



JOB NO.: TCS00694/13

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

MONTHLY ENVIRONMENTAL MONITORING AND AUDIT  
REPORT (NO.30) – JANUARY 2016

PREPARED FOR  
CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT  
(CEDD)

Date	Reference No.	Prepared By	Certified By
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Version	Date	Remarks
1	15 February 2016	First Submission
2	16 February 2016	Amended against the IEC's comments on 16 February 2016

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17 February 2016

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**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. 30) – January 2016**

With reference to the Monthly EM&A Report No. 30 for January 2016 (Version 2) certified by the ET Leader, 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](mailto:antony.wong@smec.com); or our Mr Francis LEE on tel. 3995 8144 or by email to [francis.lee@smec.com](mailto:francis.lee@smec.com).

Yours faithfully  
for and on behalf of  
SMEC Asia Limited



**Antony WONG**

Independent Environmental Checker

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	AUES	-	Mr TW TAM	by email

**EXECUTIVE SUMMARY**

ES01 This is the 30<sup>th</sup> monthly EM&A report presenting the monitoring results and inspection findings for the reporting period from 1 to 31 January 2016 (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 under Liantang/Heung Yuen Wai Boundary Control Point and Associated Works of the Project currently included Contract 2, Contract 3, Contract 5, Contract 6 and Contract SS C505. In addition, site preparation work for Contract 7 has been commenced in January 2016. 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	135
	24-hour TSP	9	48
Construction Noise	L <sub>eq(30min)</sub> Daytime	10	50
Water Quality	Water in-situ measurement and/or sampling	WM1 & WM1-C,	13 <sup>(*)</sup>
		WM2A & WM2A-C	14 <sup>(*)</sup>
		WM2B & WM2B-C	20 <sup>(*)</sup>
		WM3 & WM3-C	13 <sup>(*)</sup>
		WM4, WM4-CA & WM4-CB	13 <sup>(*)</sup>
Joint Site Inspection / Audit	IEC, ET, the Contractor and RE joint site Environmental Inspection and Auditing	Contract 2	4
		Contract 3	4
		Contract 5	4
		Contract 6	4
		Contract 7	2
		Contract SS C505	4

<sup>(\*)</sup> 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 monitoring, a total of twenty-three (23) Limit/Action Levels exceedances were recorded, namely one (1) AL and twelve (12) LL exceedance of turbidity and one (1) AL and nine (9) LL exceedance of Suspended Solids for the Project. 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 <sub>eq(30min)</sub> Daytime	0	0	0	--	--
Water Quality	DO	0	0	0	--	--

Environmental Aspect	Monitoring Parameters	Action Level	Limit Level	Event & Action		
				NOE Issued	Investigation Result	Corrective Actions
	Turbidity	1	12	<b>13</b>	The Contractor of C6 were advised to improve the water mitigation measure as per the ISEMM of the EM&A Manual	Improvement works have been undertaken by the Contractor C6
	SS	1	9	<b>10</b>		

**ENVIRONMENTAL COMPLAINT**

ES05 In this Reporting Period, one (1) verbal complaint received by the Contractor and two (2) documented environmental complaints regarding wastewater / muddy water related to Contracts 6 were received and lodged by EPD on 14 and 20 January 2016 respectively. Follow up actions have been undertaken 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. However, a warning letter from EPD was issued to Contract 6 on 1 February 2016 regarding Non Compliance (NC) with APCO for the non-covered dump trucks travelling to Fill Bank at TM Area 38 on 14 and 18 January 2016 respectively. The Contractor has explained to the EPD that all dump trucks under the Contract were well covered before leaving the site, however, some drivers of the dump trucks immediately opened the cover when they just get into Fill Bank at TM Area 38 and captured by the CCTV. A briefing and warning letter has given to the relevant drivers to prevent reoccurrence of similar case.

**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 **8, 15, 22 and 29 January 2016**. 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 **4, 11, 20 and 25 January 2016**. 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 **7, 12, 19 and 26 January 2016**. 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 **7, 14, 21 and 28 January 2016**. 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 **6, 13, 20 and 27 January 2016**. No non-compliance was noted.

ES13 Although construction activities under **Contract 7** have not yet commenced, site preparation work was carried out in the Reporting Period. Therefore, two occasions of joint site inspection by the

RE, IEC and ET with the Contractor to evaluate the site environmental performance were carried out on **5 and 26 January 2016**. No non-compliance was noted.

**FUTURE KEY ISSUES**

- ES14 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.
- ES15 The Contractor was 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. For all Contracts, water quality mitigation measures to prevent muddy runoff into nearby water bodies or public areas should paid attention and fully implemented in particular for Contract 6.
- ES16 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.

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## 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 **30<sup>th</sup>** monthly EM&A report presenting the monitoring results and inspection findings for reporting period from **1** to **31 January 2016**.

### 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*

<b>Section 8</b>	<i>Site Inspections</i>
<b>Section 9</b>	<i>Environmental Complaints and Non-Compliance</i>
<b>Section 10</b>	<i>Implementation Status of Mitigation Measures</i>
<b>Section 11</b>	<i>Conclusions and Recommendations</i>

## 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 Regulation 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 IEC 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, IEC 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, IEC 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*. For Contract 7, construction activities were scheduled to commence in February 2016 and therefore no construction activities was undertaken in the Reporting Period.

#### 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     | • Installation of blast curtain          |
| Portal       | • Tube excavation (NB + SB)              |
|              | • Adit invert slab                       |
|              | • Building works foundation              |
| North Portal | • Slope stabilization and retaining wall |



- Northbound top heading excavation and tunnel enlargement
- 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
- Waterworks

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 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
- Installation of Underground Utility (UU) at proposed and existing LMH road
- Irrigation at proposed LMH Road
- Water works at existing LMH Road
- Bituminous laying at L15 road 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 / training centre set-up
- Structural works
- Assembly of crawler crane
- Mock up for curtain wall
- Weighbridge works
- Construction of Prototype A

**2.5 SUMMARY OF ENVIRONMENTAL SUBMISSIONS**

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

- Project Layout Plans of Contracts 2, 3, 5, 6, 7 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
- Wetland Compensation 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
<b>Contract 2</b>				
1	Air pollution Control (Construction Dust) Regulation	Ref No.: 368864	31 Dec 2013	Till Contract ends
2	Chemical Waste Producer Registration	<b>North Portal</b> Waste Producers Number: No.5213-652-D2523-01	25 Mar 2014	Till Contract ends
		<b>Mid-Vent Portal</b> Waste Producers Number:	25 Mar 2014	Till Contract ends

Item	Description	License/Permit Status		
		Ref. no.	Effective Date	Expiry Date
		No.5213-634-D2524-01 <i>South Portal</i> 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-RN0678-15	1 Nov 2015	31 Jan 2016
		GW-RN0718-15	25 Nov 2015	24 Jan 2016
		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
		GW-RN0057-16	28-Feb-2016	27-May-2016
		GW-RN0059-16	24-Feb-2016	23-Apr-2016
		GW-RN0067-16	28-Feb-2016	27-May-2016
		GW-RN0068-16	23-Feb-2016	22-Apr-2016
GW-RN0071-16	02-Feb-16	31-Jul-2016		
<b>Contract 3</b>				
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-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

Item	Description	License/Permit Status		
		Ref. no.	Effective Date	Expiry Date
		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
		GW-RN0001-16	8 Jan 2016	27 Feb 2016
		GW-RN0049-16	26 Jan 2016	29 Feb 2016
		GW-RN0056-16	2 Feb 2016	18 Mar 2016
		GW-RN0060-16	1 Feb 2016	30 Jun 2016
		GW-RN0064-16	16 Feb 2016	13 Aug 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		

Item	Description	License/Permit Status		
		Ref. no.	Effective Date	Expiry Date
5	Construction Noise Permit	GW-RN0681-15	26 Oct 2015	25 Apr 2016
6	Construction Noise Permit	GW-RN0683-15	26 Oct 2015	25 Apr 2016
<b>Contract SS C505</b>				
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	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-RN0865-15	23 Dec 2015	22 Jan 2016
		PP-RN0002-16	23 Jan 2016	22 Mar 2016
		GW-RN0023-16	23 Jan 2016	22 Mar 2016
<b>Contract 7</b>				
1	Air pollution Control (Construction Dust) Regulation	Application is processing by EPD		
2	Chemical Waste Producer Registration	Application is processing by EPD		
3	Water Pollution Control Ordinance - Discharge License	Application is processing by EPD		
4	Waste Disposal Regulation - Billing Account for Disposal of Construction Waste	Application is processing by EPD		

### 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	<ul style="list-style-type: none"> <li>• 1-hour TSP by Real-Time Portable Dust Meter; and</li> <li>• 24-hour TSP by High Volume Air Sampler.</li> </ul>
Noise	<ul style="list-style-type: none"> <li>• <math>L_{eq(30min)}</math> in normal working days (Monday to Saturday) 07:00-19:00 except public holiday; and</li> <li>• 3 sets of consecutive <math>L_{eq(5min)}</math> on restricted hours i.e. 19:00 to 07:00 next day, and whole day of public holiday or Sunday</li> <li>• Supplementary information for data auditing, statistical results such as <math>L_{10}</math> and <math>L_{90}</math> shall also be obtained for reference.</li> </ul>
Water Quality	<b>In-situ Measurements</b> <ul style="list-style-type: none"> <li>• Dissolved Oxygen Concentration (mg/L);</li> <li>• Dissolved Oxygen Saturation (%);</li> <li>• Turbidity (NTU);</li> <li>• pH unit;</li> <li>• Water depth (m); and</li> <li>• Temperature (°C).</li> </ul>
	<b>Laboratory Analysis</b> <ul style="list-style-type: none"> <li>• Suspended Solids (mg/L)</li> </ul>

#### 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	SS C505 Contract 5 Contract 7
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 <sup>^</sup>	House no. 10B1 Nga Yiu Ha Village	LMH to Frontier Closed Area	Contract 6
AM5a <sup>^</sup>	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 <sup>@</sup>	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 <sup>#</sup>	Nam Wa Po Village House No. 80	Fanling	Contract 3

<sup>#</sup> 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).

<sup>\*</sup> Proposal for the change of air quality monitoring location from AM1 to 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).

<sup>@</sup> 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).

<sup>^</sup> 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	SS C505 Contract 5 Contract 7
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	SS C505 Contract 5 Contract 6
WM1-Control	Upstream of Kong Yiu Channel	834 185	845 917	NA	SS C505 Contract 5 Contract 6
WM2A	Downstream	834 204	844 471	Alternative location located	Contract 6

Station ID	Description	Coordinates of Designated / Alternative Location		Nature of the location	Related to the Work Contract
	of River Ganges			at downstream 81m of the designated location	
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
<b>24-Hr TSP</b>	
High Volume Air Sampler	TISCH High Volume Air Sampler, HVS Model TE-5170*
Calibration Kit	TISCH Model TE-5025A*
<b>1-Hour TSP</b>	
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 °C 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

Equipment	Model
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° 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°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 ( $L_{eq}$ ).  $L_{eq(30min)}$  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<sup>0</sup>C 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 ( $\mu\text{g}/\text{m}^3$ )		Limit Level ( $\mu\text{g}/\text{m}^3$ )	
	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) <sup>Note 1 &amp; Note 2</sup>

*Note 1: Acceptable Noise Levels for school should be reduced to 70 dB(A) and 65 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				

Parameter	Performance criteria	Monitoring Location				
		WM1	WM2A	WM2B	WM3	WM4
SS (mg/L)	Action Level	54.5	14.6	11.8	12.6	39.4
		<b>AND</b> 120% of upstream control station of the same day				
	Limit Level	64.9	17.3	12.4	12.9	45.5
		<b>AND</b> 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 **135** events of 1-hour TSP and **48** 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 ( $\mu\text{g}/\text{m}^3$ )	1-hour TSP ( $\mu\text{g}/\text{m}^3$ )				
		Date	Start Time	1 <sup>st</sup> reading	2 <sup>nd</sup> reading	3 <sup>rd</sup> reading
4-Jan-16	86	5-Jan-16	9:54	125	61	91
9-Jan-16	44	11-Jan-16	10:00	101	95	76
15-Jan-16	34	16-Jan-16	9:57	11	22	33
21-Jan-16	29	22-Jan-16	9:43	77	93	80
27-Jan-16	43	28-Jan-16	10:31	29	43	21
Average (Range)	<b>47</b> (29 – 86)	Average (Range)		<b>91</b> (11 – 125)		

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

Date	24-hour TSP ( $\mu\text{g}/\text{m}^3$ )	1-hour TSP ( $\mu\text{g}/\text{m}^3$ )				
		Date	Start Time	1 <sup>st</sup> reading	2 <sup>nd</sup> reading	3 <sup>rd</sup> reading
4-Jan-16	65	5-Jan-16	9:37	93	62	80
9-Jan-16	82	11-Jan-16	10:03	92	94	92
15-Jan-16	33	16-Jan-16	9:59	54	47	45
21-Jan-16	25	22-Jan-16	9:49	71	92	71
27-Jan-16	48	28-Jan-16	10:13	57	108	93
Average (Range)	<b>51</b> (25 – 82)	Average (Range)		<b>77</b> (45 – 108)		

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

Date	24-hour TSP ( $\mu\text{g}/\text{m}^3$ )	1-hour TSP ( $\mu\text{g}/\text{m}^3$ )				
		Date	Start Time	1 <sup>st</sup> reading	2 <sup>nd</sup> reading	3 <sup>rd</sup> reading
4-Jan-16	139	5-Jan-16	9:30	100	69	86
9-Jan-16	96	11-Jan-16	10:05	103	96	68
15-Jan-16	37	16-Jan-16	10:05	58	52	49
21-Jan-16	46	22-Jan-16	9:57	71	89	79
27-Jan-16	112	28-Jan-16	9:52	32	60	51
Average (Range)	<b>86</b> (37 – 139)	Average (Range)		<b>71</b> (32 – 103)		

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

Date	24-hour TSP ( $\mu\text{g}/\text{m}^3$ )	1-hour TSP ( $\mu\text{g}/\text{m}^3$ )				
		Date	Start Time	1 <sup>st</sup> reading	2 <sup>nd</sup> reading	3 <sup>rd</sup> reading
2-Jan-16	105	4-Jan-16	14:11	77	54	47
7-Jan-16	49	8-Jan-16	10:08	136	124	35
13-Jan-16	46	14-Jan-16	10:03	177	184	169
19-Jan-16	70	20-Jan-16	10:57	84	102	86
25-Jan-16	73	26-Jan-16	9:49	66	84	72
30-Jan-16	22					
Average (Range)	<b>61</b> (22 – 105)	Average (Range)		<b>100</b> (35 – 184)		

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

Date	24-hour TSP ( $\mu\text{g}/\text{m}^3$ )	1-hour TSP ( $\mu\text{g}/\text{m}^3$ )				
		Date	Start Time	1 <sup>st</sup> reading	2 <sup>nd</sup> reading	3 <sup>rd</sup> reading
2-Jan-16	93	4-Jan-16	14:17	83	61	53
7-Jan-16	42	8-Jan-16	10:01	97	91	15
13-Jan-16	46	14-Jan-16	10:02	154	167	179
19-Jan-16	64	20-Jan-16	10:49	77	99	79
25-Jan-16	59	26-Jan-16	9:47	69	91	70
30-Jan-16	31					
Average (Range)	<b>56</b> (31 – 93)	Average (Range)		<b>92</b> (15 – 179)		

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

Date	24-hour TSP ( $\mu\text{g}/\text{m}^3$ )	1-hour TSP ( $\mu\text{g}/\text{m}^3$ )				
		Date	Start Time	1 <sup>st</sup> reading	2 <sup>nd</sup> reading	3 <sup>rd</sup> reading
2-Jan-16	124	4-Jan-16	14:16	72	50	42
7-Jan-16	134	8-Jan-16	9:57	127	121	134
13-Jan-16	132	14-Jan-16	9:50	138	140	168
19-Jan-16	145	20-Jan-16	10:35	80	97	85
25-Jan-16	61	26-Jan-16	9:37	77	95	79
30-Jan-16	48					
Average (Range)	<b>107</b> (48 – 145)	Average (Range)		<b>100</b> (42 – 168)		

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

Date	24-hour TSP ( $\mu\text{g}/\text{m}^3$ )	1-hour TSP ( $\mu\text{g}/\text{m}^3$ )				
		Date	Start Time	1 <sup>st</sup> reading	2 <sup>nd</sup> reading	3 <sup>rd</sup> reading
4-Jan-16	34	4-Jan-16	9:18	50	47	45
9-Jan-16	70	8-Jan-16	9:07	108	110	115
15-Jan-16	41	14-Jan-16	9:15	79	110	117
21-Jan-16	39	20-Jan-16	9:21	198	167	155
27-Jan-16	32	26-Jan-16	9:17	68	59	63
Average (Range)	<b>43</b> (32 – 70)	Average (Range)		<b>99</b> (45 – 198)		



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

Date	24-hour TSP ( $\mu\text{g}/\text{m}^3$ )	1-hour TSP ( $\mu\text{g}/\text{m}^3$ )				
		Date	Start Time	1 <sup>st</sup> reading	2 <sup>nd</sup> reading	3 <sup>rd</sup> reading
4-Jan-16	22	4-Jan-16	13:9	47	43	39
9-Jan-16	49	8-Jan-16	13:3	107	110	116
15-Jan-16	23	14-Jan-16	13:09	78	111	115
21-Jan-16	38	20-Jan-16	13:07	196	166	155
27-Jan-16	27	26-Jan-16	13:02	53	41	64
Average (Range)	<b>32</b> (22 – 49)	Average (Range)		<b>96</b> (39 – 196)		

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

Date	24-hour TSP ( $\mu\text{g}/\text{m}^3$ )	1-hour TSP ( $\mu\text{g}/\text{m}^3$ )				
		Date	Start Time	1 <sup>st</sup> reading	2 <sup>nd</sup> reading	3 <sup>rd</sup> reading
4-Jan-16	20	5-Jan-16	11:00	106	64	91
9-Jan-16	37	11-Jan-16	9:05	41	14	37
15-Jan-16	45	16-Jan-16	9:20	189	188	162
21-Jan-16	41	22-Jan-16	9:09	55	52	57
27-Jan-16	36	28-Jan-16	9:15	34	26	36
Average (Range)	<b>36</b> (20 – 45)	Average (Range)		<b>77</b> (14 – 189)		

- 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 **50** 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**

Construction Noise Level ( $L_{eq30min}$ ), dB(A)					
Date	NM1	NM2	NM8	NM9	NM10 <sup>(*)</sup>
5-Jan-16	60	66	63	62	67
11-Jan-16	53	68	59	66	62
16-Jan-16	61	65	59	59	68
22-Jan-16	71	71	59	59	65
28-Jan-16	58	62	63	62	63
<b>Limit Level</b>	<b>75 dB(A)</b>				

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**

Construction Noise Level ( $L_{eq30min}$ ), dB(A)					
Date	NM3	NM4	NM5	NM6	NM7
4-Jan-16	70	75	55	56	58
8-Jan-16	62	67	55	54	63
14-Jan-16	67	64	56	63	63
20-Jan-16	66	67	59	55	67
26-Jan-16	58	66	62	62	67
<b>Limit Level</b>	<b>75 dB(A)</b>				

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, CEDD, Architect/AR/ and the Contractors in the Reporting Period. Therefore, no Action or Limit Level exceedance was triggered and no corrective action was required.

## 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, a total of thirteen (13) sampling days water quality was scheduled to carry out for all designated locations with their control stations. Since water quality exceedance were recorded at WM2A and WM2B, one (1) and seven (7) extra days water quality monitoring were conducted at WM2A and WM2B respectively in accordance with “*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 6-5*. Breaches of water quality monitoring criteria are shown in *Table 6-6*. 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 Water Quality Monitoring Results Associated of 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
2-Jan-16	8.2	8.9	6.7	10.1	3.8	6.8	10.5	2.0	8.5
5-Jan-16	7.4	8.5	7.6	23.8	11.7	46.4	26.5	19.0	76.0
7-Jan-16	10.0	9.6	8.3	31.8	9.8	24.2	34.0	12.5	29.0
9-Jan-16	8.0	7.7	6.7	17.1	6.4	23.6	17.0	4.0	27.0
11-Jan-16	10.0	10.2	8.8	19.8	13.0	13.6	16.5	8.0	13.5
13-Jan-16	10.6	11.8	11.1	15.9	5.6	10.3	8.0	3.0	18.5
15-Jan-16	10.0	10.5	9.1	<b>40.6</b>	22.1	30.0	33.5	13.0	25.0
19-Jan-16	10.8	11.4	9.5	29.4	5.0	8.8	22.5	2.0	14.5
21-Jan-16	9.5	9.4	7.3	32.9	16.6	19.4	34.5	12.0	23.5
23-Jan-16	13.7	13.2	11.4	25.9	6.5	9.0	20.5	2.0	4.5
25-Jan-16	11.6	12.2	10.2	8.0	4.1	11.2	4.0	2.0	8.5
27-Jan-16	13.3	10.8	10.3	31.9	49.3	27.1	15.0	27.5	13.5
29-Jan-16	10.4	10.7	10.1	28.4	21.7	24.5	19.5	18.0	15.5

Remark: *bold and underlined indicated Limit Level exceedance.*

**Table 6-2 Water Quality Monitoring Results Associated of Contracts 5, 6 and SS C505**

Date	Dissolved Oxygen (mg/L)		Turbidity (NTU)		Suspended Solids (mg/L)	
	WM1	WM1-Control	WM1	WM1-Control	WM1	WM1-Control
2-Jan-16	8.6	8.5	37.7	11.3	34.0	4.5
5-Jan-16	6.3	8.6	22.5	5.4	21.0	4.0
7-Jan-16	6.9	10.6	41.2	22.9	30.5	19.0
9-Jan-16	9.1	7.8	30.7	7.6	28.5	5.0
11-Jan-16	10.4	10.3	424.0	407.0	184.0	161.5
13-Jan-16	10.5	9.3	49.0	12.4	51.0	5.5
15-Jan-16	10.6	10.7	182.5	170.5	109.0	98.0
19-Jan-16	11.9	11.6	43.0	13.8	49.0	8.0
21-Jan-16	9.3	10.0	41.6	31.5	40.5	19.5
23-Jan-16	14.7	15.8	48.6	34.2	51.5	14.5
25-Jan-16	13.6	14.6	45.6	7.7	31.5	3.5
27-Jan-16	14.7	25.7	155.5	135.0	86.0	89.5
29-Jan-16	10.4	10.3	853.5	765.0	479.5	414.0

**Table 6-3 Water Quality Monitoring Results Associated only 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-Jan-16	9.1	8.6	9.8	7.9	6.3	9.0	<b>23.9</b>	5.9	3.0	3.0	<b>19.0</b>	2.0
4-Jan-16	8.5	7.7	8.7	7.3	7.2	34.0	8.8	8.6	6.0	20.0	5.5	11.0
5-Jan-16 <sup>#</sup>							10.5				4.0	
6-Jan-16	9.7	7.9	8.2	8.3	13.6	19.7	<b>199.0</b>	6.4	7.0	7.5	<b>134.0</b>	2.0
7-Jan-16 <sup>#</sup>							<b>21.3</b>				10.0	
8-Jan-16	9.0	9.4	8.3	7.3	11.0	11.9	<b>12.2</b>	6.0	5.5	4.5	<b>20.0</b>	2.0
9-Jan-16 <sup>#</sup>							10.9				4.0	
11-Jan-16 <sup>#</sup>							<b>26.2</b>				9.0	
12-Jan-16	10.3	9.4	11.1	10.6	30.2	34.9	<b>95.2</b>	7.5	5.0	6.0	<b>54.0</b>	2.0
13-Jan-16 <sup>#</sup>							10.4				5.0	
14-Jan-16	10.3	9.5	9.9	8.6	8.8	23.0	10.7	5.9	7.0	14.0	10.0	6.0
16-Jan-16	10.6	10.5	10.3	11.0	<b>40.6</b>	10.7	<b>143.5</b>	8.8	<b>17.0</b>	4.0	<b>89.0</b>	3.0
18-Jan-16	9.1	9.5	10.7	10.6	<b>570.0</b>	8.2	<b>23.9</b>	5.7	<b>227.5</b>	3.5	<b>24.5</b>	5.0
19-Jan-16 <sup>#</sup>					22.2		8.8				6.0	
20-Jan-16	11.1	10.4	11.2	11.5	17.3	16.7	141.0	278.0	6.0	9.0	78.0	149.5
22-Jan-16	11.9	11.1	11.6	10.2	9.6	71.8	9.8	5.3	6.0	30.5	4.5	2.0
26-Jan-16	13.3	12.2	13.2	10.7	14.3	13.4	10.8	7.2	5.0	9.0	7.0	4.0
28-Jan-16	12.8	13.5	9.7	12.1	200.5	190.5	<b>502.5</b>	164.0	146.5	145.5	<b>289.0</b>	184.0
29-Jan-16 <sup>#</sup>							<b>366.0</b>	11.1			<b>375.0</b>	7.0
30-Jan-16	11.0	9.2	10.3	8.7	22.1	4.4	10.7	6.5	12.0	2.5	7.5	4.5

**Remarks:** (i) bold with underline indicated Limit Level exceedance  
 (ii) bold and italic indicated Action Level exceedance  
<sup>#</sup> Additional water quality monitoring at the exceeded location(s) due to two consecutive monitoring days indicated Limit Level exceedance.

**Table 6-4 Water Quality Monitoring Results Associated 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-Jan-16	8.9	9.1	9.6	18.8	10.0	21.0
4-Jan-16	8.2	8.6	20.7	25.5	14.5	25.0
6-Jan-16	9.4	8.0	13.4	10.8	11.5	20.5
8-Jan-16	10.6	10.2	9.2	8.0	12.5	25.5
12-Jan-16	10.2	8.7	6.9	72.3	6.5	102.0
14-Jan-16	9.7	9.9	9.8	8.1	4.0	13.0
16-Jan-16	10.1	10.5	57.9	49.2	45.5	321.0
18-Jan-16	10.0	10.8	12.7	9.7	7.5	51.0
20-Jan-16	12.3	11.4	22.1	19.4	23.5	55.0
22-Jan-16	10.1	9.7	13.0	22.5	9.0	26.5
26-Jan-16	10.9	12.4	10.4	21.6	11.5	32.0
28-Jan-16	11.0	11.7	275.5	260.0	229.5	396.5
30-Jan-16	10.3	10.6	11.6	14.8	7.5	9.0

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

Location	Dissolved Oxygen		Turbidity		Suspended Solids		Total Exceedance	
	Action	Limit	Action	Limit	Action	Limit	Action	Limit
WM1	0	0	0	0	0	0	0	0
WM2A	0	0	0	2	1	1	1	3
WM2B	0	0	1	9	0	8	1	15
WM3	0	0	0	0	0	0	0	0
WM4	0	0	0	1	0	0	0	1

Location	Dissolved Oxygen		Turbidity		Suspended Solids		Total Exceedance	
	Action	Limit	Action	Limit	Action	Limit	Action	Limit
No of Exceedance	0	0	1	12	1	9	2	21

6.2.3 In this Reporting Period, a total of twenty-three (23) Limit/Action Levels exceedances were recorded, namely one (1) AL and twelve (12) LL exceedance of turbidity and one (1) AL and nine (9) LL exceedance of Suspended Solids for the Project. There were two (2) LL of Turbidity and one (1) AL & one (1) LL Level of Suspended Solids recorded at WM2A, one (1) AL and nine (9) LL of Turbidity and eight LL of Suspended Solids recorded at WM2B and one LL of Turbidity recorded at WM4.

6.2.4 NOE was issued to relevant parties upon confirmation of the monitoring result. The cause of exceedance is summarized in **Table 6-6** accordance to investigation findings and the detailed investigation reports for the exceedances are attached in **Appendix N**.

**Table 6-6 Summary of Water Quality Exceedance in the Reporting Period**

Exceedance Day	Location	Exceeded Parameter	Cause of Water Quality Exceedance
2-Jan-16	WM2B	NTU & SS	The exceedances <u>should be related to Contract 6</u> when the Contractor conducted channel cleaning for sediment and muddy water removal after rainfall. Mitigation measures such as sump pit with temporary channel were constructed under the slope to divert the muddy runoff. Enhance work such as hydro-seeding was applied at the stabilized slope in late January 2016.
6-Jan-16	WM2B	NTU & SS	The implemented mitigation measures and capacity of sump pits by <u>Contract 6 were not sufficient to cater the muddy runoff from site uphill</u> . Mitigation measures such as sump pit with temporary channel were constructed under the slope to divert the muddy runoff. Enhance work such as hydro-seeding was applied at the stabilized slope in late January 2016.
7-Jan-16	WM2B	NTU	The exceedances were due to the shallow water and the disturbance of sediment at river bed and it <u>unlikely related to the works under Contract 6</u> .
8-Jan-16	WM2B	NTU & SS	The exceedances were due to the shallow water and the disturbance of sediment at river bed and it <u>unlikely related to the works under the Contract 6</u> .
11-Jan-16	WM2B	NTU	The exceedances were due to the shallow water and the disturbance of sediment at river bed and it <u>unlikely related to the works under Contract 6</u> .
12-Jan-16	WM2B	NTU & SS	The implemented mitigation measures and capacity of sump pits by <u>Contract 6 were not sufficient to cater the muddy runoff from site uphill</u> . Mitigation measures such as sump pit with temporary channel were constructed under the slope to divert the muddy runoff. Enhance work such as hydro-seeding was applied at the stabilized slope in late January 2016.
15-Jan-16	WM4	NTU	The exceedance was a single incident due to rainstorm and <u>unlikely related to the works under the Contracts 2 and 3</u> .
16-Jan-16	WM2A	NTU & SS	Current mitigation measures provided by Contract 6 such covering the opened slope are not sufficient to cope with site runoff especially when raining. Construction of bund along the riverside has been undertaking since 3 February 2016 at the works area of Bridge D.

	WM2B	NTU & SS	The exceedances were likely related to contribution of muddy runoff from the public road surface and <b><i>unlikely related to the works under Contract 6.</i></b>
18-Jan-16	WM2A	NTU & SS	Current mitigation measures provided by Contract 6 such covering the opened slope are not sufficient to cope with site runoff especially when raining. Construction of bund along the riverside has been undertaken since 3 February 2016 at the works area of Bridge D.
	WM2B	NTU & SS	The exceedances were likely related to contribution of muddy runoff from the public road surface and <b><i>unlikely related to the works under Contract 6.</i></b>
28-Jan-16	WM2B	NTU & SS	Current mitigation measures provided by Contract 6 were not adequate to cater the large amount of storm runoff during rainstorm. The Contractor has newly constructed a sump pit to collect the muddy runoff on 4 February 2016.
29-Jan-16	WM2B	NTU & SS	Current mitigation measures provided by Contract 6 were not adequate to cater the large amount of storm runoff during rainstorm. The Contractor has newly constructed a sump pit to collect the muddy runoff on 4 February 2016.

**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 <sup>3</sup> )	74.4242	--	2.430	--	0	--	58.943	--	0.8	--	136.5972
Reused in this Contract (Inert) (in '000 m <sup>3</sup> )	0.6482	--	0.030	--	0	--	3.811	--	0	--	4.4893
Reused in other Contracts/ Projects (Inert) (in '000 m <sup>3</sup> )	32.5036	C6/ NENT# & other projects approved by the ER	0	--	0	--	12.131	C5 & other projects approved by the ER	0	--	44.6346
Disposal as Public Fill (Inert) (in '000 m <sup>3</sup> )	41.2724	Tuen Mun 38	2.40	Tuen Mun 38	0	--	43.001	Tuen Mun 38	0.8	TKO 137	87.4734

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) #	0	-	0.001	Licensed collector	0	--	0	--	4.73	Licensed collector	0.001*+4.73
Recycled Paper / Cardboard Packing ('000kg) #	0	-	0	-	0	--	0	--	0	--	0
Recycled Plastic ('000kg) #	0	--	0	-	0	--	0	--	0	--	0
Chemical Wastes ('000kg) #	0.8800	Licensed collector	0	-	0	--	0	--	0	--	0.88
General Refuses ('000m <sup>3</sup> )	0.1247	NENT	0.115	NENT	0.06	NENT	0.695	NENT	0.072	NENT	1.0667

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

**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 **8, 15, 22 and 29 January 2016**. 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**

<b>Date</b>	<b>Findings / Deficiencies</b>	<b>Follow-Up Status</b>
8 January 2016	<ul style="list-style-type: none"> <li>Stockpile of bag cement more than 20 bages should be covered with tarpaulin sheet. (Admin Buidling)</li> <li>Turbid water cumulated at the final gully was observed. The Contractor should review the treatment facilities and make sure all discharge water should comply with discharge license requirement. (Admin Buidling)</li> </ul>	<ul style="list-style-type: none"> <li>Cement bags were covered by tarpaulin.</li> <li>The gully was cleaned and no muddy discharge was observed.</li> </ul>
15 January 2016	<ul style="list-style-type: none"> <li>Turbidity wheel washing water cumulated at the site exit was observed. The contractor should keep the site exit clean and tidy. (Mid-Vent)</li> <li>White bubble cumulated at the discharge water treatment system was observed. The contractor should review the treatment system and make sure all discharge water should comply with discharge license requirement. (North Portal)</li> </ul>	<ul style="list-style-type: none"> <li>Regular cleaning provided and no turbid water found at the site entrance.</li> <li>The treatment system was fixed immediately and no foam was observed afterwards.</li> </ul>
22 January 2016	<ul style="list-style-type: none"> <li>The contractor was reminded to closely monitor the de-silting system and make sure all the discharge water should comply with license requirement.</li> </ul>	<ul style="list-style-type: none"> <li>Not required for reminder.</li> </ul>
29 January 2016	<ul style="list-style-type: none"> <li>It was reminded that stagnant water cumulated inside the waste skip should be cleaned after the rainstorm to prevent mosquito breeding.</li> <li>It was reminded that lifting eye of the concrete block should filled with sand to prevent stagnant water accmulation.</li> </ul>	<ul style="list-style-type: none"> <li>Not required for reminder.</li> <li>Not required for reminder.</li> </ul>

**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 **4, 11, 20 and 25 January 2016**. 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
4 January 2016	<ul style="list-style-type: none"> <li>A diversion flow with sufficient protection was observed, the Contractor should provide proper measures to ensure the diversion flow would not be polluted by construction activities (SA12)</li> <li>The Contractor was reminded to maintain the cleanliness of the site exit.</li> </ul>	<ul style="list-style-type: none"> <li>A new pipe connected from the WetSep was provided to ensure diversion flow would not be polluted by construction activities.</li> <li>Not required for reminder.</li> </ul>
11 January 2016	<ul style="list-style-type: none"> <li>No adverse environmental were observed.</li> </ul>	<ul style="list-style-type: none"> <li>NA</li> </ul>
20 January 2016	<ul style="list-style-type: none"> <li>Mud trace at site exit was observed. The contractor should clean up the trace and maintain the site exit clean and tidy. (SA18)</li> <li>As a reminder, the contractor should closely monitor all discharge point to make sure all discharge water should comply with discharge license requirement.</li> </ul>	<ul style="list-style-type: none"> <li>The site exit was cleaned.</li> <li>Not required for reminder.</li> </ul>
25 January 2016	<ul style="list-style-type: none"> <li>No adverse environmental were observed.</li> </ul>	<ul style="list-style-type: none"> <li>NA</li> </ul>

**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 **7, 12, 19 and 26 January 2016**. 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
7 January 2016	<ul style="list-style-type: none"> <li>No adverse environmental were observed.</li> </ul>	<ul style="list-style-type: none"> <li>NA</li> </ul>
12 January 2016	<ul style="list-style-type: none"> <li>A tree without proper protection was observed at the working area in LMH road, the Contractor should fence off the tree to provide tree protection zone.</li> </ul>	<ul style="list-style-type: none"> <li>The tree is isolated by fences.</li> </ul>
19 January 2016	<ul style="list-style-type: none"> <li>No adverse environmental were observed.</li> </ul>	<ul style="list-style-type: none"> <li>NA</li> </ul>
26 January 2016	<ul style="list-style-type: none"> <li>To prevent storm water run-off from the site area, the Contractor should provide mitigation measures for the exposed surface adjacent to the public road. ((Location: LMH Road)</li> <li>The Contractor was reminded to provide and maintain the mitigation measures for dusty stockpiles the stockpile for long time storage. (Location: BCP)</li> </ul>	<ul style="list-style-type: none"> <li>The soil was dug out to lower the ground level along the concrete bund.</li> <li>Not required for reminder.</li> </ul>

**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 **7, 14, 21 and 28 January 2016**. 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
7 January 2016	<ul style="list-style-type: none"> <li>• Smoke exhausted from generators were observed, the Contractor should provide maintenance to prevent smoke emission. (Location: BCP)</li> <li>• the Contractor should cover the exposed slope to minimize the dust generation. (North Portal)</li> <li>• The Contractor was reminded to provide mitigation measures such as site hoarding for construction activity to avoid muddy water runoff to public area.</li> </ul>	<ul style="list-style-type: none"> <li>• The generator has been sent back for maintenance. And no smoke is observed from the other generator on site.</li> <li>• The Exposed slope surface not under constant work activities has been paved.</li> <li>• Not required for reminder.</li> </ul>
14 January 2016	<ul style="list-style-type: none"> <li>• Trees without proper fencing for protection were observed, the Contractor should fence off the retained trees and ensure no construction materials are placed near the trees. (Bridge D and Wo Keng Shan Road and Ng Chow Road)</li> </ul>	<ul style="list-style-type: none"> <li>• The trees are fenced off to prevent damage from construction activities.</li> </ul>
21 January 2016	<ul style="list-style-type: none"> <li>• To prevent storm water run-off entering the water body, the Contractor should provide sand bags or relevant measures along the iron railings adjacent to the river. (Location: Ng Chow Road)</li> <li>• The Contractor should provide maintenance on the newly provided U-channel and improve it to redirect the run-off water from the site and to prevent from entering public area. (Location: Ng Chow Road)</li> <li>• Exposed road surface adjacent to a river was observed at Bridge C, the Contractor should provide mitigation measures to prevent water accumulation and water run-off from the site area entering the water body. Mitigation measures such as increase the gradient of land surface near the river side or rock fill at the low point with bund near the boundary side.</li> <li>• The Contractor should provide and maintain the tree protection measures for all the retained trees at Bridge C.</li> </ul>	<ul style="list-style-type: none"> <li>• Sand bags have been provided along the iron railings adjacent to the channel.</li> <li>• Tarpaulin sheets have been used to cover exposed surface.</li> <li>• Ground level has been elevated by rock filling and concrete bund has been set up along the site boundary</li> <li>• Tree protection has been enhanced by barrier fencing</li> </ul>

Date	Findings / Deficiencies	Follow-Up Status
	<ul style="list-style-type: none"> <li>The Contractor was reminded to review the tree protection measures for the retained tree on Ng Chow Road and to remove the branch clipping from the tree.</li> </ul>	<ul style="list-style-type: none"> <li>Not required for reminder.</li> </ul>
<ul style="list-style-type: none"> <li>28 January 2016</li> </ul>	<ul style="list-style-type: none"> <li>To prevent wheel washing water entering the river, the Contractor should seal all the gaps along the temporary bridge at BCP.</li> <li>It was observed that muddy water from C6 south portal directing to wastewater treatment facility (ID: SH-6 &amp; SH-7) lead to overflow, and muddy water discharge through the facilities was occurred. The Contractor should modify the facilities and to ensure the water quality is comply with the discharge license requirement.</li> <li>The Contractor was reminded to provide notice “停車洗轆” at each site exits.</li> </ul>	<ul style="list-style-type: none"> <li>The gap of the temporary bridge has been sealed up with concrete.</li> <li>The diameter of the influent pipe of the wastewater treatment facility (SH-7) was enlarge from 3 inches to 4 inches and the 3 inches of submersible pump was replaced by 4 inches one. Moreover, the frequency for desludging of wastewater treatment facility (SH-6) was increased from one per week to 3 times per week. Discharge of treated water from the wastewater treatment facility was visually clear after the above mentioned arrangement.</li> <li>Not required for reminder.</li> </ul>

**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 **6, 13, 20 and 27 January 2016**. 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
6 January 2016	<ul style="list-style-type: none"> <li>The Contractor should cover the stockpile well with impervious sheet to reduce dust generation in Portion 2.</li> <li>The Contractor was reminded to remove stagnant water on site after rainy days</li> </ul>	<ul style="list-style-type: none"> <li>The stockpile was covered well with tarpaulin sheet.</li> </ul>
13 January 2016	<ul style="list-style-type: none"> <li>Stagnant water was observed at the lifting eye of concrete block at Portion 1. The Contractor should take measures to avoid stagnant water being stored by the concrete blocks</li> </ul>	<ul style="list-style-type: none"> <li>The lifting eye of the concrete blocks were filled with sand to avoid stagnant water being stored.</li> </ul>
20 January	<ul style="list-style-type: none"> <li>The Contractor should cover the stockpile properly at Portion 2 to reduce dust</li> </ul>	<ul style="list-style-type: none"> <li>The Contractor was reminded to clear the</li> </ul>

Date	Findings / Deficiencies	Follow-Up Status
2016	generation and avoid being washed away by rain. <ul style="list-style-type: none"> <li>The Contractor was reminded to clear the sediment at the drainage channel on site regularly.</li> </ul>	sediment at the drainage channel on site regularly. <ul style="list-style-type: none"> <li>Not required for reminder.</li> </ul>
27 January 2016	<ul style="list-style-type: none"> <li>As a reminder, stagnant water cumulated inside the drip tray should be cleaned after the rainstorm.</li> <li>As a reminder, dust mitigation measures should be provided for stockpile which storage on site.</li> </ul>	<ul style="list-style-type: none"> <li>Not required for reminder.</li> <li>Not required for reminder.</li> </ul>

**Contract 7**

- 8.2.11 Although construction activities under **Contract 7** have not yet commenced, site preparation work was conducted in the Reporting Period. In the Reporting Period, two occasions of joint site inspection to evaluate the site environmental performance were carried out on **5 and 26 January 2016**. No non-compliance was noted.
- 8.2.12 The findings / deficiencies of **Contract 7** that observed during the weekly site inspection are listed in **Table 8-6**.

**Table 8-6 Site Observations for Contract 7**

Date	Findings / Deficiencies	Follow-Up Status
5 January 2016	<ul style="list-style-type: none"> <li>As a reminder, all NRMM using on site should be granted with NRMM label or under application under the NRMM Regulation.</li> </ul>	<ul style="list-style-type: none"> <li>Not required for reminder.</li> </ul>
26 January 2016	<ul style="list-style-type: none"> <li>No adverse environmental were observed.</li> </ul>	<ul style="list-style-type: none"> <li>NA</li> </ul>

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

**Other Contracts**

- 8.2.14 Since Contract 4 has not yet commenced, no site inspection were performed.

## 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, 5, 6 and Contract SS C505. However, one (1) verbal and two (2) documented environmental complaints regarding wastewater / muddy water were 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 undertaken by the Contractor to resolve the deficiencies. The details of complaint are listed below:-

#### **Investigation Result for the Verbal Complaint received by the Contractor on 4 January 2016**

9.1.3 On 4 January 2016, a land user of the farm located at junction of Ng Chow Road and Wo Keng Shan Road notified the Contractor of C6 (CCKJV) that muddy water was observed in the his land area. It was suspected that the muddy water was discharged from the construction site of C6.

9.1.4 According to the information provided by the CCKJV, pump pipe burst from the bored piling work at Bridge B was occurred at around 6pm on 4 January 2015. The muddy water from the burst pump pipe was accidentally leaked to the adjacent river channel and the concerned farm which next to the bored piling area. Immediate action has undertaken by CCKJV as follows:-

- (a) The muddy water in the affected channel was trapped by the Contractor to stop further spreading
- (b) The muddy water in the affected channel was pumped to the wastewater treatment facilities for proper treatment and then recirculated for the bored piling work
- (c) The worker of CCKJV was sent to the affected farm to clean up part of the muddy water

9.1.5 On 5 January 2016 morning, representatives of CCKJV, AECOM and the land user were carried out joint inspection at the affected farm to investigate the source of muddy water and negotiate the remediate works. Under their investigation, it was considered that the muddy water in the farm was come from the leakage of burst pump pipe from bored piling work at Bridge B. Some of the muddy water on the affected farm has been cleaned up by the workers of CCKJV. However, the land user of the farm expressed that they will carry out intense remediate work on the farm as the cumulated mud may affect the crops on his farm.

9.1.6 A joint site inspection by the RE, IEC, Contractor and ET was carried out on 7 January 2016 at Bridge B and the adjacent channel follow up the status of the complaint and remediate action. During site inspection, it was observed that the affected channel was kept clear of muddy water and it is believe that the Contractor has completed the clearing works. To avoid reoccurrence of similar incident, the Contractor has constructed site hoarding for surrounding the site area and it was completed on 21 January 2016.

#### **Investigation Result for the Documented Complaints received by EPD on 14 January 2016**

9.1.7 On 14 January 2016, a complaint was received by EPD regarding the soil/ muddy water brought by the vehicle when leaving the construction site. The soil/ muddy water were cumulated at the road and this situation has been observed for a long period of time. It was suspected that the wheel washing facilities of the construction site was not in proper function and follow up action is required.

9.1.8 A joint site inspection among EPD/AECOM/CCKJV/DHK was conducted on 21 January 2016 morning for the complaint investigation. It was noted that the complaint location is the site exit of North Portal adjacent to Sha Tau Kok Road. The concerned site exit was previously maintained by Contractor of Contractor 2 (DHK) provided with automatic wheel washing facility.

Since the concerned area had been handed over to Contractor of Contract 6 (CCKJV), DHK has relocated the wheel washing facility within the boundary of Contract 2. The current exit of North Portal is being shared by Contract 2 and Contract 6 but maintained by CCKJV.

- 9.1.9 Joint site inspection among RE, IEC, CCKJV and ET was conducted on 21 January 2016 afternoon at the complaint location for investigation. It was observed that muddy water was cumulated at the roadside of Sha Tau Kok Road. Manual wheel washing was provided before the site exit and there was cut-off ditch to intercept any storm water or residual water from manual wheel washing, however, the ditch was damaged due to frequent passage of truck and the muddy water generated by manual wheel washing was getting into the adjacent Sha Tau Kok Road.
- 9.1.10 CCKJV was advised to immediately provide protection for the road gully outside the site exit to avoid muddy water directly getting into the communal drainage. Moreover, the Contractor should repair the damage road surface and reinstate the cut-off ditch in proper function. The remedial works were completed on 5 February 2016 afternoon as following:-
- (a) A new cut-off ditch was constructed in order to divert the wastewater generated from wheel washing activity to the sump pit. Manual wheel washing would only conduct behind the new cut-off ditch to ensure all wastewater from wheel washing being intercepted.
  - (b) The damaged cut-off ditch was repaired in order to prevent wastewater being overflow to public road.
  - (c) Water pump was provided at the sump pit to pump the wastewater to the sedimentation tanks to undergo treatment
  - (d) Sedimentation tank and sand bag bund was installed and removal of silt in the sedimentation tank would be carried out once per week.
- 9.1.11 During site inspection on 12 February 2016, it was observed that the remedial works by CCKJV was properly in place and no cumulated muddy water was observed at the concerned site exit. However, CCKJV was advised to closely monitor the condition of the site exit and further improve the wheel washing facilities if necessary.

#### **Investigation Result for the Documented Complaints received by EPD on 20 January 2016**

- 9.1.12 A complaint was received from EPD on 20 January 2016 regarding soil/ muddy water gushed out from the construction site and getting into his village house area. In view of the complaint location and confirmed with the Contractor, this complaint is related to the accident of burst pump pipe from a recirculation tank during the bored piling work at Bridge B happened on 4 January 2016, which causing muddy water leaked from the works area to the nearby village house area. The investigation report for the accident was conducted by ET and submitted to the RE on 12 January 2016.
- 9.1.13 Joint site inspection among EPD, RE and Contractor was carried on 21 January 2016 morning for the complaint investigation. During the inspection, the Contractor has explained to EPD that the complaint is related to the accident of burst pump pipe from a recirculation tank causing leakage of muddy water at Bridge B on 4 January 2016. After the burst pump pipe accident, the Contractor had taken remedial action such as immediately cleaned up the muddy water at the affected area and constructed site hoarding and provided sand bag barrier as a temporary berm to isolate the bored piling area to avoid reoccurrence of leakage cases.
- 9.1.14 During the EPD's inspection on 21 January 2016, the bored piling area and the remediated works conducted by the Contractor were inspected. The findings during the site inspection are summarized below:-
- (a) No leakage of soil/ muddy water was observed from concerned recirculation tanks and the bored piling area.
  - (b) After the burst pump pipe incident, site hoarding had been constructed to isolate the bored

piling area and the adjacent village houses which prevent muddy water flowing from the works area of C6 to other non-C6 works areas.

- (c) Sand bags barriers and drains as a temporary berm were erected at the isolate of the bored piling area which construction of hoarding is not practicable.

9.1.15 There was no muddy water leakage from the bored piling works area after the remedial action taken by the Contractor. It is considered that the remediate measures provided by the Contractor are effectively preventing muddy water leaked from the works area. However, the Contractor was reminded to regularly check and maintain the condition of the pump pipe and related machinery to minimize the chance of similar accident. EPD has no further comment on the remediate works conducted by the Contractor during the site inspection on 21 January 2016.

9.1.16 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 – 31 Dec 2015	Contract 2	0	13	<ul style="list-style-type: none"> <li>• (6) Water Quality</li> <li>• (5) Construction Dust</li> <li>• (2) Noise</li> </ul>
06 Nov 2013 – 31 Dec 2015	Contract 3	0	3	<ul style="list-style-type: none"> <li>• (1) Construction Dust</li> <li>• (2) Water quality</li> </ul>
16 Aug 2013 – 31 Dec 2015	Contract 5	0	2	<ul style="list-style-type: none"> <li>• (2) Construction Dust</li> </ul>
16 Aug 2013 – 31 Dec 2015	Contract 6	0	3	<ul style="list-style-type: none"> <li>• (2) Water Quality</li> <li>• (1) Construction Dust</li> </ul>
16 Aug 2013 – 31 Dec 2015	SS C505	0	0	N/A
1 – 31 January 2016	Contract 2	0	13	<ul style="list-style-type: none"> <li>• (6) Water Quality</li> <li>• (5) Construction Dust</li> <li>• (2) Noise</li> </ul>
	Contract 3	0	3	<ul style="list-style-type: none"> <li>• (1) Construction Dust</li> <li>• (2) Water quality</li> </ul>
	Contract 5	0	2	<ul style="list-style-type: none"> <li>• (2) Construction Dust</li> </ul>
	Contract 6	2	5	<ul style="list-style-type: none"> <li>• (4) Water Quality</li> <li>• (1) construction Dust</li> </ul>
	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 – 31 Dec 2015	Contract 2	0	0	NA
06 Nov 2013 – 31 Dec 2015	Contract 3	0	0	NA
16 Aug 2013 – 31 Dec 2015	Contract 5	0	0	NA
16 Aug 2013 – 31 Dec 2015	Contract 6	0	0	NA
1 – 31 January 2016	SS C505	0	0	NA
	Contract 2	0	0	NA
	Contract 3	0	0	NA
	Contract 5	0	0	NA
	Contract 6	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 – 31 Dec 2015	Contract 2	0	0	NA
06 Nov 2013 – 31 Dec 2015	Contract 3	0	0	NA
16 Aug 2013 – 31 Dec 2015	Contract 5	0	0	NA
16 Aug 2013 – 31 Dec 2015	Contract 6	0	0	NA
1 – 31 January 2016	SS C505	0	0	NA
	Contract 2	0	0	NA
	Contract 3	0	0	NA
	Contract 5	0	0	NA
	Contract 6	0	0	NA

**The Other Contracts**

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

**Warning Letter**

- 9.1.18 A warning letter from EPD was issued to Contract 6 on 1 February 2016 regarding Non Compliance (NC) with APCO for the non-covered dump trucks travelling to Fill Bank at TM Area 38 on 14 and 18 January 2016 respectively. The Contractor has explained to the EPD that all dump trucks under the Contract were well covered before leaving the site, however, some drivers of the dump trucks immediately opened the cover when they just get into Fill Bank at TM Area 38 and captured by the CCTV. A briefing and warning letter has given to the relevant drivers to prevent reoccurrence of similar case.



**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**

<b>Issues</b>	<b>Environmental Mitigation Measures</b>
Water Quality	<ul style="list-style-type: none"> <li>Wastewater to be treated by the wastewater treatment facilities i.e. sedimentation tank or AquaSed before discharge.</li> </ul>
Air Quality	<ul style="list-style-type: none"> <li>Maintain damp / wet surface on access road</li> <li>Keep slow speed in the sites</li> <li>All vehicles must use wheel washing facility before off site</li> <li>Sprayed water during breaking works</li> <li>A cleaning truck was regularly performed on the public road to prevent fugitive dust emission</li> </ul>
Noise	<ul style="list-style-type: none"> <li>Restrain operation time of plants from 07:00 to 19:00 on any working day except for Public Holiday and Sunday.</li> <li>Keep good maintenance of plants</li> <li>Place noisy plants away from residence or school</li> <li>Provide noise barriers or hoarding to enclose the noisy plants or works</li> <li>Shut down the plants when not in used.</li> </ul>
Waste and Chemical Management	<ul style="list-style-type: none"> <li>On-site sorting prior to disposal</li> <li>Follow requirements and procedures of the “Trip-ticket System”</li> <li>Predict required quantity of concrete accurately</li> <li>Collect the unused fresh concrete at designated locations in the sites for subsequent disposal</li> </ul>
General	<ul style="list-style-type: none"> <li>The site was generally kept tidy and clean.</li> </ul>

**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
  - Northbound top heading excavation and tunnel enlargement
  - Southbound tunnel internal works and finishes
  - 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
- 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 L15 road and existing LMH road.
- Brick laying at footpath of proposed LMH road
- Road works (kerb and bituminous laying) at existing LMH road
- Drainage works at Depressed Road at BCP3
- 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
- Pile cap construction

#### **Contract SS C505**

- Excavation & fill works
- Predrilling
- Percussive piling
- Pre-boring
- Bored piling
- Pile caps
- Training centre set-up
- Structural works
- Assembly of crawler crane
- Weighbridge works
- Construction of Prototype A & C

### **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 Contract 7 have not yet commenced and no environmental issue is presented.

## 11 CONCLUSIONS AND RECOMMENDATIONS

### 11.1 CONCLUSIONS

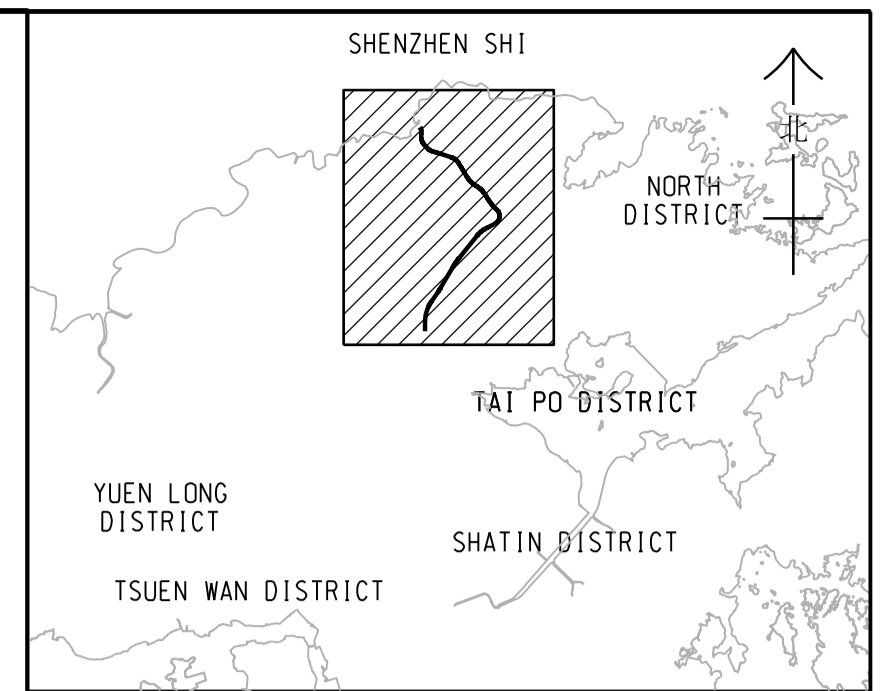
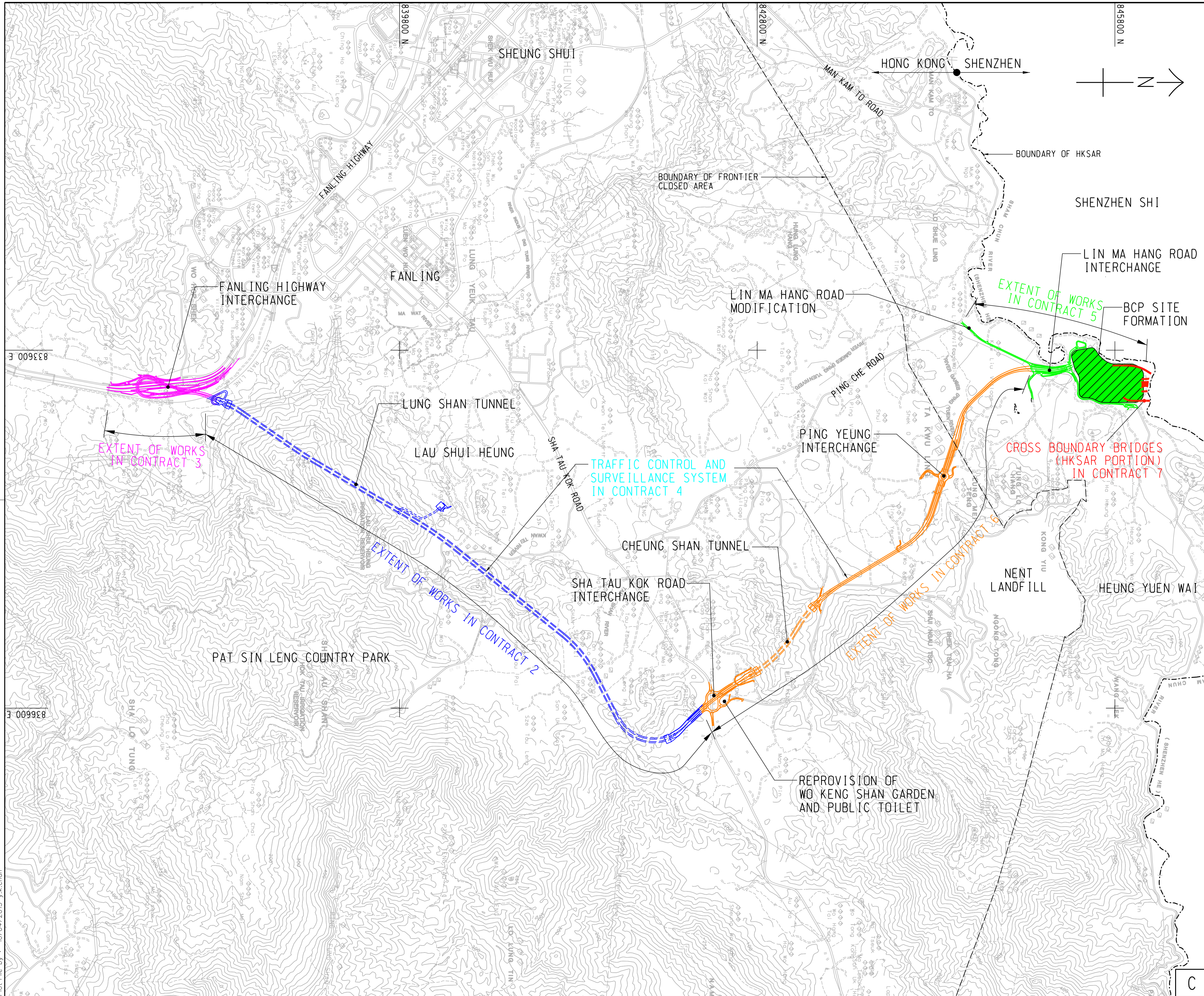
- 11.1.1 This is the 30<sup>th</sup> monthly EM&A report presenting the monitoring results and inspection findings for the Reporting Period from 1 to 31 January 2016.
- 11.1.2 For air quality monitoring, no 1-hour and 24-hour TSP monitoring results triggered the Action or Limit Levels were recorded. 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, a total of twenty-three (23) Limit/Action Levels exceedances were recorded, namely one (1) AL and twelve (12) LL exceedance of turbidity and one (1) AL and nine (9) LL exceedance of Suspended Solids for the Project. 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 environmental summons or successful prosecutions were recorded in the Reporting Period. However, a warning letter from EPD was issued to Contract 6 on 1 February 2016 regarding Non Compliance (NC) with APCO for the non-covered dump trucks travelling to Fill Bank at TM Area 38 on 14 and 18 January 2016 respectively. The Contractor has explained to the EPD that all dump trucks under the Contract were well covered before leaving the site, however, some drivers of the dump trucks immediately opened the cover when they just get into Fill Bank at TM Area 38 and captured by the CCTV. A briefing and warning letter has given to the relevant drivers to prevent reoccurrence of similar case.
- 11.1.6 In this Reporting Period, one (1) verbal complaint received by the Contractor and two (2) documented environmental complaints regarding wastewater / muddy water related to Contracts 6 were received and lodged by EPD on 14 and 20 January 2016 respectively. Follow up actions have been undertaken 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 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. For all Contracts, water quality mitigation measures to prevent muddy runoff into nearby water bodies or public areas should paid attention and fully implemented in particular for Contract 6.
- 11.2.3 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.
- 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 修訂摘要	D.C. 校核	C.K. 查核	DATE 日期

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

LIAN TANG/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. D.C. APPROVED 審核人

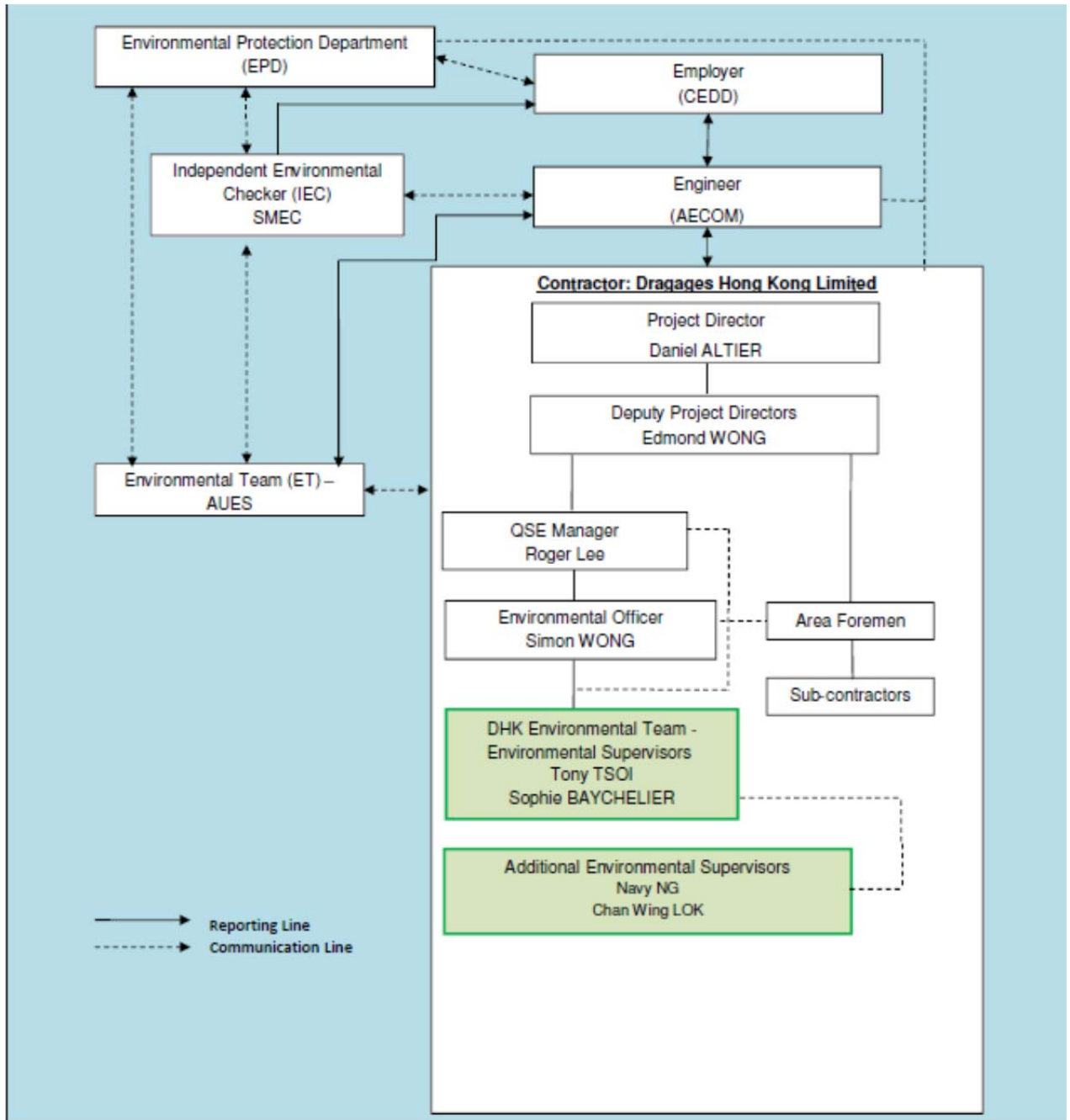
DRAWN BY 繪圖	STATUS 階段
ZJ	

SCALE 比例 A1 1 : 15000 A3 1 : 30000  
DIMENSIONS ARE IN 尺寸單位 METRES  
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Plot File by : 10/04/2015 y.k.chan

## **Appendix B**

### **Organization Chart**



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



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

<b>Organization</b>	<b>Project Role</b>	<b>Name of Key Staff</b>	<b>Tel No</b>	<b>Fax No.</b>
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	Simon Wong	2171 3004	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

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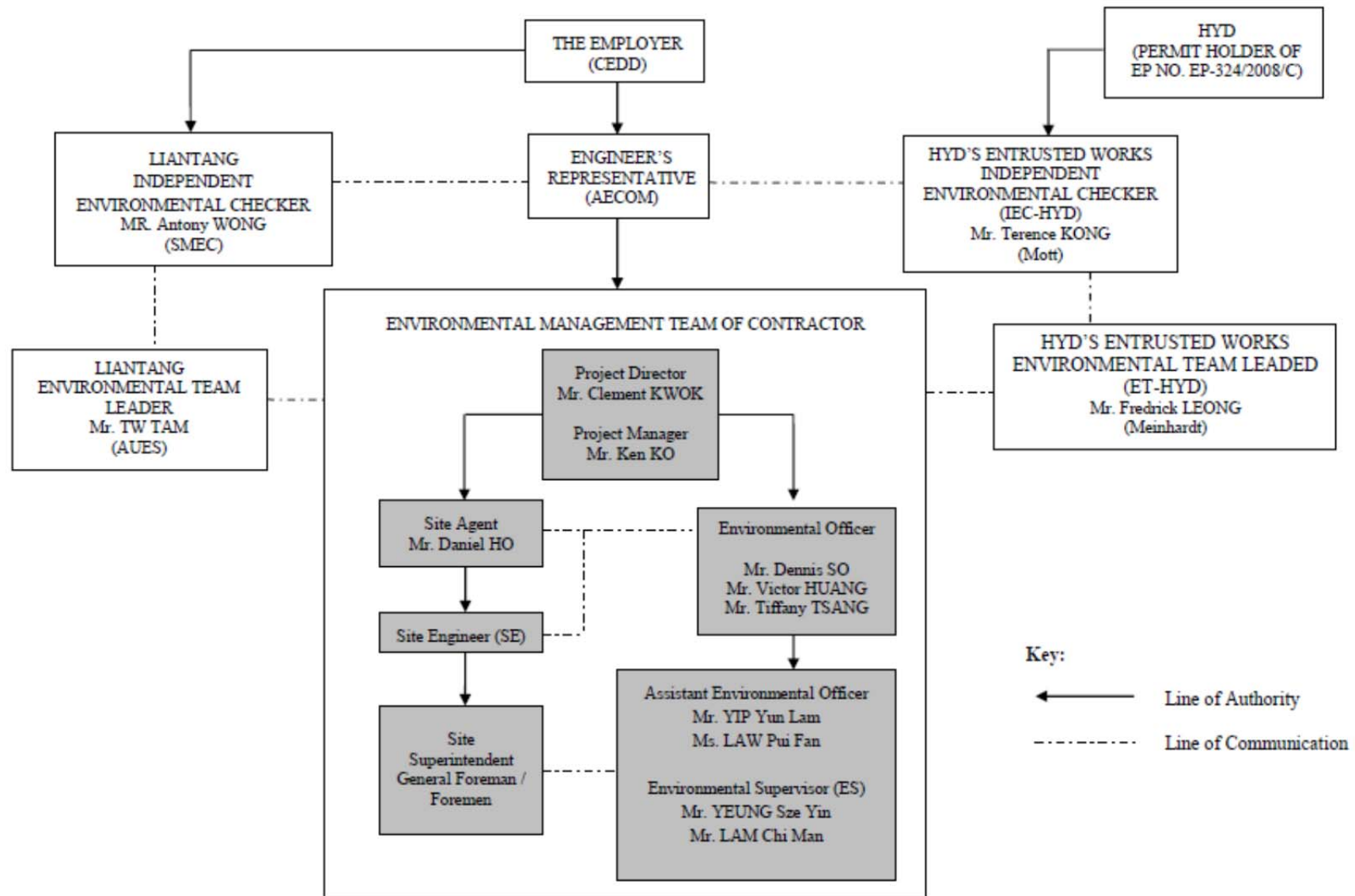
*CEDD (Employer) – Civil Engineering and Development Department*

*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**

<b>Organization</b>	<b>Project Role</b>	<b>Name of Key Staff</b>	<b>Tel No</b>	<b>Fax No.</b>
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

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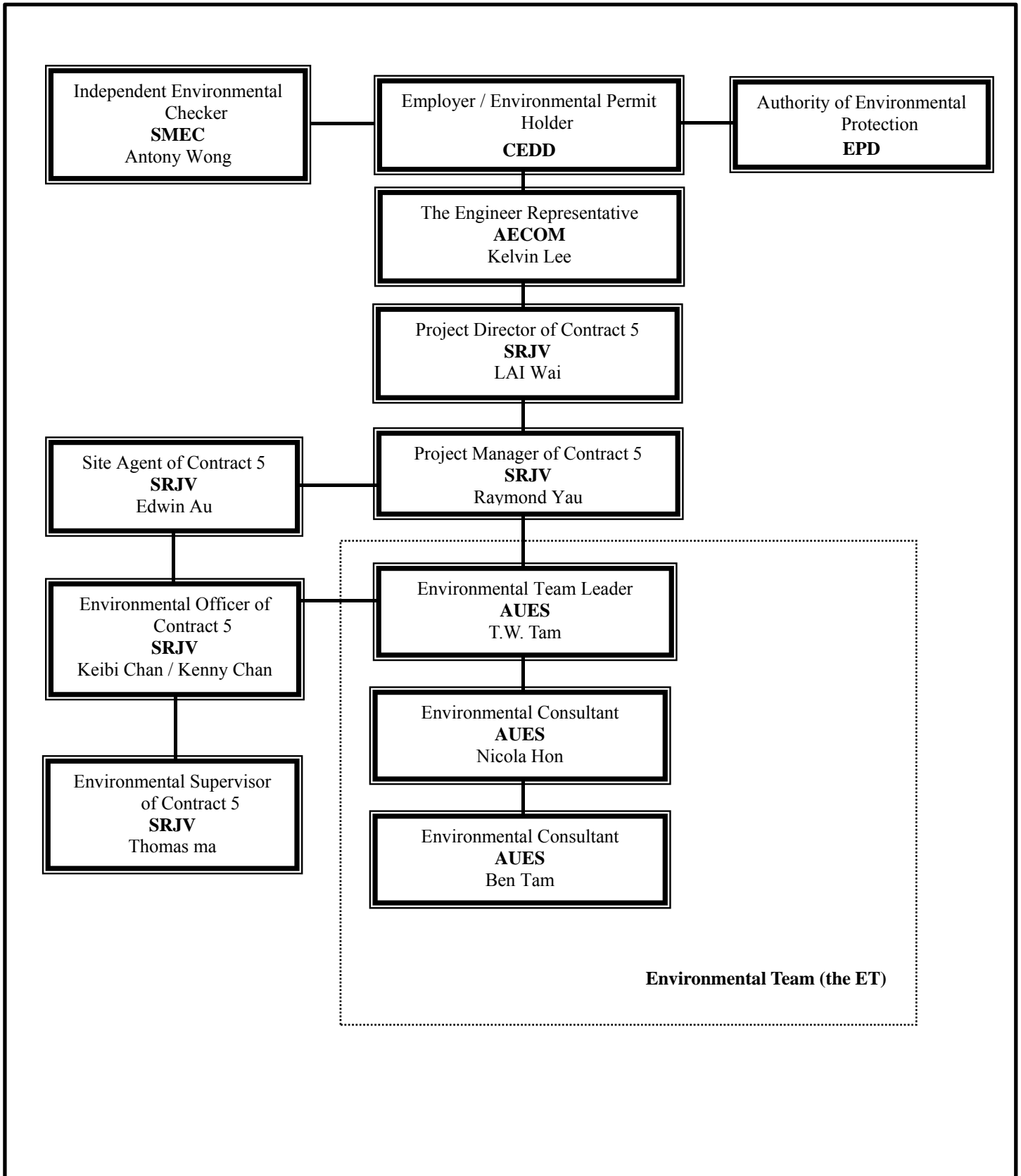
*CEDD (Employer) – Civil Engineering and Development Department*

*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	LAI Wai	--	2403 1162
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

