594.72	1440.00	34	34	34.0	16.8	1020.2	0.82	1185	2.8112	2.8961	0.0849	72
AM5a - Ping Yeung Village House															
1-Dec-15	28716	7290.02	7314.02	1440.00	20	21	20.5	22.9	1017.6	0.59	846	2.7930	2.8555	0.0625	74
7-Dec-15	28648	7314.03	7338.03	1440.00	23	24	23.5	17.3	1023.1	0.70	1002	2.8077	2.8546	0.0469	47
12-Dec-15	28810	7337.04	7361.04	1440.00	22	22	22.0	20	1016.2	0.64	922	2.8991	2.9377	0.0386	42
18-Dec-15	28836	7361.05	7385.05	1440.00	27	28	27.5	13.9	1026.4	0.84	1203	2.8643	2.9485	0.0842	70
24-Dec-15	28796	7385.05	7409.05	1440.00	30	30	30.0	22.3	1016.8	1.00	1445	2.7699	2.8192	0.0493	34

DATE	SAMPLE NUMBER	ELAPSED TIME			CHART READING			AVG TEMP	AVG AIR PRESS	STANDARD FLOW RATE	AIR VOLUME	FILTER WEIGHT (g)		DUST WEIGHT COLLECTED	24-HR TSP ($\mu g/m^3$)
		INITIAL	FINAL	(min)	MIN	MAX	AVG	(℃)	(hPa)	(m^3/min)	(std m^3)	INITIAL	FINAL	(g)	
30-Dec-15	28865	7409.05	7433.05	1440.00	30	30	30.0	16.8	1020.2	1.01	1460	2.8031	2.8616	0.0585	40
AM6 - Wo Keng Shan Village House															
1-Dec-15	28717	5860.48	5884.48	1440.00	33	33	33.0	22.9	1017.6	1.04	1502	2.8086	2.9569	0.1483	99
7-Dec-15	28646	5884.48	5908.48	1440.00	33	33	33.0	17.3	1023.1	1.06	1520	2.8008	3.0104	0.2096	138
12-Dec-15	28811	5908.49	5932.49	1440.00	34	34	34.0	20	1016.2	1.08	1552	2.8859	3.0481	0.1622	105
18-Dec-15	28791	5932.49	5956.49	1440.00	34	34	34.0	13.9	1026.4	1.09	1575	2.7806	2.9026	0.1220	77
24-Dec-15	28798	5956.49	5980.49	1440.00	33	33	33.0	22.3	1016.8	0.97	1403	2.7469	2.9190	0.1721	123
30-Dec-15	28837	5980.49	6004.49	1440.00	32	34	33.0	16.8	1020.2	0.99	1420	2.8873	3.0890	0.2017	142
AM7b - Loi Tung Village House															
3-Dec-15	28779	14893.02	14917.02	1440.00	30	30	30.0	20.8	1019.4	0.91	1315	2.8016	2.8674	0.0658	50
9-Dec-15	28645	14917.06	14941.06	1440.00	30	31	30.5	17.9	1016.8	0.93	1339	2.8192	2.8574	0.0382	29
15-Dec-15	28774	14941.08	14965.08	1440.00	28	29	28.5	18.4	1019	0.87	1259	2.8024	2.8642	0.0618	49
21-Dec-15	28854	14965.08	14989.08	1440.00	28	28	28.0	19.4	1021.3	0.86	1238	2.8530	2.8987	0.0457	37
24-Dec-15	28872	14989.08	15013.08	1440.00	30	30	30.0	22.3	1016.8	0.85	1226	2.8040	2.8978	0.0938	77
30-Dec-15	28846	15013.08	15037.08	1440.00	30	30	30.0	16.8	1020.2	0.86	1240	2.8532	2.9260	0.0728	59
AM8 - Po Kat Tsai Village No. 4															
3-Dec-15	28770	8763.42	8787.42	1440.00	48	49	48.5	20.8	1019.4	1.34	1923	2.7922	2.8998	0.1076	56
9-Dec-15	28644	8787.43	8811.43	1440.00	44	45	44.5	17.9	1016.8	1.22	1762	2.8229	2.8734	0.0505	29
15-Dec-15	28812	8811.43	8835.43	1440.00	42	42	42.0	18.4	1019	1.15	1657	2.8765	2.9665	0.0900	54
21-Dec-15	28795	8835.44	8859.44	1440.00	42	42	42.0	19.4	1021.3	1.15	1656	2.7816	2.8092	0.0276	17
24-Dec-15	28871	8859.45	8883.45	1440.00	30	30	30.0	22.3	1016.8	0.63	910	2.7969	2.8195	0.0226	25
30-Dec-15	28867	8883.45	8907.45	1440.00	36	37	36.5	16.8	1020.2	0.84	1212	2.7907	2.8408	0.0501	41
AM9b - Nam Wa Po Village House No. 80															
3-Dec-15	28607	16240.15	16264.15	1440.00	51	52	51.5	20.8	1019.4	1.67	2412	2.8351	3.0286	0.1935	80
9-Dec-15	28705	16264.19	16288.19	1440.00	32	32	32.0	17.9	1016.8	1.07	1540	2.8164	2.8690	0.0526	34
15-Dec-15	28776	16288.19	16312.19	1440.00	32	32	32.0	18.4	1019	1.07	1540	2.7928	2.9050	0.1122	73
21-Dec-15	28790	16312.23	16336.23	1440.00	30	31	30.5	19.4	1021.3	1.02	1472	2.7580	2.8238	0.0658	45
24-Dec-15	28876	16336.23	16360.23	1440.00	25	25	25.0	22.3	1016.8	0.62	894	2.7846	2.8204	0.0358	40
30-Dec-15	28868	16360.23	16384.23	1440.00	28	30	29.0	16.8	1020.2	0.77	1115	2.8040	2.8671	0.0631	57

Construction Noise Monitoring Results, dB(A)

Date	Start Time	1st Leq_{5min}	L10	L90	2nd Leq_{5min}	L10	L90	3nd Leq_{5min}	L10	L90	4th Leq_{5min}	L10	L90	5th Leq_{5min}	L10	L90	6th Leq_{5min}	L10	L90	Leq30	façade correction
NM1 - Tsung Yuen Ha Village House No. 63																					
2-Dec-15	10:25	62.9	64.2	57.7	64.5	67.1	56.3	64.0	66.6	56.6	63.4	65.9	57.5	64.7	68.0	59.6	63.2	66.2	56.4	64	NA
8-Dec-15	10:10	67.0	68.6	60.6	71.8	74.3	67.5	71.0	74.2	64.9	69.4	73.5	58.6	61.7	67.4	55.3	63.6	67.7	55.9	69	NA
14-Dec-15	10:12	70.5	72.6	67.4	69.1	71.9	63.9	68.4	71.1	63.3	67.0	69.9	59.2	67.8	70.3	63.6	66.2	69.6	57.3	68	NA
19-Dec-15	8:44	63.8	66.5	58.1	60.9	64.4	54.8	60.2	64.1	53.4	64.4	67.7	57.3	65.2	68.6	58.7	64.1	67.6	57.4	63	NA
24-Dec-15	10:22	60.1	62.6	55.7	56.0	59.8	49.8	57.8	60.7	52.6	54.8	58.0	49.4	53.7	56.0	50.5	56.6	58.8	52.1	57	NA
30-Dec-15	13:40	60.4	65.1	51.4	54.0	56.5	50.6	60.2	56.1	50.4	63.2	66.4	50.5	61.7	65.9	50.1	67.4	72.5	56.1	63	NA
NM2 - Village House near Lin Ma Hang Road																					
2-Dec-15	9:47	63.7	64.9	58.0	62.3	64.3	54.3	63.1	65.8	55.5	65.8	68.2	58.7	64.4	67.5	59.1	63.6	66.4	57.2	64	NA
8-Dec-15	10:46	66.3	68.8	57.3	61.5	62.7	58.1	61.7	64.2	58.8	59.7	61.9	56.1	59.3	61.7	56.2	56.4	70.2	55.9	62	NA
14-Dec-15	10:51	64.2	68.1	56.6	61.2	62.8	57.0	60.5	62.3	57.5	60.4	62.2	54.0	59.1	61.2	53.7	59.9	62.4	55.3	61	NA
19-Dec-15	11:27	66.6	68.4	56.9	63.5	65.2	54.3	65.1	67.9	56.2	62.0	65.1	54.7	66.1	68.3	57.0	64.3	67.1	57.3	65	NA
24-Dec-15	11:13	63.1	64.9	61.2	62.6	63.5	61.3	61.0	62.7	47.8	58.9	61.6	46.8	61.3	65.4	48.0	60.9	63.0	47.1	62	NA
30-Dec-15	11:28	62.2	63.6	55.5	60.3	61.5	56.2	60.4	63.7	48.9	61.2	62.1	59.7	61.8	62.5	60.1	62.2	63.4	60.6	61	NA
NM3 - Ping Yeung Village House																					
5-Dec-15	13:08	58.6	60.0	53.5	59.3	59.7	55.1	58.4	59.4	53.9	62.1	59.8	55.4	60.2	59.1	55.6	56.3	58.5	52.3	60	NA
11-Dec-15	10:31	56.6	54.8	50.5	50.2	51.4	48.9	65.1	65.2	48.5	56.1	53.6	49.5	56.1	55.1	49.6	53.5	53.7	50.1	59	NA
17-Dec-15	10:33	58.1	59.9	51.9	62.3	61.1	52.0	55.7	55.2	51.5	57.0	56.5	50.9	56.1	56.5	52.1	60.0	60.4	51.1	59	NA
23-Dec-15	10:27	60.8	63.5	51.4	65.9	68.5	49.4	49.8	50.4	49.4	53.3	52.8	50.1	51.2	51.9	50.5	62.0	64.5	49.5	61	NA
29-Dec-15	10:43	54.6	54.4	49.6	56.3	58.5	50.1	60.2	53.2	50.3	62.8	55.9	50.0	59.0	60.1	50.5	61.0	66.6	50.8	60	NA
NM4 - Wo Keng Shan Village House																					
5-Dec-15	16:13	62.4	62.0	53.8	67.1	60.0	53.8	67.3	65.2	55.8	56.0	57.7	50.1	57.7	59.3	51.2	55.2	55.6	48.9	64	NA
11-Dec-15	11:27	66.4	66.2	54.0	66.1	66.4	53.4	64.6	62.3	51.2	63.4	62.5	49.6	65.8	67.2	51.5	67.5	65.4	49.6	66	NA
17-Dec-15	11:19	65.7	61.4	50.9	65.1	61.4	50.5	63.4	61.0	51.6	66.5	63.8	51.1	65.2	65.4	53.0	69.1	70.8	50.7	66	NA
23-Dec-15	9:34	67.5	71.5	57.0	67.4	70.0	54.8	68.8	72.4	54.8	66.2	68.0	54.1	67.6	70.7	53.8	71.9	70.8	53.8	69	NA
29-Dec-15	11:29	71.8	73.5	56.5	63.8	63.5	53.5	67.8	70.5	55.5	65.6	65.7	56.3	63.9	64.3	56.9	64.8	64.2	52.7	67	NA
NM5– Ping Yeung Village House (façade facing northeast)																					
5-Dec-15	10:13	51.4	54.0	46.1	51.7	54.5	45.9	51.5	55.4	48.0	55.5	57.2	44.2	54.3	56.8	45.4	53.7	57.1	45.2	53	NA
11-Dec-15	9:33	52.6	54.7	48.9	53.0	54.8	48.0	52.5	55.2	49.5	51.7	54.2	48.1	52.3	55.1	47.5	52.0	53.6	49.5	52	NA
17-Dec-15	9:08	67.1	71.0	60.0	65.6	68.5	60.0	65.9	69.5	60.0	64.3	66.5	59.5	62.9	65.0	59.5	62.5	65.0	59.0	65	NA
23-Dec-15	9:22	59.1	59.5	41.0	54.3	52.0	39.5	60.3	61.5	41.5	53.4	54.5	41.0	57.6	60.0	41.0	58.2	58.5	42.0	58	NA
29-Dec-15	9:53	53.3	56.3	45.6	53.2	56.2	44.5	53.0	56.4	47.7	52.7	56.8	43.5	51.7	55.5	44.8	55.4	56.8	45.7	53	NA

Date	Start Time	1st Leq5min	L10	L90	2nd Leq5min	L10	L90	3nd Leq5min	L10	L90	4th Leq5min	L10	L90	5th Leq5min	L10	L90	6th Leq5min	L10	L90	Leq30	façade correction
NM6 – Tai Tong Wu Village House 2																					
5-Dec-15	11:01	58.5	61.1	53.8	59.0	61.1	53.5	57.2	59.3	53.9	58.9	61.5	51.9	58.6	60.3	52.2	58.2	60.5	51.9	58	NA
11-Dec-15	10:28	59.0	62.4	51.9	58.9	62.6	51.2	59.0	60.9	50.1	57.0	59.0	50.2	57.8	61.0	52.3	57.9	60.1	52.4	58	NA
17-Dec-15	9:46	64.1	63.0	58.5	60.5	67.5	58.0	60.9	63.5	58.0	60.5	63.0	58.0	60.5	62.5	57.0	60.2	62.5	57.0	61	NA
23-Dec-15	10:05	54.0	58.0	46.0	53.6	55.5	43.0	50.1	45.5	42.5	51.5	53.0	43.5	52.4	53.0	43.5	55.7	58.5	46.0	53	NA
29-Dec-15	10:49	59.6	60.1	52.8	59.4	59.5	52.4	60.3	60.4	53.9	59.4	61.2	52.5	59.6	60.7	53.5	57.2	59.4	52.4	59	NA
NM7 – Po Kat Tsai Village																					
5-Dec-15	13:28	59.0	61.9	50.9	59.2	63.0	52.3	60.6	64.5	52.5	59.6	62.8	52.6	61.1	64.8	51.4	58.6	62.4	51.0	60	NA
11-Dec-15	13:19	60.5	63.4	54.7	58.0	63.3	53.5	58.4	60.7	53.9	58.2	61.9	54.5	59.1	64.3	54.9	60.1	64.0	53.4	59	NA
17-Dec-15	13:05	64.1	67.5	53.5	65.6	69.5	58.0	63.5	67.5	58.0	70.7	74.5	59.5	64.3	68.5	56.5	66.1	70.0	56.0	67	NA
23-Dec-15	13:08	59.4	62.0	46.0	64.1	65.0	46.0	59.4	61.5	46.5	63.9	66.5	48.5	66.4	66.0	46.0	61.4	64.5	44.0	63	NA
29-Dec-15	13:28	58.7	60.3	56.2	59.2	61.2	56.5	58.1	60.4	55.0	59.7	61.5	55.6	60.8	62.7	55.2	60.6	61.2	52.7	60	NA
NM8 - Village House, Tong Hang																					
2-Dec-15	10:49	65.5	67.5	53	59.6	65.5	52.5	54.7	56	50.5	57.8	62.5	50.5	58	61	51.5	60.2	64	53.5	61	NA
8-Dec-15	13:00	55	57	50	53.6	55.5	49	53.1	55	49.5	56.9	59	51	56.5	59	52.5	54.5	55.5	47.5	55	NA
14-Dec-15	13:41	59.1	61.5	53.5	58.4	61.5	52	56	59.5	49.5	56.7	59.5	50.5	58.7	61.5	52	56.2	59	51	58	NA
19-Dec-15	10:33	58.4	59.5	47.5	49.4	51	44.5	57.6	62	46	60.5	61	45.5	56.7	58.5	46	57.5	61	47.5	58	NA
24-Dec-15	13:00	54.5	56	51	54	56	51	53	56	49.5	50.8	52	48.5	53.3	54.5	51.5	52.5	53.5	50.5	53	NA
30-Dec-15	13:08	59	61.2	51.5	61.9	66.8	49.6	58.4	62.1	52.1	61	65.9	54.8	59.1	63.8	53.8	68.8	66.5	53.6	63	NA
NM9 - Village House, Kiu Tau Village																					
2-Dec-15	10:08	58.8	63.0	51.5	59.2	62.5	53.5	59.1	64.0	52.5	60.0	64.5	53.5	58.7	63.0	53.5	57.3	60.0	52.5	59	NA
8-Dec-15	13:42	49.1	50.5	46.0	48.7	50.5	46.5	52.0	52.5	48.0	51.2	52.5	49.5	52.5	54.0	50.5	54.0	56.0	51.0	52	NA
14-Dec-15	13:01	58.6	61.0	54.0	59.6	61.0	53.0	56.5	59.0	51.0	57.1	60.5	51.0	55.8	58.0	52.0	57.2	59.5	54.0	58	NA
19-Dec-15	9:48	59.9	67.0	47.5	60.7	64.0	47.5	67.5	70.5	47.5	59.3	59.5	47.5	63.6	66.5	49.0	58.5	67.0	46.5	63	NA
24-Dec-15	11:16	51.0	52.5	48.5	51.6	53.0	49.0	54.2	56.5	49.5	58.8	61.5	53.5	56.1	58.0	52.5	55.5	58.0	52.0	55	NA
NM10 - Nam Wa Po Village House No. 80																					
2-Dec-15	9:26	64.3	64.5	58.5	64.7	65.0	61.5	70.1	72.0	65.0	66.7	69.5	58.0	61.5	63.0	60.0	61.7	63.0	60.0	66	69
8-Dec-15	9:42	67.5	70.5	60.5	62.5	64.0	60.0	67.9	71.0	61.0	68.9	73.5	60.0	67.3	71.0	60.0	61.8	63.5	56.0	67	70
14-Dec-15	9:21	66.1	68.0	62.5	65.5	67.5	62.5	66.5	68.5	62.5	65.6	67.5	62.0	65.3	68.0	61.0	65.1	67.0	61.5	66	69
19-Dec-15	9:06	61.8	62.5	48.5	61.3	58.0	49.0	63.2	60.5	48.5	57.3	54.0	48.5	52.2	55.0	48.5	65.0	67.0	49.0	62	65
24-Dec-15	9:00	61.7	63.0	55.0	58.6	59.5	56.0	64.3	66.5	59.5	60.7	64.0	55.0	57.7	58.5	55.0	57.7	60.0	54.5	61	64
30-Dec-16	11:09	60.7	62.8	58.1	61.2	62.8	59.0	63.4	65.5	59.9	61.2	63.3	58.6	59.2	62.1	56.0	56.8	58.9	54.6	61	64

Water Quality Monitoring Data for Contract 5 and SS C505

Date	1-Dec-15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM1-C	10:41	0.28	21.6	21.6	7.17	7.2	81.4	81.5	12.9	13.3	8.9	8.9	4	5.0
			21.6		7.19		81.6		13.6		8.9		6	
WM1	10:25	0.25	22.6	22.6	7.11	7.1	82.3	82.4	241.0	**244.5**	9.1	9.1	138	**140.0**
			22.6		7.12		82.4		248.0		9.1		142	

Date	3-Dec-15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM1-C	10:40	0.30	19.2	19.2	7.54	7.5	81.6	81.7	8.6	8.8	8.6	8.6	4	5.0
			19.2		7.55		81.7		9.0		8.6		6	
WM1	10:25	0.24	20	20.0	7.25	7.3	79.8	79.9	24.2	24.7	8.7	8.7	26	25.0
			20		7.26		80.0		25.1		8.7		24	

Date	5-Dec-15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM1-C	11:02	0.25	18.9	18.9	8.01	8.0	86.2	86.4	11.6	12.2	7.8	7.9	15	14.0
			18.9		8.04		86.6		12.8		7.9		13	
WM1	10:51	0.31	19.7	19.7	8.4	8.4	91.9	92.0	17.1	17.6	7.9	7.9	21	21.0
			19.7		8.41		92.1		18.1		7.9		21	

Date	8-Dec-15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM1-C	10:17	0.30	16.4	16.4	8.33	8.3	85.1	85.3	11.3	11.6	9.2	9.2	4	4.0
			16.4		8.36		85.4		11.9		9.2		4	
WM1	10:30	0.25	16.7	16.7	8.4	8.4	86.5	86.4	20.5	20.1	8.4	8.4	22	22.0
			16.7		8.38		86.2		19.7		8.4		22	

Date	10-Dec-15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM1-C	10:07	0.30	18.5	18.5	8.08	8.1	86.3	86.4	29.7	29.1	8.6	8.6	12	12.5
			18.5		8.1		86.4		28.5		8.5		13	
WM1	10:31	0.25	19	19.0	7.99	8.0	86.2	86.3	133.0	**133.5**	7.9	8.0	161	**156.0**
			19		8.01		86.4		134.0		8		151	

Date	12-Dec-15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM1-C	10:22	0.27	19.5	14.5	7.78	7.8	84.8	84.8	9.7	9.8	9.5	9.5	5	5.0
			9.5		7.77		84.7		9.9		9.5		5	
WM1	10:45	0.25	20.5	20.5	7.25	7.2	80.6	80.5	343.0	**348.0**	9	9.0	599	**606.5**
			20.5		7.23		80.3		353.0		9		614	

Date	14-Dec-15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM1-C	10:16	0.24	20.8	20.8	7.06	7.0	78.9	78.6	11.4	10.9	9.1	9.1	4	4.5
			20.8		6.96		78.2		10.3		9.1		5	
WM1	10:34	0.24	20	20.0	6.01	6.0	66.2	66.3	149.0	**148.0**	8.5	8.5	203	**211.0**
			20		6.03		66.4		147.0		8.5		219	

Date	16-Dec-15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM1-C	16:30	0.31	15.7	15.7	10.73	10.7	108.2	108.1	6.8	6.9	8.5	8.5	2	2.5
			15.7		10.76		108.0		7.0		8.5		3	
WM1	17:20	0.25	15.8	15.8	8.78	8.8	88.5	88.6	50.7	50.4	8.2	8.2	49	51.0
			15.8		8.78		88.6		50.1		8.2		53	

Date	18-Dec-15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM1-C	11:20	0.31	11.4	11.4	10.07	10.1	92.3	92.6	13.8	13.9	8.6	8.6	7	7.0
			11.4		10.13		92.8		13.9		8.6		7	
WM1	10:57	0.21	14.7	14.7	8.74	8.7	86.1	86.0	48.1	47.8	8.5	8.5	46	47.5
			14.7		8.73		85.9		47.5		8.5		49	

Date	22-Dec-15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM1-C	11:55	0.31	19.9	19.9	8.41	8.4	92.4	92.5	12.1	11.8	7.9	7.9	3	3.5
			19.9		8.42		92.5		11.4		7.9		4	
WM1	11:47	0.22	20.4	20.4	7.37	7.4	81.8	81.9	28.0	27.8	7.5	7.5	27	27.0
			20.4		7.39		82.0		27.6		7.5		27	

Date	24-Dec-15															
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM1-C	11:36	0.26	21.8	21.8	7.56	7.6	86.1	86.4	10.4	9.9	8.3	8.3	9	10.0
			21.8		7.6		86.6		9.4		8.3		11	
WM1	10:25	0.31	22.4	22.4	7.19	7.2	82.9	83.0	48.6	48.0	7.9	7.9	48	49.0
			22.4		7.21		83.1		47.3		7.9		50	

Date	28-Dec-15															
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM1-C	11:08	0.28	16.5	16.5	9.01	9.0	92.2	92.2	33.5	33.8	8.7	8.7	5	5.5
			16.5		9		92.1		34.1		8.7		6	
WM1	10:55	0.29	17.2	17.3	6.87	6.9	71.6	71.4	10.7	10.7	7.8	7.8	30	29.5
			17.3		6.83		71.2		10.6		7.8		29	

Date	30-Dec-15															
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM1-C	13:37	0.26	18.1	18.1	9.72	9.8	102.9	103.3	11.6	11.9	8.3	8.3	6	5.0
			18.1		9.79		103.6		12.2		8.3		4	
WM1	13:23	0.21	18.8	18.8	9.18	9.2	98.6	99.1	21.2	20.5	8	8.0	14	14.0
			18.8		9.26		99.5		19.7		8		14	

Water Quality Monitoring Data for Contract 2 and 3

Date	1-Dec-15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM4-CA	15:37	0.16	23.6	23.6	7.67	7.7	90.6	90.6	15.2	15.5	8.2	8.2	14	13.5
			23.6		7.66		90.5		15.7		8.1		13	
WM4-CB	15:45	0.31	23.7	23.7	7.05	7.0	83.3	83.3	11.7	11.1	8.4	8.4	8	8.5
			23.7		7.04		83.2		10.4		8.4		9	
WM4	15:28	0.35	24.3	24.3	7.57	7.6	90.5	90.5	13.3	13.6	7.9	7.9	13	14.0
			24.3		7.58		90.4		13.8		7.8		15	

Date	3-Dec-15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM4-CA	14:58	0.18	20.4	20.4	7.66	7.7	85.0	84.9	9.3	9.3	8.7	8.7	5	4.5
			20.4		7.65		84.8		9.2		8.7		4	
WM4-CB	15:10	0.31	21.2	21.2	4.13	4.1	46.5	46.6	12.4	12.6	8	8.0	11	10.5
			21.2		4.12		46.6		12.7		8		10	
WM4	15:40	0.36	20.5	20.5	5.92	5.9	65.0	65.4	66.5	**66.4**	7.9	7.9	56	**56.5**
			20.5		5.93		65.8		66.3		7.9		57	

