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Your ref: Our ref:

<u>By hand</u>

Chief Engineer /Project Management Water Supplies Department 46/F., Immigration Tower 7 Gloucester Road, Wanchai (Attn: Mr. H C Wong, Heinz)

12 June, 2020

Dear Sir,

In-Situ Reprovisioning of Sha Tin Water Treatment Works – South Works Environmental Permit EP-494/2015 Submission of 51st monthly EM&A Report

In accordance with the Condition 3.4 of the Environmental Permit (No. EP-494/2015), we submit herewith 5 hard copies and 2 electronic copies of the 51st monthly Environmental Monitoring and Audit (EM&A) Report (Rev.0) for your processing. I certified and confirmed the submission of this monthly EM&A Report had complied with the requirements as set out in the approved Environmental Monitoring and Audit (EM&A) Manual of the EIA Report (Register No.: AEIAR-187/2015).

Yours faithfully,

Ir Leung, Jacky, C. H. Environmental Team Leader

c.c. Independent Environmental Checker



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Your Ref: 60479142/C/fyw2006121

By Hand & By Email

Chief Engineer/Project Management Water Supplies Department 46/F., Immigration Tower 7 Gloucester Road, Wanchai

Attn: Mr. H C Wong, Heinz

12 June 2020

Dear Sir,

Contract No.3/WSD/15q In-situ reprovisioning of Sha Tin Water Treatment Works (South Works) Advance Works Submission of 51st Monthly EM&A Report for May 2020

Reference is made to Environmental Team (ET)'s 51st Monthly EM&A Report for May 2020 (Rev. 0) submitted on 12 June 2020.

In accordance with the Condition 3.4 of the Environmental Permit (No.EP-494/2015), I verified and confirmed the submission of this Monthly EM&A Monitoring Report as compiled with the requirements as set in the approved Environmental Monitoring and Audit (EM&A) Manual of the EIA Report (Register No.: AEIAR-187/2015).

Should you have any queries, please feel free to contact the undersigned at 3922 9366.

Yours faithfully, AECOM Asia Co. Ltd.

Y W Fung Independent Environmental Checker

c.c. Environmental Team Leader



Water Supplies Department



MONTHLY ENVIRONMENTAL MONITORING AND AUDIT

(EM&A) REPORT (NO. 51)

FOR

CONTRACT NO. 3/WSD/15 IN-SITU REPROVISIONING OF SHA TIN WATER TREATMENT WORKS – SOUTH WORKS

(**Rev. 0**)

MONTHLY ENVIRONMENTAL MONITORING AND AUDIT (EM&A) REPORT (NO. 51) –

FOR CONTRACT NO. 3/WSD/15 In-situ Reprovisioning of Sha Tin Water Treatment Works – South Works

	Name	Signature
Prepared by	Ms. Fung Jessica	Jessica FJ
Reviewed by	Mr. Wong, Vega, T. L.	Hop
Approved & Certified by	Ir Leung, Jacky, C. H. Environmental Team Leader (ETL)	
Verified & Confirmed by	Mr. Fung, Y. W. Independent Environmental Checker (IEC)	8

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EXECUTIVE SUMMARY

- A.1 Pursuant to the Environmental Impact Assessment (EIA) Ordinance, the Director of Environmental Protection (DEP) granted the Environmental Permit (No. EP- 494/2015) to the Water Supplies Department (WSD) to construct and operate the designated project for "In-situ Reprovisioning of Sha Tin Water Treatment Works - South Works" ("The Project").
- A.2 Under Contract No. 3/WSD/15, Ming Hing Ming Hing Civil Vasteam Joint Venture (MMVJV) is commissioned by WSD to undertake the construction of the advance works while AECOM Asia Company Limited was appointed by WSD as the Engineer. For implementation of the environmental monitoring and audit (EM&A) programme under the Contract, Acumen Environmental Engineering & Technologies Company Limited was appointed by MMVJV as the Environmental Team (ET). AECOM Asia Company Limited was also employed by the WSD as the Independent Environmental Checker (IEC).
- A.3 The construction phase of the Contract commenced on 30 October 2015 for completion by 2021. The impact monitoring of the EM&A programme, including air quality, noise, water quality monitoring as well as environmental site inspections, commenced on 17 February 2016.
- A.4 This is the 51st monthly Environmental Monitoring and Audit Report for this Contract covering the period from 1 May 2020 to 31 May 2020 (the Reporting Period). As informed by the Contractor, major activities in the reporting period included:
 - Architectural Builders Works and Finishes at Logistic Center
 - E&M, BS works at Logistic Center
 - Architectural Builders Works and Finishes at Alum Tank & Hydro Turbine House
 - E&M, BS works at Alum Tank & Hydro Turbine House
 - U-channel erection at North Circular Road
 - E&M works at Flowmeter house and valve chamber at M123
 - Backfilling on box culvert for construction of carriageway at South access entrance
- A.5 Environmental monitoring activities under the EM&A program in this reporting period are summarized below

Issues	Environmental Monitoring Parameters / Inspection	Occasions
Air	1-Hour TSP	18
Noise	L _{eq(30mins)} Daytime	6
Water Quality	Water Sampling	13
Inspection /	ET Regular Environmental Site Inspection	4
Audit	IEC Monthly Environmental Site Audit	1

- A.6 No exceedance of air quality, noise and water quality monitoring were recorded in this reporting period.
- A.7 No environmental complaint were received via EPD in this reporting period.
- A.8 No notification of any summons and successful prosecutions was received in this reporting period.
- A.9 No reporting change was made in this reporting period.
- A.10 There was no EPD site inspection conducted in the reporting period.

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- A.11 As informed by the Contractor, the major works for this Project in June 2020 will be:
 - Architectural Builders Works and Finishes at Logistic Center
 - E&M, BS works at Logistic Center
 - Architectural Builders Works and Finishes at Alum Tank & Hydro Turbine House
 - E&M, BS works at Alum Tank & Hydro Turbine House
 - U-channel erection at North Circular Road
 - E&M works at Flowmeter house and valve chamber at M123
 - Construction of new carriageway and associate work at South access entrance
- A.12 EM&A monitoring for the 51st reporting period has been completed. The 52nd monthly EM&A report will cover the period from 1 June 2020 to 30 June 2020.

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1. INTRODUCTION

1.1. PROJECT BACKGROUND

- 1.1.1 Pursuant to the Environmental Impact Assessment (EIA) Ordinance, the Director of Environmental Protection (DEP) granted the Environmental Permit (No. EP- 494/2015) on 28 January 2015, subsequent to approval of the EIA Report (Register No. AEIAR-187/2015), to the Water Supplies Department (WSD) to construct and operate the designated project for "In-situ Reprovisioning of Sha Tin Water Treatment Works South Works" ("The Project").
- 1.1.2 Under Contract No. 3/WSD/15, Ming Hing Ming Hing Civil Vasteam Joint Venture (MMVJV) is commissioned by WSD to undertake the construction of the advance works while AECOM Asia Company Limited was appointed by WSD as the Engineer. For implementation of the environmental monitoring and audit (EM&A) programme under the Contract, Acumen Environmental Engineering & Technologies Company Limited was appointed by MMVJV as the Environmental Team (ET). AECOM Asia Company Limited was also employed by the WSD as the Independent Environmental Checker (IEC).
- 1.1.3 The construction phase of the Contract commenced on 30 October 2015 for completion by 28 January 2021. The general layout plan of the Contract components is presented in **Appendix A**.
- 1.1.4 ET conducted below baseline monitoring at designated locations according to the EM&A Manual.
 Air quality and noise: from 21 December 2015 to 3 January 2016.
 Water quality: from 15 December 2015 to 8 January 2016.
- 1.1.5 Baseline Monitoring Report was issued by the ET and verified by the IEC on 27 January 2016 and submitted to the EPD on 2 February 2016.
- 1.1.6 The impact monitoring of the EM&A programme, including air quality, noise, water quality monitoring as well as environmental site inspections, commenced on 17 February 2016.

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1.2. ORGANIZATION STRUCTURE

1.2.1 The organization structure of the Contract is shown in **Appendix B**. Contact details of key personnel are summarized in below table:

Party	Position	Name	Telephone
Water Supplies	Engineer / Project	Mr. Chiu, Aletta C. M.	2829 5653
Department	Management		
AECOM	Senior Resident Engineer	Mr. Ng, Derek, K. H.	9717 1420
	(Civil)		
	Independent	Mr. Fung, Y. W.	3922 9366
	Environmental Checker		
	Deputy Independent	Ms. Lam, Lemon, M.	3922 9381
	Environmental Checker	C.	
Ming Hing - Ming	Project Manager	Mr. Lam, Larry, M. W.	6478 0501
Hing Civil - Vasteam	Site Agent	Mr. To, Eros, W. H.	9223 9590
Joint Venture			
Acumen Env. Eng. &	Project Director	Ir Dr. Lam, Gabriel, C.	2333 6823
Tech. Co. Ltd.		К.	
	Environmental Team	Ir Leung, Jacky, C. H.	9060 2368
	Leader		
	Ecologist	Mr. Liu, Vincent, W. L.	6505 5827

Table 1-1: Key Personnel Contact for Environmental Works

1.3. SCOPE OF REPORT

- 1.3.1 This is the 51st monthly EM&A Report under the Contract No. 3/WSD/15 In-situ Reprovisioning of Sha Tin Water Treatment Works (South Works) Advance Works covering the period from 1 May 2020 to 31 May 2020 (the reporting period).
- 1.3.2 The EM&A requirements for impact monitoring are set out in the approved EM&A Manual. Environmental aspects such as the construction air quality, noise, water quality and ecology were identified as the key issues during the construction phase of the Project.

1.4. SUMMARY OF CONSTRUCTION WORKS

- 1.4.1 The construction phase of the Contract commenced on 30 October 2015. Latest construction programmes is shown in **Appendix C**.
- 1.4.2 As informed by the Contractor, details of the major works carried out in this reporting month are listed below:
 - Architectural Builders Works and Finishes at Logistic Center
 - E&M, BS works at Logistic Center
 - Architectural Builders Works and Finishes at Alum Tank & Hydro Turbine House
 - E&M, BS works at Alum Tank & Hydro Turbine House
 - U-channel erection at North Circular Road
 - E&M works at Flowmeter house and valve chamber at M123
 - Backfilling on box culvert for construction of carriageway at South access entrance
- 1.4.3 The locations of the construction activities are shown in **Appendix D**. The Environmental Sensitive Receivers in the vicinity of the Project are shown in **Appendix E**.

2. EM&A RESULTS

2.1. EM&A BACKGROUND

2.1.1 The EM&A programme required environmental monitoring for air quality, noise, water quality and ecology as well as environmental site inspections for air quality, noise, water quality, waste management and ecology impacts. The EM&A requirements and related findings for each component are summarized in the following sections. A summary of impact monitoring programme is presented in Table 2-1.

Impact Monitoring	Sampling Parameter	Frequency
Air Quality	1-hour TSP	3 times in every 6 days when documented and valid complaint was received
Noise	$L_{eq 30 min}$, $L_{eq 5 min}$, L_{10} and L_{90} as reference.	 1 time per week: ♦ L_{eq 30 min} for normal weekdays from 0700 - 1900;
Water Quality	Duplicate in-situ measurements: Dissolved Oxygen (DO), Turbidity and pH; HOKLAS-accredited laboratory analysis: Suspended Solids (SS).	3 days per week. The interval between 2 monitoring days will be more than 36 hours.
Ecology	-	A detailed at least 6 years post-planting monitoring and maintenance programme

Table 2-1: Summary of Impact Monitoring Programme

Remark: Sampling Depth for Water Quality:

- (*i*) 3 depths: 1m below water surface, 1m above bottom and at mid-depth when the water depth exceeds 6m.
- (ii) If the water depth is between 3m and 6m, 2 depths: 1m below water surface and 1m above bottom.
- (iii) If the water depth is less than 3m, 1 sample at mid-depth is taken
- 2.1.2 A summary of the monitoring parameters is presented in Table 2-2.

Table 2-2: Summary of the monitoring parameters of EM&A Requirements

Environmental Issue	Parameter			
Air Quality	• 1-hour TSP Monitoring by Real-Time Portable Dust Meter			
Noise	• L _{eq (30min)} during normal working hours			
Water Quality	In-situ measurement Dissolved Oxygen (mg/L); Dissolved Oxygen Saturation (%); Turbidity (NTU); pH value; Water depth (m); and Temperature (°C) Laboratory analysis Suspended Solids (mg/L)			

- 2.1.3 Summary of determination of Action/Limit (A/L) Levels for air quality, noise and water quality are presented in **Appendix F**.
- 2.1.4 Should non-compliance of the environmental quality criteria occurs, remedial actions will be triggered according to the Event and Action Plan enclosed in **Appendix G**.
- 2.1.5 The impact monitoring schedules are presented in **Appendix H** and the monitoring results are detailed in the following sub-sections.

2.2. AIR QUALITY MONITORING

- 2.2.1 Impact monitoring for air quality had been carried out in accordance with Sections 2.29 of the approved EM&A Manual to determine the ambient 1-hour total suspended particulates (TSP) levels at the monitoring locations. 1-hour TSP sampling should be undertaken at least 3 times in every six-days at each monitoring station when the highest dust impacts are expected. General meteorological conditions (wind speed, direction and precipitation) and notes regarding any significant adjacent dust producing sources had also been recorded throughout the impact monitoring period.
- 2.2.2 Two (2) designated monitoring stations, AM1 located at the L Louey and AM2 located at Hin Keng Estate Hin Wan House, were recommended in Section 2.18 of the approved EM&A Manual. In order to identify and seek for the access of the air monitoring locations designated in the EM&A Manual, site visit was conducted among ET, IEC and EPD.
- 2.2.3 During the site visit, all designated air monitoring locations were identified. Details of air monitoring stations are described in Table 2-3. The location plan of air quality monitoring stations is shown in **Appendix I**.

Air Quality Monitoring Station	Air Sensitive Receiver (ASR) ID in the approved EIA Report	Dust Monitoring Station
AM1	ASR2	The L Louey (at a platform level of about 5m above road level nearby)
AM2	ASR4	Hin Keng Estate - Hin Wan House (at the roof top)

Table 2-3: Location of the Air Quality Monitoring Stations

2.2.4 The monitoring equipment using for the air quality impact monitoring was proposed by ET and verified by IEC. 1-hour TSP levels had been measured with direct reading dust meter. It has been demonstrated its capability in achieving comparable results with high volume sampling method as set out in the Title 40 of the Code of Federal Regulations, Chapter 1 (Part 50). The details of equipment using for impact monitoring are listed in Table 2-4 as below.

Table 2-4: Air Quality Impact Monitoring Equipment

Equipment	Model
Portable dust meter – 1-hour TSP	Sensidyne Model 80570
Portable Wind Speed Indicator	The Kestrel Pocket Weather Meter

- 2.2.5 The 1-hour TSP meter provides a real time 1-hour TSP measurement based on 90° light scattering. The 1-hour TSP monitor consists of the following:
 - A pump to draw sample aerosol through the optic chamber where TSP is measured;
 - A sheath air system to isolate the aerosol in the chamber to keep the optics clean for maximum reliability; and

- A built-in data logger compatible with based program to facilitate data collection, analysis and reporting.
- 2.2.6 The 1-hour TSP meter was calibrated by the manufacturer prior to purchasing. Zero response of the instrument was checked before and after each monitoring event. Operation of the 1-hour TSP meter followed manufacturer's Operation and Service Manual. A valid calibration certificate is attached in **Appendix J**.
- 2.2.7 In this Reporting Period, a total of six (6) sampling days perform air quality monitoring at the two designated locations. The results for 1-hour TSP are summarized in Table 2-5 and Table 2-6.

	1-hour TSP (µg/m ³)					
Date	Weather	Start	End	1 st	2^{nd}	3 rd
		Time	Time	Measurement	Measurement	Measurement
4/5/2020	Cloudy	14:16	17:16	80	72	79
8/5/2020	Fine	14:42	17:42	63	69	72
13/5/2020	Fine	10:19	13:19	60	59	70
18/5/2020	Cloudy	11:16	14:16	71	79	82
22/5/220	Fine	11:38	14:38	58	62	69
27/5/2020	Sunny	15:33	18:33	51	63	68
	Average				68.2	
	Range				51 – 82	

Table 2-5: Summary of 1-hour TSP Monitoring Results – AM1

Table 2-6: Summary of 1-hour TSP Monitoring Results – AM2

1-hour TSP (μg/m ³)			• (μg/m ³)			
Date	Weather	Start Time	End Time	1 st Measurement	2 nd Measurement	3 rd Measurement
4/5/2020	Cloudy	13:59	16:59	73	85	70
8/5/2020	Fine	14:22	17:22	69	72	81
13/5/2020	Fine	10:05	13:05	59	68	61
18/5/2020	Cloudy	11:02	14:02	62	73	71
22/5/220	Fine	11:19	14:19	69	66	76
27/5/2020	Sunny	15:21	18:21	55	63	61
	Average				68.6	•
	Range				55 – 85	

2.2.8 In this Reporting Month, all monitoring result were below the action level. Hence, no Action or Limit Level exceedance was triggered during this month. The impact air quality monitoring results and graphical presentation are shown in **Appendix K**.

2.3. Noise Monitoring

- 2.3.1 Impact monitoring for noise levels had been measured in accordance with Sections 3.13 of approved EM&A Manual on normal weekdays at a frequency of once a week at logging interval of 30 minutes for daytime (between 0700 and 1900 hours of normal weekdays). The L_{eq} had been recorded at the specified intervals. The non-project related construction activity Sha Tin to Central Link (SCL) for Hin Keng to Diamond Hill Tunnel, in the vicinity of the monitoring stations during the impact monitoring had been noted and the source and location of this activity had been recorded.
- 2.3.2 According to Section 3.7 of the approved EM&A Manual, 3 noise sensitive receivers designated for the construction noise monitoring. The designated monitoring stations are identified and successfully granted by the premises. The details of noise monitoring stations are described in Table 2-7 and the location plan of noise monitoring stations is shown in **Appendix L**.

Noise Monitoring Station	Noise Sensitive Receiver (NSR) ID in the approved EIA Report	Identified Noise Monitoring Station
		The L Louey (South)
NM1	HK2	(at a platform level of
1 1 1 1 1		about 5m above road level nearby
		- free field measurement)
		Hin Keng Estate –
NM2	HK5	Hin Wan House
		(at the roof level - facade measurement)
	HK7	C.U.H.K.F.A.A.
NM3		Thomas Cheung School
		(at the roof level - free field measurement)

Table 2-7: Details of Noise Monitoring Stations

2.3.3 The monitoring equipment using for the noise impact monitoring was proposed by ET and verified by IEC. Sound level meter in compliance with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications has been used for carrying out the noise monitoring. The sound level meter has been checked using an acoustic calibrator. The wind speed has been checked with a portable wind speed meter capable of measuring the wind speed in m/s. The details of equipment using for impact monitoring are listed in Table 2-8 as below.

Table 2-8: Noise Impact Monitoring Equipment

Noise	
Sound Level Meter	NTi Audio XL2
Acoustic Calibrator	Rion NC-74
Portable Wind Speed Indicator	The Kestrel Pocket Weather Meter

- 2.3.4 All noise measurements were the meter set to FAST response and on the A-weighted equivalent continuous sound pressure level (L_{eq}).
- 2.3.5 Prior to the impact noise measurement, the accuracy of the sound level meter was checked using an acoustic calibrator generating a known sound pressure level at a known frequency. Regular checking

In-situ Reprovisioning of Sha Tin Water Treatment Works - South Works

was conducted in impact monitoring period. The calibration level before and after the noise measurement is agreed to within 1.0 dB.

- 2.3.6 An acoustic calibrator and sound level meter using impact monitoring is within the valid period and were calibrated per year. A set of valid calibration certificates is attached in **Appendix M**.
- 2.3.7 Noise measurements should not be made in presence of fog, rain, wind with a steady speed exceeding 5 ms⁻¹ or wind with gusts exceeding 10 ms⁻¹. The wind speed was checked with a portable wind speed meter capable of measuring with speeds in ms⁻¹.
- 2.3.8 In this Reporting Period, a total six (6) occasions noise monitoring was undertaken in Reporting period. The noise monitoring results at the designated locations are summarized in Tables 2-9 to 2-11.

Dete	D•	W41	1 st	2^{nd}	3 rd	4 th	5 th	6 th	T
Date	Time	Weather	Leq _{5min}	Leq _{30min}					
4/5/2020	14:20 - 14:50	Cloudy	50.3	50.8	51.4	51.9	52.2	51.6	51.4
8/5/2020	14:45 - 15:15	Fine	51.3	50.9	51.1	51.6	52.3	52.0	51.6
13/5/2020	10:22 - 10:52	Fine	51.7	51.1	50.4	51.7	50.1	50.3	50.9
18/5/2020	11:19 - 11:49	Cloudy	53.0	53.1	53.8	52.9	53.8	54.6	53.6
22/5/220	11:42 - 12:12	Fine	51.2	51.5	52.7	52.5	51.2	49.7	51.6
27/5/2020	15:37 - 16:07	Sunny	50.2	51.6	50.9	51.3	52.0	52.6	51.5
								Average	51.8
Limit Level	>75dB(A)							Range	50.9 -
									53.6

Table 2-9: Summary of Noise Monitoring Results - NM1

Date	Time	Weather	1 st	2 nd	3 rd	4 th	5 th	6 th	Log
Date	Time	weather	Leq _{5min}	Leq _{30min}					
4/5/2020	14:59 - 15:29	Cloudy	52.6	52.9	53.1	53.8	52.1	52.9	52.9
8/5/2020	15:28 - 15:58	Fine	51.6	51.7	52.5	51.5	52.8	53.3	52.3
13/5/2020	11:05 - 11:35	Fine	52.8	52.6	53.1	53.5	52.1	52.8	52.8
18/5/2020	12:09 - 12:39	Cloudy	51.1	51.6	52.8	52.5	53.0	53.4	52.5
22/5/220	12:28 - 12:58	Fine	54.1	54.6	54.8	55.5	54.7	55.9	55.0
27/5/2020	16:20 - 16:50	Sunny	55.3	54.2	54.9	55.6	56.1	56.8	55.6
								Average	53.7
Limit Level	>75dB(A)							Range	52.3 -
									55.6

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Dete	Time	Weether	1 st	2^{nd}	3 rd	4 th	5 th	6 th	Lag
Date	Time	Weather	Leq _{5min}	Leq _{30min}					
4/5/2020	15:43 - 16:13	Cloudy	52.3	51.8	51.9	52.9	53.2	53.0	52.6
8/5/2020	16:12 - 16:42	Fine	51.3	51.0	50.5	50.8	50.0	50.6	50.7
13/5/2020	11:49 - 12:19	Fine	52.0	52.9	51.7	51.0	51.5	51.9	51.9
18/5/2020	12:48 - 13:18	Cloudy	50.4	50.9	51.8	51.4	51.9	51.0	51.3
22/5/220	13:13 - 13:43	Fine	51.7	50.6	51.1	50.8	51.4	51.9	51.3
27/5/2020	17:03 - 17:33	Sunny	51.4	51.7	51.7	52.6	50.9	51.5	51.7
Limit Level 70dB(A) during normal teaching periods							Average	51.6	
							Range	50.7 -	
or 65dB(A)	or 65dB(A) during examination periods								52.6

Table 2-11: Summary	of Noise	Monitoring	Results – NM3
	01 1 10150	monne	Results 141415

2.3.9 As shown in the results were well below the limit level, also no complaint was received by the RE, WSD, EPD and contractor. Hence, no Action or Limit Level exceedance was triggered during this month. The impact noise quality monitoring results and graphical presentation are shown in **Appendix** N.

2.4. WATER QUALITY MONITORING

- 2.4.1 Water Impact monitoring had been taken three days per week with sampling or measurement in accordance with Sections 4.12 of the approved EM&A Manual at all designated monitoring stations in the 2 water courses. The interval between 2 sets of monitoring had been more than 36 hours. Replicate in-situ measures had been carried out in each sampling event.
- 2.4.2 Three (3) control and two (2) impact stations were recommended in the Section 4.7 of the approved EM&A Manual to carry out water quality monitoring. In order to identify and seek for the access of the water monitoring locations designated in the approved EM&A Manual, site visit was conducted among ET, IEC and Environmental Protection Department (EPD).
- 2.4.3 During the site visit, all designated monitoring locations were identified however one more impact stations (M3) along the same water course was introduced due to the concern on multiple site effect, in particular to address the potential impact to M2 from a source at upstream of the water course. Details and coordinates of the monitoring stations are described in Table 2-12 and the location plan of water quality monitoring stations is shown in **Appendix O**.

Water Quality	Decorintion	Co-ordinates		
Monitoring Station	Description	Easting	Northing	
C1		835110	824716	
C2	Control Stations	835403	824470	
C3		835642	824386	
M1	Immed	835215	824827	
M2	Impact Monitoring Stations	835536	824775	
M3	Wolltoning Stations	835501	824648	

Table 2-12: Details of Water Quality Monitoring Station

2.4.4 The water monitoring equipment and analysis using for the water quality monitoring were proposed by ET and verified by IEC. The details of equipment using for impact monitoring are listed in the Table 2-13 below:

Water quality					
YSI ProDSS Multi Parameters	YSI ProDSS Multi Parameters/ Horiba Multi Water Quality Checker U-53				
Thermometer & DO meter	The instrument is a portable and weatherproof dissolved oxygen (DO) measuring instrument complete with cable and sensor, and use a DC power source. The equipment is capable of measuring as included a DO level in the range of $0 - 20 \text{mg/L}$ and $0 - 200\%$ saturation; and a temperature of $0 - 45^{\circ}$ C.				
pH meter	The instrument consists of a potentiometer, a glass electrode, a reference electrode and a temperature-compensating device. It is readable to 0.1 pH in range of 0 to 14.				
Turbidmeter	The instrument is a portable and weatherproof turbidity measuring instrument using a DC power source. It has a photoelectric sensor capable of measuring turbidity between 0 - 1000 NTU.				
Laboratory Analysis					
Suspended Solids	HOKLAS-accredited laboratory (Acumen Laboratory and Testing Limited)				

Table 2-13: Monitoring Equipment Used in Impact Monitoring Program

Remark:

(i) Water samples for suspended solids (SS) have been stored in high density polythene bottles with no preservative added, packed in ice (cooled to 4°C without being frozen).

- 2.4.5 Before the commencement of the sampling, general information such as the date and time of sampling as well as the personnel responsible for monitoring were recorded on the monitoring field data sheet.
- 2.4.6 Water temperature, turbidity, DO, pH and water depth were measured in-situ. Since water depths at C1, C2, M1, M2 and M3 were less than 3 m, all in-situ measurements and sampling conducted at one water depth such as mid-depth are performed. Moreover, C3 was recorded dry throughout the sampling period. Therefore, in-situ measurements and sampling could not be conducted at C3 in accordance with the water monitoring requirements in the approved EM&A Manual.
- 2.4.7 At each sampling point, (two) 2 consecutive measurements of temperature, DO, turbidity and pH were measured. The Multi-Parameter Water Quality Monitoring Probe were retrieved out of the water after the first measurement and then re-deployed for the second measurement. Where the difference in the value between the first and second readings of each set was more than 25% of the value of the first reading, the reading was discarded and further readings were taken. The certification of the Multi-parameter Water Quality Monitoring System is showed in **Appendix P**.
- 2.4.8 All water samples were delivered to the Acumen Laboratory and Testing Limited (HOKLAS registration no.: 241). SS testing was used HOKLAS accredited Analytical method APHA 2540 D. The certification of laboratory with HOKLAS accredited analytical tests are provided in **Appendix Q**.
- 2.4.9 In this reporting period, a total of thirteen (13) sampling days perform water monitoring at the six designated locations. Monitoring results of 4 key parameters: dissolved oxygen (DO), turbidity, suspended solids and pH in this Reporting Months, are summarized in Table 2-14.

Table 2-14: Summary of Water Quality Monitoring Results						
Dissolved Oxygen – Mid Depth (mg/L)	C1	C2	C3	M1	M2	M3
Average	8.49	8.52	N/A	9.10	9.21	9.40
Min.	8.21	8.26	N/A	8.95	9.02	9.21
Max.	8.76	8.82	N/A	9.30	9.34	9.60
Turbidity – Mid Depth (NTU)	C1	C2	C3	M1	M2	M3
Average	2.49	2.57	N/A	2.08	1.68	0.55
Min.	2.30	2.40	N/A	1.80	1.40	0.30
Max.	2.80	2.80	N/A	2.30	2.00	0.80
Suspended Solid – Mid depth (mg/L)	C1	C2	С3	M1	M2	M3
Average	3.35	3.37	N/A	2.64	4.06	<1
Min.	2.70	2.60	N/A	1.80	3.30	<1
Max.	4.00	4.20	N/A	3.20	5.40	<1
pH value (unit)	C1	C2	C3	M1	M2	M3
Average	7.48	7.54	N/A	7.75	7.78	7.67
Min.	7.24	7.21	N/A	7.60	7.63	7.55
Max	7.73	7.88	N/A	7.87	7.89	7.77

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2.4.10 In this Reporting Month, all monitoring result were below or within the action level. Hence, no Action or Limit Level exceedance was triggered during this month. Detailed monitoring results including insitu measurements, laboratory analysis data are shown in Appendix R.

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2.5. ECOLOGY

- 2.5.1 Detailed Vegetation Survey Report and Woodland Compensation Plan submitted to EPD and approved on 17 February 2016. To ensure the planting works are properly implemented, bi-weekly monitoring is proposed throughout the planting phase. The frequency of monitoring is proposed to be bi-monthly during the first years of the planting stage, and then reduced to quarterly for the six (6) year post-planting period.
- 2.5.2 A 6 years post-planting review report will be submitted within a month after completion of the at least 6 years post-planting monitoring and maintenance.
- 2.5.3 Monitoring inspections were conducted on 25 May 2020.
- 2.5.4 Three trees TA572, TA326 and TA327 were transplanted to tree compensation area within the Sha Tin Water Treatment Works (STWTW) in 20 June 2016.
- 2.5.5 The condition of TA572 was observed in poor condition due to the damage of two main trunks. TA327 was also in poor condition. The already dead tree TA326 collapsed due to big hit by the Signal No.10 typhoon Mangkhut on 16 September 2018. Tree guying cables have been installed to provide external support to the remaining two transplanted trees. Transplanted Lamb of Tartary (Cibotium barometz) seems to be received too much sunlight. Leaves of them were observed yellowish in colour. On the other hand, young foliage was growing out to replace the old one.
- 2.5.6 Since Sha Tin South Fresh Water Service Reservoir (STSFWSR) was still under preparation, Lamb of Tartary was still temporally stored in a nursery garden at Wang Toi Shan, Kam Tin.
- 2.5.7 In general, all transplanted Lamb of Tartary (Cibotium barometz) were in fair condition while Hong Kong Eagle's Claw (Artabotrys hongkongensis) was observed dead during inspection on 20 August 2016. The survival rate for Lamb of Tartary (Cibotium barometz) and Hong Kong Eagle's Claw (Artabotrys hongkongensis) was 96%. The Summary table for health condition and survival rate was shown in Appendix II.
- 2.5.8 All transplanted Lamb of Tartary (Cibotium barometz) have been severely damaged by Typhon Wipha on 30-31 July 2019; the next few monitoring will be critical to assess their survival and recovery progress.
- 2.5.9 It is recommended to retain transplanted Lamb of Tartary (Cibotium barometz) at the nursery garden under proper maintenance during current recovery stage. Once their condition has recovered to acceptable level, they can be moved to the transplantation site at Sha Tin South Fresh Water Service Reservoir (STSFWSR) when the site is ready.

2.5.10 After transplantation, root ball of TA572 and TA327 tree should be kept moisture especially during non-raining day.

2.6. WASTE MANAGEMENT STATUS

- 2.6.1 The Contractor has submitted application form for registration as chemical waste producer under the Contract. Sufficient numbers of receptacles were available for general refuse collection and sorting. The Waste Producer Number to the Contractor is assigned in respect of the project site.
- 2.6.2 Wastes generated during this reporting period include mainly construction wastes (inert and non-inert). Waste flow table was prepared by the Contractor to record amount of waste generated and disposed (**Appendix T**).
- 2.6.3 The Contractor was advised to properly maintain on site C&D materials and waste collection, sorting and recording system, dispose of C&D materials and wastes at designated ground and maximize reuse/ recycle of C&D materials and wastes.
- 2.6.4 The Contractor was also reminded to properly maintain the site tidiness and dispose of the wastes accumulated on site regularly and properly. For chemical waste containers, the Contractor was reminded to treat properly and store temporarily in designated chemical waste storage area on site in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.

2.7. DELIVERY, STORAGE AND HANDLING OF CHLORINE

2.7.1 Chlorine is delivered to Sha Tin WTW in batches of up to 6×1-tonne drums. The transport route from Sham Shui Kok dock on North Lantau is shown in **Figure 1**. The route passes along the North Lantau

Expressway, around the northern edge of Tsing Yi, through Tsuen Wan and along Tai Po Road (Piper's Hill) to Sha Tin (Table 2-15).

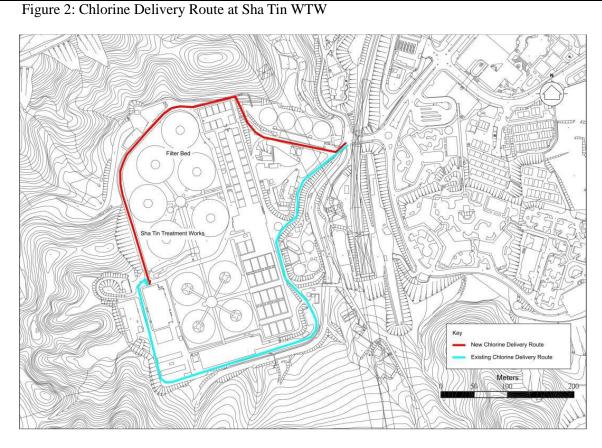


Figure 1: Chlorine Transport Route to Sha Tin Water Treatment Works

 Table 2-15: Chlorine Truck Transport Route

Destination	Koute
From SSK	Sham Shui Kok Dock > Cheung Tung Road > Sunny Bay Road > N Lantau Highway
Dock to Sha	> Lantau Link > NW Tsing Yi Interchange > Tsing Yi North Costal road > Tsing
Tin WTW	Tsuen Road > Tsuen Wan Road > Kwai Chung Road > Ching Cheung Road > Tai
	Po Road > Tai Po Road (Piper's Hill) > Tai Po Road (Sha Tin Heights) > Tai Po
	Road > Tsing Sha Highway (Sha Tin) > Tai Po Rd (Sha Tin) > Sha Tin Rural
	Committee Rd > Tai Chung Kiu Rd > Che Kung Miu Road > Sha Tin WTW

- 2.7.2 Unloading takes place inside the Chlorination House, with the doors closed, in a designated truck unloading bay. The movement of drums within the storage area and 'drive-through' unloading bay is carried out using a hoist/monorail system with a purpose-built lifting beam. Prior to usage, the drums are stored on cradles within the chlorine storage area.
- 2.7.3 The on-site chlorine delivery route is shown in Figure 2.



- 2.7.4 An emergency chlorine scrubbing system is installed to remove any leaked chlorine in the chlorine handling and storage areas. The system is a packed tower utilising sodium hydroxide as the neutralising agent. The plant and equipment are installed in a separate scrubber room.
- 2.7.5 On detection of chlorine at a concentration of 3 ppm or above in the chlorine handling or storage areas, the scrubbing system will activate automatically. The air/chlorine mixture in the affected areas is drawn into the scrubber by the scrubber fan via ducting connected to the normal ventilation system. An electrically-operated isolating damper is provided in the scrubber intake which opens automatically when the scrubber fan starts up.
- 2.7.6 The scrubber system is normally set at auto standby mode and is activated if the chlorine concentration rises above 3 ppm. A continuous chlorine monitor is installed at a point downstream of the packed tower and upstream of the vent/recycle changeover dampers to monitor the scrubber performance; a "Chlorine concentration high" alarm will be initiated if the concentration of chlorine in the tower exhaust exceeds the preset value.
- 2.7.7 According to the Fire Services Department's fire safety requirements, an emergency repair/stoppage kit for chlorine spillage/leakage is provided and maintained in good working condition at all times for use

by the trained persons and stowed adjacent to but outside the store/plant room. Regular drills are conducted to train personnel on the proper use of the breathing apparatus and protective clothing.

- 2.7.8 A Hazard Assessment of the risks associated with the storage, handling and transport of chlorine at Sha Tin WTW and the off-site transport of chlorine for the Construction and Operational Phases of the reprovisioning project has been conducted in the approved EIA Report (Register No. AEIAR-187/2015).
- 2.7.9 This In-situ Reprovisioning of Sha Tin WTW is an improvement project, following its completion the chlorine-related risks levels to the general public will be lowered due to the anticipated reduction of the chlorine storage and usage levels.
- 2.7.10 Implementation of the recommended mitigation measures would be regularly audited. No specific Environmental Monitoring would be required.

2.8. EM&A SITE INSPECTION

- 2.8.1 Site inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures under the Contract. In the reporting period, four (4) site inspections were carried out on 6, 13, 20, 27 May 2020.
- 2.8.2 One joint site inspection with IEC also undertaken on 13 May 2020. Minor deficiencies were observed during weekly site inspection or joint site inspection. Key observations during the site inspections are summarized in Table 2-16.

Date	Environmental Observations	Follow-up Status
6 May 2020	1. Chemical containers was observed stored without drip tray near Bar Bending Yard. The Contractor was reminded to provide a drip tray for chemicals.	1. Drip tray was provided.
13 May 2020	 Decolored NRMM label on cherry picker was observed at Logistic Center. The Contractor was reminded to replace the NRMM label. Chemicals were observed stored without drip tray at Wall C. The Contractor was reminded to provide drip tray for chemical storage. Stockpile at Wall C was found without proper cover. The Contractor was reminded to provide proper cover for stockpile. 	 NRMM label was replaced. Drip tray was provided. Stockpile were covered.
20 May 2020	No major observation.	NA
27 May 2020	1. Stockpile at Wall C was found without proper storage. The Contractor was reminded to store stockpile in designated area to avoid dusty material enter the drainage channel.	1. Stockpile was covered with impervious sheeting and stored in designated area.

Table 2-16: Site Observations

i. The Contractor has rectified all of the observations identified during environmental site inspections in the reporting period.

2.9. Environmental Licenses and Permits

2.9.1 The status of environmental license and permit is summarized in Table 2-17 below:

Table 2-17: Summary of Environmental License and Permit

License / Permit	License / Permit No.	Date of Issue	Date of Expiry	License / Permit Holder	Remark
Environmental Permit	EP- 494/2015	28/01/2015	N/A	WSD	
Registration of Chemical	WPN5218-759	31/12/2015	N/A	MMVJV	
Waste Producer	-M2936-01				
Trip Ticket (Chit) Account	7023723	10/12/2015	N/A	MMVJV	
Waste Water Discharge	WT0023932	01/04/2016	31/03/2021	MMVJV	
License (Wall C)	-2016				
Waste Water Discharge	WT0024211	10/06/2016	30/06/2021	MMVJV	
License (Wall D)	-2016				
Construction Noise Permit	GW-RN0159-20	13/03/2020	16/06/2020	MMVJV	

2.10. IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES

- 2.10.1 In response to the site audit findings, the Contractors carried out corrective actions. A summary of the environmental mitigation measures implemented by the Contractor in this Reporting Period are summarized in Table 2-18.
- 2.10.2 The environmental mitigation measures that recommended in the Implementation Schedule for Environmental Mitigation Measures (EMIS) in the approved EM&A Manual covered the issues of dust, noise, water and waste and they are showed **Appendix U**.

Issues	Environmental Mitigation Measures
	- Tarpaulin covering of any dusty materials on a vehicle leaving the site;
	- Imposition of speed controls for vehicles on site haul roads;
	- Use of regular watering to reduce dust emissions from exposed site
Air Quality	surfaces and roads;
All Quality	- Side enclosure and covering of any aggregate or stockpiling of dusty
	materials to reduce emissions;
	- Where possible, routing of vehicles and positioning of construction plant
	should be at the maximum possible distance from ASRs.
	- Good site practices to limit noise emissions at the sources;
	- Use of quite plant and working methods;
Noise	- Use of site hoarding or other mass materials as noise barrier to screen
INDISC	noise at ground level of NSRs;
	- Scheduling of construction works outside school examination period in
	critical area.
	- Drainage systems were regularly and adequately maintained;
Water	- Effluent discharged from the construction site should comply with
	standards stipulated in the TM-DSS;
	- Open stockpiles of construction materials on sites should be covered.
General	- The site was generally kept tidy and clean.

 Table 2-18: Environmental Mitigation Measures

2.10.3 The necessary mitigation measures were implemented properly for this Contract.

2.11. SUMMARY OF EXCEEDANCES OF THE ENVIRONMENTAL QUALITY PERFORMANCE LIMIT

- 2.11.1 Results for 1-hour TSP, noise and water quality monitoring complied with the Action/ Limit levels in the reporting period.
- 2.11.2 Cumulative statistics on exceedances is provided in Appendix V.

2.12. SUMMARY OF COMPLAINTS, NOTIFICATION OF SUMMONS AND PROSECUTIONS

2.12.1 The Environmental Complaint Handling Procedure is shown in below table:

Table 2-19: Environmental Complaint Handling Procedure

Complaint Received via	a Project	Complaint Received via 1823 or						
Hotline	5	from other government departments						
MMVJV notify ER, ET	and IEC	ER notify MMVJV, ET and IEC						
Register of the compla	int. MMVJV	and ET to conduct investigation of						
complaint and report to ER and IEC the investigation results								
If complaint is consider	ed not valid	If complaint is found valid						
ET or ER to reply the c	complainant	MMVJV to implement necessary						
if necessary		improvement measures in						
		consultation with the IEC, ET and						
		ER. ET to check and inspect if the						
		situation is improved. ER to						
		conduct further inspection as						
		necessary.						
		ER to report the follow up actions						
		done to WSD and reply to						
		complainant is necessary.						
		If the complaint is referred by the						
		EPD, the Contractor to prepare						
		interim report on the status of the						
		complaint investigation and follow-						
		up action						
ER prepare co	omplaint rep	ort for submission to WSD						
ET to record the	e complaint c	ase in monthly EM&A report						

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- 2.12.3 No notification of summons and prosecution was received in the reporting period.
- 2.12.4 No visit from EPD in the reporting period.
- 2.12.5 Statistics on complaints, notifications of summons and successful prosecutions are summarized in Appendix V.

