Civil Engineering and Development Department

EP-344/2009 – New Sewage Pumping Stations Serving KTD
EP-337/2009 – New Distributor Roads Serving the Planned KTD

Contract No. KL/2012/03
Kai Tak Development –Stage 4 Infrastructure at Former North Apron Area

Monthly EM&A Report

July 2017

(Version 1.0)

Approved By	(Environmental Team Leader)

REMARKS:

The information supplied and contained within this report is, to the best of our knowledge, correct at the time of printing.

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EXECUTIVE SUMMARY

Introduction

1. This is the 44th Monthly Environmental Monitoring and Audit (EM&A) Report prepared by Cinotech Consultants Ltd. for "Contract No. KL/2012/03 - Kai Tak Development –Stage 4 Infrastructure at Former North Apron Area" (Hereafter referred to as "the Project"). This contract comprises the construction of Schedule 2 Designated Projects (DP) Road D2 & Sewage Pumping Station PS2 and PS NPS which forms a part of the works under two Environmental Permits (EP), EP-337/2009 and EP-344/2009. The title of the designated projects under Environmental Permit No.: EP-344/2009 is "New sewage pumping stations serving Kai Tak Development" and under Environmental Permit No.: EP-337/2009 is "New distributor roads serving the planned Kai Tak Development". This report documents the findings of EM&A Works conducted from 1 to 31 July 2017.

2. The major site activities undertaken in the reporting month included:
   - Daily Cleaning
   - Finishing works, E&M work in PS2
   - Water test, backfill and sheet-pile removal in Heading 7A,
   - Chamber construction, DCS pipe installation, backfill and sheet-pile removal, water test, grouting in Heading 7B
   - Backfill and sheet-pile removal, installation of valve in 1L4
   - Road widening work (excavation and UU works) in (Portion 1) Sung Wong Toi Road
   - Maintenance & Servicing Engineer's office in Portion 9
   - Rising Main installation in Pit2
   - Rising Main installation in Pit 4
   - Install fitting inside chamber in Pit 5
   - Install fitting inside chamber in Pit9
   - Install fitting inside chamber in Pit10
   - Installation of drainage , UU laying works and Road works in Road D2
   - Finishing works and E&M works in NPS
   - UU works and Road Works in Road L19 and Bailey Street
   - Refer construction works of NPS in portion 4 sewerage; and
   - Removal of excavated material in Portion 6

Environmental Monitoring Works

3. Environmental monitoring for the Project was performed in accordance with the EM&A Manual and the monitoring results were checked and reviewed. Site Inspections/Audits were conducted once per week. The implementation of the environmental mitigation measures, Event Action Plans and environmental complaint handling procedures were also checked.

4. Summary of the breaches of action and limit levels in the reporting month for the Project is tabulated in **Table I**.

Table I Breaches of Action and Limit Levels for the Project in the Reporting Month

Parameter	No. of Project-related Exceedance		Action Taken
	Action Level	Limit Level	
1-hr TSP	0	0	N/A

24-hr TSP	0	0	N/A
Noise	0	0	N/A

1-hour & 24-hour TSP Monitoring

5. All 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

6. All 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

7. For 24-hr TSP monitoring results at AM2 and AM3 (A), all results were adopted from Schedule 3, KLN/2016/09.

Construction Noise Monitoring

8. All construction noise monitoring was conducted as scheduled in the reporting month. No Action and Limit Level exceedance was recorded.

Environmental Licenses and Permits

9. Licenses/Permits granted to the Project include the Environmental Permit (EP) for the Project, Environmental Permits No. EP-344/2009 and EP-337/2009 were issued on 23 April 2009.

10. Registration of Chemical Waste Producer (Waste Producer Number: 5213-286-K2958-05).

11. Water Discharge License (WT00020971-2015).

12. Construction Noise Permit (GW-RE0149-17).

Key Information in the Reporting Month

13. Summary of complaint received, reporting changes and notifications of any summons and successful prosecutions in the reporting month is tabulated in **Table II**.

Table II Summary Table for Key Information in the Reporting Month

Event	Event Details		Action Taken	Status	Remark
	Number	Nature			
Complaint received	0	---	N/A	N/A	---
Reporting Changes	0	---	N/A	N/A	---
Notifications of any summons & prosecutions received	0	---	N/A	N/A	---

Future Key Issues

14. The future key environmental issues in the coming month include:
- Daily Cleaning
- Finishing works, E&M work in PS2
- Water test, backfill and sheet-pile removal in Heading 7A
- Chamber construction, DCS pipe installation, backfill and sheet-pile removal, water test,
- grouting in Heading 7B
- Backfill and sheet-pile removal, installation of valve in 1L4
- Road widening work (excavation and UU works) in (Portion 1) Sung Wong Toi Road
- Maintenance & Servicing Engineer's office in Portion 9
- Rising Main installation in Pit2

- Rising Main installation in Pit 4
- Install fitting inside chamber in Pit 5
- Install fitting inside chamber in Pit9
- Install fitting inside chamber in Pit10
- Installation of drainage , UU laying works
- Road works in Road D2
- Finishing works and E&M works in NPS
- UU works and Road Works in Road L19 and Bailey Street
- Refer construction works of NPS in portion 4 sewerage; and
- Removal of excavated material in Portion 6

INTRODUCTION

Background

1.1 The Kai Tak Development (KTD) is located in the south-eastern part of Kowloon Peninsula, comprising the apron and runway areas of the former Kai Tak Airport and existing waterfront areas at To Kwa Wan, Ma Tau Kok, Kowloon Bay, Kwun Tong and Cha Kwo Ling. It covers a land area of about 328 hectares. Stage 4 Infrastructure at Former North Apron Area is one of the construction stages of KTD. Schedule 2 DPs in this Project include new distributor roads serving the planned KTD and new sewage pumping stations serving the planned KTD. The general layout of the Project is shown in **Figure 1.**

1.2 Two Environmental Permits (EPs) No. EP-344/2009 and EP-337/2009 were also issued to the Permit Holder Civil Engineering and Development Department on 23 April 2009 for new sewage pumping stations serving the planned KTD and new distributor roads serving the planned KTD respectively.

1.3 A study of environmental impact assessment (EIA) was undertaken to identify the key issues of air quality, noise, water quality, waste, land contamination, cultural heritage and landscape and visual impact, and recommend possible mitigation measures associated with the works. The EIA Report (Register No. AEIAR-130/2009) was approved by the Environmental Protection Department (EPD) on 4 April 2009.

1.4 Cinotech Consultants Limited (Cinotech) is commissioned by Kwan On Construction Co., Ltd. (the Contractor) to undertake the role of the Environmental Team (ET) for the Contract No. KL/2012/03 - Stage 4 Infrastructure at Former North Apron Area. The construction work under KL/2012/03 comprises the construction of Road D2 & Sewage Pumping Station PS2 and PS NPS which forms a part of the works under two EPs (EP-337/2009 and EP-344/2009).

1.5 The construction commencement of this Contract was on 1st December 2013 for Road D2, Sewage Pumping Station PS2 and PS NPS. This is the 44th Monthly EM&A report summarizing the EM&A works for the Project from 1 to 31 July 2017.

Project Organizations

1.6 Different parties with different levels of involvement in the project organization include:

- Project Proponent – Civil Engineering and Development Department (CEDD).
- The Engineer and the Engineer's Representative (ER) – AECOM.
- Environmental Team (ET) – Cinotech Consultants Limited (CCL).
- Independent Environmental Checker (IEC) – Arcadis Design & Engineering Limited. (Arcadis).
- Contractor –Kwan On Construction Co., Ltd. (Kwan On).

1.7 The key contacts of the Project are shown in **Table 1.1** and **Figure 5**.

Table 1.1 Key Project Contacts

Party	Role	Contact Person	Position	Phone No.	Fax No.
CEDD	Project Proponent	Mr. C. K. Choi	Senior Engineer	2301 1174	2301 1277
AECOM	Engineer's Representative	Mr. John Yam	SRE	2798 0771	3013 8864
		Mr. Jacky Pun	RE		
Cinotech	Environmental Team	Dr. Priscilla Choy	Environmental Team Leader	2151 2089	3107 1388
		Ms. Ivy Tam	Project Coordinator and Audit Team Leader	2151 2090	
Arcadis	Independent Environmental Checker	Mr. Wong Fu Nam	Independent Environmental Checker	2911 2744	2805 5028
Kwan On	Contractor	Mr. Albert Ng	Site Agent	3689 7752	3689 7726
				6146 6761 (Hotline telephone number)	

Construction Activities undertaken during the Reporting Month

1.8 The site activities undertaken in the reporting month included:

- Daily Cleaning
- Finishing works, E&M work in PS2
- Water test, backfill and sheet-pile removal in Heading 7A,
- Chamber construction, DCS pipe installation, backfill and sheet-pile removal, water test, grouting in Heading 7B
- Backfill and sheet-pile removal, installation of valve in 1L4
- Road widening work (excavation and UU works) in (Portion 1) Sung Wong Toi Road
- Maintenance & Servicing Engineer's office in Portion 9
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- Installation of drainage , UU laying works and Road works in Road D2
- Finishing works and E&M works in NPS
- UU works and Road Works in Road L19 and Bailey Street
- Refer construction works of NPS in portion 4 sewerage; and
- Removal of excavated material in Portion 6

1.9 The construction programme showing the inter-relationship with environmental protection/mitigation measures is presented in **Table 1.2**.

Table 1.2 Construction Programme Showing the Inter-Relationship with Environmental Protection/Mitigation Measures

Construction Works	Generated Major Environmental Impact	Control Measures
Construction of superstructure of Pumping Station PS2 and NPS;	Dust, Water Quality, Waste Management	• Sufficient watering of the works site with active dust emitting activities; • Properly cover the stockpiles; • Appropriate desilting/sedimentation devices provided on site for treatment before discharge; • Well maintain the drainage system to prevent the spillage of wastewater during heavy rainfall; and • On-site waste sorting and implementation of trip ticket system.
Backfilling between sewerage manholes 1K1_1 and FMH10_340 and construction of manhole FMH10_370a at L6;	Dust, Noise	• Use of quiet plant and well-maintained construction plant; and • Properly cover the stockpiles;
Installation of precast unit and construction of in-situ portions of Box Culvert B6; Construction of jacking pits nos. 1 and 2; Installation of gas pipe at pit no. 10; Construction of washout chamber at pit no. 11;	Noise, Waste Management	• Use of quiet plant and well-maintained construction plant; and • Provide hoarding. • Good management and control on construction waste reduction
Construction of sewerage manhole FMH 10 at Bailey Street; Widening works of Sung Wong Toi Road.	Noise	• Use of quiet plant and well-maintained construction plant; and • Provide hoarding.
Pipe laying from manhole SMH2204 to Box Culvert B6; Laying of rising mains from PS2 to chainage CHA-18; Pipe laying from stormwater manholes SMH1962 to SMH1963 and construction of manholes SMH1953 and SMH1963 at L6; Installation of DCS;	Noise, Water Quality	• Use of quiet plant and well-maintained construction plant; and • Well maintain the drainage system to prevent the spillage of wastewater during heavy rainfall.

Summary of EM&A Requirements

1.10 The EM&A programme requires construction noise monitoring, air quality monitoring, landscape and visual monitoring and environmental site audit. The EM&A requirements for each parameter are described in the following sections, including:

- All monitoring parameters;
- Action and Limit levels for all environmental parameters;
- Event Action Plans;
- Environmental requirements and mitigation measures, as recommended in the EM&A Manual under the EP.

1.11 The advice on the implementation status of environmental protection and pollution control/mitigation measures is summarized in Section 6 of this report.

1.12 This report presents the implementation of the EM&A programme for the Project from 1 to 31 July 2017.

1.13 Air quality monitoring stations within 500m and noise monitoring stations within 300m from the boundary of this Project are considered as relevant monitoring locations. In such regard, the relevant air quality and noise monitoring locations are tabulated in **Table 1.3** (see **Figure 2 and 3** for their locations).

Table 1.3 Air Quality and Noise Monitoring Stations for this Project

Locations	Monitoring Stations In accordance with EM&A Manual	Alternative Monitoring Stations
Air Quality Monitoring Stations		
AM2 - Lee Kau Yan Memorial School	Yes	N/A
AM3 – Sky Tower	No	AM3(A) – Holy Trinity Bradbury Centre
AM4 – Grand Waterfront	No	AM4(A) – EMSD Workshop*
AM5 – CCC Kei To Secondary School	No	N/A^
AM6 – Site 1B4 (Planned)	N/A	
Noise Monitoring Stations		
M6 – Holy Carpenter Primary School	No	M6(A) – Oblate Primary School
M7 – CCC Kei To Secondary School	Yes	N/A
M8 – Po Leung Kuk Ngan Po Ling College	Yes	N/A
M9 – Tak Long Estate	Yes	N/A
M10 – Site 1B4 (Planned)	N/A	

Remarks:
- "Yes" - Monitoring station is the same as that stated in EM&A Manual
- No - Monitoring station is not the same as that stated in EM&A Manual. Request for carrying monitoring works at the monitoring stations stated in EM&A Manual was rejected by owner of premise. Alternative monitoring stations were proposed by the ET of Schedule 3 EIA and approved by the EPD.
- N/A - No alternative monitoring station is required.
- *AM4(A) – EMSD Workshop was cancelled due to unsuccessful accessibility of the facility. 1-hr TSP monitoring was conducted at AM4(B) – Ma Tau Kok Road (next to EMSD workshop) temporarily and 24-hr TSP monitoring was conducted at AM4(C) – New Pumping Station under Contract No. KL/2012/03.
- ^AM5(A) – Po Leung Kuk Ngan Po Ling College was cancelled because no permission was granted from the premise. Air quality monitoring was carried out at AM5 – CCC Kei To Secondary School.

1.14 According to the Environmental Monitoring and Audit Manual (EM&A Manual) of the Kai Tak Development (KTD) Schedule 3 Environmental Impact Assessment (EIA) Report, the impact monitoring at the designated monitoring stations as required in KTD EM&A Manual under the EP, has been conducted in Environmental Monitoring Works for Kai Tak Development under Schedule 3 of KTD, which is on-going starting from December 2010, when the impact monitoring data under Schedule 3 of KTD were adopted for the Project.

1.15 Although Contract no. KLN/2013/16 under Schedule 3 of KTD has been superseded by KLN/2016/09 since early March 2017, the ET continued to adopt the impact monitoring data under Schedule 3 of KTD until appropriate new arrangement is agreed. The KLN/2016/09 impact environmental monitoring schedule is shown in **Appendix D**.

Status of Compliance with Environmental Permits Conditions

1.16 The status of required submission related to this Project under the Environmental Permits No. EP-337/2009 and EP-344/2009 is summarized in the **Table 1.4** and **Table 1.5** respectively:

Table 1.4 Summary Table for Required Submission under EP No. EP-337/2009

EP Conditions	Submission	Submission Date	Remark
1.11	Notification of Commencement Date of Construction of Project	31 October 2013	For Road D2
2.3	Management Organization of Main Construction Companies	31 October 2013	For Contract No. KL/2012/03
2.4	Design Drawing(s) of the Project	28 October 2013	For Road D2
2.11	Landscape Mitigation Plan(s) for distributors road(s)	7 January 2014	For Road D2
2.12	As-built drawing(s) for the distributor road(s)	To be submitted at least one week before the commencement of operation of distributor road(s)	
3.2	Baseline Monitoring Report	26 November 2010 (Part I) 24 December 2010 (Part II)	/
3.3	Four hard copies and one electronic copy of the Monthly EM&A Report No. 43 (June 2017)	31 July 2017	Monthly EM&A Report for Contract No. KL/2012/03

Table 1.5 Summary Table for Required Submission under EP No. EP-344/2009

EP Conditions	Submission	Submission Date	Remark
1.11	Notification of Commencement Date of Construction of Project	31 October 2013	For Pumping Station PS2 and PS NPS
2.3	Management Organization of Main Construction Companies	31 October 2013	For Contract No. KL/2012/03
2.4	Design Drawing(s) of the Project	28 October 2013	For Pumping Station PS2 and PS NPS
2.11	Landscape Mitigation Plan(s) for sewage pumping station(s)	7 January 2014	For Pumping Station PS2 and PS NPS
2.12	As-built drawing(s) for the sewage pumping station (s)	To be submitted at least one week before the commencement of operation of distributor road(s)	
3.2	Baseline Monitoring Report	26 November 2010 (Part I) 24 December 2010 (Part II)	/
3.3	Four hard copies and one electronic copy of the Monthly EM&A Report No. 43 (June 2017)	31 July 2017	Monthly EM&A Report for Contract No. KL/2012/03

1. AIR QUALITY

Monitoring Requirements

2.1 According to EM&A Manual under the Eps, 1-hour and 24-hour Total Suspended Particulates (TSP) monitoring were conducted to monitor the air quality for this Project. For regular impact monitoring, a sampling frequency of at least once in every six days at all of the monitoring stations for 24-hour TSP monitoring. For 1-hour TSP monitoring, the sampling frequency of at least three times in every six days shall be undertaken when the highest dust impact occurs. **Appendix A** shows the established Action/Limit Levels for the environmental monitoring works.

Monitoring Locations

2.2 Five designated monitoring stations were selected for air quality monitoring programme. Impact dust monitoring was conducted at four of the air quality monitoring stations (AM2, AM3(A), AM4(C) and AM5. **Table 2.1** describes the air quality monitoring locations, which are also depicted in **Figure 2**.

Table 2.1 Locations for Air Quality Monitoring

Monitoring Stations	Locations	Location of Measurement
AM2	Lee Kau Yan Memorial School	Rooftop (about 8/F) Area
AM3(A)	Holy Trinity Bradbury Centre	Rooftop (about 8/F) Area
AM4(C)	New Pumping Station	Rooftop (about 6/F) Area
AM5	CCC Kei To Secondary School	Rooftop (about 10/F) Area
#AM6	PA 15	Site 1B4 (Planned)

Remarks: # The impact monitoring at these locations will only be carried out until the sensitive receivers at the building are resided.

Monitoring Equipment

2.3 **Table 2.2** summarizes the equipment used in the impact air monitoring programme. Copies of calibration certificates and laboratory accreditation are attached in **Appendix B**.

Table 2.2 Air Quality Monitoring Equipment

Equipment	Model and Make	Quantity
Calibrator	TE-2025A	2
1-hour TSP Dust Meter	TSI Model AM510 SidePak Personal Aerosol Monitor	3
	Laser Dust Monitor – Model LD-3, LD-3B/ Hal-HPC300/ 301	7
HVS Sampler	GMWS 2310 c/w of TSP sampling inlet	3

	TE-5170X	7
Wind Anemometer	Davis Weather Monitor, Vantage Pro2	1

Monitoring Parameters, Frequency and Duration

2.4 Table 2.3 summarizes the monitoring parameters and frequencies of impact dust monitoring for the whole construction period. The air quality monitoring schedule for the reporting month is shown in **Appendix D**.

Table 2.3 Impact Dust Monitoring Parameters, Frequency and Duration

Parameters	Frequency
1-hr TSP	At least three times every 6 days
24-hr TSP	At least once every 6 days

Monitoring Methodology and Quality Assurance and Quality Control (QA/QC) Procedure

1-hour TSP Monitoring

Measuring Procedures

2.5 The measuring procedures of the 1-hour dust meters were in accordance with the Manufacturer's Instruction Manual as follows:

- The 1-hour dust meter is placed at least 1.3 meters above ground.
- Set POWER to "ON" and make sure that the battery level was not flash or in low level.
- Allow the instrument to stand for about 3 minutes and then the cap of the air sampling inlet has been released.
- Push the knob at MEASURE position.
- Set time/mode setting to [BG] by pushing the time setting switch. Then, start the background measurement by pushing the start/stop switch once. It will take 6 sec. to complete the background measurement.
- Push the time setting switch to change the time setting display to [MANUAL] at the bottom left of the liquid crystal display. Finally, push the start/stop switch to stop the measuring after 1 hour sampling.
- Information such as sampling date, time, count value and site condition were recorded during the monitoring period.

Maintenance/Calibration

2.6 The following maintenance/calibration was required for the direct dust meters:

- Check and calibrate the meter by High-Volume Sampler (HVS) to check the validity and accuracy of the results measured by direct reading method at 2-month intervals throughout all stages of the air quality monitoring.

24-hour TSP Monitoring

Instrumentation

2.7 High volume samplers (HVS) (Model GMWS-2310 Accu-Vol) completed with appropriate sampling inlets were employed for 24-hour TSP monitoring. The sampler was composed of a motor, a filter holder, a flow controller and a sampling inlet and its performance specification complied with that required by USEPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50). Moreover, the HVS also met all the requirements in section 2.5 of the updated EM&A Manual.

Operating/Analytical Procedures

2.8 Operating/analytical procedures for the operation of HVS were as follows:

- A horizontal platform was provided with appropriate support to secure the samplers against gusty wind.
- No two samplers were placed less than 2 meters apart.
- The distance between the sampler and an obstacle, such as buildings, was at least twice the height that the obstacle protrudes above the sampler.
- A minimum of 2 meters of separation from walls, parapets and penthouses was required for rooftop samples.
- A minimum of 2 meters separation from any supporting structure, measured horizontally was required.
- No furnaces or incineration flues were nearby.
- Airflow around the sampler was unrestricted.
- The sampler was more than 20 meters from the drip line.
- Any wire fence and gate, to protect the sampler, should not cause any obstruction during monitoring.

2.9 Prior to the commencement of the 24-hour TSP sampling, the flow rate of the high volume sampler was properly set (between 1.1 m^3/min. and 1.4 m^3/min.) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard Title 40, CFR Part 50.

2.10 For 24-hour TSP sampling, fiberglass filters having a collection efficiency of ≥ 99% for particles of 0.3μm (DOP) diameter were used.

2.11 The power supply was checked to ensure the sampler worked properly. On sampling, the sampler was operated for 5 minutes to establish thermal equilibrium before placing any filter media at the designated air monitoring station.

2.12 The filter holding frame was then removed by loosening the four nuts and a weighted and conditioned filter was carefully centered with the stamped number upwards, on a supporting screen.

2.13 The filter was aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter. Then the filter holding frame was tightened to the filter holder with swing bolts. The applied pressure should be sufficient to avoid air leakage at the edges.

2.14 The shelter lid was closed and secured with the aluminum strip.

2.15 The timer was then programmed so that the TSP will be sampled for 24 hours. Information was recorded on the record sheet, which included the starting time, the weather condition and the filter number (the initial weight of the filter paper can be found out by using the filter number).

2.16 After completion of sampling, the filter was removed and sent to Wellab Ltd., which is accredited under HOKLAS for laboratory analysis. The elapsed time was also recorded.

2.17 Before weighing, all filters were equilibrated in a conditioning environment for 24 hours. The conditioning temperature should be between 25°C and 30°C and not vary by more than ±3°C; the relative humidity (RH) should be < 50% and not vary by more than ±5%. A convenient working RH is 40%.

Maintenance/Calibration

2.18 The following maintenance/calibration was required for the HVS:

- The high volume motors and their accessories were properly maintained. Appropriate maintenance such as routine motor brushes replacement and electrical wiring checking were made to ensure that the equipment and necessary power supply are in good working condition.
- High volume samplers were calibrated at bi-monthly intervals using G25A Calibration Kit throughout all stages of the air quality monitoring.
- Orifice Transfer Standards were calibrated at yearly intervals throughout all stages of the air quality monitoring.

Results, Observations and Action/Limit Level Exceedance

2.19 All other 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

2.20 All other 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

2.21 For 24-hr TSP monitoring results at AM2 and AM3(A), all results were adopted from Schedule 3, KLN/2016/09.

2.22 The air temperature, precipitation and the relative humidity data were obtained from Hong Kong Observatory where the wind speed and wind direction were recorded by the installed Wind Anemometer set at rooftop (about 8/F) Lee Kau Yan Memorial School. The location is shown in **Figure 4**. This weather information for the reporting month is summarized in **Appendix C.**

2.23 The monitoring data and graphical presentations of 1-hour and 24-hour TSP monitoring results are shown in **Appendices E and F** respectively.

2.24 The summary of exceedance record in the reporting month is shown in **Appendix H**. No exceedance in Action/Limit Levels of 1-hour and 24-hour TSP was recorded for the air quality monitoring.

2.25 According to our field observations, the major dust source identified at the designated air

quality monitoring stations is as follows:

Table 2.4 Major dust source identified at the designated air quality monitoring stations

Station	Major Dust Source
AM2 – Lee Kau Yan Memorial School	Road Traffic Dust Exposed site area and open stockpiles Site vehicle movement
AM3(A) – Holy Trinity Bradbury Centre	Road Traffic Dust Exposed site area Excavation works Site vehicle movement
AM4(C) – New Pumping Station under Contract No. KL/2012/03	Site vehicle movement
AM5 – CCC Kei To Secondary School	Road Traffic Dust

2. NOISE

Monitoring Requirements

3.1 According to EM&A Manuals under the EP, construction noise monitoring was conducted to monitor the construction noise arising from the construction activities within KTD. The regular monitoring frequency for each monitoring station shall be on a weekly basis to conduct one set of measurements between 0700 and 1900 hours on normal weekdays. **Appendix A** shows the established Action and Limit Levels for the environmental monitoring works.

Monitoring Locations

3.2 Five designated monitoring stations were selected for noise monitoring programme. Noise monitoring was conducted at four designated monitoring stations (M6, M7, M8 and M9). **Figure 3** shows the locations of these stations.

3.3 Construction noise monitoring at Station M6 – Holy Carpenter Primary School was rejected by the premise owner on 6th October 2014. The monitoring station has been relocated at a proposed alternative noise monitoring station M6(A) – Oblate Primary School since 10th October 2014 to carry out the monitoring works.

Table 3.1 Noise Monitoring Stations

Monitoring Stations	Locations	Location of Measurement
*M6(A)	Oblate Primary School	Rooftop (about 7/F) Area
M7	CCC Kei To Secondary School	Rooftop (about 8/F) Area
M8	Po Leung Kuk Ngan Po Ling College	Staircase Area (about 9/F)
M9	Tak Long Estate	Car Park Building (about 2/F)
#M10	Site 1B4 (Planned)	-

Remarks:
* Alternative noise monitoring station for M6 – Holy Carpenter Primary School from 10th October 2014 onwards
\# The impact monitoring at these locations will only be carried out until existence of the sensitive receiver at the building.

Monitoring Equipment

3.4 **Table 3.2** summarizes the noise monitoring equipment. Copies of calibration certificates are provided in **Appendix B**.

Table 3.2 Noise Monitoring Equipment

Equipment	Model and Make	Qty.
Integrating Sound Level Meter	SVAN 955, 957	3
Calibrator	SVAN 30A & B&K4231	3

Monitoring Parameters, Frequency and Duration

3.5 Table 3.3 summarizes the monitoring parameters, frequency and total duration of monitoring. The noise monitoring schedule is shown in **Appendix D**.

Table 3.3 Noise Monitoring Parameters, Frequency and Duration

Monitoring Stations	Parameter	Period	Frequency	Type of Measurement
M7 M8 M9	L_{10}(30 min.) dB(A) L_{90}(30 min.) dB(A) L_{eq}(30 min.) dB(A)	0700-1900 hrs on normal weekdays	Once per week	Façade (*)
M6(A)	L_{10}(30 min.) dB(A) L_{90}(30 min.) dB(A) L_{eq}(30 min.) dB(A)	0700-1900 hrs on normal weekdays	Once per week	Free Field (*)

(*) Refer to bullet point 1 and 2 in the following section.

Monitoring Methodology and QA/QC Procedures

- The Sound Level Meter was set on a tripod at a point 1m from the exterior of the sensitive receivers building façade and be at a position 1.2m above the ground.
- For free field measurement, the meter was positioned away from any nearby reflective surfaces. All records for free field noise levels was adjusted with a correction of +3 dB(A).
- The battery condition was checked to ensure the correct functioning of the meter.
- Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:
  - frequency weighting : A
  - time weighting : Fast
  - time measurement : 30 minutes
- Prior to and after each noise measurement, the meter was calibrated using a Calibrator for 94.0 dB at 1000 Hz. If the difference in the calibration level before and after measurement was more than 1.0 dB, the measurement would be considered invalid and repeat of noise measurement would be required after re-calibration or repair of the equipment.
- The wind speed was frequently checked with the portable wind meter.
- At the end of the monitoring period, the L_{eq}, L_{90} and L_{10} were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.
- Noise measurement was paused temporarily during periods of high intrusive noise if possible and observation was recorded when intrusive noise was not avoided.
- Noise monitoring was cancelled in the presence of fog, rain, and wind with a steady speed exceeding 5 m/s, or wind with gusts exceeding 10 m/s.

Maintenance and Calibration

3.6 The microphone head of the sound level meter and calibrator was cleaned with a soft cloth at quarterly intervals.

3.7 The sound level meter and calibrator were checked and calibrated at yearly intervals.

3.8 Immediately prior to and following each noise measurement the accuracy of the sound level meter shall be checked using an acoustic calibrator generating a known sound pressure level at a known frequency. Measurements may be accepted as valid only if the calibration levels from before and after the noise measurement agree to within 1.0 dB.

Results, Observations and Action/Limit Level Exceedance

3.9 All construction noise monitoring was conducted as scheduled in the reporting month. No Action and Limit Level exceedance was recorded.

3.10 The baseline noise level and the Noise Limit Level at each designated noise monitoring station are presented in **Table 3.4**.

3.11 Noise monitoring results and graphical presentations are shown in **Appendix G**.

3.12 The major noise source identified at the designated noise monitoring stations is as follows:

Table 3.4 Major noise source identified at the designated noise monitoring stations

Monitoring Stations	Locations	Major Noise Source
M6(A)	Oblate Primary School	Road and marine traffic Noise
M7	CCC Kei To Secondary School	Road and marine traffic Noise
M8	Po Leung Kuk Ngan Po Ling College	Excavation works at the site (Contract No.: 1/WSD/14(K)) facing Po Leung Kuk Ngan Po Ling College
M9	Tak Long Estate	Road paving and asphalt paving works

Table 3.5 Baseline noise level and noise limit level for monitoring stations

Monitoring Stations	Baseline Noise Level, dB (A)	Noise Limit Level, dB (A)
M6(A)	63.9 (at 0700 – 1900 hrs on normal weekdays)	70* (at 0700 – 1900 hrs on normal weekdays)
M7	68.7 (at 0700 – 1900 hrs on normal weekdays)	
M8	61.9 (at 0700 – 1900 hrs on normal weekdays)	
M9	59.0 (at 0700 – 1900 hrs on normal weekdays)	75 (at 0700 – 1900 hrs on normal weekdays)

(*) Noise Limit Level is 65 dB(A) during school examination periods.

3. COMPARISON OF EM&A RESULTS WITH EIA PREDICTIONS

3.1 According to Section 16.1.6 (vi) of the EM&A Manual, the EM&A data were compared with the EIA predictions as summarized in **Table 4.1** to **4.3** below.

Table 4.1 Comparison of 1-hr TSP data with EIA predictions

Station	Predicted 1-hr TSP conc.			
	Scenario1 (Mid 2009 to Mid 2013), µg/m3	Scenario2 (Mid 2013 to Late 2016), µg/m3	Reporting Month (July 2017), µg/m3	
			Average	Range
AM2 – Lee Kau Yan Memorial School	290	312	53.8	22.7 – 97.1
AM3(A) - Holy Trinity Bradbury Centre (Alternative station for Sky Tower)	217	247	67.1	43.1 – 98.7
AM4(C) – New Pumping Station	N/A	N/A	133.3	52.2 – 314.9
AM5– CCC Kei To Secondary School	159	221	122.4	36.4 – 326.9

Table 4.2 Comparison of 24-hr TSP data with EIA predictions

Station	Predicted 24-hr TSP conc.			
	Scenario1 (Mid 2009 to Mid 2013), µg/m3	Scenario2 (Mid 2013 to Late 2016), µg/m3	Reporting Month (July 2017), µg/m3	
			Average	Range
AM2 – Lee Kau Yan Memorial School	145	169	29	23 - 36
AM3(A) - Holy Trinity Bradbury Centre (Alternative station for Sky Tower)	106	138	39	18 - 54
AM4(C) – New Pumping Station	N/A	N/A	18.3	13.8 – 22.5
AM5 – CCC Kei To Secondary School	103	128	16.4	11.0 – 25.1

Table 4.3 Comparison of Noise Monitoring Data with EIA predictions

Stations	Predicted Mitigated Construction Noise Levels during Normal Working Hour ($L_{eq\ (30min)}$ dB(A))	Reporting Month (July 2017), $L_{eq\ (30min)}$ dB(A)
M6(A) - Oblate Primary School ^	N/A	61.2 – 64.8
M7 - CCC Kei To Secondary School	45 – 68	61.1 – 67.2
M8 - Po Leung Kuk Ngan Po Ling College	44 – 70	52.8 – 62.1
M9 – Tak Long Estate	Not predicted in EIA Report	56.4 – 65.0

(^) Alternative noise monitoring station for M6 – Holy Carpenter Primary School from 10th October 2014 onwards.

4. LANDSCAPE AND VISUAL

Monitoring Requirements

5.1 According to EM&A Manual of the Kai Tak Development EIA Study, ET shall monitor and audit the contractor's activities during the construction period on a weekly basis, and to report on the contractor's performance.

Results and Observations

5.2 Site audits were carried out on a weekly basis to monitor and audit the timely implementation of landscape and visual mitigation measures within the site boundaries of this Project. The summaries of site audits are attached in **Appendix I**.

5.3 No non-compliance of the landscape and visual impact was recorded in the reporting month.

5.4 In accordance with the Action Plan presented in **Appendix J**, no corrective actions were required in the reporting month.

5. ENVIRONMENTAL AUDIT

Site Audits

6.1 Site audits were carried out on a weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Project site. The summaries of site audits are attached in **Appendix I**.

6.2 Site audits were conducted on 6, 14, 19 and 28 July 2017 in the reporting month. IEC site inspection was conducted on 19 July 2017. No non-compliance was observed during the site audits.

Status of Environmental Licensing and Permitting

6.3 All permits/licenses obtained for the Project are summarized in Table 6.1.

Table 6.1 Summary of Environmental Licensing and Permit Status

Permit No.	Valid Period		Details	Status
	From	To		
Environmental Permit (EP)				
EP-337/2009	23/04/09	N/A	Construction of new distributor roads serving the planned Kai Tak development.	Valid
EP-344/2009	23/04/09	N/A	Construction of a new sewage pumping station serving the planned Kai Tak development with installed capacity of more than 2,000 m^3 per day and a boundary of which is less than 150m from an existing or planned residential area or educational institution.	Valid
Effluent Discharge License				
WT00020971-2015	22/04/15	21/04/20	Discharge Licence for the discharge of wastewater from the construction site including contaminated surface run-off to the communal storm water drain	Valid
Registration of Chemical Waste Producer				
5213-286-K2958-05	--	--	Registration of chemical waste producer for chemical waste produced during construction of Stage 4 at former North Apron Area Infrastructure.	Valid
Construction Noise Permit				
GW-RE0149-17	29/03/17	28/09/17	Location: Heading 7A & 7B	Valid

Status of Waste Management

6.4 The amount of wastes generated by the major site activities of this Project during the reporting month is shown in **Appendix M**.

6.5 In respect of the dump truck cover, the Contractor is advised to take record photos and inspection to ensure that the skips of all dump trucks have been fully covered before leaving the site.

Implementation Status of Environmental Mitigation Measures

6.6 During site inspections in the reporting month, no non-conformance was identified. ET weekly site inspections were carried out during the reporting month and the observations and recommendations are summarized in Table 6.2.

Table 6.2 Observations and Recommendations of Site Inspections for EP-337/2009

Parameters	Date	Observations and Recommendations	Follow-up
Water Quality	6 July 2017	Reminder: Ponding water should be avoided.	Ponding water was cleared on 14 July 2017
	14 July 2017	Observation: Ponding water should be avoided.	Item was remarked as 170719-O01.
	19 July 2017	Follow up: Ponding water should be avoided.	Ponding water was cleared on 28 July 2017.
Air Quality	14 July 2017	Observation: Haul road should be sprayed with water regularly.	Haul road was observed wet on 19 July 2017.
	28 July 2017	Observation: Subbase at Portion 6 should be properly covered to prevent dust generation.	Follow up actions will be reported in the next month.
Noise	--	--	**--**
Waste/Chemical Management	--	--	**--**
Landscape and Visual	--	--	**--**
Permits /Licences	--	--	**--**

Table 6.3 Observations and Recommendations of Site Inspections for EP-344/2009

Parameters	Date	Observations and Recommendations	Follow-up
Water Quality	--	--	**--**
Air Quality	--	--	**--**

Parameters	Date	Observations and Recommendations	Follow-up
Noise	--	--	**--**
Waste/Chemical Management	--	--	**--**
Landscape and Visual	--	--	**--**
Permits /Licences	--	--	**--**

Summary of Mitigation Measures Implemented

6.7 The monthly IEC audit was carried out on 19 July 2017, the observations were recorded and they are presented as follows:

Follow up of last monthly audit:
- NIL

Observation(s) in the reporting month:
- No adverse environmental impacts were observed. No follow-up actions are required.

6.8 An updated summary of the EMIS is provided in **Appendix K**.

Implementation Status of Event Action Plans

6.9 The Event Action Plans for air quality, noise and landscape and visual are presented in **Appendix J**.

1-hr TSP Monitoring

6.10 No Action/Limit Level exceedance was recorded in the reporting month.

24-hr TSP Monitoring

6.11 No Action/Limit Level exceedance was recorded in the reporting month.

Construction Noise

6.12 No Action/Limit Level exceedance was recorded in the reporting month.

Landscape and visual

6.13 No non-compliance was recorded in the reporting month.

Summary of Complaint, Warning, Notification of any Summons and Successful Prosecution

6.14 No environmental complaint and environmental prosecution was received in the reporting

month. The summaries of environmental complaint, warning, summon and notification of successful prosecution for the Project are presented in **Appendix L**.

6. FUTURE KEY ISSUES

7.1 Major site activities undertaken for the coming two months include:

- Daily Cleaning
- Finishing works, E&M work in PS2
- Water test, backfill and sheet-pile removal inHeading 7A
- Chamber construction, DCS pipe installation, backfill and sheet-pile removal, water test,
- grouting in Heading 7B
- Backfill and sheet-pile removal, installation of valve in 1L4
- Road widening work (excavation and UU works) in (Portion 1)Sung Wong Toi Road
- Maintenance & Servicing Engineer's office in Portion 9
- Rising Main installation in Pit2
- Rising Main installation in Pit 4
- Install fitting inside chamber in Pit 5
- Install fitting inside chamber in Pit9
- Install fitting inside chamber in Pit10
- Installation of drainage , UU laying works and
- Road works in Road D2
- Finishing works and E&M works in NPS
- UU works and Road Works in Road L19 and Bailey Street
- Refer construction works of NPS in portion 4 sewerage; and
- Removal of excavated material in Portion 6

7.2 The tentative construction program for the Project is provided in **Appendix N.**

Key Issues for the Coming Month

7.3 Key environmental issues in the coming month include:

1. Dust generation from stockpiles of dusty materials, exposed site area, excavation works and rock breaking activities;
2. Water spraying for dust generating activity and on haul road;
3. Proper storage of construction materials on site;
4. Storage of chemicals/fuel and chemical waste/waste oil on site;
5. Accumulation of general and construction waste on site;
6. Noise from operation of the equipment, especially for rock-breaking activities, piling works and machinery on-site; and
7. Review and implementation of temporary drainage system for the surface runoff.

7.4 The tentative program of major site activities and the impact prediction and environmental mitigation measures for the coming two months, i.e. August and September 2017 are summarized as follows:

Table 7.1 Summary of the tentative program of major site activities, the impact prediction and control measures for August and September 2017

Construction Works	Major Impact Prediction	Control Measures
As mentioned in Section 7.1	Air quality impact (dust)	a) Frequent watering of haul road and unpaved/exposed areas; b) Frequent watering or covering stockpiles with tarpaulin or similar means; and c) Watering of any earth moving activities.
	Water quality impact (surface run-off)	d) Diversion of the collected effluent to de-silting facilities for treatment prior to discharge to public storm water drains; e) Provision of adequate de-silting facilities for treating surface run-off and other collected effluents prior to discharge; f) Provision of site boundary bund such as sealing of hoarding footings to avoid run-off from entering the existing storm water drainage system via public road; and g) Provision of measures to prevent discharge into the stream.
	Noise Impact	h) Scheduling of noisy construction activities if necessary to avoid persistent noisy operation; i) Controlling the number of plants use on site; j) Regular maintenance of machines; and k) Use of acoustic barriers if necessary.

Monitoring Schedule for the Next Month

7.5 The tentative environmental monitoring schedules for the next month are shown in **Appendix D**.

7. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

8.1 Environmental monitoring works required under the EM&A Manual were performed in the reporting month and all monitoring results were checked and reviewed.

1-hr TSP Monitoring

8.2 All 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded. 1-hour TSP concentrations in all stations in the reporting month were below the prediction in the approved Environmental Impact Assessment (EIA) Report.

24-hr TSP Monitoring

8.3 All 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded. 24-hour TSP concentrations in all stations in the reporting month were below the prediction in the approved Environmental Impact Assessment (EIA) Report

Construction Noise Monitoring

8.4 All construction noise monitoring was conducted as scheduled in the reporting month. No Action and Limit Level exceedance was recorded. The construction noise levels in all stations in the reporting month were within the range of predicted mitigated construction noise levels in the approved Environmental Impact Assessment (EIA) report.

Complaints, Notification of any Summons and Prosecution Received

8.5 No environmental complaint and environmental prosecution was received in the reporting month. The summaries of environmental complaint, warning, summon and notification of successful prosecution for the Project are presented in **Appendix L**.

Recommendations

8.6 According to the environmental audit performed in the reporting month, the following recommendations were made:

Air Quality Impact

- To implement dust suppression measures on all haul roads, stockpiles, dry surfaces and excavation works.
- To mitigate the dust generation by adequate water spraying in dry days.

Noise Impact
- To inspect the noise sources inside the site.
- To disperse the locations of noisy equipments and position the equipments as far away as possible from sensitive receivers.
- To provide temporary noise barriers for operations of noisy equipment near the noise sensitive receivers in an appropriate location.

Water Impact
- To prevent any surface runoff discharge into any stream course.
- To review and implement temporary drainage system.
- To identify any wastewater discharges from site.
- To ensure properly maintenance for de-silting facilities.
- To clear the silt and sediment in the sedimentation tanks.
- To review the capacity of de-silting facilities for discharge.
- To divert all the water generated from construction site to de-silting facilities with enough handling capacity before discharge.

Waste/Chemical Management
- To check for any accumulation of waste materials or rubbish on site.
- To ensure the performance of sorting of C&D materials at source (during generation);
- To avoid any discharge or accidental spillage of chemical waste or oil directly from the site.
- To provide proper storage area or drip trays for oil containers/ equipment on site.
- To avoid improper handling or storage of oil drum on site.