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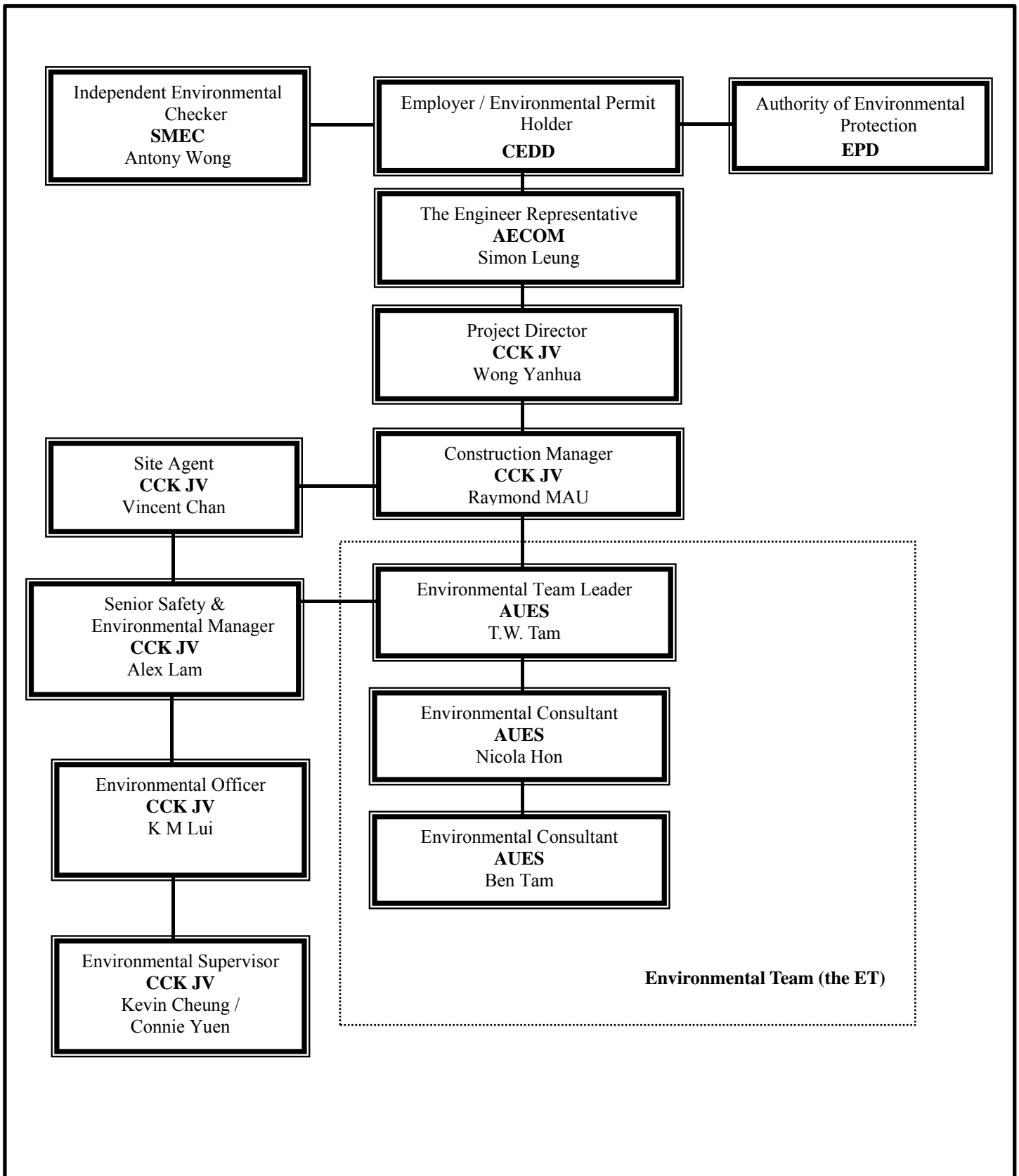
*CEDD (Employer) – Civil Engineering and Development Department*

*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

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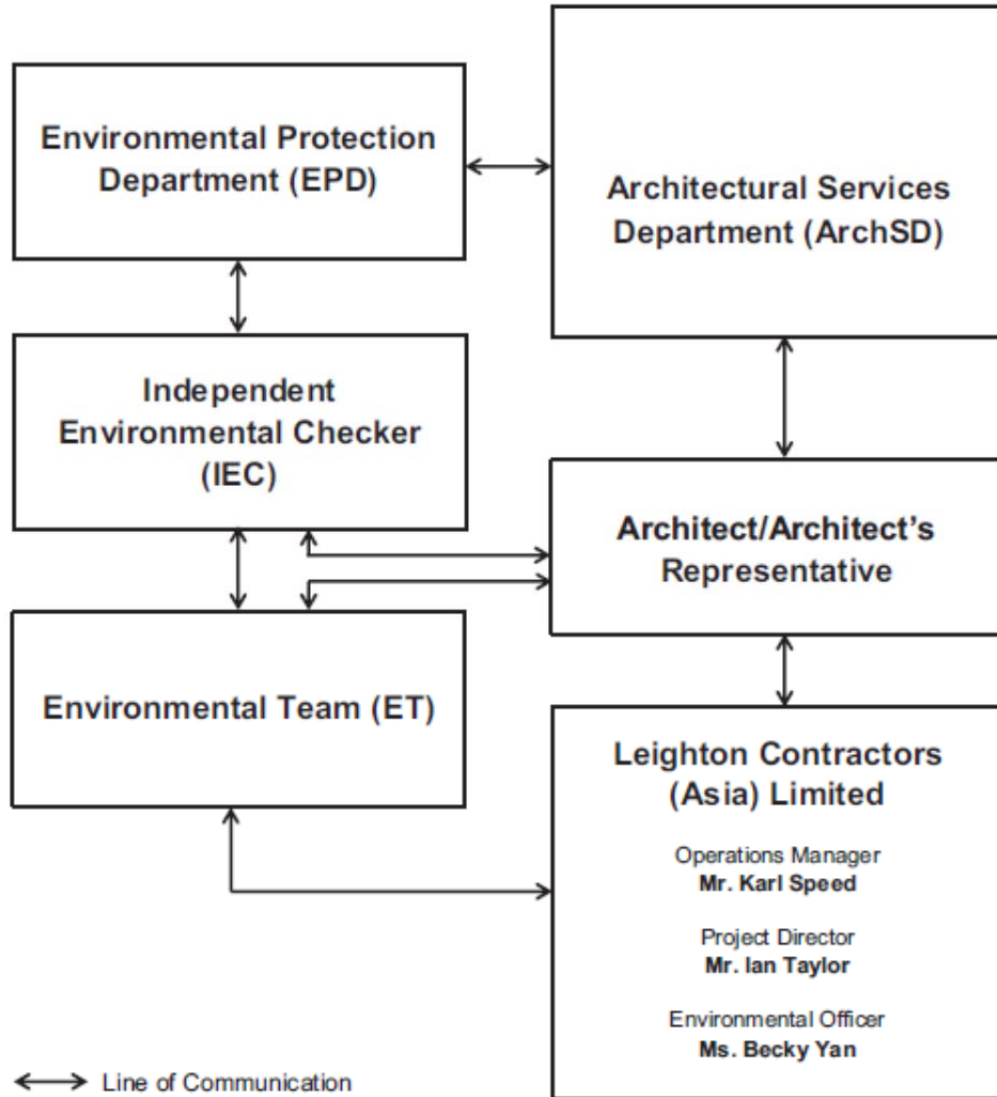
*CEDD (Employer) – Civil Engineering and Development Department*

*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	2015	2016			
						Jan	Feb	Mar	Apr
<b>Total</b>		755.0d	27-Oct-14	04-Mar-17					
<b>HKLTH Works Programme update (Rev D) 20-January-2016</b>		755.0d	27-Oct-14	04-Mar-17					
<b>2 General</b>		755.0d	27-Oct-14	04-Mar-17					
<b>Noise Barriers</b>		122.0d	03-Jul-15	01-Dec-15					
<b>DDA Submission</b>		122.0d	03-Jul-15	01-Dec-15					
CONTDS1090	Preparation of DDA for formal submission to ER/ICE/IP	45.0d	03-Jul-15	28-Aug-15					
CONTDS1100	IPs/ ER's Review	28.0d	29-Aug-15	03-Oct-15					
CONTDS1110	Preparation of DDA with ICE Certification for resubmission to ER/ICE/IP	21.0d	05-Oct-15	29-Oct-15					
CONTDS1120	ER/IP's Approval	28.0d	30-Oct-15	01-Dec-15					
<b>Project Wide E&amp;M</b>		755.0d	27-Oct-14	04-Mar-17					
<b>E&amp;M Design &amp; Engineering Works</b>		177.0d	22-Jan-15	29-Aug-15					
<b>Shop Drawing &amp; Builder's Drawing Submission</b>		177.0d	22-Jan-15	29-Aug-15					
PD.DW.1010	Shop Drawings & Builder's Drawings Submission & Approval	177.0d	22-Jan-15	29-Aug-15					
<b>Equipment Selection &amp; Submission</b>		338.0d	27-Oct-14	14-Dec-15					
PD.PQ.1080	Electrical Services System Submission and Approval by the Engineer	338.0d	27-Oct-14	14-Dec-15					
PD.PQ.1150	Tunnel Ventilation System Submission and Approval by the Engineer	228.0d	07-Nov-14	15-Aug-15					
PD.PQ.2010	FS System Submission and Approval by the Engineer	278.0d	01-Nov-14	09-Oct-15					
<b>Manufacturing &amp; Delivery of Major Equipment</b>		390.0d	22-Jan-16	04-Mar-17					
PD.EC.MD	Manufacturing and Delivery of ECS System	390.0d	22-Jan-16	04-Mar-17					
<b>3 South Portal Area</b>		388.9d	06-May-15	14-Mar-16					
<b>3.1 South Portal Subcontract &amp; Procurement</b>		341.3d	30-Jun-15	16-Jan-16					
SPS&P0080	Subcontract : Ventilation Building Structure Works	60.0d	30-Jun-15	08-Sep-15					
SPS&P0090	Subcontract : Tunnel Lining Works	60.0d	13-Jul-15	19-Sep-15					
SPS&P0100	Subcontract : Tunnel Lining Form works (Design, Fabrication, Delivery, & On-Site Assembly)	150.0d	13-Jul-15	09-Jan-16					
SPS&P0110	Subcontract : Tunnel Concreting Works	60.0d	24-Aug-15	04-Nov-15					
SPS&P0120	Subcontract : Tunnel Finishing Works	60.0d	05-Nov-15	16-Jan-16					
<b>3.2 South Portal Design Submission</b>		260.9d	08-Jul-15	27-Dec-15					
<b>South Tunnel Internal Structures</b>		28.0d	26-Jul-15	22-Aug-15					
<b>DDA Submission</b>		28.0d	26-Jul-15	22-Aug-15					
STIS1L1023690	ER/IP's Approval	28.0d	26-Jul-15	22-Aug-15					
<b>Cross Passages -Temp Works D&amp;B Tunnel - Rock</b>		55.0d	08-Jul-15	07-Oct-15					
<b>DDA Submission</b>		55.0d	08-Jul-15	07-Oct-15					
FL326980	IPs/ ER's Review	28.0d	08-Jul-15	08-Aug-15					
FL327000	Preparation for resubmission to ER/ICE/IP with ICE Certification	27.0d	10-Aug-15	09-Sep-15					
FL327100	ER/IP's Approval	28.0d	10-Sep-15	07-Oct-15					
<b>As-Built Drawings [Contractor's Design/ Contractor's Alternative Design]</b>		60.0d	29-Oct-15	27-Dec-15					
SC1650	As-Built Drawings Submission - South Portal Ventilation Bldg Foundation	60.0d	29-Oct-15	27-Dec-15					
<b>3.3 South Portal Method Statement Submission</b>		48.0d	05-Jan-16	03-Mar-16					
<b>South Portal: Temporary Bridge Dismantling</b>		48.0d	05-Jan-16	03-Mar-16					
FL2022077	Prepare Method Statement	48.0d	05-Jan-16	03-Mar-16					
<b>3.5 South Portal Works</b>		303.6d	06-May-15	14-Mar-16					
<b>South Portal: Foundation &amp; Substructure</b>		109.0d	29-Jun-15	28-Oct-15					
SV2180	South Bound Foundation	54.0d	29-Jun-15	04-Sep-15					
SV2190	Handover to SB Tunneling	1.0d	04-Sep-15	04-Sep-15					
SV2210	N/B Bored Piles 4nos & Pile Test	48.0d	07-Jul-15	04-Sep-15					

MAIN CONTRACTOR  香港寶嘉 Dragages Hong Kong A member of the Bouygues Construction group						CLIENT  土木工程拓展署 Civil Engineering and Development Department		THE ENGINEER  CONTRACTOR'S DESIGNER 		PROJECT Contract No. CV/2012/08 Liantang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works Contract 2		DOCUMENT NO. LTH/DHK/PGR/PW/PLP/00112/A		
A	Monthly Report No.25	18/01/2016	KEC/RAN	RBS/SJO	DAL	TITLE Monthly Report No.25 3-Months Rolling Programme (Approved Works Programme Rev. D)		DOC. STATUS FOR INFO.	CREATION DATE 20-Jan-16	REVISION A				
REV	DESCRIPTION	DATE	PREPARED	CHECKED	APPROVED	PAPER SIZE A3		SCALE N/A		PAGE 1 of 5				

Activity ID	Activity Name	Working Duration	BL Project Start	BL Project Finish	2016				
					2015	Jan	Feb	Mar	Apr
SV2740	N/B Pile Caps & Tie Beams	36.0d	05-Sep-15	20-Oct-15					
SV2745	N/B Backfilling	6.0d	22-Oct-15	28-Oct-15					
SV2750	Handover to NB Tunneling	1.0d	28-Oct-15	28-Oct-15					
<b>South Portal: Superstructure</b>		157.0d	22-Oct-15	02-Feb-16					
SV2325	Retaining Walls (LSTSP/ RW3 & LST SP/ RW4 & S1,S2 & S3)	74.0d	22-Oct-15	19-Jan-16					
SV2335	Backfilling to Permanent Slope	60.0d	21-Nov-15	02-Feb-16					
<b>South Tunnels: Southbound Tunnel</b>		273.6d	06-May-15	14-Mar-16					
DB6300	D&B Setup / Site Installation	101.0d	06-May-15	04-Sep-15					
DB6310	Top Heading Excavation (Canopies) (CRP: Ch1,751>Ch1,787) 36m	57.0d	05-Sep-15	11-Nov-15					
DB6320	Bottom Bench Excavation (CRP:Ch1,751>Ch1,787) 36m	34.0d	12-Nov-15	21-Dec-15					
DB6330cdwp	Full Face D&B Excavation: (CRP: Ch1,787 to Ch2,065) 278m	70.0d	22-Dec-15	14-Mar-16					
<b>South Tunnels: Northbound Tunnel</b>		159.2d	30-Oct-15	25-Feb-16					
DB6340dwp1	Top Heading Excavation (Canopies) (P20/NB Ch: 139 to 178 ); 39m; (CRP: Ch1,750>Ch1,789)	67.0d	30-Oct-15	18-Jan-16					
DB6340dwp2	Top Heading Excavation (Canopies) (P20/NB Ch: 178 to 200 ); 22m; (CRP: Ch1,789>Ch1,811)	28.0d	19-Jan-16	19-Feb-16					
DB6350	Bottom Bench Excavation (P20/NB - 139>200); 61m; (CRP: Ch1,750>Ch1,811)	62.0d	14-Dec-15	25-Feb-16					
<b>4 Middle Portal Area</b>		399.0d	05-Feb-15	02-Apr-16					
<b>4.1 Middle Portal Subcontract &amp; Procurement</b>		369.2d	05-Feb-15	04-Dec-15					
MPS&P0050	Subcontract : Tunnel Lining Form works (Design, Fabrication, Delivery, & On-Site Assembly)	150.0d	05-Feb-15	11-Aug-15					
MPS&P0080	Subcontract : Ventilation Building ABWF Works	60.0d	15-Jul-15	22-Sep-15					
MPS&P0090	Subcontract : Tunnel Concreting Works for Internal Structures	60.0d	31-Aug-15	11-Nov-15					
MPS&P0100	Subcontract : External Works and Landscaping Works	60.0d	23-Sep-15	04-Dec-15					
<b>4.2 Middle Portal Design Submission</b>		362.0d	20-Jul-15	26-Sep-15					
<b>Mid Vent Adit Internal Structure</b>		119.0d	20-Jul-15	25-Sep-15					
<b>DDA Submission</b>		119.0d	20-Jul-15	25-Sep-15					
DSN29084	Preparation for resubmission to ER/ICE/IP with ICE Certification	35.0d	20-Jul-15	28-Aug-15					
DSN29085	ER/IP's Approval	28.0d	29-Aug-15	25-Sep-15					
<b>Mid Vent Junction Internal Structure</b>		55.0d	24-Jul-15	26-Sep-15					
<b>DDA Submission</b>		55.0d	24-Jul-15	26-Sep-15					
DSN29104	Preparation for resubmission to ER/ICE/IP with ICE Certification	32.0d	24-Jul-15	29-Aug-15					
DSN29105	ER/IP's Approval	28.0d	30-Aug-15	26-Sep-15					
<b>4.3 Middle Portal Method Statement Submission</b>		85.4d	29-Jul-15	02-Feb-16					
<b>Cavern Permanent Lining</b>		80.0d	29-Jul-15	02-Nov-15					
A25522	Engineer's Comment	28.0d	29-Jul-15	29-Aug-15					
A25523	Re-submission Method Statement	24.0d	31-Aug-15	26-Sep-15					
A25524	Engineer's Approval	28.0d	29-Sep-15	02-Nov-15					
<b>Middle Ventilation Adit Tunnel Concreting Works (Internal Structures)</b>		80.0d	31-Aug-15	02-Feb-16					
A25517	Prepare Method Statement	48.0d	31-Aug-15	28-Oct-15					
A25518	Engineer's Comment	28.0d	29-Oct-15	30-Nov-15					
A25519	Re-submission Method Statement	24.0d	01-Dec-15	30-Dec-15					
A25520	Engineer's Approval	28.0d	31-Dec-15	02-Feb-16					
<b>4.5 Middle Portal Works</b>		291.8d	18-Jul-15	02-Apr-16					
<b>Adit Construction - Mid Portal</b>		291.8d	18-Jul-15	02-Apr-16					
MV2530	Cavern Excavation Ch302>Ch371; 69m	70.0d	18-Jul-15	10-Oct-15					
MV2710	D&B UT Tunneling Ch3,436 to Ch3,586 (NB) - towards North 150m	70.0d	12-Oct-15	02-Jan-16					
MV2720	D&B DT Tunneling Ch3,433 to Ch3,561 (SB) - towards North 128m	60.0d	23-Oct-15	02-Jan-16					
MV2730	D&B UT Tunneling Ch3,413 to Ch3,313 (NB) - towards South 100m	23.0d	04-Jan-16	29-Jan-16					
MV2740	D&B DT Tunneling Ch3,410 to Ch3,313 (SB) - towards South 97m	23.0d	04-Jan-16	29-Jan-16					
MV2749	Ground Treatment for TBm Breakthrough	77.0d	04-Jan-16	02-Apr-16					
MV2750	De-mobilization of Tunneling plants & equipment	24.0d	30-Jan-16	26-Feb-16					
MV2760a	Adit Lining (up to Ch151)	50.0d	30-Jan-16	29-Mar-16					

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Activity ID	Activity Name	Working Duration	BL Project Start	BL Project Finish	2016							
					2015	Jan	Feb	Mar	Apr			
<b>5 North Portal Area</b>					444.0d	21-Jan-15	06-May-16					
<b>5.0 North Portal Site Possession Contract Dates</b>					0.0d	19-Aug-15	19-Aug-15					
A1920	LS7 (near North Vent Slope)	0.0d	19-Aug-15									
<b>5.1 North Portal Subcontract &amp; Procurement</b>					418.8d	05-Jun-15	18-Mar-16					
NPS&P0070	Subcontract : Tunnel Lining Works	60.0d	05-Jun-15	15-Aug-15								
NPS&P0080	Subcontract : Tunnel Concreting Works	60.0d	05-Jun-15	15-Aug-15								
NPS&P0090	Subcontract : Tunnel Lining Form works (Design, Fabrication, Delivery, & On-Site Assembly)	150.0d	05-Jun-15	02-Dec-15								
NPS&P0110	Subcontract : Ventilation Building Structure Works	60.0d	12-Aug-15	23-Oct-15								
NPS&P0120	Subcontract : Ventilation Building Pile Cap Works	60.0d	23-Sep-15	04-Dec-15								
NPS&P0130	Subcontract : Ventilation Building ABWF Works	60.0d	24-Oct-15	05-Jan-16								
NPS&P0140	Subcontract : External Works and Landscaping Works	60.0d	06-Jan-16	18-Mar-16								
<b>5.2 North Portal Design Submission</b>					284.0d	18-May-15	16-Nov-15					
<b>Bored Tunnel/ D&amp;B Tunnel Transition - Headwall Structure (N/B &amp; S/B)</b>					81.0d	15-Jul-15	17-Oct-15					
<b>DDA Submission</b>					81.0d	15-Jul-15	17-Oct-15					
FL2022182	IPs/ ER's Review	28.0d	15-Jul-15	15-Aug-15								
FL2022183	Preparation for resubmission to ER/ICE/IP with ICE Certification	30.0d	17-Aug-15	19-Sep-15								
FL2022184	ER/IP's Approval	28.0d	20-Sep-15	17-Oct-15								
<b>North Tunnel Curved Section Cross Passages - Temp Works</b>					80.0d	20-Jul-15	24-Oct-15					
<b>DDA Submission</b>					80.0d	20-Jul-15	24-Oct-15					
FL2022190	IPs/ ER's Review	28.0d	20-Jul-15	20-Aug-15								
FL2022191	Preparation for resubmission to ER/ICE/IP with ICE Certification	32.0d	21-Aug-15	26-Sep-15								
FL2022192	ER/IP's Approval	28.0d	27-Sep-15	24-Oct-15								
<b>Bored Tunnel Cross Passages Permanent Lining (Soft Ground)</b>					65.0d	28-Jul-15	13-Oct-15					
<b>DDA Submission</b>					65.0d	28-Jul-15	13-Oct-15					
FL2022211	Preparation for resubmission to ER/ICE/IP with ICE Certification	43.0d	28-Jul-15	15-Sep-15								
FL2022212	ER/IP's Approval	28.0d	16-Sep-15	13-Oct-15								
<b>Bored Tunnel Cross Passages Permanent Lining (Rock)</b>					73.0d	18-Jul-15	13-Oct-15					
<b>DDA Submission</b>					73.0d	18-Jul-15	13-Oct-15					
FL2022218	IPs/ ER's Review	28.0d	18-Jul-15	19-Aug-15								
FL2022219	Preparation for resubmission to ER/ICE/IP with ICE Certification	23.0d	20-Aug-15	15-Sep-15								
FL2022220	ER/IP's Approval	28.0d	16-Sep-15	13-Oct-15								
<b>Bored Tunnel Cross Passages Internal Structures</b>					284.0d	18-May-15	16-Nov-15					
<b>DDA Submission</b>					284.0d	18-May-15	16-Nov-15					
FL2022225	Preparation for formal submission to ER/ICE/IP	75.0d	18-May-15	15-Aug-15								
FL2022226	IPs/ ER's Review	28.0d	17-Aug-15	17-Sep-15								
FL2022227	Preparation for resubmission to ER/ICE/IP with ICE Certification	25.0d	18-Sep-15	19-Oct-15								
FL2022228	ER/IP's Approval	28.0d	20-Oct-15	16-Nov-15								
<b>5.3 North Portal Method Statement Submission</b>					281.0d	01-Jun-15	06-Feb-16					
<b>North Tunnel (Cross Passages) Blasting Method Statement</b>					95.0d	01-Jun-15	21-Sep-15					
FL2022111	Preparation and Submission of Blasting Method Statement	70.0d	01-Jun-15	22-Aug-15								
FL2022112	Engineer's/IP's Review & Approval	60.0d	14-Jul-15	21-Sep-15								
<b>MS for TBM Break-out</b>					104.8d	17-Sep-15	04-Jan-16					
FL2022544	Prepare & Submit Method Statement	24.0d	17-Sep-15	16-Oct-15								
FL2022554	ER's Comment for Method Statement	30.0d	17-Oct-15	15-Nov-15								
FL2022564	Prepare & Re-submit Method Statement	18.0d	16-Nov-15	05-Dec-15								
FL2022574	ER's Approval for Method Statement	30.0d	06-Dec-15	04-Jan-16								
<b>MS for TBM Turn</b>					168.0d	17-Oct-15	06-Feb-16					
FL3875	Prepare & Submit Method Statement	24.0d	17-Oct-15	14-Nov-15								
FL3880	ER's Comment for Method Statement	30.0d	15-Nov-15	14-Dec-15								
FL3885	Prepare & Re-submit Method Statement	18.0d	15-Dec-15	07-Jan-16								

 <b>MAIN CONTRACTOR</b> 香港寶嘉 Dragages Hong Kong <small>A member of the Bouygues Construction group</small>						 <b>CLIENT</b> 土木工程拓展署 Civil Engineering and Development Department			 <b>THE ENGINEER</b>		<b>PROJECT</b> Contract No. CV/2012/08 Liantang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works Contract 2		<b>DOCUMENT NO.</b> LTH/DHK/PGR/PW/PLP/00112/A		
<b>CONTRACTOR'S DESIGNER</b> 						<b>TITLE</b> Monthly Report No.25 3-Months Rolling Programme (Approved Works Programme Rev. D)		<b>DOC. STATUS</b> FOR INFO.	<b>CREATION DATE</b> 20-Jan-16	<b>REVISION</b> A					
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REV	DESCRIPTION	DATE	PREPARED	CHECKED	APPROVED
A	Monthly Report No.25	18/01/2016	KEC/RAN	RBS/SJO	DAL

Activity ID	Activity Name	Working Duration	BL Project Start	BL Project Finish	2016				
					2015	Jan	Feb	Mar	Apr
FL3890	ER's Approval for Method Statement	30.0d	08-Jan-16	06-Feb-16					
<b>MS for Removal of Left-in HDC Drill Rods within N/B TBM Excavation</b>		165.2d	13-Nov-15	30-Jan-16					
FL2022584	Prepare & Submit Method Statement	40.0d	13-Nov-15	31-Dec-15					
FL2022594	ER's Comment for Method Statement	30.0d	01-Jan-16	30-Jan-16					
<b>North Portal: MS for Cross Passage Ground Treatment</b>		42.0d	20-Jul-15	07-Sep-15					
FL2022067	Prepare & Re-submit Method Statement	18.0d	20-Jul-15	08-Aug-15					
FL2022068	ER's Approval for Method Statement	30.0d	09-Aug-15	07-Sep-15					
<b>North Portal: MS for Cross Passage Excavation in Rock</b>		205.0d	12-Sep-15	20-Jan-16					
FL2022069	Prepare & Submit Method Statement	40.0d	12-Sep-15	31-Oct-15					
FL2022070	ER's Comment for Method Statement	30.0d	01-Nov-15	30-Nov-15					
FL2022071	Prepare & Re-submit Method Statement	18.0d	01-Dec-15	21-Dec-15					
FL2022072	ER's Approval for Method Statement	30.0d	22-Dec-15	20-Jan-16					
<b>North Portal: MS for Cross Passage Excavation in Soft</b>		205.0d	12-Sep-15	20-Jan-16					
FL2022073	Prepare & Submit Method Statement	40.0d	12-Sep-15	31-Oct-15					
FL2022074	ER's Comment for Method Statement	30.0d	01-Nov-15	30-Nov-15					
FL2022075	Prepare & Re-submit Method Statement	18.0d	01-Dec-15	21-Dec-15					
FL2022076	ER's Approval for Method Statement	30.0d	22-Dec-15	20-Jan-16					
<b>5.5 North Portal Works</b>		444.0d	21-Jan-15	06-May-16					
<b>North Portal: Site Formation</b>		215.9d	21-Jan-15	30-Oct-15					
N20655	NB: Stage 3 Permanent Slope from +75mPD to +30mPD	192.0d	21-Jan-15	30-Sep-15					
N20665	NB: Stage 4 Excavation from +18mPD to +9.5mPD w/4 rows Soil Nail	24.0d	02-Oct-15	30-Oct-15					
<b>Southbound Tunnel (Mined Excavation) inc Enlargement</b>		241.0d	23-Jul-15	06-May-16					
TD0910	SB - Invert Grouting	60.0d	23-Jul-15	03-Oct-15					
TD0920	SB - Gallery	60.0d	21-Aug-15	31-Oct-15					
TD0930	SB - Crown Grouting	60.0d	19-Sep-15	28-Nov-15					
TD0940a	Top Heading Enlargement (Ch6355>Ch6268); 87m; [P21: 4755 to 4668]	47.0d	09-Nov-15	04-Jan-16					
TD0940a1	Top Heading Enlargement (Ch6268>Ch6148); 120m; [P21: 4668 to 4548] - WSD Restriction Zone	104.0d	05-Jan-16	06-May-16					
<b>Northbound Tunnel (Mined Excavation)</b>		235.0d	09-Jun-15	31-Mar-16					
DB6400a2	Top Heading Canopies (Ch6410>Ch6350); 60m; [P20: 4788 to 4728]	70.0d	09-Jun-15	31-Aug-15					
DB6400a3	Top Heading Canopies (Ch6350>Ch6284); 66m; [P20: 4728 to 4662]	76.0d	01-Sep-15	30-Nov-15					
DB6400a5	Platform Lowering for Bench Excavation	26.0d	01-Dec-15	31-Dec-15					
DB6400a6	Bench Excavation (Ch6446>Ch6284); 162m; [P20: 4824 to 4662]	76.0d	02-Jan-16	31-Mar-16					
<b>Southbound Tunnel (TBM Tunneling)</b>		269.0d	10-Jun-15	12-Feb-16					
TD1000a	TBM DT (Ch6,355>Ch6,077) 278m	82.0d	10-Jun-15	16-Sep-15					
TD1000a20	TBM DT (Ch6,268>Ch6,148) 120m - WSD Restriction Zone	35.0d	11-Jul-15	21-Aug-15					
TD1000a30	TBM DT (Ch6,148>Ch6,077) 71m	21.0d	22-Aug-15	16-Sep-15					
TD1010a	TBM DT (Ch6,077>Ch5,950) 127m	17.0d	17-Sep-15	07-Oct-15					
TD1010b	TBM DT (Ch5,950>Ch5,713) 237m	31.0d	08-Oct-15	12-Nov-15					
TD1050	TBM DT (Ch5,713>Ch4,904) 809m	77.0d	13-Nov-15	12-Feb-16					
<b>Bored Tunnel (S/B &amp; N/B) Internal Works &amp; Finishes</b>		148.0d	28-Oct-15	20-Apr-16					
<b>Southbound Tunnel Internal Works &amp; Finishes</b>		148.0d	28-Oct-15	20-Apr-16					
TD1470a	Tunnel Backfilling (Ch5,950 >Ch5,153) 797m- (Stage 1)	85.0d	28-Oct-15	05-Feb-16					
TD1480a	Bottom Drilling for Cross Passage (fr.Ch5953)	70.0d	14-Nov-15	05-Feb-16					
TD1490a	Tunnel Backfilling (Ch5,950 >Ch5,153) 797m- (Stage 2)	80.0d	19-Nov-15	22-Feb-16					
TD1500a	Drilling for Cross Passage (Remaining) (Ch5,950 >Ch5,153) 797m	80.0d	19-Nov-15	22-Feb-16					
TD1520a	Corbel (Ch5,950 >Ch5,153) 797m	80.0d	03-Dec-15	07-Mar-16					
TD1523a	OHVD Slab & 132kV Cable Trough (Ch5,950 >Ch5,153) 797m	81.0d	15-Dec-15	19-Mar-16					
TD1524a	Walkway Construction Ch5,950 >Ch5,153) 797m	81.0d	30-Dec-15	04-Apr-16					
TD1528a	Ground Treatment for Cross Passage Ch5,950 >Ch5,153) 797m	82.0d	19-Dec-15	25-Mar-16					
TD1725a	E&M Installation for S/B TBM Tunnel [CRP Ch5,950 to Ch5,650] 300m	77.0d	21-Jan-16	20-Apr-16					
<b>North Portal: Retaining Wall &amp; Site Formation</b>		102.0d	03-Aug-15	05-Dec-15					

					<b>MAIN CONTRACTOR</b>  香港寶嘉 Dragages HongKong <small>A member of the Bouygues Construction group</small>		<b>CLIENT</b>  土木工程拓展署 Civil Engineering and Development Department		<b>THE ENGINEER</b>  <b>CONTRACTOR'S DESIGNER</b> 		<b>PROJECT</b> Contract No. CV/2012/08 Liantang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works Contract 2 <b>TITLE</b> Monthly Report No.25 3-Months Rolling Programme (Approved Works Programme Rev. D)		<b>DOCUMENT NO.</b> LTH/DHK/PGR/PW/PLP/00112/A <table border="1"> <tr> <td><b>DOC. STATUS</b> FOR INFO.</td> <td><b>CREATION DATE</b> 20-Jan-16</td> <td><b>REVISION</b> A</td> </tr> <tr> <td><b>PAPER SIZE</b> A3</td> <td><b>SCALE</b> N/A</td> <td><b>PAGE</b> 4 of 5</td> </tr> </table>			<b>DOC. STATUS</b> FOR INFO.	<b>CREATION DATE</b> 20-Jan-16	<b>REVISION</b> A	<b>PAPER SIZE</b> A3	<b>SCALE</b> N/A	<b>PAGE</b> 4 of 5
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<b>REV</b>	<b>DESCRIPTION</b>	<b>DATE</b>	<b>PREPARED</b>	<b>CHECKED</b>	<b>APPROVED</b>																
A	Monthly Report No.25	18/01/2016	KEC/RAN	RBS/SJO	DAL																

Activity ID	Activity Name	Working Duration	BL Project Start	BL Project Finish	2015	2016			
						Jan	Feb	Mar	Apr
N20930	*Retaining Wall & Site Formation (STK/RW1)	57.0d	03-Aug-15	13-Oct-15					
N20940	Retaining Wall & Site Formation (STK/RW3 )	45.0d	14-Oct-15	05-Dec-15					
<b>North Portal: Noise Barrier (NB5 to NB9)</b>		51.0d	04-Jan-16	09-Mar-16					
N20990	Noise Barrier NB 6,8,9	51.0d	04-Jan-16	09-Mar-16		[Red bar spanning Jan, Feb, Mar]			
<b>5.6 Administration Building:</b>		153.0d	24-Jul-15	05-Mar-16					
<b>5.65 Administration Building: Works</b>		153.0d	24-Jul-15	05-Mar-16					
<b>Administration Building: Demolition</b>		18.0d	24-Jul-15	15-Aug-15					
SV2945	Demolish Existing Building (AB3 - GLL 36508)	18.0d	24-Jul-15	15-Aug-15					
<b>Administration Building: Site Formation</b>		88.0d	17-Aug-15	05-Jan-16					
AD2070	Backfilling for Surcharge	66.0d	17-Aug-15	06-Nov-15					
AD2080	Surcharge (2 months Consolidation)	60.0d	07-Nov-15	05-Jan-16	[Cyan bar in Jan 2016]				
<b>Administration Building: Foundation &amp; Substructure</b>		46.0d	06-Jan-16	05-Mar-16					
AD2030	Excavation for Footing	46.0d	06-Jan-16	05-Mar-16		[Cyan bar spanning Jan, Feb, Mar]			

						<b>MAIN CONTRACTOR</b>  香港寶嘉 Dragages HongKong <small>A member of the Bouygues Construction group</small>	<b>CLIENT</b>  土木工程拓展署 Civil Engineering and Development Department	<b>THE ENGINEER</b>  <b>CONTRACTOR'S DESIGNER</b> 	<b>PROJECT</b> Contract No. CV/2012/08 Liantang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works Contract 2	<b>DOCUMENT NO.</b> LTH/DHK/PGR/PW/PLP/00112/A	<b>DOC. STATUS</b> FOR INFO.	<b>CREATION DATE</b> 20-Jan-16	<b>REVISION</b> A
A	Monthly Report No.25	18/01/2016	KEC/RAN	RBS/SJO	DAL				<b>TITLE</b> Monthly Report No.25 3-Months Rolling Programme (Approved Works Programme Rev. D)	<b>PAPER SIZE</b> A3	<b>SCALE</b> N/A	<b>PAGE</b> 5 of 5	
REV	DESCRIPTION	DATE	PREPARED	CHECKED	APPROVED								



## Contract 3

Activity ID	Activity Name	OD	RD	Start	Finish	TF	2016					
							Jan	Feb	Mar	Apr	May	
<b>3-Month Rolling Programme 2016-01-21</b>												
<b>Key Dates (Contractual)</b>												
KD-1100	KD7: Stage 1A - Completion of the Realigned Tai Wo Service Road West for diversion of vehicular traffic	0	0		21-Jan-16*	-1		◆	KD7: Stage 1A - Completion of the Realigned Tai Wo Service Road West for diversion of vehicular traffic			
KD-1500	KD13: Stage N4A - Connection of Access Road A and Slip Road Y at Entrustment Boundary CD	0	0		21-Jan-16*	-81		◆	KD13: Stage N4A - Connection of Access Road A and Slip Road Y at Entrustment Boundary CD			
<b>Key Dates (Forecast)</b>												
KD-1105	KD7: Stage 1A - Completion of the Realigned Tai Wo Service Road West for diversion of vehicular traffic	0	0		18-Feb-16	-30		◆	KD7: Stage 1A - Completion of the Realigned Tai Wo Service Road West for diversion of vehicular traffic			
<b>Major Milestones and Events</b>												
MS-0240	Commissioning of the diverted DN2300 Dong Jiang Watermains	0	0		24-Dec-15 A			◆	Commissioning of the diverted DN2300 Dong Jiang Watermains			
MS-2000C	T3: TTA to split FLHSNB & SB with 3 lanes in the middle unoccupied (between CH7130 and CH7470)	1	1		27-Feb-16*	-32			T3: TTA to split FLHSNB & SB with 3 lanes in the middle unoccupied (between CH7130 and CH7470)			
MS-2000D	T4: TTA to divert TWSRW traffic to the completed re-aligned TWSRW	1	1		09-Mar-16	19			T4: TTA to divert TWSRW traffic to the completed re-aligned TWSRW			
<b>Major Procurement &amp; Delivery</b>												
<b>Footbridge Steel Truss</b>												
MM-3050	Fabrication of footbridge steel truss (Kiu Tau Footbridge)	100	100		02-Feb-16	11-Jun-16	0					
<b>Design and Submissions</b>												
<b>Statutory Approval</b>												
PRE-1050	Submission & approval of CDIA report for construction of temporary platform for segment erection works	185	4		27-Nov-14 A	25-Jan-16	-17					
<b>Method Statement and Design (Major) Approved by AECOM</b>												
PRE-2050	Submission of Shop Drawing for fabrication of Kiu Tau Footbridge Steelworks	30	10		02-Nov-15 A	01-Feb-16	0					
PRE-2030	Submission of E&M design for lighting of Kiu Tau Footbridge	60	60		21-Jan-16	11-Apr-16	104					
<b>Section IA &amp; IB - Fanling Highway Widening (KD-1 &amp; KD-2)</b>												
<b>Fanling Highway South Portion between CH6935 and CH7470</b>												
<b>Fanling Highway Zone 1 between CH6935 and CH7130 (within SBZ2)</b>												
<b>At-Grade Roadworks (195m)</b>												
FHW-1130*	Pipe Laying - DN1200 Watermains (CHC) along Fanling Highway (80m long, 4m depth)	182	20		20-Feb-14 A	19-Feb-16	69					
FHW-1300	Noise Barrier NB68 - Mini-Piling at central median (CSD: 24 nos)	80	80		29-Feb-16	07-Jun-16	18					
FHW-1140	Noise Barrier NB70 - Footing adjacent to SB lane (15m)	115	115		21-Mar-16	10-Aug-16	44					
<b>Fanling Highway Zone 2 between CH7130 and CH7290</b>												
<b>At-Grade Roadworks (160m)</b>												
FHW-2130*	Pipe Laying - DN1200 & DN600 Watermains (CHB & CHC) along Fanling Highway (183m long, 4m depth)	144	350		12-Oct-15 A	03-Apr-17	209					



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3-Month Rolling Programme updated to 2016-01-20

Date	Revision	Checked	Approved
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Activity ID	Activity Name	OD	RD	Start	Finish	TF	2016				
							Jan	Feb	Mar	Apr	May
FHW-2140	Road Formation, Kerb and Pavement (Eastern Side: FLH SB Slow lane and hard shoulder)	61	4	14-Oct-15 A	25-Jan-16	0	Road Formation, Kerb and Pavement (Eastern Side: FLH SB Slow lane and hard shoulder), Road Formation, Kerb and				
FHW-2300	Noise Barrier NB68 - Mini-Piling at central median (CSD: 22 nos)	80	80	29-Feb-16	07-Jun-16	-22					
FHW-2190	Footpath & DSD Access Track adjacent to SB lane	108	108	21-Mar-16	02-Aug-16	139					
<b>Fanling Highway Zone 3 between CH7290 and CH7380</b>											
<b>At-Grade Roadworks (130m)</b>											
FHW-3150*	Pipe Laying - DN600, DN1200 Watermains (CHB &CHC) along Fanling Highway (90m long, 3m depth)	150	350	07-Jun-14 A	03-Apr-17	50					
FHW-3160	Road Formation, Kerb and Pavement (Eastern Side: FLH SB Slow lane and hard shoulder)	63	14	05-Oct-15 A	16-Feb-16	-13	Road Formation, Kerb and Pavement (Eastern Side: FLH SB Slow lane and hard shoulder), Ro				
FHW-3160A	Temporary Diversion of existing DN600 watermains to facilitate Road Formation (FLH SB slow lane & hard shoulder)	12	7	28-Dec-15 A	28-Jan-16	-13	Temporary Diversion of existing DN600 watermains to facilitate Road Formation (FLH SB slow lane & hard shoulder				
FHW-3300	Noise Barrier NB68A - Mini-Piling at central median (CSD: 20 nos)	70	70	29-Feb-16	26-May-16	-22					
FHW-3310	Noise Barrier NB68A - Footing at central median (98m)	90	90	14-Apr-16	01-Aug-16	-17					
<b>Fanling Highway North Portion between CH7470 and CH7925</b>											
<b>Fanling Highway Zone 4 between CH7380 and CH7470</b>											
<b>At-Grade Roadworks (90m)</b>											
FHW-4210	Noise Barrier NB68A - Footing at central median (40m)	90	90	14-Apr-16	01-Aug-16	-17					
<b>Fanling Highway Zone 5 between CH7470 and CH7600 (Provision of Kiu Tau Footbridge)</b>											
<b>Kiu Tau Footbridge Re-provision (East)</b>											
FHW-5110	Inspection & Remedial Works for the 3nos. suspected defected piles (AB1-7, AB2-4, P3-9)	35	17	20-Nov-15 A	16-Feb-16	18	Inspection & Remedial Works for the 3nos. suspected defect				
FHW-5010E	KT-P4 - Pile Cap & Pier	75	75	21-Jan-16	28-Apr-16	35	KT-P4 - Pile C				
FHW-5000C2	KT-P2 - Piling Works (3 out of 6 nos of Pile) - Phase 2, conflict with existing TWSRE	15	15	04-Feb-16	27-Feb-16	13	KT-P2 - Piling Works (3 out of 6 nos of Pile) - Phase 2, conflict with existing TWSR				
FHW-5010A	KT-AB1 - Pile Cap & Abutment	75	75	17-Feb-16	20-May-16	18					
FHW-5010D	KT-P3 - Pile Cap & Pier	60	60	29-Feb-16	13-May-16	13					
FHW-5010C	KT-P2 - Pile Cap & Pier	60	60	29-Feb-16	13-May-16	13					
FHW-5090	Additional BFA Facilities - Pile Cap & Sump Pit, to be covered by VO	45	45	29-Feb-16	25-Apr-16	38	Additional BFA F				
FHW-5010B	KT-AB2 - Pile Cap & Abutment	60	60	11-Mar-16	26-May-16	13					
<b>At-Grade Road Works (130m)</b>											
FHW-5120C	Preparation Works for Implementation of TTA Scheme E3A	30	12	07-Nov-15 A	03-Feb-16	13	Preparation Works for Implementation of TTA Scheme E3A, Preparation Works for Implementation of TTA Sc				
FHW-5120D	Implementation of TTA - Scheme E3A (shifting TWSR East westward, at the existing ramp of Kiu Tau Footbridge)	0	0	04-Feb-16	13	13	Implementation of TTA - Scheme E3A (shifting TWSR East westward, at the existing ramp of Kiu Tau Footbr				
<b>Remaining Works for Noise Barrier along widened Fanling Highway</b>											
FHW-NB-120	Noise Barrier Steelworks & Panel for NB6 (123m), adjacent to Fanling Highway SB lanes at Zone 1	20	20	21-Jan-16*	19-Feb-16	520	Noise Barrier Steelworks & Panel for NB6 (123m), adjacent to Fanling Highway SB lanes at				



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Activity ID	Activity Name	OD	RD	Start	Finish	TF	2016									
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FHW-NB-130	Noise Barrier Steelworks & Panel for NB7 (60m), adjacent to Fanling Highway SB lanes at Zone 1	10	10	20-Feb-16	02-Mar-16	520										
FHW-NB-140	Noise Barrier Steelworks & Panel for NB71 (254m), adjacent to Fanling Highway SB lanes at Zones 2,3 & 4	45	45	03-Mar-16	28-Apr-16	520										
<b>Section II - Remainder of the Works (KD-3)</b>																
<b>At Grade Link Road at Fanling Highway Interchange</b>																
<b>Link Road 1 (near Abutment AB1)</b>																
FHI-LR1-1005	Noise Barrier NB66 - Footing adjacent NB lane (75m)	108	108	10-Mar-16	22-Jul-16	13										
FHI-LR1-1010	Noise Barrier NB67 - Mini-Piling (42nos) (Assume 2 sets of plant)	160	160	10-Mar-16	22-Sep-16	19										
<b>Link Road 3 (near Abutment AD1)</b>																
FHI-LR3-3000	Completion of WSD works incl. DN600, DN1200 & DN1400	0	0		19-Feb-16	440										
<b>Link Road 4 (near Abutment AC1)</b>																
FHI-LR4-4030	Construction of Retaining Wall beside Abutment AC1 (4 bays)	35	35	28-Jan-16	15-Mar-16	0										
FHI-LR4-4000	Diversion of Traffic from Existing TWSR West to Realigned TWSR West	0	0	09-Mar-16		425										
<b>WSD Works</b>																
<b>DN450 Fire Mains (CHA)</b>																
WA-1050	Pipe Laying - CHA 420 - 450 (DN450) near Realigned TWSR West (Re-TWSRW: CH530 - 640), 30m long & 2m depth	70	0	29-May-15 A	21-Dec-15 A											
WA-1090	Pipe Laying - CHA 800 - 960 (DN450) near Ext. TWSR West (No Roadworks), 160m long & 3m depth	148	148	21-Jan-16*	27-Jul-16	63										
WA-1060	Pipe Laying - CHA 450 - 575 (DN450) near Realigned TWSR West (Re-TWSRW: CH640 - 695), 125m long & 2m depth	95	95	27-Jan-16	30-May-16	216										
<b>DN600 Water Mains (CHB)</b>																
WB-1060	Pipe Laying - CHB 538 - 635 (DN600) near Realigned TWSR East (TWSRE: CH270-380), 97m long & GL	40	20	17-Jul-15 A	19-Feb-16	539										
WB-1070	Pipe Laying - CHB 635 - 700 (DN600) near Realigned TWSR East (TWSRE: CH380-456), 65m long & GL	78	0	18-Jul-15 A	13-Jan-16 A											
WB-1030C	Pipe Laying - CHB 350 - 450 (DN600) from Portal AB7/AD9/AC12 to Portal AB8	85	85	17-Mar-16	02-Jul-16	432										
<b>DN1200 Water Mains (CHC)</b>																
WC-1050A	Pipe Laying - CHC 155 - 200 (DN1200) near Fanling Highway S/B (FHW: CH6935-7130), 45m long, 4m depth	120	20	15-Oct-14 A	19-Feb-16	69										
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	19-Mar-16	44										
WC-1090C	Pipe Laying - CHC 615 - 720 (DN1200) from Portal AB7/AD9/AC12 to Portal AB8	85	85	17-Mar-16	02-Jul-16	117										
<b>DN2200 Water Mains (CHF)</b>																
WF-1000A	Pipe Laying - CHF 80 - 112 (DN2200) near ext. TWSR West underneath Box Culvert BC01	210	210	10-Mar-16	22-Nov-16	105										
<b>DN2300 Water Mains and Leakage Collection System (CHJ &amp; CHKA/CHK)</b>																
WJ-1020A	Pipe Laying - CHK 0 - 80 (DN1400) near Realigned TWSR East, 80m long & 4m depth	55	23	05-Oct-15 A	23-Feb-16	131										



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Activity ID	Activity Name	OD	RD	Start	Finish	TF	2016				
							Jan	Feb	Mar	Apr	May
WJ-2040	Connection to Existing Mains	7	0	19-Dec-15 A	24-Dec-15 A		Connection to Existing Mains				
WJ-1100	DN300 Washout at around CHJ 268	65	65	21-Jan-16	16-Apr-16*	189	DN300 Washout at around CHJ 268				
WJ-1110	DN300 Washout at CHJ 155	65	65	21-Jan-16	16-Apr-16*	189	DN300 Washout at CHJ 155				
WJ-1020B	Pipe Laying - CHKA 0 - 73 (DN1400) near Realigned TWSR East, 73m long & 4m depth	90	90	24-Feb-16	15-Jun-16	131	Pipe Laying - CHKA 0 - 73 (DN1400) near Realigned TWSR East, 73m long & 4m depth				
<b>Kau Lung Hang Valve Control &amp; Telemetry House Reprovision</b>											
VCTH-1020a	Testing and Commissioning (New Telemetry House)	60	0	10-Oct-15 A	06-Jan-16 A		Testing and Commissioning (New Telemetry House)				
VCTH-1020c	Testing and Commissioning (Valve operation for DN1400 watermains)	30	33	10-Oct-15 A	05-Mar-16	140	Testing and Commissioning (Valve operation for DN1400 watermains), Testing and Commissioning (Valve operation for DN1400 watermains)				
VCTH-1030	Demolition of Existing KLH Valve Control & Telemetry House	90	90	05-Apr-16*	22-Jul-16	119	Demolition of Existing KLH Valve Control & Telemetry House				
<b>Existing Nam Wa Po Trunk Sewage Pumping Station (PST3)</b>											
PS-1000	Demolition of Existing Boundary Wall of Pumping Station (PST3)	50	50	22-Feb-16*	23-Apr-16	434	Demolition of Existing Boundary Wall of Pumping Station (PST3)				
<b>Stage 1A - Realignment of Tai Wo Service Road West (KD-7)</b>											
<b>TWSRW Zone 1 between CH100 and CH155</b>											
<b>At-Grade Roadworks</b>											
TWSRW-1160	Road Formation, Road Drainage, DN150 watermain, Kerb, Planter & Pavement	286	2	15-Nov-14 A	18-Feb-16	-20	Road Formation, Road Drainage, DN150 watermain, Kerb, Planter & Pavement, Road Formation, Road Drainage, DN150 watermain, Kerb, Planter & Pavement, Road Formation, Road Drainage, DN150 watermain, Kerb, Planter & Pavement				
<b>TWSRW Zone 2 between CH155 and CH280</b>											
<b>At-Grade Roadworks</b>											
TWSRW-2120	Road Formation, Road Drainage, DN150 watermain, Kerb, Planter & Pavement	165	13	16-Oct-14 A	18-Feb-16	-20	Road Formation, Road Drainage, DN150 watermain, Kerb, Planter & Pavement, Road Formation, Road Drainage, DN150 watermain, Kerb, Planter & Pavement, Road Formation, Road Drainage, DN150 watermain, Kerb, Planter & Pavement				
TWSRW-2130	Noise Barrier NB1a - Footing adjacent Realigned TWSR West (Covered by VO 103) (Approx. 60.2m)	85	3	14-Sep-15 A	23-Jan-16	-10	Noise Barrier NB1a - Footing adjacent Realigned TWSR West (Covered by VO 103) (Approx. 60.2m)				
TWSRW-2140	Rectification Works for Southern Trunk Sewer	48	15	30-Oct-15 A	06-Feb-16	-20	Rectification Works for Southern Trunk Sewer, Rectification Works for Southern Trunk Sewer, Rectification Works for Southern Trunk Sewer				
<b>TWSRW Zone 3 between CH280 and CH315</b>											
<b>At-Grade Roadworks</b>											
TWSRW-3120	Road Formation, Road Drainage, Kerb, Planter and Pavement	181	19	22-Jun-15 A	18-Feb-16	-20	Road Formation, Road Drainage, Kerb, Planter and Pavement, Road Formation, Road Drainage, Kerb, Planter and Pavement, Road Formation, Road Drainage, Kerb, Planter and Pavement				
TWSRW-3100	Noise Barrier NB1a - Footing adjacent Realigned TWSR West (Covered by VO 103) (Approx. 35.1m)	26	0	19-Nov-15 A	31-Dec-15 A		Noise Barrier NB1a - Footing adjacent Realigned TWSR West (Covered by VO 103) (Approx. 35.1m)				
<b>TWSRW Zone 4 between CH315 and CH376</b>											
<b>Construction of Bridge E</b>											
TWSRW-4100	Remove Scaffold System and Temporary Work together with Slope Reinstatement	75	33	21-Dec-15 A	05-Mar-16*	19	Remove Scaffold System and Temporary Work together with Slope Reinstatement				
<b>At-Grade Roadworks</b>											
TWSRW-4200	Cast Parapet, Lay Surfacing and Road Furniture for Footpath and Carriageway	35	9	12-Dec-15 A	30-Jan-16	-10	Cast Parapet, Lay Surfacing and Road Furniture for Footpath and Carriageway, Cast Parapet, Lay Surfacing and Road Furniture for Footpath and Carriageway				
<b>TWSRW Zone 5 between CH376 and CH520</b>											



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								Jan	Feb	Mar	Apr	May	
<b>At-Grade Roadworks</b>													
TWSRW-5100	Retaining Wall RW7- adjacent to Realigned TWSR West (66m) (covered by VO No.100)	70	10	29-Oct-15 A	01-Feb-16	-20							
TWSRW-5110	Retaining Wall RW9 (to be covered by VO)	45	35	05-Jan-16 A	08-Mar-16	14							
TWSRW-5110A	Road Formation, DN150 watermain, Kerb, Planter and Pavement	19	19	21-Jan-16	18-Feb-16	-20							
TWSRW-5100B	Filling and Compaction Works along TWSRW adjacent to Retaining Wall RW7 & Abutment AE2	12	12	21-Jan-16	03-Feb-16	-20							
TWSRW-5100A	Retaining Wall RW8 - adjacent to Realigned TWSR West (66m) (covered by VO No.100)	50	50	21-Jan-16	29-Mar-16	420							
TWSRW-5130	Installation of Stone Facing Finish	45	45	19-Feb-16	15-Apr-16	300							
TWSRW-5140	Remaining Road Formation, DN150 watermain, Kerb, Planter and Pavement (incl. Zone 5)	24	24	03-Mar-16	02-Apr-16	0							
TWSRW-5120	Permanent Vehicular Access to Lot 81	125	125	30-Mar-16	27-Aug-16	420							
<b>TWSRW Zone 6 between CH520 and CH530</b>													
<b>At-Grade Roadworks</b>													
TWSRW-6110	Slope Upgrading Works for unregistered feature beside Slope 3SW-D/C80 (Covered by VO. 68)	65	9	22-May-15 A	30-Jan-16	40							
TWSRW-6100	Preparation Works for Implementation of TTA (shifting TWSRW traffic towards the edge of extended box culvert)	21	5	24-Dec-15 A	26-Jan-16	0							
<b>TWSRW Zone 7 between CH530 and CH640</b>													
<b>At-Grade Roadworks</b>													
TWSRW-7140	Installation of Cable Ducts for Utilities Diversion Works at Area 4 (Approx. 150m) (by utilities undertakers)	233	0	28-Jan-15 A	23-Dec-15 A								
TWSRW-7120*	Pipe Laying - DN450 Watermains (CHA)	70	0	29-May-15 A	21-Dec-15 A								
TWSRW-7160	Pipe Laying - DN150	70	0	13-Jul-15 A	21-Dec-15 A								
TWSRW-7100	Preparation Works for Implementation of TTA (shifting TWSRW traffic towards the cut-slope)	21	5	22-Dec-15 A	26-Jan-16	0							
TWSRW-7110	Implementation of TTA - Scheme W3A	0	0	27-Jan-16		0							
TWSRW-7150	Remaining Road Drainage, Road Formation, DN150 watermain, Kerb, Planter and Pavement (incl. Zone 6 & Zone 7)	49	49	27-Jan-16	02-Apr-16	0							
<b>TWSRW Zone 8 between CH640 and CH695</b>													
<b>Kiu Tau Footbridge Reprovision (West)</b>													
TWSRW-8020	Construction of Pile Cap and Abutment	50	22	17-Nov-15 A	22-Feb-16	13							
<b>At-Grade Roadworks</b>													
TWSRW-8120	Road Formation, Road Drainage, Kerb and Pavement	22	2	21-Dec-15 A	22-Jan-16	-3							
TWSRW-8110*	Pipe Laying - DN450 Watermains (CHA)	95	95	27-Jan-16	30-May-16	216							
<b>Remainder of the Works</b>													
TWSRW-9040*	Utilities Diversion in Area 4 (along Re-aligned TWSRW CH530 - CH640)	233	0	28-Jan-15 A	23-Dec-15 A								



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Activity ID	Activity Name	OD	RD	Start	Finish	TF	2016				
							Jan	Feb	Mar	Apr	May
TWSRW-9030	Utilities Diversion in Area 3 (along existing TWSRW, Approx. 150m) (by utilities undertakers)	106	106	10-Mar-16	23-Jun-16	202					
<b>Remaining Works for Noise Barrier along realigned TWSR West</b>											
TWSRW-NB-110	Noise Barrier Steelworks & Panel for NB4 at Zones 1 & 2	20	20	21-Jan-16*	19-Feb-16	4					
TWSRW-NB-130	Noise Barrier Steelworks & Panel for NB1b at Zone 4	10	10	20-Feb-16	02-Mar-16	4					
TWSRW-NB-140	Noise Barrier Steelworks & Panel for NB2 at Zone 5	20	20	03-Mar-16	29-Mar-16	4					
<b>Stage N4A &amp; N4B - Realignment of Tai Wo Service Road East (KD-13 &amp; KD-14)</b>											
<b>TWSRE Zone 1 between CH100 and CH270</b>											
<b>At-Grade Roadworks</b>											
TWSRE-1140*	Pipe laying - DN1400 Watermains (CHKA) along Realigned TWSR East	90	90	24-Feb-16	15-Jun-16	131					
TWSRE-1170	Remaining Noise Barrier NB3 Stem Wall (a total of 24m long)	30	30	11-Apr-16	17-May-16	250					
<b>TWSRE Zone 2 between CH270 and CH380</b>											
<b>At-Grade Roadworks</b>											
TWSRE-2030A*	Pipe laying - DN600 & DN1200 Watermains (CHB & CHC) along Realigned TWSR East	30	301	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	23-Feb-16	131					
TWSRE-2040	Road Formation, Kerb, Footpath, Cycle Track, Planter and Pavement	71	71	24-Feb-16	23-May-16	245					
<b>TWSRE Zone 3 between CH380 and CH456</b>											
<b>At-Grade Roadworks</b>											
TWSRE-3020A*	Pipe Laying - DN600 & DN1200 Watermains (CHB & CHC) along Realigned TWSR East	78	0	07-Jul-15 A	13-Jan-16 A						
TWSRE-3040	Road Formation, Kerb, Footpath, Cycle Track, Planter and Pavement (Incl. FL/F10)	165	165	21-Jan-16	16-Aug-16	174					
<b>Roundabout A, Slip Road and Access Road</b>											
TWSRE-4070	Roundabout A - Road Formation, Kerb, Planter and Pavement	90	17	26-Oct-15 A	16-Feb-16	85					
TWSRE-4110	Preparation Works for Implementation of TTA Scheme E1A	30	12	26-Oct-15 A	03-Feb-16	87					
TWSRE-4020	Slip Road Y (CH260-CH404) - Road Formation, Road Drainage, Kerb, Planter and Pavement	108	95	28-Dec-15 A	24-May-16	7					
TWSRE-4030B	Slip Road Y (CH100-CH230) - Road Formation, Remaining Road Drainage, Kerb, Planter and Pavement	120	120	04-Feb-16	08-Jul-16	87					
TWSRE-4120	Implementation of TTA - Scheme E1A	0	0	04-Feb-16*		116					
<b>Stage 1C - Viaduct Structure &amp; TCSS Civil Provisions (KD-9)</b>											
<b>Preliminaries</b>											
B-3050	Relocation of Plant including Pre-drilling Works	21	21	29-Feb-16	23-Mar-16	18					
<b>Foundation &amp; Pier Construction</b>											



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							Jan	Feb	Mar	Apr	May			
<b>Bridge A</b>														
BA-01-1010	Abutment AA1 - Pile Test	14	14	06-May-15 A	05-Feb-16	211	Abutment AA1 - Pile Test, Abutment AA1 - Pile Test							
BA-09-1030	Pier AA9 - Pier Construction (Twin Pier)	49	33	07-Nov-15 A	05-Mar-16	48	Pier AA9 - Pier Construction (Twin Pier), Pier AA9 - Pier Construction (Twin Pier)							
BA-10-1000	Pier AA10 - Piling Works	24	0	07-Nov-15 A	30-Dec-15 A		Pier AA10 - Piling Works							
BA-11-1020	Pier AA11 - Pile Cap	30	2	15-Dec-15 A	22-Jan-16	38	Pier AA11 - Pile Cap, Pier AA11 - Pile Cap							
BA-07-1030	Pier AA7 - Pier Construction	28	21	31-Dec-15 A	20-Feb-16	140	Pier AA7 - Pier Construction, Pier AA7 - Pier Construction, P							
BA-01-1000b	Abutment AA1 - Piling Works (P1)	12	0	07-Jan-16 A	18-Jan-16 A		Abutment AA1 - Piling Works (P1)							
BA-10-1010	Pier AA10 - Pile Test	14	1	08-Jan-16 A	21-Jan-16	44	Pier AA10 - Pile Test, Pier AA10 - Pile Test							
BA-02-1000	Pier AA2W - Piling Works	12	12	21-Jan-16	03-Feb-16	42	Pier AA2W - Piling Works							
BA-10-1020	Pier AA10 - Pile Cap	30	30	23-Jan-16	04-Mar-16	43	Pier AA10 - Pile Cap							
BA-11-1030	Pier AA11 - Pier Construction	35	35	23-Jan-16	10-Mar-16	38	Pier AA11 - Pier Construction							
BA-08-1000	Pier AA8 - Piling Works (P1)	12	12	04-Feb-16	24-Feb-16	42	Pier AA8 - Piling Works (P1)							
BA-02-1010	Pier AA2W - Pile Test	14	14	27-Feb-16	14-Mar-16	112	Pier AA2W - Pile Test							
BA-10-1030	Pier AA10 - Pier Construction	30	30	11-Mar-16	19-Apr-16	38	Pier AA10 - Pier Construction							
BA-02-1020B	Pier AA2W - Pile Cap	30	30	15-Mar-16	22-Apr-16	112	Pier AA2W - Pile Cap							
<b>Bridge B</b>														
BB-01-1010	Abutment AB1 - Pile Test	14	14	18-Aug-15 A	05-Feb-16	246	Abutment AB1 - Pile Test							
BB-12-1020	Abutment AB12/AD14 - Pile Cap	65	45	28-Oct-15 A	19-Mar-16	1	Abutment AB12/AD14 - Pile Cap, Abutment AB12/AD14 -							
BB-06-1030	Pier AB6E - Pier Construction	48	23	21-Nov-15 A	23-Feb-16	32	Pier AB6E - Pier Construction, Pier AB6E - Pier Construction							
BB-03-1030	Pier AB3 - Pier Construction	21	21	22-Feb-16	16-Mar-16	140	Pier AB3 - Pier Construction							
BB-06-1050	Portal AB6 - Portal Beam Construction together with Kicker	40	40	03-Mar-16	22-Apr-16	32	Portal AB6 - Portal B							
BB-12-1030	Abutment AB12/AD14 - Abutment Construction	75	75	21-Mar-16	23-Jun-16	133	Abutment AB12/AD14 - Abutment Construction							
BB-04-1000	Pier AB4 - Piling Works	24	24	24-Mar-16	25-Apr-16	18	Pier AB4 - Piling							
<b>Bridge C</b>														
BC-03-1020	Pier AC3 - Pile Cap	30	8	11-Dec-15 A	29-Jan-16	115	Pier AC3 - Pile Cap, Pier AC3 - Pile Cap							
BC-01-1030	Abutment AC1 - Abutment Construction	50	25	16-Dec-15 A	25-Feb-16	0	Abutment AC1 - Abutment Construction, Abutment AC1 - Abutment Construction							
BC-02-1020	Pier AC2 - Pile Cap	30	27	18-Jan-16 A	27-Feb-16	59	Pier AC2 - Pile Cap, Pier AC2 - Pile Cap							
BC-02-1030	Pier AC2 - Pier Construction	45	45	29-Feb-16	25-Apr-16	59	Pier AC2 - Pier C							
BC-03-1030	Pier AC3 - Pier Construction	28	28	20-Apr-16	24-May-16	56	Pier AC3 - Pier Construction							



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							Jan	Feb	Mar	Apr	May	
<b>Bridge D</b>												
BD-12-1030	Pier AD12 - Pier Construction	45	35	09-Dec-15 A	08-Mar-16	57						
BD-09-1040	Portal AD9/AC12 - Portal Beam Construction together with Kicker	40	40	21-Jan-16	14-Mar-16	7						
BD-01-1030	Abutment AD1 - Abutment Construction	50	50	21-Jan-16	29-Mar-16	216						
BD-08-1040	Portal AC11/AD8 - Portal Beam Construction together with Kicker	40	40	26-Jan-16	18-Mar-16	-17						
BD-11-1020A	Pier AD11E - Pile Cap	30	30	21-Mar-16	28-Apr-16	1						
<b>Pier Table Construction</b>												
<b>Bridge A</b>												
PA-1180	Pier Table Construction at Pier AA18 (4 nos.)	50	22	14-Dec-15 A	22-Feb-16	6						
PA-1030	Pier Table Construction at Pier AA3 (3 nos.)	50	48	19-Jan-16 A	23-Mar-16	0						
PA-1040	Pier Table Construction at Pier AA4 (3 nos.)	50	50	21-Jan-16	29-Mar-16	8						
PA-1050	Pier Table Construction at Pier AA5 (4 nos.)	50	50	01-Feb-16	09-Apr-16	9						
PA-1090	Pier Table Construction at Pier AA9 (4 nos.)	50	50	24-Mar-16	27-May-16	40						
PA-1110	Pier Table Construction at Pier AA11 (3 nos.)	50	50	30-Mar-16	30-May-16	42						
PA-1120	Pier Table Construction at Pier AA12 (3 nos.)	50	50	11-Apr-16	10-Jun-16	18						
<b>Bridge B</b>												
PB-1100	Pier Table Construction at Pier AB10 (4 nos.) incl. in-situ cross head	50	3	21-Sep-15 A	23-Jan-16	-44						
PB-1110	Pier Table Construction at Pier AB11 (4 nos.) incl. in-situ cross head	42	43	24-Dec-15 A	17-Mar-16	-9						
PB-1070	Pier Table Construction at Portal AB7/AD9 (4 nos.)	28	22	11-Jan-16 A	22-Feb-16	5						
PB-1090	Pier Table Construction at Pier AB9 (4 nos.) incl. in-situ cross head	40	40	25-Jan-16	17-Mar-16	250						
PB-1050	Pier Table Construction at Pier AB5 (3 nos.)	50	50	23-Feb-16	25-Apr-16	6						
<b>Bridge C</b>												
PC-1050	Pier Table Construction at Pier AC5 (4 nos.)	50	9	09-Dec-15 A	30-Jan-16	9						
<b>Bridge D</b>												
PD-1100	Pier Table Construction at Pier AD10 (4 nos.) incl. in-situ cross head	40	26	06-Oct-15 A	26-Feb-16	18						
PD-1070	Pier Table Construction at Pier AD7 (3 nos.)	50	0	12-Nov-15 A	22-Dec-15 A							
PD-1120	Pier Table Construction at Pier AD12 (4 nos.) incl. in-situ cross head	40	40	17-Mar-16	07-May-16	57						
PD-1130	Pier Table Construction at Pier AD13 (4 nos.) incl. in-situ cross head	40	40	18-Mar-16	09-May-16	62						
PD-1080	Pier Table Construction at Portal AC11/AD8 (4 nos.)	20	20	19-Mar-16	15-Apr-16	-17						



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							Jan	Feb	Mar	Apr	May	
PD-1090	Pier Table Construction at Portal AD9/AC12 (4 nos.)	28	28	16-Apr-16	20-May-16	-17						
<b>Vaduct Bridge Segement Erection</b>												
<b>Bridge A</b>												
EA-1170	Bridge Deck Construction at Pier AA17 by Typical Lifting Frame (14 nos + 1 no. key segment)	15	0	28-Dec-15 A	05-Jan-16 A							
EA-1030	Bridge Deck Construction at Pier AA3 by Typical Lifting Frame (16 nos + 1 no. key segment)	10	10	01-Apr-16	13-Apr-16	0						
EA-1040	Bridge Deck Construction at Pier AA4 by Typical Lifting Frame (16 nos + 1 no. key segment)	10	10	14-Apr-16	25-Apr-16	0						
<b>Bridge B</b>												
EB-1080	Bridge Deck Construction at Portal AB8 by Special Lifting Frame & Crane (26 nos)	12	6	14-Jan-16 A	27-Jan-16	-48						
EB-1100	Bridge Deck Construction at Pier AB10 by Special Lifting Frame (54 nos in which 12 nos above MTRCL Railway)	72	72	29-Jan-16	04-May-16	-48						
EB-1070	Bridge Deck Construction at Pier AB7 by Crane (26 nos + 2 no. key segment)	20	20	23-Feb-16	16-Mar-16	34						
EB-1090	Bridge Deck Construction at Pier AB9 by Crane (36 nos + 2 no. key segment)	16	16	18-Mar-16	09-Apr-16	250						
<b>Bridge C</b>												
EC-1090	Bridge Deck Construction at Pier AC9 by Crane (21 nos + 1 no. key segment)	12	0	15-Dec-15 A	24-Dec-15 A							
EC-1100	Bridge Deck Construction at Pier AC10 by Typical Lifting Frame (10 nos + 1 no. key segment)	15	15	28-Jan-16	20-Feb-16	4						
EC-1050	Bridge Deck Construction at Pier AC5 by Typical Lifting Frame (20 nos + 2 no. key segment + 3 no. of AC6)	12	12	10-Mar-16	23-Mar-16	4						
<b>Bridge D</b>												
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-Jan-16	1054						
ED-1040	Bridge Deck Construction at Pier AD4 by Typical Lifting Frame (14 nos + 2 no. key segment)	14	6	11-Jan-16 A	27-Jan-16	4						
ED-1070	Bridge Deck Construction at Pier AD7 by Typical Lifting Frame (26 nos + 1 no. key segment)	15	15	22-Feb-16	09-Mar-16	4						
ED-1100	Bridge Deck Construction at Portal AD10 by Crane (52 nos)	32	32	27-Feb-16	08-Apr-16	18						
<b>Section VI - Works in Portion FH9 (KD-6A)</b>												
<b>Major Works</b>												
S6-2000*	Construction of Abutment AB12/AD14 (including Piling, Pile Cap & Abutment construction)	276	120	06-Feb-15 A	23-Jun-16	133						
<b>Landscaping &amp; Establishment Works (KD-4, 4A, 5, 5A, 6)</b>												
<b>Section III - Remainder of Landscaping Softworks Not Included in Section IIIA</b>												
S3-1000	Transplanting along Realigned TWSR West	120	120	10-Mar-16	05-Aug-16	323						