2.13. DATA MANAGEMENT AND DATA QA/QC CONTROL

- 2.13.1 The impact monitoring data were handled by ET's in-house data recording and management system.
- 2.13.2 The monitoring data recorded in the equipment were downloaded directly from the equipment at the end of each monitoring day. The downloaded monitoring data were input into computerized database properly. The laboratory results were input directly into the computerized database and checked by personnel other than those who had input the data.
- 2.13.3 For monitoring parameters that require laboratory analysis, the local laboratory had followed the QA/QC requirements as set out under the HOKLAS scheme for the relevant laboratory testing.

3. FUTURE KEY ISSUES

3.1. CONSTRUCTION PROGRAMME FOR THE COMING MONTHS

- 3.1.1 As informed by the Contractor, the major works for this Project from June 2020 to August 2020 will be:
 - Architectural Builders Works and Finishes at Logistic Center
 - E&M, BS works at Logistic Center
 - Architectural Builders Works and Finishes at Alum Tank & Hydro Turbine House
 - E&M, BS works at Alum Tank & Hydro Turbine House
 - U-channel erection at North Circular Road
 - E&M works at Flowmeter house and valve chamber at M123
 - Construction of new carriageway and associate work at South access entrance

3.2. KEY ISSUES FOR COMING MONTH

- 3.2.1 Potential environmental impacts arising from the above upcoming construction activities in June 2020 are mainly associated with dust, noise, water quality issues and waste management issues.
- 3.2.2 Particular issues to be considered in the coming month include:
 - Architectural Builders Works and Finishes at Logistic Center
 - E&M, BS works at Logistic Center
 - Architectural Builders Works and Finishes at Alum Tank & Hydro Turbine House
 - E&M, BS works at Alum Tank & Hydro Turbine House
 - U-channel erection at North Circular Road
 - E&M works at Flowmeter house and valve chamber at M123
 - Construction of new carriageway and associate work at South access entrance
- 3.2.2 The tentative monitoring schedule for June 2020 to August 2020 can be found in Appendix W.

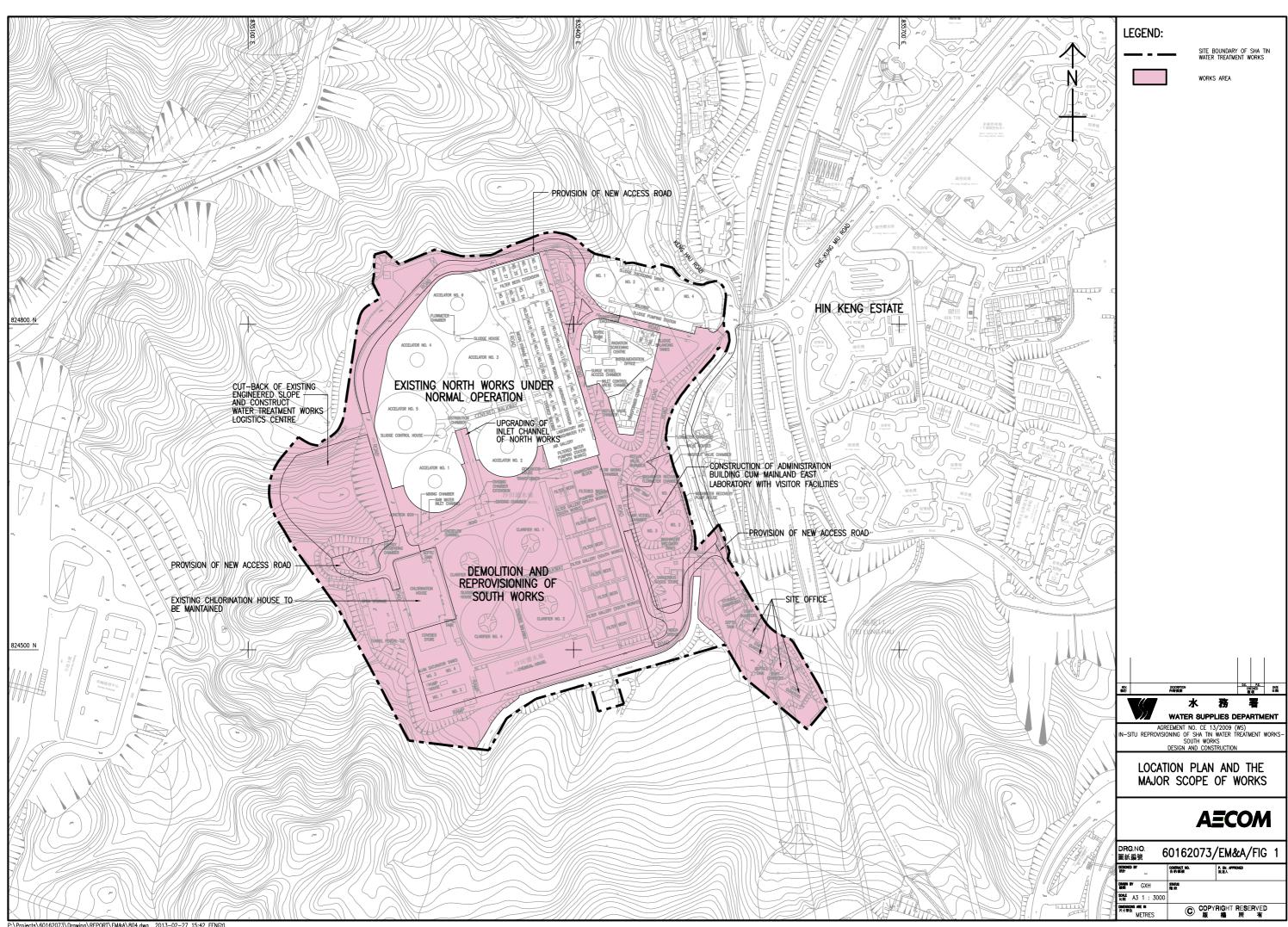
4. CONCLUSIONS AND RECOMMENDATIONS

4.1. SUMMARY

- 4.1.1 Air quality (including 1-hour TSP), noise, water quality and ecology impact monitoring were carried out in the reporting period. All monitoring results are satisfactory and no NOEs or associated corrective action was therefore issued.
- 4.1.2 Four (4 nos.) environmental site inspection were conducted during the reporting period. Joint site inspection with IEC were carried out on 13 May 2020. Minor deficiencies were observed during site inspection and were rectified within the specified deadlines. The environmental performance of the Project was therefore considered satisfactory.
- 4.1.3 To control the site performance on waste management, the contractor shall ensure that all solid and liquid waste management works are fully in compliance with the relevant license/permit requirements, such as the effluent discharge licence and the chemical waste producer registration. Contractor is also reminded to implement the recommended environmental mitigation measures according to the Environmental Monitoring and Audit Manual.
- 4.1.4 No Environmental complaint were received in reporting period.
- 4.1.5 No notification of summons or prosecution was received since commencement of the Contract.
- 4.1.6 The ET will keep track on the construction works to confirm compliance of environmental requirements and the proper implementation of all necessary mitigation measures.

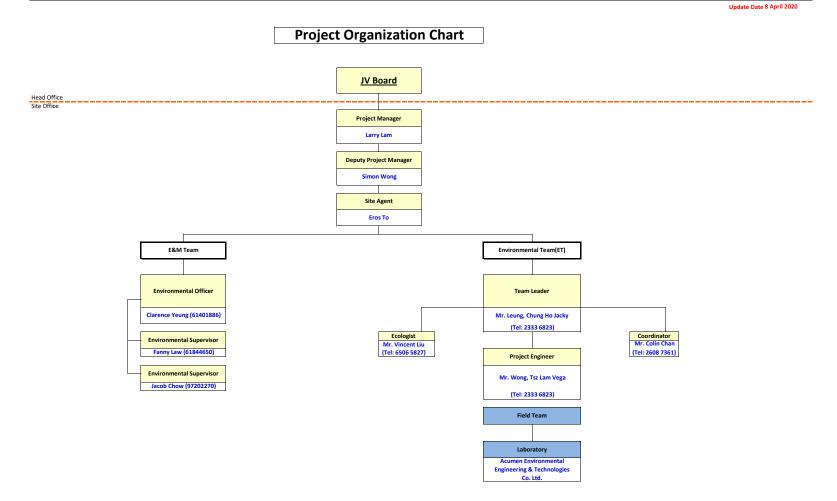
Appendix A General Layout Plan

Project no.: CJO-3113



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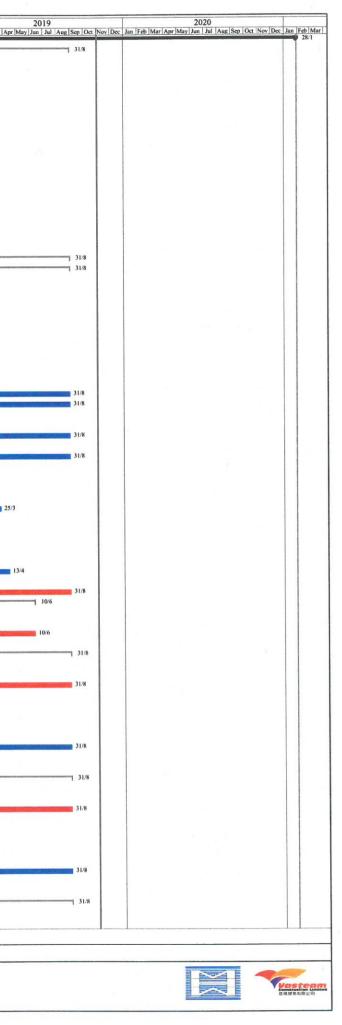
Appendix B Project Organization



Appendix C Latest Construction Programme

	ID	Task Name	Duration	Rev 9 Start	Rev 9 Finish	Sep Oct N	lov Dec	2016 an Feb Mar Apr May Jun Jul Aug Sep Oct Nov	2017 Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov D	2018 cc Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec	Jan Feb Mar
		3/WSD/15 Master Programme	1918 d	30/10/15	28/1/21	30/10					
-	P	Preliminary & Design Works	1402 d 1155 d	30/10/15	31/8/19 27/12/18	30/10					27/12
	P000 P000a	Preliminaries Works Office Setup	150 d	30/10/15		30/10		27/3			
	P000a P001	Temporary RE office	30 d	30/10/15		30/10	28/1				1
	P002	Renovation of RE office	150 d	30/10/15		30/10		27/3			1
	P003	Erection of site office	150 d	30/10/15		30/10	Constant of	27/3			1
3	P004	Wheels wash facilities	120 d	30/10/15		30/10		26/2			1
	P004a	Survey & Environmental	100 d	30/10/15		30/10		6/2			1
	P005	Initial survey	100 d	30/10/15		30/10		6/2			1
	P006	UU detection	100 d 78 d	30/10/15 30/10/15		30/10		15/1			
	P007	Tree and vegetation survey Tree and vegetation survey submission to EPD	0 d	15/1/16	15/1/16			15/1			
	P008 P009	Tree and vegetation survey consent from EPD	21 d	16/1/16	5/2/16		16	5/2			
	P010	Environmental Impact baseline monitoring	100 d	30/10/15		30/10		6/2			1
	P011	Baseline monitoring submission	0 d	15/1/16	15/1/16			15/1			
	P012	Baseline monitoring approval	0 d	6/2/16	6/2/16			♠ 6/2			
8	P013	Pre-condition survey	100 d	30/10/15		30/10		6/2			27/12
	P013a	Tree Protection	1155 d	30/10/15		30/10		72			
	P014	Tree transplanting works	90 d	7/2/16	6/5/16	30/10		7/2 6/5			27/12
	P015	Tree Protection	1155 d	30/10/15		13/11	-				
	D000	Contractor's Design Submission	1388 d 1388 d	13/11/15		13/11	_				
	D100	General Project Design Plan	145 d	13/11/15		13/1	-	5/4			
	D101 D102	Project Design Plan AIP-01 & DDA-01 - Addition GI Plan	88 d	7/12/15	3/3/16	2	7/12	3/3			
	D102	AIP-01 & DDA-01 - Addition OF Fian AIP-02 & DDA-02 - Basis of Design	60 d	4/12/15	1/2/16	4	/12	1/2			
	D104	AIP-04 - P&ID	250 d	15/1/16	20/9/16		15/	20/9			
	D107	DDA-04-1 - P&ID	115 d	22/11/16				22/11		0.0	
	D108	DDA-04-2 - Pumping System & Pipework Design	541 d	15/2/17	9/8/18				15/2	9/8	
	D109	DDA-04-3 - Pipe Support Design	170 d	23/9/16	11/3/17			23/9	11/3		3/12
	D110	DDA-04-4 - Testing & Commissioning	703 d	10/1/17	13/12/18			18/2			1
2	D111	AIP-05 - Intrumentation, Control and Automation (DCS / Control Philosophy)	117 d	18/2/16	13/6/16			18/2 13/6			
			458 d	A/7/11	4/10/17			4/7	4/10		
	D112	DDA-05-1 - DCS (General)	458 d 1129 d	4/7/16 29/7/16	31/8/19			29/7			
	D113	DDA-05-2 - DCS (Functional Design Specification)	957 d	17/1/17	31/8/19				17,1		
	D114 D115	DDA-05-3 - DCS (Control Loop Diagrams) AIP-06 - Communication Network	105 d	14/7/17	26/10/17				14/7 26/10		
	D115	DDA-06 - Communication Network	14 d	27/10/17					27/10 9/11		
	D118	DDA-00 - Communication Network	298 d	7/11/18	31/8/19					7/11	Constant of the local division of the local
	D119	AIP-08 - Electrical Power Supply System	130 d	5/2/16	13/6/16			5/2 13/6			
	D120	DDA-08-1 - Electrical Power Supply System	911 d	4/3/17	31/8/19				4/3		Cold Services
and a local division of	D121	DDA-08-2 - Earthing Design	643 d	26/8/16	30/5/18	1		26/8		30/5	21/12
	D122	DDA-08-3 - Fault Calculation & Protection Setting for Electrical System	651 d	21/3/17	31/12/18	1			21/3	14/6	31/12
43	D123	DDA-08-4 - Harmonic Analysis	486 d	14/2/17	14/6/18				14/2	21/9	
44	D124	DDA-08-5 - Electrical Typical Design	737 d	15/9/16	21/9/18			15/9	16/2	41/7	
	D125	DDA-08-6 - Modification of Existing Administration Building	768 d	16/2/17	25/3/19		31/12	3/4	10/2		
	D126	AIP-10A - Process Piping - Civil	95 d	31/12/15	3/4/16 9/1/19		3014			1/6	9/1
	D127	DDA-10A - Process Piping - Civil	223 d 146 d	5/2/16	29/6/16			5/2 29/6			
	D128	AIP-10B - Process Piping - E&M (Pipe Trench E&M Design)	897 d	14/7/16	27/12/18			14/7			27/12
	D129 D130	DDA-10B - Process Piping - E&M (Pipe Trench E&M Design) AIP-19 - Sitewide E&M Design	137 d	19/2/16	4/7/16			19/2 4/7			
_	D130	DDA-19-1 - Sitewide E&M Design (General) (including Cable Duct Routes / Cable			13/4/19					24/10	CONCERCION AND
	DIST	Routes) by Main Contractor									
52	D132	DDA-19-2 - Modification of North Works Air Gallery	1082 d	14/9/16	31/8/19			14/9			The second se
53	D200	WTW Logistics Centre, Alum Saturation Tank, and Hydro Turbine House	1240 d	18/1/16	10/6/19		18/	l			
				101111	10/0/11/	1	19	1 13/2			
	D201	AIP-11A - Design Concept	27 d	18/1/16	13/2/16		16	15/2	7/4		and the second second
55	D202	DDA-11A - Architectural Design Development (DAP stage 2 submission to ASD)	795 d	7/4/17	10/6/19						
	D100	WTW I - Idia Casta	1315 d	25/1/16	31/8/19		25	1			-
	D300 D301	WTW Logistics Centre AIP-12A - Architectural Design including GA, Interior Design and Non-Structural	91 d	26/4/16	25/7/16			26/4 25/7			
51	0501	Element	7. u								
58	D302	DDA-12A - Architectural Design including GA, Interior Design and Non-Structura	983 d	22/12/16	31/8/19			2	/12		-
		Element									
59	D303	AIP-12B - Foundation & Structural Design	40 d	25/1/16			2	5/1 1/1 4/3	2 10/10		
	D304	DDA-12B - Foundation & Structural Design	306 d	9/12/16	10/10/17	1		9/1	10/10		
				1.010.00				16/6	26/10		
	D305	AIP-12C - Building Services Design	498 d	16/6/16		-			27/10		
62	D306	DDA-12C - Building Services Design	674 d	27/10/17				25/2	8/12		
	D307	AIP-12D - Electrical & Mechanical Design	288 d	25/2/16 21/3/17	8/12/16	- 1			21/3	/11	
63	D308	DDA-12D - Electrical & Mechanical Design	242 d 1315 d			1 1	25	1			+
63 64	D400	Alum Saturation Tanks AIP-13A - Architectural Design including GA, Interior Design and Non-Structural	91 d	26/4/16				26/4 25/7			
63 64 65		Element		-0. //10							
63 64	D401		983 d	22/12/10	5 31/8/19			2	/12	A CONTRACT OF A	C. See and Co.
63 64 65 66		DDA-13A - Architectural Design including GA. Interior Design and Non-Structura									
63 64 65 66	D401 D402	DDA-13A - Architectural Design including GA, Interior Design and Non-Structura Element		2011/11/			2	5/1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 	10/10		
63 64 65 66 67			40 d	25/1/16				9/1	2 10/10		
63 64 65 66 67 68	D402	Element	40 d 306 d	9/12/16	10/10/17	1 1		179	26/10	7.1	1 .
63 64 65 66 67 68 69	D402 D403 D404	Element AIP-13B - Foundation & Structural Design DDA-13B - Foundation & Structural Design	306 d	9/12/16		1 1			2010		
63 64 65 66 67 68 69 70	D402 D403 D404 D405	Element AIP-13B - Foundation & Structural Design DDA-13B - Foundation & Structural Design AIP-13C - Building Services Design	306 d 498 d	9/12/16	26/10/17			16/6	27/10		
63 64 65 66 67 68 69 70 71	D402 D403 D404 D405 D406	Element AIP-13B - Foundation & Structural Design DDA-13B - Foundation & Structural Design AIP-13C - Building Services Design DDA-13C - Building Services Design	306 d 498 d 674 d	9/12/16 16/6/16 27/10/1	26/10/17 7 31/8/19			11/3 9/6	27/10		
63 64 65 66 67 68 69 70 71 72	D402 D403 D404 D405 D406 D407	Element AIP-13B - Foundation & Structural Design DDA-13B - Foundation & Structural Design AIP-13C - Building Services Design DDA-13C - Building Services Design AIP-13D - Electrical & Mechanical Design	306 d 498 d 674 d 91 d	9/12/16 16/6/16 27/10/1 11/3/16	26/10/17 7 31/8/19 9/6/16			16/6	27/10		
63 64 65 66 67 68 69 70 71 72 73	D402 D403 D404 D405 D406 D407 D408	Element AIP-13B - Foundation & Structural Design DDA-13B - Foundation & Structural Design AIP-13C - Building Services Design DDA-13C - Building Services Design AIP-13D - Electrical & Mechanical Design DDA-13D - Electrical & Mechanical Design	306 d 498 d 674 d 91 d 280 d	9/12/16 16/6/16 27/10/1 11/3/16 15/2/17	26/10/17 7 31/8/19 9/6/16 21/11/17		31/12	16/6			
63 64 65 66 67 68 69 70 71 72 73 74	D402 D403 D404 D405 D406 D407 D408 D500	Element AIP-13B - Foundation & Structural Design DDA-13B - Foundation & Structural Design AIP-13C - Building Services Design DDA-13C - Building Services Design AIP-13D - Electrical & Mechanical Design DDA-13D - Electrical & Mechanical Design Hydro Turbine House	306 d 498 d 674 d 91 d 280 d 1340 d	9/12/16 16/6/16 27/10/1 11/3/16 15/2/17 31/12/1	26/10/17 7 31/8/19 9/6/16 21/11/17 5 31/8/19		31/12	11/3 9/6 3/2 21/3			
63 64 65 66 67 68 69 70 71 72 73 74	D402 D403 D404 D405 D406 D407 D408	Element AIP-13B - Foundation & Structural Design DDA-13B - Foundation & Structural Design AIP-13C - Building Services Design DDA-13C - Building Services Design AIP-13D - Electrical & Mechanical Design DDA-13D - Electrical & Mechanical Design Hydro Turbine House AIP-14A - Architectural Design including GA, Interior Design and Non-Structural	306 d 498 d 674 d 91 d 280 d	9/12/16 16/6/16 27/10/1 11/3/16 15/2/17	26/10/17 7 31/8/19 9/6/16 21/11/17		31/12				
63 64 65 66 67 68 69 70 71 72 73 74	D402 D403 D404 D405 D406 D407 D408 D500	Element AIP-13B - Foundation & Structural Design DDA-13B - Foundation & Structural Design AIP-13C - Building Services Design DDA-13C - Building Services Design AIP-13D - Electrical & Mechanical Design DDA-13D - Electrical & Mechanical Design Hydro Turbine House	306 d 498 d 674 d 91 d 280 d 1340 d	9/12/16 16/6/16 27/10/1 11/3/16 15/2/17 31/12/1	26/10/17 7 31/8/19 9/6/16 21/11/17 5 31/8/19		31/12				
63 64 65 66 67 68 69 70 71 72 73 74	D402 D403 D404 D405 D406 D407 D408 D500	Element AIP-13B - Foundation & Structural Design DDA-13B - Foundation & Structural Design AIP-13C - Building Services Design DDA-13C - Building Services Design AIP-13D - Electrical & Mechanical Design DDA-13D - Electrical & Mechanical Design Hydro Turbine House AIP-14A - Architectural Design including GA, Interior Design and Non-Structural	306 d 498 d 674 d 91 d 280 d 1340 d	9/12/16 16/6/16 27/10/1 11/3/16 15/2/17 31/12/1	26/10/17 7 31/8/19 9/6/16 21/11/17 5 31/8/19		31/12				

In-situ Reprovisioning of Sha Tin Water Treatment Works (South W Master Programme (Ver.09) - (Accelerated)



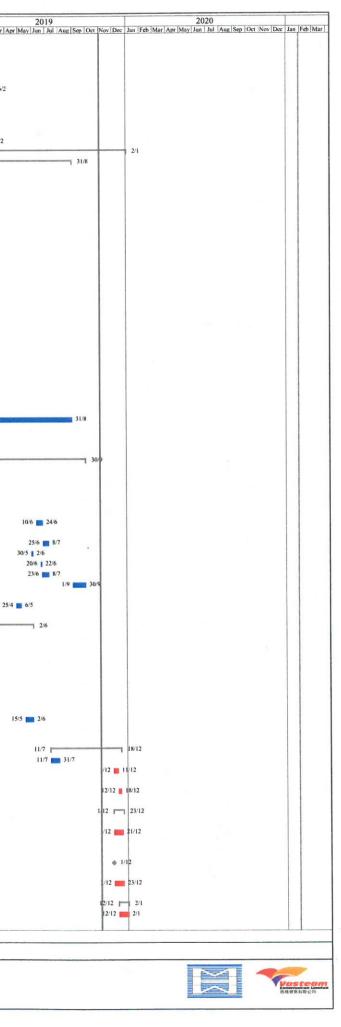
	Task Name	Duration	Start	Rev 9 Finish	Sen Our	Nov Day	2016 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec	2017 Jan Feb Mar Anr May Jun Jul Aug Sep Oct Nov De	2018 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec	c Jan
D502	DDA-14A - Architectural Design including GA, Interior Design and Non-Structural	766 d	31/5/16	5/7/18	Sep OC	Loov Dec	31/5	our to on transits the local hand it are to add to be have hand the	5/7	
	Element (incl. MEICA and BS design)									
D503		95 d	31/12/15	3/4/16		31/12	3/4			
D504		642 d	6/5/16	6/2/18	1 1		6/5	The second s	6/2	
D505	DENT THE TOURISTICS OF OUTPUT	408 d	20/4/16	1/6/17			20/4	1/6		
D506	The The Building Bolthood Boogh	821 d	2/6/17	31/8/19				2/6		
		149 d	17/2/16	14/7/16			17/2 14/7			
D507	All THE Electrical of Internation Design (International)	766 d	14/9/16	19/10/18			14/9		19/10	
D508						31/12			5/11	
D600	Hora Horas Temporary Tonor House	1041 d	31/12/15			51/12	19/2 15/3			
D601		26 d	19/2/16	15/3/16			19/2 13/3			
	Element							10.2		
D602	DDA-15A - Architectural Design including GA, Interior Design and Non-Structural	309 d	6/5/16	10/3/17	-		6/5	10/3		
	Element					100				
D603		65 d	31/12/15	4/3/16		31/12	CARACTERIN 4/3			
D604	The Total autor of or or or office	330 d	31/5/16	25/4/17			31/5	25/4		
	DDA-150 - I buildingi & buildingi Design	189 d	16/6/16	21/12/16			16/6	1/12		1
D605	The foot participation of the states				- 1	1	24/10		5/11	
D606	borrie building of the bridge	743 d	24/10/16					A REAL PROPERTY AND A REAL		
D607		130 d	19/2/16	27/6/16			19/2 27/6			
D608	DDA-15D - Electrical & Mechanical Design	322 d	26/8/16	13/7/17			26/8	13/7	. 31/0	
D700	Temporary Washwater Recovery Tank	975 d	31/12/15	31/8/18		31/12			31/8	
D701		65 d	31/12/15	4/3/16		31/12	4/3			
	The Tore Guirdinated breat Finite The State of State	340 d	6/5/16	10/4/17			6/5	10/4		
D702		20 d	20/4/16	9/5/16	- 1		20/4 9/5			
D703	The rob Eighting Devign				1	1	30/6		31/8	
D704	Dert rob Eighning brough	793 d	30/6/16	31/8/18		1	17/2 29/6			
D705	AIP-16C - Electrical & Mechanical Design	134 d	17/2/16	29/6/16	1	-	25/6	17/5		
D706	DDA-16C - Electrical & Mechanical Design	265 d	26/8/16	17/5/17	1 1		20/6	1//2	1	
D800	Flowmeter House	1312 d	28/1/16	31/8/19		2	\$/1 [
D801		26 d	19/2/16	15/3/16		1	19/2 15/3			
	Element									
D802		503 d	27/7/17	11/12/18				27/7		11/12
D802		505 U	2111111	11/12/10						
-	Element	46 1	30/1/14	12/2/15	-	1	28/1 22/3			
D803	AIP-17B - Foundation & Structural Design	45 d	28/1/16	12/3/16	-	1	10/6	26/10		
D804		484 d	30/6/16	26/10/17		1	300	28/10		
D805	AIP-17C - Electrical & Mechanical Design	20 d	11/3/16	30/3/16			11/3 30/3			
D806	DDA-17C - Electrical & Mechanical Design	928 d	15/2/17	31/8/19		1 -		15/2		T
D807	AIP-17D - Building Services Design	196 d	16/6/16	28/12/16			16/6	28/12		
D808	DDA-17D - Building Services Designn	893 d	22/3/17	31/8/19		-		22/3		
and the second sec		1284 d	25/2/16	31/8/19	-	1	25/2		and the second se	-
D900	Valve Chamber	63 d	25/2/16	27/4/16	-		25/2 27/4			
D901	AIP-18A - Foundation, Civil & Structural Design				-		30/6			7
D902	DDA-18A - Foundation, Civil & Structural Design	922 d	30/6/16	7/1/19	_		11.2			T
D903	AIP-18B - Electrical & Mechanical Design	27 d	11/3/16	6/4/16			11/3 6/4			
D904	DDA-18B - Electrical & Mechanical Design	928 d	15/2/17	31/8/19		and a second		15/2		T
D905	AIP-18C - Building Services Design	122 d	16/6/16	15/10/16			16/6 15/10			
D906	DDA-18C - Building Services Design	893 d	22/3/17	31/8/19		Lange Contract of		22/3		
S1000	Section 1	1526 d	30/10/15	2/1/20	30/10					T
S1001	Section 1 Commencement	0 d		30/10/15		\$ 30/10				
S1100	North Works Temporary Power House	958 d	2/4/16	15/11/18			2/4		15/1	/14
		260 d	2/4/16	17/12/16			2/4	17/12		
S1100a	NWTPH - Ground Investigation & foundation	18 d	2/4/16	19/4/16		1	2/4 19/4			
S1101	Excavation of trial pit for earthing test				-	1	20/4 29/4			
S1102	Ground Investigation Works	10 d	20/4/16	29/4/16	-		30/4 29/5			
S1103	Additational drilling for in planting earthing log	30 d	30/4/16	29/5/16	-	8	15/8 24/8			
S1104	Site Clearance and Preparation Works	10 d	15/8/16	24/8/16	_					
S1105	Excavation and installation of ELS	50 d	25/8/16	13/10/16			25/8 13/10			
S1106	Plate Load Test	10 d	14/10/16	23/10/16			14/10 23/10			
S1107	Installation of earth mat	20 d	24/10/16	12/11/16		1	24/10 📷 12/11			
S1108	Foundation	35 d	13/11/16	17/12/16			13/11	7/12		
		698 d		15/11/18	-	1	18/12		15/1	/11
S1108a	NWTPH - Structure & Building Service	210 d	18/12/16		-	1	18/12	15/7		
S1109	Structural for North Works Tempoary Power House				-			16/7	3/4	
S1110	ABWF Works for North Works Tempoary Power House	262 d	16/7/17			1			15/3	11
S1118	Plumbing and Drainage installation	246 d	15/3/18	15/11/18					15/3	
S1119	MVAC installation	246 d	15/3/18	15/11/18		1	1		15/3	
S1120	Fire Services installation	246 d	15/3/18	15/11/18		1				
S1121	Electrical installation	246 d	15/3/18	15/11/18					15/3	44 -
S1111	Ready for "laying of cable ducts, construction of draw pits and installation of cable	0 d	2/6/17	2/6/17		1		2/6		
	trays"									
S1112	Laying of cable ducts, construction of draw pits and installation of cable trays	83 d	2/6/17	23/8/17		1		2/6 23/8		
1112	Laying or eache oners, construction of start pro and mountation of eache days					1				
C1195	Einishina warke	280 d	6/1/18	12/10/18		1			12/10	
S1185	Finishing works	29 d	13/10/18						13/10 10/11	1
S1185A	Site cleaning			15/11/18		1		1	\$ 15 ⁷	/11
S1186	Completion of architectural finishes and relevant works (both internal and external)	0 d	13/11/18	13/11/18		1				
1			01000	1/0/10			2/6		1/8	
S1112a	NWTPH - 6.6KV & 11KV	791 d	2/6/16	1/8/18	-	1	\$ 2/6			
S1113	Confirmation of cable routing with CLP and WSD	0 d	2/6/16	2/6/16				28/2		
S1114	Design 6.6kv / 11kv working platform	120 d	1/11/16			1	1/11	1/6	7/18	
S1115	Construction of 6.6kv / 11kv working platform incl. cable pit and steel frame at roof o	180 d	1/6/17	27/11/17		1		1/0 2		
	Washwater Pump House									
S1116	Cable tray installation at roof of Washwater Pump House for CLP cable laying	124 d	28/11/17	31/3/18				28/11	31/3	
Sinto	Caute day mountained at toos of the sind and stand for our shore any my			- 19439-5315-52		1				1
61117	Loving 6 6ky / 11 ky ashla by CI D	123 d	1/4/18	1/8/18		1			1/4 1/8	
S1117	Laying 6.6kv / 11 kv cable by CLP			26/2/19		1	1/6			+
S1123	NWTPH - E&M Works	1001 d				1	1/6	and the second se	30/6	
S1123a	NWTPH - Electrical equipment	760 d	1/6/16	30/6/18		1	1/6	1/7	1	
S1124	NWTPH- Electrical Equipment Procurement	396 d	1/6/16	1/7/17		1	10	20/9	10/6	
S1126	NWTPH- Electrical Equipment Delivery	284 d	20/9/17			1		20/9	30/6	
	NWTPH- Whole Set of Equipment (Duo Bias and PCT) Delivered on Site (Claims No.	141 d	30/6/18	18/11/18	3	1			30/6 18	MI
DIIZOA	26A)					1				
S1126A		b0	30/6/18	30/6/18					30/6	
		vu	010/10	010110		1			and a second	-
S1126A©-1	Whole Set of Equipment (Duo Bias and PCT) Delivered on Site									
	Whole Set of Equipment (Duo Bias and PC1) Delivered on Site									
	Critical Split Task Milestone *		mary -		7 Critic	cal				

Master Programme (Ver.09) - (Accelerated)



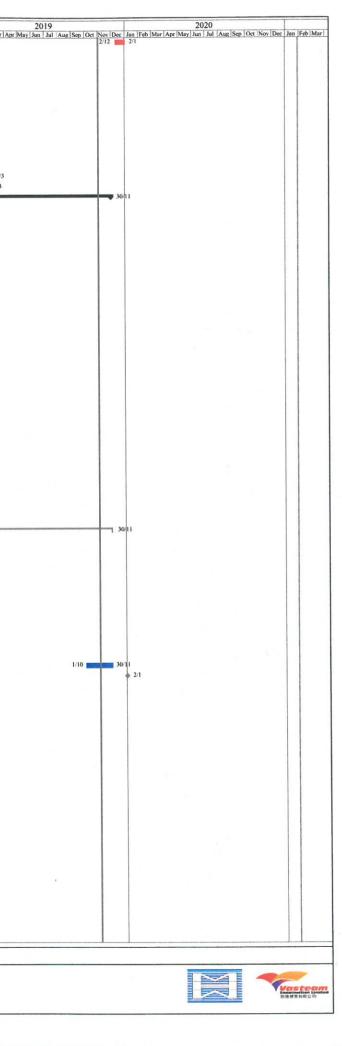
-)	Task Name	Juration	Rev 9	Rev 9 Finish	0	2016 2017 2018	lov Dec
S	1126A©-2	JV Conducted CLP Joint Inspection & Workshop for Those Units Installation Aspect	5 d	Start 1/7/18	6/7/18	Sep Oct Nov De	cc Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr Max Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar A	ov Dec
3	112076-2	TV Conducted CET John inspection & workshop for those ones insumation respect			unit.			
2 S	1126A©-3	The First Unit of DB and PCT installed at NWTPH	98 d	7/7/18	12/10/18		7/7	
53 S	1126AO-4	CLP Final Test and Inspected, Accepted for Further Energization	30 d	13/10/18	11/11/18		13/10	18/11
4 S	1126A©-5	iteral of oton i on the second of the second	7 d	12/11/18			20/11	-
55 S	1126B	it we internet out out out out of the second	99 d	20/11/18				1 20/1
56 S	1126B©-1		1 d	20/11/18				201
57 S	1126B©-2	Design and Shop Drawing	37 d	21/11/18				28/12
58 S	1126B©-3	indefinit ordering, benner) er reening	14 d	28/12/18				11
59 S	1126BO-4	Tuchennen and Brethen for Cuche Support	17 d	11/1/19				
50 S	1126BO-5		47 d	11/1/19	26/2/19			
61			835 d		2/1/20		20/9	-
52 S	1127	NWTPH Phase 1 - E & M Works & 6.6 kV Supply 4 Diversion by CLP	711 d	20/9/17	31/8/19	1	20.9	
							24/11 25/11	
63 S	1128		2 d	24/11/17	25/11/17	1	24/11 25/1	
		Diversion - H/O by Civil Contractor					26/11 26/1	
64 S	1129	CLP Inspection of the New ducts, Draw Pits & Openings for 6.6kV	1 d	26/11/17	26/11/17	1	2011 2011	
						1	27/11 27/1)	
65 S	1130		l d	27/11/17	27/11/17		*****	
		Openings					28/11 28/11	
66 S	1131	NWTPH - Second CLP Inspection of the rectified New Ducts, Draw Pits & Openings	d	28/11/17	28/11/17			
				00/11/17	20/11/12		29/11 29/1	
67 S	1132	NWTPH- T07 New Ducts/Pits/Openings after defect rectification to CLP - H/O by	l d	29/11/17	29/11/17	1		
		Civil Contractor	1.4	15/10/10	16/10/15		15/12 15/12	
68 S		itter information for supply i stream	1 d		15/12/17		1/12 1/12	
69 5			1 d	1/12/17			16/12 18/1	
70 5	1135	, to reading of motion of the second s	34 d	16/12/17	18/1/18			
		existing Pump No. 9 and Pump No. 14 Operation)	6.4	12/10/10	12/10/15		♦ 13/10	
171 5	1136	NWTPH- Superstructure & ABWF (UP to G/F) - H/O by Civil Contractor	0 d	15/10/17	13/10/17		· · · · · ·	
			0.4	12/10/17	12/10/17		13/10	
172 5	51137	NWTPH- Panel Supporting Frames (G/F) - H/O by Civil Contractor	0 d	15/10/17	13/10/17			
170	1110	NUMBER OF A Deside State Comments of the DOM STATE STATE	0.4	12/10/17	13/10/17		13/10	
73 5	1138	NWTPH- WF & Panel Supporting Frames (1/F to R/F slab) - H/O by Civil Contractor	υα	15/10/17	13/10/17			
			22.4	12/10/17	14/11/17		13/10 13/10	
174 5			33 d	20/9/17	14/11/17 30/7/18		20/9 30/7	
175 5			314 d 34 d		15/11/17		13/10 15/11	
76 5					31/8/19		1/9	1000
177	61142	NWTPH - LV Cable Laying and Termination, # Subject to STWTW Operator	365 d	1/9/18	51/0/19			
170	1142	NWTPH - 6.6kV Power and Control Cable Laying and Termination, Existing LV	153 d	31/7/18	30/12/18		31/7	
178	1143	Diversion 12 Nos, # Subject to STWTW Operator	100 10	5411110	50/16/10			
179	1144		740 d	21/9/17	30/9/19		21/9	
179 180		terreterreterreterreterreterreterreter	14 d	21/9/17		C TO	21/9 📑 4/10	
190	01143	N W I FII- Instantation of Cable Rack at IOF of Admin Building by Civil Contractor			- 10/17			
191	11146	NWTPH- Installation of Cable Ladder on the Cable Rack at R/F of Admin Building	178 d	5/10/17	31/3/18		5/10 31/3	
181	51146	NWIPH- Installation of Cable Ladder on the Cable Rack at R/F of Admin Building by E&M Contractor	1100	0/10/11	5115/10			
192	21147	NWTPH- Cable Laying by CLP	123 d	23/8/18	23/12/18		23/8	1054223
182 183		NWIPH- CLP Mobilization for Supply 2 diversion, # Subject to STWTW Operator		10/6/19	24/6/19			
103	1140	A WITTE CLA MODILLARON IOI Supply 2 Unclaidit, # Subject to STWTW Operator						
184	1140	NWTPH- 6.6kV Supply 2 Diversion to NWTPH by CLP	14 d	25/6/19	8/7/19			
185		NWTPH- CLP T&C of the completed HV cables	4 d	30/5/19	2/6/19			
186			3 d	20/6/19	22/6/19			
	51152	NWTPH- 6.6KV Switchboard Energisation - Supply 2	16 d	23/6/19	8/7/19			
	51153	NWTPH- Pump No. 12 Diversion to NWTPH including Power and Control Cables, #	30 d	1/9/19	30/9/19			
		Subject to WSD Overhaul Completion (Claim No. 57A)						
189	\$1154	NWTPH- Pump No. 11 Diversion to NWTPH including Power and Control Cables, #	12 d	25/4/19	6/5/19			
107		Subject to WSD Overhaul Completion (Claim No. 57A)				1		
190	\$1155	NWTPH Phase 3 - E&M Works & 6.6KV Supply 3 Diversion	170 d	15/12/18	2/6/19			5/12
191		NWTPH- CLP Mobilization for Supply 3 Diversion	2 d	28/1/19	29/1/19			
	S1157		21 d	10/1/19	30/1/19			10
193			4 d		23/1/19			2
194		NWTPH- CLP T&C incl. CLP Inspection	2 d		24/1/19			1
195		NWTPH - 6.6kV Switchboard Engerisatin - Supply 3	4 d		28/1/19			
196		NWTPH- Pump No. 13 Diversion to NWTPH including Power and Control Cables	47 d	15/12/18	30/1/19			15/12
	The Reality	(Suspension of Pump No. 13 Operation), # Subject to WSD Overhaul Completion						
		(Claim No. 57A)						
197	S1162		19 d	15/5/19	2/6/19			
 1 		(Suspension of Pump No. 10 Operation), # Subject to WSD Overhaul Completion						
		(Claim No. 57A)			Stand St.			
198	S1164	NWTPH Phase 4A - Cap Bank for Pump No. 9 & 14	161 d	11/7/19	18/12/19			
	S1164a	Cap Bank No. 9 & 14 - HV cable laying	21 d	11/7/19	31/7/19			
Advanced in case of the other	S1165	Cap Bank No. 9 Connection (Suspension of Pump No. 9 Operation), # Subject to	11 d	1/12/19	11/12/19			
		WSD Arrangement						
201	S1166	Relocate existing Cap Bank No. 14 to NWTPH (Suspension of Pump No. 14	7 d	12/12/19	18/12/19			
		Operation)		-				
202	S1167	NWTPH Phase 4B - Divert Major LV Loads, Relocate existing Transformer No. 3	23 d	1/12/19	23/12/19			
				_	_			
203	S1168	Divert North Work LV Loads to New LV Switchboard in NWTPH, # Subject to	21 d	1/12/19	21/12/19			
		WSD Arrangement under VO for replacing the existing HV cable for existing						
		Transformer No. 3		- Annala				
204	S1169	NWTPH- T06 New Ducts & Draw Pits between Filters & Sludge Treatment Plant -	0 d	1/12/19	1/12/19			
		H/O by Civil Contractor						
205	S1170	Relocate existing Transformer No. 3, and Reconnect to existing 6.6kV Switchboard in	n 22 d	2/12/19	23/12/19			
		North Works Air Gallery						
	S1171	NWTPH Phase 5 - Existing 6.6kV Switchboard at North Works Air Gallery	22 d		2/1/20			
	\$1172	NWTPH- Remove Interconnection Cable between Admin. Building and North Works	22 d	12/12/19	2/1/20			
		Air Gallery Switchboard (Subject to Engineer's Instruction)				L		
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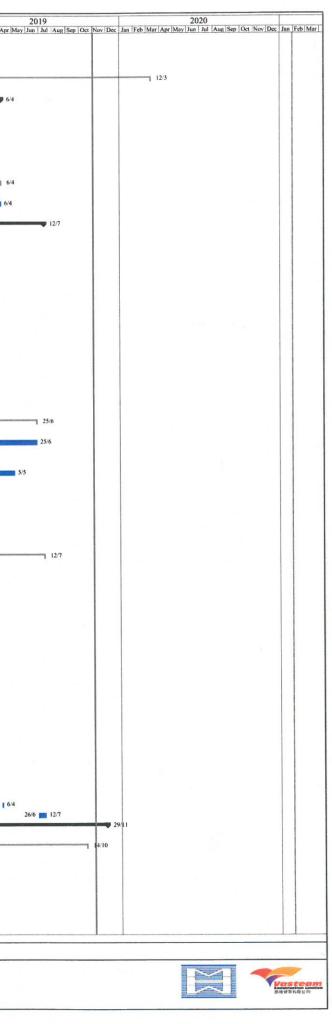