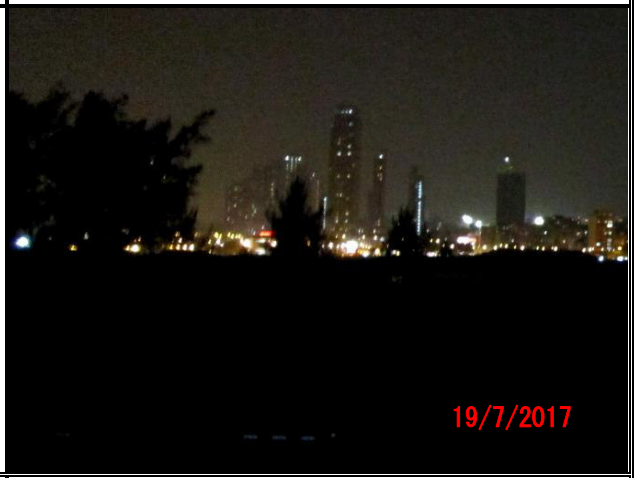
Landscape and Visual
- To protect the existing trees to be retained.
- To transplant the trees unavoidably affected by the works.
- To control of night-time lighting.
- To provide decorative screen hoarding.
- To complete landscape works at site area as early as possible.

Effectiveness of Environmental Management

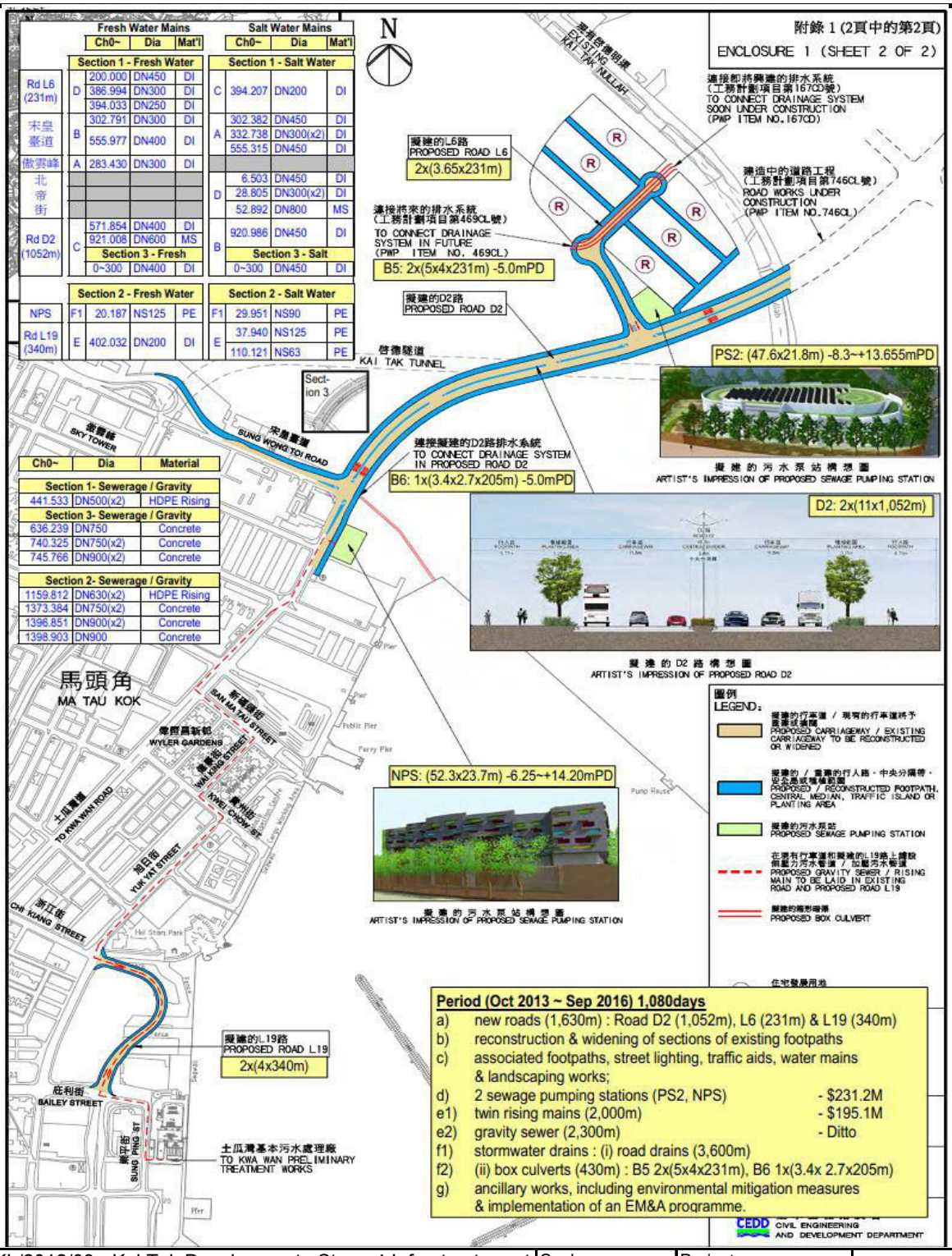
8.7 The above recommendations and the recommended mitigation measures in the EM&A Manual were carried out by the Contractor during construction. No non-compliance was recorded during the environmental site inspections as shown in **Appendix I**.

8.8 The effectiveness of environmental management is satisfactory as the above recommendations are met. Some of the examples of mitigation measures for the following recommendations are given in **Table 8.1** below.
- Surface runoff discharge into any stream course is prevented;
- Provision of sedimentation facilities after identification of wastewater discharges from site;
- Discharge or accidental spillage of chemical waste or oil directly from the site is avoided;
- Improper handling or storage of oil drum on site is avoided;
- The existing trees to be retained are protected; and
- Night-time lighting is controlled.

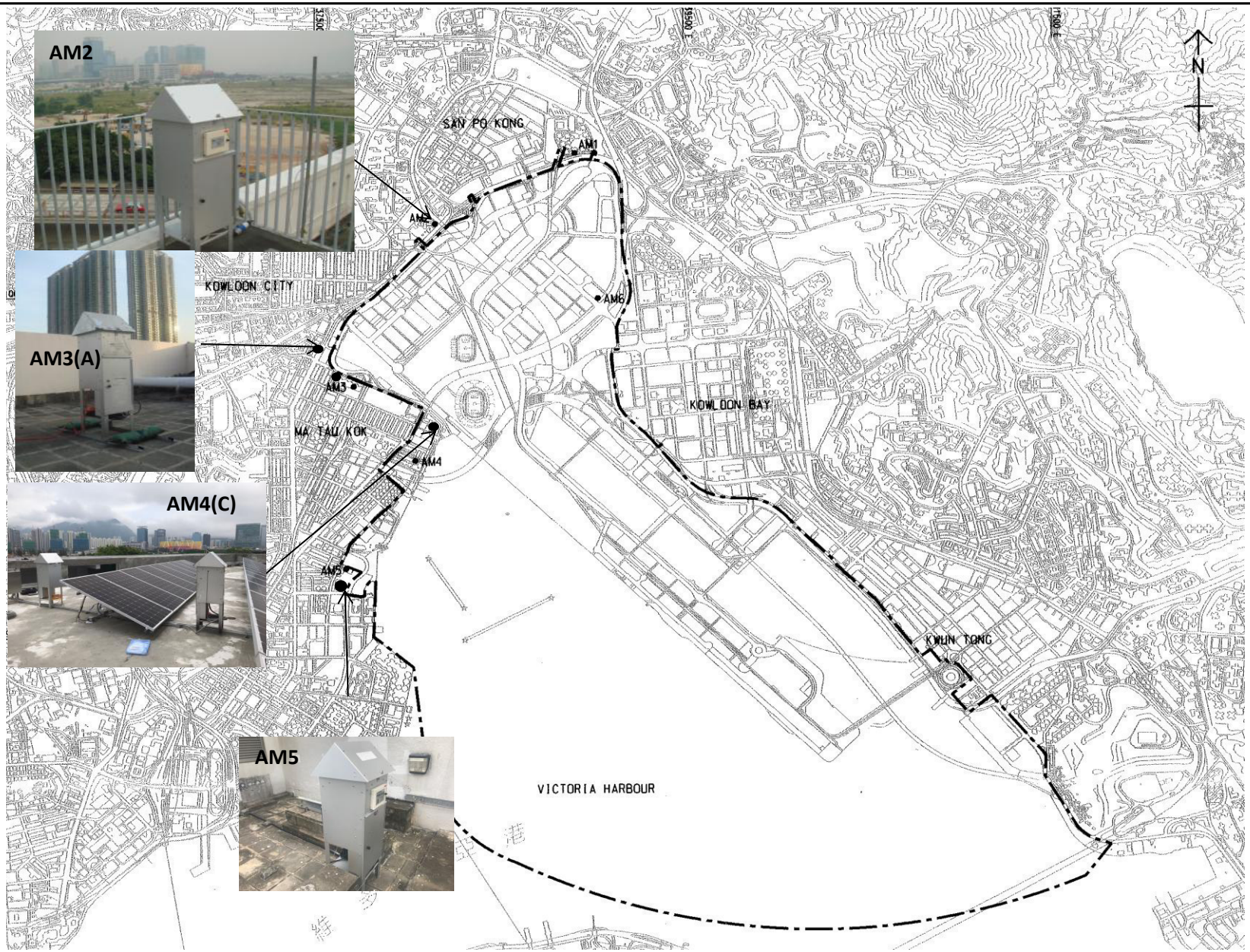
Table 8.1 Examples of Mitigation Measures for Environmental Recommendations

	
To prevent any surface runoff discharge into any stream course.	Follow-up measure(s) after identification of wastewater discharges from site.
	
To avoid any discharge or accidental spillage of chemical waste or oil directly from the site	To avoid improper handling or storage of oil drum on site
	
To protect the existing trees to be retained	To control of night-time lighting

FIGURES

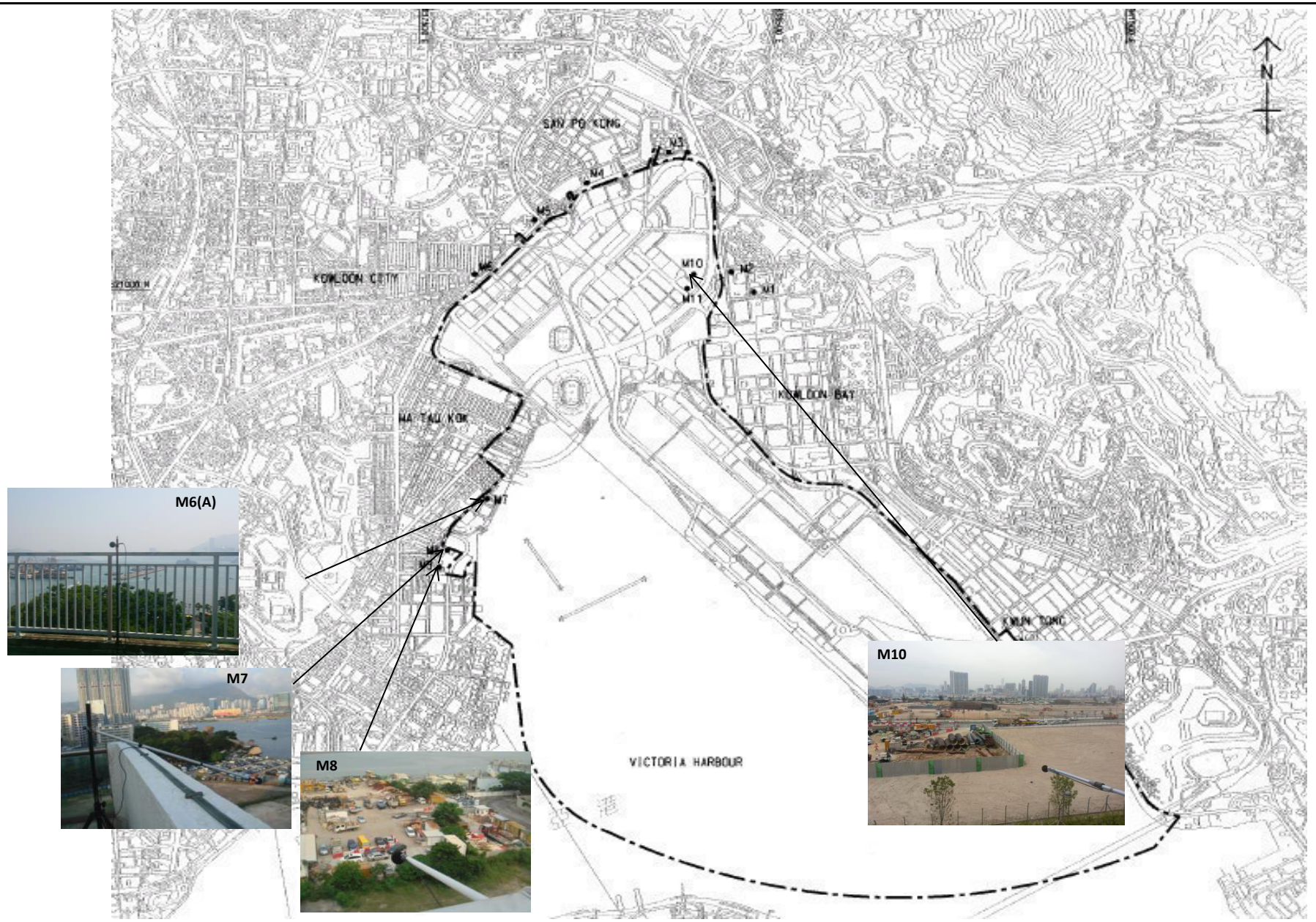


Title	KL/2012/03 - Kai Tak Development –Stage 4 Infrastructure at Former North Apron Area	Scale N.T.S	Project No. MA13056	CINOTECH
	Site Layout Plan	Date Sep-13	Figure 1	



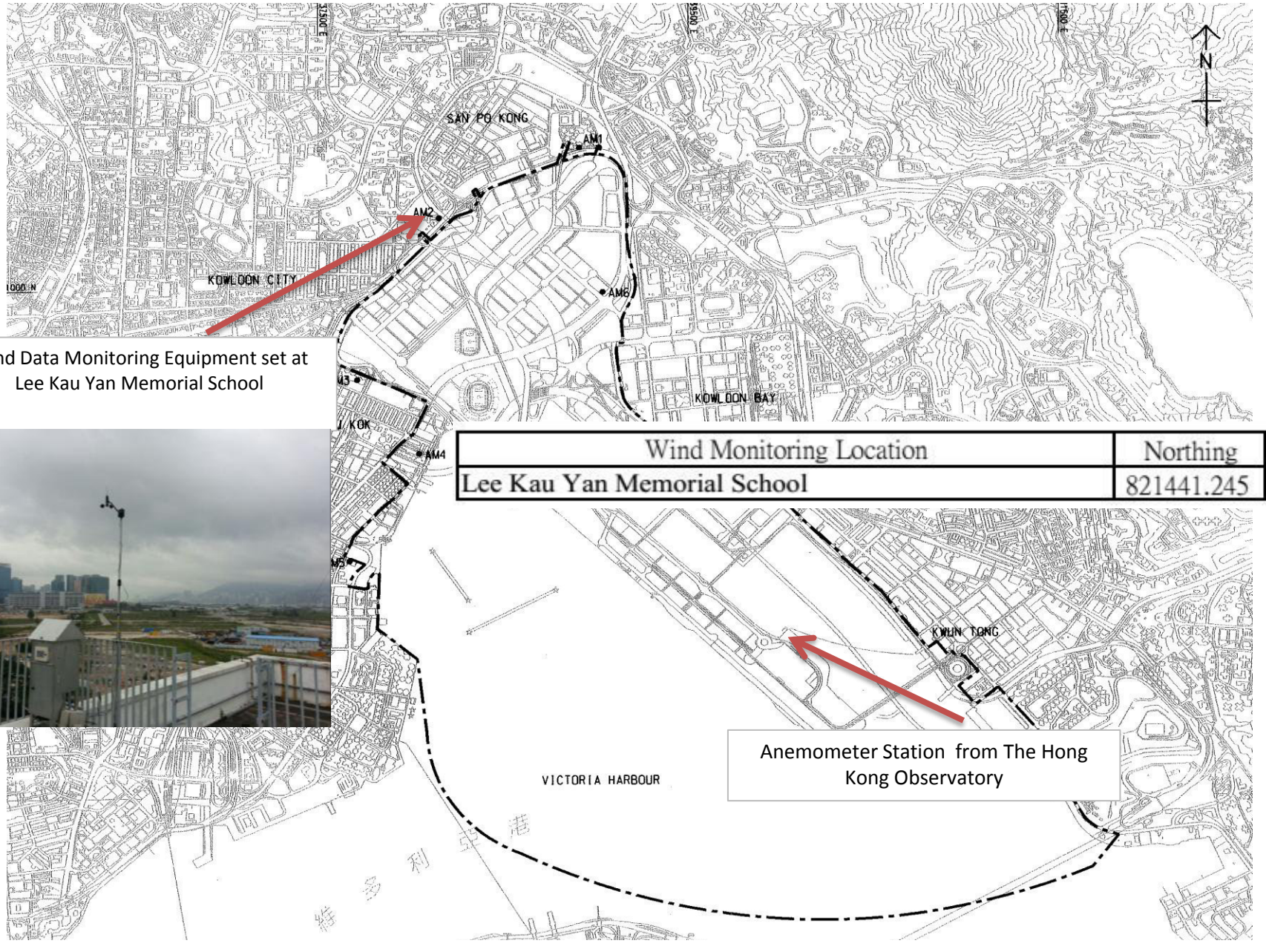
Title	Contract No. KL/2012/03 Kai Tak Development –Stage 4 Infrastructure at Former North Apron Area Air Quality Monitoring Stations under this Project	Scale: N.T.S Date: Apr-17	Project No.: MA13056 Figure: 2

CINOTECH



Title	Contract No. KL/2012/03 Kai Tak Development –Stage 4 Infrastructure at Former North Apron Area Noise Monitoring Stations under this Project	Scale: N.T.S Date: Dec-16	Project No.: MA13056 Figure: 3

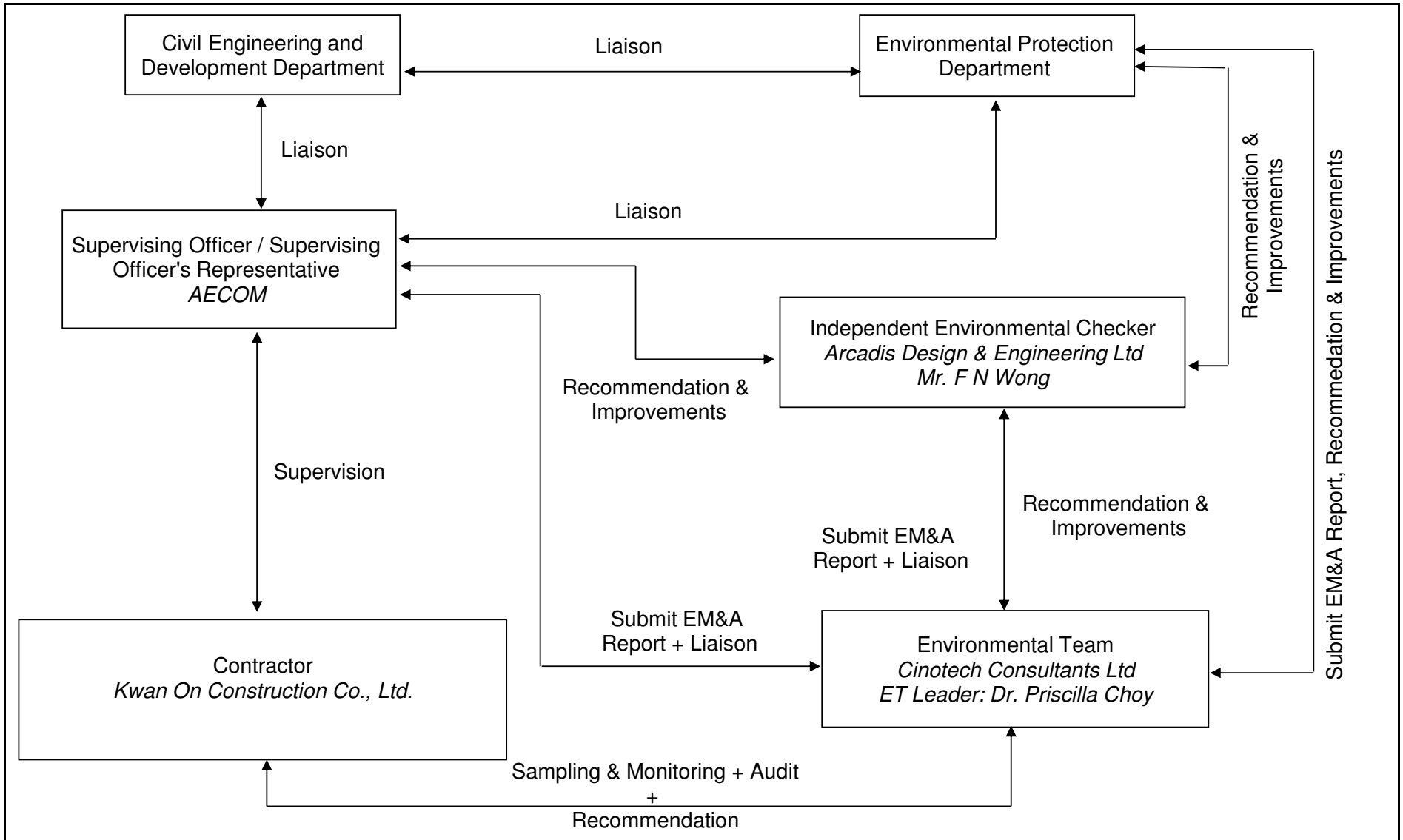
CINOTECH



Wind Monitoring Location	Northing	Easting
Lee Kau Yan Memorial School	821441.245	838153.917

Title	Contract No. KL/2012/03 Kai Tak Development –Stage 4 Infrastructure at Former North Apron Area Location of Wind Data Monitoring Equipment	Scale: N.T.S Date: Dec-13	Project No.: MA13056 Figure: 4

CINOTECH



Title	Scale	Project
Contract No. KL/2012/03 Kai Tak Development –Stage 4 Infrastructure at Former North Apron Area Management Structure	N.T.S	No. MA13056
	Date: Dec-16	Figure: 5

CINOTECH

APPENDIX A
ACTION AND LIMIT LEVELS

Appendix A - Action and Limit Levels

Table A-1 Action and Limit Levels for 1-Hour TSP

Location	Action Level, µg/m^3	Limit Level, µg/m^3
AM2	346	500
AM3(A)	351	
AM4(A)	371	
AM5(A)	345	

Table A-2 Action and Limit Levels for 24-Hour TSP

Location	Action Level, µg/m^3	Limit Level, µg/m^3
AM2	157	260
AM3(A)	167	
AM4(A)	187	
AM5(A)	156	

Table A-3 Action and Limit Levels for Construction Noise

Time Period	Action Level	Limit Level
0700-1900 hrs on normal weekdays	When one documented complaint is received	75 dB(A) 70dB(A)/65dB(A)*

Remarks: If works are to be carried out during restricted hours, the conditions stipulated in the Construction Noise Permit (CNP) issued by the Noise Control Authority have to be followed. *70dB(A) and 65dB(A) for schools during normal teaching periods and school examination periods, respectively.

APPENDIX B
COPIES OF CALIBRATION CERTIFCATES

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA13056/62/0001

Station: AM4(C) - New Pumping Station under Contract KL/2012/03 Operator: HL

Date: 23-May-17 Next Due Date: 22-Jul-17

Equipment No.: A-01-62 Serial No. 2351

Ambient Condition			
Temperature, Ta (K)	299.7	Pressure, Pa (mmHg)	758.6

Orifice Transfer Standard Information					
Serial No.:	0993	Slope, mc (CFM)	0.0578	Intercept, bc	-0.04890
Last Calibration Date:	28-Feb-17	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	27-Feb-18	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	13.4	3.65	63.97	7.7	2.76
2	10.2	3.18	55.92	6.0	2.44
3	8.3	2.87	50.53	5.0	2.23
4	5.1	2.25	39.79	3.1	1.75
5	3.3	1.81	32.17	2.3	1.51

By Linear Regression of Y on X

Slope , mw = **0.0401** **Intercept, bw :** **0.1958**

Correlation coefficient* = **0.9990**

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **3.71**

Remarks:

Conducted by: hei Signature: hei Date: 23/5/2017

Checked by: Wk Tang Signature: Kwai Date: 23/5/2017

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA13056/62/0002

Station: AM4(C) - New Pumping Station under Contract KL/2012/03 Operator: HL

Date: 19-Jul-17 Next Due Date: 18-Sep-17

Equipment No.: A-01-62 Serial No. 2351

Ambient Condition			
Temperature, Ta (K)	299.6	Pressure, Pa (mmHg)	760.3

Orifice Transfer Standard Information					
Serial No.:	0993	Slope, mc (CFM)	0.0578	Intercept, bc	-0.04890
Last Calibration Date:	28-Feb-17	**mc x Qstd + bc = $[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$**			
Next Calibration Date:	27-Feb-18	**Qstd = $\{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$ -bc} / mc**			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	13.5	3.67	64.29	7.6	2.75
2	10.4	3.22	56.53	6.1	2.46
3	8.3	2.87	50.59	5.0	2.23
4	5.0	2.23	39.45	3.2	1.78
5	3.3	1.81	32.21	2.2	1.48

By Linear Regression of Y on X

Slope , mw = 0.0397 **Intercept, bw =** 0.2127

Correlation coefficient* = 0.9998

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **3.70**

Remarks:

Conducted by: hei Signature: hei Date: 19/7/2017

Checked by: Wk Tang Signature: Kwai Date: 19/7/2017

CINOTECH

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. MA13056/59/0001

Station	AM5 - CCC Kei To Secondary School	Operator:	WK
Date:	9-Jun-17	Next Due Date:	8-Aug-17
Equipment No.:	A-01-59	Serial No.	2354

Ambient Condition			
Temperature, Ta (K)	297.9	Pressure, Pa (mmHg)	758.1

Orifice Transfer Standard Information					
Serial No.:	0993	Slope, mc (CFM)	0.0578	Intercept, bc	-0.04890
Last Calibration Date:	28-Feb-17	**mc x Qstd + bc = $[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$**			
Next Calibration Date:	27-Feb-18	**Qstd = $\{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$ -bc} / mc**			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	16.7	4.08	71.50	10.6	3.25
2	14.3	3.78	66.23	9.1	3.01
3	10.8	3.28	57.67	6.8	2.60
4	6.8	2.60	45.93	4.3	2.07
5	4.2	2.05	36.28	2.8	1.67

By Linear Regression of Y on X

Slope , mw = **0.0452** **Intercept, bw :** **0.0151**

Correlation coefficient* = **0.9997**

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **3.84**

Remarks:

Conducted by: WK. Tang Signature: Kwm Date: 9/6/17

Checked by: Signature: Date: 9 June 2017

TISCH ENVIRONMENTAL, INC.
145 SOUTH MIAMI AVE
VILLAGE OF CLEVES, OH
45002
513.467.9000
877.263.7610 TOLL FREE
513.467.9009 FAX

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Feb 28, 2017 Rootsmeter S/N 0438320 Ta (K) - 294
Operator Tisch Orifice I.D. - 0993 Pa (mm) - 750.57

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	1.3860	3.2	2.00
2	NA	NA	1.00	0.9910	6.4	4.00
3	NA	NA	1.00	0.8840	7.9	5.00
4	NA	NA	1.00	0.8430	8.7	5.50
5	NA	NA	1.00	0.6970	12.6	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
0.9967	0.7191	1.4149		0.9957	0.7184	0.8851
0.9925	1.0015	2.0010		0.9915	1.0005	1.2517
0.9904	1.1204	2.2372		0.9894	1.1192	1.3995
0.9894	1.1737	2.3464		0.9884	1.1725	1.4678
0.9842	1.4120	2.8299		0.9832	1.4106	1.7702

Qstd slope (m) =	2.04055	Qa slope (m) =	1.27776
intercept (b) =	-0.04890	intercept (b) =	-0.03059
coefficient (r) =	0.99995	coefficient (r) =	0.99995
y axis = SQRT[H2O(Pa/760)(298/Ta)]		y axis = SQRT[H2O(Ta/Pa)]	

CALCULATIONS

Vstd = Diff. Vol[(Pa-Diff. Hg)/760](298/Ta)
Qstd = Vstd/Time

Va = Diff Vol [(Pa-Diff Hg)/Pa]
Qa = Va/Time

For subsequent flow rate calculations:

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

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Testing & Research

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Website: www.wellab.com.hk

TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	C/170707
Date of Issue:	2017-07-10
Date Received:	2017-07-07
Date Tested:	2017-07-07
Date Completed:	2017-07-10
Next Due Date:	2017-09-09

ATTN: **Mr. W. K. Tang**

Page: 1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3B
Serial No.	: 541146
Sensitivity (K) 1 CPM	: 0.001 mg/m^3
Sen. Adjustment Scale Setting	: 625 CPM
Equipment No.	: A-02-07

Test Conditions:

Room Temperature	: 23 degree Celsius
Relative Humidity	: 64 %

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Laser Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Laser Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	0.0034

****

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	C/170630
Date of Issue:	2017-07-03
Date Received:	2017-06-30
Date Tested:	2017-06-30
Date Completed:	2017-07-03
Next Due Date:	2017-09-02

ATTN: **Mr. W. K. Tang**

Page: 1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3B
Serial No.	: 095029
Sensitivity (K) 1 CPM	: 0.001 mg/m^3
Sen. Adjustment Scale Setting	: 551 CPM
Equipment No.	: A-02-10

Test Conditions:

Room Temperature	: 23 degree Celsius
Relative Humidity	: 65 %

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Laser Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Laser Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	0.0036

****

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	C/170609K
Date of Issue:	2017-06-12
Date Received:	2017-06-09
Date Tested:	2017-06-09
Date Completed:	2017-06-12
Next Due Date:	2017-08-11

ATTN: **Mr. W. K. Tang**

Page: 1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Handheld Particle Counter
Manufacturer	: Hal Technology
Model No.	: Hal-HPC300
Serial No.	: 3020411
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 5 minutes
Equipment No.	: A-26-04

Test Conditions:

Room Temperature	: 21 degree Celsius
Relative Humidity	: 62 %

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Laser Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Laser Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	1.133

****

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

Patrick Tse

PATRICK TSE
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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

ATTN: **Mr. W. K. Tang**

Test Report No.:	C/170609
Date of Issue:	2017-06-12
Date Received:	2017-06-09
Date Tested:	2017-06-09
Date Completed:	2017-06-12
Next Due Date:	2017-08-11
Page:	1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Handheld Particle Counter
Manufacturer	: Hal Technology
Model No.	: Hal-HPC301
Serial No.	: 3011701011
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 5 minutes
Equipment No.	: A-27-02

Test Conditions:

Room Temperature	: 21 degree Celsius
Relative Humidity	: 62 %

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	1.133

****

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	C/170609B
Date of Issue:	2017-06-12
Date Received:	2017-06-09
Date Tested:	2017-06-09
Date Completed:	2017-06-12
Next Due Date:	2017-08-11
Page:	1 of 1

ATTN: **Mr. W. K. Tang**

Certificate of Calibration

Item for Calibration:

Description	: Handheld Particle Counter
Manufacturer	: Hal Technology
Model No.	: Hal-HPC301
Serial No.	: 3011701017
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 5 minutes
Equipment No.	: A-27-04

Test Conditions:

Room Temperature	: 21 degree Celsius
Relative Humidity	: 62 %

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	1.077

****

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
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Shatin, NT, Hong Kong

Test Report No.:	C/170609F
Date of Issue:	2017-06-12
Date Received:	2017-06-09
Date Tested:	2017-06-09
Date Completed:	2017-06-12
Next Due Date:	2017-08-11

ATTN: **Mr. W. K. Tang**

Page: 1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Handheld Particle Counter
Manufacturer	: Hal Technology
Model No.	: Hal-HPC301
Serial No.	: 3011701018
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 5 minutes
Equipment No.	: A-27-05

Test Conditions:

Room Temperature	: 21 degree Celsius
Relative Humidity	: 62 %

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	1.074

****

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
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Shatin, NT, Hong Kong

Test Report No.:	C/170609C
Date of Issue:	2017-06-12
Date Received:	2017-06-09
Date Tested:	2017-06-09
Date Completed:	2017-06-12
Next Due Date:	2017-08-11

ATTN: **Mr. W. K. Tang**

Page: 1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Handheld Particle Counter
Manufacturer	: Hal Technology
Model No.	: Hal-HPC301
Serial No.	: 3011701014
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 5 minutes
Equipment No.	: A-27-06

Test Conditions:

Room Temperature	: 21 degree Celsius
Relative Humidity	: 62 %

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	1.062

****

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	C/N/161230
Date of Issue:	2017-01-03
Date Received:	2016-12-30
Date Tested:	2016-12-30
Date Completed:	2017-01-03
Next Due Date:	2018-01-02
Page:	1 of 1

ATTN: **Mr. W. K. Tang**

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 955
Serial No.	: 14303
Microphone No.	: 35222
Equipment No.	: N-08-05

Test conditions:

Room Temperatre	: 21 degree Celsius
Relative Humidity	: 62 %

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

Remark: 1)This report supersedes the one dated 2012/01/21 with certificate number C/N/120120/1.

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
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Test Report No.:	C/N/160826A
Date of Issue:	2016-08-29
Date Received:	2016-08-26
Date Tested:	2016-08-26
Date Completed:	2016-08-29
Next Due Date:	2017-08-28
Page:	1 of 1

ATTN: **Mr. W.K. Tang**

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 957
Serial No.	: 21455
Microphone No.	: 43730
Equipment No.	: N-08-07

Test conditions:

Room Temperatre	: 25 degree Celsius
Relative Humidity	: 57%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
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ATTN: **Mr. W.K. Tang**

Test Report No.:	C/N/161128
Date of Issue:	2016-11-30
Date Received:	2016-11-28
Date Tested:	2016-11-28
Date Completed:	2016-11-30
Next Due Date:	2017-11-29
Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 957
Serial No.	: 23853
Microphone No.	: 48530
Equipment No.	: N-08-10

Test conditions:

Room Temperatre	: 21 degree Celsius
Relative Humidity	: 66%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

PREPARED AND CHECKED BY:
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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
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Shatin, NT, Hong Kong

Test Report No.:	C/N/160930A
Date of Issue:	2016-10-03
Date Received:	2016-09-30
Date Tested:	2016-09-30
Date Completed:	2016-10-03
Next Due Date:	2017-10-02
Page:	1 of 1

ATTN: **Mr. W.K. Tang**

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 24803
Equipment No.	: N-09-03

Test conditions:

Room Temperatre	: 25 degree Celsius
Relative Humidity	: 60%

Methodology:

The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
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Test Report No.:	C/N/160930B
Date of Issue:	2016-10-03
Date Received:	2016-09-30
Date Tested:	2016-09-30
Date Completed:	2016-10-03
Next Due Date:	2017-10-02
Page:	1 of 1

ATTN: **Mr. W.K. Tang**

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 24791
Equipment No.	: N-09-04

Test conditions:

Room Temperatre	: 25 degree Celsius
Relative Humidity	: 60%

Methodology:

The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

PREPARED AND CHECKED BY:
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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
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Shatin, NT, Hong Kong

Test Report No.:	C/N/160930C
Date of Issue:	2016-10-03
Date Received:	2016-09-30
Date Tested:	2016-09-30
Date Completed:	2016-10-03
Next Due Date:	2017-10-02

ATTN: **Mr. W.K. Tang**

Page: 1 of 1

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 24780
Equipment No.	: N-09-05

Test conditions:

Room Temperatre	: 25 degree Celsius
Relative Humidity	: 60%

Methodology:

The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

Calibration Certificate for High Volume Sampler (HVS)

InnoTech Instrumentation Co. Ltd.
創 新 科 儀 有 限 公 司

HIVOL SAMPLER CALIBRATION DATA SHEET (TSP)

Site Information

Location:	Castco's Office	Site ID:	NA	Date:	09-Mar-2017
Serial No:	2752	Model:	TE-5170X	Operator:	Yam

Ambient Condition

Corrected Pressure (mm Hg):	757.6	Temperature (deg K):	296.2

Calibration Orifice

Model:	TE-2025A	Slope:	2.10326
Serial No.:	2454	Intercept:	-0.06696
Calibration Due Date:	14-Mar-17	Corr. Coeff:	0.99989

Calibration Data

Plate or Test #	In,H2O (in)	Qa, X-Axis (m3/min)	I, CFM (chart)	IC, Y-Axia (corrected)
1	6.50	1.246	44.0	44.07
2	5.90	1.188	41.0	41.06
3	4.70	1.064	39.0	39.06
4	3.60	0.935	33.0	33.05
5	2.40	0.770	28.0	28.04

Sampler Calibtation Relationship (Qa on x-axis, IC on y-axis)

m= 33.1537 b= 2.5544 Corr. Coeff= 0.9921

Sampler set point(SSP) 43 CFM

Calculations

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 mm Hg
For subsequent calculation of sampler flow:
(1.21*m+b)/[Sqrt(298/Tav)(Pav/760)]

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

Checked by: Matthew Date: 13-Mar-17

Next Calibration Date: 09-Sep-2017

InnoTech Instrumentation Co. Ltd.
創 新 科 儀 有 限 公 司

HIVOL SAMPLER CALIBRATION DATA SHEET (TSP)

Site Information

Location:	Castco's Office	Site ID:	NA	Date:	09-Mar-2017
Serial No:	2754	Model:	TE-5170X	Operator:	Yam

Ambient Condition

Corrected Pressure (mm Hg):	757.6	Temperature (deg K):	296.2

Calibration Orifice

Model:	TE-2025A	Slope:	2.10326
Serial No.:	2454	Intercept:	-0.06696
Calibration Due Date:	14-Mar-17	Corr. Coeff:	0.99989

Calibration Data

Plate or Test #	In,H2O (in)	Qa, X-Axis (m3/min)	I, CFM (chart)	IC, Y-Axia (corrected)
1	6.40	1.236	40.0	40.06
2	5.50	1.149	38.0	38.06
3	4.60	1.053	36.0	36.05
4	3.30	0.897	30.0	30.05
5	2.20	0.738	26.0	26.04

Sampler Calibtation Relationship (Qa on x-axis, IC on y-axis)

m= 29.1511 b= 4.4741 Corr. Coeff= 0.9951

Sampler set point(SSP) 40 CFM

Calculations

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 mm Hg
For subsequent calculation of sampler flow:
(1.21*m+b)/[Sqrt(298/Tav)(Pav/760)]

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

Checked by: Matthew Date: 13-Mar-17

Next Calibration Date: 09-Sep-2017

Calibration Certificate for High Volume Sampler (HVS)

InnoTech Instrumentation Co. Ltd.
創 新 科 儀 有 限 公 司

HIVOL SAMPLER CALIBRATION DATA SHEET (TSP)

Site Information

Location:	Castco's Office	Site ID:	NA	Date:	09-Mar-2017
Serial No:	2763	Model:	TE-5170X	Operator:	Yam

Ambient Condition

Corrected Pressure (mm Hg):	757.6	Temperature (deg K):	296.2

Calibration Orifice

Model:	TE-2025A	Slope:	2.10326
Serial No.:	2454	Intercept:	-0.06696
Calibration Due Date:	14-Mar-17	Corr. Coeff:	0.99989

Calibration Data

Plate or Test #	In,H2O (in)	Qa, X-Axis (m3/min)	I, CFM (chart)	IC, Y-Axia (corrected)
1	6.70	1.264	39.0	39.06
2	5.90	1.188	35.0	35.05
3	4.80	1.075	32.0	32.05
4	3.50	0.923	28.0	28.04
5	2.40	0.770	22.0	22.03

Sampler Calibtation Relationship (Qa on x-axis, IC on y-axis)

m= 32.4948 b= -2.6780 Corr. Coeff= 0.9945

Sampler set point(SSP) 37 CFM

Calculations

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 mm Hg
For subsequent calculation of sampler flow:
(1.21*m+b)/[Sqrt(298/Tav)(Pav/760)]

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

Checked by: Matthew Date: 13-Mar-17

Next Calibration Date: 09-Sep-2017

InnoTech Instrumentation Co. Ltd.
創 新 科 儀 有 限 公 司

HIVOL SAMPLER CALIBRATION DATA SHEET (TSP)

Site Information

Location:	Castco's Office	Site ID:	NA	Date:	09-Mar-2017
Serial No:	2765	Model:	TE-5170X	Operator:	Yam

Ambient Condition

Corrected Pressure (mm Hg):	757.6	Temperature (deg K):	296.2

Calibration Orifice

Model:	TE-2025A	Slope:	2.10326
Serial No.:	2454	Intercept:	-0.06696
Calibration Due Date:	14-Mar-17	Corr. Coeff:	0.99989

Calibration Data

Plate or Test #	In,H2O (in)	Qa, X-Axis (m3/min)	I, CFM (chart)	IC, Y-Axia (corrected)
1	6.60	1.255	40.0	40.06
2	5.70	1.169	38.0	38.06
3	4.80	1.075	36.0	36.05
4	3.40	0.910	30.0	30.05
5	2.30	0.754	24.0	24.04

Sampler Calibtation Relationship (Qa on x-axis, IC on y-axis)

m= 32.2966 b= 0.3031 Corr. Coeff= 0.9936

Sampler set point(SSP) 39 CFM

Calculations

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 mm Hg
For subsequent calculation of sampler flow:
(1.21*m+b)/[Sqrt(298/Tav)(Pav/760)]

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

Checked by: Matthew Date: 13-Mar-17

Next Calibration Date: 09-Sep-2017

Calibration Certificate for High Volume Sampler (HVS)

InnoTech Instrumentation Co. Ltd.
創 新 科 儀 有 限 公 司

HIVOL SAMPLER CALIBRATION DATA SHEET (TSP)

Site Information

Location:	Castco's Office	Site ID:	NA	Date:	09-Mar-2017
Serial No:	2766	Model:	TE-5170X	Operator:	Yam

Ambient Condition

Corrected Pressure (mm Hg):	757.6	Temperature (deg K):	296.2

Calibration Orifice

Model:	TE-2025A	Slope:	2.10326
Serial No.:	2454	Intercept:	-0.06696
Calibration Due Date:	14-Mar-17	Corr. Coeff:	0.99989

Calibration Data

Plate or Test #	In,H2O (in)	Qa, X-Axis (m3/min)	I, CFM (chart)	IC, Y-Axia (corrected)
1	7.50	1.336	48.0	48.07
2	6.40	1.236	44.0	44.07
3	4.40	1.031	39.0	39.06
4	3.30	0.897	32.0	32.05
5	2.00	0.705	28.0	28.04

Sampler Calibtation Relationship (Qa on x-axis, IC on y-axis)

m= 32.2524 b= 4.6824 Corr. Coeff= 0.9919

Sampler set point(SSP) 44 CFM

Calculations

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 mm Hg
For subsequent calculation of sampler flow:
(1.21*m+b)/[Sqrt(298/Tav)(Pav/760)]

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

Checked by: Matthew. Date: 13-Mar-17

Next Calibration Date: 09-Sep-2017

InnoTech Instrumentation Co. Ltd.
創 新 科 儀 有 限 公 司

HIVOL SAMPLER CALIBRATION DATA SHEET (TSP)

Site Information

Location:	Castco's Office	Site ID:	NA	Date:	09-Mar-2017
Serial No:	2767	Model:	TE-5170X	Operator:	Yam

Ambient Condition

Corrected Pressure (mm Hg):	757.6	Temperature (deg K):	296.2

Calibration Orifice

Model:	TE-2025A	Slope:	2.10326
Serial No.:	2454	Intercept:	-0.06696
Calibration Due Date:	14-Mar-17	Corr. Coeff:	0.99989