Date	5- Dec -15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM4-CA	10:14	0.19	20	20.0	7.36	7.4	81.0	81.0	8.9	9.0	8.2	8.2	12	12.0
			20		7.37		81.0		9.1		8.2		12	
WM4-CB	9:48	0.31	21	21.0	5.84	5.9	65.5	65.7	11.4	11.1	8.4	8.4	8	8.0
			21		5.86		65.8		10.8		8.3		8	
WM4	10:05	0.38	20.3	20.3	7.17	7.2	79.3	79.5	25.4	25.9	8.2	8.2	24	23.0
			20.3		7.2		79.7		26.4		8.2		22	

Date	8-Dec-15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM4-CA	14:25	0.20	18.8	18.8	8.03	8.0	86.3	86.4	11.5	12.1	8.3	8.3	7	7.0
			18.8		8.05		86.4		12.6		8.2		7	
WM4-CB	14:36	0.32	19.9	19.9	5.39	5.4	59.0	59.1	18.0	17.9	8.4	8.4	15	14.5
			19.9		5.38		59.2		17.7		8.4		14	
WM4	14:10	0.39	19.3	19.3	7.51	7.5	81.6	81.7	20.0	20.2	8.2	8.2	20	19.5
			19.3		7.55		81.8		20.3		8.1		19	

Date	10-Dec-15															
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM4-CA	13:47	0.12	20.2	20.2	7.82	7.8	86.3	86.4	17.8	17.4	8	8.0	8	7.5
			20.2		7.84		86.5		16.9		8		7	
WM4-CB	13:14	0.30	21.4	21.4	6.32	6.3	71.5	71.5	32.4	32.9	7.9	7.9	17	18.0
			21.4		6.31		71.4		33.3		7.9		19	
WM4	13:33	0.35	21.1	21.1	7.3	7.3	82.1	82.1	24.2	24.7	7.9	8.0	20	20.5
			21.1		7.31		82.0		25.2		8		21	

Date	12-Dec-15															
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM4-CA	11:40	0.16	20.6	20.6	8.16	8.2	90.8	90.9	10.8	10.3	8.4	8.4	10	10.0
			20.6		8.17		90.9		9.8		8.4		10	
WM4-CB	11:55	0.27	22	22.0	6.37	6.4	72.9	72.9	35.4	35.5	7.8	7.8	46	45.5
			22		6.36		72.8		35.6		7.8		45	
WM4	11:47	0.36	21.1	21.1	7.36	7.4	82.8	82.9	16.8	17.0	8.3	8.3	22	22.5
			21.1		7.36		82.9		17.1		8.3		23	

Date	14-Dec-15															
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM4-CA	13:35	0.15	21.1	21.1	8.23	8.2	92.6	92.8	23.3	22.7	8.1	8.1	6	5.5
			21.1		8.26		92.9		22.0		8.1		5	
WM4-CB	13:45	0.30	22	22.0	5.57	5.6	63.7	63.7	14.9	14.4	7.6	7.6	13	12.5
			22		5.56		63.6		13.9		7.6		12	
WM4	13;8	0.34	21.4	21.4	7.41	7.4	83.8	83.7	22.3	22.7	8.1	8.1	19	20.0
			21.4		7.4		83.6		23.1		8.1		21	

Date	16-Dec-15															
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM4-CA	13:55	0.16	19.2	19.2	9.18	9.2	99.5	99.6	5.4	5.3	8.6	8.6	3	3.5
			19.2		9.2		99.7		5.3		8.6		4	
WM4-CB	14:08	0.30	21	21.0	7.2	7.2	80.7	80.8	14.6	15.2	8.9	8.9	22	22.0
			21		7.21		80.8		15.7		8.8		22	
WM4	13:38	0.35	19	19.0	8.65	8.7	93.3	93.4	16.2	16.5	8.1	8.1	15	15.5
			19		8.67		93.5		16.8		8.1		16	

Date	18-Dec-15															
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM4-CA	14:45	0.16	18	18.0	9.29	9.3	98.2	98.3	6.0	5.9	8.4	8.4	2	2.5
			18		9.31		98.4		5.9		8.4		3	
WM4-CB	14:59	0.27	19.7	19.7	6.78	6.8	74.1	74.2	12.0	11.8	7.9	7.9	12	11.5
			19.7		6.79		74.2		11.5		7.9		11	
WM4	14:30	0.25	19	19.0	8.63	8.6	93.1	93.0	16.5	16.8	8.2	8.2	11	10.5
			19		8.62		92.9		17.1		8.2		10	

Date	22-Dec-15															
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM4-CA	9:55	0.16	19.8	19.8	8.63	8.6	94.1	94.4	7.4	7.4	8	8.0	4	5.0
			19.8		8.63		94.6		7.5		8		6	
WM4-CB	9:05	0.25	20.5	20.6	5.83	5.8	64.9	64.9	17.8	18.2	8.4	8.4	20	19.5
			20.6		5.82		64.8		18.6		8.4		19	
WM4	9:35	0.29	20.1	20.2	7.6	7.6	83.9	83.9	13.6	13.9	7.9	7.9	8	8.0
			20.2		7.59		83.8		14.2		7.8		8	

Date	24-Dec-15															
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM4-CA	12:43	0.11	23.8	23.8	8.08	8.1	95.7	95.6	12.1	12.3	7.8	7.8	9	9.5
			23.8		8.06		95.5		12.4		7.8		10	
WM4-CB	12:58	0.22	24.6	24.6	6.56	6.6	78.8	78.9	15.3	15.0	7.3	7.3	21	20.5
			24.6		6.57		78.9		14.7		7.3		20	
WM4	12:34	0.30	25	25.0	8	8.0	96.8	96.9	28.2	28.5	7.5	7.5	25	23.5
			25		8.01		96.9		28.8		7.5		22	

Date	28-Dec-15															
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM4-CA	13:15	0.14	18.6	18.6	8.88	8.9	95.1	95.2	5.4	5.6	8	8.0	3	3.0
			18.6		8.89		95.2		5.7		8		3	
WM4-CB	13:30	0.23	19.8	19.8	7.55	7.6	82.7	82.8	33.3	33.6	7.5	7.5	36	37.0
			19.8		7.55		82.8		33.9		7.5		38	
WM4	13:05	0.30	19.1	19.1	8.53	8.5	92.3	92.2	18.0	18.2	7.6	7.6	13	13.5
			19.1		8.52		92.1		18.4		7.6		14	

Date	**30-Dec-15**													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM4-CA	11:44	0.17	19.8	19.8	9.1	9.1	99.8	100.1	6.6	6.6	8.4	8.4	3	3.5
			19.8		9.16		100.4		6.6		8.4		4	
WM4-CB	12:00	0.17	20.3	20.3	7.51	7.5	83.1	83.2	12.7	12.4	7.7	7.7	12	13.0
			20.3		7.51		83.2		12.1		7.7		14	
WM4	11:32	0.28	19.2	19.2	8.36	8.4	90.5	90.5	14.8	14.7	8.2	8.2	13	13.5
			19.2		8.35		90.4		14.5		8.2		14	

Water Quality Monitoring Data for Contract 6

Date	2-Dec-15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM2A-C	13:52	0.40	23.1	23.1	7.25	7.3	84.8	84.8	7.8	7.9	9.10	9.1	4	4.0
			23.1		7.25		84.7		8.0		9.10		4	
WM2A	14:10	0.21	24	24.0	8.16	8.2	97	97.1	10.1	10.4	9.00	9.0	9	8.5
			24		8.17		97.2		10.6		9.00		8	

Date	4-Dec-15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM2A-C	11:47	0.39	20.5	20.5	5.92	5.9	65.7	65.8	13.3	13.2	7.80	7.9	4	3.5
			20.5		5.93		65.8		13.1		7.90		3	
WM2A	12:21	0.21	20.4	20.4	8.41	8.4	93.2	93.3	8.1	8.3	8.90	8.9	6	7.0
			20.4		8.42		93.4		8.5		8.90		8	

Date	7-Dec-15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM2A-C	11:57	0.37	17.9	17.9	7.88	7.9	83.1	83.2	13.5	13.3	9.00	9.0	4	3.5
			17.9		7.9		83.3		13.1		9.00		3	
WM2A	12:12	0.22	18	18.0	9.01	9.0	95.2	95.4	35.0	**35.7**	8.70	8.7	59	**60.0**
			18		9.03		95.5		36.3		8.70		61	

Date	9-Dec-15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM2A-C	12:30	0.53	17.5	17.5	8.54	8.5	89.3	89.1	777.0	782.5	8.20	8.2	463	461.0
			17.5		8.49		88.8		788.0		8.20		459	
WM2A	12:55	0.40	17.5	17.5	7.97	8.0	83.4	83.3	369.0	375.0	7.90	7.9	292	300.0
			17.5		7.95		83.2		381.0		7.80		308	

Date	11-Dec-15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM2A-C	11:21	0.20	19.6	19.6	7.9	7.9	86.3	86.4	12.4	12.8	8.10	8.1	4	3.5
			19.6		7.9		86.4		13.2		8.10		3	
WM2A	10:20	0.25	20.6	20.6	7.92	7.9	88.2	88.3	51.0	**52.1**	7.80	7.8	20	**21.0**
			20.6		7.93		88.3		53.1		7.80		22	

Date	15-Dec-15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM2A-C	10:05	0.32	19	19.0	8.17	8.2	88.2	88.0	10.2	10.5	8.70	8.7	4	4.0
			19		8.13		87.8		10.7		8.70		4	
WM2A	10:36	0.23	18.1	18.1	8.5	8.5	90.0	90.1	19.6	19.7	8.60	8.6	10	10.5
			18.1		8.51		90.1		19.7		8.50		11	

Date	17-Dec-15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM2A-C	11:04	0.27	14.8	14.8	9.11	9.1	89.9	90.0	15.8	15.9	8.90	8.9	5	5.0
			14.8		9.12		90.0		15.9		8.90		5	
WM2A	10:45	0.22	14.2	14.2	10.05	10.0	98.0	97.9	10.7	10.5	9.00	9.0	6	5.5
			14.2		10.03		97.8		10.2		9.00		5	

Date	19-Dec-15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM2A-C	9:52	0.27	15.5	15.5	9.58	9.6	96.0	96.1	8.0	8.1	8.30	8.4	7	6.5
			15.5		9.6		96.1		8.2		8.40		6	
WM2A	10:15	0.23	15	15.0	10.3	10.3	102.0	102.1	13.8	13.5	8.40	8.4	11	12.0
			15		10.28		102.1		13.1		8.40		13	

Date	21-Dec-15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM2A-C	10:36	0.24	18.1	18.1	8.27	8.3	87.7	88.0	13.7	14.2	8.10	8.1	6	6.5
			18.1		8.32		88.2		14.6		8.10		7	
WM2A	11:15	0.21	17.4	17.4	9.32	9.3	97.2	97.3	7.5	7.8	7.80	7.8	4	3.0
			17.4		9.33		97.3		8.0		7.80		2	

Date	23-Dec-15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM2A-C	9:40	0.25	21.1	21.1	7.86	7.9	88.3	88.5	11.1	10.9	8.00	8.0	2	2.5
			21.1		7.89		88.6		10.7		8.00		3	
WM2A	10:40	0.22	20.6	20.6	8.71	8.7	96.9	96.7	12.6	12.5	7.60	7.6	5	5.0
			20.6		8.66		96.5		12.3		7.60		5	

Date	29-Dec-15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM2A-C	11:21	0.22	18.2	18.2	8.49	8.5	90.1	90.1	8.2	8.3	8.20	8.2	4	3.5
			18.2		8.48		90.0		8.4		8.20		3	
WM2A	10:55	0.24	17.9	17.9	9.29	9.3	98.0	98.1	7.4	7.4	8.60	8.6	3	2.5
			17.9		9.31		98.1		7.4		8.60		2	

Date	31-Dec-15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM2A-C	9:59	0.21	17.9	17.9	8.59	8.6	90.6	90.4	10.9	11.0	7.60	7.6	6	5.5
			17.9		8.54		90.1		11.1		7.60		5	
WM2A	10:25	0.22	17.5	17.5	9.39	9.4	98.3	98.4	8.7	8.9	7.60	7.6	8	7.5
			17.5		9.4		98.4		9.1		7.60		7	

Date	2-Dec-15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM2B-C	13:47	0.01	24.6	24.6	6.97	7.0	83.7	83.7	4.8	4.9	8.60	8.6	4	4.5
			24.6		6.96		83.6		5.0		8.50		5	
WM2B	14:07	0.01	25.5	25.5	7.55	7.6	92.4	92.3	29.7	**30.3**	8.00	8.0	68	**67.5**
			25.5		7.56		92.2		30.9		8.00		67	

Date	4-Dec-15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM2B-C	13:07	0.01	22.9	22.9	6.95	7.0	80.8	80.9	7.8	7.8	8.50	8.5	<2	2.0
			22.9		6.97		81.0		7.8		8.50		<2	
WM2B	12:55	0.01	21.4	21.4	8.7	8.7	98.4	98.3	33.4	**34.1**	8.50	8.5	41	**41.0**
			21.4		8.69		98.2		34.7		8.50		41	

Date	7-Dec-15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM2B-C	13:15	0.01	22.4	22.4	7.3	7.2	84.1	83.1	7.8	7.8	8.30	8.3	<2	2.0
			22.4		7.12		82.0		7.8		8.30		2	
WM2B	12;58	0.01	20.9	20.9	9.33	9.3	104.4	104.4	28.5	**28.2**	8.60	8.6	26	**27.0**
			20.9		9.31		104.3		27.9		8.60		28	

Date	9-Dec-15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM2B-C	10:40	0.01	22.3	22.3	7.38	7.4	84.9	85.0	4.0	4.0	8.50	8.5	<2	2.0
			22.3		7.39		85.0		4.1		8.40		<2	
WM2B	10:54	0.04	20.6	20.6	7.91	7.9	88.2	88.1	67.8	**68.1**	8.00	8.0	78	**80.0**
			20.6		7.9		88.0		68.3		8.00		82	

Date	11-Dec-15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM2B-C	11:10	0.01	22.8	22.8	7.18	7.2	83.5	83.5	24.2	24.1	8.40	8.4	16	17.0
			22.8		7.19		83.5		24.0		8.40		18	
WM2B	14:25	0.01	23.3	23.3	8.06	8.1	94.9	94.9	18.4	18.3	9.00	9.0	11	10.0
			23.3		8.07		94.8		18.2		9.00		9	

Date	15-Dec-15															
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM2B-C	11:50	0.01	21.6	21.6	7.65	7.6	86.9	86.8	3.6	3.5	9.30	9.3	<2	2.0
			21.6		7.63		86.6		3.5		9.30		<2	
WM2B	11:25	0.01	18.5	18.5	8.8	8.8	93.9	94.0	110.0	**113.0**	11.00	11.0	125	**123.5**
			18.5		8.82		94.1		116.0		11.00		122	

Date	17-Dec-15															
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM2B-C	11:37	0.01	21.1	21.1	7.96	8.0	88.8	89.1	9.1	9.0	8.30	8.3	<2	2.0
			21.1		7.96		89.4		8.8		8.30		<2	
WM2B	11:25	0.01	16.3	16.3	9.64	9.6	98.4	98.4	88.9	**88.4**	8.30	8.3	127	**125.5**
			16.3		9.63		98.3		87.8		8.30		124	

Date	19-Dec-15															
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM2B-C	9:50	0.01	19.6	19.6	7.98	8.0	87.1	87.2	3.7	3.7	9.10	9.1	<2	2.0
			19.6		8		87.3		3.8		9.00		<2	
WM2B	10:10	0.01	16.4	16.4	9.93	9.9	101.7	101.7	56.4	**56.8**	8.10	8.2	120	**121.0**
			16.4		9.94		101.7		57.2		8.20		122	

Date	21-Dec-15															
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM2B-C	10:00	0.01	22	22.0	7.91	7.9	90.5	90.6	4.3	4.3	9.10	9.1	<2	2.0
			22		7.93		90.6		4.4		9.00		<2	
WM2B	10:15	0.01	18.6	18.6	9.42	9.4	100.9	101.0	54.9	**54.0**	8.00	8.0	80	**79.5**
			18.6		9.44		101.1		53.1		8.00		79	

Date	23-Dec-15															
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM2B-C	11:47	0.01	22.5	22.5	7.46	7.5	86.2	86.3	8.7	8.6	8.10	8.1	4	4.0
			22.5		7.48		86.4		8.6		8.10		4	
WM2B	11:07	0.01	23.1	23.1	8.81	8.8	102.9	103.1	19.0	**18.8**	7.40	7.4	10	9.5
			23.1		8.84		103.2		18.5		7.40		9	

Date	29-Dec-15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM2B-C	11:47	0.01	21.7	21.7	7.8	7.8	88.6	88.7	5.9	5.9	7.80	7.8	<2	2.0
			21.7		7.82		88.8		5.8		7.80		<2	
WM2B	11:38	0.01	19	19.0	9.94	9.9	107.3	107.3	7.1	7.2	8.00	8.0	5	5.0
			19		9.93		107.2		7.2		8.00		5	

Date	31-Dec-15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM2B-C	9:25	0.01	21.2	21.2	8.01	8.0	90.1	90.4	4.7	4.8	8.10	8.1	4	3.5
			21.2		8.05		90.6		4.8		8.10		3	
WM2B	9:42	0.01	18.4	18.4	9.82	9.8	104.8	105.0	35.9	**35.7**	7.90	7.9	43	**42.5**
			18.4		9.84		105.1		35.5		7.90		42	

Date	24-Dec-15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM2B	11:48	0.01							6.2	6.1			4	4.0
									5.9				4	
Date	**28-Dec-15**													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM2B	11:48	0.01							10.3	10.2			7	7.0
									10.1				7	
Date	**30-Dec-15**													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM2B	11:48	0.01							9.2	9.4			8	8.0
									9.5				8	

Water Quality Monitoring Data for Contract 2 and 6

Date	2-Dec-15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM3-C	14:50	0.02	24.4	24.4	6.87	6.9	82.4	82.3	31.1	31.5	7.70	7.7	71	70.5
			24.4		6.85		82.1		31.8		7.70		70	
WM3	15:00	0.31	23.5	23.5	6.86	6.8	80.8	80.7	35.1	35.8	8.10	8.2	46	47.0
			23.5		6.83		80.5		36.5		8.20		48	

Date	4-Dec-15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM3-C	13:30	0.01	22.4	22.4	6.72	6.7	77.4	77.5	14.1	14.4	7.60	7.6	22	14.0
			22.4		6.72		77.5		14.6		7.60		6	
WM3	13:42	0.30	21.1	21.1	7.65	7.7	86.2	86.3	13.7	13.5	7.90	7.9	15	14.0
			21.1		7.68		86.4		13.3		7.80		13	

Date	7-Dec-15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM3-C	13:27	0.05	21	21.0	8.14	8.2	91.4	91.7	27.1	27.4	7.60	7.7	30	30.5
			21		8.2		92.0		27.7		7.70		31	
WM3	13:40	0.29	20.8	20.8	7.72	7.7	86.3	86.6	20.2	20.6	7.90	7.9	20	20.0
			20.8		7.76		86.8		20.9		7.90		20	

Date	9-Dec-15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM3-C	13:57	0.05	19.1	19.1	7.35	7.4	79.5	79.6	47.7	48.3	7.50	7.5	58	58.0
			19.1		7.36		79.6		48.8		7.50		58	
WM3	14:15	0.38	18.7	18.7	6.74	6.7	72.2	72.3	223.0	**226.0**	7.50	7.5	149	**148.0**
			18.7		6.75		72.3		229.0		7.50		147	

Date	11-Dec-15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM3-C	11:47	0.01	23.3	23.3	7.54	7.6	88.5	88.8	25.6	26.0	7.60	7.6	59	61.5
			23.3		7.59		89.0		26.3		7.60		64	
WM3	12:05	0.15	21.3	21.3	7.61	7.6	86.0	86.1	17.2	17.0	7.90	8.0	9	8.5
			21.3		7.61		86.2		16.8		8.00		8	

Date	15-Nov-15															
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM3-C	12:14	0.02	21.4	21.4	6.99	7.0	79.0	79.1	11.8	11.8	8.50	8.5	13	14.0
			21.4		7		79.2		11.7		8.50		15	
WM3	12:25	0.30	20.3	20.3	8.14	8.2	90.2	90.3	12.8	13.0	8.60	8.6	12	11.5
			20.3		8.16		90.3		13.1		8.60		11	

Date	17-Dec-15															
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM3-C	11:49	0.02	18.3	18.3	8.91	8.9	94.8	95.1	18.2	18.6	8.30	8.3	4	13.0
			18.3		8.95		95.3		18.9		8.30		22	
WM3	12:19	0.21	16.9	16.9	8.68	8.7	89.7	89.6	6.5	6.5	9.20	9.2	3	11.5
			16.9		8.67		89.5		6.5		9.10		20	

Date	19-Dec-15															
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM3-C	10:34	0.02	16.5	16.5	9.44	9.5	96.8	96.9	20.9	21.5	7.60	7.6	19	19.5
			16.5		9.47		97.0		22.0		7.60		20	
WM3	10:46	0.20	16.5	16.5	9.24	9.2	94.7	94.6	16.7	16.6	8.20	8.2	11	11.0
			16.5		9.23		94.5		16.5		8.10		11	

Date	21-Dec-15															
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM3-C	11:38	0.04	20.1	20.1	8.89	8.9	98.1	98.3	22.9	23.2	7.40	7.4	25	24.5
			20.1		8.91		98.4		23.4		7.40		24	
WM3	11:50	0.22	19.5	19.5	8.62	8.6	93.9	94.0	21.2	21.5	7.70	7.7	14	14.0
			19.5		8.63		94.0		21.8		7.70		14	

Date	23-Dec-15															
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM3-C	11;20	0.04	22.4	22.4	8.33	8.3	86.1	86.3	27.0	26.7	7.20	7.2	28	28.5
			22.4		8.35		86.4		26.4		7.20		29	
WM3	11:32	0.19	21.5	21.5	8.23	8.2	93.4	93.6	24.3	23.8	8.00	8.0	12	13.0
			21.5		8.25		93.7		23.2		8.00		14	

Date	26-Dec-15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM3-C	10:26	0.01	21	21.0	10.05	10.1	112.5	112.6	16.9	17.0	9.40	9.4	17	17.0
			21		10.06		112.6		17.1		9.40		17	
WM3	10:10	0.19	21.4	21.4	9.14	9.1	103.1	103.2	15.8	15.7	9.10	9.1	13	13.0
			21.4		9.13		103.2		15.6		9.10		13	

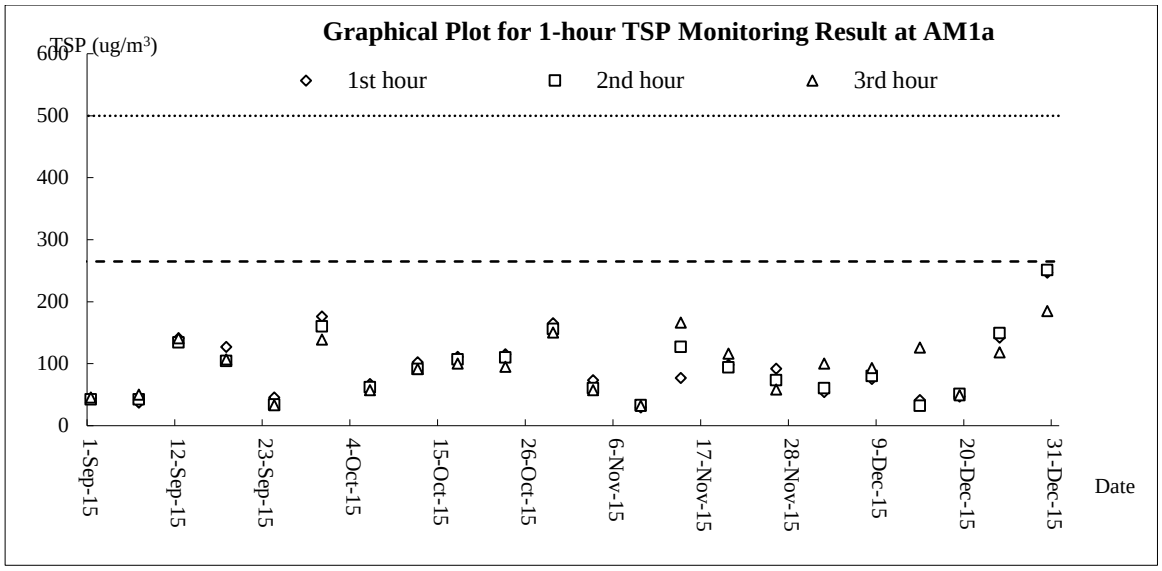
Date	29-Dec-15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM3-C	12:03	0.01	21.2	21.2	7.59	7.6	85.5	85.6	39.5	38.7	7.10	7.1	39	40.0
			21.2		7.61		85.7		37.9		7.10		41	
WM3	10:15	0.17	19.4	19.4	9.03	9.1	98.1	98.4	15.7	15.3	7.60	7.6	14	14.5
			19.4		9.08		98.6		14.8		7.60		15	