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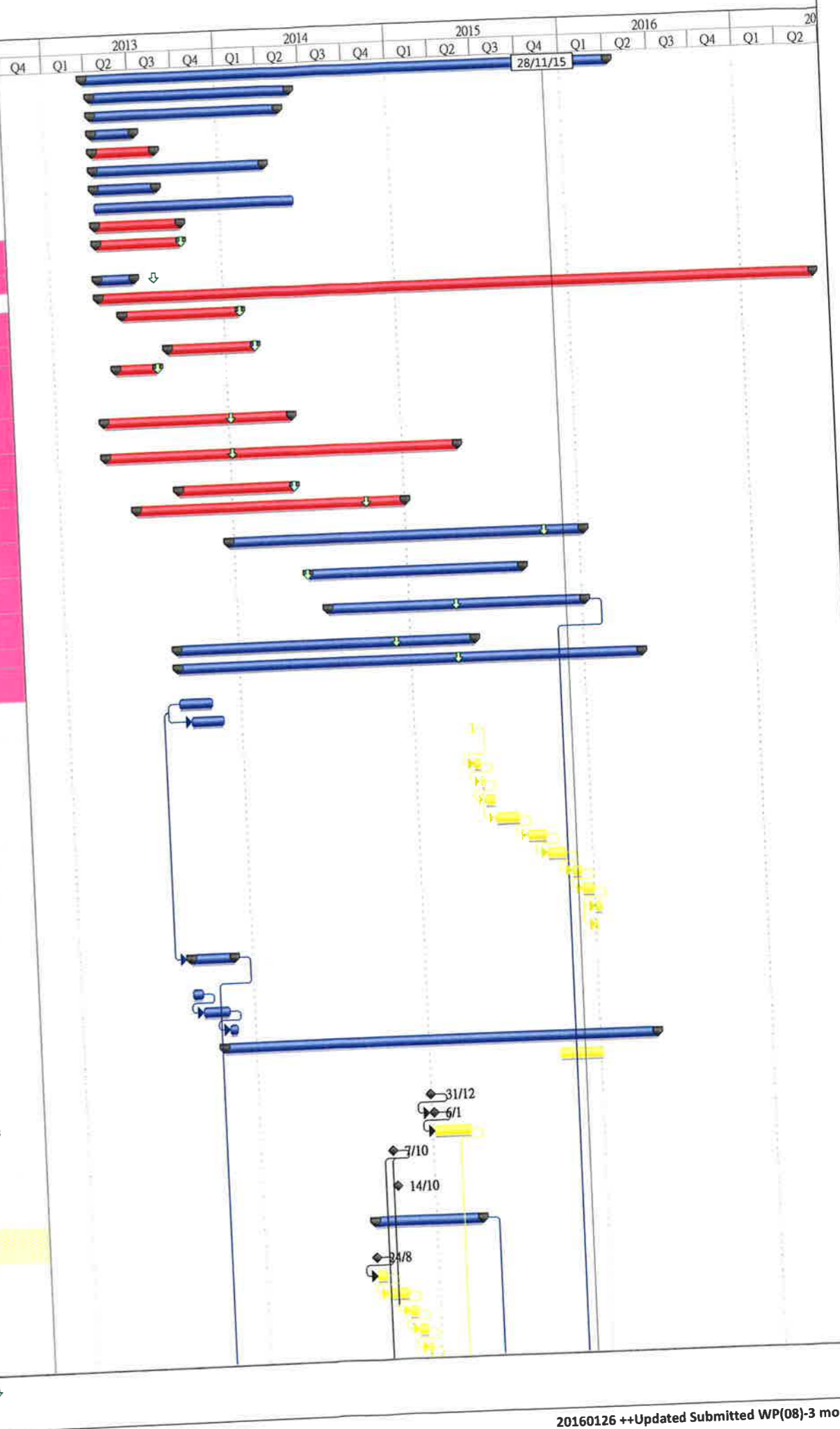
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## Contract 5

Site Formation and Infrastructure Works - Contract 5

Contract No. CV/2013/03 - Liantang/Heung Yuen Wai Boundary Control Point -

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	4
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	
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	74SS+13 days
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	
100	4.2	Section II of the Works - All laboratory tests for Section I	188 days	Sat 31/8/13	Thu 6/3/14	27
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/15/1308/00416 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 15/3/2014	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 - EOTO12 completion 9 January 2016	571 days	Fri 20/12/13	Sat 9/1/16	7
223	4.9	Section X of the Works - All works within Area BCPC	751 days	Fri 20/12/13	Sat 9/1/16	7
239	4.10	Section XI of the Works - All works within Area BCPD - EOTO12 completion 6 January 2016	454 days	Thu 5/6/14	Tue 1/9/15	8
322	4.11	Section XII of the Works - All works within Area LMH	542 days	Mon 14/7/14	Wed 6/1/16	
491	4.12	Section XIII of the Works - Works not covered in any other Sections	635 days	Thu 22/8/13	Mon 18/5/15	74
			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	Temporary 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
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
506	4.12.14.1	Preparation of TTA scheme	21 days	Fri 23/8/13	Thu 12/9/13	
507	4.12.14.2	Comment & approval of TTA scheme by TD & RMO	55 days	Fri 13/9/13	Wed 6/11/13	506
508	4.12.14.3	Obtain roadwork advice from RMO	16 days	Thu 7/11/13	Fri 22/11/13	507
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



Project Summary  Critical Split  Deadline   
 Critical  Progress

Revision 1  
Tue 26/1/16

Task  Milestone   
 Split  Summary











## Contract 6

Activity ID	Activity Name	Rem Dur	Start	Finish	January 2016					February 2016					March 2016				April 2016		
					20	27	03	10	17	24	31	07	14	21	28	06	13	20	27	03	10
<b>LT/HYW BCP Contract 6 - 3MRP Jan 2016</b>																					
<b>1.0 - Contract Key Dates</b>																					
<b>1.1 - Commencement of the Works</b>																					
CKD-1600	Section IIA Commencement of the Works Notification (PS+215d)	0	25-Jan-16																		
<b>1.5 - Works Areas Possession Date</b>																					
CKD-5160	Possession of Portion WC 2 of the Site (PS+60)	0	20-Jan-16																		
CKD-5300	Possession of Portion CR16 of the Site (PS+210)	0	12-Jan-16 A																		
CKD-5310	Possession of Portion CR17 of the Site (PS+210)	0	12-Jan-16 A																		
CKD-5360	Possession of Portion CR23 of the Site (PS+210)	0	12-Jan-16 A																		
CKD-5380	Possession of Portion CR28 of the Site (PS+210)	0	12-Jan-16 A																		
CKD-5400	Possession of Portion CR34 of the Site (PS+210)	0	16-Jan-16 A																		
CKD-5580	Possession of Portion CR37 of the Site (PS+270)	0	19-Mar-16																		
CKD-5590	Possession of Portion CR38 of the Site (PS+270)	0	19-Mar-16																		
CKD-5600	Possession of Portion CR39 of the Site (PS+270)	0	19-Mar-16																		
CKD-5640	Possession of Portion CR43 of the Site (PS+270)	0	19-Mar-16																		
CKD-5650	Possession of Works Area WA2 (PS+300)	0	30-Dec-15 A																		
CKD-5660	Possession of Works Area WA1-3 (PS+330)	0	31-Dec-15 A																		
CKD-5720	Possession of Portion C2P1 of the Site (PS+207)	0	16-Jan-16 A																		
CKD-5730	Possession of Portion C2P2 of the Site (PS+207)	0	16-Jan-16 A																		
CKD-5740	Possession of Portion C5P3 of the Site (PS+257)	0	06-Mar-16																		
<b>3.0 - Submission and Approval</b>																					
<b>3.1 - General Submission</b>																					
SUB-5930	Submit Geotechnical Risk Management Plan (PS 33.115.1(2))	84	11-Jan-16 A	12-Apr-16																	
<b>3.3 - DDA - Alternative Design</b>																					
<b>- DDA Submission - Bridge A</b>																					
<b>DDA Submission - Bridge A Substructure</b>																					
SUB-3000	Bridge A Substructure - Prep/Submit DDA Drawings + ICE	18	15-Jul-15 A	06-Feb-16																	
SUB-3010	Bridge A Substructure - Engineer Review/Comment & Resubmit	48	29-Sep-15 A	07-Mar-16																	
SUB-3030	Bridge A Substructure - DDA	18	23-Nov-15 A	25-Mar-16																	
<b>DDA Submission - Bridge A Superstructure</b>																					
SUB-3050	Bridge A Superstructure - Prep/Submit of DDA Drawings + ICE	12	27-Jul-15 A	31-Jan-16																	
SUB-3060	Bridge A Superstructure - Engineer Review/Comment & Resubmit	40	04-Dec-15 A	28-Feb-16																	
SUB-3070	Bridge A Superstructure - DDA	18	04-Dec-15 A	17-Mar-16																	
<b>- DDA Submission - Bridge B</b>																					
<b>DDA Submission - Bridge B Substructure</b>																					
SUB-3100	Bridge B Substructure - Prep/Submit DDA Drawings + ICE	12	15-Jul-15 A	31-Jan-16																	
SUB-3110	Bridge B Substructure - Engineer Review/Comment & Resubmit	40	29-Sep-15 A	28-Feb-16																	
SUB-3130	Bridge B Substructure - DDA	18	23-Sep-15 A	17-Mar-16																	
<b>DDA Submission - Bridge B Superstructure</b>																					
SUB-3140	Bridge B Superstructure - Prep/Submit DDA Drawings + ICE	12	15-Jul-15 A	31-Jan-16																	
SUB-3150	Bridge B Superstructure - Engineer Review/Comment & Resubmit	30	05-Dec-15 A	18-Feb-16																	
SUB-3160	Bridge B Superstructure - DDA	18	04-Dec-15 A	07-Mar-16																	
<b>- DDA Submission - Bridge C</b>																					
<b>DDA Submission - Bridge C Substructure</b>																					
SUB-3200	Bridge C Substructure - Prep/Submit DDA Drawings + ICE	18	20-Aug-15 A	06-Feb-16																	
SUB-3210	Bridge C Substructure - Engineer Review/Comment & Resubmit	60	12-Oct-15 A	19-Mar-16																	
SUB-3230	Bridge C Substructure - DDA	18	12-Oct-15 A	06-Apr-16																	

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

### 3-month Rolling Programme (20-Jan-2016)

Data Date: 20-Jan-16      Run Date: 29-Jan-16

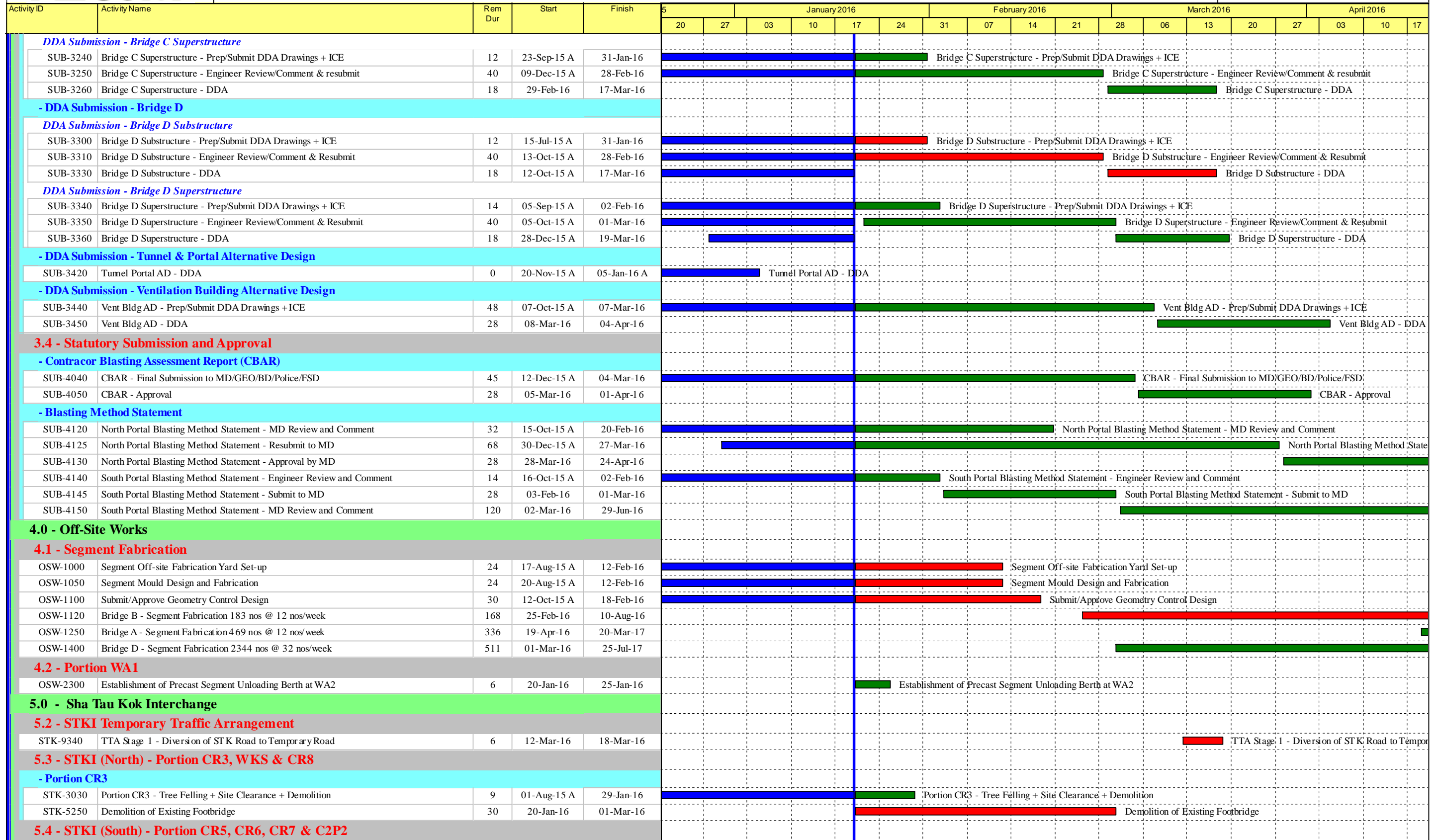
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3-month Rolling Programme			
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Liantang / Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - CONTRACT 6



- ◆ Milestone
- Critical Activity
- Non-Critical Activity
- Remaining Level of Effort
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**3-month Rolling Programme (20-Jan-2016)**

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3-month Rolling Programme

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



Activity ID	Activity Name	Rem Dur	Start	Finish	January 2016					February 2016					March 2016					April 2016			
					20	27	03	10	17	24	31	07	14	21	28	06	13	20	27	03	10	17	
<b>- STKI Slip Road S2</b>																							
STK-4140	Portion CR5/SRS2 Noise Barrier NB7 - Site Formation	9	12-Nov-15 A	29-Jan-16	Portion CR5/SRS2 Noise Barrier NB7 - Site Formation																		
STK-4141	Portion CR5/SRS2 Noise Barrier NB7 - Footing Slab	18	01-Feb-16	27-Feb-16	Portion CR5/SRS2 Noise Barrier NB7 - Footing Slab																		
STK-4142	Portion CR5/SRS2 Noise Barrier NB7 - Footing Wall	24	15-Feb-16	12-Mar-16	Portion CR5/SRS2 Noise Barrier NB7 - Footing Wall																		
STK-4150	STKI/SRS2 - Temporary Road	28	16-Feb-16	18-Mar-16	STKI/SRS2 - Temporary Road																		
<b>- STKI Portion C2P2</b>																							
STK-4220	Portion C2P2 - Tree Felling + Site Clearance	10	18-Jan-16 A	30-Jan-16	Portion C2P2 - Tree Felling + Site Clearance																		
STK-4230	Portion C2P2 - Initial Survey	10	18-Jan-16 A	30-Jan-16	Portion C2P2 - Initial Survey																		
<b>- STKI Slip Road S1</b>																							
STK-4305	Portion CR5 & CR6 (SRS1) - Temporary Road	45	19-Jan-16 A	18-Mar-16	Portion CR5 & CR6 (SRS1) - Temporary Road																		
STK-4315	Portion C2P1 - Condition + Tree Survey	5	18-Jan-16 A	25-Jan-16	Portion C2P1 - Condition + Tree Survey																		
STK-4320	Portion C2P1 - Tree Felling + Site Clearance	5	18-Jan-16 A	25-Jan-16	Portion C2P1 - Tree Felling + Site Clearance																		
STK-4325	Portion C2P1 - Initial Survey	6	21-Jan-16	28-Jan-16	Portion C2P1 - Initial Survey																		
<b>5.5 - STKI (East) - Portion CR3 &amp; RD</b>																							
<b>- Bridge E</b>																							
STK-5210	Bridge E - Diversion of Existing Utilities	36	19-Mar-16	04-May-16	Bridge E - Diversion of Existing Utilities																		
STK-5220	Bridge E - Abutment A021 Pre-drilling	18	19-Mar-16	13-Apr-16	Bridge E - Abutment A021 Pre-drilling																		
STK-5270	Bridge E - Abutment A022 Bored Piling	54	24-Feb-16	30-Apr-16	Bridge E - Abutment A022 Bored Piling																		
<b>6.0 - Bridge A (Ch6850 to Ch7295)</b>																							
<b>6.2 - Ground Investigation</b>																							
BRA-2022	TTA - Wo Keng Shan Rd. Local Diversion for AP006	6	12-Mar-16	18-Mar-16	TTA - Wo Keng Shan Rd. Local Diversion for AP006																		
BRA-2023	Diversion of Existing Utilities Diversion for AP006	48	19-Mar-16	19-May-16	Diversion of Existing Utilities Diversion for AP006																		
BRA-2035	Diversion of Existing Utilities Diversion for AP004	48	19-Mar-16	19-May-16	Diversion of Existing Utilities Diversion for AP004																		
BRA-2039	Bridge A - Pre-drilling at Portion RD-CR3 for AP004 (4 holes)	12	16-Apr-16	29-Apr-16	Bridge A - Pre-drilling at Portion RD-CR3 for AP004 (4 holes)																		
BRA-2050	Bridge A - Pre-drilling at Portion C2P2 for AP002 (4 holes)	0	17-Dec-15 A	30-Dec-15 A	Bridge A - Pre-drilling at Portion C2P2 for AP002 (4 holes)																		
BRA-2060	Bridge A - Pre-drilling at Portion C2P2 for AA001 (5 holes)	5	30-Dec-15 A	25-Jan-16	Bridge A - Pre-drilling at Portion C2P2 for AA001 (5 holes)																		
<b>6.3 - Bored Piles</b>																							
BRA-3000.03	Bridge A - AA0011-05	0	15-Dec-15 A	11-Jan-16 A	Bridge A - AA0011-05																		
BRA-3000.04	Bridge A - AA0011-04	0	27-Nov-15 A	30-Dec-15 A	Bridge A - AA0011-04																		
BRA-3000.06	Bridge A - AA0011-02	15	13-Jan-16 A	05-Feb-16	Bridge A - AA0011-02																		
BRA-3000.10	Bridge A - AP010N-02	3	06-Jan-16 A	23-Jan-16	Bridge A - AP010N-02																		
BRA-3000.11	Bridge A - AP009N-02	13	19-Jan-16 A	03-Feb-16	Bridge A - AP009N-02																		
BRA-3000.13	Bridge A - AP54S-01	0	08-Dec-15 A	06-Jan-16 A	Bridge A - AP54S-01																		
BRA-3000.16	Bridge A - AP009N-01	0	07-Dec-15 A	13-Jan-16 A	Bridge A - AP009N-01																		
BRA-3000.17	Bridge A - AP009S-02	0	28-Dec-15 A	18-Jan-16 A	Bridge A - AP009S-02																		
BRA-3010.18	Bridge A - AP008N-01	5	14-Jan-16 A	25-Jan-16	Bridge A - AP008N-01																		
BRA-3010.19	Bridge A - AP007S-01	8	25-Jan-16	03-Feb-16	Bridge A - AP007S-01																		
BRA-3010.20	Bridge A - AP008S-01	10	03-Feb-16	22-Feb-16	Bridge A - AP008S-01																		
BRA-3010.21	Bridge A - AP007N-01	12	22-Feb-16	07-Mar-16	Bridge A - AP007N-01																		
BRA-3010.22	Bridge A - AP052N-01	0	21-Dec-15 A	07-Jan-16 A	Bridge A - AP052N-01																		
BRA-3010.23	Bridge A - AP052S-01	6	13-Jan-16 A	26-Jan-16	Bridge A - AP052S-01																		
BRA-3010.24	Bridge A - AA0051N-01	3	20-Jan-16	22-Jan-16	Bridge A - AA0051N-01																		
BRA-3010.25	Bridge A - AA0051S-01	9	22-Jan-16	02-Feb-16	Bridge A - AA0051S-01																		
BRA-3010.26	Bridge A - AA0051N-02	4	08-Jan-16 A	23-Jan-16	Bridge A - AA0051N-02																		
BRA-3010.27	Bridge A - AA0051S-02	7	23-Jan-16	01-Feb-16	Bridge A - AA0051S-02																		
BRA-3050.38	Bridge A - AP003N-01	12	06-Feb-16	26-Feb-16	Bridge A - AP003N-01																		
BRA-3050.39	Bridge A - AP003S-01	12	27-Feb-16	11-Mar-16	Bridge A - AP003S-01																		
BRA-3060.40	Bridge A - AP002N-01	12	04-Feb-16	24-Feb-16	Bridge A - AP002N-01																		

- ◆ Milestone
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## 3-month Rolling Programme (20-Jan-2016)

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Activity ID	Activity Name	Rem Dur	Start	Finish	January 2016		February 2016				March 2016				April 2016						
					20	27	03	10	17	24	31	07	14	21	28	06	13	20	27	03	10
BRA-3060.41	Bridge A - AP002S-01	12	25-Feb-16	09-Mar-16																	
BRA-3600.42	Bridge A - AA001-04	15	10-Mar-16	30-Mar-16																	
BRA-3600.43	Bridge A - AA001-03	15	12-Mar-16	01-Apr-16																	
BRA-3600.44	Bridge A - AA001-01	15	31-Mar-16	18-Apr-16																	
BRA-3600.45	Bridge A - AA001-05	15	02-Apr-16	20-Apr-16																	
BRA-3600.46	Bridge A - AA001-02	15	19-Apr-16	05-May-16																	
<b>6.4 - Pile Cap</b>																					
BRA-4000	Bridge A - Pilecap for Abut AA011	42	09-Apr-16	28-May-16																	
BRA-4010	Bridge A - Pilecap at Portion CR4/CR10 (2P) - 4 nos	36	08-Mar-16	22-Apr-16																	
<b>7.0 - South Portal Works</b>																					
<b>7.1 - South Portal Preliminary Works</b>																					
TSP-1060	South Portal - Boulder Stabilization (12 nos)	0	09-Sep-15 A	02-Jan-16 A																	
<b>7.2 - South Portal Formation</b>																					
<b>- SP Slope Excavation to 48.9mPD</b>																					
<b>-- Cut Slope</b>																					
TSP-1240	SP/B4 - Cut Slope to +86.4 mPD (7779m3)	0	11-Nov-15 A	19-Jan-16 A																	
TSP-1250	SP/B5 - Cut Slope to +78.9 mPD (10977m3)	10	17-Dec-15 A	01-Feb-16																	
TSP-1260	SP/B6 - Cut Slope to +71.4 mPD (14065m3)	18	07-Jan-16 A	17-Feb-16																	
TSP-1270	SP/B7 - Cut Slope to +63.9 mPD (17231m3)	25	13-Jan-16 A	26-Feb-16																	
TSP-1280	SP/B8 - Cut Slope to +56.4 mPD (19745m3)	26	05-Feb-16	14-Mar-16																	
TSP-1290	SP/B9 - Cut Slope to +48.9 mPD (23489m3)	26	27-Feb-16	01-Apr-16																	
<b>-- Soil nail</b>																					
TSP-1075	SP/NTHS - Soil Nail at Slope C3 (71nos)	0	17-Sep-15 A	18-Jan-16 A																	
TSP-1080	SP/NTHS - Soil Nail at Slope C2 (128nos)	0	03-Oct-15 A	12-Jan-16 A																	
TSP-1085	SP/NTHS - Soil Nail at Slope C1 (116nos)	0	01-Dec-15 A	06-Jan-16 A																	
TSP-1310	SP/B1 - Soil Nail at +108.9 mPD (45nos)	0	23-Sep-15 A	06-Jan-16 A																	
TSP-1335	SP/B3 - Soil Nail Layer 3 at +93.9 mPD (237nos)	0	04-Nov-15 A	01-Jan-16 A																	
TSP-1340	SP/B4 - Soil Nail Layer 1 & 2 at +86.4 mPD (225nos)	0	11-Nov-15 A	19-Jan-16 A																	
TSP-1345	SP/B4 - Soil Nail Layer 3 at +86.4 mPD (225nos)	0	02-Dec-15 A	19-Jan-16 A																	
TSP-1350	SP/B5 - Soil Nail Layer 1 & 2 at +78.9 mPD (282nos)	8	24-Dec-15 A	28-Jan-16																	
TSP-1355	SP/B5 - Soil Nail Layer 3 at +78.9 mPD (282nos)	12	17-Feb-16	01-Mar-16																	
TSP-1360	SP/B6 - Soil Nail Layer 1 & 2 at +71.4 mPD (289nos)	15	20-Jan-16	05-Feb-16																	
TSP-1365	SP/B6 - Soil Nail Layer 3 at +71.4 mPD (289nos)	12	27-Feb-16	11-Mar-16																	
TSP-1370	SP/B7 - Soil Nail Layer 1 & 2 at +63.9 mPD (279nos)	15	22-Jan-16	16-Feb-16																	
TSP-1375	SP/B7 - Soil Nail Layer 3 at +63.9 mPD (279nos)	12	05-Mar-16	18-Mar-16																	
TSP-1380	SP/B8 - Soil Nail Layer 1 & 2 at +56.4 mPD (275nos)	18	19-Feb-16	11-Mar-16																	
TSP-1385	SP/B8 - Soil Nail Layer 3 at +56.4 mPD (275nos)	12	22-Mar-16	09-Apr-16																	
TSP-1390	SP/B9 - Soil Nail Layer 1 & 2 at +48.9 mPD (283nos)	18	05-Mar-16	30-Mar-16																	
TSP-1395	SP/B9 - Soil Nail Layer 3 at +48.9 mPD (283nos)	12	11-Apr-16	25-Apr-16																	
<b>-- Berm</b>																					
TSP-1410	SP/B1 - Berm/Drain/Stair +108.9 mPD (63m)	4	08-Oct-15 A	23-Jan-16																	
TSP-1420	SP/B2 - Berm/Drain/Stair +101.4 mPD (115m)	8	09-Oct-15 A	29-Jan-16																	
TSP-1430	SP/B3 - Berm/Drain/Stair +93.9 mPD (160m)	18	20-Jan-16	16-Feb-16																	
TSP-1440	SP/B4 - Berm/Drain/Stair +86.4 mPD (175m)	18	20-Jan-16	16-Feb-16																	
TSP-1450	SP/B5 - Berm/Drain/Stair +78.9 mPD (190m)	18	20-Jan-16	16-Feb-16																	
TSP-1460	SP/B6 - Berm/Drain/Stair +71.4 mPD (185m)	18	30-Jan-16	26-Feb-16																	
TSP-1470	SP/B7 - Berm/Drain/Stair +63.9 mPD (180m)	18	02-Feb-16	01-Mar-16																	
TSP-1480	SP/B8 - Berm/Drain/Stair +56.4 mPD (190m)	18	01-Mar-16	22-Mar-16																	



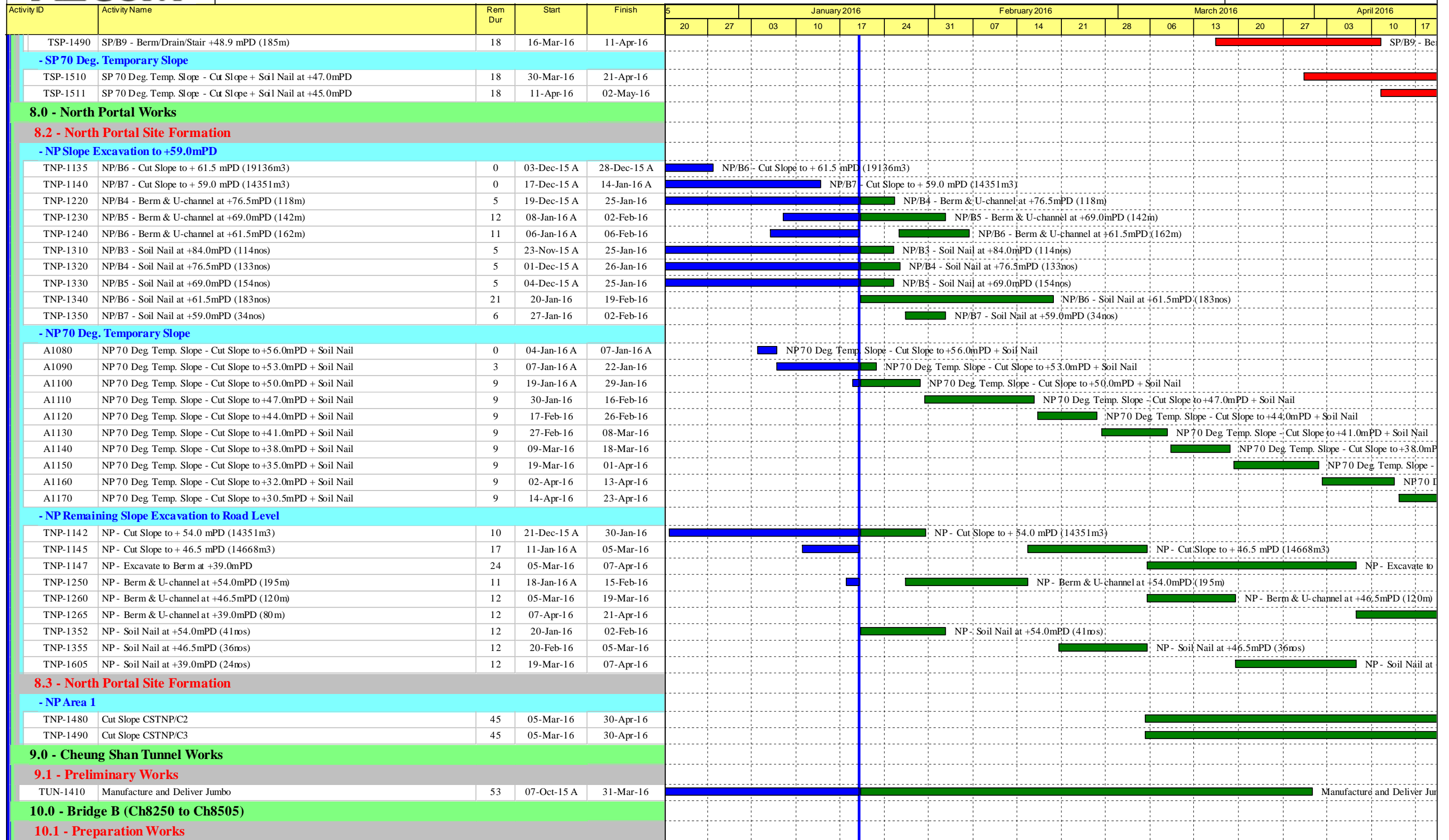
- ◆ Milestone
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### 3-month Rolling Programme (20-Jan-2016)

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**3-month Rolling Programme (20-Jan-2016)**

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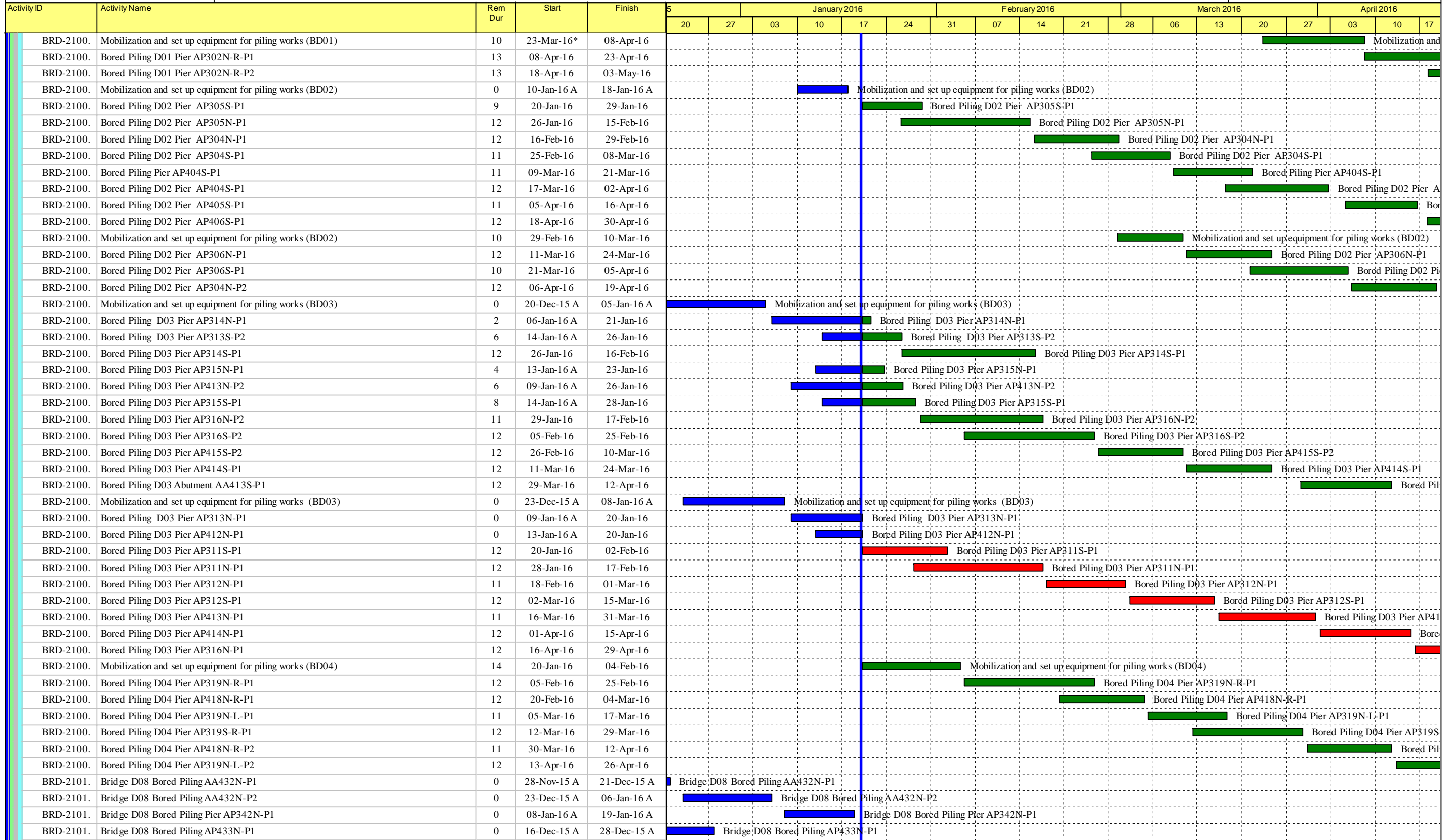
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3-month Rolling Programme			
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Activity ID	Activity Name	Rem Dur	Start	Finish	January 2016					February 2016					March 2016				April 2016				
					20	27	03	10	17	24	31	07	14	21	28	06	13	20	27	03	10	17	
BRB-1020	Portion CR1/CR15 - Tree Felling + Site Clearance	10	02-Jul-15 A	30-Jan-16	Portion CR1/CR15 - Tree Felling + Site Clearance																		
BRB-1040	Portion CR1/CR15 - Haul Road Construction	6	07-Aug-15 A	26-Jan-16	Portion CR1/CR15 - Haul Road Construction																		
BRB-1080	Portion CR1 - Bridge B Diversion of Existing Utilities	34	17-Jul-15 A	05-Mar-16	Portion CR1 - Bridge B Diversion of Existing Utilities																		
BRB-1400	Portion CR16/CR17 - Site Survey & Clearance	5	14-Jan-16 A	26-Jan-16	Portion CR16/CR17 - Site Survey & Clearance																		
BRB-1405	Portion CR17 - Temporary Piling Platform	14	20-Jan-16	04-Feb-16	Portion CR17 - Temporary Piling Platform																		
<b>10.2 - Ground Investigation</b>																							
BRB-2000	Bridge B Pre-drilling except AA106 (22 holes)	6	31-Jul-15 A	05-Mar-16	Bridge B Pre-drilling except AA106 (22 holes)																		
BRB-2100	TTA for AP102S-2 Pre-drilling	12	15-Feb-16*	27-Feb-16	TTA for AP102S-2 Pre-drilling																		
BRB-2200	Bridge B Pre-drilling AA106 (5 holes)	12	25-Jul-15 A	25-Feb-16	Bridge B Pre-drilling AA106 (5 holes)																		
<b>10.3 - Bored piles</b>																							
BRB-3030	Bridge B Bored Pile Abutment AA101S-03	0	14-Dec-15 A	24-Dec-15 A	Bridge B Bored Pile Abutment AA101S-03																		
BRB-3052	Bridge B Bored Pile Pier AP102N-02	0	23-Dec-15 A	14-Jan-16 A	Bridge B Bored Pile Pier AP102N-02																		
BRB-3053	Bridge B Bored Pile Pier AP102S-01	16	16-Jan-16 A	06-Feb-16	Bridge B Bored Pile Pier AP102S-01																		
BRB-3053.1	Bridge B Bored Pile Pier AP102S-02	14	15-Feb-16	01-Mar-16	Bridge B Bored Pile Pier AP102S-02																		
BRB-3061	Move and set-up plant from Abutment AA101	0	25-Dec-15 A	08-Jan-16 A	Move and set-up plant from Abutment AA101																		
BRB-3062	Bridge B Bored Pile Pier AP103S-01	0	09-Jan-16 A	19-Jan-16 A	Bridge B Bored Pile Pier AP103S-01																		
BRB-3063	Bridge B Bored Pile Pier AP103S-02	13	20-Jan-16	03-Feb-16	Bridge B Bored Pile Pier AP103S-02																		
BRB-3064	Bridge B Bored Pile Pier AP104S-01	13	20-Jan-16	03-Feb-16	Bridge B Bored Pile Pier AP104S-01																		
BRB-3065	Bridge B Bored Pile Pier AP104S-02	13	20-Jan-16	03-Feb-16	Bridge B Bored Pile Pier AP104S-02																		
BRB-3072	Move and set-up plant from AP103N-L-1	8	02-Mar-16	10-Mar-16	Move and set-up plant from AP103N-L-1																		
BRB-3073	Bridge B Bored Pile Pier AP103N-R-1	12	04-Feb-16	24-Feb-16	Bridge B Bored Pile Pier AP103N-R-1																		
BRB-3074	Bridge B Bored Pile Pier AP103N-L-1	12	11-Mar-16	24-Mar-16	Bridge B Bored Pile Pier AP103N-L-1																		
BRB-3075	Bridge B Bored Pile Pier AP104N-L-1	12	29-Mar-16	12-Apr-16	Bridge B Bored Pile Pier AP104N-L-1																		
BRB-3075.1	Bridge B Bored Pile Pier AP105N-R-1	15	13-Apr-16	29-Apr-16	Bridge B Bored Pile Pier AP105N-R-1																		
BRB-3076	Bridge B Bored Pile Pier AP104N-R-1	12	25-Feb-16	09-Mar-16	Bridge B Bored Pile Pier AP104N-R-1																		
BRB-3081	Move and set-up plant from AP104N-R-1	8	10-Mar-16	18-Mar-16	Move and set-up plant from AP104N-R-1																		
BRB-3082	Bridge B Bored Pile Pier AP105N-R-1	15	19-Mar-16	09-Apr-16	Bridge B Bored Pile Pier AP105N-R-1																		
<b>10.4 - Pile Cap &amp; Footing</b>																							
BRB-4000	Bridge B Abutment AA101N/AA101S - Pile Cap/ Footing	42	20-Jan-16	15-Mar-16	Bridge B Abutment AA101N/AA101S - Pile Cap/ Footing																		
<b>10.5 - Abutment wall, Pier, Portal</b>																							
BRB-5000	Bridge B Abutment AA101N/AA101S + Bearing	36	16-Mar-16	30-Apr-16	Bridge B Abutment AA101N/AA101S + Bearing																		
<b>11.0 - Road On Grade (Ch 8505 to Ch 8700)</b>																							
<b>11.2 - Cut Slopes</b>																							
RBC-2300	WKS/C1 Slope Excavation to +39.00 + Berm & Drainage	0	30-Sep-15 A	28-Dec-15 A	WKS/C1 Slope Excavation to +39.00 + Berm & Drainage																		
RBC-2400	WKS/C1 Slope Excavation to +32.00 + Berm & Drainage	13	30-Jan-16 A	03-Feb-16	WKS/C1 Slope Excavation to +32.00 + Berm & Drainage																		
RBC-2500	WKS/C2 Slope Excavation to +36.00 + Berm & Drainage	0	03-Dec-15 A	07-Jan-16 A	WKS/C2 Slope Excavation to +36.00 + Berm & Drainage																		
RBC-2600	WKS/C2 Slope Excavation to +32.00 + Berm & Drainage	9	08-Dec-15 A	29-Jan-16	WKS/C2 Slope Excavation to +32.00 + Berm & Drainage																		
<b>11.5 - Road Works</b>																							
RBC-5000	Construct U - Channel and CP along slope toe (except from CP9 to CP10)	10	20-Jan-16	30-Jan-16	Construct U - Channel and CP along slope toe (except from CP9 to CP10)																		
RBC-5010	Construct Noise Barrier NB3-a bay 3 to 8	30	25-Jan-16	05-Mar-16	Construct Noise Barrier NB3-a bay 3 to 8																		
RBC-5020	Construct ADS4 footings	12	15-Feb-16	27-Feb-16	Construct ADS4 footings																		
RBC-5030	Construct SMH4101 to SMH4102 including gullies	12	15-Feb-16	27-Feb-16	Construct SMH4101 to SMH4102 including gullies																		
RBC-5040	Construct SMH4001 to SMH4003 including gullies	18	29-Feb-16	19-Mar-16	Construct SMH4001 to SMH4003 including gullies																		
RBC-5050	Construct U - Channel and CP from CP9 to CP10	6	29-Feb-16	05-Mar-16	Construct U - Channel and CP from CP9 to CP10																		
RBC-5060	Trim Formation	4	21-Mar-16	24-Mar-16	Trim Formation																		
RBC-5070	Lay Subbase Layer	3	29-Mar-16	31-Mar-16	Lay Subbase Layer																		
RBC-5080	Construct Road Kerb (M1 & K2)	17	01-Apr-16	21-Apr-16	Construct Road Kerb (M1 & K2)																		

Activity ID	Activity Name	Rem Dur	Start	Finish	January 2016					February 2016					March 2016					April 2016			
					20	27	03	10	17	24	31	07	14	21	28	06	13	20	27	03	10	17	
<b>12.0 - Bridge C (Ch8700 to Ch9005)</b>																							
<b>12.1 - Preparation Works</b>																							
BRC-9610	Bridge C - Diversion of Existing Utilities	19	31-Jul-15 A	17-Feb-16	Bridge C - Diversion of Existing Utilities																		
<b>12.3 - Bored piles</b>																							
BRC-2900	Mobilisation and set up equipment for piling works (No. 1)	0	11-Jan-16 A	15-Jan-16 A	Mobilisation and set up equipment for piling works (No. 1)																		
BRC-2905	AA201-P1	8	07-Apr-16	16-Apr-16	AA201-P1																		
BRC-2931	AP203S-P1	14	22-Feb-16	09-Mar-16	AP203S-P1																		
BRC-2935	AP202N-P1	16	18-Jan-16 A	22-Feb-16	AP202N-P1																		
BRC-2950	AP202S-P2	0	05-Jan-16 A	16-Jan-16 A	AP202S-P2																		
BRC-2960	AP203N-P2	0	31-Dec-15 A	09-Jan-16 A	AP203N-P2																		
BRC-2965	AP203N-P1	6	11-Jan-16 A	27-Jan-16	AP203N-P1																		
BRC-2980	AA207-1	16	16-Jan-16 A	06-Feb-16	AA207-1																		
BRC-2980.01	AA207-2	20	07-Apr-16	29-Apr-16	AA207-2																		
BRC-2980.02	AA207-3	20	16-Mar-16	12-Apr-16	AA207-3																		
BRC-2980.03	AA207-4	20	27-Feb-16	21-Mar-16	AA207-4																		
BRC-2980.04	AA207-5	20	03-Feb-16	03-Mar-16	AA207-5																		
<b>13.0 - Road On Grade (Ch 9005 to Ch 9260)</b>																							
<b>13.2 - Cut Slopes</b>																							
RCD-2020	WKS/C3 Slope Excavation to +34.80mPD + Berm & Drainage	6	08-Oct-15 A	26-Jan-16	WKS/C3 Slope Excavation to +34.80mPD + Berm & Drainage																		
RCD-2030	WKS/C4 Slope Excavation to +36.00mPD + Drainage	12	24-Oct-15 A	02-Feb-16	WKS/C4 Slope Excavation to +36.00mPD + Drainage																		
RCD-2100	WKS/C5 Slope Excavation to +43.50mPD + Berm & Drainage	0	04-Dec-15 A	15-Jan-16 A	WKS/C5 Slope Excavation to +43.50mPD + Berm & Drainage																		
RCD-2200	WKS/C5 Slope Excavation to +36.00mPD + Soil Nail + Berm & Drainage	29	13-Jan-16 A	29-Feb-16	WKS/C5 Slope Excavation to +36.00mPD + Soil Nail + Berm & Drainage																		
RCD-2300	WKS/C5 Slope Excavation to +32.00mPD + Soil Nail + Berm & Drainage	36	29-Feb-16	15-Apr-16	WKS/C5 Slope Excavation to +32.00mPD + Soil Nail + Berm & Drainage																		
<b>13.3 - Fill Slopes</b>																							
RCD-3000	WKS/F8 Fill Slope	75	27-Feb-16	30-May-16	WKS/F8 Fill Slope																		
<b>13.4 - Retaining Walls</b>																							
RCD-4000	WKS/RW6 Retaining Wall Excavation	29	28-Dec-15 A	14-Mar-16	WKS/RW6 Retaining Wall Excavation																		
RCD-4100	WKS/RW6 Retaining Wall Base Slab	54	13-Jan-16 A	16-Apr-16	WKS/RW6 Retaining Wall Base Slab																		
RCD-4200	WKS/RW6 Retaining Wall Stem Wall	60	24-Feb-16	07-May-16	WKS/RW6 Retaining Wall Stem Wall																		
<b>14.0 - Bridge D (Ch9269 to Ch11369)</b>																							
<b>14.1 - Bridge D - Preliminary Works</b>																							
<b>- Site Establishment</b>																							
BRD-1020	Bridge D Portion CR2 - Tree Felling + Site Clearance	8	31-Jul-15 A	28-Jan-16	Bridge D Portion CR2 - Tree Felling + Site Clearance																		
BRD-1180	Bridge D Portion CR2 - Haul Road	12	08-Sep-15 A	02-Feb-16	Bridge D Portion CR2 - Haul Road																		
<b>- Temporary Bridges</b>																							
BRD-1190	Temporary Bridge T2 Construction	0	04-Dec-15 A	09-Jan-16 A	Temporary Bridge T2 Construction																		
BRD-1200	Temporary Bridge T1 Construction	24	24-Feb-16	23-Mar-16	Temporary Bridge T1 Construction																		
BRD-1220	Temporary Bridge T3 and T4 Construction	9	16-Dec-15 A	30-Jan-16	Temporary Bridge T3 and T4 Construction																		
<b>14.2 - Bored Piles</b>																							
<b>- Pre-drilling</b>																							
BRD-2010	Bridge D01 - Pre-drilling - 24 holes	0	27-Oct-15 A	13-Jan-16 A	Bridge D01 - Pre-drilling - 24 holes																		
BRD-2020	Bridge D02 - Pre-drilling - 27 holes	3	22-Oct-15 A	22-Jan-16	Bridge D02 - Pre-drilling - 27 holes																		
BRD-2060	Bridge D06 - Pre-drilling - 19 holes	8	08-Sep-15 A	28-Jan-16	Bridge D06 - Pre-drilling - 19 holes																		
<b>- Bored Piling</b>																							
BRD-2100	Mobilization and set up equipment for piling works (BD01)	12	01-Feb-16*	20-Feb-16	Mobilization and set up equipment for piling works (BD01)																		
BRD-2100	Bridge D01 Bored Piling Abutment AA301-01	25	29-Feb-16	31-Mar-16	Bridge D01 Bored Piling Abutment AA301-01																		
BRD-2100	Bridge D01 Bored Piling Abutment AA301-02	24	01-Apr-16	29-Apr-16	Bridge D01 Bored Piling Abutment AA301-02																		





Activity ID	Activity Name	Rem Dur	Start	Finish	January 2016					February 2016					March 2016				April 2016				
					20	27	03	10	17	24	31	07	14	21	28	06	13	20	27	03	10	17	
BRD-2101.	Bridge D08 Bored Piling Pier AP343S-P1	0	29-Dec-15 A	13-Jan-16 A	Bridge D08 Bored Piling Pier AP343S-P1																		
BRD-2101.	Bridge D08 Bored Piling Pier AP343N-P1	6	14-Jan-16 A	26-Jan-16	Bridge D08 Bored Piling Pier AP343N-P1																		
BRD-2101.	Bridge D08 Bored Piling Pier AP339N-P1	14	15-Dec-15 A	04-Feb-16	Bridge D08 Bored Piling Pier AP339N-P1																		
BRD-2101.	Bridge D08 Bored Piling Pier AP339S-P1	0	06-Jan-16 A	16-Jan-16 A	Bridge D08 Bored Piling Pier AP339S-P1																		
BRD-2101.	Bridge D08 Bored Piling Pier AP340S-P1	2	13-Jan-16 A	22-Jan-16	Bridge D08 Bored Piling Pier AP340S-P1																		
BRD-2101.	Bridge D08 Bored Piling Pier AP341N-P2	12	22-Jan-16	05-Feb-16	Bridge D08 Bored Piling Pier AP341N-P2																		
BRD-2101.	Construction of Temp Road Diversion at Lin Ma Hang Rd	7	05-Feb-16	19-Feb-16	Construction of Temp Road Diversion at Lin Ma Hang Rd																		
BRD-2101.	Bridge D08 Bored Piling Pier AP342S-P1	12	20-Feb-16	04-Mar-16	Bridge D08 Bored Piling Pier AP342S-P1																		
BRD-2101.	Bridge D08 Bored Piling Pier AP341N-P1	12	05-Mar-16	18-Mar-16	Bridge D08 Bored Piling Pier AP341N-P1																		
BRD-2101.	Bridge D08 Bored Piling Pier AP340N-P1	0	19-Dec-15 A	12-Jan-16 A	Bridge D08 Bored Piling Pier AP340N-P1																		
BRD-2101.	Bridge D08 Bored Piling Pier AP433S-RP1	0	06-Jan-16 A	19-Jan-16 A	Bridge D08 Bored Piling Pier AP433S-RP1																		
BRD-2101.	Bridge D08 Bored Piling Pier AP341S-P1	4	09-Jan-16 A	23-Jan-16	Bridge D08 Bored Piling Pier AP341S-P1																		
BRD-2101.	Bridge D08 Bored Piling Pier AP433S-LP1	12	23-Jan-16	06-Feb-16	Bridge D08 Bored Piling Pier AP433S-LP1																		
BRD-2101.	Bridge D08 Bored Piling Abutment AA432S-P1	12	06-Feb-16	27-Feb-16	Bridge D08 Bored Piling Abutment AA432S-P1																		
BRD-2101.	Bridge D08 Bored Piling Pier AP341S-P2	12	27-Feb-16	12-Mar-16	Bridge D08 Bored Piling Pier AP341S-P2																		
BRD-2101.	Bridge D08 Bored Piling Abutment AA432S-P2	12	12-Mar-16	30-Mar-16	Bridge D08 Bored Piling Abutment AA432S-P2																		
BRD-2101.	Bridge D08 Bored Piling Pier AP338S-P2	12	30-Mar-16	14-Apr-16	Bridge D08 Bored Piling Pier AP338S-P2																		
BRD-2101.	Bridge D08 Bored Piling Pier AP338N-P2	12	14-Apr-16	28-Apr-16	Bridge D08 Bored Piling Pier AP338N-P2																		
BRD-2101.	Bridge D08 Bored Piling Pier AP338S-P1	12	19-Mar-16	06-Apr-16	Bridge D08 Bored Piling Pier AP338S-P1																		
BRD-2101.	Bridge D08 Bored Piling Pier AP338N-P1	12	07-Apr-16	20-Apr-16	Bridge D08 Bored Piling Pier AP338N-P1																		
BRD-2101.	Construct temporary access and working platform Abutment AA344	22	15-Jan-16 A	20-Feb-16	Construct temporary access and working platform Abutment AA344																		
BRD-2101.	Mobilization and set up equipment for piling works (BD08)	8	01-Feb-16	16-Feb-16	Mobilization and set up equipment for piling works (BD08)																		
BRD-2101.	Bridge D08 Bored Piling Abutment AA344-P1	10	17-Feb-16	27-Feb-16	Bridge D08 Bored Piling Abutment AA344-P1																		
BRD-2101.	Bridge D08 Bored Piling Abutment AA344-P2	10	25-Feb-16	07-Mar-16	Bridge D08 Bored Piling Abutment AA344-P2																		
BRD-2101.	Bridge D08 Bored Piling Abutment AA344-P3	10	04-Mar-16	15-Mar-16	Bridge D08 Bored Piling Abutment AA344-P3																		
BRD-2101.	Bridge D08 Bored Piling Abutment AA344-P4	10	12-Mar-16	23-Mar-16	Bridge D08 Bored Piling Abutment AA344-P4																		
BRD-2101.	Bridge D08 Bored Piling Abutment AA344-P5	10	21-Mar-16	05-Apr-16	Bridge D08 Bored Piling Abutment AA344-P5																		
BRD-2101.	Bridge D08 Bored Piling Abutment AA344-P6	10	01-Apr-16	13-Apr-16	Bridge D08 Bored Piling Abutment AA344-P6																		
BRD-2101.	Bridge D08 Bored Piling Abutment AA344-P7	10	11-Apr-16	21-Apr-16	Bridge D08 Bored Piling Abutment AA344-P7																		
BRD-2101.	Bridge D08 Bored Piling Abutment AA344-P8	10	19-Apr-16	29-Apr-16	Bridge D08 Bored Piling Abutment AA344-P8																		
<b>14.3 - Pile Caps</b>																							
BRD-3100	Bridge D02 Pilecap (2P), 5 nos (2 sets)	60	01-Mar-16	13-May-16	Bridge D02 Pilecap (2P), 5 nos (2 sets)																		
BRD-3125	Bridge D02 Pilecap (1P), 13 nos (3 sets)	60	09-Apr-16	20-Jun-16	Bridge D02 Pilecap (1P), 13 nos (3 sets)																		
BRD-3750	Bridge D08 - Pilecap (2P), 5 nos (2 sets)	72	15-Feb-16	12-May-16	Bridge D08 - Pilecap (2P), 5 nos (2 sets)																		
BRD-3775	Bridge D08 - Pilecap (1P), 11 nos (3 sets)	72	15-Feb-16	12-May-16	Bridge D08 - Pilecap (1P), 11 nos (3 sets)																		
BRD-3800	Bridge D08 - Pilecap Abutment AA432N	30	08-Apr-16	12-May-16	Bridge D08 - Pilecap Abutment AA432N																		
<b>15.0 - Ping Yeung Interchange (PYI)</b>																							
<b>15.1 - PYI Local Road - South</b>																							
<b>- Preparation Works</b>																							
PYI-1015	PYI Tree Felling & Site Clearance	0	03-Sep-15 A	19-Jan-16 A	PYI Tree Felling & Site Clearance																		
<b>- Bridge G</b>																							
PYI-1050	PYI Bridge G - Prebored H-pile - 16 nos	30	20-Jan-16	01-Mar-16	PYI Bridge G - Prebored H-pile - 16 nos																		
PYI-1100	PYI Bridge G - Construct Abutments	42	24-Feb-16	16-Apr-16	PYI Bridge G - Construct Abutments																		
PYI-1150	PYI Bridge G - Construct Deck	76	18-Apr-16	18-Jul-16	PYI Bridge G - Construct Deck																		
<b>15.2 - PYI Local Road - North</b>																							
<b>- Preparation Works</b>																							
PYI-2010	PYI Condition & Tree Survey	4	03-Sep-15 A	23-Jan-16	PYI Condition & Tree Survey																		
PYI-2020	PYI Tree Felling & Site Clearance	2	21-Sep-15 A	26-Jan-16	PYI Tree Felling & Site Clearance																		



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



Activity ID	Activity Name	Rem Dur	Start	Finish	January 2016					February 2016					March 2016					April 2016			
					20	27	03	10	17	24	31	07	14	21	28	06	13	20	27	03	10	17	
PYI-2040	Archeological Survey + Final Report	2	21-Sep-15 A	21-Jan-16	Archeological Survey + Final Report																		
<b>- Bridge L</b>																							
PYI-2041	Temp Work Design - Submit/No Adverse Comment - Bridge L Abutment	90	23-Jan-16	20-May-16	[Green bar]																		
PYI-2042	Temp Work Design - Submit/No Adverse Comment - Bridge L Deck	90	14-Apr-16	01-Aug-16	[Green bar]																		
PYI-2100	PYI Bridge L - Prebored H-pile - 19 nos	36	02-Feb-16	22-Mar-16	PYI Bridge L - Prebored H-pile - 19 nos																		
<b>15.3 - PYI Roadworks</b>																							
<b>- Bridge H</b>																							
PYI-2691	Temp Work Design - Submit/No Adverse Comment - Bridge H Abutment	90	02-Feb-16	30-May-16	[Green bar]																		
PYI-2710	PYI Bridge H - Prebored H-pile - 12 nos	90	02-Feb-16	30-May-16	[Green bar]																		
<b>16.0 - Border Control Point (BCP)</b>																							
<b>16.1 - Proposed Lin Ma Hang Road</b>																							
BCP-1010	Alternative Design/Submission/Approval for BCP/RW4A	60	02-Sep-15 A	09-Apr-16	Alternative Design/Approval for BCP/RW4A																		
BCP-1050	C5P1/Lin Ma Hang Rd - Retaining Wall BCP/RW4 & RW4A	118	11-Apr-16	29-Aug-16	[Red bar]																		
BCP-1100	Possession of Portion CR43 of the Site	0	19-Mar-16		Possession of Portion CR43 of the Site																		
BCP-1110	Design/Submission/Approval of CSD Proposal for BCP/RW3	60	02-Sep-15 A	09-Apr-16	Design/Approval of CSD Proposal for BCP/RW3																		
BCP-1150	C5P1/Lin Ma Hang Rd - CSD Proposal BCP/RW3	40	11-Apr-16	27-May-16	[Red bar]																		
<b>16.2 - Village Access Road (VAR)</b>																							
BCP-6010	Village Access Road - Condition + Tree Survey	0	02-Sep-15 A	30-Dec-15 A	Village Access Road - Condition + Tree Survey																		
BCP-6020	Village Access Road - Site Clearance + Tree Felling	24	02-Oct-15 A	23-Feb-16	Village Access Road - Site Clearance + Tree Felling																		
BCP-6050	Village Access Road E/B - Site Formation + BCP/C1 + BCP/C2	42	20-Jan-16	15-Mar-16	Village Access Road E/B - Site Formation + BCP/C1 + BCP/C2																		
BCP-6100	Village Access Road - Gabion Channel	120	24-Feb-16	20-Jul-16	[Red bar]																		
<b>16.4 - Bridge K</b>																							
BCP-3991	Temp Work Design - Submit/No Adverse Comment - Bridge K Abutment	60	04-Jan-16 A	09-Apr-16	Temp Work Design - Submit/No Adverse Comment - Bridge K Abutment																		
BCP-3992	Temp Work Design - Submit/No Adverse Comment - Bridge K Deck	90	20-Jan-16	16-May-16	[Green bar]																		
BCP-4050	BCP Bridge K - Predrilling (6 nos)	0	02-Oct-15 A	06-Jan-16 A	BCP Bridge K - Predrilling (6 nos)																		
BCP-4100	BCP Bridge K - Prebored H-pile (12 nos)	72	20-Jan-16	23-Apr-16	[Red bar]																		
BCP-4150	BCP Bridge K - Construct Abutments	48	21-Mar-16	20-May-16	[Red bar]																		
<b>16.5 - BCP Underpass</b>																							
<b>- Depressed Road Structure</b>																							
BCP-2200	BCP - Depressed Road B - Excavation - 10 bays	30	20-Jan-16	01-Mar-16	BCP - Depressed Road B - Excavation - 10 bays																		
BCP-2250	BCP - Depressed Road B - Base Slab - 10 bays	54	02-Mar-16	07-May-16	[Green bar]																		
<b>16.7 - BCP Perimeter Road</b>																							
<b>- Portion C5P3</b>																							
BCP-8510	Portion C5P3 - Condition + Tree Survey	30	07-Mar-16	14-Apr-16	[Green bar]																		
BCP-8520	Portion C5P3 - Site Clearance + Tree Felling	30	15-Apr-16	20-May-16	[Green bar]																		
<b>16.8 - Sewage Treatment Plant</b>																							
<b>- Contractor's Design Approval</b>																							
BCP-7005	STP E&M AIP Design Submission	0	24-Jul-15 A	15-Jan-16 A	STP E&M AIP Design Submission																		
BCP-7010	STP E&M AIP Design Engineer Review + Approval	60	15-Jan-16 A	09-Apr-16	[Red bar]																		
BCP-7015	STP E&M AIP Design Review by Relevant Govt. Dept.	70	11-Apr-16	04-Jul-16	[Red bar]																		
BCP-7020	STP E&M DDA Design Submission	130	20-Jan-16	04-Jul-16	[Red bar]																		
BCP-7030	STP Civil and Structure Design Submission	90	11-Jan-16 A	16-May-16	[Red bar]																		
BCP-7035	STP Civil and Structure Design Engineer Review + Approval	90	31-Mar-16	18-Jul-16	[Red bar]																		
BCP-7040	STP ABWF Design Submission	90	31-Mar-16	18-Jul-16	[Red bar]																		
<b>- Preliminary Works</b>																							
BCP-7100	STP Site Initial Survey + Condition Survey	30	07-Mar-16	14-Apr-16	STP Site Initial Survey + Condition Survey																		
<b>16.9 - Reclaimed Water Facilities (Provisional)</b>																							

- ◆ Milestone
- [Red bar] Critical Activity
- [Green bar] Non-Critical Activity
- [Blue bar] Remaining Level of Effort
- [Blue bar] Actual Work

## 3-month Rolling Programme (20-Jan-2016)

Data Date: 20-Jan-16      Run Date: 29-Jan-16

Project ID : LT6-3MRP-7.0  
Layout : LT6IWP 3MRP  
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3-month Rolling Programme			
Date	Revision	Checked	Approved
20-Jan-16	3MRP		

CRBC-CEC-KADEN Joint Venture



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



Activity ID	Activity Name	Rem Dur	Start	Finish	January 2016					February 2016					March 2016					April 2016				
					5	12	19	26	31	7	14	21	28	6	13	20	27	4	11	18				
<b>- Contractor's Design Approval</b>																								
BCP-8780	RWF E&M AIP Design Submission	75	05-Oct-15 A	27-Apr-16																				
BCP-8790	RWF E&M AIP Design Engineer Review + Approval	60	21-Jan-16	11-Apr-16																				
BCP-8800	RWF E&M AIP Design Review by Relevant Govt. Dept.	70	12-Apr-16	05-Jul-16																				
BCP-8810	RWF E&M DDA Design Submission	130	21-Jan-16	05-Jul-16																				
<b>- Preliminary Works</b>																								
BCP-8700	RWF Site Initial Survey + Condition Survey	30	07-Mar-16	14-Apr-16																				
BCP-8705	RWF Access Road Formation	30	15-Apr-16	20-May-16																				
<b>17.0 - Works Subject to Excision</b>																								
<b>17.6 - Section IIA of the Works</b>																								
WSE-6000	Pipe Jacking HV001 and HV002	475	25-Jan-16	13-May-17																				
<b>18.0 - Landscaping and Establishment Works</b>																								
LEW-1000	Section 7A - Portion WC1 Initial Survey + Site Establishment	24	24-Jul-15 A	12-Feb-16																				
LEW-1100	Section 7A - Portion WC1 Initial Planting	220	13-Feb-16	19-Sep-16																				
LEW-1200	Section 7A - Portion WC2 Initial Survey + Site Establishment	24	20-Jan-16	12-Feb-16																				
LEW-1300	Section 7A - Portion WC2 Initial Planting	220	13-Feb-16	19-Sep-16																				



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

**3-month Rolling Programme (20-Jan-2016)**

Data Date: 20-Jan-16      Run Date: 29-Jan-16

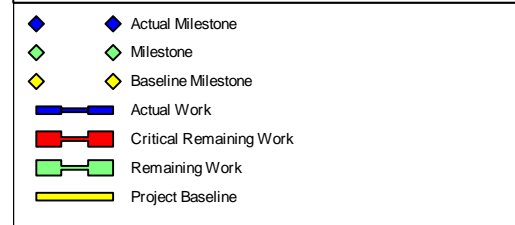
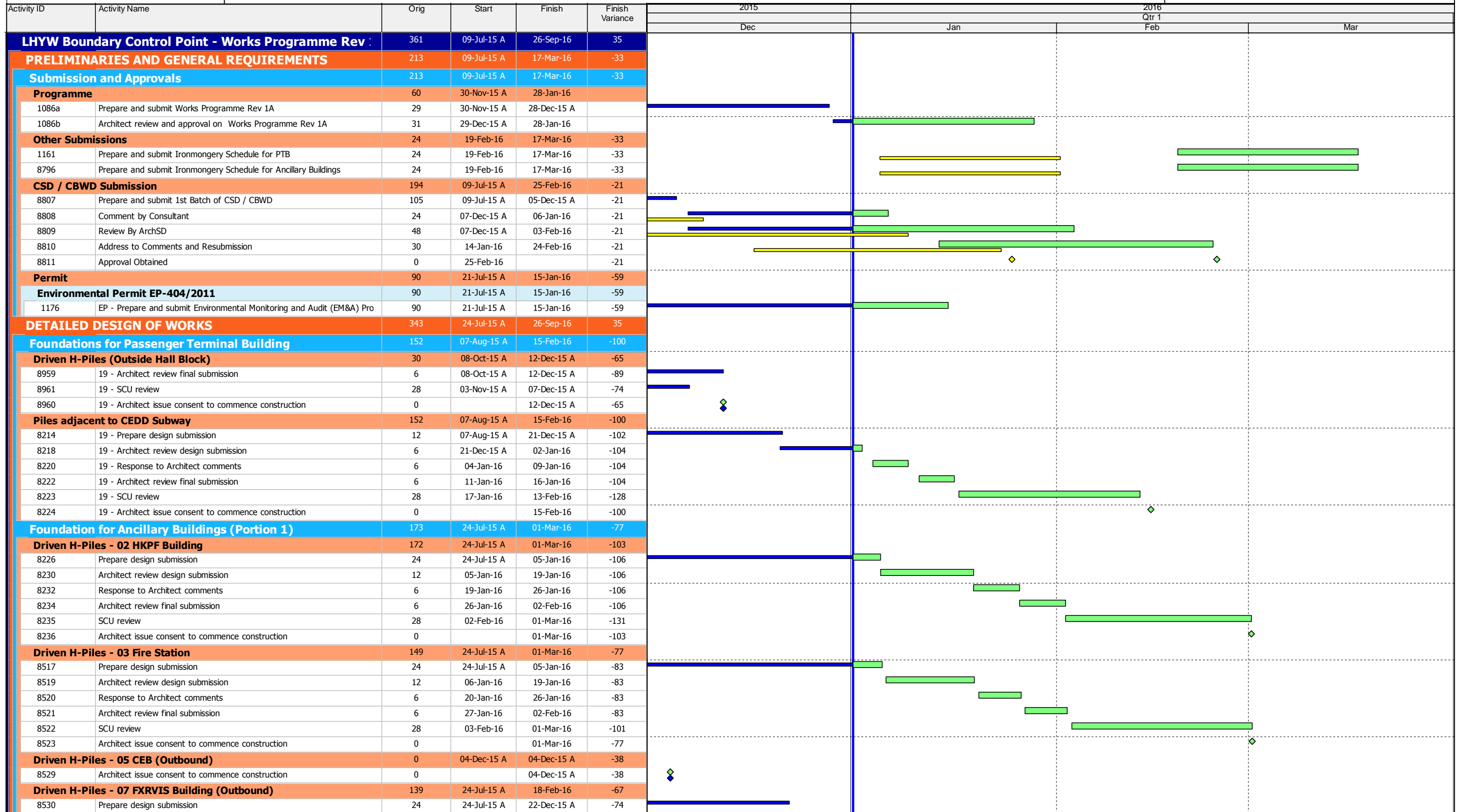
Project ID :LT6-3MRP-7.0  
 Layout : LT6IWP 3MRP  
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3-month Rolling Programme			
Date	Revision	Checked	Approved
20-Jan-16	3MRP		

## Contract SS C505

## Liantang/Heung Yuen Wai Boundary Control Point

### BCP Buildings and Associated Facilities



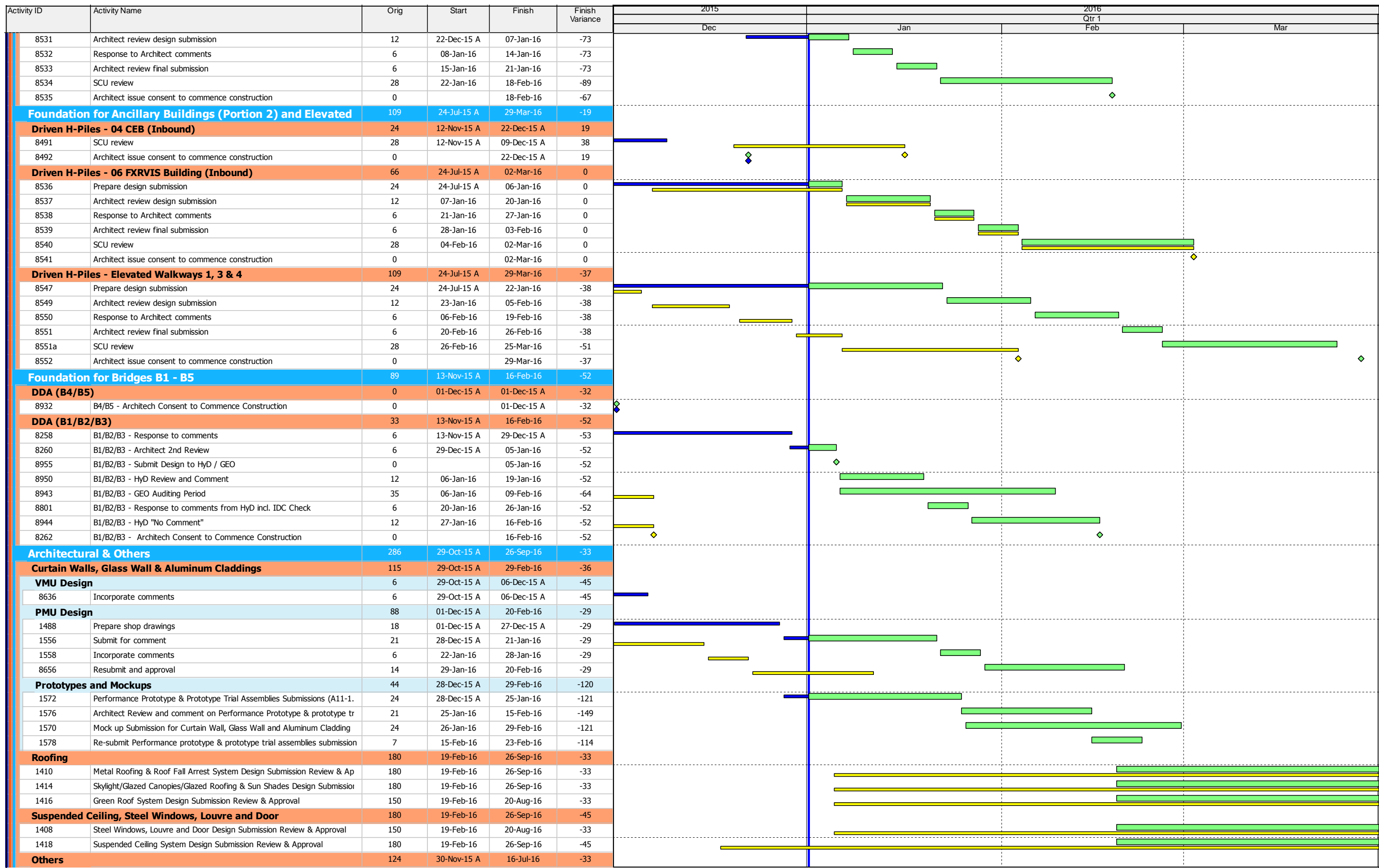
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## 3 Months Lookahead Works Programme

### 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		



# 3 Months Lookahead Works Programme

Progress to 01-Jan-16

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

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.