Calibration Data

Plate or Test #	In,H2O (in)	Qa, X-Axis (m3/min)	I, CFM (chart)	IC, Y-Axia (corrected)
1	6.60	1.255	42.0	42.06
2	5.50	1.149	41.0	41.06
3	4.80	1.075	37.0	37.06
4	3.40	0.910	33.0	33.05
5	2.20	0.738	28.0	28.04

Sampler Calibtation Relationship (Qa on x-axis, IC on y-axis)

m= 28.2377 b= 7.3012 Corr. Coeff= 0.9903

Sampler set point(SSP) 41 CFM

Calculations

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 mm Hg
For subsequent calculation of sampler flow:
(1.21*m+b)/[Sqrt(298/Tav)(Pav/760)]

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

Checked by: Matthew. Date: 13-Mar-17

Next Calibration Date: 09-Sep-2017

Calibration Certificate for High Volume Sampler (HVS)

InnoTech Instrumentation Co. Ltd.
創新科儀有限公司

HIVOL SAMPLER CALIBRATION DATA SHEET (TSP)

Site Information

Location:	Castco's Office	Site ID:	NA	Date:	09-Mar-2017
Serial No:	2768	Model:	TE-6170X	Operator:	Yam

Ambient Condition

Corrected Pressure (mm Hg):	757.6	Temperature (deg K):	296.2

Calibration Orifice

Model:	TE-2025A	Slope:	2.10326
Serial No.:	2454	Intercept:	-0.06696
Calibration Due Date:	14-Mar-17	Corr. Coeff:	0.99989

Calibration Data

Plate or Test #	In,H2O (in)	Qa, X-Axis (m3/min)	I, CFM (chart)	IC, Y-Axis (corrected)
1	6.10	1.208	42.0	42.06
2	5.40	1.138	40.0	40.06
3	4.60	1.053	38.0	38.06
4	3.20	0.884	33.0	33.05
5	2.00	0.705	30.0	30.05

Sampler Calibration Relationship (Qa on x-axis, IC on y-axis)

m= 24.3862 b= 12.3264 Corr. Coeff= 0.9948

Sampler set point(SSP) 42 CFM

Calculations

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 mm Hg
For subsequent calculation of sampler flow:
(1.21*m+b)[Sqrt(298/Tav)(Pav/760)]

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

Checked by: Matthew Date: 13-Mar-17

TISCH Environmental

TISCH ENVIRONMENTAL, INC.
145 SOUTH MIAMI AVE
VILLAGE OF CLEVES, OH
45002
513.467.9000
877.263.7610 TOLL FREE
513.467.9009 FAX

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Mar 14, 2016 Rootsmeter S/N 0438320 Ta (K) - 295
Operator Tisch Orifice I.D. - 2454 Pa (mm) - 745.49

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	1.4020	3.2	2.00
2	NA	NA	1.00	1.0060	6.4	4.00
3	NA	NA	1.00	0.9010	7.9	5.00
4	NA	NA	1.00	0.8590	8.8	5.50
5	NA	NA	1.00	0.7090	12.8	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
0.9866	0.7037	1.4078		0.9957	0.7102	0.8896
0.9824	0.9765	1.9909		0.9914	0.9855	1.2581
0.9803	1.0880	2.2259		0.9893	1.0980	1.4066
0.9792	1.1399	2.3345		0.9882	1.1504	1.4753
0.9738	1.3735	2.8155		0.9828	1.3862	1.7792
Qstd slope (m) =		2.10326		Qa slope (m) =		1.31703
intercept (b) =		-0.06696		intercept (b) =		-0.04232
coefficient (r) =		0.99989		coefficient (r) =		0.99989
y axis = SQRT[H2O(Pa/760)(298/Ta)]				y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

Vstd = Diff. Vol[(Pa-Diff. Hg)/760](298/Ta)
Qstd = Vstd/Time

Va = Diff Vol [(Pa-Diff Hg)/Pa]
Qa = Va/Time

For subsequent flow rate calculations:

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

Next Calibration Date: 09-Sep-2017

Calibration Certificate of Dust Meter

CERTIFICATE OF CALIBRATION AND TESTING

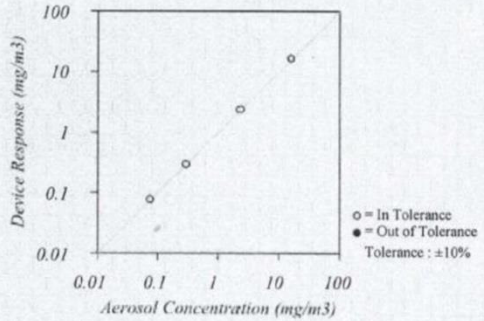
TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA
Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 http://www.tsi.com

Environment Conditions		
Temperature	75.16 (24.0)	°F (°C)
Relative Humidity	23.8	%RH
Barometric Pressure	29.36 (994.2)	inHg (hPa)

Model	AM510
Serial Number	11208032

☒ As Left ☐ As Found
☒ In Tolerance ☐ Out of Tolerance

Concentration Linearity Plot



System ID: DTII01-02

TSI Incorporated does hereby certify that all materials, components, and workmanship used in the manufacture of this equipment are in strict accordance with the applicable specifications agreed upon by TSI and the customer and with all published specifications. All performance and acceptance tests required under this contract were successfully conducted according to required specifications. There is no NIST standard for optical mass measurements. Calibration of this instrument performed by TSI has been done using emery oil and has been nominally adjusted to respirable mass per standard ISO 12103-1, A1 test dust (Arizona dust). Our calibration ratio is greater than 1.2:1

Measurement Variable	System ID	Last Cal.	Cal. Due	Measurement Variable	System ID	Last Cal.	Cal. Due
Temp/Humidity	E005656	03-08-16	03-08-17	Temp/Humidity	E005657	03-16-16	03-16-17
DC Voltage	E003314	05-19-16	05-19-17	DC Voltage	E003315	05-19-16	05-19-17
Photometer	E003319	07-19-16	01-19-17	Microbalance	M001324	11-02-16	11-02-18
Pressure	E003511	10-11-16	10-11-17	Flowmeter	E002471	04-26-16	04-26-17

Calibrated ☒ Final Function Check November 8, 2016 Date

CERTIFICATE OF CALIBRATION AND TESTING

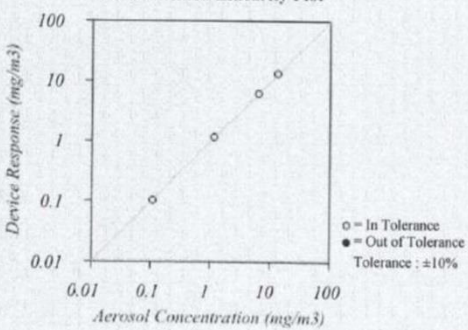
TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA
Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 http://www.tsi.com

Environment Conditions		
Temperature	75.7 (24.3)	°F (°C)
Relative Humidity	26	%RH
Barometric Pressure	28.93 (979.7)	inHg (hPa)

Model	AM510
Serial Number	11108001

☒ As Left ☐ As Found
☒ In Tolerance ☐ Out of Tolerance

Concentration Linearity Plot



System ID: DTII01-02

TSI Incorporated does hereby certify that all materials, components, and workmanship used in the manufacture of this equipment are in strict accordance with the applicable specifications agreed upon by TSI and the customer and with all published specifications. All performance and acceptance tests required under this contract were successfully conducted according to required specifications. There is no NIST standard for optical mass measurements. Calibration of this instrument performed by TSI has been done using emery oil and has been nominally adjusted to respirable mass per standard ISO 12103-1, A1 test dust (Arizona dust). Our calibration ratio is greater than 1.2:1

Measurement Variable	System ID	Last Cal.	Cal. Due	Measurement Variable	System ID	Last Cal.	Cal. Due
Temp/Humidity	E005656	03-08-16	03-08-17	Temp/Humidity	E005657	03-16-16	03-16-17
DC Voltage	E003314	05-19-16	05-19-17	DC Voltage	E003315	05-19-16	05-19-17
Photometer	E003319	07-19-16	01-19-17	Microbalance	M001324	11-02-16	11-02-18
Pressure	E003511	10-11-16	10-11-17	Flowmeter	E002232	03-08-16	03-08-17

Calibrated ☒ Final Function Check December 20, 2016 Date

Calibration Certificate of Dust Meter

CERTIFICATE OF CALIBRATION AND TESTING

TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA
Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 http://www.tsi.com

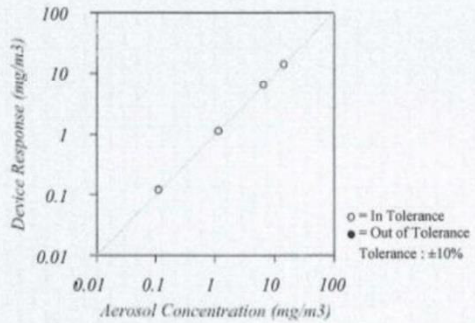
Environment Conditions		
Temperature	74.7 (23.7)	°F (°C)
Relative Humidity	33	%RH
Barometric Pressure	28.55 (966.8)	inHg (hPa)

Model	AM510
Serial Number	11404005

☒ As Left ☐ As Found

☒ In Tolerance ☐ Out of Tolerance

Concentration Linearity Plot



System ID: DTII01-02

TSI Incorporated does hereby certify that all materials, components, and workmanship used in the manufacture of this equipment are in strict accordance with the applicable specifications agreed upon by TSI and the customer and with all published specifications. All performance and acceptance tests required under this contract were successfully conducted according to required specifications. There is no NIST standard for optical mass measurements. Calibration of this instrument performed by TSI has been done using emery oil and has been nominally adjusted to respirable mass per standard ISO 12103-1, A1 test dust (Arizona dust). Our calibration ratio is greater than 1.2:1

Measurement Variable	System ID	Last Cal.	Cal. Due	Measurement Variable	System ID	Last Cal.	Cal. Due
Temp/Humidity	E005656	03-08-16	03-08-17	Temp/Humidity	E005657	03-16-16	03-16-17
DC Voltage	E003314	05-19-16	05-19-17	DC Voltage	E003315	05-19-16	05-19-17
Photometer	E003319	01-16-17	07-16-17	Microbalance	M001324	11-02-16	11-02-18
Pressure	E003511	10-11-16	10-11-17	Flowmeter	E002232	03-08-16	03-08-17

Calibrated

☒ Final Function Check

February 22, 2017
Date

TSI P/N 2900157

Certificate of Sound Level Meter

中 国 赛 宝 实 验 室
(工业和信息化部电子第五研究所)
CEPREI CHINA CEPREI LABORATORY

中国认可 国际互认 校准 CALIBRATION CNAS L0462

校 准 证 书
CALIBRATION CERTIFICATE

证书编号： 2HB17000013-0001
Certificate No.

委托单位：Client	Castco Testing Centre Limited
委托方地址：Address	29A,On Chuen Street, On Lok Tsuen, Fanling, N.T.
仪器名称：Description	Sound Level Meter
型号规格：Model/Type	NL-52
制造商：Manufacturer	RION
机身号：Serial No.	00921213
管理号：Asset No.	AAST-SLM-04
校准日期：Cal. Date	2017 年 01 月 05 日
建议再校日期：Next Cal. Date	2018 年 01 月 05 日
结论：Conclusion	所校准项目合格(Passed at Calibration Items)

校准：Calibrated by 罗志满　　核验：Inspected by 杨雨振

签发：Approved by 郑木为　　印章：Stamp

赛宝计量检测中心
广州总部地址：广州天河区东莞庄路110号
香港分部地址：香港上水剑桥广场G/F2
客服电话：852-26680871 传真：852-26686197
投诉电话：852-26680936 020-87236789
邮件：cal@ceprei.com.hk
网址：www.ceprei-cal.com

CEPREI Calibration and Testing Center
H.Q. Addr: No.110 Dongguanzhuang Road, Tianhe District, Guangzhou
CEPREI(H.K.) Addr.: G/F2 Cambridge Plaza sheung Shui N.T. Hong Kong
Tel: 852-26680871 Fax: 852-26686197
Complaint phone: 852-26680936 020-87236789
Email: cal@ceprei.com.hk
Website: www.ceprei-cal.com

中 国 赛 宝 实 验 室
(工业和信息化部电子第五研究所)
CEPREI CHINA CEPREI LABORATORY

中国认可 国际互认 校准 CALIBRATION CNAS L0462

校 准 证 书
CALIBRATION CERTIFICATE

证书编号： 2HB16001326-0003
Certificate No.

委托单位：Client	Castco Testing Centre Limited
仪器名称：Description	SOUND LEVEL METER
型号规格：Model/Type	NL-52
制造商：Manufacturer	RION
机身号：Serial No.	00164461
管理号：Asset No.	AAST-SLM-06
校准日期：Cal. Date	2016 年 09 月 22 日
建议再校日期：Next Cal. Date	2017 年 09 月 22 日
结论：Conclusion	所校准项目合格(Passed at Calibration Items)

校准：Calibrated by 杨雨振　　核验：Inspected by

签发：Approved by 郑木为　　印章：Stamp

赛宝计量检测中心
广州总部地址：广州天河区东莞庄路110号
香港分部地址：香港上水剑桥广场G/F2
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H.Q. Addr: No.110 Dongguanzhuang Road, Tianhe District, Guangzhou
CEPREI(H.K.) Addr.: G/F2 Cambridge Plaza sheung Shui N.T. Hong Kong
Tel: 852-26680871 Fax: 852-26686197
Complaint phone: 852-26680936 020-87236789
Email: cal@ceprei.com.hk
Website: www.ceprei-cal.com

Calibration Certificate of Sound Calibrator

中国赛宝实验室
(工业和信息化部电子第五研究所)
CEPREI CHINA CEPREI LABORATORY

CNAS 中国认可 国际互认 校准 CALIBRATION CNAS L0462

校准证书
CALIBRATION CERTIFICATE

证书编号： 2HB17000084-0002
Certificate No.

委托单位：Client	Castco Testing Centre Limited
委托方地址：Address	29A,On Chuen Street, On Lok Tsuen, Fanling, N.T.
仪器名称：Description	Sound Level Calibrator
型号规格：Model/Type	NC-73
制造商：Manufacturer	RION
机身号：Serial No.	20652
管理号：Asset No.	AAST-SLC-01
校准日期：Cal. Date	2017 年 01 月 20 日
建议再校日期：Next Cal. Date	2018 年 01 月 20 日
结论：Conclusion	所校准项目合格(Passed at Calibration Items)

校准：Calibrated by 罗志满　　核验：Inspected by 杨雨振

签发：Approved by 郭木方　　印章：Stamp

赛宝计量检测中心
广州总部地址：广州天河区东莞庄路110号
香港分部地址：香港上水剑桥广场G/F2
客服电话：852-26680871 传真：852-26686197
投诉电话：852-26680936 020-87236749
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网址：www.ceprei-cal.com

CEPREI Calibration and Testing Center
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Tel: 852-26680871 Fax: 852-26686197
Complaint phone: 852-26680936 020-87236789
Email: cal@ceprei.com.hk
Website: www.ceprei-cal.com

中国赛宝实验室
(工业和信息化部电子第五研究所)
CEPREI CHINA CEPREI LABORATORY

CNAS 中国认可 国际互认 校准 CALIBRATION CNAS L0462

校准证书
CALIBRATION CERTIFICATE

证书编号： 2HB16001157-0001
Certificate No.

委托单位：Client	Castco Testing Centre Limited
委托方地址：Address	29A,On Chuen Street, On Lok Tsuen, Fanling, N.T.
仪器名称：Description	SOUND LEVEL CALIBRATOR
型号规格：Model/Type	NC-74
制造商：Manufacturer	RION
机身号：Serial No.	34546624
管理号：Asset No.	AAST-SLC-03
校准日期：Cal. Date	2016 年 08 月 18 日
建议再校日期：Next Cal. Date	2017 年 08 月 18 日
结论：Conclusion	所校准项目合格(Passed at Calibration Items)

校准：Calibrated by 罗志满　　核验：Inspected by 杨雨振

签发：Approved by 郭木方　　印章：Stamp

赛宝计量检测中心
广州总部地址：广州天河区东莞庄路110号
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CEPREI Calibration and Testing Center
H.Q. Addr: No.110 Dongguanzhuang Road, Tianhe District, Guangzhou
CEPREI(H.K.) Addr.: G/F2 Cambridge Plaza Sheung Shui N.T. Hong Kong
Tel: 852-26680871 Fax: 852-26686197
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Email: cal@ceprei.com.hk
Website: www.ceprei-cal.com

Calibration Certificate of Wind Anemometer

广州计量检测技术研究院
GUANGZHOU INSTITUTE OF MEASUREMENT AND TESTING TECHNOLOGY

校准证书
CALIBRATION CERTIFICATE

证书编号 Certificate No. LC-20172600　　第 1 页 Page　　共 3 页 of

委托方 Client：佳力高試驗中心有限公司 CASTCO TESING CENTRE LTD

地址 Address：香港新界粉嶺安樂村安居街33號 33 On Kui Street On Lok Tsue Fanling, N.T, H.K.

计量器具名称 Measuring instruments：Davis Weather Station

规格型号 Model/Type：Vantage Pro2

制造者 Manufacturer：

编号 Serial No.：A70604D29N/自编號:EN52-01

主管 Approved by：陈金明

审核 Inspected by：

校准 Calibrated by：

证书专用章 Issued by(Stamp)

校准日期 Calibration Date　2017 年 Y 03 月 M 14 日 D　　建议校准周期 The recommended calibration period　一年

本院地址：广州市广仁路11号　邮政编码：510030　电话：020-83362165　传真：020-83369351
广州市科学城尖塔山路19号　邮政编码：510663　电话：020-32086301　传真：020-32086300
开发区中心电话：020-82223272　白云区中心电话：020-36200320　南沙中心电话：020-34970774
单位网址：www.gzjljc.net　业务邮箱：ywuban@gzjls.net　微信号：GZJLJC

广州计量检测技术研究院
GUANGZHOU INSTITUTE OF MEASUREMENT AND TESTING TECHNOLOGY

说　明
DIRECTIONS

证书编号：LC-20172600 Certificate No.　　第 2 页 Page　　共 3 页 of

1、本院是政府依法设置的法定计量检定机构，工作职责为承担授权范围内的量值传递工作和向社会开展计量校准技术服务工作。
Guangzhou Institute of Measurement and Testing Technology(GIMTT) is a legal metrological organization set by government, which is responsible for value dissemination within authorization, and to provide metrological and calibration services for social benefit.

2、本院的质量管理体系符合ISO/IEC 17025：2005标准的要求。
The quality system of GIMTT is in accordance with ISO/IEC 17025:2005.

3、本院出具的数据均可溯源到国家计量基准和SI单位标准。
All data issued by GIMTT are traceable to national measurement standards and SI unit standards.

4、本次校准所依据的技术文件是：
Reference documents for the calibration:
JJG 613-1989 《电接风向风速仪》检定规程
V.R.of Verification Regulation of Contact Anemorumbometer

5、本次校准所使用的计量标准是：
Standards of measurement used in the calibration:

设备名称/型号 Equipment/Model	编号 Serial No.	证书号 Certificate No.	技术特征 Technique character
皮托静压管(Pitot Tubes)	0471	NSC201750171/2022-02-16	MPE:±0.01
补偿式微压计 (Compensated micromanometer)	200509032	LY-201534497/2017-12-19	准确度等级：二等 Grade 2
空盒气压表(Aneroid barometer)	06-0008	LY-201619205/2017-07-01	MPE:±2.5 hPa
风洞(Wind tunel)	08	LC-20167300/2017-06-28	均匀性≤1%；稳定性≤0.5%；
数显倾角仪(Digital Inclinometer)	N2955	CJ-20169223/2017-5-25	MPE：±5′

6、依据JJF 1059.1-2012《测量结果不确定度评定与表示》，本次校准中部分测量结果的不确定度分别是：
The uncertainty of measurement results in accordance with JJF 1059.1-2012:
U=0.20 m/s；k=2

7、本次校准的地点与校准时的环境条件：
Site of the calibration and environmental conditions during the calibration:
地点 Site　科学城实验室　　温度 Temperature　19.4℃　　相对湿度 RH　53%

Calibration Certificate of Wind Anemometer

广州计量检测技术研究院
GUANGZHOU INSTITUTE OF MEASUREMENT AND TESTING TECHNOLOGY

校准结果
RESULTS OF CALIBRATION

证书编号 LC-20172600　　原始记录号 17205J0338　　第 3 页　　共 3 页
Certificate No.　　Page　　Of

1、外 观：正 常
Appearance: Pass

2、空气密度修正系数(Correction factor of air density)：1.007；
总修正系数(Correction factor of total)：1.013；
大气压力 (Atmospheric pressure)：1018.0 hPa；

3、风速仪示值校准：
Indication calibrated of anemometer:

微压计示值 Indication of micromanometer (mmH_2O)	标准值 Values of standard (m/s)	仪器示值 Indication of anemometer (m/s)	修正值 Values of correction (m/s)
6.10	2.0	1.8	+0.2

4、风向角示值校准：
Indication calibrated of wind direction sensor:

标准值（°） Values of standard	仪器示值（°） Instrument Reading
0.0	0
45.0	45
90.0	90
135.0	135
180.0	180
225.0	225
270.0	270
315.0	315
360.0	360

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注：1、此结果只与受校准的项目有关。
2、未经本院书面批准，不得部分复制此证书。
3、此证书无本院盖章无效。

Note: 1、The results relate only to the items verified.
2、This certificate shall not be reproduced except in full, without the written approval of our institute .
3、This certificate shall not be valid without stamp of our institute .

APPENDIX C
WEATHER INFORMATION

APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD

I. General Information

Date	Mean Air Temperature (°C)	Mean Relative Humidity (%)	Precipitation (mm)
1 July 2017	26.7 – 31.7	67 – 94	7.4
2 July 2017	26.2 – 30.3	79 – 91	8.8
3 July 2017	26.7 – 30.7	77 – 93	8.4
4 July 2017	25.3 – 28.6	84 – 97	32.3
5 July 2017	26.5 – 31.0	77 – 96	27.5
6 July 2017	25.8 – 28.7	87 – 97	16.3
7 July 2017	26.0 – 29.8	77 – 97	35.8
8 July 2017	26.3 – 28.9	86 – 96	12.8
9 July 2017	27.1 – 32.3	66 – 94	1.2
10 July 2017	25.7 – 32.1	65 – 88	0.6
11 July 2017	27.6 – 32.7	64 – 89	0
12 July 2017	27.9 – 32.9	66 – 88	Trace
13 July 2017	28.2 – 33.5	68 – 87	Trace
14 July 2017	27.4 – 32.8	70 – 93	2.3
15 July 2017	27.0 – 32.1	75 – 94	8.8
16 July 2017	26.1 – 28.5	83 – 97	21.0
17 July 2017	24.4 – 28.8	83 – 98	184.6
18 July 2017	24.6 – 27.8	91 – 99	134.3
19 July 2017	24.2 – 30.8	76 – 98	12.6

APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD

I. General Information

Date	Mean Air Temperature (°C)	Mean Relative Humidity (%)	Precipitation (mm)
20 July 2017	27.2 – 30.8	77 – 91	2.0
21 July 2017	27.6 – 32.2	67 – 91	0.2
22 July 2017	26.5 – 33.1	62 – 85	3.3
23 July 2017	25.6 – 28.8	73 – 98	46.5
24 July 2017	25.8 – 31.2	77 – 98	3.3
25 July 2017	27.7 – 33.1	63 – 88	Trace
26 July 2017	27.1 – 34.4	56 – 91	0
27 July 2017	28.0 – 30.6	74 – 85	Trace
28 July 2017	28.1 – 34.4	57 – 84	0
29 July 2017	28.8 – 33.8	64 – 79	0
30 July 2017	29.6 – 34.8	57 – 83	0
31 July 2017	29.8 – 32.4	68 – 86	0

* The above information was extracted from the daily weather summary by Hong Kong Observatory.

APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD

II. Mean Wind Speed and Wind Direction

Date	Prevailing Wind Direction (Degrees)	Mean Wind Speed (km/h)
1 July 2017	200	7.2
2 July 2017	180	7.4
3 July 2017	160	10
4 July 2017	140	9
5 July 2017	100	13.5
6 July 2017	110	15.2
7 July 2017	110	10
8 July 2017	120	7.8
9 July 2017	140	7.5
10 July 2017	160	6.5
11 July 2017	130	10.1
12 July 2017	130	9.2
13 July 2017	110	11
14 July 2017	110	13.5
15 July 2017	100	16.8
16 July 2017	100	18.9
17 July 2017	110	11.4
18 July 2017	100	11.1
19 July 2017	130	10
20 July 2017	90	12.8
21 July 2017	100	15.3
22 July 2017	100	11.2
23 July 2017	100	12.9
24 July 2017	100	10.5
25 July 2017	140	11.4
26 July 2017	140	8.6
27 July 2017	100	12.8
28 July 2017	100	11.6
29 July 2017	230	9.1
30 July 2017	240	13.5
31 July 2017	240	15.7

* The above information was extracted from the daily weather summary by Hong Kong Observatory

APPENDIX D
ENVIRONMENTAL MONITORING SCHEDULES

Contract No. KL/2012/03
Kai Tak Development –Stage 4 Infrastructure at Former North Apron Area
Impact Air and Noise Monitoring Schedule for July 2017

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1-Jul
2-Jul	3-Jul	4-Jul	5-Jul	6-Jul	7-Jul	8-Jul
	1 hr TSP X3 AM4(C), AM5 Noise M6(A) M7, M8, M9	1 hr TSP X3 AM2, AM3(A)		24-hr TSP AM4(C), AM5	1 hr TSP X3 AM4(C), AM5	
9-Jul	10-Jul	11-Jul	12-Jul	13-Jul	14-Jul	15-Jul
	1 hr TSP X3 AM2, AM3(A)		24-hr TSP AM4(C), AM5	1 hr TSP X3 AM4(C), AM5 Noise M6(A) M7, M8, M9		1 hr TSP X3 AM2, AM3(A)
16-Jul	17-Jul	18-Jul	19-Jul	20-Jul	21-Jul	22-Jul
		24-hr TSP AM4(C), AM5	1 hr TSP X3 AM4(C), AM5 Noise M6(A) M7, M8, M9		1 hr TSP X3 AM2, AM3(A)	
23-Jul	24-Jul	25-Jul	26-Jul	27-Jul	28-Jul	29-Jul
	24-hr TSP AM4(C), AM5	1 hr TSP X3 AM4(C), AM5 Noise M6(A) M7, M8, M9		1 hr TSP X3 AM2, AM3(A)	24-hr TSP AM4(C), AM5	
30-Jul	31-Jul					
	1 hr TSP X3 AM4(C), AM5 Noise M6(A) M7, M8, M9					

Air Quality Monitoring Station

AM2 - Lee Kau Yan Memorial School
AM3(A) - Holy Trinity Bradbury Centre
AM4(C) - New Pumping Station under Contract KL/2012/03
AM5 - CCC Kei To Secondary School

Noise Monitoring Station

M6(A) - Oblate Primary School
M7 - CCC Kei To Secondary School
M8 - Po Leung Kuk Ngan Po Ling College
M9 - Tak Long Estate

Contract No. KL/2012/03
Kai Tak Development –Stage 4 Infrastructure at Former North Apron Area
Tentative Impact Air and Noise Monitoring Schedule for August 2017

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1-Aug	2-Aug	3-Aug	4-Aug	5-Aug
			1 hr TSP X3 AM2, AM3(A)	24-hr TSP AM4(C), AM5	1 hr TSP X3 AM4(C), AM5	
6-Aug	7-Aug	8-Aug	9-Aug	10-Aug	11-Aug	12-Aug
		1 hr TSP X3 AM2, AM3(A)	24-hr TSP AM4(C), AM5	1 hr TSP X3 AM4(C), AM5 Noise M6(A) M7, M8, M9		1 hr TSP X3 AM2, AM3(A)
13-Aug	14-Aug	15-Aug	16-Aug	17-Aug	18-Aug	19-Aug
	1 hr TSP X3 AM2, AM3(A)	24-hr TSP AM4(C), AM5	1 hr TSP X3 AM4(C), AM5 Noise M6(A) M7, M8, M9			1 hr TSP X3 AM2, AM3(A)
20-Aug	21-Aug	22-Aug	23-Aug	24-Aug	25-Aug	26-Aug
	24-hr TSP AM4(C), AM5	1 hr TSP X3 AM4(C), AM5 Noise M6(A) M7, M8, M9			1 hr TSP X3 AM2, AM3(A) 24-hr TSP AM4(C), AM5	
27-Aug	28-Aug	29-Aug	30-Aug	31-Aug		
	1 hr TSP X3 AM4(C), AM5			1 hr TSP X3 AM2, AM3(A) 24-hr TSP AM4(C), AM5		

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)

Air Quality Monitoring Station

AM2 - Lee Kau Yan Memorial School
AM3(A) - Holy Trinity Bradbury Centre
AM4(C) - New Pumping Station under Contract KL/2012/03
AM5 - CCC Kei To Secondary School

Noise Monitoring Station

M6(A) - Oblate Primary School
M7 - CCC Kei To Secondary School
M8 - Po Leung Kuk Ngan Po Ling College
M9 - Tak Long Estate

APPENDIX E
1-HOUR TSP MONITORING RESULTS AND GRAPHICAL PRESENTATION

Appendix E - 1-hour TSP Monitoring Results

Location AM2 - Lee Kau Yan Memorial School			
Date	Time	Weather	Particulate Concentration (µg/m3)
4-Jul-17	13:10	Cloudy	88.6
4-Jul-17	14:10	Cloudy	97.1
4-Jul-17	15:10	Cloudy	94.7
10-Jul-17	13:05	Sunny	64.4
10-Jul-17	14:05	Sunny	67.7
10-Jul-17	15:05	Sunny	65.5
15-Jul-17	13:10	Cloudy	31.7
15-Jul-17	14:10	Cloudy	34.0
15-Jul-17	15:10	Cloudy	36.3
21-Jul-17	13:05	Sunny	45.0
21-Jul-17	14:05	Sunny	48.7
21-Jul-17	15:05	Sunny	53.0
27-Jul-17	13:00	Cloudy	31.7
27-Jul-17	14:00	Cloudy	26.1
27-Jul-17	15:00	Cloudy	22.7
		Average	53.8
		Maximum	97.1
		Minimum	22.7

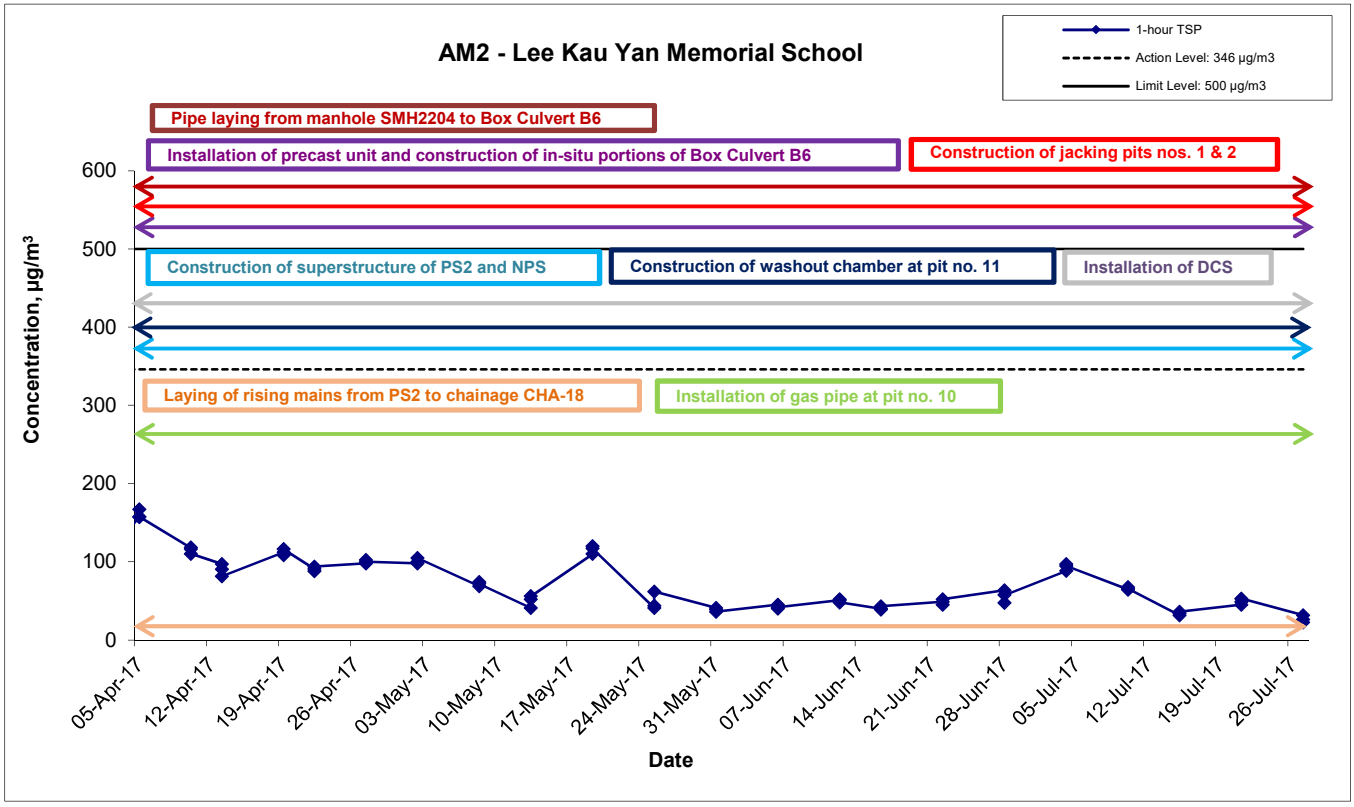
Location AM3(A) - Holy Trinity Bradury Centre			
Date	Time	Weather	Particulate Concentration (µg/m3)
4-Jul-17	9:00	Cloudy	98.7
4-Jul-17	10:00	Cloudy	93.2
4-Jul-17	11:00	Cloudy	86.7
10-Jul-17	9:00	Sunny	70.9
10-Jul-17	10:00	Sunny	75.1
10-Jul-17	11:00	Sunny	74.3
15-Jul-17	9:00	Cloudy	49.9
15-Jul-17	10:00	Cloudy	44.2
15-Jul-17	11:00	Cloudy	43.1
21-Jul-17	9:00	Sunny	50.2
21-Jul-17	10:00	Sunny	52.5
21-Jul-17	11:00	Sunny	53.4
27-Jul-17	9:00	Cloudy	69.0
27-Jul-17	10:00	Cloudy	72.2
27-Jul-17	11:00	Cloudy	73.0
		Average	67.1
		Maximum	98.7
		Minimum	43.1

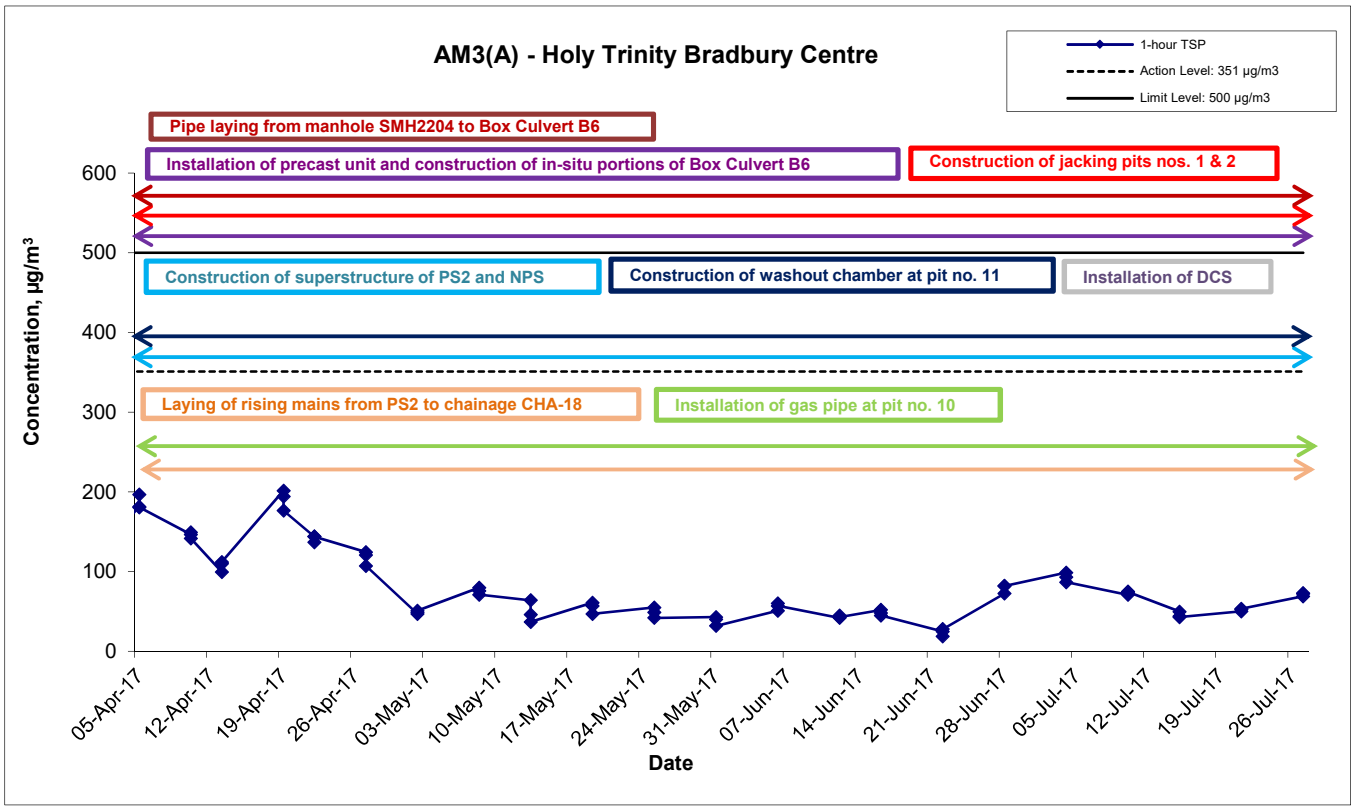
Appendix E - 1-hour TSP Monitoring Results

Location AM4(C) - New Pumping Station			
Date	Time	Weather	Particulate Concentration (µg/m3)
3-Jul-17	9:00	Cloudy	78.9
3-Jul-17	10:00	Cloudy	81.4
3-Jul-17	11:00	Cloudy	85.5
7-Jul-17	9:00	Cloudy	78.0
7-Jul-17	10:00	Cloudy	73.7
7-Jul-17	11:00	Cloudy	70.7
13-Jul-17	9:00	Sunny	64.8
13-Jul-17	10:00	Sunny	68.4
13-Jul-17	11:00	Sunny	71.8
19-Jul-17	13:00	Cloudy	228.2
19-Jul-17	14:00	Cloudy	200.8
19-Jul-17	15:00	Cloudy	194.4
25-Jul-17	9:00	Sunny	52.2
25-Jul-17	10:00	Sunny	54.7
25-Jul-17	11:00	Sunny	58.5
31-Jul-17	9:00	Fine	308.7
31-Jul-17	10:00	Fine	314.9
31-Jul-17	11:00	Fine	313.2
		Average	133.3
		Maximum	314.9
		Minimum	52.2

Location AM5 - CCC Kei To Secondary School			
Date	Time	Weather	Particulate Concentration (µg/m3)
3-Jul-17	9:00	Cloudy	59.8
3-Jul-17	10:00	Cloudy	62.1
3-Jul-17	11:00	Cloudy	65.1
7-Jul-17	14:30	Cloudy	70.3
7-Jul-17	15:30	Cloudy	74.8
7-Jul-17	16:30	Cloudy	67.3
13-Jul-17	9:00	Sunny	60.8
13-Jul-17	10:00	Sunny	67.2
13-Jul-17	11:00	Sunny	59.4
19-Jul-17	13:30	Cloudy	152.5
19-Jul-17	14:30	Cloudy	171.6
19-Jul-17	15:30	Cloudy	204.3
25-Jul-17	8:35	Cloudy	39.0
25-Jul-17	9:35	Cloudy	41.4
25-Jul-17	10:35	Cloudy	36.4
31-Jul-17	8:30	Fine	319.6
31-Jul-17	9:30	Fine	326.9
31-Jul-17	10:30	Fine	324.6
		Average	122.4
		Maximum	326.9
		Minimum	36.4