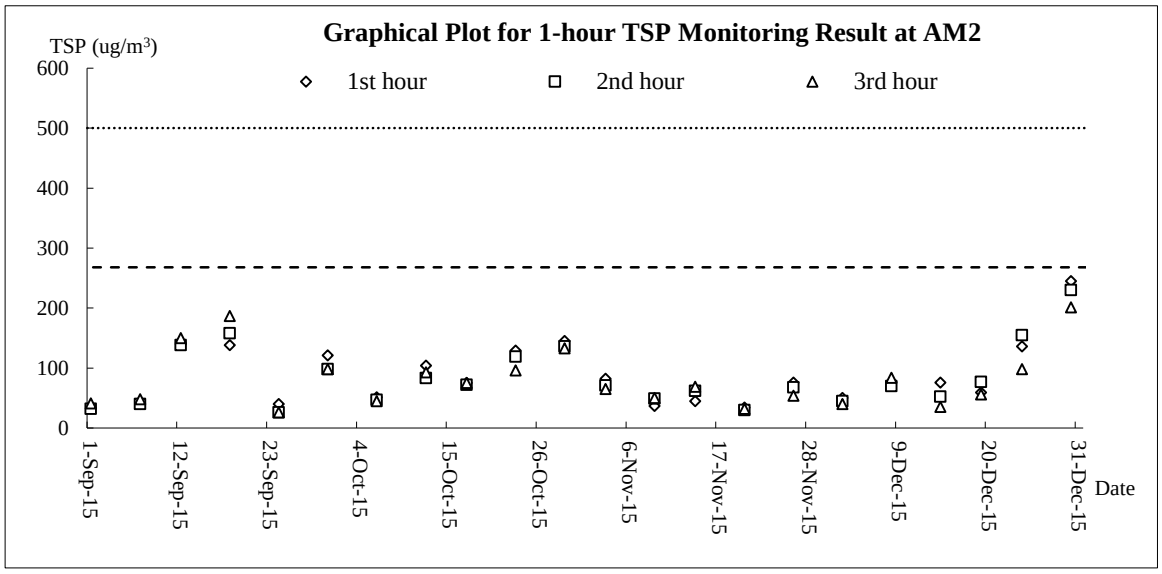
Date	31-Dec-15													
Location	**Time**	**Depth (m)**	**Temp (oC)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**SS(mg/L)**	
WM3-C	10:50	0.02	20.3	20.3	8.8	8.8	97.6	98.0	29.2	30.2	7.20	7.2	22	22.5
			20.3		8.87		98.3		31.1		7.20		23	
WM3	10:59	0.17	19.7	19.7	8.85	8.8	96.8	96.6	18.7	18.6	7.90	7.9	8	8.5
			19.7		8.82		96.4		18.4		7.90		9	

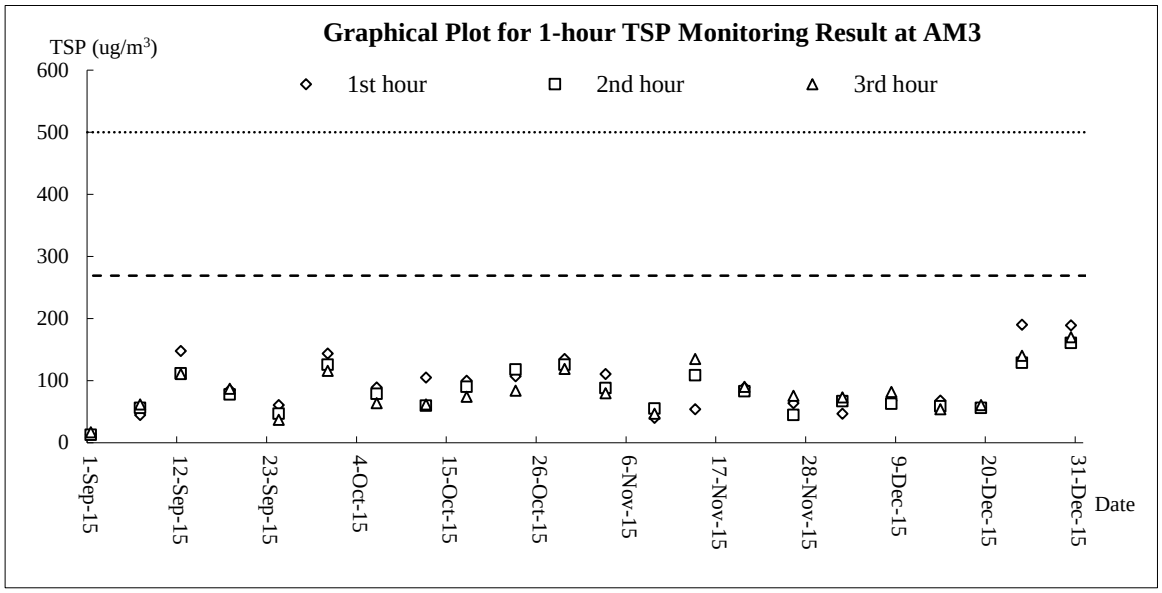
Appendix J

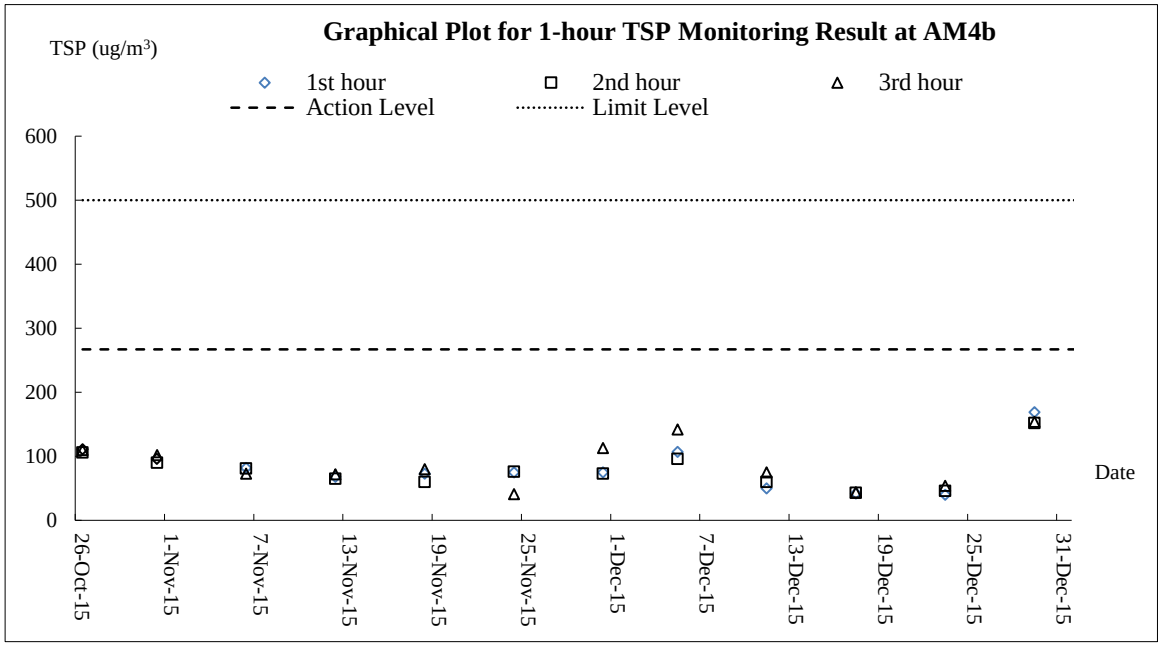
Graphical Plots for Monitoring Result

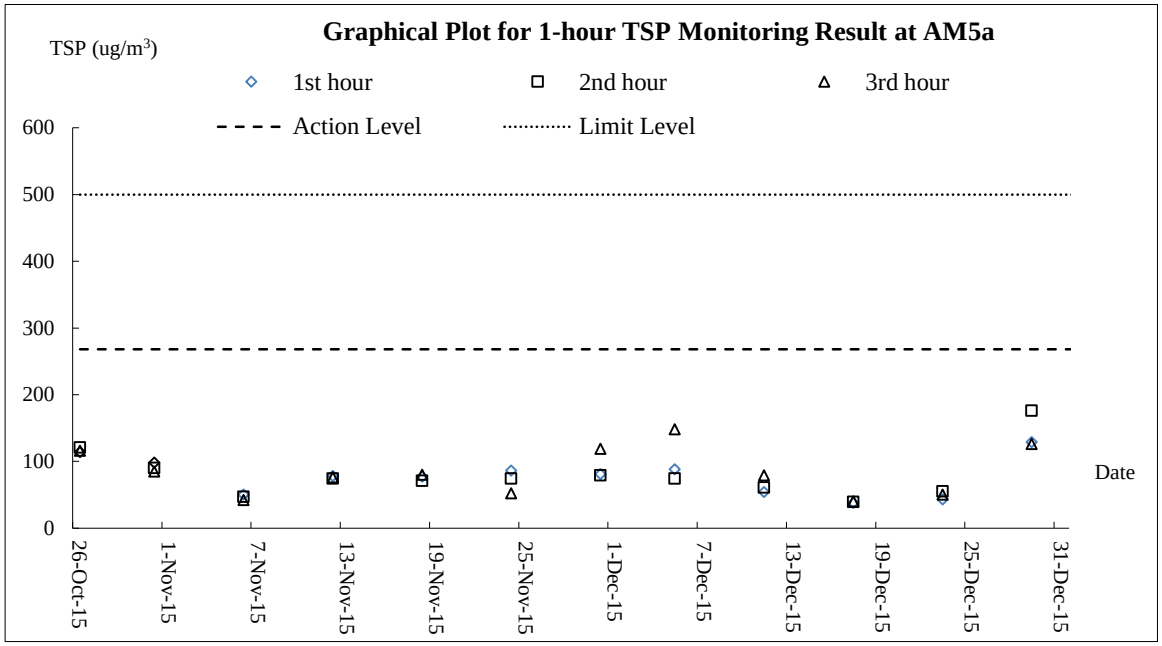
Air Quality – 1-hour TSP

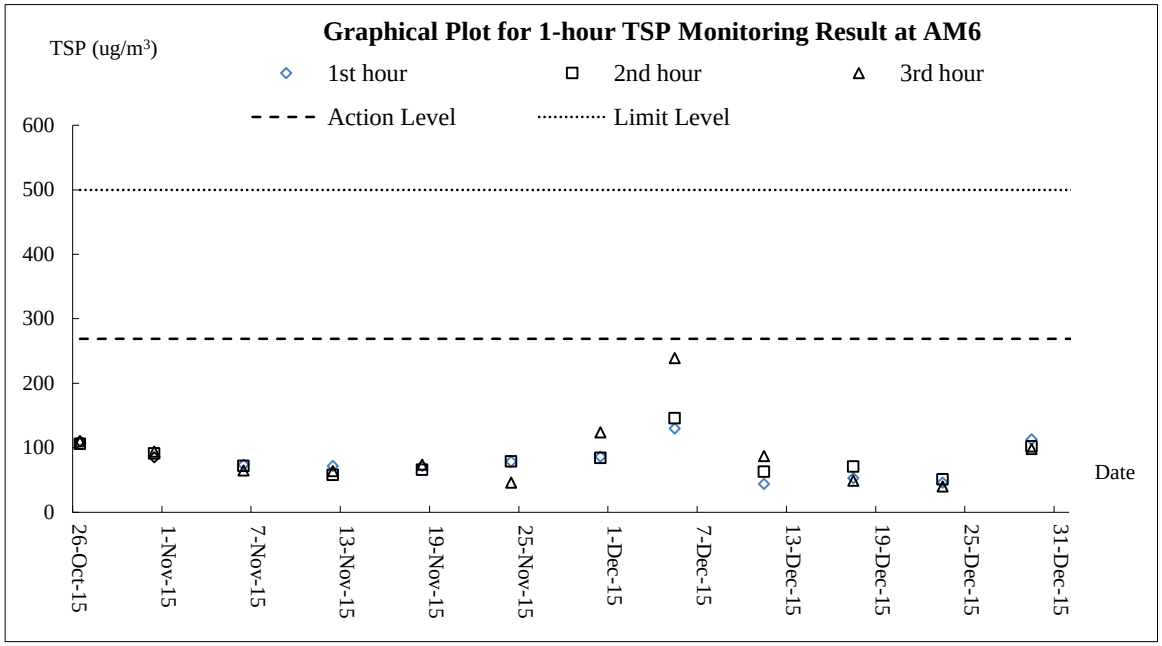


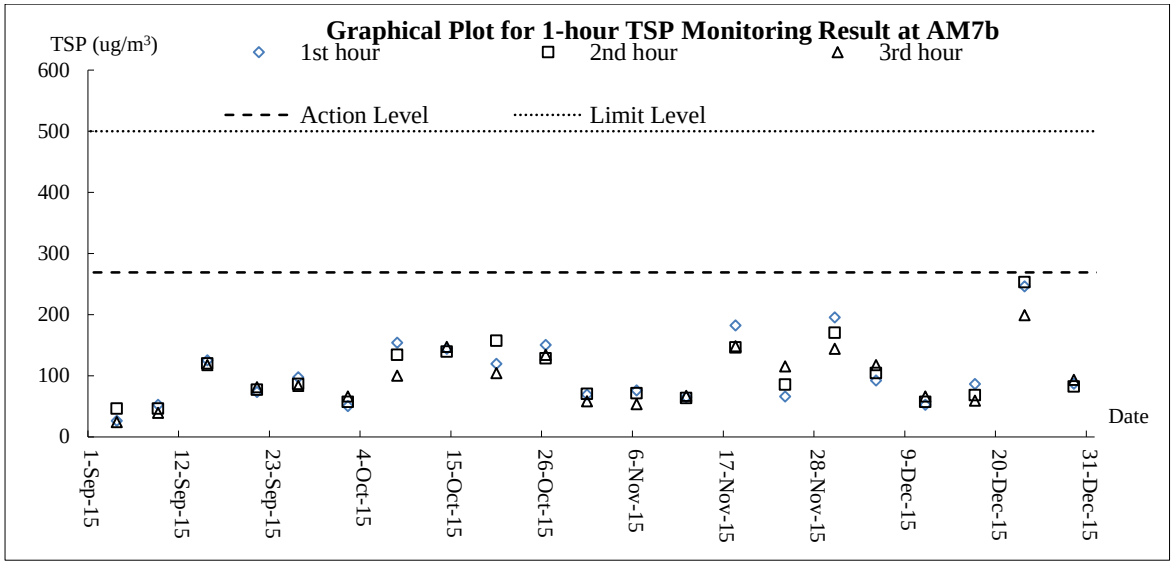


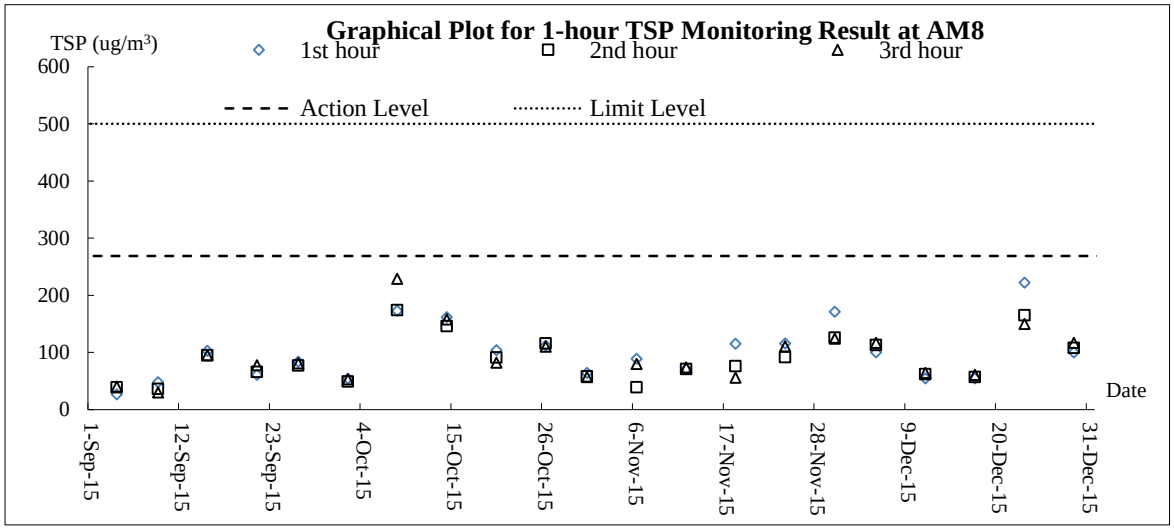


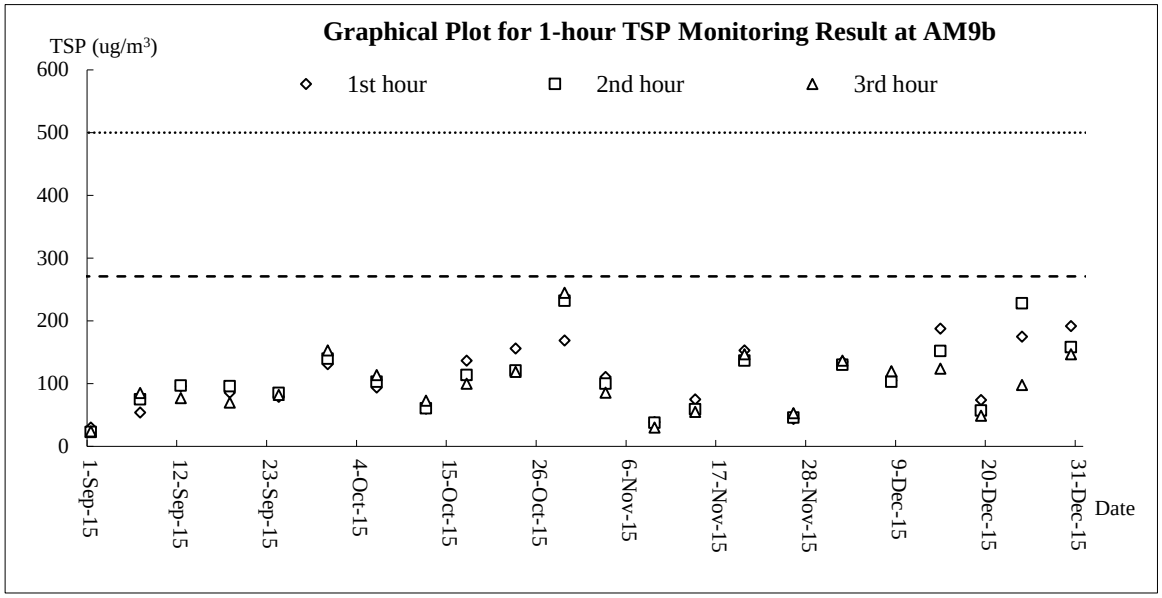

Graphical Plot for 1-hour TSP Monitoring Result at AM4b
TSP (ug/m3)
1st hour
2nd hour
3rd hour
Action Level
Limit Level
600
500
400
300
200
100
0
Date
26-Oct-15
1-Nov-15
7-Nov-15
13-Nov-15
19-Nov-15
25-Nov-15
1-Dec-15
7-Dec-15
13-Dec-15
19-Dec-15
25-Dec-15
31-Dec-15


Graphical Plot for 1-hour TSP Monitoring Result at AM5a
TSP (ug/m3)
1st hour
2nd hour
3rd hour
Action Level
Limit Level
600
500
400
300
200
100
0
Date
26-Oct-15
1-Nov-15
7-Nov-15
13-Nov-15
19-Nov-15
25-Nov-15
1-Dec-15
7-Dec-15
13-Dec-15
19-Dec-15
25-Dec-15
31-Dec-15

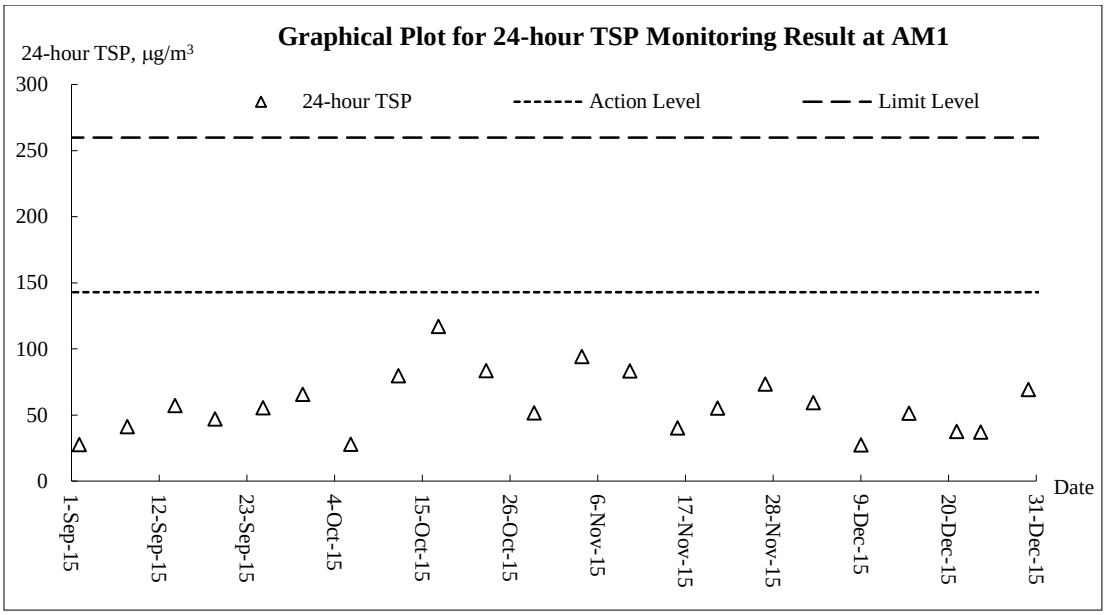

Graphical Plot for 1-hour TSP Monitoring Result at AM6
TSP (ug/m3)
1st hour
2nd hour
3rd hour
Action Level
Limit Level
600
500
400
300
200
100
0
Date
26-Oct-15
1-Nov-15
7-Nov-15
13-Nov-15
19-Nov-15
25-Nov-15
1-Dec-15
7-Dec-15
13-Dec-15
19-Dec-15
25-Dec-15
31-Dec-15

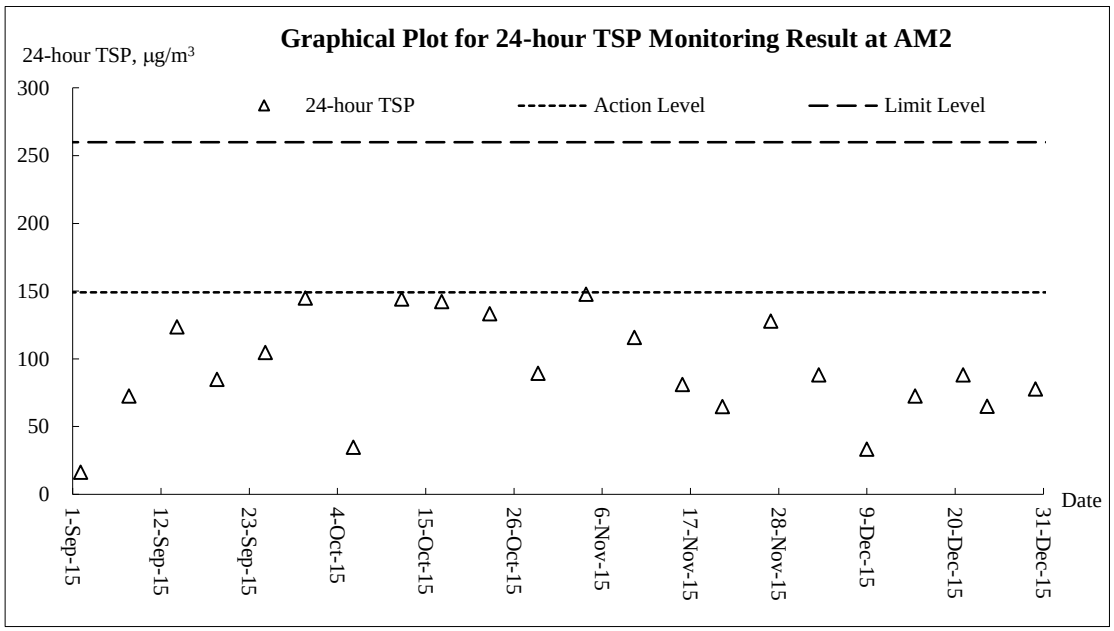

Graphical Plot for 1-hour TSP Monitoring Result at AM7b
TSP (ug/m3)
1st hour
2nd hour
3rd hour
Action Level
Limit Level
600
500
400
300
200
100
0
Date
1-Sep-15
12-Sep-15
23-Sep-15
4-Oct-15
15-Oct-15
26-Oct-15
6-Nov-15
17-Nov-15
28-Nov-15
9-Dec-15
20-Dec-15
31-Dec-15