ID	Task Name	Duration	Start	Rev 9 Finish	ep Oct Nov Dec	2016 2017 2018 Jnn Feb Mar Apr May Jun Jun Jun Jun Jun Feb Mar Apr May Jun Jun
S1173	NWTPH- Establish a New 6.6kV Interconnection Cable Between North Works Temp Power House and existing North Works Air Gallery Switchboard	. 22 d	12/12/19	2/1/20		
			1/2/10	1/11/10		
S1174	NWTPH LVSB, Tx, PLC & Genset Installation at G/F	274 d 61 d	1/2/18	1/11/18 31/7/18		1/6 31/7
\$1175	NWTPH-6.6KV/11KV to 380V Transformers	90 d	2/4/18	30/6/18		2/4 2014 2016 30/6
1176 1177	NWTPH-300KVA ESS. Genset NWTPH- PLC & Ctrl. (incl. 6.6kV switchboard to existing Admin. Building)	93 d	1/8/18	1/11/18		1/8
51177	NWITH-TEC & Cut. (incl. 0.0kv switchboard to existing remain building)					
61178	NWTPH- Battery Charger System	21 d	11/7/18	31/7/18		11/7 31/7
51179	NWTPH- Cable Supports	104 d	1/2/18	15/5/18		1/2 15/5
51180	NWTPH- Cable Trays	76 d	1/3/18	15/5/18		1/4 15/5
51181	NWTPH- Cable Laying	45 d	1/4/18	15/5/18		1/4 15/5
51182	NWTPH- Cable Termination	45 d	1/4/18	15/5/18		2/11
51183	NWTPH - T&C	120 d 120 d	2/11/18 2/11/18	1/3/19 1/3/19		2/11
51184	NWTPH- Testing	120 d	15/2/16	30/11/19		152
\$1200	Hydro Turbine House	605 d	15/2/16	11/10/17		11/10
51200a	HTH - Modification work for High Island Watermain	16 d	15/2/16	1/3/16		15/2 1/3
S1201 S1202	Site survey of existing pipeworks and cabling Data collection for HTH design by E&M Contractor	112 d	2/3/16	21/6/16		23 21/6
51202	Construction of cable ducting for signal and power cable	82 d	2/3/16	22/5/16		2/3 22/5
S1203	Relocation of sampling panel and cable diversion	122 d	23/5/16	21/9/16		23/5 21/9
S1205	Replacement of existing actuators by WSD (EOT Claim no. 010)	107 d	22/9/16	6/1/17		22/9 6/1
S1205	Water suspension of High Island Water main pipes	5 d	7/1/17	11/1/17		7/1 11/1
S1200	Capping of path A (Upstream)	0 d	11/1/17	11/1/17		♦ 11/1
S1208	Investigation of backflow from downstream (Mixing Chamber) and preparation works	118 d	12/1/17	9/5/17		12/
	for V160 valve capping works					
\$1209	Capping off of V160 valve for facilitating Path A downstream capping works	0 d	10/5/17	10/5/17		♦ 10/5
		00.1	11/5/15	0/0/1=		11/5 8/8
\$1210	Demolition of EDH (incl. relocation of existing E & M equipment)	90 d	11/5/17	8/8/17		9/8 11/10
S1211	Swapping of path B to path A (original)	64 d 395 d	9/8/17 12/10/17	11/10/17		12/10 10/11
S1211a	HTH - Structure & Building Service	395 d 28 d		8/11/17		12/10 💶 8/11
S1212 S1213	ELS works (sheetpile or pipe pile installation) ELS works and excavation works	59 d	9/11/17	6/1/18		9/11 6/1
S1213 S1214	Plate Load Test for Raft Foundation	10 d	7/1/18	16/1/18		7/1 16/1
S1214 S1215	Foundation & substructure (incl. pipeworks installation inside Hydro Turbine House)	61 d	17/1/18	18/3/18		17/1 18/3
						19/3 19/3 15/6
S1216	Superstructure for Hydro Turbine House	89 d	19/3/18	15/6/18		15/6
S1217	Completion of concrete structure of Hydro Turbine House	0 d	15/6/18	15/6/18		166
S1218	Finishing works	148 d	16/6/18	10/11/18		♦ 10/11
S1219	Completion of architectural finishes and relevant works (both internal and external)	0 d	10/11/18	10/11/18		
S1220	Plumbing and Drainage installation	148 d	16/6/18	10/11/18		16/6 10/11
S1220 S1221	MVAC installation	148 d	16/6/18	10/11/18		16/6
S1222	Fire Services installation	148 d	16/6/18	10/11/18		16/6 10/11
S1222	Electrical installation	148 d	16/6/18	10/11/18		16/6 10/11
S1225	Water resumption of High Island Water main pipes	5 d	24/10/18			24/10 # 24/10
S1225	Remove capping of path A and reinstall flow meter at HF1	0 d	30/10/11	30/10/18		\$ 3010
S1226	HTH - E&M Works (Section 1)	1221 d	28/7/16	30/11/19		28/7
S1227	Hydro Turbine House - E&M Equipment Procurement	366 d	28/7/16			28/7
S1228	Hydro Turbine House - E&M Equipment Manufacturing & FAT	450 d	17/8/16			17/8
S1229	Hydro Turbine House - E&M Equipment Delivery	203 d		7 31/5/18		10/11 16/8
\$1230	Hydro Turbine House - E&M Equipment Delivery (Needle Valve & Turbine	280 d	10/11/1	7 16/8/18		
0.000	Generator)	0 d	16/6/18	16/6/18		\$ 16/6
S1231	Hydro Turbine House - H/O by Civil Contractor	59 d	15/7/18	11/9/18		15/7
S1232 S1233	Installation of needle valve and turbine generator Hydro Turbine House - Hydropower Generation System Mechanical Installation	112 d	15/7/18			15/7
51255	Tyuto Tutonic Touse Tyutoponer Solicitation System Toosaanaa as					
S1234	T04 - Trench/Cable ducts & Draw Pits H/O by Civil Contractor	0 d	15/6/18			÷ 15/6
S1235	T05 - Trench/Cable ducts & Draw Pits H/O by Civil Contractor	0 d	15/6/18			♦ 15/6 15/9
S1236	Hydro Turbine House - Electrical & ICA Installation	57 d	15/9/18			1011
S1237	Hydro Turbine House - T&C for the BS., FSI, Hydroturbine System	61 d	1/10/19			
S1238	Section 1 Completion (Claims No. 026A, 028A & 051A)	0 d	2/1/20	2/1/20	30/10	24/1
S2000	Section 2	757 d 0 d	30/10/1 30/10/1	5 24 11/1	30/10	
S2001 S2100	Section 2 Commencement Site Formation and Slope Retaining Structures for North Circular Road	657 d	7/2/16	24/11/1		7/2 24/11
						7/2 22/8
S2100a	L-shape Retaining Wall D	197 d	7/2/16	22/8/16		7/2 22/8
S2101	Site Clearance	21 d	7/2/16	27/2/16		7/2 27/2
S2102	Temporary works removal Utilities relocation	21 d 0 d	7/2/16	27/2/16		▲ 1/3
S2103	Submission of DI 1038	90 d	28/2/16			28/2 28/2 27/5
S2104	Excavation for L-shape Retaining wall Construction of L-shape Retaining wall	120 d	13/4/16			13/4
S2105 S2106	Permission of DI 1038	0 d	22/8/16			÷ 22/8
S2106 S2106a	Bore Pile & Mini Pile for Retaining Wall D	334 d	22/8/16			22/8 21/7
S2100a	Excavation and backfilling for bore piling works area	100 d	22/8/16			22/8 29/1
S2107	Installation of temp. soil nail	90 d	22/8/16			22/8 19/11
S2108	GI works for bored piles and mini piles	15 d	30/11/1	6 14/12/1		30/11 14/12
S2110	Bored piling machine establishment	7 d		6 21/12/1		15/12 21/12
S2111	Construction of bored piles (D) (H 5-10m, L 70m, Dia 1.5m)	118 d		6 18/4/17		18/4
S2112	Bored Pile test	28 d	19/4/17			19/4 19/5 5/4 19/4
S2113	Excavation for mini pile area	14 d	5/4/17	18/4/17		19/4 19/4 19/4 1
S2114	Preparation works (Plant mobilization & site set Up)	3 d	19/4/17			22/4 19/5
S2115	Mini pile load test (Preliminary Pile)	28 d	22/4/17			6/5 5000000 14/7
S2116	Construction of mini piles	70 d	6/5/17	14/7/17		15/7 21/7
S2117	Mini pile load test (Tension and compression)	7 d	15/7/17			22/7 24/1
S2117a	Retaining Wall D for Bore Pile & Mini Pile Section	126 d	22/7/17			22/7 20/9 9/9
S2118	Construction of retaining wall above bored pile	50 d	22/7/17	9/9/17		

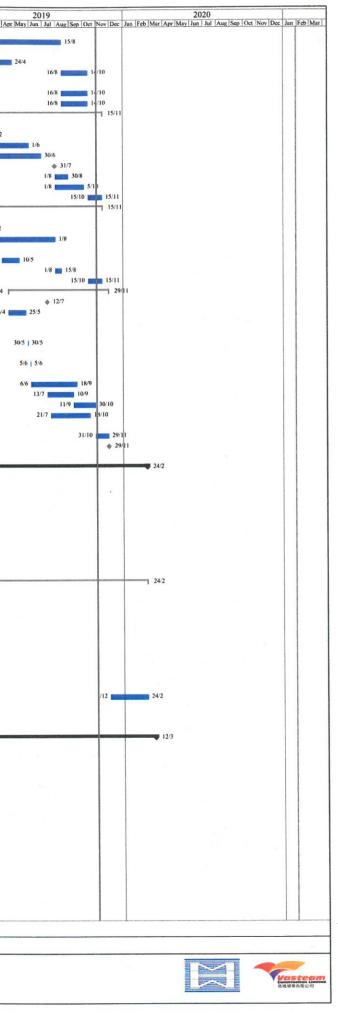
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1	ID 1	Task Name	Duration	Start	Rev 9 Finish	Sep Oct Nov De	2016 2017 2018 Jan [Feb Mar Apr May] Jun] Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May] Jun] Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May] Jun] Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May] Jun] Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May] Jun] Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May] Jun] Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May] Jun] Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun] Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun] Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun] Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun] Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun] Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun] Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun] Jul Aug Sep Oct Nov Dec Jan Feb Apr Apr	Feb Mar
	S2119	Construction of mini piles cap and L-shape retaining wall	45 d	5/8/17	18/9/17		5/8 18/9 19/9 28/10	
	S2120	Construction of capping beam	40 d	19/9/17	28/10/17		31/8 28/10	
	S2121 S2002	Backfilling works behind bored pile wall & L-shape retaining wall Section 2 Completion (Certificate of Completion No. 1)	86 d 0 d	31/8/17	24/11/17 24/11/17		♦ 24/1	
	S3000	Section 3	1596 d	30/10/15	12/3/20	30/10		
	S3001		0 d		30/10/15	\$ 30/10		
	S3002	New North Circular Road	887 d	1/11/16	6/4/19		1/11	
	S3002a	New Valve Chamber	224 d 47 d	1/11/16	12/6/17 17/12/16		1/11 17/12	
	S3004 S3005	Excavation for construction of new valve chamber Construction of New Valve Chamber	177 d	18/12/16			18/12 12/6	
	S3005a	Flowmeter Chamber	366 d	4/1/18	4/1/19		4/1 4/1	1
	S3003	Raising the existing Flowmeter chamber	211 d	4/1/18	2/8/18		4/1 2/3 2/8 4/1	-
7	S3008		299 d	12/3/18	4/1/19		125	
8 9	S3008a	440 to Ch. 557)	37 d	1/3/19	6/4/19			1/3
	S3008a S3006	E&M fitting for New Valve Chamber Lighting Installation for New Valve Chamber	6 d	1/3/19	6/3/19			1/3 6
	\$3007		5 d	2/4/19	6/4/19			2/4
		Cove Reservoir						
	S3100	Temporary Washwater Recovery Tank	1198 d 516 d	1/4/16 26/4/16	12/7/19 23/9/17		26/4 23/9	
	S3100a S3101	TWRT - DN900 pipe works Trial trench for DN900 washwater pipes	25 d	26/4/16	20/5/16		26/4 20/5	
	S3102	ELS works and excavation works of trench pit	41 d	21/5/16	30/6/16		21/5 30/6	
	S3103	Construction of divider wall and wier wall	137 d	14/6/16	28/10/16			
	\$3104	Hand dug tunnel (Tunnel no. 1, 2 & 3) for DN900 pipe	120 d	28/11/16			28/11 28/3 25/6	
	S3105	Trial pit, ELS works and excavation works for manhole E	90 d 60 d	28/3/17 28/3/17	25/6/17 26/5/17		28/3 26/5	
	S3108 S3106	Installation of DN900 pipe Modification of manhole E	90 d	26/6/17	23/9/17		26/6 [23:9	
	S3100	Hand dug tunnel (Tunnel no. 4) for DN900 pipe (Claim No. 27A - Encounter with	370 d	24/9/17	28/9/18		24/9	
		Uncharted Concrete Feature; & Suspension of Works due to New Guidance Notes on						
_	031050	Safety and Health of Hand Dug Tunnel))	75 d	24/9/17	7/12/17		24/9 2010	
	S3107©-1 S3107©-4	Hand dug tunnel (Tunnel no. 4) for DN900 pipe Claim No. 27A - Delay-1:- Encounter with Uncharted Concrete Feature	15 d 67 d	8/12/17	12/2/18		8/12 12/2	
	S31070-4 S31070-2	Hand dug tunnel (Tunnel no. 4) for DN900 pipe	14 d	13/2/18			13/2 🔳 26/2	
	S31070-5	Claim No. 27A - Delay-2:- Suspension of Works due to New Guidance Notes on	17 d	27/2/18	15/3/18		27/2 15/3	
		Safety and Health of Hand Dug Tunnel	107.1	10000	20/0/10		163 28/9	
	S3107©-3 S3108A	Hand dug tunnel (Tunnel no. 4) for DN900 pipe, including pipe installation Installation of DN900 pipe	197 d 12 d	16/3/18 29/9/18	28/9/18 10/10/18		29/9 🔲 10/10	
	S3108A	Connection to Existing Washwater Recovery Culvert (from North Filter Beds & South	258 d		25/6/19		11/10	
	DOTOOD	Filter Beds), (Claims No. 39A)					11/10	
8	S3108B©-1	Claim No. 39A - Delay-1:- Leakage of Excessive Water from Existing South Works & North Works Filter Beds, Investigation, Additional Works & Final Change Over	258 d	11/10/18	25/6/19			
9	S3108B©-2	Claim No. 39A - Delay-2:- Conduct Investigation and Excavate Trial Pits (VO No. 59)	45 d	22/3/19	5/5/19			22/3
20	S3108B	TWRT - Modification of Tank	361 d	18/1/17	13/1/18		18/	
	S3109	Construction of Steel Platforms and Walkway	175 d	8/3/17	29/8/17		8/3 \$29/8 \$\$ 29/8	
	S3110	Completion of Steel Platforms and Walkway Installation	0 d	29/8/17	29/8/17		181	
	S3111 S3112	Lay 400mm & 100mm pipes (incl. 3 nos. of steel pipe bridge) External Process Pipe Line installation	361 d 120 d	18/1/17 28/3/17	13/1/18 25/7/17		28/3 25/7	
	S3112 S3113	Electrical installation (Lighting)	127 d	30/8/17	3/1/18		30/8	
	\$3114	Temporary Washwater Recovery Tank - E&M Works	1198 d	1/4/16	12/7/19		1/4	
7	\$3115	E&M equipment procurement and Completion of delivery of E&M equipment on site (Lighting)	122 d	1/7/16	30/10/16		1/7 30/10	
.8	\$3116	Temp. WRT - Equipment Procurement	168 d	1/4/16	15/9/16		1/4 1/6 30/12	
	S3117	Temp. WRT - Equipment Manufacturing & FAT	213 d	1/6/16	30/12/16		2/1 15/10	
	S3118	Temp. WRT - Equipment Delivery Temp. WRT - H/O by Civil Contractor	287 d 0 d	2/1/17 30/9/17	15/10/17 30/9/17		\$ 30.9	
	S3119 S3120	Temp. WRT - TOI LV/Fibre Cable draw pit & trench H/O by Civil Contractor	0 d	30/9/17			\$ 30.9	
-								
3	S3121	Temp. WRT - Wall / slab opening inside Admin. Building - H/O by Civil Contractor	0 d	1/10/17	1/10/17		♦ 1/10	
14	\$3122	Temp. WRT - Cable containment installation inside admin. Building	13 d	2/10/17			2/10 1/10	
	\$3123	Temp. WRT - LV / Fibre Cable Laying	47 d		7 30/11/17		15/10 mmmm 30/11 1/10 1/10	
6	\$3124	Temp. WRT - Panel Support at existing Clarifier Distributing Chamber - H/O by Civi	1 d	1/10/17	1/10/17		1/10 1 1/10	
7	62125	Contractor	8 d	15/12/1	7 22/12/17		15/12 22/12	
	\$3125 \$3127	Temp. WRT - LVSB delivery and Installation Temp. WRT - Site Acceptance Test for LVSB	10 d	1/3/18	10/3/18		1/3 📺 10/3	
	\$3127	Temp. WRT - Modify the existing Power Source and New power cable termination at		1/5/18	10/5/18		1/5 🔳 10:5	
		Admin. Building LV Switch Room					1/6 3/6	
	S3129	Temp. WRT - LVSB energization	3 d	1/6/18	3/6/18		30/3 30/6	
1	\$3131	Temp. WRT - E&M Installation inside circular Washwater Recovery Tank	93 d	30/3/18	30/6/18			
2	\$3132	Temp. WRT - ICA	82 d	10/4/18	30/6/18		10/4 20/00/2016	
	\$3126	Temp. WRT - DCS Panel delivery and Installation	32 d	15/7/18	15/8/18		15/7 15/8	1.8
4	S3130	Temp. WRT - Modification of existing switchboard at Clarifier Chamber	3 d	4/4/19	6/4/19			4
	\$3133	Temp. WRT - T&C	17 d	26/6/19 1/9/16	12/7/19 29/11/19		1/9	No. of Concession, Name
6	S3300	Site Formation + Flow Meter House + Valve Chamber @ Future Administration Building	1185 d	1/9/10	29/11/19			
	S3300a S3301	Future Adminstration Building Ahead Works Planning & coordination with WSD for re-arrangement of raw watermains from High Island Reservoir and construction of Flowmeter House and Valve Chamber	1139 d 235 d	1/9/16 1/9/16	14/10/19 23/4/17		1/9 23/4	
	-	ABILITY DESCRIPTION WITH CONSTRUCTION OF FROM THE CONSTRUCT OF CONSTRUCTION					24/1 23/4	
	S3301a	Technical Submission for Cable diversion & Pipe Capings	90 d	24/1/17			24/1 23/4 24/4 22/6	
	\$3302	Trial pit; underground utilities and cable diversion	60 d 110 d	24/4/17 23/6/17			23/6 10/10	
	\$3303	ELS works and excavation works for flow meter house and valve chamber					4/8 6/8	
2	S3307	Relocating existing Flow Meter	3 d	4/8/17	6/8/17			
						Critical		



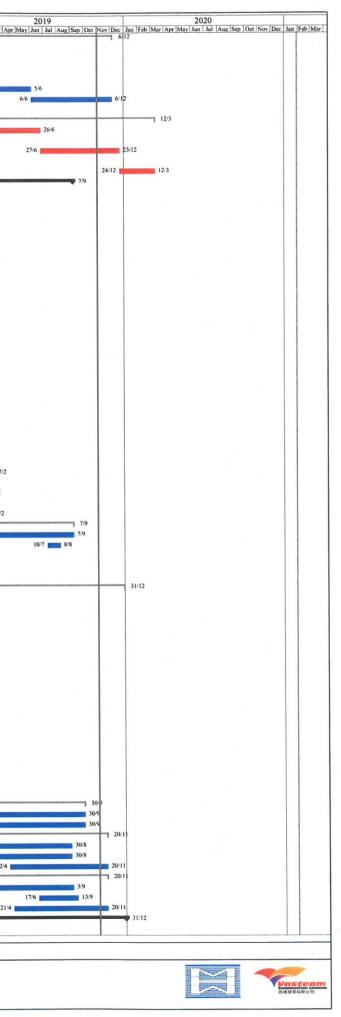
\$330. \$330: \$330: \$330: \$330: \$330: \$330: \$330: \$330: \$330: \$331: \$331: \$331: \$331: \$331: \$331: \$331: \$331: \$331: \$331: \$331: \$332: \$332: \$332: \$332: \$332: \$332: \$332: \$332: \$333: \$333: \$333: \$333: \$333: \$333: \$333: \$333: \$333: \$333:	05 06 08 09 10 11 12 13 14 16 15 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30A 30B 30C 31 32	Partial removal of existing flow meter house and valve chamber Re-construction of flow meter house and valve chamber (incl. Steel Platform Installation) ABWF Finishing Works for Flow Meter House and Valve Chamber Plumbing and Drainage Installation for Flow Meter House and Valve Chamber Electrical installation for Flow Meter House and Valve Chamber Valve Chamber - Eduipment Procurement Valve Chamber - Equipment Procurement Valve Chamber - Equipment Delivery Valve Chamber - Equipment Delivery Valve Chamber - Equipment Delivery Valve Chamber - Equipment Delivery Valve Chamber - Eduipment Site Works Duration* Valve Chamber - H/O by Civil Contractor Valve Chamber - Modifying the actuator to suit new level Valve Chamber - Modifying the actuator to suit new level Valve Chamber - Modifying the actuator to suit new level Valve Chamber - Modifying the actuator to suit new level Valve Chamber - H/O by Civil Contractor Flowmeter House - Equipment Manufacturing & FAT Flowmeter House - Equipment Delivery Flowmeter House - Equipment Delivery Flowmeter House - Eduipment Delivery Flowmeter House - Edw Installation of new mono rails Flowmeter House - T&C Sitte Formation @ Future Administration Building Abandon of 3 Nos. Existing Washwater Recovery Tanks Isolation and Removal of Existing DN600 Fresh Water Main, # Subject to WSD Supply and Planning Division Schedule (Called off). (Contractor's NOC No. 22) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 1 (Location B near South Bridge) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 2	150 d 222 d 100 d 60 d 60 d 60 d 60 d 716 d 62 d 122 d 93 d 122 d 93 d 30 d 66 d 32 d 868 d 93 d 512 d 157 d 0 d 40 d 15 d 228 d 0 d	Start 17/8/17 6/1/19 15/1/19 16/8/19 16/8/19 16/8/19 16/8/19 16/8/19 16/8/19 16/8/19 16/8/19 10/11/17 30/11/17 30/11/17 1/8/19 1/8/19 1/7/17 1/7/17 2/10/17 2/10/17 2/2/19 11/1/19 1/8/19 15/10/19 1/8/19 1/8/19 1/8/19 1/7/17 1/7/17 1/7/17 1/8/19 1/7/17 1/7/17 1/8/19 1/7/17 1/8/19 1/7/17 1/7/17 1/7/17 1/7/17 1/8/19 1/7/17 1/7/17 1/7/17 1/8/19 1/7/17 1/7/17 1/7/17 1/7/17 1/8/19 1/7/17 1/7/17 1/7/17 1/8/19 1/7/17 1/7/17 1/7/17 1/8/19 1/7/17 1/7/17 1/7/17 1/8/19 1/7/17 1/7/17 1/8/19 1/7/17 1/7/17 1/7/17 1/8/19 1/7/17 1/7/17 1/7/17 1/7/17 1/8/19 1/7/19 1/7/19 1/7/17 1/7/17 1/7/17 1/7/17 1/7/17 1/7/17 1/8/19 1/7/17 1/7/17 1/7/17 1/8/19 1/7/17 1/7/17 1/7/17 1/7/17 1/8/19 1/7/17 1/7/17 1/7/17 1/7/17 1/8/19 1/7/17 1/7/17 1/7/17 1/7/17 1/8/19 1/8/19 1/7/17 1/7/17 1/7/17 1/8/19 1/8/19 1/7/17 1/7/17 1/7/17 1/8/19 1/8/19 1/8/19 1/8/19 1/7/17 1/7/17 1/8/19 1/17 1/19 1/17 1/	28/2/19 1/6/19 30/6/19 31/7/19 5/10/19 15/11/19 15/11/19 1/10/17 25/2/19 1/8/19 11/1/19 10/5/19 15/11/19 29/11/19
S3300 S3300 S3301 S331 S331 S331 S331 S3	06 008 09 10 11 12 13 14 16 15 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30A 30B 30C 31 32	Installation) ABWF Finishing Works for Flow Meter House and Valve Chamber Plumbing and Drainage Installation for Flow Meter House and Valve Chamber Electrical installation for Flow Meter House and Valve Chamber Electrical installation for Flow Meter House and Valve Chamber Electrical installation for Flow Meter House and Valve Chamber Valve Chamber - Equipment Procurement Valve Chamber - Equipment Manufacturing & FAT Valve Chamber - Equipment Delivery Valve Chamber - Equipment Site Works Duration* Valve Chamber - Equipment Site Works Duration* Valve Chamber - H/O by Civil Contractor Valve Chamber - Modifying the actuator to suit new level Valve Chamber - T&C Flowmeter House - E&M Works Flowmeter House - Equipment Procurement Flowmeter House - Equipment Procurement Flowmeter House - Equipment Delivery Flowmeter House - E&M Installation of new mono rails Flowmeter House - T&C Site Formation @ Future Administration Building Abandon of 3 Nos. Existing Washwater Recovery Tanks Isolation and Removal of Existing DN600 Fresh Water Main, # Subject to WSD Supply and Planning Division Schedule (Called off). (Contractor's NOC No. 22) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 1 (Location B near South Bridge) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 2	100 d 60 d 60 d 60 d 716 d 62 d 122 d 93 d 122 d 93 d 122 d 93 d 30 d 66 d 32 d 868 d 93 d 512 d 157 d 0 d 40 d 15 d 32 d 228 d 0 d	15/1/19 16/8/19 16/8/19 30/11/17 30/11/17 30/10/18 1/3/19	24/4/19 14/10/19 14/10/19 14/10/19 15/11/19 30/1/18 28/2/19 1/6/19 30/6/19 31/7/19 30/6/19 31/7/19 30/6/19 31/7/19 30/8/19 15/11/19 15/11/19 15/11/19 15/11/19 29/11/19
S3300 S3300 S3311 S3311 S3313 S332 S332 S332 S332 S332 S332 S333 S3333 S3333 S3333 S3333 S3333	008 009 10 11 12 13 14 16 15 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30A 30B 30C 31 32	ABWF Finishing Works for Flow Meter House and Valve Chamber Plumbing and Drainage Installation for Flow Meter House and Valve Chamber MVAC installation for Flow Meter House and Valve Chamber Electrical installation for Flow Meter House and Valve Chamber Valve Chamber - Equipment Procurement Valve Chamber - Equipment Procurement Valve Chamber - Equipment Delivery Valve Chamber - Equipment Delivery Valve Chamber - Equipment Site Works Duration* Valve Chamber - Equipment Site Works Duration Valve Chamber - H/O by Civil Contractor Valve Chamber - H/O by Civil Contractor Valve Chamber - Modifying the actuator to suit new level Valve Chamber - T&C Flowmeter House - Equipment Manufacturing & FAT Flowmeter House - Equipment Manufacturing & FAT Flowmeter House - Equipment Delivery Flowmeter House - ExM Installation of new mono rails Flowmeter House - T&C Site Formation @ Future Administration Building Abandon of 3 Nos. Existing Washwater Recovery Tanks Isolation and Removal of Existing DN600 Fresh Water Main, # Subject to WSD Supply and Planning Division Schedule (Called off). (Contractor's NOC No. 22) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 1 (Location of DN600 Fresh Water Main into Two Stages, as per request - Stage 2	60 d 60 d 716 d 62 d 122 d 93 d 122 d 0 d 30 d 30 d 32 d 868 d 93 d 512 d 157 d 0 d 40 d 15 d 228 d 0 d 40 d	16/8/19 16/8/19 16/8/19 30/11/17 30/11/17 30/11/17 30/10/18 1/3/19 1/3/19 1/8/19 1/8/19 1/5/10/19 1/7/17 2/10/17 26/2/19 1/4/19 1/4/19 1/5/10/19 16/4/19 12/7/19	14/10/19 14/10/19 14/10/19 15/11/19 30/1/18 28/2/19 1/6/19 31/7/19 30/6/19 31/7/19 30/6/19 31/7/19 30/6/19 31/7/19 15/11/19 15/11/19 15/11/19 10/5/19 15/11/19 29/11/19
\$3300 \$3300 \$3310 \$331 \$331 \$331 \$331 \$3	008 009 10 11 12 13 14 16 15 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30A 30B 30C 31 32	Plumbing and Drainage Installation for Flow Meter House and Valve Chamber MVAC installation for Flow Meter House and Valve Chamber Electrical installation for Flow Meter House and Valve Chamber Valve Chamber - Eduipment Procurement Valve Chamber - Equipment Procurement Valve Chamber - Equipment Delivery Valve Chamber - Equipment Delivery Valve Chamber - H/O by Civil Contractor Valve Chamber - H/O by Civil Contractor Valve Chamber - Eduifying the actuator to suit new level Valve Chamber - T&C Flowmeter House - E&M Works Flowmeter House - Equipment Procurement Flowmeter House - Equipment Manufacturing & FAT Flowmeter House - Equipment Delivery Flowmeter House - Eduipment Delivery Flowmeter House - Eduipment Manufacturing & FAT Flowmeter House - Equipment Delivery Flowmeter House - Equipment Delivery Flowmeter House - Equipment Delivery Flowmeter House - Eduipment Delivery Flowmeter House - Eduipment Delivery Flowmeter House - Eduipment Delivery Flowmeter House - T&C Site Formation @ Future Administration Building Abandon of 3 Nos. Existing DN600 Fresh Water Main, # Subject to WSD Supply and Planning Division Schedule (Called off). (Contractor's NOC No. 22) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 1 (Location B near South Bridge) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 2	60 d 60 d 716 d 62 d 122 d 93 d 122 d 0 d 30 d 30 d 32 d 868 d 93 d 512 d 157 d 0 d 40 d 15 d 228 d 0 d 40 d	16/8/19 16/8/19 16/8/19 30/11/17 30/11/17 30/11/17 30/10/18 1/3/19 1/3/19 1/8/19 1/8/19 1/5/10/19 1/7/17 2/10/17 26/2/19 1/4/19 1/4/19 1/5/10/19 16/4/19 12/7/19	14/10/19 14/10/19 14/10/19 15/11/19 30/1/18 28/2/19 1/6/19 31/7/19 30/6/19 31/7/19 30/6/19 31/7/19 30/6/19 31/7/19 15/11/19 15/11/19 15/11/19 10/5/19 15/11/19 29/11/19
S3300 S3310 S3311 S331 S331 S331 S331 S3	09 10 11 12 13 14 16 15 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30A 30B 30C 31 32	MVAC installation for Flow Meter House and Valve Chamber Electrical installation for Flow Meter House and Valve Chamber Valve Chamber - Equipment Procurement Valve Chamber - Equipment Manufacturing & FAT Valve Chamber - Equipment Delivery Valve Chamber - Equipment Delivery Valve Chamber - Equipment Site Works Duration* Valve Chamber - H/O by Civil Contractor Valve Chamber - E&M Installation Valve Chamber - Modifying the actuator to suit new level Valve Chamber - Modifying the actuator to suit new level Valve Chamber - T&C Flowmeter House - Equipment Procurement Flowmeter House - Equipment Delivery Flowmeter House - Equipment Delivery Flowmeter House - Equipment Delivery Flowmeter House - H/O by Civil Contractor Flowmeter House - H/O by Civil Contractor Flowmeter House - E&M Installation of new mono rails Flowmeter House - T&C Site Formation @ Future Administration Building Abandon of 3 Nos. Existing Washwater Recovery Tanks Isolation and Removal of Existing DN600 Fresh Water Main, # Subject to WSD Supply and Planning Division Schedule (Called off). (Contractor's NOC No. 22) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 1 (Location B near South Bridge) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 2	60 d 60 d 716 d 62 d 122 d 93 d 122 d 0 d 30 d 66 d 93 d 512 d 868 d 93 d 512 d 157 d 0 d 40 d 15 d 228 d 0 d	16/8/19 16/8/19 30/11/17 30/11/17 30/10/18 1/3/19 1/3/19 1/3/19 1/8/19 1/8/19 15/10/17 26/2/19 11/1/17 1/4/19 1/4/19 1/5/10/19 15/10/19 15/10/19 15/6/4/19	14/10/19 14/10/19 15/11/19 30/1/18 28/2/19 30/6/19 31/7/19 30/8/19 5/10/19 15/11/19 15/11/19 15/11/19 15/11/19 10/5/19 15/11/19 29/11/19
S3310 S3311 S3313 S332 S332 S332 S332 S333 S3333 S3333 S3333 S3333 S3333 S3333	10 11 12 13 14 16 15 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30A 30B 30C 31 32	Electrical installation for Flow Meter House and Valve Chamber Valve Chamber - Equipment Procurement Valve Chamber - Equipment Procurement Valve Chamber - Equipment Delivery Valve Chamber - Equipment Delivery Valve Chamber - H/O by Civil Contractor Valve Chamber - H/O by Civil Contractor Valve Chamber - E&M Installation Valve Chamber - E&M Installation Valve Chamber - T&C Flowmeter House - Equipment Procurement Flowmeter House - Equipment Manufacturing & FAT Flowmeter House - Equipment Manufacturing & FAT Flowmeter House - Equipment Delivery Flowmeter House - EQUIPMENT Manufacturing & FAT Flowmeter House - EQUIPMENT Manufacturing & FAT Flowmeter House - EQUIPMENT Manufacturing & FAT Flowmeter House - EQUIPMENT Delivery Flowmeter House - E&M Installation of new mono rails Flowmeter House - T&C Site Formation @ Future Administration Building Abandon of 3 Nos. Existing Washwater Recovery Tanks Isolation and Removal of Existing DN600 Fresh Water Main, # Subject to WSD Supply and Planning Division Schedule (Called off). (Contractor's NOC No. 22) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 1 (Location of DN600 Fresh Water Main into Two Stages, as per request - Stage 2	60 d 716 d 62 d 122 d 93 d 122 d 0 d 30 d 66 d 32 d 868 d 93 d 512 d 157 d 0 d 40 d 15 d 32 d 228 d 0 d	16/8/19 30/11/17 30/11/17 30/10/18 1/3/19 1/3/19 1/8/19 1/8/19 15/10/19 1/7/17 1/7/17 2/10/17 2/10/17 2/6/2/19 11/1/19 1/8/19 15/10/19 15/10/19 15/10/19 15/4/19	14/10/19 15/11/19 30/11/8 28/2/19 30/6/19 31/7/19 30/8/19 5/10/19 15/11/19 15/11/19 15/11/19 15/11/19 10/5/19 15/11/19 29/11/19
S331 S331 S331 S331 S331 S331 S331 S331	11 12 13 14 16 15 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30A 30B 30C 31 32	Valve Chamber - E&M Works Valve Chamber - Equipment Procurement Valve Chamber - Equipment Procurement Valve Chamber - Equipment Delivery Valve Chamber - Equipment Site Works Duration* Valve Chamber - H/O by Civil Contractor Valve Chamber - H/O by Civil Contractor Valve Chamber - E&M Installation Valve Chamber - T&C Flowmeter House - E&M Works Flowmeter House - E&M Works Flowmeter House - Equipment Procurement Flowmeter House - Equipment Manufacturing & FAT Flowmeter House - Equipment Delivery Flowmeter House - Equipment Delivery Flowmeter House - EAM Installation of new mono rails Flowmeter House - T&C Site Formation @ Future Administration Building Abandon of 3 Nos. Existing DN600 Fresh Water Main, # Subject to WSD Supply and Planning Division Schedule (Called off). (Contractor's NOC No. 22) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 1 (Location B near South Bridge) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 2	716 d 62 d 122 d 93 d 122 d 0 d 30 d 30 d 32 d 868 d 93 d 512 d 157 d 0 d 40 d 15 d 32 d 228 d 0 d	30/11/17 30/11/17 30/10/18 1/3/19 1/3/19 1/8/19 1/8/19 1/5/10/19 1/7/17 1/7/17 2/10/17 26/2/19 1/4/19 1/4/19 1/5/10/19 15/10/19 15/10/19 15/10/19 15/10/19 15/10/19 15/4/19 12/7/19	15/11/19 30/1/18 28/219 1/6/19 30/6/19 31/7/19 30/8/19 5/10/19 15/11/19 15/11/19 1/10/17 25/219 1/8/19 11/1/19 10/5/19 15/8/19 15/11/19 29/11/19
S3312 S3313 S331 S332 S332 S332 S332 S332 S333	12 13 14 16 15 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30A 30B 30C 31 32	Valve Chamber - Equipment Procurement Valve Chamber - Equipment Manufacturing & FAT Valve Chamber - Equipment Delivery Valve Chamber - Equipment Site Works Duration* Valve Chamber - H/O by Civil Contractor Valve Chamber - E&M Installation Valve Chamber - Modifying the actuator to suit new level Valve Chamber - Modifying the actuator to suit new level Valve Chamber - T&C Flowmeter House - Equipment Procurement Flowmeter House - Equipment Procurement Flowmeter House - Equipment Delivery Flowmeter House - Equipment Delivery Flowmeter House - H/O by Civil Contractor Flowmeter House - EMN Installation of new mono rails Flowmeter House - E&M Installation Building Abandon of 3 Nos. Existing Washwater Recovery Tanks Isolation and Removal of Existing DN600 Fresh Water Main, # Subject to WSD Supply and Planning Division Schedule (Called off). (Contractor's NOC No. 22) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 1 (Location B near South Bridge) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 2	62 d 122 d 93 d 122 d 0 d 30 d 66 d 93 d 512 d 868 d 93 d 512 d 0 d 157 d 0 d 157 d 0 d 228 d 0 d 40 d 15 d 0 d	30/11/17 30/10/18 1/3/19 1/3/19 1/3/19 1/8/19 1/8/19 1/7/17 1/7/17 2/10/17 2/10/17 26/2/19 11/1/19 1/4/19 1/5/10/19 15/10/19 15/10/19 15/6/4/19 12/7/19	30/1/18 28/2/19 1/6/19 30/6/19 31/7/19 30/8/19 5/10/19 15/11/19 15/11/19 15/11/19 15/11/19 11/1/19 10/5/19 15/11/19 29/11/19
\$331. \$331. \$331. \$331. \$331. \$331. \$331. \$332. \$332. \$332. \$332. \$332. \$332. \$332. \$332. \$333. \$333. \$333. \$333. \$333. \$333. \$333. \$333.	13 14 16 15 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30A 30B 30C 31 32	Valve Chamber - Equipment Manufacturing & FAT Valve Chamber - Equipment Delivery Valve Chamber - Equipment Site Works Duration* Valve Chamber - HO by Civil Contractor Valve Chamber - E&M Installation Valve Chamber - T&C Flowmeter House - E&M Works Flowmeter House - Equipment Procurement Flowmeter House - Equipment Procurement Flowmeter House - Equipment Delivery Flowmeter House - Equipment Delivery Flowmeter House - Equipment Delivery Flowmeter House - Equipment Oriex of the State State Flowmeter House - Equipment State St	122 d 93 d 122 d 0 d 30 d 66 d 32 d 868 d 512 d 157 d 0 d 40 d 155 d 32 d 228 d 0 d 40 d	30/10/18 1/3/19 1/3/19 31/7/19 1/8/19 1/8/19 1/7/17 1/7/17 1/7/17 26/2/19 11/1/19 1/8/19 1/8/19 15/10/19 15/10/19	28/2/19 1/6/19 30/6/19 31/7/19 5/10/19 15/11/19 15/11/19 1/10/17 25/2/19 1/8/19 11/1/19 10/5/19 15/11/19 29/11/19
S331 S332 S332 S332 S332 S332 S333 S333 S333 S333 S333 S333 S333 S333 S333	14 16 15 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30A 30B 30C 31 32	Valve Chamber - Equipment Delivery Valve Chamber - Equipment Site Works Duration* Valve Chamber - H/O by Civil Contractor Valve Chamber - H/O by Civil Contractor Valve Chamber - Modifying the actuator to suit new level Valve Chamber - T&C Flowmeter House - E&M Works Flowmeter House - Equipment Procurement Flowmeter House - Equipment Manufacturing & FAT Flowmeter House - Equipment Delivery Flowmeter House - Equipment Delivery Flowmeter House - E&M Installation of new mono rails Flowmeter House - Dower Supply Flowmeter House - T&C Site Formation @ Future Administration Building Abandon of 3 Nos. Existing Washwater Recovery Tanks Isolation and Removal of Existing DN600 Fresh Water Main, # Subject to WSD Supply and Planning Division Schedule (Called off). (Contractor's NOC No. 22) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 1 (Location B near South Bridge) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 2	93 d 122 d 0 d 30 d 66 d 32 d 868 d 93 d 157 d 0 d 40 d 15 d 32 d 228 d 0 d 40 d	1/3/19 1/3/19 31/7/19 31/7/19 1/8/19 1/8/19 1/7/17 2/10/17 2/10/17 2/6/2/19 11/1/19 1/4/19 1/8/19 15/10/19 16/4/19 12/7/19	1/6/19 30/6/19 31/7/19 30/8/19 5/10/19 15/11/19 15/11/19 1/10/17 25/2/19 1/8/19 11/1/19 10/5/19 15/8/19 15/11/19 29/11/19
S3311 S331 S331 S331 S331 S331 S332 S332 S332 S332 S332 S332 S332 S332 S332 S333 S333 S333 S333 S333 S333 S333 S333	16 15 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30A 30B 30C 31 32	Valve Chamber - Equipment Site Works Duration* Valve Chamber - H/O by Civil Contractor Valve Chamber - Modifying the actuator to suit new level Valve Chamber - T&C Flowmeter House - E&M Works Flowmeter House - Equipment Procurement Flowmeter House - Equipment Manufacturing & FAT Flowmeter House - Equipment Delivery Flowmeter House - Equipment Delivery Flowmeter House - Eduipment Delivery Flowmeter House - Eduipment Delivery Flowmeter House - Eduipment Delivery Flowmeter House - Power Supply Flowmeter House - T&C Site Formation @ Future Administration Building Abandon of 3 Nos. Existing DN600 Fresh Water Main, # Subject to WSD Supply and Planning Division Schedule (Called off). (Contractor's NOC No. 22) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 1 (Location of DN600 Fresh Water Main into Two Stages, as per request - Stage 2	122 d 0 d 30 d 66 d 32 d 868 d 93 d 512 d 157 d 0 d 15 d 32 d 228 d 0 d 40 d	1/3/19 31/7/19 1/8/19 1/8/19 15/10/19 15/10/19 1/7/17 2/10/17 26/2/19 11/1/19 1/4/19 1/8/19 15/10/19 16/4/19 12/7/19	30/6/19 31/7/19 30/8/19 5/10/19 15/11/19 15/11/19 15/11/19 15/11/19 15/11/19 11/11/19 10/5/19 15/8/19 15/8/19 15/11/19 29/11/19
\$331 \$331 \$331 \$331 \$331 \$332 \$332 \$332 \$332 \$332 \$332 \$332 \$332 \$332 \$333 \$333 \$333 \$333 \$333 \$333 \$333 \$333	15 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30A 30A 30B 30C 31 32	Valve Chamber - H/O by Civil Contractor Valve Chamber - & M Installation Valve Chamber - Modifying the actuator to suit new level Valve Chamber - T&C Flowmeter House - Equipment Procurement Flowmeter House - Equipment Procurement Flowmeter House - Equipment Delivery Flowmeter House - Equipment Delivery Flowmeter House - E&M Installation of new mono rails Flowmeter House - E&M Installation of new mono rails Flowmeter House - E&M Installation of new mono rails Flowmeter House - T&C Site Formation @ Future Administration Building Abandon of 3 Nos. Existing Washwater Recovery Tanks Isolation and Removal of Existing DN600 Fresh Water Main, # Subject to WSD Supply and Planning Division Schedule (Called off). (Contractor's NOC No. 22) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 1 (Location B near South Bridge) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 2	0 d 30 d 66 d 32 d 868 d 93 d 512 d 157 d 0 d 40 d 15 d 32 d 228 d 0 d 40 d	31/7/19 1/8/19 1/8/19 1/7/17 1/7/17 2/10/17 26/2/19 11/1/19 1/4/19 1/8/19 15/10/19 16/4/19 12/7/19	31/7/19 30/8/19 5/10/19 15/11/19 15/11/19 15/11/19 1/10/17 25/2/19 1/8/19 11/1/19 10/5/19 15/8/19 15/8/19 15/11/19 29/11/19
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S331 S331 S332 S332 S332 S332 S332 S332	18 19 20 21 22 23 24 25 26 27 28 29 30 30A 30B 30C 31 32	Valve Chamber - Modifying the actuator to suit new level Valve Chamber - T&C Flowmeter House - E&M Works Flowmeter House - Equipment Procurement Flowmeter House - Equipment Manufacturing & FAT Flowmeter House - Equipment Delivery Flowmeter House - E&M Installation of new mono rails Flowmeter House - Power Supply Flowmeter House - T&C Site Formation @ Future Administration Building Abandon of 3 Nos. Existing DN600 Fresh Water Main, # Subject to WSD Supply and Planning Division Schedule (Called off). (Contractor's NOC No. 22) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 1 (Location B near South Bridge) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 2	66 d 32 d 868 d 93 d 512 d 157 d 0 d 40 d 15 d 32 d 228 d 0 d 40 d	1/8/19 15/10/19 1/7/17 2/10/17 26/2/19 11/1/19 1/4/19 1/8/19 15/10/19 16/4/19 12/7/19	5/10/19 15/11/19 15/11/19 1/10/17 25/2/19 1/8/19 11/1/19 10/5/19 15/8/19 15/11/19 29/11/19
S331 S332 S333	19 20 21 22 23 24 25 26 27 28 29 30 30A 30A 30B 30C 31 32	Valve Chamber - T&C Flowmeter House - E&M Works Flowmeter House - Equipment Procurement Flowmeter House - Equipment Manufacturing & FAT Flowmeter House - Equipment Delivery Flowmeter House - E&M Installation of new mono rails Flowmeter House - Power Supply Flowmeter House - T&C Site Formation @ Future Administration Building Abandon of 3 Nos. Existing Washwater Recovery Tanks Isolation and Removal of Existing DN600 Fresh Water Main, # Subject to WSD Supply and Planning Division Schedule (Called off). (Contractor's NOC No. 22) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 1 (Location of DN600 Fresh Water Main into Two Stages, as per request - Stage 2	32 d 868 d 93 d 512 d 157 d 0 d 40 d 15 d 32 d 228 d 0 d 40 d	15/10/19 1/7/17 2/10/17 26/2/19 11/1/19 1/4/19 1/8/19 15/10/19 16/4/19 12/7/19	15/11/19 15/11/19 1/10/17 25/2/19 1/8/19 11/1/19 10/5/19 15/8/19 15/11/19 29/11/19
S332 S333	20 21 22 23 24 25 26 27 28 29 30 30A 30A 30B 30C 31 32	Flowmeter House - E&M Works Flowmeter House - Equipment Procurement Flowmeter House - Equipment Manufacturing & FAT Flowmeter House - H/O by Civil Contractor Flowmeter House - H/O by Civil Contractor Flowmeter House - E&M Installation of new mono rails Flowmeter House - Power Supply Flowmeter House - T&C Site Formation @ Future Administration Building Abandon of 3 Nos. Existing Washwater Recovery Tanks Isolation and Removal of Existing DN600 Fresh Water Main, # Subject to WSD Supply and Planning Division Schedule (Called off). (Contractor's NOC No. 22) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 1 (Location B near South Bridge) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 2	93 d 512 d 157 d 0 d 40 d 15 d 32 d 228 d 0 d 40 d	1/7/17 2/10/17 26/2/19 11/1/19 1/4/19 1/8/19 15/10/19 16/4/19 12/7/19	1/10/17 25/2/19 1/8/19 11/1/19 10/5/19 15/8/19 15/11/19 29/11/19
S332 S332 S332 S332 S332 S332 S332 S332 S332 S333	21 22 23 24 25 26 27 28 29 30 30 30 30 30 30 30 30 30 30 30 30 30	Flowmeter House - Equipment Procurement Flowmeter House - Equipment Manufacturing & FAT Flowmeter House - Equipment Delivery Flowmeter House - E&M Installation of new mono rails Flowmeter House - E&M Installation of new mono rails Flowmeter House - E&M Installation of new mono rails Flowmeter House - T&C Site Formation @ Future Administration Building Abandon of 3 Nos. Existing Washwater Recovery Tanks Isolation and Removal of Existing DN600 Fresh Water Main, # Subject to WSD Supply and Planning Division Schedule (Called off). (Contractor's NOC No. 22) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 1 (Location B near South Bridge) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 2	512 d 157 d 0 d 40 d 15 d 32 d 228 d 0 d 40 d	2/10/17 26/2/19 11/1/19 1/4/19 1/8/19 15/10/19 16/4/19 12/7/19	25/2/19 1/8/19 11/1/19 10/5/19 15/8/19 15/11/19 29/11/19
S332 S332 S332 S332 S332 S332 S332 S332 S333	23 24 25 26 27 28 29 30 30A 30A 30B 30C 31 32	Flowmeter House - Equipment Delivery Flowmeter House - H/O by Civil Contractor Flowmeter House - E&M Installation of new mono rails Flowmeter House - Power Supply Flowmeter House - T&C Site Formation @ Future Administration Building Abandon of 3 Nos. Existing Washwater Recovery Tanks Isolation and Removal of Existing DN600 Fresh Water Main, # Subject to WSD Supply and Planning Division Schedule (Called off). (Contractor's NOC No. 22) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 1 (Location B near South Bridge) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 2	157 d 0 d 40 d 15 d 32 d 228 d 0 d 40 d	26/2/19 11/1/19 1/4/19 1/8/19 15/10/19 16/4/19 12/7/19	1/8/19 11/1/19 10/5/19 15/8/19 15/11/19 29/11/19
S332 S332 S332 S332 S332 S332 S332 S333	24 25 26 27 28 29 30 30 30 30 30 30 30 31 32	Flowmeter House - H/O by Civil Contractor Flowmeter House - E&M Installation of new mono rails Flowmeter House - Power Supply Flowmeter House - T&C Site Formation @ Future Administration Building Abandon of 3 Nos. Existing Washwater Recovery Tanks Isolation and Removal of Existing DN600 Fresh Water Main, # Subject to WSD Supply and Planning Division Schedule (Called off). (Contractor's NOC No. 22) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 1 (Location B near South Bridge) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 2	0 d 40 d 15 d 32 d 228 d 0 d 40 d	11/1/19 1/4/19 1/8/19 15/10/19 16/4/19 12/7/19	11/1/19 10/5/19 15/8/19 15/11/19 29/11/19
S332 S332 S332 S332 S332 S333	25 26 27 28 29 30 30A 30A 30B 30C 31 32	Flowmeter House - E&M Installation of new mono rails Flowmeter House - Power Supply Flowmeter House - T&C Site Formation @ Future Administration Building Abandon of 3 Nos. Existing Washwater Recovery Tanks Isolation and Removal of Existing DN600 Fresh Water Main, # Subject to WSD Supply and Planning Division Schedule (Called off). (Contractor's NOC No. 22) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 1 (Location B near South Bridge) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 2	40 d 15 d 32 d 228 d 0 d 40 d	1/4/19 1/8/19 15/10/19 16/4/19 12/7/19	10/5/19 15/8/19 15/11/19 29/11/19
S332 S332 S332 S332 S333	26 27 28 29 30 30A 30B 30C 31 32	Flowmeter House - Power Supply Flowmeter House - T&C Site Formation @ Future Administration Building Abandon of 3 Nos. Existing Washwater Recovery Tanks Isolation and Removal of Existing DN600 Fresh Water Main, # Subject to WSD Supply and Planning Division Schedule (Called off). (Contractor's NOC No. 22) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 1 (Location B near South Bridge) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 2	15 d 32 d 228 d 0 d 40 d	1/8/19 15/10/19 16/4/19 12/7/19	15/8/19 15/11/19 29/11/19
S332 S332 S332 S333 S333 S333	27 28 29 30 30A 30B 30C 31 32	Flowmeter House - T&C Site Formation @ Future Administration Building Abandon of 3 Nos. Existing Washwater Recovery Tanks Isolation and Removal of Existing DN600 Fresh Water Main, # Subject to WSD Supply and Planning Division Schedule (Called off). (Contractor's NOC No. 22) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 1 (Location B near South Bridge) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 2	32 d 228 d 0 d 40 d	15/10/19 16/4/19 12/7/19	15/11/19 29/11/19
S332 S332 S333	28 29 30 30A 30B 30C 31 32	Site Formation @ Future Administration Building Abandon of 3 Nos. Existing Washwater Recovery Tanks Isolation and Removal of Existing DN600 Fresh Water Main, # Subject to WSD Supply and Planning Division Schedule (Called off). (Contractor's NOC No. 22) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 1 (Location B near South Bridge) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 2	228 d 0 d 40 d	16/4/19 12/7/19	29/11/19
S332 S333	29 30 30A 30B 30C 31 32	Abandon of 3 Nos. Existing Washwater Recovery Tanks Isolation and Removal of Existing DN600 Fresh Water Main, # Subject to WSD Supply and Planning Division Schedule (Called off). (Contractor's NOC No. 22) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 1 (Location B near South Bridge) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 2	0 d 40 d	12/7/19	
 S333 S333 S333 S333 S333 S333 S333 S333 	30 30A 30B 30C 31 32	Isolation and Removal of Existing DN600 Fresh Water Main, # Subject to WSD Supply and Planning Division Schedule (Called off). (Contractor's NOC No. 22) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 1 (Location B near South Bridge) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 2	40 d		
S333 S333 S333 S333 S333 S333 S333 S33	30A 30B 30C 31 32	Supply and Planning Division Schedule (Called off). (Contractor's NOC No. 22) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 1 (Location B near South Bridge) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 2			12/7/19 25/5/19
S333 S333 S333 S333 S333 S333	30B 30C 31 32	Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 1 (Location B near South Bridge) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 2	1.4	10/1/15	2313113
S333 S333 S333 S333 S333 S333	30B 30C 31 32	(Location B near South Bridge) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 2	1.4		
S333 S333 S333 S333 S333 S333	30B 30C 31 32	(Location B near South Bridge) Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 2	14	30/5/19	30/5/19
S333 S333 S333 S333 S333	30C 31 32	Re-Isolation of DN600 Fresh Water Main into Two Stages, as per request - Stage 2	El Service		
S333 S333 S333 S333 S333	30C 31 32		1 d	5/6/19	5/6/19
\$333 \$333 \$333	31 32	(Location A near Main Gate)			Pur an
\$333 \$333	32	Removal and Disposal of Isolated Existing DN600 Fresh Water Main	105 d	6/6/19	18/9/19
\$333		Investigation and Termination of Existing Utilities Connection	60 d	13/7/19	10/9/19
	33	Demolishing existing structure for future administration building	50 d	11/9/19	30/10/19
6222	0.0 ¹ -	Temporary Works & Demolition of 3 Nos. Existing Washwater Recovery Tanks	90 d	21/7/19	18/10/19
	24	Pie. Competence (Dept. Cilling) Confecture administration building	30 d	31/10/10	29/11/19
\$333		Site formation (Backfilling) for future adminstration building Completion of Site Formation + Flow Meter House + Valve Chamber @ Future	0 d		29/11/19
3333	33	Administration Building	04		23/11/13
\$340	00	Box Culvert at Tin Sum Nullah	1242 d	1/10/16	24/2/20
\$ \$340		Box Cilvert Bay 5 to Bay 8 Construction Works	261 d	1/10/16	18/6/17
S340		Temporary drainage diversion and form access	45 d	1/10/16	14/11/16
S340		Excavation for Box culvert (Bay 5)	60 d	15/11/16	13/1/17
S340		Construction for Box Culvert (Bay 5)	50 d	14/1/17	4/3/17
S340	104	Excavation for Box culvert (Bay 6)	30 d	14/1/17	12/2/17
\$ \$340	405	Construction for Box Culvert (Bay 6)	28 d	19/3/17	15/4/17
4 S340		Excavation for Box culvert (Bay 7)	25 d	13/2/17	
5 S340		Construction for Box Culvert (Bay 7)	18 d	30/4/17	17/5/17
5 \$340		Excavation for Box culvert (Bay 8)	25 d	10/3/17	3/4/17
7 S340		Construction for Box Culvert (Bay 8)	18 d 876 d	1/6/17 2/10/17	18/6/17 24/2/20
S340		Box Cilvert Bay 4 to Bay 1 Construction Works	25 d	2/10/17	
S341		Drainage diversion and form access	35 d		30/11/17
S341		Excavation for Box culvert (Bay 4) Construction for Box Culvert (Bay 4)	35 d	1/12/17	
2 \$341		Excavation for Box culvert (Bay 3)	25 d	1/12/17	25/12/17
3 \$341		Construction for Box Culvert (Bay 3)	41 d	19/1/18	28/2/18
4 \$341		Excavation for Box culvert (Bay 2)	30 d		24/1/18
5 \$341		Construction for Box Culvert (Bay 2)	30 d	1/3/18	30/3/18
5 \$341		Excavation for Box culvert (Bay 1)	30 d	25/1/18	23/2/18
7 \$341		Construction for Box Culvert (Bay 1)	30 d	17/3/18	15/4/18
8 \$34		Backfilling Works and Existing Utilities Connection	122 d	2/10/18	31/1/19
9 \$342		Demolition of Temporary Steel South Bridge and Backfilling works to form Access	86 d	1/12/19	24/2/20
		Road (Subject to approval from STWTW operator for using main gate as site entrance			
		during construction of entrance above new box culvert.)			
0 02-	500	Storm Drain for Decking at Tin Sum Nullah, Drainage & Master Meter Room @ Keng Hau	1532 d	2/1/16	12/3/20
0 \$350	500	Road	1002.0	2/1/10	1213120
1 \$350	500a	Storm Drain for Tin Sam Nullah	791 d	2/1/16	2/3/18
2 S35		Temporary drainage diversion	15 d	2/1/16	16/1/16
3 \$350		Modification of existing inlet structure	40 d	21/2/16	
4 \$350		Temporary drainage diversion	45 d	3/10/16	
5 \$35		ELS works and excavation works (Section 1)	45 d		5 31/12/16
6 S35		Installation for Storm Drain (Section 1)	25 d	1/1/17	25/1/17
7 \$35		Construction of manhole (Section 1)	30 d	26/1/17	
8 S35		ELS works and excavation works (Section 2)	45 d	1/1/17	14/2/17
9 \$35		Installation for Storm Drain (Section 2)	25 d	15/2/17	
0 \$35		Construction of inlet structure (Section 2)	30 d 60 d	12/3/17	
1 \$35		Concrete surround to storm drain pipe and backfilling	60 d	2/1/18	2/3/18
2 \$35		Modification of STWTW main entrance	540 d	3/7/17	24/12/18
3 \$35		Water Mains Connection & Master Meter Room	60 d	3/7/17	31/8/17
4 S35		Application and obtain of excavation permit from Lands Department Pipe laying and connection to existing watermains at Keng Hau Road	150 d	1/9/17	28/1/18
5 S35 6 S35		Construction of Valve Chamber at Keng Hau Road	330 d	29/1/18	
3 333	515	Consulucion of varye Chamber at Keng nau Road	2200	=2/4/10	
		Critical Split Task Milestone	Sum	mary r	NAMES AND ADDRESS OF TAXABLE