1-hr TSP Concentration Levels

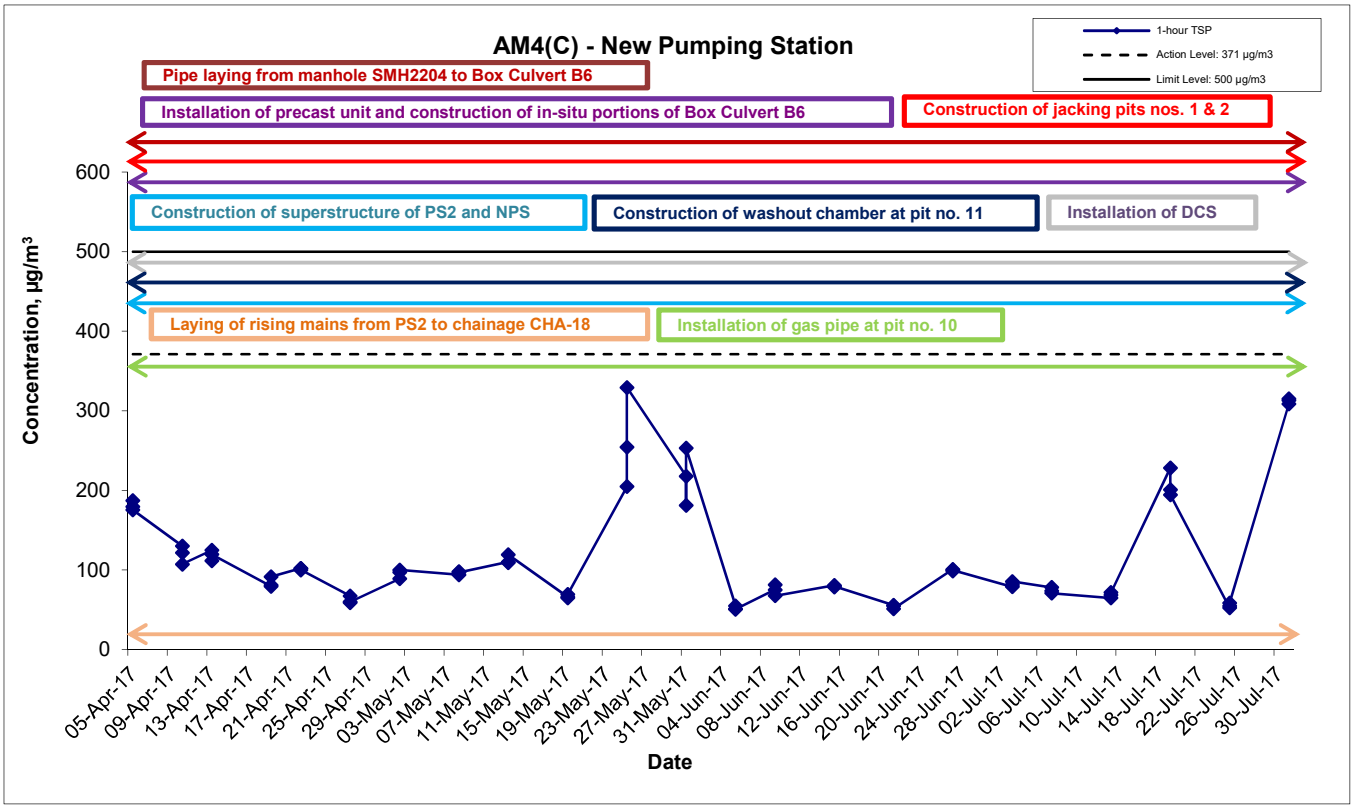


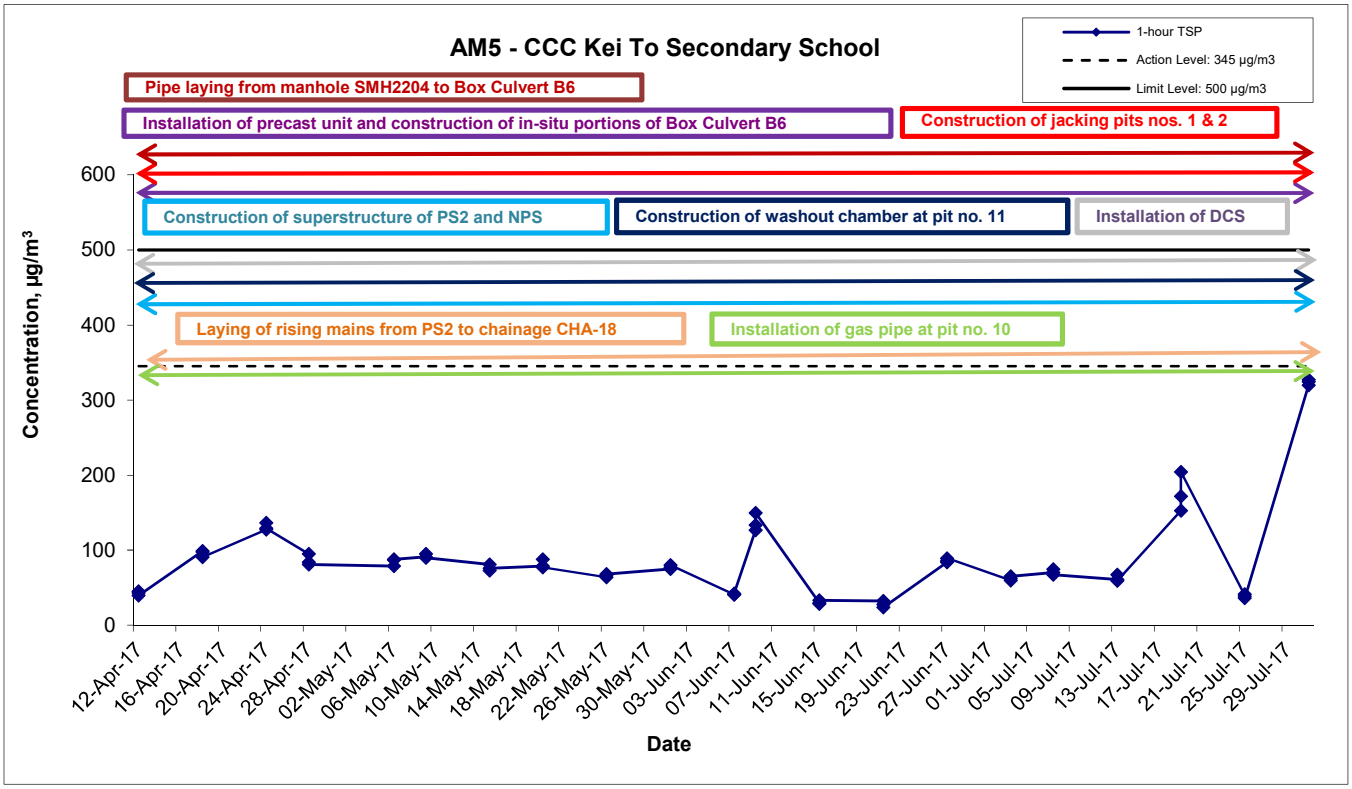


Title: Graphical Presentation of 1-hour TSP Monitoring Results	Contract No. KL/2012/03 Kai Tak Development –Stage 4 Infrastructure at Former North Apron Area	Scale: N.T.S Date: Jul 17	Project No.: MA13056 Appendix: E

CINOTECH

1-hr TSP Concentration Levels





Title	Contract No. KL/2012/03 Kai Tak Development –Stage 4 Infrastructure at Former North Apron Area Graphical Presentation of 1-hour TSP Monitoring Results	Scale N.T.S	Project No. MA13056	CINOTECH
		Date Jul 17	Appendix E	

APPENDIX F
24-HOUR TSP MONITORING RESULTS AND GRAPHICAL PRESENTATION

Appendix F - 24-hour TSP Monitoring Results

Monitoring data at AM2 and AM3(A) was conducted by Castco

Location AM2 - Lee Kau Yan Memorial School

Start Date	Weather Condition	Conc. (µg/m3)
4-Jul-17	Sunny	24
10-Jul-17	Sunny	32
15-Jul-17	Cloudy	23
21-Jul-17	Cloudy	29
27-Jul-17	Sunny	36
	Min	23
	Max	36
	Average	29

Location AM3(A) - Holy Trinity Bradbury Centre

Start Date	Weather Condition	Conc. (µg/m3)
4-Jul-17	Sunny	38
10-Jul-17	Sunny	18
15-Jul-17	Cloudy	38
21-Jul-17	Cloudy	54
27-Jul-17	Sunny	49
	Min	18
	Max	54
	Average	39

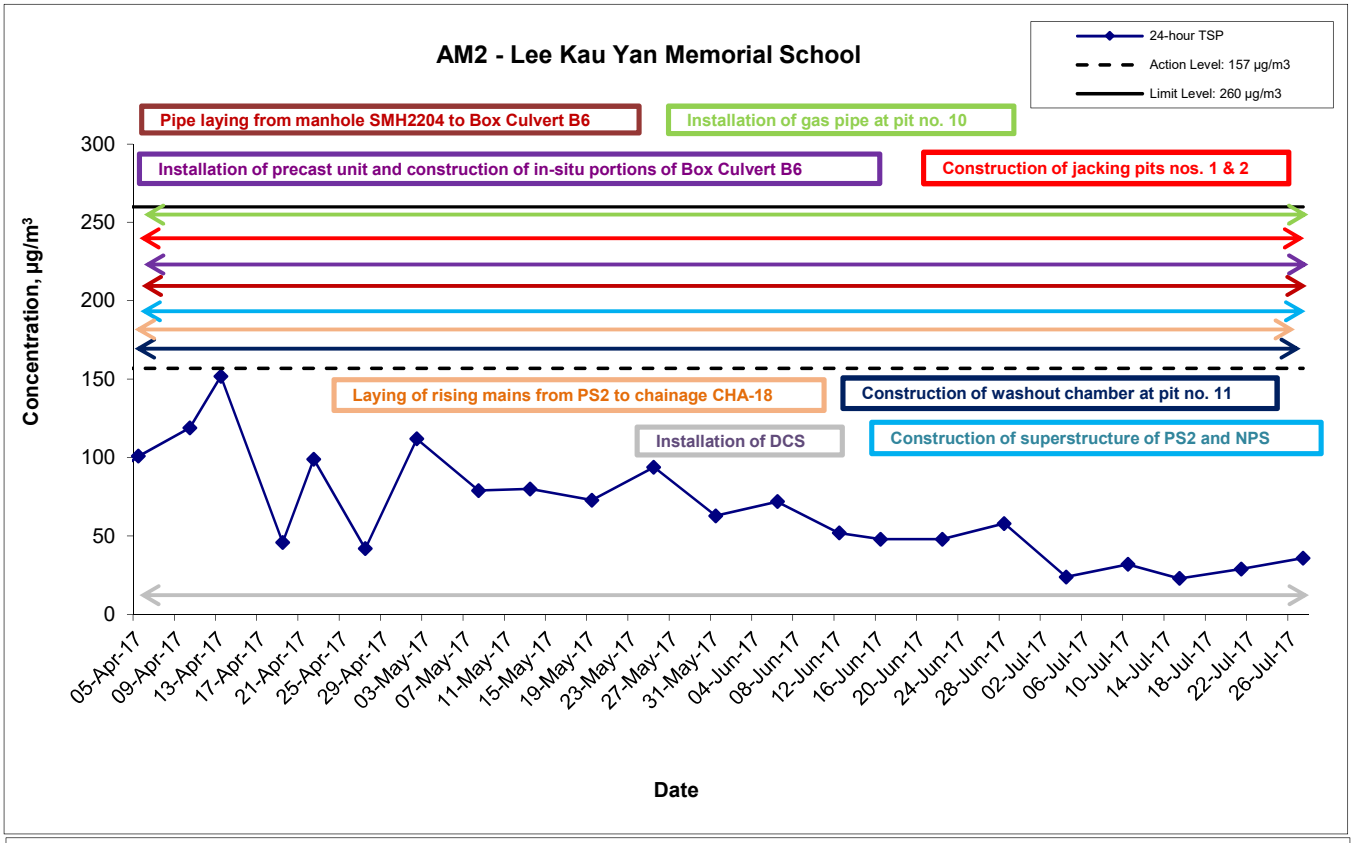
Location AM4(C) - New Pumping Station under Contract KL/2012/03

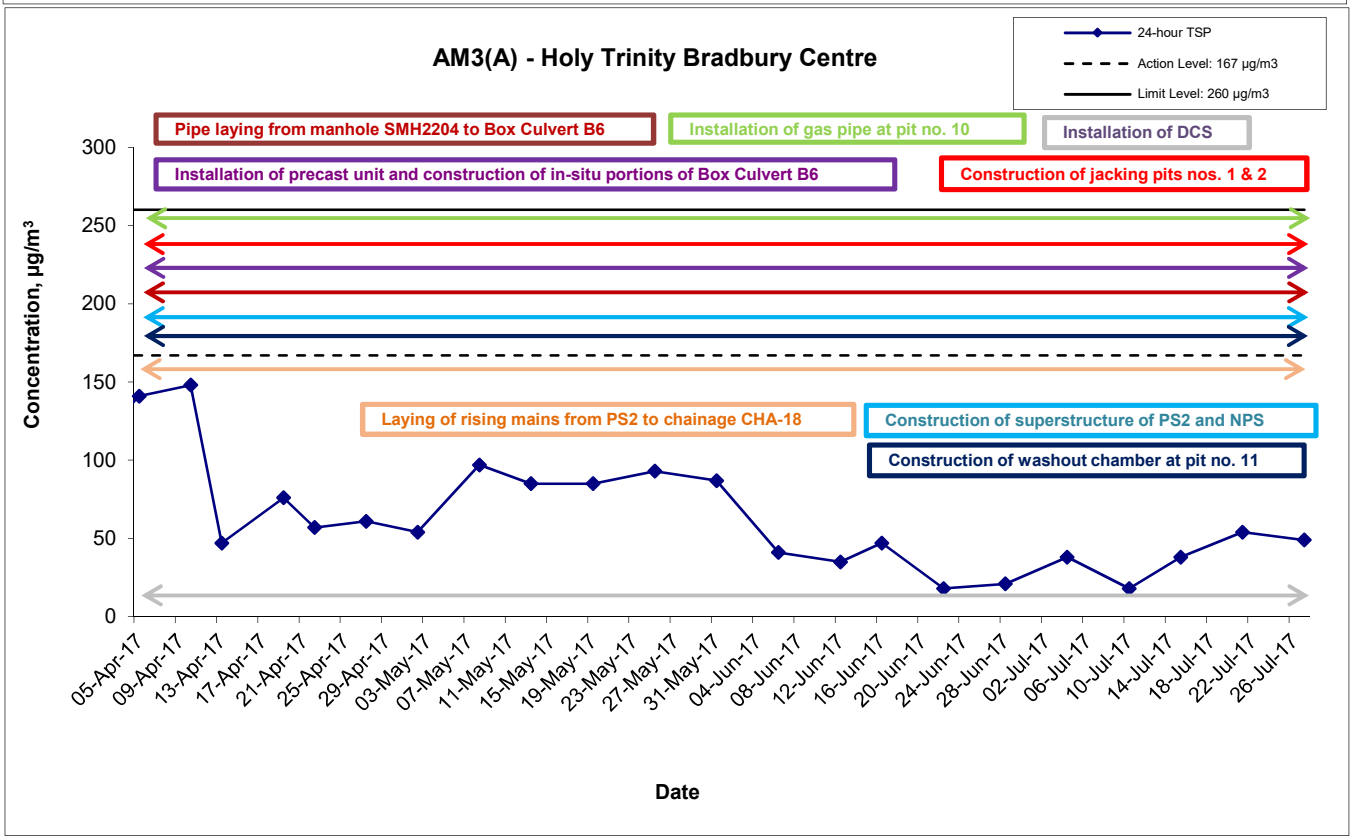
Start Date	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m^3/min.)		Av. flow (m^3/min)	Total vol. (m^3)	Conc. (µg/m^3)
				Initial	Final		Initial	Final		Initial	Final			
6-Jul-17	Sunny	301.4	759.1	2.8759	2.9048	0.0289	1509.2	1533.2	24.0	1.21	1.21	1.21	1743.6	16.6
12-Jul-17	Sunny	302.6	761.7	2.8117	2.8357	0.0240	1533.2	1557.2	24.0	1.21	1.21	1.21	1743.1	13.8
18-Jul-17	Cloudy	297.9	761.4	2.8629	2.9024	0.0395	1557.2	1581.2	24.0	1.22	1.22	1.22	1758.0	22.5
24-Jul-17	Cloudy	299.4	757.3	2.8462	2.8761	0.0299	1581.2	1605.2	24.0	1.21	1.21	1.21	1748.0	17.1
28-Jul-17	Cloudy	303.6	756.7	2.8725	2.9100	0.0375	1605.2	1629.2	24.0	1.20	1.20	1.20	1733.6	21.6
													Min	13.8
													Max	22.5
													Average	18.3

Location AM5 - CCC Kei To Secondary School

Start Date	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m^3/min.)		Av. flow (m^3/min)	Total vol. (m^3)	Conc. (µg/m^3)
				Initial	Final		Initial	Final		Initial	Final			
6-Jul-17	Sunny	302.0	759.7	2.8524	2.8743	0.0219	3122.2	3146.2	24.0	1.20	1.20	1.20	1731.9	12.6
12-Jul-17	Sunny	302.5	761.3	2.8743	2.9004	0.0261	3146.2	3170.2	24.0	1.20	1.20	1.20	1732.3	15.1
18-Jul-17	Cloudy	297.6	761.8	2.8775	2.8968	0.0193	3170.2	3194.2	24.0	1.21	1.21	1.21	1747.2	11.0
24-Jul-17	Cloudy	299.3	757.7	2.8564	2.8881	0.0317	3194.2	3218.2	24.0	1.21	1.21	1.21	1737.4	18.2
28-Jul-17	Cloudy	303.5	756.4	2.8399	2.8831	0.0432	3218.2	3242.2	24.0	1.20	1.20	1.20	1723.8	25.1
													Min	11.0
													Max	25.1
													Average	16.4

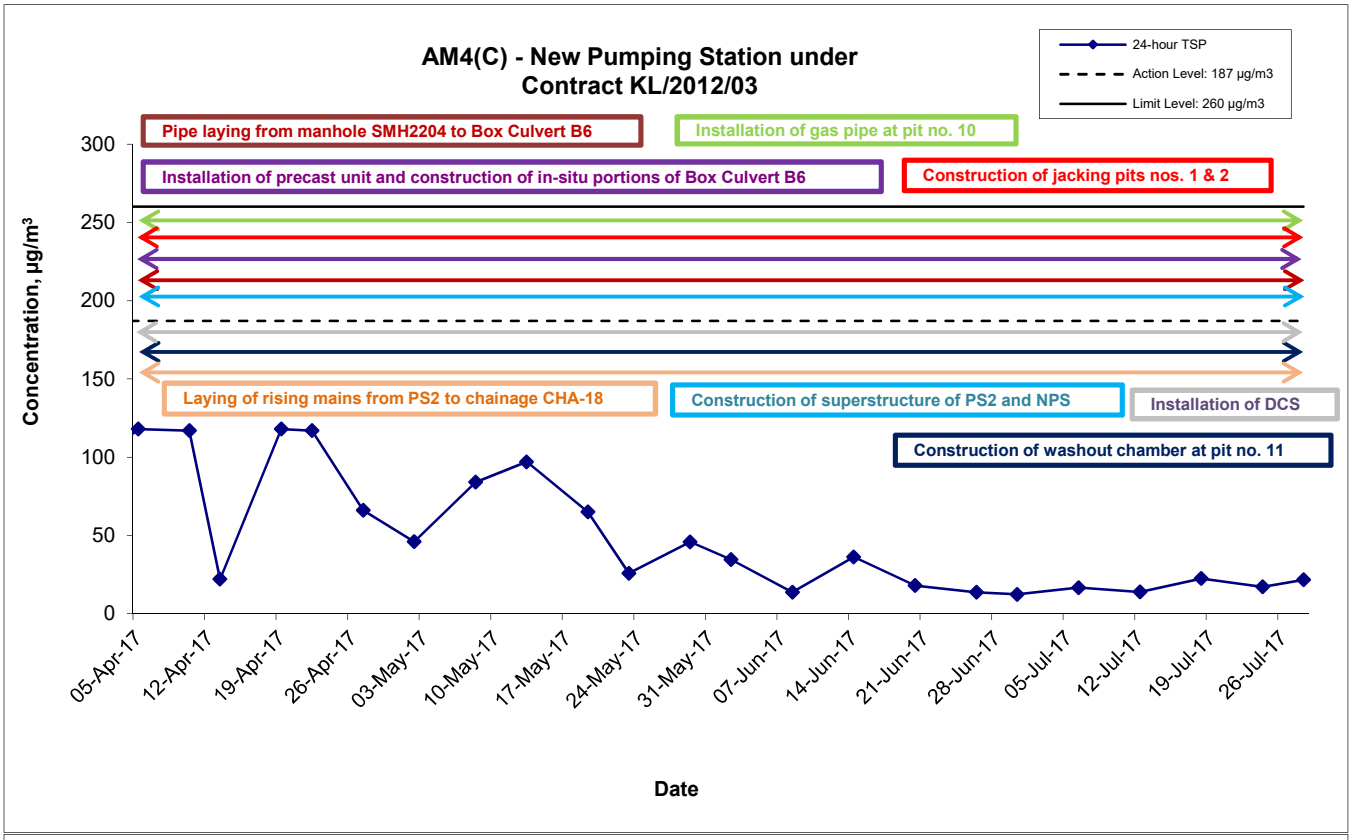
24-hr TSP Concentration Levels

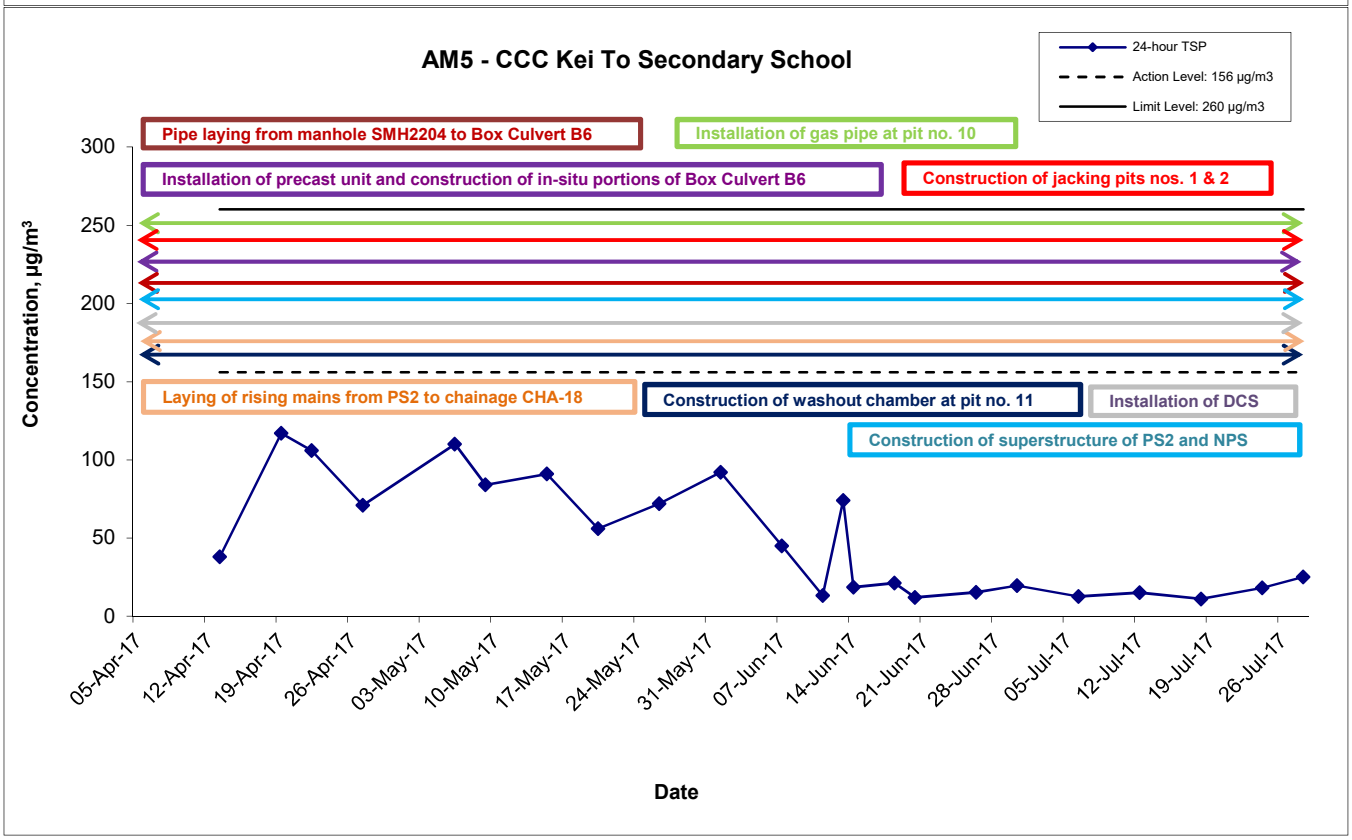




Title: Contract No. KL/2012/03 Kai Tak Development –Stage 4 Infrastructure at Former North Apron Area Graphical Presentation of 24-hour TSP Monitoring Results	Scale: N.T.S Date: Jul 17	Project No.: MA13056 Appendix: F	CINOTECH

24-hr TSP Concentration Levels





Title: Contract No. KL/2012/03 Kai Tak Development –Stage 4 Infrastructure at Former North Apron Area Graphical Presentation of 24-hour TSP Monitoring Results	Scale: N.T.S Date: Jul 17	Project No.: MA13056 Appendix: F	CINOTECH

APPENDIX G
NOISE MONITORING RESULTS AND GRAPHICAL PRESENTATION

Appendix G - Noise Monitoring Results

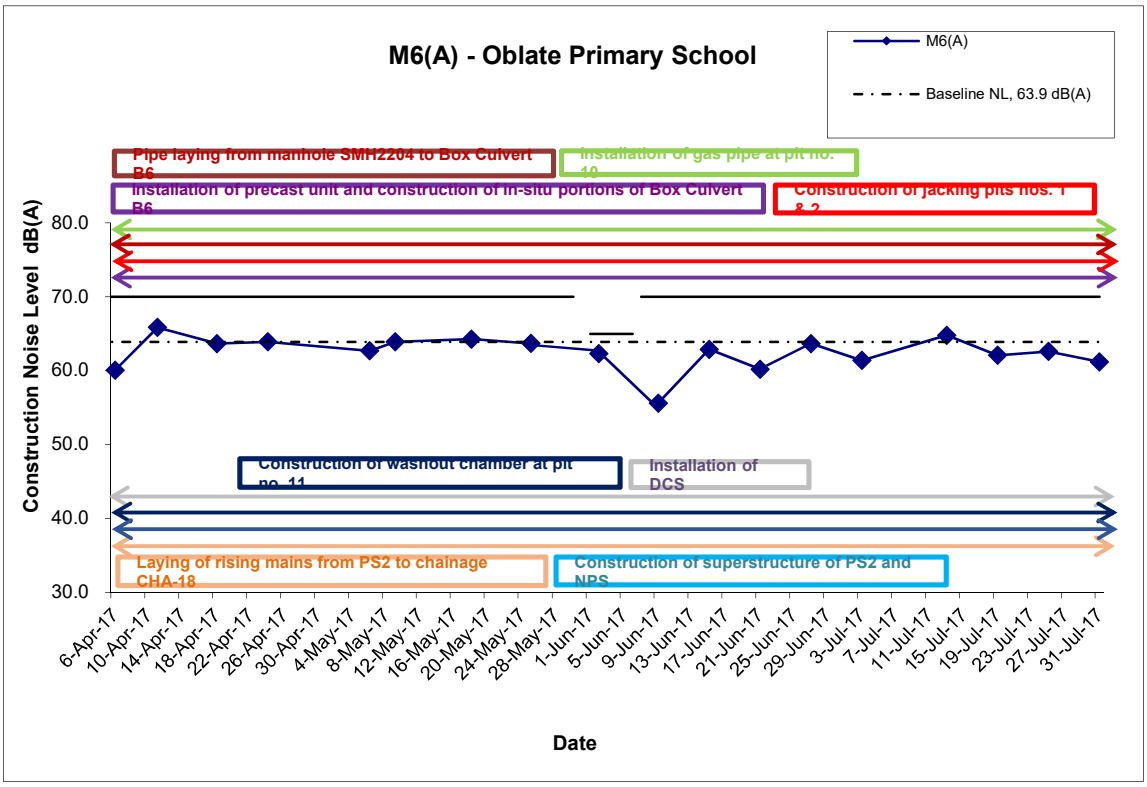
Location M6(A) - Oblate Primary School							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
3-Jul-17	13:00	Cloudy	61.4	62.9	59.4	63.9	61.4 Measured ≦ Baseline
13-Jul-17	10:15	Sunny	67.4	69.3	63.5		64.8
19-Jul-17	11:00	Cloudy	62.1	67.8	58.6		62.1 Measured ≦ Baseline
25-Jul-17	9:35	Sunny	62.6	64.1	61.0		62.6 Measured ≦ Baseline
31-Jul-17	10:00	Cloudy	61.2	63.3	60.3		61.2 Measured ≦ Baseline

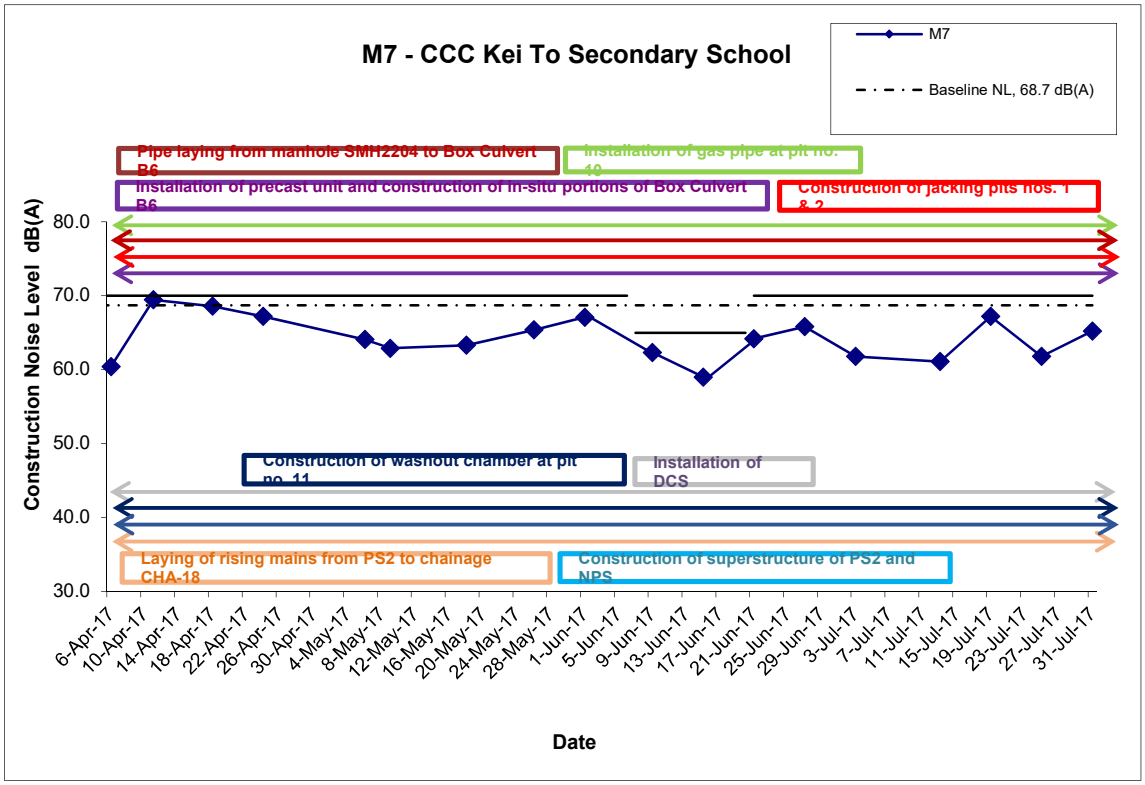
Location M7 - CCC Kei To Secondary School							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
3-Jul-17	9:10	Cloudy	69.5	71.9	66.0	68.7	61.8
13-Jul-17	9:10	Sunny	69.4	72.6	67.0		61.1
19-Jul-17	14:00	Cloudy	67.2	71.0	64.0		67.2 Measured ≦ Baseline
25-Jul-17	9:10	Cloudy	69.5	72.0	65.5		61.8
31-Jul-17	11:15	Cloudy	65.2	66.7	63.1		65.2 Measured ≦ Baseline

Location M8 - Po Leung Kuk Ngan Po Ling College							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
3-Jul-17	14:00	Cloudy	61.7	63.4	59.1	61.9	61.7 Measured ≦ Baseline
13-Jul-17	11:30	Sunny	65.0	66.6	61.1		62.1
19-Jul-17	15:00	Cloudy	63.4	65.8	61.0		58.1
25-Jul-17	11:00	Sunny	63.5	64.9	60.3		58.4
31-Jul-17	13:15	Cloudy	62.4	64.2	60.2		52.8

Location M9 - Tak Long Estate							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
3-Jul-17	15:00	Cloudy	65.4	67.1	62.4	59.9	64.0
13-Jul-17	13:00	Sunny	64.7	66.3	62.5		63.0
19-Jul-17	9:20	Cloudy	66.2	68.3	62.5		65.0
25-Jul-17	17:20	Sunny	61.5	63.2	59.0		56.4
31-Jul-17	14:55	Cloudy	64.5	65.9	62.2		62.7

Noise Levels

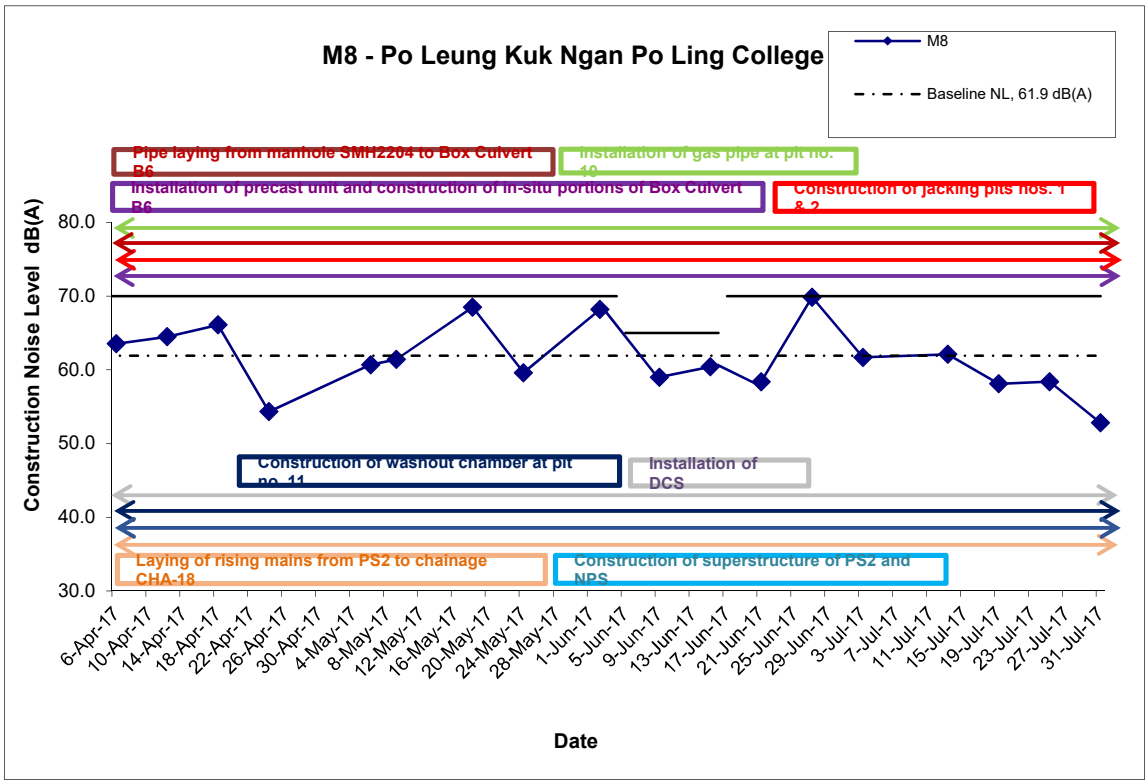


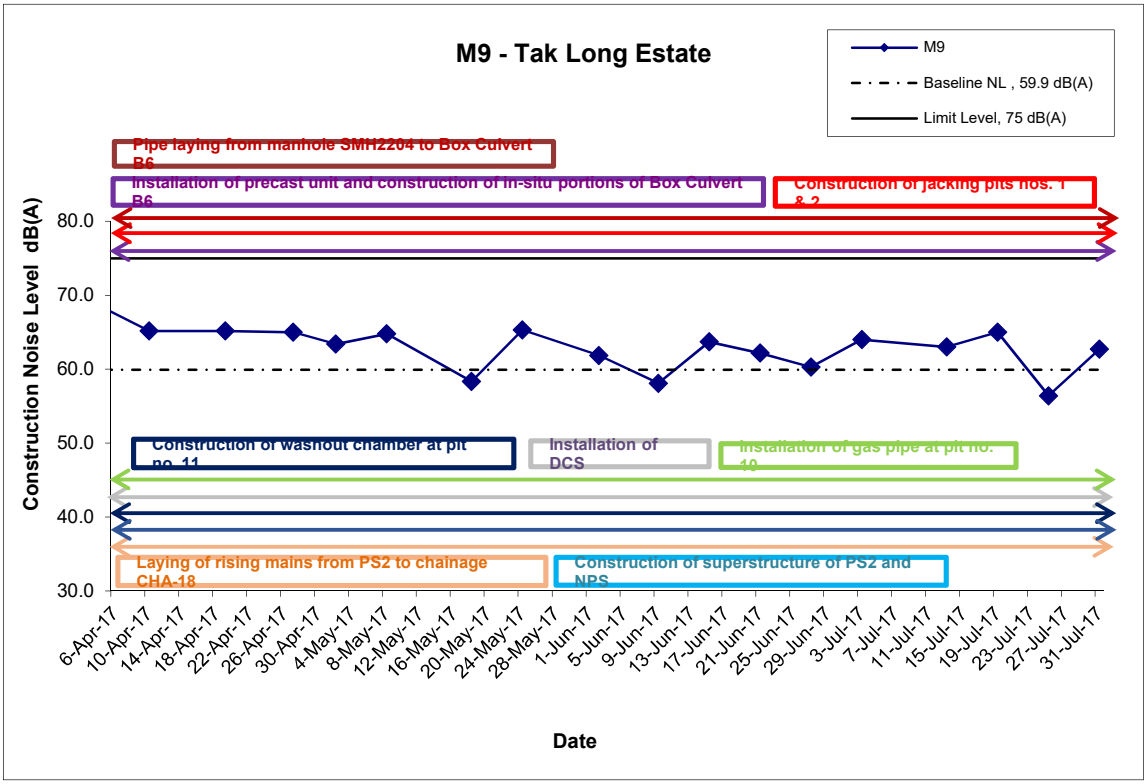


Remarks: The construction noise levels in the Tables in Appendix G were adopted for plotting the graphs

Title: Contract No. KL/2012/03 Kai Tak Development –Stage 4 Infrastructure at Former North Apron Area Graphical Presentation of Construction Noise Monitoring Results	Scale: N.T.S	Project No.: MA13056	CINOTECH
	Date: Jul 17	Appendix: G	

Noise Levels





Remarks: The construction noise levels in the Tables in Appendix G were adopted for plotting the graphs

Title: Contract No. KL/2012/03 Kai Tak Development –Stage 4 Infrastructure at Former North Apron Area Graphical Presentation of Construction Noise Monitoring Results	Scale: N.T.S	Project No.: MA13056	CINOTECH
	Date: Jul 17	Appendix: G	

APPENDIX H
SUMMARY OF EXCEEDANCE

Contract No. KL/2012/03
Kai Tak Development –Stage 4 Infrastructure at Former North Apron Area

Appendix H – Summary of Exceedance

Exceedance Report for Contract No. KL/2012/03

(A) Exceedance Report for Air Quality
(NIL in the reporting month)

(B) Exceedance Report for Construction Noise
(NIL in the reporting month)

(C) Exceedance Report for Landscape and Visual
(NIL in the reporting month)

APPENDIX I
SITE AUDIT SUMMARY

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	170706
Date	6 July 2017
Time	11:00-12:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	B. Water Quality	
170706-R01	• Ponding water should be avoided.	B 8
	C. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
	• No environmental deficiency was identified during site inspection.	
	F. Visual and Landscape	
	• No environmental deficiency was identified during site inspection.	
	G. Permits /Licences	
	• No environmental deficiency was identified during site inspection.	
	H. Others	
	• Follow-up on previous audit section (Ref. No.: 170630), all environmental deficiencies were improved/rectified during the site inspection.	

	Name	Signature	Date
Recorded by	Carrie Leung		6 July 2017
Checked by	Dr. Priscilla Choy		6 July 2017

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	170714
Date	14 July 2017
Time	10:00-11:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	B. Water Quality	
170714-O01	• Ponding water should be avoided.	B 8
	C. Air Quality	
170714-O02	• Haul road should be sprayed with water regularly.	C 5
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
	• No environmental deficiency was identified during site inspection.	
	F. Visual and Landscape	
	• No environmental deficiency was identified during site inspection.	
	G. Permits /Licences	
	• No environmental deficiency was identified during site inspection.	
	H. Others	
	• Follow-up on previous audit section (Ref. No.: 170706), all environmental deficiencies were improved/rectified during the site inspection.	

	Name	Signature	Date
Recorded by	Carrie Leung		14 July 2017
Checked by	Dr. Priscilla Choy		14 July 2017

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	170719
Date	19 July 2017
Time	14:00-16:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

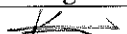
Ref. No.	Remarks/Observations	Related Item No.
	B. Water Quality	
170719-O01	• Ponding water should be avoided.	B 8
	C. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
	• No environmental deficiency was identified during site inspection.	
	F. Visual and Landscape	
	• No environmental deficiency was identified during site inspection.	
	G. Permits /Licences	
	• No environmental deficiency was identified during site inspection.	
	H. Others	
	• Follow-up on previous audit section (Ref. No.: 170714), item 170714-O01 was remarked as 170719-O01.	

	Name	Signature	Date
Recorded by	Carrie Leung		19 July 2017
Checked by	Dr. Priscilla Choy		19 July 2017

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	170728
Date	28 July 2017
Time	14:00-16:30

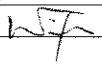
Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	B. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	C. Air Quality	
170728-R01	• Subbase at Portion 6 should be properly covered to prevent dust generation.	C 6
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
	• No environmental deficiency was identified during site inspection.	
	F. Visual and Landscape	
	• No environmental deficiency was identified during site inspection.	
	G. Permits /Licences	
	• No environmental deficiency was identified during site inspection.	
	H. Others	
	• Follow-up on previous audit session (Ref. No.: 170719), all environmental deficiencies were improved/rectified during the site inspection.	

	Name	Signature	Date
Recorded by	Kelvin Koo		28 July 2017
Checked by	Dr. Priscilla Choy		28 July 2017

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	170706
Date	6 July 2017
Time	11:00-12:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	B. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	C. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
	• No environmental deficiency was identified during site inspection.	
	F. Visual and Landscape	
	• No environmental deficiency was identified during site inspection.	
	G. Permits /Licences	
	• No environmental deficiency was identified during site inspection.	
	H. Others	
	• Follow-up on previous audit section (Ref. No.: 170630), no environmental deficiencies was observed during the site inspection.	

	Name	Signature	Date
Recorded by	Carrie Leung		7 July 2017
Checked by	Dr. Priscilla Choy		7 July 2017

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	170714
Date	14 July 2017
Time	10:00-11:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	B. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	C. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
	• No environmental deficiency was identified during site inspection.	
	F. Visual and Landscape	
	• No environmental deficiency was identified during site inspection.	
	G. Permits /Licences	
	• No environmental deficiency was identified during site inspection.	
	H. Others	
	• Follow-up on previous audit section (Ref. No.: 170706), no environmental deficiencies was observed during the site inspection.	

	Name	Signature	Date
Recorded by	Carrie Leung		14 July 2017
Checked by	Dr. Priscilla Choy		14 July 2017

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	170719
Date	19 July 2017
Time	14:00-16:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
	B. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	C. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
	• No environmental deficiency was identified during site inspection.	
	F. Visual and Landscape	
	• No environmental deficiency was identified during site inspection.	
	G. Permits /Licences	
	• No environmental deficiency was identified during site inspection.	
	H. Others	
	• Follow-up on previous audit section (Ref. No.: 170714), no environmental deficiencies was observed during the site inspection.	

	Name	Signature	Date
Recorded by	Carrie Leung		19 July 2017
Checked by	Dr. Priscilla Choy		19 July 2017

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	170728
Date	28 July 2017
Time	14:00-16:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
	B. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	C. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
	• No environmental deficiency was identified during site inspection.	
	F. Visual and Landscape	
	• No environmental deficiency was identified during site inspection.	
	G. Permits /Licences	
	• No environmental deficiency was identified during site inspection.	
	H. Others	
	• Follow-up on previous audit session (Ref. No.: 170719), no environmental deficiencies was observed during the site inspection.	