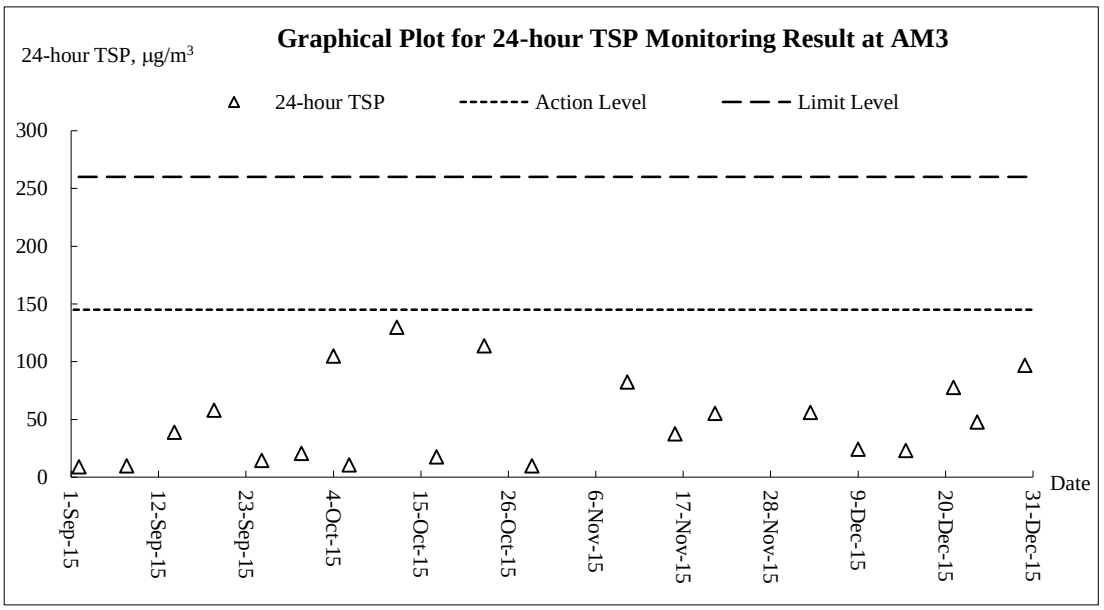

Graphical Plot for 1-hour TSP Monitoring Result at AM8
TSP (ug/m3)
1st hour
2nd hour
3rd hour
Action Level
Limit Level
600
500
400
300
200
100
0
Date
1-Sep-15
12-Sep-15
23-Sep-15
4-Oct-15
15-Oct-15
26-Oct-15
6-Nov-15
17-Nov-15
28-Nov-15
9-Dec-15
20-Dec-15
31-Dec-15

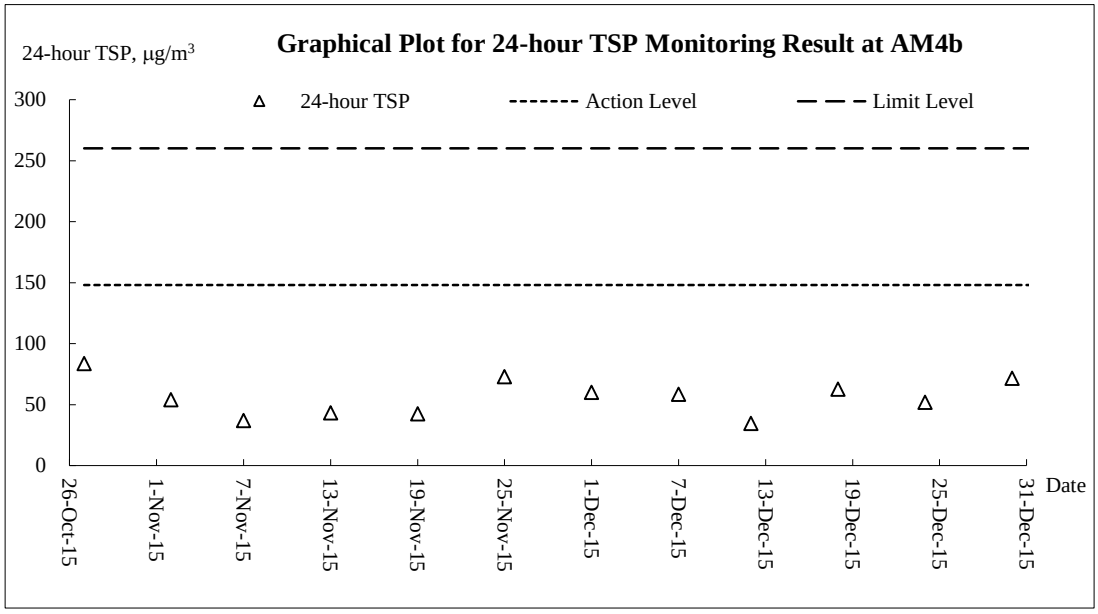

Graphical Plot for 1-hour TSP Monitoring Result at AM9b
TSP (ug/m3)
1st hour
2nd hour
3rd hour
600
500
400
300
200
100
0
1-Sep-15
12-Sep-15
23-Sep-15
4-Oct-15
15-Oct-15
26-Oct-15
6-Nov-15
17-Nov-15
28-Nov-15
9-Dec-15
20-Dec-15
31-Dec-15
Date

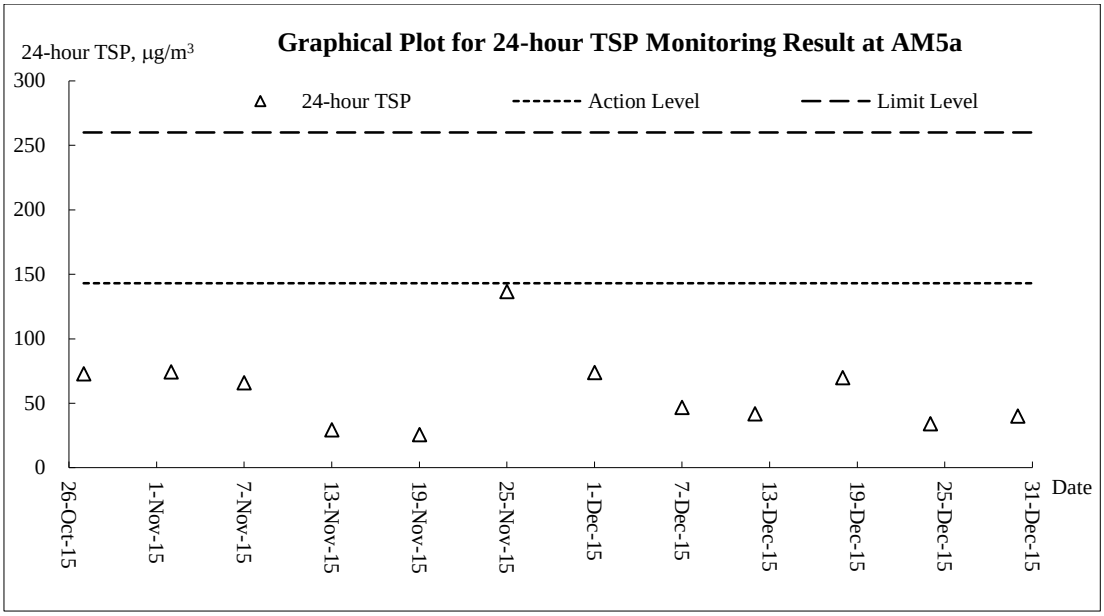
Air Quality – 24-hour TSP

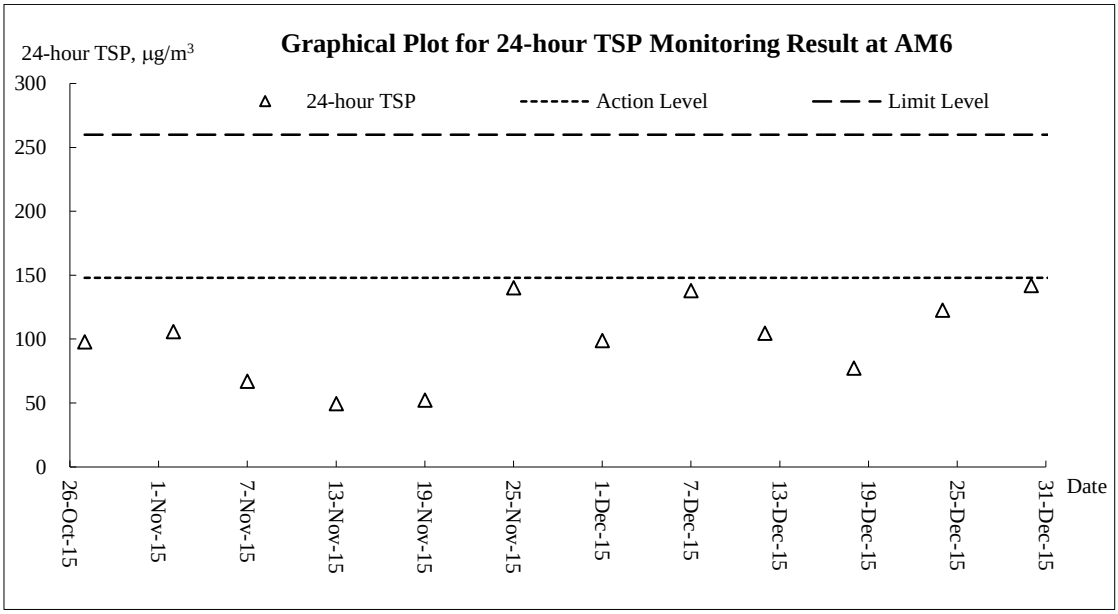


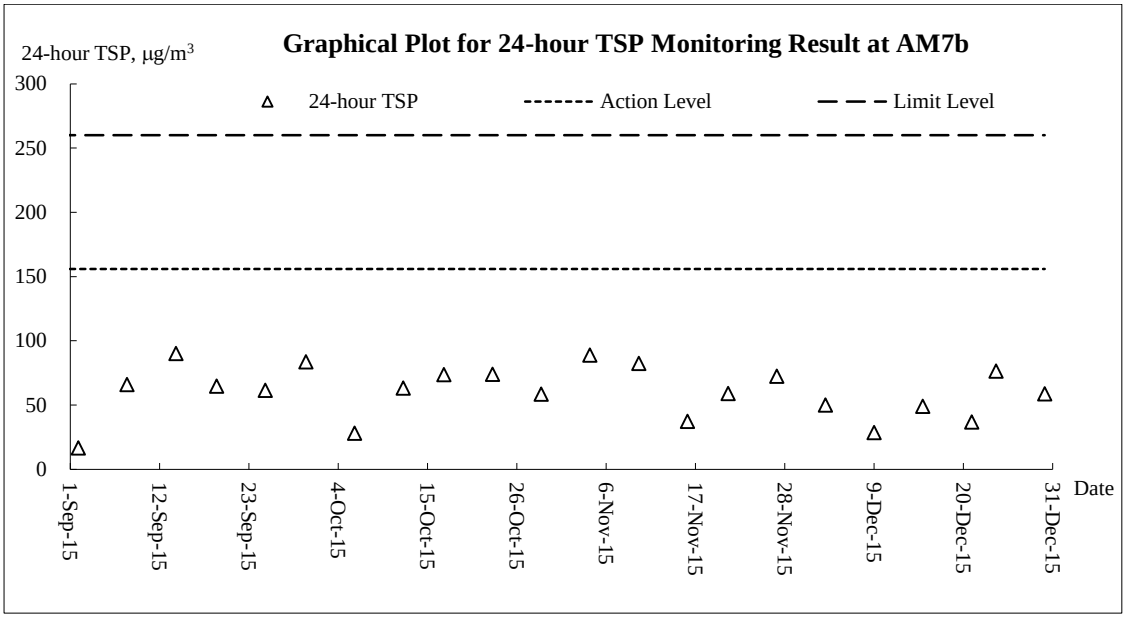


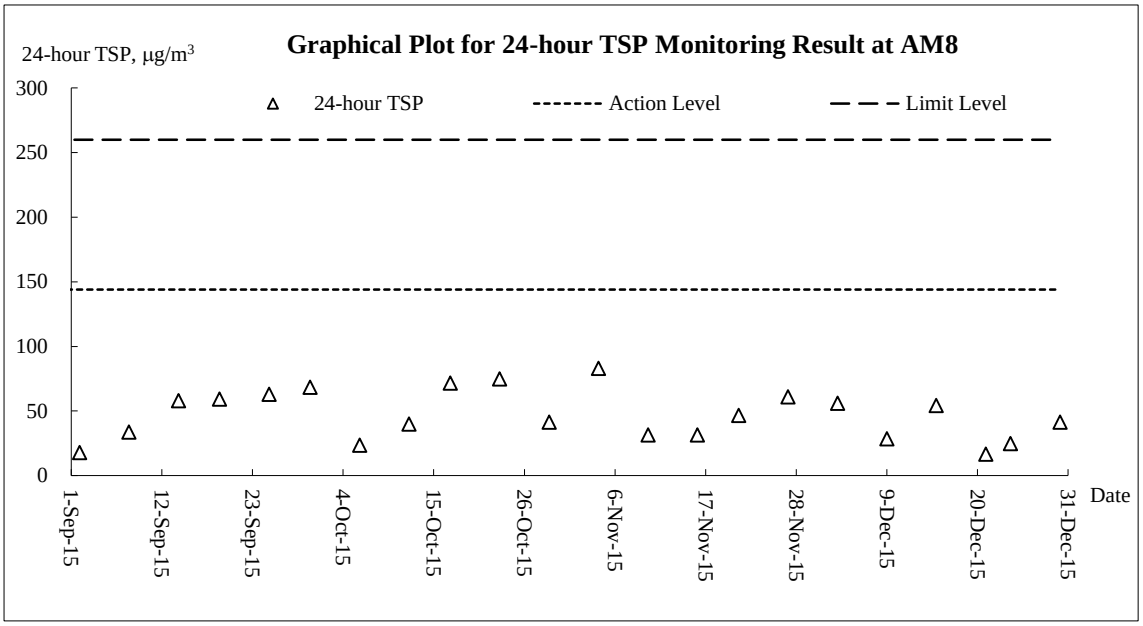


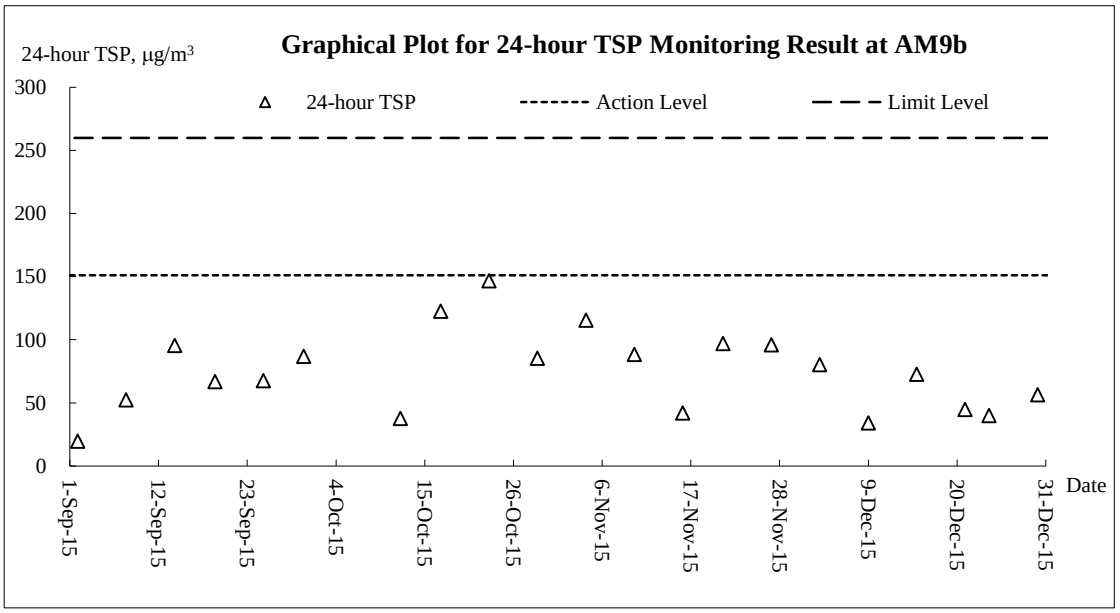

Graphical Plot for 24-hour TSP Monitoring Result at AM4b
24-hour TSP, μg/m3
24-hour TSP
Action Level
Limit Level
300
250
200
150
100
50
0
26-Oct-15
1-Nov-15
7-Nov-15
13-Nov-15
19-Nov-15
25-Nov-15
1-Dec-15
7-Dec-15
13-Dec-15
19-Dec-15
25-Dec-15
31-Dec-15
Date


Graphical Plot for 24-hour TSP Monitoring Result at AM5a
24-hour TSP, μg/m3
24-hour TSP
Action Level
Limit Level
300
250
200
150
100
50
0
26-Oct-15
1-Nov-15
7-Nov-15
13-Nov-15
19-Nov-15
25-Nov-15
1-Dec-15
7-Dec-15
13-Dec-15
19-Dec-15
25-Dec-15
31-Dec-15
Date

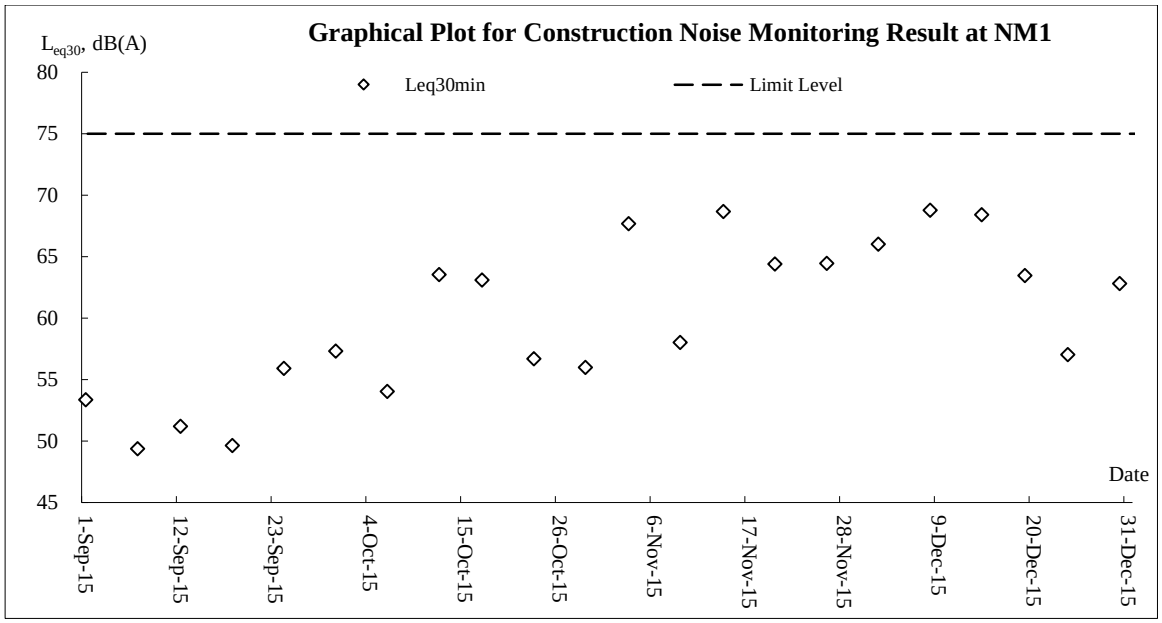

Graphical Plot for 24-hour TSP Monitoring Result at AM6
24-hour TSP, μg/m3
24-hour TSP
Action Level
Limit Level
300
250
200
150
100
50
0
26-Oct-15
1-Nov-15
7-Nov-15
13-Nov-15
19-Nov-15
25-Nov-15
1-Dec-15
7-Dec-15
13-Dec-15
19-Dec-15
25-Dec-15
31-Dec-15
Date

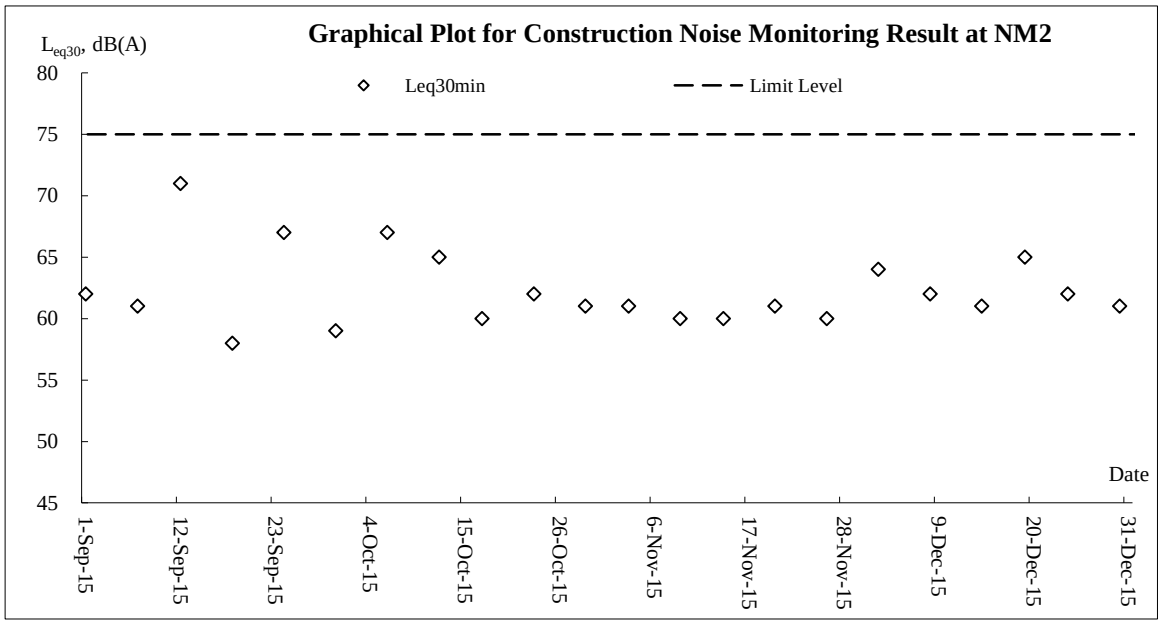

Graphical Plot for 24-hour TSP Monitoring Result at AM7b
24-hour TSP, μg/m3
24-hour TSP
Action Level
Limit Level
300
250
200
150
100
50
0
1-Sep-15
12-Sep-15
23-Sep-15
4-Oct-15
15-Oct-15
26-Oct-15
6-Nov-15
17-Nov-15
28-Nov-15
9-Dec-15
20-Dec-15
31-Dec-15
Date

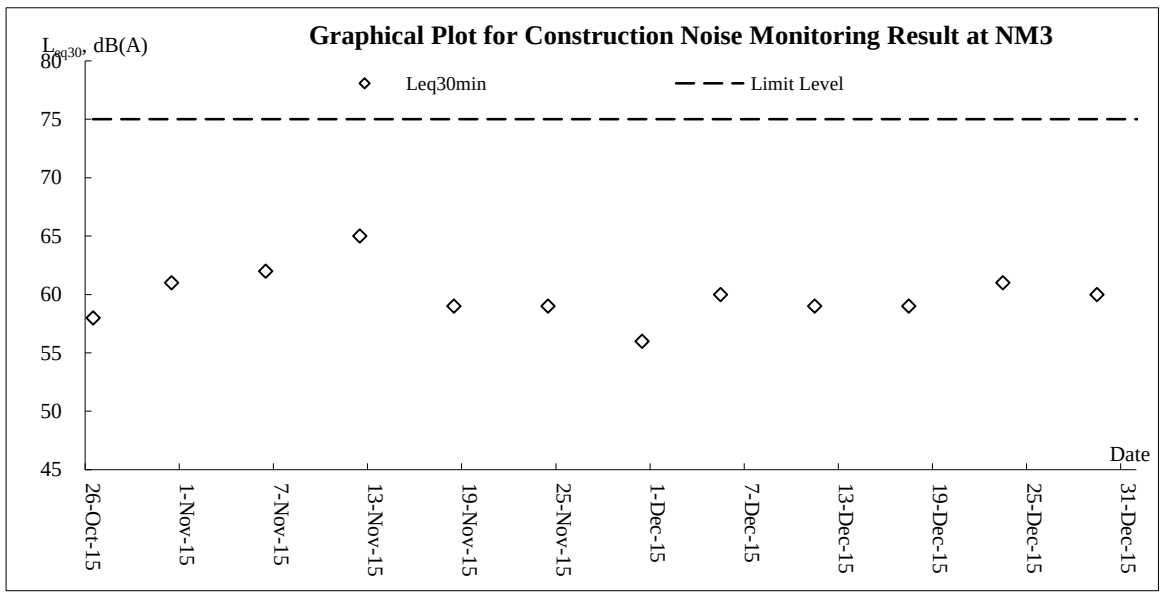

Graphical Plot for 24-hour TSP Monitoring Result at AM8
24-hour TSP, μg/m3
24-hour TSP
Action Level
Limit Level
300
250
200
150
100
50
0
1-Sep-15
12-Sep-15
23-Sep-15
4-Oct-15
15-Oct-15
26-Oct-15
6-Nov-15
17-Nov-15
28-Nov-15
9-Dec-15
20-Dec-15
31-Dec-15
Date