1	D	Task Name	Duration	Rev 9 Start	Rev 9 Finish
7	\$3516	Construction of Master Meter Room & Associated Water Mains (Claim No. 43A)	527 d	28/6/18	6/12/19
			100	20/6/10	1/11/10
	S3516©-3	Claim No. 43A - Delay-1:- Delayed Starting of Master Meter Room	127 d	28/6/18	1/11/18
	S3516©-1	Construction of Master Meter Room & Associated Water Mains	19 d	2/11/18	20/11/18
	S35160-4	Claim No. 43A - Delay-2:- Awaiting Design & Construction Details	87 d	21/11/18	15/2/19
	S3516©-5	Claim No. 43A - Delay-3:- Addition Works under VO No. 11	110 d	16/2/19	5/6/19
1	\$35160-2	Construction of Master Meter Room & Associated Water Mains, affected by	184 d	6/6/19	6/12/19
_	\$3517	Additional Washout Chamber Details and Associated Pipeworks Drainage Connection @ Keng Hau Road	1381 d	1/6/16	12/3/20
	S3517 S3518	Application and obtain of excavation permit from HyD & RMO (Claim No. 42A)	1121 d	1/6/16	26/6/19
1	33318	Application and obtain of excertation permit from type a ferro (claum rest service)			
5	S3519	ELS Works and Tunnelling Works for Manhole and Drainage Pipe Installation	180 d	27/6/19	23/12/19
6	S3520	Manhole and Drainage Pipe Installation	80 d	24/12/19	
7	S3600	Site Formation and Bored Pile Wall for Logistics Center cum Alum Saturation Tank	1310 d	6/2/16	7/9/19
8		Bore Pile Stage 1 for Logistics Centre	493 d	6/2/16	12/6/17
9	S36001	Site Clearance	22 d	6/2/16	27/2/16
	S36002	Learing curve and resolution of early teething problems	30 d	28/2/16	28/3/16
1	\$36003	Excavation for slope slope behind the bored pile wall C and reduce the level to	90 d	28/2/16	27/5/16
		+45.0mPD (Stage 1)			
	S36004	Installation of temp soil nails (60 deg. Temp slope above Haul Road)	30 d	18/5/16	16/6/16
	S36005	Pre-drill for bored piles	50 d	28/5/16	16/7/16
	S36006	Bored piling machine establishment	21 d	17/7/16	6/8/16
	S36007	Construction of bored piles (Pile no. CB2 ~ CB13) (Stage 1)	90 d	7/8/16	4/11/16
	S36008	Excavation to reduce the level to +40mPD	20 d	5/11/16	24/11/16
17	S36023	Construction of bored piles capping beam & lagging wall (CB2 ~ CB13) above	200 d	23/11/10	12/0/17
8	626022-	+40mPD ELS & Excavation for Stage 2 & Stage 3	490 d	28/5/16	29/9/17
	S36023a	ELS & Excavation for Stage 2 & Stage 3 Excavation at logistics center and Alum saturation tank location to level +33mPD	490 d	28/5/16	
7	\$36014	(Stage 2)		20/0/10	5/0/10
50	S36015	(Stage 2) Installation of temp soil nails (60 deg. Temp slope above Haul Road)	70 d	28/5/16	5/8/16
	S36015 S36017	Excavation at the open area between bored pile wall C and Logistics Center to	65 d	6/8/16	9/10/16
		formation +23.5mPD (Stage 3)			
12	S36018	Installation of sheet piles/pipe pile at level +33mPD	60 d	6/8/16	4/10/16
	S36019	Installation of sheet piles/pipe pile at level +27.5mPD	60 d	5/10/16	3/12/16
	S36020	Installation of the back for level +33mPD sheet piles/ pipe piles	45 d	5/10/16	18/11/16
	S36021	Excavation at logistics center and Alum saturation tank location to formation level	280 d	24/12/16	
		+20mPD (Stage 4)			
56	\$36022	Temp. shoring (waling & strut) installation	280 d	4/12/16	9/9/17
	S36022a	Bore Pile Stage 2 for Logistics Centre	130 d	13/6/17	20/10/17
58	S36009	Construction of bored piles (Pile no. CA4, CB1, CB14, CC1) (Stage 2)	70 d	13/6/17	21/8/17
59	S36010	Excavation to reduce the level to +35mPD	60 d	22/8/17	20/10/17
60	\$36010a	Bore Pile Stage 3 for Logistics Centre	211 d	1/8/18	27/2/19
61	S36011	Construction of bored piles (Pile no. CA2, CA3, CC2, CC3) (Stage 3)	70 d	1/8/18	9/10/18
62	S36012	Excavation to reduce the level to +33mPD & formation level for installation of earth	72 d	10/12/18	19/2/19
		mat			
	S36013	Installation of earth mat	8 d	20/2/19	27/2/19
	S36013a	Bore Pile Lagging Wall & Capping Beam	200 d	20/2/19	7/9/19
	\$36024	Construction of bored piles lagging walls	200 d	20/2/19	7/9/19
	\$36025	Constrution of bored pile capping beam	30 d	10/7/19	8/8/19
	S36025a	Foundation Works	182 d	26/9/17	26/3/18
	\$36026	Foundation for grid 1-6	45 d	26/9/17	9/11/17
	\$36027	Foundation for reminding portion	178 d	30/9/17	26/3/18
-	S36028	Superstructure for Logistic Center	818 d	5/10/17	31/12/19
	\$36028a	Structure for WTW Logistics Centre CH-1 to CH-5	217 d		14/6/18
72	\$36029	Completion of concrete structure of G.L. CH-1 to 5 Basement Level +22.5mpd to	52 d	10/11/17	31/12/17
	02/020	+28.5mpd of WTW Logistics Centre	67 d	1/1/18	8/3/18
13	\$36030	Completion of concrete structure of G.L. CH-1 to 5 Ground Level +28.5mpd to +34 5mpd of WTW Logistics Centre	67 d	1/1/10	0/3/10
7.4	\$36031	+34.5mpd of WTW Logistics Centre Completion of concrete structure of G.L. CH-1 to 5 Frist Level 34.5mpd to 40.5mpd	21 d	9/3/18	29/3/18
/4	330031	of WTW Logistics Centre	~10	213/10	
75	S36031A	Removal of formwork & falsework at Basement Level & Site Clearance for Lime	77 d	30/3/18	14/6/18
	330031A	Saturator Installation Works			
76	\$36031B	Structure for WTW Logistics Centre	467 d	5/10/17	14/1/19
	\$36032	Completion of concrete structure of Basement Level of WTW Logistics Centre	173 d	5/10/17	26/3/18
			1.17-1990.(A.75).		
78	S36033	Completion of concrete structure of Ground Level of WTW Logistics Centre	70 d	27/3/18	4/6/18
179	S36034	Completion of concrete structure of First Level of WTW Logistics Centre	64 d	5/6/18	7/8/18
80	S36035	Completion of concrete structure of Second Level of WTW Logistics Centre	34 d	8/8/18	10/9/18
				1	_
	\$36036	Completion of concrete structure of Third Level of WTW Logistics Centre	30 d	11/9/18	
	\$36037	Completion of concrete structure of Roof Level of WTW Logistics Centre	64 d	11/10/11	
	S36038	Cast Temporary Opening at +40.5mPD & +45.0mPD @ Grid 1~2 / B~C	60 d	16/11/18	
	S36038a	B.S P&D & MVAC	336 d	30/10/11	
	\$36039	B.S Plumbing and Drainage installation-starting from basement G.L 1-9	336 d	30/10/11	
	S36040	B.S MVAC installation-starting from basement G.L 1-9	336 d	30/10/11	
	S36041	B.S Fire Services installation	387 d	30/10/11	
	S36041a	B.S Fire Services installation - FS Sprinkler & Hose Wheel at B/F & G/F	305 d	30/10/11	
	\$36041b	B.S Individual Test - FS Sprinkler & Hose Wheel at B/F & G/F	183 d	1/3/19	30/8/19
	\$36041c	B.S Fire Services installation - Remaining Works	223 d	12/4/19	
	\$36042	B.S Electrical installation	322 d	3/1/19	20/11/19
	S36042a	B.S Electrical installation - Public Lighting at B/F & G/F	244 d	3/1/19	3/9/19
	S36042b	B.S Individual Test - Public Lighting at B/F & G/F	89 d	17/6/19	
	S36042c	B.S Electrical installation - Remaining Works	214 d	21/4/19	
95	S36043	Alum Satuation Tanks	448 d 79 d		8 31/12/19
	S36044	Foundation		10/10/1	8 27/12/18

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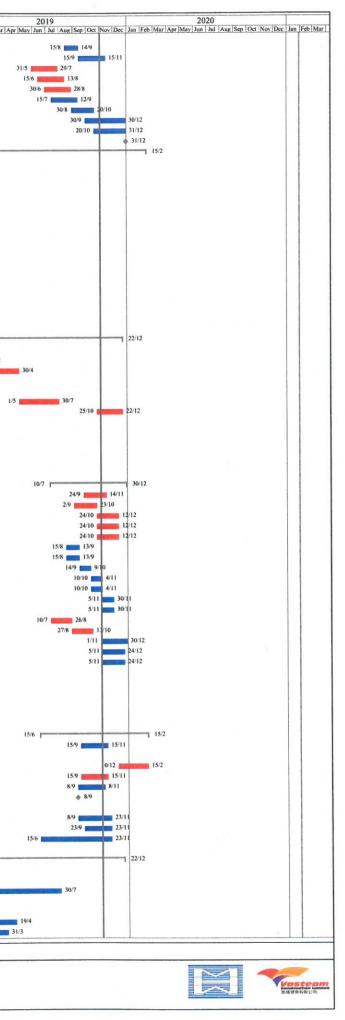
Contract No.: 3/WSD/15 In-situ Reprovisioning of Sha Tin Water Treatment Works (South Works) - Advance Works Master Programme (Ver.09) - (Accelerated)



п)	Task Name	Duration	Start	Rev 9 Finish	See Oct New D	2016 2017 2018 c Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan c Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan 28/12 Z8/12
S	36045	Superstructure for Alum Satuation Tanks	34 d	28/12/18	30/1/19	Sep Oct NOV Det	c. New it we found to be interfaced from the contrast to be found to be been it on too be interfaced from too be been too be and to be and to be too be and to be too be and to be too be and to be and
S	36046	Steel Canopy at Alum Saturation Tanks Roof	31 d	15/8/19	14/9/19		
	36046a	Tank coating & other in tank works	62 d	15/9/19	15/11/19		
	36046b	B.S Plumbing and Drainage installation for Alum Satuation Tank	60 d 60 d	31/5/19 15/6/19	29/7/19 13/8/19		
	36046c	B.S MVAC installation for Alum Satuation Tank	60 d	30/6/19	28/8/19		
-	36046d 36046e	B.S Fire Services installation for Alum Satuation Tank B.S Electrical installation for Alum Satuation Tank	60 d	15/7/19	12/9/19		
	36046e	Lifting appliances for Alum Satuation Tank	52 d	30/8/19	20/10/19		
	36046g	Automatic Irrigation system	92 d	30/9/19	30/12/19		
	36046h	Canopy installation	73 d		31/12/19		
	36047	Completion of structure including canopy above Alum Saturation Tanks	0 d	31/12/19	31/12/19		
S	36048	WTW Logistic Centre - Internal E&M Site Works	1410 d	7/4/16	15/2/20		7/4
S	36049	WTW Logistics Centre - Silo Installation B/F	671 d	9/12/16	10/10/18		2/14
	36050	WTWLC - Lime System - Silo Procurement	77 d	9/12/16	23/2/17		9/12 23/2 24/3
	36051	WTWLC - Lime System - Silo Manufacturing & FAT	480 d	24/3/17	16/7/18		15/4
_	36052 36053	WTWLC - Lime System - Silo Delivery WTWLC - Second 2/F Slab G.L. CH-1~CH-5 - H/O by Civil Contractor (i.e. Area available from Level +22.5 to +40.5)	179 d 0 d	15/4/18 14/6/18	10/10/18 14/6/18		\$ 14/6
IS	36054	WTW Logistics Centre - Saturators Installation B/F	864 d	19/8/16	30/12/18		19/8
	36055	WTWLC - Lime System - Saturators Procurement	94 d	19/8/16	20/11/16		19/8 20/11
S	36056	WTWLC - Lime System - Saturators Manufacturing & FAT	314 d	21/11/16			21/11 30/9
	36057 36058	WTWLC - Lime System - Saturators Delivery WTWLC - Second 2/F Slab G.L. CH-1~CH-5 - H/O by Civil Contractor (i.e. Area	199 d 0 d	15/6/18 14/6/18	30/12/18 14/6/18		15/6 30
-	2/050	available from Level +22.5 to +40.5)	215 d	15/6/18	15/1/19		15/6
	36059 36060	WTWLC - Lime System - Saturators Site Works Duration WTWLC - Lime System - Saturators No.1 at G.L. CH-4/CH-B	215 d	15/6/18	30/8/18		15/6 2008
	36060	WTWLC - Lime System - Saturators No.1 at O.L. CH-4/CH-B WTWLC - Lime System - Saturators No.2 at G.L. CH-3/CH-B	78 d	15/7/18	30/9/18		15/7 30/9
	36062	WTWLC - Lime System - Saturators No.2 at G.L. CH-3/CH-D	46 d	1/10/18	15/11/18		1/10 15/11
-	36063	WTWLC - Line System - Saturators No.3 at G.L. CH-3/CH-D	61 d		15/1/19		16/11
	36064	WTWLC - Lime System - Silo Site Works Duration*	464 d	15/9/18	22/12/19		15/9
S	36065	WTWLC - Lime System - Silo No.4 at G.L. CH-2/CH-D to E	72 d	15/9/18	25/11/18		25/1
	36066 36067	WTWLC - Lime System - Silo No.3 at G.L. CH-2/CH-C to D WTWLC - Lime System - Silo No.2 at G.L. CJ-2/CH-B to C (Late commencement so as to allow access for Saturators delivery and installation)	81 d 75 d	26/11/18 15/2/19	14/2/19 30/4/19		
S	36068	WTWLC - Lime System - Silo No.1 at G.L. CH-2/CH-A to B	91 d	1/5/19	30/7/19	_	
S	36068a	WTWLC - Lime System - Silo T&C	59 d	25/10/19			7.4
	\$36069	WTW Logistics Centre - Various Dosing System & Pipeworks G/F	887 d	7/4/16	10/9/18		//4
	\$36070	WTWLC - Chemcial Dosing System & pipeworks Procurement	329 d	7/4/16	1/3/17		7/4 2/3 15/10
	536071	WTWLC - Chemcial Dosing System & pipeworks Manufacturing & FAT	228 d	2/3/17	15/10/17		1/11 307
-	536072 536073	WTWLC - Chemcial Dosing System & pipeworks Delivery WTWLC - Second 2/F Slab G.L. CH-5~CH-9 - H/O by Civil Contractor (i.e. Area available from Level +22.5 to +40.5)	272 d 0 d	1/11/17 10/9/18	30/7/18 10/9/18		\$ 10 ⁹
S	\$36074	WTWLC - Various Dosing System & Pipeworks Site Works Duration*	174 d	10/7/19	30/12/19		
	536075	WTWLC - Lime System - Pre-Lime Dosing - South Works	52 d	24/9/19	14/11/19		
S	\$36076	WTWLC - Lime System - Sludge Recycling System	52 d	2/9/19	23/10/19		
	\$36077	WTWLC - Lime System - Solution Tank	50 d		12/12/19		
	536078	WTWLC - Lime System - Post Lime Dosing - South Work	50 d		12/12/19		
	\$36079	WTWLC - Lime System - Depacking Unit	50 d 30 d	24/10/19	12/12/19		
	\$36080	WTWLC - Waste Chemical Storage Tank	30 d	15/8/19	13/9/19		
	536081	WTWLC - Floc-Aid Polymer Dosing - South Works	26 d	14/9/19	9/10/19		
	536082	WTWLC - Floc-Aid Polymer Transfer - North Works WTWLC - Residuals Polymer Dosing - South Work	26 d		4/11/19		
	S36083 S36084	WTWLC - Polymer Preparation System	26 d		4/11/19		
	\$36085	WTWLC - Polymer Dilution System	26 d	5/11/19	30/11/19		
	\$36085	WTWLC - Filter-Aid Polymer Dosing System	26 d	5/11/19	30/11/19		
	536087	WTWLC - Flouride Preparation System	48 d	10/7/19	26/8/19		
	\$36088	WTWLC - Flouride Dosing System	48 d	27/8/19	13/10/19		
	\$36089	WTWLC - All interconnecting fittings & pipeworks	60 d	1/11/19	30/12/19		
	\$36089A	WTWLC - Central Dust Collection System at 1/F Storage Area	50 d	5/11/19	24/12/19		
2	S36089B	WTWLC - Air Compression system for Workshop at 3/F	50 d	5/11/19	24/12/19		21/4
	\$36090	WTW Logistics Centre - Auxiliary System & field pipeworks	873 d	21/4/16	10/9/18		21/4 24/2
	S36091	WTWLC - Aux. Sys. & Field pipeworks Procurement	310 d	21/4/16	24/2/17		21/4 25/2 12/9
	S36092	WTWLC - Aux. Sys. & Field pipeworks Manufacturing & FAT	200 d	25/2/17	12/9/17		13/9 11/11
	\$36093 \$36094	WTWLC - Aux. Sys. & Field pipeworks Delivery WTWLC - Second 2/F Slab G.L. CH-5~CH-9 - H/O by Civil Contractor (i.e. Area available from Level +22.5 to +40.5)	60 d 0 d	10/9/18	10/9/18		÷ 10'9
	S36095 S36096	WTWLC - Aux. Sys. & Field pipeworks Site Works Duration* WTWLC - Instrument Air Compressor System (First Level slab completed as ceiling)	246 d 62 d	15/6/19 15/9/19	15/2/20 15/11/19		
	\$36097	WTWLC - Central Dust Collection System	68 d	10/12/19			
	S36098	WTWLC - Powdered Activated Carbon Preparation and Dosing System	62 d	15/9/19 8/9/19	15/11/19 8/11/19		
	S36099 S36100	WTWLC - E&M Works new dosing & service water pipework WTWLC - All trenches for new dosing & service water pipework - H/O by Civil Contractor	62 d 0 d	8/9/19 8/9/19	8/9/19		
-	S36101	WTWLC - Chem Dosing Pipeworks to TWPS	77 d	8/9/19	23/11/19		
	S36102 S36103	WTWLC - Chem Dosing pipeworks to Raw Water Inlet WTWLC - Plant services water line from TWPS to WTW Logistics Centre	62 d 162 d	23/9/19 15/6/19	23/11/19 23/11/19		
	S36104	WTW Logistics Centre - Elect. Works Cabling/MCC/LCP/ALCP/DC	1055 d		22/12/19		
	S36105	WTWLC - Electrical Equipment Procurement	684 d	1/2/17	16/12/18		2/1
	S36106	WTWLC - Electrical Equipment Manufacturing & FAT	363 d	2/1/18	30/12/18		2/10
	S36107	WTWLC - Electrical Equipment Delivery	302 d	2/10/18			\$ 3/2
	\$36110	WTWLC - First 1/F Slab G.L. CH-5~CH-9 - H/O by Civil Contractor (i.e. Area	0 d	3/12/18	3/12/18		
	62(112	available from Level +22.5 to +34.5)	119 d	22/12/14	8 19/4/19		22/12
- 1	S36113 S36108	WTWLC - Electrical LVSB Installation WTWLC - Electrical Battery Room Installation	31 d	1/3/19	31/3/19		
-1					warwis!		