	Name	Signature	Date
Recorded by	Kelvin Koo		28 July 2017
Checked by	Dr. Priscilla Choy		28 July 2017

APPENDIX J
EVENT ACTION PLANS

Appendix J - Event Action Plans

Event/Action Plan for Air Quality

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action Level being exceeded by one sampling	1. Identify source and investigate the causes of exceedance; 2. Inform Contactor, IEC and ER; 3. Repeat measurement to confirm finding.	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.
Action Level being exceeded by two or more consecutive sampling	1. Identify source and investigate the causes of exceedance; 2. Inform Contractor, IEC and ER; 3. Increase monitoring frequency to daily; 4. Discuss with IEC and Contractor on remedial actions required; 5. Assess the effectiveness of Contractor's remedial actions; 6. If exceedance continues, arrange meeting with IEC and ER; 7. 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 ER on the effectiveness of the proposed remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise implementation of remedial measures; 5. Conduct meeting with ET and IEC if exceedance continues.	1. Discuss with ET and IEC on proper remedial actions; 2. Submit proposals for remedial actions to ER and IEC within three working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.
Limit Level being exceeded by one sampling	1. Identify source and investigate the causes of exceedance; 2. Inform Contractor, IEC, ER, and EPD; 3. Repeat measurement to confirm finding; 4. Assess effectiveness of Contractor's remedial actions and keep	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures;	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be	1. Take immediate action to avoid further exceedance; 2. Discuss with ET and IEC on proper remedial actions; 3. Submit proposals for remedial actions to ER and IEC within three

	EPD, IEC and ER informed of the results.	4. Advise the ER on the effectiveness of the proposed remedial measures.	implemented; 4. Supervise implementation of remedial measures; 5. Conduct meeting with ET and IEC if exceedance continues.	working days of notification; 4. Implement the agreed proposals.
Limit Level being exceeded by two or more consecutive sampling	1. Notify IEC, ER, Contractor and EPD; 2. Repeat measurement to confirm findings; 3. Carry out analysis of Contractor's working procedures to identify source and investigate the causes of exceedance; 4. Increase monitoring frequency to daily; 5. Arrange meeting with IEC, ER and Contractor to discuss the remedial actions to be taken; 6. Assess effectiveness of Contractor's remedial actions and keep EPD, IEC and ER informed of the results; 7. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 4. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise 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. Discuss with ET, ER and IEC on proper remedial actions; 3. Submit proposals for remedial actions to IEC within three working days of notification; 4. Implement the agreed proposals; 5. Submit further remedial actions if problem still not under control; 6. Stop the relevant portion of works as instructed by the ER until the exceedance is abated.

Appendix J - Event Action Plans

Event/Action Plan for Construction Noise

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action Level being exceeded	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. (The above actions should be taken within 2 working days after the exceedance is identified)	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. (The above actions should be taken within 2 working days after the exceedance is identified)	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. (The above actions should be taken within 2 working days after the exceedance is identified)	1. Submit noise mitigation proposals to IEC and ER; 2. Implement noise mitigation proposals. (The above actions should be taken within 2 working days after the exceedance is identified)
Limit Level being exceeded	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;	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	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;

	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. (The above actions should be taken within 2 working days after the exceedance is identified)	(The above actions should be taken within 2 working days after the exceedance is identified)	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. (The above actions should be taken within 2 working days after the exceedance is identified)	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. (The above actions should be taken within 2 working days after the exceedance is identified)

Appendix J - Event Action Plans

Event/Action Plan for Landscape and Visual

EVENT ACTION LEVEL	ACTION			
	ET	IEC	ER	CONTRACTOR
Design Check	1. Check final design conforms to the requirements of EP and prepare report.	1. Check report. 2. Recommend remedial design if necessary	1. Undertake remedial design if necessary	
Non-conformity on one occasion	1. Identify Source 2. Inform IEC and ER 3. Discuss remedial actions with IEC, ER and Contractor 4. Monitor remedial actions until rectification has been completed	1. Check report 2. Check Contractor's working method 3. Discuss with ET and Contractor on possible remedial measures 4. Advise ER on effectiveness of proposed remedial measures. 5. Check implementation of remedial measures.	1. Notify Contractor 2. Ensure remedial measures are properly implemented	1. Amend working methods 2. Rectify damage and undertake any necessary replacement
Repeated Non-conformity	1. Identify Source Inform IEC and	1. Check monitoring report	1. Notify Contractor 2. Ensure remedial measures are properly	1. Amend working methods 2. Rectify damage and

	ER 2. Increase monitoring frequency 3. Discuss remedial actions with IEC, ER and Contractor 4. Monitor remedial actions until rectification has been completed 5. If non-conformity stops, cease additional monitoring	2. Check Contractor's working method 3. Discuss with ET and Contractor on possible remedial measures 4. Advise ER on effectiveness of proposed remedial measures 5. Supervise implementation of remedial measures.	implemented	undertake any necessary replacement

APPENDIX K
ENVIRONMENTAL MITIGATION
IMPLEMENTATION SCHEDULE (EMIS)

Appendix K - Summary of Implementation Schedule of Mitigation Measures for Construction Phase

Types of Impacts	Mitigation Measures	Status
Construction Dust	8 times daily watering of the work site with active dust emitting activities.	^
	Implementation of dust suppression measures stipulated in Air Pollution Control (Construction Dust) Regulation. The following mitigation measures, good site practices and a comprehensive dust monitoring and audit programme are recommended to minimize cumulative dust impacts.	
	• Stockpiling site(s) should be lined with impermeable sheeting and bunded. Stockpiles should be fully covered by impermeable sheeting to reduce dust emission.	^
	• Misting for the dusty material should be carried out before being loaded into the vehicle.	^
	• Any vehicle with an open load carrying area should have properly fitted side and tail boards.	^
	• Material having the potential to create dust should not be loaded from a level higher than the side and tail boards and should be dampened and covered by a clean tarpaulin.	^
	• The tarpaulin should be properly secured and should extent at least 300 mm over the edges of the sides and tailboards. The material should also be dampened if necessary before transportation.	^
	• The vehicles should be restricted to maximum speed of 10 km per hour and confined haulage and delivery vehicle to designated roadways insider the site. On-site unpaved roads should be compacted and kept free of lose materials.	^
	• Vehicle washing facilities should be provided at every vehicle exit point.	^
	• The area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores.	^
	• Every main haul road should be scaled with concrete and kept clear of dusty materials or sprayed with water so as to maintain the entire road surface wet.	^
	• Every stock of more than 20 bags of cement should be covered entirely by impervious sheeting placed in an area sheltered on the top and the three sides.	^
	• Every vehicle should be washed to remove any dusty materials from its body and wheels before leaving the construction sites.	^

Construction Noise	Use of quiet PME, movable barriers barrier for Asphalt Paver, Breaker, Excavator and Hand-held breaker and full enclosure for Air Compressor, Bar Bender, Concrete Pump, Generator and Water Pump	^
	Good Site Practice: • Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program.	^
	• Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction program.	N/A(1)
	• Mobile plant, if any, should be sited as far away from NSRs as possible.	^
	• Machines and plant (such as trucks) that may be in intermittent use should be shut down between works periods or should be throttled down to a minimum.	^
	• Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs.	^
	• Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities.	^
	Scheduling of Construction Works during School Examination Period	^
	(i) Provision of low noise surfacing in a section of Road L2; and	N/A
	(ii) Provision of structural fins	N/A
	(i) Avoid the sensitive façade of class room facing Road L2 and L4; and	N/A
	(ii) Provision of low noise surfacing in a section of Road L2 & L4	N/A
	(i) Provision of low noise surfacing in a section of Road L4 before occupation of Site 1I1; and	N/A
	(ii) Setback of building about 5m from site boundary.	N/A
	Setback of building about 35m to the northwest direction at 1L3 and 5m at Site 1L2.	N/A
	(i) avoid any sensitive façades with openable window facing the existing Kowloon City Road network; and	N/A
	(ii) for the sensitive facades facing the To Kwa Wan direction, either setback the facades by about 5m to the northeast direction or do not provide the facades with openable window.	N/A

	(i) avoid any sensitive facades with openable window facing the existing To Kwa Wan Road or	N/A
	(ii) provision of 17.5m high noise tolerant building fronting To Kwa Wan Road and restrict the height of the residential block(s) located at less than 55m away from To Kwa Wan Road to no more than 25m above ground.	N/A
	(i) avoid any sensitive facades with openable window facing the slip road connecting Prince Edward Road East and San Po Kong or other alternative mitigation measures and at-source mitigation measures for the surrounding new local roads to minimise the potential traffic noise impacts from the slip road	N/A
	All the ventilation fans installed in the below will be provided with silencers or acoustics treatment.	
	(i) SPS	N/A
	(ii) ESS	N/A
	(iii) Tunnel Ventilation Shaft	N/A
	(iv) EFTS depot	N/A
	Installation of retractable roof or other equivalent measures	N/A
Construction Water Quality	The following mitigation measures are proposed to be incorporated in the design of the SPS at KTD, including:	
	• Dual power supply or emergency generator should be provided at all the SPSs to secure electrical power supply;	N/A
	• Standby pumps should be provided at all SPSs to ensure smooth operation of the SPS during maintenance of the duty pumps;	N/A
	• An alarm should be installed to signal emergency high water level in the wet well at all SPSs; and	N/A
	• For all unmanned SPSs, a remote monitor system connecting SPSs with the control station through telemetry system should be provided so that swift actions could be taken in case of malfunction of unmanned facilities.	N/A
	<u>Land-based Construction</u>	
	Construction Runoff	
	Exposed soil areas should be minimised to reduce the potential for increased siltation, contamination of runoff, and erosion. Construction runoff related impacts associated with the above ground construction activities can be readily controlled through the use of appropriate mitigation measures which include:	^
	• use of sediment traps	^
	• adequate maintenance of drainage systems to prevent flooding and overflow	^

	Construction site should be provided with adequately designed perimeter channel and pre-treatment facilities and proper maintenance. The boundaries of critical areas of earthworks should be marked and surrounded by dykes or embankments for flood protection. Temporary ditches should be provided to facilitate runoff discharge into the appropriate watercourses, via a silt retention pond. Permanent drainage channels should incorporate sediment basins or traps and baffles to enhance deposition rates. The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94.	^
	Ideally, construction works should be programmed to minimise surface excavation works during the rainy season (April to September). All exposed earth areas should be completed as soon as possible after earthworks have been completed, or alternatively, within 14 days of the cessation of earthworks where practicable. If excavation of soil cannot be avoided during the rainy season, or at any time of year when rainstorms are likely, exposed slope surfaces should be covered by tarpaulin or other means.	^
	Sediment tanks of sufficient capacity, constructed from pre-formed individual cells of approximately 6 to 8 m^3 capacity, are recommended as a general mitigation measure which can be used for settling surface runoff prior to disposal. The system capacity is flexible and able to handle multiple inputs from a variety of sources and particularly suited to applications where the influent is pumped.	^
	Open stockpiles of construction materials (for examples, aggregates, sand and fill material) of more than 50 m^3 should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.	^
	Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers.	^
	Precautions to be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms are summarised in Appendix A2 of ProPECC PN 1/94. Particular attention should be paid to the control of silty surface runoff during storm events.	^
	Oil interceptors should be provided in the drainage system and regularly cleaned to prevent the release of oils and grease into the storm water drainage system after accidental spillages. The interceptor should have a bypass to prevent flushing during periods of heavy rain.	^

	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 located wheel washing bay should be provided at every site exit, and wash-water should have sand and silt settled out and removed at least on a weekly basis 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.	*
	Drainage	
	It is recommended that on-site drainage system should be installed prior to the commencement of other construction activities. Sediment traps should be installed in order to minimise the sediment loading of the effluent prior to discharge into foul sewers. There should be no direct discharge of effluent from the site into the sea.	^
	All temporary and permanent drainage pipes and culverts provided to facilitate runoff discharge should be adequately designed for the controlled release of storm flows. All sediment control measures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rain storms. The temporarily diverted drainage should be reinstated to its original condition when the construction work has finished or the temporary diversion is no longer required.	^
	All fuel tanks and storage areas should be provided with locks and be located on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank, to prevent spilled fuel oils from reaching the coastal waters of the Victoria Harbour WCZ.	^
	Sewage Effluent	
	Construction work force sewage discharges on site are expected to be connected to the existing trunk sewer or sewage treatment facilities. The construction sewage may need to be handled by portable chemical toilets prior to the commission of the on-site sewer system. Appropriate numbers of portable toilets should be provided by a licensed contractor to serve the large number of construction workers over the construction site. The Contractor should also be responsible for waste disposal and maintenance practices.	^
	Stormwater Discharges	
	Minimum distances of 100 m should be maintained between the existing or planned stormwater discharges and the existing or planned seawater intakes	N/A

	Debris and Litter In order to maintain water quality in acceptable conditions with regard to aesthetic quality, contractors should be required, under conditions of contract, to ensure that site management is optimised and that disposal of any solid materials. litter or wastes to marine waters does not occur	^
	Construction Works at or in Close Proximity of Storm Culvert or Seafront The proposed works should preferably be carried out within the dry season where the flow in the drainage channel /storm culvert/ nullah is low.	^
	The use of less or smaller construction plants may be specified to reduce the disturbance to the bottom sediment at the drainage channel /storm culvert / nullah.	^
	Temporary storage of materials (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction materials should be located well away from any water courses during carrying out of the construction works.	^
	Stockpiling of construction materials and dusty materials should be covered and located away from any water courses.	^
	Construction debris and spoil should be covered up and/or disposed of as soon as possible to avoid being washed into the nearby water receivers.	^
	Construction activities, which generate large amount of wastewater, should be carried out in a distance away from the waterfront, where practicable.	^
	Mitigation measures to control site runoff from entering the nearby water environment should be implemented to minimize water quality impacts. Surface channels should be provided along the edge of the waterfront within the work sites to intercept the runoff.	^
	Construction effluent, site run-off and sewage should be properly collected and/or treated.	^
	Any works site inside the storm water courses should be temporarily isolated, such as by placing of sandbags or silt curtains with lead edge at bottom and properly supported props to prevent adverse impact on the storm water quality.	^
	Silt curtain may be installed around the construction activities at the seafront to minimize the potential impacts due to accidental spillage of construction materials.	^
	Proper shoring may need to be erected in order to prevent soil/mud from slipping into the storm culvert/drainage channel/sea.	^

	Supervisory staff should be assigned to station on site to closely supervise and monitor the works	^
	Marine water quality monitoring and audit programme shall be implemented for the proposed sediment treatment operation.	^
	Good Site Practices It is not anticipated that adverse waste management related impacts would arise, provided that good site practices are adhered to. Recommendations for good site practices during construction activities include:	
	• Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site	^
	• Training of site personnel in proper waste management and chemical waste handling procedures	^
	• Provision of sufficient waste disposal points and regular collection for disposal	^
	• Appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers	^
	• A recording system for the amount of wastes generated, recycled and disposed of (including the disposal sites)	^
	Waste Reduction Measures Good management and control can prevent the generation of a significant amount of waste. Waste reduction is best achieved at the planning and design stage, as well as by ensuring the implementation of good site practices. Recommendations to achieve waste reduction include:	
	• Sort C&D waste from demolition of the remaining structures to recover recyclable portions such as metals	^
	• Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal	^
	• Encourage collection of aluminium cans, PET bottles and paper by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the work force	^
	• Any unused chemicals or those with remaining functional capacity should be recycled	^
	• Proper storage and site practices to minimise the potential for damage or contamination of construction materials	^

Construction and Demolition Material

Mitigation measures and good site practices should be incorporated into contract document to control potential environmental impact from handling and transportation of C&D material. The mitigation measures include:

- Where it is unavoidable to have transient stockpiles of C&D material within the Project work site pending collection for disposal, the transient stockpiles should be located away from waterfront or storm drains as far as possible ^
- Open stockpiles of construction materials or construction wastes on-site should be covered with tarpaulin or similar fabric ^
- Skip hoist for material transport should be totally enclosed by impervious sheeting ^
- Every vehicle should be washed to remove any dusty materials from its body and wheels before leaving a construction site ^
- The area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores ^
- The load of dusty materials carried by vehicle leaving a construction site should be covered entirely by clean impervious sheeting to ensure dust materials do not leak from the vehicle ^
- All dusty materials should be sprayed with water prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet ^
- The height from which excavated materials are dropped should be controlled to a minimum practical height to limit fugitive dust generation from unloading ^

When delivering inert C&D material to public fill reception facilities, the material should consist entirely of inert construction waste and of size less than 250mm or other sizes as agreed with the Secretary of the Public Fill Committee. In order to monitor the disposal of the surplus C&D material at the designed public fill reception facility and to control fly tipping, a trip-ticket system as stipulated in the ETWB TCW No. 31/2004 "Trip Ticket System for Disposal of Construction and Demolition Materials" should be included as one of the contractual requirements and implemented by an Environmental Team undertaking the Environmental Monitoring and Audit work. An Independent Environmental Checker should be responsible for auditing the results of the system. ^

Chemical Waste

After use, chemical wastes (for example, cleaning fluids, solvents, lubrication oil and fuel) should be handled according to the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Spent chemicals should be collected by a licensed collector for disposal at the CWTF or other licensed facility, in accordance with the *Waste Disposal (Chemical Waste) (General) Regulation* ^

	General Refuse General refuse should be stored in enclosed bins or compaction units separate from C&D material. A licensed waste collector should be employed by the contractor to remove general refuse from the site, separately from C&D material. Effective collection and storage methods (including enclosed and covered area) of site wastes would be required to prevent waste materials from being blown around by wind, wastewater discharge by flushing or leaching into the marine environment, or creating odour nuisance or pest and vermin problem	^
Landscape and Visual	CM1 All existing trees should be carefully protected during construction. CM2 Trees unavoidably affected by the works should be transplanted where practical. Detailed transplanting proposal will be submitted to relevant government departments for approval in accordance with ETWBC 2/2004 and 3/2006. Final locations of transplanted trees should be agreed prior to commencement of the work. CM3 Control of night-time lighting. CM4 Erection of decorative screen hoarding.	^ N/A ^ ^

Remarks:	^ Compliance of mitigation measure;
	X Non-compliance of mitigation measure;
	N/A Not Applicable at this stage; N/A(1) Not observed;
	• Non-compliance but rectified by the contractor;
	* Recommendation was made during site audit but improved/rectified by the contractor.

APPENDIX L
SUMMARIES OF ENVIRONMENTAL COMPLAINT, WARNING, SUMMON AND NOTIFICATION OF SUCCESSFUL PROSECUTION

Contract No. KL/2012/03

Kai Tak Development –Stage 4 Infrastructure at Former North Apron Area

Appendix L – Summary of environmental complaint, warning, summon and notification of successful prosecution

Reporting Month: July 2017

Warnings / Summons and Successful Prosecutions received in the reporting month

Log Ref.	Received Date	Details of Warning / Summons and Successful Prosecutions	Investigation/Mitigation Action	Status
N/A	N/A	N/A	N/A	N/A

Remarks: No warning/summon and prosecution were received in the reporting period.

Complaint Log

EPD Complaint Ref No.	Date of Complaint	Complaint Details	Investigation / Mitigation Action	Status
N/A	N/A	N/A	N/A	N/A

APPENDIX M
GENERATED WASTE QUANTITY

APPENDIX IV

Monthly Summary Waste Flow Table

(PS Clause 1.86)

Name of Department: CEDD

Contract No. : KL/2012/03

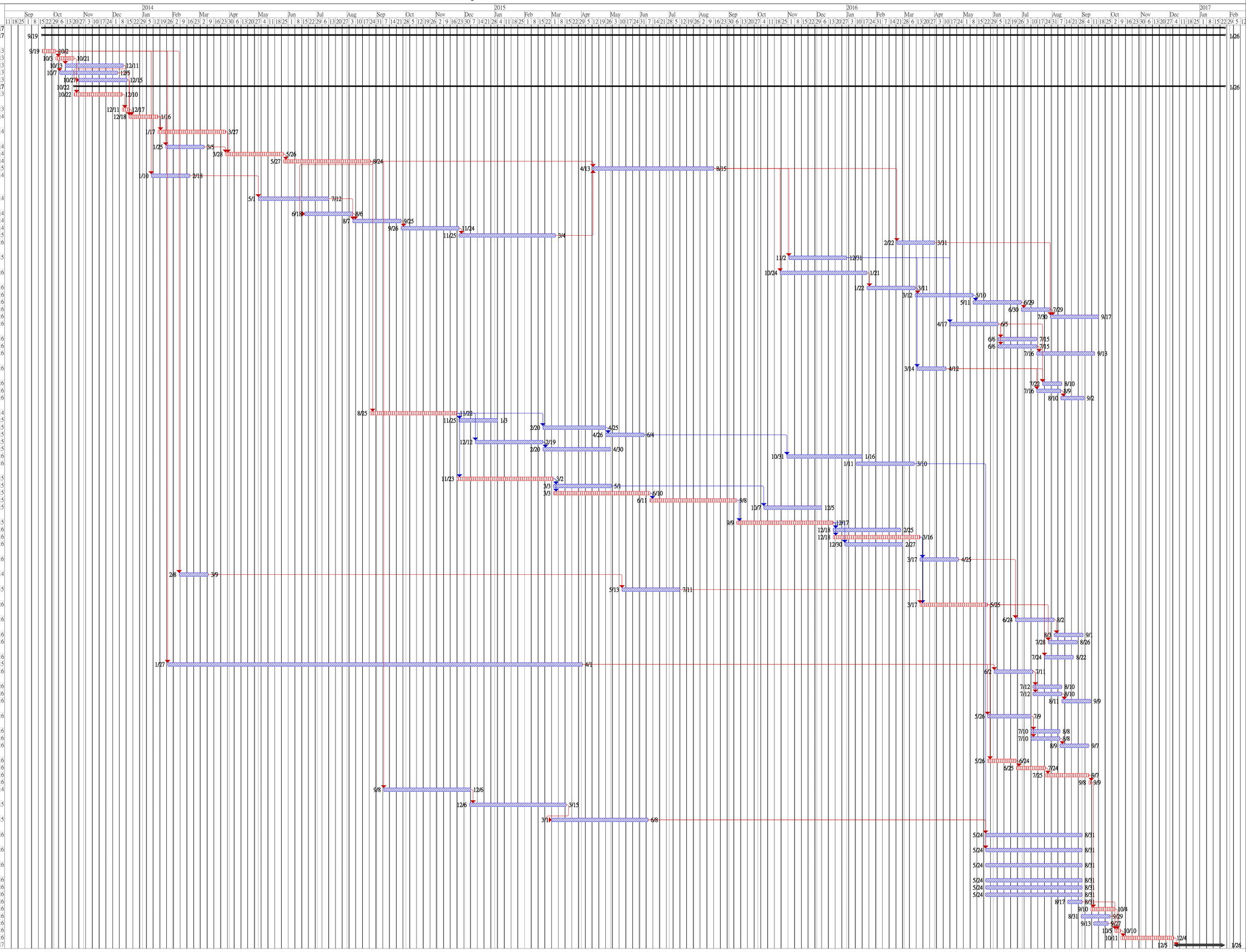
Monthly Summary Waste Flow Table for July 2017 (year) (in tons)

Month	Total Disposal Loads	Total Quantity Generated	Actual Quantities of Inert C&D Materials Generated Monthly					Actual Quantities of C&D Wastes Generated Monthly				
			Hard Rock & 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)	Chemicals Waste	Others, e.g. general refuse
	(No.s)	(in tons)	(in tons)	(in tons)	(in tons)	(in tons)	(in tons)	(in tons)	(in tons)	(in tons)	(in tons)	(in tons)
2013 (Oct - Dec) Sub-Total	108	463.69	0	0	0	0	0	0	0	0	0	463.69
2014 (Jan – Dec) Sub-Total	24	16925.7	0	0	16798.93	83.66	1804.27	0	0	0	0	43.11
2015 (Jan – Dec) Sub-Total	284	81859.97	0	0	38291.91	43457.21	19920	0	0	0	0	310.26
2015 (Jan – Dec) Sub-Total	3369	50762.64	0	0	0	49894.67	4020	0	0	0	0	867.95
Jan-17	23	107.63	0	0	0	58.53	0	0	0	0	0	39.1
Feb-17	1227	18948.76	0	0	0	18898.13	0	0	0	0	0	50.63
Mar-17	307	4426.51	0	0	0	4379.15	0	0	0	0	0	157.74
Apr-17	124	1741.5	0	0	0	1703.61	0	0	0	0	0	37.89
May-17	111	1608.02	0	0	0	1590.33	0	0	0	0	0	17.69
Jun-17	176	2649.19	0	0	0	2631.73	0	0	0	0	0	17.46
Jul-17	123	1732.3	0	0	0	1688.75	0	0	0	0	0	43.55
Aug-17												
Sep-17												
Oct-17												
Nov-17												
Dec-17												
Total	5876	181225.91	0	0	55090.84	124385.8	25744.27	0	0	0	0	2049.07

APPENDIX N
CONSTRUCTION PROGRAMME

Master Programme

ID	Task Name	Duration	Start	Finish
1	**Commence KL/2012/03 construction**	**1226 days**	**Thu Sep 19, '13**	**Thu Jan 26, '17**
2	**Section 1: Works within Portion 1 and 3**	**1226 days**	**Thu Sep 19, '13**	**Thu Jan 26, '17**
3	Site possession and preparation works	14 days	Thu Sep 19, '13	Wed Oct 2, '13
4	Setting out site boundary and site clearance	19 days	Thu Oct 3, '13	Mon Oct 21, '13
5	Initial joint survey	60 days	Sun Oct 13, '13	Wed Dec 11, '13
6	Obtain underground utilities plans	60 days	Mon Oct 7, '13	Thu Dec 5, '13
7	Erect hoarding, chain link fence and vehicular gate	50 days	Sun Oct 27, '13	Sun Dec 15, '13
8	**Works for Road L6**	**1193 days**	**Tue Oct 22, '13**	**Thu Jan 26, '17**
9	Submission / approval of construction materials, method statements and temporary work design for box culverts B5	50 days	Tue Oct 22, '13	Tue Dec 10, '13
10	Plant mobilization	7 days	Wed Dec 11, '13	Tue Dec 17, '13
11	Excavation to the formation level for B5 at CH48 - CH72	30 days	Wed Dec 18, '13	Thu Jan 16, '14
12	Excavation to the formation level for B5 at CH72 - CH221	70 days	Fri Jan 17, '14	Thu Mar 27, '14
13	Construct base slab of B5 at CH48 - CH72	40 days	Sat Jan 25, '14	Wed Mar 5, '14
14	Construct base slab of B5 at CH72 - CH221	60 days	Fri Mar 28, '14	Mon May 26, '14
15	Construct the wall and roof of B5 at CH48 - CH221	90 days	Tue May 27, '14	Sun Aug 24, '14
16	Backfilling to B5 at CH48 - CH221	125 days	Mon Apr 13, '15	Sat Aug 15, '15
17	Submission / approval of construction materials and delivery of materials and method statements and temporary works for stormdrain and sewerage drain	40 days	Fri Jan 10, '14	Tue Feb 18, '14
18	Install 2x750mm dia sewerage drain from FMH10_345 to FMH10_350 under box culvert B5	73 days	Thu May 1, '14	Sat Jul 12, '14
19	Excavation to the formation level for B5 at CH0 - CH48	50 days	Wed Jun 18, '14	Wed Aug 6, '14
20	Construct the base slab of B5 at CH0 - CH48	50 days	Thu Aug 7, '14	Thu Sep 25, '14
21	Construct the wall and roof of B5 at CH0 - CH48	60 days	Fri Sep 26, '14	Mon Nov 24, '14
22	Backfilling to B5 at CH0 - CH48	100 days	Tue Nov 25, '14	Wed Mar 4, '15
23	Reconstruct manhole opening at B5 from CH0 - CH48 before wet season (Variation Order to be issued)	39 days	Mon Feb 22, '16	Thu Mar 31, '16
24	Laying sewerage drain from FMH 1K3_1 to 345 and 1K1_1 to FMH10_340	60 days	Mon Nov 2, '15	Thu Dec 31, '15
25	Install 250mm, 300mm dia.FWM CHD200-CHD394 and 200mm SWM CHC200-CHC394	90 days	Sat Oct 24, '15	Thu Jan 21, '16
26	Install irrigation system above B5	50 days	Fri Jan 22, '16	Fri Mar 11, '16
27	Laying storm drain and manhole above B5	60 days	Sat Mar 12, '16	Tue May 10, '16
28	Construct road gully and gully pipe above B5	50 days	Wed May 11, '16	Wed Jun 29, '16
29	Construct road kerb	30 days	Thu Jun 30, '16	Fri Jul 29, '16
30	Construct flexible carriageway	50 days	Sat Jul 30, '16	Sat Sep 17, '16
31	Installation of utility by the utility undertakers along proposed footpath CHB150-400	50 days	Sun Apr 17, '16	Sun Jun 5, '16
32	Install street lighting	40 days	Mon Jun 6, '16	Fri Jul 15, '16
33	Construct u-channel and drainpit at footpath	40 days	Mon Jun 6, '16	Fri Jul 15, '16
34	Construct footpath, planting area and concrete run-in	60 days	Sat Jul 16, '16	Tue Sep 13, '16
35	Installation of utility by the utility undertakers along proposed footpath CHC150-350	30 days	Mon Mar 14, '16	Tue Apr 12, '16
36	Install street lighting	20 days	Fri Jul 22, '16	Wed Aug 10, '16
37	Construct u-channel and drainpit at footpath	25 days	Sat Jul 16, '16	Tue Aug 9, '16
38	Construct footpath, planting area and concrete run-in	24 days	Wed Aug 10, '16	Fri Sep 2, '16
39	Laying sewerage drain from FMH10_320 to 330	90 days	Mon Aug 25, '14	Sat Nov 22, '14
40	Construct manhole (FMH10_330)	40 days	Tue Nov 25, '14	Sat Jan 3, '15
41	Laying sewerage drain from FMH10_310 to 320	65 days	Fri Feb 20, '15	Sat Apr 25, '15
42	Construct manhole (FMH10_310 & 320)	40 days	Sun Apr 26, '15	Thu Jun 4, '15
43	Laying sewerage drain from FMH10_330 to 345	70 days	Fri Dec 12, '14	Thu Feb 19, '15
44	Construct manhole (FMH10_330 & 345)	70 days	Fri Feb 20, '15	Thu Apr 30, '15
45	Laying storm drains and manhole from SMH1502 to B5	78 days	Sat Oct 31, '15	Sat Jan 16, '16
46	Laying storm drains and manhole from existing storm drain to SMH21 to B5	60 days	Mon Jan 11, '16	Thu Mar 10, '16
47	Laying sewerage drain from FMH10_360 to 370	100 days	Sun Nov 23, '14	Mon Mar 2, '15
48	Construct manhole (FMH10_360 & 370)	60 days	Tue Mar 3, '15	Fri May 1, '15
49	Laying sewerage drain for FMH10_350 to 360	100 days	Tue Mar 3, '15	Wed Jun 10, '15
50	Construct manhole (FMH10_350)	90 days	Thu Jun 11, '15	Tue Sep 8, '15
51	Laying sewerage drain for FMH10_370 to PS2 & FMH90_80 to FMH10_370	60 days	Wed Oct 7, '15	Sat Dec 5, '15
52	Laying storm drain and manhole (SMH1906 to 1909)	100 days	Wed Sep 9, '15	Thu Dec 17, '15
53	Laying sewerage drain from FMH 2D1_1 to 350	70 days	Fri Dec 18, '15	Thu Feb 25, '16
54	Laying storm drain and manhole (SMH1904 to 1906)	90 days	Fri Dec 18, '15	Wed Mar 16, '16
55	Laying storm drain and manhole from existing storm drain to SMH23 to 1910	60 days	Wed Dec 30, '15	Sat Feb 27, '16
56	Laying storm drain and manhole (SMH1901 to 1904 & 1921 to 1902)	40 days	Thu Mar 17, '16	Mon Apr 25, '16
57	Submission / approval of construction materials and method statements for watermains	30 days	Sat Feb 8, '14	Sun Mar 9, '14
58	Delivery of FWM and SWM pipes and fittings and valves	60 days	Wed May 13, '15	Sat Jul 11, '15
59	Install 450mm dia.FWM CHD100-CHD200 and 200mm SWM CHC100-CHC200	70 days	Thu Mar 17, '16	Wed May 25, '16
60	Install 450mm dia.FWM CHD0-CHD100 and 200mm SWM CHC0-CHC100	40 days	Fri Jun 24, '16	Tue Aug 2, '16
61	Pressure test, swabbing, sterilization and connection	30 days	Wed Aug 3, '16	Thu Sep 1, '16
62	Construct valve, air-valve and wash-out chambers and fire hyrdants for watermain	30 days	Thu Jul 28, '16	Fri Aug 26, '16
63	Install irrigation system along road L6	30 days	Sun Jul 24, '16	Mon Aug 22, '16
64	Liaison meeting with UU	430 days	Mon Jan 27, '14	Wed Apr 1, '15
65	Installation of utility by the utility undertakers along proposed footpath CHB0-150	40 days	Thu Jun 2, '16	Mon Jul 11, '16
66	Install street lighting along L6 (RHS)	30 days	Tue Jul 12, '16	Wed Aug 10, '16
67	Construct u-channel and drainpit at footpath	30 days	Tue Jul 12, '16	Wed Aug 10, '16
68	Construct footpath, planting area and concrete run-in	30 days	Thu Aug 11, '16	Fri Sep 9, '16
69	Installation of utility by the utility undertakers along proposed footpath CHC0-150	45 days	Thu May 26, '16	Sat Jul 9, '16
70	Install street lighting (LHS)	30 days	Sun Jul 10, '16	Mon Aug 8, '16
71	Construct u-channel and drainpit at footpath	30 days	Sun Jul 10, '16	Mon Aug 8, '16
72	Construct footpath, planting area and concrete run-in	30 days	Tue Aug 9, '16	Wed Sep 7, '16
73	Construct road gully and gully pipe at Road L6	30 days	Thu May 26, '16	Fri Jun 24, '16
74	Construct road kerb along Road L6	30 days	Sat Jun 25, '16	Sun Jul 24, '16
75	Construct flexible carriageway	45 days	Mon Jul 25, '16	Wed Sep 7, '16
76	Road marking	2 days	Thu Sep 8, '16	Fri Sep 9, '16
77	Laying stormwater drain at pedestrian street for SMH1701 to B5	90 days	Mon Sep 8, '14	Sat Dec 6, '14
78	Laying stormwater drain at pedestrian street for SMH1801 to B5	100 days	Sat Dec 6, '14	Sun Mar 15, '15
79	Laying stormwater drain at pedestrian street for SMH1601 to B5	100 days	Sun Mar 1, '15	Mon Jun 8, '15
80	Construct u-channel and drainpit at pedestrian street near and inside site 1L/2 & 3	100 days	Tue May 24, '16	Wed Aug 31, '16
81	Construct u-channel and drainpit at pedestrian street near and inside site 1K/2	100 days	Tue May 24, '16	Wed Aug 31, '16
82	Install irrigation system at pedestrian street near site 1L/2 & 3	100 days	Tue May 24, '16	Wed Aug 31, '16
83	Install irrigation system at pedestrian street near site 1K/2	100 days	Tue May 24, '16	Wed Aug 31, '16
84	Construct pedestrian street near site 1L/2 & 3	100 days	Tue May 24, '16	Wed Aug 31, '16
85	Construct pedestrian street near site 1K/2	100 days	Tue May 24, '16	Wed Aug 31, '16
86	Installation of lighting system by HyD	15 days	Wed Aug 17, '16	Wed Aug 31, '16
87	Road marking	25 days	Sat Sep 10, '16	Tue Oct 4, '16
88	Plants delivery for landscaping works	30 days	Wed Aug 31, '16	Thu Sep 29, '16
89	Preparatory works for landscaping works	15 days	Tue Sep 13, '16	Tue Sep 27, '16
90	Hydroseeding	6 days	Wed Oct 5, '16	Mon Oct 10, '16
91	Tree and shurb planting	55 days	Tue Oct 11, '16	Sun Dec 4, '16
92	Terminal float	53 days	Mon Dec 5, '16	Thu Jan 26, '17



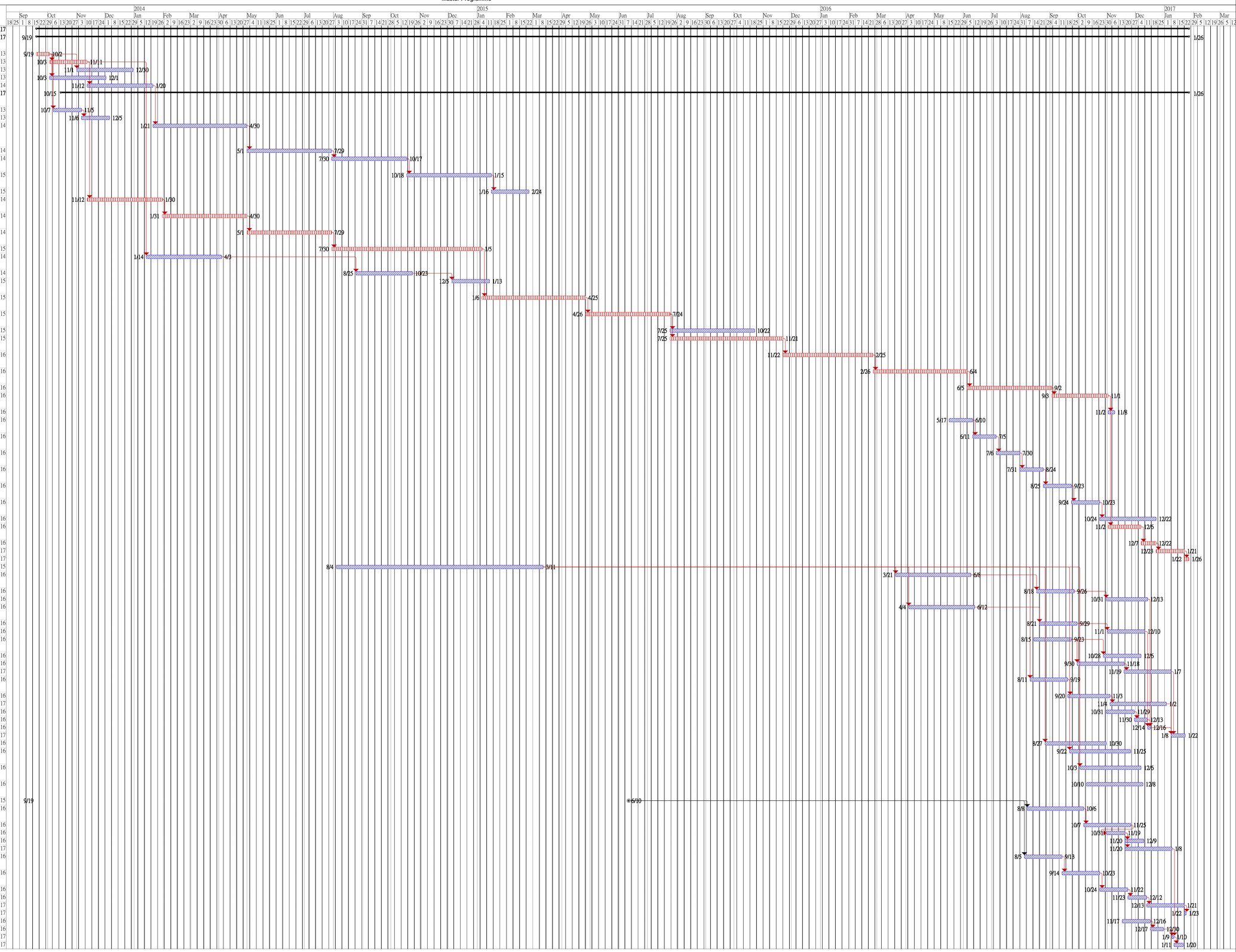
Critical tasks — Working days — Inactive Summary — Duration-only — Manual Summary — Finish-only — External Milestone
Non-critical Tasks — Inactive Milestone — Manual Task — Manual Summary Rollup — Start-only — External Tasks