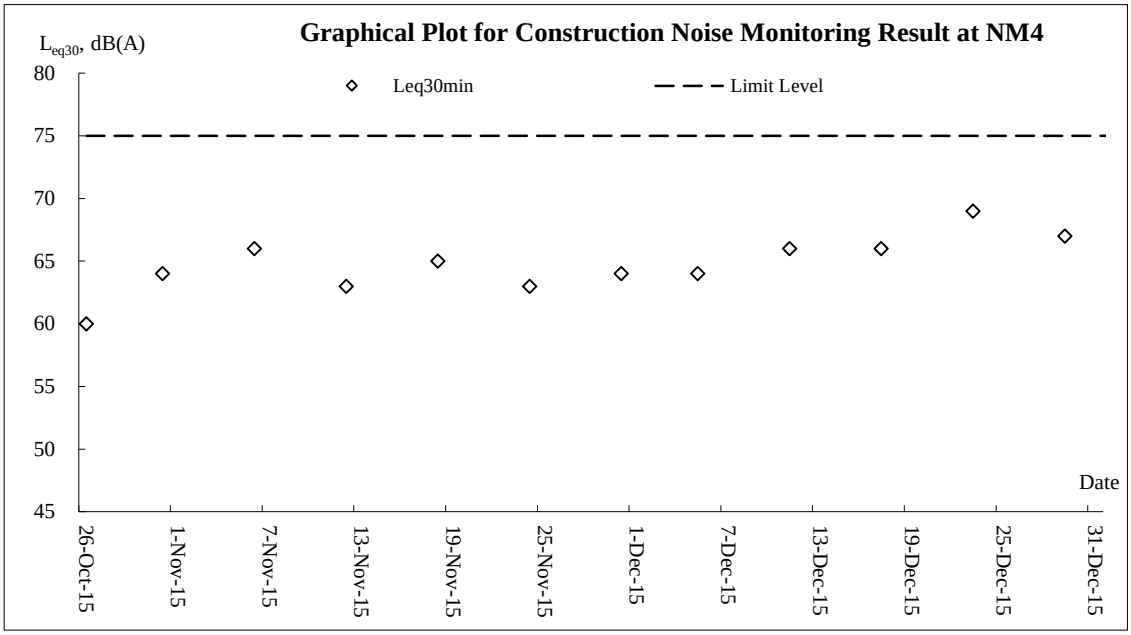

Graphical Plot for 24-hour TSP Monitoring Result at AM9b
24-hour TSP, μg/m3
24-hour TSP
Action Level
Limit Level
300
250
200
150
100
50
0
1-Sep-15
12-Sep-15
23-Sep-15
4-Oct-15
15-Oct-15
26-Oct-15
6-Nov-15
17-Nov-15
28-Nov-15
9-Dec-15
20-Dec-15
31-Dec-15
Date

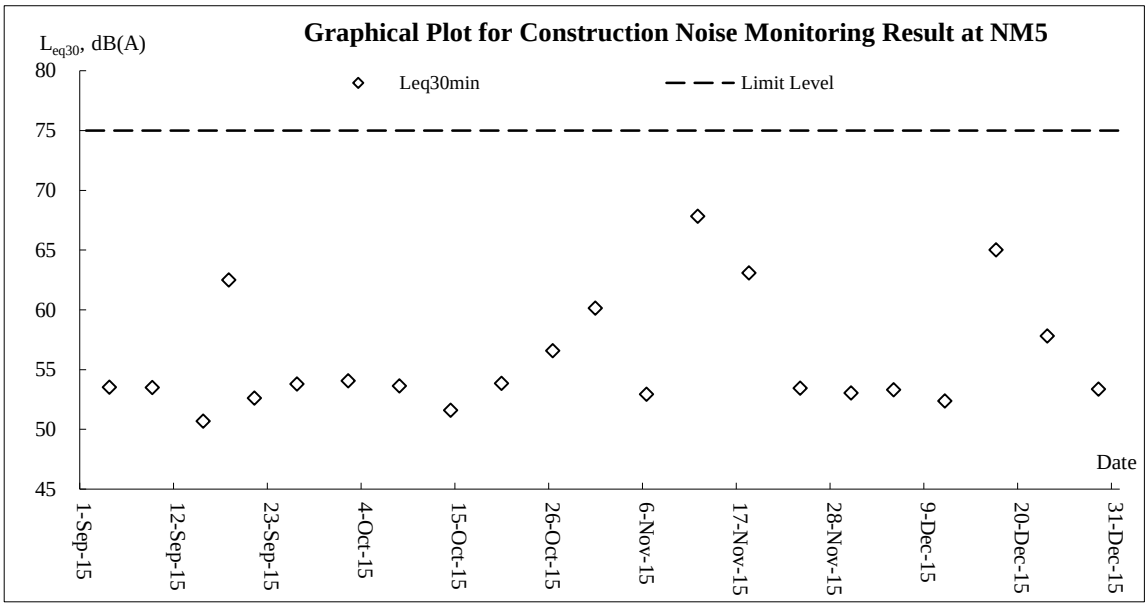
Noise

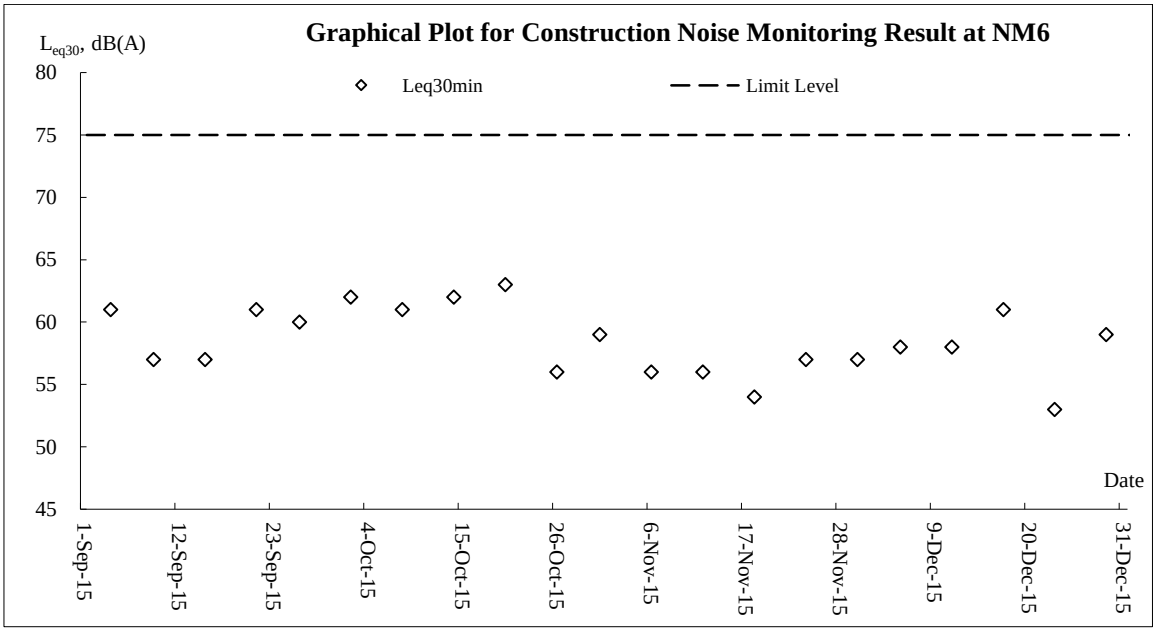

Graphical Plot for Construction Noise Monitoring Result at NM1
L_{eq30}, dB(A)
Leq30min
Limit Level
80
75
70
65
60
55
50
45
Date
1-Sep-15
12-Sep-15
23-Sep-15
4-Oct-15
15-Oct-15
26-Oct-15
6-Nov-15
17-Nov-15
28-Nov-15
9-Dec-15
20-Dec-15
31-Dec-15

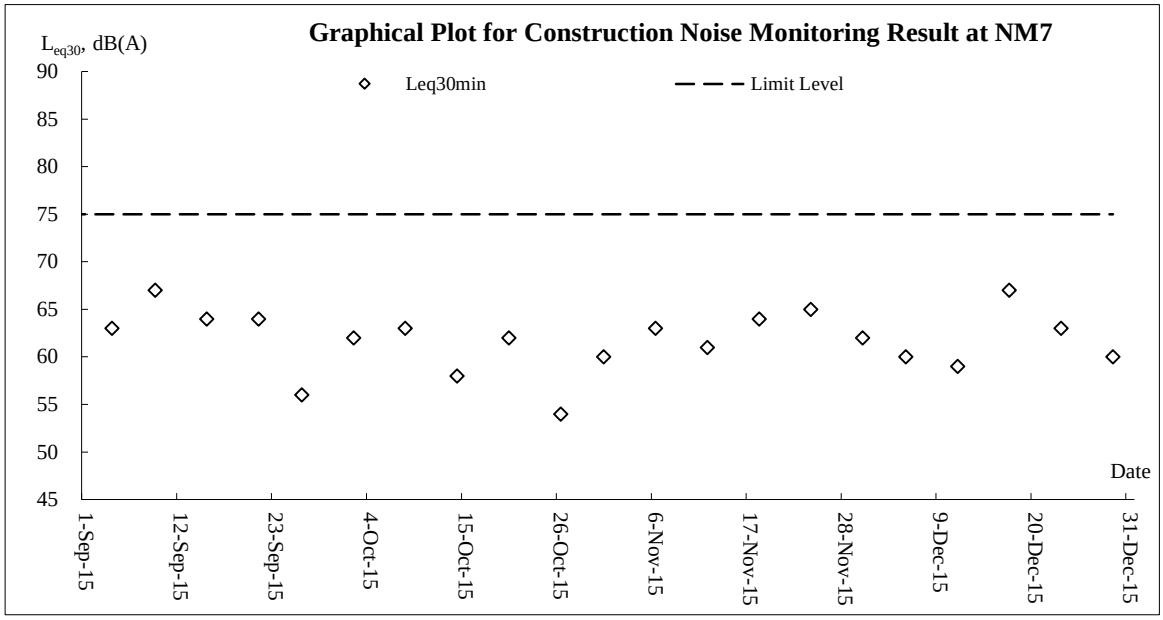

Graphical Plot for Construction Noise Monitoring Result at NM2
L_{eq30}, dB(A)
Leq30min
Limit Level
80
75
70
65
60
55
50
45
Date
1-Sep-15
12-Sep-15
23-Sep-15
4-Oct-15
15-Oct-15
26-Oct-15
6-Nov-15
17-Nov-15
28-Nov-15
9-Dec-15
20-Dec-15
31-Dec-15

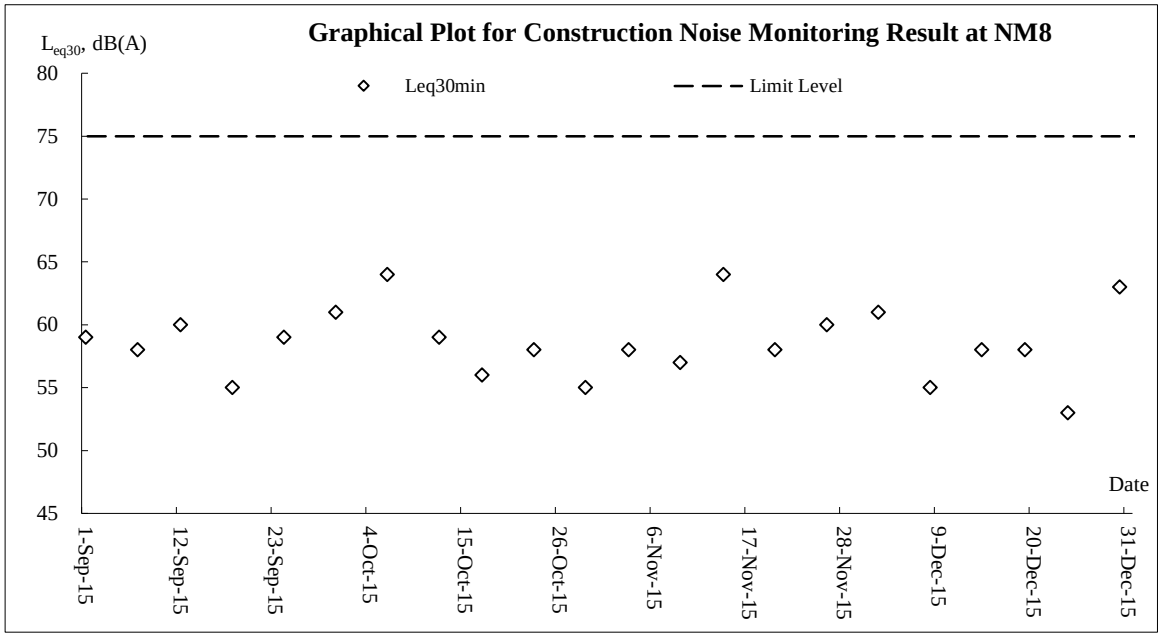

Graphical Plot for Construction Noise Monitoring Result at NM3
L_{eq30}, dB(A)
Leq30min
Limit Level
80
75
70
65
60
55
50
45
Date
26-Oct-15
1-Nov-15
7-Nov-15
13-Nov-15
19-Nov-15
25-Nov-15
1-Dec-15
7-Dec-15
13-Dec-15
19-Dec-15
25-Dec-15
31-Dec-15

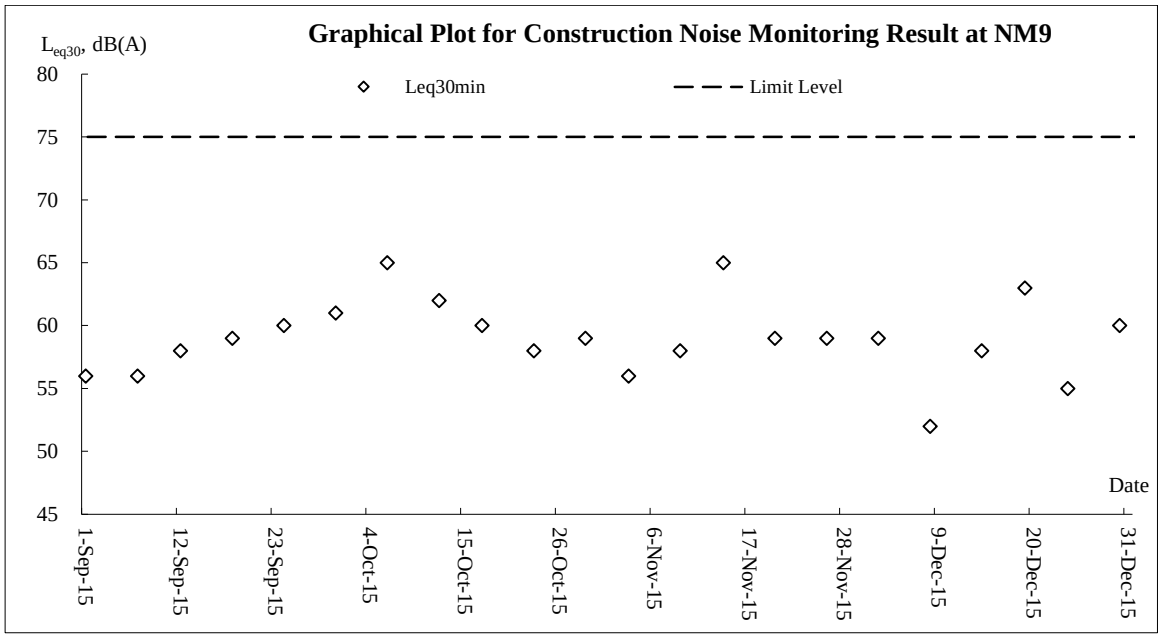

Graphical Plot for Construction Noise Monitoring Result at NM4
L_{eq30}, dB(A)
Leq30min
Limit Level
80
75
70
65
60
55
50
45
Date
26-Oct-15
1-Nov-15
7-Nov-15
13-Nov-15
19-Nov-15
25-Nov-15
1-Dec-15
7-Dec-15
13-Dec-15
19-Dec-15
25-Dec-15
31-Dec-15

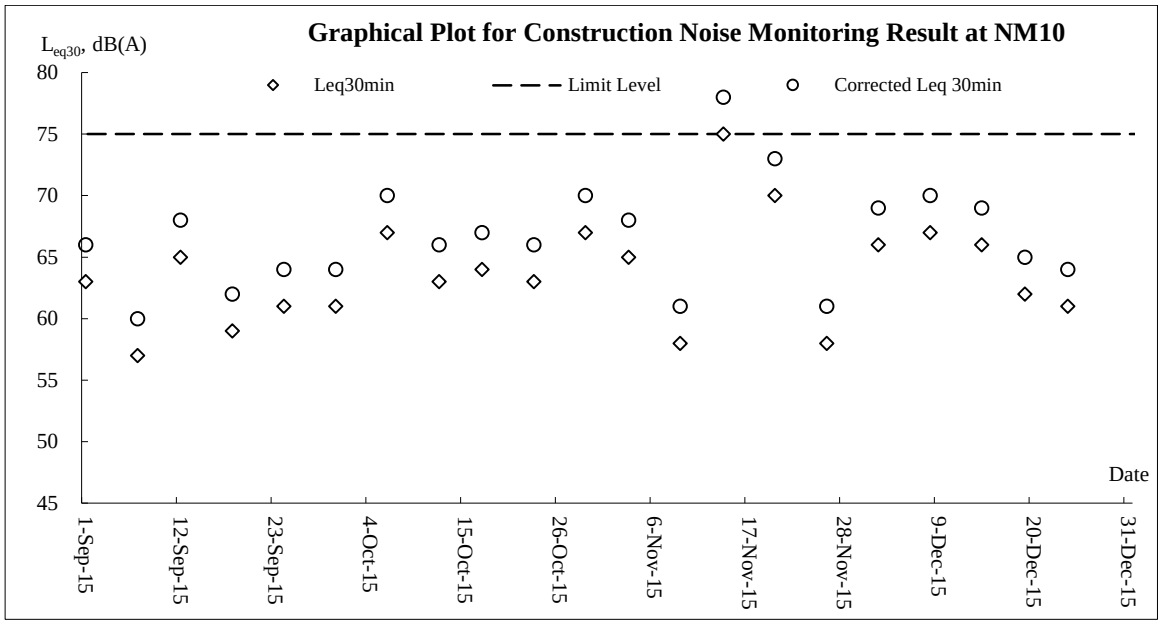

Graphical Plot for Construction Noise Monitoring Result at NM5
L_{eq30}, dB(A)
Leq30min
Limit Level
80
75
70
65
60
55
50
45
Date
1-Sep-15
12-Sep-15
23-Sep-15
4-Oct-15
15-Oct-15
26-Oct-15
6-Nov-15
17-Nov-15
28-Nov-15
9-Dec-15
20-Dec-15
31-Dec-15


Graphical Plot for Construction Noise Monitoring Result at NM6
L_{eq30}, dB(A)
Leq30min
Limit Level
80
75
70
65
60
55
50
45
Date
1-Sep-15
12-Sep-15
23-Sep-15
4-Oct-15
15-Oct-15
26-Oct-15
6-Nov-15
17-Nov-15
28-Nov-15
9-Dec-15
20-Dec-15
31-Dec-15

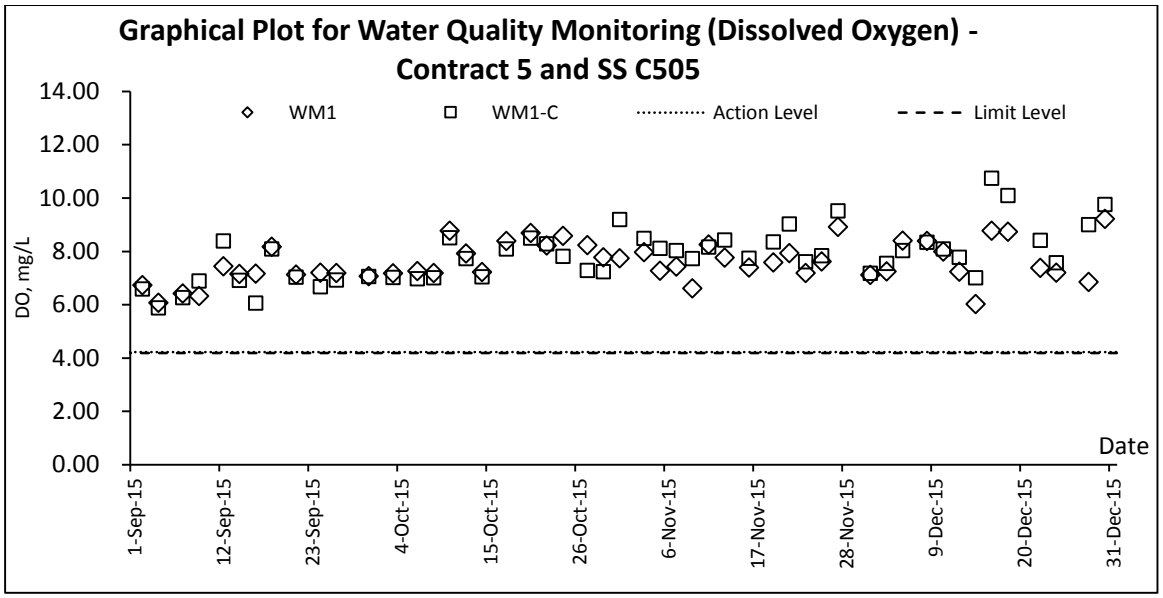

Graphical Plot for Construction Noise Monitoring Result at NM7
L_{eq30}, dB(A)
Leq30min
Limit Level
90
85
80
75
70
65
60
55
50
45
Date
1-Sep-15
12-Sep-15
23-Sep-15
4-Oct-15
15-Oct-15
26-Oct-15
6-Nov-15
17-Nov-15
28-Nov-15
9-Dec-15
20-Dec-15
31-Dec-15

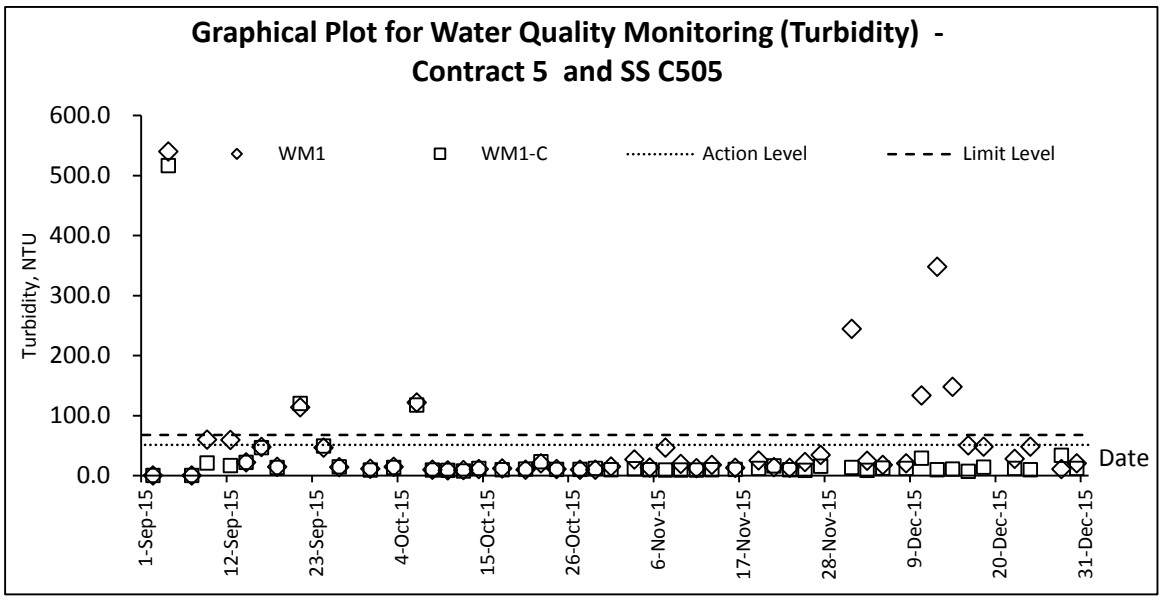

Graphical Plot for Construction Noise Monitoring Result at NM8
L_{eq30}, dB(A)
Leq30min
Limit Level
80
75
70
65
60
55
50
45
Date
1-Sep-15
12-Sep-15
23-Sep-15
4-Oct-15
15-Oct-15
26-Oct-15
6-Nov-15
17-Nov-15
28-Nov-15
9-Dec-15
20-Dec-15
31-Dec-15