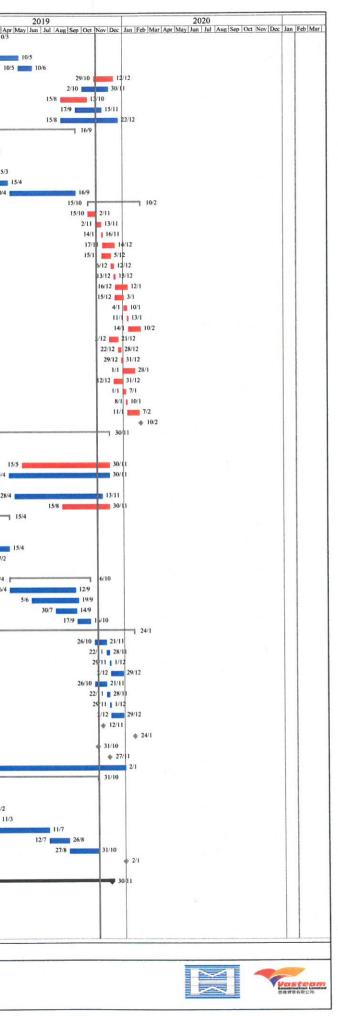
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In-situ



		Task Name	Duration	Rev 9 Start	Rev 9 Finish	2016	2017 r. Ian Feb Mar Anr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr M	2018 Aay Jun Jul Aug Sep Oct Nov Dec	Jan Feb M
74 S	36109	WTWLC-Cable Trough / Ducts / Pits between NWTPH & WTWLC - H/O by Civil	0 d	10/3/19	10/3/19	ep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov De	ee Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr M	and the second sec	•
	50107	Contractor							10/3
5 S	36111		62 d	10/3/19	10/5/19				10.5
6 S	36112			10/5/19	10/6/19				
S	36115a				12/12/19				
	36115b	with the Cable of Termination for Forjular System		2/10/19	30/11/19				
	36115c	WTWEE Cubic & Termination for Finance System		15/8/19	13/10/19				
	36115d	WTWEE Cable & Telinination for the optimit		17/9/19	15/11/19				
	36116			15/8/19	22/12/19			1/10	
	36117	WIW Degistes center TT Works		1/10/18	16/9/19 15/11/18			1/10 15/11	4
	36118			1/10/18					24/2
34 S	36121	WTWLC/NWTPH - HV Cable and Switchboard Final Inspection by CLP & Metering	2 a	24/2/19	25/2/19				
0.0	26110	Unit	6 d	10/3/19	15/3/19				10/3
	36119		31 d	16/3/19	15/4/19				16/.
	36120		150 d	20/4/19	16/9/19				
	36122 36123	The bolt that the the bolt of the bird granter	119 d		10/2/20				
	36123	The Degistres county into	19 d		2/11/19				
	36126				13/11/19				
	36125		3 d		16/11/19				1
	36127	The fact for the formation			14/12/19				
	36124D	The for the common and the for			5/12/19				
	36126D		7 d		12/12/19				1
	36125D		3 d	13/12/19	15/12/19				
	36127D		28 d	16/12/19	12/1/20				1
	36124A		20 d	15/12/19	3/1/20				1
	36126A	WTWLC - T&C Precommissioning Test for Post Lime	7 d	4/1/20	10/1/20				
	36125A	WTWLC - T&C Preliminary Test for Post Lime	3 d	11/1/20	13/1/20				
	36127A	WTWLC - T&C Commissioning Test for Post Lime	28 d	14/1/20	10/2/20				
	36124B		20 d	2/12/19					1
	36126B	himse hereiter	7 d		28/12/19				
	36125B	with be recented and y rest to response	3 d		31/12/19				1
	36127B	WTWEE The community for the payment	28 d	1/1/20	28/1/20				1
-	36124C		20 d		31/12/19				
	36126C		7 d	1/1/20	7/1/20				
	36125C	with be interitentially represented	3 d	8/1/20	10/1/20				
	36127	ni ne commente presente a secondaria de la commencia de la comm Commencia de la commencia de la	28 d 0 d	11/1/20 10/2/20	7/2/20				
-	Critical #2		611 d	29/3/18			29/3		+
	36128		0 d	29/3/18			29/3	(
	36129	with be not next with the system states	0 d	29/3/18					
	36130		200 d	15/5/19					
	36131	with De Tow How Data grant party series	230 d	15/4/19					1
	336132 336133	WINES mound of new Freedos province to entering seeing provide	0 d	13/12/18				*	13/12
	36133		200 d	28/4/19					
	336135		108 d	15/8/19					
	536136	WIWE Than better water bystem ingentieter bystem (***)	694 d	22/5/17			22/5		-
	536137	Suturition Turing Electric from the	55 d	22/5/17			22/5 15/7		
	536138		120 d	16/7/17			16/7		1
	536139		91 d	15/1/19	15/4/19			13	51 000
	536140		0 d	27/2/19	27/2/19				
- 1									
3	\$36141	Saturation Tanks - Alum System Site Works Duration*	184 d	16/4/19	16/10/19				
4	\$36142	Saturation Tanks - Alum System - Saturation Tanks Mixers & Accessories	150 d	16/4/19					
5	\$36143	Saturation Tanks - Alum System - Process pumps & Solution tank	107 d	5/6/19	19/9/19				
6	\$36144	Saturation Tanks - Alum System - Electrical & ICA Installation	47 d	30/7/19					
	\$36145	Saturation Tanks - Alum System - Energisation	30 d	17/9/19				18/11	
	\$36146	outurition future for the second second	433 d	18/11/18					
_	\$36147	Saturation Failes Field Indifficult Fost for Interact Pre-	27 d		9 21/11/19				
	\$36149	Saturation rains rate reterning retries in the pre-	7 d		9 28/11/19				
	S36148	Saturation Tanks - T&C Preliminary Test for lateral & nozzle pipe	3 d 28 d		9 1/12/19 29/12/19				
	\$36150	Saturation Tanks - T&C Commissioning Test for lateral & nozzle pipe	28 d		9 21/11/19				
	S36147a	Saturation Tanks - T&C Individual Test for Alum solution tank Saturation Tanks - T&C Precommissioning Test for Alum solution tank	27 d		9 28/11/19				
	S36149a		3 d		9 1/12/19				
	S36148a	Saturation Tanks - T&C Preliminary Test for Alum solution tank Saturation Tanks - T&C Commissioning Test for Alum solution tank	28 d	2/12/19					
	S36150a S36151	EMSD inspection of passenger lift	1 d		9 12/11/19				
	S36151A	EMSD inspection of passenger int EMSD inspection of Cargo lift	1 d	24/1/20					
	\$36151A \$36152	WSD inspection	1 d		9 31/10/19				
	\$36152 \$36153	FSD inspection	3 d		9 27/11/19				
	S36155	Finishing works, subject to window wall installation	411 d		8 2/1/20			18/11	
	S36154A	Additional Glass Canopy on Window Wall at WTWLC (Claim No. 50A)	319 d	17/12/11	8 31/10/19			17/12	
	S36154AQ-1	AECOM Request MMVJV to Provide the Proposal of Additional Glass Canopy on	0 d		8 17/12/18			*	17/12
1		Window Wall at WTWLC							
14	S36154AO-2	MMVJV Provide the Proposal and the Cost Estimate to AECOM	73 d	17/12/1	8 27/2/19			17/12	
	S36154AC-3	AECOM Confirmed Variation Order	0 d	11/3/19					
	S36154AO-4	Design & Shop Drawing Submission and Approval	122 d	12/3/19	11/7/19				
	S36154A@-5	Material Ordering, Delivery & Testing	46 d	12/7/19					
	S36154AO-6		66 d	27/8/19	31/10/19				
	\$36155	Completion of architectural finishes and relevant building works (both internal and	0 d	2/1/20	2/1/20				
		external)							
50	\$3700	Piping Works	569 d	11/5/18			11/5	9/11	
	S3700A	Delay to Process Pipelines and Related Works Due to Replacement Works of Existing	183 d	11/5/18	9/11/18		11/5	9/11	
22.		Lamp Posts, Uncharted Obstructions and Realignment of Process Pipeworks (Claim No.							
		38A)						5	
	S3700AC-1	Claim No. 38A - Delay-1:- Obstruction to Commencement of Excavation due to Daley	y 177 d	11/5/18	3/11/18		11/5	3/11	
52	33100AC-1								1

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	ID	Task Name	Duration		Rev 9			2016	2017	2018	Ion Feb Mar 4
		OUT NO ADA DA DA Character Dark and Devision of Departs	74 4	Start 22/8/18	Finish 3/11/18	Sep Oc	t Nov De	Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec	Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec	22/8 22/8 3/11	Jan (reo) Mar (Ap
53	\$3700A©-2	Claim No. 38A - Delay-2:- Change of Alignment, Depth, and Position of Process	74 d	22/0/18	3/11/10	369	-				
(EA	C2200 4 @ 2	Pipelines Claim No. 38A - Delay-3:- Finalize the Diversion of Existing PE Chlorine Pipe	9 d	1/11/18	9/11/18		-			1/11 🔳 9/11	
554	\$3700A©-3	Claim No. 38A - Delay-3:- Finalize the Diversion of Existing PE Chlorine Pipe	90	1/11/10	2/11/10						
655	\$2700a	Process Pipe Trench	249 d	12/11/18	18/7/19					12/11	
	S3700a		246 d		15/7/19					12/11	
	S3701	Process Pipe Trench C1 Process Pipe Trench C2	246 d	12/11/18			1			12/11	and the second second
	S3702		246 d	15/11/18						15/11	and the second second second
	S3703	Process Pipe Trench F	14 d		28/11/18					15/11 🔜 28/1	10
	S3704	Process Pipe Trench I	177 d		7/5/19		1			12/11	And in the second second
	S3705	Process Pipe Trench G	226 d	13/3/19			1				13/3
	S3705a	Diversion of Existing Pipe		13/3/19	28/3/19						13/3 🗾 28
662	S3706	Diversion of Existing Chlorine Pipe (additional works, arrangement with STWTW	16 d	13/3/19	26/3/19		1				
		operator)	210 d	29/3/19	24/10/19	-	1				29/3
663	\$3707	Process Pipe Trench H, subject to diversion of existing chlorine pipe schedule	210 d	29/3/19	24/10/19						
			716 4	30/4/19	30/11/19	-	1				30/4
	S3707a	Pile Line Installation & Testing	215 d				1				30/4
	\$3708	Pipe line installation and testing (Trench C1 + F)	77 d	30/4/19	15/7/19	-	1				30/4
	\$3709	Pipe line installation and testing (Trench C2)	77 d	30/4/19	15/7/19	-	1				
667	\$3710	Pipe line installation and testing (Trench $G + I$)	47 d	30/6/19	15/8/19						
668	\$3711	Pipe line installation and testing (Trench H)	51 d		30/11/19		1				
	\$3712	Completion of all site testing and operation commissioning	0 d		30/11/19						
670	S3800	Road Works (Claim No. 45, 53, 58 & 59)	1207 d	1/8/16	20/11/19			1/8			-
671	S3800a	Sludge Plant Road	150 d	1/8/16	28/12/16		-	1/8	28/12		
672	S3801	Construction for new road and associated Utility Installation at Sludge Plant Road	150 d	1/8/16	28/12/16		1	1/8	28/12		
							1			17/12	
673	S3801a	Internal Road - G06 (North Circular Road)	256 d	17/12/18	29/8/19					17/12	
	S3802	Construction for new road and associated Utility Installation, G06 Phase 2 (G06 Ch.	238 d	17/12/18	11/8/19					17/12	
		180 to Ch. 240)					1				
675	S3803	Construction for new road and associated Utility Installation, G06 Phase 4 & 5 (G06	143 d	5/4/19	25/8/19						5/4
		Ch. 240 to Ch. 350)									
676	S3804	Construction for new road and associated Utility Installation, G06 Phase 3 (G06 Ch.	240 d	2/1/19	29/8/19		1			2/1	
		350 to Ch. 440)					1				
677	S3804a	Internal Road - G10 (North Filter Loop) & G01 (Logistics Branch)	415 d	2/10/18	20/11/19		1			2/10	
	\$3805	Construction for new road and associated Utility Installation, G10 (G10 Ch. 179 to Ch		2/10/18	10/9/19					2/10	and the second second
010	00000	240)									
679	S3806	Construction for new road and associated Utility Installation, G01 (G01 Ch. 100 to Ch	71 d	11/9/19	20/11/19						
0/7	55600	180)				-	Server 10				
680	S3806a	Internal Road - Road Surface	133 d	11/7/19	20/11/19						
	\$3807	Construction of road surface	133 d	11/7/19	20/11/19						
	\$3009	Section 3 Completion	0 d	12/3/20		-	1				-
683	\$4000	Section 4 (VVO No. 36 - Deletion of Landscape Works in Portion D)	683 d	2/1/17	16/11/18			2/1		16/1	11
	S4001	Section 4 Commencement	0 d	2/1/17	2/1/17				2/1		
	S4100	Landscaping Softworks & Establishment Works	0 d	28/6/18							
	S4101	Landscaping Softworks (Deletion of Landscape Works in Portion D under Variation Order		28/6/18						28/6	
000	34101	no. 36)		2010110							
687	S4102	Establishment works (Deletion of Landscape Works in Portion D under Variation Order	0 d	28/6/18	28/6/18						
007	54102	no. 36)			20.0.10		1				
688	S4002	Section 4 Completion (Certificate of Completion No. 2)	0 d	16/11/18	8 16/11/18	2					11
	S5000	Section 5	1917 d	30/10/1		28/1					
689	\$5001	Section 5 Commencement	0 d		5 30/10/15		30/10				
690	and an		1848 d	- Philippine - Phi	28/1/21						-
	S5100	Landscaping Softworks & Establishment Works	585 d	8/1/16	14/8/17	-			14/8		
	S5100a	Tree Tranplanting	20 d	8/1/16	27/1/16			27/1			
	S5101	Preparation of site area for planting works				-		28/1 14/8			
	S5102	Transplanting works	200 d	28/1/16		_		15/8	14/8		
	S5103	Establishment for transplanting works	365 d	15/8/16							
696	S5104	Lanscape & Establishment	516 d	1/9/19	28/1/21						
697	S5104a	Plant Material - Submission & approval	45 d	1/9/19							
698	S5104b	Plant Material - Preparation	60 d		9 14/12/19	9					
	S5104c	Landscape Works - Wall C	45 d		9 28/1/20		1				
	S5104d	Landscape Works - Wall D	45 d		9 28/1/20						
	S5104e	Landscape Works - Portion E	45 d	15/12/1	9 28/1/20						
	S5104f	Landscape Works - HPP Surround Area	14 d	16/1/20	29/1/20						
	S5104g	Landscape Works - along NCR	45 d		9 29/1/20		and the second se				-
	S5104h	Landscape Works - Along Filter Bed	14 d		29/1/20						
	\$5105	Establishment works	365 d		28/1/21						
105		Section 5 Completion (Claims in related to Access of Planting Area)	0 d		28/1/21						
706											

1 Critical

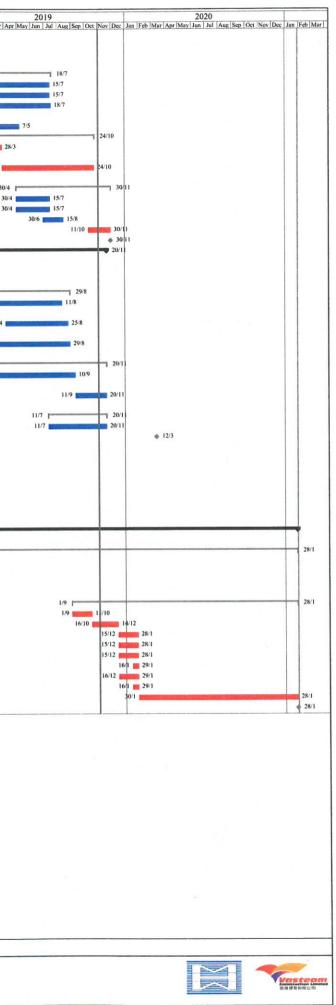
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Summary

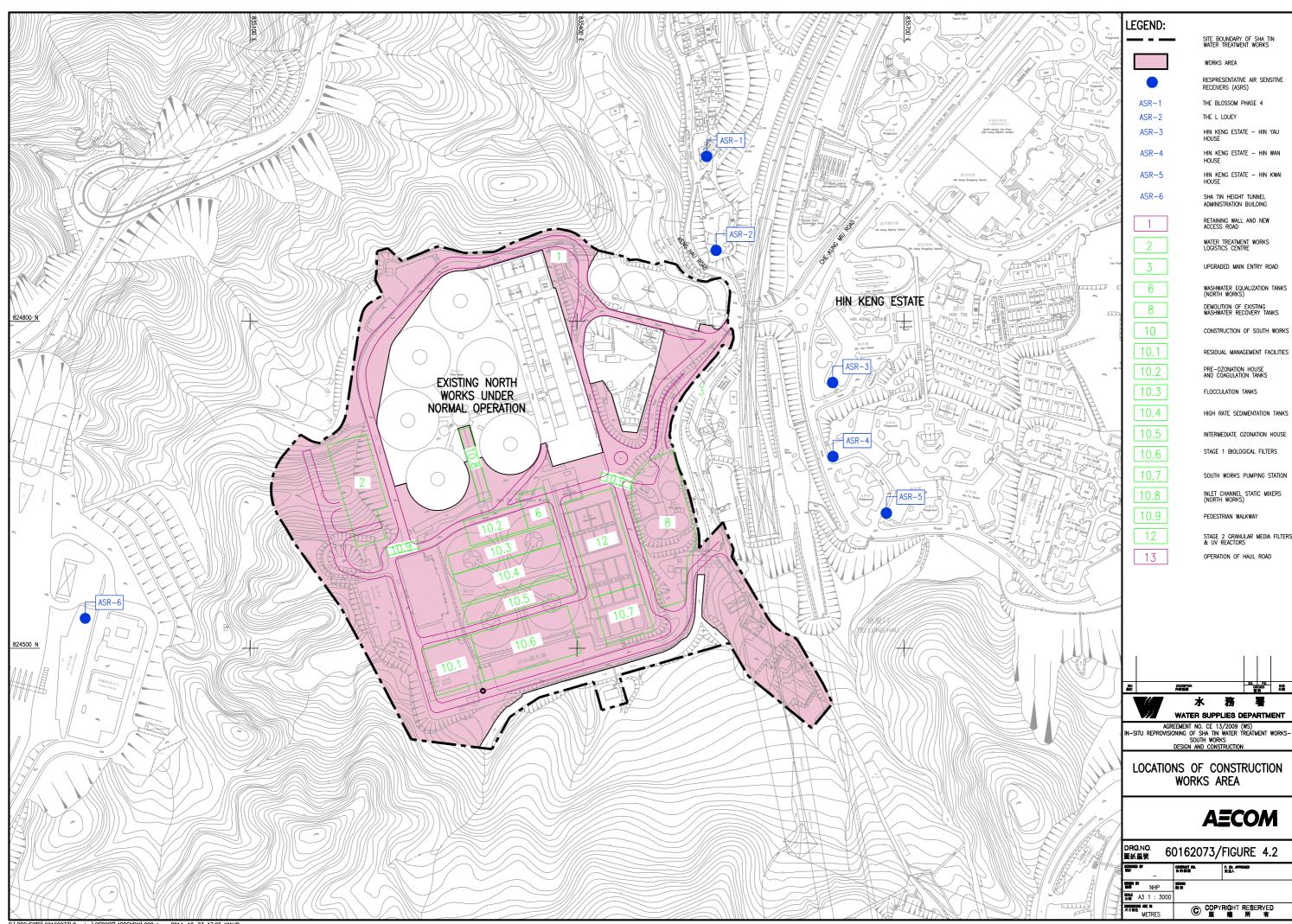
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Critical Split

Milestone +



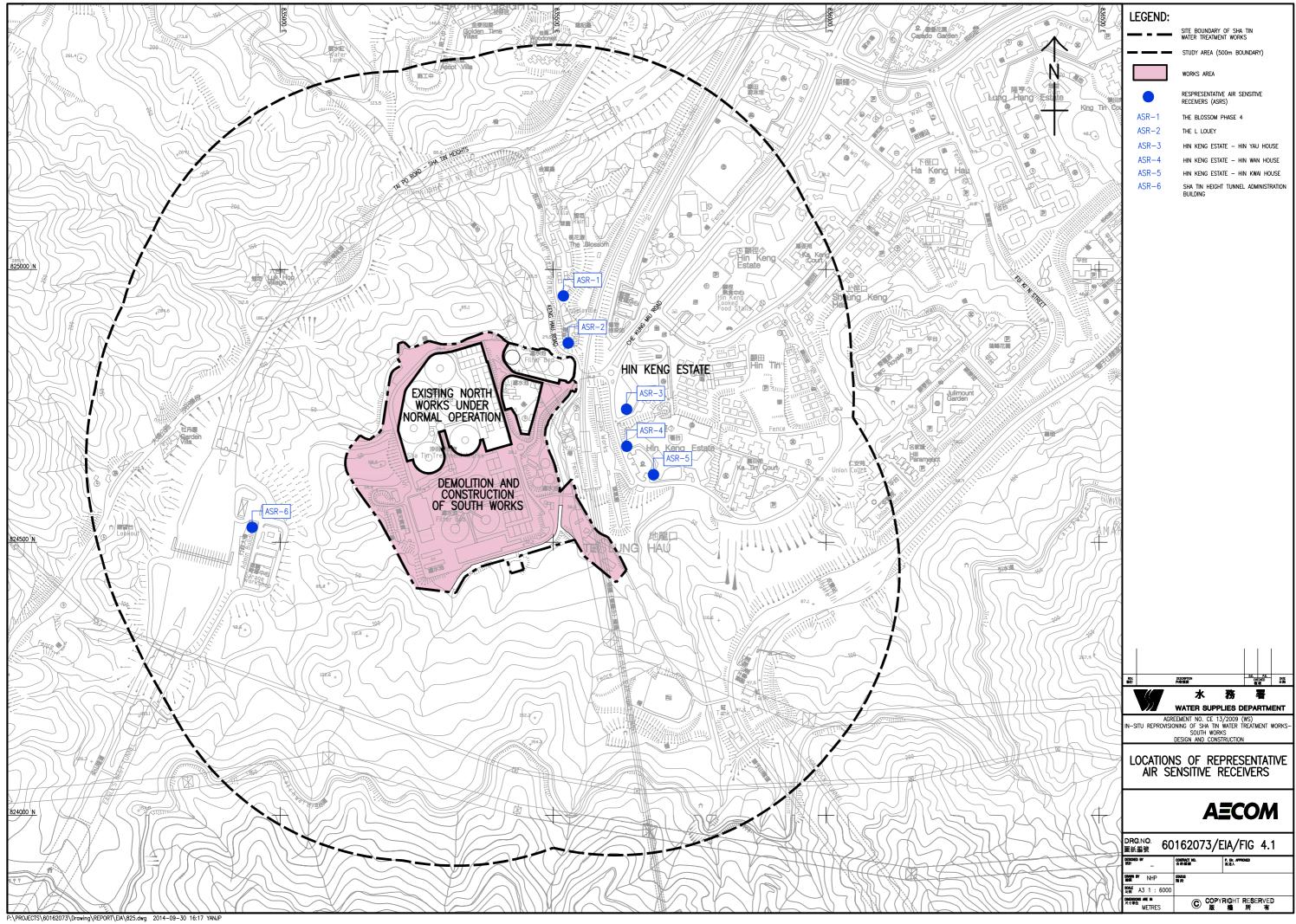
Appendix D Location of Construction Activities

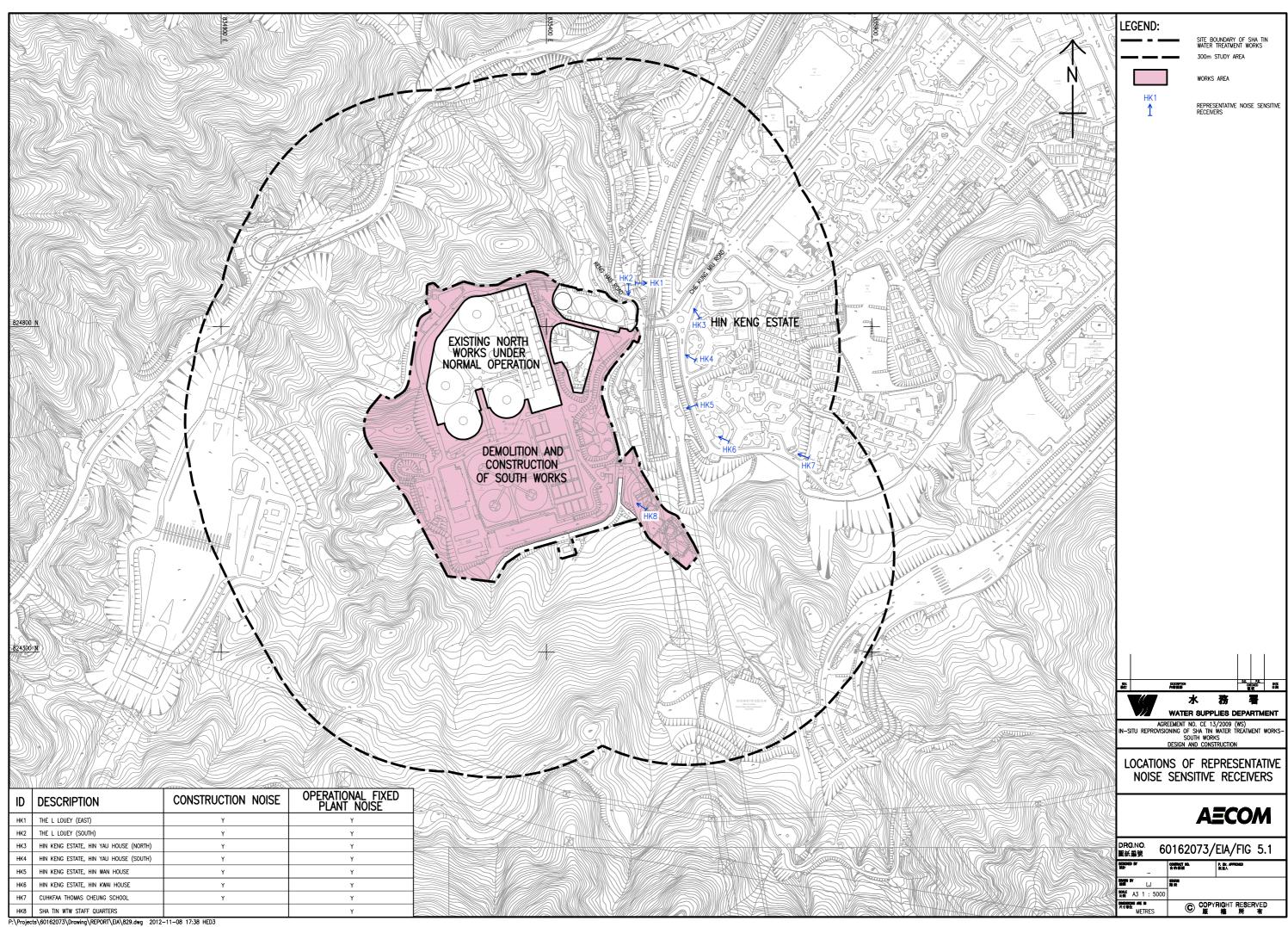


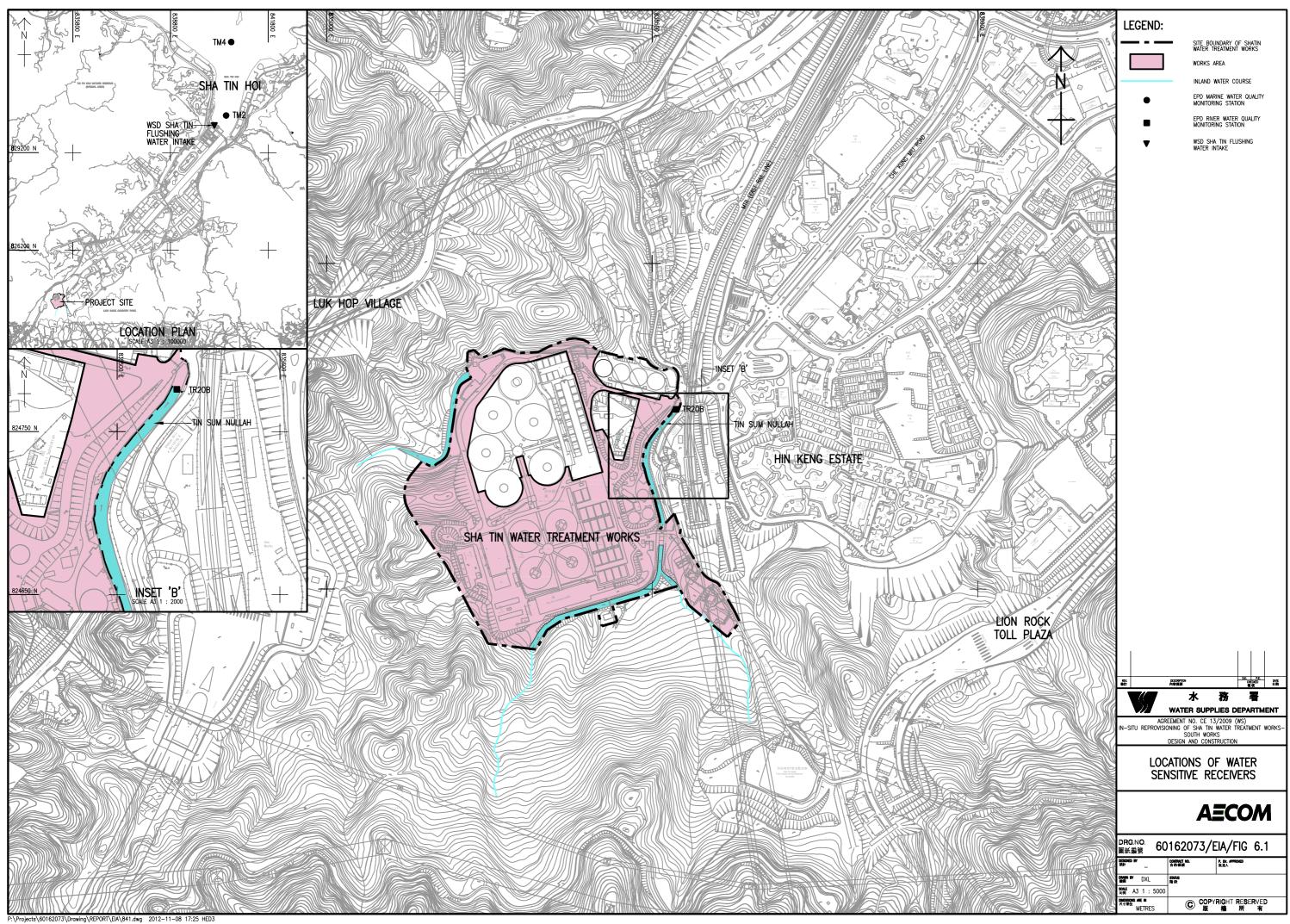
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DRG.NO. 60 圖紙編號 60	0162073/	FIGURE 4.2
DESIGNED BY TRat 	confinct HD. 合約網號	P. Dr. APPROVED 批准人
NHP	SNUS 階段	
SOLE A3 1 : 3000		
Demensions Are In R寸單位 METRES	C COPY	RIGHT RESERVED 權所有

Appendix E Environmental Sensitive Receivers in the Vicinity of the Project







Appendix F Summary of Action and Limit Levels

Monitoring Locations	Action Level 1-hour TSP, (μg/m³)	Limit Level 1-hour TSP, (µg/m ³)
AM1	357	500
AM2	334	500

Determination of Action and Limit Levels for Air Quality

Determination of Action and Limit Levels for Noise

Monitoring	Action Level	Limit Level in dB(A)
Location	0700-1900 hc	ours on normal weekdays
NM1		For domestic premises: 75 dB(A) for
NM2	When one documented	NM1 & NM2
NM3	complaint is received	For schools: 70dB(A) during normal teaching periods and 65 dB(A) during examination periods for NM3

Determination of Action and Limit Levels for Water Quality

Water	Dissolved Oxygen (mg/L)		Suspended Solids (mg/L)		Turbidity	r (NTU)	pl	H
monitoring stations	Action	Limit	Action	Limit	Action	Limit	Action	Limit
stations	Level	Level	Level	Level	el Level Level		Level	Level
C1	7.51	7.44	4.19	6.73	3.99	4.00	Beyond the range 6.6 to 7.9	Beyond the range 6.5 to 8.0
C2	8.10	7.98	4.33	8.16	3.13	3.28	Beyond the range 6.6 to 8.8	Beyond the range 6.5 to 8.9
C3*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M1	8.90	8.89	3.30	3.56	4.36	4.48	Beyond the range 6.6 to 8.2	Beyond the range 6.6 to 8.3
M2	8.92	8.91	18.84	26.80	12.64	13.72	Beyond the range 6.6 to 11.0	Beyond the range 6.6 to 11.0
M3	9.16	9.15	1.00	1.00	1.10	1.18	Beyond the range 6.6 to 8.6	Beyond the range 6.6 to 8.7

Remark: For DO, action should be taken when monitoring result of either one of the surface, middle or bottom DO is lower than the proposed Action/Limit Levels.

Appendix G Event/Action Plan

Air Quality

		ACT	ΓΙΟΝ	
EVENT	ET	IEC	ER	CONTRACTOR
ACTION LEVEL				
1. Exceedance for one	1. Inform the Contractor, IEC	1. Check monitoring data	1. Confirm receipt of	1. Identify source(s),
sample	and ER;	submitted by the ET;	notification of exceedance	investigate the causes of
	2. Discuss with the	2. Check Contractor's	in writing.	exceedance and propose
	Contractor on the remedial	working method; and		remedial measures;
	measures required;	3. Review and advise the ET		2. Implement remedial
	3. Repeat measurement to	and ER on the effectiveness		measures; and
	confirm findings; and	of the proposed remedial		3. Amend working methods
	4. Increase monitoring	measures.		agreed with the ER as
	frequency.			appropriate.
2. Exceedance for two or	1. Inform the Contractor, IEC	1. Check monitoring data	1. Confirm receipt of	1. Identify source and
more consecutive samples	and ER;	submitted by the ET;	notification of exceedance	investigate the causes
	2. Discuss with the ER and	2. Check Contractor's	in writing;	of exceedance;
	Contractor on the remedial	working method; and	2. Review and agree on the	2. Submit proposals for
	measures required;	3. Review and advise the ET	remedial measures proposed	remedial measures to
	3. Repeat measurements to	and ER on the effectiveness	by the Contractor; and	the ER with a copy to
	confirm findings;	of the proposed remedial	3. Supervise implementation	ET and IEC within three
	4. Increase monitoring	measures.	of remedial measures.	working days of notification;
	frequency to daily;			3. Implement the agreed
	5. If exceedance continues,			proposals; and

	arrange meeting with the			4. Amend proposal as
	IEC, ER and Contractor; and			appropriate.
	6. If exceedance stops,			
	cease additional monitoring.			
LIMIT LEVEL				
Event	ET	IEC	ER	CONTRACTOR
1. Exceedance for one	1. Inform the Contractor,	1. Check monitoring data	1. Confirm receipt of	1. Identify source(s) and
sample	IEC, EPD and ER;	submitted by the ET;	notification of exceedance	investigate the causes
	2. Repeat measurement to	2. Check the Contractor's	in writing;	of exceedance;
	confirm findings;	working method;	2. Review and agree on the	2. Take immediate action to
	3. Increase monitoring	3. Discuss with the ET, ER	remedial measures proposed	avoid further exceedance;
	frequency to daily; and	and Contractor on possible	by the Contractor; and	3. Submit proposals for
	4. Discuss with the ER, IEC	remedial measures; and	3. Supervise implementation	remedial measures to ER
	and contractor on the	4. Review and advise the ER	of remedial measures.	with a copy to ET and IEC
	remedial measures and	and ET on the effectiveness		within three working days of
	assess the effectiveness.	of Contractor's remedial		notification;
		measures.		4. Implement the agreed
				proposals; and
				5. Amend proposal if
				appropriate.

	ET	IEC	ER	CONTRACTOR
2. Exceedance for two or	1. Notify Contractor, IEC, EPD	1. Check monitoring data	1. Confirm receipt of	1. Identify source(s) and
more consecutive samples	and ER;	submitted by the ET;	notification of exceedance	investigate the causes of
	2. Repeat measurement to	2. Check the Contractor's	in writing;	exceedance;
	confirm findings;	working method;	2. In consultation with the ET	2. Take immediate action
	3. Increase monitoring	3. Discuss with ET, ER, and	and IEC, agree with the	to avoid further exceedance;
	frequency to daily;	Contractor on the potential	Contractor on the remedial	3. Submit proposals for
	4. Carry out analysis of the	remedial measures; and	measures to be	remedial measures to the ER
	Contractor's working procedures	4. Review and advise the ER	implemented;	with a copy to the IEC and
	with the ER to determine	and ET on the effectiveness	3. Supervise the	ET within three working days
	possible mitigation to be	of Contractor's remedial	implementation of remedial	of notification;
	implemented;	measures.	measures; and	4. Implement the agreed
	5. Arrange meeting with the IEC		4. If exceedance continues,	proposals;
	and ER to discuss the remedial		consider what portion of the	5. Revise and resubmit
	measures to be taken;		work is responsible and	proposals if problem still not
	6. Review the effectiveness of		instruct the Contractor to	under control; and
	the Contractor's remedial		stop that portion of work	6. Stop the relevant portion
	measures and keep IEC, EPD		until the exceedance is	of works as determined by
	and ER informed of the results;		abated.	the ER until the exceedance
	and			is abated.
	7. If exceedance stops, cease			
	additional monitoring.			

Noise

		ACI	ΓΙΟΝ	
EVENT	ET	IEC	ER	CONTRACTOR
ACTION LEVEL	1. Notify the Contractor, IEC	1. Review the investigation	1. Confirm receipt of	1. Investigate the complaint
	and ER;	results submitted by the	notification of complaint in	and propose remedial
	2. Discuss with the ER and	Contractor; and	writing;	measures;
	Contractor on the remedial	2. Review and advise the ET	2. Review and agree on the	2. Report the results of
	measures required; and	and ER on the effectiveness	remedial measures proposed	investigation to the IEC, ET
	3. Increase monitoring	of the remedial measures	by the Contractor; and	and ER;
	frequency to check mitigation	proposed by the Contractor.	3. Supervise implementation	3. Submit noise mitigation
	effectiveness.		of remedial measures.	proposals to the ER with
				copy to the IEC and ET
				within three working days of
				notification; and
				4. Implement noise mitigation
				proposals.
LIMIT LEVEL	1. Notify the Contractor, IEC,	1. Check monitoring data	1. Confirm receipt of	1. Identify source and
	EPD and ER;	submitted by the ET;	notification of failure in	investigate the causes of
	2. Repeat measurement to	2. Check the Contractor's	writing;	exceedance;
	confirm findings;	working method;	2. In consultation with the ET	2. Take immediate action to
	3. Increase monitoring	3. Discuss with the ER, ET	and IEC, agree with the	avoid further exceedance;
	frequency;	and Contractor on the	Contractor on the remedial	3. Submit proposals for
	4. Carry out analysis of	potential remedial measures;	measures to be	remedial measures to the ER

Contractor's working	and	implemented;	with copy to the IEC and ET
procedures to determine	4. Review and advise the ET	3. Supervise the	within three working days of
possible mitigation to be	and ER on the effectiveness	implementation of remedial	notification;
implemented;	of the remedial measures	measures; and	4. Implement the agreed
5. Arrange meeting with the	proposed by the Contractor.	4. If exceedance continues,	proposals;
IEC and ER to discuss the		consider what portion of the	5. Revise and resubmit
remedial measures to be		work is responsible and	proposals if problem still not
taken;		instruct the Contractor to	under control; and
6. Review the effectiveness		stop that portion of work until	6. Stop the relevant portion
of Contractor's remedial		the exceedance is abated.	of works as determined by
measures and keep IEC,			the ER until the exceedance
EPD and ER informed of the			is abated.
results; and			
7. If exceedance stops,			
cease			

Water Quality

		ACTION								
EVENT	ET Leader		IEC		ER		CONTRACTOR			
Action level being exceeded	•	Repeat in situ	•	Discuss with ET and	•	Discuss with IEC on the	•	Inform the ER and		
by one sampling day		measurement to		Contractor on the		proposed mitigation		confirm notification of		
		confirm findings;		mitigation measures;		measures;		the non-compliance in		
	•	Identify reasons for	•	Review proposals on	•	Make agreement on the		writing;		
		non-compliance and		mitigation measures		mitigation measures to	•	Rectify unacceptable		
		source(s) of impact;		submitted by		be implemented.		practice;		
	•	Inform IEC and		Contractor and advise	•	Assess the	•	Check all plant and		
		Contractor;		the ER accordingly;		effectiveness of the		equipment;		
	•	Check monitoring data,	•	Assess the		implemented mitigation	•	Consider changes of		
		all plant, equipment		effectiveness of the		measures.		working methods;		
		and Contractor's		Implemented mitigation			•	Discuss with ET and		
		working methods;		measures.				IEC and propose		
	•	Discuss mitigation						mitigation measures to		
		measures with IEC and						IEC and ER;		
		Contractor;					•	Implement the agreed		
	•	Repeat measurement						mitigation measures.		
		on next day of								
		exceedance.								

		ET Leader		IEC		ER		CONTRACTOR
Action level being exceeded	•	Repeat in situ	•	Discuss with ET and	•	Discuss with IEC on the	•	Inform the ER and
by more than one		measurement to		Contractor on the		proposed mitigation		confirm notification of
consecutive sampling day		confirm findings;		mitigation measures;		measures;		the non-compliance in
	•	Identify reasons for	•	Review proposals on	•	Make agreement on the		writing;
		non-compliance and		mitigation measures		mitigation measures to	•	Rectify unacceptable
		source(s) of impact;		submitted by		be implemented;		practice;
	•	Inform IEC and		Contractor and advise	•	Assess the	•	Check all plant and
		Contractor;		the ER accordingly;		effectiveness of the		equipment;
	•	Check monitoring data,	•	Assess the		implemented mitigation	•	Consider changes of
		all plant, equipment		effectiveness of the		measures.		working methods;
		and Contractor's		implemented mitigation			•	Discuss with ET and
		working methods;		measures.				IEC and propose
	•	Discuss mitigation						mitigation measures to
		measures with IEC and						IEC and ER within
		Contractor;						three working days;
	•	Ensure mitigation					•	Implement the agreed
		measures are						mitigation measures.
		implemented;						
	•	Prepare to increase the						
		monitoring frequency to						
		daily;						

	•	Repeat measurement on next day of exceedance.						
		ET Leader		IEC		ER		CONTRACTOR
Limit level being	•	Repeat in situ	•	Discuss with ET and	•	Discuss with IEC, ET	•	Inform the ER and
exceeded by one		measurement to		Contractor on the		and Contractor on the		confirm notification of
sampling day		confirm findings;		mitigation measures;		proposed mitigation		the non-compliance in
	•	Identify reasons for	•	Review proposals on		measures;		writing;
		non-compliance and		mitigation measures	•	Request Contractor to	•	Rectify unacceptable
		source(s) of impact;		submitted by		critically review the		practice;
	•	Inform IEC Contractor		Contractor and advise		working methods;	•	Check all plant and
		and EPD;		the ER accordingly;	•	Make agreement on the		equipment;
	•	Check monitoring data,	•	Assess the		mitigation measures to	•	Consider changes of
		all plant, equipment		effectiveness of the		be implemented;		working methods;
		and Contractor's		implemented mitigation	•	Assess the	•	Discuss with ET, IEC
		working methods;		measures.		effectiveness of the		and ER and propose
	•	Discuss mitigation				implemented mitigation		mitigation measures to
		measures with IEC, ER				measures.		IEC and ER within
		and Contractor;						three working days;
	•	Ensure mitigation					•	Implement the agreed
		measures are						mitigation measures.
		implemented;						

	•	Increase the monitoring frequency to daily until						
		no exceedance of Limit level.						
		ET Leader		IEC		ER		CONTRACTOR
Limit level being	•	Repeat in situ	•	Discuss with ET and	•	Discuss with IEC, ET	•	Inform the ER and
exceeded by more		measurement to		Contractor on the		and Contractor on the		confirm notification of
than one		confirm findings;		mitigation measures;		proposed mitigation		the non-compliance in
consecutive	•	Identify reasons for	•	Review proposals on		measures;		writing;
sampling day		non-compliance and		mitigation measures	•	Request Contractor to	•	Rectify unacceptable
		source(s) of impact;		submitted by		critically review the		practice;
	•	Inform IEC Contractor		Contractor and advise		working methods;	•	Check all plant and
		and EPD;		the ER accordingly;	•	Make agreement on the		equipment;
	•	Check monitoring data,	•	Assess the		mitigation measures to	•	Consider changes of
		all plant, equipment		effectiveness of the		be implemented;		working methods;
		and Contractor's		implemented mitigation	•	Assess the	•	Discuss with ET, IEC
		working methods;		measures.		effectiveness of the		and ER and propose
	•	Discuss mitigation				implemented mitigation		mitigation measures to
		measures with IEC, ER				measures;		IEC and ER within
		and Contractor;			•	Consider and instruct, if		three working days;
	•	Ensure mitigation				necessary, the	•	Implement the agreed
		measures are				Contractor to slow		mitigation measures;

implemented; Increase	down or to stop all or	• As directed by the ER,
the monitoring	part of the construction	to slow down or to stop
frequency to daily until	activities until no	all or part of the
no exceedance of Limit	exceedance of Limit	construction activities.
level for two	level.	
consecutive days.		