Commencement Date: 19 September 2013
Completion Date: 2 September 2016
Revised Completion Date: 26 January 2017

updated on 22 July 2016

Master Programme

ID	Task Name	Duration	Start	Finish
1	**Commence KL/2012/03 construction**	**1226 days**	**Thu Sep 19, '13**	**Thu Jan 26, '17**
2	**Section 1: Works within Portion 1 and 3**	**1226 days**	**Thu Sep 19, '13**	**Thu Jan 26, '17**
3	Site possession and preparation works	14 days	Thu Sep 19, '13	Wed Oct 2, '13
4	Setting out site boundary and site clearance	40 days	Thu Oct 3, '13	Mon Nov 11, '13
5	Initial joint survey	60 days	Fri Nov 1, '13	Mon Dec 30, '13
6	Obtain underground utilities plans	60 days	Thu Oct 3, '13	Sun Dec 1, '13
7	Erect hoarding, chain link fence and vehicular gate	70 days	Tue Nov 12, '13	Mon Jan 20, '14
8	**Works for Northbound of Road D2**	**1200 days**	**Tue Oct 15, '13**	**Thu Jan 26, '17**
9	Submission of baseline monitoring for EPD approval	30 days	Mon Oct 7, '13	Tue Nov 5, '13
10	Approval of baseline monitoring by EPD	30 days	Wed Nov 6, '13	Thu Dec 5, '13
11	Submission / approval of construction materials and delivery of materials and method statements for stormwater drain and sewerage drain	100 days	Tue Jan 21, '14	Wed Apr 30, '14
12	Delivery of materials for stormwater and sewerage drain	90 days	Thu May 1, '14	Tue Jul 29, '14
13	Install sewerage drain and construct manhole (FMH90_20 to 40 and 50 to 65)	80 days	Wed Jul 30, '14	Fri Oct 17, '14
14	Install storm drain and construct manhole (SMH3418 to 3422 and 3423 to 3426)	90 days	Sat Oct 18, '14	Thu Jan 15, '15
15	Diversion of KO ROW	40 days	Fri Jan 16, '15	Tue Feb 24, '15
16	Submission of condition survey for work within existing Kai Tak Tunnel	80 days	Tue Nov 12, '13	Thu Jan 30, '14
17	Submission of trial pit records for work within existing Kai Tak Tunnel	90 days	Fri Jan 31, '14	Wed Apr 30, '14
18	Submission of method statement for work within existing Kai Tak Tunnel	90 days	Thu May 1, '14	Tue Jul 29, '14
19	Approval for work within existing Kai Tak Tunnel	160 days	Wed Jul 30, '14	Mon Jan 5, '15
20	Submission / approval of construction materials and method statements for rising mains	80 days	Tue Jan 14, '14	Thu Apr 3, '14
21	Delivery of materials for rising mains	60 days	Mon Aug 25, '14	Thu Oct 23, '14
22	Install 2x500mm dia. HDPE rising main CHA120-CHA180	40 days	Fri Dec 5, '14	Tue Jan 13, '15
23	Breaking up existing concrete slab	110 days	Tue Jan 6, '15	Sat Apr 25, '15
24	Install 2x500mm dia. HDPE rising main CHA70-100 & CHA180-350 and DC1	90 days	Sun Apr 26, '15	Fri Jul 24, '15
25	Install 2x500mm dia. HDPE rising main CHA0-CHA70	90 days	Sat Jul 25, '15	Thu Oct 22, '15
26	Install storm drain and construct manhole (SMH3101 to SMH3111 & SMH3401 to 3418)	120 days	Sat Jul 25, '15	Sat Nov 21, '15
27	Install FWM CHC250-CHC630 and SWM CHB250-CHB630	96 days	Sun Nov 22, '15	Thu Feb 25, '16
28	Construct road gully and gully pipe up to the jointion of D2 & L6	100 days	Fri Feb 26, '16	Sat Jun 4, '16
29	Construct road kerb up to the jointion of D2 & L6	90 days	Sun Jun 5, '16	Fri Sep 2, '16
30	Construct flexible carriageway up to the jointion of D2 & L6	60 days	Sat Sep 3, '16	Tue Nov 1, '16
31	Road marking	7 days	Wed Nov 2, '16	Tue Nov 8, '16
32	Install sewerage drain and construct manhole (FMH90_40 to 50)	25 days	Tue May 17, '16	Fri Jun 10, '16
33	Install sewerage drain and construct manhole (FMH90_50 to 60)	25 days	Sat Jun 11, '16	Tue Jul 5, '16
34	Install storm drain and construct manhole (SMH3422 to 3423)	25 days	Wed Jul 6, '16	Sat Jul 30, '16
35	Install sewerage drain and construct manhole (1P1 to FMH90_20)	25 days	Sun Jul 31, '16	Wed Aug 24, '16
36	Install FWM CHC630-CHC825 and SWM CHB630-CHB825	30 days	Thu Aug 25, '16	Fri Sep 23, '16
37	Construct valve, fire hydrant, air-valve and wash-out chamber for watermain	30 days	Sat Sep 24, '16	Sun Oct 23, '16
38	Pressure test, swabbing, sterilization and connection	60 days	Mon Oct 24, '16	Thu Dec 22, '16
39	Construct remaining stormdrain, sewer drain, road gully and gully pipe along D2	35 days	Wed Nov 2, '16	Tue Dec 6, '16
40	Construct road kerb	16 days	Wed Dec 7, '16	Thu Dec 22, '16
41	Construct flexible carriageway	30 days	Fri Dec 23, '16	Sat Jan 21, '17
42	Road marking	5 days	Sun Jan 22, '17	Thu Jan 26, '17
43	Liaison meeting with UU	220 days	Mon Aug 4, '14	Wed Mar 11, '15
44	Installation of utility by the utility undertakers along proposed footpath CH200-400	80 days	Mon Mar 21, '16	Wed Jun 8, '16
45	Construct drainpit and u-channel at footpath	40 days	Thu Aug 18, '16	Mon Sep 26, '16
46	Construct footpath and concrete run-in	44 days	Mon Oct 31, '16	Tue Dec 13, '16
47	Installation of utility by the utility undertakers along proposed footpath CH400-600	70 days	Mon Apr 4, '16	Sun Jun 12, '16
48	Construct drainpit and u-channel at footpath	40 days	Sun Aug 21, '16	Thu Sep 29, '16
49	Construct footpath and concrete run-in	40 days	Tue Nov 1, '16	Sat Dec 10, '16
50	Installation of utility by the utility undertakers along proposed footpath CH0-200	40 days	Mon Aug 15, '16	Fri Sep 23, '16
51	Install irrigation system	40 days	Fri Oct 28, '16	Tue Dec 6, '16
52	Construct drainpit and u-channel at footpath	50 days	Fri Sep 30, '16	Fri Nov 18, '16
53	Construct footpath, planting area and concrete run-in	50 days	Sat Nov 19, '16	Sat Jan 7, '17
54	Installation of utility by the utility undertakers along proposed footpath CHA850-960	40 days	Thu Aug 11, '16	Mon Sep 19, '16
55	Construct drainpit and u-channel at footpath	45 days	Tue Sep 20, '16	Thu Nov 3, '16
56	Construct footpath and concrete run-in	60 days	Fri Nov 4, '16	Mon Jan 2, '17
57	Plants delivery for landscaping works	30 days	Mon Oct 31, '16	Tue Nov 29, '16
58	Preparatory works for landscaping works	14 days	Wed Nov 30, '16	Tue Dec 13, '16
59	Hydroseeding	3 days	Wed Dec 14, '16	Fri Dec 16, '16
60	Tree and shurb planting	15 days	Sun Jan 8, '17	Sun Jan 22, '17
61	Install traffic signal at the Junction of Road D2/ Road D3	65 days	Sat Aug 27, '16	Sun Oct 30, '16
62	Install traffic signal at the Junction of Road D2/ Slip Road of KCR	65 days	Thu Sep 22, '16	Fri Nov 25, '16
63	Install traffic signal at the Junction of Road D2/ Eastern Access Road	65 days	Mon Oct 3, '16	Tue Dec 6, '16
64	Construct sewerage drain pipes from FMH120_70 to FMH130_90	60 days	Mon Oct 10, '16	Thu Dec 8, '16
65	Awaiting for site possession at Portion 3	630 days	Thu Sep 19, '13	Wed Jun 10, '15
66	Installation of utility by the utility undertakers along proposed footpath CH0-CHG100	60 days	Mon Aug 8, '16	Thu Oct 6, '16
67	Construct drainpit and u-channel	50 days	Fri Oct 7, '16	Fri Nov 25, '16
68	Install street lighting	20 days	Mon Oct 31, '16	Sat Nov 19, '16
69	Installation of lighting system by HyD	20 days	Sun Nov 20, '16	Fri Dec 9, '16
70	Construct footpath, planting area and concrete run-in	50 days	Sun Nov 20, '16	Sun Jan 8, '17
71	Construct stormwater drain and manholes from SMH3426 to SMH3500	40 days	Fri Aug 5, '16	Tue Sep 13, '16
72	Install FWM CHC825-CHC921 and SWM CHB825-CHB920	40 days	Wed Sep 14, '16	Sun Oct 23, '16
73	Construct road gully with pipes	30 days	Mon Oct 24, '16	Tue Nov 22, '16
74	Construct road kerb	20 days	Wed Nov 23, '16	Mon Dec 12, '16
75	Construct flexible carriageway	40 days	Tue Dec 13, '16	Sat Jan 21, '17
76	Road marking	2 days	Sun Jan 22, '17	Mon Jan 23, '17
77	Plants delivery for landscaping works	30 days	Thu Nov 17, '16	Fri Dec 16, '16
78	Preparatory works for landscaping works	14 days	Sat Dec 17, '16	Fri Dec 30, '16
79	Hydroseeding	2 days	Mon Jan 9, '17	Tue Jan 10, '17
80	Tree and shurb planting	10 days	Wed Jan 11, '17	Fri Jan 20, '17

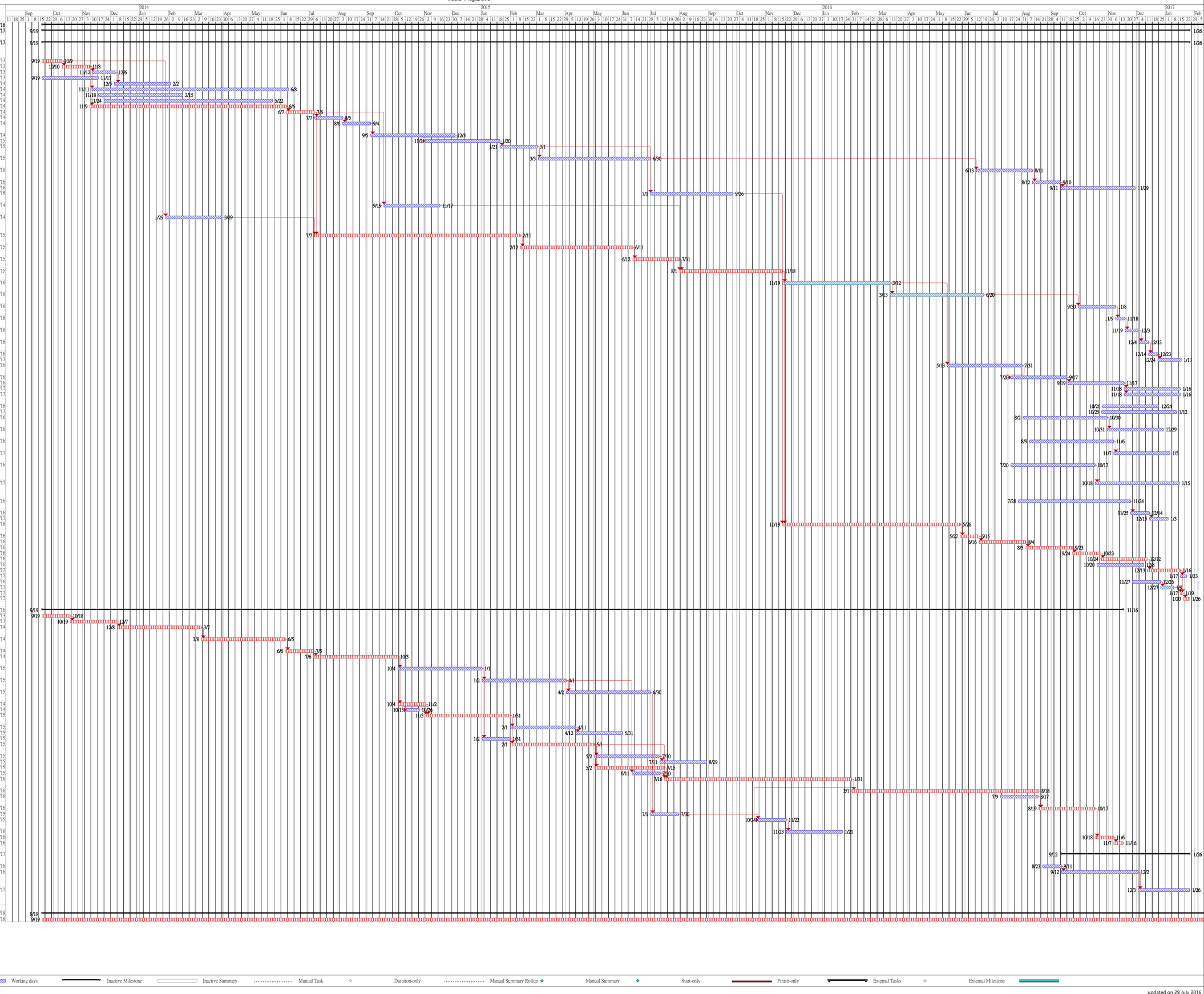


Critical tasks · Working days · Inactive Summary · Duration-only · Manual Summary · Finish-only · External Milestone
Non-critical tasks · Inactive Milestone · Manual Task · Manual Summary Rollup · Start-only · External Tasks

Commencement Date: 19 September 2013
Completion Date: 2 September 2016
Revised Completion Date: 26 January 2017

updated on 30 July 2016

ID	Task Name	Duration	Start	Finish
1	Commence KL/2012/03 construction	1591 days	Thu Sep 19, '13	Fri Jan 26, '18
2	Section 1: Works within Portion 1 and 3	1226 days	Thu Sep 19, '13	Thu Jan 26, '17
3	Widening of Existing Footpaths at Sung Wong Toi Road and To Kwa Wan Road	1226 days	Thu Sep 19, '13	Thu Jan 26, '17
4	Site possession and preparation works	21 days	Thu Sep 19, '13	Wed Oct 9, '13
5	Setting out site boundary and site clearance	30 days	Thu Oct 10, '13	Fri Nov 8, '13
6	Initial joint survey	25 days	Tue Nov 12, '13	Fri Dec 6, '13
7	Obtain underground utilities plans	60 days	Thu Sep 19, '13	Sun Nov 17, '13
8	Erect hoarding, chain link fence and vehicular gate	60 days	Thu Dec 5, '13	Sun Feb 2, '14
9	Apply XP for roadworks	210 days	Mon Nov 11, '13	Sun Jun 8, '14
10	Approval of TTA drawings	90 days	Mon Nov 18, '13	Sat Feb 15, '14
11	Liaison meeting with UU	180 days	Sun Nov 24, '13	Thu May 22, '14
12	Application of tree felling permit	210 days	Sat Nov 9, '13	Fri Jun 6, '14
13	Tree felling	30 days	Sat Jun 7, '14	Sun Jul 6, '14
14	Site clearance for widening of existing footpath	30 days	Mon Jul 7, '14	Tue Aug 5, '14
15	Awaiting for design of mass concrete wall (Additional works)	30 days	Wed Aug 6, '14	Thu Sep 4, '14
16	Demolish existing security fence (Additional works)	90 days	Fri Sep 5, '14	Wed Dec 3, '14
17	Construction of mass concrete wall (Additional works)	80 days	Sun Nov 2, '14	Tue Jan 20, '15
18	Backfilling and completion to formation level for widening of existing footpath	40 days	Wed Jun 21, '15	Sun Mar 1, '15
19	Installation of utility by the utility undertakers along proposed footpath CHD0-100	120 days	Tue Mar 3, '15	Tue Jun 30, '15
20	Install 400mm dia.FWM CHB200-CHB300 & 450mm dia. SWM CHA200-CHA300	60 days	Mon Jun 13, '16	Thu Aug 11, '16
21	Install street lighting CHD0-100	30 days	Fri Aug 12, '16	Sat Sep 10, '16
22	Construct new footpath	80 days	Sun Sep 11, '16	Tue Nov 29, '16
23	Installation of utility by the utility undertakers along proposed footpath CHD100-250	88 days	Wed Jul 1, '15	Sat Sep 26, '15
24	Backfilling and compaction to formation level for construction of new footpath	60 days	Fri Sep 19, '14	Mon Nov 17, '14
25	Submission / approval of construction materials and method statements for watermains	60 days	Wed Jan 29, '14	Sat Mar 29, '14
26	Change of alignment and size of watermains by AECOM (Variation Order issued on 9 Feb 2015)	220 days	Mon Jul 7, '14	Wed Feb 11, '15
27	Procument and delivery of materials for watermains (Variation Order)	120 days	Thu Feb 12, '15	Thu Jun 11, '15
28	TTA approval along Sung Wong Toi Road	50 days	Fri Jun 12, '15	Fri Jul 31, '15
29	Install 300mm dia.FWM CHB50-CHB100 & 450mm dia. SWM CHA50-CHA100	110 days	Sat Aug 1, '15	Wed Nov 18, '15
30	Install 300mm dia.FWM CHB100-CHB150 & 450mm dia. SWM CHA100-CHB150	115 days	Thu Nov 19, '15	Sat Mar 12, '16
31	Install 300mm dia.FWM CHB150-CHB200 & 450mm dia. SWM CHA150-CHB200	100 days	Sun Mar 13, '16	Mon Jun 20, '16
32	Install 300mm dia. FWM CHB450-CHB565 & 450mm dia. SWM CHA450-CHA565 (excluding CH480 to 500)	40 days	Fri Sep 30, '16	Tue Nov 8, '16
33	Re-diversion of Gate 7 to the newly constructed carriageway under Section 3	10 days	Wed Nov 9, '16	Fri Nov 18, '16
34	Install 300mm dia. FWM CHB480-CHB500 & 450mm dia. SWM CHA480-CHA500	15 days	Sat Nov 19, '16	Sat Dec 3, '16
35	Installation of utility by the utility undertakers along proposed footpath CHD270-300	10 days	Sun Dec 4, '16	Tue Dec 13, '16
36	Install street lighting CHD270-300	10 days	Wed Dec 14, '16	Fri Dec 23, '16
37	Construct new footpath	25 days	Sat Dec 24, '16	Tue Jan 17, '17
38	Install 300mm dia. FWM CHB0-CHB50 & 450mm dia. SWM CHA0-CHA50	80 days	Fri May 13, '16	Sun Jul 31, '16
39	Install 800mm dia. Salt water main CHD0-CHD25	60 days	Wed Jul 20, '16	Sat Sep 17, '16
40	Install 800mm dia. Salt water main CHD25-CHD52	60 days	Mon Sep 19, '16	Thu Nov 17, '16
41	Pressure test, swabbing, sterilization and connection	60 days	Fri Nov 18, '16	Mon Jan 16, '17
42	Construct valve, fire hydrant, air-valve and wash-out chambers for watermain	60 days	Fri Nov 18, '16	Mon Jan 16, '17
43	Install irrigation system	60 days	Wed Oct 26, '16	Sat Dec 24, '16
44	Construct u-channel and drainpit	80 days	Tue Oct 25, '16	Thu Jan 12, '17
45	Application of traffic signal at the Junction of Sung Wong Toi Road / To Kwa Wan Road by AECOM	90 days	Tue Aug 2, '16	Sun Oct 30, '16
46	Install traffic signal at the Junction of Sung Wong Toi Road / To Kwa Wan Road	60 days	Mon Oct 31, '16	Thu Dec 29, '16
47	Application of traffic signal at the Junction along Sung Wong Toi Road by AECOM	90 days	Tue Aug 9, '16	Sun Nov 6, '16
48	Install traffic signal at the Junction along Sung Wong Toi Road	60 days	Mon Nov 7, '16	Thu Jan 5, '17
49	Application for relocation of traffic signal and red light cameras at To Kwa Wan Road and Mok Cheong Street junction by AECOM	90 days	Wed Jul 20, '16	Mon Oct 17, '16
50	Relocate traffic signal and red light cameras at To Kwa Wan Road and Mok Cheong Street junction (additional works to be covered by VO)	90 days	Tue Oct 18, '16	Sun Jan 15, '17
51	Install ducting and draw pit for street lighting at N/B of Sung Wong Toi Road	120 days	Thu Jul 28, '16	Thu Nov 24, '16
52	Install street lighting by HyD	20 days	Fri Nov 25, '16	Wed Dec 14, '16
53	Demolition of existing street lighting by HyD	20 days	Thu Dec 15, '16	Tue Jan 3, '17
54	Install 400mm dia.FWM CHB300-CHB450 & 450mm dia. SWM CHA300-CHA450	190 days	Thu Nov 19, '15	Thu May 26, '16
55	Install street lighting CHD100-250	20 days	Fri May 27, '16	Wed Jun 15, '16
56	Construct new footpath	50 days	Thu Jun 16, '16	Thu Aug 4, '16
57	Construct road gully and gully pipe	50 days	Fri Aug 5, '16	Fri Sep 23, '16
58	Construct road kerb	30 days	Sat Sep 24, '16	Sun Oct 23, '16
59	Construct carriageway at the existing footpath	50 days	Mon Oct 24, '16	Mon Dec 12, '16
60	Erect traffic sign	50 days	Thu Oct 20, '16	Thu Dec 8, '16
61	Re-surface existing carriageway	35 days	Tue Dec 13, '16	Mon Jan 16, '17
62	Road marking	7 days	Tue Jan 17, '17	Mon Jan 23, '17
63	Plants delivery for landscaping works	30 days	Sun Nov 27, '16	Mon Dec 26, '16
64	Preparatory works for landscaping works	14 days	Tue Dec 27, '16	Mon Jan 9, '17
65	Hydroseeding	3 days	Tue Jan 17, '17	Thu Jan 19, '17
66	Tree and shurb planting	7 days	Fri Jan 20, '17	Thu Jan 26, '17
67				
68	Construction of Box Culverts B6	1155 days	Thu Sep 19, '13	Wed Nov 16, '16
69	Site possession and preparation works	30 days	Thu Sep 19, '13	Fri Oct 18, '13
70	Initial survey and site clearance	50 days	Sat Oct 19, '13	Sat Dec 7, '13
71	Submission for change of construction method by precast box unit for box culverts B6	90 days	Sun Dec 8, '13	Fri Mar 7, '14
72	Approval for change of construction method by precast box unit for box culverts B6	90 days	Sat Mar 8, '14	Thu Jun 5, '14
73	Plant trial for precast units for box culvert B6	30 days	Fri Jun 6, '14	Sat Jul 5, '14
74	Production of precast units for box culvert B6 (batch 1 - approx. 15 nos.)	90 days	Sun Jul 6, '14	Fri Oct 3, '14
75	Production of precast units for box culvert B6 (batch 2 - approx. 15 nos.)	90 days	Sat Oct 4, '14	Thu Jan 1, '15
76	Production of precast units for box culvert B6 (batch 3 - approx. 15 nos)	90 days	Fri Jan 2, '15	Wed Apr 1, '15
77	Production of precast units for box culvert B6 (batch 4 - approx. 15 nos)	90 days	Thu Apr 2, '15	Tue Jun 30, '15
78	Delivery of precast unit batch no. 1	30 days	Sat Oct 4, '14	Sun Nov 2, '14
79	Plant mobilization	14 days	Mon Oct 13, '14	Sun Oct 26, '14
80	Construct temporary works and excavation to the formation level for box culverts B6 CH50-100	90 days	Mon Nov 3, '14	Sat Jan 31, '15
81	Placing precast unit for box culvert for CH50-100	70 days	Sun Feb 1, '15	Sat Apr 11, '15
82	Soil backfilling works	50 days	Sun Apr 12, '15	Sun May 31, '15
83	Delivery of precast unit batch no. 2	30 days	Fri Jan 2, '15	Sat Jan 31, '15
84	Construct temporary works and excavation to the formation level for box culverts B6 CH100-150	90 days	Sun Feb 1, '15	Fri May 1, '15
85	Placing precast unit for box culvert for CH100-150	70 days	Sat May 2, '15	Fri Jul 10, '15
86	Soil backfilling works	50 days	Sat Jul 11, '15	Sat Aug 29, '15
87	Diversion of existing sewerage drain	75 days	Sat May 2, '15	Wed Jul 15, '15
88	Delivery of precast unit batch no. 3	30 days	Thu Jun 11, '15	Fri Jul 10, '15
89	Construct temporary works and excavation to the formation level for box culverts B6 CH150-200	200 days	Thu Jul 16, '15	Sun Jan 31, '16
90	Placing precast unit for box culvert for CH150-200	200 days	Mon Feb 1, '16	Thu Aug 18, '16
91	Notification of Marine Department for construction of outfall	40 days	Sat Jul 9, '16	Wed Aug 17, '16
92	Construction of outfall	60 days	Fri Aug 19, '16	Mon Oct 17, '16
93	Delivery of precast unit batch no. 4	30 days	Wed Jul 1, '15	Thu Jul 30, '15
94	Construct temporary works and excavation to the formation level for box culverts B6 CH0-50	30 days	Sat Oct 24, '15	Sun Nov 22, '15
95	Placing precast unit for box culvert for CH0-50	60 days	Mon Nov 23, '15	Thu Jan 21, '16
96	Modification of seawall	20 days	Tue Oct 18, '16	Sun Nov 6, '16
97	Soil backfilling works	10 days	Mon Nov 7, '16	Wed Nov 16, '16
98				
99	Demolition of Kowloon East DWFI pumping station	137 days	Mon Sep 12, '16	Thu Jan 26, '17
100	Submission / approval of method statements	20 days	Tue Aug 23, '16	Sun Sep 11, '16
101	Demolish super-structure of Kowloon East DWFI pumping station (To be carried out after completion of NPS)	82 days	Mon Sep 12, '16	Fri Dec 2, '16
102	Demolish sub-structure of Kowloon East DWFI pumping station (To be carried out after completion of NPS)	55 days	Sat Dec 3, '16	Thu Jan 26, '17
103				
104	Section 1A	1587 days	Thu Sep 19, '13	Mon Jan 22, '18
105	Establishment works for Section 1	1587 days	Thu Sep 19, '13	Mon Jan 22, '18



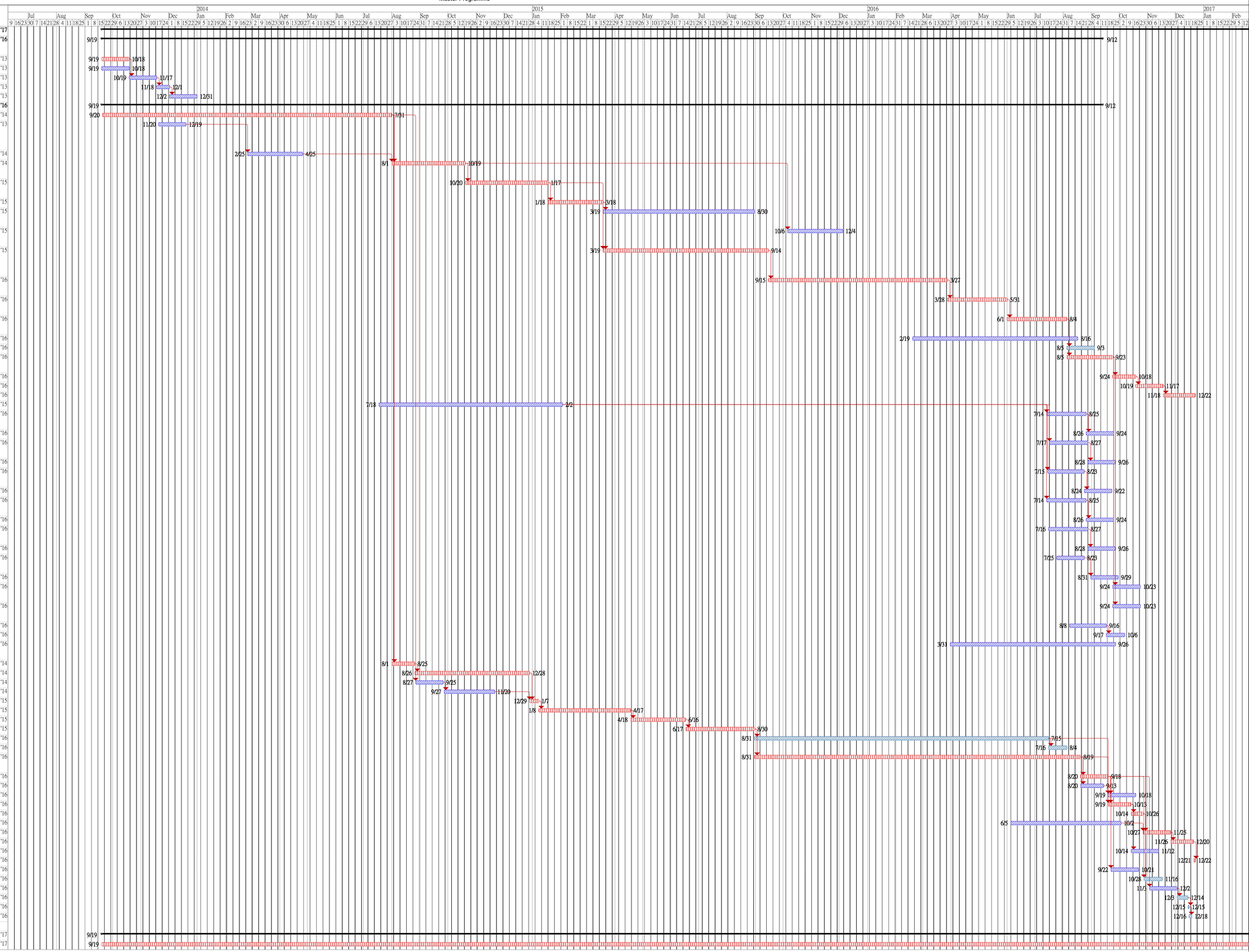
Critical tasks | Non-critical tasks | Working days | Inactive Milestone | Inactive Summary | Manual Task | Duration-only | Manual Summary Rollup | Manual Summary | Start-only | Finish-only | External Tasks | External Milestone

Commencement Date: 19 September 2013
Completion Date: 2 September 2016
Revised Completion Date: 26 January 2017

updated on 29 July 2016

Master Programme

ID	Task Name	Duration	Start	Finish
1	**Commence KL/2012/03 construction**	**1454 days**	**Thu Sep 19, '13**	**Mon Sep 11, '17**
2	**Section 2: Works within Portion 1 and 4**	**1090 days**	**Thu Sep 19, '13**	**Mon Sep 12, '16**
3	Setting out site boundary	30 days	Thu Sep 19, '13	Fri Oct 18, '13
4	Obtain underground utilities plans	30 days	Thu Sep 19, '13	Fri Oct 18, '13
5	Site clearance	30 days	Sat Oct 19, '13	Sun Nov 17, '13
6	Initial survey	14 days	Mon Nov 18, '13	Sun Dec 1, '13
7	Erect hoarding, chain link fence and vehicular gate	30 days	Mon Dec 2, '13	Tue Dec 31, '13
8	**Construction of Road L19**	**1090 days**	**Thu Sep 19, '13**	**Mon Sep 12, '16**
9	Application of XP and TTA for approval	315 days	Fri Sep 20, '13	Thu Jul 31, '14
10	Submission / approval of construction materials, temporary works design and method statements for rising mains, stormwater drain and watermains	30 days	Wed Nov 20, '13	Thu Dec 19, '13
11	Delivery of materials	60 days	Tue Feb 25, '14	Fri Apr 25, '14
12	Install storm drain from SMH1 to SMH6 and construct manholes	80 days	Fri Aug 1, '14	Sun Oct 19, '14
13	Install sewerage drain from DC2 to FMH7 and construct manholes	90 days	Mon Oct 20, '14	Sat Jan 17, '15
14	Approval of TTA drawing at Bailey Street	60 days	Sun Jan 18, '15	Wed Mar 18, '15
15	Install storm drain from SMH8 to SMH12 and 16 and manholes	165 days	Thu Mar 19, '15	Sun Aug 30, '15
16	Install storm drain from SMH7 to existing manhole and construct manholes	60 days	Tue Oct 6, '15	Fri Dec 4, '15
17	Inspection pit at Bailey Street for determining the alignment of sewer drain and construct protection concrete layer above existing manholes	180 days	Thu Mar 19, '15	Mon Sep 14, '15
18	Install sewerage drain from FMH10 to existing manhole and construct manholes (VO)	195 days	Tue Sep 15, '15	Sun Mar 27, '16
19	Notification of traffic advice and implementation of TTA at Bailey Street (VO)	65 days	Mon Mar 28, '16	Tue May 31, '16
20	Construction of manhole FMH9 and 4 nos. DN600 DI pipes (VO)	65 days	Wed Jun 1, '16	Thu Aug 4, '16
21	Application of traffic signal at Beiley Street (VO)	180 days	Fri Feb 19, '16	Tue Aug 16, '16
22	Construct road kerb at CHE50-150	30 days	Fri Aug 5, '16	Sat Sep 3, '16
23	Installation of additional street lighting and traffic signals system at Bailey Street (VO)	50 days	Fri Aug 5, '16	Fri Sep 23, '16
24	Install 200mm dia. Fresh water main CHE50-CHE100	25 days	Sat Sep 24, '16	Tue Oct 18, '16
25	Construct road kerb at CHE50-150	30 days	Wed Oct 19, '16	Thu Nov 17, '16
26	Construction of road pavement CHE50-150	35 days	Fri Nov 18, '16	Thu Dec 22, '16
27	UU liaison meeting	200 days	Fri Jul 18, '14	Mon Feb 2, '15
28	Installation of utility by the utility undertakers along proposed footpath CHF50-150	43 days	Thu Jul 14, '16	Thu Aug 25, '16
29	Construct footpath	30 days	Fri Aug 26, '16	Sat Sep 24, '16
30	Installation of utility by the utility undertakers along proposed footpath CHE50-150	42 days	Sun Jul 17, '16	Sat Aug 27, '16
31	Construct footpath	30 days	Sun Aug 28, '16	Mon Sep 26, '16
32	Installation of utility by the utility undertakers along proposed footpath CHE150-250	40 days	Fri Jul 15, '16	Tue Aug 23, '16
33	Construct footpath	30 days	Wed Aug 24, '16	Thu Sep 22, '16
34	Installation of utility by the utility undertakers along proposed footpath CHF150-250	43 days	Thu Jul 14, '16	Thu Aug 25, '16
35	Construct footpath	30 days	Fri Aug 26, '16	Sat Sep 24, '16
36	Installation of utility by the utility undertakers along proposed footpath CHF250-340	43 days	Sat Jul 16, '16	Sat Aug 27, '16
37	Construct footpath	30 days	Sun Aug 28, '16	Mon Sep 26, '16
38	Installation of utility by the utility undertakers along proposed footpath CHE250-340	30 days	Mon Jul 25, '16	Tue Aug 23, '16
39	Construct footpath	30 days	Wed Aug 31, '16	Thu Sep 29, '16
40	Installation of utility by the utility undertakers along proposed footpath CHE0-50	30 days	Sat Sep 24, '16	Sun Oct 23, '16
41	Installation of utility by the utility undertakers along proposed footpath CHF0-50	30 days	Sat Sep 24, '16	Sun Oct 23, '16
42	Existing utilities diversion works by the UU	40 days	Mon Aug 8, '16	Fri Sep 16, '16
43	Construct footpath	20 days	Sat Sep 17, '16	Thu Oct 6, '16
44	Application and installation of traffic signal at Beiley Street (VO)	180 days	Thu Mar 31, '16	Mon Sep 26, '16
45	Submission of ICE design for jacking pit 10 and 11	25 days	Fri Aug 1, '14	Mon Aug 25, '14
46	Construct jacking pit at pit no. 11	125 days	Tue Aug 26, '14	Sun Dec 28, '14
47	Submission of ICE design for common pit no. 10 (VO)	30 days	Wed Aug 27, '14	Thu Sep 25, '14
48	Construct common pit at pit no. 10 (VO)	55 days	Sat Sep 27, '14	Thu Nov 20, '14
49	Mobilization of equipment and set up	10 days	Mon Dec 29, '14	Wed Jan 7, '15
50	Drilling for rising mains from pit 11 to 10	100 days	Thu Jan 8, '15	Fri Apr 17, '15
51	Delivery of rising mains for pit 11 to 10	60 days	Sat Apr 18, '15	Tue Jun 16, '15
52	Install rising mains from pit 11 and 10	75 days	Wed Jun 17, '15	Sun Aug 30, '15
53	Construct WO chamber at pit no. 11	320 days	Mon Aug 31, '15	Fri Jul 15, '16
54	Install storm drain from SMH13 to SMH15 and manholes	20 days	Sat Jul 16, '16	Thu Aug 4, '16
55	Install 2x630mm dia. HDPE rising mains from WOC to DC2 (VO)	355 days	Mon Aug 31, '15	Fri Aug 19, '16
56	Install 200mm dia fresh water main CHE200-CHE400	30 days	Sat Aug 20, '16	Sun Sep 18, '16
57	Install NS125 & NS63 salt water main CHE0-CHE100	25 days	Sat Aug 20, '16	Tue Sep 13, '16
58	Pressure test, swabbing,sterilization and connection	30 days	Mon Sep 19, '16	Tue Oct 18, '16
59	Construct addition lay-by (VO)	25 days	Mon Sep 19, '16	Thu Oct 13, '16
60	Construct road kerb	13 days	Fri Oct 14, '16	Wed Oct 26, '16
61	Application of traffic signal at Chi Kiang Street (VO)	120 days	Sun Jun 5, '16	Sun Oct 2, '16
62	Installation of traffic signals at Chi Kiang Street (VO)	30 days	Thu Oct 27, '16	Fri Nov 25, '16
63	Construct flexible carriageway	25 days	Sat Nov 26, '16	Tue Dec 20, '16
64	Installation of street lighting by HyD	30 days	Fri Oct 14, '16	Sat Nov 12, '16
65	Road marking	2 days	Wed Dec 21, '16	Thu Dec 22, '16
66	Relocate existing directional sign	30 days	Thu Sep 22, '16	Fri Oct 21, '16
67	Construct footpath and planting area and irrigation system	20 days	Fri Oct 28, '16	Wed Nov 16, '16
68	Plants delivery for landscaping works	30 days	Thu Nov 3, '16	Fri Dec 2, '16
69	Preparatory works for landscaping works	12 days	Sat Dec 3, '16	Wed Dec 14, '16
70	Hydroseeding	1 day	Thu Dec 15, '16	Thu Dec 15, '16
71	Tree and shurb planting	3 days	Fri Dec 16, '16	Sun Dec 18, '16
72				
73	**Section 2A**	1454 days	Thu Sep 19, '13	Mon Sep 11, '17
74	**Establishment works for Section 2**	1454 days	Thu Sep 19, '13	Mon Sep 11, '17



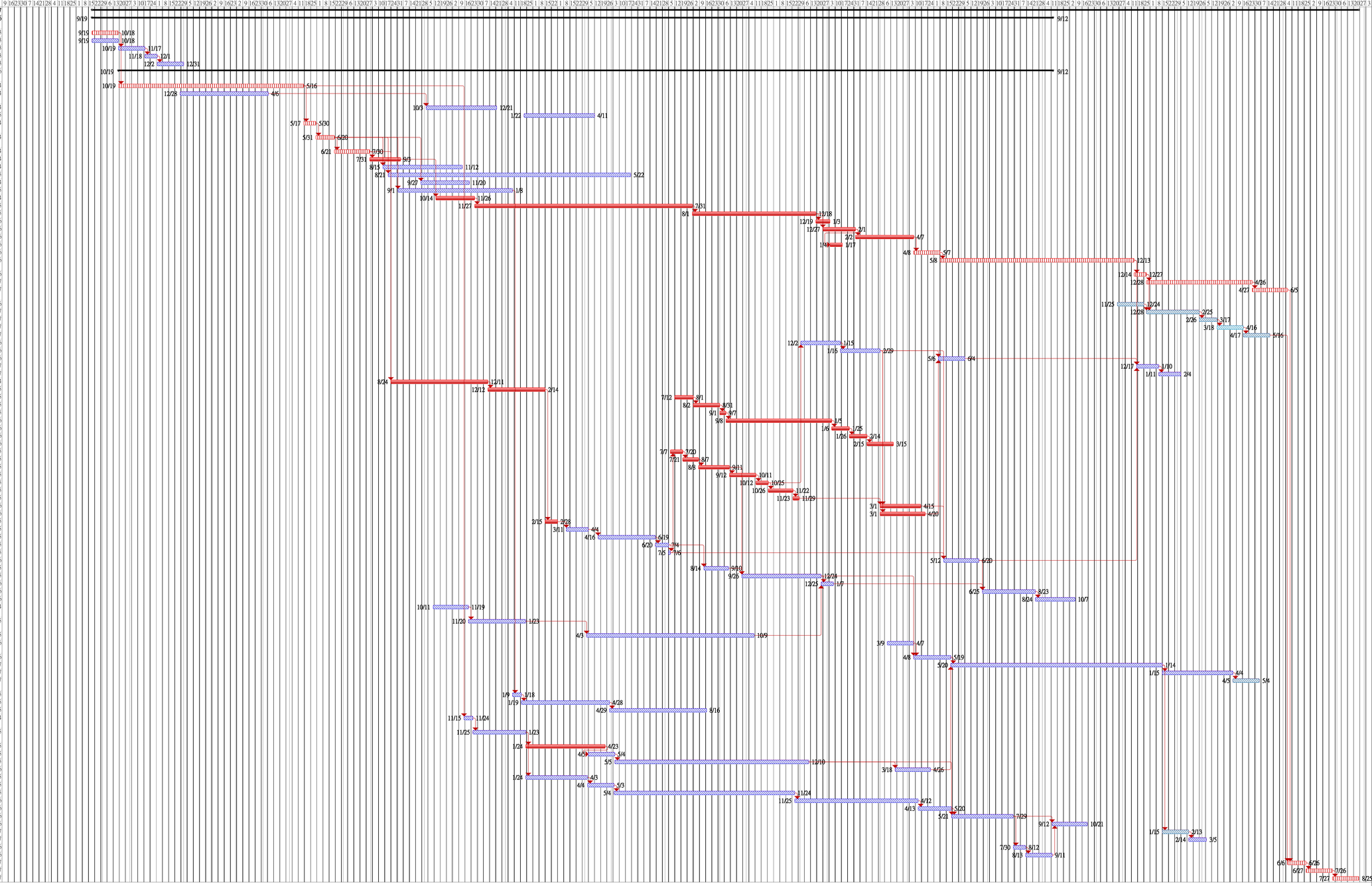
Critical tasks — Working days — Inactive Summary — Duration-only — Manual Summary — Finish-only — External Milestone

Non-critical tasks — Inactive Milestone — Manual Task — Manual Summary Rollup — Start-only — External Tasks