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

Activity ID	Activity Name	Orig	Start	Finish	Finish Variance	2015		2016		
						Dec	Jan	Qtr 1 Feb	Mar	
8686	Steel Maintenance and Support Platforms Design Submission Review & Approval	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					
<b>Bridge Bearing Design Submission (Bridge 4 &amp; 5)</b>		<b>84</b>	<b>20-Nov-15 A</b>	<b>11-Feb-16</b>	<b>-21</b>					
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					
<b>Bridge Movement Joint Design Submission (Bridge 4 &amp; 5)</b>		<b>63</b>	<b>01-Jan-16</b>	<b>03-Mar-16</b>	<b>-42</b>					
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					
<b>Bridge Bearing Design Submission (Bridge 1-3)</b>		<b>63</b>	<b>01-Jan-16</b>	<b>03-Mar-16</b>	<b>-28</b>					
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					
<b>Bridge Movement Joint Design Submission (Bridge 1-3)</b>		<b>63</b>	<b>01-Jan-16</b>	<b>03-Mar-16</b>	<b>-28</b>					
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					
<b>MEP Systems</b>		<b>205</b>	<b>07-Oct-15 A</b>	<b>13-Sep-16</b>	<b>45</b>					
<b>Shop Drawings</b>		<b>156</b>	<b>07-Oct-15 A</b>	<b>10-May-16</b>	<b>-15</b>					
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					
<b>Fuel Tank</b>		<b>100</b>	<b>01-Feb-16</b>	<b>10-Jun-16</b>	<b>45</b>					
DD.BS82	Fuel Tank Submission/Review & Approval	100	01-Feb-16	10-Jun-16	45					
<b>Air Conditioning</b>		<b>100</b>	<b>01-Feb-16</b>	<b>10-Jun-16</b>	<b>45</b>					
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					
<b>Electrical</b>		<b>100</b>	<b>01-Feb-16</b>	<b>10-Jun-16</b>	<b>45</b>					
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					
<b>Fire Services</b>		<b>100</b>	<b>01-Feb-16</b>	<b>10-Jun-16</b>	<b>45</b>					
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 & Approval	100	01-Feb-16	10-Jun-16	45					
<b>Diesel Generators</b>		<b>100</b>	<b>01-Feb-16</b>	<b>10-Jun-16</b>	<b>45</b>					
DD.BS0050	Diesel Generators Design Submission/Review & Approval	100	01-Feb-16	10-Jun-16	45					
<b>Low Voltage Cubicle Switchboards</b>		<b>100</b>	<b>01-Feb-16</b>	<b>10-Jun-16</b>	<b>45</b>					
DD.BS0060	LVS Design Submission/Review & Approval	100	01-Feb-16	10-Jun-16	45					
<b>Broadcast Reception &amp; Burglar Alarm System</b>		<b>100</b>	<b>01-Feb-16</b>	<b>10-Jun-16</b>	<b>45</b>					
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					
<b>Catering Equipment</b>		<b>180</b>	<b>01-Feb-16</b>	<b>13-Sep-16</b>	<b>45</b>					
DD.BS0080	Catering Equipment Design Submission/Review & Approval	180	01-Feb-16	13-Sep-16	45					
<b>LPG</b>		<b>100</b>	<b>01-Feb-16</b>	<b>10-Jun-16</b>	<b>45</b>					

◆	Actual Milestone
◇	Milestone
◇	Baseline Milestone
—	Actual Work
—	Critical Remaining Work
—	Remaining Work
—	Project Baseline

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



Activity ID	Activity Name	Orig	Start	Finish	Finish Variance	2015		2016		
						Dec	Jan	Qtr 1 Feb	Mar	
DD.BS80	Liquified Petroleum Gas Design Submission/Review & Approval	100	01-Feb-16	10-Jun-16	45					
<b>Drainage</b>		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					
<b>Temporary Works Design &amp; Engineering</b>		36	29-Oct-15 A	19-Feb-16	-14					
<b>ELS for u/g Water / Fuel Tanks</b>		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					
<b>Formwork and Falsework</b>		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					
<b>Formwork and Falsework - Bridge</b>		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					
<b>PROCUREMENT MOCK-UPS MANUFACTURING &amp; DELIVE</b>		259	28-Jul-15 A	27-Jul-16	49					
<b>Procurement of Major Subcontracts</b>		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					
<b>Mock-Ups, Prototypes &amp; Performance Test</b>		164	30-Oct-15 A	27-Jul-16	-3					
<b>Facade</b>		111	30-Oct-15 A	24-May-16	50					
<b>VMU</b>		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					
<b>PMU</b>		25	29-Mar-16	26-Apr-16	-24					
A1060	Procurement including extrusion and glazing	25	29-Mar-16	26-Apr-16	-24					
<b>GV Kiosk (Prototype A)</b>		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					
<b>Double Curved Aluminum Cladding (Prototype B)</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					
<b>PTB Passenger Hall Interior (Prototype D)</b>		60	14-Mar-16	24-May-16	51					
PT.1310	Prepare shop drawings and structural calculations	60	14-Mar-16	24-May-16	51					
<b>Mock-ups</b>		151	18-Jan-16	27-Jul-16	-42					
<b>Other Specified Mockups (PS.A01)</b>		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					
<b>Procurement Architectural &amp; Others</b>		115	03-Mar-16	23-Jul-16	52					
<b>Walls, Windows &amp; Claddings</b>		96	29-Mar-16	23-Jul-16	52					
1574	Bulk material procurement	96	29-Mar-16	23-Jul-16	52					

# 3 Months Lookahead Works Programme

Progress to 01-Jan-16

- ◆ Actual Milestone
- ◆ Milestone
- ◆ Baseline Milestone
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- Project Baseline

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.

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

Activity ID	Activity Name	Orig	Start	Finish	Finish Variance	2015		2016					
						Dec	Jan	Feb	Mar				
<b>Interior and Others</b>						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								
<b>Elevated Walkway Type A &amp; B Steel Trusses</b>						60	11-Mar-16	26-May-16	-37				
<b>Elevated Walkway 1</b>						60	11-Mar-16	26-May-16	-37				
8901	Subcontracting / Prepare Shop Drawings / Material Submission	60	11-Mar-16	26-May-16	-37								
<b>CONSTRUCTION</b>						303	09-Jul-15 A	18-Jun-16	43				
<b>Establishment Mobilisation &amp; Advance Works</b>						303	09-Jul-15 A	15-Apr-16	77				
<b>Site Establishment Works</b>						72	05-Oct-15 A	31-Dec-15 A	157				
<b>Portion 2</b>						72	05-Oct-15 A	31-Dec-15 A	157				
<b>Offices Welfare and other Facilities</b>						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								
<b>Temporary Utilities</b>						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								
<b>Tower Cranes</b>						80	29-Oct-15 A	15-Apr-16	11				
<b>19 Passenger Terminal Building (PTB)</b>						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								
<b>05 Cargo Examination Building (Outbound)</b>						30	08-Mar-16	15-Apr-16	11				
1378	TC - Concrete Tower Crane Footing (TC7 & TC8 )	30	08-Mar-16	15-Apr-16	11								
<b>Passenger Terminal Building (PTB)</b>						211	12-Sep-15 A	18-Jun-16	-58				
<b>19/20 Milestones</b>						0	04-Mar-16	04-Mar-16	-54				
19.MS20	PTB Building - Pilecaps Works Start	0	04-Mar-16		-54								
<b>19 - PTB (Podium)</b>						211	12-Sep-15 A	18-Jun-16	-58				
<b>19 - Foundations</b>						160	12-Sep-15 A	16-Apr-16	-37				
<b>19 - Foundations Portion C1</b>						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								
<b>19 - Foundations Portion C2</b>						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								
<b>19 - Foundations Portion B1</b>						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								
<b>19 - Foundations Portion B2</b>						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
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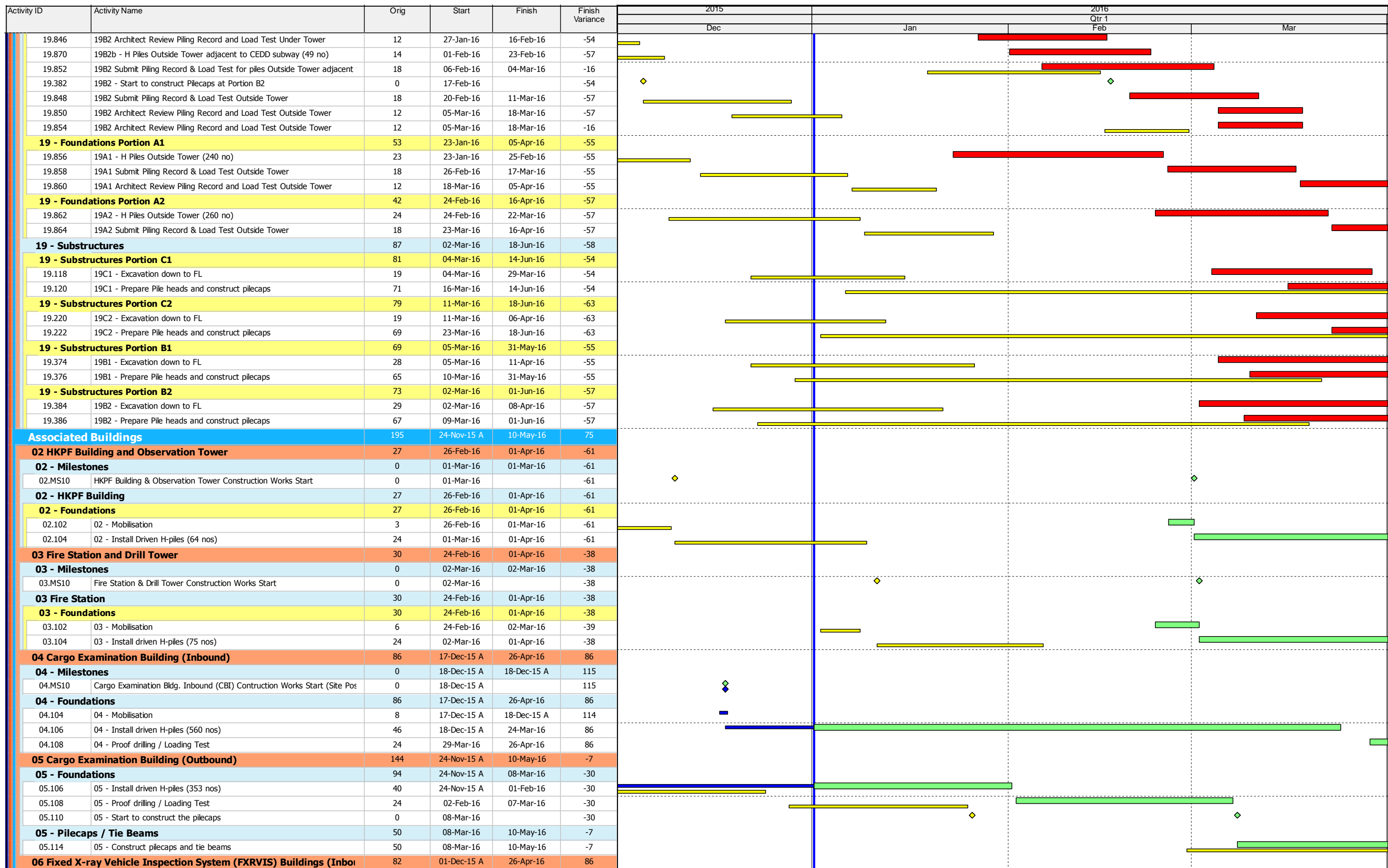
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## 3 Months Lookahead Works Programme

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



# 3 Months Lookahead Works Programme

Progress to 01-Jan-16

- ◆ Actual Milestone
- ◆ Milestone
- ◆ Baseline Milestone
- Actual Work
- Critical Remaining Work
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Project ID: H2634-P7  
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Progress Update			
Date	Revision	Checked	A
31-Dec-15	Progress update		

Activity ID	Activity Name	Orig	Start	Finish	Finish Variance	2015		2016					
						Dec	Jan	Feb	Mar				
<b>06 - Milestones</b>						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								
<b>06 - SI Works</b>						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								
<b>06 - Foundations</b>						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								
<b>07 Fixed X-ray Vehicle Inspection System (FXRVIS) Buildings (Outb</b>						48	19-Feb-16	19-Apr-16	3				
<b>07 - Milestones</b>						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								
<b>07 - Foundations</b>						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								
<b>Other Associated Buildings for C&amp;ED</b>						82	19-Oct-15 A	13-Apr-16	-34				
<b>09 - MXRVSS (Outbound)</b>						82	19-Oct-15 A	13-Apr-16	-34				
<b>09 - Structures</b>						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								
<b>External Civil Works</b>						160	16-Nov-15 A	16-May-16	51				
<b>37-40 Elevated Walkways</b>						104	02-Jan-16	16-May-16	51				
<b>37 Elevated Walkway E1</b>						104	02-Jan-16	16-May-16	51				
<b>37 - Milestones</b>						0	02-Jan-16	02-Jan-16	82				
37.MS10	Elevated Walkway E1 Construction Works Start	0	02-Jan-16		82								
<b>37 - SI Works</b>						28	02-Jan-16	03-Feb-16	82				
37.100	37 - Site Investigation (11 nos)	28	02-Jan-16	03-Feb-16	82								
<b>37 - Foundations</b>						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								
<b>39 Elevated Walkway E3</b>						3	04-Feb-16	06-Feb-16	82				
<b>39 - Milestones</b>						0	04-Feb-16	04-Feb-16	82				
39.MS10	Elevated Walkway E3 Construction Works Start	0	04-Feb-16		82								
<b>39 - SI Works</b>						3	04-Feb-16	06-Feb-16	82				
39.100	39 - Site investigation (1 nos)	3	04-Feb-16	06-Feb-16	82								
<b>40 Elevated Walkway E4</b>						10	15-Feb-16	25-Feb-16	82				
<b>40 - Milestones</b>						0	15-Feb-16	15-Feb-16	82				
40.MS10	Elevated Walkway E4 Construction Works Start	0	15-Feb-16		82								
<b>40 - SI Works</b>						10	15-Feb-16	25-Feb-16	82				
40.100	40 - Site investigation (4 nos)	10	15-Feb-16	25-Feb-16	82								
<b>Vehicular Bridges</b>						152	16-Nov-15 A	05-May-16	-4				
<b>Bridge 4</b>						44	21-Dec-15 A	15-Feb-16	22				
<b>B4 - Foundations</b>						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								
<b>Bridge 5</b>						152	16-Nov-15 A	05-May-16	-4				
<b>B5 - Foundations</b>						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								
<b>B5 - Pilecaps / Piers / Abutment / Retaining Walls / Portal</b>						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 Retaining 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

Page 7 of 7

## 3 Months Lookahead Works Programme

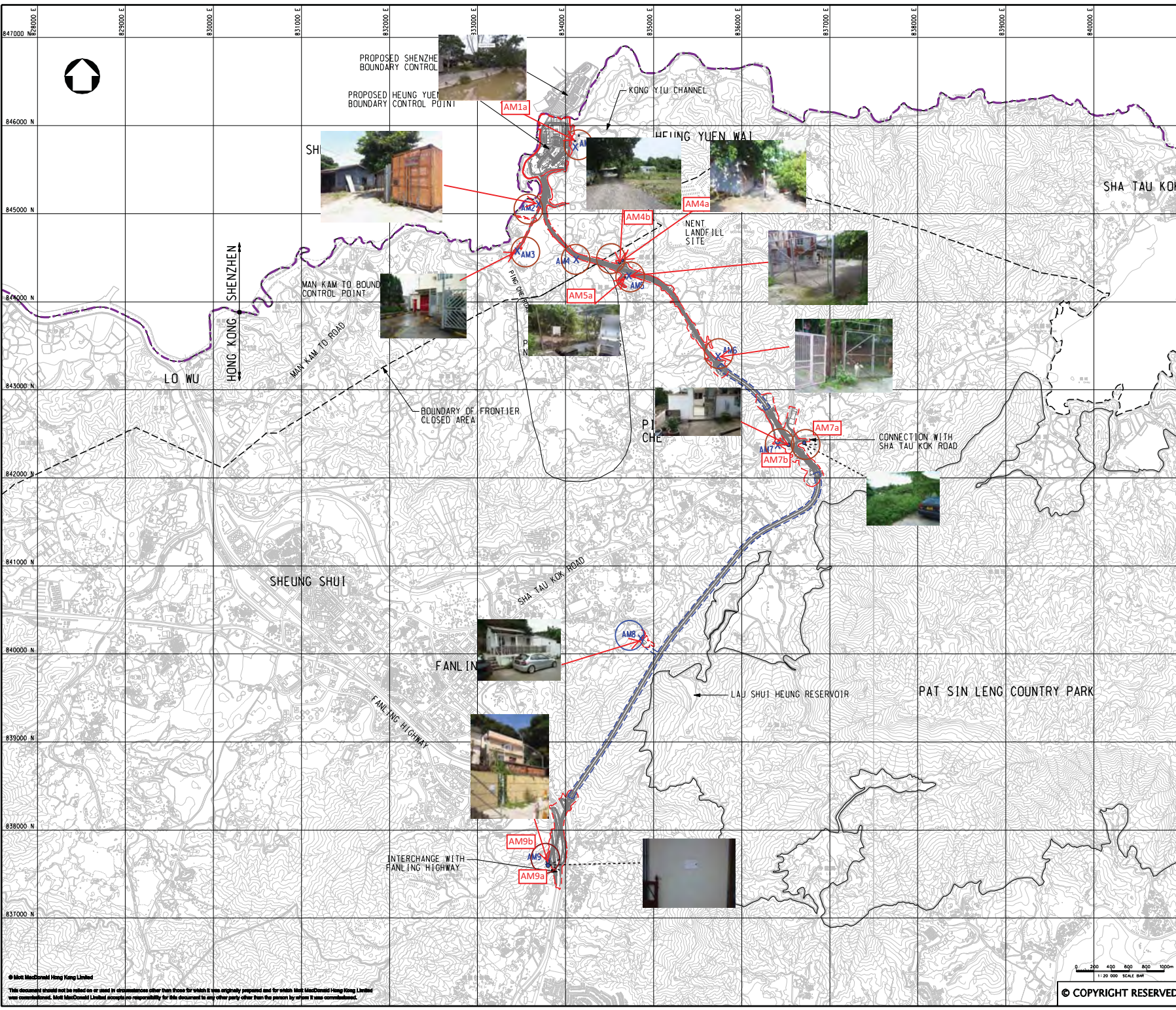
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Project ID: H2634-P7  
 Baseline: Works Programme Rev 1A  
 Layout: 3 Month Lookahead Works Programme  
 Filter: TASK filter: Date range DD-1M to DD+3M.  
 Page 7 of 7

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

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



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**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	
Draw.Chk.	DC	Approved	HT	
Scale at A1	1:20000	Project	255228	Status
Drawing No		CAD file	255228\report\env\em&a\00831\FE_21.dgn	PRE
		Revision		Rev

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FIGURE 2.1

LEGEND:

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

PA	REV TO	REV	FIRST ISSUE	DC	WT

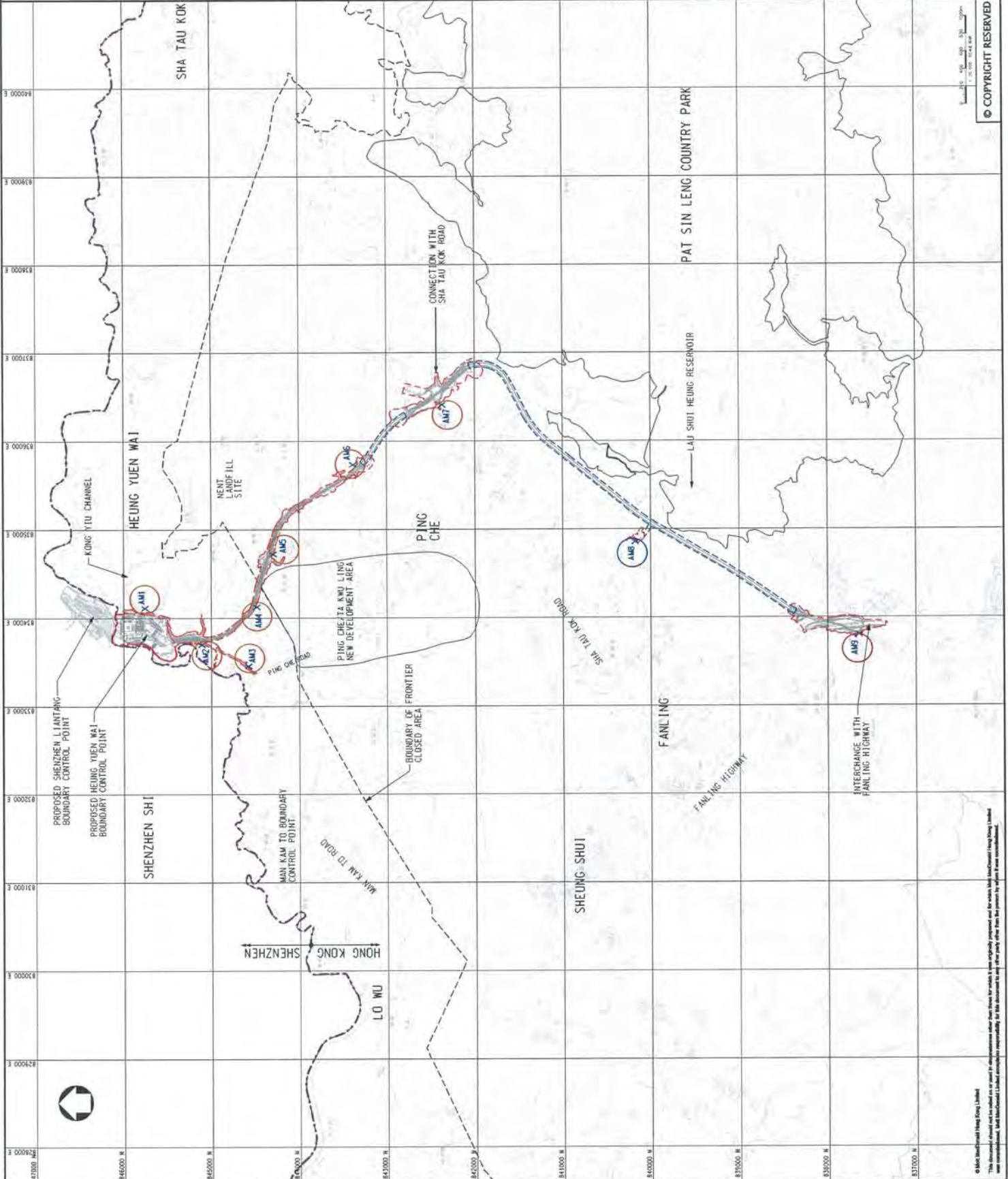


CIVIL ENGINEERING  
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DEPARTMENT

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

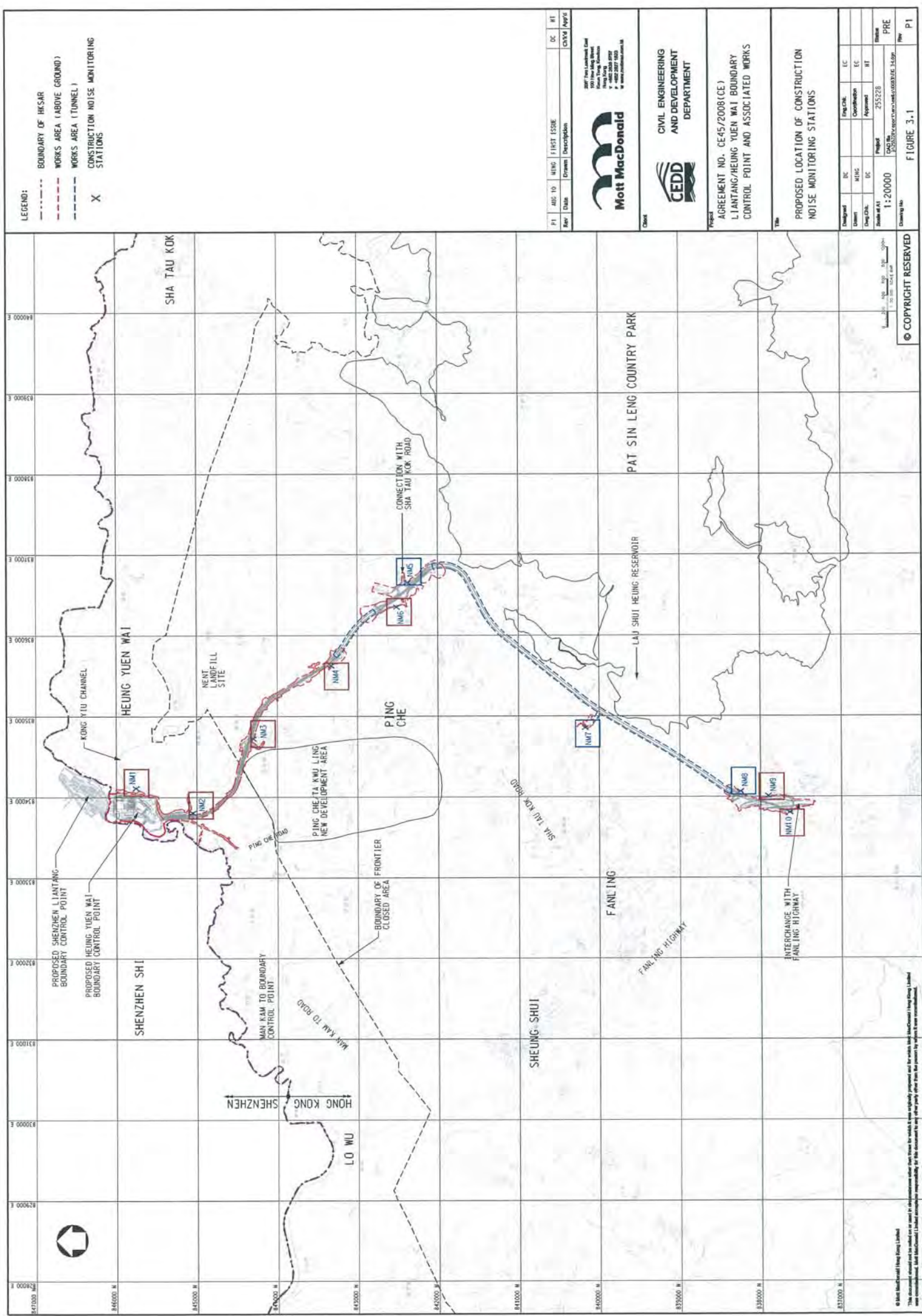
PROPOSED LOCATION OF CONSTRUCTION  
AIR QUALITY MONITORING STATIONS

Designed	DC	Eng. Check	EC
Drawn	H/EC	Coordination	EC
Scale at A1	1:20000 <th>Project</th> <td>253228 </td>	Project	253228
Scale at A2		Contract No.	CE45/2008(CE)
Drawing No.	FIGURE 2-1 <th>Status</th> <td>PRE </td>	Status	PRE
		Date	P1



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**LEGEND:**

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

PI	ADD TO	DATE	NO	DESCRIPTION	DC	BY



100 The Quadrant, Level 100  
 100 The Quadrant, Level 100  
 100 The Quadrant, Level 100  
 100 The Quadrant, Level 100  
 100 The Quadrant, Level 100

**CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT**

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

PROPOSED LOCATION OF CONSTRUCTION NOISE MONITORING STATIONS

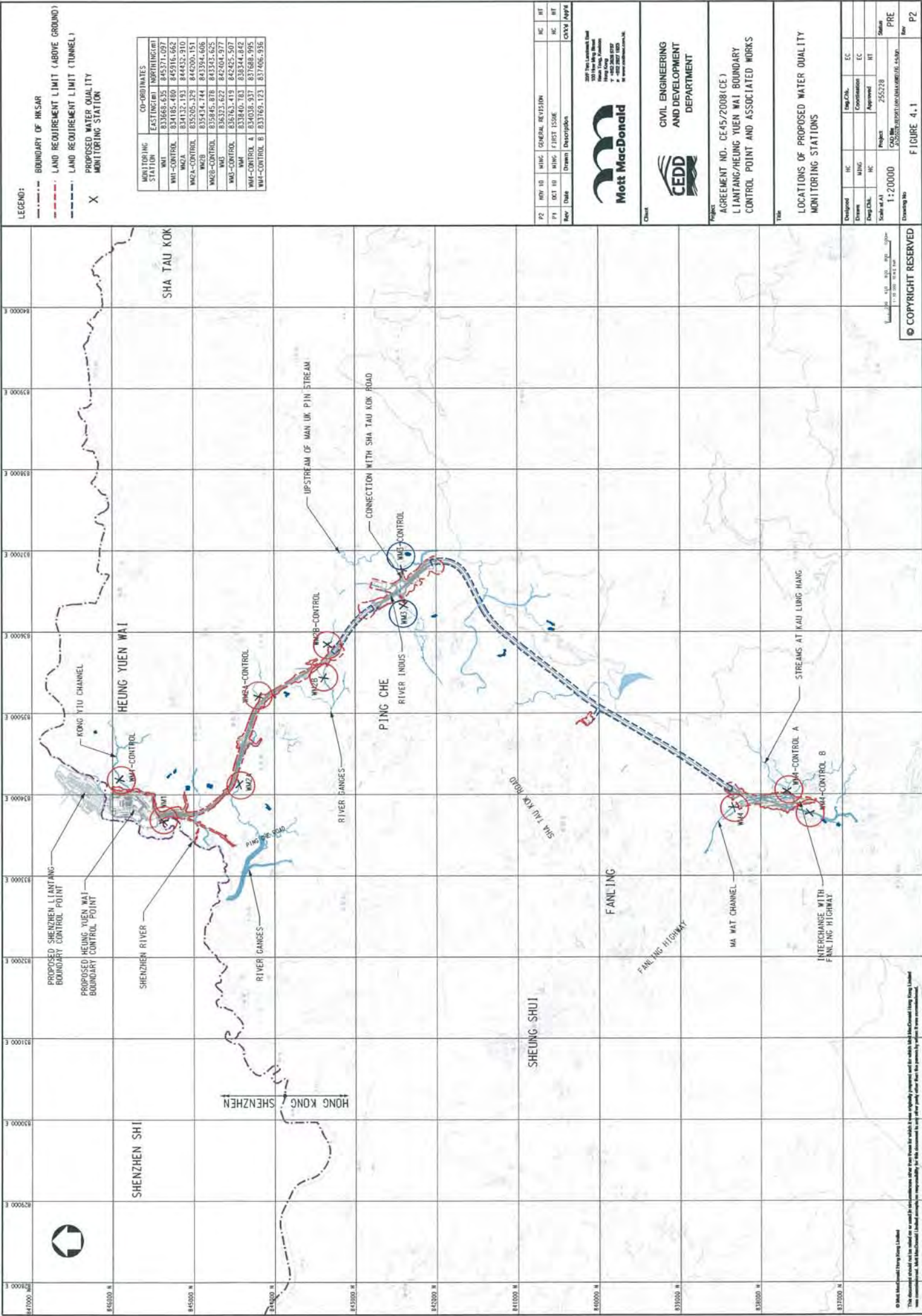
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				255228	

Scale at A1: 1:20000  
 Date: 15/08/2010  
 Drawing No: CE45/2008(CE)001/016/16/01  
 PRE P1

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FIGURE 3-1





**LEGEND:**

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

MONITORING STATION	CO-ORDINATES	
	EASTING (M)	NORTHING (M)
WMA	837683.635	845371.097
WMA-CONTROL 1	834185.460	845916.662
WMA-CONTROL 2	834132.193	844432.910
WMA-CONTROL 3	835505.329	844200.151
WMA-CONTROL 4	835334.744	843394.606
WMA-CONTROL 5	835945.878	843343.625
WMA-CONTROL 6	836323.622	842404.977
WMA-CONTROL 7	836763.419	842425.507
WMA-CONTROL 8	834038.937	837688.995

REV	DATE	BY	CHKD	DESCRIPTION
P2	NOV 10	MHC	GENERAL REVISION	
P1	OCT 10	MHC	FIRST ISSUE	

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 AND DEVELOPMENT  
 DEPARTMENT

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

Title  
 LOCATIONS OF PROPOSED WATER QUALITY  
 MONITORING STATIONS

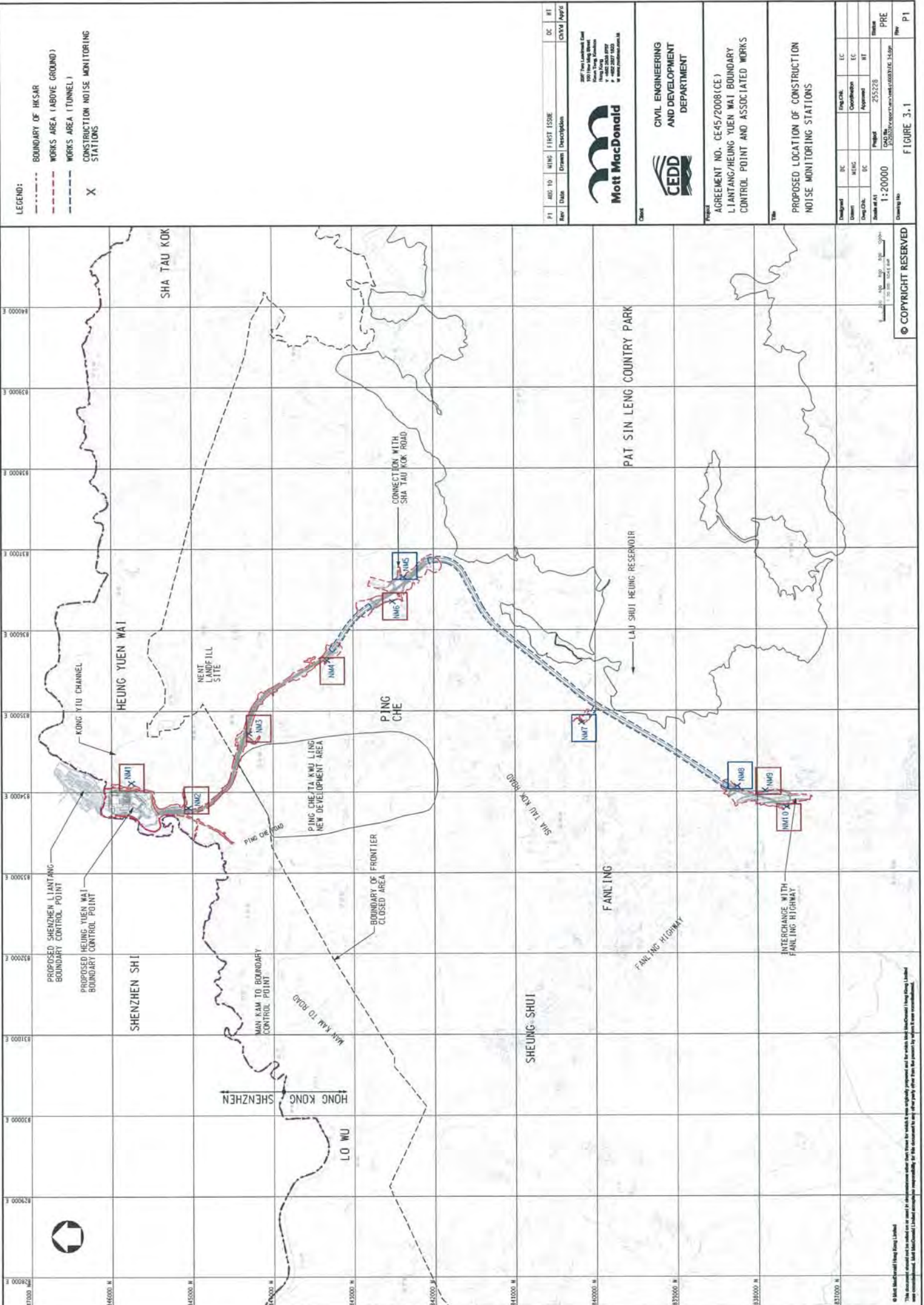
Developed	HC	Eng. Chk.	EC
Drawn	MHC	Coordination	EC
Design Chk.	HC	Approved	HT
Scale at A3	1:20000	Project	255228
Scale at A1		CAU No.	
Drawing No.		ASST. CHIEF EXECUTIVE OFFICER (E&D)	PRE
			Rev
			P2

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## **Appendix E**

### **Monitoring Locations for Impact Monitoring**



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

PI	APP TO	DATE	NO.	DESCRIPTION	DC	RT

100 Yuen Long Road  
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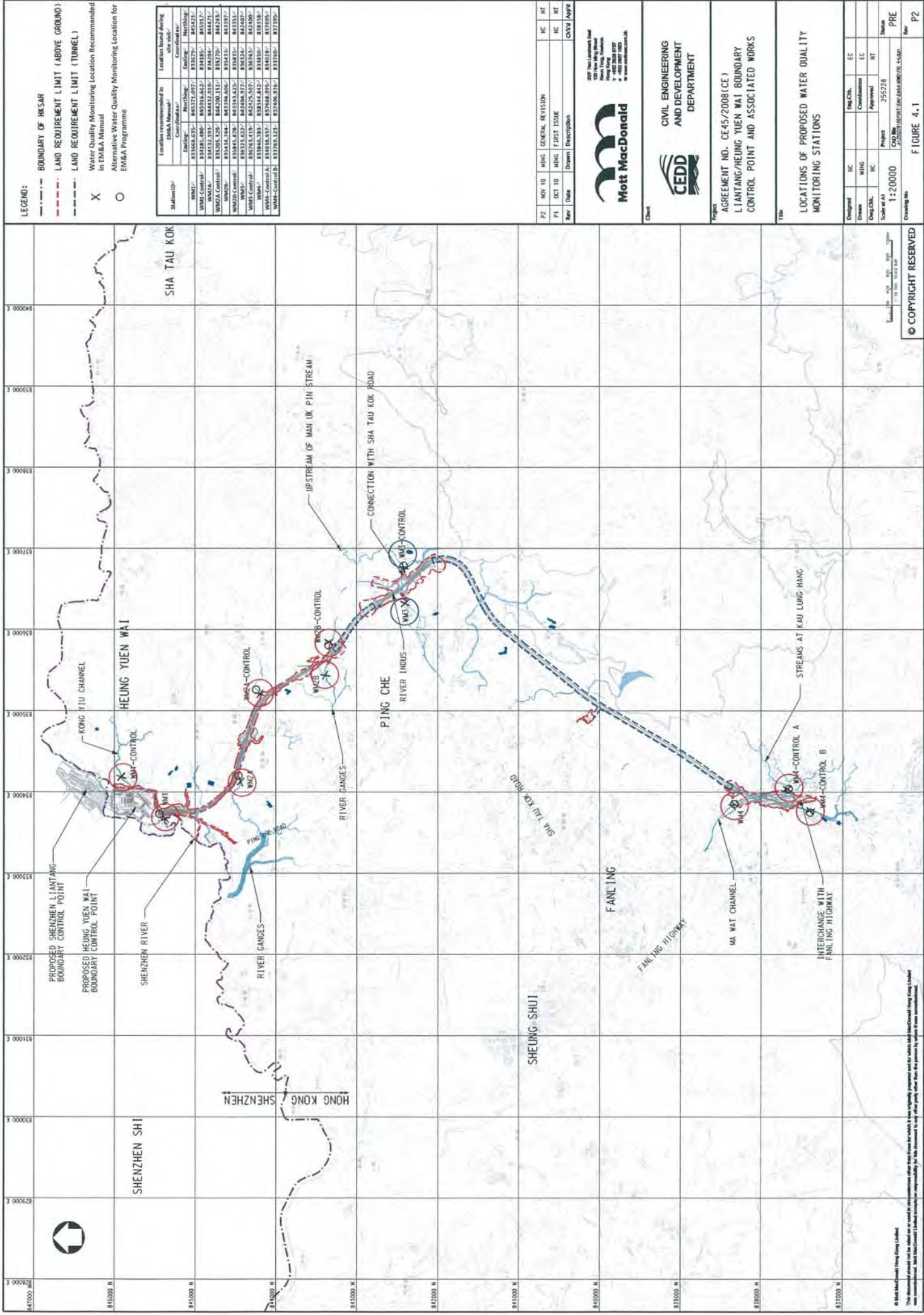
AGREEMENT NO. CE-45/2008(CE)  
 LIANTANG/HEUNG YUEN WAI BOUNDARY  
 CONTROL POINT AND ASSOCIATED WORKS

PROPOSED LOCATION OF CONSTRUCTION  
 NOISE MONITORING STATIONS

Designated Station	DC	M/HC	DC	Project No.	Scale at A1	Drawn Date	Checked Date	EC
				255228	1:20000			

FIGURE 3-1

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**LEGEND:**

- BOUNDARY OF HK SAR
- - - 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		Location based on the site visit	
	Easting	Northing	Easting	Northing
WMA1	83366.433	845372.097	83367	845473
WMA2	84412.183	844452.816	84414	844471
WMA3	85205.326	844200.331	85207	844215
WMA4	83484.744	843384.606	83486	843397
WMA5	83585.878	843348.625	83587	843361
WMA6	83765.415	842528.507	83767	842541
WMA7	83846.283	838144.842	83848	838158
WMA8	834038.937	837668.595	834041	837681
WMA9	83765.427	837606.916	83767	837619

P2	REV 10	HWG	GENERAL REVISION	HC	HT
P1	101	HWG	FIRST ISSUE	HC	HT
Rev	Date	Drawn	Description	Checked	App'd



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**Civil Engineering  
AND DEVELOPMENT  
DEPARTMENT**

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

Locations of Proposed Water Quality  
Monitoring Stations

Designed	HC	HWG	EC	EC
Drawn	MHW	HC	Approved	HT
Scale at A1	1:20000			
Project	CE45/2008(CE) LIANTANG/HEUNG YUEN WAI BOUNDARY CONTROL POINT AND ASSOCIATED WORKS			
Drawing No.	FIGURE 4_1			
Rev	P2			

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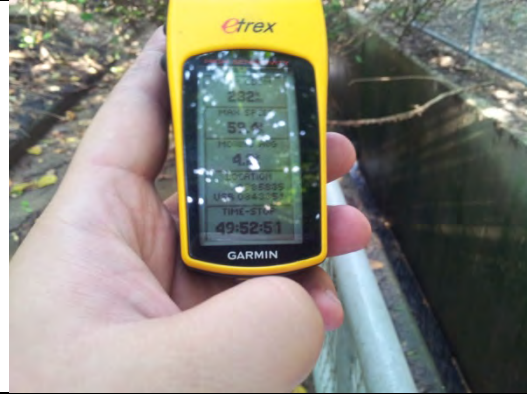
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**Photographic Records for Water Quality Monitoring Location**

	
<p><b>Alternative Location of WM1</b></p>	<p><b>Co-ordinates of Alternative Location of WM1</b></p>
	
<p><b>Alternative Location of WM1 - Control</b></p>	<p><b>Co-ordinates of Alternative Location of WM1 - Control</b></p>
	
<p><b>Alternative Location of WM2A</b></p>	<p><b>Co-ordinates of Alternative Location of WM2A</b></p>
	
<p><b>Alternative Location of WM2-Control A</b></p>	<p><b>Co-ordinates of Alternative Location of WM2 - Control</b></p>



**Location of WM2B-Control**



**Co-ordinates of WM2B-Control**



**Location of WM2B**



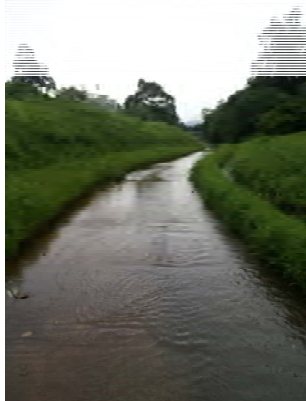
**Co-ordinates of WM2B**



**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	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.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION		
							Slope =	Intercept =	Corr. coeff. =
18	6.9	6.9	13.8	1.784	50	50.44	Slope =	30.8553	
13	5.3	5.3	10.6	1.564	45	45.40	Intercept =	-3.6127	
10	4.1	4.1	8.2	1.375	39	39.34	Corr. coeff. =	0.9975	
7	2.7	2.7	5.4	1.117	31	31.27			
5	1.6	1.6	3.2	0.860	22	22.19			

**Calculations :**

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$

$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate

IC = corrected chart responses

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:**

$$1/m(( I )[\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

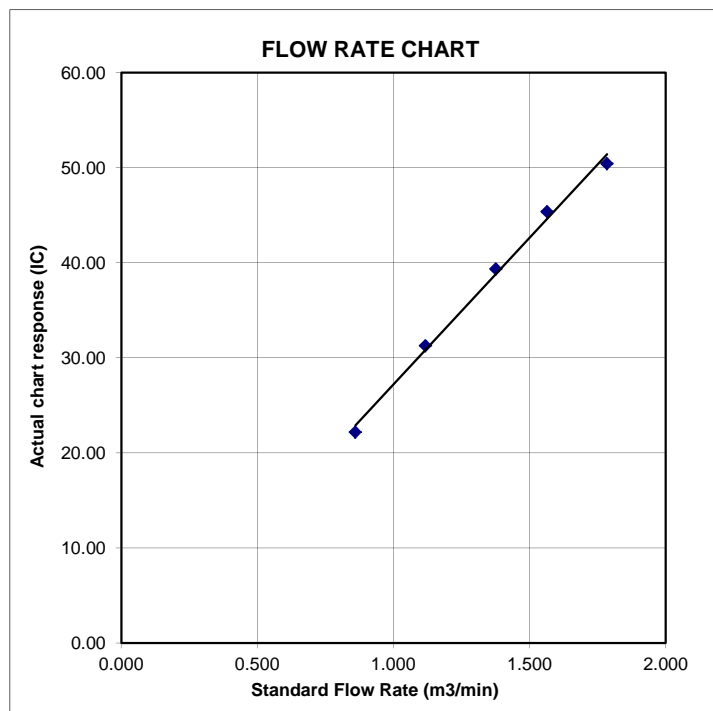
m = sampler slope

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.	H2O (L) (in)	H2O (R) (in)	H2O (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 Intercept = 0.8876 Corr. coeff. = 0.9960
13	6.3	6.3	12.6	1.705	50	50.44	
10	4.3	4.3	8.6	1.409	43	43.38	
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 :**

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$

$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate

IC = corrected chart responses

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:**

$$1/m(( I )[\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

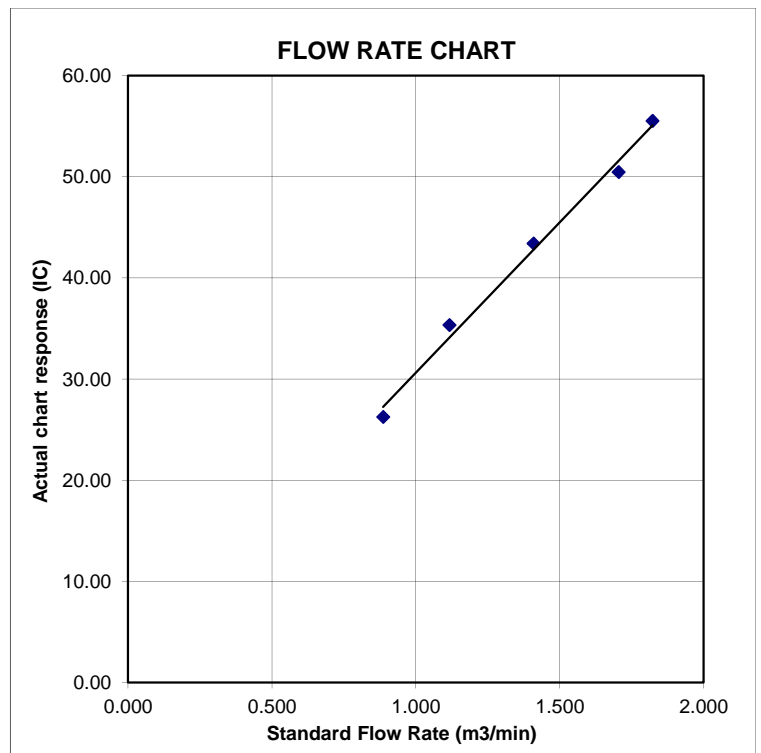
m = sampler slope

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.	H2O (L) (in)	H2O (R) (in)	H2O (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 Intercept = 4.5899 Corr. coeff. = 0.9996
13	4.8	4.8	9.6	1.488	49	49.43	
10	3.8	3.8	7.6	1.324	44	44.39	
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 :**

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$

$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate

IC = corrected chart responses

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:**

$$1/m(( I )[\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

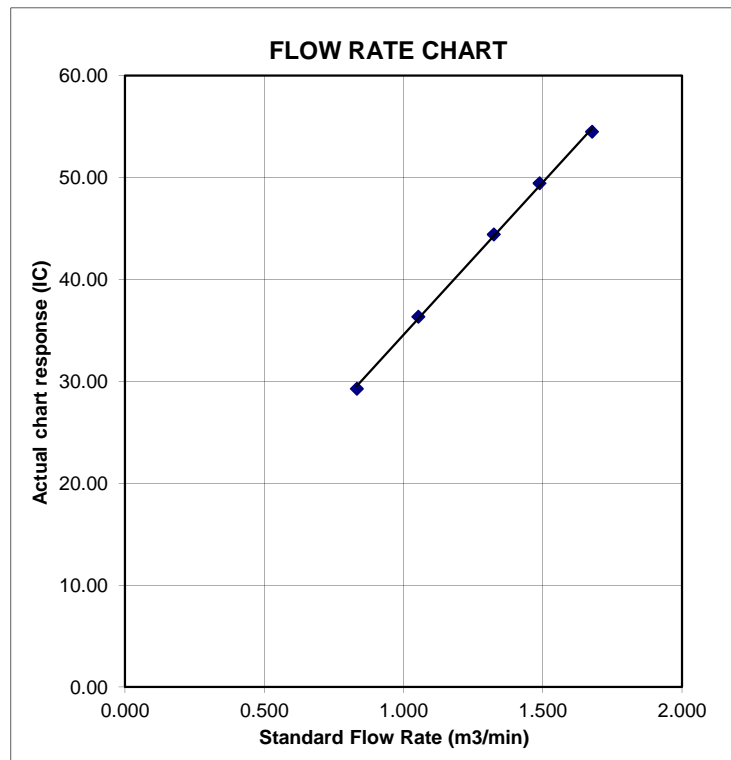
m = sampler slope

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 : AM4a	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.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6	6	12.0	1.664	60	60.53	Slope = 29.3221 Intercept = 10.4729 Corr. coeff. = 0.9923
13	5.3	5.3	10.6	1.564	54	54.48	
10	3.8	3.8	7.6	1.324	49	49.43	
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 :**

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$

$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate

IC = corrected chart responses

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:**

$$1/m(( I )[\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

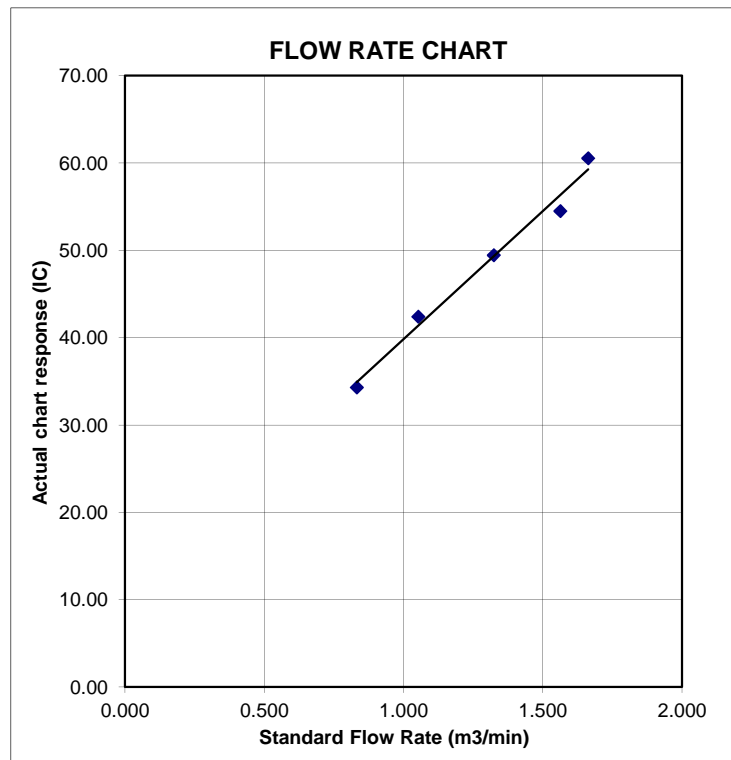
m = sampler slope

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.	H2O (L) (in)	H2O (R) (in)	H2O (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 Intercept = -3.4935 Corr. coeff. = 0.9965
13	5.3	5.3	10.6	1.564	49	49.43	
10	4.1	4.1	8.2	1.375	43	43.38	
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 :**

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$

$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate

IC = corrected chart responses

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:**

$$1/m(( I )[\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

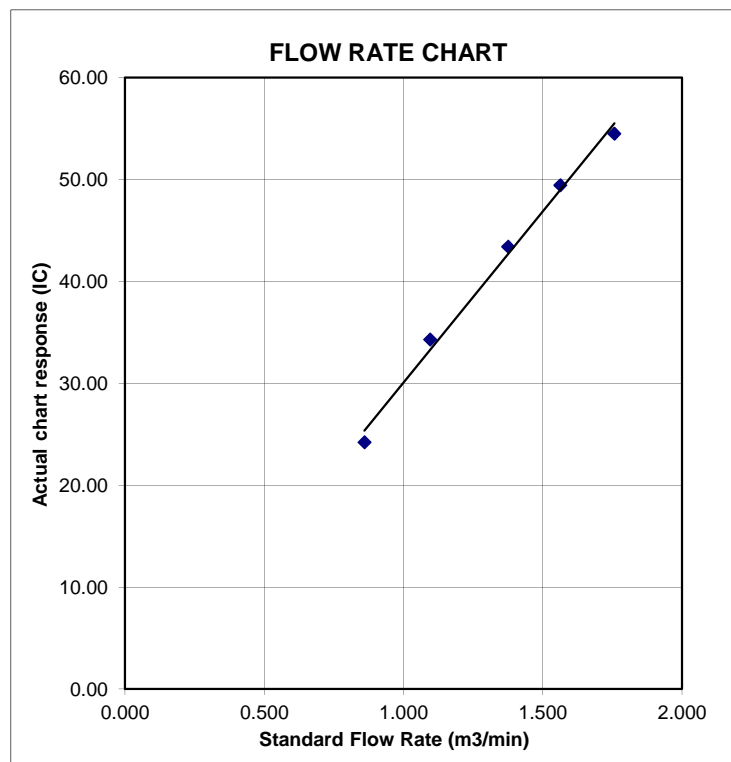
m = sampler slope

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 (°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.	H2O (L) (in)	H2O (R) (in)	H2O (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 Intercept = 3.5616 Corr. coeff. = 0.9966
13	5.2	5.2	10.4	1.549	51	51.45	
10	3.9	3.9	7.8	1.342	45	45.40	
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 :**

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$

$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate

IC = corrected chart responses

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:**

$$1/m(( I )[\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

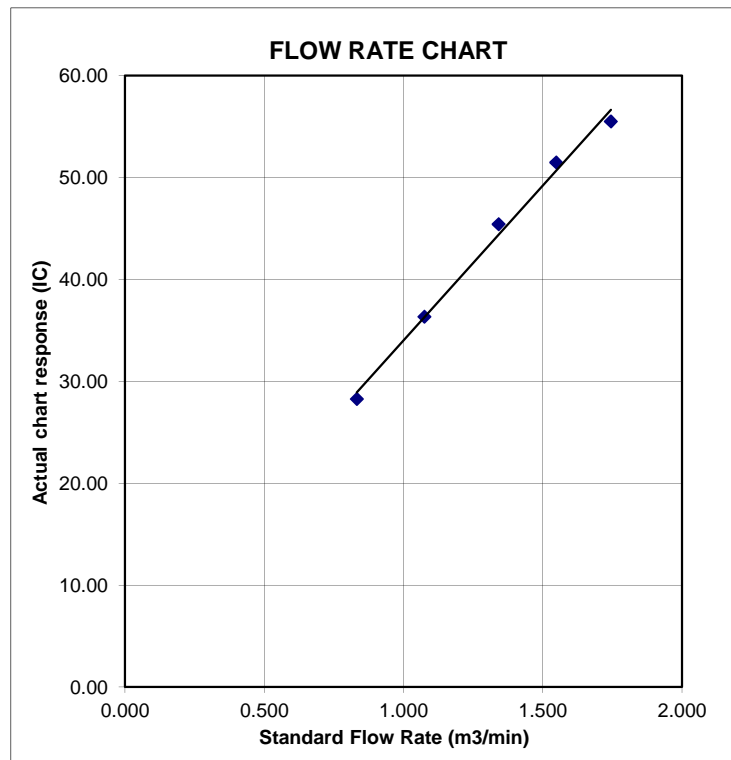
m = sampler slope

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

Date of Calibration: 23/12/2015

Location ID : AM7b

Next Calibration Date: 23/2/2016

Technician: K.C. Cheung

### CONDITIONS

Sea Level Pressure (hPa) 1017.8  
 Temperature (°C) 21.1

Corrected Pressure (mm Hg) 763.35  
 Temperature (K) 294

### CALIBRATION ORIFICE

Make-> TISCH  
 Model-> 5025A  
 Serial # -> 1941

Qstd Slope -> 2.10265  
 Qstd Intercept -> -0.00335

### CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (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 Intercept = -0.2606 Corr. coeff. = 0.9963
13	3.8	3.8	7.6	1.324	47	47.41	
10	3.2	3.2	6.4	1.215	43	43.38	
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 :**

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$

$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate

IC = corrected chart responses

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:**

$$1/m(( I )[\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

m = sampler slope

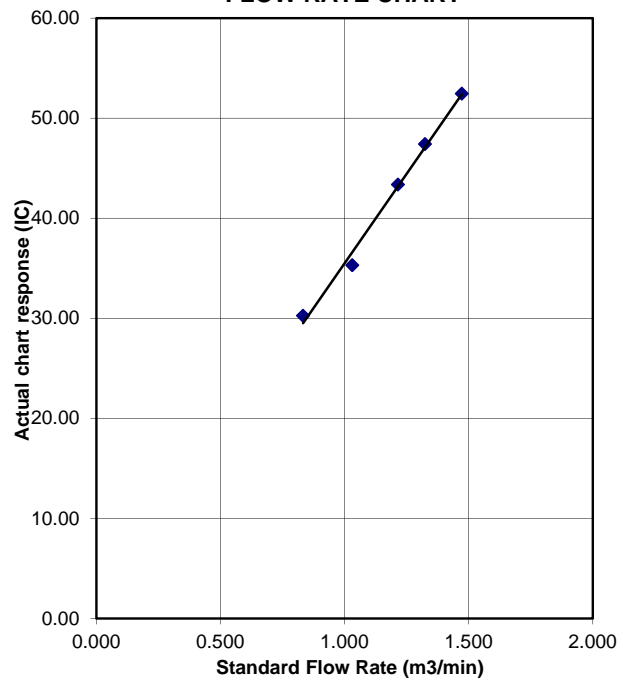
b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure

**FLOW RATE CHART**



## 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.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION		
							Slope =	Intercept =	Corr. coeff. =
18	6.2	6.2	12.4	1.691	64	64.56	33.0787	9.2931	0.9968
13	5	5	10.0	1.519	59	59.52			
10	3.6	3.6	7.2	1.289	53	53.47			
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 :**

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$

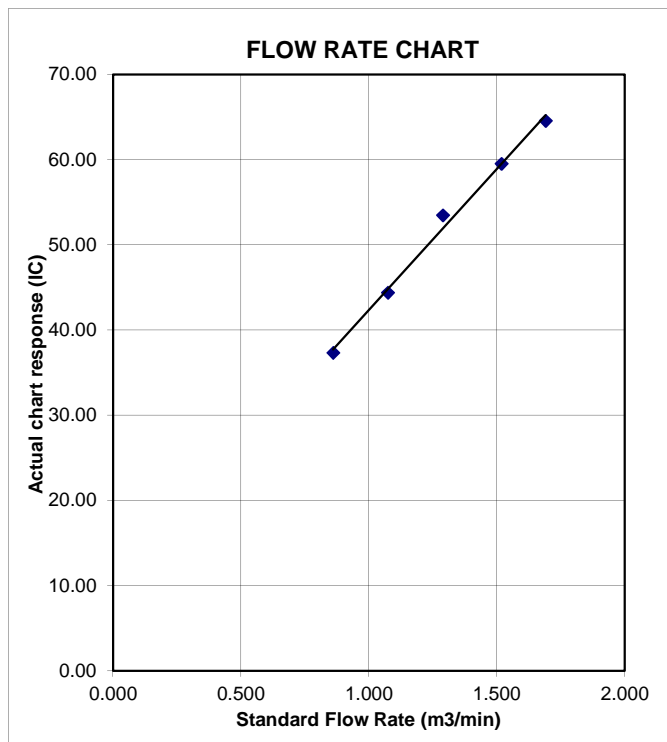
$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate  
 IC = corrected chart responses  
 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:**

$$1/m(( I )[\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

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  
 Location ID : AM9b

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.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.6	6.6	13.2	1.745	56	56.49	Slope = 28.3457 Intercept = 7.5574 Corr. coeff. = 0.9973
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	

**Calculations :**

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$

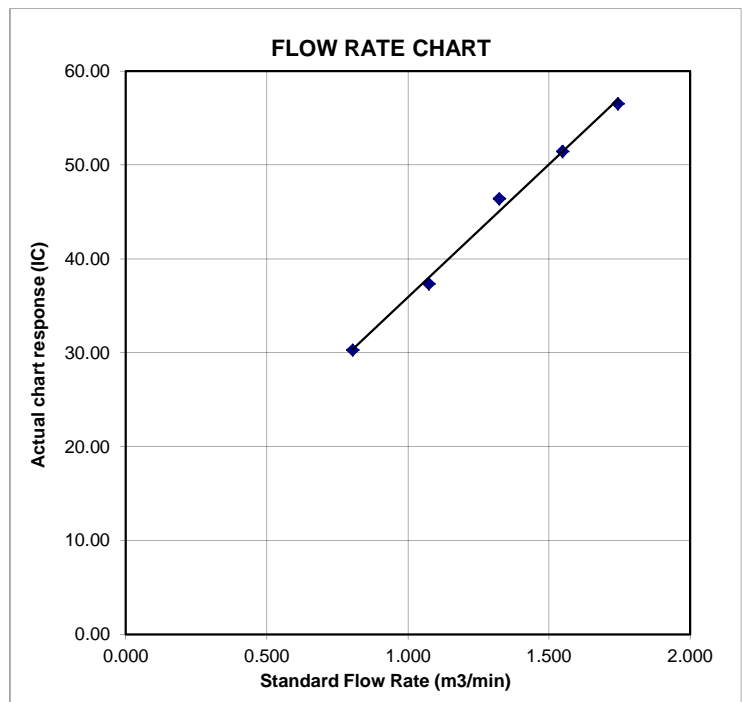
$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate  
 IC = corrected chart responses  
 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:**

$$1/m(( I )[\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

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





TISCH ENVIRONMENTAL, INC.  
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 VILLAGE OF CLEVELAND, 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 Rootmeter 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

$$Vstd = \text{Diff. Vol} [(Pa - \text{Diff. Hg}) / 760] (298 / Ta)$$

$$Qstd = Vstd / \text{Time}$$

$$Va = \text{Diff Vol} [(Pa - \text{Diff Hg}) / Pa]$$

$$Qa = Va / \text{Time}$$

For subsequent flow rate calculations:

$$Qstd = 1/m \{ [\text{SQRT}(H2O(Pa/760) (298/Ta))] - b \}$$

$$Qa = 1/m \{ [\text{SQRT } H2O(Ta/Pa)] - b \}$$

# 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 <sup>3</sup> (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)

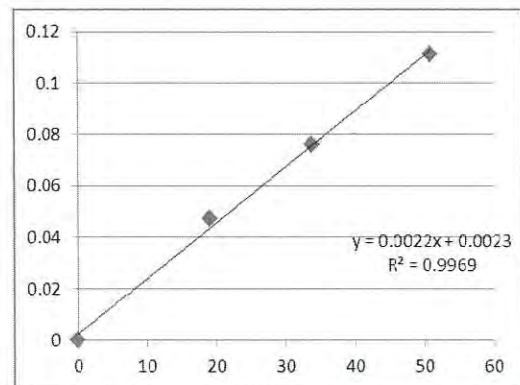
Sensitivity Adjustment Scale Setting (After Calibration) 588 (CPM)

### 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: [Signature] Date: 6 January 2015

QC Reviewer: Ben Tam Signature: [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.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION		
							Slope =	Intercept =	Corr. coeff. =
18	3.6	3.6	7.2	1.351	58	58.28	33.8083	12.9642	0.9976
13	2.8	2.8	5.6	1.193	54	54.26			
10	2.2	2.2	4.4	1.058	48	48.23			
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 :**

$$Q_{std} = 1/m[\text{Sqrt}(H2O(Pa/P_{std})(T_{std}/T_a)) - b]$$

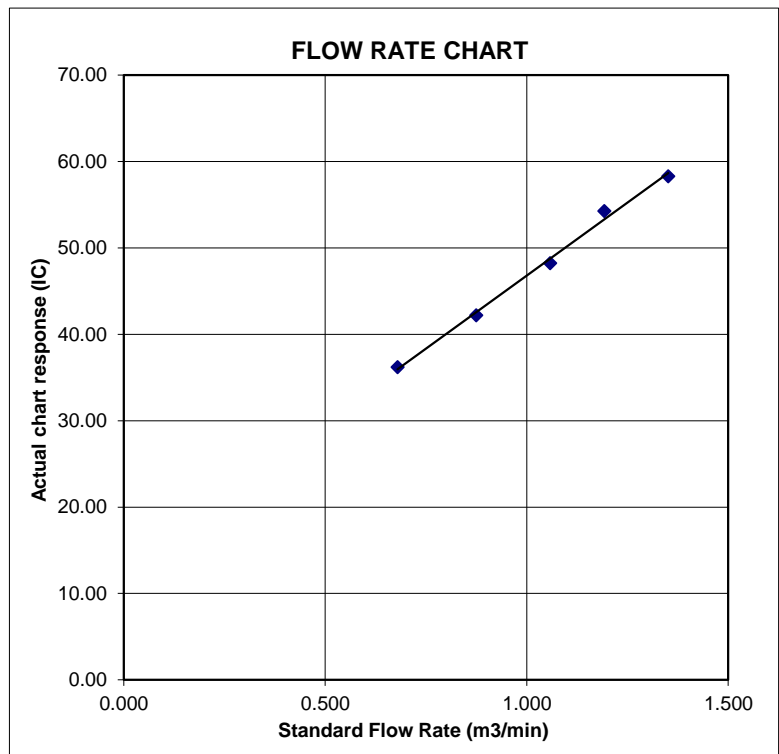
$$IC = I[\text{Sqrt}(Pa/P_{std})(T_{std}/T_a)]$$

Qstd = standard flow rate  
 IC = corrected chart responses  
 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:**

$$1/m(( I )[\text{Sqrt}(298/T_{av})(P_{av}/760)] - b)$$

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 <sup>3</sup> (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)

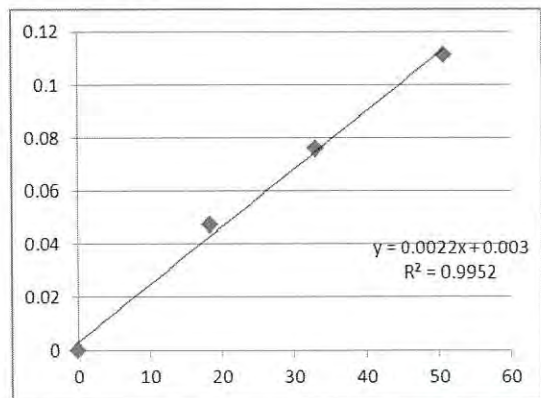
Sensitivity Adjustment Scale Setting (After Calibration) 533 (CPM)

### 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: [Signature] Date: 6 January 2015

QC Reviewer: Ben Tam Signature: [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.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION		
							Slope =	Intercept =	Corr. coeff. =
18	3.6	3.6	7.2	1.351	58	58.28	33.8083	12.9642	0.9976
13	2.8	2.8	5.6	1.193	54	54.26			
10	2.2	2.2	4.4	1.058	48	48.23			
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 :**

$$Q_{std} = 1/m[\text{Sqrt}(H2O(Pa/P_{std})(T_{std}/T_a)) - b]$$

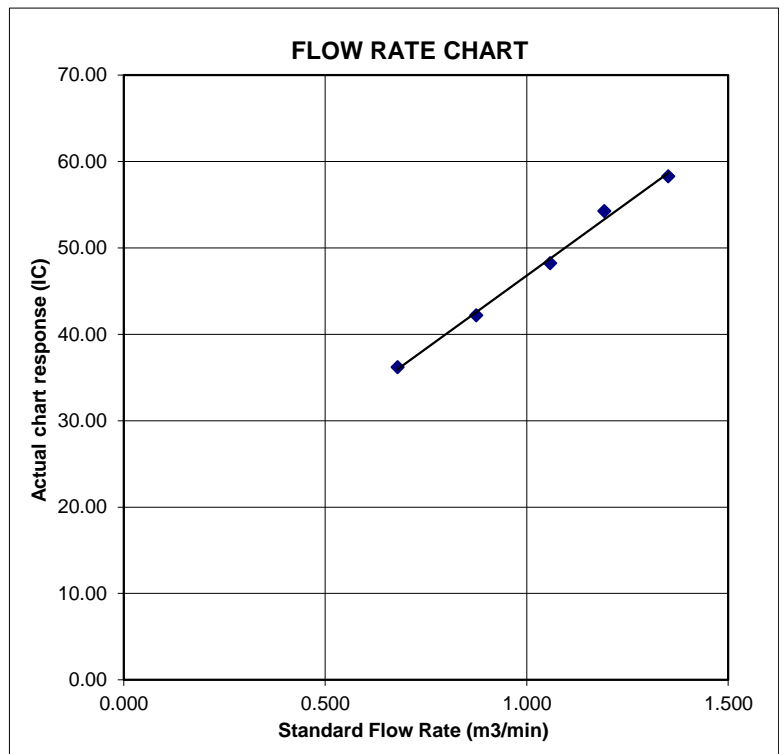
$$IC = I[\text{Sqrt}(Pa/P_{std})(T_{std}/T_a)]$$

Qstd = standard flow rate  
 IC = corrected chart responses  
 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:**

$$1/m(( I )[\text{Sqrt}(298/T_{av})(P_{av}/760)] - b)$$

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 <sup>3</sup> (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)

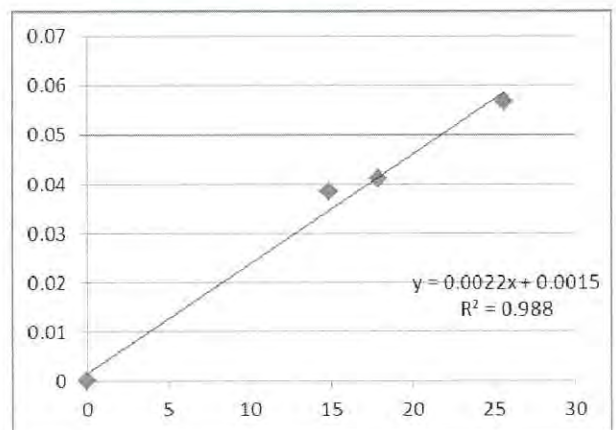
Sensitivity Adjustment Scale Setting (After Calibration) 602 (CPM)

### Linear Regression of Y or X

Slope (K-factor): 0.0022

Correlation Coefficient 0.9940

Date of Issue 20 April 2015



### Remarks:

- Strong** Correlation ( $R > 0.8$ )
  - 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 : [Signature] Date : 20 April 2015

QC Reviewer : Ben Tam Signature : [Signature] Date : 20 April 2015

## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Gold King Industrial Building, Kwai Chung  
 Location ID : Calibration Room

Date of Calibration: 6-Feb-15  
 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.	H2O (L) (in)	H2O (R) (in)	H2O (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 Intercept = 14.6821 Corr. coeff. = 0.9974
13	3	3	6.0	1.260	52	53.33	
10	2.3	2.3	4.6	1.104	48	49.23	
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 :**

$$Q_{std} = 1/m[\sqrt{H_2O(P_a/P_{std})(T_{std}/T_a)}] - b$$

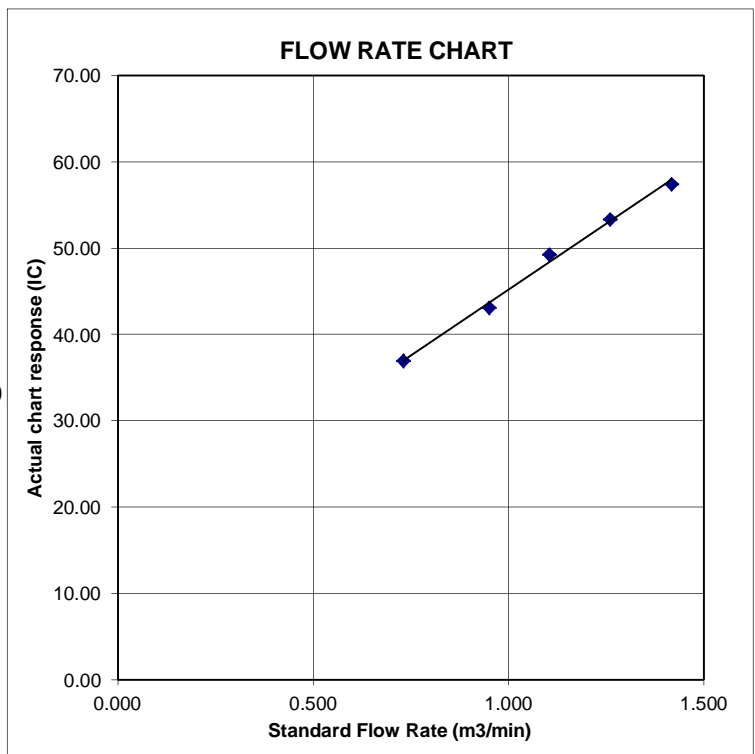
$$IC = I[\sqrt{P_a/P_{std}}(T_{std}/T_a)]$$

Qstd = standard flow rate  
 IC = corrected chart responses  
 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:**

$$1/m(( I )[\sqrt{298/T_{av}}(P_{av}/760)] - b)$$

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 <sup>3</sup> (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

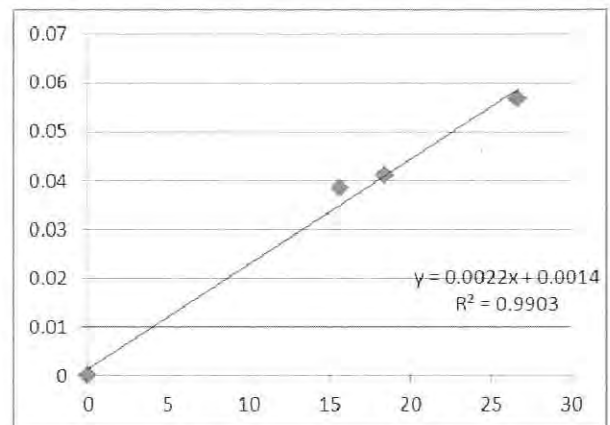
Slope (K-factor): 0.0022

Correlation Coefficient 0.9951

Date of Issue 20 April 2015

### Remarks:

- Strong** Correlation ( $R > 0.8$ )
  - 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  
 Location ID : Calibration Room

Date of Calibration: 6-Feb-15  
 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.	H2O (L) (in)	H2O (R) (in)	H2O (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 Intercept = 14.6821 Corr. coeff. = 0.9974
13	3	3	6.0	1.260	52	53.33	
10	2.3	2.3	4.6	1.104	48	49.23	
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 :**