Appendix H Impact Monitoring Schedules

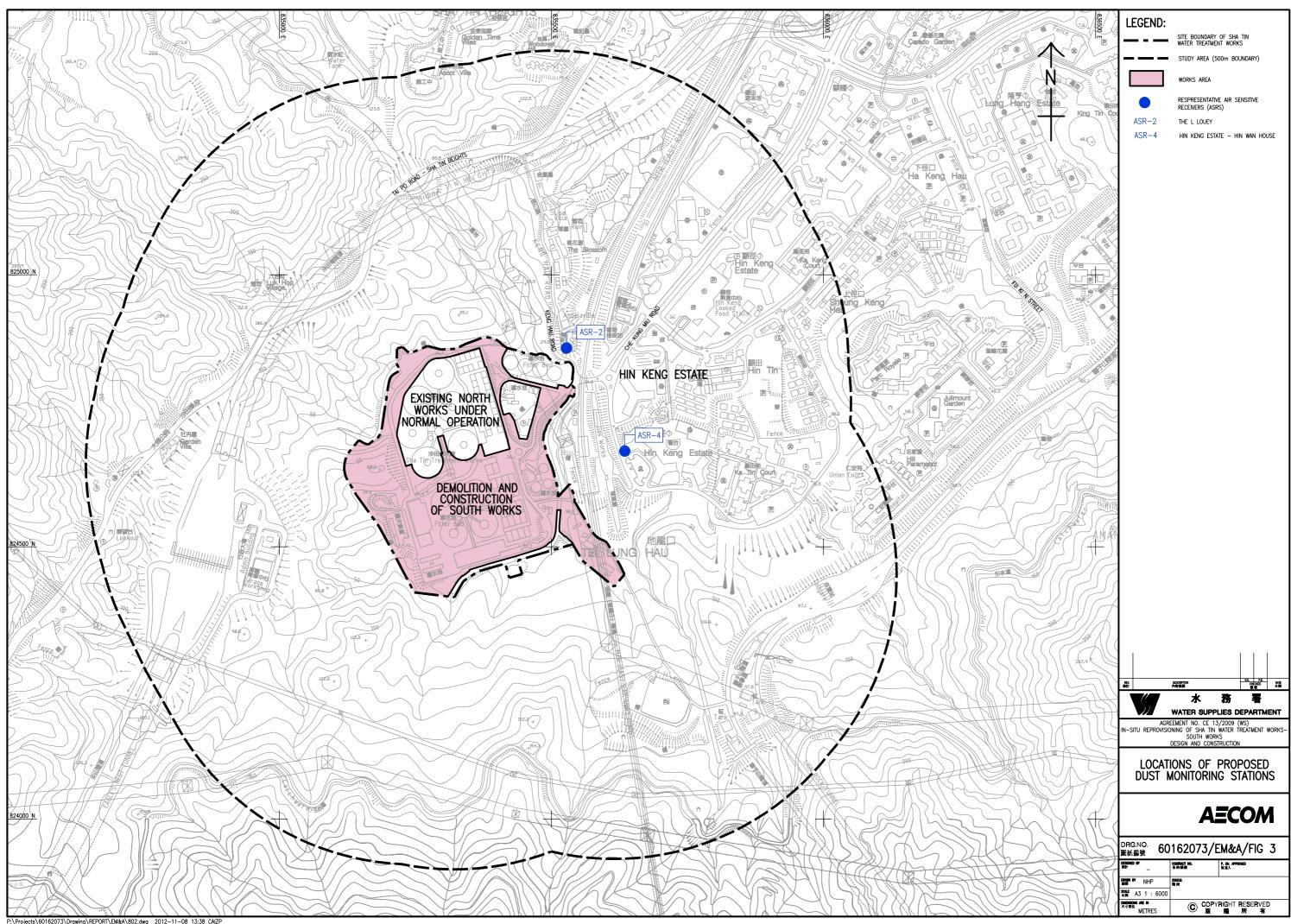
Impact Monitoring Schedule for STWTW

Impact Monitoring Schedule for STWTW Apr 20										
Sun	Mon	Tue		Thur	Fri	Sat				
			1	2	3	4				
			Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2					
5	6	7	8	9	10	11				
	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2 & NM3							
12	13	14	15	16	17	18				
		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2 & NM3		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3				
19	20	21	22	23	24	25				
	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2					
26	27	28	29	30						
	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2							

*Remark: No construction will be performed on public holiday 4/4, 10/4, 11/4, 13/4 & 30/4.

Impact Monitoring Schedule for STWTW						
Sun	Mon	Tue	Mar 20 Wed	Thur	Fri	Sat
5un 1	2	1 de	wed	5	6	sat 7
1	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2	5	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2	
8	9	10	11	12	13	14
	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3	
15	16	17	18	19	20	21
	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2	
22	23	24	25	26	27	28
	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3	
29	30	31				
	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2					

Appendix I Location Plan of Air Quality Monitoring Station



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Appendix J Calibration Certificates (Air Monitoring)

Project no.: CJO-3113



Sensidyne 80570 Nephelometer Calibration Certificate

Recommended calibration interval is 24 months from date of shipment and at 24 month intervals thereafter.

Serial #	P14471	
Firmware	80570-8100-V1.0.4	

All work has been successfully completed. (Sign off)

Calibrated By: <u>D. Best</u>	Date <u>0</u>7 Date <u>JUL</u>	<u>-24-2019</u> 2 6 2019
Next Calibration Due <u>07-24-2021</u>	Pass/Fail	Criteria
Balance Sheath/Sample Flow Rate	pass	± 5%
Set Sample Flow to 1 lpm	pass	± 5%
Set Zero (k=1)	pass	± 2 μg/m3
Set Gain	pass	± 5%
Set Serial & Model Number	X	_
Calibration Concentration, LD-3, µg/m ³	635	_

Sensidyne, LP

1000 112th Circle North Suite 100 St. Petersburg, FL 33716 U.S.A.

T 800-451-9444 T +1 727-530-3602 F +1 727-539-0550

Email: info@Sensidyne.com www.Sensidyne.com www.Schauenburg.com

Calibration Standards

Standard	Manufacturer	Model	SN	Cal Due
Nephelometer	Sibata	LD-3B	6X7759	12/14/2019

The test and calibration results on this report certify that this instrument complies with the product specifications at the time of this report. Calibration was performed using test instruments and standards that are traceable to NMIJ and the International System of Units (SI). Laser safety and anti-static procedures are followed.

80570-9600 Sensidyne Cal Cert Rev C





Sensidyne 80570 Nephelometer Calibration Certificate

Recommended calibration interval is 24 months from date of shipment and at 24 month intervals thereafter.

Serial #	R13214
Firmware	80570-8100-V1.0.4

All work has been successfully completed. (Sign off)

Calibrated By: <u>D. JONES</u> Quality Inspector: LD A 23	Date <u>10</u> Date <u>0</u>	<u>-01-2019</u> CT 0 3 2019
Next Calibration Due <u>10-01-2021</u>	Pass/Fail	Criteria
Balance Sheath/Sample Flow Rate	pass	± 5%
Set Sample Flow to 1 lpm	pass	± 5%
Set Zero (k=1)	pass	± 2 μg/m3
Set Gain	pass	± 5%
Set Serial & Model Number	X	_
Calibration Concentration, LD-3, µg/m ³	388	

Sensidyne, LP

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T 800-451-9444 T +1 727-530-3602 F +1 727-539-0550

Email: info@Sensidyne.com www.Sensidyne.com www.Schauenburg.com

Calibration Standards

Standard	Manufacturer	Model	SN	Cal Due
Nephelometer	Sibata	LD-3B	6X7759	12/14/2019

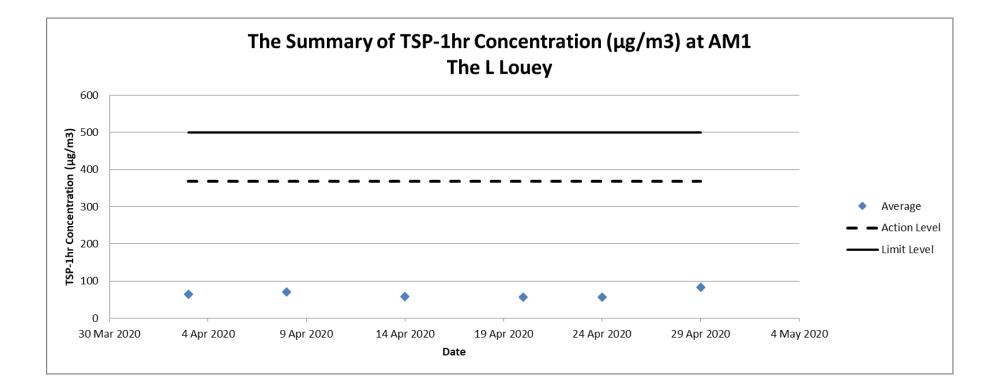
The test and calibration results on this report certify that this instrument complies with the product specifications at the time of this report. Calibration was performed using test instruments and standards that are traceable to NMIJ and the International System of Units (SI). Laser safety and anti-static procedures are followed.

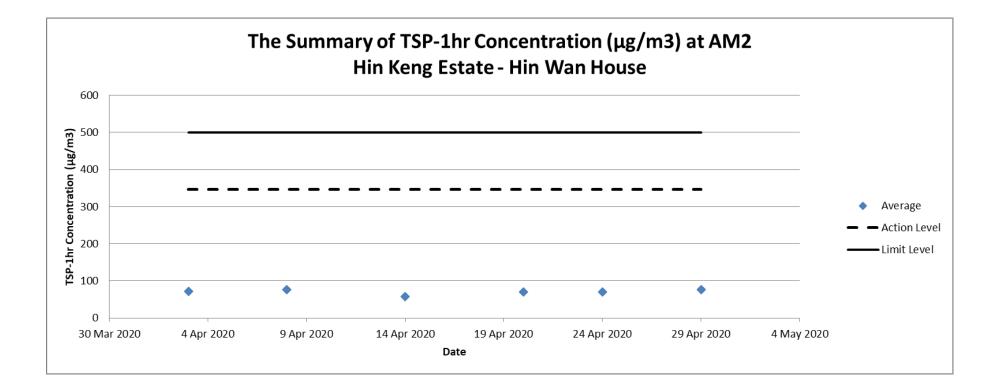
80570-9600 Sensidyne Cal Cert Rev C



A company of the SCHAUENBURG International Group

Appendix K Impact Air Quality Monitoring Results and Graphical Presentation

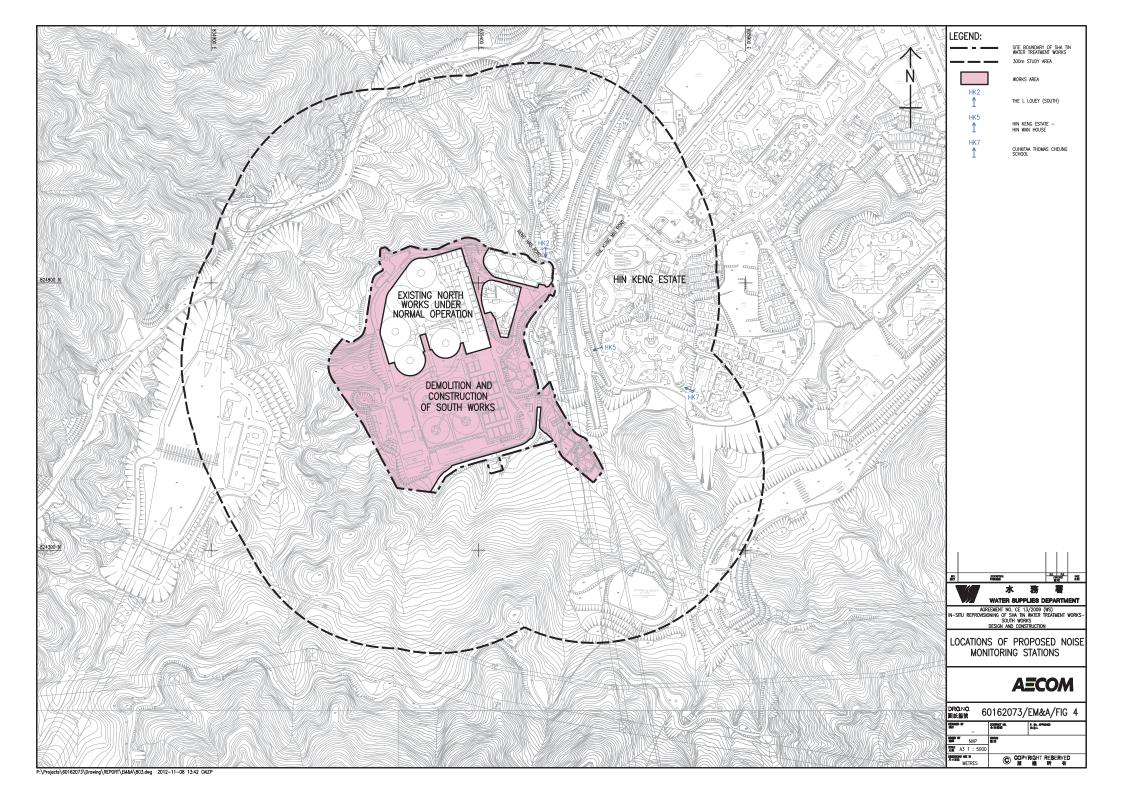




Appendix L Location Plan of Noise Monitoring Station

Acumen Environmental Engineering & Technologies Company Limited

Project no.: CJO-3113



Appendix M Calibration Certificates (Noise)

Project no.: CJO-3113





This instrument was produced under rigorous factory production control and documented standard procedures. It was individually visually inspected, leak tested and function tested for display, backlight, button and software performance. The accuracy of each of its primary measurements was individually calibrated and/or tested against standards traceable to the National Institute of Standards and Technology ("NIST") or calibrated intermediary standards. This instrument is certified to have performed at the time of manufacture in compliance with the following specifications as they apply to this meter's specific model, measurements and features.

Methods Used in Calibration and Testing

Wind Speed:

The Kestrel Pocket Weather Meter impeller installed in this unit was individually tested in a subsonic wind tunnel operating at approximately 300 fpm (1.5 m/s) and 1200 fpm (6.1 m/s) monitored by a Gill Instruments Model 1350 ultrasonic time-of-flight anemometer. The Standard's maximum combined uncertainty is +/-1.04%within the airspeed range 706.6 to 3923.9 fpm (3.59 to 19.93 m/s), and +/-1.66% within the airspeed range 166.6 to 706.6 fpm (0.85 to 3.59 m/s).

Temperature:

Temperature response is verified in comparison with a Eutechnics 4600 Precision Thermometer or a standard Kestrel 4000 Weather and Environmental Meter calibrated weekly against the Eutechnics 4600. The Eutechnics 4600 is calibrated annually and is traceable to NIST with a system accuracy of +/-0.05 °C.

Direction / Heading

The sensitivity of the magnetic directional sensor is verfied at the component level by applying a magnetic field to the sensor and measuring the signal output at 4 points, as well as after assembly by orienting the unit to the cardinal directions and measuring the magnetic field output. In both cases the compass output must be accurate to within ± -5 degrees.

Relative Humidity:

Relative humidity receives a two-point calibration in humidity and temperature controlled chambers at 75.3% RH and 32.8% RH at 25° C. The calibration tanks are monitored with an Edgetech Model 2002 DewPrime II Standard Chilled Mirror Hygrometer. Following calibration, performance is further verified at an RH of approximately 43.2% against the Edgetech Hygrometer. The Edgetech Hygrometer is calibrated annually and is traceable to NIST with a maximum relative expanded uncertainty of +/- 0.2% RH.

Barometric Pressure:

Pressure response is verified against a Mensor Series 6000 Digital Barometer or a standard Kestrel 4000 Weather and Environmental Meter calibrated weekly against the Mensor Barometer. The Mensor Barometer is calibrated annually and is traceable to NIST with a maximum relative expanded uncertainty of +/- 0.02% F.S.

Approved By:

Michael Naughton, Engineering Manager

The enclosed Kestrel Weather and Environmental Meter was manufactured by Nielsen-Kellerman Co. at its facilities located at 21 Creek Circle, Boothwyn, PA 19061 USA.

															SENSO	RS		
SENSOR	1000	2000	2500	3000	3500	3500	4000	4200	4250	4300	4400	4500	4500	ACCURACY (+/-)*	RESOLUTION	SPECIFICATION RANGE	OPERATIONAL RANGE	NOTES
Wind Speed Air Flow	•	•	•	•	•	•	•	•	•	•	•	•	•	Larger of 3% of reading, least significant digit or 20 ft/min	0.1 m/s 1 ft/min 0.1 km/h 0.1 kmots 1 B	0.6 to 40.0 m/s 118 to 7,874 ft/min 2.2 to 144.0 km/h 1.3 to 89.5 mph 1.2 to 77.8 knots 0 to 12 B	0.6 to 60.0 m/s 118 to 11,811 ft/min 2.2 to 216.0 km/h 1.3 to 134.2 mph 1.2 to 116.6 kmots 0 to 12 B	1 inch/25 mm diameter impeler with precision axie and low-friction Zytel8 bearings. Startup s statud as sover imit, readings may be taken down to 04 mm (7 Britmin 11 Shrmh 1 Bryth). Effort impeler statud as 04 mm (2 Britmin 11 Shrmh 1 Bryth). Effort and the regiment statud (2 Britmin 12 Bryth 12
Ambient Temperature	V	•	•	•	•	•	•	•	•	•	•	•	•	0.9 *F 0.5 *C	0.1 *F 0.1 *C	-20.0 to 158.0 *F -29.0 to 70.0 *C	14.0.0 to 131.0 "F -10.0 to 55.0 "C	Hermelically-seaked, precision thermitor mounted externally and thermally licelated (US Paik 5.936.645) for rapidr response. Altificion (2.2 mpc) if mis or greater provide fatteet response exaction of molecular offset. C alternal on threadgible. Thermater may also be used to may be used to make the second second and the second
Globe Temperature - Tg								-			•			*F 1.4 *C	0.1 *F 0.1 *C	-20.0 to 140.0 °F -29.0 to 60.0 °C	14.0 to 131.0 *F -10.0 to 55.0 *C	Temperature inside 1in 25 mm black powder coated copper globe converted to Tg equivalent standard 6 in 150 mm globe. Closest equivalence obtained with airflow greater than 2.2 mph m/s.
Relative Humidity				•	•	•	•	•	•	•	•	•	•	3.0 %RH	0.1 %RH	5 to 95% non-condensing	0 to 100%	Polymer capacitive humidity sensor mounted in thin-walled chamber external to case for rapic accurate response (US Plante 6.257 2074). To achieve stated accuracy, unit mat be permit equilibrate to activate la Imprature wall encoursed to large, rapid temperature dranges and b out of direct sunight. California of the -2% over 24 months. Humidity sensor may be recall at factory or in fault using Kastel Humiding California for (MR PH-0602).
Pressure	1	-01	•	14	•	•	•		•	•		•	•	0.03 inHg 1.0 hPaImbar 0.01 PSI	0.01 inHg 0.1 hPajmbar 0.01 PSI	8.86 to 32.49 inHg 300.0 to 1100.0 hPajmbar 4.35 to 15.95 PSI and 32.0 to 185.0 *F 0.0 to 85.0 *C	0.30 to 48.87 in Hg 10.0 to 1654.7 h Palmbar 0.14 to 24.00 PSI and 14.0 to 131.0 °F -10.0 to 55.0 °C	Monothics sillion piecewsitely pressure sensor with second-order temperature controllon- Pressure sensor may be nearbitrated at tochyo in field, adjustable inference attubus also display of tation pressure on anometric pressure connected to MSL. Kestini 4.200 display attation pressure on addicated screen. Restriet 2.200 and 3500 display continuously update three-hour barometric pressure trend indicator: main graphy, ning, steady, falling, falling na kestitel 4.000 series displays on sexite tend frough graphing function. PSI display on Kestrie 4.000 series displays on sexite trend frough graphing function. PSI display on Kestrie
Compass		153						1919 1-1-1-1				•	•	5*	1* 1/16th Cardinal Scale	0 to 360*	0 to 360°	400 series only. 2-axis sole-state magnetoresistive sensor mounted perpendicular to unit plane. Accuracy of sensor dependent upon unit's vertical populion. Self-aultication routine eliminates imagnetic en from bittimis or unit anomato te un after every full power-down (bittimy removal or change increation). Declaracionariation advatable for Time North read-ut.
						18								CALCUL		SUREMENTS		
MEASUREMENT	1000	2000	2500	3000	3500	3500 DT	4000	4200	4250	4300	4400	4500	4500 HOR	ACCURACY (+/-)*	RESOLUTION	SPECIFICATION RANGE	SENSORS EMPLOYED	NOTES
Air Density	1	-	1		123	Y	1	•	•		13	31	3.23	0.0002 lb/tt ³ 0.0033 kg/m ³	0.001 lbs/ft ³ 0.001 kg/m ³	Refer to Ranges for Sensors Employed	Temperature Relative Humidity Pressure	Mass of air per unit volume
Air Flow								•	-					6.71%	1 cfm 1 m ³ /hr 1 m ³ /m 0.1m ³ /s 1 L/s	Refer to Ranges for Sensors Employed	Air Flow User Input (Duct Shape & Size)	Volume of air flowing through an opening. Automatically calculated from Air Velocity measure and user-specified duct shape (circle or rectangle) and dimensions (units, in ft, cm or m). Maximum duct dimension input: 258.0 in 21.5 ft 655.3 cm 6.35 m.
Altitude			•		•	•	•	•	•	•	•	•	•	typical: 23.6 ft 7.2 m max: 48.2 ft 14.7 m	1 ft 1 m	typical: 750 to 1100 mBar max: 300 to 750 mBar	Pressure User Input (Reference Pressure)	Height above Mean Sea Level ("MSL"). Temperature compensated pressure (barometric) altimeter requires accurate reference barometric pressure to produce maximum absolute accuracy. Both accuracy specs corresponds to a reference pressure anywhere from 850 to mBar.
Barometric Pressure			•		•	•	•	•	•	•	•	•	•	0.07 inHg 2.4 hPa mbar 0.03 PSI	0.01 inHg 0.1 hPa mbar 0.01 PSI	Refer to Ranges for Sensors Employed	Pressure User Input (Reference Altitude)	Air pressure that would be present in identical conditions at MSL. Station pressure compensation local elevation provided by reference abitude. Requires accurate reference abitude to pro maximum absolute accuracy.
Crosswind & Headwind/Tailwind											rin		•	7.1%	1 mph 1 ft/min 0.1 km/h 0.1 m/s 0.1 knots	Refer to Ranges for Sensors Employed	Wind Speed Compass	Effective wind relative to a target or travel direction. Auto-switching headwindtailwind indicate
Delta T	18		an		an	•							ins	3.2 *F 1.8 *C	0.1 *F 0.1 *C	Refer to Ranges for Sensors Employed	Temperature Relative Humidity Pressure	Difference between dry bulb temperature and wet bulb temperature. When spraying, indicate evaporation rate and droplet lifetime. Safe range for pesticide spraying is 4 to 16 $^{\circ}$ / 2 to 9 $^{\circ}$
Density Altitude							•	•	•	•	•	•	•	226 ft 69 m	1 ft 1 m	Refer to Ranges for Sensors Employed	Temperature Relative Humidity Pressure	Local air density converted to equivalent elevation above sea level in a uniform layer consisti the International Standard Atmosphere.
Dewpoint				•	•	•	•	•	•		•	•	•	3.4 *F 1.9 *C	0.1 *F 0.1 *C	15 to 95 % RH Refer to Range for Temperature Sensor	Temperature Relative Humidity	Temperature that a volume of air must be cooled to at constant pressure for the water vapor present to condense into dew and form on a solid surface. Can also be considered to be the water-to-air saturation temperature.
Evaporation Rate										•				0.01 lb/ft ² /hr 0.06 kg/m2/hr	0.01 b/ft²/hr 0.01 kg/m²/hr	Refer to Ranges for Sensors Employed	Wind Speed Temperature Relative Humidity Pressure User Input (Concrete Temperature)	The rate at which moleture is lost from the surface of curing concrete. Requires user measurement and entry of concrete temperature obtained with an accurate IR or probe thermometer ("F or "C, not included). Readings should be taken 20 inches above pour surfac with the thermiser braked, and averaged for 5-10 seconds using built-in waveraging function.
Heat Index		121	•	1.	•	1231	•	•	•	•	•	•	•	7.1 *F 4.0 *C	0.1 *F 0.1 *C	Refer to Ranges for Sensors Employed	Temperature Relative Humidity	Perceived temperature resulting from the combined effect of temperature and relative humidit Calculated based on NVNS Heat Index (HI) tables. Measurement range limited by extent of published tables.
Moisture Content Humidity Ratio ("Grains")								•	•					.3 gpp .04 g/kg	0.1 gpp 0.01 g/kg	Refer to Ranges for Sensors Employed	Temperature Relative Humidity Pressure	Mass of water vapor in a mass of air.
Relative Air Density									•					0.3%	0.1%	Refer to Ranges for Sensors Employed	Temperature Relative Humidity Pressure	The ratio, expressed as a percentage, of measured air density to the air density of a standard atmosphere as defined by the ICAO.
Thermal Work Limit (TWL)														10.9 W/m ²	0.1 W/m²	Refer to Ranges for Sensors Employed	Wind Speed Temperature Giobe Temperature Relative Humidity Pressure	Estimated safe maximum continuously sustainable human metabolic rate (Wim2) for the conditions and clothing factors. Based off of estimated metabolic output of typical human. On screen zone warnings.
Outdoor Wet Bulb Globe Temperature (WBGT)											•			1.3 °F 0.7 °C	0.1 *F 0.1 *C	Refer to Ranges for Sensors Employed	Wind Speed Temperature Globe Temperature Relative Humidity Pressure	Measure of human heat stress defined as the combination of effects due to radiation, convec and conduction. Outdoor WBGT is calculated from a weighted sum of natural wet bub (Triwb) globe temperature (Tg), and dry bub temperature (Td). User settable on-screen warning zone
Wet Bulb Temperature - aturally Aspirated (Tnwb)					23	112	18	3. "F) 11	936)	•	101		1.4 *F 0.8 *C	0.1 *F 0.1 *C	Refer to Ranges for Sensors Employed	Wind Speed Temperature Globe Temperature Relative Humidity Pressure	Similar to psychrometric web-bub temperature (see below). However, Trub only undergoes for convection from the ambient air velocity. Trub is a measure of the evaporative cooling that th will allow. This is accounted for by combining the effects of, mainly, relative humidity and windspeed.
Wet Bulb Temperature - Psychrometric					•	•	•		•	•	•	•	•	3.2 °F 1.8 °C	0.1 *F 0.1 *C	Refer to Ranges for Sensors Employed	Temperature Relative Humidity Pressure	Temperature indicated by a sling psychrometer. Due to nature of the psychrometric ratio for water-air system, this approximates the thermodynamic wei-bub temperature. The thermodyn wei-bub temperature is the temperature a parcel of air would have if cooled adiabatically to saturation temperature via water evaporating into it.
Wind Chill		•			•		•	•		•	•	•	•	1.6 *F 0.9 *C	0.1 *F 0.1 *C	Refer to Ranges for Sensors Employed	Wind Speed Temperature	Perceived temperature resulting from combined effect of wind speed and temperature. Calcul based on the NWS Wind Chill Temperature (WCT) Index, revised 2001, with wind speed adju by a factor of 1.5 to yield equivalent results to wind speed measured at 10 m above ground. Measurement range limited by extern of published tables.
																CIFICATIONS		
Display & Backlight		•	•								AND CONTRACTOR	CONT.		Reflective 5 digit LCD. D	Digit height 0.36 in / 9 r	nm. Choice of aviation green of	iuminescent backlight. Manual activation or visible red (NV models only) electrol	uminescent backlight. Manual activation with auto-off.
Response Time & Display Update	•	•	•	•	•	•	•	•	•	•	•	•		All measurements except equilibrate to a large cha	ot those based on relations in the measurements of		ly within 1 second. Relative humidity a tes every 1 second.	viectroluminescent backlight. Automatic or manual activation. nd all measurements which include RH in their calculation may require as long as 1 minute to ful
Max/Avg Wind			-				•	•	•	•	•	•	•					with all other wind-related functions: air velocity, crosswind, headwind/tailwind, wind chill, WBGT
Data Storage & Graphical Display, Min/Max/Avg History										• 3600 points			• 2500	Minimum, maximum, ave				ta logger with graphical display. Mariual and auto data storage. Min/Max/Avg history may be res y off except for 2 and 5 second intervals (code version 4.18 and later). Data capacity shown.
ata Upload & Bluetooth® Data Connect Option								•	•	•	•	•		Bluetooth Data Trans pairing and transmitting.	fer Option: Adjustabl Employs Bluetooth Se	32) or Bluetooth data transfer e power consumption and radi rial Port Protocol for data tran 32) or Bluetooth data transfer	io range from up to 30 ft 9 meters. In smission.	sividual unit ID and 4-digit PIN code preprogrammed for easy identification and data security whe
Clock / Calendar					•		•	•			•	•		Requires optional PC int	erface (USB or RS-23	 or Bluetooth data transfer or Bluetooth data transfer or Bluetooth data transfer 	option and provided software.	Western refer to the transfer of
Auto Shutdown Languages							•	•	*	*	•	•		Requires optional PC int English, French, German	erface (USB or RS-23 n, Italian, Spanish.	32) or Bluetooth data transfer	option and provided software.	
Certifications Origin	•	*	*	*	*	•	*	•	•		•	•		CE certified, RoHS and Designed and manufact	WEEE compliant. Inde ured in the USA from U	JS and imported components.		ts available at additional charge). t and Tariff Code Transformation requirements for NAFTA Preference Criterion B.
Battery Life	•	•	•	•	•	•	•				•	•		Standard Models: AA	A Alkaline, two, include	d. Average life, 400 hours of u	klight use in 2000 to 3500 models. use, reduced by backlight or Bluetooth	radio transmission use.
Shock Resistance Sealing	•	•	•		•	•	•	•	•	•	•	•		Waterproof (IP67 and N	EMA-6).		t may damage replaceable impeller.	nge of the display and batteries by maintaining the unit within the operational range and exposin
Operational Temperature Limits Storage Temperature	*	•	•	•	*	*	*	*	*	•	•	*		14" F to 131" F -10 "C to the more extreme env -22.0 "F to 140.0 "F -3	ironment for the minim	nts may be taken beyond the li num time necessary to take rea	ading.	nge or one weavery and batteries by maintaining, the unit within the operational range and exposin
atorage remperature		•	•				-		-		-	-		4.8 x 1.9 x 1.1 in / 12.2 >	4.8 x 2.8 cm, 3.6 oz /	102 g (including slip-on cover)).	
Size & Weight														5.0 x 1.8 x 1.1 in / 12.7 x	45x28 m 20	102 g		

Please note, these specifications are valid for all Kestrel 4400 products and all other Kestrel 4000 series with a serial number higher than 659340. If your product has a lower serial number, please reference the previous version of the specifications.

Certificate of Calibration

for

Description:	Sound Level Meter
Manufacturer:	NTi Audio
Type No.:	XL2 (Serial No.: A2A-09696-E0)
Microphone:	ACO 7052 (Serial No.: 60997)
Preamplifier:	MA220 (Serial No.: 5287)
	Submitted by:

Customer:	Acumen Environmental Engineering and Technologies Co.
	Ltd.
Address:	No.12, Tam Kon Shan Road, Tsing Yi Island, Hong Kong

Upon receipt for calibration, the instrument was found to be:

\checkmark	Within
	Outside

the allowable tolerance.

The test equipment used for calibration are traceable to National Standards via:

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory

Date of receipt: 28 February 2020

Date of calibration: 2 March 2020

Calibrated by: Calibration Technician

Certified by: Mr. Ng Yan Wa Laboratory Manager



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Certificate No.: APJ19-168-CC001

Date of issue: 2 March 2020

1. Calibration Precaution:

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 24 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
- The results presented are the mean of 3 measurements at each calibration point.

2. Calibration Conditions:

Air Temperature:	23.7 °C
Air Pressure:	1008 hPa
Relative Humidity:	54.5 %

3. Calibration Equipment:

	Туре	Serial No.	Calibration Report Number	Traceable to
Multifunction Calibrator	B&K 4226	2288467	AV180064	HOKLAS

4. Calibration Results

Sound Pressure Level

Reference Sound Pressure Level

Setting of Unit-under-test (UUT)			Applied value		UUT Reading,	IEC 61672 Class 1	
Range, dB	Freq. W	eighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
30-130	dBA	SPL	Fast	94	1000	94.0	±0.4

Linearity

Setting of Unit-under-test (UUT)			Applied value		UUT Reading,	IEC 61672 Class 1	
Range, dB	Freq. V	Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
				94		94.0	Ref
30-130	dBA	SPL	Fast	104	1000	104.0	±0.3
				114		114.0	±0.3

Time Weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading,	IEC 61672 Class 1	
Range, dB	Freq.	Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
30-130	dBA	SPL	Fast	94	1000	94.0	Ref
30-130	uDA	A SPL	Slow	94	1000	94.0	±0.3

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Frequency Response

Linear Response

Setting of Unit-under-test (UUT)				Appl	Applied value		IEC 61672 Class 1
Range, dB	Freq. We	eighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
2					31.5	94.0	±2.0
					63	94.1	±1.5
					125	94.2	±1.5
					250	94.1	±1.4
30-130	dB	dB SPL	Fast	94	500	94.1	±1.4
					1000	94.0	Ref
	0	0			2000	93.8	±1.6
					4000	93.3	±1.6
	_		8000	92.9	+2.1: -3.1		

A-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading,	IEC 61672 Class 1	
Range, dB	Freq. We	eighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
				31.5	55.6	-39.4 ±2.0	
				63	67.9	-26.2±1.5	
				125	78.0	-16.1±1.5	
			Fast	94	250	85.4	-8.6±1.4
30-130	dBA	SPL			500	90.8	-3.2±1.4
					1000	94.0	Ref
				2000	95.0	$+1.2\pm1.6$	
					4000	94.3	$+1.0 \pm 1.6$
					8000	91.8	-1.1+2.1; -3.1

C-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading,	IEC 61672 Class 1	
Range, dB	Freq. W	eighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
				31.5	91.0	-3.0 ±2.0	
				63	93.2	-0.8±1.5	
				125	94.0	-0.2±1.5	
				94	250	94.1	-0.0 ± 1.4
30-130	dBC	SPL	Fast		500	94.1	-0.0±1.4
					1000	94.0	Ref
					2000	93.6	-0.2±1.6
					4000	92.5	-0.8±1.6
					8000	89.9	-3.0+2.1; -3.1

(A+A)

Certificate No.: APJ19-168-CC001

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Room 422,Leader Industrial Centre,57-59 Au Pui Wan Street ,Fo Tan, Shatin,N.T.,Hong KongTel: (852) 2668 3423Fax:(852) 2668 6946Homepage: http://www.aa-lab.comE-mail : inquiry@aa-lab.com



5. Calibration Results Applied

The results apply to the particular unit-under-test only. All calibration points are within manufacture's specification as IEC 61672 Class 1.

Uncertainties of Applied Value:

94 dB	31.5 Hz	± 0.10
	63 Hz	± 0.10
	125 Hz	± 0.10
	250 Hz	± 0.05
	500 Hz	± 0.10
	1000 Hz	± 0.05
	2000 Hz	± 0.05
	4000 Hz	± 0.05
	8000 Hz	± 0.10
104 dB	1000 Hz	± 0.05
114 dB	1000 Hz	± 0.05

The uncertainties are evaluated for a 95% confidence level.

Note:

The values given in this certification only related to the values measured at the time of the calibration and any uncertainties quoted will not allow for the equipment long-term drift, variations with environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the calibration. (A+A)*L shall not be liable for any loss or damage resulting from the use of the equipment.

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Certificate No.: APJ19-168-CC001



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CALIBRATION CERTIFICATE

Certificate Information	on					
Date of Issue	22-Oct-2019]	Certificate Number	MLCN192765S		
Customer Informatio	n					
Company Name		lity Consulting Limite				
Address		01-305 Castle Peak R	oad,			
	Kwai Chung, N.T					
Equipment-under-Te	st (EUT)					
Description	Sound Level Cali	brator				
Manufacturer	Rion					
Model Number	NC-74					
Serial Number	34504770					
Equipment Number						
Calibration Particula	ır					
Date of Calibration	22-Oct-2019					
Calibration Equipment		/ AV180068 / 13-May				
	1357(MLTE190)	/ MLEC19/05/02 / 26	-May-20			
Calibration Procedure	MLCG00, MLCO	315				
Calibration Conditions	Laboratory	Temperature	23 °C ± 5 °C			
		Relative Humidity	55% ± 25%			
	EUT	Stabilizing Time	Over 3 hours			
		Warm-up Time	Not applicable			
		Power Supply	Internal battery			
Calibration Results	Calibration data were detailed in the continuation pages.					
	Calibration result was out of EUT specification.					
Approved By & Date						
			K.O. Lo	22-Oct-2019		
Statements						
* Calibration equipment used						
			at the time of the calibration and the uncerta			
mishandling, misuse, and the			hanges, vibration and shock during transpo easurement.	rtation, overloading,		
* MaxLab Calibration Centre	Limited shall not be lia	ble for any loss or damage	resulting from the use of the EUT.			
 The copy of this Certificate written approval of MaxLab 			No part of this Certificate may be reprodu-	ced without the prior		
written approval of waxLat	Canoration Centre Lin	inted.				

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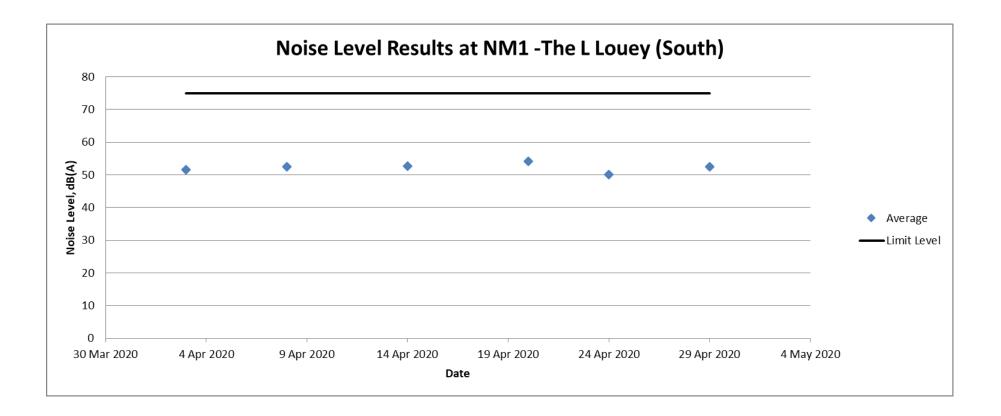
Certificate No. MLCN192765S **Calibration Data** EUT Standard **EUT Error from** Calibration EUT Setting Reading Setting Uncertainty Specification dB 94.0 dB 94 0.0 dB 0.20 dB 0.3 dB \pm - END -

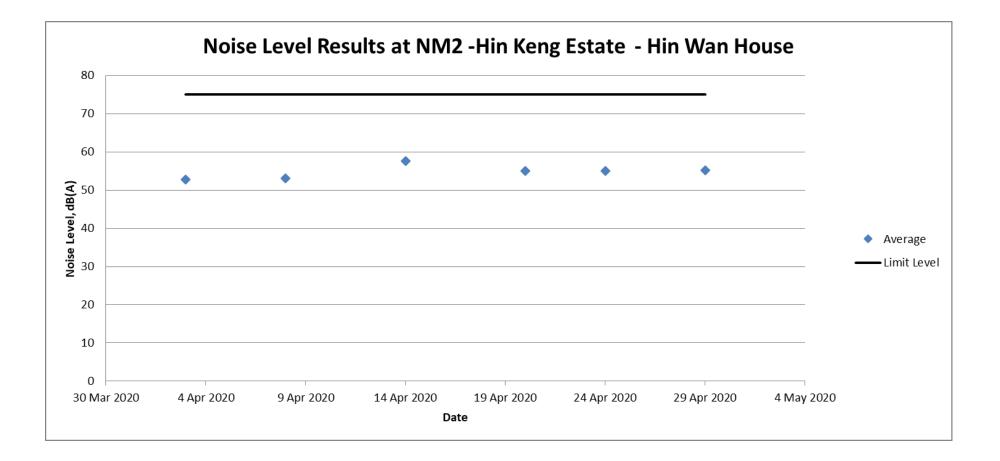
Calibrated By :	Dan	Checked By :	K.O. Lo
Date :	22-Oct-19	Date :	22-Oct-19
			D 0 00

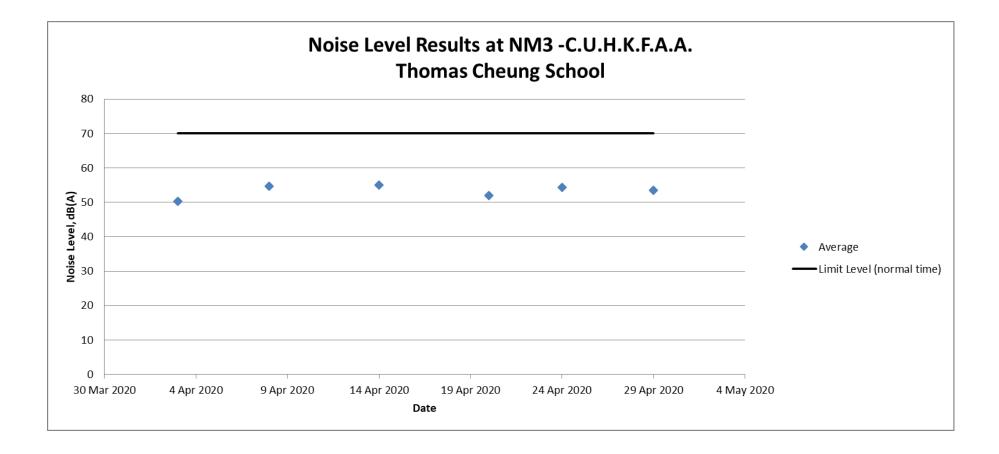
Page 2 of 2



Appendix N Impact Noise Monitoring Results and Graphical Presentation

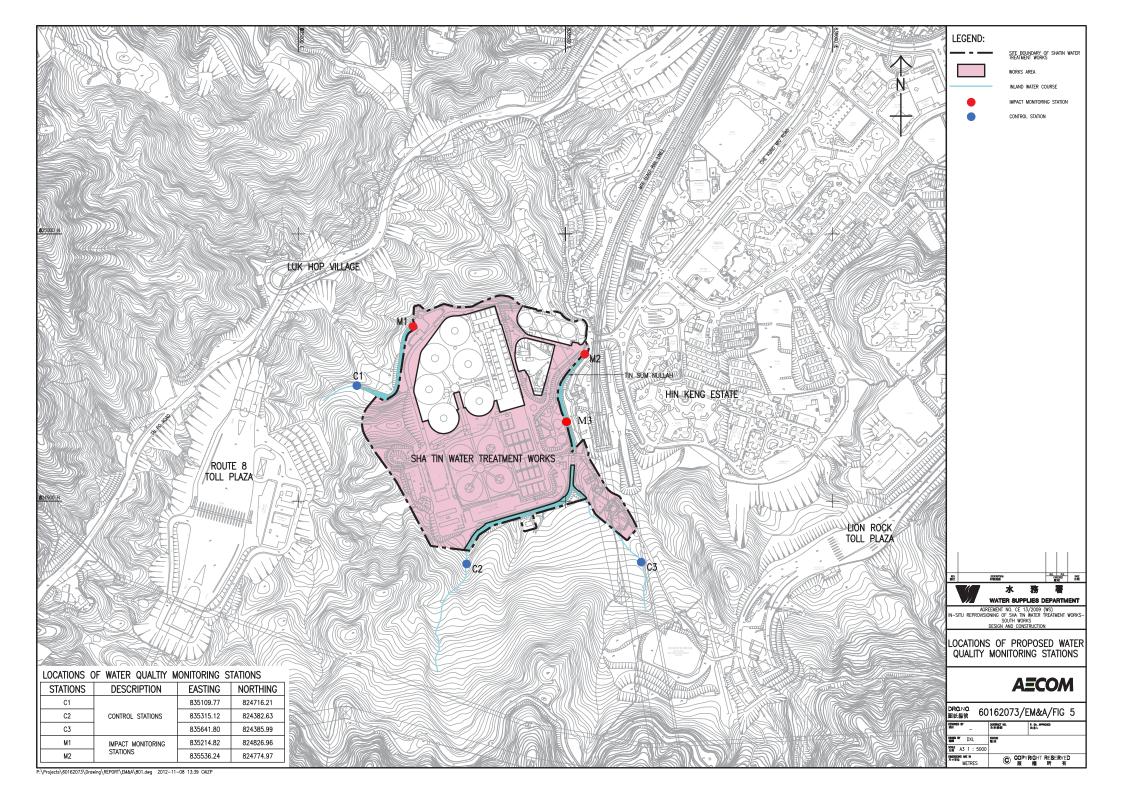






Appendix O Location Plan of Water Quality Monitoring Station

Project no.: CJO-3113



Appendix P Calibration Certificate (Water Quality)



REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No.	:	AJ010129
Date of Issue	:	05 January, 2020
Page No.	ì	1 of 2

PART A - CUSTOMER INFORMATION

Acuity Sustainability Consulting Limited Unit C, 11/F, Ford Glory Plaza 37-39 Wing Hong Street Cheung Sha Wan, Kowloon, Hong Kong Attn: Mr. Nelson TSUI

PART B - DESCRIPTION

:	YSI ProDSS Multi Parameters
:	YSI (a xylem brand)
:	15M101091
:	Jan 23, 2020
:	Feb 05, 2020
:	May 05, 2020

PART C – REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

Parameter	Reference Method
pH at 25°C	APHA 21e 4500-H ⁺ B
Dissolved Oxygen	APHA 21e 4500-O G
Salinity	APHA 21e 2520 B
Turbidity	APHA 21e 2130 B
Temperature	Section 6 of international Accreditation New Zealand Technical
	Guide no. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

PART D - CALIBRATION RESULTS^(b,c)

(1) pH at 25°C

Target (pH unit)	Displayed Reading ^(d) (pH Unit)	Tolerance ^(e) (pH Unit)	Results
4.00	4.05	0.05	Satisfactory
7,42	7.43	0.01	Satisfactory
10.01	10.10	0.09	Satisfactory

Tolerance of pH should be less than ±0.20 (pH unit)

(2) Temperature

Reading of Ref. thermometer (°C)	Displayed Reading (°C)	Tolerance (°C)	Results
5.5	5.60	0.1	Satisfactory
24.0	23.50	-0.5	Satisfactory
56.0	54.90	-1.1	Satisfactory

Tolerance limit of temperature should be less than ±2.0 (°C)

~ CONTINUED ON NEXT PAGE ~

Remark(s): -

The "Date of Next Calibration" is recommended according to best practice principals as practiced by QPT or quoted form relevant international standards.