Commencement Date: 19 September 2013
Completion Date: 5 May 2016
Revised Completion Date: 12 September 2016

updated on 29 July 2016

ID	Task Name	Duration	Start	Finish
1	**Commence KL/2012/03 construction**	**1437 days**	**Thu Sep 19, '13**	**Fri Aug 25, '17**
2	**Section 2: Works within Portion 1 and 4**	**1090 days**	**Thu Sep 19, '13**	**Mon Sep 12, '16**
3	Setting out site boundary	30 days	Thu Sep 19, '13	Fri Oct 18, '13
4	Obtain underground utilities plans	30 days	Thu Sep 19, '13	Fri Oct 18, '13
5	Site clearance	30 days	Sat Oct 19, '13	Sun Nov 17, '13
6	Initial survey	14 days	Mon Nov 18, '13	Sun Dec 1, '13
7	Erect hoarding, chain link fence and vehicular gate	30 days	Mon Dec 2, '13	Tue Dec 31, '13
8	**Installation of rising main along To Kwa Wan Road**	1060 days	Sat Oct 19, '13	Mon Sep 12, '16
9	Application of XP and TTA for approval	210 days	Sat Oct 19, '13	Fri May 16, '14
10	Submission / approval of method statement, temporary works design	100 days	Sat Dec 28, '13	Sun Apr 6, '14
11	Procurement of HDPE pipes and fittings	80 days	Fri Oct 3, '14	Sun Dec 21, '14
12	Procurement of special fittings	80 days	Thu Jan 22, '15	Sat Apr 11, '15
13	Inspection pits at pit no. 5, 6, 7, 9, 10 and 11 for determining the alignment of rising mains.	14 days	Sat May 17, '14	Fri May 30, '14
14	Allow for utilities diversion works by the UU at pit no. 5, 6 ,7, 9, 10 and 11	21 days	Sat May 31, '14	Fri Jun 20, '14
15	Construct common pit at pit no.5 and 9	40 days	Sat Jun 21, '14	Wed Jul 30, '14
16	Handover common pit 5 and 9 for HKCG works	35 days	Thu Jul 31, '14	Wed Sep 3, '14
17	Construct common pit at pit no. 6	90 days	Fri Aug 15, '14	Wed Nov 12, '14
18	Construct common pit at pit no. 7	275 days	Thu Aug 21, '14	Fri May 22, '15
19	Construct common pit at pit no. 10	55 days	Sat Sep 27, '14	Thu Nov 20, '14
20	Construct jacking pit at pit no. 11	130 days	Mon Sep 1, '14	Thu Jan 8, '15
21	Mobilization of equipment and set up at Pit 7	44 days	Tue Oct 14, '14	Wed Nov 26, '14
22	Drilling for gas mains from pit 9 to 7 by HKCG	247 days	Thu Nov 27, '14	Fri Jul 31, '15
23	Install gas mains from pit 9 to 7 by HKCG	140 days	Sat Aug 1, '15	Fri Dec 18, '15
24	Backfilling and handback pit 7 to KO	16 days	Sat Dec 19, '15	Sun Jan 3, '16
25	Backfilling and handback pit 9 to KO	37 days	Sun Dec 27, '15	Mon Feb 1, '16
26	Rectification works by HKCG at Pit 9	66 days	Tue Feb 2, '16	Thu Apr 7, '16
27	DSD contractor repair works near Pit 9	14 days	Mon Jan 4, '16	Sun Jan 17, '16
28	Mobilization of equipment and set up at pit 9	30 days	Fri Apr 8, '16	Sat May 7, '16
29	Drilling for rising mains from pit 9 to 7 (use DN1350 TBM and DN1650 steel sleeve pipe) (Rock head)	220 days	Sun May 8, '16	Tue Dec 13, '16
30	Demobilization of equipment at Pit 9	14 days	Wed Dec 14, '16	Tue Dec 27, '16
31	Install rising mains (HDPE - 3m long) from pit 9 to 7	120 days	Wed Dec 28, '16	Wed Apr 26, '17
32	Procument of HDPE fittings and install rising mains at pit 7 and 9	40 days	Thu Apr 27, '17	Mon Jun 5, '17
33	Mobilization of equipment and set up at pit 10	30 days	Fri Nov 25, '16	Sat Dec 24, '16
34	Drilling for rising mains from pit 10 to 9 (Boulder head)	60 days	Wed Dec 28, '16	Sat Feb 25, '17
35	Demobilization of equipment at Pit 10	20 days	Sun Feb 26, '17	Fri Mar 17, '17
36	Install rising mains from pit 10 and 9	30 days	Sat Mar 18, '17	Sun Apr 16, '17
37	Procument of HDPE fittings and install rising mains at pit 10	30 days	Mon Apr 17, '17	Tue May 16, '17
38	Mobilization of equipment and set up at pit 6	45 days	Wed Dec 2, '15	Fri Jan 15, '16
39	Drilling for rising mains from pit 6 to 7 (Rock Head)	45 days	Sat Jan 16, '16	Mon Feb 29, '16
40	Install rising mains from pit 6 to 7	30 days	Fri May 6, '16	Sat Jun 4, '16
41	Procument of HDPE fittings and install rising mains at pit 6	25 days	Sat Dec 17, '16	Tue Jan 10, '17
42	Reinstatement of pit 6	25 days	Wed Jan 11, '17	Sat Feb 4, '17
43	Drilling for gas mains from pit 5 to 6 by HKCG	110 days	Sun Aug 24, '14	Thu Dec 11, '14
44	Install gas mains from pit 5 and 6 by HKCG	65 days	Fri Dec 12, '14	Sat Feb 14, '15
45	Mobilization of equipment and set up at Pit 10	21 days	Sun Jul 12, '15	Sat Aug 1, '15
46	Drilling for gas mains from pit 10 to 9 by HKCG	30 days	Sun Aug 2, '15	Mon Aug 31, '15
47	Demobilization of equipment at Pit 10	7 days	Tue Sep 1, '15	Mon Sep 7, '15
48	Install gas mains from pit 10 and 9 by HKCG	120 days	Tue Sep 8, '15	Tue Jan 5, '16
49	Riser installation at pit 10	20 days	Wed Jan 6, '16	Mon Jan 25, '16
50	Gas pipe Connection	20 days	Tue Jan 26, '16	Sun Feb 14, '16
51	Bacfilling and handback pit 10 to KO	30 days	Mon Feb 15, '16	Tue Mar 15, '16
52	Mobilization of equipment and set up at Pit 6 by HKCG	14 days	Tue Jul 7, '15	Mon Jul 20, '15
53	Drilling for gas mains from pit 6 to 7 by HKCG	18 days	Tue Jul 21, '15	Fri Aug 7, '15
54	Demobilization of equipment at Pit 6 & 7	35 days	Sat Aug 8, '15	Fri Sep 11, '15
55	Install gas mains from pit 6 and 7 by HKCG	30 days	Sat Sep 12, '15	Sun Oct 11, '15
56	Erect working platform by HKCG	14 days	Mon Oct 12, '15	Sun Oct 25, '15
57	Gas pipe testing	28 days	Mon Oct 26, '15	Sun Nov 22, '15
58	Gas pipe Connection	7 days	Mon Nov 23, '15	Sun Nov 29, '15
59	Bacfilling and handback pit 6 to KO	46 days	Tue Mar 1, '16	Fri Apr 15, '16
60	Bacfilling and handback pit 7 to KO	51 days	Tue Mar 1, '16	Wed Apr 20, '16
61	Backfilling to the formation level for KO works at pit no. 5	14 days	Sun Feb 15, '15	Sat Feb 28, '15
62	Mobilization of equipment and set up at Pit 5	25 days	Wed Mar 11, '15	Sat Apr 4, '15
63	Drilling for rising mains from pit 5 to 6 (Boulder head)	65 days	Thu Apr 16, '15	Fri Jun 19, '15
64	Demobilization of equipment at pit 5	15 days	Sat Jun 20, '15	Sat Jul 4, '15
65	Handover common pit 6 for HKCG works	2 days	Sun Jul 5, '15	Mon Jul 6, '15
66	Install rising mains from pit 5 and 6	40 days	Thu May 12, '16	Mon Jun 20, '16
67	Mobilization of equipment and set up at pit 5	28 days	Fri Aug 14, '15	Thu Sep 10, '15
68	Drilling for rising mains from pit 5 to 4 (Rock head)	90 days	Sat Sep 26, '15	Thu Dec 24, '15
69	Demobilization of equipment at Pit 4 and 5	14 days	Fri Dec 25, '15	Thu Jan 7, '16
70	Install rising mains from pit 5 to 4	60 days	Sat Jun 25, '16	Tue Aug 23, '16
71	Construct wash-out chamber at pit no.5	45 days	Wed Aug 24, '16	Fri Oct 7, '16
72	Inspection pits at pit no. 3 and 4 for determining the alignment of rising mains.	40 days	Sat Oct 11, '14	Wed Nov 19, '14
73	Allow for utilities diversion works by the UU at pit no. 3 and 4 if necessary	65 days	Thu Nov 20, '14	Fri Jan 23, '15
74	Construct jacking pit no. 4	190 days	Fri Apr 3, '15	Fri Oct 9, '15
75	Revised TTA at Pit 4 for TMLG approval and implementation of TTA	30 days	Wed Mar 9, '16	Thu Apr 7, '16
76	Mobilization of equipment and set up at pit 4	42 days	Fri Apr 8, '16	Thu May 19, '16
77	Drilling for rising mains from pit 4 to 2 (Rock head)	240 days	Fri May 20, '16	Sat Jan 14, '17
78	Install rising mains (HDPE - 4m long) from pit 4 to 2	80 days	Sun Jan 15, '17	Tue Apr 4, '17
79	Procument of HDPE fittings and install rising mains at pit 2 and 4	30 days	Wed Apr 5, '17	Thu May 4, '17
80	Mobilization of equipment and set up	10 days	Fri Jan 9, '15	Sun Jan 18, '15
81	Drilling for rising mains from pit 11 to 10	100 days	Mon Jan 19, '15	Tue Apr 28, '15
82	Install rising mains from pit 11 and 10	110 days	Wed Apr 29, '15	Sun Aug 16, '15
83	Inspection pits at pit no. 2 for determining the alignment of rising mains.	10 days	Sat Nov 15, '14	Mon Nov 24, '14
84	Inspection pits at pit no. 1 for determining the alignment of rising mains.	60 days	Tue Nov 25, '14	Fri Jan 23, '15
85	DSD's Construction of Works	90 days	Sat Jan 24, '15	Thu Apr 23, '15
86	Roadworks advice approved by RMO	30 days	Sun Apr 5, '15	Mon May 4, '15
87	Allow for utilities diversion works by the UU at pit no. 2	220 days	Tue May 5, '15	Thu Dec 10, '15
88	Construct receiving pit no. 2	40 days	Fri Mar 18, '16	Tue Apr 26, '16
89	Remove existing EMSD hoarding	70 days	Sat Jan 24, '15	Fri Apr 3, '15
90	Roadworks advice approved by RMO	30 days	Sat Apr 4, '15	Sun May 3, '15
91	Allow for utilities diversion works by the UU at pit no. 1	205 days	Mon May 4, '15	Tue Nov 24, '15
92	Construct jacking pit no. 1	140 days	Wed Nov 25, '15	Tue Apr 12, '16
93	Mobilization of equipment and set up	38 days	Wed Apr 13, '16	Fri May 20, '16
94	Drilling for rising mains from pit 1 to 2 (Boulder head)	70 days	Sat May 21, '16	Fri Jul 29, '16
95	Install rising mains from pit 1 to 2 and pit 1	40 days	Mon Sep 12, '16	Fri Oct 21, '16
96	Procument of HDPE fittings and install rising mains at pit 1	30 days	Sun Jan 15, '17	Mon Feb 13, '17
97	Pit reinstatement at pit 1	20 days	Tue Feb 14, '17	Sun Mar 5, '17
98	Demobilization of equipment at Pit 1	14 days	Sat Jul 30, '16	Fri Aug 12, '16
99	Install rising mains from NPS to pit 1	30 days	Sat Aug 13, '16	Sun Sep 11, '16
100	CCTV inspection to completed pipeline	21 days	Tue Jun 6, '17	Mon Jun 26, '17
101	Pressure test	30 days	Tue Jun 27, '17	Wed Jul 26, '17
102	Road reinstatement at pit 7, 9 and 10	30 days	Thu Jul 27, '17	Fri Aug 25, '17

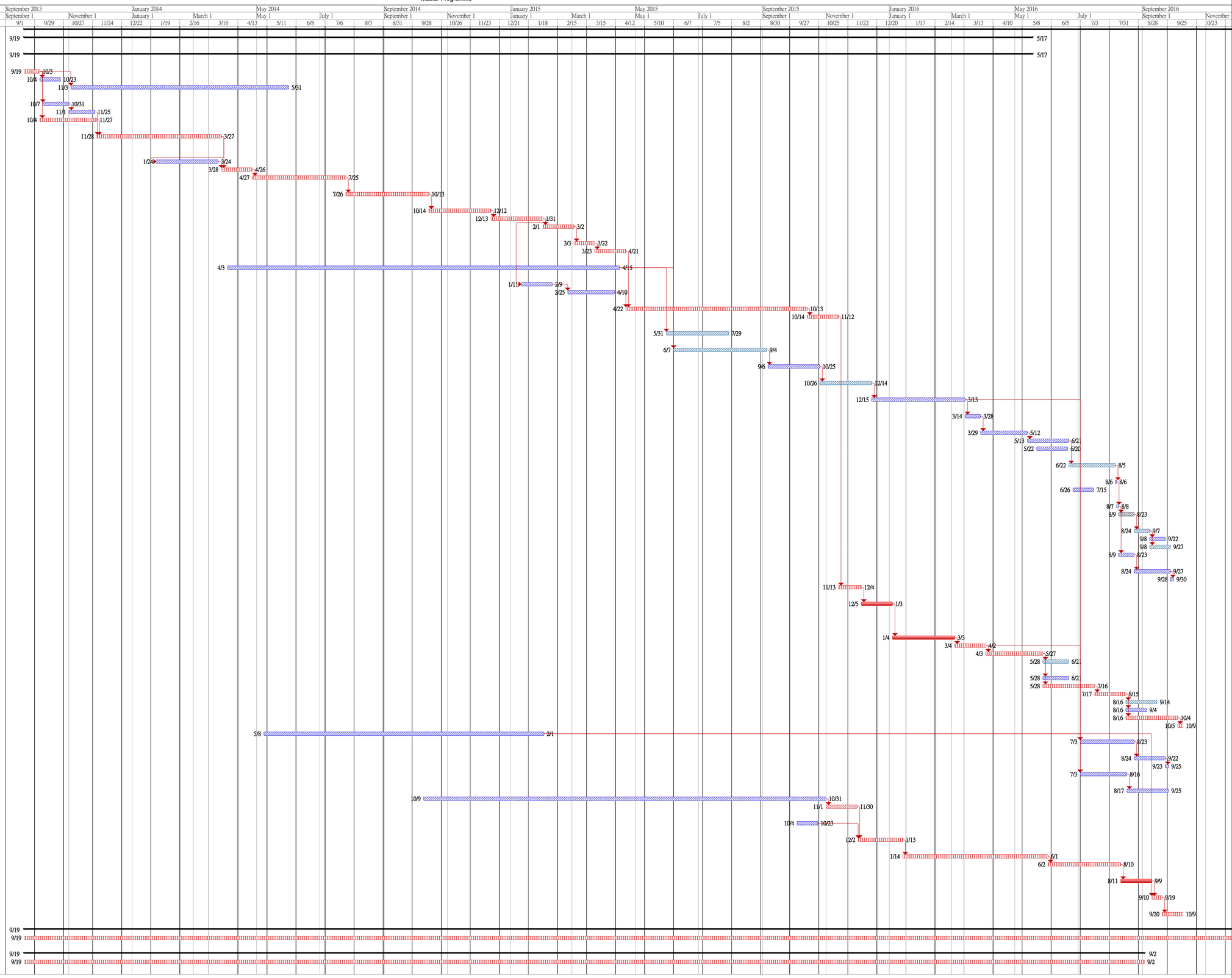


HKCG / DSD works | Non-critical tasks | Inactive Milestone | Manual Task | Manual Summary Rollup | Start-only | External Tasks
Critical tasks | Working days | Inactive Summary | Duration-only | Manual Summary | Finish-only | External Milestone

Commencement Date: 19 September 2013
Completion Date: 5 May 2016
Revised Completion Date: 12 September 2016

Updated on 29 July 2016

ID	Task Name	Duration	Start	Finish
1	Commence KL/2012/03 construction	1336 days	Thu Sep 19, '13	Tue May 16, '17
2	Section 3: Works within Portion 1	972 days	Thu Sep 19, '13	Tue May 17, '16
3	Works for Part of Road D2	972 days	Thu Sep 19, '13	Tue May 17, '16
4	Site possession and preparation works	15 days	Thu Sep 19, '13	Thu Oct 3, '13
5	Site clearance and setting out site boundary	20 days	Fri Oct 4, '13	Wed Oct 23, '13
6	Apply XP for roadworks at junction of SWTR and TKWR and TTA approval	210 days	Sun Nov 3, '13	Sat May 31, '14
7	Submission of baseline monitoring for EPD approval	25 days	Mon Oct 7, '13	Thu Oct 31, '13
8	Approval of baseline monitoring by EPD	25 days	Fri Nov 1, '13	Mon Nov 25, '13
9	Submission / approval of construction materials and method statements for sewerage drain	55 days	Fri Oct 4, '13	Wed Nov 27, '13
10	Construct jacking / receiving pits for 2x750mm dia. Concrete pipes from FMH120_60 to 70 by trenchless method	120 days	Thu Nov 28, '13	Thu Mar 27, '14
11	Delivery of materials for sewerage drain	60 days	Fri Jan 24, '14	Mon Mar 24, '14
12	Mobilization of pipe jacking machine and setup	30 days	Fri Mar 28, '14	Sat Apr 26, '14
13	Drilling and installation of concrete pipe for 2x750mm dia.	90 days	Sun Apr 27, '14	Fri Jul 25, '14
14	Construct sewerage drain and construct manholes from FMH120_30 to 40	80 days	Sat Jul 26, '14	Mon Oct 13, '14
15	Construct manholes FMH120_60 and 70	60 days	Tue Oct 14, '14	Fri Dec 12, '14
16	Removal of existing hoarding	50 days	Sat Dec 13, '14	Sat Jan 31, '15
17	Approval of TTA and implementation of TTA along SWTR and TKWR	30 days	Sun Feb 1, '15	Mon Mar 2, '15
18	Removal of existing security fence	20 days	Tue Mar 3, '15	Sun Mar 22, '15
19	Install storm drain from SMH2501 to 2503 and construct manholes for construction of road junction of D2/SWTR	30 days	Mon Mar 23, '15	Tue Apr 21, '15
20	Completion of CLP works (Portion B) (width of occupied areas at northbound of D2 = approx. 20m)	378 days	Thu Apr 3, '14	Wed Apr 15, '15
21	Installation of sheetpiling for CP3P3 1061-1115	30 days	Sun Jan 11, '15	Mon Feb 9, '15
22	Installation of waling and excavation to formation level for CP3P3 1061-1115	45 days	Wed Feb 25, '15	Fri Apr 10, '15
23	Construct DCS system at CP3P3 1061-1115	175 days	Wed Apr 22, '15	Tue Oct 13, '15
24	Trench backfilling at CP3P3 1061-1115 and removal of sheet piles	30 days	Wed Oct 14, '15	Thu Nov 12, '15
25	Install storm drain from SMH2202 to 2204 and construct manholes	60 days	Sun May 31, '15	Wed Jul 29, '15
26	Install storm drain from SMH3110 to3112 & 3113 to 3115 and construct manholes	90 days	Sun Jun 7, '15	Fri Sep 4, '15
27	Construct sewerage drain and construct manholes from DC1 to FMH120_30	50 days	Sun Sep 6, '15	Sun Oct 25, '15
28	Install storm drain from SMH3112 to 3113 and construct manholes	50 days	Mon Oct 26, '15	Mon Dec 14, '15
29	Install water main and wash-out chamber CHB200-CHB280 and CHC200-CHC280	90 days	Tue Dec 15, '15	Sun Mar 13, '16
30	Installation of utility by the utility undertakers at the junction of the realigned DLO ROW	15 days	Mon Mar 14, '16	Mon Mar 28, '16
31	Install sewer drain from FMH120_10 to 20	45 days	Tue Mar 29, '16	Thu May 12, '16
32	Construct additional manhole FMH120_15 (VO)	40 days	Fri May 13, '16	Tue Jun 21, '16
33	Modification of newly constructed sewer manholes and associated drain pipes for DC1	30 days	Sun May 22, '16	Mon Jun 20, '16
34	Construct flexible carriageway at the junction of realigned DLO ROW including wearing course	45 days	Wed Jun 22, '16	Fri Aug 5, '16
35	Road marking	1 day	Sat Aug 6, '16	Sat Aug 6, '16
36	Install traffic signal at the Junction of Road D2/ Western Access Road	20 days	Sun Jun 26, '16	Fri Jul 15, '16
37	Re-diversion of DLO ROW	2 days	Sun Aug 7, '16	Mon Aug 8, '16
38	Install water main CHB170-CHB200 and CHC170-CHC200	15 days	Tue Aug 9, '16	Tue Aug 23, '16
39	Construct road gully and gully pipe	15 days	Wed Aug 24, '16	Wed Sep 7, '16
40	Construct road kerb	15 days	Thu Sep 8, '16	Thu Sep 22, '16
41	Construct flexible carriageway	20 days	Thu Sep 8, '16	Tue Sep 27, '16
42	Installation of utility by the utility undertakers along proposed footpath CH730-750	15 days	Tue Aug 9, '16	Tue Aug 23, '16
43	Construct u-channel and footpath	35 days	Wed Aug 24, '16	Tue Sep 27, '16
44	Landscaping works	3 days	Wed Sep 28, '16	Fri Sep 30, '16
45	Construct sewerage drain and construct manholes from FMH120_40 to 60	22 days	Fri Nov 13, '15	Fri Dec 4, '15
46	Proposed sewerage drain from FMH120_50 to 60 clash with CLP as-constructed CLP tunnel. Revised construction details was instructed by the Engineer on 30 Dec 15	30 days	Sat Dec 5, '15	Sun Jan 3, '16
47	Construct additional manhole FMH120_55 (VO)	60 days	Mon Jan 4, '16	Thu Mar 3, '16
48	Construct sewerage drain from FMH120_50 to 55 to 60	30 days	Fri Mar 4, '16	Sat Apr 2, '16
49	Install storm drain from SMH3117 to SMH2304	55 days	Sun Apr 3, '16	Fri May 27, '16
50	Install storm drain from SMH3115 to 3117a and construct manholes	25 days	Sat May 28, '16	Tue Jun 21, '16
51	Install water main CHB0-CHB170 and CHC0-CHC170	25 days	Sat May 28, '16	Tue Jun 21, '16
52	Construct road gully and gully pipe	50 days	Sat May 28, '16	Sat Jul 16, '16
53	Construct road kerb	30 days	Sun Jul 17, '16	Mon Aug 15, '16
54	Install irrigation system	30 days	Tue Aug 16, '16	Wed Sep 14, '16
55	Installation of lighting system by HyD	20 days	Tue Aug 16, '16	Sun Sep 4, '16
56	Construct flexible carriageway	50 days	Tue Aug 16, '16	Tue Oct 4, '16
57	Planting works	5 days	Wed Oct 5, '16	Sun Oct 9, '16
58	Liaison meeting with UU	270 days	Thu May 8, '14	Sun Feb 1, '15
59	Installation of utility by the utility undertakers along proposed footpath CH550-730	52 days	Sun Jul 3, '16	Tue Aug 23, '16
60	Construct planting area, u-channel and footpath	30 days	Wed Aug 24, '16	Thu Sep 22, '16
61	Landscaping works	3 days	Fri Sep 23, '16	Sun Sep 25, '16
62	Installation of utility by the utility undertakers along proposed footpath CH750-810	45 days	Sun Jul 3, '16	Tue Aug 16, '16
63	Construct planting area, u-channel and footpath	40 days	Wed Aug 17, '16	Sun Sep 25, '16
64	CLP T-junction at Portion C	388 days	Thu Oct 9, '14	Sat Oct 31, '15
65	Installation of utility by the utility undertakers along proposed footpath CHA820-850	30 days	Sun Nov 1, '15	Mon Nov 30, '15
66	Submission on method statement for DWFI for DSD approval	20 days	Sun Oct 4, '15	Fri Oct 23, '15
67	Awaiting for construction details for re-construction of box culvert	43 days	Wed Dec 2, '15	Wed Jan 13, '16
68	Reconstruction of existing box culvert DWFI (VO)	140 days	Thu Jan 14, '16	Wed Jun 1, '16
69	Construct sewer drain from box culvert to FMH140_10 and manhole	70 days	Thu Jun 2, '16	Wed Aug 10, '16
70	Install FWM CHC1-0 to 50 & SWM CHF2-0 to 50 (VO 35A)	30 days	Thu Aug 11, '16	Fri Sep 9, '16
71	Installation of utility by the utility undertakers along proposed footpath CHA820-850	10 days	Sat Sep 10, '16	Mon Sep 19, '16
72	Construct planting area, u-channel and footpath	20 days	Tue Sep 20, '16	Sun Oct 9, '16
73				
74	Section 3A	1336 days	Thu Sep 19, '13	Tue May 16, '17
75	Establishment works for Section 3	1336 days	Thu Sep 19, '13	Tue May 16, '17
76				
77	Section 4	1080 days	Thu Sep 19, '13	Fri Sep 2, '16
78	Perservation and preotection of trees within Portions 1 to 4	1080 days	Thu Sep 19, '13	Fri Sep 2, '16

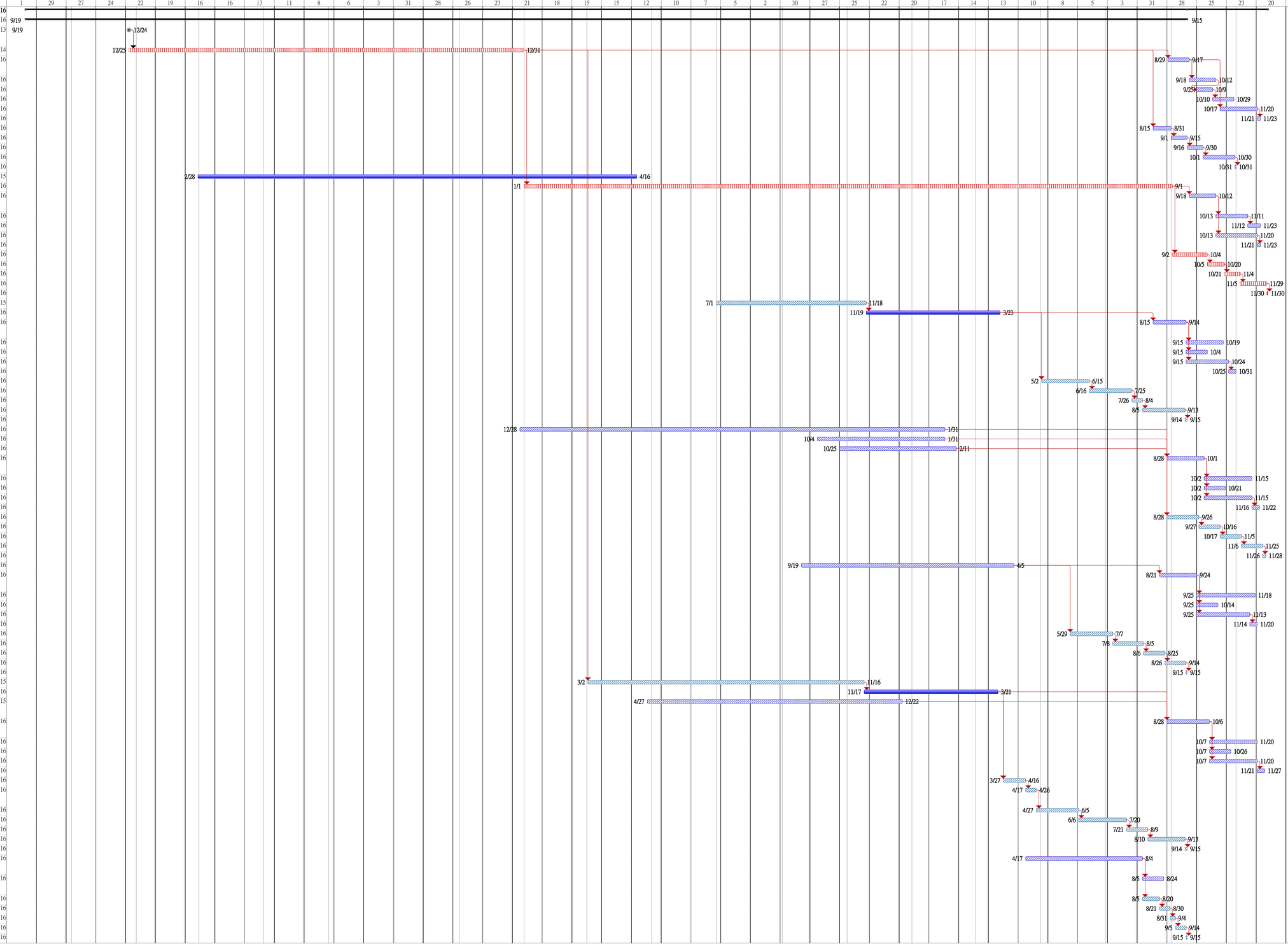


Section 3
Commencement Date: 19 September 2013
Completion Date: 17 May 2016

updated on 29 July 2016

Master Programme

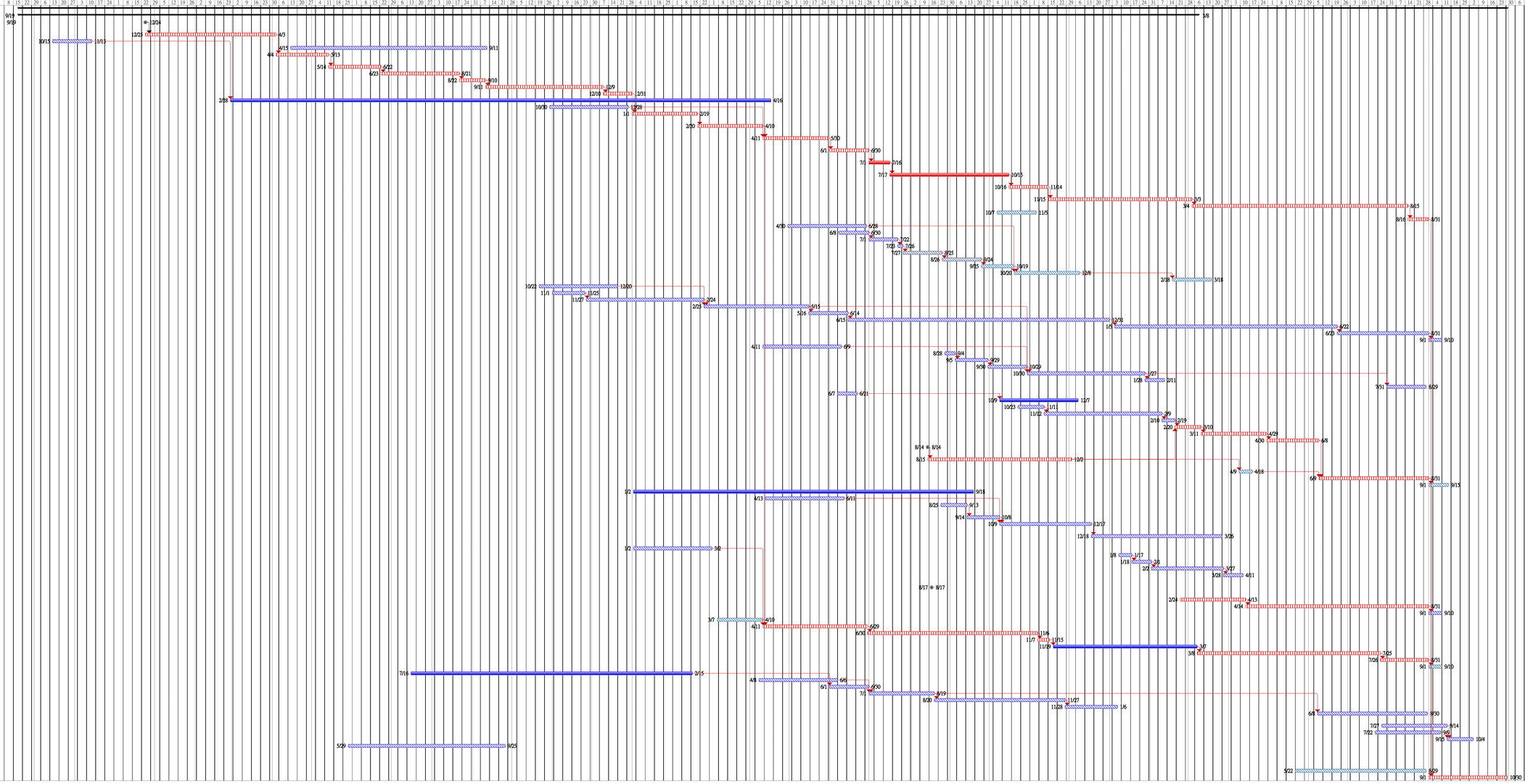
ID	Task Name	Duration	Start	Finish
1	**Commence KL/2012/03 construction**	**1093 days**	**Thu Sep 19, '13**	**Thu Sep 15, '16**
2	**Section 5: Works for Southbound of Road D2**	1093 days	Thu Sep 19, '13	Thu Sep 15, '16
3	Awaiting for the notifcation of commencement of works by the Engineer	97 days	Thu Sep 19, '13	Tue Dec 24, '13
4	Completion of DCS works for CH3P3-970 to 1030	372 days	Wed Dec 25, '13	Wed Dec 31, '14
5	Installation of utility by the utility undertakers along proposed footpath	20 days	Mon Aug 29, '16	Sat Sep 17, '16
6	Construct drainpit and u-channel	25 days	Sun Sep 18, '16	Wed Oct 12, '16
7	Install street lighting	15 days	Sun Sep 25, '16	Sun Oct 9, '16
8	Installation of lighting system by HyD	20 days	Mon Oct 10, '16	Sat Oct 29, '16
9	Construct footpath, planting area and concrete run-in	35 days	Mon Oct 17, '16	Sun Nov 20, '16
10	Landscape works	3 days	Mon Nov 21, '16	Wed Nov 23, '16
11	Construct stormwater drain and manholes	17 days	Mon Aug 15, '16	Wed Aug 31, '16
12	Construct road gully with pipes	15 days	Thu Sep 1, '16	Thu Sep 15, '16
13	Construct road kerb	15 days	Fri Sep 16, '16	Fri Sep 30, '16
14	Construct flexible carriageway	30 days	Sat Oct 1, '16	Sun Oct 30, '16
15	Road marking	1 day	Mon Oct 31, '16	Mon Oct 31, '16
16	Construct CLP tunnel by CLP Portion B	413 days	Fri Feb 28, '14	Thu Apr 16, '15
17	Completion of DCS works for CH3P3-1030 to 1115	610 days	Thu Jan 1, '15	Thu Sep 1, '16
18	Installation of utility by the utility undertakers along proposed footpath	25 days	Sun Sep 18, '16	Wed Oct 12, '16
19	Construct drainpit and u-channel	30 days	Thu Oct 13, '16	Fri Nov 11, '16
20	Install street lighting	12 days	Sat Nov 12, '16	Wed Nov 23, '16
21	Construct footpath, planting area and concrete run-in	39 days	Thu Oct 13, '16	Sun Nov 20, '16
22	Landscape works	3 days	Mon Nov 21, '16	Wed Nov 23, '16
23	Construct stormwater drain and manholes	33 days	Fri Sep 2, '16	Tue Oct 4, '16
24	Construct road gully with pipes	16 days	Wed Oct 5, '16	Thu Oct 20, '16
25	Construct road kerb	15 days	Fri Oct 21, '16	Fri Nov 4, '16
26	Construct flexible carriageway	25 days	Sat Nov 5, '16	Tue Nov 29, '16
27	Road marking	1 day	Wed Nov 30, '16	Wed Nov 30, '16
28	Completion of DCS works for CH3P3-930 to 970	141 days	Wed Jul 1, '15	Wed Nov 18, '15
29	Construct CLP tunnel by CLP Portion F1	126 days	Thu Nov 19, '15	Wed Mar 23, '16
30	Installation of utility by the utility undertakers along proposed footpath	31 days	Mon Aug 15, '16	Wed Sep 14, '16
31	Construct drainpit and u-channel	35 days	Thu Sep 15, '16	Wed Oct 19, '16
32	Install street lighting	20 days	Thu Sep 15, '16	Tue Oct 4, '16
33	Construct footpath, planting area and concrete run-in	40 days	Thu Sep 15, '16	Mon Oct 24, '16
34	Landscape works	7 days	Tue Oct 25, '16	Mon Oct 31, '16
35	Construct stormwater drain and manholes	45 days	Mon May 2, '16	Wed Jun 15, '16
36	Construct road gully with pipes	40 days	Thu Jun 16, '16	Mon Jul 25, '16
37	Construct road kerb	10 days	Tue Jul 26, '16	Thu Aug 4, '16
38	Construct flexible carriageway	40 days	Fri Aug 5, '16	Tue Sep 13, '16
39	Road marking	2 days	Wed Sep 14, '16	Thu Sep 15, '16
40	Completion of DCS works for CH3P3-370 to 520	400 days	Sun Dec 28, '14	Sun Jan 31, '16
41	Completion of DCS works for CH3P3-350 to 370	120 days	Sun Oct 4, '15	Sun Jan 31, '16
42	Completion of DCS works for CH3P3-520 to 570	110 days	Sun Oct 25, '15	Thu Feb 11, '16
43	Installation of utility by the utility undertakers along proposed footpath	35 days	Sun Aug 28, '16	Sat Oct 1, '16
44	Construct drainpit and u-channel	45 days	Sun Oct 2, '16	Tue Nov 15, '16
45	Install street lighting	20 days	Sun Oct 2, '16	Fri Oct 21, '16
46	Construct footpath, planting area and concrete run-in	45 days	Sun Oct 2, '16	Tue Nov 15, '16
47	Landscape works	7 days	Wed Nov 16, '16	Tue Nov 22, '16
48	Construct stormwater drain and manholes	30 days	Sun Aug 28, '16	Mon Sep 26, '16
49	Construct road gully with pipes	20 days	Tue Sep 27, '16	Sun Oct 16, '16
50	Construct road kerb	20 days	Mon Oct 17, '16	Sat Nov 5, '16
51	Construct flexible carriageway	20 days	Sun Nov 6, '16	Fri Nov 25, '16
52	Road marking	3 days	Sat Nov 26, '16	Mon Nov 28, '16
53	Completion of DCS works for CH3P3-570 to 730	200 days	Sat Sep 19, '15	Tue Apr 5, '16
54	Installation of utility by the utility undertakers along proposed footpath	35 days	Sun Aug 21, '16	Sat Sep 24, '16
55	Construct drainpit and u-channel	55 days	Sun Sep 25, '16	Fri Nov 18, '16
56	Install street lighting	20 days	Sun Sep 25, '16	Fri Oct 14, '16
57	Construct footpath, planting area and concrete run-in	50 days	Sun Sep 25, '16	Sun Nov 13, '16
58	Landscape works	7 days	Mon Nov 14, '16	Sun Nov 20, '16
59	Construct stormwater drain and manholes	40 days	Sun May 29, '16	Thu Jul 7, '16
60	Construct road gully with pipes	29 days	Fri Jul 8, '16	Fri Aug 5, '16
61	Construct road kerb	20 days	Sat Aug 6, '16	Thu Aug 25, '16
62	Construct flexible carriageway	20 days	Fri Aug 26, '16	Wed Sep 14, '16
63	Road marking	1 day	Thu Sep 15, '16	Thu Sep 15, '16
64	Completion of DCS works for CH3P3-730 to 830	260 days	Mon Mar 2, '15	Mon Nov 16, '15
65	Cable duct block by CLP	126 days	Tue Nov 17, '15	Mon Mar 21, '16
66	Completion of DCS works for CH3P3-830 to 930 (except 860 to 900)	240 days	Mon Apr 27, '15	Tue Dec 22, '15
67	Installation of utility by the utility undertakers along proposed footpath	40 days	Sun Aug 28, '16	Thu Oct 6, '16
68	Construct drainpit and u-channel	45 days	Fri Oct 7, '16	Sun Nov 20, '16
69	Install street lighting	20 days	Fri Oct 7, '16	Wed Oct 26, '16
70	Construct footpath, planting area and concrete run-in	45 days	Fri Oct 7, '16	Sun Nov 20, '16
71	Landscape works	7 days	Mon Nov 21, '16	Sun Nov 27, '16
72	Construct stormwater drain and manholes	21 days	Sun Mar 27, '16	Sat Apr 16, '16
73	Proposed sewer drain FMH120_20 to 10 clash with as-constructed CLP's cable tunnel. Further instruction is required	10 days	Sun Apr 17, '16	Tue Apr 26, '16
74	Construct additional manhole with backdrop (VO)	40 days	Wed Apr 27, '16	Sun Jun 5, '16
75	Construct road gully with pipes	45 days	Mon Jun 6, '16	Wed Jul 20, '16
76	Construct road kerb	20 days	Thu Jul 21, '16	Tue Aug 9, '16
77	Construct flexible carriageway	35 days	Wed Aug 10, '16	Tue Sep 13, '16
78	Road marking	2 days	Wed Sep 14, '16	Thu Sep 15, '16
79	Completion of DCS works for CH3P3-860 to 900 for realignment of DLO ROW including wearing course	110 days	Sun Apr 17, '16	Thu Aug 4, '16
80	Installation of utility by the utility undertakers along proposed footpath	20 days	Fri Aug 5, '16	Wed Aug 24, '16
81	Construct stormwater drain and manholes	16 days	Fri Aug 5, '16	Sat Aug 20, '16
82	Construct road gully with pipes	10 days	Sun Aug 21, '16	Tue Aug 30, '16
83	Construct road kerb	5 days	Wed Aug 31, '16	Sun Sep 4, '16
84	Construct flexible carriageway	10 days	Mon Sep 5, '16	Wed Sep 14, '16
85	Road marking	1 day	Thu Sep 15, '16	Thu Sep 15, '16



Critical tasks | Working days | Inactive Summary | Duration-only | Manual Summary | Finish-only | External Milestone
Non-critical tasks | Inactive Milestone | Manual Task | Manual Summary Rollup | Start-only | External Tasks