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$

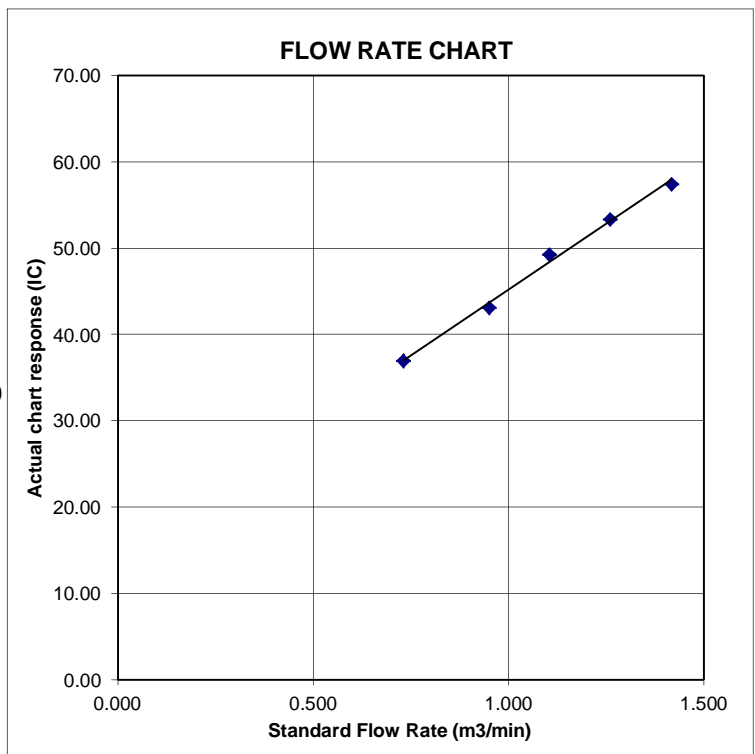
$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate  
 IC = corrected chart responses  
 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:**

$$1/m(( I )[\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

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. 2X6145  
 Equipment Ref: EQ105  
 Job Order HK1603558

## Standard Equipment:

Standard Equipment: Higher Volume Sampler  
 Location & Location ID: AUES office (calibration room)  
 Equipment Ref: HVS 018  
 Last Calibration Date: 2 January 2016

## Equipment Verification Results:

Testing Date: 4 to 6 January 2016

Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in mg/m <sup>3</sup> (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/60min)
2hr17min	17:30 ~ 19:47	20.6	1018.9	0.027	1602	11.7
2hr42min	17:00 ~ 19:42	20.7	1015.9	0.021	1522	9.3
2hr21min	18:00 ~ 20:21	20.9	1018.8	0.051	3347	23.6

Sensitivity Adjustment Scale Setting (Before Calibration) 593 (CPM)

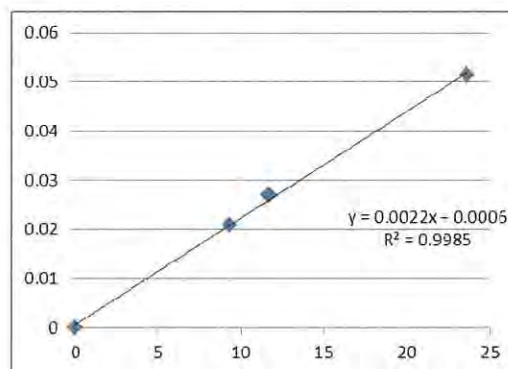
Sensitivity Adjustment Scale Setting (After Calibration) 596 (CPM)

## Linear Regression of Y or X

Slope (K-factor): 0.0022

Correlation Coefficient 0.9985

Date of Issue 11 January 2016



## 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 : [Signature] Date : 12 January 2016

QC Reviewer : Ben Tam Signature : [Signature] Date : 12 January 2016

## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location :	Gold King Industrial Building, Kwai Chung	Date of Calibration: 2-Jan-16
Location ID :	Calibration Room	Next Calibration Date: 2-Apr-16

### CONDITIONS

Sea Level Pressure (hPa)	1022	Corrected Pressure (mm Hg)	766.5
Temperature (°C)	18.9	Temperature (K)	292

### CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10265
Model->	5025A	Qstd Intercept ->	-0.00335
Calibration Date->	24-Mar-15	Expiry Date->	24-Mar-16

### CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	4.1	4.1	8.2	1.384	56	56.82	Slope = 30.1332 Intercept = 15.8637 Corr. coeff. = 0.9950
13	3.2	3.2	6.4	1.222	52	52.76	
10	2.4	2.4	4.8	1.059	48	48.71	
8	1.6	1.6	3.2	0.865	42	42.62	
5	1.0	1.0	2.0	0.684	35	35.51	

**Calculations :**

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$

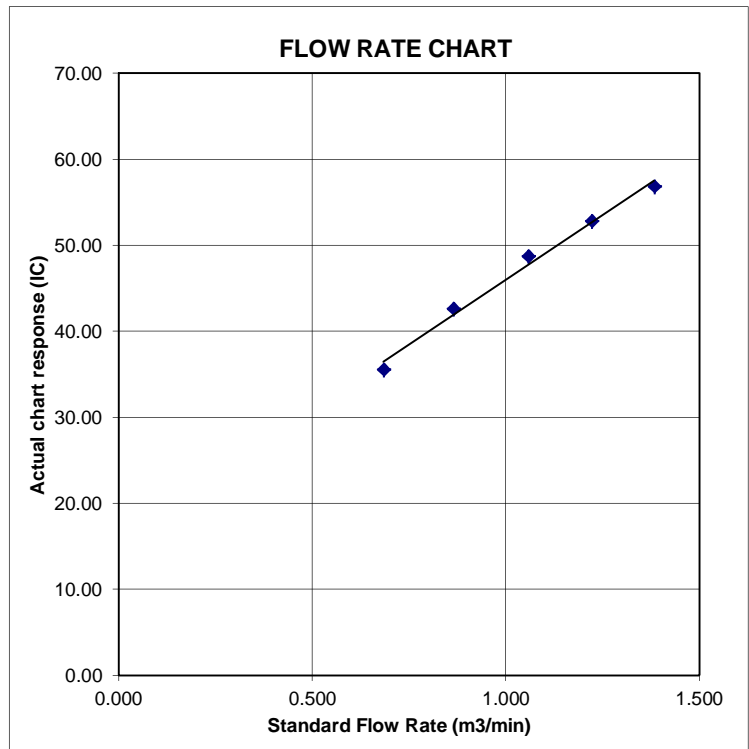
$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate  
 IC = corrected chart responses  
 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:**

$$1/m(( I )[\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

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. 366409  
 Equipment Ref: EQ109  
 Job Order HK1603560

## Standard Equipment:

Standard Equipment: Higher Volume Sampler  
 Location & Location ID: AUES office (calibration room)  
 Equipment Ref: HVS 018  
 Last Calibration Date: 2 January 2016

## Equipment Verification Results:

Testing Date: 4 to 6 January 2016

Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in mg/m <sup>3</sup> (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/60min)
2hr17min	17:30 ~ 19:47	20.6	1018.9	0.027	1577	11.5
2hr42min	17:00 ~ 19:42	20.7	1015.9	0.021	1433	8.8
2hr21min	18:00 ~ 20:21	20.9	1018.8	0.051	3328	23.5

Sensitivity Adjustment Scale Setting (Before Calibration) 540 (CPM)

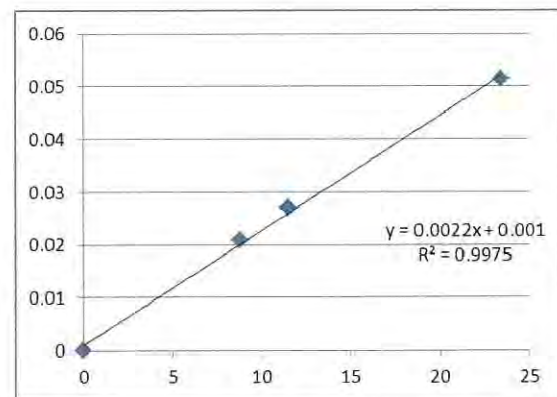
Sensitivity Adjustment Scale Setting (After Calibration) 540 (CPM)

## Linear Regression of Y or X

Slope (K-factor): 0.0022


Correlation Coefficient 0.9975


Date of Issue 11 January 2016



## Remarks:

- Strong** Correlation ( $R > 0.8$ )
  - 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 : 12 January 2016

QC Reviewer : Ben Tam Signature :  Date : 12 January 2016

## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location :	Gold King Industrial Building, Kwai Chung	Date of Calibration: 2-Jan-16
Location ID :	Calibration Room	Next Calibration Date: 2-Apr-16

### CONDITIONS

Sea Level Pressure (hPa)	1022	Corrected Pressure (mm Hg)	766.5
Temperature (°C)	18.9	Temperature (K)	292

### CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10265
Model->	5025A	Qstd Intercept ->	-0.00335
Calibration Date->	24-Mar-15	Expiry Date->	24-Mar-16

### CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	4.1	4.1	8.2	1.384	56	56.82	Slope = 30.1332 Intercept = 15.8637 Corr. coeff. = 0.9950
13	3.2	3.2	6.4	1.222	52	52.76	
10	2.4	2.4	4.8	1.059	48	48.71	
8	1.6	1.6	3.2	0.865	42	42.62	
5	1.0	1.0	2.0	0.684	35	35.51	

**Calculations :**

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$

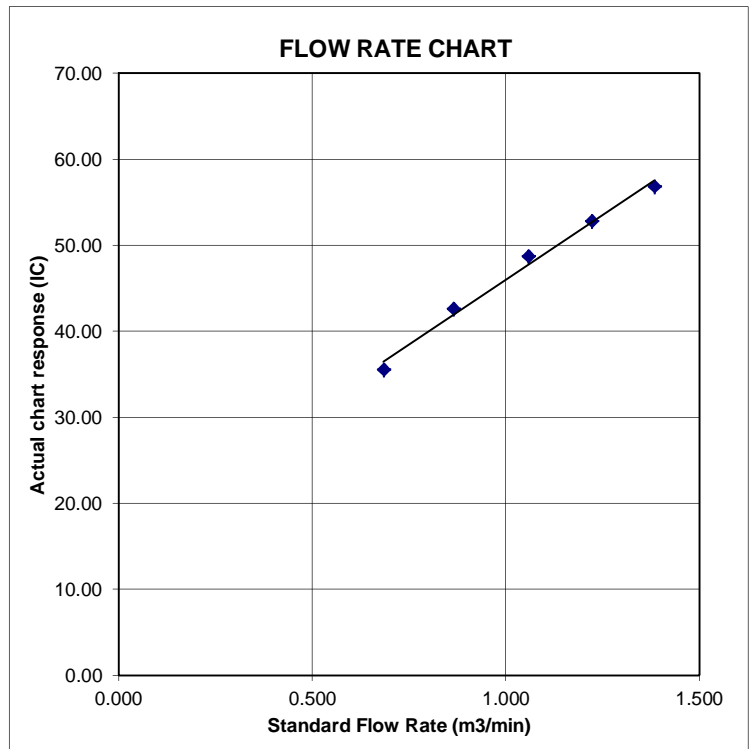
$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate  
 IC = corrected chart responses  
 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:**

$$1/m(( I )[\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

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. 366410  
 Equipment Ref: EQ110  
 Job Order HK1603561

### Standard Equipment:

Standard Equipment: Higher Volume Sampler  
 Location & Location ID: AUES office (calibration room)  
 Equipment Ref: HVS 018  
 Last Calibration Date: 2 January 2016

### Equipment Verification Results:

Testing Date: 4 to 6 January 2016

Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in mg/m <sup>3</sup> (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/60min)
2hr17min	17:30 ~ 19:47	20.6	1018.9	0.027	1566	11.4
2hr42min	17:00 ~ 19:42	20.7	1015.9	0.021	1422	8.7
2hr21min	18:00 ~ 20:21	20.9	1018.8	0.051	3318	23.4

Sensitivity Adjustment Scale Setting (Before Calibration) 660 (CPM)

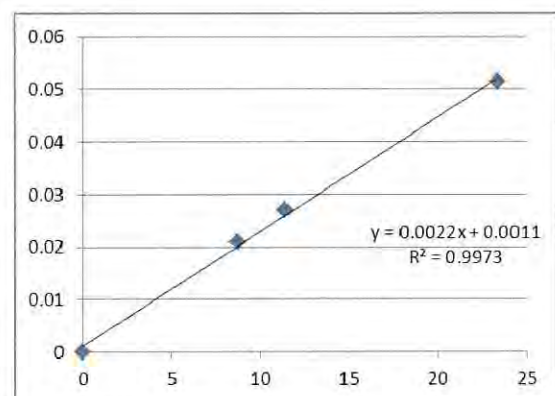
Sensitivity Adjustment Scale Setting (After Calibration) 661 (CPM)

### Linear Regression of Y or X

Slope (K-factor): 0.0022

Correlation Coefficient 0.9973

Date of Issue 11 January 2016



### Remarks:

- Strong** Correlation ( $R > 0.8$ )
- 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: [Signature] Date: 12 January 2016

QC Reviewer: Ben Tam Signature: [Signature] Date: 12 January 2016

## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location :	Gold King Industrial Building, Kwai Chung	Date of Calibration: 2-Jan-16
Location ID :	Calibration Room	Next Calibration Date: 2-Apr-16

### CONDITIONS

Sea Level Pressure (hPa)	1022	Corrected Pressure (mm Hg)	766.5
Temperature (°C)	18.9	Temperature (K)	292

### CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10265
Model->	5025A	Qstd Intercept ->	-0.00335
Calibration Date->	24-Mar-15	Expiry Date->	24-Mar-16

### CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	4.1	4.1	8.2	1.384	56	56.82	Slope = 30.1332 Intercept = 15.8637 Corr. coeff. = 0.9950
13	3.2	3.2	6.4	1.222	52	52.76	
10	2.4	2.4	4.8	1.059	48	48.71	
8	1.6	1.6	3.2	0.865	42	42.62	
5	1.0	1.0	2.0	0.684	35	35.51	

**Calculations :**

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$

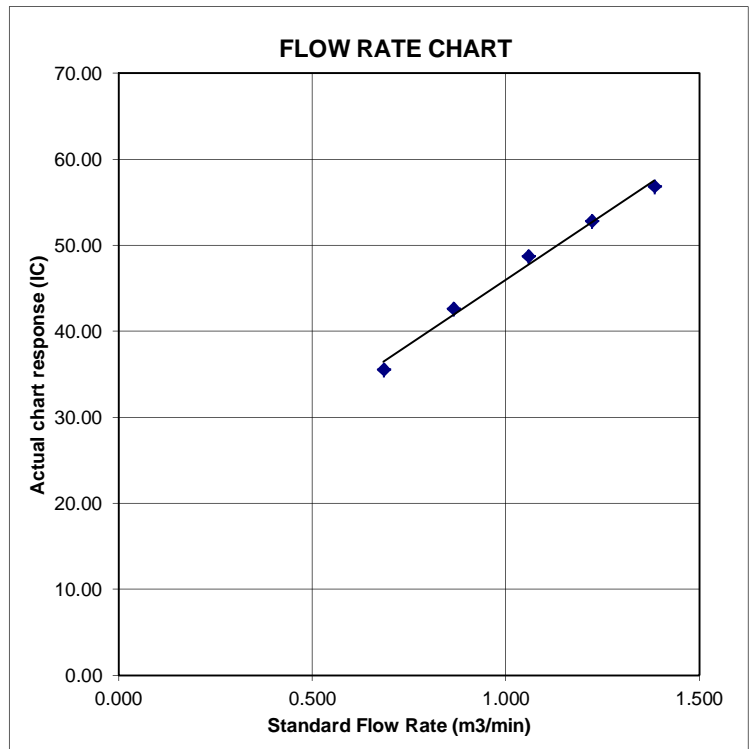
$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate  
 IC = corrected chart responses  
 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:**

$$1/m(( I )[\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

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. 3Y6503  
 Equipment Ref: EQ112  
 Job Order HK1603553

## Standard Equipment:

Standard Equipment: Higher Volume Sampler  
 Location & Location ID: AUES office (calibration room)  
 Equipment Ref: HVS 018  
 Last Calibration Date: 2 January 2016

## Equipment Verification Results:

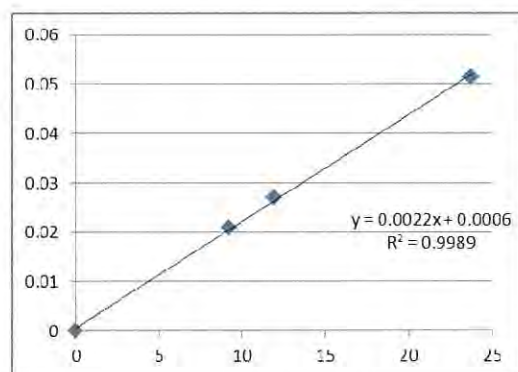
Testing Date: 4 to 6 January 2016

Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in mg/m <sup>3</sup> (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/60min)
2hr17min	17:30 ~ 19:47	20.6	1018.9	0.027	1633	11.9
2hr42min	17:00 ~ 19:42	20.7	1015.9	0.021	1502	9.2
2hr21min	18:00 ~ 20:21	20.9	1018.8	0.051	3365	23.8

Sensitivity Adjustment Scale Setting (Before Calibration) 642 (CPM)  
 Sensitivity Adjustment Scale Setting (After Calibration) 648 (CPM)

## Linear Regression of Y or X

Slope (K-factor): 0.0022  
 Correlation Coefficient 0.9989  
 Date of Issue 11 January 2016



## Remarks:

- Strong** Correlation ( $R > 0.8$ )
- 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: [Signature] Date: 12 January 2016

QC Reviewer: Ben Tam Signature: [Signature] Date: 12 January 2016

## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location :	Gold King Industrial Building, Kwai Chung	Date of Calibration: 2-Jan-16
Location ID :	Calibration Room	Next Calibration Date: 2-Apr-16

### CONDITIONS

Sea Level Pressure (hPa)	1022	Corrected Pressure (mm Hg)	766.5
Temperature (°C)	18.9	Temperature (K)	292

### CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10265
Model->	5025A	Qstd Intercept ->	-0.00335
Calibration Date->	24-Mar-15	Expiry Date->	24-Mar-16

### CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	4.1	4.1	8.2	1.384	56	56.82	Slope = 30.1332 Intercept = 15.8637 Corr. coeff. = 0.9950
13	3.2	3.2	6.4	1.222	52	52.76	
10	2.4	2.4	4.8	1.059	48	48.71	
8	1.6	1.6	3.2	0.865	42	42.62	
5	1.0	1.0	2.0	0.684	35	35.51	

#### Calculations :

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$

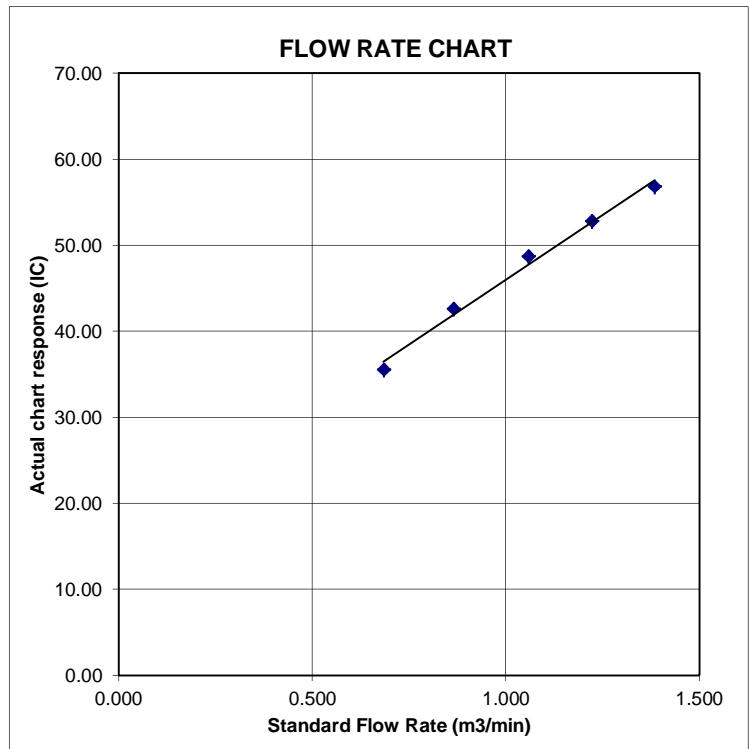
$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate  
 IC = corrected chart responses  
 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:

$$1/m(( I )[\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

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. 3Y6505  
 Equipment Ref: EQ114  
 Job Order HK1603562

## Standard Equipment:

Standard Equipment: Higher Volume Sampler  
 Location & Location ID: AUES office (calibration room)  
 Equipment Ref: HVS 018  
 Last Calibration Date: 2 January 2016

## Equipment Verification Results:

Testing Date: 4 to 6 January 2016

Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in mg/m <sup>3</sup> (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/60min)
2hr17min	17:30 ~ 19:47	20.6	1018.9	0.027	1589	11.6
2hr42min	17:00 ~ 19:42	20.7	1015.9	0.021	1473	9.0
2hr21min	18:00 ~ 20:21	20.9	1018.8	0.051	3314	23.4

Sensitivity Adjustment Scale Setting (Before Calibration) 588 (CPM)

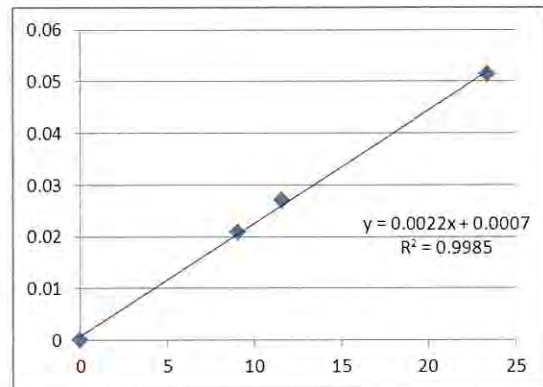
Sensitivity Adjustment Scale Setting (After Calibration) 585 (CPM)

## Linear Regression of Y or X

Slope (K-factor): 0.0022

Correlation Coefficient 0.9985

Date of Issue 11 January 2016




## 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 : 12 January 2016

QC Reviewer : Ben Tam Signature :  Date : 12 January 2016

## TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location :	Gold King Industrial Building, Kwai Chung	Date of Calibration: 2-Jan-16
Location ID :	Calibration Room	Next Calibration Date: 2-Apr-16

### CONDITIONS

Sea Level Pressure (hPa)	1022	Corrected Pressure (mm Hg)	766.5
Temperature (°C)	18.9	Temperature (K)	292

### CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.10265
Model->	5025A	Qstd Intercept ->	-0.00335
Calibration Date->	24-Mar-15	Expiry Date->	24-Mar-16

### CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	4.1	4.1	8.2	1.384	56	56.82	Slope = 30.1332 Intercept = 15.8637 Corr. coeff. = 0.9950
13	3.2	3.2	6.4	1.222	52	52.76	
10	2.4	2.4	4.8	1.059	48	48.71	
8	1.6	1.6	3.2	0.865	42	42.62	
5	1.0	1.0	2.0	0.684	35	35.51	

**Calculations :**

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$

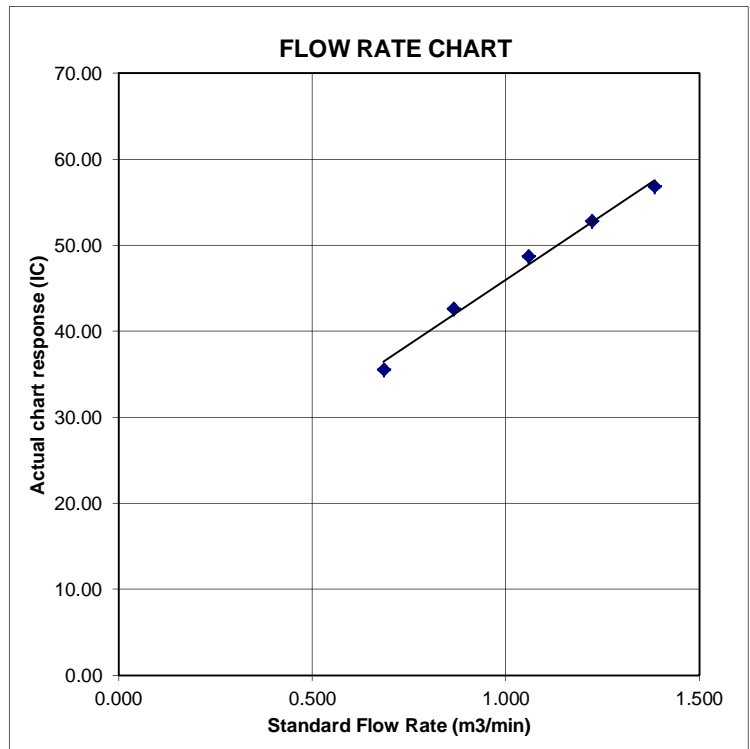
$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate  
 IC = corrected chart responses  
 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:**

$$1/m(( I )[\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

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



**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/m <sup>3</sup>
Sensitivity Adjustment	:	656CPM
Scale Setting	:	April 24, 2015

We hereby certify that the avobe mentioned instrmt has been calibrated satisfactory.

Sincerely

**SIBATA SCIENTIFIC TECHNOLOGY LTD.**

*Hong*  
\_\_\_\_\_  
For Kentaro Togo  
Overseas Sales Division



# 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

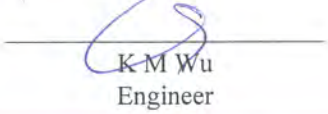
## TEST RESULTS / 測試結果

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 : 14 April 2015  
簽發日期

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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# Certificate of Calibration

## 校正證書

Certificate No. : C151969

證書編號

- 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.
- Self-calibration using laboratory acoustic calibrator was performed before the test from 6.1.1.2 to 6.4.
- The results presented are the mean of 3 measurements at each calibration point.
- Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C150014
CL281	Multifunction Acoustic Calibrator	DC130171

- Test procedure : MA101N.

- 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 <sub>AFP</sub>	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 <sub>AFP</sub>	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 <sub>AFP</sub>	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.

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗室所書面批准。

# 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 <sub>AFP</sub>	A	F	94.00	1	94.1	Ref.
	L <sub>ASP</sub>		S			94.1	± 0.1
	L <sub>AIP</sub>		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 <sub>AFP</sub>	A	F	106.0	Continuous	106.0	Ref.
	L <sub>AFMax</sub>				200 ms	104.9	-1.0 ± 1.0
	L <sub>ASP</sub>		S		Continuous	106.0	Ref.
	L <sub>ASMax</sub>				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 <sub>AFP</sub>	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)

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗室書面批准。



# 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 <sub>CFP</sub>	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 <sub>Aeq</sub>	A	10 sec.	4	1	1/10	110.0	100	100.0	± 0.5
			60 sec.					90	90.1	± 0.5
			5 min.					80	79.4	± 1.0
								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.

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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# 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 : 5 June 2015  
簽發日期

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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# Certificate of Calibration

## 校正證書

Certificate No. : C153055  
證書編號

- 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.
- The results presented are the mean of 3 measurements at each calibration point.
- Test equipment :

<u>Equipment ID</u>	<u>Description</u>	<u>Certificate No.</u>
CL280	40 MHz Arbitrary Waveform Generator	C150014
CL281	Multifunction Acoustic Calibrator	DC130171

- Test procedure : MA101N.

- Results :

### 5.1 Sound Pressure Level

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 <sub>AFP</sub>	A	F	94.00	1	94.0	± 0.7

### 5.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
50 - 130	L <sub>AFP</sub>	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 Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
50 - 130	L <sub>AFP</sub>	A	F	94.00	1	94.0	Ref.
	L <sub>ASP</sub>		S			94.0	± 0.1
	L <sub>AIP</sub>		I			94.0	± 0.1

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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# 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 <sub>AFP</sub>	A	F	106.0	Continuous	106.0	Ref.
	L <sub>AFMax</sub>				200 ms	105.0	-1.0 ± 1.0
	L <sub>ASP</sub>	S	Continuous		106.0	Ref.	
	L <sub>ASMax</sub>		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 <sub>AFP</sub>	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 <sub>CFP</sub>	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)

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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# Certificate of Calibration

## 校正證書

Certificate No. : C153055  
證書編號

### 5.4 Time Averaging

UUT Setting				Applied Value					UUT	IEC 60804	
Range (dB)	Parameter	Frequency Weighting	Integrating Time	Frequency (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)	Reading (dB)	Type 1 Spec. (dB)	
30 - 110	L <sub>Aeq</sub>	A	10 sec.	4	1	1/10	110.0	100	100.0	± 0.5	
								1/10 <sup>2</sup>	90	89.7	± 0.5
			60 sec.					1/10 <sup>3</sup>	80	79.8	± 1.0
			5 min.					1/10 <sup>4</sup>	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.



# 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 :  $(23 \pm 2)^{\circ}\text{C}$       Relative Humidity / 相對濕度 :  $(55 \pm 20)\%$   
Line Voltage / 電壓 : ---

### TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 8 May 2015

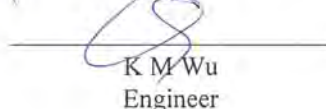
### TEST RESULTS / 測試結果

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 : 12 May 2015  
簽發日期

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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# Certificate of Calibration

## 校正證書

Certificate No. : C152552  
證書編號

- 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.
- Self-calibration was performed before the test.
- The results presented are the mean of 3 measurements at each calibration point.
- Test equipment :

<u>Equipment ID</u>	<u>Description</u>	<u>Certificate No.</u>
CL280	40 MHz Arbitrary Waveform Generator	C150014
CL281	Multifunction Acoustic Calibrator	DC130171

- Test procedure : MA101N.

- 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 <sub>A</sub>	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 <sub>A</sub>	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 <sub>A</sub>	A	Fast	94.00	1	93.6	Ref.
			Slow			93.6	± 0.3

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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# 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 <sub>A</sub>	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 <sub>C</sub>	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.

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗室書面批准。

Sun Creation Engineering Limited – Calibration & Testing Laboratory

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輝創工程有限公司 – 校正及檢測實驗室

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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

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 :  $(23 \pm 2)^{\circ}\text{C}$       Relative Humidity / 相對濕度 :  $(55 \pm 20)\%$   
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

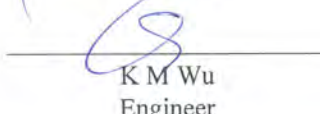
The results apply to the particular unit-under-test only.  
All results are within manufacturer's specification. (after adjustment)  
The results are detailed in the subsequent page(s).

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 : 14 April 2015  
簽發日期

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗室書面批准。

# 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

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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# 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.

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輝創工程有限公司 – 校正及檢測實驗室

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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. : 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 : 12 May 2015  
簽發日期

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗室所書而批准。

# Certificate of Calibration

## 校正證書

Certificate No. : C152550  
證書編號

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.
- The results presented are the mean of 3 measurements at each calibration point.
- Test equipment :

<u>Equipment ID</u>	<u>Description</u>	<u>Certificate No.</u>
CL130	Universal Counter	C143868
CL281	Multifunction Acoustic Calibrator	DC130171
TST150A	Measuring Amplifier	C141558

- Test procedure : MA100N.

- 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.



# 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

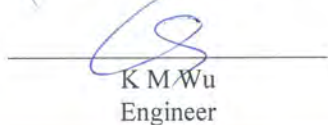
## TEST RESULTS / 測試結果

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 : 14 April 2015  
簽發日期

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。

# Certificate of Calibration

## 校正證書

Certificate No. : C151968  
證書編號

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.
- The results presented are the mean of 3 measurements at each calibration point.
- Test equipment :

Equipment ID	Description	Certificate No.
CL130	Universal Counter	C143868
CL281	Multifunction Acoustic Calibrator	DC130171
TST150A	Measuring Amplifier	C141558

- Test procedure : MA100N.
- 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.



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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:** HK1548853  
**SUB-BATCH:** 0  
**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  
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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., GOLDEN KING IND BLDG,  
NO. 35-41 TAI LIN PAI ROAD,  
KWAI CHUNG,  
N.T., HONG KONG

**WORK ORDER:** HK1548854  
**SUB-BATCH:** 0  
**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



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## REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

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**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:** HK1548856  
**SUB-BATCH:** 0  
**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: Turbidity  
Equipment Type: Turbidimeter  
Brand Name: HACH  
Model No.: 2100Q  
Serial No.: 11030C008499  
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:** HK1548856  
**Sub-batch:** 0  
**Date of Issue:** 24/12/2015  
**Client:** ACTION UNITED ENVIRO SERVICES

**Equipment Type:** Turbidimeter  
**Brand Name:** HACH  
**Model No.:** 2100Q  
**Serial No.:** 11030C008499  
**Equipment No.:** --  
**Date of Calibration:** 23 December, 2015      **Date of next Calibration:** 23 March, 2016

## Parameters:

### Turbidity

Method Ref: APHA 21st Ed. 2130B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.00	--
4	4.36	+9.0
40	40.2	+0.5
80	81.1	+1.4
400	388	-3.0
800	794	-0.8
	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



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



## **Appendix G**

### **Event and Action Plan**

### Event and Action Plan for Air Quality

Event	ET	IEC	ER	Action Contractor
<b>Action Level</b>				
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.
<b>Limit Level</b>				
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 the implementation 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	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	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;	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
	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.	the ER accordingly; 5. Monitor the implementation of remedial measures.	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.	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 CONTRACTOR			
	ET	IEC	ER	CONTRACTOR
Action level being exceeded by one sampling day	<ol style="list-style-type: none"> <li>Repeat in-situ measurement to confirm findings;</li> <li>Identify reasons for non-compliance and sources of impact;</li> <li>Inform IEC and Contractor;</li> <li>Check monitoring data, all plant, equipment and Contractor's working methods;</li> <li>Discuss mitigation measures with IEC and Contractor;</li> <li>Repeat measurement on next day of exceedance.</li> </ol>	<ol style="list-style-type: none"> <li>Discuss with ET and Contractor on the mitigation measures;</li> <li>Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly;</li> <li>Assess the effectiveness of the implemented mitigation measures</li> </ol>	<ol style="list-style-type: none"> <li>Discuss with IEC on the proposed mitigation measures;</li> <li>Make agreement on the mitigation measures to be implemented;</li> <li>Assess the effectiveness of the implemented mitigation measures</li> </ol>	<ol style="list-style-type: none"> <li>Inform the ER and confirm notification of the non-compliance in writing;</li> <li>Rectify unacceptable practice;</li> <li>Check all plant and equipment;</li> <li>Consider changes of working methods;</li> <li>Discuss with ET and IEC and propose mitigation measures to IEC and ER;</li> <li>Implement the agreed mitigation measures.</li> </ol>
Action Level being exceeded by more than two consecutive sampling days	<ol style="list-style-type: none"> <li>Repeat in-situ measurement to confirm findings;</li> <li>Identify reasons for non-compliance and sources of impact;</li> <li>Inform IEC and Contractor;</li> <li>Check monitoring data, all plant, equipment and Contractor's working methods;</li> <li>Discuss mitigation measures with IEC and Contractor;</li> <li>Ensure mitigation measures are implemented;</li> <li>Prepare to increase the monitoring frequency to daily;</li> <li>Repeat measurement on next day of exceedance.</li> </ol>	<ol style="list-style-type: none"> <li>Discuss with ET and Contractor on the mitigation measures;</li> <li>Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly;</li> <li>Assess the effectiveness of the implemented mitigation measures</li> </ol>	<ol style="list-style-type: none"> <li>Discuss with IEC on the proposed mitigation measures;</li> <li>Make agreement on the mitigation measures to be implemented;</li> <li>Assess the effectiveness of the implemented mitigation measures</li> </ol>	<ol style="list-style-type: none"> <li>Inform the ER and confirm notification of the non-compliance in writing;</li> <li>Rectify unacceptable practice;</li> <li>Check all plant and equipment;</li> <li>Consider changes of working methods;</li> <li>Discuss with ET and IEC and propose mitigation measures to IEC and ER within 3 working days;</li> <li>Implement the agreed mitigation measures.</li> </ol>
Limit Level being exceeded by one sampling day	<ol style="list-style-type: none"> <li>Repeat in-situ measurement to confirm findings;</li> <li>Identify reasons for non-compliance and sources of impact;</li> <li>Inform IEC, Contractor and EPD;</li> <li>Check monitoring data, all plant, equipment and Contractor's working methods;</li> <li>Discuss mitigation measures with IEC, ER and Contractor;</li> <li>Ensure mitigation measures are implemented;</li> <li>Increase the monitoring frequency to daily until no exceedance of Limit Level.</li> </ol>	<ol style="list-style-type: none"> <li>Discuss with ET and Contractor on the mitigation measures;</li> <li>Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly;</li> <li>Assess the effectiveness of the implemented mitigation measures</li> </ol>	<ol style="list-style-type: none"> <li>Discuss with IEC, ET and Contractor on the proposed mitigation measures;</li> <li>Request Contractor to critically review the working methods;</li> <li>Make agreement on the mitigation measures to be implemented;</li> <li>Assess the effectiveness of the implemented mitigation measures</li> </ol>	<ol style="list-style-type: none"> <li>Inform the ER and confirm notification of the non-compliance in writing;</li> <li>Rectify unacceptable practice;</li> <li>Check all plant and equipment;</li> <li>Consider changes of working methods;</li> <li>Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 3 working days;</li> <li>Implement the agreed mitigation measures.</li> </ol>
Limit level being exceeded by more than one consecutive sampling days	<ol style="list-style-type: none"> <li>Repeat in-situ measurement to confirm findings;</li> <li>Identify reasons for non-compliance and sources of impact;</li> <li>Inform IEC, Contractor and EPD;</li> <li>Check monitoring data, all plant, equipment and Contractor's working methods;</li> <li>Discuss mitigation measures with IEC, ER and Contractor;</li> <li>Ensure mitigation measures are implemented;</li> <li>Increase the monitoring frequency to daily until no exceedance of Limit Level for two consecutive days.</li> </ol>	<ol style="list-style-type: none"> <li>Discuss with ET and Contractor on the mitigation measures;</li> <li>Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly;</li> <li>Assess the effectiveness of the implemented mitigation measures.</li> </ol>	<ol style="list-style-type: none"> <li>Discuss with IEC, ET and Contractor on the proposed mitigation measures;</li> <li>Request Contractor to critically review the working methods;</li> <li>Make agreement on the mitigation measures to be implemented;</li> <li>Assess the effectiveness of the implemented mitigation measures;</li> <li>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.</li> </ol>	<ol style="list-style-type: none"> <li>Inform the ER and confirm notification of the non-compliance in writing;</li> <li>Rectify unacceptable practice;</li> <li>Check all plant and equipment;</li> <li>Consider changes of working methods;</li> <li>Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 3 working days;</li> <li>Implement the agreed mitigation measures;</li> <li>As directed by the ER, to slow down or to stop all or part of the construction activities.</li> </ol>

## **Appendix H**

### **Impact Monitoring Schedule**

**Impact Monitoring Schedule for the 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
	Water Quality	WM1 & WM1-Control
Contract 6 (C6)	Air Quality	AM2, AM3, AM4b, AM5 & AM6
	Construction Noise	NM2, NM3, NM4, NM5 & NM6
	Water Quality	WM1, WM1C, 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		
Mon	1-Feb-16	C2&C6		C2&C6	C2 & C3&C5& SSC505
Tue	2-Feb-16		C3&C5 & SSC505		C3&C5 & SSC505
Wed	3-Feb-16	C3&C5 & SSC505		C3&C5 & SSC505	C2 & C3&C5& SSC505
Thu	4-Feb-16				C2 & C6
Fri	5-Feb-16		C2&C6		C2 & C3&C5& SSC505
Sat	6-Feb-16	C3&C5 & SSC505 & C2&C6		C3&C5 & SSC505& C2&C6	C2 & C6
Sun	7-Feb-16				
Mon	8-Feb-16				
Tue	9-Feb-16				
Wed	10-Feb-16				
Thu	11-Feb-16		C3&C5 & SSC505 & C2&C6		C2 & C3&C5& SSC505& C6
Fri	12-Feb-16	C3&C5 & SSC505 & C2&C6		C3&C5 & SSC505& C2&C6	
Sat	13-Feb-16				C2 & C3&C5& SSC505& C6
Sun	14-Feb-16				
Mon	15-Feb-16				C2 & C6
Tue	16-Feb-16		C2&C6		C2 & C3&C5& SSC505
Wed	17-Feb-16	C2&C6	C3&C5 & SSC505	C2&C6	C2 & C6
Thu	18-Feb-16	C3&C5 & SSC505		C3&C5 & SSC505	C2 & C3&C5& SSC505
Fri	19-Feb-16				C2 & C6
Sat	20-Feb-16				C2 & C3&C5& SSC505
Sun	21-Feb-16				
Mon	22-Feb-16		C2&C6		C2 & C3&C5& SSC505
Tue	23-Feb-16	C2&C6	C3&C5 & SSC505	C2&C6	C2 & C6
Wed	24-Feb-16	C3&C5 & SSC505		C3&C5 & SSC505	C2 & C3&C5& SSC505
Thu	25-Feb-16				C2 & C6
Fri	26-Feb-16				C2 & C3&C5& SSC505
Sat	27-Feb-16		C2&C6		C2 & C6
Sun	28-Feb-16				
Mon	29-Feb-16	C2&C6	C3&C5 & SSC505	C2&C6	C2 & C6

Remark: no water monitoring was carried out from 7 to 10 February 2016 since it was site closed for Lunar New Year Holiday and no construction activities were being conducted.

	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 and Contract 7	Air Quality	AM1a
	Construction Noise	NM1
	Water Quality	WM1 & WM1-Control
Contract 6 (C6)	Air Quality	AM2, AM3, AM4b, AM5 & AM6
	Construction Noise	NM2, NM3, NM4, NM5 & NM6
	Water Quality	WM1, WM1C, 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 (°C)	AVG AIR PRESS (hPa)	STANDARD FLOW RATE (m <sup>3</sup> /min)	AIR VOLUME (std m <sup>3</sup> )	FILTER WEIGHT (g)		DUST WEIGHT COLLECTED (g)	24-HR TSP (µg/m <sup>3</sup> )
		INITIAL	FINAL	(min)	MIN	MAX	AVG					INITIAL	FINAL		
<b>AM1a - Garden Farm, Tsung Yuen Ha Village</b>															
4-Jan-16	28911	10951.88	10975.42	1412.40	38	40	39.0	20.6	1018.9	1.39	1969	2.8314	3.0017	0.1703	86
9-Jan-16	28909	10975.42	10998.95	1411.80	36	36	36.0	18.1	1020.6	1.30	1838	2.8147	2.8952	0.0805	44
15-Jan-16	28899	10998.95	11022.51	1413.60	36	36	36.0	15.1	1015.4	1.30	1845	2.7960	2.8582	0.0622	34
21-Jan-16	28926	11023.22	11047.19	1438.20	36	36	36.0	16.1	1017.7	1.30	1876	2.8092	2.8632	0.0540	29
27-Jan-16	28973	11047.19	11070.76	1414.20	40	41	40.5	13	1022.7	1.46	2069	2.8970	2.9856	0.0886	43
<b>AM2 - Village House near Lin Ma Hang Road</b>															
4-Jan-16	28910	6500.75	6524.55	1428.00	28	29	28.5	20.6	1018.9	0.94	1339	2.7938	2.8803	0.0865	65
9-Jan-16	28893	6524.55	6548.32	1426.20	30	32	31.0	18.1	1020.6	1.03	1467	2.8185	2.9388	0.1203	82
15-Jan-16	28930	6548.31	6572.14	1429.80	32	33	32.5	15.1	1015.4	1.08	1548	2.8011	2.8527	0.0516	33
21-Jan-16	28925	6572.14	6595.96	1429.20	34	35	34.5	16.1	1017.7	1.15	1644	2.8221	2.8633	0.0412	25
27-Jan-16	28972	6595.96	6619.78	1429.20	34	34	34.0	13	1022.7	1.14	1632	2.8842	2.9621	0.0779	48
<b>AM3 - Ta Kwu Ling Fire Service Station of Ta Kwu Ling Village</b>															
4-Jan-16	28870	7611.07	7635.07	1440.00	35	35	35.0	20.6	1018.9	1.03	1479	2.8021	3.0072	0.2051	139
9-Jan-16	28907	7635.14	7659.14	1440.00	32	32	32.0	18.1	1020.6	0.93	1342	2.8312	2.9595	0.1283	96
15-Jan-16	28902	7659.23	7683.23	1440.00	36	36	36.0	15.1	1015.4	1.07	1542	2.8018	2.8587	0.0569	37
21-Jan-16	28901	7683.23	7707.23	1440.00	36	27	31.5	16.1	1017.7	0.92	1320	2.8108	2.8719	0.0611	46
27-Jan-16	28927	7707.23	7731.23	1440.00	22	22	22.0	13	1022.7	0.60	864	2.8125	2.9094	0.0969	112
<b>AM4 - House no. 10B1 Nga Yiu Ha Village</b>															
2-Jan-16	28889	9594.74	9618.74	1440.00	38	39	38.5	18.9	1022.2	0.98	1404	2.8032	2.9500	0.1468	105
7-Jan-16	28893	9618.74	9642.74	1440.00	34	35	34.5	18.8	1021.8	0.84	1205	2.8060	2.8655	0.0595	49
13-Jan-16	28930	9642.74	9666.74	1440.00	44	46	45.0	16.1	1020.8	1.21	1738	2.8122	2.8919	0.0797	46
19-Jan-16	28896	9666.74	9690.74	1440.00	36	38	37.0	16.4	1020.1	0.93	1336	2.8016	2.8950	0.0934	70
25-Jan-16	28969	9690.74	9714.74	1440.00	33	36	34.5	7.4	1032.6	0.87	1249	2.8720	2.9631	0.0911	73
30-Jan-16	28976	9714.74	9738.74	1440.00	34	34	34.0	19.9	1020.0	0.82	1175	2.8786	2.9041	0.0255	22
<b>AM5a - Ping Yeung Village House</b>															
2-Jan-16	28888	7433.05	7457.05	1440.00	28	28	28.0	18.9	1022.2	0.95	1369	2.8173	2.9448	0.1275	93
7-Jan-16	28894	7457.06	7481.06	1440.00	28	28	28.0	18.8	1021.8	0.95	1369	2.8040	2.8611	0.0571	42
13-Jan-16	28931	7481.06	7505.05	1439.40	28	28	28.0	16.1	1020.8	0.95	1374	2.8114	2.8751	0.0637	46
19-Jan-16	28895	7505.05	7529.05	1440.00	34	34	34.0	16.4	1020.1	1.14	1635	2.8051	2.9092	0.1041	64
25-Jan-16	28970	7529.05	7553.04	1439.40	29	30	29.5	7.4	1032.6	1.02	1467	2.8710	2.9573	0.0863	59
30-Jan-16	28975	7553.04	7577.04	1440.00	34	34	34.0	19.9	1020.0	1.13	1626	2.8652	2.9162	0.0510	31
<b>AM6 - Wo Keng Shan Village House</b>															
2-Jan-16	28912	6004.49	6028.49	1440.00	34	34	34.0	18.9	1022.2	1.02	1464	2.8280	3.0095	0.1815	124

DATE	SAMPLE NUMBER	ELAPSED TIME			CHART READING			AVG TEMP (°C)	AVG AIR PRESS (hPa)	STANDARD FLOW RATE (m <sup>3</sup> /min)	AIR VOLUME (std m <sup>3</sup> )	FILTER WEIGHT (g)		DUST WEIGHT COLLECTED (g)	24-HR TSP (µg/m <sup>3</sup> )
		INITIAL	FINAL	(min)	MIN	MAX	AVG					INITIAL	FINAL		
7-Jan-16	28892	6028.50	6052.50	1440.00	34	34	34.0	18.8	1021.8	1.02	1464	2.8170	3.0129	0.1959	134
13-Jan-16	28929	6052.50	6076.49	1439.40	34	34	34.0	16.1	1020.8	1.02	1470	2.8120	3.0065	0.1945	132
19-Jan-16	28949	6076.49	6100.49	1440.00	37	38	37.5	16.4	1020.1	1.14	1638	2.8083	3.0465	0.2382	145
25-Jan-16	28971	6100.49	6124.49	1440.00	38	38	38.0	7.4	1032.6	1.18	1703	2.8732	2.9774	0.1042	61
30-Jan-16	28993	6124.49	6148.48	1439.40	38	38	38.0	19.9	1020.0	1.15	1650	2.8678	2.9470	0.0792	48
<b>AM7b - Loi Tung Village House</b>															
4-Jan-16	28890	15037.08	15061.08	1440.00	28	28	28.0	20.6	1018.9	0.80	1149	2.8124	2.8517	0.0393	34
9-Jan-16	28905	15061.08	15085.08	1440.00	30	30	30.0	18.1	1020.6	0.86	1237	2.8318	2.9181	0.0863	70
15-Jan-16	28948	15085.08	15109.08	1440.00	29	30	29.5	15.1	1015.4	0.85	1220	2.7973	2.8470	0.0497	41
21-Jan-16	28951	15109.09	15133.09	1440.00	30	30	30.0	16.1	1017.7	0.86	1240	2.8850	2.9333	0.0483	39
27-Jan-16	28994	15133.09	15157.08	1439.40	29	30	29.5	15.3	1022.7	0.85	1223	2.8699	2.9093	0.0394	32
<b>AM8 - Po Kat Tsai Village No. 4</b>															
4-Jan-16	28891	8907.45	8931.45	1440.00	28	28	28.0	20.6	1018.9	0.57	827	2.8136	2.8321	0.0185	22
9-Jan-16	28904	8931.45	8955.45	1440.00	42	43	42.5	18.1	1020.6	1.02	1474	2.8290	2.9010	0.0720	49
15-Jan-16	28924	8955.46	8979.46	1440.00	50	50	50.0	15.1	1015.4	1.26	1811	2.7986	2.8410	0.0424	23
21-Jan-16	28928	8979.46	9003.48	1441.20	41	42	41.5	16.1	1017.7	1.00	1435	2.8315	2.8863	0.0548	38
27-Jan-16	28995	9003.48	9027.48	1440.00	38	38	38.0	13	1022.7	0.90	1292	2.8635	2.8989	0.0354	27
<b>AM9b - Nam Wa Po Village House No. 80</b>															
4-Jan-16	28869	16384.24	16408.24	1440.00	26	26	26.0	20.6	1018.9	0.66	950	2.8141	2.8333	0.0192	20
9-Jan-16	28906	16408.24	16432.24	1440.00	26	27	26.5	18.1	1020.6	0.68	983	2.8284	2.8650	0.0366	37
15-Jan-16	28900	16432.24	16456.24	1440.00	26	27	26.5	15.1	1015.4	0.69	987	2.8030	2.8471	0.0441	45
21-Jan-16	28968	16456.24	16480.24	1440.00	28	28	28.0	16.1	1017.7	0.74	1063	2.8743	2.9177	0.0434	41
27-Jan-16	28974	16480.29	16504.29	1440.00	36	38	37.0	13	1022.7	1.07	1544	2.8841	2.9400	0.0559	36



**Construction Noise Monitoring Results, dB(A)**

Date	Start Time	1 <sup>st</sup> Leq <sub>5mi</sub> n	L10	L90	2 <sup>nd</sup> Leq <sub>5mi</sub> n	L10	L90	3 <sup>rd</sup> Leq <sub>5mi</sub> n	L10	L90	4 <sup>th</sup> Leq <sub>5mi</sub> n	L10	L90	5 <sup>th</sup> Leq <sub>5mi</sub> n	L10	L90	6 <sup>th</sup> Leq <sub>5mi</sub> n	L10	L90	Leq30	façade correctio n
<b>NM1 - Tsung Yuen Ha Village House No. 63</b>																					
5-Jan-16	10:00	61.5	64.5	52.9	61.8	65.1	53.5	56.6	60.3	49.8	60.9	63.5	56.3	61.0	64.7	53.3	59.3	62.1	53.8	60	NA
11-Jan-16	10:54	57.1	60.9	45.9	50.4	53.6	45.8	50.6	54.3	46.3	48.2	50.9	45.7	48.9	48.8	45.7	53.1	55.7	47.3	53	NA
16-Jan-16	10:07	61.0	64.0	52.4	62.0	65.3	53.9	57.6	61.3	50.9	62.9	64.4	58.3	60.0	63.2	54.6	59.7	62.8	54.1	61	NA
22-Jan-16	10:07	71.5	73.9	67.6	70.3	72.1	67.3	71.1	73.6	67.0	72.1	74.4	68.1	70.9	72.4	68.0	71.1	73.8	68.1	71	NA
28-Jan-16	13:04	58.5	61.3	53.5	62.3	63.3	53.6	58.9	58.6	53.5	53.5	54.3	49.8	53.4	55.4	48.7	56.4	55.2	49.9	58	NA
<b>NM2 - Village House near Lin Ma Hang Road</b>																					
5-Jan-16	10:58	67.2	70.8	61.6	67.0	70.6	61.8	67.2	70.6	61.6	67.1	71.1	61.0	65.8	68.6	60.5	62.5	65.2	58.6	66	NA
11-Jan-16	11:30	68.5	70.0	66.9	67.9	68.6	67.3	68.3	68.7	67.6	67.3	68.1	66.5	66.6	67.0	66.0	66.6	67.1	65.9	68	NA
16-Jan-16	10:47	66.3	69.7	60.1	66.0	69.7	60.2	66.5	70.0	61.0	64.0	67.1	58.9	64.5	67.8	58.7	65.0	66.9	59.1	65	NA
22-Jan-16	10:45	70.6	72.9	66.7	71.1	73.3	66.5	72.1	73.9	67.8	69.7	71.4	65.8	70.5	73.0	66.5	71.5	73.7	67.7	71	NA
28-Jan-16	13:55	63.5	64.8	60.0	62.1	63.2	59.4	61.9	63.8	59.6	61.6	62.7	59.4	62.8	65.1	60.3	61.3	63.2	60.8	62	NA
<b>NM3 - Ping Yeung Village House</b>																					
4-Jan-16	10:41	63.2	65.9	59.2	69.5	71.9	59.5	62.2	63.5	59.1	76.4	69.8	58.3	65.3	69.7	58.7	59.9	61.1	58.7	70	NA
8-Jan-16	11:16	60.1	58.7	51.8	60.3	60.9	52.1	53.5	54.1	51.2	65.0	57.1	50.8	58.5	54.1	51.1	64.6	56.9	50.8	62	NA
14-Jan-16	10:21	68.2	71.9	57.5	66.6	69.7	58.6	67.4	69.6	58.1	65.7	68.6	59.6	64.7	67.0	56.6	66.4	68.7	57.6	67	NA
20-Jan-16	13:06	66.7	64.6	57.8	64.7	65.7	56.3	65.5	68.9	58.1	64.0	67.0	58.3	65.6	68.6	59.0	66.0	67.8	59.0	66	NA
26-Jan-16	10:10	56.5	57.1	49.9	56.5	53.5	49.3	60.4	60.8	49.4	57.1	61.2	50.1	58.7	63.1	50.3	57.0	61.1	50.3	58	NA
<b>NM4 - Wo Keng Shan Village House</b>																					
4-Jan-16	11:21	74.8	79.3	66.9	73.8	76.5	66.3	73.8	77.2	65.0	75.3	74.5	64.3	76.4	80.0	66.8	73.0	75.9	68.6	75	NA
8-Jan-16	13:06	64.1	61.6	48.2	67.6	66.7	47.6	64.3	61.6	45.5	67.5	63.2	47.9	64.1	61.4	47.5	69.0	70.2	52.3	67	NA
14-Jan-16	11:14	67.6	70.7	56.0	67.3	68.2	54.7	57.2	57.6	56.7	60.7	63.3	56.7	61.7	66.3	58.2	64.1	67.0	57.8	64	NA
20-Jan-16	13:45	67.8	68.5	58.6	65.7	67.2	59.6	66.0	67.9	58.8	66.7	68.7	59.3	66.9	69.0	60.3	67.1	69.3	61.2	67	NA
26-Jan-16	10:55	69.6	68.8	54.3	59.8	63.4	55.4	65.2	66.4	55.4	66.3	69.1	55.5	65.7	66.7	55.6	66.8	69.6	55.7	66	NA
<b>NM5 - Ping Yeung Village House (façade facing northeast)</b>																					
4-Jan-16	9:25	55.2	58.5	49.5	51.5	53.5	48.0	54.3	56.0	51.0	57.9	58.0	52.5	55.0	56.0	53.5	54.6	56.0	51.5	55	NA
8-Jan-16	9:17	55.8	58.0	53.0	55.8	55.5	52.0	55.2	56.0	52.0	54.1	55.5	52.5	54.6	56.0	52.5	55.8	57.5	53.5	55	NA
14-Jan-16	9:28	57.5	59.5	53.5	56.8	59.5	52.0	56.6	59.0	52.5	55.5	58.0	51.5	53.8	56.5	49.0	55.7	54.0	48.0	56	NA
20-Jan-16	9:32	59.1	59.5	54.5	58.0	60.0	55.5	59.7	62.5	55.0	59.1	62.0	55.0	61.0	64.5	55.0	58.9	61.5	55.0	59	NA
26-Jan-16	9:22	62.3	64.5	59.0	62.2	64.5	59.0	61.3	64.0	57.5	62.3	65.0	58.5	62.1	64.0	58.5	62.8	65.0	59.0	62	NA
<b>NM6 - Tai Tong Wu Village House 2</b>																					
4-Jan-16	10:08	54.0	55.0	51.5	56.4	58.0	53.0	54.5	56.0	52.0	56.8	58.5	53.0	56.1	57.5	5.0	56.5	58.0	54.0	56	NA

Date	Start Time	1 <sup>st</sup> Leq <sub>5mi</sub> n	L10	L90	2 <sup>nd</sup> Leq <sub>5mi</sub> n	L10	L90	3 <sup>rd</sup> Leq <sub>5mi</sub> n	L10	L90	4 <sup>th</sup> Leq <sub>5mi</sub> n	L10	L90	5 <sup>th</sup> Leq <sub>5mi</sub> n	L10	L90	6 <sup>th</sup> Leq <sub>5mi</sub> n	L10	L90	Leq30	façade correction
8-Jan-16	9:58	54.1	56.0	52.0	54.1	55.5	52.0	53.8	55.0	51.5	54.9	56.0	52.0	55.3	56.5	52.5	54.4	56.0	52.5	54	NA
14-Jan-16	10:16	63.6	67.5	56.5	65.2	68.5	59.5	60.9	62.5	57.5	64.0	67.0	57.5	63.4	66.0	57.5	62.0	64.5	57.0	63	NA
20-Jan-16	10:18	54.5	55.5	52.5	56.0	56.0	52.5	56.4	58.5	52.5	54.8	55.5	53.0	54.5	55.0	52.5	53.7	54.5	52.5	55	NA
26-Jan-16	10:06	62.2	64.0	59.0	62.0	64.0	58.5	61.2	63.5	58.5	61.2	63.0	58.5	62.7	64.5	59.0	62.3	65.0	59.0	62	NA
<b>NM7 – Po Kat Tsai Village</b>																					
4-Jan-16	13:07	57.3	58.5	55.0	58.7	60.5	55.5	58.1	59.5	56.0	58.8	60.5	56.5	57.3	58.5	55.5	59.4	61.0	56.5	58	NA
8-Jan-16	13:06	66.2	67.0	54.5	63.3	66.5	54.5	62.2	65.5	52.5	61.7	64.5	53.5	61.8	65.0	52.0	60.3	64.5	51.0	63	NA
14-Jan-16	13:04	52.9	53.5	51.5	64.0	67.5	51.5	64.2	67.5	51.5	65.9	67.0	51.5	63.3	67.0	50.5	60.9	63.5	50.5	63	NA
20-Jan-16	13:10	63.3	64.5	61.5	63.1	63.5	62.0	68.0	69.5	60.0	70.8	72.5	63.0	66.1	69.5	59.0	61.2	62.5	58.5	67	NA
26-Jan-16	13:05	66.3	70.5	58.0	67.6	72.0	57.0	64.8	69.0	56.0	65.9	69.5	57.0	67.1	70.5	61.0	67.2	70.5	60.5	67	NA
<b>NM8 - Village House, Tong Hang</b>																					
5-Jan-16	13:00	58.5	61.8	51.1	65.1	67.4	55.7	63.2	65.1	56	59.4	62.1	52.2	63.3	65.1	57.7	64.5	66.3	58	63	NA
11-Jan-16	13:00	61.7	67	48	57.9	61.5	47.5	58.3	64.5	48.5	58.7	64.5	48.5	59	65.5	47.5	56.7	60	50.5	59	NA
16-Jan-16	10:41	58.5	60.5	56	59.8	62	55.5	58.9	61	55.5	58.1	59.5	56	58.6	60.5	56	58.2	59.5	56	59	NA
22-Jan-16	13:45	58.2	59	51.5	57.4	60	53	59.9	65.5	53.5	59.6	65	54	58.5	58	54	59	64	52.5	59	NA
28-Jan-16	9:39	61.4	66	57	62.9	64.5	60	64.2	65	60	61.6	66	57	62.7	66.5	58.5	61.8	63.5	59.5	63	NA
<b>NM9 - Village House, Kiu Tau Village</b>																					
5-Jan-16	13:45	61.3	63.5	58.8	61.4	63.7	59.4	63.6	65.7	60.8	58.7	60.9	56.7	62.7	64.5	61.1	62.1	64.0	60.5	62	NA
11-Jan-16	11:24	64.1	67.0	56.0	71.2	67.0	56.5	60.2	63.0	56.5	62.3	64.5	58.5	62.7	66.5	58.5	62.5	66.5	52.5	66	NA
16-Jan-16	9:56	60.7	63.0	57.0	59.0	60.5	57.0	58.9	60.5	56.5	58.9	60.5	57.0	58.7	60.5	56.5	60.0	61.5	57.0	59	NA
22-Jan-16	13:00	59.5	62.0	55.0	57.8	60.0	54.5	56.2	59.5	53.0	56.5	58.0	53.5	60.0	62.5	56.0	61.3	64.0	57.0	59	NA
28-Jan-16	10:20	61.0	64.0	58.5	62.2	64.5	59.5	62.6	65.0	59.5	61.5	63.5	59.0	61.7	63.0	59.0	63.1	66.0	60.5	62	NA
<b>NM10 - Nam Wa Po Village House No. 80</b>																					
5-Jan-16	16:06	62.4	64.1	60.3	62.7	64.3	61.0	63.3	65.1	61.1	66.7	68.5	63.1	64.1	66.3	61.9	63.4	65.5	61.6	64	67
11-Jan-16	9:01	58.9	60.0	57.0	59.2	61.0	57.0	59.7	61.0	57.5	59.3	60.5	57.0	59.1	60.5	56.5	57.1	58.5	55.0	59	62
16-Jan-16	9:14	64.2	66.0	59.5	65.5	67.5	61.0	65.3	67.5	60.5	64.6	67.0	59.5	64.5	66.5	59.5	65.8	68.0	60.5	65	68
22-Jan-16	9:14	62.1	64.5	58.0	62.0	64.5	58.0	62.8	65.5	58.5	62.2	64.5	58.5	61.0	63.0	57.0	59.9	63.0	57.0	62	65
28-Jan-16	11:03	60.2	61.0	58.5	61.5	65.0	57.5	59.9	60.5	57.0	61.7	66.0	56.5	58.3	60.0	54.0	59.9	64.0	53.5	60	63

**Water Quality Monitoring Data for Contract 5, 6 and SS C505**

Date	2-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	12:30	0.31	18.8	18.8	8.5	8.5	91.3	91.3	11.8	11.3	7.7	7.7	5	4.5
			18.8		8.49		91.2		10.8		7.7		4	
WM1	12:10	0.22	19.4	19.4	8.51	8.6	92.5	93.0	37.1	37.7	7.6	7.6	33	34.0
			19.4		8.59		93.4		38.2		7.6		35	

Date	5-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	10:49	0.23	21.2	21.2	8.54	8.6	96.2	96.5	5.4	5.4	8.6	8.6	4	4.0
			21.2		8.58		96.7		5.4		8.6		4	
WM1	10:40	0.19	22.1	22.2	6.29	6.3	72.4	72.8	22.2	22.5	7.4	7.4	21	21.0
			22.2		6.37		73.2		22.7		7.4		21	

Date	7-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	10:34	0.26	18.5	18.5	10.66	10.6	115.3	115.0	23.0	22.9	8.3	8.3	19	19.0
			18.5		10.57		114.7		22.7		8.3		19	
WM1	10:10	0.24	22.3	22.3	6.85	6.9	78.4	78.6	42.1	41.2	7.8	7.8	31	30.5
			22.3		6.88		78.8		40.2		7.7		30	

Date	9-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	10:31	0.29	20.9	20.9	7.79	7.8	87.1	87.2	7.6	7.6	9.4	9.4	4	5.0
			20.9		7.8		87.2		7.7		9.4		6	
WM1	10:40	0.26	19.9	19.9	9.14	9.1	100.1	100.2	30.6	30.7	8.6	8.6	29	28.5
			19.9		9.15		100.2		30.7		8.6		28	

Date	11-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	11:45	0.31	19.3	19.3	10.26	10.3	111.2	111.2	404.0	407.0	8.8	8.8	162	161.5
			19.3		10.25		111.2		410.0		8.7		161	
WM1	10:56	0.33	19.4	19.4	10.39	10.4	113.2	113.1	414.0	424.0	8.7	8.7	187	184.0
			19.3		10.37		112.9		434.0		8.7		181	

Date	13-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	10:42	0.70	19.3	19.4	8.47	9.3	91.5	97.1	13.8	12.4	9.2	9.1	5	5.5
			19.4		10.1		102.7		10.9		8.9		6	
WM1	11:07	0.21	17.5	17.5	10.67	10.5	111.5	110.2	49.0	49.0	7.9	7.9	50	51.0
			17.5		10.38		108.8		49.0		7.9		52	

Date	15-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	11:35	0.31	16.4	16.4	10.71	10.7	108.0	108.1	170.0	170.5	6.7	6.8	100	98.0
			16.4		10.72		108.1		171.0		6.8		96	
WM1	11:55	0.29	15.8	15.8	10.57	10.6	106.4	106.5	181.0	182.5	6.7	6.7	107	109.0
			15.8		10.58		106.5		184.0		6.7		111	

Date	19-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	11:01	0.28	17.8	17.9	11.57	11.6	120.8	120.9	13.7	13.8	6.5	6.5	7	8.0
			17.9		11.58		120.9		13.9		6.5		9	
WM1	13:46	0.25	18.6	18.6	11.85	11.9	123.4	123.5	42.6	43.0	6.7	6.7	49	49.0
			18.6		11.86		123.5		43.3		6.7		49	

Date	21-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	13:30	0.25	17.4	17.4	9.95	10.0	103.6	103.7	31.3	31.5	7.3	7.4	19	19.5
			17.4		9.97		103.7		31.7		7.4		20	
WM1	13:01	0.22	17.6	17.6	9.33	9.3	98.5	98.1	41.3	41.6	7.2	7.2	41	40.5
			17.6		9.25		97.6		41.8		7.2		40	

Date	23-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	10:59	0.24	8.9	8.9	15.78	15.8	136.1	136.2	34.0	34.2	8.1	8.2	15	14.5
			8.9		15.79		136.2		34.3		8.2		14	
WM1	11:13	0.21	9.6	9.6	14.71	14.7	129.3	129.4	48.1	48.6	7.6	7.7	51	51.5
			9.6		14.73		129.5		49.0		7.7		52	

Date	25-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	11:40	0.22	9.3	9.3	14.62	14.6	127.6	127.6	7.8	7.7	8.6	8.6	4	3.5
			9.3		14.61		127.5		7.7		8.6		3	
WM1	11:58	0.24	10.7	10.7	13.55	13.6	122.7	122.8	45.4	45.6	7.9	7.9	32	31.5
			10.7		13.56		122.8		45.7		7.9		31	

Date	27-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	10:35	0.27	10.9	10.9	25.6	25.7	232.1	232.5	133.0	135.0	8.3	8.3	88	89.5
			10.9		25.7		232.9		137.0		8.3		91	
WM1	11:01	0.25	10.6	10.6	14.66	14.7	131.7	131.8	154.0	155.5	7.7	7.8	84	86.0
			10.6		14.69		131.9		157.0		7.8		88	

Date	29-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM1-C	12:27	0.30	18.1	18.2	10.27	10.3	108.9	108.5	763.0	765.0	7.6	7.6	417	414.0
			18.2		10.29		108.0		767.0		7.6		411	
WM1	12:01	0.33	18.2	18.2	10.35	10.4	109.8	110.0	850.0	853.5	7.6	7.6	480	479.5
			18.2		10.36		110.1		857.0		7.5		479	

**Water Quality Monitoring Data for Contract 2 and 3**

Date	2-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM4-CA	9:55	0.16	19.7	19.7	8.85	8.9	96.8	96.8	3.8	3.8	8	8.1	<2	2.0
			19.7		8.86		96.7		3.8		8.1		<2	
WM4-CB	9:25	0.18	19.7	19.7	6.66	6.7	73.0	73.0	6.7	6.8	7.5	7.5	9	8.5
			19.7		6.67		72.9		7.0		7.5		8	
WM4	9:40	0.29	19.7	19.7	8.2	8.2	89.5	89.6	9.7	10.1	8.1	8.1	11	10.5
			19.7		8.19		89.6		10.6		8		10	

Date	5-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM4-CA	13:20	0.14	21.7	21.7	8.45	8.5	96.6	96.7	11.5	11.7	7.1	7.1	19	19.0
			21.7		8.46		96.7		11.9		7.1		19	
WM4-CB	14:07	0.22	21.9	21.9	7.63	7.6	87.0	87.2	45.8	46.4	7.2	7.2	77	76.0
			21.9		7.65		87.3		46.9		7.2		75	
WM4	13:00	0.25	22.5	22.5	7.4	7.4	85.7	86.1	23.2	23.8	7.3	7.3	27	26.5
			22.5		7.48		86.4		24.3		7.3		26	

Date	7-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM4-CA	12:27	0.17	21.4	21.4	9.52	9.6	108.8	109.3	10.3	9.8	7.9	8.0	12	12.5
			21.4		9.67		109.7		9.3		8		13	
WM4-CB	12:41	0.21	22	22.0	8.31	8.3	94.9	95.3	24.5	24.2	7.5	7.5	28	29.0
			22		8.38		95.7		23.9		7.5		30	
WM4	12:02	0.26	20.7	20.7	9.95	10.0	110.3	110.8	32.1	31.8	7.6	7.7	34	34.0
			20.7		9.98		111.3		31.4		7.7		34	

Date	9-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM4-CA	11:15	0.16	19.1	19.1	7.71	7.7	83.2	82.8	6.5	6.4	8.8	8.8	5	4.0
			19.1		7.63		82.4		6.4		8.8		3	
WM4-CB	11:26	0.20	19.8	19.8	6.76	6.7	83.8	78.1	24.2	23.6	8	8.1	27	27.0
			19.8		6.62		72.3		22.9		8.1		27	
WM4	11:05	0.27	19.4	19.4	8.03	8.0	87.2	86.8	17.5	17.1	8.8	8.8	16	17.0
			19.4		7.95		86.4		16.7		8.7		18	

Date	11-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM4-CA	13:41	0.17	20.6	20.6	10.17	10.2	112.8	112.8	13.2	13.0	8.4	8.4	8	8.0
			20.6		10.16		112.7		12.8		8.4		8	
WM4-CB	13:55	0.20	21.2	21.2	8.81	8.8	93.7	93.8	13.3	13.6	8.1	8.1	14	13.5
			21.2		8.83		93.8		13.9		8.1		13	
WM4	13:22	0.33	20	20.0	10.05	10.0	111.2	111.2	19.4	19.8	8.1	8.1	16	16.5
			20		10.03		111.1		20.2		8.1		17	

Date	13-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM4-CA	12:03	0.15	16.5	16.5	11.83	11.8	120.8	120.9	5.5	5.6	7.5	7.5	3	3.0
			16.5		11.84		120.9		5.7		7.5		3	
WM4-CB	12:47	0.19	16.6	16.6	11.12	11.1	114.6	114.7	10.1	10.3	7.1	7.1	18	18.5
			16.6		11.11		114.7		10.5		7.1		19	
WM4	12:15	0.28	17.1	17.1	10.57	10.6	109.3	109.4	15.6	15.9	7.4	7.4	7	8.0
			17.1		10.56		109.4		16.1		7.4		9	

Date	15-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM4-CA	10:20	0.20	16.6	16.7	10.46	10.5	107.6	107.7	22.2	22.1	7.3	7.3	13	13.0
			16.7		10.48		107.7		22.0		7.2		13	
WM4-CB	9:55	0.22	16.8	16.8	9.08	9.1	93.3	93.4	29.7	30.0	7.2	7.2	24	25.0
			16.8		9.07		93.4		30.2		7.2		26	
WM4	10:11	0.30	16.7	16.7	10.03	10.0	102.6	102.7	40.2	40.6	7.2	7.2	33	33.5
			16.7		10.04		102.7		41.0		7.2		34	

Date	19-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM4-CA	11:32	0.16	18.2	18.2	11.4	11.4	120.1	120.2	4.9	5.0	7.4	7.4	<2	<2
			18.2		11.41		120.2		5.0		7.4		<2	
WM4-CB	11:43	0.21	18.4	18.4	9.46	9.5	102.1	102.2	8.8	8.8	6.8	6.8	14	14.5
			18.4		9.47		102.2		8.8		6.8		15	
WM4	11:17	0.28	18.9	18.9	10.81	10.8	115.2	115.2	29.7	29.4	7.3	7.3	23	22.5
			18.9		10.78		115.1		29.1		7.3		22	

Date	21-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM4-CA	14:55	0.18	17.7	17.7	9.39	9.4	103.9	104.0	16.6	16.6	7.1	7.1	13	12.0
			17.7		9.41		104.1		16.5		7.1		11	
WM4-CB	10:35	0.21	18.2	18.2	7.31	7.3	77.6	77.8	19.3	19.4	6.9	7.0	24	23.5
			18.2		7.34		77.9		19.4		7		23	
WM4	10:01	0.31	18.2	18.2	9.56	9.5	101.9	101.4	32.7	32.9	7.1	7.2	34	34.5
			18.2		9.46		100.9		33.1		7.2		35	