(b) The results relate only to the calibrated equipment as received

The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source. (c)

(d)

"Displayed Reading" denotes the figure shown on item under calibration/ checking regardless of equipment precision or significant figures. The "Tolerance Limit" mentioned is the acceptance criteria applicable for similar equipment used by Quality Pro Test-Consult Ltd. or quoted form relevant (e) international standards.

LEE Chun-ning, Desmond Senior Chemist



REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

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PART D - CALIBRATION RESULTS (Cont'd)

(3) Dissolved Oxygen

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)	Results
0.12	0.31	0.19	Satisfactory
3.79	4.01	0.22	Satisfactory
6.01	6.21	0.20	Satisfactory
7.90	8.17	0.27	Satisfactory

Tolerance limit of dissolved oxygen should be less than ±0.50 (mg/L)

(4) Salinity

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)	Results	
10	9.87	-1.30	Satisfactory	
20	20.26	1.30	Satisfactory	
30	30.60	2.00	Satisfactory	

Tolerance limit of salinity should be less than ± 10.0 (%)

(5) Turbidity

Expected Reading (NTU)	Displayed Reading ^(f) (NTU)	Tolerance ^(g) (%)	Results
0	0.9		Satisfactory
10	10.8	8.0	Satisfactory
20	21.0	5.0	Satisfactory
100	103.0	3.0	Satisfactory
800	807.0	0.9	Satisfactory

Tolerance limit of turbidity should be less than ± 10.0 (%)

~ END OF REPORT ~

Remark(s): -

"Displayed Reading" presents the figures shown on item under calibration/ checking regardless of equipment precision or significant figures. The "Tolerance Limit" mentioned is the acceptance criteria applicable for similar equipment used by Quality Pro Test-Consult Ltd. or quoted form relevant (g) international standards.

Appendix Q The Certification of Laboratory with HOKLAS accredited Analytical Tests



Hong Kong Accreditation Service 香港認可處

Certificate of Accreditation 認可證書

This is to certify that 特此證明

ACUMEN LABORATORY AND TESTING LIMITED 浩科檢測中心有限公司

Lot 12, Tam Kon Shan Road, North Tsing Yi, New Territories, Hong Kong 香港新界青衣北担杆山路12路段

has been accepted by the HKAS Executive, on the recommendation of the Accreditation Advisory Board, as a 在認可諮詢委員會的建議下獲香港認可處執行機關接受為

HOKLAS Accredited Laboratory 「香港實驗所認可計劃」認可實驗所

This laboratory meets the requirements of ISO/IEC 17025:2005 and it has been accredited for performing specific tests or calibrations as listed in the scope of accreditation within the test category of

Environmental Testing

此實驗所符合ISO/IEC 17025:2005所訂的要求 並獲認可進行載於認可範圍內下述測試類別中的指定測試或校正工作

環境測試

This accreditation to ISO/IEC 17025:2005 demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (see joint IAF-ILAC-ISO Communiqué). 此页 ISO/IEC 17025:2005 的認可資格證明此實驗所認可合作組織及國際標準化組織的聯合公報)。 實施一套實驗所質量管理體系(見國際認可論壇、國際實驗所認可合作組織及國際標準化組織的聯合公報)。

The common seal of the Hong Kong Accreditation Service is affixed hereto by the authority of the HKAS Executive 現經香港認可處執行機關授權在此蓋上香港認可處的印章

Chor

WONG Wang-wan, Executive Administrator 執行幹事 黄宏華 Issue Date:16 July 2014 簽發日期:二零一四年七月十六日

Registration Number : HOKLAS 241 註冊號碼:

This certificate is issued subject to the terms and conditions laid down by HKAS 本證書按照香港認可處訂立的條款及條件發出



Date of First Registration : 16 July 2014 首次註冊日期:二零一四年七月十六日

∟001195

Appendix R Impact Water Quality Monitoring Results

Date	Time	Weather	Location	Co-ord	dinates	Water Depth	Sample Depth	Ter	mp.	DO	con.	DO Sa	aturation	Tur	oidity	p	Н	SS
				East	North	m	m	0	С	m	g/L		%	N	TU	u	nit	mg/L
	10:08	Cloudy	C1	835110	824716	0.04	0.02	21.2	21.1	8.40	8.40	90.8	90.8	2.6	2.6	7.25	7.25	2.5
	10:19	Cloudy	C2	835403	824470	0.02	0.01	20.7	20.7	8.92	8.92	96.3	96.3	2.4	2.4	7.66	7.67	3.1
1 Apr 2020	N/A	N/A	C3	835642	824386	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1 Api 2020	9:53	Cloudy	M1	835215	824827	0.8	0.4	20.5	20.5	9.02	9.02	97.4	97.4	2.2	2.3	7.80	7.81	1.2
	9:30	Cloudy	M2	835536	824775	0.05	0.025	21.3	21.4	9.02	9.01	97.1	97.0	1.7	1.7	7.71	7.71	3.4
	9:43	Cloudy	M3	835501	824648	0.02	0.01	20.7	20.8	9.55	9.55	102.8	102.8	0.3	0.3	7.66	7.67	<1
													-					
	9:45	-	C1	835110	824716	0.04	0.02	20.2	20.3	8.35						7.42	7.43	3.5
_		Fine	C2	835403	824470	0.02	0.01	20.5	20.4	8.75				2.6	=		7.40	2.9
3 Apr 2020	N/A	N/A	C3	835642	824386	N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A
	9:30	-	M1	835215	824827	0.8	0.4	20.7	20.6	9.06				2.0		7.77	7.76	2.6
Ļ		Fine	M2	835536	824775	0.05	0.025	20.9	20.8	9.09	9.10			1.9			7.84	4.0
	9:19	Fine	M3	835501	824648	0.02	0.01	20.4	20.5	9.31	9.31	100.5	100.4	0.4	0.5	7.62	7.60	<1
	10.10	G	C1	025110	004716	0.04	0.02	10.0	10.0	0.70	0.70	05.5	05.0	0.5	0.5	7.57	7.50	10
ŀ		Sunny	C1 C2	835110	824716	0.04	0.02	19.0	18.9					2.5		7.57	7.58	4.0
		Sunny		835403	824470	0.0-	0.0.5	19.5		8.91	8.91			2.6				
5 Apr 2020	N/A	N/A	C3 M1	835642	824386	N/A	N/A	N/A	N/A	N/A	N/A	N/A 00.6	N/A 00.5	N/A	N/A	N/A 7.70	N/A 7.70	N/A 2.7
-		Sunny		835215	824827	0.8	0.4	19.6	19.5	9.08	9.08						7.78	
-		Sunny Sunny	M2 M3	835536 835501	824775 824648	0.05	0.025	19.7 19.0	19.6 18.9	9.14 9.55				1.9				7.1
	12:30	Sunny	IVI3	855501	824048	0.02	0.01	19.0	16.9	9.55	9.30	105.0	105.7	0.0	0.0	7.70	1.12	ξ1
	13.48	Sunny	C1	835110	824716	0.04	0.02	24.0	24.0	8.57	8.57	91.6	5 91.6	2.7	2.6	7.75	7.74	3.1
-		Sunny	C2	835403	824470	0.04	0.02	23.7	23.7	8.73				2.7			7.51	3.5
1	N/A	N/A	C3	835642	824386	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8 Apr 2020 1	13:39	Sunny	M1	835215	824827	0.8	0.4	23.6	23.5	9.00				2.2		7.63	7.61	2.0
Ē	13:11	Sunny	M2	835536	824775	0.05	0.025	23.5	23.5	9.03	9.03	96.4	96.4	1.8	1.9	7.78	7.77	3.6
	13:21	Sunny	M3	835501	824648	0.02	0.01	24.0	24.1	9.47	9.48	100.8	3 100.9	0.3	0.4	7.51	7.53	<1
			_								_							
		Sunny	C1	835110	824716	0.04	0.02	22.1	22.1	8.85			95.1	2.7			7.72	2.4
	11:09	Sunny	C2	835403	824470	0.02	0.01	21.9	22.0					2.5				2.2
4 Apr 2020	N/A	N/A	C3	835642	824386	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Sunny	M1	835215	824827	0.8	0.4	21.7	21.8	9.18				1.9			7.77	2.8
Ļ		Sunny	M2	835536	824775	0.05	0.025	22.5	22.4	9.25				1.5			7.86	4.9
	10:20	Sunny	M3	835501	824648	0.02	0.01	22.2	22.2	9.28	9.28	99.4	99.4	0.7	0.7	7.56	7.56	<1
	0.40	Cloudy	C1	835110	824716	0.04	0.02	25.0	25.0	8.37	8.36	89.3	89.2	2.5	2.5	7.65	7.64	3.4
F		Cloudy	C1 C2	835403	824710	0.04	0.02	25.0	25.0	8.31	8.30	88.5		2.3	2.3	7.03	7.04	2.5
1	10.00 N/A	N/A	C2 C3	835642	824386	0.02 N/A	0.01 N/A	23.3 N/A	23.0 N/A	0.51 N/A	0.50 N/A	00.J N/A	00.J N/A	2.0 N/A	2.0 N/A	7.51 N/A	7.50 N/A	2.5 N/A
6 Apr 2020	9:35		M1	835215	824827	0.8	0.4	25.3	25.3	8.96	8.96	95.3	95.3	2.3	2.3	7.82	7.84	1.8
ŀ	9:05		M1 M2	835536	824775	0.05	0.025	25.0	25.5	8.90	9.00	95.7		1.5	1.6	7.86	7.85	3.7
																		<1
_		Cloudy	M2 M3	835501	824775	0.03	0.025	23.0	25.0	9.30	9.00	95.7		0.4	0.4	7.80		7.68

	14:53	Eine	C1	835110	824716	0.04	0.02	26.9	26.8	8.31	8.31	88.2	88.2	2.8	2.8	7.76	7.75	3.8
	14:33		C1 C2	835403	824710	0.04	0.02	26.9	20.8	8.65	8.66			2.6				4.2
		N/A	C2 C3	835642		0.02 N/A	0.01 N/A	20.4 N/A	20.4 N/A	0.03 N/A	0.00 N/A	92.0 N/A	//	2.0 N/A	2.0 N/A	7.55 N/A	7.52 N/A	4.2 N/A
18 Apr 2020	14:46		M1	835215	824380	0.8	0.4	26.8	26.8		9.15			2.0				2.6
	14:40	Fine	M1 M2	835536	824775	0.05	0.025	26.4	26.3		9.13	96.6		1.7				6.6
	14:23		M2 M3	835501	824648	0.03	0.023	26.1	20.3	9.11	9.11			0.7		7.78		<1
	14.JZ	1 IIIC	IVIJ	055501	024040	0.02	0.01	20.1	20.1	9.40	2.40	100.5	100.4	0.7	0.0	7.70	1.17	
	14:37	Fine	C1	835110	824716	0.04	0.02	28.7	28.8	8.27	8.27	87.5	87.5	2.3	2.3	7.76	7.74	2.4
	12:06	Fine	C2	835403	824470	0.02	0.01	28.8	28.8		8.59			2.5				3.8
20 4 2020	N/A	N/A	C3	835642	824386	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
20 Apr 2020	14:29	Fine	M1	835215	824827	0.8	0.4	28.2	28.3	9.03	9.03	95.4	95.4	1.9	2.0	7.78	7.80	3.0
	14:00	Fine	M2	835536	824775	0.05	0.025	28.9	28.8	9.19	9.19	96.9	97.0	1.6	1.5	7.81	7.81	3.5
	14:12	Fine	M3	835501	824648	0.02	0.01	28.7	28.7	9.29	9.29	98.0	98.0	0.4	0.5	7.61	7.62	<1
										_			_			_		
	11:36	Fine	C1	835110	824716	0.04	0.02	24.8	24.9		8.72			2.6				3.8
	11:42		C2	835403	824470	0.02	0.01	25.0	24.9		8.72			2.6		7.30		4.0
22 Apr 2020		N/A	C3	835642		N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A
22 Mpi 2020		Fine	M1	835215	824827	0.8	0.4	25.3	25.2	9.22	9.23			2.3				2.9
		Fine	M2	835536	824775	0.05	0.025	25.4	25.3		9.33			1.9				7.4
	11:08	Fine	M3	835501	824648	0.02	0.01	24.9	25.0	9.60	9.59	102.0	101.9	0.6	0.7	7.63	7.62	<1
	11.10	a	G1	005110	00.471.6	0.04	0.00	21.1	01.1	0.56	0.57	00.5	02.5	2.0	2.0		T 50	2.0
		Sunny	C1	835110	824716	0.04	0.02	21.1	21.1	8.56	8.57			2.3				2.8
	11:30		C2	835403	824470	0.02 N/A	0.01	20.4	20.4		8.80			2.4				3.5
24 Apr 2020	N/A	N/A	C3	835642			N/A	N/A 20.4	N/A 20.4	N/A	N/A	N/A	N/A 98.7	N/A	N/A	N/A 7.62	N/A 7.63	N/A 2.6
		Sunny	M1 M2	835215 835536	824827 824775	0.8	0.4	20.4 20.9	20.4	9.15 9.03	9.14 9.03	98.8 97.4		2.3				4.2
		Sunny Sunny	M2 M3	835501	824648	0.03	0.023	20.9	21.0		9.03			1.6				4.2
	10.42	Sunny	IVIS	855501	824048	0.02	0.01	20.3	20.5	9.04	9.04	102.8	102.8	0.4	0.4	1.70	1.15	<1
	0.40	Sunny	C1	835110	824716	0.04	0.02	27.3	27.3	8.25	8.25	87.6	87.6	2.5	2.5	7.60	7.62	3.3
		Sunny	C2	835403	824470	0.02	0.01	27.5	27.3		8.30			2.5				2.6
27 1 2020	N/A	N/A	C3	835642	824386	N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A
27 Apr 2020	9:39	Sunny	M1	835215	824827	0.8	0.4	27.5	27.5	9.11	9.11	96.4	96.4	2.0	1.9	7.69	7.69	2.7
	9:18	Sunny	M2	835536	824775	0.05	0.025	27.7	27.7	9.24	9.24	97.7	97.7	1.6	1	7.63	7.64	3.8
	9:25	Sunny	M3	835501	824648	0.02	0.01	27.1	27.2	9.38	9.39	99.3	99.3	0.7	0.7	7.72		<1
	15:48	Sunny	C1	835110	824716	0.04	0.02	27.7	27.7	8.45	8.44	89.5	89.6	2.5	2.5	7.31	7.30	3.1
	15:55	Sunny	C2	835403	824470	0.02	0.01	28.1	28.1		8.65	91.5		2.8		7.35	7.35	3.0
29 Apr 2020	N/A	N/A	C3	835642	824386	N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A
27 Mpi 2020	15:30	Sunny	M1	835215	824827	0.8	0.4	27.7	27.7		9.07			2.3		7.63		1.8
		Sunny	M2	835536	824775	0.05	0.025	28.1	28.1	9.14	9.13			1.8				3.5
	15:15	Sunny	M3	835501	824648	0.02	0.01	28.1	28.1	9.55	9.54	100.8	100.7	0.5	0.4	7.66	7.67	<1

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Test Report

Page 1 of 2

Report Number	: Q200003aR200360
Job Number	: R200360
Issue Date	: 08/05/2020
Name of Applicant	: Acumen Environmental Engineering and Technologies Co., Ltd.
Address of Applicant	: No. 12, Tam Kon Shan Road, Tsing Yi (North), N.T.
Project Name	: CJO-3113-664
Sample Description	: SS test
Laboratory ID	: R200360/1-5
Date of Sampling	: 01/04/2020
Date Received	: 01/04/2020
Test Period	: 01/04/2020 – 02/04/2020
Test Required	: 1. Suspended Solids (SS)
Method Used	: 1. QPL-15e, APHA 22ed 2540 D

Test Result

: Refer to the results on page 2.

For and on behalf of Acumen Laboratory and Testing Limited

Authorized Signature:

Hui Wai Fung, Huntington Laboratory Manager **Chemical Division**

Hong Kong Accreditation Service (HKAS) has accredited Acumen Laboratory and Testing Limited (Reg. No. HOKLAS 241 - TEST) under the Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories. This report is issued subject to Acumen Laboratory and Testing Limited standard TERMS AND CONDITIONS, and shall not be reproduced except in full or with written approval by Acumen Laboratory and Testing Limited. The result(s) of this report are applied to the sample(s) submitted only.

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Test Report

Page 2 of 2

Report Number	: Q200003aR200360

: R200360 Job Number

Issue Date : 08/05/2020

Test Result:

Lab ID	Date of Sampling	Client Sample ID	Suspended Solids (SS), mg/L
R200360/1	01/04/2020	C1	2.5
R200360/2	01/04/2020	C2	3.1
R200360/3	01/04/2020	M1	1.2
R200360/4	01/04/2020	M2	3.4
R200360/5	01/04/2020	M3	<1

Note: 1. mg/L indicates milligram per liter

2. mg O_2 /L indicates milligram oxygen per liter 3. < indicates less than.

4. > indicates more than.

5. NA indicates Not Applicable.

End of Report

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Test Report

Page 1 of 2

Report Number	: Q200003aR200361
Job Number	: R200361
Issue Date	: 08/05/2020
Name of Applicant	: Acumen Environmental Engineering and Technologies Co., Ltd.
Address of Applicant	: No. 12, Tam Kon Shan Road, Tsing Yi (North), N.T.
Project Name	: CJO-3113-665
Sample Description	: SS test
Laboratory ID	: R200361/1-5
Date of Sampling	: 03/04/2020
Date Received	: 03/04/2020
Test Period	: 03/04/2020 – 04/04/2020
Test Required	: 1. Suspended Solids (SS)
Method Used	: 1. QPL-15e, APHA 22ed 2540 D

Test Result

: Refer to the results on page 2.

For and on behalf of Acumen Laboratory and Testing Limited

Authorized Signature:

Hui Wai Fung, Huntington

Laboratory Manager **Chemical Division**

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Fax: (852) 2333 1316 Tel: (852) 2333 6823

Test Report

Page 2 of 2

Report Number	: Q200003aR20036	

Job Number : R200361

Issue Date : 08/05/2020

Test Result:

Lab ID	Date of Sampling	Client Sample ID	Suspended Solids (SS), mg/L
R200361/1	03/04/2020	C1	3.5
R200361/2	03/04/2020	C2	2.9
R200361/3	03/04/2020	M1	2.6
R200361/4	03/04/2020	M2	4.0
R200361/5	03/04/2020	M3	· <1

Note: 1. mg/L indicates milligram per liter

2. mg O₂/ L indicates milligram oxygen per liter

3. < indicates less than.

4. > indicates more than.

5. NA indicates Not Applicable.

End of Report

Hong Kong Accreditation Service (HKAS) has accredited Acumen Laboratory and Testing Limited (Reg. No. HOKLAS 241 - TEST) under the Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories. This report is issued subject to Acumen Laboratory and Testing Limited standard TERMS AND CONDITIONS, and shall not be reproduced except in full or with written approval by Acumen Laboratory and Testing Limited. The result(s) of this report are applied to the sample(s) submitted only.

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Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Page 1 of 2

Report Number	: Q200003aR200362
Job Number	: R200362
Issue Date	: 08/05/2020
Name of Applicant	: Acumen Environmental Engineering and Technologies Co., Ltd.
Address of Applicant	: No. 12, Tam Kon Shan Road, Tsing Yi (North), N.T.
Project Name	: CJO-3113-666
Sample Description	: SS test
Laboratory ID	: R200362/1-5
Date of Sampling	: 06/04/2020
Date Received	: 06/04/2020
Test Period	: 06/04/2020 07/04/2020
Test Required	: 1. Suspended Solids (SS)
Method Used	: 1. QPL-15e, APHA 22ed 2540 D

Test Result

: Refer to the results on page 2.

For and on behalf of Acumen Laboratory and Testing Limited

Authorized Signature:

Hui Wai Fung, Huntington Laboratory Manager **Chemical Division**

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Test Report

Page 2 of 2

Report Number	: Q200003aR200362	
Job Number	: R200362	

Issue Date : 08/05/2020

Test Result:

Lab ID	Date of Sampling	Client Sample ID	Suspended Solids (SS), mg/L
R200362/1	06/04/2020	C1	4.0
R200362/2	06/04/2020	C2	4.3
R200362/3	06/04/2020	M1	2.7
R200362/4	06/04/2020	M2	7.1
R200362/5	06/04/2020	М3	<1

1. mg/L indicates milligram per liter Note:

2. mg O₂/ L indicates milligram oxygen per liter

3. < indicates less than.

4. > indicates more than.

5. NA indicates Not Applicable.

End of Report

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Test Report

Page 1 of 2

Report Number	: Q200003aR200363
Job Number	: R200363
Issue Date	: 08/05/2020
Name of Applicant	: Acumen Environmental Engineering and Technologies Co., Ltd.
Address of Applicant	: No. 12, Tam Kon Shan Road, Tsing Yi (North), N.T.
Project Name	: CJO-3113-667
Sample Description	: SS test
Laboratory ID	: R200363/1-5
Date of Sampling	: 08/04/2020
Date Received	: 08/04/2020
Test Period	: 08/04/2020 – 09/04/2020
Test Required	: 1. Suspended Solids (SS)
Method Used	: 1. QPL-15e, APHA 22ed 2540 D

Test Result

: Refer to the results on page 2.

For and on behalf of Acumen Laboratory and Testing Limited

Authorized Signature:

Hui Wai Fung, Huntington Laboratory Manager **Chemical Division**

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Test Report

Page 2 of 2

Report Number	: Q200003aR200363	
Job Number	: R200363	

Issue Date : 08/05/2020

Test Result:

Lab ID	Date of Sampling	Client Sample ID	Suspended Solids (SS), mg/L
R200363/1	08/04/2020	C1	3.1
R200363/2	08/04/2020	C2	3.5
R200363/3	08/04/2020	M1	2.0
R200363/4	08/04/2020	M2	3.6
R200363/5	08/04/2020	М3	<1

1. mg/L indicates milligram per liter Note:

2. mg O2/ L indicates milligram oxygen per liter

3. < indicates less than.

4. > indicates more than.

5. NA indicates Not Applicable.

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Test Report

Page 1 of 2

Report Number	: Q200003aR200364
Job Number	: R200364
Issue Date	: 08/05/2020
Name of Applicant	: Acumen Environmental Engineering and Technologies Co., Ltd.
Address of Applicant	: No. 12, Tam Kon Shan Road, Tsing Yi (North), N.T.
Project Name	: CJO-3113-668
Sample Description	: SS test
Laboratory ID	: R200364/1-5
Date of Sampling	: 14/04/2020
Date Received	: 14/04/2020
Test Period	: 14/04/2020 – 15/04/2020
Test Required	: 1. Suspended Solids (SS)
Method Used	: 1. QPL-15e, APHA 22ed 2540 D

Test Result

: Refer to the results on page 2.

For and on behalf of Acumen Laboratory and Testing Limited

Authorized Signature:

Hui Wai Fung, Huntington Laboratory Manager **Chemical Division**

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Test Report

Page 2 of 2

Report Number	: Q200003aR200364
Report Number	. Q200003aR200364

Job Number : R200364

: 08/05/2020 Issue Date

Test Result:

Lab ID	Date of Sampling	Client Sample ID	Suspended Solids (SS), mg/L
R200364/1	14/04/2020	C1	2.4
R200364/2	14/04/2020	C2	2.2
R200364/3	14/04/2020	M1	2.8
R200364/4	14/04/2020	M2	4.9
R200364/5	14/04/2020	M3	<1

Note: 1. mg/L indicates milligram per liter

2. mg O₂/ L indicates milligram oxygen per liter

3. < indicates less than.

4. > indicates more than.

5. NA indicates Not Applicable.

End of Report

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Test Report

Page 1 of 2

Report Number	: Q200003aR200365
Job Number	: R200365
Issue Date	: 08/05/2020
Name of Applicant	: Acumen Environmental Engineering and Technologies Co., Ltd.
Address of Applicant	: No. 12, Tam Kon Shan Road, Tsing Yi (North), N.T.
Project Name	: CJO-3113-669
Sample Description	: SS test
Laboratory ID	: R200365/1-5
Date of Sampling	: 16/04/2020
Date Received	: 16/04/2020
Test Period	: 16/04/2020 – 17/04/2020
Test Required	: 1. Suspended Solids (SS)
Method Used	: 1. QPL-15e, APHA 22ed 2540 D

Test Result

: Refer to the results on page 2.

For and on behalf of Acumen Laboratory and Testing Limited

Authorized Signature:

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Test Report

Page 2 of 2

Report Number : C	2200003aR200365
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Job Number : R200365

Issue Date : 08/05/2020

Test Result:

Lab ID	Date of Sampling	Client Sample ID	Suspended Solids (SS), mg/L
R200365/1	16/04/2020	C1	3.4
R200365/2	16/04/2020	C2	2.5
R200365/3	16/04/2020	M1	1.8
R200365/4	16/04/2020	M2	3.7
R200365/5	16/04/2020	M3	<1

Note: 1. mg/L indicates milligram per liter

2. mg O₂/ L indicates milligram oxygen per liter

3. < indicates less than.

4. > indicates more than.

5. NA indicates Not Applicable.

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Test Report

Page 1 of 2

Report Number	: Q200003aR200366
Job Number	: R200366
Issue Date	: 08/05/2020
Name of Applicant	: Acumen Environmental Engineering and Technologies Co., Ltd.
Address of Applicant	: No. 12, Tam Kon Shan Road, Tsing Yi (North), N.T.
Project Name	: CJO-3113-670
Sample Description	: SS test
Laboratory ID	: R200366/1-5
Date of Sampling	: 18/04/2020
Date Received	: 18/04/2020
Test Period	: 18/04/2020 – 19/04/2020
Test Required	: 1. Suspended Solids (SS)
Method Used	: 1. QPL-15e, APHA 22ed 2540 D

Test Result

: Refer to the results on page 2.

For and on behalf of Acumen Laboratory and Testing Limited

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Test Report

Page 2 of 2

Report Number	: Q200003aR200366

Job Number : R200366

Issue Date : 08/05/2020

Test Result:

Lab ID	Date of Sampling	Client Sample ID	Suspended Solids (SS), mg/L
R200366/1	18/04/2020	C1	3.8
R200366/2	18/04/2020	C2	4.2
R200366/3	18/04/2020	M1	2.6
R200366/4	18/04/2020	M2	6.6
R200366/5	18/04/2020	M3	<1

Note: 1. mg/L indicates milligram per liter

2. mg O₂/ L indicates milligram oxygen per liter

3. < indicates less than.

4. > indicates more than.

5. NA indicates Not Applicable.

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Test Report

Page 1 of 2

Report Number	: Q200003aR200367
Job Number	: R200367
Issue Date	: 08/05/2020
Name of Applicant	: Acumen Environmental Engineering and Technologies Co., Ltd.
Address of Applicant	: No. 12, Tam Kon Shan Road, Tsing Yi (North), N.T.
Project Name	: CJO-3113-671
Sample Description	: SS test
Laboratory ID	: R200367/1-5
Date of Sampling	: 20/04/2020
Date Received	: 20/04/2020
Test Period	: 20/04/2020 21/04/2020
Test Required	: 1. Suspended Solids (SS)
Method Used	: 1. QPL-15e, APHA 22ed 2540 D

Test Result

: Refer to the results on page 2.

For and on behalf of Acumen Laboratory and Testing Limited

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Test Report

Page 2 of 2

Report Number	: Q200003aR200367

: R200367 Job Number

: 08/05/2020 Issue Date

Test Result:

Lab ID	Date of Sampling	Client Sample ID	Suspended Solids (SS), mg/L
R200367/1	20/04/2020	C1	2.4
R200367/2	20/04/2020	C2	3.8
R200367/3	20/04/2020	M1	3.0
R200367/4	20/04/2020	M2	3.5
R200367/5	20/04/2020	M3	<1

Note: 1. mg/L indicates milligram per liter

2. mg O₂/ L indicates milligram oxygen per liter

3. < indicates less than.

4. > indicates more than.

5. NA indicates Not Applicable.

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Test Report

Page 1 of 2

Report Number	: Q200003aR200368
Job Number	: R200368
Issue Date	: 08/05/2020
Name of Applicant	: Acumen Environmental Engineering and Technologies Co., Ltd.
Address of Applicant	: No. 12, Tam Kon Shan Road, Tsing Yi (North), N.T.
Project Name	: CJO-3113-672
Sample Description	: SS test
Laboratory ID	: R200368/1-5
Date of Sampling	: 22/04/2020
Date Received	: 22/04/2020
Test Period	: 22/04/2020 – 23/04/2020
Test Required	: 1. Suspended Solids (SS)
Method Used	: 1. QPL-15e, APHA 22ed 2540 D

Test Result

: Refer to the results on page 2.

For and on behalf of Acumen Laboratory and Testing Limited

Authorized Signature:

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Test Report

Page 2 of 2

Report Number	: Q200003aR200368	
Job Number	: R200368	

Issue Date : 08/05/2020

Test Result:

Lab ID	Date of Sampling	Client Sample ID	Suspended Solids (SS), mg/L
R200368/1	22/04/2020	C1	3.8
R200368/2	22/04/2020	C2	4.0
R200368/3	22/04/2020	M1	2.9
R200368/4	22/04/2020	M2	7.4
R200368/5	22/04/2020	M3	<1

Note:

1. mg/L indicates milligram per liter 2. mg O₂/ L indicates milligram oxygen per liter 3. < indicates less than.

4. > indicates more than.

5. NA indicates Not Applicable.

End of Report

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Test Report

Page 1 of 2

Report Number	: Q200003aR200369
Job Number	: R200369
Issue Date	: 08/05/2020
Name of Applicant	: Acumen Environmental Engineering and Technologies Co., Ltd.
Address of Applicant	: No. 12, Tam Kon Shan Road, Tsing Yi (North), N.T.
Project Name	: CJO-3113-673
Sample Description	: SS test
Laboratory ID	: R200369/1-5
Date of Sampling	: 24/04/2020
Date Received	: 24/04/2020
Test Period	: 24/04/2020 – 25/04/2020
Test Required	: 1. Suspended Solids (SS)
Method Used	: 1. QPL-15e, APHA 22ed 2540 D

Test Result

: Refer to the results on page 2.

For and on behalf of Acumen Laboratory and Testing Limited

Authorized Signature:

Hui Wai Fung, Huntington Laboratory Manager **Chemical Division**

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Test Report

Page 2 of 2

Report Number : 0	Q200003aR200369
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Job Number : R200369

Issue Date : 08/05/2020

Test Result:

Lab ID	Date of Sampling	Client Sample ID	Suspended Solids (SS), mg/L
R200369/1	24/04/2020	C1	2.8
R200369/2	24/04/2020	C2	3.5
R200369/3	24/04/2020	M1	2.6
R200369/4	24/04/2020	M2	4.2
R200369/5	24/04/2020	M3	<1

Note:

1. mg/L indicates milligram per liter 2. mg Og/L indicates milligram oxygen per liter

3. < indicates less than.

4. > indicates more than.

5. NA indicates Not Applicable.

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Test Report

Page 1 of 2

Report Number	: Q200003aR200370
Job Number	: R200370
Issue Date	: 08/05/2020
Name of Applicant	: Acumen Environmental Engineering and Technologies Co., Ltd.
Address of Applicant	: No. 12, Tam Kon Shan Road, Tsing Yi (North), N.T.
Project Name	: CJO-3113-674
Sample Description	: SS test
Laboratory ID	: R200370/1-5
Date of Sampling	: 27/04/2020
Date Received	: 27/04/2020
Test Period	: 27/04/2020 – 28/04/2020
Test Required	: 1. Suspended Solids (SS)
Method Used	: 1. QPL-15e, APHA 22ed 2540 D

Test Result

: Refer to the results on page 2.

For and on behalf of Acumen Laboratory and Testing Limited

Authorized Signature:

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Test Report

Page 2 of 2

Report Number	: Q200003aR200370
Job Number	: R200370

Issue Date : 08/05/2020

Test Result:

Lab ID	Date of Sampling	Client Sample ID	Suspended Solids (SS), mg/L
R200370/1	27/04/2020	C1	3.3
R200370/2	27/04/2020	C2	2.6
R200370/3	27/04/2020	M1	2.7
R200370/4	27/04/2020	M2	3.8
R200370/5	27/04/2020	M3	<1

Note:

1. mg/L indicates milligram per liter 2. mg Q_2 /L indicates milligram oxygen per liter

3. < indicates less than,

indicates more than.

5. NA indicates Not Applicable.

End of Report

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Test Report

Page 1 of 2

Report Number	: Q200003aR200371
Job Number	: R200371
Issue Date	: 08/05/2020
Name of Applicant	: Acumen Environmental Engineering and Technologies Co., Ltd.
Address of Applicant	: No. 12, Tam Kon Shan Road, Tsing Yi (North), N.T.
Project Name	: CJO-3113-675
Sample Description	: SS test
Laboratory ID	: R200371/1-5
Date of Sampling	: 29/04/2020
Date Received	: 29/04/2020
Test Period	: 29/04/2020 – 30/04/2020
Test Required	: 1. Suspended Solids (SS)
Method Used	: 1. QPL-15e, APHA 22ed 2540 D

Test Result

: Refer to the results on page 2.

For and on behalf of Acumen Laboratory and Testing Limited

Authorized Signature:

Hui Wai Fung, Huntington Laboratory Manager **Chemical Division**

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Test Report

Page 2 of 2

Report Number	: Q200003aR200371

Job Number : R200371

Issue Date : 08/05/2020

Test Result:

Lab ID	Date of Sampling	Client Sample ID	Suspended Solids (SS), mg/L
R200371/1	29/04/2020	C1	3.1
R200371/2	29/04/2020	C2	. 3.0
R200371/3	29/04/2020	M1	1.8
R200371/4	29/04/2020	M2	3.5
R200371/5	29/04/2020	M3	<1

Note: 1. mg/L indicates milligram per liter

2. mg O₂/ L indicates milligram oxygen per liter

3. < indicates less than.

4. > indicates more than.

5. NA indicates Not Applicable.

End of Report

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Test Report

Page 1 of 2

Report Number	: Q200003aR200372
Job Number	: R200372
Issue Date	: 08/05/2020
Name of Applicant	: Acumen Environmental Engineering and Technologies Co., Ltd.
Address of Applicant	: No. 12, Tam Kon Shan Road, Tsing Yi (North), N.T.
Project Name	: CJO-3113-676
Sample Description	: pH Value, TSS and COD tests
Laboratory ID	: R200372/1
Date of Sampling	: 22/04/2020
Date Received	: 22/04/2020
Test Period	: 22/04/2020 – 23/04/2020
Test Required	: 1. pH Value;
	2. Total Suspended Solids (TSS);
	3. Chemical Oxygen Demand (COD)
Method Used	: 1. QPL-15d, APHA 22ed 4500-H⁺ B
	2. QPL-15e, APHA 22ed 2540 D
	3. QPL-15f, APHA 22ed 5220 B
Test Result	: Refer to the results on page 2.
	For and on behalf of
	Acumen Laboratory and Testing Limited

Authorized Signature:

Hui Wai Pung, Huntington Laboratory Manager

Chemical Division

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Test Report

Page 2 of 2

Report Number	: Q200003aR200372
Job Number	: R200372
Issue Date	: 08/05/2020

Test Result:

Lab ID	Date of Sampling	Client Sample ID	pH Value at (measured temperature °C)	Total Suspended Solids (TSS), mg/L	Chemical Oxygen Demand (COD), mg O₂/L
R200372/1	22/04/2020	Hing Keng, Wall C	8.0 (23)	3.9	<50

Note:

1. mg/l. indicates milligram per liter 2. mg O₂/ L indicates milligram oxygen per liter

3. < indicates less than.

4. > indicates more than.

5. NA indicates Not Applicable.

End of Report

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Appendix S

Impact Monitoring report for Ecology

Post-Transplantation Monitoring Report

for Agreement No. CE 13/2009 (WS) IN-SITU REPROVISIONING OF SHA TIN WATER TREATMENT WORKS – SOUTH WORKS

Report No.68

April 2020

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1. INTRODUCTION

- 1.1 Pursuant to the Environmental Impact Assessment (EIA) Ordinance, the Director of Environmental Protection (DEP) granted the Environmental Permit (No. EP- 494/2015) to the Water Supplies Department (WSD) to construct and operate the designated project for "In-situ Reprovisioning of Sha Tin Water Treatment Works - South Works" ("The Project").
- 1.2 Upon the requirement of the Environmental Permit, a detailed vegetation report presenting the baseline vegetation condition for flora species with conservation interest, transplanting and monitoring programme for the Project has been prepared and approved by DEP in February 2016.
- 1.3 There were 4 flora species of conservation importance were recorded in the woodland habitat within project site including Ailanthus (*Ailanthus fordii*), Incense Tree (*Aquilaria sinensis*), Lamb of Tartary (*Cibotium barometz*) and Hong Kong Eagle's Claw (*Artabotrys hongkongensis*). In total, 2 nos. of Incense Tree (*Aquilaria sinensis*), 1 no. of Ailanthus (*Ailanthus fordii*) trees, 5 colonies of Lamb of Tartary (*Cibotium barometz*) and 1 no. Hong Kong Eagle's Claw (*Artabotrys hongkongensis*) was recommended to be transplanted in the approved detailed vegetation survey report.
- 1.4 Detailed vegetation report was planned that Incense Tree (*Aquilaria sinensis*) and Ailanthus (*Ailanthus fordii*) trees will be transplanted within existing Sha Tin Water Treatment Works (STWTW). All other shrubs including Lamb of Tartary (*Cibotium barometz*) and Hong Kong Eagle's Claw (*Artabotrys hongkongensis*) will be transplanted to the hillside slope at Sha Tin South Fresh Water Service Reservoir (STSFWSR).
- 1.2 Upon the requirement of the Environmental Permit, a qualified Ecologist was commissioned to prepare a post-transplantation monitoring report to present the status (health condition and survival rate) of transplanted vegetation and submitted to the DEP.
- 1.3 Monitoring of transplanted flora was conducted after the transplantation. The monitoring will be conducted at twice per month during the first year and once per month during the course of planting works. The parameters to be monitoring will include the health condition and survival rate of the transplanted flora. Any observations and recommendations will be reported in monthly EM&A reports.
- 1.3 This is Tree Report presents data collected on 21 April 2020. It contains the following information:
 - Introduction (Section 1)
 - Description Of Tree Monitoring Area (Section 2)
 - Monitoring Methodology (Section 3)
 - Result (Section 4)
 - Summary

- Photos (Appendix I)
- Summary table (Appendix II)
- Typhoon information (Appendix III)

2. DESCRIPTION OF TREE MONITORING SITE

- 2.1 Incense Tree (*Aquilaria sinensis*) and Ailanthus (*Ailanthus fordii*) trees was transplanted within existing Sha Tin Water Treatment Works (STWTW) where is the extended compensatory plantation area. The area was flat and without covering with concrete.
- 2.2 Lamb of Tartary (*Cibotium barometz*) will be transplanted to the Sha Tin South Fresh Water Service Reservoir (STSFWSR) where is currently covered with concrete. Plough is required before planting on to this area.
- 2.3 The planting site at Sha Tin South Fresh Water Service Reservoir (STSFWSR) was still under preparation. Lamb of Tartary (*Cibotium barometz*) to be transplanted was temporally stored at a nursery garden at Shui Mei Tsuen, Kam Tin. Once the planting site at Sha Tin South Fresh Water Service Reservoir (STSFWSR) was prepared and temporally stored transplanted vegetation were in fair condition, all transplanted Lamb of Tartary (*Cibotium barometz*) will be planted at the planting site.