Updated on 29 July 2016

ID	Task Name	Duration	Start	Finish
1	**Commence KL/2012/03 construction**	902 days	Thu Sep 19, '13	Tue Mar 8, '16
2	**Section 7A: Works for Southbound of Road D2**	902 days	Thu Sep 19, '13	Tue Mar 8, '16
3	Awaiting for the notification of commencement of works by the Engineer	97 days	Thu Sep 19, '13	Tue Dec 24, '13
4	Submission for approval of DCS materials	100 days	Wed Dec 25, '13	Thu Apr 3, '14
5	Interface works meeting with CLP	30 days	Tue Oct 15, '13	Wed Nov 13, '13
6	Deliver DCS materials batch no. 1	150 days	Tue Apr 15, '14	Thu Sep 11, '14
7	Submission for approval of method statement and temp work design	40 days	Fri Apr 4, '14	Tue May 13, '14
8	Installation of sheetpiles for CHSP3-970 to 1030	40 days	Wed May 14, '14	Sun Jun 22, '14
9	Installation of waling and excavation for CHSP3-970 to 1030	60 days	Mon Jun 23, '14	Thu Aug 21, '14
10	Grade 200 rock fill (SD)	20 days	Fri Aug 22, '14	Wed Sep 10, '14
11	Construct DCS system at CHSP3-970 to 1030	90 days	Thu Sep 11, '14	Tue Dec 9, '14
12	Trench backfilling at CHSP3-970 to 1030	22 days	Wed Dec 10, '14	Wed Dec 31, '14
13	Construct CLP tunnel by CLP Portion B	413 days	Fri Feb 28, '14	Thu Apr 16, '15
14	Deliver DCS materials batch no. 3	60 days	Thu Oct 30, '14	Sun Dec 28, '14
15	Installation of sheetpiles for CHSP1-1030 to CPSP3-1087 & CPSP2-1115	50 days	Thu Jun 1, '15	Thu Feb 19, '15
16	Installation of waling and excavation for CHSP3-1030 to CPSP3-1087 & CPSP2-1115	50 days	Fri Feb 20, '15	Fri Apr 10, '15
17	Construct DCS system at CHSP3-1060 to CPSP3-1087 & CPSP2-1115	50 days	Sat Apr 11, '15	Sat May 30, '15
18	Cut CLP sheetpiles and additional infill in CLP structure for installation of seawater pipes	30 days	Mon Jun 1, '15	Tue Jun 30, '15
19	Trench excavation for WSD permanent diversion of existing watermain at CHSP3-1000 (additional works)	16 days	Wed Jul 1, '15	Thu Jul 16, '15
20	Permanent diversion of existing watermain at CHSP3-1000 by WSD (additional works)	91 days	Fri Jul 17, '15	Thu Oct 15, '15
21	Remove existing watermain and then installation of waling and excavation for CHSP3-1030 to 1050	30 days	Fri Oct 16, '15	Sat Nov 14, '15
22	Construct DCS system at CHSP3-1030 to CPSP3-1087	110 days	Sun Nov 15, '15	Thu Mar 3, '16
23	Construct sectional valve chambers (SV-N-09)	165 days	Fri Mar 4, '16	Mon Aug 15, '16
24	Trench backfilling at CPSP3-1087 to CPSP2-1115	30 days	Wed Oct 7, '15	Thu Nov 5, '15
25	Trench backfilling at CHSP3-1030 to CPSP3-1087	16 days	Tue Aug 16, '16	Wed Aug 31, '16
26	Deliver DCS materials batch no. 5	60 days	Thu Apr 30, '15	Sun Jun 28, '15
27	Proposed UU works to be laid at DLO ROW	23 days	Mon Jun 8, '15	Tue Jun 30, '15
28	Re-diversion of DLO ROW	22 days	Wed Jul 1, '15	Wed Jul 22, '15
29	Break up existing hard materials for sheetpiling works	4 days	Thu Jul 23, '15	Sun Jul 26, '15
30	Installation of sheetpiles for CHSP3-930 to 970	30 days	Mon Jul 27, '15	Tue Aug 25, '15
31	Temporary support existing watermain	30 days	Wed Aug 26, '15	Thu Sep 24, '15
32	Install waling and excavate for CHSP3-930 to 970	25 days	Fri Sep 25, '15	Mon Oct 19, '15
33	Construct DCS system at CHSP3-930 to 970	50 days	Tue Oct 20, '15	Tue Dec 8, '15
34	Trench backfilling at CHSP3-930 to 970	30 days	Thu Feb 18, '16	Fri Mar 18, '16
35	Deliver DCS materials batch no. 2	60 days	Wed Oct 22, '14	Sat Dec 20, '14
36	Installation of sheetpiling for CHSP3-370 to 520	25 days	Sat Nov 1, '14	Tue Nov 25, '14
37	Installation of waling and excavation for CHSP3-370 to 520	90 days	Thu Nov 27, '14	Tue Feb 24, '15
38	Construct DCS system at CHSP3-370 to 450	80 days	Wed Feb 25, '15	Fri May 15, '15
39	Trench backfilling at CHSP3-370 to 450	30 days	Sat May 16, '15	Sun Jun 14, '15
40	Construct DCS system at CHSP3-450 to 520	200 days	Mon Jun 15, '15	Thu Dec 31, '15
41	Construct sectional valve chambers (SV-N-10)	170 days	Tue Jun 5, '16	Wed Jun 22, '16
42	Construct bend block concrete at CHCP3-450 to 520	70 days	Thu Jun 23, '16	Wed Aug 31, '16
43	Trench backfilling at CHSP3-450 to 520	10 days	Thu Sep 1, '16	Sat Sep 10, '16
44	Deliver DCS materials batch no. 5	60 days	Sat Apr 11, '15	Tue Jun 9, '15
45	Divert ROW	8 days	Fri Aug 28, '15	Fri Sep 4, '15
46	Installation of sheetpiles for CHSP3-350 to 370	25 days	Sat Sep 5, '15	Tue Sep 29, '15
47	Installation of wailing and excavation for CHSP3-350 to 370	30 days	Wed Sep 30, '15	Thu Oct 29, '15
48	Construct DCS system at CHSP3-350 to 370	90 days	Fri Oct 30, '15	Wed Jan 27, '16
49	Trench backfilling at CHSP3-350 to 370	15 days	Thu Jan 28, '16	Thu Feb 11, '16
50	Construct tee-off gate valve chambers (S-1L4)	30 days	Sun Jul 31, '16	Mon Aug 29, '16
51	Diversion of MTR ROW	15 days	Sun Jun 7, '15	Sun Jun 21, '15
52	CLP cable duck block	60 days	Fri Oct 9, '15	Mon Dec 7, '15
53	Trench excavation at CHSP3-520 to 570	20 days	Fri Oct 23, '15	Wed Nov 11, '15
54	Construct DCS system at CHSP3-520 to 570	90 days	Thu Nov 12, '15	Tue Feb 9, '16
55	Trench backfilling at CHSP3-520 to 570	10 days	Wed Feb 10, '16	Fri Feb 19, '16
56	Diversion of MTR ROW	20 days	Sat Feb 20, '16	Thu Mar 10, '16
57	Construct DCS system at CHSP3-570 to 590	50 days	Fri Mar 11, '16	Fri Apr 29, '16
58	Construct bend block concrete at CHCP3-570 to 590	40 days	Sat Apr 30, '16	Wed Jun 8, '16
59	VO49 additional 3 nos. tee-off pipes at CHSP3-560 issued on 14 Aug 15	1 day	Fri Aug 14, '15	Fri Aug 14, '15
60	VO49 materials production, IIB, insulation layer and delivery to site	110 days	Sat Aug 15, '15	Wed Dec 2, '15
61	VO49 trench excavation	10 days	Sat Apr 9, '16	Mon Apr 18, '16
62	VO49 pipe laying for 3 nos. CWP	84 days	Thu Jun 9, '16	Wed Aug 31, '16
63	VO49 trench backfilling	15 days	Thu Sep 1, '16	Thu Sep 15, '16
64	Construct CLP tunnel by CLP Portion A3-A5	260 days	Fri Jan 2, '15	Fri Sep 18, '15
65	Deliver DCS materials batch no. 4	60 days	Mon Apr 13, '15	Thu Jun 11, '15
66	Trench excavation for 4 nos. seawater pipes and 1 no. DN500 CWP CHSP3-590 to 730	20 days	Tue Aug 25, '15	Sun Sep 13, '15
67	Laying miradrain and steel plate above KTT (addition works)	25 days	Mon Sep 14, '15	Thu Oct 8, '15
68	Pipe laying for 4 nos. seawater pipes and 1 no. DN500 CWP CHSP3-590 to 730	70 days	Fri Oct 9, '15	Thu Dec 17, '15
69	Concrete surround (addition works) and laying steel plate above KTT	100 days	Fri Dec 18, '15	Sat Mar 26, '16
70	Deliver DCS materials batch no. 4	60 days	Fri Jan 2, '15	Mon Mar 2, '15
71	Trench excavation for 2 nos. DN1000 CWP CHSP3-590 to 730	10 days	Fri Jan 8, '16	Sun Jan 17, '16
72	Laying miradrain and steel plate above KTT (addition works)	15 days	Mon Jan 18, '16	Mon Feb 1, '16
73	Pipe laying for 2 nos. DN1000 CWP CHSP3-590 to 730	55 days	Tue Feb 2, '16	Sun Mar 27, '16
74	Concrete surround (addition works) and laying steel plate above KTT	15 days	Mon Mar 28, '16	Mon Apr 11, '16
75	VO58 additional 2 nos. tee-off pipes at CHSP3-720, issued on 17 Aug 15, materials provided by client	1 day	Mon Aug 17, '15	Mon Aug 17, '15
76	Installation of sheetpiles and excavation works	50 days	Wed Feb 24, '16	Wed Apr 13, '16
77	VO58 tee-off laying works	140 days	Thu Apr 14, '16	Wed Aug 31, '16
78	Trench backfilling	10 days	Thu Sep 1, '16	Sat Sep 10, '16
79	Installation of wailing for CHSP3-730 to 830	35 days	Sat Mar 7, '15	Fri Apr 10, '15
80	Installation of wailing and excavation for CHSP3-730 to 830	80 days	Sat Apr 11, '15	Mon Jun 29, '15
81	Construct DCS system at CHSP3-730 to 830	130 days	Tue Jun 30, '15	Fri Nov 6, '15
82	Trench backfilling at CHSP3-730 to 830	9 days	Sat Nov 7, '15	Sun Nov 15, '15
83	Cable duct block by CLP	110 days	Thu Nov 19, '15	Mon Mar 7, '16
84	Construct tee-off gate valve chambers (S-2D1)	140 days	Tue Mar 8, '16	Mon Jul 25, '16
85	Construct bend block concrete at CHSP3-730 to 830	37 days	Tue Jul 26, '16	Wed Aug 31, '16
86	Trench backfilling at CHSP3-750-770	10 days	Thu Sep 1, '16	Sat Sep 10, '16
87	Construct CLP tunnel by CLP Portion F2a	215 days	Wed Jul 16, '14	Sun Feb 15, '15
88	Deliver DCS materials batch no. 5	60 days	Wed Apr 8, '15	Sat Jun 6, '15
89	Installation of sheetpiling for CHSP3-830 to 930	30 days	Mon Jun 1, '15	Tue Jun 30, '15
90	Installation of wailing and excavation for CHSP3-830 to 930	50 days	Wed Jul 1, '15	Wed Aug 19, '15
91	Construct DCS system at CHSP3-830 to 930	100 days	Thu Aug 20, '15	Fri Nov 27, '15
92	Trench backfilling at CHSP3-830 to 930	40 days	Sat Nov 28, '15	Wed Jan 6, '16
93	DCS pipe laying works and construct tee-off gate valve chambers (S-2D1L)	84 days	Wed Jun 8, '16	Tue Aug 30, '16
94	Delivery of optical fibers	50 days	Wed Jul 27, '16	Wed Sep 14, '16
95	Construction of cable ducts and drawpits	50 days	Fri Jul 22, '16	Fri Sep 9, '16
96	Laying and testing optical fibers	20 days	Thu Sep 15, '16	Tue Oct 4, '16
97	Interfacing works with EMSD 1020EM12A Contractor for connection of the proposed four seawater pipes and three chilled water pipes in Section C to their construction of seawater pipes and chilled water pipes	120 days	Thu May 29, '14	Thu Sep 25, '14
98	CCTV for DCS pipes	100 days	Sun May 22, '16	Mon Aug 29, '16
99	Swabbing, pressure test and chemical test for DCS Pipes	60 days	Thu Sep 1, '16	Sun Oct 30, '16

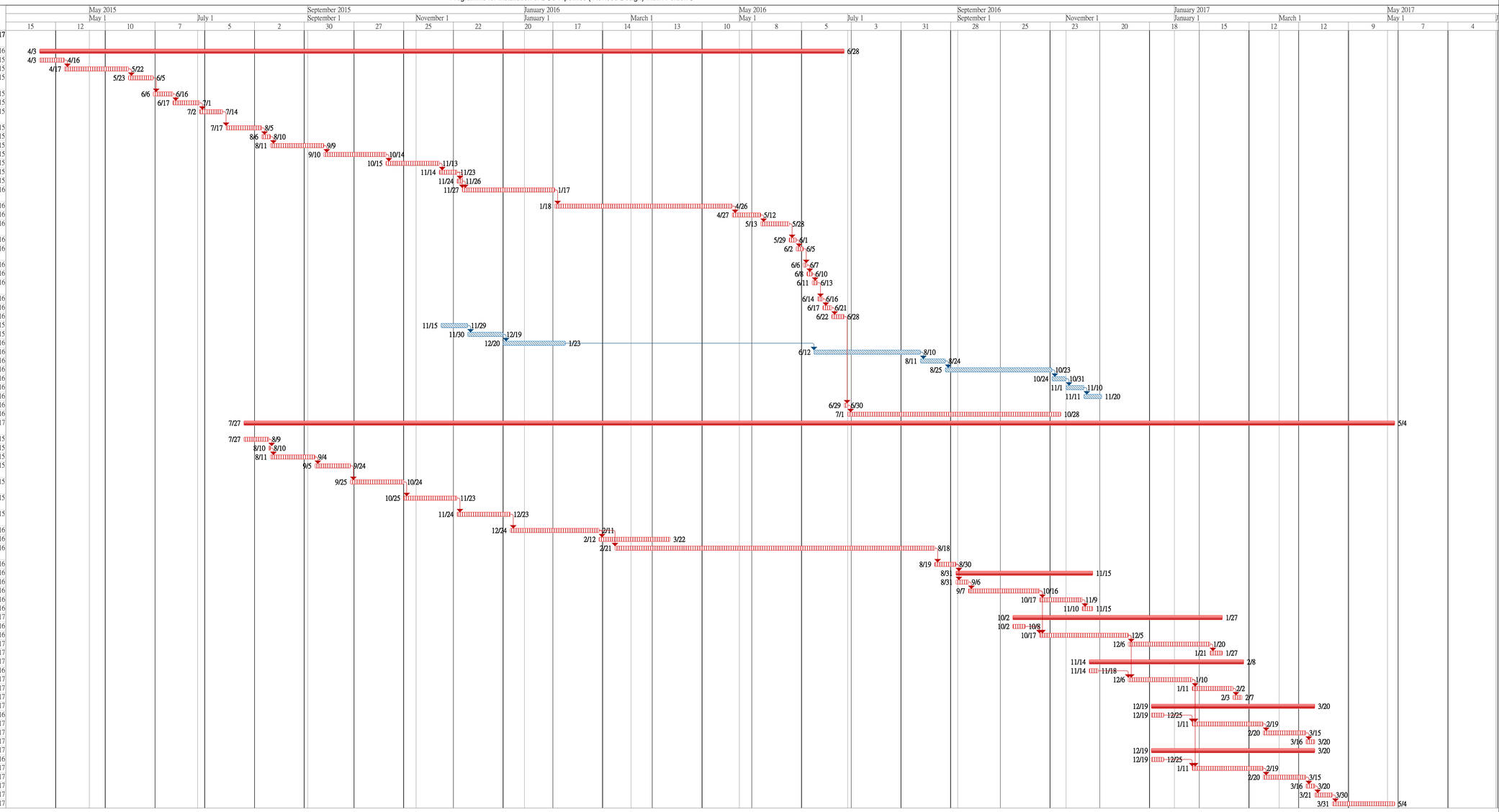


Critical tasks | Non-critical tasks | Working days | Inactive Milestone | Inactive Summary | Manual Task | Duration-only | Manual Summary Rollup | Manual Summary | Start-only | Finish-only | External Tasks | External Milestone

Updated on 29 July 2016

Programme for Installation of DCS Pipelines (Revised Design) within Portion 3

ID	Task Name	Duration	Start	Finish
1	**Section 7B: Open Cut Section and Heading Section**	**763 days**	**Fri Apr 3, '15**	**Thu May 4, '17**
2	**Western Approach**	453 days	Fri Apr 3, '15	Tue Jun 28, '16
3	Submission for temporary ELS system and approval	14 days	Fri Apr 3, '15	Thu Apr 16, '15
4	Install sheet piles at formation level	36 days	Fri Apr 17, '15	Fri May 22, '15
5	Submission for revised temporary ELS system and approval	14 days	Sat May 23, '15	Fri Jun 5, '15
6	Install waling	11 days	Sat Jun 6, '15	Tue Jun 16, '15
7	Install strut	15 days	Wed Jun 17, '15	Wed Jul 1, '15
8	Trench excavation down to 2m and 8m long for drilling horizontal pipe-piles	13 days	Thu Jul 2, '15	Tue Jul 14, '15
9	Submission for heading method	20 days	Fri Jul 17, '15	Wed Aug 5, '15
10	Comment on heading method	5 days	Thu Aug 6, '15	Mon Aug 10, '15
11	Mobilization and set up for drilling works	30 days	Tue Aug 11, '15	Wed Sep 9, '15
12	Drilling for 219 dia. pipe-piles	35 days	Thu Sep 10, '15	Wed Oct 14, '15
13	Review design for heading method	30 days	Thu Oct 15, '15	Fri Nov 13, '15
14	Grout trial to obtain design parameter	10 days	Sat Nov 14, '15	Mon Nov 23, '15
15	Update method statement for heading method	3 days	Tue Nov 24, '15	Thu Nov 26, '15
16	Upon grout trial successful, proceed with drilling for all grout holes and grouting	52 days	Fri Nov 27, '15	Sun Jan 17, '16
17	Rectification of existing ELS system	100 days	Mon Jan 18, '16	Tue Apr 26, '16
18	Release of suspension of works order	16 days	Wed Apr 27, '16	Thu May 12, '16
19	Fixing bottom layer reinforcement bar (Additional works - no steel bar shown on original design)	16 days	Fri May 13, '16	Sat May 28, '16
20	Concreting up to bottom level of sleeve pipe	4 days	Sun May 29, '16	Wed Jun 1, '16
21	Install 1 no. DN2800 dia sleeve pipe and 4 nos. DN2100 dia. Sleeve pipe	4 days	Thu Jun 2, '16	Sun Jun 5, '16
22	Concreting up to middle level of sleeve pipe	2 days	Mon Jun 6, '16	Tue Jun 7, '16
23	Concreting up to top level of sleeve pipe	3 days	Wed Jun 8, '16	Fri Jun 10, '16
24	Fixing top layer reinforcement bar (Additional works - no steel bar shown on original design)	3 days	Sat Jun 11, '16	Mon Jun 13, '16
25	Concreting up to final level of concrete surround	3 days	Tue Jun 14, '16	Thu Jun 16, '16
26	Backfilling and remove stage 1 strut and waling	5 days	Fri Jun 17, '16	Tue Jun 21, '16
27	Remove sheetpiles and filling the gap	7 days	Wed Jun 22, '16	Tue Jun 28, '16
28	Grade 400 rock fill (additional works)	15 days	Sun Nov 15, '15	Sun Nov 29, '15
29	Blinding layer for PJ-N-02	20 days	Mon Nov 30, '15	Sat Dec 19, '15
30	Construct base slab of PJ-N-02	35 days	Sun Dec 20, '15	Sat Jan 23, '16
31	Construct wall of PJ-N-02 up to +3mPD	60 days	Sun Jun 12, '16	Wed Aug 10, '16
32	Soil Backfilling up to +2.8mPD	14 days	Thu Aug 11, '16	Wed Aug 24, '16
33	Construct top slab of PJ-N-02	60 days	Thu Aug 25, '16	Sun Oct 23, '16
34	Soil Backfilling up to formation level	8 days	Mon Oct 24, '16	Mon Oct 31, '16
35	Remove strut and waling	10 days	Tue Nov 1, '16	Thu Nov 10, '16
36	Remove sheetpiles and filling the gap	10 days	Fri Nov 11, '16	Sun Nov 20, '16
37	Hand back the site to CCC's	2 days	Wed Jun 29, '16	Thu Jun 30, '16
38	Construction of remaining box culvert by CCC's.	120 days	Fri Jul 1, '16	Fri Oct 28, '16
39	**Section 7B: Open-cut Section & Heading from Eastern Approach**	648 days	Mon Jul 27, '15	Thu May 4, '17
40	Submission for temporary ELS system and approval	14 days	Mon Jul 27, '15	Sun Aug 9, '15
41	Site possession	1 day	Mon Aug 10, '15	Mon Aug 10, '15
42	Install sheet piles	25 days	Tue Aug 11, '15	Fri Sep 4, '15
43	Install 1st layer waling and strut and excavate to 2nd layer	20 days	Sat Sep 5, '15	Thu Sep 24, '15
44	Install 2nd layer waling and strut and excavate to 3rd layer	30 days	Fri Sep 25, '15	Sat Oct 24, '15
45	Install 3rd layer waling and strut and excavate to 4th layer	30 days	Sun Oct 25, '15	Mon Nov 23, '15
46	Install 4th layer waling and strut and excavate to formation level	30 days	Tue Nov 24, '15	Wed Dec 23, '15
47	Drilling for 50 dia. grout holes at 2 layers and grouting	50 days	Thu Dec 24, '15	Thu Feb 11, '16
48	Strengthening existing ELS system	40 days	Fri Feb 12, '16	Tue Mar 22, '16
49	Preparation of method statement for hand-shield construction and approval	180 days	Sun Feb 21, '16	Thu Aug 18, '16
50	Mobilize equipment & materials	12 days	Fri Aug 19, '16	Tue Aug 30, '16
51	**Pipeline 1 - DN2100**	77 days	Wed Aug 31, '16	Tue Nov 15, '16
52	Ground treatment works	7 days	Wed Aug 31, '16	Tue Sep 6, '16
53	Pipe jacking	40 days	Wed Sep 7, '16	Sun Oct 16, '16
54	DN1400 installation works	24 days	Mon Oct 17, '16	Wed Nov 9, '16
55	Annulus grout	6 days	Thu Nov 10, '16	Tue Nov 15, '16
56	**Pipeline 5 - DN2800**	118 days	Sun Oct 2, '16	Fri Jan 27, '17
57	Ground treatment works	7 days	Sun Oct 2, '16	Sat Oct 8, '16
58	Pipe jacking	50 days	Mon Oct 17, '16	Mon Dec 5, '16
59	CWP installation works	46 days	Tue Dec 6, '16	Fri Jan 20, '17
60	Annulus grout	7 days	Sat Jan 21, '17	Fri Jan 27, '17
61	**Pipeline 3 - DN2100**	87 days	Mon Nov 14, '16	Wed Feb 8, '17
62	Ground treatment works	5 days	Mon Nov 14, '16	Fri Nov 18, '16
63	Pipe jacking	36 days	Tue Dec 6, '16	Tue Jan 10, '17
64	DN1400 installation works	23 days	Wed Jan 11, '17	Thu Feb 2, '17
65	Annulus grout	5 days	Fri Feb 3, '17	Tue Feb 7, '17
66	**Pipeline 2 - DN2100**	92 days	Mon Dec 19, '16	Mon Mar 20, '17
67	Ground treatment works	7 days	Mon Dec 19, '16	Sun Dec 25, '16
68	Pipe jacking	40 days	Wed Jan 11, '17	Sun Feb 19, '17
69	DN1400 installation works	24 days	Mon Feb 20, '17	Wed Mar 15, '17
70	Annulus grout	5 days	Thu Mar 16, '17	Mon Mar 20, '17
71	**Pipeline 4 - DN2100**	92 days	Mon Dec 19, '16	Mon Mar 20, '17
72	Ground treatment works	7 days	Mon Dec 19, '16	Sun Dec 25, '16
73	Pipe jacking	40 days	Wed Jan 11, '17	Sun Feb 19, '17
74	DN1400 installation works	24 days	Mon Feb 20, '17	Wed Mar 15, '17
75	Annulus grout	5 days	Thu Mar 16, '17	Mon Mar 20, '17
76	Removal of plant	10 days	Tue Mar 21, '17	Thu Mar 30, '17
77	Backfilling and removal ELS system	35 days	Fri Mar 31, '17	Thu May 4, '17

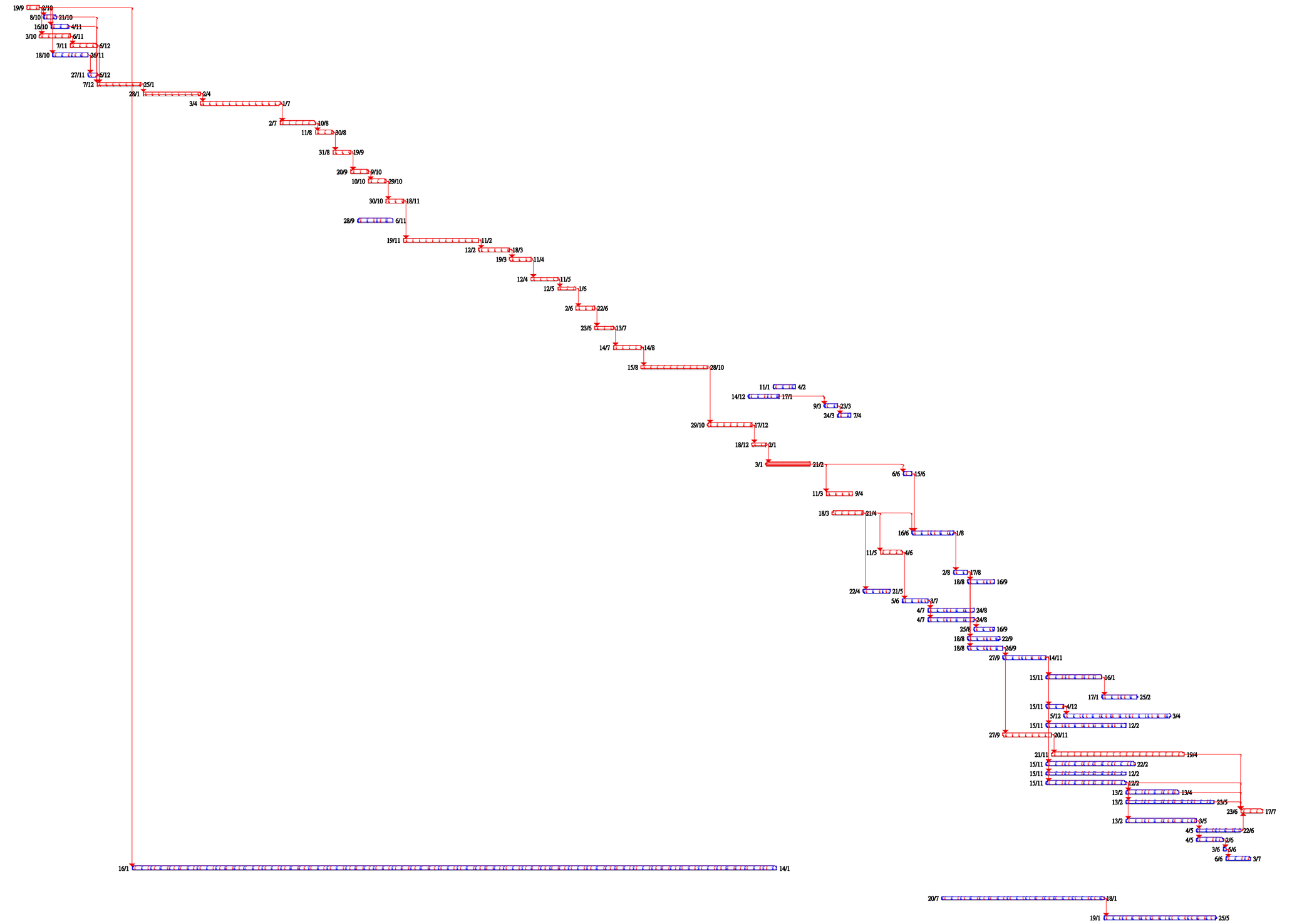


Site Activity

Updated on 29 July 2016

Master Programme

ID	Task Name	Duration	Start	Finish
1	**Commence KL/2012/03 construction**	**1398 days**	**Thu 19/9/13**	**Mon 17/7/17**
2	**Section 1: Works within Portion 1 and 3**	**1345 days**	**Thu 19/9/13**	**Thu 25/5/17**
3	**Construction of Sewerage Pumping Station PS2**	1345 days	Thu 19/9/13	Thu 25/5/17
4	Site possession and preparation works	14 days	Thu 19/9/13	Wed 2/10/13
5	Site clearance and setting out pumping station	14 days	Tue 8/10/13	Mon 21/10/13
6	Initial survey	20 days	Wed 16/10/13	Mon 4/11/13
7	Submission of baseline monitoring for EPD approval	35 days	Thu 3/10/13	Wed 6/11/13
8	Approval of baseline monitoring by EPD	30 days	Thu 7/11/13	Fri 6/12/13
9	Submission / approval of method statements and temporary works design	40 days	Fri 18/10/13	Tue 26/11/13
10	Mobilization of plant and delivery of materials	10 days	Wed 27/11/13	Fri 6/12/13
11	Construct sheet piling system	50 days	Sat 7/12/13	Sat 25/1/14
12	Install waling and strut, excavation to -1 mPD	65 days	Tue 28/1/14	Wed 2/4/14
13	Install waling and strut, excavation to the formation level	90 days	Thu 3/4/14	Tue 1/7/14
14	Construct the base slab	40 days	Wed 2/7/14	Sun 10/8/14
15	Construct 1st layer lower wall Grid C to D and Grid 2 to 5	20 days	Mon 11/8/14	Sat 30/8/14
16	Construct 1st layer lower wall Grid E to H and Grid 2 to 4	20 days	Sun 31/8/14	Fri 19/9/14
17	Construct the remaining base slab	20 days	Sat 20/9/14	Thu 9/10/14
18	Construct 1 st layer lower wall Grid D to E and Grid 2 to 3	20 days	Fri 10/10/14	Wed 29/10/14
19	Construct 1st layer lower wall Grid D to E and Grid 3 to 5	20 days	Thu 30/10/14	Tue 18/11/14
20	Submission of ICE design for removal of 1st and 2nd layers of waling and strut	40 days	Sun 28/9/14	Thu 6/11/14
21	Backfilling behind the wall up to -1.3mPD	85 days	Wed 19/11/14	Wed 11/2/15
22	Removal of 2nd layer of waling and struts	35 days	Thu 12/2/15	Wed 18/3/15
23	Construct 2nd layer lower wall Grid E to H and Grid 2 to 4	24 days	Thu 19/3/15	Sat 11/4/15
24	Removal of 2nd and 3rd layer of waling and struts	30 days	Sun 12/4/15	Mon 11/5/15
25	Construct 2nd layer lower wall Grid D to E and Grid 2 to 3	21 days	Tue 12/5/15	Mon 1/6/15
26	Construct 2nd layer lower wall Grid D to E and Grid 3 to 5	21 days	Tue 2/6/15	Mon 22/6/15
27	Construct 2nd layer lower wall Grid C to D and Grid 2 to 5	21 days	Tue 23/6/15	Mon 13/7/15
28	Remove 1st layer waling and struts and then remove sheetpiles	32 days	Tue 14/7/15	Fri 14/8/15
29	Construct ground floor slab except ground slab above intake and overflow pipe	75 days	Sat 15/8/15	Wed 28/10/15
30	Install rising main CHA0-CHA15	25 days	Mon 11/1/16	Thu 4/2/16
31	Construct intake pipes	35 days	Mon 14/12/15	Sun 17/1/16
32	Construct overflow pipes	15 days	Wed 9/3/16	Wed 23/3/16
33	Construct remaining ground slab	15 days	Thu 24/3/16	Thu 7/4/16
34	Construct wall, column, beam and roof Grid A to E and 1 to 2 and A to C and 2 to 5	50 days	Thu 29/10/15	Thu 17/12/15
35	Construct wall, column, beam and roof Grid C to E and 2 to 5	16 days	Fri 18/12/15	Sat 2/1/16
36	Revoking SN's	50 days	Sun 3/1/16	Sun 21/2/16
37	Water tightness test for lower roof at transformer room at Grid D to E and 1 to 2	10 days	Mon 6/6/16	Wed 15/6/16
38	Construct wall, column, beam and roof Grid C to D and 2 to 5	30 days	Fri 11/3/16	Sat 9/4/16
39	Construct wall, column, beam and roof Grid D to E and 2 to 5	35 days	Fri 18/3/16	Thu 21/4/16
40	Construct double roof Grid A to E and 1 to 2 and A to C and 2 to 5	47 days	Thu 16/6/16	Mon 1/8/16
41	Construct wall, column, beam and roof Grid E to H and 1 to 5	25 days	Wed 11/5/16	Sat 4/6/16
42	Construct Double slab & fence wall	16 days	Tue 2/8/16	Wed 17/8/16
43	Construct roof plinth & fence wall	30 days	Thu 18/8/16	Fri 16/9/16
44	Construct corbel C to D	30 days	Fri 22/4/16	Sat 21/5/16
45	Construct corbel E to F	29 days	Sun 5/6/16	Sun 3/7/16
46	Construct plinth DO room	52 days	Mon 4/7/16	Wed 24/8/16
47	Construct plinth screen room	52 days	Mon 4/7/16	Wed 24/8/16
48	Construct plinth room for water booster system	23 days	Thu 25/8/16	Fri 16/9/16
49	Staircase No.2 at Dry Well	36 days	Thu 18/8/16	Thu 22/9/16
50	Working platform at wet well, drt well, screen channel	40 days	Thu 18/8/16	Mon 26/9/16
51	Follow up defect works before architecural finish & mobilization	49 days	Tue 27/9/16	Mon 14/11/16
52	Water tightness test for inlet chamber, screen channel and wet wells	63 days	Tue 15/11/16	Mon 16/1/17
53	Install protective liner at the retaining structure	40 days	Tue 17/1/17	Sat 25/2/17
54	Water tightness test for upper roof at transformer room	20 days	Tue 15/11/16	Sun 4/12/16
55	Construct green roof system	120 days	Mon 5/12/16	Mon 3/4/17
56	Architectural finishes (internal)	90 days	Tue 15/11/16	Sun 12/2/17
57	Submission of method statement and preparation works for erection of cladding	55 days	Tue 27/9/16	Sun 20/11/16
58	Erect cladding (external)	150 days	Mon 21/11/16	Wed 19/4/17
59	Erect door, roller shutter etc.	100 days	Tue 15/11/16	Wed 22/2/17
60	Erect handrailing, louvre etc.	90 days	Tue 15/11/16	Sun 12/2/17
61	Construct storm drain and manholes	90 days	Tue 15/11/16	Sun 12/2/17
62	Construct cable ducts and draw pits for PCCW	60 days	Mon 13/2/17	Thu 13/4/17
63	Construct u-channel with cover along access road	100 days	Mon 13/2/17	Tue 23/5/17
64	Construct access road inside PS	25 days	Fri 23/6/17	Mon 17/7/17
65	Erect fence wall and mini bollard light	80 days	Mon 13/2/17	Wed 3/5/17
66	Erect vehicular and man access	50 days	Thu 4/5/17	Thu 22/6/17
67	Plants delivery for landscaping works	30 days	Thu 4/5/17	Fri 2/6/17
68	Hydroseeding	3 days	Sat 3/6/17	Mon 5/6/17
69	Tree and shurb planting	28 days	Tue 6/6/17	Mon 3/7/17
70	Submission / approval of E&M services materials and delivery (Detailed programme will be submitted separately)	729 days	Thu 16/1/14	Thu 14/1/16
71	E&M building service installation. (Detailed programme will be submitted separately)	183 days	Wed 20/7/16	Wed 18/1/17
72	E&M building service testing & comissioning. (Detailed programme will be submitted separately)	127 days	Thu 19/1/17	Thu 25/5/17



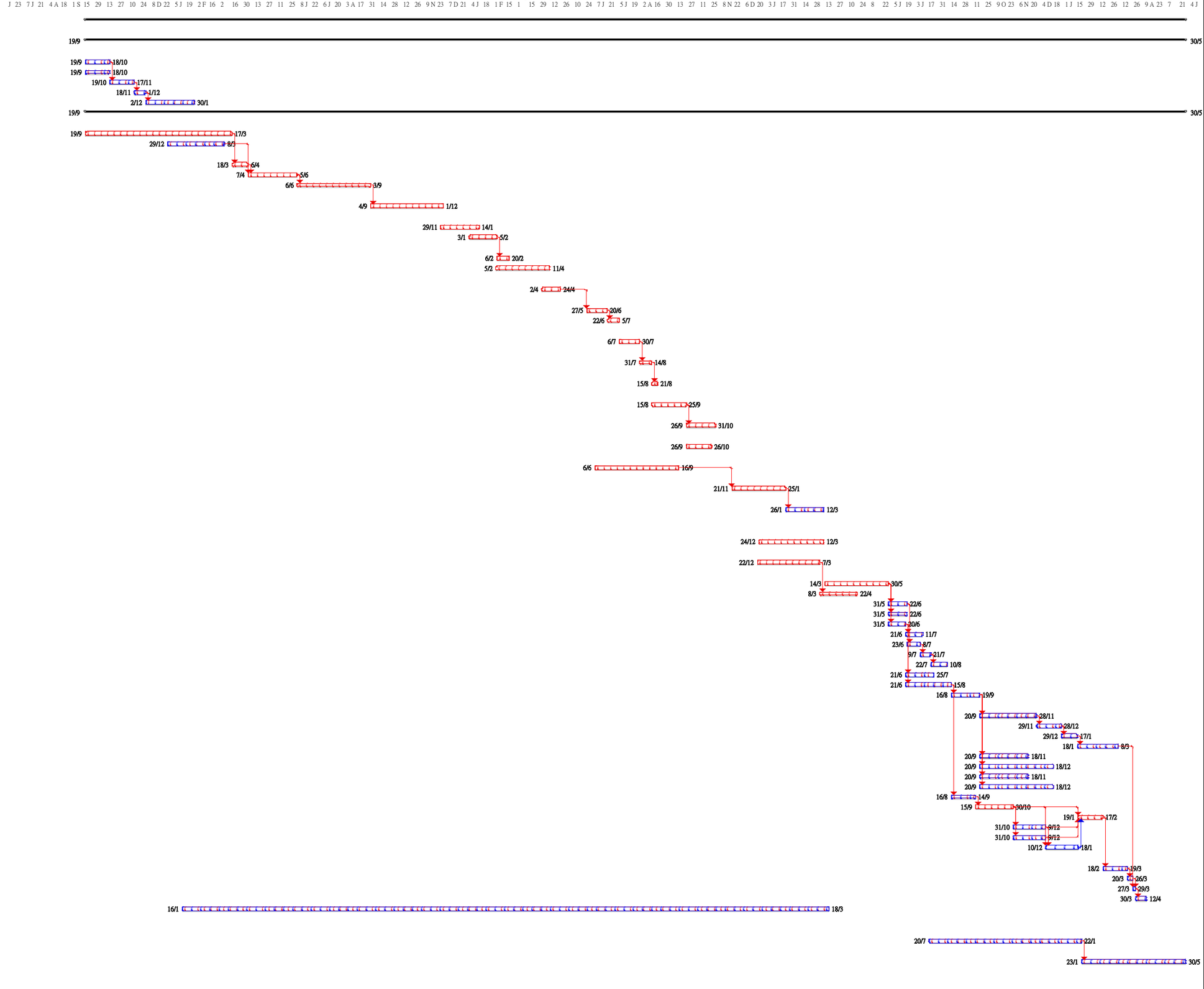
Critical tasks Non-critical tasks Working days

Commencement Date: 19 September 2013
Completion Date: 2 September 2016
Revised Completion Date: 25 May 2017

updated on 20 July 2016

Master Programme

ID	Task Name	Duration	Start	Finish	Predecessors
1	**Commence KL/2012/03 construction**	**1350 days**	**Thu 19/9/13**	**Tue 30/5/17**	
2	Commence KL/2012/03 construction	0 days	Thu 19/9/13	Thu 19/9/13	
3	**Section 2: Works within Portion 1 and 4**	**1350 days**	**Thu 19/9/13**	**Tue 30/5/17**	
4	Setting out site boundary	30 days	Thu 19/9/13	Fri 18/10/13	
5	Obtain underground utilities plans	30 days	Thu 19/9/13	Fri 18/10/13	
6	Site clearance	30 days	Sat 19/10/13	Sun 17/11/13	4
7	Initial survey	14 days	Mon 18/11/13	Sun 1/12/13	6
8	Erect hoarding, chain link fence and vehicular gate	60 days	Mon 2/12/13	Thu 30/1/14	7
9	**Construction of sewerage pumping station NPS**	**1350 days**	**Thu 19/9/13**	**Tue 30/5/17**	
10	Site Possession	180 days	Thu 19/9/13	Mon 17/3/14	
11	Submission / approval of method statements and temporary work design	70 days	Sun 29/12/13	Sat 8/3/14	
12	Mobilization	20 days	Tue 18/3/14	Sun 6/4/14	10
13	Construct sheet piling system	60 days	Mon 7/4/14	Thu 5/6/14	12,11
14	Install waling and strut, excavation to the formation level (1st and 2nd layers)	90 days	Fri 6/6/14	Wed 3/9/14	13
15	Install waling and strut, excavation to the formation level (3rd layer)	89 days	Thu 4/9/14	Mon 1/12/14	14
16	Construct the base slab	47 days	Sat 29/11/14	Wed 14/1/15	
17	Construct the external and internal wall Grid E to G and Grid 2 to 3 up to -1.25 mPD	34 days	Sat 3/1/15	Thu 5/2/15	
18	Backfilling works behind completed base slab and wall	15 days	Fri 6/2/15	Fri 20/2/15	17
19	Construct the external wall Grid C to E and Grid 2 to 4 up to -0.95 mPD	66 days	Thu 5/2/15	Sat 11/4/15	
20	Construct the external wall Grid C to E and Grid 1 to 2 up to -0.95 mPD	23 days	Thu 2/4/15	Fri 24/4/15	
21	Construct the internal wall Grid D to E up to -0.95 mPD	25 days	Wed 27/5/15	Sat 20/6/15	20
22	Backfilling works behind constructed wall and remove 2nd layer of waling and strut	14 days	Mon 22/6/15	Sun 5/7/15	21
23	Construct the external wall Grid C to E and Grid 2 to 4 up to +2.25 mPD	25 days	Mon 6/7/15	Thu 30/7/15	
24	Construct the external wall Grid C to E and Grid 1 to 2 up to +2..25 mPD	15 days	Fri 31/7/15	Fri 14/8/15	23
25	Construct the internal wall Grid D to E up to +2.25 mPD	7 days	Sat 15/8/15	Fri 21/8/15	24
26	Backfilling works behind constructed wall and remove 1st layer of waling and strut and sheetpiles	42 days	Sat 15/8/15	Fri 25/9/15	
27	Construct the external and internal wall Grid A to E and Grid 1 to 2 up to +4.7 mPD	36 days	Sat 26/9/15	Sat 31/10/15	26
28	Construct the external and internal wall Grid A to E and Grid 2 to 4 up to +4.7 mPD	31 days	Sat 26/9/15	Mon 26/10/15	
29	Construct the external and internal wall Grid E to G and Grid 2 to 3 up to +4.7 mPD	103 days	Sat 6/6/15	Wed 16/9/15	
30	Construct upper wall and column up to beam level Grid A to C and 1 to 5	66 days	Sat 21/11/15	Mon 25/1/16	29
31	Construct the beam and roof Grid A to C and 1 to 5, Only double ceiling will be divided into two layers for construction	47 days	Tue 26/1/16	Sat 12/3/16	30
32	Construct upper wall and column up to beam level Grid E to G and 1 to 5	80 days	Thu 24/12/15	Sat 12/3/16	
33	Construct upper wall and column up to beam level Grid C to E and 1 to 5	77 days	Tue 22/12/15	Mon 7/3/16	
34	Construct the beam and roof Grid E to G and 1 to 5	78 days	Mon 14/3/16	Mon 30/5/16	
35	Construct the beam and roof Grid C to E and 1 to 5	46 days	Tue 8/3/16	Fri 22/4/16	33
36	Construct roof plinth and fence wall	23 days	Tue 31/5/16	Wed 22/6/16	34
37	Construct ventilation house	23 days	Tue 31/5/16	Wed 22/6/16	34
38	Construct corbel Grid Cto D	21 days	Tue 31/5/16	Mon 20/6/16	34
39	Construct corbel Grid E to F	21 days	Tue 21/6/16	Mon 11/7/16	38
40	Construct Plinth DO room 1	16 days	Thu 23/6/16	Fri 8/7/16	36
41	Construct Plinth DO room 2	13 days	Sat 9/7/16	Thu 21/7/16	40
42	Construct Plinth Room for waterbooster system	20 days	Fri 22/7/16	Wed 10/8/16	41
43	Staircase No1 at Dry Well	35 days	Tue 21/6/16	Mon 25/7/16	38
44	Working plantform at Wet well, Dry weel, screen channel	56 days	Tue 21/6/16	Mon 15/8/16	38
45	Follow up defect works before arcectural finish works & mobilization	35 days	Tue 16/8/16	Mon 19/9/16	44
46	Water tightness test for retaining structure	70 days	Tue 20/9/16	Mon 28/11/16	45
47	Install protective liner at the retaining structure	30 days	Tue 29/11/16	Wed 28/12/16	46
48	Water tightness test for the double ceiling	20 days	Thu 29/12/16	Tue 17/1/17	47
49	Establishment of green roof system	50 days	Wed 18/1/17	Wed 8/3/17	48
50	Architectural finishes (internal)	60 days	Tue 20/9/16	Fri 18/11/16	45
51	Erect granite tile	90 days	Tue 20/9/16	Sun 18/12/16	45
52	Erect louvre and door	60 days	Tue 20/9/16	Fri 18/11/16	45
53	Erect handrailing and roller shutter etc.	90 days	Tue 20/9/16	Sun 18/12/16	45
54	Install rising main	30 days	Tue 16/8/16	Wed 14/9/16	44
55	Construct sewerage, drainage drain and manhole	46 days	Thu 15/9/16	Sun 30/10/16	54
56	Construct assess road	30 days	Thu 19/1/17	Fri 17/2/17	59,55,58,57
57	Construct cable ducts and draw pits for PCCW and CLP	40 days	Mon 31/10/16	Fri 9/12/16	55
58	Construct u-channel with cover along access road	40 days	Mon 31/10/16	Fri 9/12/16	55
59	Erect vehicular and man access and mini bollard light	40 days	Sat 10/12/16	Wed 18/1/17	55,58,57
60	Plants delivery for landscaping works	30 days	Sat 18/2/17	Sun 19/3/17	56
61	Preparatory works for landscaping works	7 days	Mon 20/3/17	Sun 26/3/17	60
62	Hydroseeding	3 days	Mon 27/3/17	Wed 29/3/17	61,49
63	Tree and shurb planting	14 days	Thu 30/3/17	Wed 12/4/17	62
64	Submission / approval of E&M services materials and delivery (Detailed programme will be submitted separately)	793 days	Thu 16/1/14	Fri 18/3/16	
65	E&M building service installation. (Detailed programme will be submitted separately)	187 days	Wed 20/7/16	Sun 22/1/17	
66	E&M building service Testing & Commissioning (Detailed programme will be submitted separately)	128 days	Mon 23/1/17	Tue 30/5/17	65



Commencement Date: 19 September 2013
Completion Date: 5 May 2016
Revised Completion Date: 30 May 2017

updated on 20 July 2016