Date	23-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM4-CA	12:06	0.18	11.3	11.3	13.19	13.2	120.5	120.6	6.5	6.5	7.9	7.9	2	2.0
			11.3		13.21		120.7		6.6		7.9		2	
WM4-CB	12:16	0.21	11.5	11.5	11.44	11.4	195.5	195.6	9.0	9.0	7.6	7.7	4	4.5
			11.5		11.45		195.6		8.9		7.7		5	
WM4	11:54	0.32	10.2	10.2	13.64	13.7	121.5	121.6	25.7	25.9	7.7	7.7	20	20.5
			10.2		13.66		121.7		26.1		7.7		21	

Date	25-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM4-CA	13:41	0.18	14.4	14.4	12.15	12.2	118.8	118.9	4.1	4.1	7.9	7.9	<2	2.0
			14.4		12.18		119.0		4.1		7.9		2	
WM4-CB	13:30	0.23	15.5	15.5	10.18	10.2	102.2	102.4	11.0	11.2	7.5	7.5	9	8.5
			15.5		10.21		102.5		11.3		7.5		8	
WM4	13:01	0.27	13.6	13.6	11.56	11.6	111.2	111.3	8.0	8.0	7.7	7.7	3	4.0
			13.6		11.59		111.4		7.9		7.7		5	

Date	27-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM4-CA	11:50	0.19	13.2	13.2	10.81	10.8	103.2	103.1	49.5	49.3	7.8	7.8	27	27.5
			13.2		10.79		103.0		49.0		7.8		28	
WM4-CB	12:01	0.23	14.1	14.1	10.24	10.3	99.6	100.2	27.2	27.1	7.6	7.6	14	13.5
			14.1		10.3		100.7		26.9		7.6		13	
WM4	11:35	0.28	13.5	13.5	13.28	13.3	127.6	127.7	32.1	31.9	7.8	7.8	15	15.0
			13.5		13.3		127.8		31.7		7.8		15	



Date	29-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM4-CA	14:17	0.25	18	18.0	10.68	10.7	112.8	112.9	21.3	21.7	8	8.0	18	18.0
			18		10.7		113.0		22.0		8		18	
WM4-CB	14:39	0.27	18.1	18.1	10.05	10.1	106.4	106.5	24.4	24.5	8.2	8.2	15	15.5
			18.1		10.07		106.6		24.5		8.2		16	
WM4	13:50	0.36	18.3	18.3	10.36	10.4	110.0	110.1	28.1	28.4	7.7	7.7	20	19.5
			18.3		10.4		110.2		28.6		7.7		19	

**Water Quality Monitoring Data for Contract 6**

Date	2-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM2A-C	10:26	0.20	19.1	19.1	8.55	8.6	92.6	92.6	8.8	9.0	8.20	8.2	3	3.0
			19.1		8.57		92.5		9.1		8.10		3	
WM2A	10:50	0.01	18.9	18.9	9.14	9.1	98.0	98.1	6.3	6.3	8.30	8.3	3	3.0
			18.9		9.13		98.2		6.4		8.30		3	

Date	4-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM2A-C	11:11	0.21	20.5	20.5	7.65	7.7	85.1	85.1	34.6	34.0	8.30	8.3	19	20.0
			20.5		7.69		85.1		33.3		8.30		21	
WM2A	10:45	0.19	20.4	20.4	8.46	8.5	93.8	94.1	7.1	7.2	8.90	8.9	6	6.0
			20.4		8.51		94.3		7.3		8.90		6	

Date	6-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM2A-C	10:05	0.22	24.7	24.7	7.93	7.9	96.1	96.0	19.6	19.7	8.30	8.3	8	7.5
			24.7		7.94		95.8		19.7		8.30		7	
WM2A	10:26	0.19	22	22.0	9.76	9.7	111.6	111.3	13.9	13.6	8.80	8.8	8	7.0
			22		9.67		111.0		13.2		8.80		6	

Date	8-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM2A-C	11:43	0.26	18.8	18.8	9.47	9.4	101.2	101.1	11.7	11.9	8.60	8.6	4	4.5
			18.8		9.37		100.9		12.1		8.60		5	
WM2A	11:21	0.17	20.2	20.2	9.07	9.0	101.3	100.9	10.7	11.0	9.00	9.0	6	5.5
			20.2		9.01		100.5		11.3		8.90		5	

Date	12-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM2A-C	11:55	0.20	19.1	19.1	9.42	9.4	100.4	99.8	35.1	34.9	9.10	9.1	6	6.0
			19.1		9.36		99.2		34.7		9.10		6	
WM2A	12:10	0.24	18.2	18.2	10.19	10.3	108.2	109.8	30.9	30.2	8.30	8.3	5	5.0
			18.2		10.5		111.3		29.4		8.30		5	

Date	14-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM2A-C	10:00	0.21	17	17.1	9.61	9.5	99.4	98.4	22.8	23.0	9.10	9.1	15	14.0
			17.1		9.4		97.3		23.1		9.10		13	
WM2A	10:20	0.24	17	17.0	10.35	10.3	107.1	106.2	8.6	8.8	8.30	8.3	7	7.0
			17		10.22		105.3		9.0		8.30		7	

Date	16-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM2A-C	10:20	0.21	17.6	17.6	10.47	10.5	109.4	109.5	10.9	10.7	6.90	6.9	4	4.0
			17.6		10.48		109.5		10.4		6.90		4	
WM2A	10:41	0.28	17.4	17.4	10.62	10.6	111.2	111.3	39.9	40.6	6.60	6.6	16	17.0
			17.4		10.63		111.3		41.2		6.60		18	

Date	18-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM2A-C	11:10	0.22	19.1	19.1	9.45	9.5	102.2	102.3	8.2	8.2	8.60	8.6	4	3.5
			19.1		9.46		102.3		8.2		8.60		3	
WM2A	11:37	0.21	18.8	18.8	9.13	9.1	97.9	98.0	572.0	570.0	8.10	8.1	225	227.5
			18.8		9.14		98.0		568.0		8.10		230	

Date	19-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM2A-C														
WM2A	11:25	0.21							22.1	22.2				
							22.3							

Date	20-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM2A-C	11:06	0.26	16.7	16.7	10.41	10.4	107.3	107.4	16.9	16.7	7.00	7.0	10	9.0
			16.7		10.42		107.4		16.5		7.00		8	
WM2A	10:45	0.30	16.5	16.5	11.14	11.1	114.7	114.8	17.4	17.3	7.30	7.3	7	6.0
			16.5		11.15		114.8		17.2		7.30		5	

Date														
22-Jan-16														
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM2A-C	11:05	0.26	16.2	16.2	11.06	11.1	112.5	112.6	71.4	71.8	8.20	8.3	31	30.5
			16.2		11.08		112.6		72.1		8.30		30	
WM2A	10:56	0.25	15.9	15.9	11.87	11.9	120.1	120.3	9.5	9.6	8.90	8.9	6	6.0
			15.9		11.9		120.4		9.6		8.90		6	

Date														
26-Jan-16														
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM2A-C	10:00	0.21	12.8	12.8	12.22	12.2	115.4	115.3	13.6	13.4	8.40	8.4	8	9.0
			12.8		12.21		115.2		13.2		8.40		10	
WM2A	10:20	0.24	11.8	11.8	13.25	13.3	122.6	122.7	14.1	14.3	8.40	8.4	5	5.0
			11.8		13.27		122.8		14.5		8.40		5	

Date														
28-Jan-16														
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM2A-C	13:05	0.30	16.1	16.1	13.46	13.5	136.8	136.9	189.0	190.5	7.70	7.7	147	145.5
			16.1		13.48		137.0		192.0		7.70		144	
WM2A	12:40	0.27	16.1	16.1	12.75	12.8	129.6	129.7	200.0	200.5	7.60	7.7	145	146.5
			16.1		12.76		129.7		201.0		7.70		148	

Date														
30-Jan-16														
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM2A-C	10:34	0.24	19	19.0	9.19	9.2	99.1	99.1	4.4	4.4	9.00	9.0	2	2.5
			19		9.18		99.0		4.5		9.00		3	
WM2A	10:11	0.26	19.3	19.3	10.96	11.0	118.9	119.0	22.0	22.1	8.50	8.5	11	12.0
			19.3		10.99		119.1		22.1		8.50		13	

Date	2-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM2B-C	10:21	0.10	21.8	21.8	7.92	7.9	90.3	90.4	5.7	5.9	8.90	9.0	<2	2.0
			21.8		7.93		90.4		6.0		9.00		2	
WM2B	10:42	0.01	20	20.1	9.84	9.8	108.4	108.5	24.1	<b>23.9</b>	7.90	8.0	20	<b>19.0</b>
			20.2		9.85		108.5		23.7		8.00		18	

Date	4-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM2B-C	11:51	0.01	22.3	22.3	7.32	7.3	84.2	84.4	8.6	8.6	8.50	8.5	11	11.0
			22.3		7.36		84.6		8.7		8.50		11	
WM2B	11:40	0.01	21.9	21.9	8.68	8.7	99.3	99.8	8.7	8.8	8.30	8.3	5	5.5
			21.9		8.77		100.2		9.0		8.30		6	

Date	5-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM2B-C														
WM2B	12:04	0.01							10.4	10.5			4	4.0
								10.6	4					

Date	6-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM2B-C	10:40	0.01	23.9	23.9	8.25	8.3	98.3	98.4	6.5	6.4	8.40	8.5	<2	2.0
			23.9		8.26		98.4		6.2		8.50		<2	
WM2B	10:00	0.01	26.3	26.3	8.16	8.2	102.5	102.6	197.0	<b>199.0</b>	8.20	8.3	132	<b>134.0</b>
			26.3		8.17		102.6		201.0		8.30		136	

Date	7-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM2B-C														
WM2B	14:10	0.01							21.0	<b>21.3</b>			10	10.0
								21.6	10					

Date	8-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM2B-C	12:27	0.01	22.8	22.3	7.28	7.3	82.9	82.8	5.9	6.0	8.70	8.7	<2	2.0
			21.8		7.26		82.7		6.0		8.70		<2	
WM2B	12:03	0.01	20.7	20.7	8.32	8.3	82.9	87.5	12.1	12.2	8.60	8.7	20	20.0
			20.7		8.27		92.1		12.3		8.70		20	

Date	9-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM2B-C														
WM2B	10:10	0.01							11.0	10.9			4	4.0
								10.8	4					

Date	11-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM2B-C														
WM2B	12:12	0.01							25.6	26.2			9	9.0
								26.7	9					

Date	12-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM2B-C	12:30	0.01	18.9	18.9	10.59	10.6	113.8	113.9	7.3	7.5	9.80	9.8	<2	2.0
			18.9		10.6		113.9		7.6		9.80		<2	
WM2B	11:40	0.01	19.6	19.6	11.06	11.1	121.1	121.2	95.6	95.2	9.00	9.0	55	54.0
			19.6		11.07		121.2		94.7		9.00		53	

Date	13-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM2B-C														
WM2B	13:13	0.01							10.3	10.4			5	5.0
								10.4	5					

Date	14-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM2B-C	11:10	0.03	20.5	20.5	8.63	8.6	93.1	93.5	6.0	5.9	9.80	9.8	6	6.0
			20.5		8.66		93.8		5.7		9.70		6	
WM2B	11:35	0.01	18.1	18.1	10	9.9	105.3	104.4	10.4	10.7	8.90	9.0	11	10.0
			18.1		9.78		103.5		10.9		9.00		9	

Date	16-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM2B-C	10:11	0.02	17.8	17.8	11.03	11.0	116.1	116.2	8.8	8.8	7.20	7.3	3	3.0
			17.8		11.04		116.2		8.7		7.30		3	
WM2B	10:30	0.01	18.2	18.2	10.3	10.3	113.7	113.8	143.0	143.5	6.70	6.7	89	89.0
			18.2		10.31		113.8		144.0		6.70		89	

Date	18-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM2B-C	11:03	0.01	19.1	19.1	10.58	10.6	114.9	115.0	5.6	5.7	9.10	9.1	5	5.0
			19.1		10.59		115.0		5.7		9.10		5	
WM2B	11:24	0.01	18.8	18.8	10.74	10.7	115.2	115.3	23.7	23.9	8.30	8.3	24	24.5
			18.8		10.75		115.3		24.0		8.30		25	

Date	19-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM2B-C														
WM2B	14:14	0.01							8.8	8.8			6	6.0
							8.8		6					

Date	20-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM2B-C	11:19	0.02	16.4	16.5	11.46	11.5	117.4	117.4	276.0	278.0	6.90	7.0	146	149.5
			16.5		11.45		117.3		280.0		7.00		153	
WM2B	10:25	0.02	17	17.1	11.16	11.2	115.2	115.3	142.0	141.0	7.20	7.2	80	78.0
			17.1		11.17		115.3		140.0		7.20		76	

Date	22-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM2B-C	11:13	0.01	20.4	20.4	10.16	10.2	111.5	111.6	5.4	5.3	8.30	8.3	<2	2.0
			20.4		10.18		111.6		5.3		8.30		<2	
WM2B	10:44	0.01	16.8	16.8	11.59	11.6	122.4	122.5	9.8	9.8	7.70	7.7	4	4.5
			16.8		11.6		122.5		9.9		7.70		5	

Date	26-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM2B-C	10:55	0.01	18.7	18.7	10.75	10.7	115.2	114.9	7.2	7.2	9.10	9.1	3	4.0
			18.7		10.7		114.6		7.2		9.10		5	
WM2B	10:43	0.01	14.2	14.2	13.23	13.2	128.5	128.6	10.6	10.8	8.30	8.3	7	7.0
			14.2		13.25		128.7		10.9		8.30		7	

Date	28-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM2B-C	13:27	0.05	16.6	16.6	12.11	12.1	124.3	124.6	162.0	164.0	7.60	7.6	185	184.0
			16.6		12.17		124.8		166.0		7.60		183	
WM2B	14:42	0.06	16.8	16.8	9.69	9.7	99.9	100.0	507.0	502.5	8.40	8.4	286	289.0
			16.7		9.7		100.1		498.0		8.40		292	

Date	29-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM2B-C	12:20	0.50							11.0	11.1			7	7.0
									11.2		7			
WM2B	12:37	0.04							363.0	366.0			375	375.0
									369.0		375			

Date	30-Jan-16													
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM2B-C	11:28	0.04	20.4	20.4	8.7	8.7	96.5	96.4	6.5	6.5	9.50	9.5	4	4.5
			20.4		8.69		96.3		6.5		9.50		5	
WM2B	11:02	0.04	19.8	19.8	10.27	10.3	112.5	112.6	10.5	10.7	8.30	8.3	8	7.5
			19.8		10.3		112.7		10.9		8.30		7	



**Water Quality Monitoring Data for Contract 2 and 6**

Date: 2-Jan-16														
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM3-C	11:07	0.02	21.1	21.1	9.09	9.1	102.4	102.5	18.2	18.8	8.70	8.7	22	21.0
			21.1		9.1		102.5		19.3		8.70		20	
WM3	11:14	0.21	19.5	19.5	8.88	8.9	97.0	97.1	9.6	9.6	7.80	7.9	9	10.0
			19.5		8.91		97.1		9.5		7.90		11	

Date: 4-Jan-16														
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM3-C	12:25	0.02	22.2	22.2	8.6	8.6	98.8	98.8	25.1	25.5	7.40	7.4	26	25.0
			22.2		8.58		98.7		25.9		7.40		24	
WM3	12:36	0.20	21	21.0	8.19	8.2	91.9	92.0	20.4	20.7	7.60	7.6	14	14.5
			21		8.18		92.0		20.9		7.50		15	

Date: 6-Jan-16														
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM3-C	10:52	0.02	25.9	25.9	8.03	8.0	99.4	99.5	10.3	10.8	7.50	7.5	20	20.5
			25.9		8.04		99.5		11.2		7.50		21	
WM3	11:01	0.25	25.2	25.2	9.4	9.4	107.2	107.5	13.6	13.4	7.80	7.9	11	11.5
			25.2		9.44		107.8		13.1		7.90		12	

Date: 8-Jan-16														
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM3-C	10:17	0.01	20.6	20.6	10.2	10.2	114.9	115.0	7.9	8.0	10.10	10.1	26	25.5
			20.6		10.23		115.0		8.1		10.10		25	
WM3	10:01	0.22	19.7	19.7	10.62	10.6	115.9	116.0	9.2	9.2	8.90	8.9	12	12.5
			19.7		10.61		116.0		9.1		8.90		13	

Date: 12-Jan-16														
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM3-C	10:34	0.03	19.9	19.9	8.73	8.7	93.7	94.2	71.9	72.3	10.90	10.9	105	102.0
			19.9		8.64		94.7		72.6		10.90		99	
WM3	10:05	0.22	19.5	19.5	10.34	10.2	111.2	110.2	6.8	6.9	8.30	8.3	7	6.5
			19.5		10.1		109.2		6.9		8.30		6	

Date: 14-Jan-16														
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM3-C	12:10	0.01	18.1	18.1	9.88	9.9	104.5	104.6	7.9	8.1	8.50	8.6	13	13.0
			18.1		9.88		104.6		8.3		8.60		13	
WM3	13:05	0.22	17.9	17.9	9.66	9.7	101.3	101.4	10.0	9.8	9.40	9.5	4	4.0
			17.9		9.67		101.4		9.5		9.50		4	

Date: 16-Jan-16														
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM3-C	9:54	0.02	17.5	17.6	10.54	10.5	110.8	110.9	49.6	49.2	6.80	6.8	327	321.0
			17.6		10.55		110.9		48.8		6.80		315	
WM3	9:42	0.24	17.5	17.5	10.13	10.1	105.9	106.0	57.6	57.9	6.90	6.9	44	45.5
			17.5		10.14		106.0		58.1		6.90		47	

Date: 18-Jan-16														
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM3-C	10:45	0.03	18.8	18.8	10.75	10.8	115.3	115.4	9.8	9.7	9.20	9.3	52	51.0
			18.8		10.76		115.4		9.7		9.30		50	
WM3	10:32	0.20	18.8	18.8	10.03	10.0	107.4	107.5	12.9	12.7	6.80	6.8	8	7.5
			18.8		10.04		107.5		12.5		6.80		7	

Date: 20-Jan-16														
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM3-C	11:47	0.03	16.5	16.5	11.36	11.4	116.9	117.0	19.2	19.4	6.30	6.3	54	55.0
			16.5		11.37		117.0		19.5		6.30		56	
WM3	11:57	0.24	15.9	15.9	12.26	12.3	124.5	124.6	22.0	22.1	6.50	6.5	23	23.5
			15.9		12.26		124.6		22.2		6.50		24	

Date: 22-Jan-16														
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM3-C	11:52	0.02	17.3	17.3	9.73	9.7	101.5	101.6	22.7	22.5	7.30	7.4	26	26.5
			17.3		9.75		101.7		22.3		7.40		27	
WM3	11:35	0.24	16.6	16.6	10.06	10.1	103.3	103.4	13.1	13.0	7.50	7.5	9	9.0
			16.6		10.07		103.4		12.8		7.50		9	

Date		26-Jan-16												
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM3-C	11:12	0.00	17.5	17.5	12.52	12.4	131.0	129.5	21.5	21.6	9.00	9.0	33	32.0
			17.5		12.22		127.9		21.7		9.00		31	
WM3	11:40	0.27	13.8	13.8	10.88	10.9	105.3	105.4	10.2	10.4	8.10	8.1	11	11.5
			13.8		10.89		105.4		10.6		8.10		12	

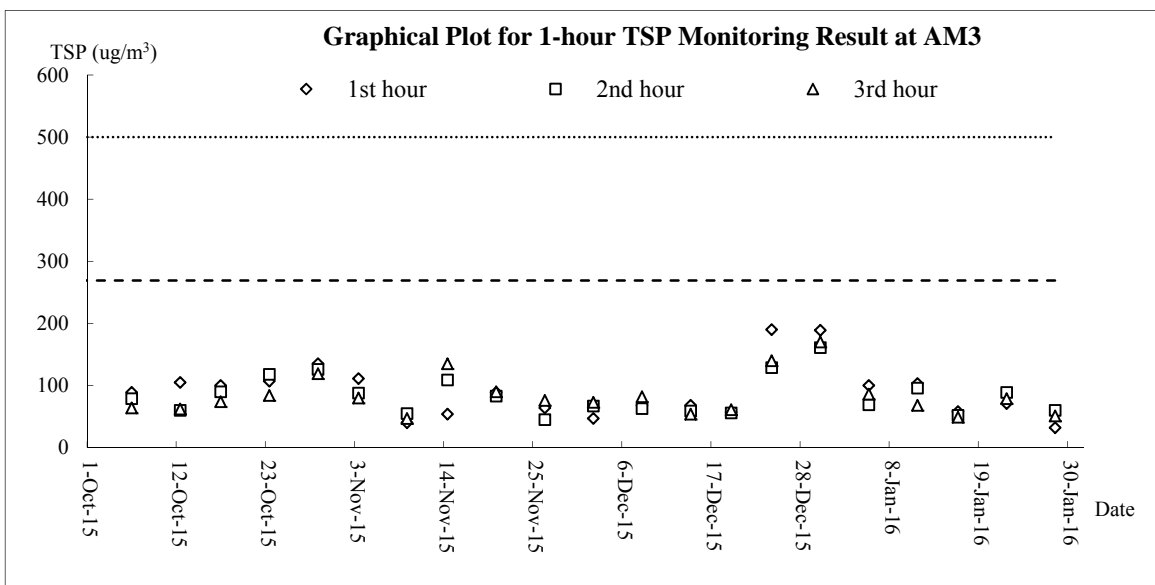
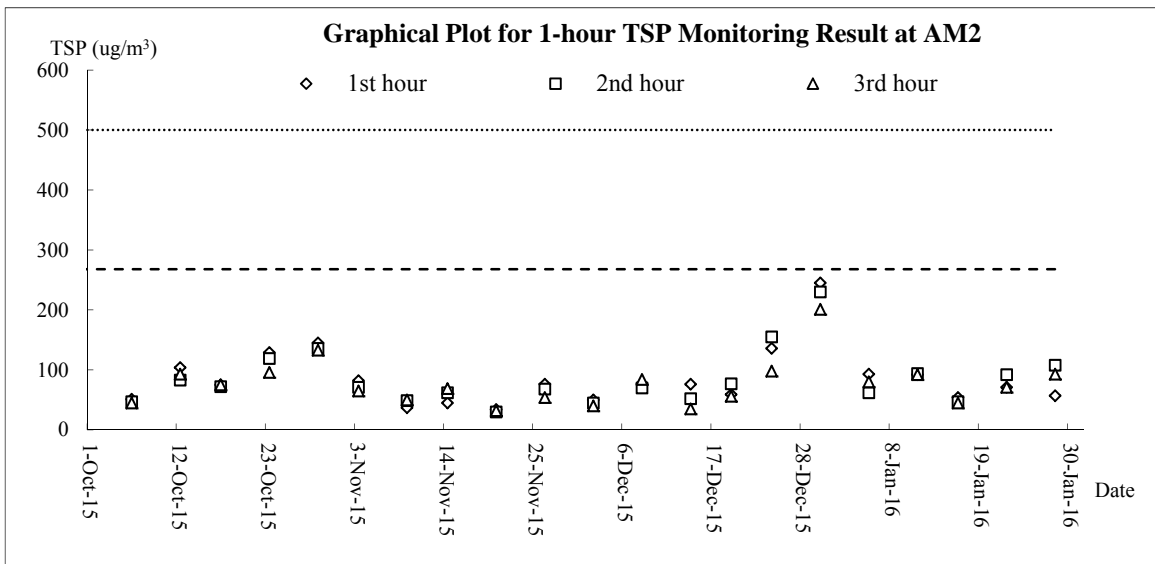
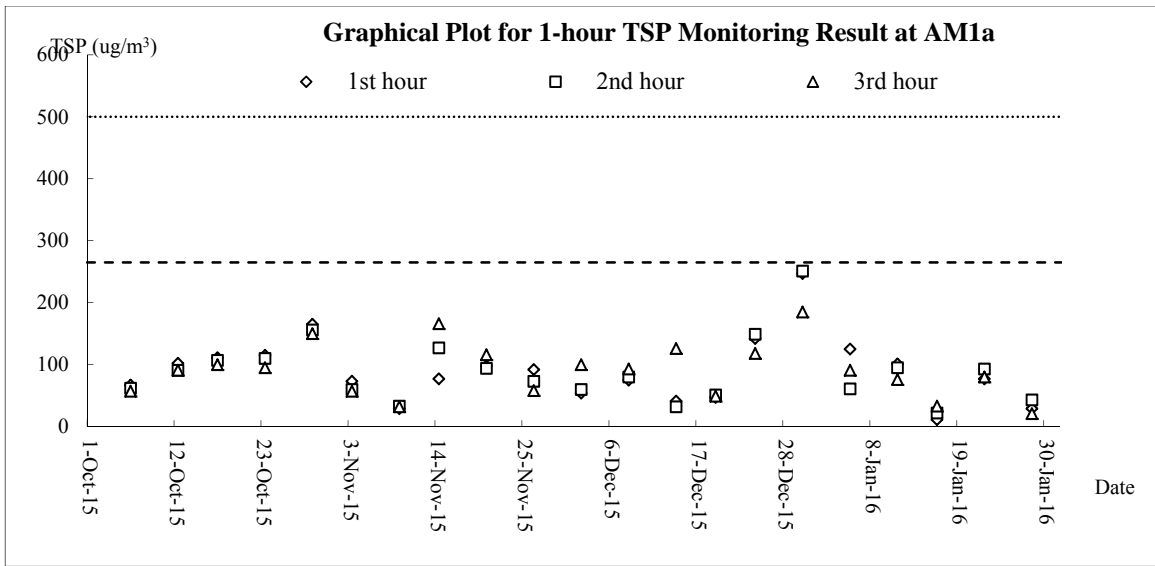
Date		28-Jan-16												
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM3-C	13:56	0.04	16.3	16.3	11.7	11.7	119.4	119.6	258.0	260.0	8.10	8.1	386	396.5
			16.3		11.73		119.7		262.0		8.10		407	
WM3	14:15	0.47	16.1	16.1	11	11.0	111.8	111.9	274.0	275.5	8.90	8.9	233	229.5
			16.1		11.02		112.0		277.0		8.90		226	

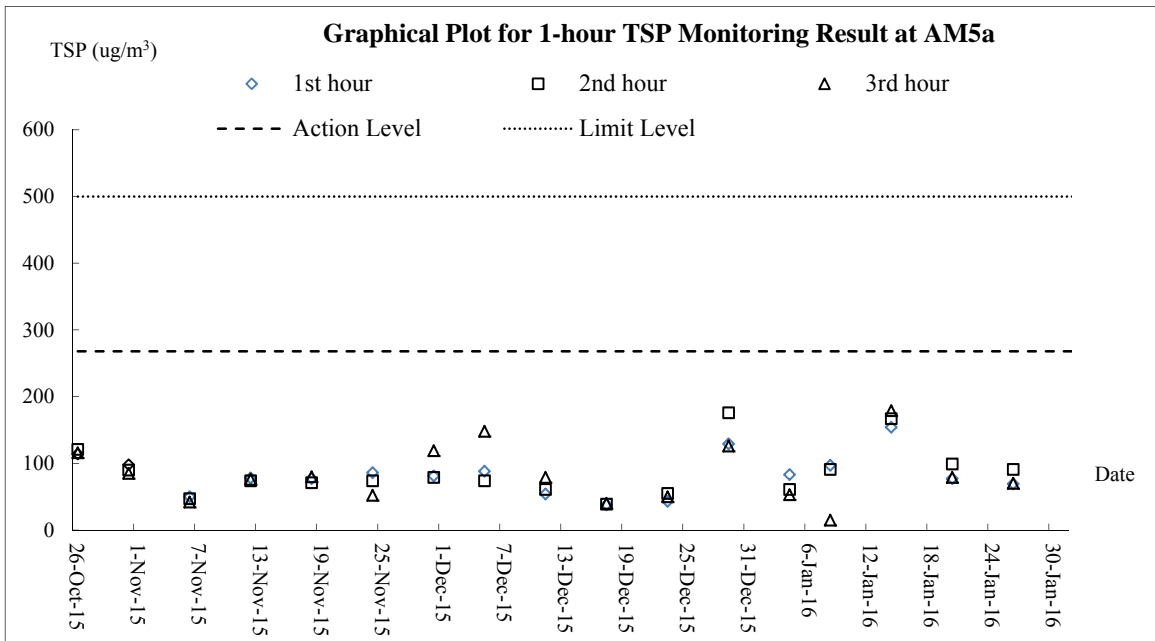
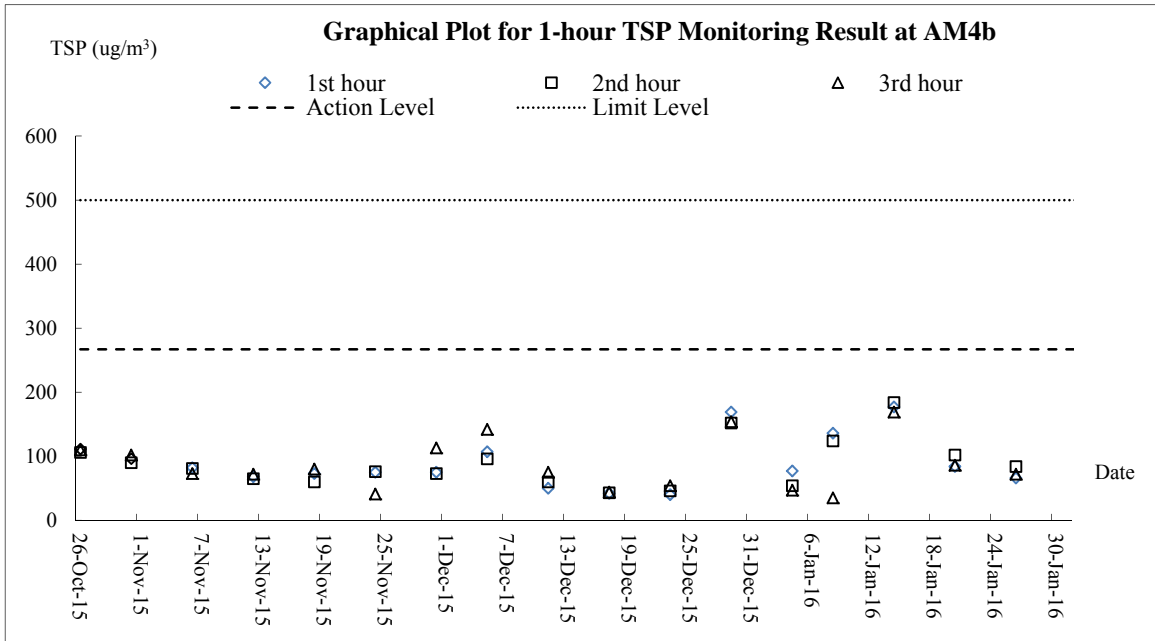
Date		30-Jan-16												
Location	Time	Depth (m)	Temp (oC)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		SS(mg/L)	
WM3-C	11:55	0.03	19.6	19.6	10.67	10.6	116.5	116.2	14.9	14.8	9.00	9.0	8	9.0
			19.6		10.62		115.9		14.7		9.00		10	
WM3	12:16	0.27	19	19.1	10.31	10.3	109.5	109.8	11.4	11.6	8.20	8.2	7	7.5
			19.1		10.35		110.0		11.7		8.20		8	

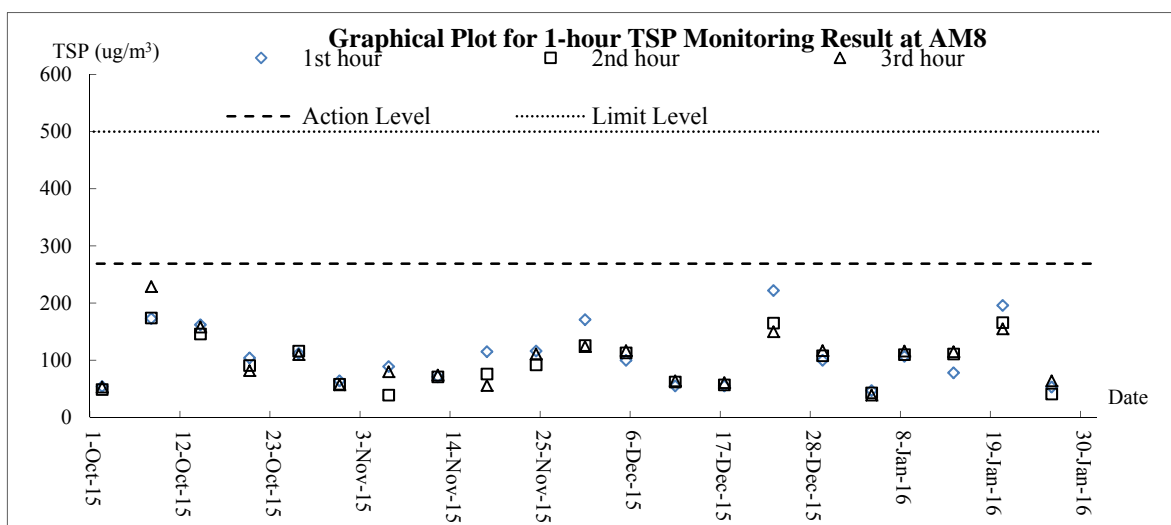
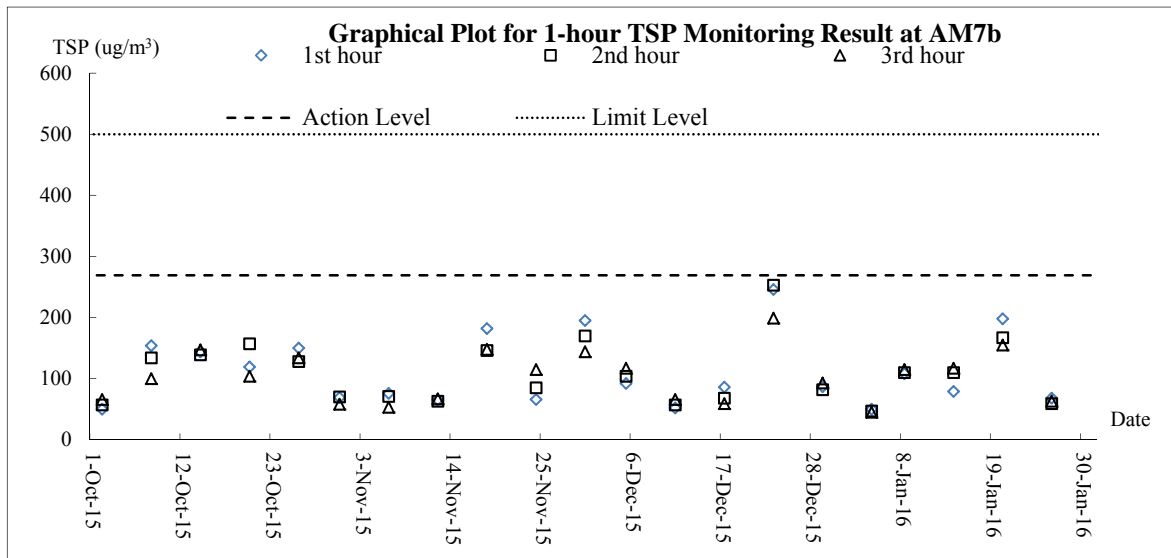
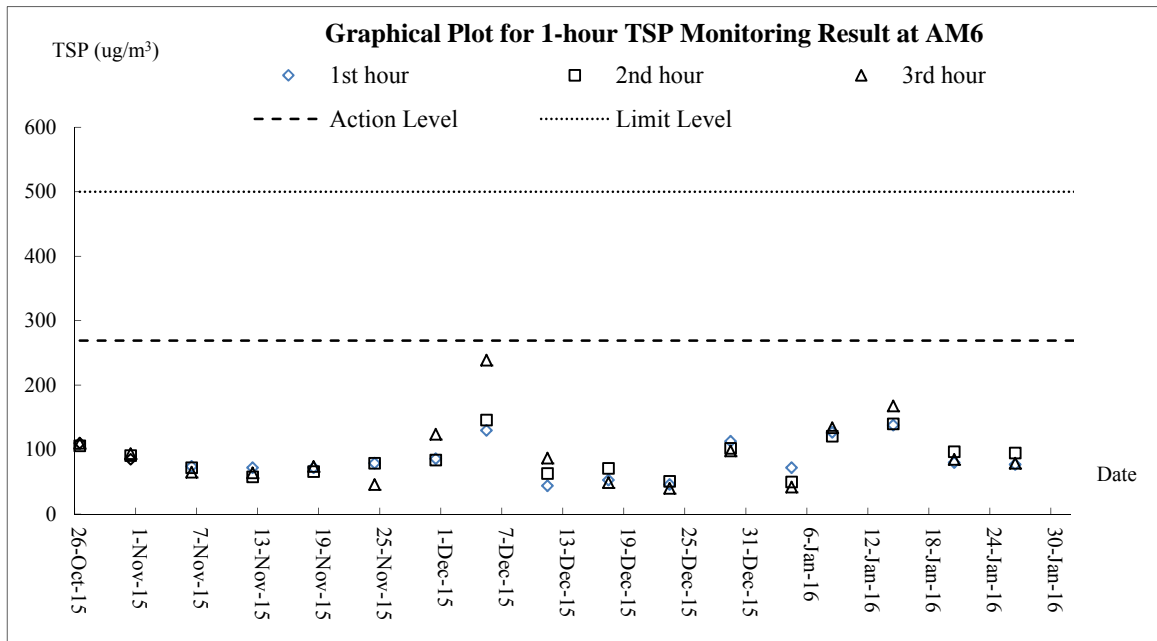
## **Appendix J**

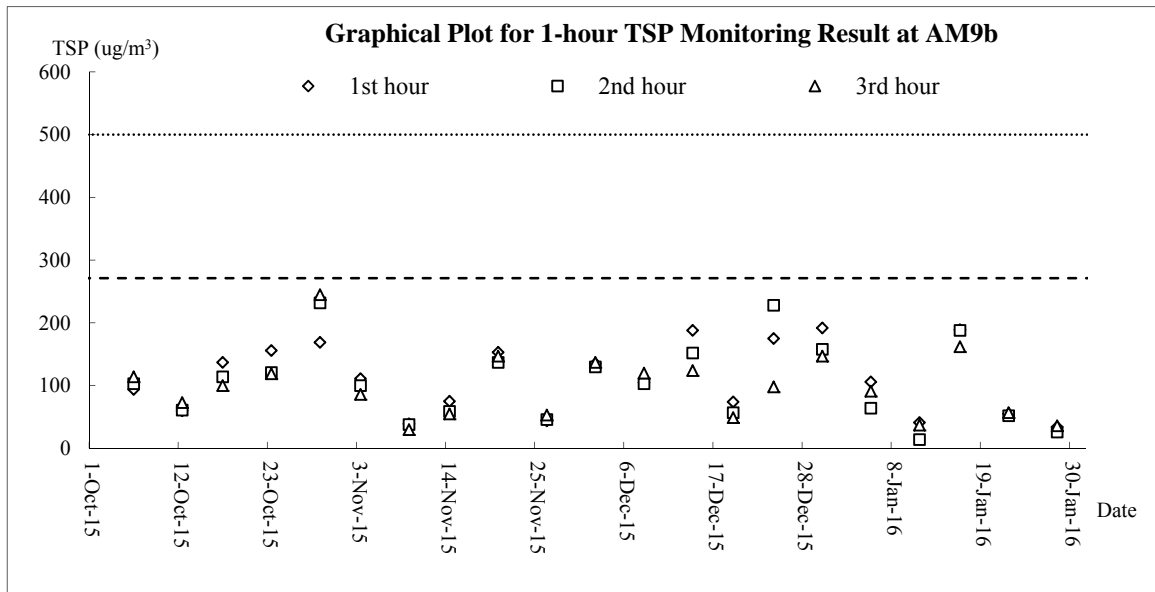
### **Graphical Plots for Monitoring Result**

**Air Quality – 1-hour TSP**



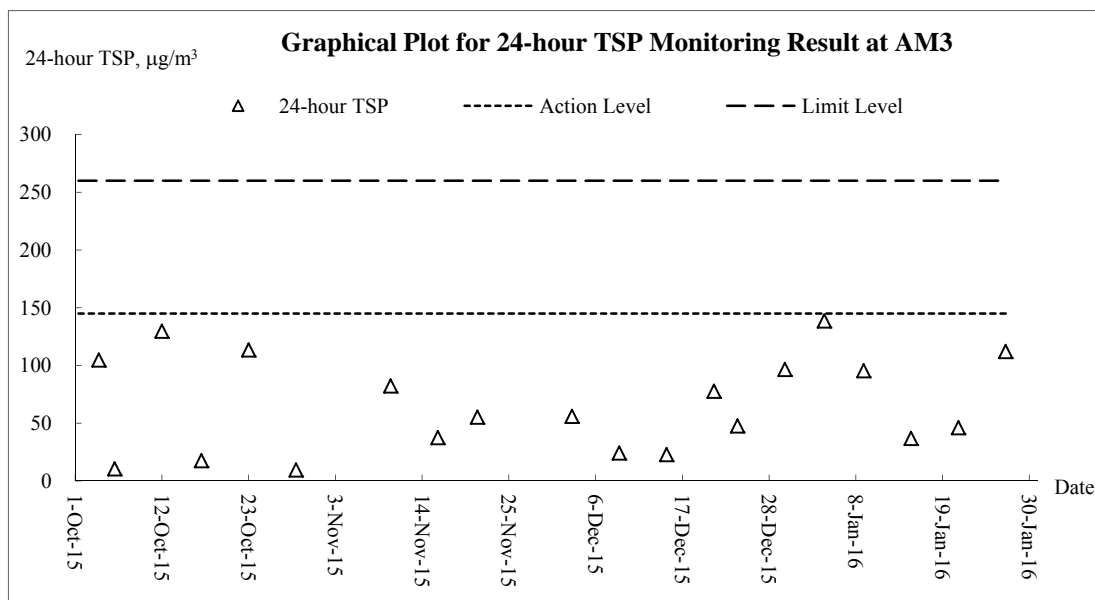
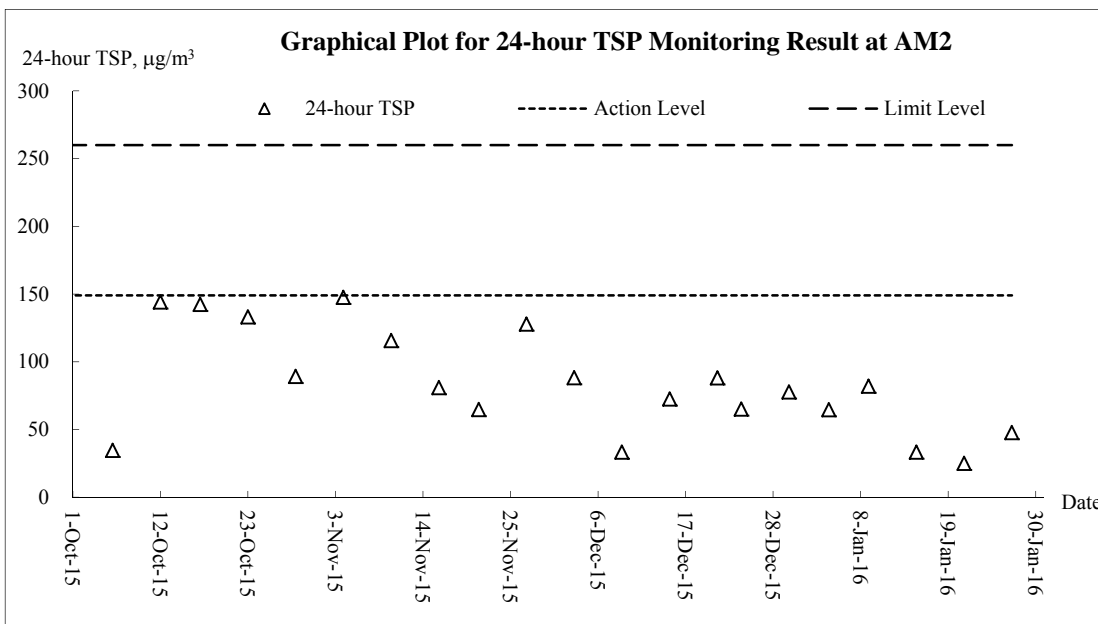
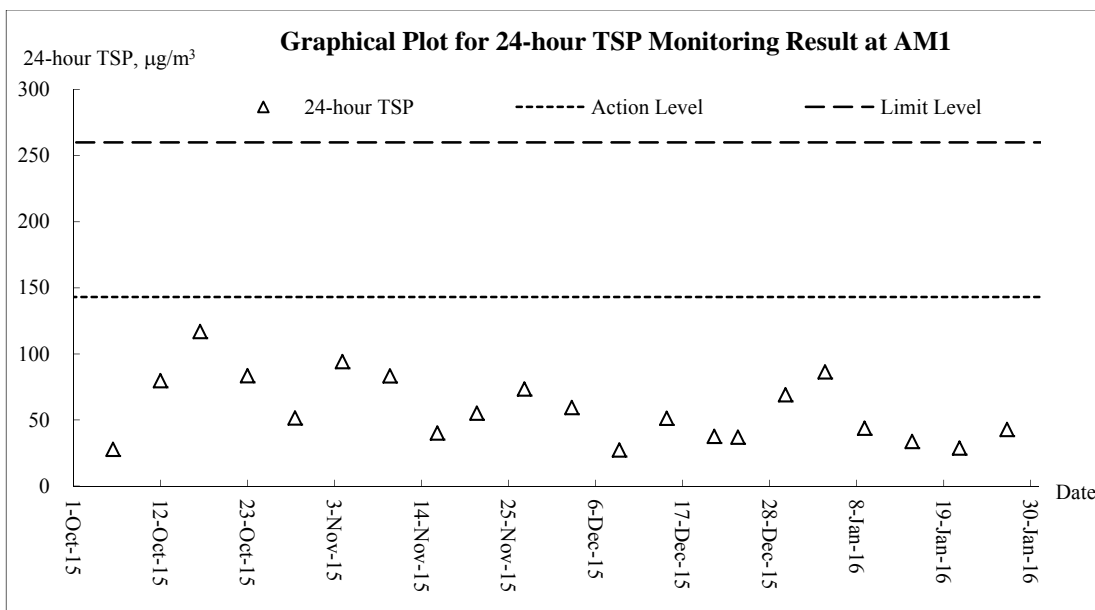


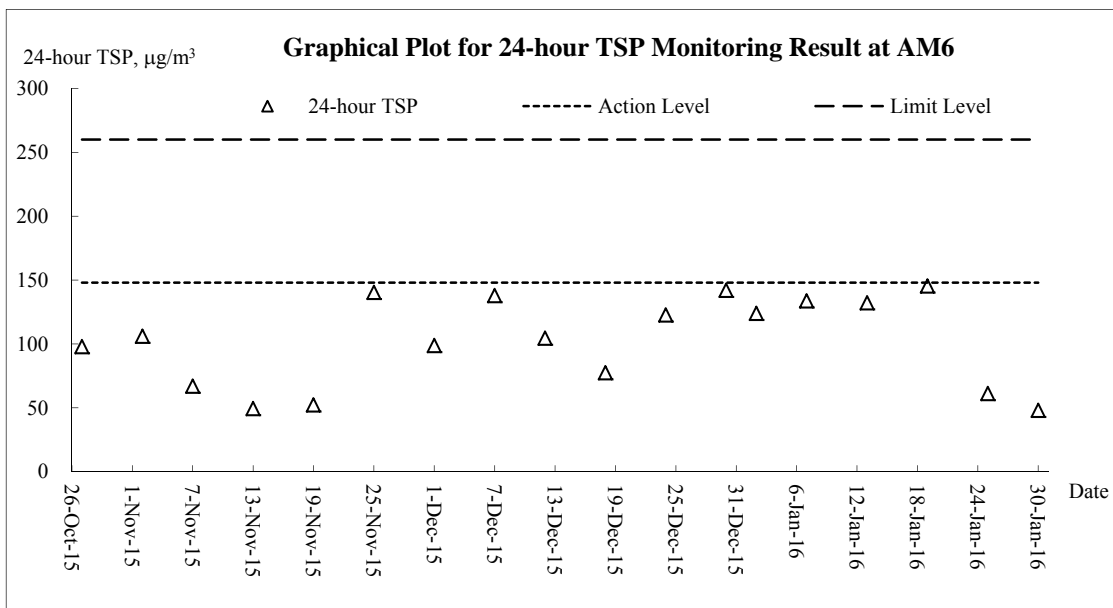
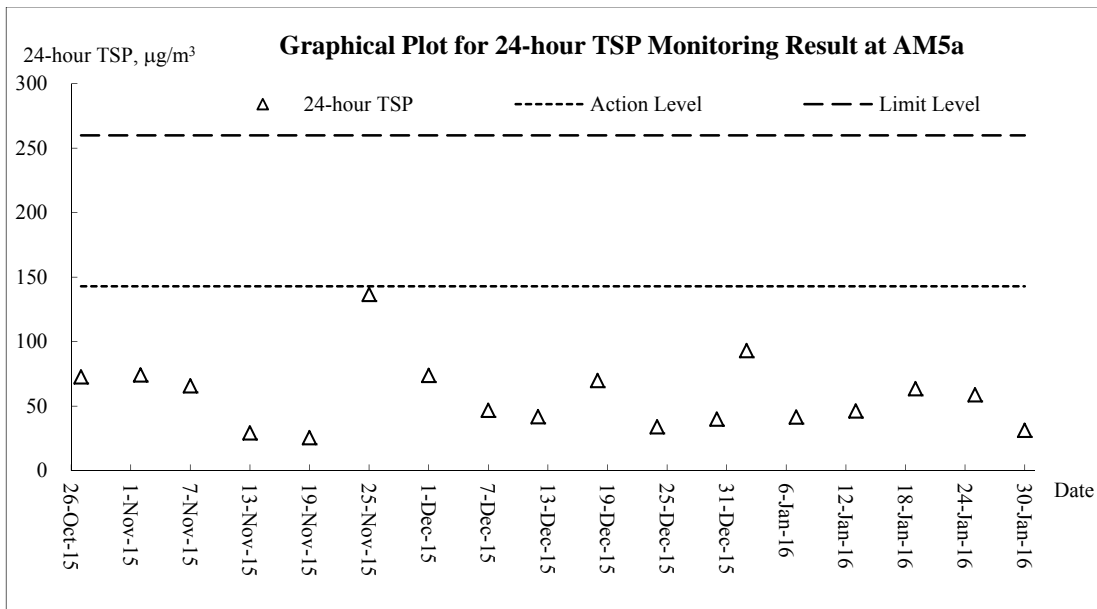
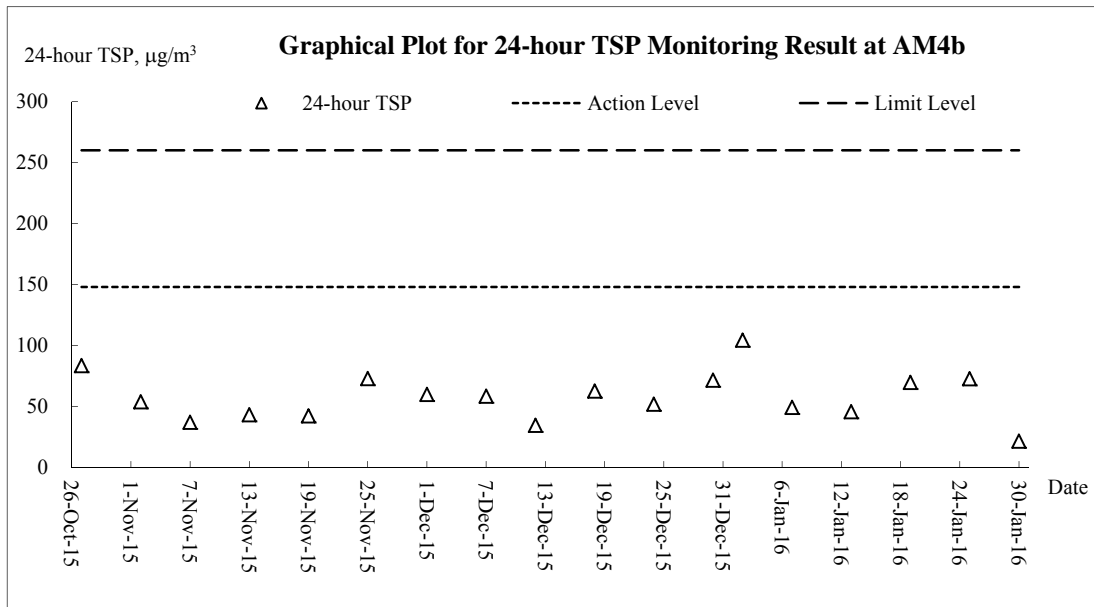


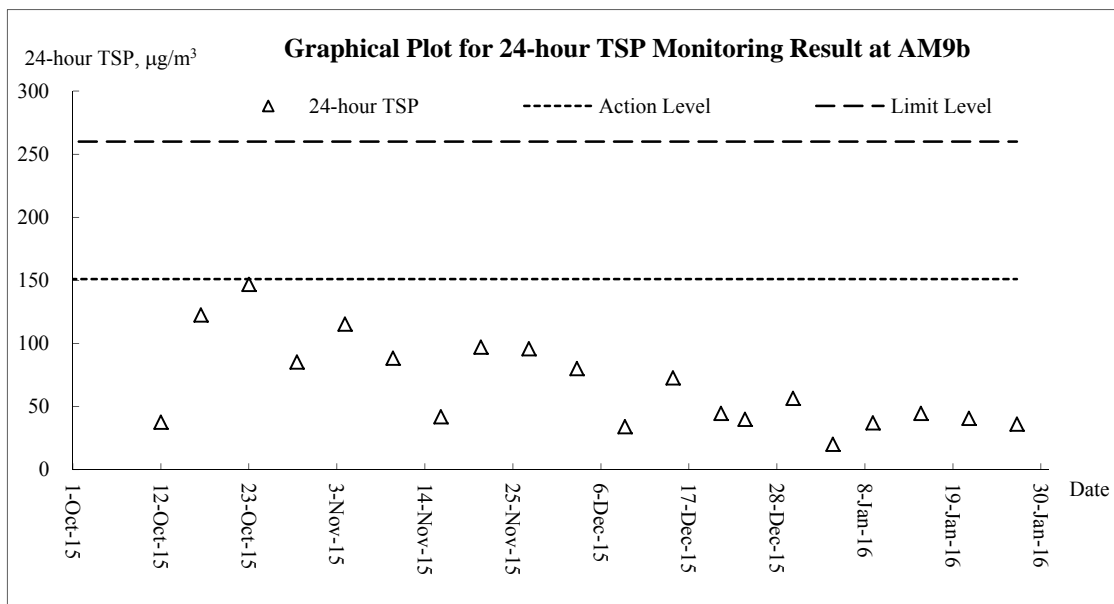
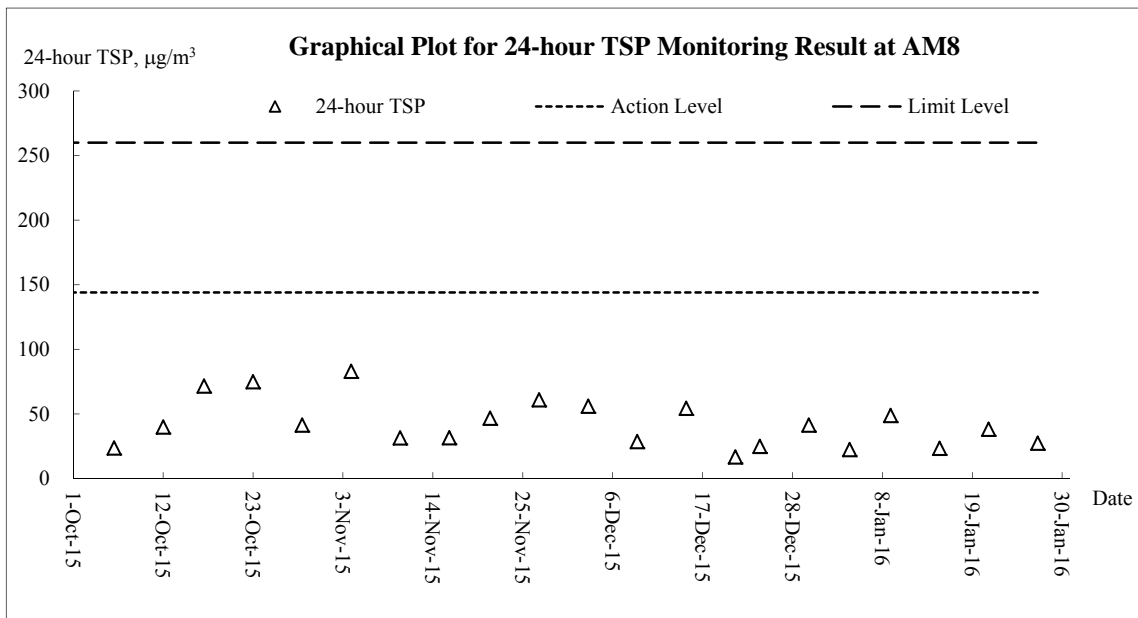
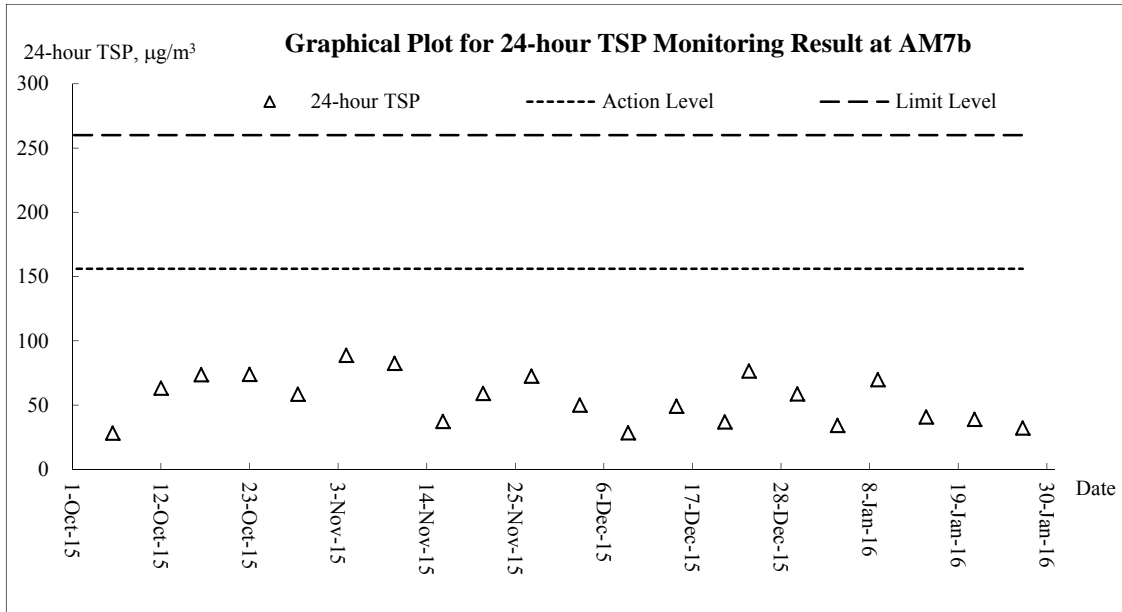




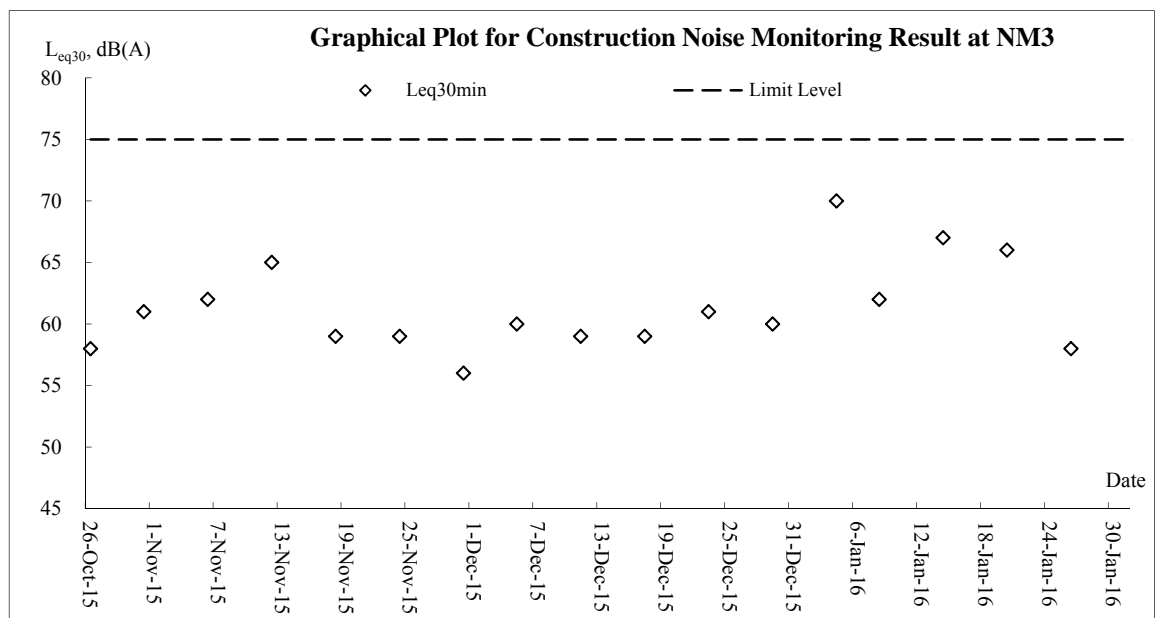
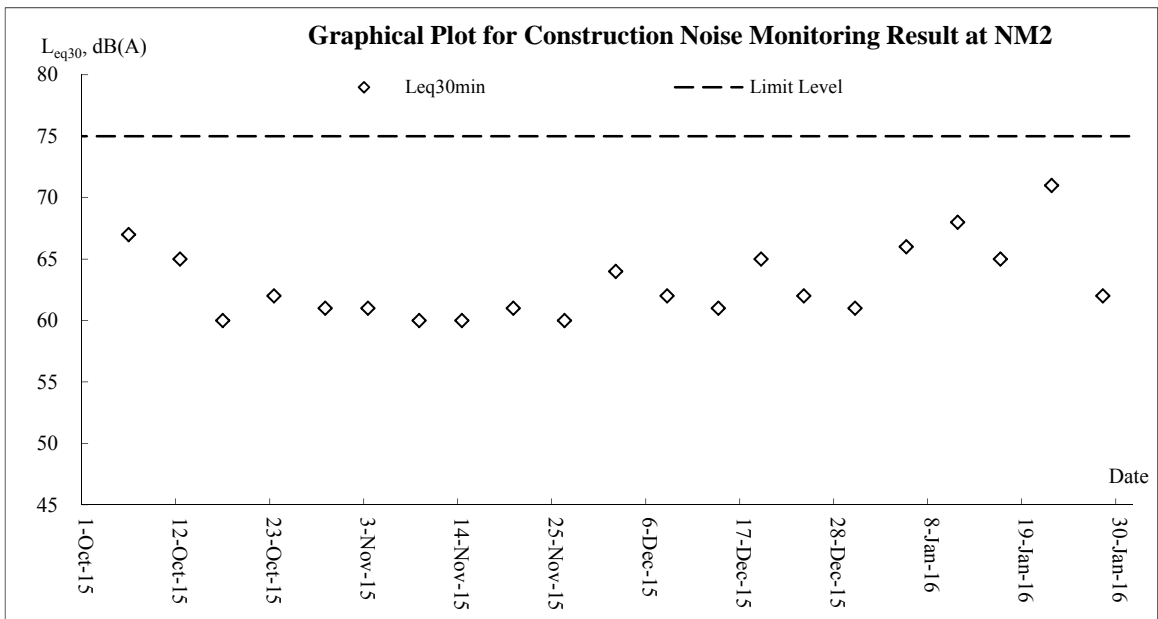
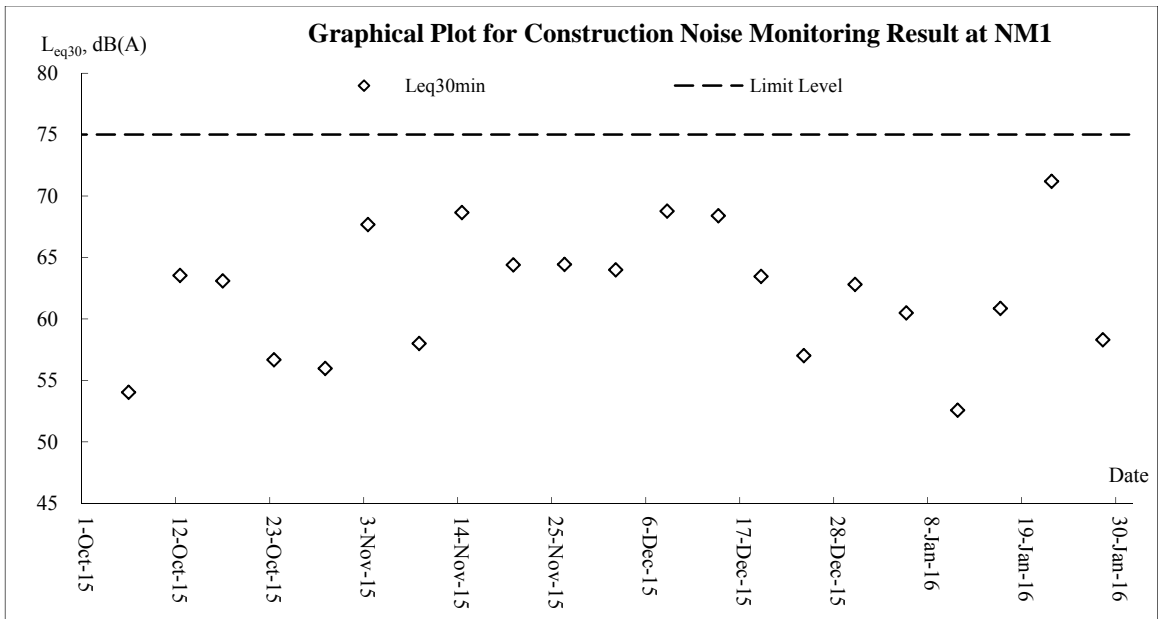
**Air Quality – 24-hour TSP**

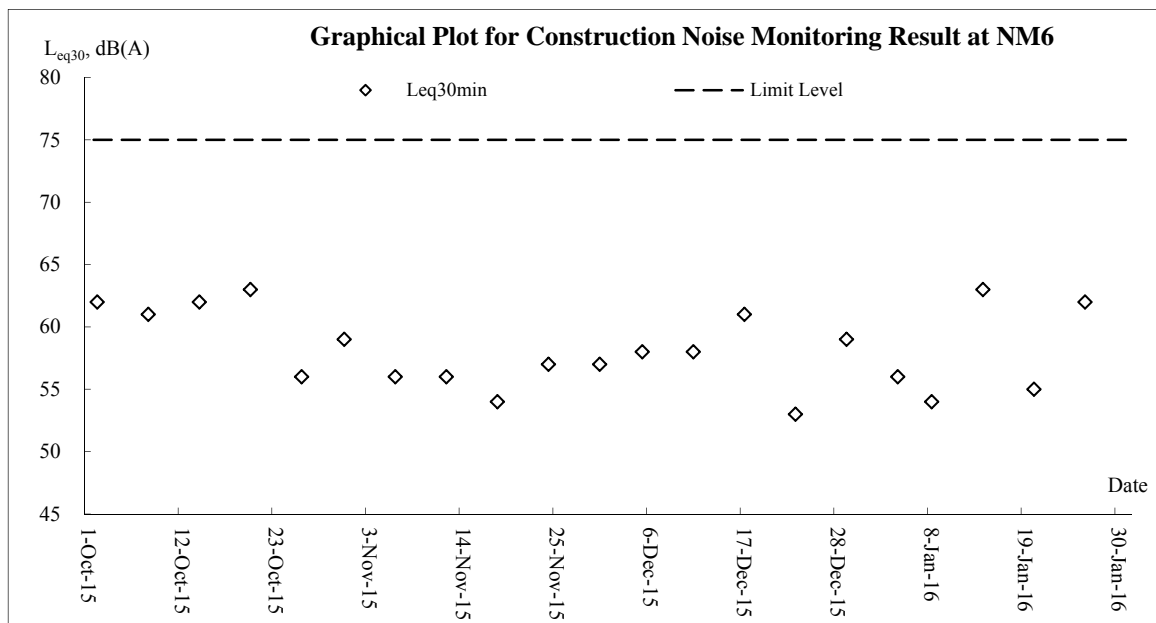
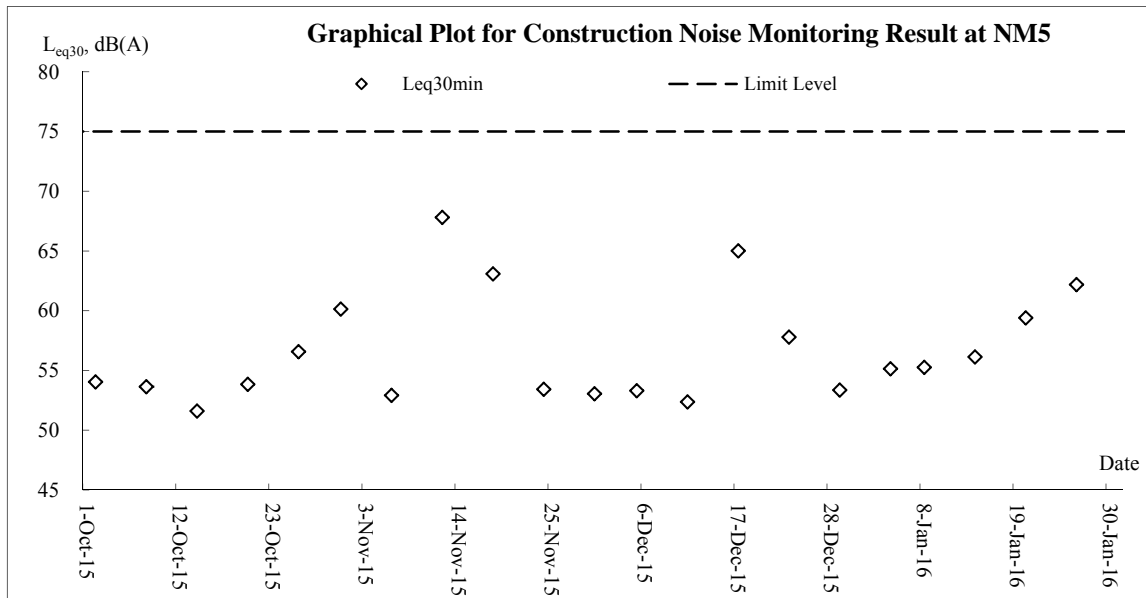
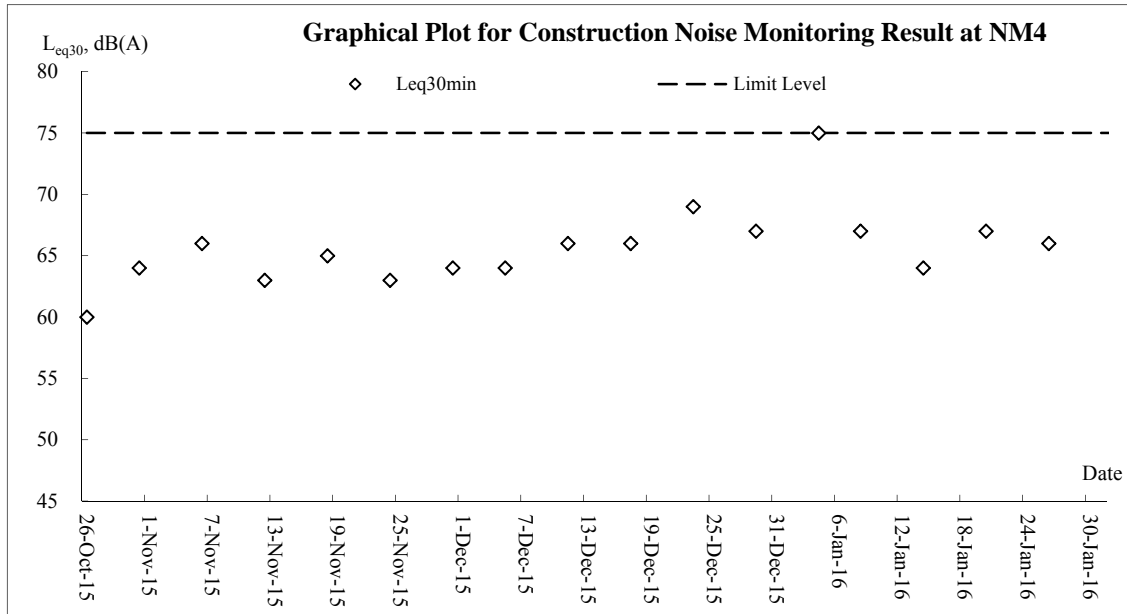