3. MONITORING METHODOLOGY

- 3.1 Site inspection will be carried out by walking through the transplanting area. Health condition and survival rate will be observed during inspection.
- 3.4 Health condition of all transplanted vegetation including trees/Shrubs surveyed was evaluated according to the following criteria:
 - Transplanted vegetation with good health are classified as **good**;
 - Transplanted vegetation with few or no visible defects or health problems are classified as being **fair**;
 - Transplanted vegetation was badly damaged or clearly suffering from decay die back or the effects of very heavy vine growth are classified as **poor**.
- 3.5 Survival rate for each of transplanted vegetation species will be calculated based on site observation.

4. **RESULT**

- 4.1 Monitoring inspections were conducted on 21 April 2020. Three trees TA572, TA326 and TA327 were transplanted to tree compensation area within the Sha Tin Water Treatment Works (STWTW) in 20 June 2016.
- 4.2 The condition of TA572 was observed in poor condition due to the damage of two main trunks. TA327 was also in poor condition. The already dead tree TA326 collapsed due to big hit by the Signal No.10 typhoon Mangkhut on 16 September 2018. Tree guying cables have been installed to provide external support to the remaining two transplanted trees.
- 4.3 All transplanted Lamb of Tartary (*Cibotium barometz*) have been severely damaged by Typhon Wipha on 30-31 July 2019. Young leaves have been re-grown in about 18 individuals with fair condition; however, the next few monitoring will be critical to assess their survival and recovery progress of all individuals.
- 4.4 Since Sha Tin South Fresh Water Service Reservoir (STSFWSR) was still under preparation, Lamb of Tartary was still temporally stored in a nursery garden at Shui Mei Tsuen, Kam Tin.
- 4.5 In general, 18 transplanted Lamb of Tartary (*Cibotium barometz*) were in fair condition, while the other remained in poor condition. Hong Kong Eagle's Claw (*Artabotrys hongkongensis*) was observed dead during inspection on 20 August 2016. The survival rate for Lamb of Tartary (*Cibotium barometz*) and Hong Kong Eagle's Claw (*Artabotrys hongkongensis*) was 96%. The Summary table for health condition and survival rate was shown in Appendix II.

5. MITIGATION MEASURE

5.1 Hong Kong Eagle's Claw (*Artabotrys hongkongensis*) was observed dead during inspection on 20 August 2016. In order to compensate for the loss of transplanted Hong Kong Eagle's Claw which is in climber growing form, it is recommended to plant an individual of native climber species at compensatory planting site (Sha Tin South Fresh Water Service Reservoir (STSFWSR)) together with compensatory tree planting. Recommended list of species are given in the Table 1 below. It is suggested that about 1 species of climber to be selected from the following list according to availability of the nursery source. The recommended plant species have been recorded from adjacent secondary woodland in an approved EIA Report (AEIAR-187/2015). These species would have certain ecological value in terms of plant ecology and the associated wildlife including birds.

Table 1. Table for Recommended climber species list to be planted

Native Tree Species			
Common Name	Latin Name	Chinese Name	Growing Form

Climbing Bauhinia	Bauhinia glauca	粉葉羊蹄甲	Climber
Spiny-fruited Vine	Byttneria aspera	刺果藤	Climber
Bentham,s Rose-wood	Dalbergia benthamii	兩廣黃檀	Climber
Desmos	Desmos chinensis	假鷹爪	Climber
Glaucescent Diploclisia	Diploclisia glaucescens	蒼白秤鈎風	Climber
Luofushan Joint-fir	Gnetum luofuense	羅浮買麻藤	Climber
Australian Cow-plant	Gymnema sylvestre	匙羹藤	Climber
Shining Hypserpa	Hypserpa nitida	夜花藤	Climber
Large-floweredHoneysuckle	Lonicera macrantha	大花忍冬	Climber
Splash-of-white	Mussaenda pubescen	玉葉金花	Climber
Rusty-haired Raspberry	Rubus reflexus	鏽毛莓	Climber
Sandpaper Vine	Tetracera asiatica	錫葉藤	Climber
Hong Kong Eagle's Claw	Artabotrys hongkongensis	鷹爪花	Climber

- 5.2 Most transplanted Lamb of Tartary (*Cibotium barometz*) had shown yellow foliage, probably due to high exposure of sunlight at the new nursery site before the hit of Typhoon Wipha. It is recommended to retain them at the nursery garden under proper maintenance during current recovery stage. Shelter (such as 遮光網) shall be provided to reduce the amount of sunlight received and avoid direct hit of rainstorm/ typhoon. Once their condition has recovered to acceptable level, they can be moved to the transplantation site at Sha Tin South Fresh Water Service Reservoir (STSFWSR) when the site is ready.
- 5.3 After transplantation, root ball of TA572 and TA327 tree should be kept moisture especially during non-raining day.
- 5.4 Incense Tree (*Aquilaria sinensis*) tagged as TA326 was observed dead during inspection on 10 August 2017. Its DBH was measured as 346cm. In according to the Tree Preservation, Development Bureau Technical Circular (Works) No. 7/2015, the compensatory planting will try to achieve the compensatory planting ratio of 1:1 in terms of aggregated DBH.
- 5.5 In total, 3 individual of native tree species with heavy standard size will be planted with 2.5-3 meters (center to center) spacing at compensatory planting site. Recommended list of species are given in the Table 2 below. It is suggested that at least 1 tree species to be selected from the following list according to availability of the nursery source. The recommended plant species have been recorded from adjacent secondary woodland in an approved EIA Report (AEIAR-187/2015). These species would have certain ecological value in terms of plant ecology and the associated wildlife including birds.

Table 2. Table for Recommended tree species list to be planted

Common Name	Latin Name	Chinese Name	Growing Form
Ivy Tree	Schefflera heptaphylla	鴨腳木	Tree
Levine's Syzygium	Syzygium levinei	山蒲桃	Tree
Chekiang Machilus	Machilus chekiangensis	浙江潤楠	Tree
Aporusa	Aporusa dioica	銀柴	Tree
Mountain Tallow Tree	Sapium discolor	山烏桕	Tree
Fragrant Litsea	Litsea cubeba	山蒼樹	Tree
Chinese Apea Ear-ring	Archidendron lucidum	亮葉猴耳環	Tree
Chinese Hackberry	Celtis sinensis	朴樹	Tree
Turn-in-the-wind	Mallotus paniculatus	白楸	Tree
Acronychia	Acronychia pedunculata	降真香	Tree

6. SUMMARY

- 6.1 The condition of TA572 was observed in poor condition due to broken of main trunk. TA327 was also in poor condition; while already dead TA326 collapsed under Signal No. 10 typhoon Mangkhut in September 2018. Tree guying cables have been installed to provide external support to the two remaining transplanted trees.
- 6.2 All transplanted Lamb of Tartary (*Cibotium barometz*) have been severely damaged by Typhon Wipha on 30-31 July 2019. Young leaves have been re-grown in about 18 individuals with fair condition. Next few monitoring will be critical to assess survival and recovery progress of all individuals. Shelter (遮光網) was recommended to reduce the intensity of sunlight and avoid direct hit of rainstorm/ typhoon. Currently, Lamb of Tartary was temporally stored in a nursery garden at Shui Mei Tsuen, Kam Tin. It is recommended to retain them at the nursery garden under proper maintenance during current recovery stage. Hong Kong Eagle's Claw (*Artabotrys hongkongensis*) was observed dead during inspection on 20 August 2016.
- 6.3 In general, 18 transplanted Lamb of Tartary (*Cibotium barometz*) were in fair condition, while the other remained in poor condition. Hong Kong Eagle's Claw (*Artabotrys hongkongensis*) and one Incense Tree (*Aquilaria sinensis*) TA326 were observed dead during inspection on 20 August 2016 and on 10 August 2017 respectively.
- 6.4 In order to compensate for the loss of transplanted Hong Kong Eagle's Claw and Incense Tree, it is recommended to plant an individual of native climber species and 3 heavy standard native tree species at compensatory planting site. The suggested species in planting list would have certain ecological value in terms of plant ecology and the associated wildlife including birds.
- 6.5 After transplantation, root ball of TA572 and TA327 tree should be kept moisture especially during dry and non-raining day.

APPENDIX I Photo

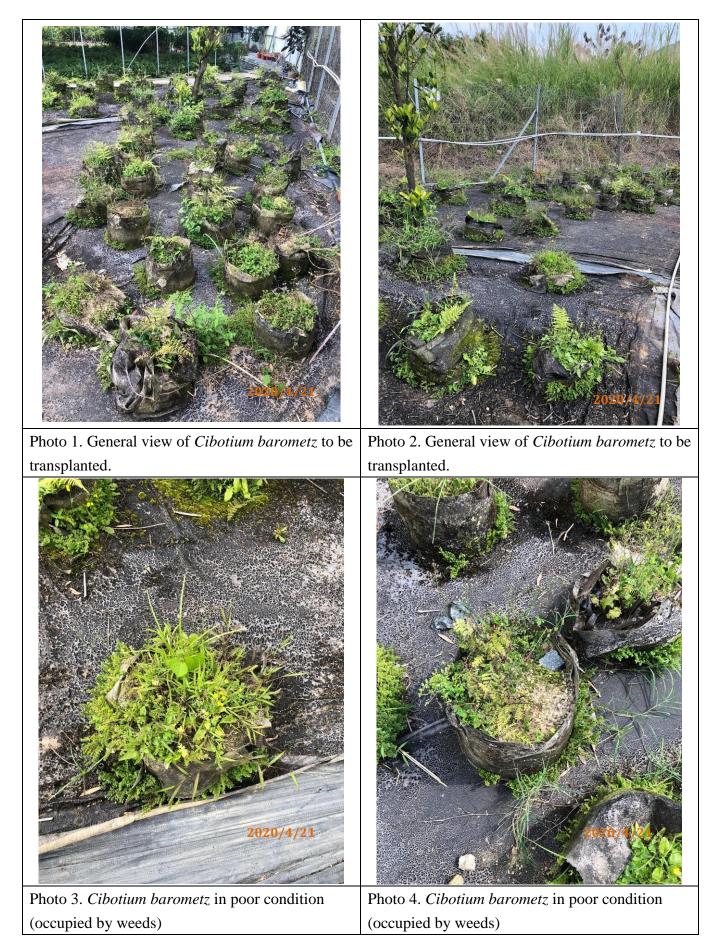
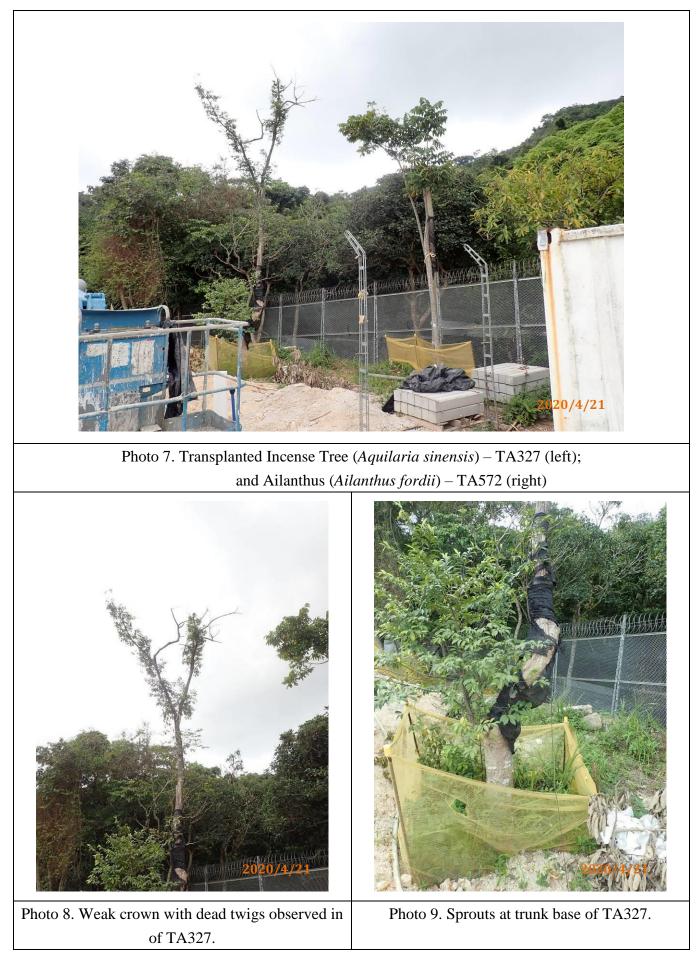
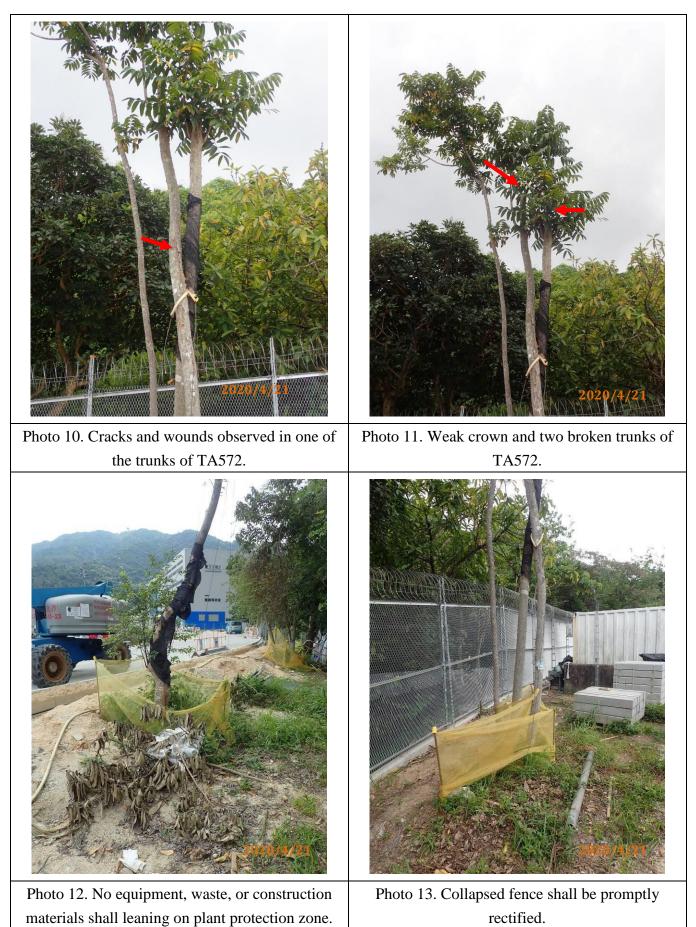




Photo 5 & 6. *Cibotium barometz* under recovery after damage caused by Typhoon Wipha in July 2019. Shelter (such as 遮光網) is recommended for reducing intensity of sunlight and avoid direct hit of rainstorm/ typhoon on the plants. Yellow foliage was observed in these individuals.





File: 1559 Vegetation transplantation monitoring report -VR68

Collapsed fence shall be promptly rectified.

APPENDIX II Table for condition of transplanted plant

No.	Species	Condition	Alive/Dead	Remark	
1	Cibotium barometz	Fair	Alive		
2	Cibotium barometz	Fair	Alive	_	
3	Cibotium barometz	Fair	Alive	_	
4	Cibotium barometz	Fair	Alive	-	
5	Cibotium barometz	Fair	Alive	-	
6	Cibotium barometz	Fair	Alive		
7	Cibotium barometz	Fair	Alive	Severely damaged by	
8	Cibotium barometz	Fair	Alive	Typhon Wipha on 30-31	
9	Cibotium barometz	Fair	Alive	July 2019; the next few	
10	Cibotium barometz	Fair	Alive	monitoring will be critical	
11	Cibotium barometz	Fair	Alive	to assess their survival	
12	Cibotium barometz	Fair	Alive	and recovery progress.	
13	Cibotium barometz	Fair	Alive		
14	Cibotium barometz	Fair	Alive	New leaves were	
15	Cibotium barometz	Fair	Alive	observed in 18 individuals	
16	Cibotium barometz	Fair	Alive	with fair condition,	
17	Cibotium barometz	Fair	Alive	condition of others	
18	Cibotium barometz	Fair	Alive	remained as poor before	
19	Cibotium barometz	Poor	Alive	healthy foliage can sustain	
20	Cibotium barometz	Poor	Alive	in coming monitoring	
21	Cibotium barometz	Poor	Alive		
22	Cibotium barometz	Poor	Alive		
23	Cibotium barometz	Poor	Alive		
24	Cibotium barometz	Poor	Alive		
25	Cibotium barometz	Poor	Alive		
26	Cibotium barometz	Poor	Alive		
27	Cibotium barometz	Poor	Alive		
Shelter (such as 遮光網) is recommended for reducing intensity of sunlight and direct hit of					
rainstorm/ typhoon on the plants.					
			on on the plants.		
28	Artabotrys hongkongensis		Dead		

Shrubs of Lamb of Tartary and Hong Kong Eagle's Claw

No.	Species	Condition	Alive/Dead	Remark
TA572	Ailanthus fordii	Poor	Alive	Two main trunks were
				broken during typhoon
				on 23 August 2017.
				Cracks and wounds
				observed in one of the
				trunks. Weak canopy
				formed only by sprouts.
TA327	Aquilaria sinensis	Poor	Alive	Tree crown of TA327
				was thinner after
				transplantation. Water
				sprouts, cracks on tree
				bark and would at trunk
				base observed.
TA326	Aquilaria sinensis	Dead	Dead	Collapsed due to the
				Signal No.10 typhoon
				Mangkhut in September
				2018.
		Survival rate (%)	67%	

Trees of Ailanthus and Incense Tree

Appendix T Monthly Summary of Waste Flow Table

Water Supplies Department Monthly Summary Waste Flow Table for Contract with Environmental Management Plan under ETWB TCW No. 19/2005 and its Interim Guidance Note Reporting Year: <u>2020</u>

Contract No. 3/WSD/15

(To be submitted to C&D MM Coordinator of Respective Division/Region via Engineer's Representative before 15th of the following month)

	Act	tual Quantities of Ine	ert C&D Materials	Generated / Imported	ed (in '000 m ³)		Actual Quantities of Other C&D Materials / Wastes Generated				
Month	Total Quantities Generated	Broken Concrete (including rock for recycling into aggregates)	Reused in the Contract	Reused in Other Projects	Disposed as Public Fill	Imported C&D Material	Metal	Paper/ Cardboard Packaging	Plastic (bottles/containers, plastic sheets/ foams from package material)	Chemical Waste	Others (e.g. General Refuse etc.)
	[a+b+c+d)	(a)	(b)	(c)	(d)		(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m ³)
January	0.457	0.178	0.000	0.000	0.279	0.277	3.340	0.000	0.000	0.000	0.115
February	0.219	0.131	0.000	0.000	0.088	0.213	0.000	0.000	0.000	0.000	0.048
March	0.448	0.160	0.000	0.000	0.288	0.876	0.000	0.000	0.000	0.000	0.112
April	0.099	0.036	0.000	0.000	0.063	0.465	0.000	0.000	0.000	0.000	0.085
May											
June											
Half-year total	1.223	0.505	0.000	0.000	0.718	1.831	3.340	0.000	0.000	0.000	0.361
July											
August											
September											
October											
November											
December											
Yearly Total	1.223	0.505	0.000	0.000	0.718	1.831	3.340	0.000	0.000	0.000	0.361

Appendix U Implementation Schedule of Environmental Mitigation Measures (EMIS)

Environmental Mitigation and Enhancement Measure Implementation Schedule at Construction Stage

EIA Ref.	Recommended Mitigation Measures	Location of the Measures	Implementation Agent	n Relevant Legislation and Guidelines	Implementation Phase			Status
					D	с	0	
Air Quality								
4.7.1	Use of regular watering to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather.	All works areas	Contractor	Air Pollution Control		\checkmark		Y
4.7.1	Side enclosure and covering of any aggregate or stockpiling of dusty material to reduce emissions. Where this is not practicable owing to frequent usage, watering shall be applied to aggregate fines.	All works areas	Contractor	Ordinance and Air Pollution Control (Construction		\checkmark		Y
4.7.1	Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations.	All works areas	Contractor	Dust) Regulation		\checkmark		Y
4.7.1	Establishment and use of vehicle wheel and body washing facilities at the exit points of the site.	All works areas	Contractor			\checkmark		Y
4.7.1	Imposition of speed controls for vehicles on site haul roads.	All works areas	Contractor			\checkmark		Y
4.7.1	Implement EM&A program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise.	All works areas / Monitoring points	Contractor					Y
Noise					1		I	
5.6.4	Implement good site practices to reduce noise level	All works areas	Contractor	Noise Control Ordinance		\checkmark		Y
5.6.5	Adoption of Quiet PME	All works areas	Contractor			\checkmark		N/A
5.6.6	Use of Movable Noise Barrier	All works areas	Contractor	-		\checkmark		N/A
5.8	Noise monitoring	Monitoring points	Contractor			\checkmark		Y
Water Quality								
6.8.1	Surface run-off from construction sites should be discharged into storm drains via adequately designed sand/silt removal facilities such as sand	All works areas	Contractor	ProPECC PN 1/94 Construction		\checkmark		Y

	traps, silt traps and sedimentation basins. Channels or earth bunds or			Site Drainage		
	sand bag barriers should be provided on site to properly direct					
	stormwater to such silt removal facilities. Perimeter channels at site			TM-DSS		
	boundaries should be provided where necessary to intercept storm					
	run-off from outside the site so that it will not wash across the site.			Water Pollution		
	Catchpits and perimeter channels should be constructed in advance of			Control		
	site formation works and earthworks.			Ordinance		
6.8.2	Silt removal facilities, channels and manholes should be maintained and the deposited silt and grit should be removed regularly, at the onset of and after each rainstorm to prevent local flooding.	All works areas	Contractor		\checkmark	Y
6.8.3	Temporary exposed slope surfaces should be covered and temporary	All works area	Contractor	_		
0.8.5	access roads should be protected by crushed stone or gravel, as excavation proceeds. Intercepting channels should be provided to prevent storm run-off from washing across exposed soil surfaces.	All WORKS area	Contractor		\checkmark	Y
6.8.4	Earthworks final surfaces should be well compacted and the subsequent permanent work or surface protection should be carried out immediately after the final surfaces are formed to prevent erosion caused by rainstorms. Appropriate drainage like intercepting channels should be provided where necessary.	All works areas	Contractor		\checkmark	N/A
6.8.5	Rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities.	All works areas	Contractor	-	\checkmark	Y
6.8.6	Open stockpiles of construction materials (e.g. aggregates, sand and fill material) on sites should be covered with tarpaulin or similar fabric during rainstorms.	All works areas	Contractor		\checkmark	Y
6.8.7	Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system.	All works areas	Contractor	-	\checkmark	Y
6.8.8	Good site practices should be adopted to remove rubbish and litter from construction sites so as to prevent the rubbish and litter from spreading from the site area.	All works areas	Contractor		\checkmark	Y
6.8.9	All vehicles and plant should be cleaned before they leave a construction site to minimize the deposition of earth, mud, debris on roads. A wheel washing bay should be provided at every site exit if practicable and wash-water should have sand and silt settled out or removed before discharging into storm drains.	All works areas	Contractor			Y
6.8.10	Before commencing any demolition works, all drainage connections should be sealed to prevent building debris, soil, sand etc. from entering	All works areas	Contractor		\checkmark	N/A

	drains.		
6.8.11	Wastewater generated from building construction activities including concreting, plastering, internal decoration, cleaning of works and similar activities should not be discharged into the stormwater drainage system. If the wastewater is to be tankered off site for disposal into foul sewers, it should undergo the removal of settleable solids in a silt removal facility, and pH adjustment as necessary.	All works areas	Contractor
6.8.12	Acidic wastewater generated from acid cleaning, etching, pickling and similar activities should be neutralized to within the pH range of 6 to 10. The neutralized wastewater should be tankered off site for disposal into foul sewers or treated to a standard acceptable to storm drains and the receiving waters.	All works areas	Contractor
6.8.13	All surface run-off must proper collected and discharge at designated location. The discharge quality must meet the requirements specified in the discharge license.	All works areas	Contractor
6.8.15	Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.	All works areas	Contractor
6.8.16	Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges	All works areas	Contractor
6.8.17	Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance.	All works areas	Contractor
6.8.18	Sewage generated from the workforce should be properly treated by interim treatment facilities, such as chemical toilets which are properly maintained with the employment of licensed collectors for the collection and disposal on a regular basis.	All works areas	Contractor
6.8.19	Adopt relevant measures stated in ETWB TC (Works) No. 5/2005 "Protection of Natural Streams/rivers from Adverse Impacts arising from Construction Works" to minimize the potential water quality impacts from the construction works near any water courses.	All works areas	Contractor
6.10	Water quality monitoring	Monitoring points	Contractor

7.6.1	Appropriate waste handling, transportation and disposal methods for all	All works areas	Contractor	Waste Disposal		
	waste arisings generated during the construction works for the Project			Ordinance	\checkmark	Y
	should be implemented to ensure that construction wastes do not enter					
	the nearby streams or drainage channel.			DEVB TCW No.		
7.6.2	Implementation of good site practices for waste management	All works areas	Contractor	6/2010,	\checkmark	Y
7.6.3	Implementation of trip ticket system to control waste disposal	All works areas	Contractor	ETWB TCW No. 19/2005	\checkmark	Y
7.6.4	Implementation of good site practices to reduce waste generations	All works areas	Contractor	Land	\checkmark	Y
7.6.5	Re-use of excavated C&D materials on site as far as practical. A suitable area should be designated within the site for temporary stockpiling of	All works areas	Contractor	(Miscellaneous Provisions)	\checkmark	Y
7.0	C&D material and to facilitate the sorting process.			Ordinance		
7.6.8	General refuse should be stored in enclosed bins or compaction units separate from C&D material. A reputable waste collector should be employed by the contractor to remove general refuse from the site, separately from C&D material.	All works areas	Contractor	Code of Practice on the Packaging, Labelling and	\checkmark	Y
7.6.9	All storage of asbestos waste should be carried out properly in a secure place isolated from other substances so as to prevent any possible release of asbestos fibres into the atmosphere and contamination of other substances. The storage area should bear warning panels to alert people of the presence of asbestos waste.	All works areas	Contractor	Storage of Chemical Wastes	N	N/A
7.6.10	A licensed asbestos waste collector will be appointed to collect the asbestos waste and deliver to the designated landfill for disposal. Application should be submitted to EPD.	All works areas	Contractor		\checkmark	N/A
7.6.11	If chemical wastes were to be produced at the construction site, the Contractor would be required to register with the EPD as a Chemical Waste Producer, and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the waste, such as explosive, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport the chemical wastes. The licensed collector shall deliver the waste to the Chemical Waste Treatment Centre at Tsing Yi, or other licenced facility, in accordance with	All works areas	Contractor		\checkmark	Y

	the Waste Disposal (Chemical Waste) (General) Regulation.					
Ecology		•	•		· · ·	
8.8.1	Ecological impacts on important habitats and the associated wildfile caused by the proposed development should be mitigated and compensation approaches to the maximum practical extent	All works areas in particular important	The Engineer/ Contractor	EIAO-TM EM&A Manual	\checkmark	Y
8.8.2	Reduce the amount of vegetation removal required and thereby minimize the footprint of the slope at the woodland habitat	habitats All works areas	The Engineer/ Contractor		\checkmark	Y
8.8.3	Conduct detailed vegetation survey and implement suggested measures for species of conservation importance.		The Engineer/ Contractor	-	\checkmark	Y
8.8.4	The affected Incense Tree and Ailanthus as mentioned in the detailed vegetation survey report within the works area will be transplanted		The Engineer/ Contractor	-	\checkmark	Y
8.8.5	To avoid impacts on Short-nosed Fruit Bat, the tree with records of an active roost and trees showing evidence of roosting activity should be retained where possible. Where Chinese Fan-palm (Livistona chinensis) removal is required, these should be checked by suitably qualified ecologist with over 7 years relevant experience for roosting bats prior to their removal. If roosting bats are observed, a strategy for passive removal will be agreed with the AFCD and implemented. This could include undertaking the works just after the bats have left the roost (i.e. dusk).		The Engineer/ Contractor		~	N/A
8.8.6	The inclusion of Chinese Fan-palm of similar size as the affected plant within the areas of compensatory planting or other suitable areas is recommended to replace affected specimens, and compensate for the impact to roosting opportunities for this bat species		The Engineer/ Contractor		\checkmark	N/A
8.8.7	Implement good site measures to minimize the disturbance impacts to terrestrial habitat and associated wildlife arising from the land-based construction activities.		The Engineer/ Contractor		√	Y
8.8.8	To minimize the contamination of wastewater discharge, accidental chemical spillage and construction site run-off to the receiving water bodies, mitigation measures such as diverting the site runoff to silt trap facilities before discharging into storm drain, proper waste and dumping management and standard good site practice for land-based construction.		The Engineer/ Contractor		~	Y
8.8.9-8.8.11	Implement woodland compensation		The Engineer/ Contractor		\checkmark	N/A

Landscape and	d Visual					
9.8.1	Existing tress to be retained on site shall be carefully protected during construction. Trees unavoidably affected by the works shall be transplanted as far as possible.	All works areas	Contractor	DEVB TCW No. 10/2013	\checkmark	Y
	Compensatory Planting shall be provided in accordance with DEVB TCW No. 10/2013 – Tree Preservation.	All works areas	Contractor	EIAO TM	\checkmark	Y
	Control of night-time lighting glare.	All works areas	Contractor		\checkmark	Y
	Erection of decorative screen hoarding compatible with the surrounding setting.	All works areas	Contractor		\checkmark	Y
	Management of facilities on work sites which give control on the height and disposition/arrangement of all facilities on the works site to minimize visual impact to adjacent VSRs.	All works areas	Contractor		\checkmark	Y
Cultural Herita	age					
10.6.2	Vibration monitoring at Ex KCR Beacon Hill Tunnel during piling works of Administration Building	Work site	The Engineer /Contractor		\checkmark	N/A
Land Contami	nation	•			I	
11.7	Identify contamination and implement appropriate remedial measures on site. Provide relevant submission and obtain approval from EPD if necessary.	All works areas	Contractor	Guidance Note for Contaminated Land Assessment and Remediation Guidance Manual for Use of Risk based Remediation Goals for Contaminated Land Management (Guidance Manual)	\checkmark	N/A
Hazard to Life						
Table 12.22	Ensure speed limit enforcement is specified in the contractor's Method Statement to limit the speed of construction vehicles on site	All works areas	The Engineer	EIAO-TM	\checkmark	Y
	Develop an audit procedure to ensure enforcement of speed limits and to ensure adequate site access control	All works areas	The Engineer		\checkmark	Y
	Ensure construction method statement is endorsed by the Engineer (AECOM)	All works areas	The Engineer	1	\checkmark	Y

		1		
Ensure designated manoeuvring area for the new access road construction is away from the Chlorination House	New access road area	Contractor/ The Engineer	\checkmark	Y
Ensure that the emergency response plan and procedures (including drills) cover the reprovisioning activities	All works areas	Contractor/ The Engineer	\checkmark	Y
Safety training to be provided to construction workers and WSD/Engineer staff regarding evacuation procedures	All works area	Contractor/ The Engineer	\checkmark	Y
Ensure communication protocol is in place between construction and operation staff with regard to the change of chlorine delivery route and the switchover from the existing to new chlorinated water piping;	All works areas	Contractor/ The Engineer	\checkmark	N/A
Ensure temporary suspension of crane operation and construction truck movements during chlorine delivery	All works areas	Contractor/ The Engineer	\checkmark	Y
Provide a crash barrier between the construction site and the north side of the Chlorination House.	Chlorination House area	Contractor	\checkmark	Y
Conduct vibration monitoring at the Chlorination House during piling activities to ensure vibration levels are acceptable and will not lead to any damage of the Chlorination House	Chlorination House area	Contractor	√	Y
Civil engineering calculation to be performed to confirm differential settlement from excavation work is within acceptable limits for the Chlorination House	Chlorination House area	Contractor	\checkmark	Y
Provide settlement monitoring for the Chlorination House to ensure no subsidence occurs from nearby excavation works.	Chlorination House area	Contractor	\checkmark	Y
Confirm the chlorine concentration for the chlorinated water before the switchover from the existing to new piping. This is to avoid the potential for chlorine gas vapours being released if the concentration is too high and there is spillage during switchover	Chlorinated water piping	WSD	\checkmark	N/A
Develop an operating procedure for performing the chlorinated water switchover from the existing piping to new piping.	All works areas	Contractor/ The Engineer / WSD	\checkmark	N/A
Ensure the location/height of the lifting equipment is such there is no impact on Chlorination House/chlorine delivery route in case of falling, swinging or dropped load.	Chlorination House area	Contractor/ The Engineer	\checkmark	Y
Implement the controlled demolition of the existing E&M workshop to ensure that any steel structural elements can only fall away from the Chlorination House	Existing E&M Workshop and Chlorination House	Contractor/ The Engineer	\checkmark	N/A

	areas				
	aleas				
Stop any construction activities which may lead to vibrations and potential slope/boulder disturbance during the chlorine deliveries	All works areas	Contractor			Y
Installation of Chlorine gas monitors with audible alarms in the relevant	Reprovisioning	Contractor/			k.
reprovisioning works area	works areas	The Engineer		•	
Provision of an accompanying vehicle for the chlorine truck on the WTW site and ensuring that during the chlorine drums delivery construction works are stopped and the construction workers moved away from Chlorination House	All works areas	Contractor		\checkmark	Y
Establish a liaison between the contractor and HKCG and develop a	Beacon Hill	The Engineer /			
chlorine/town gas emergency plan to ensure gas safety during the	North Gas	Contractor /			
Construction Phase	Offtake Station	HKCG		,	
	and Gas			\checkmark	k
	Pipelines in Old Beacon Hill				
	Tunnel				
Temporary suspend chlorine delivery during the short period of		The Engineer /			
construction of the concerned section of elevated walkway to avoid		Contractor		\checkmark	N
mobile crane impact on the chlorine truck					
Provide clear road signs for site vehicles	Chlorine	The Engineer /			
	delivery route	Contractor			
	and			\checkmark	Y
	reprovisioning works access				
	roads				
Large equipment/plant movement should be controlled by	All works areas	The Engineer /			
'Permit-to-move' system		Contractor /		\checkmark	Y
		WSD			
Define restricted zone for the equipment (i.e. keep the equipment from	Chlorination	The Engineer /		,	
the Chlorination House at a safe distance). The extent of the restricted zone would be determined by the size of the equipment	House area	Contractor		\checkmark	Y
Locate the construction site office at or near property boundary away	Construction	The Engineer /			Y
from the Chlorination House as far as possible	Office area	Contractor		N	Y
Entry of non-authorized personnel to the construction site to be prohibited	All works areas	Contractor		\checkmark	Y

12.15.4, 12.18.1, 12.22.9	GPS fleet management system with driver training to help enforce truck speeds	Chlorine delivery trucks, fleet management centre	WSD / Chlorine Supply Contractor	EIAO-TM	\checkmark	k.i.v.				
	Improved clamps with independent checks to prevent load shedding	Ind larger fire extinguishers to prevent engine delivery trucks ding to the cargo area elivery route from Sham Shui Kok Dock to Sha air kit gires and perform regular visual checks on the lorine truck along critical road sections in Sha equipped with emergency kit, fire extinguisher, on. The accompanying vehicle will be ahead r the vehicles entering the water treatment ving vehicle may provide rapid response to an ald be limited to containing a small leak. the beginning of the Project (Item 2.3 of Table reducing combustible materials or use of fire reducing combustible materials or use of fire			\checkmark	F				
	Installation of fire screen and larger fire extinguishers to prevent engine and wheel fires from spreading to the cargo area				\checkmark	F				
	Adoption of the chlorine delivery route from Sham Shui Kok Dock to Sha Tin WTW					F				
	Provision of emergency repair kit					F				
12.34.3 Table 12.37	Ban the use of retreaded tyres and perform regular visual checks on the tyres.					\checkmark	F			
& 12.38	A vehicle accompanying chlorine truck along critical road sections in Sha Tin. The truck should be equipped with emergency kit, fire extinguisher, radio set for communication. The accompanying vehicle will be ahead of the chlorine truck after the vehicles entering the water treatment works site – An accompanying vehicle may provide rapid response to an incident but any action would be limited to containing a small leak.								\checkmark	F
	Limit fuel tanks capacity at the beginning of the Project (Item 2.3 of Table 12.37 – advance measure).									
	Review the practicality of reducing combustible materials or use of fire retardant materials in the cab. (Item 2.3 of Table 12.37 – further measure)		_		~	k.i.v.				
	Annual periodic radiography or ultrasonic test inspections of the chlorine drums should be considered for implementation as soon as feasible (Item 3.8 of Table 12.37).	Chlorine drums			\checkmark	k.i.v.				
	Implement side, front and rear crash guards with high energy absorption in coordination and accordance with the relevant authorities.	Chlorine delivery trucks			\checkmark	k.i.v.				
	Implement a sturdy steel frame to minimize the potential for chlorine release due to truck rollover				\checkmark	k.i.v.				
12.34.4	WSD will continue to keep under review the latest development of use of alternative disinfectants in water supply industry to aim at minimising on-site chlorine storage.4	Chlorine delivery Route	WSD		\checkmark	k.i.v.				

	Training should be provided for the use of the GPS fleet management and improved safe driving.	\checkmark	k.i.v.
	Ensured that independent checks are performed to ensure proper chlorine drum latching and clamping.	\checkmark	F
	Chlorine truck drivers or driver attendants should be further trained to check and detect potential chlorine leaks during transport. This should include the timely application of the emergency kit.	\checkmark	k.i.v.
	Training should be provided to driver and driver attendant for the emergency use of the new 2 × 9L AFFF extinguishers.	\checkmark	F
	Induction training for new drivers and driver attendant should include familiarisation with the route, familiarisation with chlorine risks, defensive driving, application of emergency kits, use of fire extinguishers and emergency response	\checkmark	k.i.v.
	Provision of a fire screen between the cab and cargo as well as fire retardant materials for the wheel arches on the chlorine truck should be planned and provided	\checkmark	F
	To keep under review alternate chlorine receiving dock in Sha Tin/Tai Po area for chlorine delivery to STWTW.	\sim	k.i.v.
<u>Legend</u>			
D – Design I			
C – Constru	ction Phase		
0 – Operati	on Phase		
Y - Complia	nce of Mitigation Measures		
N/A – Not A	Applicable in Reporting Period		
k.i.v – Keep	In View		
nine neep			

Appendix V Cumulative Statistics on Exceedances, Complaints, Notifications of Summons and Successful Prosecutions

Air Quality									
Location	Action Level			Limit Level					Total
AM1		0				0			0
AM2		0				0			0
					Noise				
Location	A	ction Lev	el		Ι	imit Levo	el		Total
NM1		0				0			0
NM2		0				0			0
NM3		0				0			0
				Wat	ter Qualit				
Location		Action	Level		Limit Level			Total	
Location	DO	Turbidity	SS	pH	DO	Turbidity	SS	pH	IUtai
C1	0	0	0	0	0	0	0	0	0
C2	0	0	0	0	0	0	0	0	0
C3	N/A N/A N/A N/A N/A N/A N/A N/A					0			
M1	0	0	0	0	0	0	0	0	0
M2	0	0	0	0	0	0	0	0	0
M3	0	0	0	0	0	0	0	0	0

Statistical Summary of Exceedances

Statistical Summary of Environmental Complaints

Reporting	Environmental Complaint Statistics						
Period	Frequency	Frequency Cumulative Complaint Nature					
1 April- 30 April 2020	0	0	N/A				

Statistical Summary of Environmental Summons

Reporting	Environmental Summons Statistics						
Period	Frequency Cumulative Details						
1 April- 30 April 2020	0	0	N/A				

Statistical Summary of Environmental Prosecution

Reporting	En	vironmental Prosecution Statis	stics
Period	Frequency	Cumulative	Details
1 April- 30 April 2020	0	0	N/A

Appendix W

Tentative schedule for environmental monitoring

Impact Monitoring Schedule for STWTW Mar 20								
Sum.	Mon	Tue	Wed	Thur	Fri	Sat		
Sun	2	3	wed	r	Fri			
1	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2	5	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3	5	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2	/		
8	9 Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3	10	11 Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2	12	13 Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3	14		
15	16	17	18	19	20	21		
	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2			
22	23	24	25	26	27	28		
	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3			
29	30	31						
	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2							

	Impact Monitoring Schedule for STWTW Apr 20							
Sun	Mon	Tue	Wed	Thur	Fri	Sat		
			1	2	3	4		
			Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2			
5	6	7	8	9	10	11		
	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2 & NM3					
12	13	14	15	16	17	18		
		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2 & NM3		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3		
19	20	21	22	23	24	25		
	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2			
26	27	28	29	30				
	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2					

*Remark: No construction will be performed on public holiday 4/4, 10/4, 11/4, 13/4 & 30/4.

Impact Monitoring Schedule for STWTW							
			May 20				
Sun	Mon	Tue	Wed	Thur	Fri	Sat	
					1	2	
					2	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3	
2	4	5	6	7	0	9	
5	Mater Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2	5	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2	5	
10	11	12	13	14	15	16	
10	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3		
17	18	19	20	21	22	23	
17	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2	19	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3	21	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2	23	
24	25	26	27	28	29	30	
	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3		
31							

*Remark: No construction will be performed on public holiday 1/5.

	Impact Monitoring Schedule for STWTW Jun 20							
Sun	Mon	Тие	Wed	Thur	Fri	Sat		
Sun	1	2	2	4	5	6		
	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2 & NM3	-	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2			
7	8	9	10	11	12	13		
	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3			
14	15	16	17	18	19	20		
	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2			
21	22	23	24	25	26	27		
	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3			
28	29	30						
	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2							

*Remark: No construction will be performed on public holiday 25/6.

			Impact Monitoring Schedule for STWTW Jul 20								
Sun	Mon	Tue	Wed	Thur	Fri	Sat					
5011			1	2	2						
				Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3	5	Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2					
5	6	7	8	9	10	11					
	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2						
12	13	14	15	16	17	18					
	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3						
19	20	21	22	23	24	25					
	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2						
26	27	28	29	30	31						
	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3						

*Remark: No construction will be performed on public holiday 1/7.