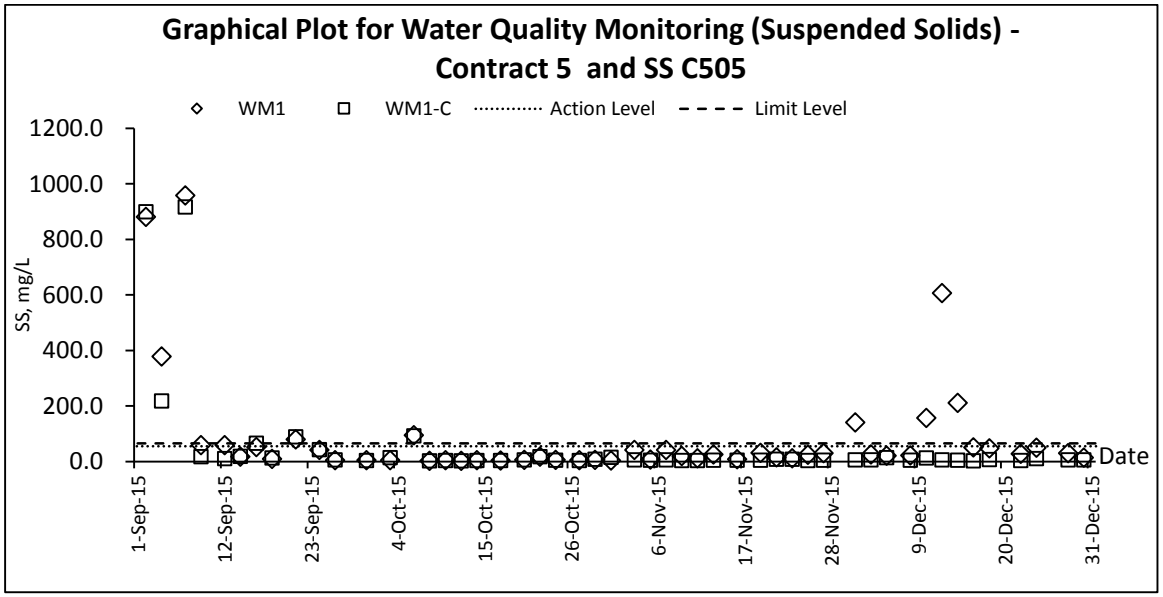

Graphical Plot for Construction Noise Monitoring Result at NM9
L_{eq30}, dB(A)
Leq30min
Limit Level
80
75
70
65
60
55
50
45
Date
1-Sep-15
12-Sep-15
23-Sep-15
4-Oct-15
15-Oct-15
26-Oct-15
6-Nov-15
17-Nov-15
28-Nov-15
9-Dec-15
20-Dec-15
31-Dec-15

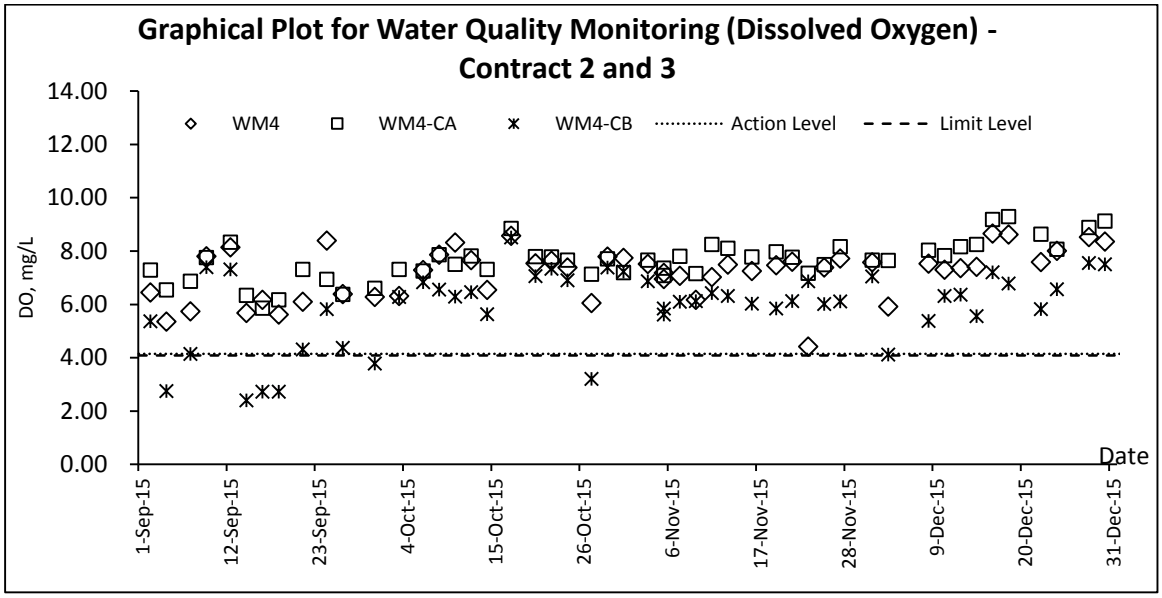

Graphical Plot for Construction Noise Monitoring Result at NM10
L_{eq30}, dB(A)
Leq30min
Limit Level
Corrected Leq 30min
80
75
70
65
60
55
50
45
Date
1-Sep-15
12-Sep-15
23-Sep-15
4-Oct-15
15-Oct-15
26-Oct-15
6-Nov-15
17-Nov-15
28-Nov-15
9-Dec-15
20-Dec-15
31-Dec-15

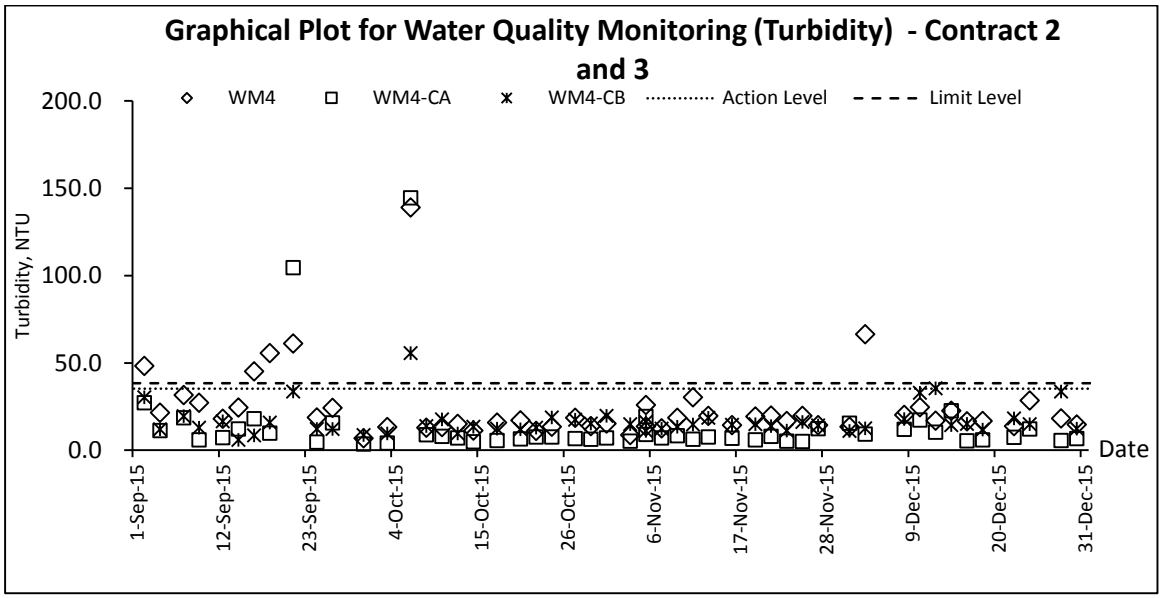
Water Quality

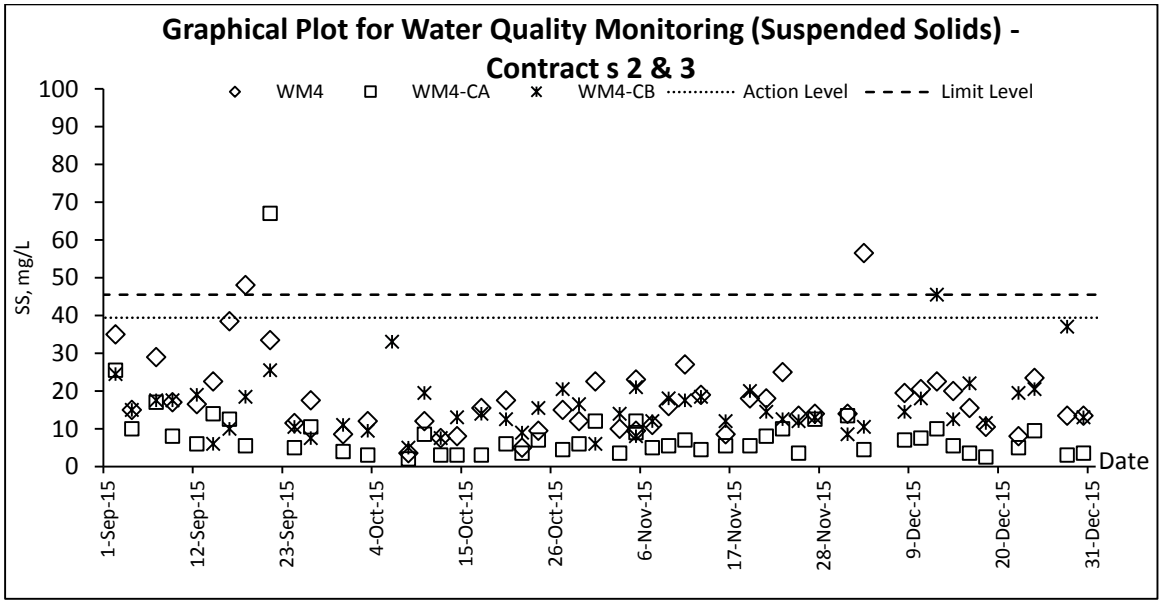


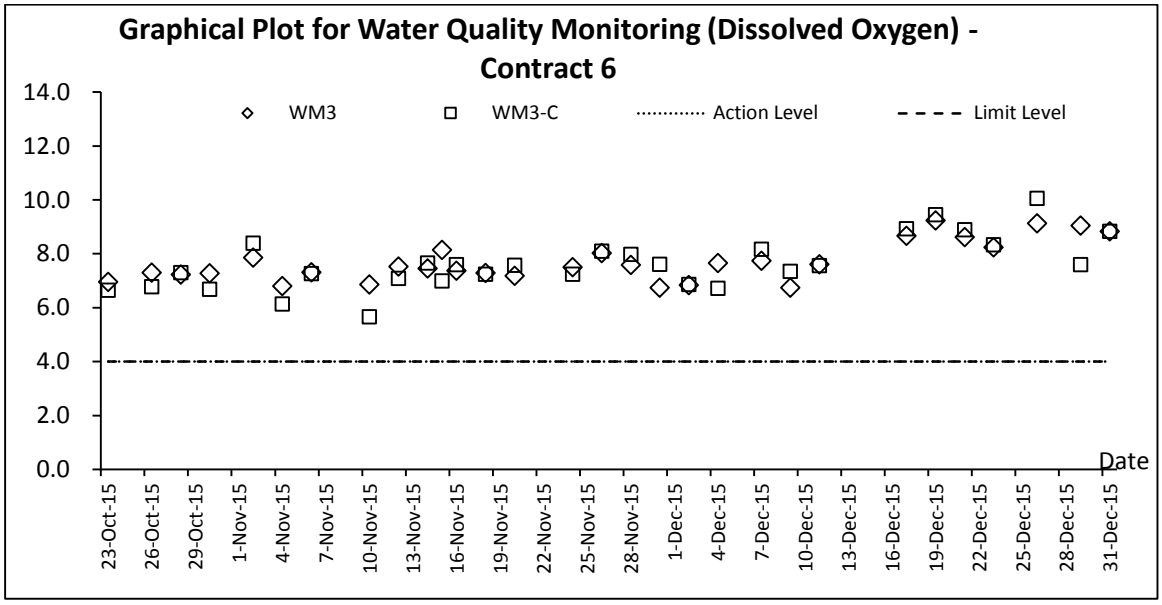


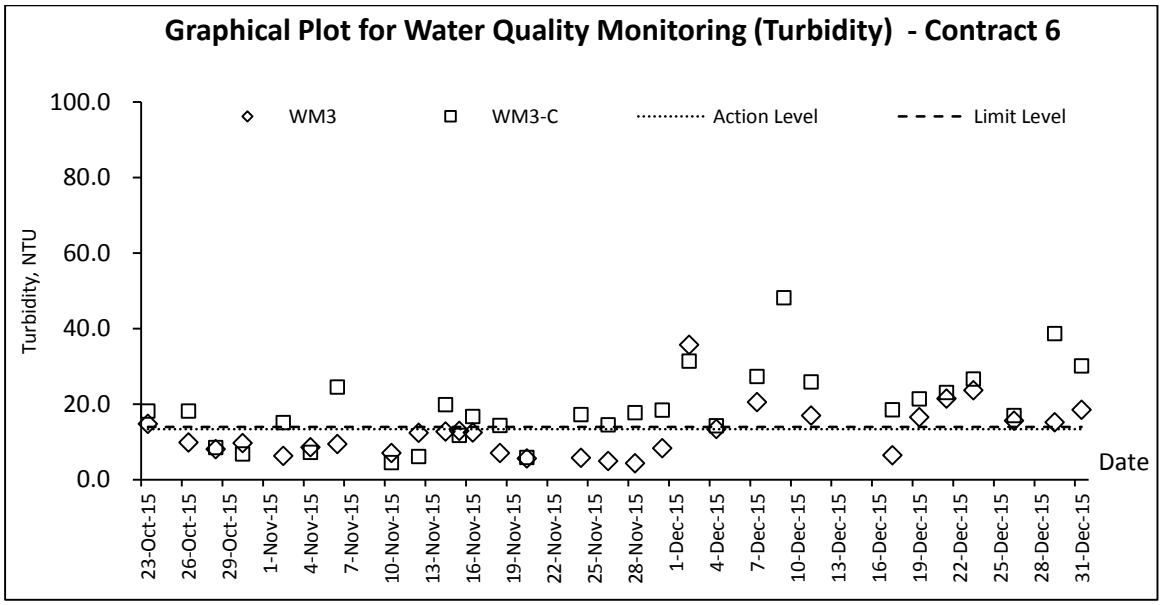


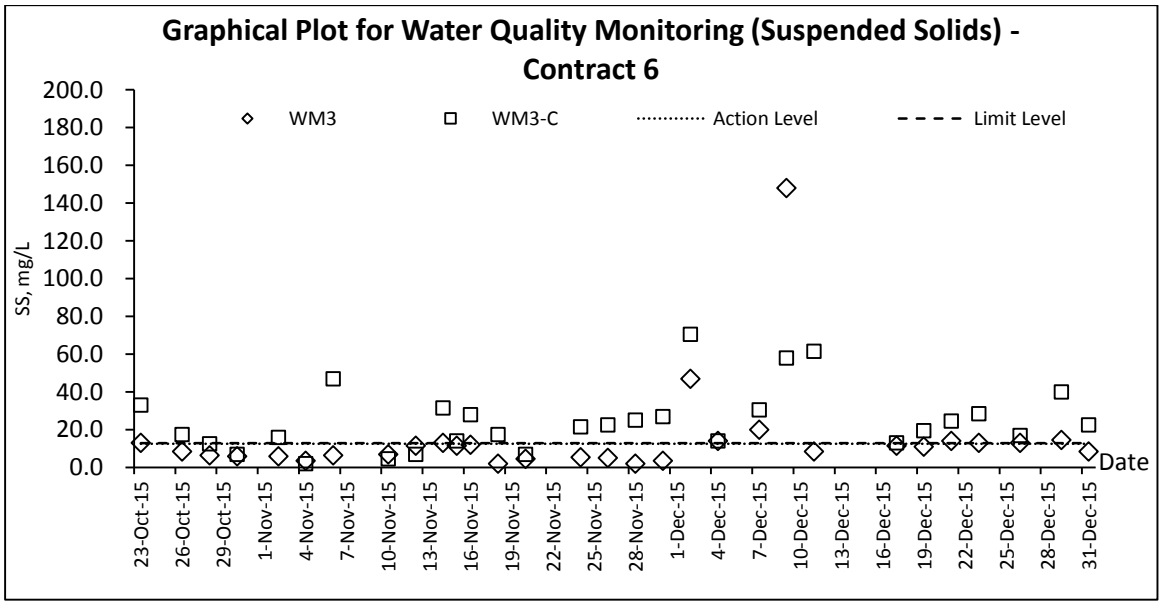

Graphical Plot for Water Quality Monitoring (Dissolved Oxygen) - Contract 2 and 3
WM4
WM4-CA
WM4-CB
Action Level
Limit Level
DO, mg/L
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Date
1-Sep-15
12-Sep-15
23-Sep-15
4-Oct-15
15-Oct-15
26-Oct-15
6-Nov-15
17-Nov-15
28-Nov-15
9-Dec-15
20-Dec-15
31-Dec-15

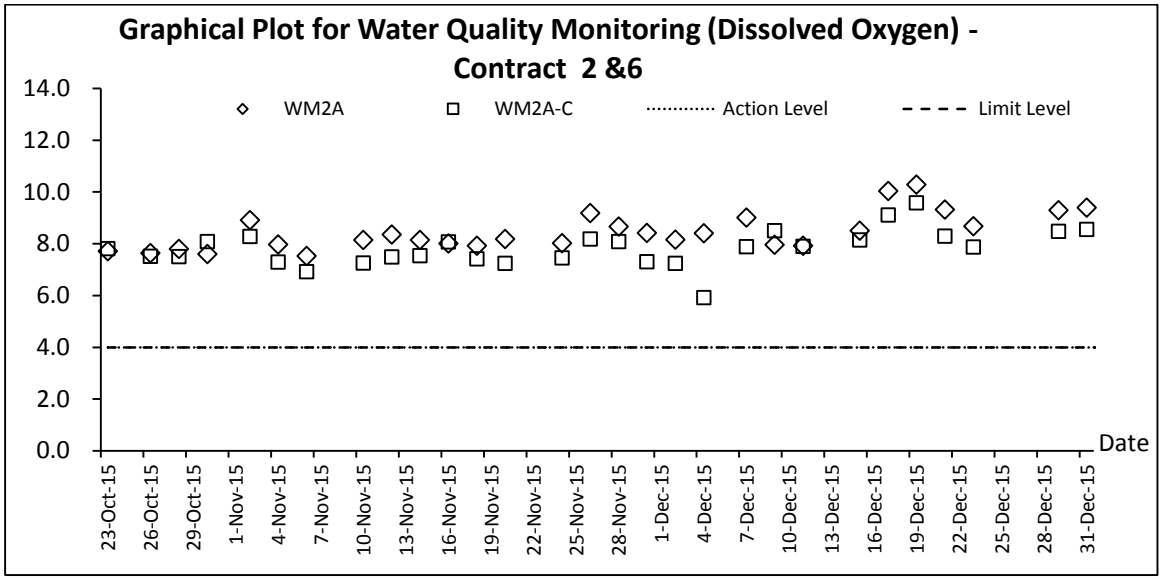

Graphical Plot for Water Quality Monitoring (Turbidity) - Contract 2 and 3
WM4
WM4-CA
WM4-CB
Action Level
Limit Level
Turbidity, NTU
200.0
150.0
100.0
50.0
0.0
Date
1-Sep-15
12-Sep-15
23-Sep-15
4-Oct-15
15-Oct-15
26-Oct-15
6-Nov-15
17-Nov-15
28-Nov-15
9-Dec-15
20-Dec-15
31-Dec-15

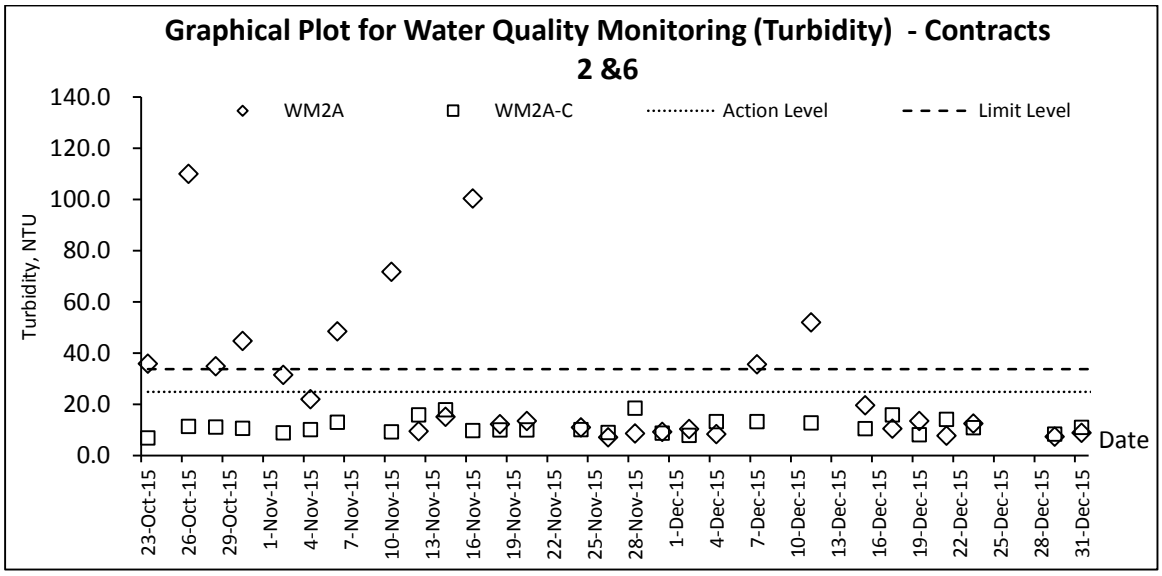

Graphical Plot for Water Quality Monitoring (Suspended Solids) - Contract s 2 & 3
WM4
WM4-CA
WM4-CB
Action Level
Limit Level
SS, mg/L
100
90
80
70
60
50
40
30
20
10
0
Date
1-Sep-15
12-Sep-15
23-Sep-15
4-Oct-15
15-Oct-15
26-Oct-15
6-Nov-15
17-Nov-15
28-Nov-15
9-Dec-15
20-Dec-15
31-Dec-15

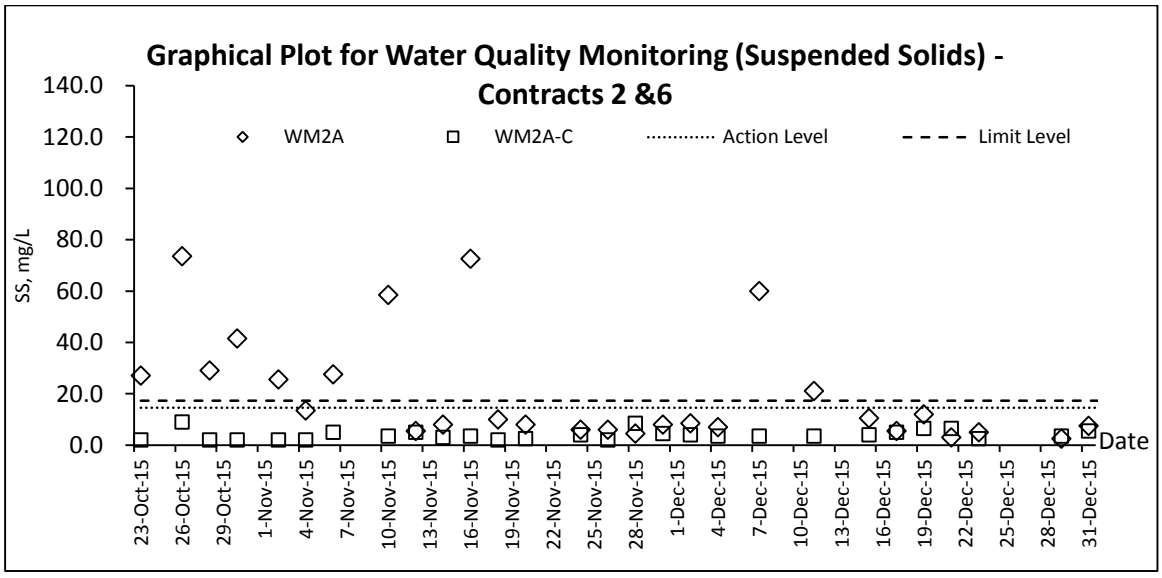

Graphical Plot for Water Quality Monitoring (Dissolved Oxygen) - Contract 6
WM3
WM3-C
Action Level
Limit Level
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
Date
23-Oct-15
26-Oct-15
29-Oct-15
1-Nov-15
4-Nov-15
7-Nov-15
10-Nov-15
13-Nov-15
16-Nov-15
19-Nov-15
22-Nov-15
25-Nov-15
28-Nov-15
1-Dec-15
4-Dec-15
7-Dec-15
10-Dec-15
13-Dec-15
16-Dec-15
19-Dec-15
22-Dec-15
25-Dec-15
28-Dec-15
31-Dec-15