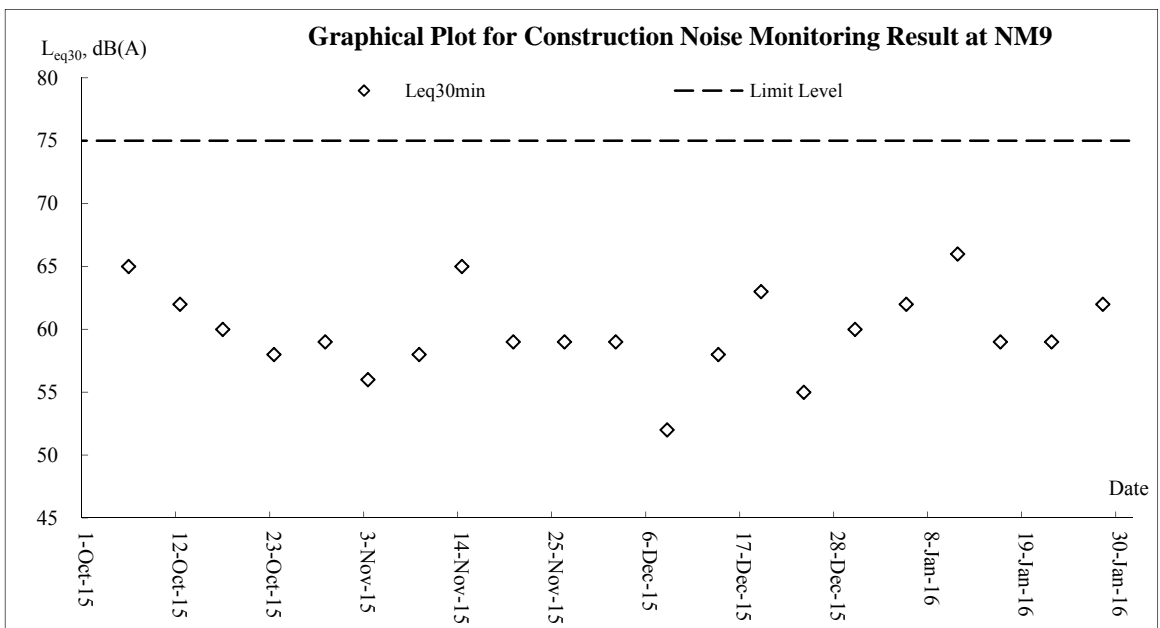
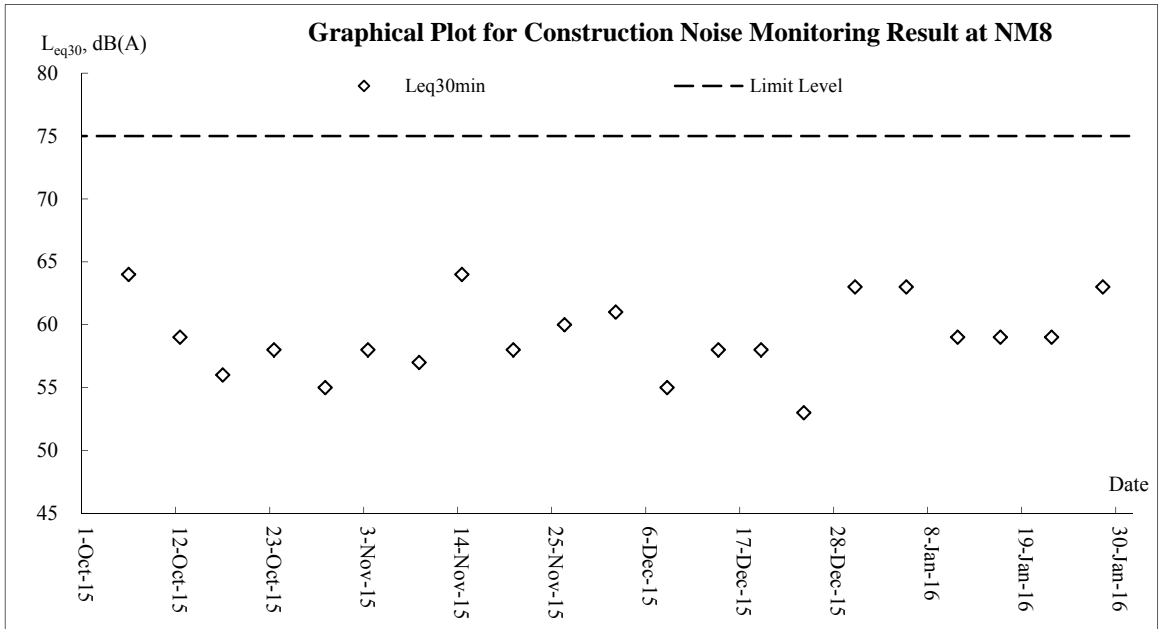
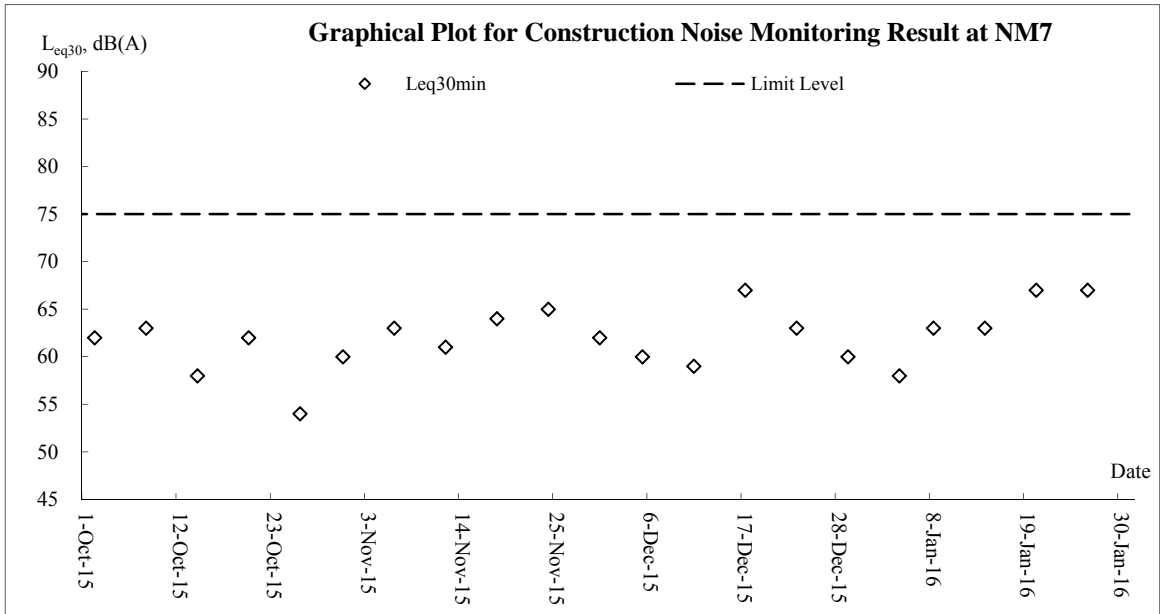


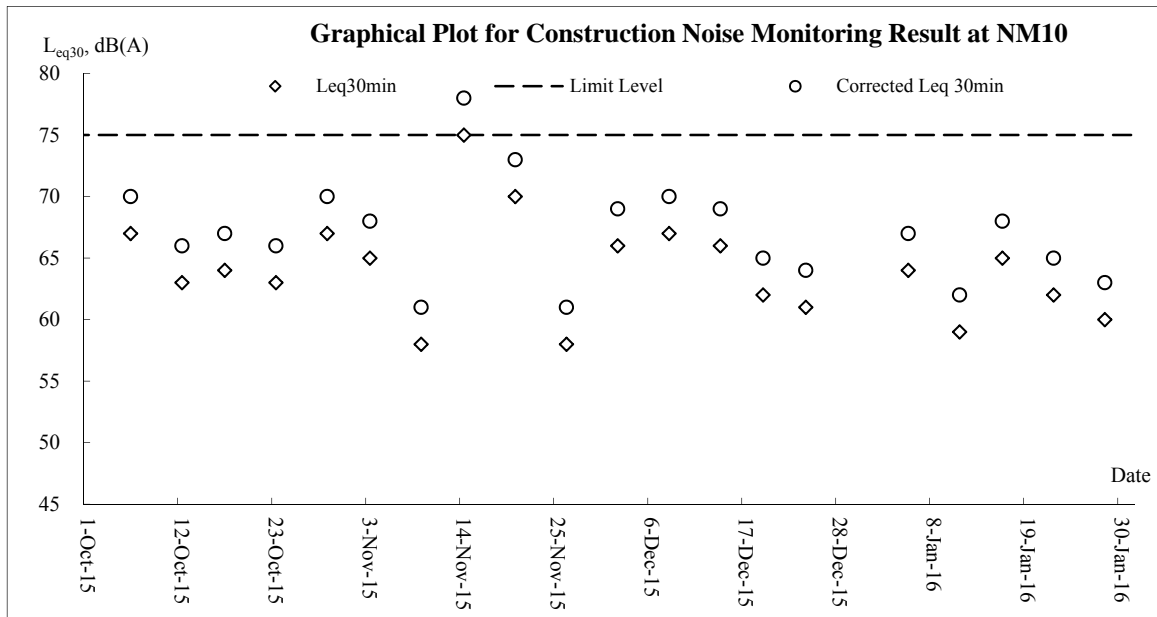


**Noise**

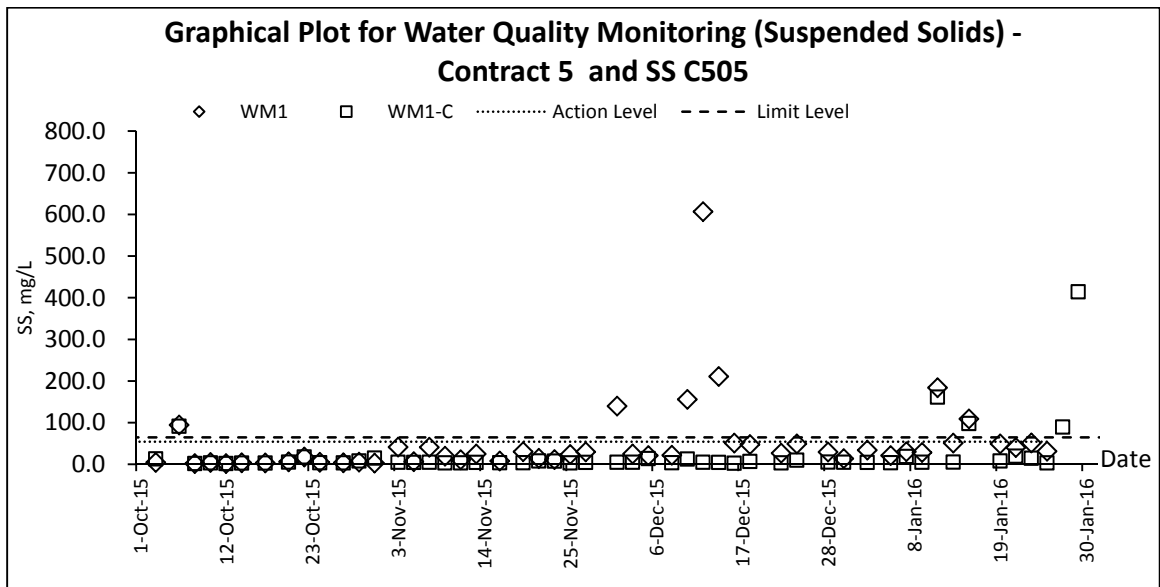
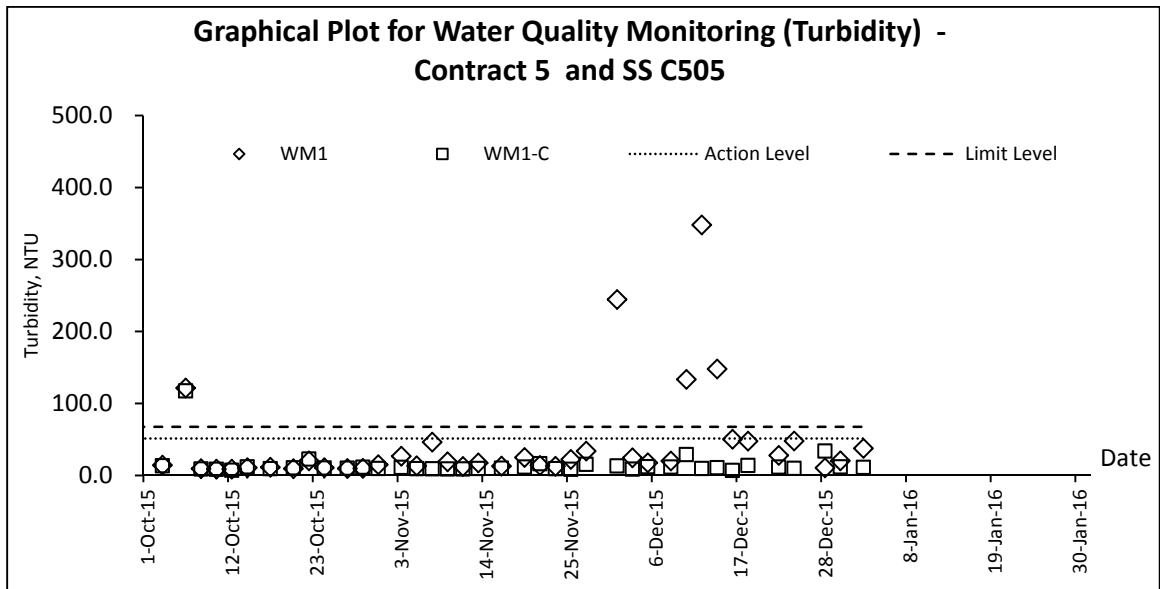
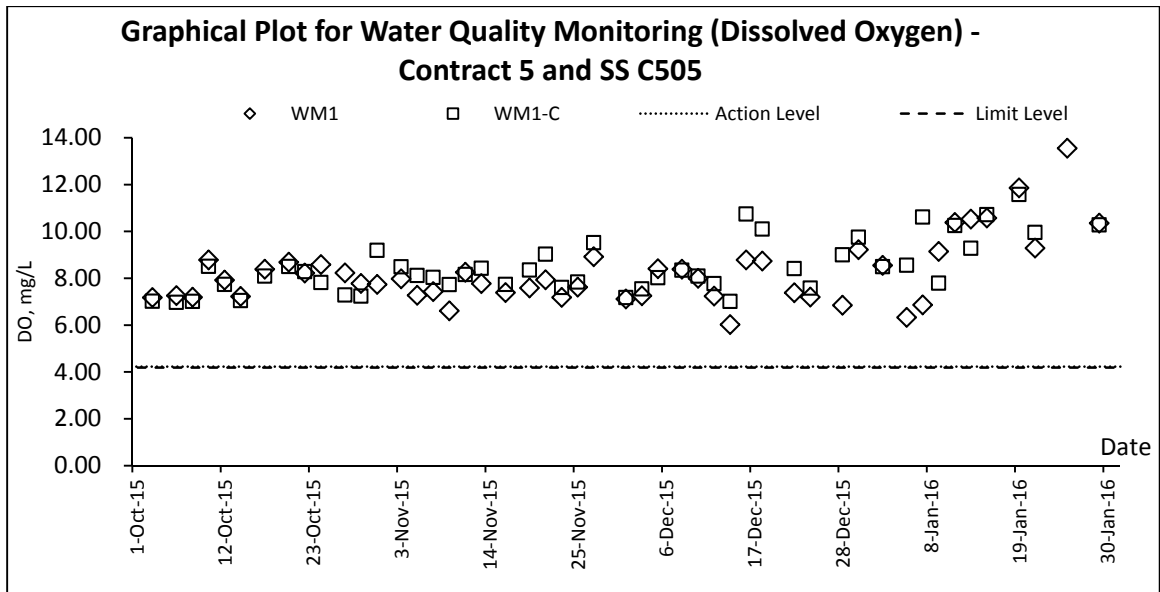




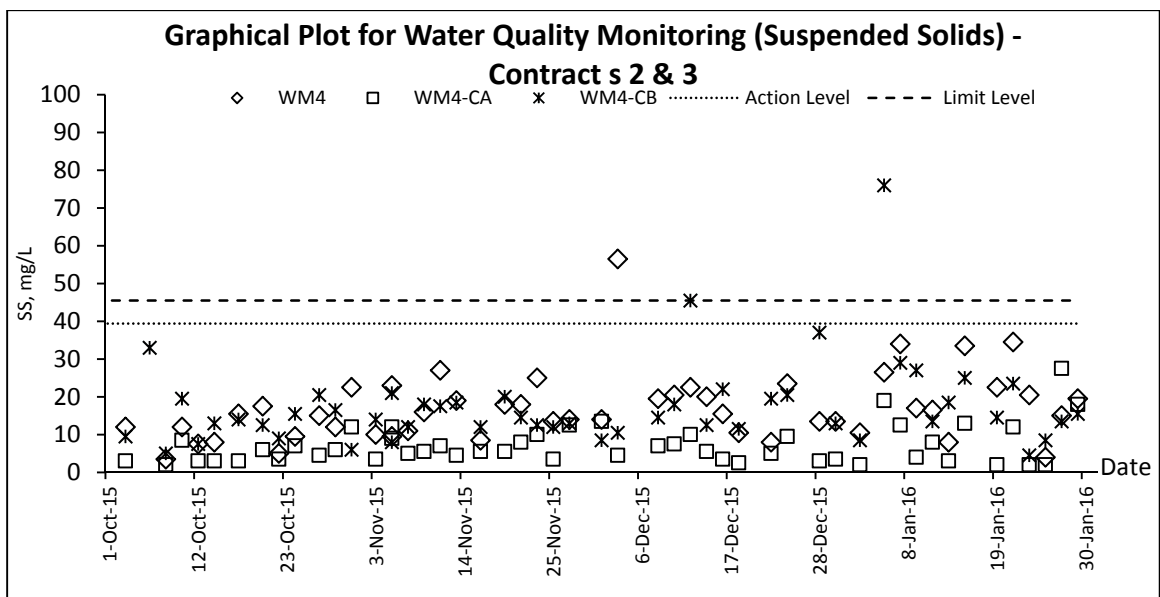
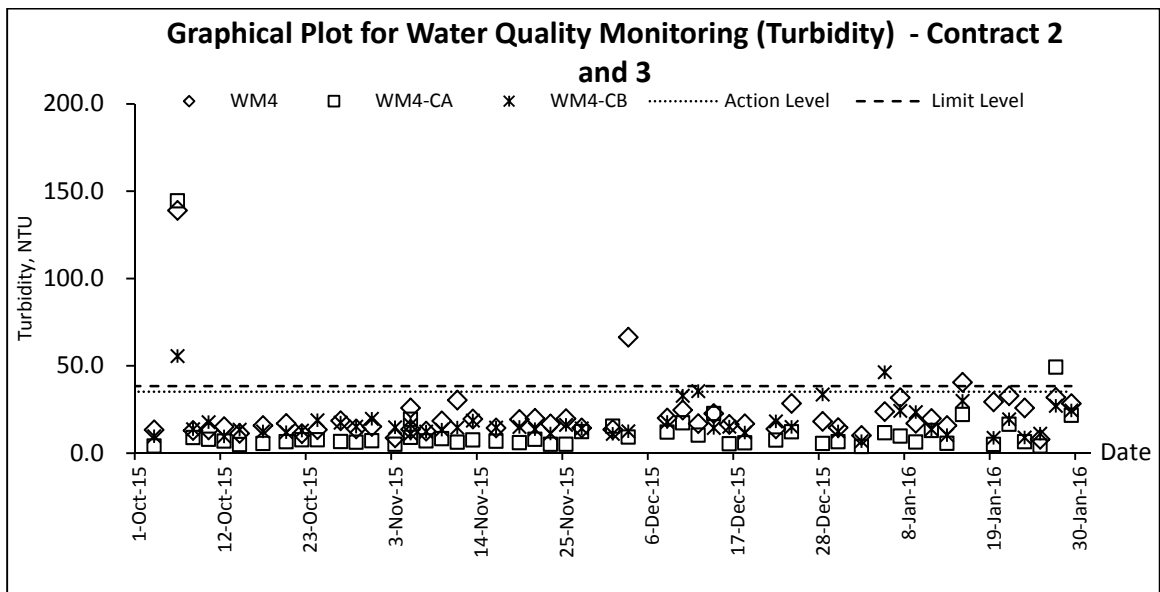
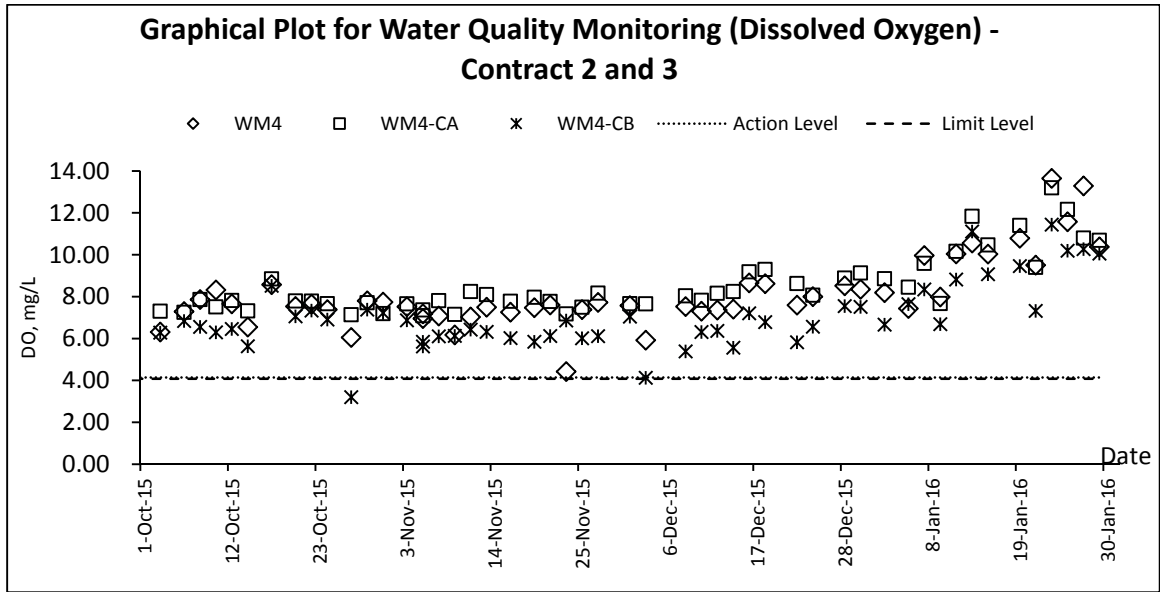


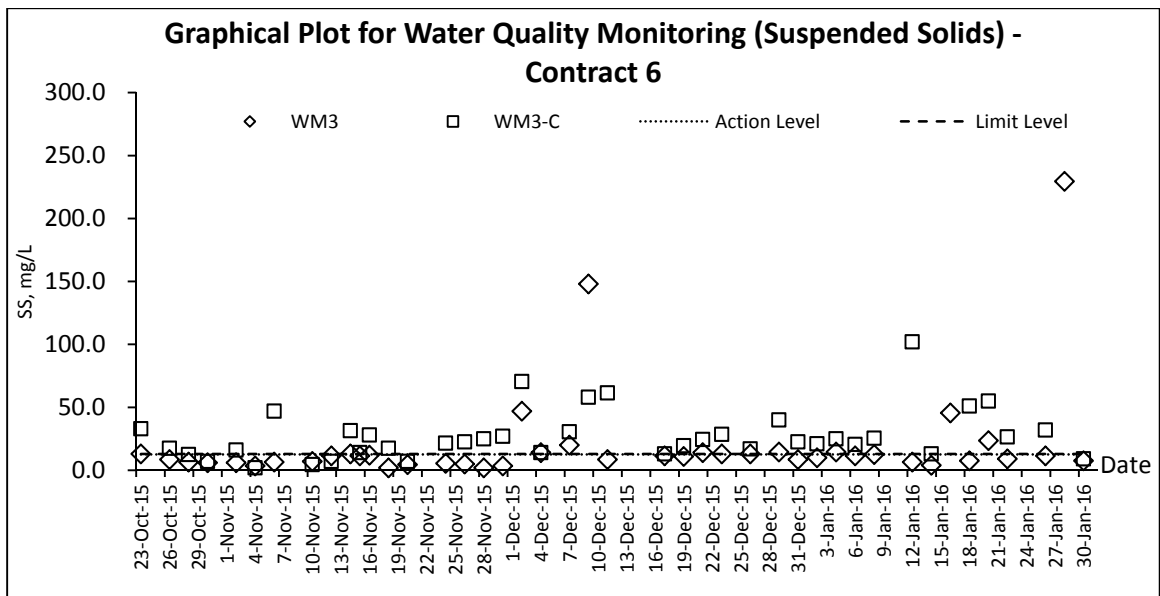
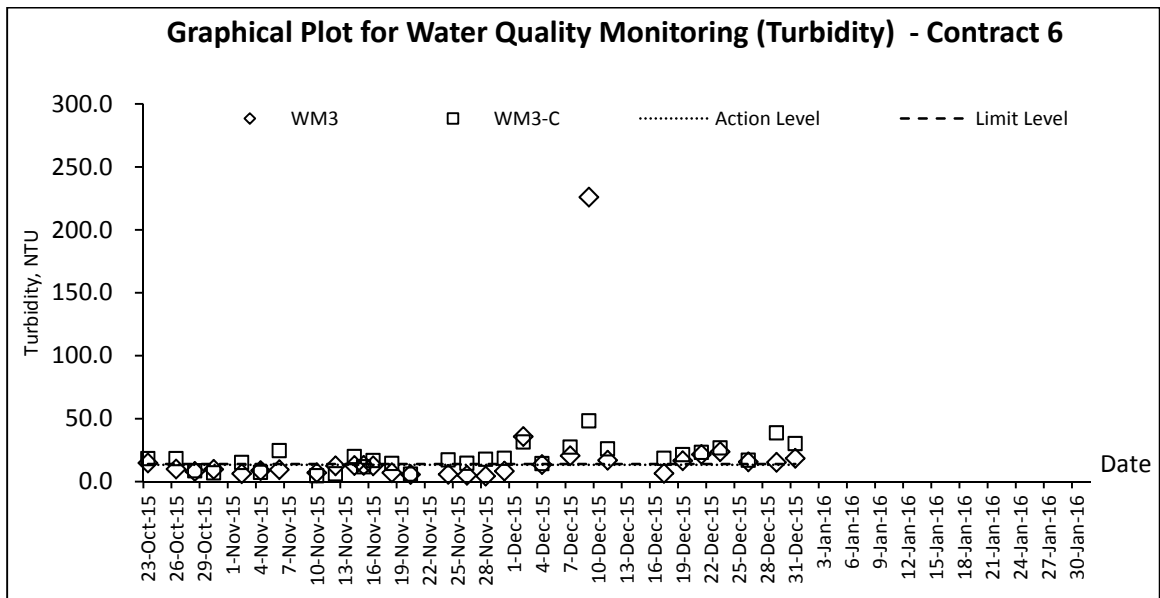
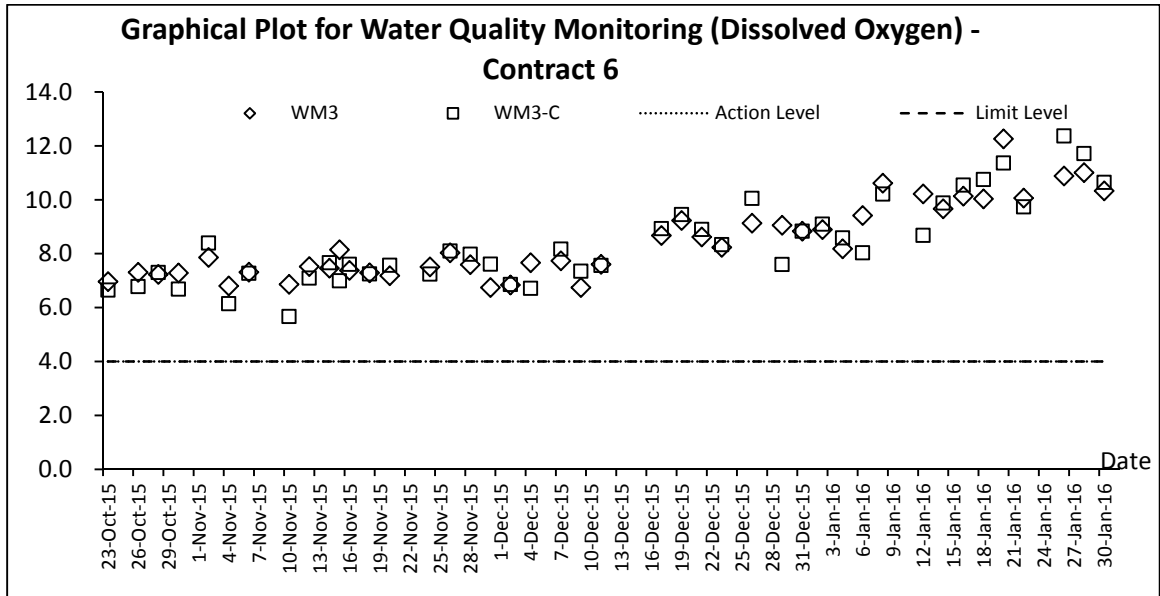


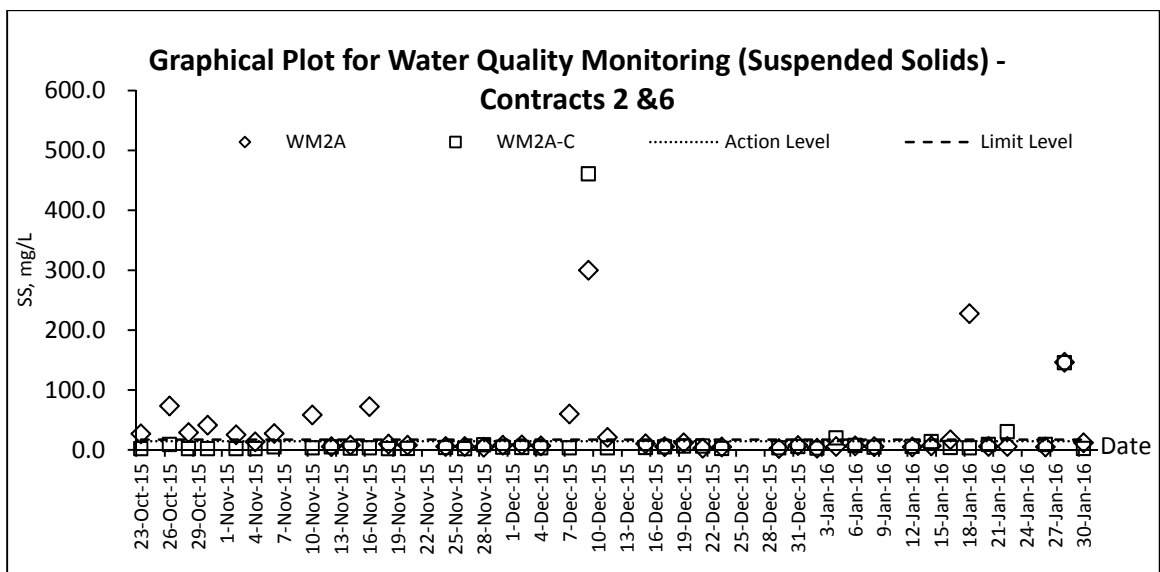
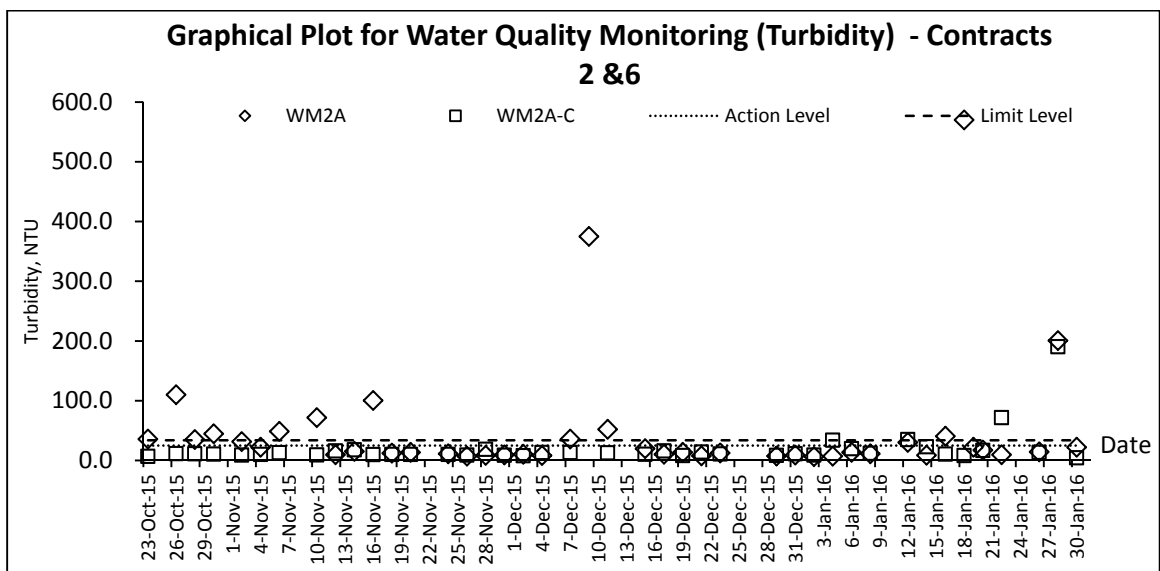
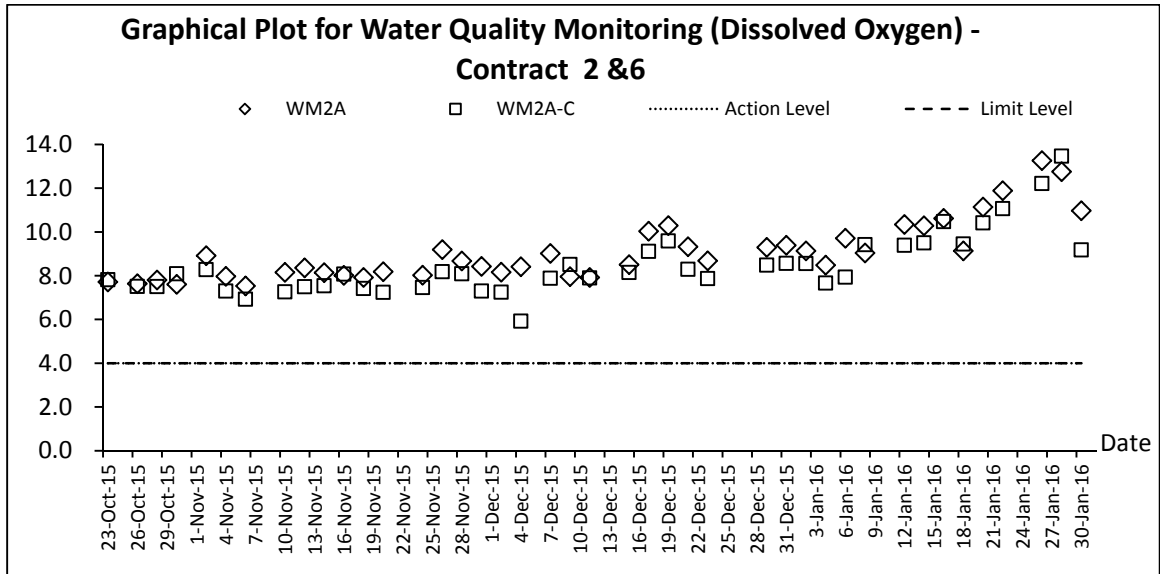
**Water Quality**

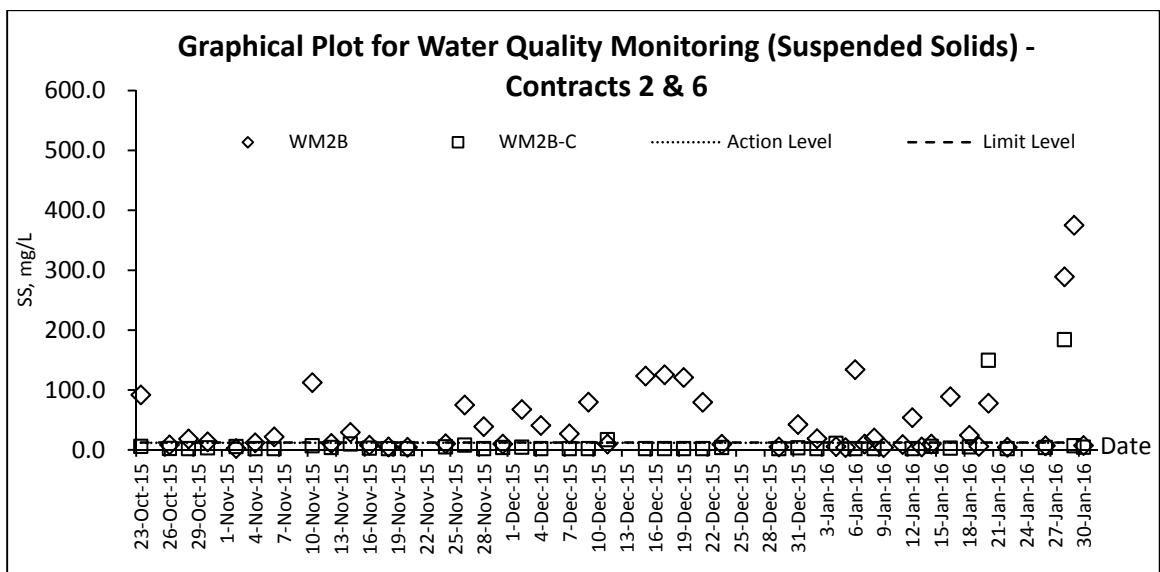
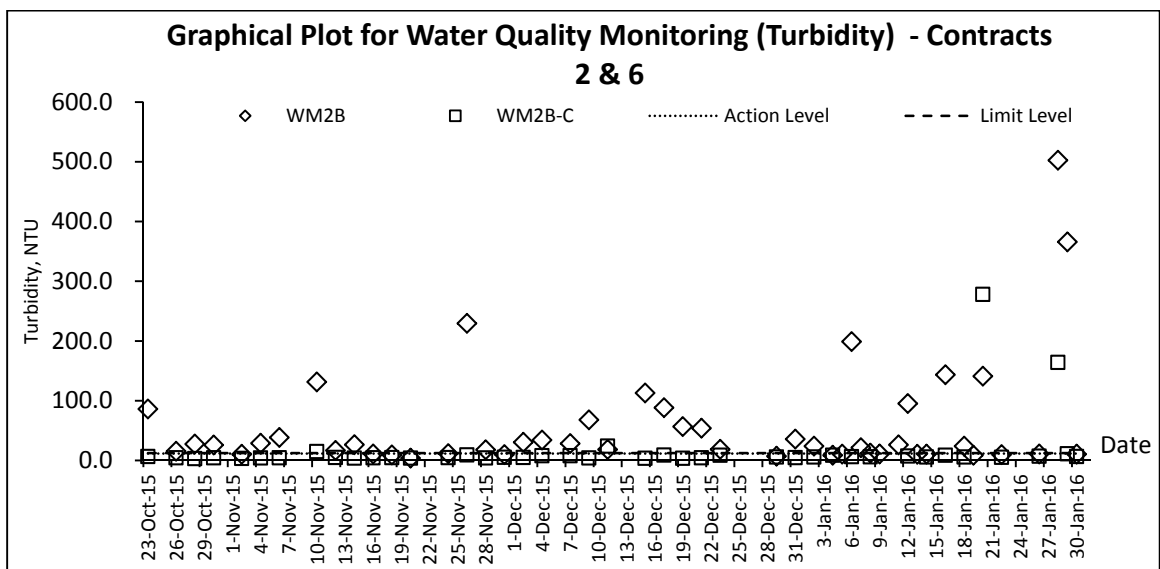
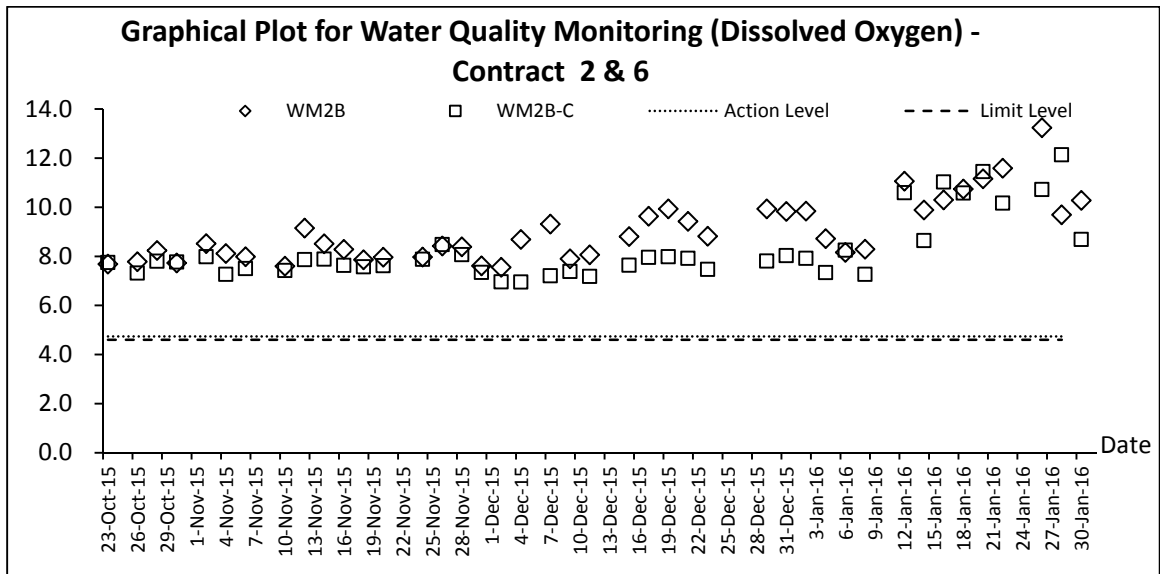












## **Appendix K**

### **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-Jan-16	Fri	Mainly fine. Light to moderate northeasterly winds.	Trace	18.3	5.7	71.2	E/SE
2-Jan-16	Sat	Mainly fine. Light to moderate northeasterly winds.	0.3	17.7	6	77.5	E/SE
3-Jan-16	Sun	Sunny periods. Mainly cloudy tonight. Moderate east to northeasterly winds.	5.6	18.9	4.5	95	E
4-Jan-16	Mon	Sunny periods. Mainly cloudy tonight. Moderate east to northeasterly winds.	Trace	21.2	5.4	86.5	E/SE
5-Jan-16	Tue	Sunny periods. Mainly cloudy tonight. Moderate east to northeasterly winds.	46.2	20.3	8.2	92	E
6-Jan-16	Wed	Mainly fine. Moderate east to northeasterly winds, occasionally fresh tomorrow.	Trace	21	6.5	78	N/NW
7-Jan-16	Thu	Sunny periods. Mainly cloudy tonight. Moderate east to northeasterly winds.	0	17.9	6.1	75.5	N
8-Jan-16	Fri	Mainly fine. Light to moderate northeasterly winds.	0	17.1	6.5	74	N/NW
9-Jan-16	Sat	Sunny periods. Mainly cloudy tonight. Moderate east to northeasterly winds.	0	15.8	8.5	78.7	E/NE
10-Jan-16	Sun	Mainly fine. Light to moderate northeasterly winds.	6.9	17.1	9.1	84	E/SE
11-Jan-16	Mon	Mainly cloudy with sunny periods. Moderate north to northeasterly winds, fresh offshore.	30.7	18.6	7.5	82.5	E
12-Jan-16	Tue	Mainly cloudy with sunny periods. Moderate north to northeasterly winds, fresh offshore.	0	15.5	7.6	75	N/NW
13-Jan-16	Wed	Mainly fine. Cool in the morning. Moderate northeasterly winds.	0	15.1	5.3	70	N
14-Jan-16	Thu	Mainly fine. Light to moderate northeasterly winds.	1.1	14	7.5	83	E/SE
15-Jan-16	Fri	Mainly cloudy with sunny periods. Moderate north to northeasterly winds, fresh offshore.	38.8	13.8	10	85	E/SE
16-Jan-16	Sat	Mainly cloudy with sunny periods. Moderate north to northeasterly winds, fresh offshore.	12.3	15.9	13	91.7	E/SE
17-Jan-16	Sun	Mainly fine. Cool in the morning. Moderate northeasterly winds.	24.6	16.2	8.4	83.5	N/NW
18-Jan-16	Mon	Mainly cloudy. Sunny intervals in the afternoon. Moderate to fresh east to northeasterly winds.	0	12.6	11.6	77	N
19-Jan-16	Tue	Mainly cloudy. Sunny intervals in the afternoon. Moderate to fresh east to northeasterly winds.	0	15.6	7.7	75.5	N
20-Jan-16	Wed	Cloudy to overcast with a few rain patches. It will be cool. Fresh easterly winds, strong offshore and on high ground.	3.3	15.2	11.3	84.7	E
21-Jan-16	Thu	Mainly cloudy with occasional rain. It will be cold. Moderate to fresh northeasterly winds.	0.1	14.5	5.7	92.5	N/NW
22-Jan-16	Fri	Mainly cloudy with occasional rain. It will be cold. Moderate to fresh northeasterly winds.	12.9	10.6	6.5	93.2	N/NW
23-Jan-16	Sat	Mainly cloudy with occasional rain. It will be cold. Moderate to fresh northeasterly winds.	0.5	6.5	15.2	33	NN/E
24-Jan-16	Sun	Mainly cloudy with occasional rain. It will be cold. Moderate to fresh northeasterly winds.	4	3.5	13.5	38.7	N/NE
25-Jan-16	Mon	Mainly cloudy with occasional rain. It will be cold. Moderate to fresh northeasterly winds.	0	6.7	15.2	33	N/NE
26-Jan-16	Tue	Mainly cloudy with occasional rain. It will be cold. Moderate to fresh northeasterly winds.	Trace	6.7	5.4	59	N/NW
27-Jan-16	Wed	Cloudy to overcast. It will be humid with occasional rain. Moderate easterly winds, fresh at times at first.	3.5	11.2	5.2	89.5	NW
28-Jan-16	Thu	Mainly cloudy with occasional rain. It will be cold. Moderate to fresh northeasterly winds.	42.5	15.4	7.1	92.5	E/SE
29-Jan-16	Fri	Mainly cloudy with occasional rain. It will be cold. Moderate to fresh northeasterly winds.	32.8	17.8	5.5	88.7	E/SE
30-Jan-16	Sat	Cloudy to overcast. It will be humid with occasional rain. Moderate easterly winds, fresh at times at first.	0	18.3	6.5	80.5	E
31-Jan-16	Sun	Cloudy to overcast. It will be humid with occasional rain. Moderate easterly winds, fresh at times at first.	0.3	15.6	9.7	84.2	E

## **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 2016

(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	74.4242	0.0000	0.6482	32.5036	41.2724	0.5518	0.0000	0.0000	0.0000	0.8800	0.1247
February	0.0000										
March	0.0000										
April	0.0000										
May	0.0000										
June	0.0000										
Half-year total	74.4242	0.0000	0.6482	32.5036	41.2724	0.5518	0.0000	0.0000	0.0000	0.8800	0.1247
July	0.0000										
August	0.0000										
September	0.0000										
October	0.0000										
November	0.0000										
December	0.0000										
Yearly Total	74.4242	0.0000	0.6482	32.5036	41.2724	0.5518	0.0000	0.0000	0.0000	0.8800	0.1247

(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	16.1920	1.1696
2016	74.4242	0.0000	0.6482	32.5036	41.2724	0.5518	0.0000	0.0000	0.0000	0.8800	0.1247
2017											
2018											
Total	1070.8107	0.0000	24.2003	952.1144	94.4961	10.7255	17.3400	4.3610	1.5070	27.9520	3.5552

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



### Monthly Summary Waste Flow Table for 2016 (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 <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in m <sup>3</sup> )	(in '000m <sup>3</sup> )
Jan	2.430	0.253	0.030	0.000	2.400	0.799	0.001	0.000	0.000	0.000	0.115
Feb											
Mar											
Apr											
May											
Jun											
<b>Sub-total</b>	2.430	0.253	0.030	0.000	2.400	0.799	0.001	0.000	0.000	0.000	0.115
Jul											
Aug											
Sep											
Oct											
Nov											
Dec											
<b>Total</b>	2.430	0.253	0.030	0.000	2.400	0.799	0.001	0.000	0.000	0.000	0.115

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

Name of Department: CEDD

## Monthly Summary Waste Flow Table for 2016

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 <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m <sup>3</sup> )
JAN	0	0	0	0	0	0.235	0	0	0	0	0.06
FEB											
MAR											
APRIL											
MAY											
JUN											
Sub Total	0	0	0	0	0	0.235	0	0	0	0	0.06
JUL											
AUG											
SEP											
OCT											
NOV											
DEC											
Total	0	0	0	0	0	0.24	0	0	0	0	0.06

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 <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m <sup>3</sup> )
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<sup>3</sup>
  - 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 2016 (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 <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000 m <sup>3</sup> )
Jan	58.943	0	3.811	12.131	43.001	43.109	0	0	0	0	0.695
Feb											
Mar											
Apr											
May											
Jun											
Sub-total	58.943	0	3.811	12.131	43.001	43.109	0	0	0	0	0.695
Jul											
Aug											
Sep											
Oct											
Nov											
Dec											
Total	228.166	0	22.345	28.915	176.906	50.358	0	0.294	0	32.28	3.771

- 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.

Contract No. / Works Order No.: - SSC505**Monthly Summary Waste Flow Table for 2015** [year] [to be submitted not later than the 15<sup>th</sup> 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 <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )
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 <sup>3</sup> )
	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<sup>3</sup> by volume.

Contract No. / Works Order No.: - SSC505**Monthly Summary Waste Flow Table for 2016** [year] [to be submitted not later than the 15<sup>th</sup> 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 <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )
Jan	0.8	0	0	0	0.8
Feb	-	-	-	-	-
Mar	-	-	-	-	-
Apr	-	-	-	-	-
May	-	-	-	-	-
Jun	-	-	-	-	-
Sub-total	0.8	0	0	0	0.8
Jul	-	-	-	-	-
Aug	-	-	-	-	-
Sep	-	-	-	-	-
Oct	-	-	-	-	-
Nov	-	-	-	-	-
Dec	-	-	-	-	-
Total	0.8	0	0	0	0.8



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 <sup>3</sup> )
	generated	recycled	generated	recycled	generated	recycled	generated	recycled	generated	recycled	generated	recycled	generated
Jan	0.000	0.000	4.73	4.73	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.072
Feb	-	-	-	-	-	-	-	-	-	-	-	-	-
Mar	-	-	-	-	-	-	-	-	-	-	-	-	-
Apr	-	-	-	-	-	-	-	-	-	-	-	-	-
May	-	-	-	-	-	-	-	-	-	-	-	-	-
Jun	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Sub-total</b>	<b>0.000</b>	<b>0.000</b>	<b>4.73</b>	<b>4.73</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.072</b>
Jul	-	-	-	-	-	-	-	-	-	-	-	-	-
Aug	-	-	-	-	-	-	-	-	-	-	-	-	-
Sep	-	-	-	-	-	-	-	-	-	-	-	-	-
Oct	-	-	-	-	-	-	-	-	-	-	-	-	-
Nov	-	-	-	-	-	-	-	-	-	-	-	-	-
Dec	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>0.000</b>	<b>0.000</b>	<b>4.73</b>	<b>4.73</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.072</b>

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					
4730 kg of scrap metal was sent to Yat Fung for transformation for reuse	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<sup>3</sup> 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?
<b>Air Quality Impact (Construction)</b>							
3.6.1.1	2.1	<p><b>General Dust Control Measures</b></p> <p>The following dust suppression measures should be implemented:</p> <ul style="list-style-type: none"> <li>■ 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</li> <li>■ 80% of stockpile areas should be covered by impervious sheets</li> <li>■ Speed of trucks within the site should be controlled to about 10 km/hr</li> <li>■ All haul roads within the site should be paved to avoid dust emission due to vehicular movement</li> </ul>	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	<p><b>Best Practice for Dust Control</b></p> <p>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:</p> <p><i>Good site management</i></p> <ul style="list-style-type: none"> <li>■ The Contractor should maintain high standard of housekeeping to prevent emission of fugitive dust.</li> <li>■ 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.</li> <li>■ Any piles of materials accumulated on or around the work areas should be cleaned up regularly.</li> <li>■ 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.</li> <li>■ The material should be handled properly to prevent fugitive dust emission before cleaning.</li> </ul> <p><i>Disturbed Parts of the Roads</i></p> <ul style="list-style-type: none"> <li>■ Each and every main temporary access should be paved with</li> </ul>	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?
		<p>concrete, bituminous hardcore materials or metal plates and kept clear of dusty materials; or</p> <ul style="list-style-type: none"> <li>Unpaved parts of the road should be sprayed with water or a dust suppression chemical so as to keep the entire road surface wet.</li> </ul> <p><i>Exposed Earth</i></p> <ul style="list-style-type: none"> <li>Exposed earth should be properly treated by compaction, hydroseeding, vegetation planting or seeding 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.</li> </ul> <p><i>Loading, Unloading or Transfer of Dusty Materials</i></p> <ul style="list-style-type: none"> <li>All dusty materials should be sprayed with water immediately prior to any loading or transfer operation so as to keep the dusty material wet.</li> </ul> <p><i>Debris Handling</i></p> <ul style="list-style-type: none"> <li>Any debris should be covered entirely by impervious sheeting or stored in a debris collection area sheltered on the top and the three sides.</li> <li>Before debris is dumped into a chute, water should be sprayed so that it remains wet when it is dumped.</li> </ul> <p><i>Transport of Dusty Materials</i></p> <ul style="list-style-type: none"> <li>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.</li> </ul> <p><i>Wheel washing</i></p> <ul style="list-style-type: none"> <li>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.</li> </ul> <p><i>Use of vehicles</i></p> <ul style="list-style-type: none"> <li>Immediately before leaving the construction site, every vehicle should be washed to remove any dusty materials from its body and wheels.</li> <li>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.</li> </ul>					

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?
		<p><i>Site hoarding</i></p> <ul style="list-style-type: none"> <li>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.</li> </ul> <p><i>Blasting</i></p> <ul style="list-style-type: none"> <li>The areas within 30m from the blasting area should be wetted with water prior to blasting.</li> </ul>					
<b><u>Air Quality Impact (Operation)</u></b>							
3.5.2.2	2.2	<p>The following odour containment and control measures will be provided for the proposed sewage treatment work at the BCP site:</p> <ul style="list-style-type: none"> <li>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.</li> <li>Further odour containment will be achieved by covering or confining the sewage channels, sewage tanks, and equipment with potential odour emission.</li> <li>Proper mixing will be provided at the equalization and sludge holding tanks to prevent sewage septicity.</li> <li>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.</li> </ul>	To minimize potential odour impact from operation of the proposed sewage treatment work at BCP	DSD	BCP	Operation Phase	EIA recommendation
<b><u>Noise Impact (Construction)</u></b>							
4.4.1.4	3.1	<p><b>Adoption of Quieter PME</b></p> <p>Use of the recommended quieter PME such as those given in the BS5228: Part 1:2009 and presented in <b>Table 4.14</b>, which can be found in Hong Kong.</p>	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	<p><b>Use of Movable Noise Barrier</b></p> <p>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<sup>2</sup> is recommended to achieve the predicted screening effect.</p>	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	<p><b>Use of Noise Enclosure/ Acoustic Shed</b></p> <p>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.</p>	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	<p><b>Use of Noise Insulating Fabric</b></p> <p>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.</p>	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	<p><b>Good Site Practice</b></p> <p>The good site practices listed below should be followed during each phase of construction:</p> <ul style="list-style-type: none"> <li>• Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme;</li> <li>• Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction programme;</li> <li>• Mobile plant, if any, should be sited as far from NSRs as possible;</li> <li>• 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;</li> <li>• 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</li> <li>• Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities.</li> </ul>	To minimize the construction air-borne noise impact	Contractors	Construction Work Sites	During Construction	EIA recommendation, EIAO and NCO
<b>Noise Impact (Operation)</b>							
<u>Road Traffic Noise</u>							
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
<u>Fixed Plant Noise</u>							
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	<p>The following noise reduction measures shall be considered as far as practicable during operation:</p> <ul style="list-style-type: none"> <li>Choose quieter plant such as those which have been effectively silenced;</li> <li>Include noise levels specification when ordering new plant (including chillier and E/M equipment);</li> <li>Locate fixed plant/louver away from any NSRs as far as practicable;</li> <li>Locate fixed plant in walled plant rooms or in specially designed enclosures;</li> <li>Locate noisy machines in a basement or a completely separate building;</li> <li>Install direct noise mitigation measures including silencers, acoustic louvers and acoustic enclosure where necessary; and</li> <li>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.</li> </ul>	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
<b>Water Quality Impact (Construction)</b>							
5.6.1.1	4.1	<p><b>Construction site runoff and drainage</b></p> <p>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:</p> <ul style="list-style-type: none"> <li>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.</li> <li>The dikes or embankments for flood protection should be implemented around the boundaries of earthwork areas.</li> </ul>	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?
		<p>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.</p> <ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ 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.</li> <li>▪ 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.</li> <li>▪ 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.</li> <li>▪ The overall slope of the site should be kept to a minimum to reduce</li> </ul>					

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?
		<p>the erosive potential of surface water flows.</p> <ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ 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.</li> <li>▪ 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.</li> <li>▪ 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.</li> <li>▪ 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.</li> </ul>					
5.6.1.1	4.1	<p><b>Good site practices for works within water gathering grounds</b></p> <p>The following conditions should be complied, if there is any works to be carried out within the water gathering grounds:</p>	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?
		<ul style="list-style-type: none"> <li>▪ Adequate measures should be implemented to ensure no pollution or siltation occurs to the catchwaters and catchments.</li> <li>▪ 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.</li> <li>▪ All surplus spoil should be removed from water gathering grounds as soon as possible.</li> <li>▪ Temporary drains with silt traps should be constructed at the site boundary before the commencement of any earthworks.</li> <li>▪ Regular cleaning of silt traps should be carried out to ensure proper operation at all time.</li> <li>▪ All excavated or filled surfaces which have the risk of erosion should always be protected from erosion.</li> <li>▪ Facilities for washing the wheels of vehicles before leaving the site should be provided.</li> <li>▪ Any construction plant which causes pollution to catchwaters or catchments due to the leakage of oil or fuel should be removed off site immediately.</li> <li>▪ 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.</li> <li>▪ 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.</li> <li>▪ 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.</li> <li>▪ Drainage plans should be submitted for approval by the Director of</li> </ul>			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?
		<p>Water Supplies.</p> <ul style="list-style-type: none"> <li>▪ An unimpeded access through the waterworks access road should always be maintained.</li> <li>▪ Earthworks near catchwaters or streamcourses should only be carried out in dry season between October and March,</li> <li>▪ Advance notice must be given before the commencement of works on site quoting WSD's approval letter reference.</li> </ul>					
5.6.1.2	4.1	<p><b>Good site practices of general construction activities</b></p> <p>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.</p> <p>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.</p>	To minimize water quality impacts	Contractor	All construction works sites	Construction phase	EIA Recommendation
5.6.1.3	4.1	<p><b>Sewage effluent from construction workforce</b></p> <p>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.</p>	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	<p><b>Hydrogeological Impact</b></p> <p>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.</p>	To minimize water quality impacts	Contractor	Construction works sites of the drill and blast tunnel	Construction phase	EIA Recommendation and WPCO
<b><u>Water Quality Impact (Operation)</u></b>							
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?
<b><u>Sewage and Sewerage Treatment Impact (Construction)</u></b>							
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
<b><u>Sewage and Sewerage Treatment Impact (Operation)</u></b>							
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
<b><u>Waste Management Implication (Construction)</u></b>							
7.6.1.1	6	<p><b>Good Site Practices</b></p> <p>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:</p> <ul style="list-style-type: none"> <li>▪ 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</li> <li>▪ Training of site personnel in proper waste management and chemical handling procedures</li> <li>▪ Provision of sufficient waste disposal points and regular collection of waste</li> <li>▪ 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</li> <li>▪ General refuse shall be removed away immediately for disposal. As</li> </ul>	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?
		<p>such odour is not anticipated to be an issue to distant sensitive receivers</p> <ul style="list-style-type: none"> <li>▪ Provision of wheel washing facilities before the trucks leaving the works area so as to minimise dust introduction from public road</li> <li>▪ Covers and water spraying system should be provided for the stockpiled C&amp;D material to prevent dust impact or being washed away</li> <li>▪ Designate different locations for storage of C&amp;D material to enhance reuse</li> <li>▪ Well planned programme for transportation of C&amp;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&amp;D material is not anticipated</li> <li>▪ 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</li> <li>▪ Provision of cover for the stockpile material, sand bag or earth bund as barrier to prevent material from washing away and entering the drains</li> </ul>					
7.6.1.2	6	<p><b>Waste Reduction Measures</b></p> <p>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:</p> <ul style="list-style-type: none"> <li>▪ 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</li> <li>▪ 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</li> <li>▪ Proper storage and site practices to minimise the potential for damage or contamination of construction materials</li> <li>▪ Plan and stock construction materials carefully to minimise amount</li> </ul>	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?
		<p>of waste generated and avoid unnecessary generation of waste</p> <ul style="list-style-type: none"> <li>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.</li> </ul>					
7.6.1.3	6	<p><b>C&amp;D Materials</b></p> <p>In order to minimise impacts resulting from collection and transportation of C&amp;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&amp;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&amp;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:</p> <ul style="list-style-type: none"> <li>A Waste Management Plan should be prepared and implemented in accordance with ETWB TC(W) No. 19/2005 Environmental Management on Construction Site; and</li> <li>In order to monitor the disposal of C&amp;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.</li> </ul>	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	<p><b>General refuse</b></p> <p>General refuse should be stored in enclosed bins or compaction units separated from other C&amp;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.</p>	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	<p><b>Chemical waste</b></p> <p>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 <i>Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes</i>. 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</p>	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



## **Appendix N**

### **Investigation Report for Exceedance**



**Agreement No. CE 45/2008**  
**Liantang/ Heung Yuen Wai Boundary Control Point and Associated Works**  
**Investigation Report on Action or Limit Level Non-compliance**

<b>Project</b>	CE 45/2008			
<b>Date</b>	31 December 2015	2 January 2016	31 December 2015	2 January 2016
<b>Location</b>	WM2B			
<b>Time</b>	9:42	10:42	9:42	10:42
<b>Parameter</b>	Turbidity (NTU)		Suspended Solids (mg/L)	
<b>Action Level</b>	11.4 AND 120% of upstream control station of the same day		11.8 AND 120% of upstream control station of the same day	
<b>Limit Level</b>	12.3 AND 130% of upstream control station of the same day		12.4 AND 130% of upstream control station of the same day	
<b>Measured Level at Control Station (WM2B-C)</b>	4.8	5.9	3.5	2
<b>Measured Level at WM2B</b>	<b>35.7</b>	<b>23.9</b>	<b>42.5</b>	<b>19.0</b>
<b>Exceedance</b>	<b>Limit Level</b>	<b>Limit Level</b>	<b>Limit Level</b>	<b>Limit Level</b>
<b>Investigation Results, Recommendations &amp; Mitigation Measures</b>	<ol style="list-style-type: none"> <li>1. According to the site information provided from the Contractor of C6, construction activities carried out on 31 December 2015 and 2 January 2016 at North Portal at upstream of WM2B included bored piling and channel clearing. The monitoring locations and works area are shown in Figure 1.</li> <li>2. According to the site record from the monitoring team during monitoring on 31 December 2015 and 2 January 2016, very shallow water was measured at WM2B and the water depth was around 0.01m. (Photo 1 and 2) Moreover, turbid water was observed at WM2B on 2 January 2016. 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.</li> <li>3. As advised by the Contractor, channel clearing for removal of sediment and muddy water was undertaken by the Contractor on 31 December 2015 and 2 January 2016 after rainfall. (Photo 3 and 4) 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.</li> <li>4. 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.</li> <li>5. The Contractor has enhanced the water mitigation measures after 2 January 2016 to resolve the runoff problem. Another sump pits with temporary channel were constructed under the slopes (Photo 5 &amp; 6) Moreover, the slopes adjacent to channel were covered as far as possible with tarpaulin sheet or hard paved to minimise muddy runoff during rain. (Photo 7) Moreover, hydro-seeding at the stabilized slope would be applied in forthcoming stage.</li> </ol>			

	<p>6. 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&amp;A Manual.</p>
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**Prepared By :** Nicola Hon

**Designation :** Environmental Consultant

**Signature :** 

**Date :** 14 January 2016

## Photo Record



**Photo 1**

Very shallow water was measured at WM2B and the water quality at WM2B was visually clear during water monitoring on 31 December 2015.



**Photo 2**

Turbid water was observed on 2 January 2016



**Photo 3**

Removal of silt and sediment at the exiting channel was undertaken by the Contractor on 31 December 2015.



**Photo 4**

Removal of silt and sediment at the exiting channel was undertaken by the Contractor on 2 January 2016.



**Photo 5**

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.



**Photo 6**

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.



**Photo 7**

The slopes adjacent to channel were covered with tarpaulin sheet as far as possible to minimize muddy runoff when raining.

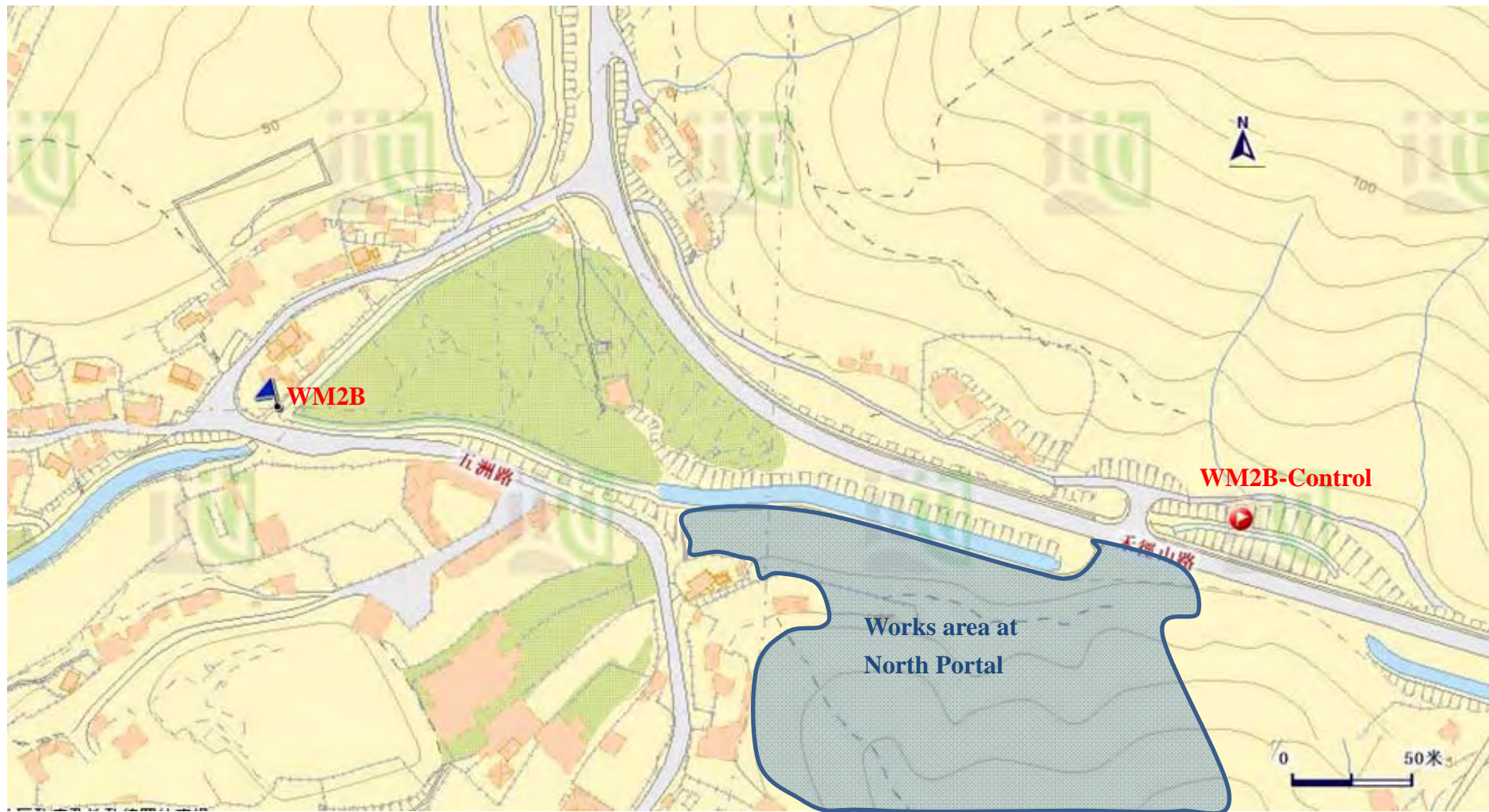


Figure 1 Location Map for Water Quality Monitoring Locations WM2B and WM2B-Control





**Agreement No. CE 45/2008**  
**Liantang/ Heung Yuen Wai Boundary Control Point and Associated Works**  
**Investigation Report on Action or Limit Level Non-compliance**

<b>Project</b>	CE 45/2008	
<b>Date</b>	6 January 2016	
<b>Location</b>	WM2B	
<b>Time</b>	10:00	
<b>Parameter</b>	Turbidity (NTU)	Suspended Solids (mg/L)
<b>Action Level</b>	11.4 AND 120% of upstream control station of the same day	11.8 AND 120% of upstream control station of the same day
<b>Limit Level</b>	12.3 AND 130% of upstream control station of the same day	12.4 AND 130% of upstream control station of the same day
<b>Measured Level at Control Station (WM2B-C)</b>	6.4	2
<b>Measured Level at WM2B</b>	<b>199.0</b>	<b>134.0</b>
<b>Exceedance</b>	<b>Limit Level</b>	<b>Limit Level</b>
<b>Investigation Results, Recommendations &amp; Mitigation Measures</b>	<ol style="list-style-type: none"> <li>1. According to the site information provided from the Contractor of C6, construction activities carried out on 6 January 2016 at North Portal at upstream of WM2B included bored piling and slope work. The monitoring locations and works area are shown in Figure 1.</li> <li>2. According to the site record from the monitoring team during monitoring on 6 January 2016, very shallow water was measured at WM2B and the water depth was around 0.01m and cloudy water was observed. (Photo 1) 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.</li> <li>3. As advised by the Contractor, the wastewater from piling work was recirculated after treatment in the AquaSed and no discharge was made on 6 January 2016. (Photo 2 ) Moreover, self-monitoring was conducted by the Contractor and treated water in the AquaSed was visually clear. (Photo 3) As water mitigation measures, two sump pits with temporary channel were constructed under the slopes to divert the site runoff for temporary storage and primarily desilting before divert to the AquaSed. (Photo 4 and 5) Moreover, the slopes adjacent to channel were covered with tarpaulin sheet or hard paved to minimise muddy runoff during rain.</li> <li>4. In view of the site condition, it was believed that the implemented mitigation measures and capacity of sump pits were not sufficient to cater the site runoff from uphill. The Contractor was advised to enhance the water mitigation measures such as shotcreting the exposed slope to minimize the muddy runoff. As advised by the Contractor, hydro-seeding on the stabilized slope to minimize the muddy runoff will be carried out in late January 2016.</li> <li>5. During site inspection by the RE, IEC, Contractor and ET on 7 January 2016, it was observed that the channel next to the site was clear and no discharge from the site was observed. (Photo 6) Nevertheless, the Contractor is reminded to continuous fully implement the water mitigation measures as recommended in the implementation schedule for environmental mitigation measures in the EM&amp;A Manual.</li> </ol>	

**Prepared By :** Nicola Hon

**Designation :** Environmental Consultant

**Signature :** 

**Date :** 22 January 2016

## Photo Record



**Photo 1**

Very shallow water was measured at WM2B and the water in the channel is slightly cloudy on 6 January 2016.



**Photo 2**

The wastewater from piling work was recirculated after treatment in the AquaSed and no discharge was made.



**Photo 3**

Self-monitoring was conducted by the Contractor and treated water in the AquaSed was visually clear.



**Photo 4**

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.



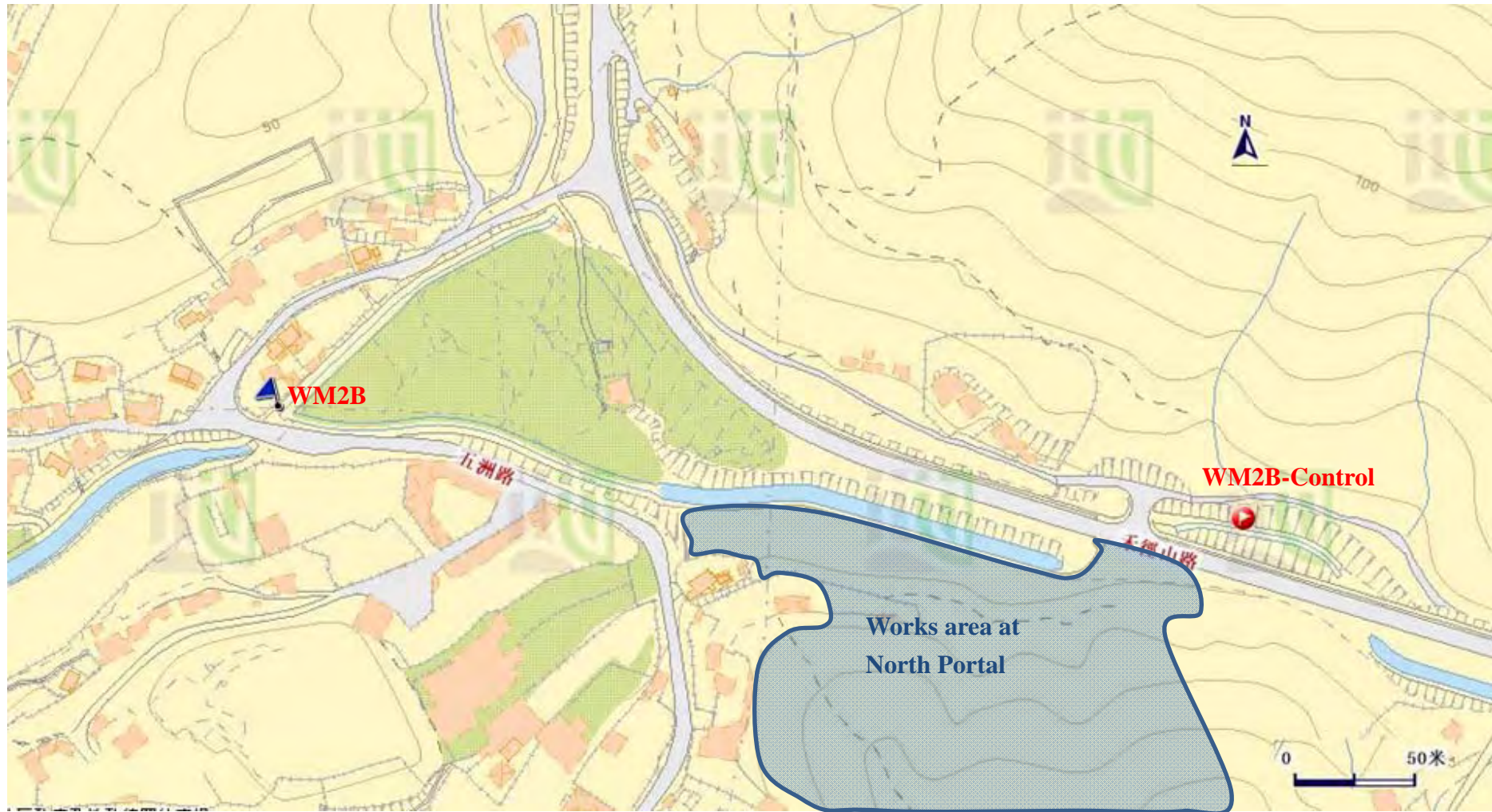
**Photo 5**

Concert bund was constructed next to the channel.



**Photo 6**

During site inspection on 7 January, it was observed that the channel next to the site was clear and no discharge from the site was observed.



**Figure 1 Location Map for Water Quality Monitoring Locations WM2B and WM2B-Control**



**Agreement No. CE 45/2008**  
**Liantang/ Heung Yuen Wai Boundary Control Point and Associated Works**  
**Investigation Report on Action or Limit Level Non-compliance**

<b>Project</b>	CE 45/2008		
<b>Date</b>	7 January 2016	8 January 2016	8 January 2016
<b>Location</b>	WM2B	WM2B	WM2B
<b>Time</b>	10:10	12:03	12:03
<b>Parameter</b>	Turbidity (NTU)		Suspended Solids (mg/L)
<b>Action Level</b>	11.4 AND 120% of upstream control station of the same day		11.8 AND 120% of upstream control station of the same day
<b>Limit Level</b>	12.3 AND 130% of upstream control station of the same day		12.4 AND 130% of upstream control station of the same day
<b>Measured Level at Control Station (WM2B-C)</b>	NA#	6.0	2.0
<b>Measured Level at WM2B</b>	<b>21.3</b>	<b>12.2</b>	<b>20.0</b>
<b>Exceedance</b>	<b>Limit Level</b>	<b>Action Level</b>	<b>Limit Level</b>
<b>Investigation Results, Recommendations &amp; Mitigation Measures</b>	<ol style="list-style-type: none"> <li>1. According to the site information provided by the Contractor of C6, construction activities carried out on 7 and 8 January 2016 at North Portal which upstream of WM2B included bored piling and slope work. The monitoring locations and works area are shown in Figure 1.</li> <li>2. According to the site record from the monitoring team during monitoring on 7 and 8 January 2016, very shallow water at water depth of 0.01m was measured at WM2B and the water quality was visually clear (Photo 1 &amp; 2) 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.</li> <li>3. As advised by the Contractor, the wastewater from piling work was recirculated after treatment in the AquaSed and no discharge was made on 7 and 8 January 2016. (Photo 3) Moreover, self-monitoring was conducted by the Contractor and treated water in the AquaSed was visually clear. (Photo 4 &amp; 5) As water mitigation measures, two sump pits with temporary channel were constructed under the slopes to divert the site runoff for temporary storage and primarily desilting before divert to the AquaSed. (Photo 6 and 7) Moreover, the slopes adjacent to channel were covered with tarpaulin sheet or hard paved to minimise muddy runoff during rain.</li> <li>4. During site inspection by the RE, IEC, Contractor and ET on 7 January 2016, it was observed that the channel next to the site was clear and no discharge from the site was observed. (Photo 8)</li> <li>5. In our investigation, it is considered that the exceedances were due to the shallow water and the disturbance of sediment at river bed. Nevertheless, the Contractor is reminded to continuous fully implement the water mitigation measures as recommended in the implementation schedule for environmental mitigation measures in the EM&amp;A Manual.</li> <li>6. According to the Event and Action Plan, monitoring frequency should be increase to daily until no limit level exceedance for consecutive days. In view of the recent monitoring data, no exceedance was triggered on 9 January 2016 and daily monitoring was continued since 11 January 2016 until no limit level exceedance for consecutive days.</li> </ol>		

# Since the measured level at the control station WM2B-C is always lower the impact station WM2B, additional monitoring was carried out at the exceeded impact station only compare the result with the baseline.

**Prepared By :** Nicola Hon

**Designation :** Environmental Consultant

**Signature :** 

**Date :** 22 January 2016

## Photo Record



**Photo 1**

Very shallow water was measured at WM2B and the water in the channel was visually clear on 7 January 2016.



**Photo 2**

Very shallow water was measured at WM2B and the water in the channel was visually clear on 8 January 2016.



**Photo 3**

The wastewater from piling work was recirculated after treatment in the AquaSed and no discharge was made.



**Photo 4**

Self-monitoring was conducted by the Contractor and treated water in the AquaSed was visually clear on 7 January 2016.



**Photo 5**

Self-monitoring was conducted by the Contractor and treated water in the AquaSed was visually clear on 8 January 2016.



**Photo 6**

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.





**Photo 7**  
Concrete bund was constructed next to the channel.



**Photo 8**  
During site inspection on 7 January, it was observed that the channel next to the site was clear and no discharge from the site was observed

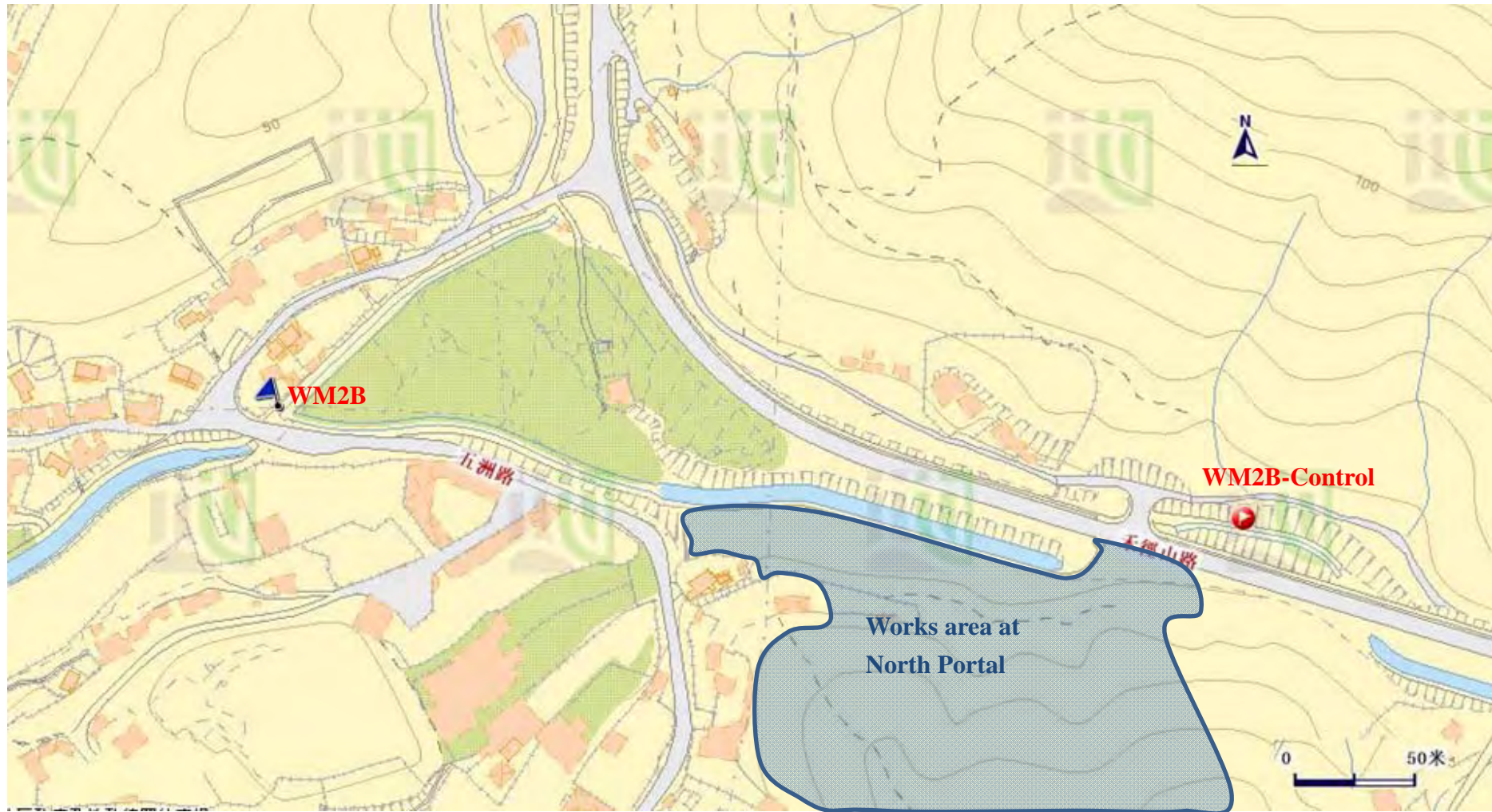


Figure 1 Location Map for Water Quality Monitoring Locations WM2B and WM2B-Control

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To **Mr. Vincent Chan** Fax No **By e-mail**

Company **CRBC-CEC-Kaden JV**

cc

From **Nicola Hon** Date **22 January 2016**

Our Ref TCS00694/13/300/**F0115a** No of Pages 5 (Incl. cover sheet)

RE **Agreement No. CE 45/2008  
Liantang/ Heung Yuen Wai Boundary Control Point and Associated Works  
Investigation Report of Exceedance of Water Quality at Location WM2B on 11  
January 2016**

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Dear Sir,

Further to the Notification of Exceedance (NOE) ref.: TCS00694/13/300/F0100 dated 11 January 2016. Please find attached the "Investigation Report on Action or Limit Level Non-compliance" referenced above for your follow up action.

Should you have any queries or need further information, please do not hesitate to contact us or the undersigned at **Tel: 2959-6059 or Fax: 2959-6079.**

Yours Faithfully,  
For and on Behalf of  
**Action-United Environmental Services & Consulting**



Nicola Hon  
Environmental Consultant

Encl.

c.c.	Mr. David Chan (EPD)	Fax:	2685 1155
	Mr. Simon Leung (ER of C6/ AECOM)	Fax:	2251 0698
	Mr. Antony Wong (IEC, SMEC)		By email

**Agreement No. CE 45/2008**  
**Liantang/ Heung Yuen Wai Boundary Control Point and Associated Works**  
**Investigation Report on Action or Limit Level Non-compliance**

<b>Project</b>	CE 45/2008
<b>Date</b>	11 January 2016
<b>Location</b>	WM2B
<b>Time</b>	12:12
<b>Parameter</b>	Turbidity (NTU)
<b>Action Level</b>	11.4 AND 120% of upstream control station of the same day
<b>Limit Level</b>	12.3 AND 130% of upstream control station of the same day
<b>Measured Level at Control Station (WM2B-C)</b>	NA#
<b>Measured Level at WM2B</b>	<b>26.2</b>
<b>Exceedance</b>	<b>Limit Level</b>
<b>Investigation Results, Recommendations &amp; Mitigation Measures</b>	<ol style="list-style-type: none"> <li>1. According to the site information provided by the Contractor of C6, construction activities carried out on 11 January 2016 at North Portal which upstream of WM2B included bored piling and slope work. The monitoring locations and works area are shown in Figure 1.</li> <li>2. According to the site record from the monitoring team during monitoring on 11 January 2016, very shallow water at water depth of 0.01m was measured at WM2B and the water quality was visually clear (Photo 1 &amp; 2) 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.</li> <li>3. As advised by the Contractor, self-monitoring for the treated water in the wastewater treatment facilities was conducted and effluent was visually clear. (Photo 2) As water mitigation measures, two sump pits 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.</li> <li>4. During site inspection by the RE, IEC, Contractor and ET on 14 January 2016, no discharge from the site was observed and the water in WM2B was visually clear. (Photo 4)</li> <li>5. In our investigation, it is considered that the exceedances were due to the shallow water and the disturbance of sediment at river bed. Nevertheless, the Contractor is reminded to continuous fully implement the water mitigation measures as recommended in the implementation schedule for environmental mitigation measures in the EM&amp;A Manual</li> <li>6. According to the Event and Action Plan, monitoring frequency should be increase to daily until no limit level exceedance for consecutive days. In view of the recent monitoring data, no exceedance was triggered on 13 and 14 January 2016 and daily monitoring was ceased on 15 January 2016.</li> </ol>

# Since the measured level at the control station WM2B-C is always lower the impact station WM2B, additional monitoring was carried out at the exceeded impact station only compare the result with the baseline.

**Prepared By :** Nicola Hon

**Designation :** Environmental Consultant

**Signature :** 

**Date :** 18 January 2016

## Photo Record



**Photo 1**

Very shallow water was measured at WM2B and the water in the channel was visually clear on 11 January 2016.



**Photo 1**

The water sample collected at WM2B on 11 January 2016 was visually clear.



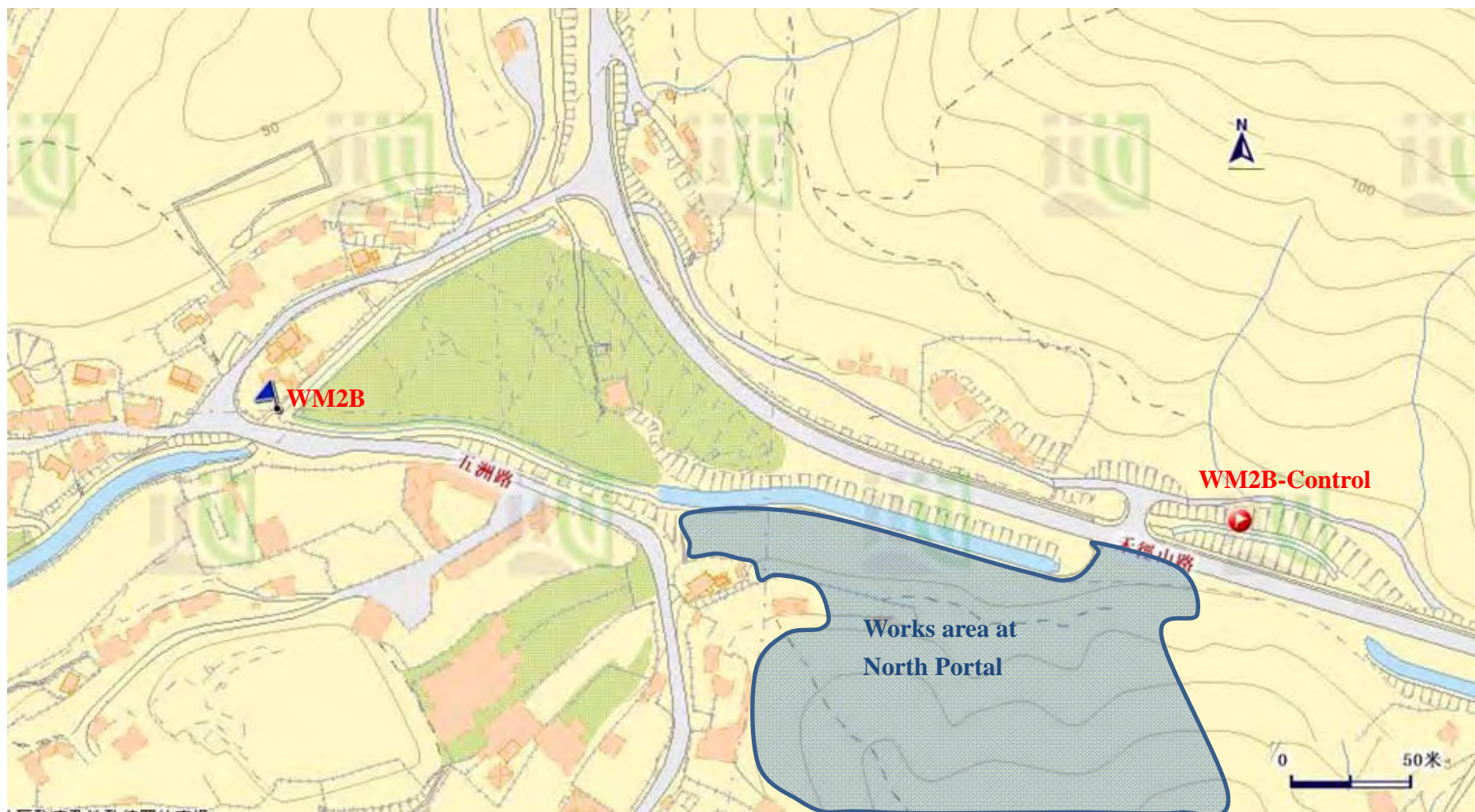
**Photo 3**

The effluent from the wastewater treatment facilities was visually clear on 11 January 2016.



**Photo 4**

During site inspection at WM2B on 14 January 2016, it was observed that the channel water in WM2B was visually clear.



**Figure 1 Location Map for Water Quality Monitoring Locations WM2B and WM2B-Control**





**Agreement No. CE 45/2008**  
**Liantang/ Heung Yuen Wai Boundary Control Point and Associated Works**  
**Investigation Report on Action or Limit Level Non-compliance**

<b>Project</b>	CE 45/2008	
<b>Date</b>	12 January 2016	
<b>Location</b>	WM2B	
<b>Time</b>	11:40	
<b>Parameter</b>	Turbidity (NTU)	Suspended Solids (mg/L)
<b>Action Level</b>	11.4 AND 120% of upstream control station of the same day	11.8 AND 120% of upstream control station of the same day
<b>Limit Level</b>	12.3 AND 130% of upstream control station of the same day	12.4 AND 130% of upstream control station of the same day
<b>Measured Level at Control Station (WM2B-C)</b>	7.5	2.0
<b>Measured Level at WM2B</b>	<b>95.2</b>	<b>54.0</b>
<b>Exceedance</b>	<b>Limit Level</b>	<b>Limit Level</b>
<b>Investigation Results, Recommendations &amp; Mitigation Measures</b>	<ol style="list-style-type: none"> <li>1. According to the site information provided from the Contractor of C6, construction activities carried out on 12 January 2016 at North Portal at upstream of WM2B included bored piling and slope work. The monitoring locations and works area are shown in Figure 1.</li> <li>2. According to the site record from the monitoring team during monitoring on 6 January 2016, very shallow water was measured at WM2B and the water depth was around 0.01m and cloudy water was observed. (Photo 1) 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.</li> <li>3. As advised by the Contractor, the wastewater generated from the bored piling was recirculated and no discharge was made (Photo 2) whilst the wastewater from slope work was treated in the AquaSed before discharge. On 12 January 2016, self-monitoring of the treated water of the AquaSed was conducted and result was acceptable (Photo 3) As water mitigation measures, two sump pits 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 and concrete bund was constructed next to the channel. (Photo 4 &amp; 5)</li> <li>4. In view of the site condition, it was believed that the implemented mitigation measures and capacity of sump pits were not sufficient to cater the site runoff from uphill. The Contractor was advised to enhance the water mitigation measures such as shotcreting the exposed slope to minimize the muddy runoff.</li> <li>5. During site inspection by the RE, IEC, Contractor and ET on 14 January 2016, it was observed that the water quality at WM2B was visually clear. (Photo 6) As advised by the Contractor, hydro-seeding will be carried out on the stabilized slope to minimize the muddy runoff in late January 2016.</li> <li>6. Additional monitoring at WM2B was carried out on 13 January 2016 due to the Limit exceedance according to the Event and Action Plan. In view of the monitoring result at WM2B on 13 and 14 January 2016, no exceedances were triggered. Nevertheless, the Contractor is reminded to continuous fully implement the water mitigation measures as recommended in the implementation schedule for environmental</li> </ol>	

	mitigation measures in the EM&A Manual.
--	---

**Prepared By :** Nicola Hon

**Designation :** Environmental Consultant

**Signature :** 

**Date :** 22 January 2016

## Photo Record



**Photo 1**  
Very shallow water was measured at WM2B and the water in the channel was cloudy on 12 January 2016.



**Photo 2**  
The wastewater from piling work was recirculated after treatment in the AquaSed and no discharge was made.



**Photo 3**  
Self-monitoring was conducted by the Contractor and treated water in the AquaSed was acceptable. The Contractor was advised to remove the silt in the AquaSed to ensure it functions effectively.



**Photo 4**  
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.



**Photo 5**  
Concrete bund was constructed next to the channel.



**Photo 6**  
During site inspection on 14 January, it was observed that the water quality at WM2B was visually clear.

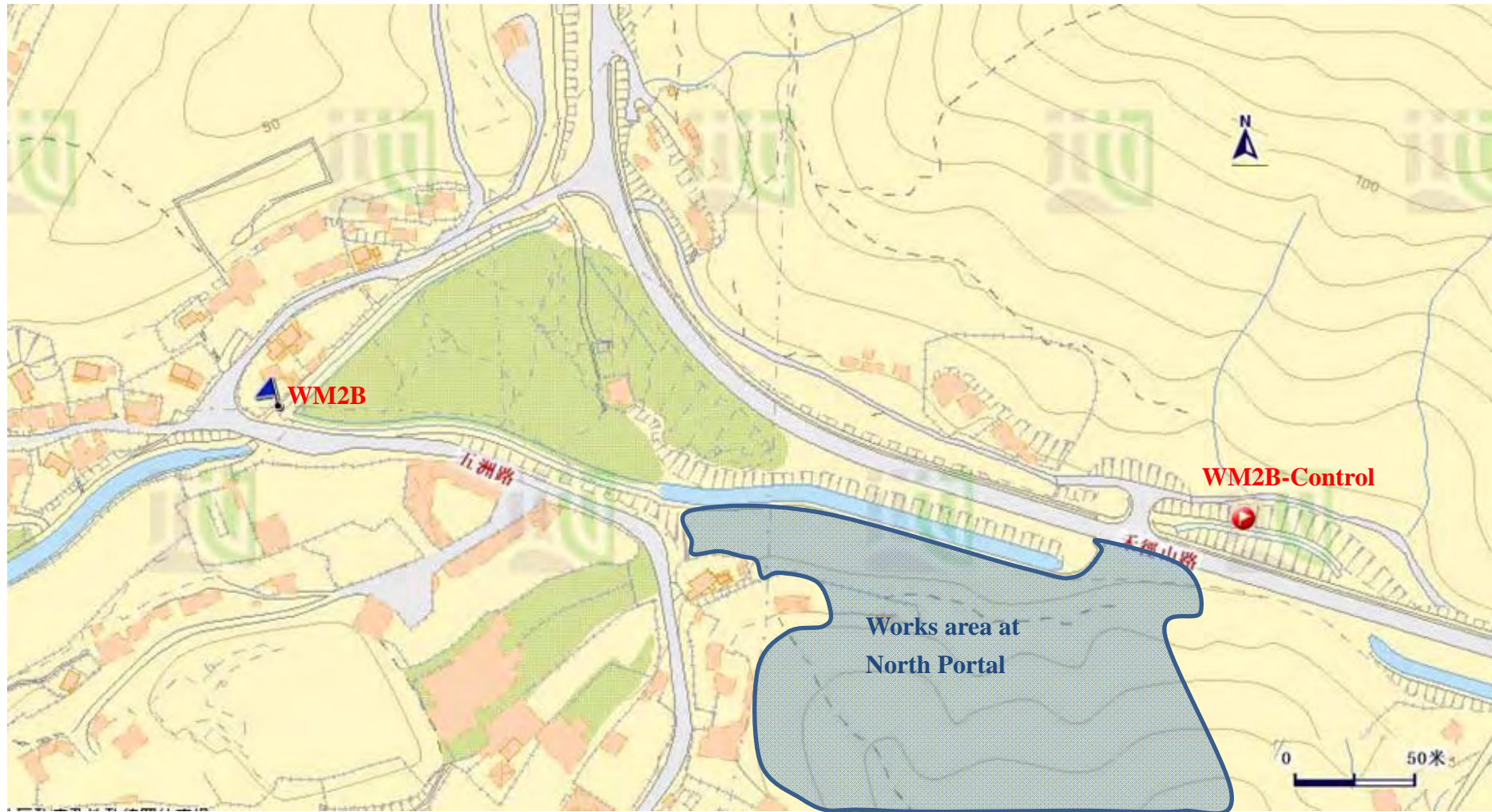


Figure 1 Location Map for Water Quality Monitoring Locations WM2B and WM2B-Control

---

**To** Mr. Daniel Ho **Fax No** 2638 7077

**Company** Chun Wo Construction Ltd

cc

**From** Nicola Hon **Date** 22 January 2016

**Our Ref** TCS00670/13/300/F0119 **No of Pages** 5 (Incl. cover sheet)

**RE** Agreement No. CE 45/2008  
Liantang/ Heung Yuen Wai Boundary Control Point and Associated Works  
Investigation Report of Exceedance of Water Quality at Location WM4 on 15 January  
2016 (Contract 3)

---

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Dear Mr. Ho,

Further to the Notification of Exceedance (NOE) ref.: TCS00670/13/300/F0112 dated 15 January 2016. Please find attached the "Investigation Report on Action or Limit Level Non-compliance" referenced above for your follow up action.

Should you have any queries or need further information, please do not hesitate to contact us or the undersigned at **Tel: 2959-6059 or Fax: 2959-6079**.

Yours Faithfully,  
For and on Behalf of  
**Action-United Environmental Services & Consulting**



Nicola Hon  
Environmental Consultant

Encl.

c.c.	Mr. David Chan (EPD)	Fax:	2685 1155
	Mr. Alan Lee (ER of C3, AECOM)	Fax:	2171 3498
	Mr. Antony Wong (IEC, SMEC)		By e-mail

**Agreement No. CE 45/2008**  
**Liantang/ Heung Yuen Wai Boundary Control Point and Associated Works**  
**Investigation Report on Action or Limit Level Non-compliance**

<b>Project</b>	CE 45/2008
<b>Date</b>	15 January 2016
<b>Location</b>	<b>WM4</b>
<b>Time</b>	10:11
<b>Parameter</b>	Turbidity (NTU)
<b>Action Level</b>	35.2 AND 120% of upstream control station of the same day
<b>Limit Level</b>	38.4 AND 130% of upstream control station of the same day
<b>Measured Level at Control Station (WM4-CA)</b>	22.1
<b>Measured Level at Control Station (WM4-CB)</b>	30.0
<b>Measured Level at WM4</b>	<b>40.6</b>
<b>Exceedance</b>	<b>Limit Level</b>
<b>Investigation Results, Recommendations &amp; Mitigation Measures</b>	<ol style="list-style-type: none"> <li>1. According to the site information provided by the Contractor, construction activities were halted on 15 January 2016 due to heavy rain and no wastewater would be generated from the construction work. Surface runoff of the site was all diverted to the wastewater treatment facilities for de-silting prior to discharge.</li> <li>2. According to the site record from the monitoring team during monitoring on 15 January 2016, it was raining during the course of monitoring and turbid water was observed throughout the channel including WM4, WM4-CA and WM-CB. (Photo 1 to 3 and Figure 1)</li> <li>3. Due to heavy rain in 15 January 2016 (Figure 2), the stream water was deteriorated by vigorous water flow in the river and stirred up the sediment at river bed. There was no exceedance recorded in the subsequent monitoring days, it is considered that the exceedance was a single incident due to rainstorm and unlikely related to the works under the Contract.</li> </ol>
<b>Action to be taken</b>	The Contractor is reminded to implement the water mitigation measures as recommended in the implementation schedule for environmental mitigation measures in the EM&A Manual.

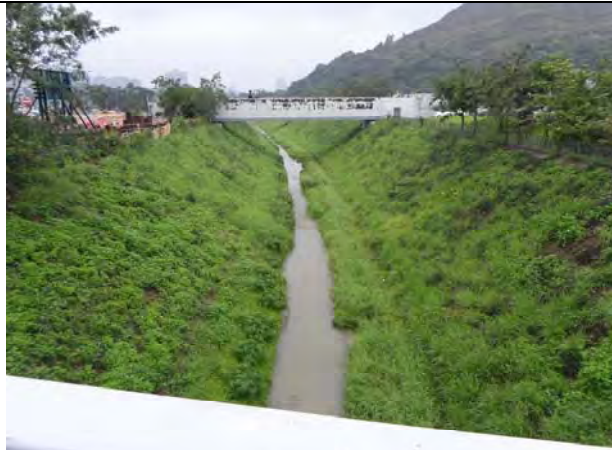
**Prepared By :** Nicola Hon

**Designation :** Environmental Consultant

**Signature :** 

**Date :** 22 January 2016

## Photo Record



**Photo 1**  
Turbid water was observed at WM4 on 15 January 2016



**Photo 2**  
Turbid water was observed at WM4-CA on 15 January 2016



**Photo 3**  
Turbid water was observed at WM4-CB on 15 January 2016



**Photo 4**  
The water samples collected at WM4, WM4-CA and WM4-CB on 15 January 2016 were turbid.

Figure

2016年 1 月 15 日的總雨量 ( 基於雨量計及雷達數據 )

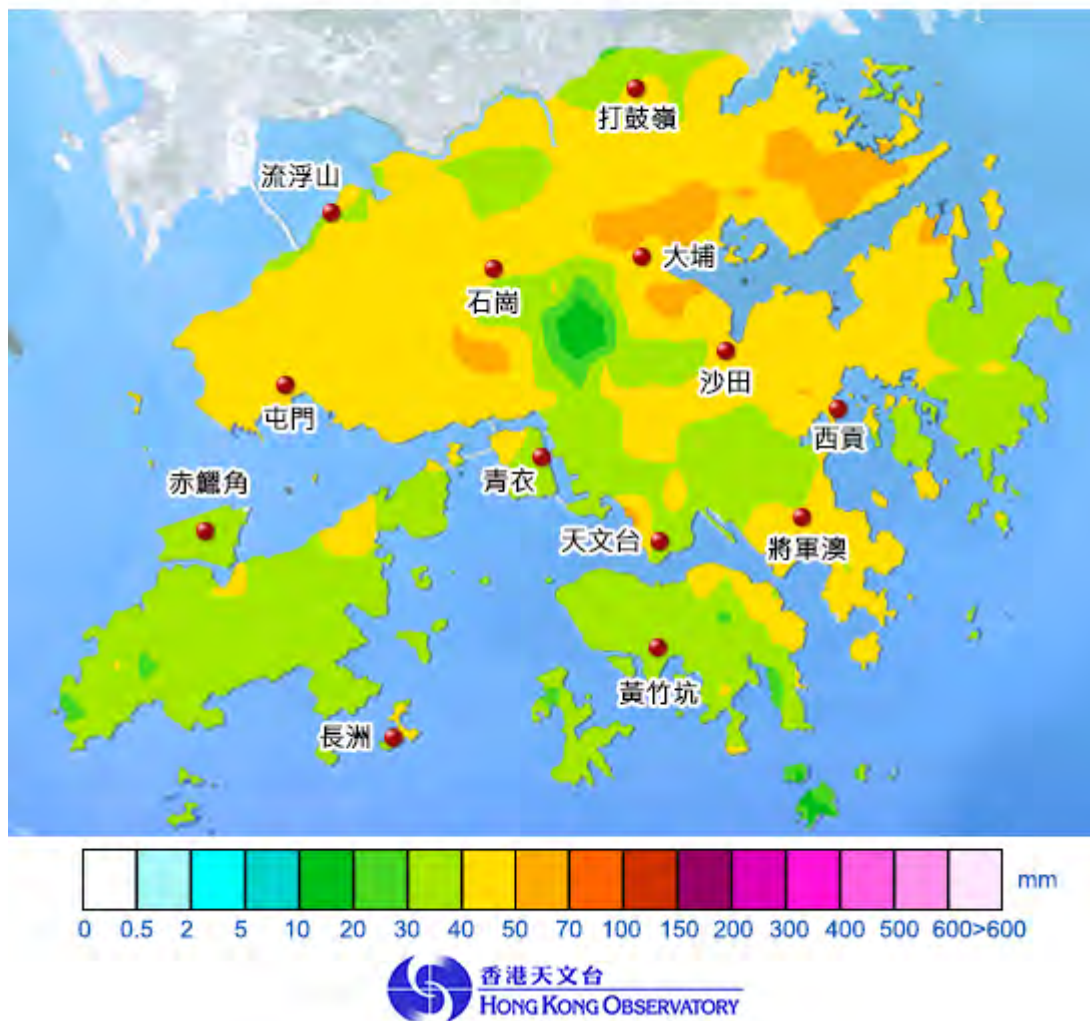


Figure 2 Rainfall distribution on 15 January 2016



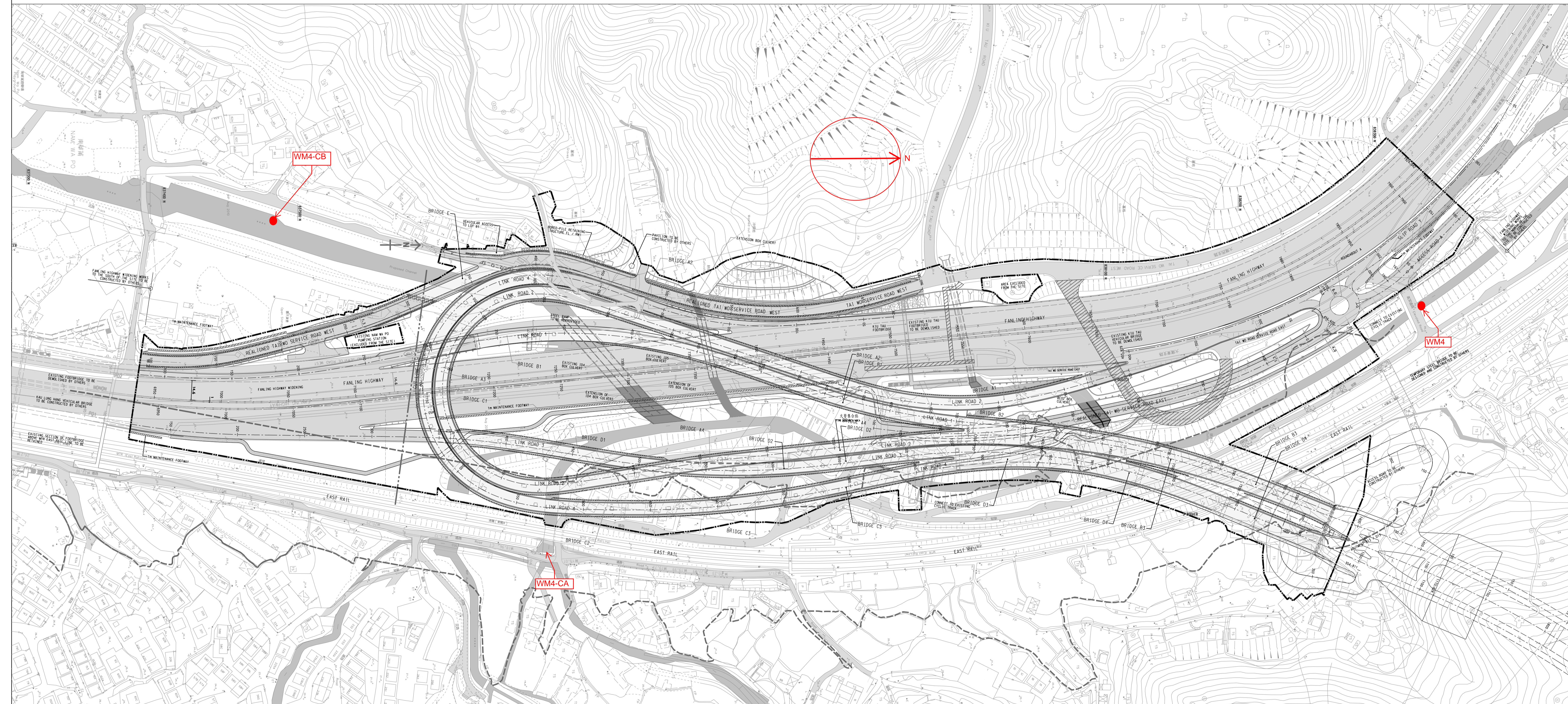


Figure 1. Location of Water Quality Monitoring Location



**Agreement No. CE 45/2008**  
**Liantang/ Heung Yuen Wai Boundary Control Point and Associated Works**  
**Investigation Report on Action or Limit Level Non-compliance**

<b>Project</b>	CE 45/2008
<b>Date</b>	15 January 2016
<b>Location</b>	<b>WM4</b>
<b>Time</b>	10:11
<b>Parameter</b>	Turbidity (NTU)
<b>Action Level</b>	35.2 AND 120% of upstream control station of the same day
<b>Limit Level</b>	38.4 AND 130% of upstream control station of the same day
<b>Measured Level at Control Station (WM4-CA)</b>	22.1
<b>Measured Level at Control Station (WM4-CB)</b>	30.0
<b>Measured Level</b>	<b>40.6</b>
<b>Exceedance</b>	<b>Limit Level</b>
<b>Investigation Results, Recommendations &amp; Mitigation Measures</b>	<ol style="list-style-type: none"> <li>1. According to the site information provided by the Contractor, construction activities carried out at South Portal on 15 January 2016 included tunnel excavation and building work superstructure. The construction activities were carried out away from the river course and no discharge was made on 15 January 2016.</li> <li>2. According to the site record from the monitoring team during monitoring on 15 January 2016, it was raining during the course of monitoring and turbid water was observed throughout the channel including WM4, WM4-CA and WM-CB. (Photo 1 to 3 and Figure 1)</li> <li>3. Due to heavy rain in 15 January 2016 (Figure 2), the stream water was deteriorated by vigorous water flow in the river and stirred up the sediment at river bed. There was no exceedance recorded in the subsequent monitoring days, it is considered that the exceedance was a single incident due to rainstorm and unlikely related to the works under the Contract.</li> </ol>
<b>Action to be taken</b>	DHK is reminded to fully implement the water mitigation measures as recommended in the implementation schedule for environmental mitigation measures in the EM&A Manual.

**Prepared By :** Nicola Hon

**Designation :** Environmental Consultant

**Signature :** 

**Date :** 22 January 2016

## Photo Record



**Photo 1**  
Turbid water was observed at WM4 on 15 January 2016



**Photo 2**  
Turbid water was observed at WM4-CA on 15 January 2016



**Photo 3**  
Turbid water was observed at WM4-CB on 15 January 2016



**Photo 4**  
The water samples collected at WM4, WM4-CA and WM4-CB on 15 January 2016 were turbid.

Figure

2016年 1 月 15 日的總雨量 ( 基於雨量計及雷達數據 )

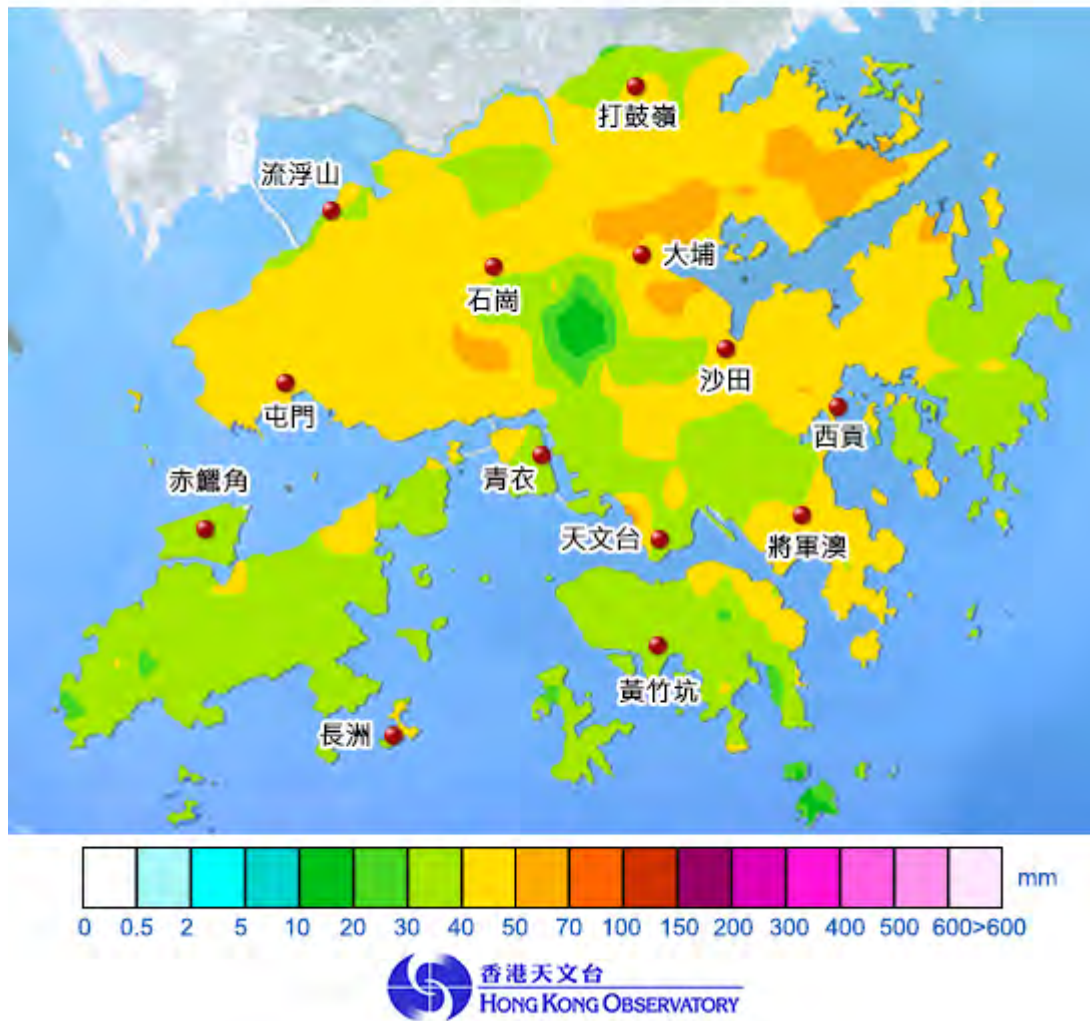


Figure 2 Rainfall distribution on 15 January 2016

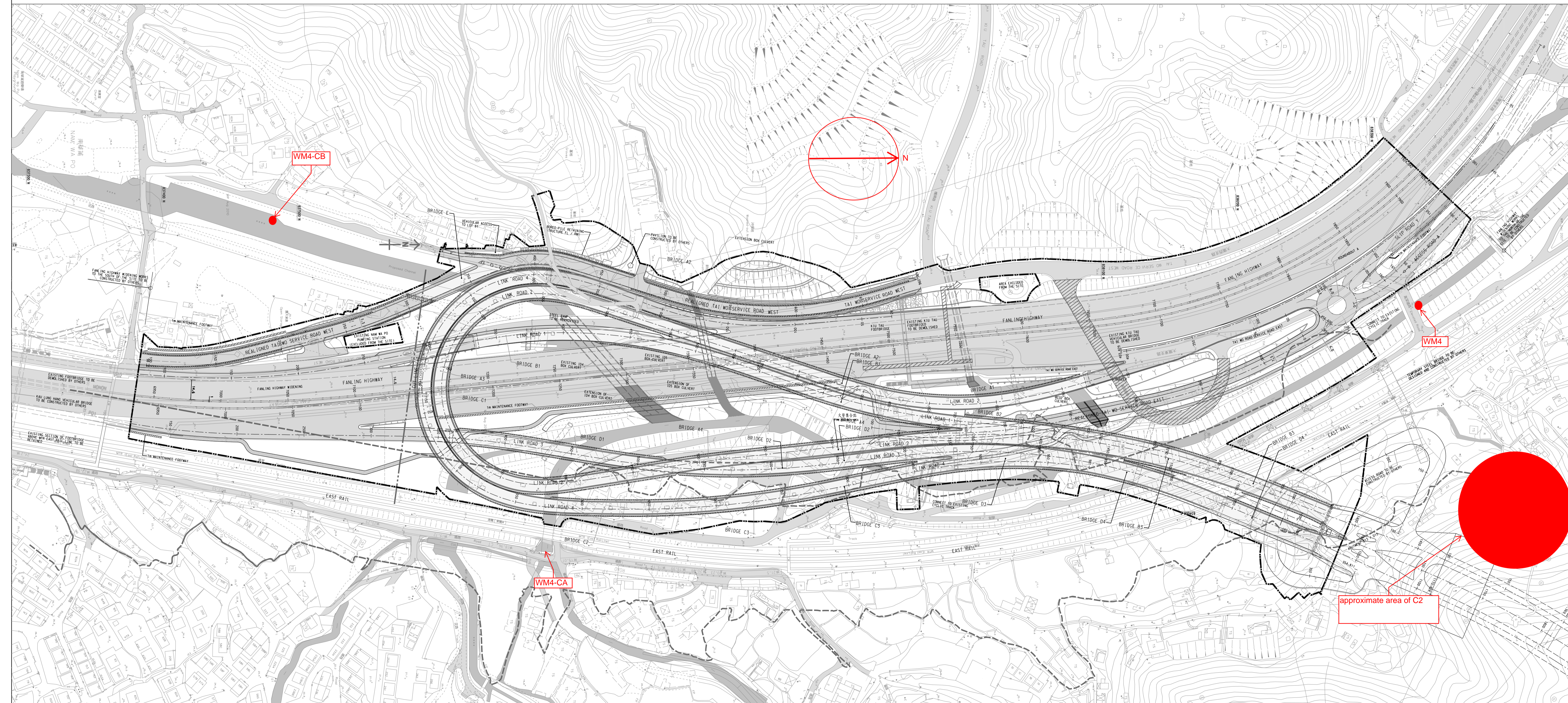


Figure 1. Location of Water Quality Monitoring Location

**To**            **Mr. Vincent Chan**                                 **Fax No**            **By e-mail**

**Company**    **CRBC-CEC-Kaden JV**

**cc**

**From**        **Nicola Hon**     **Date**            **1 February 2016**

**Our Ref**     **TCS00694/13/300/F0123a**                                 **No of Pages**     9         **(Incl. cover sheet)**

**RE**            **Agreement No. CE 45/2008**  
**Liantang/ Heung Yuen Wai Boundary Control Point and Associated Works**  
**Investigation Report of Exceedance of Water Quality at Location WM2B on 16 and**  
**18 January 2016**

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---

Dear Sir,

Further to the Notification of Exceedance (NOE) ref.: TCS00694/13/300/F0117 dated 18 January 2016 and TCS00694/13/300/F0121 dated 22 January 2016. Please find attached the “Investigation Report on Action or Limit Level Non-compliance” referenced above for your follow up action.

Should you have any queries or need further information, please do not hesitate to contact us or the undersigned at **Tel: 2959-6059 or Fax: 2959-6079.**

Yours Faithfully,  
For and on Behalf of  
**Action-United Environmental Services & Consulting**



Nicola Hon  
Environmental Consultant

Encl.


c.c.	Mr. David Chan (EPD)	Fax:	2685 1155
	Mr. Simon Leung (ER of C6/ AECOM)	Fax:	2251 0698
	Mr. Antony Wong (IEC, SMEC)		By email

**Agreement No. CE 45/2008**  
**Liantang/ Heung Yuen Wai Boundary Control Point and Associated Works**  
**Investigation Report on Action or Limit Level Non-compliance**

<b>Project</b>	CE 45/2008	
<b>Date</b>	16 January 2016	16 January 2016
<b>Location</b>	WM2B	WM2B
<b>Time</b>	10:11	10:11
<b>Parameter</b>	Turbidity (NTU)	Suspended Solids (mg/L)
<b>Action Level</b>	11.4 AND 120% of upstream control station of the same day	11.8 AND 120% of upstream control station of the same day
<b>Limit Level</b>	12.3 AND 130% of upstream control station of the same day	12.4 AND 130% of upstream control station of the same day
<b>Measured Level at Control Station (WM2B-C)</b>	8.8	3.0
<b>Measured Level at WM2B</b>	<b>143.5</b>	<b>89.0</b>
<b>Exceedance</b>	<b>Limit Level</b>	<b>Limit Level</b>
<b>Investigation Results, Recommendations &amp; Mitigation Measures</b>	<ol style="list-style-type: none"> <li>1. According to the site information provided from the Contractor of C6, construction activities carried out on 16 January 2016 at North Portal at upstream of WM2B included bored piling and slope work. The monitoring locations and works area are shown in Figure 1.</li> <li>2. According to the site record from the monitoring team during monitoring on 16 January 2016, very shallow water was measured at WM2B and the water depth was around 0.01m. (Photo 1) It was observed that the water flowing in the channel and the collected samples was slightly turbid. (Photo 2) 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.</li> <li>3. As advised by the Contractor, the wastewater generated from bored piling was recirculated and no discharge was made whilst the wastewater from slope work was treated in the AquaSed before discharge. On 16 January 2016, self-monitoring was conducted by the Contractor and treated water in the AquaSed was slightly turbid. (Photo 3) As advised by the Contractor, desludging of the AquaSed is now carried out daily to ensure it functions effectively. As water mitigation measures, two sump pits 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 and concrete bund was constructed next to the channel. (Photo 4 &amp; 5) As advised by the Contractor, hydro-seeding will be carried out on the stabilized slope to minimize the muddy runoff in late January 2016.</li> <li>4. During the course of monitoring on 16 January 2016, muddy runoff from the public road surface into the existing channel was observed after rain. (Photo 6 and Figure 1) This situation was also observed during weekly site inspection with RE, IEC and Contractor on 21 January 2016. (Photo 7) It is considered that the exceedances were likely related to contribution of muddy runoff from the public road surface.</li> <li>5. According to the Event and Action, the monitoring frequency at WM2B has been increase to daily due to the limit level exceedance recorded until no exceedances were triggered in consecutive days. There were no exceedance triggered at WM2B for monitoring on 19 and 20 January</li> </ol>	



	2016. Nevertheless, the Contractor is reminded to continuous fully implement the water mitigation measures as recommended in the implementation schedule for environmental mitigation measures in the EM&A Manual.
--	--

**Prepared By :** Nicola Hon  
**Designation :** Environmental Consultant  
**Signature :**   
**Date :** 1 February 2016

## Photo Record



**Photo 1**  
Very shallow water at WM2B on 16 January 2016 and the water flowing in the channel was slightly turbid.



**Photo 2**  
The water samples collected at WM2B was visually turbid on 16 January 2016.



**Photo 3**  
Self-monitoring was conducted by the Contractor on 16 January 2016 and treated water in the AquaSed was slightly turbid. As advised by the Contractor, desludging of the AquaSed is now carried out daily to ensure it functions effectively.



**Photo 4**  
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.



**Photo 5**  
Concrete bund was constructed next to the channel.



**Photo 6**  
During the course of monitoring on 16 January 2016, muddy runoff from the public road surface into the existing channel was observed after rain.



**Photo 6**

During weekly site inspection on 21 January 2016, muddy runoff from the public road surface into the existing channel was observed after rain.

**Agreement No. CE 45/2008**  
**Liantang/ Heung Yuen Wai Boundary Control Point and Associated Works**  
**Investigation Report on Action or Limit Level Non-compliance**

<b>Project</b>	CE 45/2008	
<b>Date</b>	18 January 2016	18 January 2016
<b>Location</b>	WM2B	WM2B
<b>Time</b>	11:03	11:03
<b>Parameter</b>	Turbidity (NTU)	Suspended Solids (mg/L)
<b>Action Level</b>	11.4 AND 120% of upstream control station of the same day	11.8 AND 120% of upstream control station of the same day
<b>Limit Level</b>	12.3 AND 130% of upstream control station of the same day	12.4 AND 130% of upstream control station of the same day
<b>Measured Level at Control Station (WM2B-C)</b>	5.7	5.0
<b>Measured Level at WM2B</b>	<b>23.9</b>	<b>24.5</b>
<b>Exceedance</b>	<b>Limit Level</b>	<b>Limit Level</b>
<b>Investigation Results, Recommendations &amp; Mitigation Measures</b>	<ol style="list-style-type: none"> <li>1. According to the site information provided from the Contractor of C6, construction activities carried out on 18 January 2016 at North Portal at upstream of WM2B included bored piling and slope work. The monitoring locations and works area are shown in Figure 1.</li> <li>2. According to the site record from the monitoring team during monitoring on 18 January 2016, very shallow water was measured at WM2B and the water depth was around 0.01m. (Photo 1) Although cumulated silt was observed at the channel bed, the water flowing in the channel and the samples collected at WM2B was visually clear. (Photo 2) 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.</li> <li>3. As advised by the Contractor, the wastewater generated from the bored piling was recirculated and no discharge was made. As water mitigation measures, two sump pits 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 and concrete bund was constructed next to the channel. (Photo 3 &amp; 4) As advised by the Contractor, hydro-seeding will be carried out on the stabilized slope to minimize the muddy runoff in late January 2016.</li> <li>4. Since there was no discharge made from the site and runoff was unlikely to occur during non-rainy day, it is considered that the exceedances were related to the disturbance of the cumulated silt at the channel bed when sampling carry out at shallow water.</li> <li>5. According to the Event and Action, the monitoring frequency at WM2B has been increase to daily due to the limit level exceedance recorded until no exceedances were triggered in consecutive days. There were no exceedance triggered at WM2B for monitoring on 19 and 20 January 2016. Nevertheless, the Contractor is reminded to continuous fully implement the water mitigation measures as recommended in the implementation schedule for environmental mitigation measures in the EM&amp;A Manual.</li> </ol>	

**Prepared By :** Nicola Hon

**Designation :** Environmental Consultant

**Signature :** 

**Date :** 1 February 2016

## Photo Record



**Photo 1**  
Very shallow water at WM2B on 18 January 2016 and cumulated silt was observed at the channel bed.



**Photo 2**  
The water samples collected at WM2B was visually clear on 18 January 2016



**Photo 3**  
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.



**Photo 4**  
Concrete bund was constructed next to the channel.

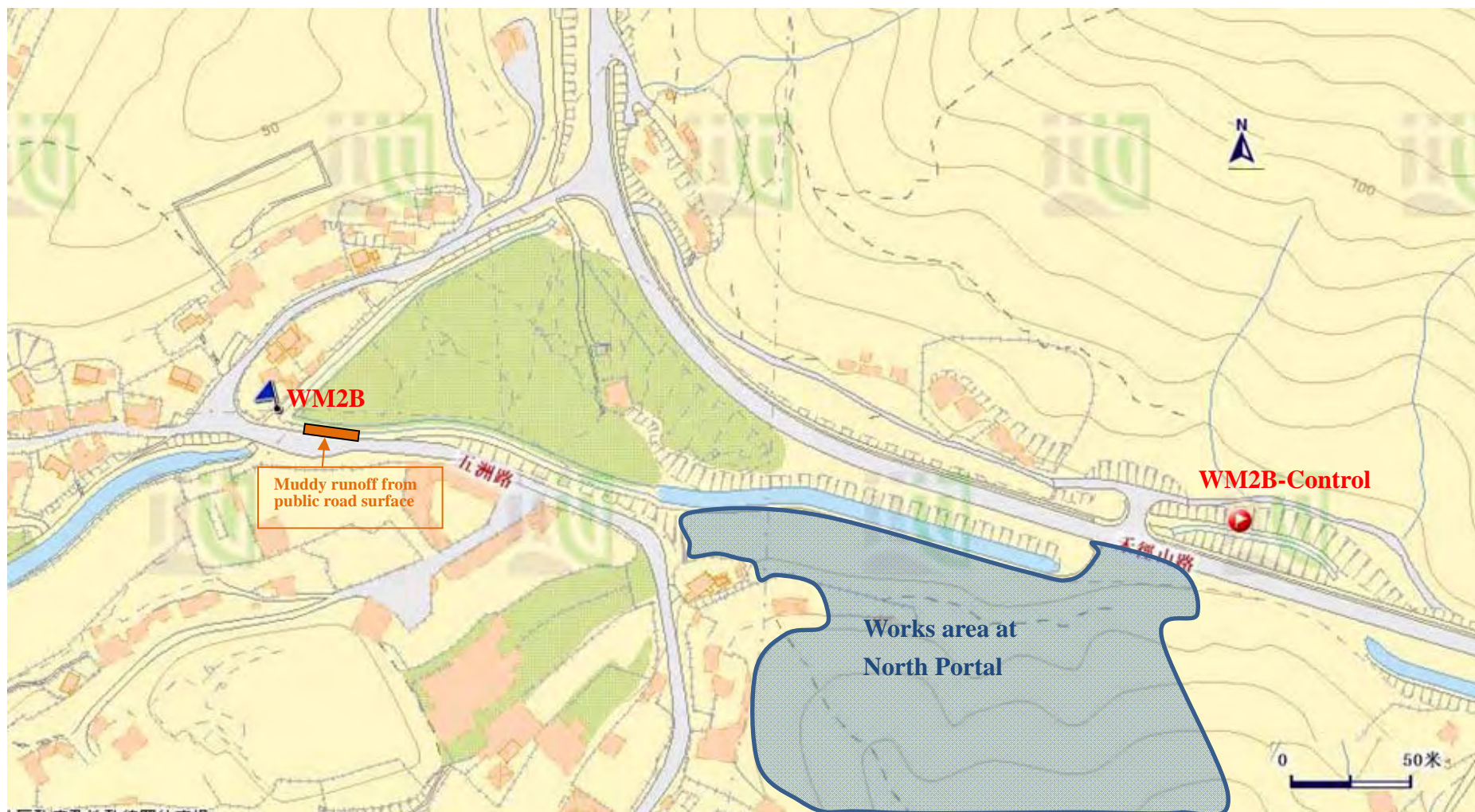


Figure 1 Location Map for Water Quality Monitoring Locations WM2B and WM2B-Control

<b>To</b>	<b>Mr. Vincent Chan</b>	<b>Fax No</b>	<b>By e-mail</b>
<b>Company</b>	<b>CRBC-CEC-Kaden JV</b>		
<b>cc</b>			
<b>From</b>	<b>Nicola Hon</b>	<b>Date</b>	<b>29 January 2016</b>
<b>Our Ref</b>	TCS00694/13/300/ <b>F0124a</b>	<b>No of Pages</b>	<b>5 (Incl. cover sheet)</b>
<b>RE</b>	<b>Agreement No. CE 45/2008</b> <b>Liantang/ Heung Yuen Wai Boundary Control Point and Associated Works</b> <b>Investigation Report of Exceedance of Water Quality at Location WM2A on 16 and 18</b> <b>January 2016</b>		

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Dear Sir,

Further to the Notification of Exceedance (NOE) ref.: TCS00694/13/300/F0118 dated 18 January 2016 and TCS00694/13/300/F00122 dated 22 January 2016.

Please find attached the “Investigation Report on Action or Limit Level Non-compliance” referenced above for your follow up action.

Should you have any queries or need further information, please do not hesitate to contact us or the undersigned at **Tel: 2959-6059 or Fax: 2959-6079.**

Yours Faithfully,  
 For and on Behalf of  
**Action-United Environmental Services & Consulting**



Nicola Hon  
 Environmental Consultant

Encl.

c.c.	Mr. David Chan (EPD)	Fax:	2685 1155
	Mr. Simon Leung (ER. AECOM)	Fax:	2551 0698
	Mr. Antony Wong (IEC, SMEC)		By email



**Agreement No. CE 45/2008**  
**Liantang/ Heung Yuen Wai Boundary Control Point and Associated Works**  
**Investigation Report on Action or Limit Level Non-compliance**

<b>Project</b>	CE 45/2008			
<b>Date</b>	<b>16 January 2016</b>	<b>18 January 2016</b>	<b>16 January 2016</b>	<b>18 January 2016</b>
<b>Location</b>	WM2A			
<b>Time</b>	10:20	11:10	10:20	11:10
<b>Parameter</b>	Turbidity (NTU)		Suspended Solids (mg/L)	
<b>Action Level</b>	24.9 AND 120% of upstream control station of the same day		14.6 AND 120% of upstream control station of the same day	
<b>Limit Level</b>	33.8 AND 130% of upstream control station of the same day		17.3 AND 130% of upstream control station of the same day	
<b>Measured Level at Control Station (WM2A-C)</b>	10.7	8.2	4.0	17.0
<b>Measured Level at WM2A</b>	<b>40.6</b>	<b>570.0</b>	<b>17.0</b>	<b>227.5</b>
<b>Exceedance</b>	<b>Limit Level</b>	<b>Limit Level</b>	<b>Action Level</b>	<b>Limit Level</b>
<b>Investigation Results, Recommendations &amp; Mitigation Measures</b>	<ol style="list-style-type: none"> <li>1. According to the site information provided from the Contractor of C6, construction activities carried out on 16 and 18 January 2016 at Bridge D at upstream of WM2A included piling works and construction of temporary bridge. There was no wastewater generated from the temporary bridge construction and wastewater treatment system was implemented for piling works. . (Figure 1)</li> <li>2. According to the site record from the monitoring team during monitoring on 16 and 18 January 2016, turbid water was observed at WM2A (Photo 1 &amp; 2) whilst the water at WM2A-C was visually clear.</li> <li>3. As water mitigation measures, wastewater treatment facilities including one AquaSed and three series of sedimentation tank have been installed for piling work. (Photo 3) As advised by the Contractor, the wastewater generated from piling was recirculated and no discharge was made on 16 and 18 January 2016. .</li> <li>4. During site inspection in on 14 January 2016, preparation for piling work was conducted at Bridge D. It was observed that slope adjacent to the river course was laid with rock fill and covered with tarpaulin to minimize muddy runoff as interim mitigation measures. (Photo 4) However, the current mitigation measures are no sufficient to cope with site runoff especially when raining. As advised by the Contractor, construction of temporary drainage system and set up of bund will be commenced on 3 February 2016 for the works area of Bridge D.</li> <li>5. According to the meteorological record from the HKO, it rained on 16 and 17 January 2016. Since the temporary drainage system has not yet properly in place, it was considered that muddy runoff from the site into the river course was likely to occur.</li> </ol>			

	<p>6. According to the Event and Action, the monitoring frequency at WM2A has been increase to daily due to the limit level exceedance recorded until no exceedances were triggered in consecutive days. There were no exceedance triggered at WM2A for monitoring on 19 and 20 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&amp;A Manual.</p>
--	---

**Prepared By :** Nicola Hon

**Designation :** Environmental Consultant

**Signature :** 

**Date :** 29 January 2016

## Photo Record



**Photo 1**  
Turbid water was observed at WM2A during water monitoring on 16 January 2016.



**Photo 2**  
Turbid water was observed at WM2A during water monitoring on 18 January 2016.



**Photo 3**  
Wastewater treatment facilities was installed for piling work at Bridge D.



**Photo 4**  
During site inspection in on 14 January 2016, it was observed that slope adjacent to the river course was laid with rock fill and covered with tarpaulin to minimize muddy runoff

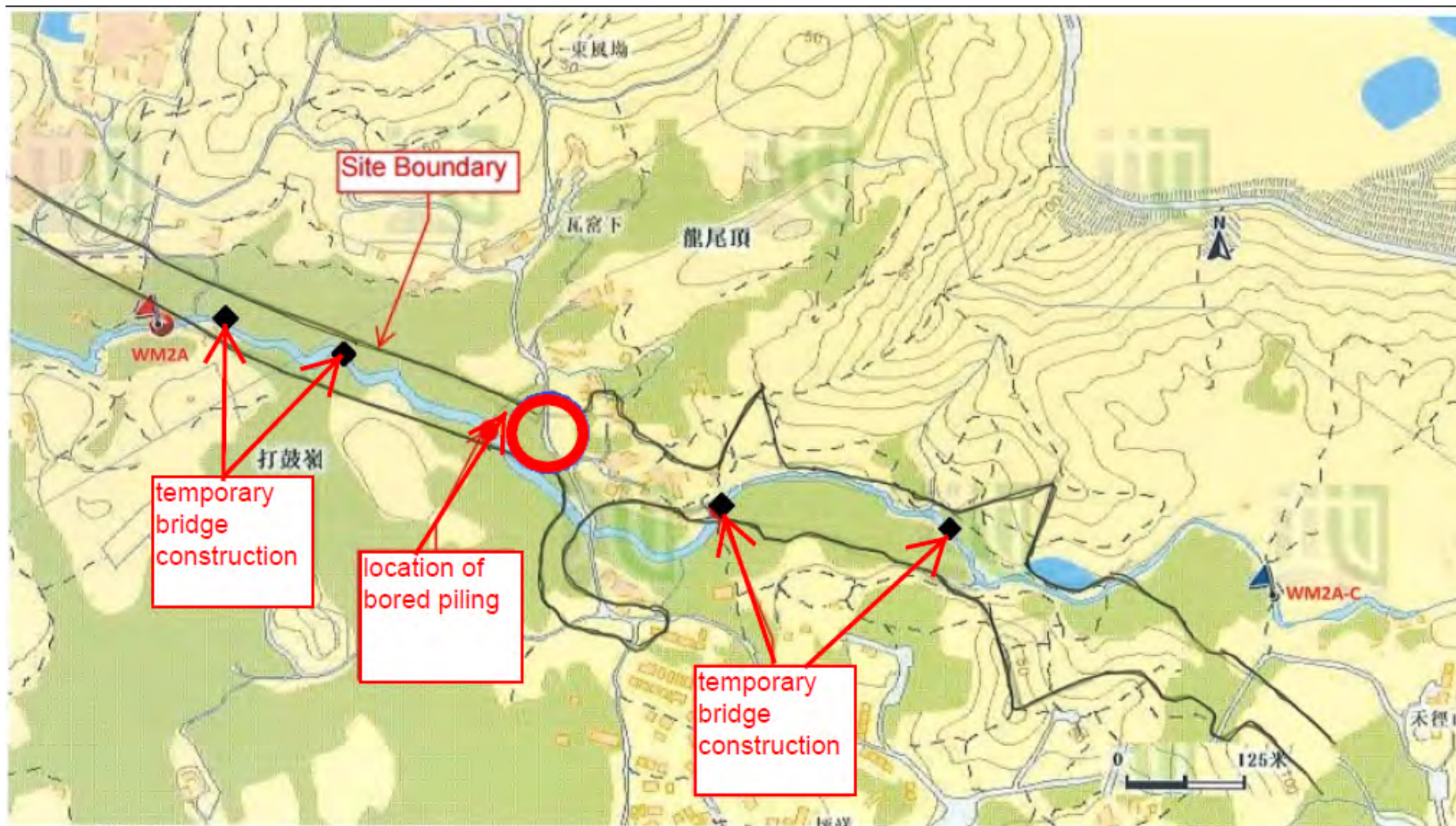


Figure 1 Location Map for the Site Area and Water Monitoring Location




**Agreement No. CE 45/2008**  
**Liantang/ Heung Yuen Wai Boundary Control Point and Associated Works**  
**Investigation Report on Action or Limit Level Non-compliance**

Project	CE 45/2008			
Date	28 January 2016	29 January 2016	28 January 2016	29 January 2016
Location	WM2B	WM2B	WM2B	WM2B
Time	14:42	12:20	14:42	12:20
Parameter	Turbidity (NTU)		Suspended Solids (mg/L)	
Action Level	11.4 AND 120% of upstream control station of the same day		11.8 AND 120% of upstream control station of the same day	
Limit Level	12.3 AND 130% of upstream control station of the same day		12.4 AND 130% of upstream control station of the same day	
Measured Level at Control Station (WM2B-C)	164	11.1	184.0	7.0
Measured Level at WM2B	<b>502.5</b>	<b>366.0</b>	<b>289.0</b>	<b>375.0</b>
Exceedance	<b>Limit Level</b>	<b>Limit Level</b>	<b>Limit Level</b>	<b>Limit Level</b>
Investigation Results, Recommendations & Mitigation Measures	<ol style="list-style-type: none"> <li>1. According to the site information provided from the Contractor of C6 (CCKJV), construction activities carried out at North Portal which at upstream of WM2B on 28 and 29 January 2016 included bored piling and slope excavation. The monitoring locations and works area are shown in Figure 1.</li> <li>2. According to the site record from the monitoring team on 28 and 29 January 2016, muddy water was observed at WM2B (Photo 1 and 2)</li> <li>3. As advised by the CCKJV, soil erosion and generation of run-off from the excavation area at North Portal was happened on 28 and 29 January 2016 during rainstorm. Hydro-seeding at the upper stabilized slope was completed in late January 2016, however, covering the opened slopes at the active excavation area by tarpaulin to minimize muddy runoff was unable to carry out. (Photo 3) As water mitigation measures, temporary channel and sump pits were constructed under the slopes to intercept the storm runoff for primarily desilting before divert to the wastewater treatment facilities. However, the current mitigation measures were not adequate to cater the large amount of storm runoff during rainstorm. The storm run-off from excavation area was flowing into the existing channel during rainstorm. (Photo 4)</li> <li>4. The Contractor was advised to review the temporary drainage system for North Portal and enhance the mitigation measures as far as practicable.</li> <li>5. According to the Event and Action, the monitoring frequency at WM2B has been increase to daily due to the limit level exceedance recorded until no exceedances were triggered in consecutive days. In view of the subsequent monitoring result turbidity exceedances were triggered at WM2B on 1 and 2 February 2016. The Contractor should enhance the water mitigation measures and fully implement the recommended in the implementation schedule for environmental mitigation measures in the EM&amp;A Manual.</li> </ol>			

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**Designation :** Environmental Consultant

**Signature :** 

**Date :** 3 February 2016

## Photo Record



**Photo 1**  
Turbid water was observed at WM2B on 28 January 2016.



**Photo 2**  
Turbid water was observed at WM2B on 29 January 2016.

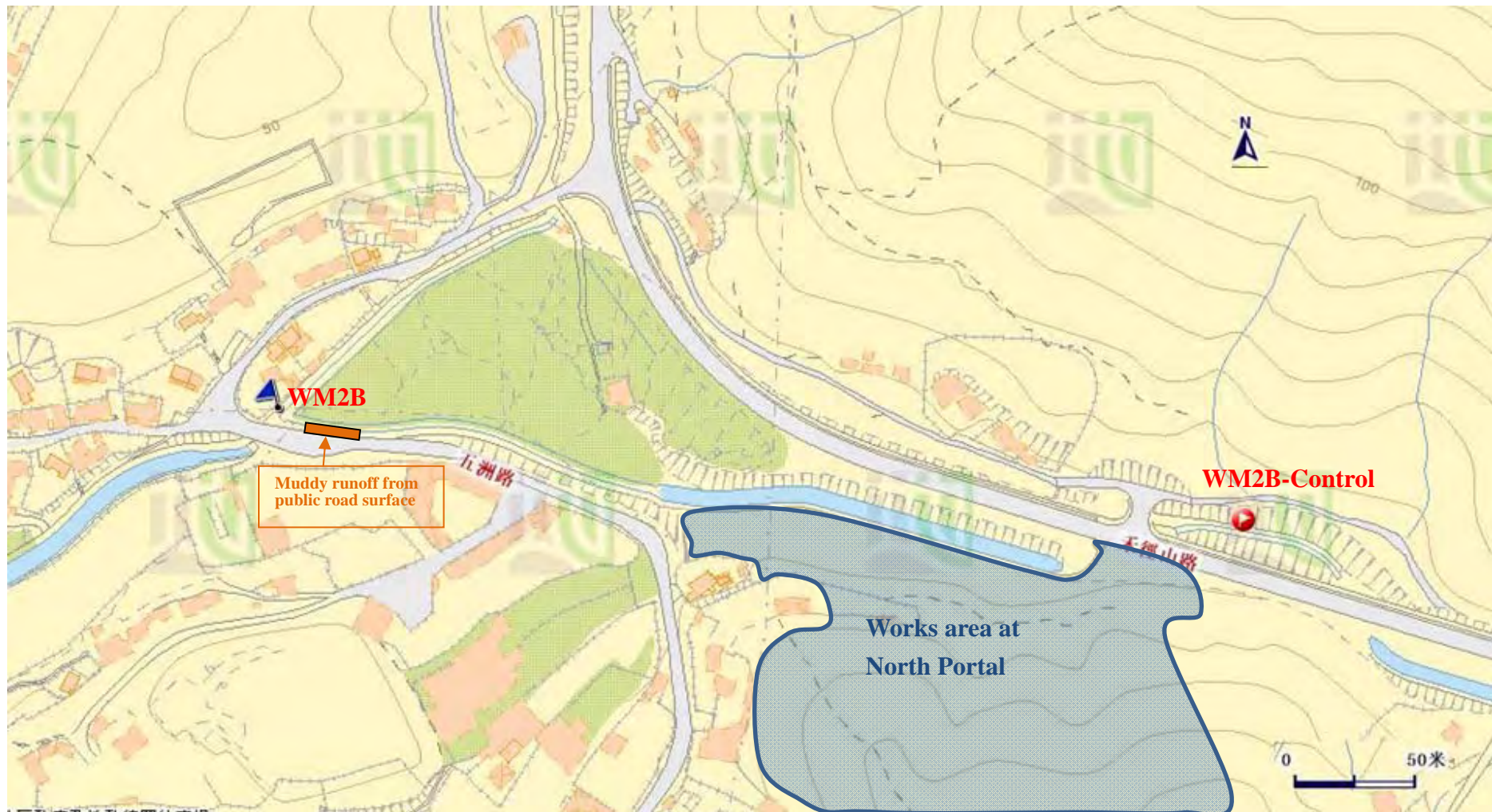


**Photo 3**  
Slope excavation at North Portal was carried out on 28 and 29 January 2016



**Photo 4**  
Run off from excavation area was flowing into the existing channel during rainstorm.





**Figure 1** Location Map for Water Quality Monitoring Locations WM2B and WM2B-Control