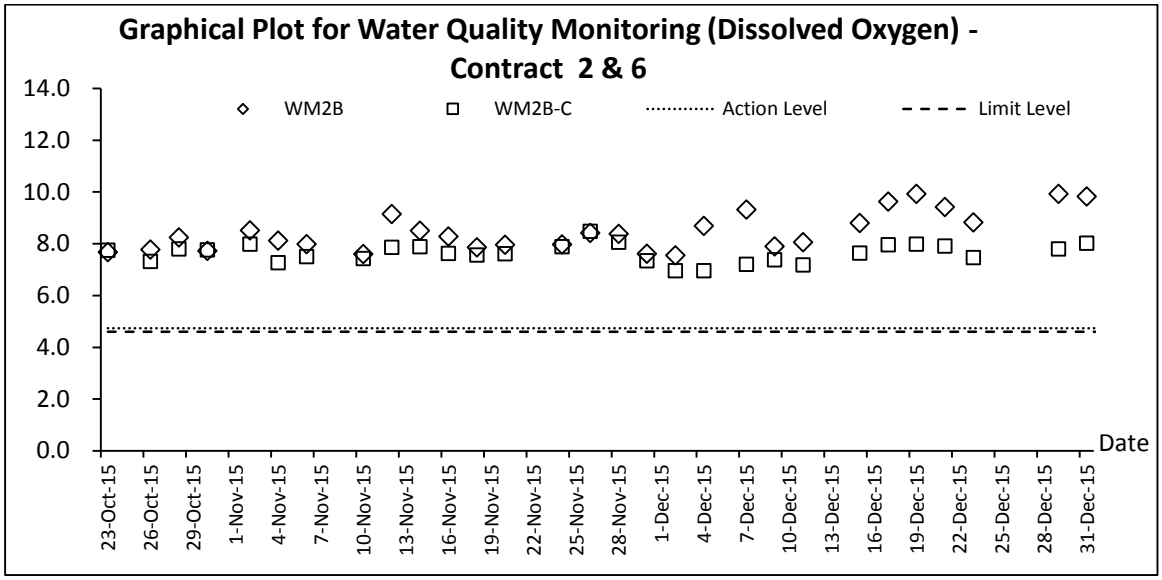

Graphical Plot for Water Quality Monitoring (Turbidity) - Contract 6
WM3
WM3-C
Action Level
Limit Level
Turbidity, NTU
100.0
80.0
60.0
40.0
20.0
0.0
Date
23-Oct-15
26-Oct-15
29-Oct-15
1-Nov-15
4-Nov-15
7-Nov-15
10-Nov-15
13-Nov-15
16-Nov-15
19-Nov-15
22-Nov-15
25-Nov-15
28-Nov-15
1-Dec-15
4-Dec-15
7-Dec-15
10-Dec-15
13-Dec-15
16-Dec-15
19-Dec-15
22-Dec-15
25-Dec-15
28-Dec-15
31-Dec-15

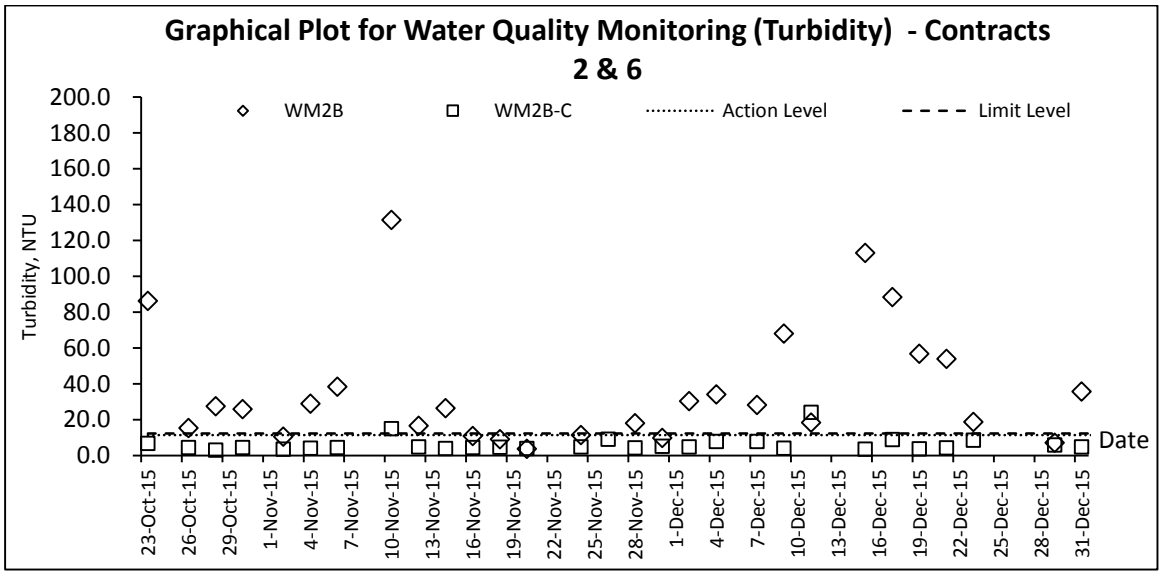

Graphical Plot for Water Quality Monitoring (Suspended Solids) - Contract 6
WM3
WM3-C
Action Level
Limit Level
SS, mg/L
200.0
180.0
160.0
140.0
120.0
100.0
80.0
60.0
40.0
20.0
0.0
Date
23-Oct-15
26-Oct-15
29-Oct-15
1-Nov-15
4-Nov-15
7-Nov-15
10-Nov-15
13-Nov-15
16-Nov-15
19-Nov-15
22-Nov-15
25-Nov-15
28-Nov-15
1-Dec-15
4-Dec-15
7-Dec-15
10-Dec-15
13-Dec-15
16-Dec-15
19-Dec-15
22-Dec-15
25-Dec-15
28-Dec-15
31-Dec-15

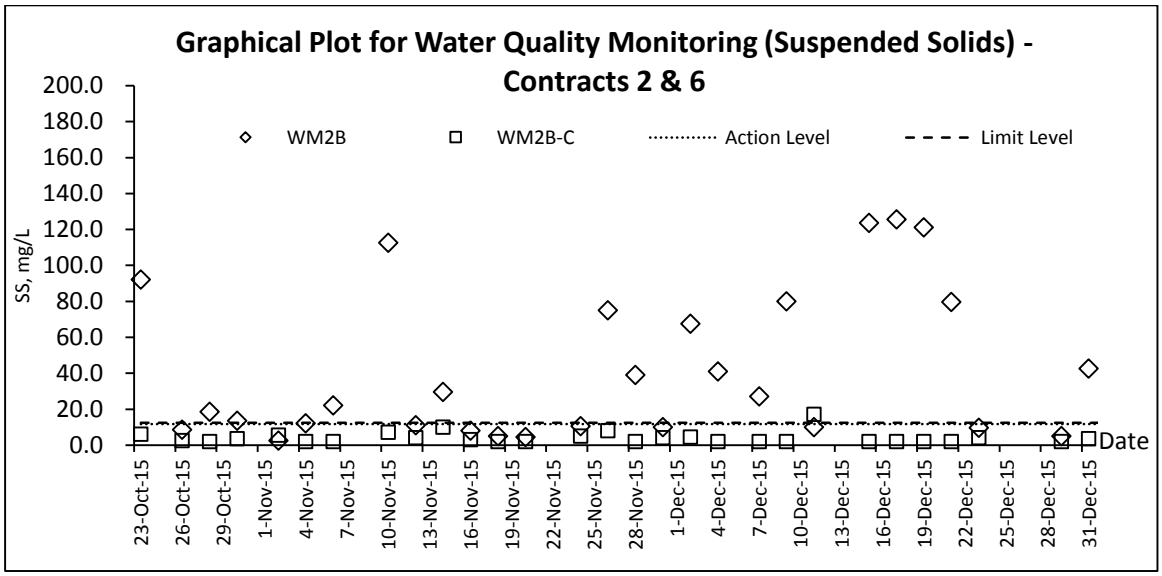

Graphical Plot for Water Quality Monitoring (Dissolved Oxygen) - Contract 2 &6
WM2A
WM2A-C
Action Level
Limit Level
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
Date
23-Oct-15
26-Oct-15
29-Oct-15
1-Nov-15
4-Nov-15
7-Nov-15
10-Nov-15
13-Nov-15
16-Nov-15
19-Nov-15
22-Nov-15
25-Nov-15
28-Nov-15
1-Dec-15
4-Dec-15
7-Dec-15
10-Dec-15
13-Dec-15
16-Dec-15
19-Dec-15
22-Dec-15
25-Dec-15
28-Dec-15
31-Dec-15


Graphical Plot for Water Quality Monitoring (Turbidity) - Contracts 2 &6
WM2A
WM2A-C
Action Level
Limit Level
Turbidity, NTU
140.0
120.0
100.0
80.0
60.0
40.0
20.0
0.0
Date
23-Oct-15
26-Oct-15
29-Oct-15
1-Nov-15
4-Nov-15
7-Nov-15
10-Nov-15
13-Nov-15
16-Nov-15
19-Nov-15
22-Nov-15
25-Nov-15
28-Nov-15
1-Dec-15
4-Dec-15
7-Dec-15
10-Dec-15
13-Dec-15
16-Dec-15
19-Dec-15
22-Dec-15
25-Dec-15
28-Dec-15
31-Dec-15


Graphical Plot for Water Quality Monitoring (Suspended Solids) - Contracts 2 &6
WM2A
WM2A-C
Action Level
Limit Level
SS, mg/L
140.0
120.0
100.0
80.0
60.0
40.0
20.0
0.0
Date
23-Oct-15
26-Oct-15
29-Oct-15
1-Nov-15
4-Nov-15
7-Nov-15
10-Nov-15
13-Nov-15
16-Nov-15
19-Nov-15
22-Nov-15
25-Nov-15
28-Nov-15
1-Dec-15
4-Dec-15
7-Dec-15
10-Dec-15
13-Dec-15
16-Dec-15
19-Dec-15
22-Dec-15
25-Dec-15
28-Dec-15
31-Dec-15


Graphical Plot for Water Quality Monitoring (Dissolved Oxygen) - Contract 2 & 6
WM2B
WM2B-C
Action Level
Limit Level
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
Date
23-Oct-15
26-Oct-15
29-Oct-15
1-Nov-15
4-Nov-15
7-Nov-15
10-Nov-15
13-Nov-15
16-Nov-15
19-Nov-15
22-Nov-15
25-Nov-15
28-Nov-15
1-Dec-15
4-Dec-15
7-Dec-15
10-Dec-15
13-Dec-15
16-Dec-15
19-Dec-15
22-Dec-15
25-Dec-15
28-Dec-15
31-Dec-15


Graphical Plot for Water Quality Monitoring (Turbidity) - Contracts 2 & 6
WM2B
WM2B-C
Action Level
Limit Level
Turbidity, NTU
200.0
180.0
160.0
140.0
120.0
100.0
80.0
60.0
40.0
20.0
0.0
Date
23-Oct-15
26-Oct-15
29-Oct-15
1-Nov-15
4-Nov-15
7-Nov-15
10-Nov-15
13-Nov-15
16-Nov-15
19-Nov-15
22-Nov-15
25-Nov-15
28-Nov-15
1-Dec-15
4-Dec-15
7-Dec-15
10-Dec-15
13-Dec-15
16-Dec-15
19-Dec-15
22-Dec-15
25-Dec-15
28-Dec-15
31-Dec-15


Graphical Plot for Water Quality Monitoring (Suspended Solids) - Contracts 2 & 6
WM2B
WM2B-C
Action Level
Limit Level
SS, mg/L
200.0
180.0
160.0
140.0
120.0
100.0
80.0
60.0
40.0
20.0
0.0
Date
23-Oct-15
26-Oct-15
29-Oct-15
1-Nov-15
4-Nov-15
7-Nov-15
10-Nov-15
13-Nov-15
16-Nov-15
19-Nov-15
22-Nov-15
25-Nov-15
28-Nov-15
1-Dec-15
4-Dec-15
7-Dec-15
10-Dec-15
13-Dec-15
16-Dec-15
19-Dec-15
22-Dec-15
25-Dec-15
28-Dec-15
31-Dec-15

Appendix K

Meteorological Data

Date		Weather	Total Rainfall (mm)	Ta Kwu Ling Station			
				Mean Air Temp. (°C)	Wind Speed (km/h)	Mean Relative Humidity (%)	Wind Direction
1-Dec-15	Tue	Mainly cloudy. Bright periods in the afternoon. Moderate to fresh northeasterly winds,.	0	23.1	6	76.5	E/SE
2-Dec-15	Wed	Mainly cloudy. Bright periods in the afternoon. Moderate to fresh northeasterly winds,.	Trace	23.9	6.5	76.7	E
3-Dec-15	Thu	Mainly cloudy. Bright periods in the afternoon. Moderate to fresh northeasterly winds,.	Trace	18.2	7.3	78	N
4-Dec-15	Fri	Mainly cloudy. Bright periods in the afternoon. Moderate to fresh northeasterly winds,.	Trace	17.8	8	77.5	N
5-Dec-15	Sat	Mainly cloudy. Bright periods in the afternoon. Moderate to fresh northeasterly winds,.	15.7	17.1	10	70	N
6-Dec-15	Sun	Cloudy with a few rain patches. Moderate northeasterly winds, fresh at times	1	15.1	13	66	N
7-Dec-15	Mon	Cloudy with a few rain patches. Moderate northeasterly winds, fresh at times	0	15.7	10.8	67.2	N/NW
8-Dec-15	Tue	Cloudy with a few rain patches. Moderate northeasterly winds, fresh at times	0.7	15.8	4.5	80	N
9-Dec-15	Wed	Mainly fine apart from relatively low visibility in some areas at first. Moderate north to northeasterly winds	44.6	15.8	5.5	95	N/NW
10-Dec-15	Thu	It will be fine. Very dry in the afternoon. Moderate northeasterly winds, fresh at times offshore.	Trace	18.6	4.5	87	N/NW
11-Dec-15	Fri	Cloudy with a few rain patches. Moderate northeasterly winds, fresh at times	0	18.7	5.3	78	N/NW
12-Dec-15	Sat	Cloudy with a few rain patches. Moderate northeasterly winds, fresh at times	0	19.1	7	77	N/NW
13-Dec-15	Sun	It will be fine. Very dry in the afternoon. Moderate northeasterly winds, fresh at times offshore.	Trace	20.8	5.5	80.7	E/SE
14-Dec-15	Mon	Cloudy with a few rain patches. Moderate northeasterly winds, fresh at times	Trace	18.9	6	81.7	N/NW
15-Dec-15	Tue	It will be fine. Very dry in the afternoon. Moderate northeasterly winds, fresh at times offshore.	Trace	16.8	9.4	65	N/NW
16-Dec-15	Wed	It will be fine. Very dry in the afternoon. Moderate northeasterly winds, fresh at times offshore.	0	14.6	15	45.5	N/NE
17-Dec-15	Thu	It will be fine. Very dry in the afternoon. Moderate northeasterly winds, fresh at times offshore.	0	10.6	16.6	29	N/NE
18-Dec-15	Fri	It will be fine. Very dry in the afternoon. Moderate northeasterly winds, fresh at times offshore.	0	10.8	6.8	Maintenance	N/NW
19-Dec-15	Sat	It will be fine. Very dry in the afternoon. Moderate northeasterly winds, fresh at times offshore.	0	13.5	5	81	N/NW
20-Dec-15	Sun	It will be fine. Very dry in the afternoon. Moderate northeasterly winds, fresh at times offshore.	0.7	15	2.5	85	N/NW
21-Dec-15	Mon	Mainly cloudy. One or two light rain patches with relatively low visibility in some areas at first. Moderate easterly winds, fresh overnight.	Trace	19.1	6	82	E/NE
22-Dec-15	Tue	Mainly cloudy. Moderate northeasterly winds, fresh at times later.	0.6	24.7	8.2	90.1	E/SE
23-Dec-15	Wed	Mainly cloudy with coastal fog. One or two light rain patches in the morning and at night.	Trace	21.8	6.5	84.5	E
24-Dec-15	Thu	Mainly cloudy. Moderate northeasterly winds, fresh at times later.	Trace	23.6	8.2	85	E/SE
25-Dec-15	Fri	Mainly cloudy. Moderate northeasterly winds, fresh at times later.	0.2	17.6	12.9	75	N
26-Dec-15	Sat	Mainly cloudy. Moderate northeasterly winds, fresh at times later.	0	17	11.2	72.5	N.NW
27-Dec-15	Sun	Mainly cloudy. Moderate northeasterly winds, fresh at times later.	0.4	15.9	4.5	86.5	N.NW
28-Dec-15	Mon	Mainly cloudy. Moderate northeasterly winds, fresh at times later.	Trace	17.3	8.2	69.7	N.NW
29-Dec-15	Tue	Sunny periods. Cloudy tonight. Moderate to fresh east to northeasterly winds.	Trace	16.4	5.3	71	E
30-Dec-15	Wed	Mainly fine. Dry in the afternoon. Cloudy periods tonight. Moderate northeasterly winds, fresh tonight.	0.4	16.4	6	78.5	N
31-Dec-15	Thu	Mainly fine. Dry in the afternoon. Cloudy periods tonight. Moderate northeasterly winds, fresh tonight.	Trace	17	6.5	72.5	N/NW

Appendix L

Waste Flow Table

Name of Department : CEDD **Contract No./ Work Order No. :** CV/2012/08

Appendix I - Monthly Summary Waste Flow Table for 2015

(All quantities shall be rounded off to 3 decimal places)

Month	Actual Quantities of Inert C&D Materials Generated / Imported (in '000 m3)						Actual Quantities of Other C&D Materials / Wastes Generated				
	Total Quantities Generated [a+b+c+d]	Broken Concrete (including rock for recycling into aggregates) (a)	Reused in the Contract (b)	Reused in Other Projects (c)	Disposed as Public Fill (d)	Imported C&D Material	Metal (in '000kg)	Paper/ Cardboard Packaging (in '000kg)	Plastic (bottles/containers, plastic sheets/ foams from package material) (in '000kg)	Chemical Waste (in '000kg)	Others (e.g. General Refuse etc.) (in '000m3)
January	66.2666	0.0000	0.0670	65.6529	0.5467	0.1150	0.0000	0.2500	0.0000	0.0000	0.0617
February	57.9980	0.0000	0.0000	57.3858	0.6121	0.3505	3.3200	0.3900	0.0000	0.5280	0.0908
March	66.0198	0.0000	0.3614	65.3359	0.3225	0.0729	0.0000	0.2920	0.0000	0.7040	0.1293
April	49.2562	0.0000	0.2770	48.7725	0.2066	0.1928	0.0000	0.2300	0.0000	0.0000	0.2423
May	41.7957	0.0000	8.7663	32.6095	0.4199	0.8683	0.0000	0.1300	0.0000	2.6400	0.0511
June	32.4389	0.0000	5.2132	26.7733	0.4524	0.9260	0.0000	0.5400	0.0000	0.5280	0.1703
Half-year total	313.7751	0.0000	14.6850	296.5299	2.5602	2.5255	3.3200	1.8320	0.0000	4.4000	0.7454
July	28.0854	0.0000	0.5171	26.7761	0.7922	1.0930	0.0000	0.6600	0.0000	0.8800	0.0496
August	47.6646	0.0000	0.4526	46.9470	0.2650	0.3577	0.0000	0.4500	0.6000	1.9360	0.1021
September	39.4931	0.0000	0.1339	38.4616	0.8975	0.3062	0.0000	0.0000	0.0000	1.0560	0.0611
October	45.0442	0.0000	1.6666	43.0977	0.2800	0.0680	5.2000	0.5800	0.9000	2.9920	0.0716
November	46.3947	0.0000	2.5152	42.1530	1.7265	0.0444	0.0000	0.0000	0.0000	3.6960	0.0953
December	50.4888	0.0000	0.8455	49.2509	0.3925	0.1544	5.6100	0.4000	0.0000	0.8800	0.0446
Yearly Total	570.9459	0.0000	20.8159	543.2162	6.9138	4.5492	14.1300	3.9220	1.5000	15.8400	1.1696

(All quantities shall be rounded off to 3 decimal places)

Year	Actual Quantities of Inert C&D Materials Generated / Imported (in '000 m3)						Actual Quantities of Other C&D Materials / Wastes Generated				
	Total Quantities Generated [a+b+c+d]	Broken Concrete (including rock for recycling into aggregates) (a)	Reused in the Contract (b)	Reused in Other Projects (c)	Disposed as Public Fill (d)	Imported C&D Material	Metal (in '000kg)	Paper/ Cardboard Packaging (in '000kg)	Plastic (bottles/containers, plastic sheets/ foams from package material) (in '000kg)	Chemical Waste (in '000kg)	Others (e.g. General Refuse etc.) (in '000m3)
2013	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2014	425.4406	0.0000	2.7362	376.3945	46.3099	5.6245	3.2100	0.4390	0.0070	10.8800	2.2609
2015	570.9459	0.0000	20.8159	543.2162	6.9138	4.5492	14.1300	3.9220	1.5000	15.8400	1.1696
2016											
2017											
2018											
Total	996.3865	0.0000	23.5521	919.6108	53.2237	10.1737	17.3400	4.3610	1.5070	26.7200	3.4305

Remark:

1) Density of C&D material to be 2.2 metric ton/m3
2) Density of General Refuse to be 1.6 metric ton/m3
3) Density of Spent Oil to be 0.88 metric ton/m3

Name of Department: CEDD

Contract No.: CV/2012/09

Monthly Summary Waste Flow Table for 2015 (year)

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	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics	Chemical Waste	Others, e.g. general refuse
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in m^3)	(in '000m^3)
Jan	3.864	0.105	0.648	0.000	3.216	0.118	0.000	0.000	0.000	0.040	0.080
Feb	2.429	0.049	1.518	0.000	0.911	0.100	0.000	0.000	0.003	0.900	0.070
Mar	3.713	0.029	0.270	0.000	3.443	0.100	0.000	0.000	0.006	0.000	0.080
Apr	3.597	0.115	2.308	0.000	1.289	0.090	0.003	0.000	0.000	0.000	0.065
May	1.357	0.197	0.108	0.000	1.249	0.100	0.000	0.000	0.012	0.000	0.065
Jun	2.515	0.053	0.840	0.000	1.675	0.125	0.000	0.000	0.030	0.800	0.060
Sub-total	17.475	0.547	5.692	0.000	11.783	0.633	0.003	0.000	0.051	1.740	0.420
Jul	1.177	0.030	0.351	0.000	0.826	1.564	0.000	0.000	0.000	0.000	0.065
Aug	1.966	0.164	0.294	0.000	1.672	0.956	0.002	0.000	0.001	0.000	0.130
Sep	2.092	0.027	0.264	0.000	1.828	1.141	0.000	0.000	0.001	0.000	0.115
Oct	2.462	0.381	1.500	0.000	0.962	0.226	0.000	0.000	0.001	0.000	0.125
Nov	2.990	0.709	1.200	0.000	1.790	0.066	0.001	0.000	0.000	0.000	0.130
Dec	3.158	0.174	1.600	0.000	1.558	0.259	0.000	0.000	0.001	0.600	0.145
Total	31.320	2.033	10.901	0.000	20.419	4.846	0.006	0.000	0.055	2.340	1.130

Note:

1. Assume the density of soil fill is 2 ton/m^3.
2. Assume the density of rock and broken concrete is 2.5 ton/m^3.
3. Assume each truck of C&D wastes is 5m^3.
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^3.

Name of Department: CEDD

Monthly Summary Waste Flow Table for 2015

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	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics	Chemical Waste	Others, e.g. general refuse
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m^3)
JAN	0	0	0	0	0	33.3285	4.16	0.24	0	0	0.42
FEB	0	0	0	0	0	11.82	0.99	0	0	0	0.18
MAR	0	0	0	0	0	8.592	0	0	0	0	0.375
APRIL	0	0	0	0	0	12.81	0	0	0	0	0.04
MAY	0	0	0	0	0	**16.609**	**0**	**0.154**	**0**	**0**	**0**
JUN	0	0	0	0	0	13.676	0	0	0	0	0.015
Sub Total	0	0	0	0	0	96.8355	5.15	0.394	0	0	1.03
JUL	0	0	0	0	0	10.285	0	0	0	0	0.02
AUG	0	0	0	0	0	9.129	0	0	0	0	0.43
SEP	0	0	0	0	0	2.457	0	0	0	0	0.005
OCT	0	0	0	0	0	16.218	0	0.099	0	0	0.145
NOV	0	0	0	0	0	5.823	0	**0**	0	0	0.030
DEC	**0**	**0**	**0**	**0**	**0**	**0.283**	**0**	**0**	**0**	**0**	**0.07**
Total	0	0	0	0	0	141.03	5.15	0.493	0	0	1.73

Notes:

Name of Department: CEDD

Forecast of Total Quantities of C&D Materials to be Generated from the Contract (see Note 4)										
Total Quantity Generated	Hard Rocks and Large Broken Concrete	Reused in the Contract	Reused in Other Projects	Disposed as Public Fill	Imported Fill	Metal	Paper / cardboard packaging	Plastics (see Note 3)	Chemical Waste	Others, e.g. general refuse
(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m^3)
0	0	0	0	0	350	30	4	2	1	4

Notes:

(1) The performance targets are given in PS clause 6(14) above.

(2) The waste flow table shall also include C&D materials that are specified in the Contractor to be imported for use at the Site.

(3) Plastic refer to plastic bottles/containers, plastic sheets/foam from packaging material.

(4) The Contractor shall also submit the latest forecast of the total amount of C&D materials expected to be generated from the Works, together with a breakdown of the nature

- Hard Rocks and Large Broken Concrete = Cannot be defined at this stage
- Imported Fill = Estimated by the Contractor = 1 loading = 8m 3
- Metal = Estimated by the Contractor
- Paper/cardboard packaging = Estimated by the Contractor
- Plastics = Estimated by the Contractor
- Chemical Waste = Estimated by the Contractor (Spent lubricating oil, assume density 0.9kg/L)
- Other, e.g. general refuse = Estimated by the Contractor

Monthly Summary Waste Flow Table for 2015 (year)

Name of Person completing the record: KM LUI (EO)

Project : Liangtang / Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works – Contract 6 Contract No.: CV/2013/08

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	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 3)	Chemical Waste	Others, e.g. general refuse
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000 m^3)
Jan											
Feb											
Mar											
Apr											
May											
Jun	0	0	0	0	0	0	0	0	0	0	0
Sub-total	0	0	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0	0	0
Aug	27.831	0	5.11	0.516	22.205	0	0	0	0	0	1.783
Sep	35.826	0	1.517	1.629	32.680	0	0	0	0	0	0.434
Oct	37.112	0	0.113	5.356	31.643	0	0	0.045	0	14.08	0.185
Nov	16.853	0	0.717	2.456	13.680	4.720	0	0.102	0	18.20	0.594
Dec	51.601	0	11.077	6.827	33.697	2.529	0	0.147	0	0	0.08
Total	169.223	0	18.534	16.784	133.905	7.249	0	0.294	0	32.28	3.076

Notes: (1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.

(2) Plastics refer to plastic bottles/containers, plastic sheets/ foam from packaging materials.

(3) Broken concrete for recycling into aggregates.

Architectural Services Department	**Form No. D/OI.03/09.002**

Contract No. / Works Order No.: - SSC505

Monthly Summary Waste Flow Table for 2015 [year] [to be submitted not later than the 15th day of each month following reporting month]

(All quantities shall be rounded off to 3 decimal places.)

Month	Actual Quantities of Inert Construction Waste Generated Monthly				
	(a)=(b)+(c)+(d)+(e) Total Quantity Generated	(b) Broken Concrete (see Note 4)	(c) Reused in the Contract	(d) Reused in other Projects	(e) Disposed of as Public Fill
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)
Jan	-	-	-	-	-
Feb	-	-	-	-	-
Mar	-	-	-	-	-
Apr	-	-	-	-	-
May	-	-	-	-	-
Jun	-	-	-	-	-
Sub-total	-	-	-	-	-
Jul	0	0	0	0	0
Aug	0	0	0	0	0
Sep	0.094	0	0.094	0	0
Oct	0.382	0	0.382	0	0
Nov	0.271	0	0.128	0	0.143
Dec	0.663	0	0	0	0.663
Total	1.410	0	0.604	0	0.806

Month	Actual Quantities of Non-inert Construction Waste Generated Monthly												
	Timber		Metals		Paper/ cardboard packaging		Plastics (see Note 3)		Chemical Waste		Other Recyclable Materials _____ (pls. specify)		General Refuse disposed of at Landfill
	(in '000kg)		(in '000kg)		(in '000kg)		(in '000kg)		(in '000kg)		(in '000kg)		(in '000m^3)
	generated	recycled	generated	recycled	generated	recycled	generated	recycled	generated	recycled	generated	recycled	generated
Jan	-	-	-	-	-	-	-	-	-	-	-	-	-
Feb	-	-	-	-	-	-	-	-	-	-	-	-	-
Mar	-	-	-	-	-	-	-	-	-	-	-	-	-
Apr	-	-	-	-	-	-	-	-	-	-	-	-	-
May	-	-	-	-	-	-	-	-	-	-	-	-	-
Jun	-	-	-	-	-	-	-	-	-	-	-	-	-
Sub-total	-	-	-	-	-	-	-	-	-	-	-	-	-
Jul	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.020
Oct	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.046
Nov	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.60	0.00	0.00	0.00	0.052
Dec	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.111
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.60	0.00	0.00	0.00	0.229

Description of mode and details of recycling if any for the month e.g. XX kg of used timber was sent to YY site for transformation into fertilizers					
0	0	0	0	0	0

Notes: (1) The performance targets are given in the Particular Specification on Environmental Management Plan.
(2) The waste flow table shall also include construction waste that are specified in the Contract to be imported for use at the site.
(3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.
(4) Broken concrete for recycling into aggregates.
(5) If necessary, use the conversion factor: 1 full load of dumping truck being equivalent to 6.5 m^3 by volume.

Appendix M

Implementation Schedule for Environmental Mitigation Measures

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
Air Quality Impact (Construction)							
3.6.1.1	2.1	**General Dust Control Measures** The following dust suppression measures should be implemented: ■ Frequent water spraying for active construction areas (4 times per day for active areas in Po Kak Tsai and 8 times per day for all other active areas), including areas with heavy construction and slope cutting activities ■ 80% of stockpile areas should be covered by impervious sheets ■ Speed of trucks within the site should be controlled to about 10 km/hr ■ All haul roads within the site should be paved to avoid dust emission due to vehicular movement	To minimize adverse dust emission generated from various construction activities of the works sites	Contractor	Construction Works Sites	During Construction	EIA Recommendation and Air Pollution Control (Construction Dust) Regulation
3.6.1.2	2.1	**Best Practice for Dust Control** The relevant best practices for dust control as stipulated in the Air Pollution Control (Construction Dust) Regulation should be adopted to further reduce the construction dust impacts of the Project. These best practices include: *Good site management* ■ The Contractor should maintain high standard of housekeeping to prevent emission of fugitive dust. ■ Loading, unloading, handling and storage of raw materials, wastes or by-products should be carried out in a manner so as to minimize the release of visible dust emission. ■ Any piles of materials accumulated on or around the work areas should be cleaned up regularly. ■ Cleaning, repair and maintenance of all plant facilities within the work areas should be carried out in a manner minimizing generation of fugitive dust emissions. ■ The material should be handled properly to prevent fugitive dust emission before cleaning. *Disturbed Parts of the Roads* ■ Each and every main temporary access should be paved with	To minimize adverse dust emission generated from various construction activities of the works sites	Contractor	Construction Works Sites	During Construction	EIA Recommendation and Air Pollution Control (Construction Dust) Regulation

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
		concrete, bituminous hardcore materials or metal plates and kept clear of dusty materials; or ■ Unpaved parts of the road should be sprayed with water or a dust suppression chemical so as to keep the entire road surface wet. *Exposed Earth* ■ Exposed earth should be properly treated by compaction, hydroseeding, vegetation planting or seating with latex, vinyl, bitumen within six months after the last construction activity on the site or part of the site where the exposed earth lies. *Loading, Unloading or Transfer of Dusty Materials* ■ All dusty materials should be sprayed with water immediately prior to any loading or transfer operation so as to keep the dusty material wet. *Debris Handling* ■ Any debris should be covered entirely by impervious sheeting or stored in a debris collection area sheltered on the top and the three sides. ■ Before debris is dumped into a chute, water should be sprayed so that it remains wet when it is dumped. *Transport of Dusty Materials* ■ Vehicle used for transporting dusty materials/spoils should be covered with tarpaulin or similar material. The cover should extend over the edges of the sides and tailboards. *Wheel washing* ■ Vehicle wheel washing facilities should be provided at each construction site exit. Immediately before leaving the construction site, every vehicle should be washed to remove any dusty materials from its body and wheels. *Use of vehicles* ■ Immediately before leaving the construction site, every vehicle should be washed to remove any dusty materials from its body and wheels. ■ Where a vehicle leaving the construction site is carrying a load of dusty materials, the load should be covered entirely by clean impervious sheeting to ensure that the dusty materials do not leak from the vehicle.				

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
		Site hoarding ■ Where a site boundary adjoins a road, street, service lane or other area accessible to the public, hoarding of not less than 2.4m high from ground level should be provided along the entire length of that portion of the site boundary except for a site entrance or exit. *Blasting* ■ The areas within 30m from the blasting area should be wetted with water prior to blasting.					
Air Quality Impact (Operation)							
3.5.2.2	2.2	The following odour containment and control measures will be provided for the proposed sewage treatment work at the BCP site: ■ The treatment work will be totally enclosed. Negative pressure ventilation will be provided within the enclosure to avoid any fugitive odorous emission from the treatment work. ■ Further odour containment will be achieved by covering or confining the sewage channels, sewage tanks, and equipment with potential odour emission. ■ Proper mixing will be provided at the equalization and sludge holding tanks to prevent sewage septicity. ■ Chemical or biological deodorisation facilities with a minimum odour removal efficiency of 90% will be provided to treat potential odorous emissions from the treatment plant including sewage channels / tanks, filter press and screening facilities so as to minimize any potential odour impact to the nearby ASRs.	To minimize potential odour impact from operation of the proposed sewage treatment work at BCP	DSD	BCP	Operation Phase	EIA recommendation
Noise Impact (Construction)							
4.4.1.4	3.1	**Adoption of Quieter PME** Use of the recommended quieter PME such as those given in the BS5228: Part 1:2009 and presented in **Table 4.14**, which can be found in Hong Kong.	To minimize the construction air-borne noise impact	Contractors	Construction Work Sites	During Construction	EIA recommendation, EIAO and Noise Control Ordinance (NCO)

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
4.4.1.4	3.1	**Use of Movable Noise Barrier** The use of movable barrier for certain PME can further alleviate the construction noise impacts. In general, a 5 dB(A) reduction for movable PME and 10 dB(A) for stationary PME can be achieved depending on the actual design of the movable noise barrier. The Contractor shall be responsible for design of the movable noise barrier with due consideration given to the size of the PME and the requirement for intercepting the line of sight between the NSRs and PME. Barrier material with surface mass in excess of 7 kg/m^2 is recommended to achieve the predicted screening effect.	To minimize the construction air-borne noise impact	Contractors	Construction Work Sites	During Construction	EIA recommendation, EIAO and NCO
4.4.1.4	3.1	**Use of Noise Enclosure/ Acoustic Shed** The use of noise enclosure or acoustic shed is to cover stationary PME such as air compressor and concrete pump. With the adoption of the noise enclosure, the PME could be completely screened, and noise reduction of 15 dB(A) can be achieved according to the GW-TM.	To minimize the construction air-borne noise impact	Contractors	Construction Work Sites	During Construction	EIA recommendation, EIAO and NCO
4.4.1.4	3.1	**Use of Noise Insulating Fabric** Noise insulating fabric can be adopted for certain PME (e.g. drill rig, pilling auger etc). The insulating fabric should be lapped such that there are no openings or gaps on the joints. Technical data from manufacturers state that by using the Fabric, a noise reduction of over 10 dB(A) can be achieved on noise level.	To minimize the construction air-borne noise impact	Contractors	Construction Work Sites	During Construction	EIA recommendation, EIAO and NCO

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
4.4.1.4	3.1	**Good Site Practice** The good site practices listed below should be followed during each phase of construction: • Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme; • Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction programme; • Mobile plant, if any, should be sited as far from NSRs as possible; • Machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; • Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs; and • Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities.	To minimize the construction air-borne noise impact	Contractors	Construction Work Sites	During Construction	EIA recommendation, EIAO and NCO
Noise Impact (Operation)							
		Road Traffic Noise					
Table 4.42 and Figure 4.20.1 to 4.20.4	3.2	Erection of noise barrier/ enclosure along the viaduct section.	To minimize the road traffic noise along the connecting road of BCP	Contractor	Loi Tung and Fanling Highway Interchange	Before Operation	EIAO and NCO
		Fixed Plant Noise					
Table 4.46	3.2	Specification of the maximum allowable sound power levels of the proposed fixed plants during daytime and night-time.	To minimize the fixed plant noise impact	Managing Authority of the buildings / Contractor	BCP, Administration Building and all ventilation buildings	Before Operation	EIA recommendation, EIAO and NCO

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
4.5.2.4	3.2	The following noise reduction measures shall be considered as far as practicable during operation: • Choose quieter plant such as those which have been effectively silenced; • Include noise levels specification when ordering new plant (including chillier and E/M equipment); • Locate fixed plant/louver away from any NSRs as far as practicable; • Locate fixed plant in walled plant rooms or in specially designed enclosures; • Locate noisy machines in a basement or a completely separate building; • Install direct noise mitigation measures including silencers, acoustic louvers and acoustic enclosure where necessary; and • Develop and implement a regularly scheduled plant maintenance programme so that equipment is properly operated and serviced in order to maintain a controlled level of noise.	To minimize the fixed plant noise impact	Managing Authority of the buildings / Contractor	BCP, Administration Building and all ventilation buildings	Before Operation	EIAO and NCO
Water Quality Impact (Construction)							
5.6.1.1	4.1	**Construction site runoff and drainage** The site practices outlined in ProPECC Note PN 1/94 should be followed as far as practicable in order to minimise surface runoff and the chance of erosion. The following measures are recommended to protect water quality and when properly implemented should be sufficient to adequately control site discharges so as to avoid water quality impacts: ▪ At the start of site establishment, perimeter cut-off drains to direct off-site water around the site should be constructed with internal drainage works and erosion and sedimentation control facilities implemented. Channels (both temporary and permanent drainage pipes and culverts), earth bunds or sand bag barriers should be provided on site to direct stormwater to silt removal facilities. The design of the temporary on-site drainage system should be undertaken by the Contractor prior to the commencement of construction. ▪ The dikes or embankments for flood protection should be implemented around the boundaries of earthwork areas.	To control site runoff and drainage; prevent high sediment loading from reaching the nearby watercourses	Contractor	Construction Works Sites	Construction Phase	Practice Note for Professional Persons on Construction Site Drainage (ProPECC Note PN 1/94)

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
		Temporary ditches should be provided to facilitate the runoff discharge into stormwater drainage system through a sediment/silt trap. The sediment/silt traps should be incorporated in the permanent drainage channels to enhance deposition rates, if practical. ▪ Sand/silt removal facilities such as sand/silt traps and sediment basins should be provided to remove sand/silt particles from runoff to meet the requirements of the TM standards under the WPCO. The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC Note PN 1/94. Sizes may vary depending upon the flow rate. The detailed design of the sand/silt traps should be undertaken by the Contractor prior to the commencement of construction. ▪ All drainage facilities and erosion and sediment control structures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly during rainstorms. Deposited silt and grit should be regularly removed, at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times. ▪ Measures should be taken to minimize the ingress of site drainage into excavations. If excavation of trenches in wet periods is necessary, they should be dug and backfilled in short sections wherever practicable. Water pumped out from foundation excavations should be discharged into storm drains via silt removal facilities. ▪ If surface excavation works cannot be avoided during the wet season (April to September), temporarily exposed slope/soil surfaces should be covered by tarpaulin or other means, as far as practicable, and temporary access roads should be protected by crushed stone or gravel, as excavation proceeds. Interception channels should be provided (e.g. along the crest/edge of the excavation) to prevent storm runoff from washing across exposed soil surfaces. Arrangements should always be in place to ensure that adequate surface protection measures can be safely carried out well before the arrival of a rainstorm. Other measures that need to be implemented before, during and after rainstorms are summarized in ProPECC Note PN 1/94. ▪ The overall slope of the site should be kept to a minimum to reduce					

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
		the erosive potential of surface water flows. ▪ All vehicles and plant should be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and sited wheel washing facility should be provided at construction site exit where practicable. Wash-water should have sand and silt settled out and removed regularly to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheel-wash bay to the public road should be paved with sufficient backfall toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains. ▪ Open stockpiles of construction materials or construction wastes on-site should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system. ▪ Manholes (including newly constructed ones) should be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and stormwater runoff being directed into foul sewers. ▪ Precautions should be taken at any time of the year when rainstorms are likely. Actions should be taken when a rainstorm is imminent or forecasted and actions to be taken during or after rainstorms are summarized in Appendix A2 of ProPECC Note PN 1/94. Particular attention should be paid to the control of silty surface runoff during storm events, especially for areas located near steep slopes. ▪ Bentonite slurries used in piling or slurry walling should be reconditioned and reused wherever practicable. Temporary enclosed storage locations should be provided on-site for any unused bentonite that needs to be transported away after all the related construction activities are completed. The requirements in ProPECC Note PN 1/94 should be adhered to in the handling and disposal of bentonite slurries.					
5.6.1.1	4.1	**Good site practices for works within water gathering grounds** The following conditions should be complied, if there is any works to be carried out within the water gathering grounds:	To minimize water quality impacts to the water gathering grounds	Contractor	Construction Works Sites within the water gathering	Construction Phase	ProPECC Note PN 1/94

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
		▪ Adequate measures should be implemented to ensure no pollution or siltation occurs to the catchwaters and catchments. ▪ No earth, building materials, oil or fuel, soil, toxic materials or any materials that may possibly cause contamination to water gathering grounds are allowed to be stockpiled on site. ▪ All surplus spoil should be removed from water gathering grounds as soon as possible. ▪ Temporary drains with silt traps should be constructed at the site boundary before the commencement of any earthworks. ▪ Regular cleaning of silt traps should be carried out to ensure proper operation at all time. ▪ All excavated or filled surfaces which have the risk of erosion should always be protected form erosion. ▪ Facilities for washing the wheels of vehicles before leaving the site should be provided. ▪ Any construction plant which causes pollution to catchwaters or catchments due to the leakage of oil or fuel should be removed off site immediately. ▪ No maintenance activities which may generate chemical wastes should be undertaken in the water gathering grounds. Vehicle maintenance should be confined to designated paved areas only and any spillages should be cleared up immediately using absorbents and waste oils should be collected in designated tanks prior to disposal off site. All storm water run-off from these areas should be discharged via oil/petrol separators and sand/silt removal traps. ▪ Any soil contaminated with fuel leaked from plant should be removed off site and the voids arising from removal of contaminated soil should be replaced by suitable material approved by the Director of Water Supplies. ▪ Provision of temporary toilet facilities and use of chemicals or insecticide of any kind are subject to the approval of the Director of Water Supplies. ▪ Drainage plans should be submitted for approval by the Director of			grounds		

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
		Water Supplies. ▪ An unimpeded access through the waterworks access road should always be maintained. ▪ Earthworks near catchwaters or streamcourses should only be carried out in dry season between October and March, ▪ Advance notice must be given before the commencement of works on site quoting WSD's approval letter reference.					
5.6.1.2	4.1	**Good site practices of general construction activities** Construction solid waste, debris and refuse generated on-site should be collected, handled and disposed of properly to avoid entering any nearby stormwater drain. Stockpiles of cement and other construction materials should be kept covered when not being used. Oils and fuels should only be stored in designated areas which have pollution prevention facilities. To prevent spillage of fuels and solvents to any nearby stormwater drain, all fuel tanks and storage areas should be provided with locks and be sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank. The bund should be drained of rainwater after a rain event.	To minimize water quality impacts	Contractor	All construction works sites	Construction phase	EIA Recommendation
5.6.1.3	4.1	**Sewage effluent from construction workforce** Temporary sanitary facilities, such as portable chemical toilets, should be employed on-site where necessary to handle sewage from the workforce. A licensed contractor should be employed to provide appropriate and adequate portable toilets and be responsible for appropriate disposal and maintenance.	To minimize water quality impacts	Contractor	All construction works sites with on-site sanitary facilities	Construction phase	EIA Recommendation and Water Pollution Control Ordinance (WPCO)
5.6.1.4	4.1	**Hydrogeological Impact** Grout injection works would be conducted before blasting, for sealing a limited area around the tunnel with a grout of a suitable strength for controlling the potential groundwater inflows. The pre-injection grouting method would be supplemented by post-injection grouting where necessary to further enhance the groundwater inflow control. On-site treatment for the groundwater ingress pumped out would be required to remove any contamination by grouting materials before discharge off-site.	To minimize water quality impacts	Contractor	Construction works sites of the drill and blast tunnel	Construction phase	EIA Recommendation and WPCO
Water Quality Impact (Operation)							
		No mitigation measure is required.					

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
Sewage and Sewerage Treatment Impact (Construction)							
6.7	5	The sewage generated by the on-site workforce should be collected in chemical toilets and disposed of off-site by a licensed waste collector.	To minimize water quality impacts	Contractor	All construction works sites with on-site sanitary facilities	Construction phase	EIA recommendation and WPCO
Sewage and Sewerage Treatment Impact (Operation)							
6.6.3	5	Sewage generated by the BCP and Chuk Yuen Village Resite will be collected and treated by the proposed on-site sewage treatment facility using Membrane Bioreactor treatment with a portion of the treated wastewater reused for irrigation and flushing within the BCP.	To minimize water quality impacts	DSD	BCP	Operation phase	EIA recommendation and WPCO
6.5.3	5	Sewage generated from the Administration Building will be discharged to the existing local sewerage system.	To minimize water quality impacts	DSD	Administration Building	Operation phase	EIA recommendation and WPCO
Waste Management Implication (Construction)							
7.6.1.1	6	**Good Site Practices** Adverse impacts related to waste management such as potential hazard, air, odour, noise, wastewater discharge and public transport as mentioned in section 3.4.7.2 (ii)(c) of the Study Brief are not expected to arise, provided that good site practices are strictly followed. Recommendations for good site practices during the construction activities include: ▪ Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site ▪ Training of site personnel in proper waste management and chemical handling procedures ▪ Provision of sufficient waste disposal points and regular collection of waste ▪ Dust suppression measures as required under the Air Pollution Control (Construction Dust) Regulation should be followed as far as practicable. Appropriate measures to minimise windblown litter and dust/odour during transportation of waste by covering trucks or in enclosed containers ▪ General refuse shall be removed away immediately for disposal. As	To minimize adverse environmental impact	Contractor	Construction works sites (general)	Construction Phase	EIA recommendation; Waste Disposal Ordinance; Waste Disposal (Chemical Wastes) (General) Regulation; and ETWB TC(W) No. 19/2005, Environmental Management on Construction Site

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
		such odour is not anticipated to be an issue to distant sensitive receivers ▪ Provision of wheel washing facilities before the trucks leaving the works area so as to minimise dust introduction from public road ▪ Covers and water spraying system should be provided for the stockpiled C&D material to prevent dust impact or being washed away ▪ Designate different locations for storage of C&D material to enhance reuse ▪ Well planned programme for transportation of C&D material to lessen the off-site traffic impact. Well planned delivery programme for offsite disposal and imported filling material such that adverse noise impact from transporting of C&D material is not anticipated ▪ Site practices outlined in ProPECC PN 1/94 "Construction Site Drainage" should be adopted as far as practicable, such as cleaning and maintenance of drainage systems regularly ▪ Provision of cover for the stockpile material, sand bag or earth bund as barrier to prevent material from washing away and entering the drains					
7.6.1.2	6	**Waste Reduction Measures** Good management and control can prevent the generation of a significant amount of waste. Waste reduction is best achieved at the planning and design stage, as well as by ensuring the implementation of good site practices. Recommendations to achieve waste reduction include: ▪ Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal ▪ Encourage collection of aluminium cans by providing separate labelled bins to enable this waste to be segregated from other general refuse generated by the work force ▪ Proper storage and site practices to minimise the potential for damage or contamination of construction materials ▪ Plan and stock construction materials carefully to minimise amount	To reduce the quantity of wastes	Contractor	Construction works sites (General)	Construction Phase	EIA recommendation and Waste Disposal Ordinance

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
		of waste generated and avoid unnecessary generation of waste ▪ In addition to the above measures, specific mitigation measures are recommended below for the identified waste arising to minimise environmental impacts during handling, transportation and disposal of these wastes.					
7.6.1.3	6	**C&D Materials** In order to minimise impacts resulting from collection and transportation of C&D material for off-site disposal, the excavated materials should be reused on-site as backfilling material as far as practicable. The surplus rock and other inert C&D material would be disposed of at the Government's Public Fill Reception Facilities (PFRFs) at Tuen Mun Area 38 for beneficial use by other projects in the HKSAR as the last resort. C&D waste generated from general site clearance and tree felling works would require disposal to the designated landfill site. Other mitigation requirements are listed below: ▪ A Waste Management Plan should be prepared and implemented in accordance with ETWB TC(W) No. 19/2005 Environmental Management on Construction Site; and ▪ In order to monitor the disposal of C&D material and solid wastes at public filling facilities and landfills, and to control fly-tipping, a trip-ticket system (e.g. ETWB TCW No. 31/2004) should be included.	To minimize impacts resulting from C&D material	Contractor	Construction Works Sites (General)	Construction Phase	EIA recommendation; Waste Disposal Ordinance; and ETWB TCW No. 31/2004
7.6.1.4	6	**General refuse** General refuse should be stored in enclosed bins or compaction units separated from other C&D material. A reputable waste collector is to be employed by the Contractor to remove general refuse from the site separately. Preferably an enclosed and covered area should be provided to reduce the occurrence of 'wind blown' litter.	To minimize impacts resulting from collection and transportation of general refuse for off-site disposal	Contractor	Construction works sites (General)	Construction phase	Waste Disposal Ordinance and Public Health and Municipal Services Ordinance - Public Cleansing and Prevention of Nuisances Regulation
7.6.1.5	6	**Chemical waste** If chemical wastes are produced at the construction site, the Contractor will be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the *Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes*. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical	To minimize impacts resulting from collection and transportation of chemical waste for off-site disposal	Contractor	Construction works sites (General)	Construction phase	Waste Disposal (Chemical Waste) (General) Regulation and Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes