






Ming Hing – Ming Hing Civil – Vasteam  
Joint Venture

### Contractor's General Submission Form (CGS)

<b>Contract No.</b>	3/WSD/15		
<b>Project Title:</b>	In-situ Reprovisioning of Sha Tin Water Treatment Works (South Works) – Advance Works		
<b>CGS No.:</b>	3WSD15/CGS/SEQ/ALL/JV1038	<b>Issue:</b>	A
		<b>Date:</b>	16/11/2020
<b>To:</b>	Engineer's Representative	<b>Your Ref:</b>	
<b>Attention:</b>	Ms. Derek Ng		
<b>From:</b>	Ming Hing – Ming Hing Civil – Vasteam Joint Venture		
<b>Title:</b>	EM & A Impact Monitoring Report (Oct 2020)		
<b>Specification:</b>	---		
<b>Purpose:</b>	<input type="checkbox"/> For Information <input type="checkbox"/> For Comment <input type="checkbox"/> For Approval <input checked="" type="checkbox"/> For Record		
<b>Description of Contents:</b>			
We herewith submit the EM&A Impact Monitoring Report (Oct 2020) for your perusal and record.			
<b>Attachment:</b>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<b>Number of Copies:</b> 5 + 5 CD	
<b>Expected reply date:</b>	30 Nov 2020		
<b>Issued By:</b>	  _____ (BW/f) 	<b>Printed Name:</b>	Mr. Boris Woo
<b>Designation:</b>	_____ Site Agent	<b>Date:</b>	30 Nov 2020
<b>Received By:</b>	_____ (Signature & Received Chop)	<b>Received Date:</b>	_____

\* Delete if not applicable

CC.   JV Partner               –                               (w/ encl.)  
Office Master Copy       –                               (w/ encl.)

Your Ref:  
Our Ref: 60479142/C/fyw2011161

**By Hand & By Email**

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

Attn: Mr. Edmund Huen

16 November 2020

Dear Sir,

**Contract No.3/WSD/15q  
In-situ reprovisioning of Sha Tin Water Treatment Works (South Works) Advance Works  
Submission of 56<sup>th</sup> Monthly EM&A Report for October 2020**

Reference is made to Environmental Team (ET)'s 56<sup>th</sup> Monthly EM&A Report for October 2020 (Rev. 0) submitted on 16 November 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

Your ref:

Our ref: CJO-3113

**By hand**

Chief Engineer /Project Management

Water Supplies Department

46/F., Immigration Tower

7 Gloucester Road, Wanchai

(Attn: Mr. H C Wong, Heinz)

16 November, 2020

Dear Sir,

**In-Situ Reprovisioning of Sha Tin Water Treatment Works – South Works**

**Environmental Permit EP-494/2015**

**Submission of 56<sup>th</sup> 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 56<sup>th</sup> 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



Water Supplies Department



**MONTHLY ENVIRONMENTAL MONITORING AND AUDIT  
(EM&A) REPORT (NO. 56)**





**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. 56) –**

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

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

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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 56<sup>th</sup> monthly Environmental Monitoring and Audit Report for this Contract covering the period from 1 to 31 October 2020 (the Reporting Period). As informed by the Contractor, major activities in the reporting period included:
- Architectural Builders Works and Finishes at Logistic Center
  - Architectural Builders Works and Finishes at Alum Tank & Hydro Turbine House
  - Testing and Commissioning Works at Logistic Center
  - Drainage work and associate work of new carriageway at South Access Entrance
  - Landscaping works
- A.5 Environmental monitoring activities under the EM&A program in this reporting period are summarized below

<b>Issues</b>	<b>Environmental Monitoring Parameters / Inspection</b>	<b>Occasions</b>
Air	1-Hour TSP	18
Noise	$L_{eq(30mins)}$ Daytime	6
Water Quality	Water Sampling	13
Inspection / Audit	ET Regular Environmental Site Inspection	4
	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.





- A.11 As informed by the Contractor, the major works for this Project in November 2020 will be:
- Architectural Builders Works and Finishes at Logistic Center
  - Architectural Builders Works and Finishes at Alum Tank & Hydro Turbine House
  - Testing and Commissioning Works at Logistic Center
  - Drainage work and associate work of new carriageway at South Access Entrance
  - Indoor air quality monitoring at Logistic Centre
  - Landscaping works
- A.12 EM&A monitoring for the 56<sup>th</sup> reporting period has been completed. The 57<sup>th</sup> monthly EM&A report will cover the period from 1 to 30 November 2020.



## 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.



## 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:

Table 1-1: Key Personnel Contact for Environmental Works

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

## 1.3. SCOPE OF REPORT

1.3.1 This is the 56<sup>th</sup> monthly EM&A Report under the Contract No. 3/WSD/15 In-situ Re-provisioning of Sha Tin Water Treatment Works (South Works) – Advance Works covering the period from 1 October 2020 to 31 October 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
- Architectural Builders Works and Finishes at Alum Tank & Hydro Turbine House
- Testing and Commissioning Works at Logistic Center
- Backfilling on Box Culvert for Construction of Carriageway at South Access Entrance
- Tree Felling
- Demolition Works of Existing Guard House

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.

Table 2-1: Summary of Impact Monitoring Programme

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

**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 <ul style="list-style-type: none"> <li>● Dissolved Oxygen (mg/L);</li> <li>● Dissolved Oxygen Saturation (%);</li> <li>● Turbidity (NTU);</li> <li>● pH value;</li> <li>● Water depth (m); and</li> <li>● Temperature (°C)</li> </ul>
	Laboratory analysis <ul style="list-style-type: none"> <li>● Suspended Solids (mg/L)</li> </ul>



- 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**.

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

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)

- 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.

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

Date	Weather	1-hour TSP ( $\mu\text{g}/\text{m}^3$ )				
		Start Time	End Time	1 <sup>st</sup> Measurement	2 <sup>nd</sup> Measurement	3 <sup>rd</sup> Measurement
3/10/2020	Fine	13:24	16:24	84	91	95
7/10/2020	Sunny	08:50	11:50	112	135	141
12/10/2020	Sunny	13:10	16:10	98	108	113
16/10/2020	Sunny	08:55	11:55	89	82	97
21/10/2020	Sunny	14:25	17:25	88	79	95
27/10/2020	Sunny	14:10	17:10	83	87	90
<b>Average</b>				98.2		
<b>Range</b>				79 – 141		

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

Date	Weather	1-hour TSP ( $\mu\text{g}/\text{m}^3$ )				
		Start Time	End Time	1 <sup>st</sup> Measurement	2 <sup>nd</sup> Measurement	3 <sup>rd</sup> Measurement
3/10/2020	Fine	13:32	16:32	83	87	90
7/10/2020	Sunny	08:59	11:59	108	122	131
12/10/2020	Sunny	13:17	16:17	95	98	107
16/10/2020	Sunny	09:01	12:01	98	101	113
21/10/2020	Sunny	14:32	17:32	95	88	94
27/10/2020	Sunny	14:18	17:18	86	97	93
<b>Average</b>				99.2		
<b>Range</b>				83 – 131		

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**.

Table 2-7: Details of Noise Monitoring Stations

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

- 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 NL-52
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



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  $5 \text{ ms}^{-1}$  or wind with gusts exceeding  $10 \text{ ms}^{-1}$ . The wind speed was checked with a portable wind speed meter capable of measuring with speeds in  $\text{ms}^{-1}$ .
- 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.

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

Date	Time	Weather	1 <sup>st</sup> Leq <sub>5min</sub>	2 <sup>nd</sup> Leq <sub>5min</sub>	3 <sup>rd</sup> Leq <sub>5min</sub>	4 <sup>th</sup> Leq <sub>5min</sub>	5 <sup>th</sup> Leq <sub>5min</sub>	6 <sup>th</sup> Leq <sub>5min</sub>	Leq <sub>30min</sub>
3/10/2020	14:50 - 15:20	Fine	64.5	63.2	64.5	65.4	64.2	66.2	64.8
7/10/2020	10:13 - 10:43	Sunny	63.2	64.7	63.2	65.3	67.4	64.5	65.0
12/10/2020	14:30 - 15:00	Sunny	62.6	65.4	65.0	63.2	64.2	63.2	64.1
16/10/2020	10:28 - 10:58	Sunny	63.0	64.1	64.5	65.2	63.2	63.9	64.0
21/10/2020	13:45 - 14:15	Sunny	63.2	64.3	65.4	67.0	63.6	64.4	64.8
27/10/2020	15:39 - 16:09	Sunny	65.4	64.2	63.9	67.4	65.0	63.0	65.1
<b>Average</b>									64.6
<b>Range</b>									64.0 – 65.1
<b>Limit Level &gt;75dB(A)</b>									

Table 2-10: Summary of Noise Monitoring Results – NM2

Date	Time	Weather	1 <sup>st</sup> Leq <sub>5min</sub>	2 <sup>nd</sup> Leq <sub>5min</sub>	3 <sup>rd</sup> Leq <sub>5min</sub>	4 <sup>th</sup> Leq <sub>5min</sub>	5 <sup>th</sup> Leq <sub>5min</sub>	6 <sup>th</sup> Leq <sub>5min</sub>	Leq <sub>30min</sub>
3/10/2020	13:32 - 14:02	Fine	63.2	65.0	64.2	63.2	63.4	64.5	64.0
7/10/2020	08:59 - 09:29	Sunny	62.2	64.2	63.2	64.5	63.2	62.2	63.3
12/10/2020	13:17 - 13:47	Sunny	61.7	62.1	61.5	62.6	60.5	61.8	61.7
16/10/2020	08:48 - 09:18	Sunny	60.9	62.3	62.5	63.0	64.1	62.8	62.7
21/10/2020	14:32 - 15:02	Sunny	60.6	61.7	64.4	63.2	64.2	62.0	62.9
27/10/2020	14:18 - 14:48	Sunny	62.2	63.2	60.8	61.4	62.2	63.7	62.4
<b>Average</b>									62.8
<b>Range</b>									61.7 – 64.0
<b>Limit Level &gt;75dB(A)</b>									





Table 2-11: Summary of Noise Monitoring Results – NM3

Date	Time	Weather	1 <sup>st</sup> Leq <sub>5min</sub>	2 <sup>nd</sup> Leq <sub>5min</sub>	3 <sup>rd</sup> Leq <sub>5min</sub>	4 <sup>th</sup> Leq <sub>5min</sub>	5 <sup>th</sup> Leq <sub>5min</sub>	6 <sup>th</sup> Leq <sub>5min</sub>	Leq <sub>30min</sub>
3/10/2020	14:06 - 14:36	Fine	59.9	60.6	61.1	62.1	60.6	63.2	61.4
7/10/2020	09:33 - 10:03	Sunny	60.8	62.0	60.5	59.9	60.5	61.1	60.8
12/10/2020	13:50 - 14:20	Sunny	61.1	59.9	60.5	60.1	62.2	62.2	61.1
16/10/2020	09:25 - 09:55	Sunny	61.8	60.9	61.8	60.8	61.7	62.4	61.6
21/10/2020	15:06 - 15:36	Sunny	63.2	60.6	61.1	58.9	59.8	60.5	60.9
27/10/2020	14:53 - 15:23	Sunny	61.1	62.4	61.4	64.2	62.0	60.9	62.2
<b>Average</b>									61.3
<b>Range</b>									60.8 – 62.2
<b>Limit Level</b> <b>70dB(A) during normal teaching periods</b> <b>or 65dB(A) during examination periods</b>									

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**.

Table 2-12: Details of Water Quality Monitoring Station

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



- 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:

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

<b>Water quality</b>	
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 - 20mg/L and 0 - 200% saturation; and a temperature of 0 - 45°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.
Turbidimeter	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)

**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

<b>Dissolved Oxygen – Mid Depth (mg/L)</b>	<b>C1</b>	<b>C2</b>	<b>C3</b>	<b>M1</b>	<b>M2</b>	<b>M3</b>
Average	8.50	8.47	N/A	9.14	9.15	9.42
Min.	8.23	8.26	N/A	8.87	8.82	9.18
Max.	8.65	8.74	N/A	9.34	9.34	9.58
<b>Turbidity – Mid Depth (NTU)</b>	<b>C1</b>	<b>C2</b>	<b>C3</b>	<b>M1</b>	<b>M2</b>	<b>M3</b>
Average	2.52	2.55	N/A	2.20	2.14	0.63
Min.	2.20	2.00	N/A	1.90	1.50	0.30
Max.	2.70	2.80	N/A	2.40	2.70	0.90
<b>Suspended Solid – Mid depth (mg/L)</b>	<b>C1</b>	<b>C2</b>	<b>C3</b>	<b>M1</b>	<b>M2</b>	<b>M3</b>
Average	3.01	3.04	N/A	2.25	4.00	<1
Min.	1.80	2.30	N/A	1.70	3.20	<1
Max.	3.70	4.00	N/A	2.80	5.20	<1
<b>pH value (unit)</b>	<b>C1</b>	<b>C2</b>	<b>C3</b>	<b>M1</b>	<b>M2</b>	<b>M3</b>
Average	7.57	7.53	N/A	7.74	7.75	7.67
Min.	7.25	7.30	N/A	7.61	7.61	7.51
Max	7.76	7.87	N/A	7.84	7.89	7.81

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 in-situ measurements, laboratory analysis data are shown in **Appendix R**.



## 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 20 and 27 October 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

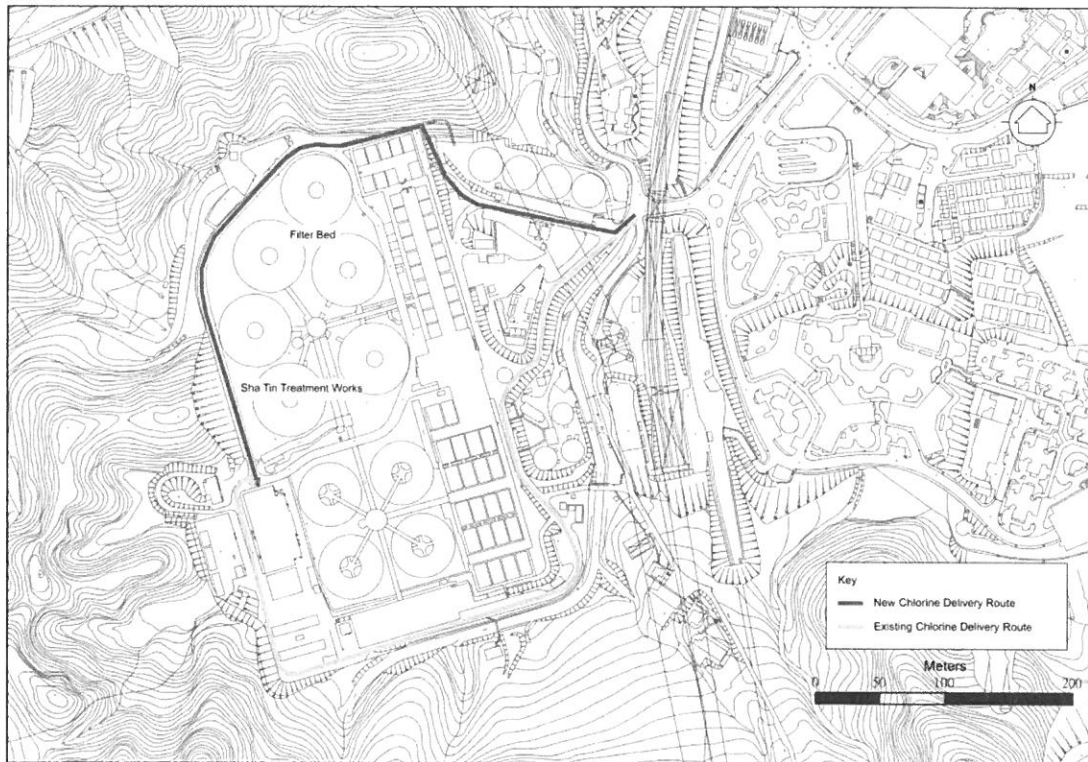
Destination	Route
From SSK Dock to Sha Tin WTW	Sham Shui Kok Dock > Cheung Tung Road > Sunny Bay Road > N Lantau Highway > Lantau Link > NW Tsing Yi Interchange > Tsing Yi North Costal road > Tsing Tsuen Road > Tsuen Wan Road > Kwai Chung Road > Ching Cheung Road > Tai Po Road > Tai Po Road (Piper’s 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.



Figure 2: Chlorine Delivery Route at Sha Tin WTW



- 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 9, 14, 21, 28 October 2020.
- 2.8.2 One joint site inspection with IEC also undertaken on 21 October 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.

Table 2-16: Site Observations

<b>Date</b>	<b>Environmental Observations</b>	<b>Follow-up Status</b>
9 October 2020	No environmental issue was observed during the site inspection	N/A
14 October 2020	Water safety barriers at the South Bridge were found without cap. The Contractor was reminded to provide cap to prevent accumulation of stagnant water	1. Water cap was provided.
21 October 2020	No environmental issue was observed during the site inspection	N/A
28 October 2020	1. Small area of oil leakage found on the road of North Circular Road. The Contractor was reminded to clear the oil leakage	1. Oil leakage was cleared.

- 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

<b>License / Permit</b>	<b>License / Permit No.</b>	<b>Date of Issue</b>	<b>Date of Expiry</b>	<b>License / Permit Holder</b>	<b>Remark</b>
Environmental Permit	EP- 494/2015	28/01/2015	N/A	WSD	
Registration of Chemical Waste Producer	WPN5218-759 -M2936-01	31/12/2015	N/A	MMVJV	
Trip Ticket (Chit) Account	7023723	10/12/2015	N/A	MMVJV	
Waste Water Discharge License (Wall C)	WT0023932 -2016	01/04/2016	31/03/2021	MMVJV	
Waste Water Discharge License (Wall D)	WT0024211 -2016	10/06/2016	30/06/2021	MMVJV	
Construction Noise Permit	GW-RN0336-20	12/05/2020	16/12/2020	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**.

Table 2-18: Environmental Mitigation Measures

Issues	Environmental Mitigation Measures
Air Quality	<ul style="list-style-type: none"> <li>- Tarpaulin covering of any dusty materials on a vehicle leaving the site;</li> <li>- Imposition of speed controls for vehicles on site haul roads;</li> <li>- Use of regular watering to reduce dust emissions from exposed site surfaces and roads;</li> <li>- Side enclosure and covering of any aggregate or stockpiling of dusty materials to reduce emissions;</li> <li>- Where possible, routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs.</li> </ul>
Noise	<ul style="list-style-type: none"> <li>- Good site practices to limit noise emissions at the sources;</li> <li>- Use of quiet plant and working methods;</li> <li>- Use of site hoarding or other mass materials as noise barrier to screen noise at ground level of NSRs;</li> <li>- Scheduling of construction works outside school examination period in critical area.</li> </ul>
Water	<ul style="list-style-type: none"> <li>- Drainage systems were regularly and adequately maintained;</li> <li>- Effluent discharged from the construction site should comply with standards stipulated in the TM-DSS;</li> <li>- Open stockpiles of construction materials on sites should be covered.</li> </ul>
General	<ul style="list-style-type: none"> <li>- The site was generally kept tidy and clean.</li> </ul>

- 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 Project Hotline	Complaint Received via 1823 or from other government departments
MMVJV notify ER, ET and IEC	ER notify MMVJV, ET and IEC
Register of the complaint. MMVJV and ET to conduct investigation of complaint and report to ER and IEC the investigation results	
If complaint is considered not valid	If complaint is found valid
ET or ER to reply the complainant if necessary	MMVJV to implement 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 complaint report for submission to WSD ET to record the complaint case in monthly EM&A report	



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2.12.2 No environmental complaint were received in the reporting period.

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 November 2020 to January 2021 will be:
- Architectural Builders Works and Finishes at Logistic Center
  - Sitewide defects work
  - Testing and Commissioning at Logistic Center
  - Drainage Works and Site Formation Works at South Access Entrance
  - Landscaping Works

#### **3.2. KEY ISSUES FOR COMING MONTH**

- 3.2.1 Potential environmental impacts arising from the above upcoming construction activities in November 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
  - Architectural Builders Works and Finishes at Alum Tank & Hydro Turbine House
  - Testing and Commissioning Works at Logistic Center
  - Drainage work and associate work of new carriageway at South Access Entrance
  - Indoor air quality monitoring at Logistic Centre
  - Landscaping works
- 3.2.2 The tentative monitoring schedule for November 2020 to January 2021 can be found in **Appendix W**.



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## 4. CONCLUSIONS AND RECOMMENDATIONS

### 4.1. SUMMARY

- 4.1.1 Air quality (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 21 October 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

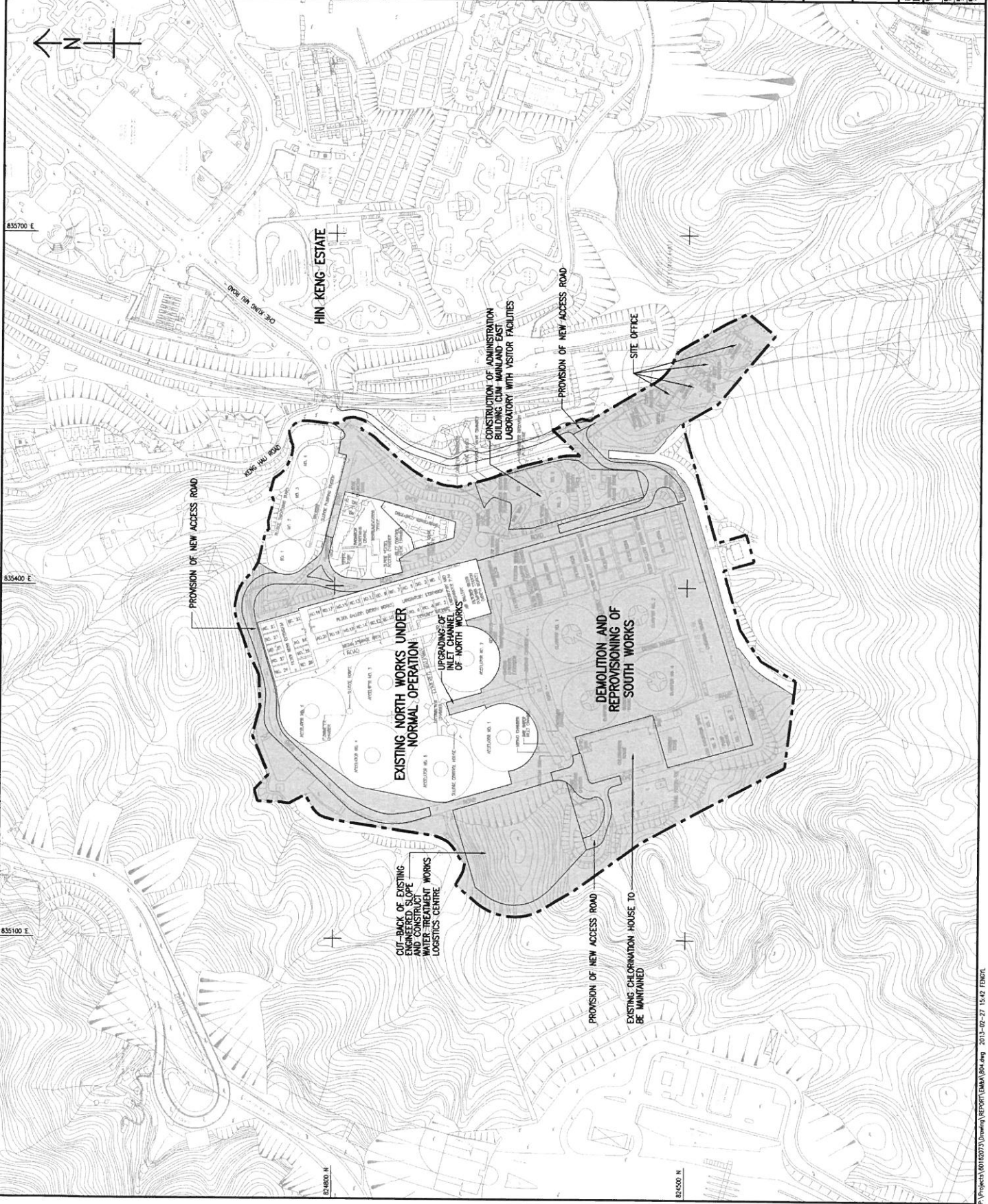
## General Layout Plan



**LEGEND:**

- SITE BOUNDARY OF SHA TIN WATER TREATMENT WORKS
- ▭ WORKS AREA

水務署 WATER SUPPLIES DEPARTMENT	
AGREEMENT NO. CE 13/2008 (NS)	
IN-SITU REPROVISIONING OF SHA TIN WATER TREATMENT WORKS - DESIGN AND CONSTRUCTION	
LOCATION PLAN AND THE MAJOR SCOPE OF WORKS	
<b>AECOM</b>	
PROJ. NO. 圖則編號	60162073/EM&A/FIG 1
DATE 日期	1.8.2010
SCALE 比例尺	AS 1 : 3000
METRES 公尺	
© COPYRIGHT RESERVED 版權保留	



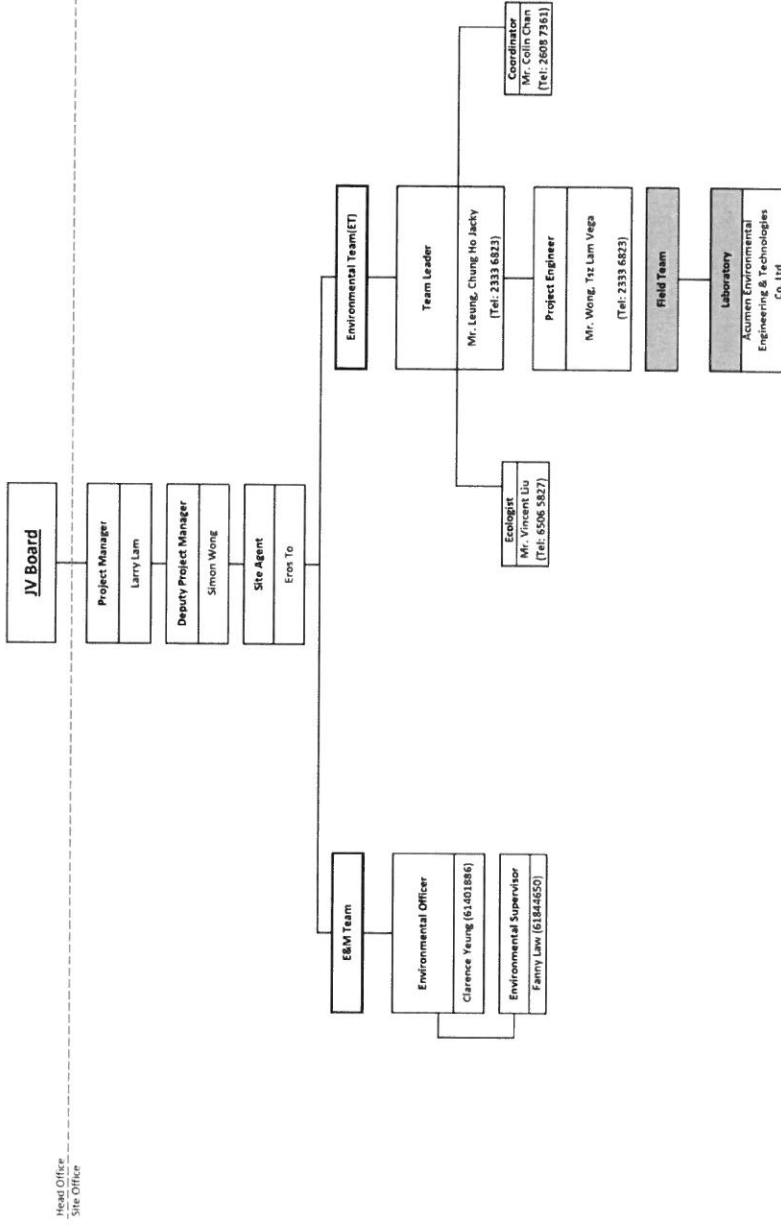
# Appendix B

## Project Organization

**Contract No. 3/WSD/15  
 In-Situ Reprovisioning of Sha Tin Water Treatment Works (South Works) - Advance Works  
 Ming Hing - Ming Hing Civil - Vastream Joint Venture**

Update Date 31/09/2020

**Project Organization Chart**



Head Office:  
Site Office

# Appendix C

## Latest Construction Programme

ID	Task Name	Domain Rev 9	Rev 9	Start	Finish	2016	2017	2018	2019	2020
1	Preliminary & Design Works	1422 d	30/01/15	31/03/19	318					
2	Preliminary & Design Works	1525 d	30/01/15	27/12/18	318					
3	Office Setup	30 d	30/01/15	28/11/15	2712					
4	Office Setup	30 d	30/01/15	27/12/18	318					
5	Renovation of RE office	150 d	30/01/15	27/12/18	318					
6	Renovation of RE office	120 d	30/01/15	26/21/16	318					
7	Which wash facilities	100 d	30/01/15	6/21/16	318					
8	Survey & Environmental	100 d	30/01/15	6/21/16	318					
9	Initial survey	78 d	30/01/15	15/11/16	318					
10	UU detection	17 d	15/11/16	1/12/16	318					
11	Tree and vegetation survey	0 d	15/11/16	15/11/16	318					
12	Tree and vegetation survey submission to EPD	0 d	15/11/16	15/11/16	318					
13	Tree and vegetation survey submission to EPD	0 d	15/11/16	15/11/16	318					
14	Environmental impact baseline monitoring	0 d	15/11/16	15/11/16	318					
15	Baseline monitoring approval	0 d	15/11/16	15/11/16	318					
16	Baseline monitoring approval	0 d	15/11/16	15/11/16	318					
17	Pre-condition survey	1155 d	30/01/15	27/12/18	318					
18	Tree Protection	96 d	7/21/16	6/5/16	318					
19	Tree Protection	1155 d	30/01/15	27/12/18	318					
20	Tree Protection	1155 d	30/01/15	27/12/18	318					
21	Tree Protection	1155 d	30/01/15	27/12/18	318					
22	Commons Design Submission	1331	31/01/15	31/03/19	318					
23	Commons Design Submission	145 d	13/11/15	5/6/16	318					
24	Commons Design Submission	88 d	7/12/15	3/1/16	318					
25	AIP-01 & DDA-01 - Addition GI Plan	66 d	4/12/15	1/2/16	318					
26	AIP-02 & DDA-02 - Basis of Design	250 d	15/11/16	20/9/16	318					
27	AIP-04 - P&ID	115 d	22/11/16	16/3/17	318					
28	DDA-04-1 - P&ID	541 d	15/2/17	9/8/18	318					
29	DDA-04-2 - Pipe Support Design	170 d	23/9/16	11/21/17	318					
30	DDA-04-3 - Pipe Support Design	703 d	10/11/17	13/12/18	318					
31	DDA-04-4 - Testing & Commissioning	117 d	18/2/16	13/6/16	318					
32	AIP-05 - Instrumentation, Control and Automation (DCS - Control Philosophy)	458 d	4/7/16	4/10/17	318					
33	DDA-05-1 - DCS (General)	1129 d	29/7/16	31/8/19	318					
34	DDA-05-2 - DCS (Functional Design Specification)	957 d	17/1/17	31/8/19	318					
35	DDA-05-3 - DCS (Control Loop Diagrams)	105 d	14/7/17	26/10/17	318					
36	AIP-06 - Communication Network	14 d	27/10/17	9/11/17	318					
37	DDA-06 - Communication Network	298 d	7/11/18	31/8/19	318					
38	DDA-07 - Automatic Ingress System	0 d	5/21/16	13/6/16	318					
39	AIP-08 - Electrical Power Supply System	330 d	5/21/16	13/6/16	318					
40	DDA-08-1 - Electrical Power Supply System	643 d	26/6/16	30/9/19	318					
41	DDA-08-2 - Electrical Power Supply System	631 d	21/3/17	31/12/18	318					
42	DDA-08-3 - Fault Calculation & Protection Setting (for Electrical System)	486 d	14/2/17	14/6/18	318					
43	DDA-08-4 - Harmonic Analysis	737 d	15/9/16	21/9/18	318					
44	DDA-08-5 - Electrical Typical Design	768 d	16/2/17	25/5/19	318					
45	DDA-08-6 - Modification of Existing Administration Building	95 d	31/7/21/5	34/1/16	318					
46	AIP-10A - Process Piping - Civil	146 d	5/21/16	29/6/16	318					
47	DDA-10A - Process Piping - Civil	897 d	14/7/16	27/12/18	318					
48	AIP-10B - Process Piping - E&M (Pipe Trench E&M Design)	172 d	24/10/18	15/4/19	318					
49	DDA-10B - Process Piping - E&M (Pipe Trench E&M Design)	172 d	24/10/18	15/4/19	318					
50	Site Edge E&M Design	1082 d	14/9/16	31/8/19	318					
51	Site Edge E&M Design (General) (including Cable Duct Routes / Cable Routes) by Main Contractor	1240 d	18/11/16	10/6/19	318					
52	DDA-19-2 - Modification of North Works Air Gallery	27 d	18/11/16	13/2/16	318					
53	WTW Logistics Centre, Alum Saturation Tank, and Hydro Turbine House	795 d	7/8/17	10/8/19	318					
54	AIP-11A - Design Concept	1315 d	25/11/16	31/8/19	318					
55	DDA-11A - Architectural Design Development (DAP stage 2 submission to ASD)	91 d	26/4/16	25/7/16	318					
56	WTW Logistics Centre	983 d	22/12/16	31/8/19	318					
57	AIP-12A - Architectural Design including GA, Interior Design and Non-Structural Element	40 d	25/11/16	4/3/16	318					
58	DDA-12A - Architectural Design including GA, Interior Design and Non-Structural Element	306 d	9/12/16	10/10/17	318					
59	AIP-12B - Foundation & Structural Design	498 d	16/6/16	26/10/17	318					
60	DDA-12B - Foundation & Structural Design	674 d	27/10/17	31/8/19	318					
61	AIP-13C - Building Services Design	288 d	25/2/16	6/12/16	318					
62	DDA-13C - Building Services Design	242 d	21/3/17	17/11/17	318					
63	AIP-12D - Electrical & Mechanical Design	1315 d	25/11/16	31/8/19	318					
64	DDA-12D - Electrical & Mechanical Design	91 d	26/4/16	25/7/16	318					
65	Alum Saturation Tanks	983 d	22/12/16	31/8/19	318					
66	AIP-13A - Architectural Design including GA, Interior Design and Non-Structural Element	40 d	25/11/16	4/3/16	318					
67	DDA-13A - Architectural Design including GA, Interior Design and Non-Structural Element	306 d	9/12/16	10/10/17	318					
68	AIP-13B - Foundation & Structural Design	498 d	16/6/16	26/10/17	318					
69	DDA-13B - Foundation & Structural Design	674 d	27/10/17	31/8/19	318					
70	AIP-13C - Building Services Design	288 d	25/2/16	6/12/16	318					
71	DDA-13C - Building Services Design	242 d	21/3/17	17/11/17	318					
72	AIP-13D - Electrical & Mechanical Design	1340 d	31/12/15	31/8/19	318					
73	DDA-13D - Electrical & Mechanical Design	48 d	3/2/16	21/3/16	318					
74	Hydro Turbine House	1340 d	31/12/15	31/8/19	318					
75	AIP-14A - Architectural Design including GA, Interior Design and Non-Structural Element (incl. MECS and BS design)	48 d	3/2/16	21/3/16	318					

ID	ID	Task Name	Duration	Rev-9	Rev-9	2016	2017	2018	2019	2020
76	D802	DDA-14A - Architectural Design including GA, Interior Design and Non-Structural Element (incl. MECA and BS design)	766 d	31/25/16	37/11/18					
77	D803	AIP-14B - Foundation & Structural Design	95 d	31/12/15	34/01/16					
78	D804	DDA-14B - Foundation & Structural Design	642 d	6/5/16	6/2/18					
79	D805	AIP-14C - Building Services Design	408 d	20/4/16	16/3/17					
80	D806	DDA-14C - Building Services Design	821 d	2/6/17	31/8/19					
81	D807	AIP-14D - Electrical & Mechanical Design (incl. Hydraulic study)	149 d	17/2/16	14/7/16					
82	D808	DDA-14D - Electrical & Mechanical Design (incl. Hydraulic study)	766 d	14/9/16	19/10/18					
83	D809	North Works Temporary Power House	1041 d	31/12/15	5/11/18					
84	D801	AIP-15A - Architectural Design including GA, Interior Design and Non-Structural Element	26 d	19/2/16	15/3/16					
85	D802	DDA-15A - Architectural Design including GA, Interior Design and Non-Structural Element	309 d	6/5/16	10/3/17					
86	D803	AIP-15B - Foundation & Structural Design	65 d	31/12/15	4/3/16					
87	D804	DDA-15B - Foundation & Structural Design	330 d	31/5/16	25/4/17					
88	D805	AIP-15C - Building Services Design	189 d	16/6/16	21/12/16					
89	D806	DDA-15C - Building Services Design	743 d	24/10/16	5/11/18					
90	D807	AIP-15D - Electrical & Mechanical Design	130 d	19/2/16	27/6/16					
91	D808	DDA-15D - Electrical & Mechanical Design	122 d	26/8/16	17/7/17					
92	D809	DDA-15D - Electrical & Mechanical Design	99 d	26/8/16	17/7/17					
93	D701	AIP-16A - Galvanized Steel Platforms, Walkways and Footing Design	65 d	31/12/15	4/3/16					
94	D702	DDA-16A - Galvanized Steel Platforms, Walkways and Footing Design	340 d	6/5/16	10/4/17					
95	D703	AIP-16B - Lighting Design	20 d	20/4/16	9/5/16					
96	D704	DDA-16B - Lighting Design	793 d	30/6/16	31/8/18					
97	D705	AIP-16C - Electrical & Mechanical Design	134 d	17/2/16	29/6/16					
98	D706	DDA-16C - Electrical & Mechanical Design	265 d	26/8/16	17/5/17					
99	D800	Flowerer House	312 d	28/1/16	31/8/19					
100	D801	AIP-17A - Architectural Design including GA, Interior Design and Non-Structural Element	26 d	19/2/16	15/3/16					
101	D802	DDA-17A - Architectural Design including GA, Interior Design and Non-Structural Element	503 d	27/7/17	11/12/18					
102	D803	AIP-17B - Foundation & Structural Design	45 d	28/1/16	12/2/16					
103	D804	DDA-17B - Foundation & Structural Design	484 d	30/6/16	26/10/17					
104	D805	AIP-17C - Electrical & Mechanical Design	20 d	11/3/16	30/3/16					
105	D806	DDA-17C - Electrical & Mechanical Design	928 d	15/2/17	31/8/19					
106	D807	AIP-17D - Building Services Design	196 d	16/6/16	28/12/16					
107	D808	DDA-17D - Building Services Design	893 d	22/3/17	31/8/19					
108	D809	AIP-17E - Electrical & Mechanical Design	149 d	6/1/16	27/6/16					
109	D901	AIP-18A - Foundation, Civil & Structural Design	922 d	30/6/16	21/1/19					
110	D902	DDA-18A - Foundation, Civil & Structural Design	27 d	11/3/16	6/4/16					
111	D903	AIP-18B - Electrical & Mechanical Design	928 d	15/2/17	31/8/19					
112	D904	DDA-18B - Electrical & Mechanical Design	122 d	16/6/16	15/10/16					
113	D905	AIP-18C - Building Services Design	893 d	22/3/17	31/8/19					
114	D906	DDA-18C - Building Services Design	1526 d	30/10/15	21/2/20					
115	S1000	Section 1 - Commencement	0 d	30/10/15	30/10/15					
116	S1001	North Works Temporary Power House	258 d	24/1/16	15/11/18					
117	S1002	North Works Temporary Power House	258 d	24/1/16	15/11/18					
118	S1003	North Works Temporary Power House	258 d	24/1/16	15/11/18					
119	S1004	Excavation of trial pit for earthing test	18 d	24/1/16	19/4/16					
120	S1005	Ground Investigation Works	10 d	20/4/16	29/4/16					
121	S1006	Additional drilling for in planting earthing log	30 d	30/4/16	29/5/16					
122	S1007	Site Clearance and Preparation Works	10 d	15/8/16	24/8/16					
123	S1008	Excavation and installation of ELS	50 d	25/8/16	13/10/16					
124	S1009	Pile Load Test	10 d	14/10/16	23/10/16					
125	S1010	Installation of earth mat	20 d	14/10/16	23/10/16					
126	S1011	Installation of earth mat	35 d	13/10/16	17/12/16					
127	S1012	Installation of earth mat	35 d	13/10/16	17/12/16					
128	S1013	Structural for North Works Temporary Power House	210 d	18/12/16	15/7/17					
129	S1014	ABWF Works for North Works Temporary Power House	262 d	16/7/17	3/4/18					
130	S1015	Plumbing and Drainage installation	246 d	15/3/18	15/11/18					
131	S1016	MVAC installation	246 d	15/3/18	15/11/18					
132	S1017	Fire Services installation	246 d	15/3/18	15/11/18					
133	S1018	Electrical installation	246 d	15/3/18	15/11/18					
134	S1019	Ready for laying of cable ducts, connection of draw pits and installation of cable trays	0 d	2/6/17	2/6/17					
135	S1020	Laying of cable ducts, construction of draw pits and installation of cable trays	83 d	2/6/17	23/8/17					
136	S1021	Finishing works	280 d	6/1/18	12/10/18					
137	S1022	Site cleaning	29 d	13/10/18	10/11/18					
138	S1023	Completion of architectural finishes and relevant works (both internal and external)	0 d	15/11/18	15/11/18					
139	S1024	NWTPH - 6.6kV & 11kV	791 d	2/6/16	1/8/18					
140	S1025	Confirmation of cable routing with CLP and WSD	0 d	2/6/16	2/6/16					
141	S1026	Design and installation of cable tray	20 d	1/11/16	28/2/17					
142	S1027	Construction of 6.6kV & 11kV working platform incl. cable pit and steel frame at roof of 180 d	166/17	16/7/17	27/11/17					
143	S1028	Washwater Pump House	124 d	28/11/17	31/3/18					
144	S1029	Cable tray installation at roof of Washwater Pump House for CLP cable laying	124 d	28/11/17	31/3/18					
145	S1030	Laying 6.6kV/11kV cable by CLP	123 d	1/4/18	1/8/18					
146	S1031	NWTPH - EAM Works	1001 d	1/6/16	26/2/19					
147	S1032	NWTPH - Electrical equipment	760 d	1/6/16	30/6/18					
148	S1033	NWTPH - Electrical Equipment Procurement	396 d	1/6/16	17/7/17					
149	S1034	NWTPH - Whole Set of Equipment (Duo Bias and PCT) Delivered on Site (Claims No 26A)	141 d	30/6/18	1/8/19					
150	S1035	Whole Set of Equipment (Duo Bias and PCT) Delivered on Site	0 d	30/6/18	30/6/18					

ID	ID	Task Name	Duration	Rev 9 Start	Rev 9 Finish	2016	2017	2018	2019	2020
151	S1126AC2	JV Conducted CLP Joint Inspection & Workshop for Those Units Installation Aspect	6 d	7/17/18	6/7/18					
152	S1126AC3	The First Unit of DB and PCT installed at NWTPH	98 d	7/7/18	12/01/18					
153	S1126AC4	CLP Final Test and Inspection. Accepted for Further Energization	30 d	13/02/18	1/11/19					
154	S1126AC5	Ready for 6.6kV Switchboard Energization - Supply 2 & 3	7 d	12/11/18	18/11/18					
155	S1126B	Additional Cable Support and Cable Bridge outside NWTPH	99 d	20/11/18	26/2/19					
156	S1126B-1	Confirm Instruction	1 d	20/11/18	20/11/18					
157	S1126B-2	Design and Shop Drawing	37 d	21/11/18	27/12/18					
158	S1126B-3	Material Ordering, Delivery & Testing	14 d	28/12/18	10/1/19					
159	S1126B-4	Fabrication and Erection for Cable Support	17 d	1/1/19	27/1/19					
160	S1126B-5	Fabrication and Erection for Cable Bridge	47 d	1/1/19	26/2/19					
161	S1127	NWTPH Phase 1 - E & M Works & 6.6 kV Supply 4 Diversion by CLP	455 d	7/11/18	20/9/17					
162	S1127	NWTPH Phase 1 - E & M Works & 6.6 kV Supply 4 Diversion by CLP	711 d	20/9/17	3/10/19					
163	S1128	NWTPH - New Ducts, Draw Pits & Openings for 6.6kV (Phase 1) Source 2 CLP	2 d	24/11/17	25/11/17					
164	S1129	Diversion - HO by Civil Contractor	1 d	26/11/17	26/11/17					
165	S1130	CLP Inspection of the New ducts, Draw Pits & Openings for 6.6kV	1 d	27/11/17	27/11/17					
166	S1131	NWTPH - Second CLP Inspection of the rectified New Ducts, Draw Pits & Openings	1 d	28/11/17	28/11/17					
167	S1132	NWTPH - T07 New Ducts Plus Openings after defect rectification to CLP - HO by Civil Contractor	1 d	29/11/17	29/11/17					
168	S1133	NWTPH - CLP Mobilization for Supply 4 Diversion	1 d	15/12/17	15/12/17					
169	S1134	NWTPH - CLP T&C of the completed HV Cables	1 d	1/12/17	1/12/17					
170	S1135	Re-routing of Incoming Power Cables to North Works Air Gallery (Suspension of existing Pump No. 9 and Pump No. 14 Operation)	34 d	16/12/17	18/1/18					
171	S1136	NWTPH - Superstructure & ABWF (CLP to GFF) - HO by Civil Contractor	0 d	13/10/17	13/10/17					
172	S1137	NWTPH - Panel Supporting Frames (GFF) - HO by Civil Contractor	0 d	13/10/17	13/10/17					
173	S1138	NWTPH - WF & Panel Supporting Frames (1/F to R/F slab) - HO by Civil Contractor	0 d	13/10/17	13/10/17					
174	S1139	NWTPH - LV Supply Installation Commence at GF	33 d	13/10/17	14/11/17					
175	S1140	NWTPH - 6.6kV/11kV Switchboard Installation at 1/F (incl. T & C)	31 d	20/9/17	30/7/18					
176	S1141	Installation of 5 nos. of New Cap Bank for Pumps at 1/F	34 d	13/03/17	15/11/17					
177	S1142	NWTPH - LV Cable Laying and Termination, # Subject to STWTP Operate	305 d	19/18	3/10/19					
178	S1143	NWTPH - 6.6kV Power and Control Cable Laying and Termination, Existing LV Diversion 12 Nos. # Subject to STWTP Operator	153 d	21/9/17	30/9/19					
179	S1144	NWTPH Phase 2 - E&M Works and 6.6kV Supply 2 Diversion	740 d	21/9/17	30/9/19					
180	S1145	NWTPH - Installation of Cable Rack at R/F of Admin Building by Civil Contractor	14 d	21/9/17	4/10/17					
181	S1146	NWTPH - Installation of Cable Ladder on the Cable Rack at R/F of Admin Building	178 d	5/10/17	31/2/18					
182	S1147	NWTPH - Cable Laying by CLP	133 d	23/8/18	23/12/18					
183	S1148	NWTPH - CLP Mobilization for Supply 2 diversion, # Subject to STWTP Operation	15 d	10/6/19	24/6/19					
184	S1149	NWTPH - 6.6kV Supply 2 Diversion to NWTPH by CLP	14 d	25/6/19	8/7/19					
185	S1150	NWTPH - CLP T&C of the completed HV cables	4 d	30/5/19	2/6/19					
186	S1151	NWTPH - 6.6kV Switchboard T&C incl. CLP Inspection	3 d	20/6/19	22/6/19					
187	S1152	NWTPH - 6.6kV Switchboard Energization - Supply 2	16 d	23/6/19	8/7/19					
188	S1153	NWTPH - Pump No. 12 Diversion to NWTPH including Power and Control Cables, # 30 d	30 d	19/19	30/9/19					
189	S1154	NWTPH - Pump No. 11 Diversion to NWTPH including Power and Control Cables, # 12 d	12 d	25/4/19	6/5/19					
190	S1155	Subject to WSD Overhaul Completion (Claim No. 57A)	170 d	15/12/18	2/6/19					
191	S1156	NWTPH Phase 3 - E&M Works & 6.6kV Supply 3 Diversion	2 d	28/1/19	29/1/19					
192	S1157	NWTPH - CLP Mobilization for Supply 3 Diversion	21 d	10/1/19	30/1/19					
193	S1158	NWTPH - CLP T&C of the Completed HV Cables	4 d	20/1/19	23/1/19					
194	S1159	NWTPH - CLP T&C incl. CLP Inspection	2 d	23/1/19	24/1/19					
195	S1160	NWTPH - 6.6kV Switchboard Energization - Supply 3	4 d	20/1/19	24/1/19					
196	S1161	NWTPH - 6.6kV Switchboard Energization - Supply 3 (Suspension of Pump No. 13 Operation), # Subject to WSD Overhaul Completion (Claim No. 57A)	47 d	15/12/18	30/1/19					
197	S1162	NWTPH - Pump No. 10 Diversion to NWTPH including Power and Control Cables (Suspension of Pump No. 10 Operation), # Subject to WSD Overhaul Completion (Claim No. 57A)	19 d	15/5/19	2/6/19					
198	S1164	NWTPH Phase 4A - Cap Bank for Pump No. 9 & 14	161 d	1/7/19	18/2/19					
199	S1165	Cap Bank # 14 - HV cable laying	21 d	1/7/19	1/7/19					
200	S1165	Cap Bank No. 9 connection (Suspension of Pump No. 9 Operation), # Subject to WSD Arrangement	11 d	1/12/19	1/12/19					
201	S1166	Release existing Cap Bank No. 14 to NWTPH (Suspension of Pump No. 14 Operation)	7 d	12/12/19	18/12/19					
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 WSD Arrangement under VO for replacing the existing HV cable for existing H/O by Civil Contractor	21 d	1/12/19	21/12/19					
204	S1169	NWTPH - T06 New Ducts & Draw Pits between Filters & Sludge Treatment Plant - H/O by Civil Contractor	0 d	1/12/19	1/12/19					
205	S1170	Relocate existing Transformer No. 3, and Reconnect to existing 6.6kV Switchboard in 22 d North Works Air Gallery	22 d	2/12/19	23/12/19					
206	S1171	NWTPH Phase 4 - Existing 6.6kV Switchboard at North Works Air Gallery	22 d	12/12/19	2/1/20					
207	S1172	NWTPH - Remove Interconnection Cable between Admin. Building and North Works 22 d Air Gallery Switchboard (Subject to Engineer's Instruction)	22 d	12/12/19	2/1/20					

ID	ID	Task Name	Duration	Rev 9	Rev 9	2016	2017	2018	2019	2020
208	S1173	Task Name	Start	Finish	2016	2017	2018	2019	2020	Task Name
208	S1173	NWTPH - Establish a New 6.6kV Interconnection Cable Between North Works Temp. 22.2 Power House and existing North Works Air Gallery Switchboard	12/12/19	21/20						
209	S1174	NWTPH LNSB, TC, PLC & Genes Installation at GTF	274.d	12/18	12/18	11/1/18				
210	S1175	NWTPH 6.6kV/11kV to 380V Transformers	61.d	16/18	16/18	31/7/18				
211	S1176	NWTPH 300kVA ESS, Genes	90.d	24/18	30/6/18					
212	S1177	NWTPH - PLC & Ctrl. (incl. 6.6kV switchboard to existing Admin. Building)	93.d	17/9/18	11/1/18					
213	S1178	NWTPH - Battery Charger System	21.d	11/7/18	31/7/18					
214	S1179	NWTPH - Cable Supports	104.d	12/18	15/5/18					
215	S1180	NWTPH - Cable Trays	76.d	12/18	15/5/18					
216	S1181	NWTPH - Cable Laying	45.d	14/18	15/5/18					
217	S1182	NWTPH - Cable Termination	46.d	14/18	15/5/18					
218	S1183	NWTPH - T&C	120.d	21/1/18	13/1/18					
219	S1184	NWTPH - Testing	120.d	21/1/18	13/1/18					
220	S1200	Hydro Turbine - House	1385.d	15/2/16	30/11/19					
221	S1200a	HTH1 - Modification work for High Island Watermain	605.d	15/2/16	11/10/17					
222	S1201	Site survey of existing pipeworks and cabling	16.d	15/2/16	13/1/16					
223	S1202	Data collection for HTH design by E&M Contractor	112.d	23/16	21/6/16					
224	S1203	Restoration of cable ducting for signal and power cable	82.d	23/16	22/8/16					
225	S1204	Construction of sampling panel and cable diversion	22.d	23/8/16	21/9/16					
226	S1205	Water treatment at High Island WSD (Claim no. 010)	10.d	23/8/16	22/9/16					
227	S1206	Water treatment at High Island Water main pipes	5.d	7/1/17	11/1/17					
228	S1207	Investigation of backflow from downstream (Mixing Chamber) and preparation works for V160 valve capping works	118.d	12/1/17	9/5/17					
229	S1208	Capping off of V160 valve for facilitating Path A downstream capping works	0.d	10/5/17	10/5/17					
230	S1209	Demolition of E&M (incl. relocation of existing E & M equipment)	90.d	11/5/17	8/8/17					
231	S1210	Swapping of path B to path A (original)	115.d	11/5/17	11/10/17					
232	S1211	Structure & Piling Service	395.d	12/10/17	10/1/18					
233	S1212	ELS works and excavation works	28.d	12/10/17	6/1/18					
234	S1213	ELS works and excavation works	59.d	9/1/17	6/1/18					
235	S1215	Plate Load Test for R&B Foundation	10.d	7/1/18	16/1/18					
236	S1214	Foundation & substructure (incl. pipeworks installation inside Hydro Turbine House)	61.d	17/1/18	18/3/18					
237	S1215	Superstructure for Hydro Turbine House	89.d	19/3/18	15/6/18					
238	S1216	Completion of concrete structure of Hydro Turbine House	0.d	13/6/18	15/6/18					
239	S1217	Finishing works	148.d	18/6/18	10/1/18					
240	S1218	Completion of architectural finishes and retainers works (both internal and external)	0.d	10/1/18	10/1/18					
241	S1219	Plumbing and Drainage installation	148.d	16/6/18	10/1/18					
242	S1220	MVAC installation	148.d	16/6/18	10/1/18					
243	S1221	Fire services installation	148.d	16/6/18	10/1/18					
244	S1222	Electrical installation	148.d	16/6/18	10/1/18					
245	S1223	Water resumption of High Island Water main pipes	5.d	24/10/18	28/10/18					
246	S1224	Remove capping of path A and reinstall flow meter at HF1	0.d	30/10/18	30/11/19					
247	S1225	HTH - E&M Works (Section 1)	1221.d	28/7/16	30/11/19					
248	S1226	Hydro Turbine House - E&M Equipment Procurement	450.d	17/8/16	9/1/17					
249	S1227	Hydro Turbine House - E&M Equipment Delivery	203.d	10/11/17	31/5/18					
250	S1228	Hydro Turbine House - E&M Equipment Delivery (Needle Valve & Turbine Generator)	280.d	10/11/17	16/8/18					
251	S1229	Hydro Turbine House - I/O by Civil Contractor	0.d	16/6/18	16/6/18					
252	S1230	Installation of needle valve and turbine generator	59.d	15/7/18	11/9/18					
253	S1231	Hydro Turbine House - Hydropower Generation System Mechanical Installation	112.d	15/7/18	31/7/18					
254	S1232	T04 - Trench/Cable ducts & Drive Pits (HO) by Civil Contractor	0.d	15/6/18	15/6/18					
255	S1233	T05 - Trench/Cable ducts & Drive Pits (HO) by Civil Contractor	0.d	15/6/18	15/6/18					
256	S1234	Hydro Turbine House - Electrical & ICA Installation	57.d	15/9/18	10/1/19					
257	S1235	Hydro Turbine House - T&C for the DS, PSI, Hydropower System	61.d	1/10/19	30/11/19					
258	S1236	Section 1 Completion (Claims No. 028A, 028B & 051A)	0.d	21/20	21/20					
259	S1237	Section 2 Commencement	0.d	30/10/15	30/10/15					
260	S1238	Site Formwork and Slope Retaining Structure for North Circular Road	657.d	7/2/16	24/11/17					
261	S1239	L-shape Retaining Wall D	187.d	7/2/16	32/8/16					
262	S2001	Site Clearance	21.d	7/2/16	27/2/16					
263	S2100	Temporary works removal Utilities relocation	21.d	7/2/16	27/2/16					
264	S2100a	Submission of D1 1018	0.d	13/16	13/16					
265	S2101	Excavation for L-shape Retaining wall	90.d	28/2/16	27/5/16					
266	S2102	Construction of L-shape Retaining wall	120.d	13/4/16	10/8/16					
267	S2103	Permission of D1 1038	0.d	22/8/16	22/8/16					
268	S2104	Bore Pile & Mini Pile for Retaining Wall D	334.d	22/8/16	21/7/17					
269	S2105	Excavation and backfilling for bore piling works area	187.d	22/8/16	29/11/16					
270	S2106	Installation of temp. soil nail	15.d	30/11/16	14/1/17					
271	S2107	Bored pile machine establishment	15.d	30/11/16	14/1/17					
272	S2108	Construction of bored piles (D) (H 5-10m, L 70m, Dia 1.5m)	118.d	22/12/16	18/4/17					
273	S2109	Bored Pile test	28.d	19/4/17	16/5/17					
274	S2110	Excavation for mini pile area	14.d	5/4/17	18/4/17					
275	S2111	Mini pile load test (Preliminary Pile)	3.d	19/4/17	21/4/17					
276	S2112	Construction of mini piles	70.d	6/5/17	14/7/17					
277	S2113	Construction of mini piles (incl. temporary works and compressions)	126.d	22/7/17	24/11/17					
278	S2114	Retaining Wall D for Bore Pile & Mini Pile Section	50.d	22/7/17	9/9/17					
279	S2115	Construction of retaining wall above bored pile								
280	S2116									
281	S2117									
282	S2118									
283	S2119									
284	S2120									



Contract No. 1/WSD/15  
 In-situ Replenishment of Shin Tin Water Treatment Works (South Works) - Advance Works  
 Master Programme (Ver.09) - (Accelerated)



ID	ID	Task Name	Duration	Rev 9 Start	Rev 9 Finish	2016	2017	2018	2019	2020
284	S31019	Construction of mini pipe cap and L-shape retaining wall	4 d	08/07/17	08/11/17					
285	S31020	Construction of concrete retaining wall	4 d	08/07/17	08/11/17					
286	S31021	Backfilling works behind bored pile wall & L-shape retaining wall	8 d	31/08/17	08/09/18					
287	S31022	Backfilling works behind bored pile wall & L-shape retaining wall	8 d	31/08/17	08/09/18					
288	S31023	Backfilling works behind bored pile wall & L-shape retaining wall	8 d	31/08/17	08/09/18					
289	S31024	Backfilling works behind bored pile wall & L-shape retaining wall	8 d	31/08/17	08/09/18					
290	S31025	Backfilling works behind bored pile wall & L-shape retaining wall	8 d	31/08/17	08/09/18					
291	S31026	Backfilling works behind bored pile wall & L-shape retaining wall	8 d	31/08/17	08/09/18					
292	S31027	Backfilling works behind bored pile wall & L-shape retaining wall	8 d	31/08/17	08/09/18					
293	S31028	Backfilling works behind bored pile wall & L-shape retaining wall	8 d	31/08/17	08/09/18					
294	S31029	Backfilling works behind bored pile wall & L-shape retaining wall	8 d	31/08/17	08/09/18					
295	S31030	Backfilling works behind bored pile wall & L-shape retaining wall	8 d	31/08/17	08/09/18					
296	S31031	Backfilling works behind bored pile wall & L-shape retaining wall	8 d	31/08/17	08/09/18					
297	S31032	Backfilling works behind bored pile wall & L-shape retaining wall	8 d	31/08/17	08/09/18					
298	S31033	Backfilling works behind bored pile wall & L-shape retaining wall	8 d	31/08/17	08/09/18					
299	S31034	Backfilling works behind bored pile wall & L-shape retaining wall	8 d	31/08/17	08/09/18					
300	S31035	Backfilling works behind bored pile wall & L-shape retaining wall	8 d	31/08/17	08/09/18					
301	S31036	Backfilling works behind bored pile wall & L-shape retaining wall	8 d	31/08/17	08/09/18					
302	S31037	Backfilling works behind bored pile wall & L-shape retaining wall	8 d	31/08/17	08/09/18					
303	S31038	Backfilling works behind bored pile wall & L-shape retaining wall	8 d	31/08/17	08/09/18					
304	S31039	Backfilling works behind bored pile wall & L-shape retaining wall	8 d	31/08/17	08/09/18					
305	S31040	Backfilling works behind bored pile wall & L-shape retaining wall	8 d	31/08/17	08/09/18					
306	S31041	Backfilling works behind bored pile wall & L-shape retaining wall	8 d	31/08/17	08/09/18					
307	S31042	Backfilling works behind bored pile wall & L-shape retaining wall	8 d	31/08/17	08/09/18					
308	S31043	Backfilling works behind bored pile wall & L-shape retaining wall	8 d	31/08/17	08/09/18					
309	S31044	Backfilling works behind bored pile wall & L-shape retaining wall	8 d	31/08/17	08/09/18					
310	S31045	Backfilling works behind bored pile wall & L-shape retaining wall	8 d	31/08/17	08/09/18					
311	S31076-1	Head dig tunnel (Tunnel no. 4) for DN900 pipe	75 d	24/09/17	07/12/17					
312	S31076-2	Head dig tunnel (Tunnel no. 4) for DN900 pipe	67 d	08/12/17	12/02/18					
313	S31076-3	Head dig tunnel (Tunnel no. 4) for DN900 pipe	14 d	13/02/18	26/02/18					
314	S31076-5	Head dig tunnel (Tunnel no. 4) for DN900 pipe	17 d	27/02/18	15/03/18					
315	S31076-3	Head dig tunnel (Tunnel no. 4) for DN900 pipe	197 d	16/03/18	28/09/18					
316	S31076-4	Head dig tunnel (Tunnel no. 4) for DN900 pipe	97 d	29/09/18	10/10/18					
317	S3108B	Head dig tunnel (Tunnel no. 4) for DN900 pipe	25 d	11/10/18	25/01/19					
318	S3108B-C-1	Head dig tunnel (Tunnel no. 4) for DN900 pipe	238 d	11/10/18	25/06/19					
319	S3108B-C-2	Head dig tunnel (Tunnel no. 4) for DN900 pipe	222 d	22/01/19	05/01/19					
320	S3108B	Head dig tunnel (Tunnel no. 4) for DN900 pipe	361 d	18/01/17	13/11/18					
321	S3108B	Head dig tunnel (Tunnel no. 4) for DN900 pipe	75 d	08/02/17	12/02/18					
322	S3108B	Head dig tunnel (Tunnel no. 4) for DN900 pipe	75 d	08/02/17	12/02/18					
323	S3110	Construction of manholes and walkways	0 d	28/03/17	28/03/17					
324	S3111	Construction of manholes and walkways	361 d	18/01/17	13/11/18					
325	S3112	Construction of manholes and walkways	120 d	28/03/17	25/07/17					
326	S3113	Construction of manholes and walkways	127 d	30/08/17	31/11/18					
327	S3114	Construction of manholes and walkways	1198 d	14/01/16	12/07/19					
328	S3116	Construction of manholes and walkways	168 d	14/01/16	15/09/16					
329	S3117	Construction of manholes and walkways	175 d	15/09/16	30/01/16					
330	S3118	Construction of manholes and walkways	287 d	21/01/17	15/01/17					
331	S3119	Construction of manholes and walkways	0 d	30/09/17	30/09/17					
332	S3120	Construction of manholes and walkways	0 d	30/09/17	30/09/17					
333	S3121	Construction of manholes and walkways	0 d	1/10/17	1/10/17					
334	S3122	Construction of manholes and walkways	13 d	2/10/17	14/10/17					
335	S3123	Construction of manholes and walkways	47 d	15/10/17	30/11/17					
336	S3124	Construction of manholes and walkways	17 d	1/08/17	1/10/17					
337	S3125	Construction of manholes and walkways	8 d	15/12/17	22/12/17					
338	S3127	Construction of manholes and walkways	10 d	1/01/18	10/01/18					
339	S3128	Construction of manholes and walkways	10 d	1/01/18	10/01/18					
340	S3129	Construction of manholes and walkways	3 d	16/01/18	3/01/18					
341	S3131	Construction of manholes and walkways	93 d	30/03/18	30/06/18					
342	S3132	Construction of manholes and walkways	82 d	10/04/18	30/06/18					
343	S3126	Construction of manholes and walkways	32 d	15/07/18	15/08/18					
344	S3130	Construction of manholes and walkways	3 d	4/01/19	6/01/19					
345	S3133	Construction of manholes and walkways	17 d	26/06/19	12/07/19					
346	S3100	Construction of manholes and walkways	1185 d	1/09/16	29/11/19					
347	S3300a	Construction of manholes and walkways	1139 d	1/09/16	14/10/19					
348	S3301	Construction of manholes and walkways	255 d	1/09/16	23/01/17					
349	S3301a	Construction of manholes and walkways	90 d	24/01/17	23/04/17					
350	S3302	Construction of manholes and walkways	60 d	24/04/17	22/06/17					
351	S3303	Construction of manholes and walkways	110 d	23/06/17	10/10/17					
352	S3307	Construction of manholes and walkways	3 d	4/08/17	6/08/17					

**Contract No.: JWS/D/15**  
**In-situ Rejuvenation of Six Th Water Treatment Works (South Works) - Advance Works**  
**Master Programme (Ver.09) - (Accelerated)**

Critical Split    Milestone    Summary    Critical

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 Date: 3 November 2019

ID	ID	Task Name	Duration	Rev 9 Start	Rev 9 Finish	2016	2017	2018	2019	2020
353	S3304	Partial removal of existing flow meter house and valve chamber	150 d	17/07/17	13/11/18					
354	S3305	Re-construction of flow meter house and valve chamber (incl. Steel Platform)	22 d	6/11/19	15/09/19					
355	S3306	ABWF Finishing Works for Flow Meter House and Valve Chamber	100 d	15/11/19	24/04/19					
356	S3308	Plumbing and Drainage Installation for Flow Meter House and Valve Chamber	60 d	16/09/19	14/10/19					
357	S3309	MVAC Installation for Flow Meter House and Valve Chamber	60 d	16/09/19	14/10/19					
358	S3310	Electrical Installation for Flow Meter House and Valve Chamber	60 d	16/09/19	14/10/19					
359	S3311	Valve Chamber - E&M Works	716 d	30/11/17	15/11/19					
360	S3312	Valve Chamber - Equipment Procurement	62 d	30/11/17	30/11/18					
361	S3313	Valve Chamber - Equipment Manufacturing & FAT	22 d	10/10/18	28/2/19					
362	S3314	Valve Chamber - Equipment Site Works Demolition*	93 d	10/10/18	28/2/19					
363	S3316	Valve Chamber - HOD by Civil Contractor	122 d	17/19	30/06/19					
364	S3315	Valve Chamber - E&M Installation	0 d	31/07/19	31/07/19					
365	S3317	Valve Chamber - E&M Installation	30 d	1/8/19	30/8/19					
366	S3318	Valve Chamber - Modifying the actuator to suit new level	66 d	1/8/19	5/10/19					
367	S3319	Valve Chamber - T&C	32 d	15/10/19	15/11/19					
368	S3320	Flowmeter House - E&M Works	868 d	17/17	17/10/17					
369	S3321	Flowmeter House - Equipment Procurement	93 d	17/17	17/10/17					
370	S3322	Flowmeter House - Equipment Manufacturing & FAT	122 d	2/10/19	25/2/19					
371	S3323	Flowmeter House - HOD by Civil Contractor	0 d	11/10/19	11/10/19					
372	S3324	Flowmeter House - E&M Installation of new mono rails	0 d	11/10/19	11/10/19					
373	S3325	Flowmeter House - E&M Installation of new mono rails	40 d	1/4/19	10/5/19					
374	S3326	Flowmeter House - Power Supply	15 d	1/8/19	15/8/19					
375	S3327	Flowmeter House - T&C	32 d	15/10/19	15/11/19					
376	S3328	Site Formation @ Future Administration Building	228 d	16/4/19	29/11/19					
377	S3329	Isolation and Removal of Existing DN600 Fresh Water Main, # Subject to WSD Supply and Planning Division Schedule (Called off). (Contractors NOC No. 22)	40 d	12/7/19	12/7/19					
378	S3330	Abandon of 3 Nos. Existing Washwater Recovery Tanks	0 d	16/4/19	25/5/19					
379	S3330A	Re-location of DN600 Fresh Water Main into Two Stages, as per request - Stage 1 (Location B near South Bridge)	1 d	30/5/19	30/5/19					
380	S3330B	Re-location of DN600 Fresh Water Main into Two Stages, as per request - Stage 2 (Location A near Main Gate)	1 d	5/6/19	5/6/19					
381	S3330C	Removal and Disposal of Isolated Existing DN600 Fresh Water Main	105 d	6/6/19	18/9/19					
382	S3331	Investigation and Termination of Existing Utilities Connection	60 d	13/7/19	10/9/19					
383	S3332	Demolishing existing structure for future administration building	50 d	11/9/19	30/10/19					
384	S3333	Temporary Works & Demolition of 3 Nos. Existing Washwater Recovery Tanks	90 d	2/17/19	18/10/19					
385	S3334	Site formation (backfilling) for future administration building	30 d	31/10/19	29/11/19					
386	S3335	Completion of Site Formation - Flow Meter House - Valve Chamber @ Future Administration Building	0 d	29/11/19	29/11/19					
387	S3400	Box Culvert at Tin Sum Nullah	1342 d	1/10/16	24/2/20					
388	S3400a	Box Culvert Bay 5 to Bay 8 Construction Works	261 d	1/10/16	18/6/17					
389	S3401	Temporary drainage diversion and form access	45 d	1/10/16	14/11/16					
390	S3402	Excavation for Box culvert (Bay 5)	60 d	15/11/16	13/1/17					
391	S3403	Construction for Box Culvert (Bay 5)	60 d	14/11/17	12/2/17					
392	S3404	Excavation for Box Culvert (Bay 6)	30 d	14/11/17	12/2/17					
393	S3405	Construction for Box Culvert (Bay 6)	28 d	19/3/17	15/4/17					
394	S3406	Excavation for Box culvert (Bay 7)	25 d	13/2/17	9/3/17					
395	S3407	Construction for Box Culvert (Bay 7)	18 d	30/4/17	17/5/17					
396	S3408	Excavation for Box culvert (Bay 8)	25 d	10/3/17	3/4/17					
397	S3409	Construction for Box Culvert (Bay 8)	18 d	18/5/17	18/6/17					
398	S3409a	Box Culvert Bay 4 to Bay 1 Construction Works	876 d	2/10/17	24/2/20					
399	S3410	Drainage diversion and form access	25 d	2/10/17	26/10/17					
400	S3411	Excavation for Box culvert (Bay 4)	15 d	2/10/17	30/11/17					
401	S3412	Construction for Box Culvert (Bay 4)	25 d	11/2/17	25/12/17					
402	S3413	Excavation for Box Culvert (Bay 5)	25 d	11/2/17	25/12/17					
403	S3414	Construction for Box Culvert (Bay 5)	41 d	19/1/18	28/2/18					
404	S3415	Excavation for Box culvert (Bay 2)	30 d	26/12/17	24/1/18					
405	S3416	Construction for Box Culvert (Bay 2)	30 d	1/3/18	30/3/18					
406	S3417	Excavation for Box culvert (Bay 1)	30 d	25/1/18	23/2/18					
407	S3418	Construction for Box Culvert (Bay 1)	30 d	17/3/18	15/4/18					
408	S3419	Backfilling Works and Existing Utilities Connection	122 d	2/10/18	31/1/19					
409	S3420	Demolition of Temporary Steel South Bridge and Backfilling works to form Access Road (Subject to appropriate permit for using main gate as site entrance during construction of entrance above new box culvert)	86 d	1/12/19	24/2/20					
410	S3500	Storm Drain for Decking at Tin Sum Nullah, Drainage & Master Meter Room @ Keng Hau Road	1532 d	2/1/16	12/3/20					
411	S3500a	Storm Drain for Tin Sum Nullah	791 d	2/1/16	23/1/18					
412	S3501	Temporary drainage diversion	15 d	2/1/16	16/1/16					
413	S3502	Modification of existing inlet structure	40 d	2/12/16	31/3/16					
414	S3503	Excavation for ELS works (Section 1)	45 d	17/1/16	31/1/16					
415	S3504	Installation for Storm Drain (Section 1)	25 d	10/1/17	25/1/17					
416	S3505	Construction of manhole (Section 1)	30 d	26/1/17	24/2/17					
417	S3506	Excavation for Storm Drain (Section 2)	45 d	1/1/17	14/2/17					
418	S3507	ELS works and excavation works (Section 2)	25 d	15/2/17	11/3/17					
419	S3508	Installation for Storm Drain (Section 2)	30 d	12/3/17	10/4/17					
420	S3509	Construction of inlet structure (Section 2)	60 d	11/4/17	9/6/17					
421	S3510	Concrete surround to storm drain pipe and backfilling	60 d	2/1/18	23/1/18					
422	S3511	Modification of STW main entrance	22 d	3/7/18	25/7/18					
423	S3512	Water Meters Connection & Master Meter Room from Land Department	60 d	3/7/18	31/8/17					
424	S3513	Pipe laying and connection to existing warmains at Keng Hau Road	150 d	18/1/17	28/1/18					
425	S3514	Construction of Valve Chamber at Keng Hau Road	330 d	29/1/18	24/12/18					

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Date: 7 November 2019

**Contract No.: JWS/D/15**  
**In-situ Re-provisioning of She Tin Water Treatment Works (South Works) - Advance Works**  
**Master Programme (Ver.09) - (Accelerated)**

Critical Path: [Gantt chart showing critical path tasks]

Summary: [Gantt chart showing summary tasks]






**Contract No. JWS/D/15  
In-situ Reprofitting of Sha Tin Water Treatment Works (South Works) - Advance Works  
Master Programme (Ver.09) - (Accelerated)**

ID	JD	Task Name	Duration	Rev 9 Start	Rev 9 Finish	2016		2017		2018		2019		2020	
						Sp	Ust	Sp	Ust	Sp	Ust	Sp	Ust	Sp	Ust
487	S16035	Superstructure for Alum Saturation Tanks	34 d	28/12/18	30/1/19										
488	S16036	Steel Canopy at Alum Saturation Tanks Roof	4 d	14/01/19	14/01/19										
489	S16037	B.S. - Plumbing and Drainage installation for Alum Saturation Tank	62 d	15/01/19	14/02/19										
500	S16040b	B.S. - HVAC installation for Alum Saturation Tank	60 d	31/05/19	29/7/19										
501	S16040c	B.S. - Fire Services installation for Alum Saturation Tank	60 d	15/06/19	13/08/19										
502	S16040d	B.S. - Fire Services installation for Alum Saturation Tank	60 d	30/06/19	28/08/19										
503	S16040e	B.S. - Electrical installation for Alum Saturation Tank	60 d	15/07/19	12/09/19										
504	S16040f	Lifting appliances for Alum Saturation Tank	53 d	30/08/19	20/10/19										
505	S16040g	Automatic Irrigation system	92 d	30/09/19	30/12/19										
506	S16040h	Canopy installation	73 d	20/10/19	31/12/19										
507	S16040i	Completion of structure including canopy above Alum Saturation Tanks	0 d	31/12/19	31/12/19										
508	S16040j	WTW Logistics Centre - Instrumentation Works	62 d	15/02/20	15/02/20										
509	S16040k	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
510	S16050	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
511	S16051	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
512	S16052	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
513	S16053	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
514	S16054	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
515	S16055	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
516	S16056	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
517	S16057	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
518	S16058	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
519	S16059	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
520	S16060	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
521	S16061	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
522	S16062	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
523	S16063	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
524	S16064	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
525	S16065	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
526	S16066	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
527	S16067	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
528	S16068	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
529	S16069	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
530	S16070	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
531	S16071	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
532	S16072	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
533	S16073	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
534	S16074	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
535	S16075	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
536	S16076	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
537	S16077	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
538	S16078	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
539	S16079	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
540	S16080	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
541	S16081	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
542	S16082	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
543	S16083	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
544	S16084	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
545	S16085	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
546	S16086	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
547	S16087	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
548	S16088	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
549	S16089	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
550	S16090	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
551	S16091	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
552	S16092	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
553	S16093	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
554	S16094	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
555	S16095	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
556	S16096	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
557	S16097	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
558	S16098	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
559	S16099	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
560	S16100	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
561	S16101	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
562	S16102	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
563	S16103	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
564	S16104	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
565	S16105	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
566	S16106	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
567	S16107	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
568	S16108	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
569	S16109	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
570	S16110	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
571	S16111	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
572	S16112	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
573	S16113	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
574	S16114	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										
575	S16115	WTW Logistics Centre - Silos B to E	71 d	09/12/16	23/02/17										

ID	ID	Task Name	Duration	Rev 9 Start	Rev 9 Finish	2016	2017	2018	2019	2020
574	S36109	WTWLC - Cable Trough / Ducts / Pit between NWTPH & WTWLC - HO by Civil	0 d	10/31/19	10/31/19					
575	S36111	WTWLC - Installation of HV Cables from NWTPH to WTWLC	62 d	10/31/19	10/5/19					
576	S36112	WTWLC - TX Room Installation	32 d	10/5/19	10/6/19					
577	S36113	WTWLC - Cable & Termination for Line System	45 d	2/10/19	12/12/19					
578	S36115	WTWLC - Cable & Termination for Polymer System	60 d	2/10/19	30/11/19					
579	S36115c	WTWLC - Cable & Termination for Fluoride System	60 d	15/8/19	13/10/19					
580	S36115d	WTWLC - Cable & Termination for PAC System	60 d	17/9/19	15/11/19					
581	S36116	WTW Logistics Centre - HV Works	130 d	15/8/19	22/12/19					
582	S36117	WTW Logistics Centre - HV Works	351 d	1/10/18	16/9/19					
583	S36118	WTW Logistics Centre - HV Works	46 d	1/10/18	15/11/18					
584	S36121	WTW Logistics Centre - HV Works	252/219	25/2/19	25/2/19					
585	S36119	WTW Logistics Centre - HV Works	6 d	10/3/19	15/3/19					
586	S36120	WTW Logistics Centre - HV Works	31 d	16/3/19	15/4/19					
587	S36122	WTW Logistics Centre - HV Works	150 d	20/4/19	16/9/19					
588	S36123	WTW Logistics Centre - HV Works	119 d	15/10/19	10/2/20					
589	S36124	WTW Logistics Centre - HV Works	19 d	15/10/19	21/11/19					
590	S36126	WTW Logistics Centre - HV Works	12 d	2/11/19	13/11/19					
591	S36127	WTW Logistics Centre - HV Works	1 d	16/11/19	16/11/19					
592	S36128	WTW Logistics Centre - HV Works	2 d	17/11/19	19/11/19					
593	S36124D	WTW Logistics Centre - HV Works	25	15/11/19	5/12/19					
594	S36124D	WTW Logistics Centre - HV Works	7 d	6/12/19	12/12/19					
595	S36125D	WTW Logistics Centre - HV Works	3 d	13/12/19	15/12/19					
596	S36127D	WTW Logistics Centre - HV Works	28 d	16/12/19	12/1/20					
597	S36124A	WTW Logistics Centre - HV Works	20 d	15/12/19	3/1/20					
598	S36126A	WTW Logistics Centre - HV Works	7 d	4/1/20	10/1/20					
599	S36125A	WTW Logistics Centre - HV Works	3 d	1/1/20	13/1/20					
600	S36125A	WTW Logistics Centre - HV Works	1 d	1/1/20	10/2/20					
601	S36124B	WTW Logistics Centre - HV Works	30 d	2/1/20	20/2/20					
602	S36124B	WTW Logistics Centre - HV Works	7 d	22/1/20	28/1/20					
603	S36125B	WTW Logistics Centre - HV Works	3 d	9/1/20	11/1/20					
604	S36127B	WTW Logistics Centre - HV Works	28 d	1/1/20	28/1/20					
605	S36124C	WTW Logistics Centre - HV Works	20 d	12/12/19	31/12/19					
606	S36124C	WTW Logistics Centre - HV Works	7 d	1/1/20	7/1/20					
607	S36125C	WTW Logistics Centre - HV Works	3 d	8/1/20	10/1/20					
608	S36127C	WTW Logistics Centre - HV Works	28 d	8/1/20	7/2/20					
609	Client #2	WTW Logistics Centre - HV Works	0 d	10/2/20	10/2/20					
610	Client #3	WTW Logistics Centre - HV Works	611 d	5/2/18	30/1/19					
611	S36129	WTW Logistics Centre - HV Works	0 d	29/2/18	30/1/19					
612	S36130	WTW Logistics Centre - HV Works	0 d	29/3/18	29/3/18					
613	S36131	WTW Logistics Centre - HV Works	200 d	15/5/19	30/11/19					
614	S36132	WTW Logistics Centre - HV Works	210 d	15/4/19	30/11/19					
615	S36133	WTW Logistics Centre - HV Works	0 d	13/12/18	13/12/18					
616	S36134	WTW Logistics Centre - HV Works	200 d	28/4/19	13/11/19					
617	S36135	WTW Logistics Centre - HV Works	108 d	15/8/19	30/11/19					
618	S36136	WTW Logistics Centre - HV Works	694 d	22/5/17	15/4/19					
619	S36137	WTW Logistics Centre - HV Works	35 d	22/5/17	15/7/17					
620	S36138	WTW Logistics Centre - HV Works	91 d	4/7/19	15/4/19					
621	S36139	WTW Logistics Centre - HV Works	0 d	15/1/19	15/4/19					
622	S36140	WTW Logistics Centre - HV Works	0 d	27/2/19	27/2/19					
623	S36141	WTW Logistics Centre - HV Works	184 d	16/4/19	16/10/19					
624	S36142	WTW Logistics Centre - HV Works	150 d	16/4/19	12/9/19					
625	S36143	WTW Logistics Centre - HV Works	107 d	5/6/19	19/9/19					
626	S36144	WTW Logistics Centre - HV Works	47 d	30/7/19	14/9/19					
627	S36145	WTW Logistics Centre - HV Works	41 d	19/9/18	16/10/19					
628	S36146	WTW Logistics Centre - HV Works	31 d	19/9/18	16/10/19					
629	S36147	WTW Logistics Centre - HV Works	27 d	26/10/19	2/11/19					
630	S36149	WTW Logistics Centre - HV Works	7 d	22/11/19	28/11/19					
631	S36148	WTW Logistics Centre - HV Works	3 d	29/11/19	1/12/19					
632	S36150	WTW Logistics Centre - HV Works	28 d	2/12/19	29/12/19					
633	S36147a	WTW Logistics Centre - HV Works	27 d	26/10/19	2/11/19					
634	S36149a	WTW Logistics Centre - HV Works	7 d	22/11/19	28/11/19					
635	S36148a	WTW Logistics Centre - HV Works	3 d	29/11/19	1/12/19					
636	S36150a	WTW Logistics Centre - HV Works	28 d	2/12/19	29/12/19					
637	S36148b	WTW Logistics Centre - HV Works	1 d	24/1/20	24/1/20					
638	S36151A	WTW Logistics Centre - HV Works	1 d	24/1/20	24/1/20					
639	S36152	WTW Logistics Centre - HV Works	1 d	31/10/19	31/10/19					
640	S36153	WTW Logistics Centre - HV Works	3 d	25/11/19	27/11/19					
641	S36154	WTW Logistics Centre - HV Works	41 d	18/11/18	2/1/20					
642	S36154A	WTW Logistics Centre - HV Works	319 d	17/12/18	17/10/19					
643	S36154A-C-1	WTW Logistics Centre - HV Works	0 d	17/12/18	17/12/18					
644	S36154A-C-2	WTW Logistics Centre - HV Works	73 d	17/12/18	27/2/19					
645	S36154A-C-3	WTW Logistics Centre - HV Works	132 d	12/7/19	1/17/19					
646	S36154A-C-4	WTW Logistics Centre - HV Works	46 d	12/7/19	26/8/19					
647	S36154A-C-5	WTW Logistics Centre - HV Works	66 d	27/8/19	31/10/19					
648	S36154A-C-6	WTW Logistics Centre - HV Works	0 d	2/1/20	2/1/20					
649	S36155	WTW Logistics Centre - HV Works	569 d	11/5/18	30/11/19					
650	S37700	WTW Logistics Centre - HV Works	183 d	1/15/18	9/11/18					
651	S3700A	WTW Logistics Centre - HV Works	177 d	11/5/18	3/11/18					
652	S3700A-C-1	WTW Logistics Centre - HV Works	0 d	11/5/18	3/11/18					



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

Critical Split			Summary
Task			Milestone
Critical Split			Summary
Task			Milestone

Page 6 of 10  
Date: 7 November 2019

ID	ID	Task Name	Duration	Rev 9 Start	Rev 9 Finish	2016	2017	2018	2019	2020
653	S3700A2-2	Claim No. 38A - Delay-2: Change of Alignment, Depth, and Position of Process Pipelines	74 d	22/8/18	31/1/18					
654	S3700A2-3	Claim No. 38A - Delay-3: Finalize the Diversion of Existing FE Chlorine Pipe	9 d	1/11/18	9/11/18					
655	S3700h	Process Pipe Trench	249 d	12/11/18	18/7/19					
656	S3701	Process Pipe Trench C1	246 d	12/11/18	15/7/19					
657	S3702	Process Pipe Trench C2	246 d	12/11/18	15/7/19					
658	S3703	Process Pipe Trench F	246 d	12/11/18	15/7/19					
659	S3704	Process Pipe Trench I	14 d	15/11/18	18/11/18					
660	S3705	Process Pipe Trench G	17 d	12/11/18	28/11/18					
661	S3705a	Process Pipe Trench H	226 d	13/3/19	24/10/19					
662	S3706	Diversion of Existing Chlorine Pipe (additional works, arrangement with STMTW)	16 d	13/3/19	28/3/19					
663	S3707	Process Pipe Trench H, subject to diversion of existing chlorine pipe schedule	210 d	29/3/19	24/10/19					
664	S3707a	Pipe Line Installation & Testing	215 d	30/4/19	30/11/19					
665	S3708	Pipe line installation and testing (Trench C1 + F)	77 d	30/4/19	15/7/19					
666	S3709	Pipe line installation and testing (Trench C2)	77 d	30/4/19	15/7/19					
667	S3710	Pipe line installation and testing (Trench G + I)	47 d	30/6/19	15/8/19					
668	S3711	Pipe line installation and testing (Trench H)	51 d	11/10/19	30/11/19					
669	S3712	Construction for new road and associated utility installation, commissioning	100 d	18/1/18	30/11/19					
670	S3800	Road Works (Claim No. 38, 39 & 39)	150 d	18/1/18	28/12/18					
671	S3800a	Sludge Plant Road	150 d	18/1/18	28/12/18					
672	S3801	Construction for new road and associated Utility Installation at Sludge Plant Road	150 d	18/1/18	28/12/18					
673	S3801a	Internal Road - G06 (North Circular Road)	256 d	17/12/18	29/8/19					
674	S3802	Construction for new road and associated Utility Installation, G06 Phase 2 (G06 Ch. 100 to Ch. 240)	238 d	17/12/18	11/8/19					
675	S3803	Construction for new road and associated Utility Installation, G06 Phase 4 & 5 (G06 Ch. 240 to Ch. 440)	143 d	5/4/19	25/6/19					
676	S3804	Construction for new road and associated Utility Installation, G06 Phase 3 (G06 Ch. 350 to Ch. 440)	240 d	2/1/19	29/8/19					
677	S3804a	Internal Road - G10 (North Filler Loop) & G01 (Logistics Branch)	415 d	2/10/18	20/11/19					
678	S3805	Construction for new road and associated Utility Installation, G10 (G10 Ch. 179 to Ch. 344 & 240)	365 d	2/10/18	10/9/19					
679	S3806	Construction for new road and associated Utility Installation, G01 (G01 Ch. 100 to Ch. 71 & 100)	119 d	11/9/19	20/11/19					
680	S3806a	Internal Road - Road Surface	133 d	11/7/19	20/11/19					
681	S3807	Construction for new road and associated Utility Installation, G01 (G01 Ch. 100 to Ch. 71 & 100)	133 d	11/7/19	20/11/19					
682	S3809	Section 3 Completion	0 d	12/3/20	12/3/20					
683	S4000	Section 4 Commencement	0 d	2/1/17	2/1/17					
684	S4001	Landscaping Softworks & Establishment Works	0 d	28/6/18	28/6/18					
685	S4100	Landscaping Soft works (Deletion of Landscape Works in Portion D under Variation Order no. 36)	0 d	28/6/18	28/6/18					
686	S4101	Establishment works (Deletion of Landscape Works in Portion D under Variation Order no. 36)	0 d	28/6/18	28/6/18					
687	S4102	Establishment works (Deletion of Landscape Works in Portion D under Variation Order no. 36)	0 d	28/6/18	28/6/18					
688	S4002	Section 5 Completion (Certificate of Completion No. 2)	0 d	16/11/18	16/11/18					
689	S5000	Section 5 Commencement	0 d	30/10/15	30/10/15					
690	S5001	Landscaping Softworks & Establishment Works	1848 d	8/1/16	28/1/21					
691	S5100	Tree Transplanting	585 d	8/1/16	14/8/17					
692	S5100a	Preparation of site area for planting works	20 d	8/1/16	27/1/16					
694	S5102	Transplanting works	200 d	28/1/16	14/8/16					
695	S5103	Establishment for transplanting works	365 d	15/8/16	14/8/17					
696	S5104	Establishment works (Deletion of Landscape Works in Portion D under Variation Order no. 36)	216 d	19/7/19	28/12/19					
697	S5104a	Plant Material - Preparation	60 d	16/10/19	14/12/19					
698	S5104b	Landscape Works - Wall C	45 d	15/12/19	28/1/20					
699	S5104c	Landscape Works - Wall D	45 d	15/12/19	28/1/20					
700	S5104d	Landscape Works - Wall E	45 d	15/12/19	28/1/20					
701	S5104e	Landscape Works - Portion E	14 d	16/12/19	29/1/20					
702	S5104f	Landscape Works - HPP Surround Area	45 d	16/12/19	29/1/20					
703	S5104g	Landscape Works - along NCR	14 d	16/12/19	29/1/20					
704	S5104h	Landscape Works - Along Filter Bed	14 d	16/12/19	29/1/20					
705	S5105	Establishment works	365 d	30/1/20	28/1/21					
706	S5002	Section 5 Completion (Claims in relation to Access of Planting Area)	0 d	28/1/21	28/1/21					

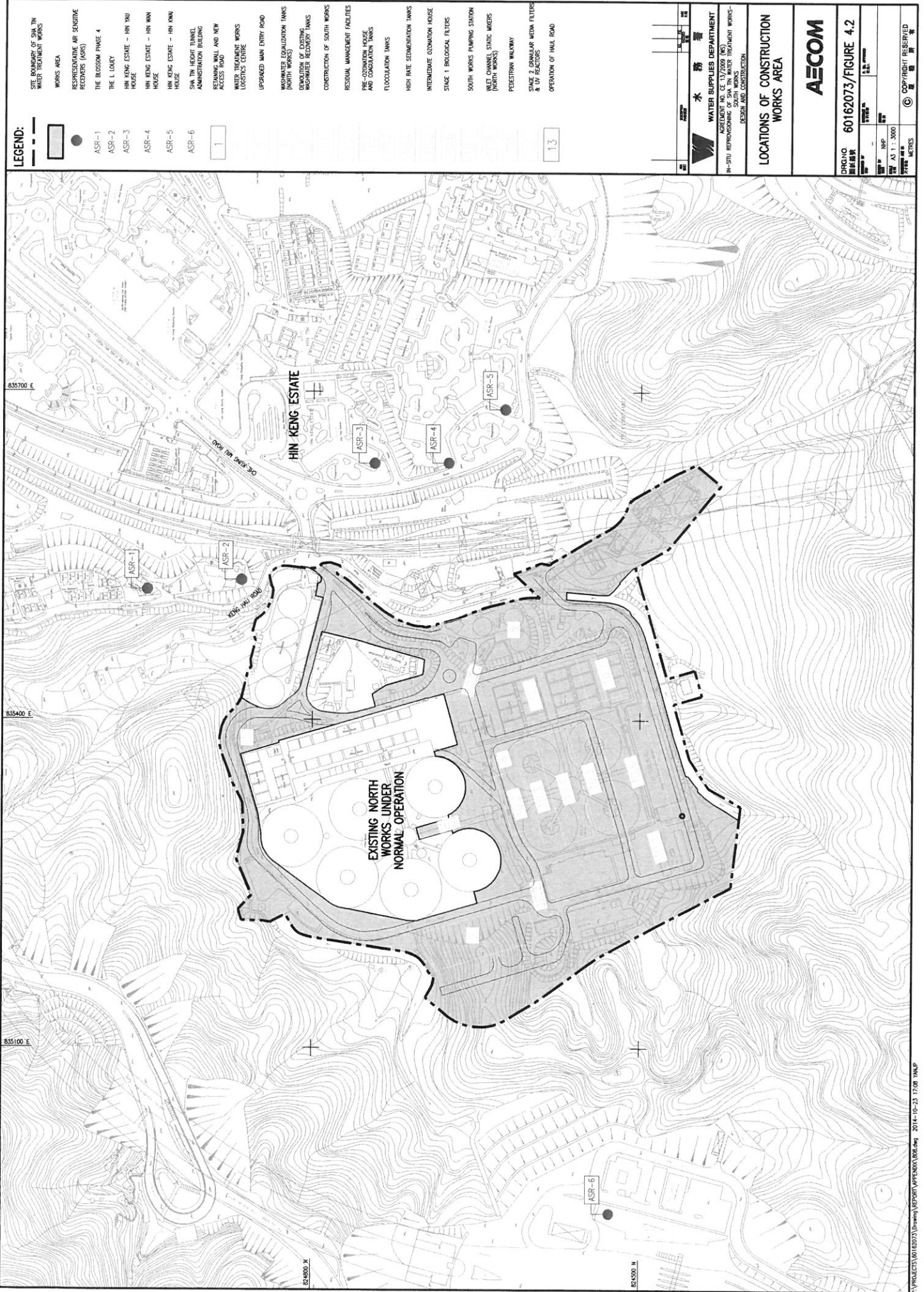
Contract No. 10WSD/15  
 In-situ Rejuvenation of Sha Tin Water Treatment Works (South Works) - Advance Works  
 Master Programme (Ver.09) - (Accelerated)

Task	Milestone	Summary	Critical

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 Date: 7 November 2019

# Appendix D

## Location of Construction Activities



**LEGEND:**

- WORKS AREA
- REPRESENTATIVE AIR SENSITIVE RECEIVERS (ASRs)
- THE BLOSSOM PHASE 4
- THE L LOUZY
- HIN KENG ESTATE - HIN YAU HOUSE
- HIN KENG ESTATE - HIN MAN HOUSE
- HIN KENG ESTATE - HIN KWAI HOUSE
- SHA TIN HEIGHT TUNNEL
- ADMINISTRATION BUILDING
- RETAINING WALL AND NEW ACCESS ROAD
- WATER TREATMENT WORKS LOGISTICS CENTRE
- UPGRADED MAIN ENTRY ROAD
- WASTEWATER EQUALIZATION TANKS (NORTH WORKS)
- WASTEWATER TREATMENT PLANT
- WASTEWATER RECOVERY TANKS
- CONSTRUCTION OF SOUTH WORKS
- RESIDUAL MANAGEMENT FACILITIES
- FIRE-COORDINATION HOUSE AND CALCULATION TANKS
- FLOCCULATION TANKS
- HIGH RATE SEDIMENTATION TANKS
- INTERMEDIATE COAGULATION HOUSE
- STAGE 1 BIOLOGICAL FILTERS
- SOUTH WORKS PUMPING STATION
- INLET CHANNEL STATIC MORTARS (NORTH WORKS)
- PEDESTRIAN WALKWAY
- STAGE 2 GRANULAR MEDIA FILTERS & UV REACTORS
- OPERATION OF HALL ROAD

13

<b>水務署</b> WATER SUPPLIES DEPARTMENT
AGREEMENT NO. CE 13/2009 (NS)
IN-SITU REPRESENTING OF SHA TIN WATER TREATMENT WORKS - DESIGN AND CONSTRUCTION
<b>LOCATIONS OF CONSTRUCTION WORKS AREA</b>
<b>AECOM</b>
DRAWING NO. <b>60162073/FIGURE 4.2</b>
DATE: 14.08.2014
SCALE: A3 1:3000
METRES
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# Appendix E

## Environmental Sensitive Receivers in the Vicinity of the Project

**LEGEND:**

- SITE BOUNDARY OF SHAN TIN WATER TREATMENT WORKS
- STUDY AREA (500m BOUNDARY)
- ▭ WORKS AREA
- REPRESENTATIVE AIR SENSITIVE RECEIVERS (ASR)
- THE BLOSSOM PHASE 4
- THE L LOUHY
- HIN KENG ESTATE - HIN YAU HOUSE
- HIN KENG ESTATE - HIN WAN HOUSE
- HIN KENG ESTATE - HIN KWAN HOUSE
- SHAN TIN HEIGHT TUNNEL ADMINISTRATION BUILDING

- ASR-1
- ASR-2
- ASR-3
- ASR-4
- ASR-5
- ASR-6

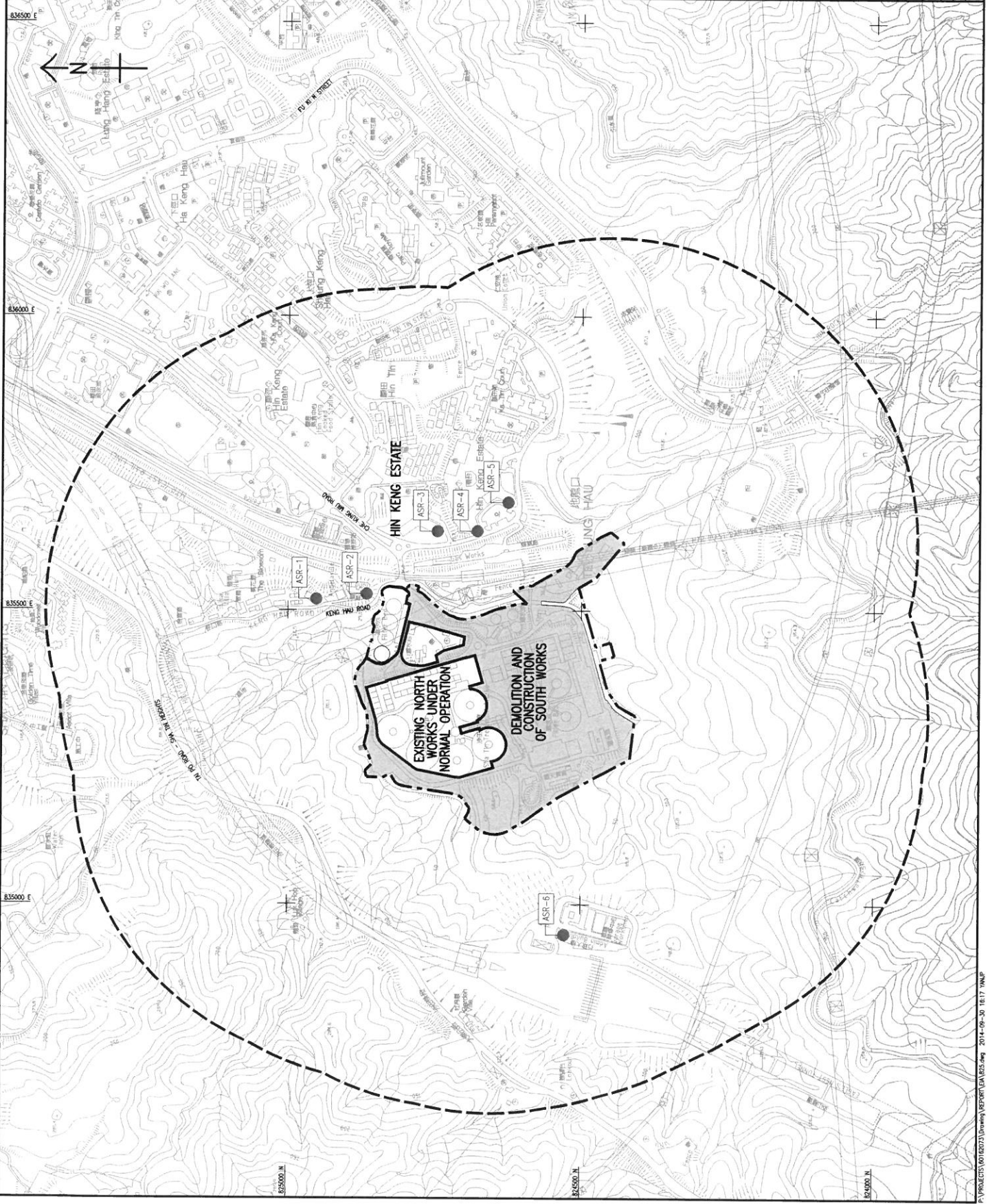
**水務署**  
**WATER SUPPLIES DEPARTMENT**  
 AGREEMENT NO. CE 13/2009 (NS)  
 IN-SITU REPRODUCTION OF SHAN TIN WATER TREATMENT WORKS - DESIGN AND CONSTRUCTION

**LOCATIONS OF REPRESENTATIVE AIR SENSITIVE RECEIVERS**

**AECOM**

DRAWING NO. 60162073/EA/FC 4.1

DATE: 15/05/2014  
 SCALE: AS 1:6000  
 METRES  
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**LEGEND:**

- SITE BOUNDARY OF SHK TWH WATER TREATMENT WORKS
- 300M STUDY AREA
- WORKS AREA
- HK1 ↑ REPRESENTATIVE NOISE SENSITIVE RECEIVERS



**水務署**  
**WATER SUPPLIES DEPARTMENT**

AGREEMENT NO. CE 17/2009 (KS)  
 IN-SITU REPAIRING SOUTH WORKS  
 DESIGN AND CONSTRUCTION

**LOCATIONS OF REPRESENTATIVE NOISE SENSITIVE RECEIVERS**

**AECOM**

DRG. NO. 60162073/EIA/FIG 5.1  
 圖則編號 60162073/EIA/FIG 5.1

比例尺 1:5000  
 縮尺 1:5000

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ID	DESCRIPTION	CONSTRUCTION NOISE	OPERATIONAL FIXED PLANT NOISE
HK1	THE L. LOBEY (DACT)	Y	Y
HK2	THE L. LOBEY (SOUTH)	Y	Y
HK3	HIN KENG ESTATE, HIN YAU HOUSE (NORTH)	Y	Y
HK4	HIN KENG ESTATE, HIN YAU HOUSE (SOUTH)	Y	Y
HK5	HIN KENG ESTATE, HIN WAN HOUSE	Y	Y
HK6	HIN KENG ESTATE, HIN KWAI HOUSE	Y	Y
HK7	CHIFFRA THOMAS CHEUNG SCHOOL	Y	Y
HK8	SHK TWH NEW STAFF QUARTERS	Y	Y

**LEGEND:**

- SITE BOUNDARY OF SHA TIN WATER TREATMENT WORKS
- ▭ WORKS AREA
- IN-LAND WATER COURSE
- EPD MONITORING WATER QUALITY MONITORING STATION
- EPD IN-LAND WATER QUALITY MONITORING STATION
- ▼ WSD SHA TIN FLUSHING WATER INTAKE

水務署  
 WATER SUPPLIES DEPARTMENT  
 AGREEMENT NO. CE 13/2008 (MS)  
 IN-SITU REPROGRAMMING OF SHA TIN WATER TREATMENT WORKS - DESIGN AND CONSTRUCTION

LOCATIONS OF WATER SENSITIVE RECEIVERS



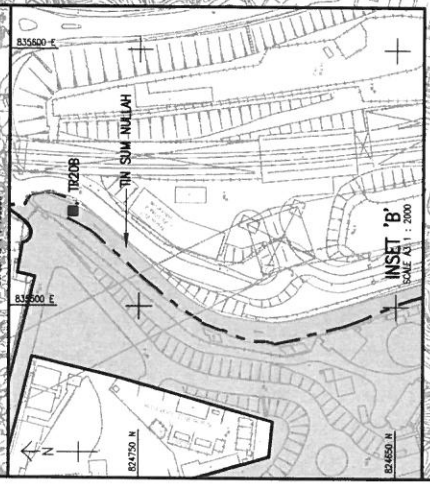
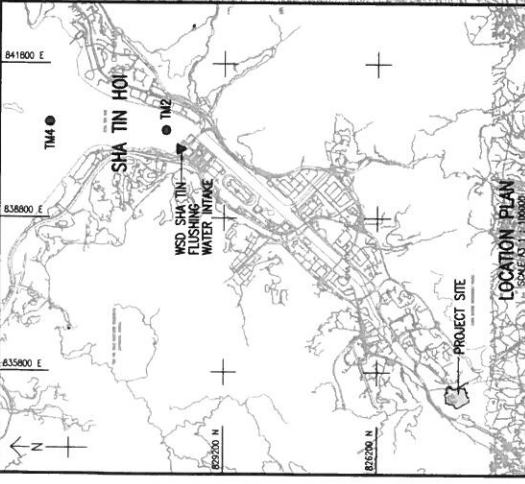
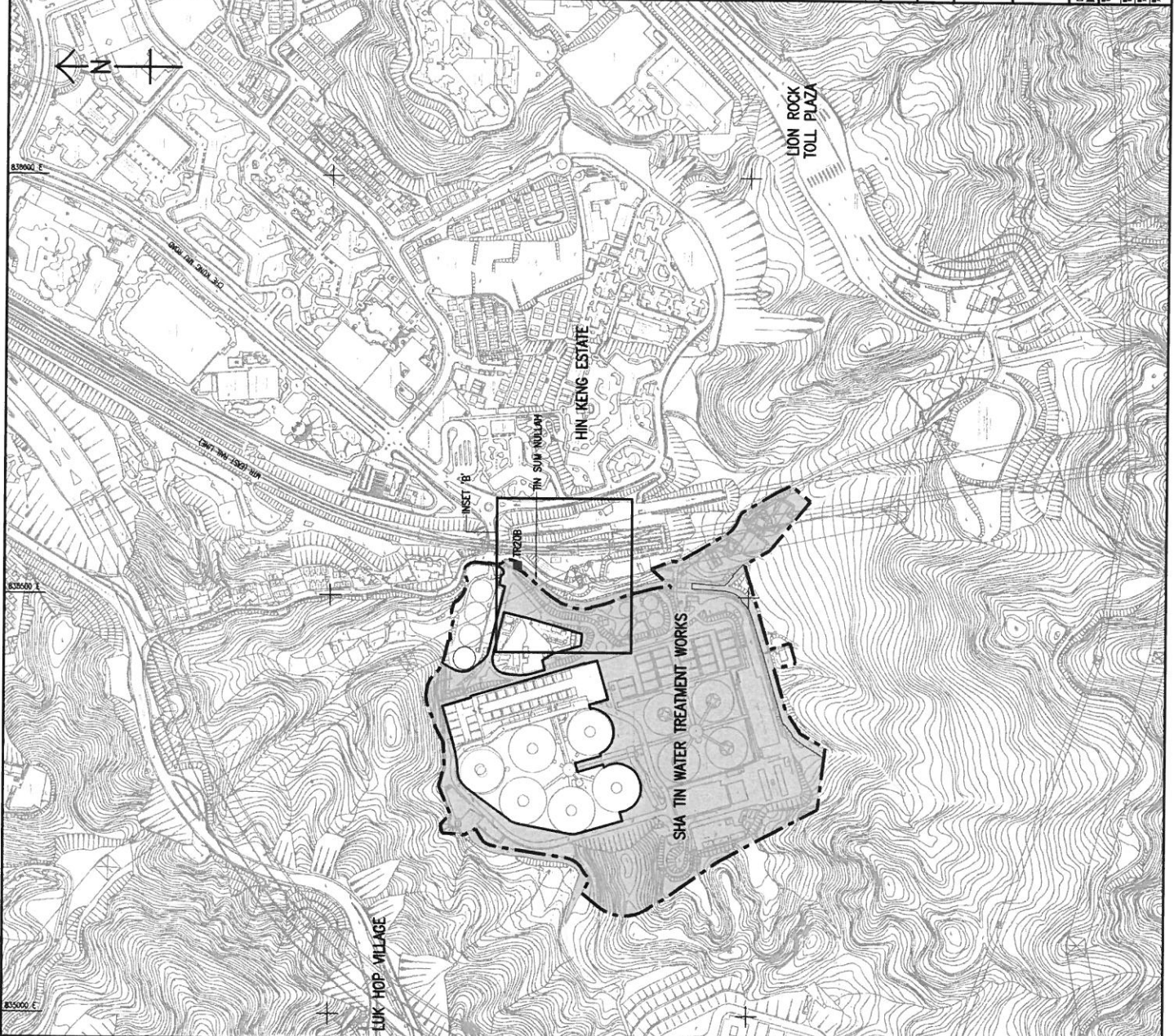
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 日期  
 14.01.2010

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# Appendix F

## Summary of Action and Limit Levels

Determination of Action and Limit Levels for Air Quality

Monitoring Locations	Action Level 1-hour TSP, ( $\mu\text{g}/\text{m}^3$ )	Limit Level 1-hour TSP, ( $\mu\text{g}/\text{m}^3$ )
AM1	357	500
AM2	334	500

Determination of Action and Limit Levels for Noise

Monitoring Location	Action Level	Limit Level in dB(A)
	0700-1900 hours on normal weekdays	
NM1	When one documented complaint is received	For domestic premises: 75 dB(A) for NM1 & NM2
NM2		
NM3		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 monitoring stations	Dissolved Oxygen (mg/L)		Suspended Solids (mg/L)		Turbidity (NTU)		pH	
	Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit 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



ACTION				
EVENT	ET	IEC	ER	CONTRACTOR
<b>ACTION LEVEL</b>				
1. Exceedance for one sample	<ol style="list-style-type: none"> <li>1. Inform the Contractor, IEC and ER;</li> <li>2. Discuss with the Contractor on the remedial measures required;</li> <li>3. Repeat measurement to confirm findings; and</li> <li>4. Increase monitoring frequency.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by the ET;</li> <li>2. Check Contractor's working method; and</li> <li>3. Review and advise the ET and ER on the effectiveness of the proposed remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify source(s), investigate the causes of exceedance and propose remedial measures;</li> <li>2. Implement remedial measures; and</li> <li>3. Amend working methods agreed with the ER as appropriate.</li> </ol>
2. Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> <li>1. Inform the Contractor, IEC and ER;</li> <li>2. Discuss with the ER and Contractor on the remedial measures required;</li> <li>3. Repeat measurements to confirm findings;</li> <li>4. Increase monitoring frequency to daily;</li> <li>5. If exceedance continues,</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by the ET;</li> <li>2. Check Contractor's working method; and</li> <li>3. Review and advise the ET and ER on the effectiveness of the proposed remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing;</li> <li>2. Review and agree on the remedial measures proposed by the Contractor; and</li> <li>3. Supervise implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify source and investigate the causes of exceedance;</li> <li>2. Submit proposals for remedial measures to the ER with a copy to ET and IEC within three working days of notification;</li> <li>3. Implement the agreed proposals; and</li> </ol>

	arrange meeting with the IEC, ER and Contractor; and 6. If exceedance stops, cease additional monitoring.				4. Amend proposal as appropriate.
<b>LIMIT LEVEL</b>					
<b>Event</b>	<b>ET</b>	<b>IEC</b>	<b>ER</b>	<b>CONTRACTOR</b>	
1. Exceedance for one sample	<ol style="list-style-type: none"> <li>1. Inform the Contractor, IEC, EPD and ER;</li> <li>2. Repeat measurement to confirm findings;</li> <li>3. Increase monitoring frequency to daily; and</li> <li>4. Discuss with the ER, IEC and contractor on the remedial measures and assess the effectiveness.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by the ET;</li> <li>2. Check the Contractor's working method;</li> <li>3. Discuss with the ET, ER and Contractor on possible remedial measures; and</li> <li>4. Review and advise the ER and ET on the effectiveness of Contractor's remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing;</li> <li>2. Review and agree on the remedial measures proposed by the Contractor; and</li> <li>3. Supervise implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify source(s) and investigate the causes of exceedance;</li> <li>2. Take immediate action to avoid further exceedance;</li> <li>3. Submit proposals for remedial measures to ER with a copy to ET and IEC within three working days of notification;</li> <li>4. Implement the agreed proposals; and</li> <li>5. Amend proposal if appropriate.</li> </ol>	

	ET	IEC	ER	CONTRACTOR
<p>2. Exceedance for two or more consecutive samples</p>	<ol style="list-style-type: none"> <li>1. Notify Contractor, IEC, EPD and ER;</li> <li>2. Repeat measurement to confirm findings;</li> <li>3. Increase monitoring frequency to daily;</li> <li>4. Carry out analysis of the Contractor's working procedures with the ER to determine possible mitigation to be implemented;</li> <li>5. Arrange meeting with the IEC and ER to discuss the remedial measures to be taken;</li> <li>6. Review the effectiveness of the Contractor's remedial measures and keep IEC, EPD and ER informed of the results; and</li> <li>7. If exceedance stops, cease additional monitoring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by the ET;</li> <li>2. Check the Contractor's working method;</li> <li>3. Discuss with ET, ER, and Contractor on the potential remedial measures; and</li> <li>4. Review and advise the ER and ET on the effectiveness of Contractor's remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing;</li> <li>2. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented;</li> <li>3. Supervise the implementation of remedial measures; and</li> <li>4. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify source(s) and investigate the causes of exceedance;</li> <li>2. Take immediate action to avoid further exceedance;</li> <li>3. Submit proposals for remedial measures to the ER with a copy to the IEC and ET within three working days of notification;</li> <li>4. Implement the agreed proposals;</li> <li>5. Revise and resubmit proposals if problem still not under control; and</li> <li>6. Stop the relevant portion of works as determined by the ER until the exceedance is abated.</li> </ol>

# Noise

<b>ACTION</b>				
<b>EVENT</b>	<b>ET</b>	<b>IEC</b>	<b>ER</b>	<b>CONTRACTOR</b>
<b>ACTION LEVEL</b>	<ol style="list-style-type: none"> <li>1. Notify the Contractor, IEC and ER;</li> <li>2. Discuss with the ER and Contractor on the remedial measures required; and</li> <li>3. Increase monitoring frequency to check mitigation effectiveness.</li> </ol>	<ol style="list-style-type: none"> <li>1. Review the investigation results submitted by the Contractor; and</li> <li>2. Review and advise the ET and ER on the effectiveness of the remedial measures proposed by the Contractor.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of complaint in writing;</li> <li>2. Review and agree on the remedial measures proposed by the Contractor; and</li> <li>3. Supervise implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Investigate the complaint and propose remedial measures;</li> <li>2. Report the results of investigation to the IEC, ET and ER;</li> <li>3. Submit noise mitigation proposals to the ER with copy to the IEC and ET within three working days of notification; and</li> <li>4. Implement noise mitigation proposals.</li> </ol>
<b>LIMIT LEVEL</b>	<ol style="list-style-type: none"> <li>1. Notify the Contractor, IEC, EPD and ER;</li> <li>2. Repeat measurement to confirm findings;</li> <li>3. Increase monitoring frequency;</li> <li>4. Carry out analysis of</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by the ET;</li> <li>2. Check the Contractor's working method;</li> <li>3. Discuss with the ER, ET and Contractor on the potential remedial measures;</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing;</li> <li>2. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify source and investigate the causes of exceedance;</li> <li>2. Take immediate action to avoid further exceedance;</li> <li>3. Submit proposals for remedial measures to the ER</li> </ol>

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

EVENT	ACTION			CONTRACTOR
	ET Leader	IEC	ER	
Action level being exceeded by one sampling day	<ul style="list-style-type: none"> <li>● Repeat <i>in situ</i> measurement to confirm findings;</li> <li>● Identify reasons for non-compliance and source(s) of impact;</li> <li>● Inform IEC and Contractor;</li> <li>● Check monitoring data, all plant, equipment and Contractor's working methods;</li> <li>● Discuss mitigation measures with IEC and Contractor;</li> <li>● Repeat measurement on next day of exceedance.</li> </ul>	<ul style="list-style-type: none"> <li>● Discuss with ET and Contractor on the mitigation measures;</li> <li>● Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly;</li> <li>● Assess the effectiveness of the implemented mitigation measures.</li> </ul>	<ul style="list-style-type: none"> <li>● Discuss with IEC on the proposed mitigation measures;</li> <li>● Make agreement on the mitigation measures to be implemented.</li> <li>● Assess the effectiveness of the implemented mitigation measures.</li> </ul>	<ul style="list-style-type: none"> <li>● Inform the ER and confirm notification of the non-compliance in writing;</li> <li>● Rectify unacceptable practice;</li> <li>● Check all plant and equipment;</li> <li>● Consider changes of working methods;</li> <li>● Discuss with ET and IEC and propose mitigation measures to IEC and ER;</li> <li>● Implement the agreed mitigation measures.</li> </ul>



	<b>ET Leader</b>	<b>IEC</b>	<b>ER</b>	<b>CONTRACTOR</b>
Action level being exceeded by more than one consecutive sampling day	<ul style="list-style-type: none"> <li>● Repeat <i>in situ</i> measurement to confirm findings;</li> <li>● Identify reasons for non-compliance and source(s) of impact;</li> <li>● Inform IEC and Contractor;</li> <li>● Check monitoring data, all plant, equipment and Contractor's working methods;</li> <li>● Discuss mitigation measures with IEC and Contractor;</li> <li>● Ensure mitigation measures are implemented;</li> <li>● Prepare to increase the monitoring frequency to daily;</li> </ul>	<ul style="list-style-type: none"> <li>● Discuss with ET and Contractor on the mitigation measures;</li> <li>● Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly;</li> <li>● Assess the effectiveness of the implemented mitigation measures.</li> </ul>	<ul style="list-style-type: none"> <li>● Discuss with IEC on the proposed mitigation measures;</li> <li>● Make agreement on the mitigation measures to be implemented;</li> <li>● Assess the effectiveness of the implemented mitigation measures.</li> </ul>	<ul style="list-style-type: none"> <li>● Inform the ER and confirm notification of the non-compliance in writing;</li> <li>● Rectify unacceptable practice;</li> <li>● Check all plant and equipment;</li> <li>● Consider changes of working methods;</li> <li>● Discuss with ET and IEC and propose mitigation measures to IEC and ER within three working days;</li> <li>● Implement the agreed mitigation measures.</li> </ul>

	<ul style="list-style-type: none"> <li>Repeat measurement on next day of exceedance.</li> </ul>			
<ul style="list-style-type: none"> <li>Limit level being exceeded by one sampling day</li> </ul>	<ul style="list-style-type: none"> <li><b>ET Leader</b></li> <li>Repeat <i>in situ</i> measurement to confirm findings;</li> <li>Identify reasons for non-compliance and source(s) of impact;</li> <li>Inform IEC Contractor and EPD;</li> <li>Check monitoring data, all plant, equipment and Contractor's working methods;</li> <li>Discuss mitigation measures with IEC, ER and Contractor;</li> <li>Ensure mitigation measures are implemented;</li> </ul>	<ul style="list-style-type: none"> <li><b>IEC</b></li> <li>Discuss with ET and Contractor on the mitigation measures;</li> <li>Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly;</li> <li>Assess the effectiveness of the implemented mitigation measures.</li> </ul>	<ul style="list-style-type: none"> <li><b>ER</b></li> <li>Discuss with IEC, ET and Contractor on the proposed mitigation measures;</li> <li>Request Contractor to critically review the working methods;</li> <li>Make agreement on the mitigation measures to be implemented;</li> <li>Assess the effectiveness of the implemented mitigation measures.</li> </ul>	<ul style="list-style-type: none"> <li><b>CONTRACTOR</b></li> <li>Inform the ER and confirm notification of the non-compliance in writing;</li> <li>Rectify unacceptable practice;</li> <li>Check all plant and equipment;</li> <li>Consider changes of working methods;</li> <li>Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within three working days;</li> <li>Implement the agreed mitigation measures.</li> </ul>

	<ul style="list-style-type: none"> <li>● Increase the monitoring frequency to daily until no exceedance of Limit level.</li> </ul>			
Limit level being exceeded by more than one consecutive sampling day	<ul style="list-style-type: none"> <li>● Repeat <i>in situ</i> measurement to confirm findings;</li> <li>● Identify reasons for non-compliance and source(s) of impact;</li> <li>● Inform IEC Contractor and EPD;</li> <li>● Check monitoring data, all plant, equipment and Contractor's working methods;</li> <li>● Discuss mitigation measures with IEC, ER and Contractor;</li> <li>● Ensure mitigation measures are</li> </ul>	<p style="text-align: center;"><b>IEC</b></p> <ul style="list-style-type: none"> <li>● Discuss with ET and Contractor on the mitigation measures;</li> <li>● Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly;</li> <li>● Assess the effectiveness of the implemented mitigation measures.</li> </ul>	<p style="text-align: center;"><b>ER</b></p> <ul style="list-style-type: none"> <li>● Discuss with IEC, ET and Contractor on the proposed mitigation measures;</li> <li>● Request Contractor to critically review the working methods;</li> <li>● Make agreement on the mitigation measures to be implemented;</li> <li>● Assess the effectiveness of the implemented mitigation measures;</li> <li>● Consider and instruct, if necessary, the Contractor to slow</li> </ul>	<p style="text-align: center;"><b>CONTRACTOR</b></p> <ul style="list-style-type: none"> <li>● Inform the ER and confirm notification of the non-compliance in writing;</li> <li>● Rectify unacceptable practice;</li> <li>● Check all plant and equipment;</li> <li>● Consider changes of working methods;</li> <li>● Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within three working days;</li> <li>● Implement the agreed mitigation measures;</li> </ul>

	<p>implemented; Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days.</p>		<p>down or to stop all or part of the construction activities until no exceedance of Limit level.</p>	<ul style="list-style-type: none"> <li>● As directed by the ER, to slow down or to stop all or part of the construction activities.</li> </ul>
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# Appendix H

## Impact Monitoring Schedules

**Oct-20**

Sun	Mon	Tue	Wed	Thur	Fri	Sat
				1	2	3
4	5	6	7	8	9	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 & NM3	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	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2 & NM3
11	12	13	14	15	16	17
	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	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	
18	19	20	21	22	23	24
	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		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3	
25	26	27	28	29	30	31
		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

**Nov-20**

Sun	Mon	Tue	Wed	Thur	Fri	Sat
1	2	3	4	5	6	7
	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 & NM3	
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 & NM3		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 & 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 & NM3	
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 & NM3		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3	
29	30					
	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2 & NM3					

# Appendix I

## Location Plan of Air Quality Monitoring Station



**LEGEND:**

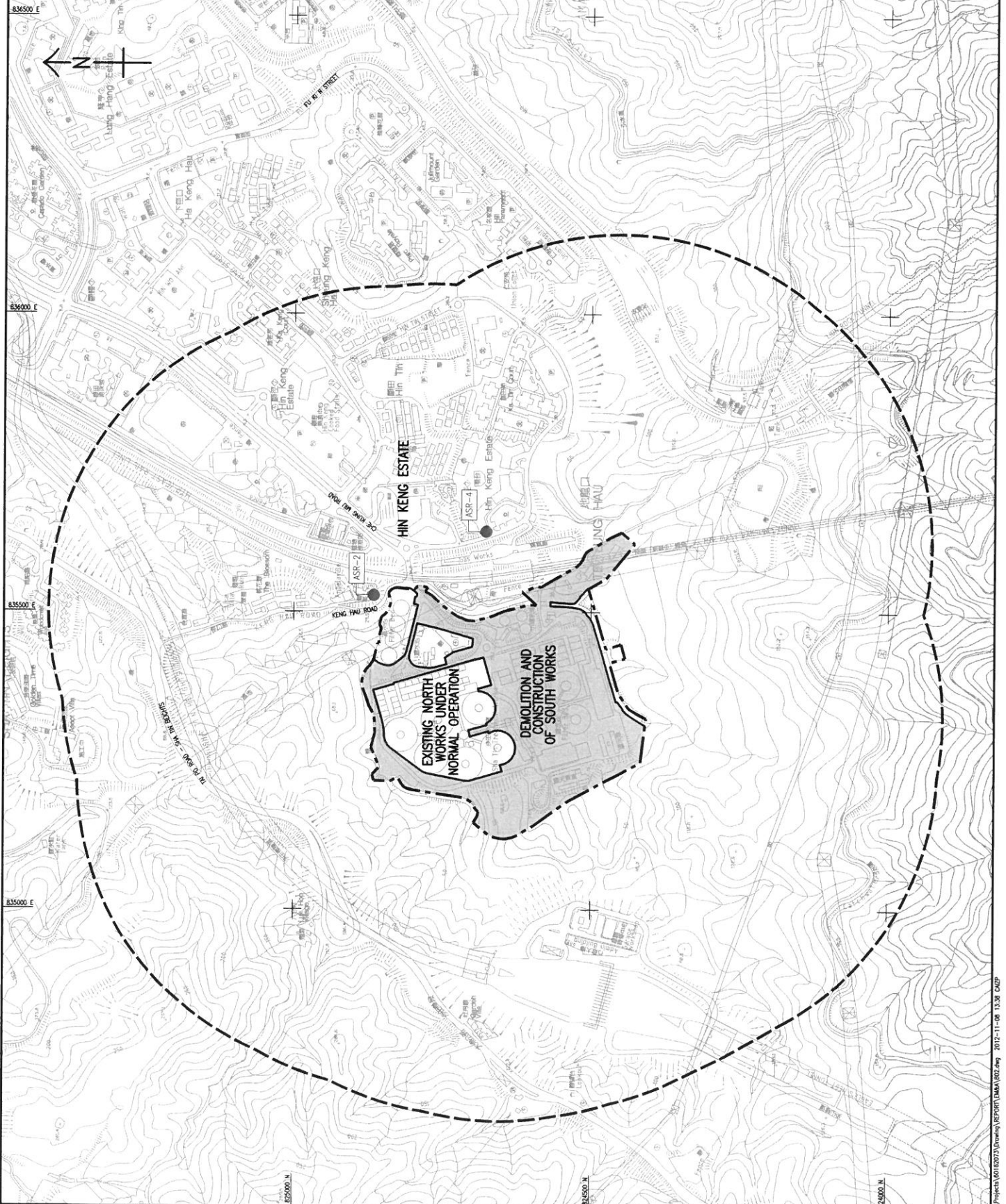
- SITE BOUNDARY OF SHK TH WATER TREATMENT WORKS
- STUDY AREA (500m BOUNDARY)
- WORKS AREA
- RESERVING/IN PROGRESS REGIONS (ASR)
- THE L LUXEY
- HIN KENG ESTATE - HIN WAN HOUSE
- ASR-2
- ASR-4

**水務署**  
**WATER SUPPLIES DEPARTMENT**  
 AGREEMENT NO. CE 13/008 (NS)  
 IN-SITU REPRODUCTION OF SHK TH WATER TREATMENT WORKS - SOUTH WORKS  
 DESIGN AND CONSTRUCTION

**LOCATIONS OF PROPOSED DUST MONITORING STATIONS**

**AECOM**

PROJECT NO.	60162073/EM&A/FIG 3
DATE	11/08/2012
SCALE	A3 1 : 6000
UNIT	METRES
STATUS	RESERVED



# Appendix J

## Calibration Certificates

### (Air Monitoring)

**Sensidyne 80570 Nephelometer Calibration Certificate**

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

Serial #	<b>P15857</b>
Firmware	<b>80570-8100-V1.0.4</b>

All work has been successfully completed. (Sign off)

Calibrated By: J. Gist *AT14*

Date 01-27-2020

Quality Inspector: AT5

Date JAN 28 2020

Next Calibration Due 01-27-2022

	Pass/Fail	Criteria
Balance Sheath/Sample Flow Rate	<b>pass</b>	± 5%
Set Sample Flow to 1 lpm	<b>pass</b>	± 5%
Set Zero (k=1)	<b>pass</b>	± 2 µg/m <sup>3</sup>
Set Gain	<b>pass</b>	± 5%
Set Serial & Model Number	<b>X</b>	
Calibration Concentration, LD-3, µg/m <sup>3</sup>	<b>395</b>	

Sensidyne, LP  
1000 112<sup>th</sup> 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](mailto:Info@Sensidyne.com)  
[www.Sensidyne.com](http://www.Sensidyne.com)  
[www.Schauenburg.com](http://www.Schauenburg.com)

**Calibration Standards**

Standard	Manufacturer	Model	SN	Cal Due
Nephelometer	Sibata	LD-3B	476795	06-07-2020

**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.**



### Sensidyne 80570 Nephelometer Calibration Certificate

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

Serial #	<b>R14527</b>
Firmware	<b>80570-8100-V1.0.4</b>

All work has been successfully completed. (Sign off)

Calibrated By: J. Gist **AT14**

Date 01-08-2020

Quality Inspector: AT5

Date **JAN 28 2020**

Next Calibration Due 01-08-2022

	Pass/Fail	Criteria
Balance Sheath/Sample Flow Rate	<u>pass</u>	± 5%
Set Sample Flow to 1 lpm	<u>pass</u>	± 5%
Set Zero (k=1)	<u>pass</u>	± 2 µg/m <sup>3</sup>
Set Gain	<u>pass</u>	± 5%
Set Serial & Model Number	<u>X</u>	
Calibration Concentration, LD-3, µg/m <sup>3</sup>	<u>637</u>	

Sensidyne, LP  
1000 112<sup>th</sup> Circle North  
Suite 100  
St. Petersburg, FL 33716  
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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	476795	06-07-2020

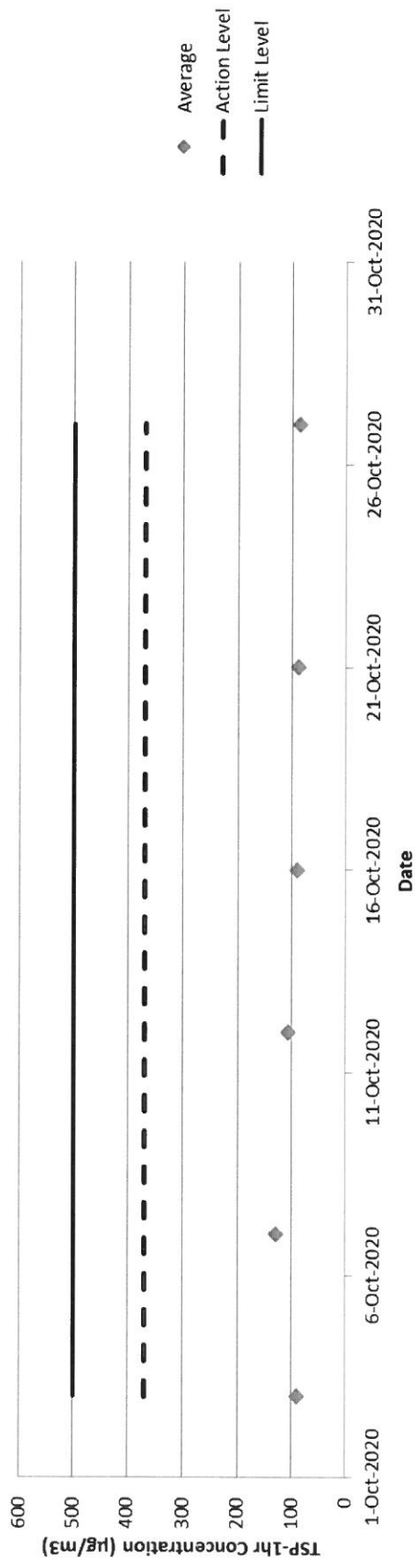
**The test and calibration results on this report certify that this instrument complies with the product specifications at the time of this report. Calibration was performed using test instruments and standards that are traceable to NMIJ and the International System of Units (SI). Laser safety and anti-static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



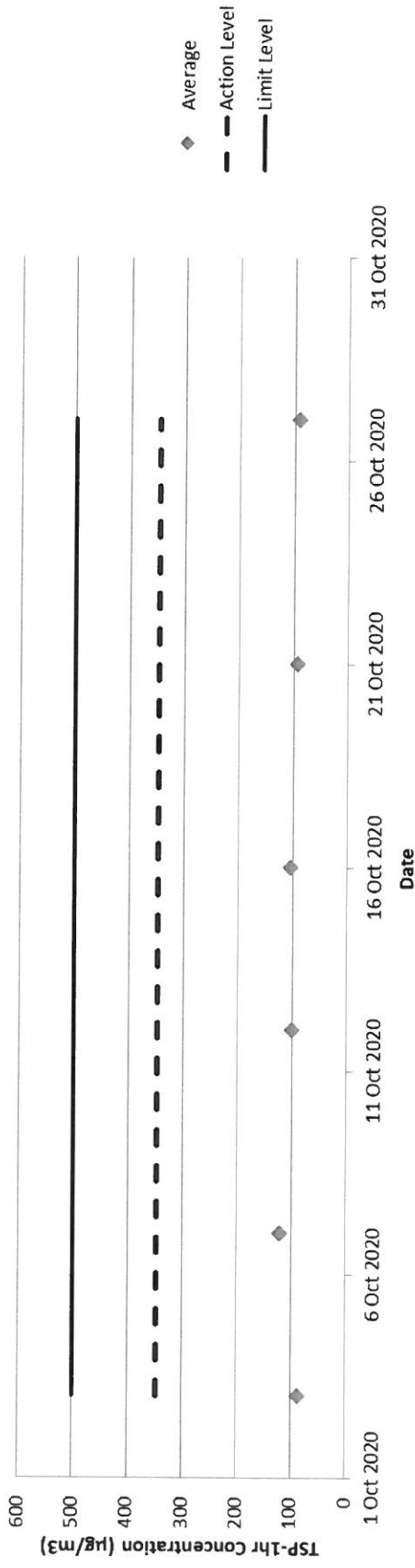
# Appendix K

## Impact Air Quality Monitoring Results and Graphical Presentation

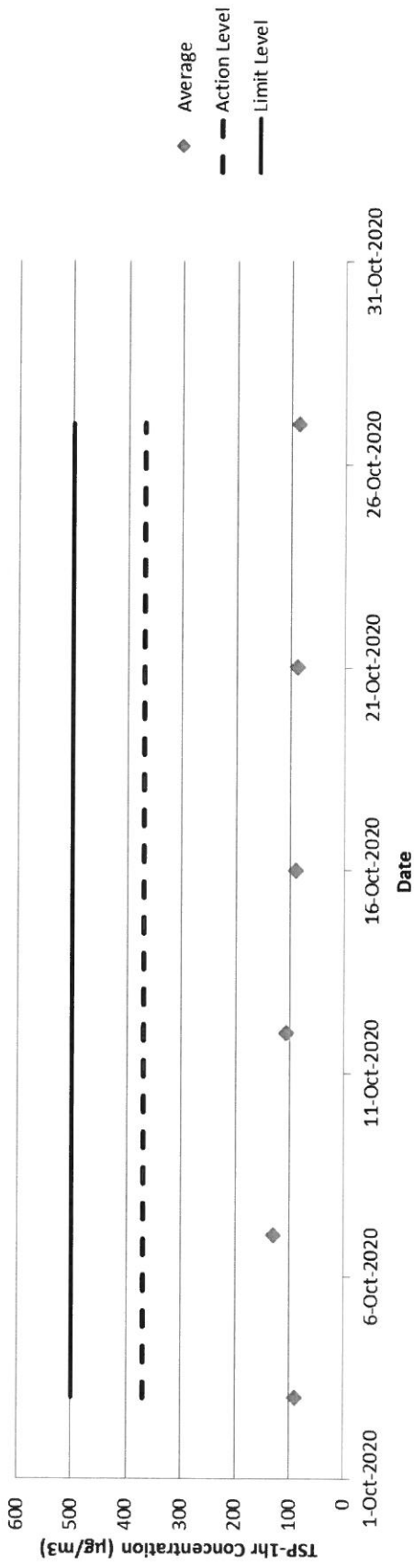
# The Summary of TSP-1hr Concentration ( $\mu\text{g}/\text{m}^3$ ) at AM1 The L Louey



# The Summary of TSP-1hr Concentration ( $\mu\text{g}/\text{m}^3$ ) at AM2 Hin Keng Estate - Hin Wan House

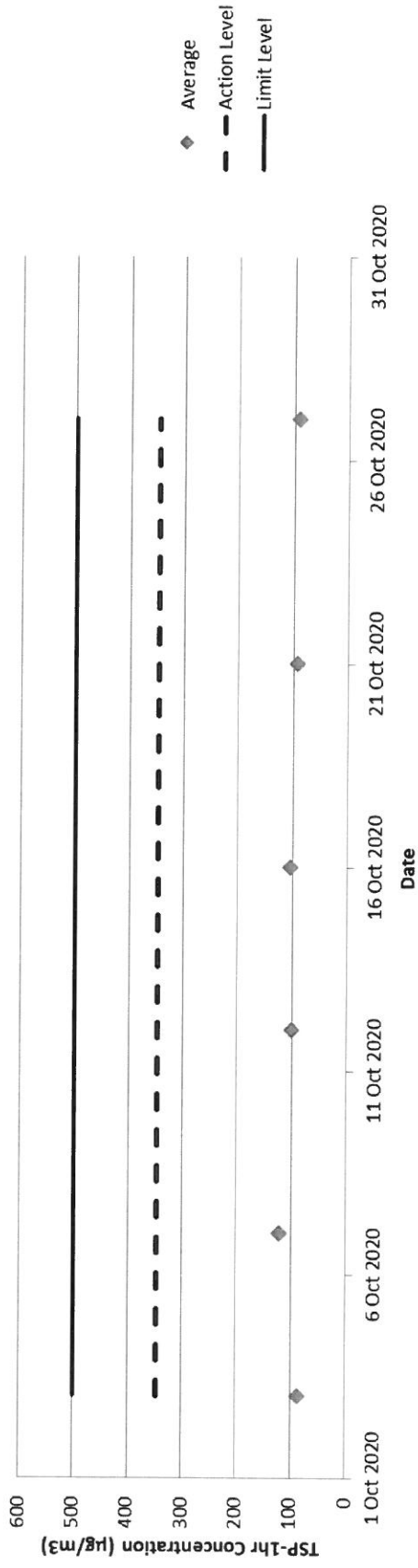


# The Summary of TSP-1hr Concentration ( $\mu\text{g}/\text{m}^3$ ) at AM1 The L Louey





# The Summary of TSP-1hr Concentration ( $\mu\text{g}/\text{m}^3$ ) at AM2 Hin Keng Estate - Hin Wan House



# Appendix L

## Location Plan of Noise Monitoring Station

**LEGEND:**

- SITE BOUNDARY OF SHK TIN WATER TREATMENT WORKS 300m STUDY AREA
- WORKS AREA
- THE L LOOY (SOUTH)
- HIN KENG ESTATE - HIN WAN HOUSE
- CUNGFAN THONG CHEUNG SCHOOL
- HK2
- HK5
- HK7

**水務署**  
**WATER SUPPLIES DEPARTMENT**  
 AGREEMENT NO. CE 13/2009 (NS)  
 IN-SITU REPROFILING SOUTH WORKS  
 DESIGN AND CONSTRUCTION

**LOCATIONS OF PROPOSED NOISE MONITORING STATIONS**

**AECOM**

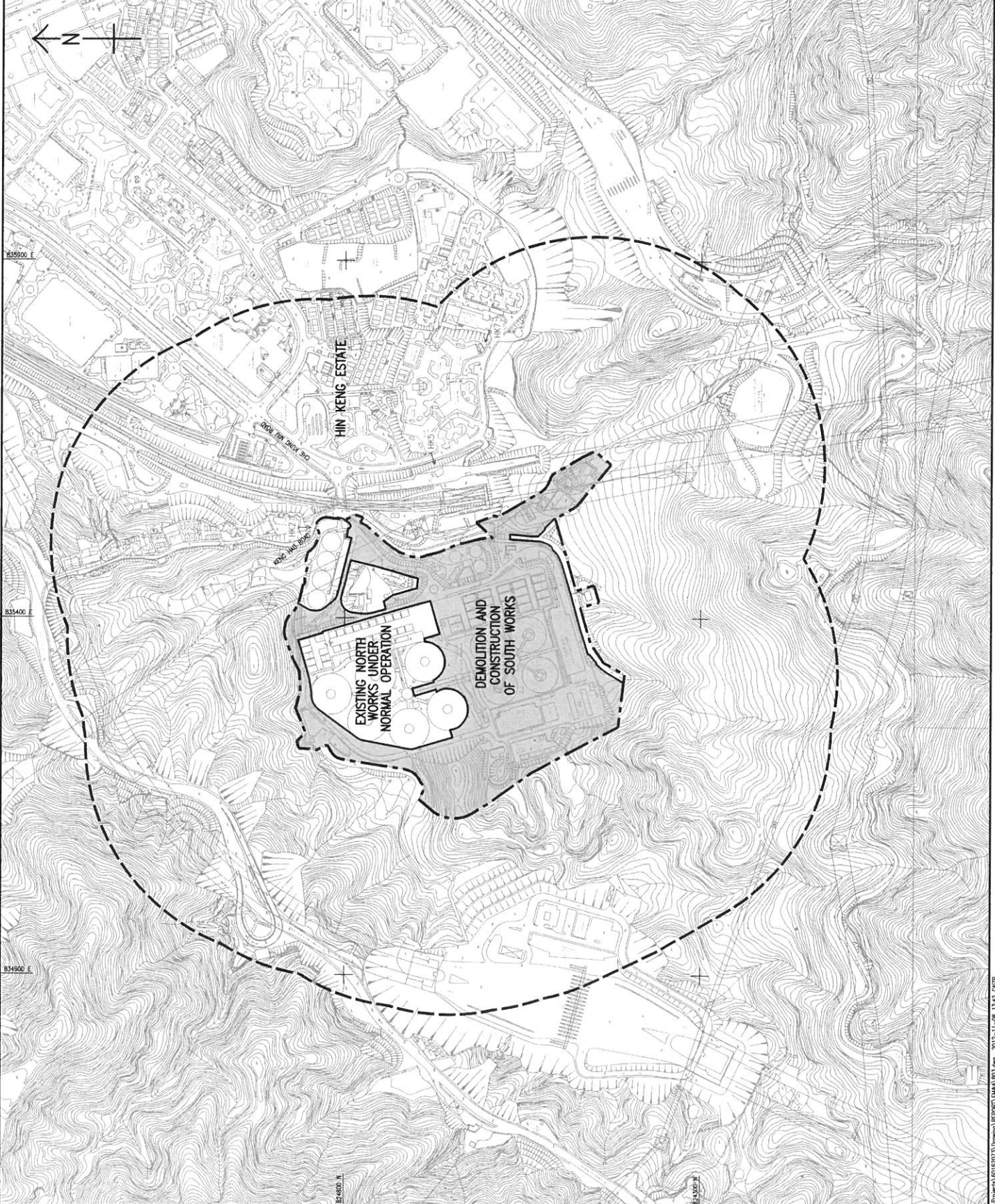
DRGNO  
圖紙編號  
60162073/EM&A/FIG 4

DATE  
日期  
2012-11-08

SCALE  
比例尺  
AS 1:5000

UNIT  
單位  
METRES

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# Appendix M

## Calibration Certificates (Noise)



**Certificate of  
Conformity**

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  $\pm 1.04\%$  within the airspeed range 706.6 to 3923.9 fpm (3.59 to 19.93 m/s), and  $\pm 1.66\%$  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  $\pm 0.05$  °C.

#### **Direction / Heading**

The sensitivity of the magnetic directional sensor is verified 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  $\pm 5$  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  $\pm 0.2\%$  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  $\pm 0.02\%$  F.S.

#### **Approved By:**

Michael Naughton, Engineering Manager

SENSORS																	
SENSOR	1000	2000	2500	3000	3500	3500 DT	4000	4200	4350	4350	4500	4500 HOR	ACCURACY (±)	RESOLUTION	SPECIFICATION RANGE	OPERATIONAL RANGE	NOTES
Wind Speed / Air Flow	•	•	•	•	•	•	•	•	•	•	•	•	Large of 3% of reading, less significant digit = 20 mph	0.1 m/s 1 ft/min 0.1 km/h 0.1 mph 0.1 knot	0.6 to 40.0 m/s 1.8 to 121.6 ft/min 2.2 to 14.0 km/h 1.3 to 89.5 mph 0.7 to 7.8 kts. 0 to 12.8	0.6 to 60.0 m/s 1.8 to 118.1 ft/min 2.2 to 216.0 km/h 1.3 to 134.2 mph 1.2 to 116.8 knots 0 to 12.8	1 inch/25 mm diameter impeller with precision axle and seal-injection 2-ball bearings. Starting speed shutoff at lower limit, readings may be taken down to 0.4 mph (78 ft/min) / 1.5 km/h (1 mph) / 0.8 m/s after the impeller starts. Operating accuracy: ±1% @ 51 mph, ±2% @ 107 mph, ±3% @ 151 mph. Calibration drift ±1% after 100 hours use at 16 MPH (7 m/s). Reproducible impeller (No. 70001) least weight without tools (US Patent 5,740,753). Wind speed calibration and testing should be done with impeller in position located at the top front face of the housing.
Ambient Temperature	•	•	•	•	•	•	•	•	•	•	•	•	0.8 °F 0.2 °C	0.1 °F 0.1 °C	-20.0 to 156.0 °F -29.0 to 70.0 °C	14.0 °C to 131.0 °F 10.0 to 55.0 °C	Hermetically sealed, precision resistor mounted externally and thermally isolated (US Patent 5,939,645) for rapid response. Allowance of 2.2 mph (1 m/s) or greater provides fastest response and reduction of insulation effect. Calibration drift negligible. Thermistor may also be used to measure temperature of water or snow by submerging the resistor portion into material - remove impeller prior to taking submerged measurements and ensure humidity sensor membrane is free of liquid water prior to taking humidity based measurements after submersion.
Globe Temperature - Tg							•						±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 sensor 1x25 mm black powder coated copper globe (mounted to Tg equivalent for standard 8 x 150 mm globe). Closest equivalence obtained with airflow greater than 2.2 mph (1 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 rapid, accurate response (US Patent 6,207,974). To achieve stated accuracy, unit must be permitted to equilibrate to external temperature when exposed to large, rapid temperature changes and be kept out of direct sunlight. Calibration drift ± 2% over 24 months. Humidity sensor may be recalibrated at factory or in field using the Humidity Calibration Kit (UK, FR, 0202).
Pressure	•	•	•	•	•	•	•	•	•	•	•	•	±0.03 inHg 1.0 mBar/mb 0.01 PSI	0.01 inHg 0.1 mBar/mb 0.01 PSI	0.88 to 32.49 inHg 300.0 to 1192.0 mBar/mb 4.35 to 15.95 PSI and 32.0 to 185.0 °F and 0 to 85.0 °C	0.30 to 48.87 inHg 10.0 to 1684.7 mBar/mb 4.35 to 24.00 PSI and 14.0 to 131.0 °F and -10 to 55.0 °C	Multilayer silicon progressive pressure sensor with secondary (temperature correction) pressure sensor may be recalibrated at factory or in field. Adjustable reference altitude above display of station pressure or barometric pressure connected to MS. Kestrel 4200 displays station pressure on a dedicated screen. Kestrel 3500 and 3550 display continuously updating five hour barometric pressure trend indicator. Rising rapidly (high, steady, falling, falling rapidly, Kestrel 4000 series displays pressure trend through graphing function. FSI display, or Kestrel 4000 series only.
Compass												•	±1°	1°	0 to 360°	0 to 360°	2-axis solid-state magnetoresistive sensor mounted perpendicular to unit plane. Accuracy of sensor dependent upon unit's vertical precision. Self-calibration routine eliminates magnetic error from batteries or unit and must be run after every full power-down (battery removal or charge). Reading indicates direction to which the back of the unit is pointing when held in a vertical orientation. Declination/variation adjustable for True North readout.

CALCULATED MEASUREMENTS																	
MEASUREMENT	1000	2000	2500	3000	3500	3500 DT	4000	4200	4350	4350	4500	4500 HOR	ACCURACY (±)	RESOLUTION	SPECIFICATION RANGE	SENSORS EMPLOYED	NOTES
Air Density							•						±0.0025 lb/ft³ 0.0003 kg/m³	0.001 lb/ft³ 0.001 kg/m³	Refer to Ranges for Sensors Employed	Temperature Relative Humidity Pressure	Mass of air per unit volume
Air Flow							•						±6.7%	1 ft³/hr 1 m³/min 0.1 m³/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 measurement and user specified duct shape (circle or rectangle) and dimensions (length, in, ft, cm, mm). Maximum duct dimension input: 256.0 in (21.5 ft) / 655.3 cm (6.55 m)
Altitude							•						Typical: 23.6 ft max: 46.2 ft 14.7 m	1 ft 0.1 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 accuracies depend on a reference pressure anywhere from 850 to 1100 mBar. Air pressure that would be present in identical conditions at MSL. Station pressure compensated for local elevation provided by reference altitude. Requires accurate reference altitude to produce maximum absolute accuracy.
Barometric Pressure							•						±0.07 inHg 2.4 mBar/mb 0.01 PSI	0.01 inHg 0.1 mBar/mb 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 compensated for local elevation provided by reference altitude. Requires accurate reference altitude to produce maximum absolute accuracy.
Crosswind & Headwind Tailwind								•					±7.1%	1 ft/min 0.1 km/h 0.1 mph 0.1 knot	Refer to Ranges for Sensors Employed	Wind Speed Compass	Effective wind relative to a target or travel direction. Auto-switching headwind/tailwind indication.
Delta T							•						±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, indicates evaporation rate and droplet lifetime. Rate range for pesticide spraying is 4 to 16 °F / 2 to 9 °C
Density Altitude								•					±226 ft 69 m	1 ft 0.1 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 consisting of the International Standard Atmosphere.
Dewpoint								•					±3.4 °F 1.9 °C	0.1 °F 0.1 °C	15 to 95 % RH Refer to Ranges 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 and dew and form on a solid surface. Can also be considered to be the wet-bulb or saturation temperature.
Evaporation Rate								•					0.01 lb/ft³-hr 0.01 kg/m³-hr	0.01 lb/ft³-hr 0.01 kg/m³-hr	Refer to Ranges for Sensors Employed	Wind Speed Temperature Relative Humidity Pressure User Input (Concrete Temperature)	The rate at which moisture is lost from the surface of curing concrete. Requires user measurement and entry of concrete temperature (obtained with an accurate air or probe thermometer) (°F or °C, not included). Readings should be taken 20 inches above pour surface with the thermometer shaded and averaged for 6-10 seconds using both in-averaging function.
Heat Index								•					±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 humidity. Calculated based on NWS Heat Map (HI) tables. Measurement range limited by extent of published tables.
Moisture Content / Humidity Ratio ("Grains")								•					±3 g/g 0%	0.1 g/g 0.01 g/g	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)								•					±10.8 Whr	0.1 Whr	Refer to Ranges for Sensors Employed	Wind Speed Temperature Globe Temperature Relative Humidity Pressure	Estimated safe maximum continuously sustainable human metabolic rate (W/m²) 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, convection, and conduction. Outdoor WBGT is calculated from a weighted sum of natural wet bulb (TWB), globe temperature (Tg), and dry bulb temperature (Td). Use wettable on-screen warning zones.
Wet Bulb Temperature Naturally Aspirated (TWB)								•					±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 wet bulb temperature (see below), however, TWB only undergoes forced convection from the ambient air velocity. TWB is a measure of the evaporative cooling that is well below. This is accounted for by combining the effects of naturally aspirated humidity and wind speed.
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 a water air system, this approximates the thermodynamic wet bulb temperature. The thermodynamic wet bulb temperature is the temperature a parcel of air would have if cooled adiabatically to saturation temperature via water evaporating into it.
Wind Chill								•					±1.8 °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. Calculated based on the NWS Wind Chill Temperature (WCT) Index, revised 2001, with wind speed adjusted by a factor of 1.5 to yield equivalent results to wind speed measured at 10 m above ground. Measurement range limited by extent of published tables.

ADDITIONAL SPECIFICATIONS													
Display & Backlight	•	•	•	•	•	•	•	•	•	•	•	•	Reflective 3.12 digit LCD. Digit height 0.25 in / 6 mm. Avation green electrochromic backlight. Manual activation with auto-off. Reflective 5 digit LCD. Digit height 0.36 in / 9 mm. Choice of avation green or visible red (NV mode only) electroluminescent backlight. Manual activation with auto-off.
Response Time & Display Update	•	•	•	•	•	•	•	•	•	•	•	•	0.1 second (typical) for temperature, pressure, humidity, and altitude. Choice of avation green or visible red (NV mode only) electroluminescent backlight. Automatic or manual activation. 0.1 second (typical) for barometric pressure, wind speed, and wind direction. 0.1 second (typical) for wind speed, wind direction, and wind gust. 0.1 second (typical) for wind speed, wind direction, and wind gust. 0.1 second (typical) for wind speed, wind direction, and wind gust.
Max/Avg Wind	•	•	•	•	•	•	•	•	•	•	•	•	One-button clear and reset of Max Wind Gust and Average Wind measurement. Max and average wind calculation may be started and stopped independently of data logging of other values, along with all other wind-related functions. Air velocity, crosswind, headwind/tailwind, wind chill, WBGT, TWB, evaporation rate.
Data Storage & Graphical Display, Min/Max/Avg History							•						Minimum, maximum, average, and log of history stored and displayed for every measured value. Large capacity data logger with graphical display. Manual and auto data storage. Min/Max/Avg history may be reset independently. Auto-store interval settable from 2 seconds to 12 hours, override on or off. Logs active when display is on except for 2 and 5 second override (code version 4.1E and later). Data capacity shown.
Data Upload & Bluetooth® Data Connect Option							•						Requires optional PC interface (USB or RS-232) or Bluetooth data transfer option and provided software. Bluetooth Data Transfer Option: Adequate power consumption and range (range from up to 30 ft / 9 meters). Individual unit ID and 4-digit PIN code (pre-programmed for easy identification and data security when pairing and transferring). Employs Bluetooth Serial Port Protocol for data transmission.
Clock / Calendar	•	•	•	•	•	•	•	•	•	•	•	•	Requires optional PC interface (USB or RS-232) or Bluetooth data transfer option and provided software.
Auto Shutdown	•	•	•	•	•	•	•	•	•	•	•	•	Requires optional PC interface (USB or RS-232) or Bluetooth data transfer option and provided software.
Language Certifications	•	•	•	•	•	•	•	•	•	•	•	•	English, French, German, Italian, Spanish. CE certified, RoHS and WEEE compliant, individually tested to MSL traceable standards (written certificate of test available at additional charge).
Battery Life	•	•	•	•	•	•	•	•	•	•	•	•	Designed and manufactured in the USA from US and imported components. Complies with Regional Veda, Content and Tariff Code Transformation requirements for NAFTA Preference Criterion B. CR2032, one included. Average life: 300 hours. Battery life reduced by backlight use in 2000 to 3500 models.
Shock Resistance	•	•	•	•	•	•	•	•	•	•	•	•	Standard Models: ASA Absolute Inc. Included Average life: 400 hours of use, reduced by battery or Bluetooth radio transmission use. MIL-810G, Tamal Shock, Method 516.5 Procedure IV, unit only, impact may damage susceptible impeller.
Operational Temperature Limits	•	•	•	•	•	•	•	•	•	•	•	•	Waterproof (IP67) and NEMA-6.
Storage Temperature	•	•	•	•	•	•	•	•	•	•	•	•	14 °F to 131 °F / -10 °C to 55 °C. Measurements may be taken beyond the limits of the operational temperature range if the display and batteries by maintaining the unit within the operational range and exposing it to the more extreme environment for the minimum time necessary. In law ranging.
Size & Weight	•	•	•	•	•	•	•	•	•	•	•	•	4.8 x 1.9 x 1.1 in / 12.2 x 4.8 x 2.8 cm, 3.6 oz / 102 g (including slide-on cover). 5.5 x 1.8 x 1.1 in / 13.7 x 4.5 x 2.8 cm, 3.8 oz / 107 g. 6.5 x 2.3 x 1.1 in / 16.5 x 5.8 x 2.8 cm, 4.4 oz / 125 g.

\* NOTE: Accuracy calculated as uncertainty of the measurement derived from statistical analysis considering the combined effects of primary sensor specifications, circuit conversions, and all other sources of error using a coverage factor of k=2, or two standard deviations (2σ). Please note, these specifications are valid for all Kestrel 4400 products and all other Kestrel 4000 series with a serial number higher than 658340. 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:

- Within  
 Outside

the allowable tolerance.

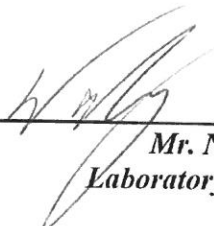
The test equipment used for calibration are traceable to National Standards via:

- 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

**Date of issue:** 2 March 2020

Certificate No.: APJ19-168-CC001



Page 1 of 4

**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:**

	Type	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, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz		
30-130	dBA SPL	Fast	94	1000	94.0	±0.4

Linearity

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

Time Weighting

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



Frequency Response

Linear Response

Setting of Unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB	
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz			
30-130	dB	SPL	Fast	94	31.5	94.0	±2.0
					63	94.1	±1.5
					125	94.2	±1.5
					250	94.1	±1.4
					500	94.1	±1.4
					1000	94.0	Ref
					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, dB	IEC 61672 Class 1 Specification, dB	
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz			
30-130	dBA	SPL	Fast	94	31.5	55.6	-39.4±2.0
					63	67.9	-26.2±1.5
					125	78.0	-16.1±1.5
					250	85.4	-8.6±1.4
					500	90.8	-3.2±1.4
					1000	94.0	Ref
					2000	95.0	+1.2±1.6
					4000	94.3	+1.0±1.6
					8000	91.8	-1.1+2.1; -3.1

C-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB	
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz			
30-130	dBC	SPL	Fast	94	31.5	91.0	-3.0±2.0
					63	93.2	-0.8±1.5
					125	94.0	-0.2±1.5
					250	94.1	-0.0±1.4
					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

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.



# MAXLAB

## CALIBRATION CERTIFICATE

<i>Certificate Information</i>																
Date of Issue	17-Jan-2020															
Certificate Number	MLCN200129S															
<i>Customer Information</i>																
Company Name	Acumen Environmental Engineering and Technologies Co. Ltd.															
Address	Lot 12, Tam Kon Shan Road, Tsing Yi (N), Hong Kong															
<i>Equipment-under-Test (EUT)</i>																
Description	Sound Level Meter															
Manufacturer	Rion															
Model Number	NL-52															
Serial Number	00821088															
Equipment Number	-															
<i>Calibration Particular</i>																
Date of Calibration	17-Jan-2020															
Calibration Equipment	4231(MLTE008) / AV180068 / 13-May-2020															
Calibration Procedure	MLCG00, MLCG15															
Calibration Conditions	<table border="1"> <tr> <td>Laboratory</td> <td>Temperature</td> <td>23 °C ± 5 °C</td> </tr> <tr> <td></td> <td>Relative Humidity</td> <td>55% ± 25%</td> </tr> <tr> <td>EUT</td> <td>Stabilizing Time</td> <td>Over 3 hours</td> </tr> <tr> <td></td> <td>Warm-up Time</td> <td>10 minutes</td> </tr> <tr> <td></td> <td>Power Supply</td> <td>Internal battery</td> </tr> </table>	Laboratory	Temperature	23 °C ± 5 °C		Relative Humidity	55% ± 25%	EUT	Stabilizing Time	Over 3 hours		Warm-up Time	10 minutes		Power Supply	Internal battery
Laboratory	Temperature	23 °C ± 5 °C														
	Relative Humidity	55% ± 25%														
EUT	Stabilizing Time	Over 3 hours														
	Warm-up Time	10 minutes														
	Power Supply	Internal battery														
Calibration Results	Calibration data were detailed in the continuation pages.															
<i>Approved By &amp; Date</i>																
	 K.O. Lo 17-Jan-2020															
<i>Statements</i>																
<ul style="list-style-type: none"> <li>* Calibration equipment used for this calibration are traceable to national / international standards.</li> <li>* The results on this Calibration Certificate only relate to the values measured at the time of the calibration and the uncertainties quoted will not include allowance for the EUT long term drift, variation with environmental changes, vibration and shock during transportation, overloading, mishandling, misuse, and the capacity of any other laboratory to repeat the measurement.</li> <li>* MaxLab Calibration Centre Limited shall not be liable for any loss or damage resulting from the use of the EUT.</li> <li>* The copy of this Certificate is owned by MaxLab Calibration Centre Limited. No part of this Certificate may be reproduced without the prior written approval of MaxLab Calibration Centre Limited.</li> </ul>																



# MAXLAB

Certificate No. MLCN200129S

<i>Calibration Data</i>					
Frequency / Time Weighting	Range	EUT Reading	Standard Reading	EUT Error	Calibration Uncertainty
A / FAST (1 kHz Input)	25 - 138 dB	93.7 dB	94.0 dB	-0.3 dB	0.2 dB
		113.7 dB	114.0 dB	-0.3 dB	0.2 dB
C / FAST (1 kHz Input)	33 - 138 dB	93.7 dB	94.0 dB	-0.3 dB	0.2 dB
		113.7 dB	114.0 dB	-0.3 dB	0.2 dB
Z / FAST (1 kHz Input)	38 - 138 dB	93.7 dB	94.0 dB	-0.3 dB	0.2 dB
		113.7 dB	114.0 dB	-0.3 dB	0.2 dB
A / SLOW (1 kHz Input)	25 - 138 dB	93.7 dB	94.0 dB	-0.3 dB	0.2 dB
		113.7 dB	114.0 dB	-0.3 dB	0.2 dB
C / SLOW (1 kHz Input)	33 - 138 dB	93.7 dB	94.0 dB	-0.3 dB	0.2 dB
		113.7 dB	114.0 dB	-0.3 dB	0.2 dB
Z / SLOW (1 kHz Input)	38 - 138 dB	93.7 dB	94.0 dB	-0.3 dB	0.2 dB
		113.7 dB	114.0 dB	-0.3 dB	0.2 dB

- END -

Calibrated By :  
Date :

Dan  
17-Jan-2020

Checked By :  
Date :

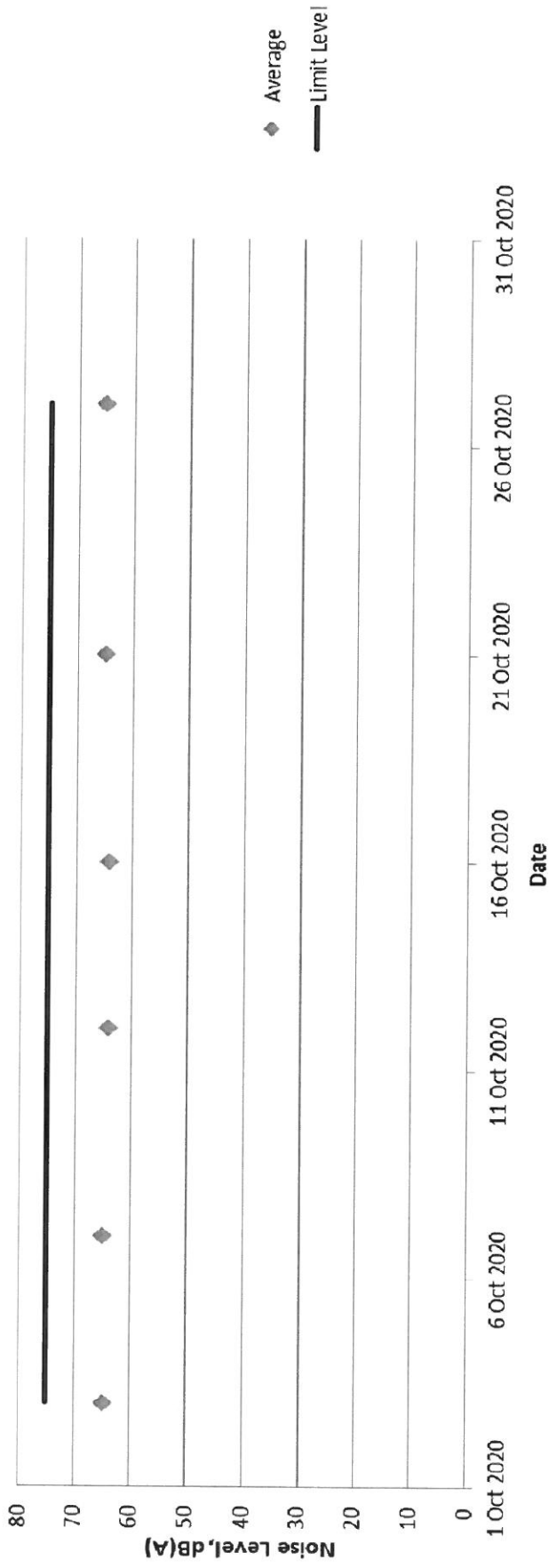
K.O. Lo  
17-Jan-2020

Page 2 of 2

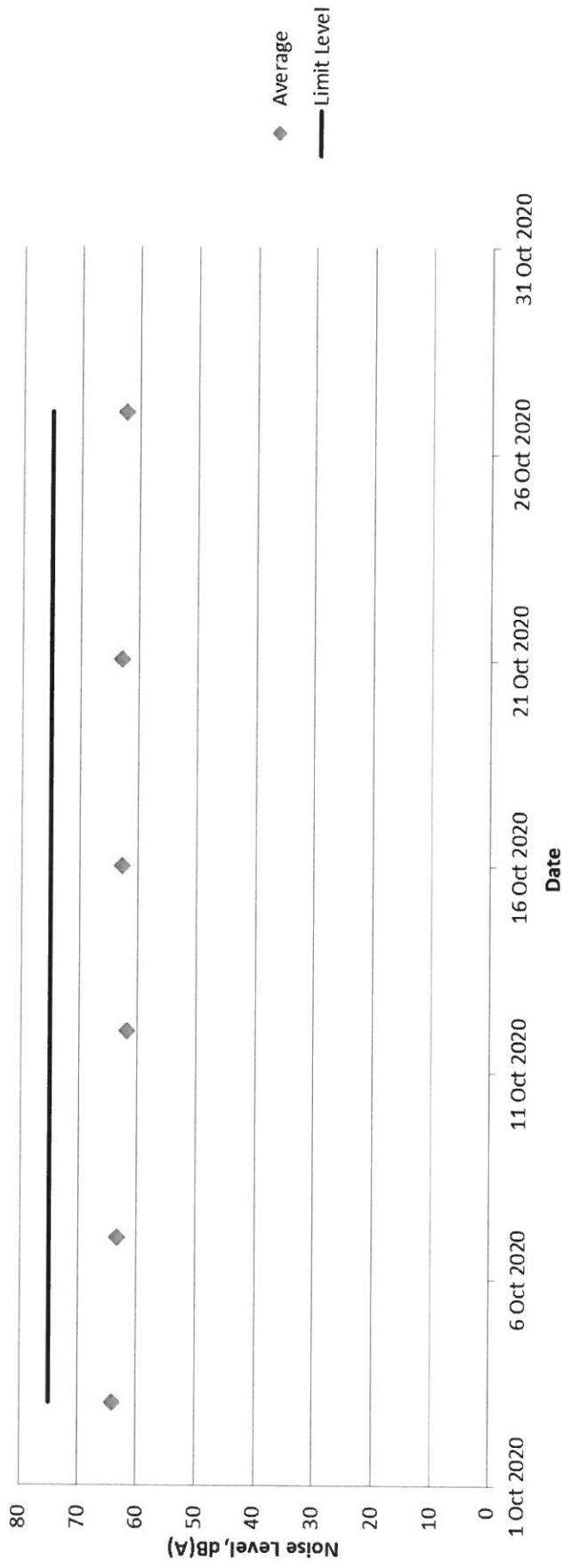
# Appendix N

## Impact Noise Monitoring Results and Graphical Presentation

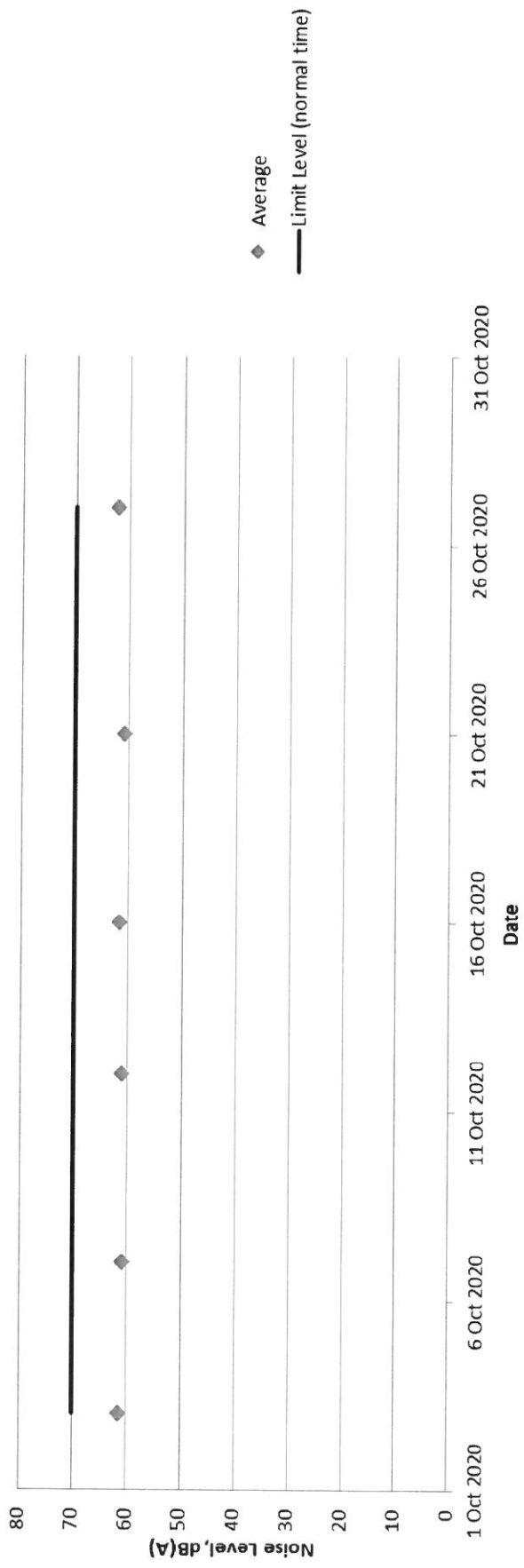
# Noise Level Results at NM1 -The L Louey (South)



# Noise Level Results at NM2 -Hin Keng Estate - Hin Wan House



# Noise Level Results at NM3 -C.U.H.K.F.A.A. Thomas Cheung School





# Appendix O

## Location Plan of Water Quality Monitoring Station



**LEGEND:**

- THE BOUNDARY OF SHA TIN WATER TREATMENT WORKS
- WORKS AREA
- INLAND WATER COURSE
- IMPACT MONITORING STATION
- CONTROL STATION

水務署  
 WATER SUPPLIES DEPARTMENT  
 ACCREDITED NO. CE 17/2009 (NS)  
 IN-SITU REPRESENTING SOUTH WORKS  
 DESIGN AND CONSTRUCTION

**LOCATIONS OF PROPOSED WATER QUALITY MONITORING STATIONS**



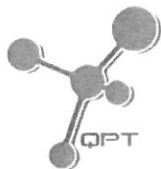
DRG. NO. 60162073/EM&A/FG 5  
 圖則號碼 60162073/EM&A/FG 5  
 DATE 11/08/2011  
 SCALE AS 1 : 5000  
 SHEET NO. 01 OF 01  
 TOTAL SHEETS 01  
 © COPYRIGHT RESERVED 版權 所 有

**LOCATIONS OF WATER QUALITY MONITORING STATIONS**

STATIONS	DESCRIPTION	EASTING	NORTHING
C1	CONTROL STATIONS	835109.77	824716.21
C2		835315.12	824392.63
C3		835641.80	824385.59
M1	IMPACT MONITORING STATIONS	835214.82	824826.96
M2		835536.24	824774.97

# Appendix P

## Calibration Certificate (Water Quality)



## REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No. : AJ080066  
Date of Issue : 25 August 2020  
Page No. : 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

Name of Equipment : Multi Water Quality Checker U-53  
Manufacturer : Horiba  
Serial Number : Y755D62F  
Date of Received : Aug 25, 2020  
Date of Calibration : Aug 25, 2020  
Date of Next Calibration<sup>(a)</sup> : Nov 24, 2020

### PART C – REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

Parameter	Reference Method
pH at 25°C	APHA 21e 4500-H <sup>+</sup> B
Dissolved Oxygen	APHA 21e 4500-O G
Salinity	APHA 21e 2520 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<sup>(b,c)</sup>

#### (1) pH at 25°C

Target (pH unit)	Displayed Reading <sup>(d)</sup> (pH Unit)	Tolerance <sup>(e)</sup> (pH Unit)	Results
4.00	4.08	0.08	Satisfactory
7.42	7.47	0.05	Satisfactory
10.01	10.00	-0.01	Satisfactory

Tolerance of pH should be less than  $\pm 0.20$  (pH unit)

#### (2) Temperature


Reading of Ref. thermometer (°C)	Displayed Reading (°C)	Tolerance (°C)	Results
12.0	12.21	0.21	Satisfactory
21.0	21.49	0.49	Satisfactory
45.0	44.93	-0.07	Satisfactory

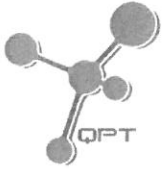
Tolerance limit of temperature should be less than  $\pm 2.0$  (°C)

~ CONTINUED ON NEXT PAGE ~

#### Remark(s): -

- <sup>(a)</sup> The "Date of Next Calibration" is recommended according to best practice principals as practiced by QPT or quoted from relevant international standards.  
<sup>(b)</sup> The results relate only to the calibrated equipment as received  
<sup>(c)</sup> The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.  
<sup>(d)</sup> "Displayed Reading" denotes the figure shown on item under calibration/ checking regardless of equipment precision or significant figures.  
<sup>(e)</sup> The "Tolerance Limit" mentioned is the acceptance criteria applicable for similar equipment used by Quality Pro Test-Consult Ltd. or quoted from relevant international standards.

  
LEE Chun-ning, Desmond  
Senior Chemist



專業化驗有限公司

QUALITY PRO TEST-CONSULT LIMITED

Unit 10, 14/F, Wah Wai Centre, 38-40 Au Pui Wan St., Fotan, Hong Kong

Email: info@qualityprotest.com; Website: www.qualityprotest.com

Tel: (852) 3956 8717; Fax: (852) 3956 3928

## REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No. : AJ080066  
Date of Issue : 25 August 2020  
Page No. : 2 of 2

### PART D – CALIBRATION RESULTS (Cont'd)

#### (3) Dissolved Oxygen

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)	Results
0.15	0.11	-0.04	Satisfactory
3.89	4.06	0.17	Satisfactory
6.01	6.09	0.08	Satisfactory
7.71	7.69	-0.02	Satisfactory

Tolerance limit of dissolved oxygen should be less than  $\pm 0.50$  (mg/L)

#### (4) Salinity

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)	Results
10	10.00	0.00	Satisfactory
20	20.09	0.45	Satisfactory
30	30.90	3.00	Satisfactory

Tolerance limit of salinity should be less than  $\pm 10.0$  (%)

~ END OF REPORT ~

# 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**  
「香港實驗室認可計劃」認可實驗室

*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**

*此實驗室符合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).  
此項 ISO/IEC 17025:2005 的認可資格證明此實驗室具備指定範圍內所須的技術能力並  
實施一套實驗室質量管理體系(見國際認可論壇、國際實驗室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*

WONG Wang-wah, Executive Administrator

執行幹事 黃宏華

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:



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

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

L 001195

# Appendix R

## Impact Water Quality Monitoring Results



# Acumen Laboratory and Testing Limited

Lot 12, Tam Kon Shan Road, Tsing Yi (N), Hong Kong  
Tel: (852) 2333 6823 Fax: (852) 2333 1316

## Test Report

Page 1 of 2

Report Number : Q200003aR201033  
Job Number : R201033  
Issue Date : 09/11/2020  
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-3113-761  
Sample Description : pH Value, TSS and COD tests  
Laboratory ID : R201033/1  
Date of Sampling : 21/10/2020  
Date Received : 21/10/2020  
Test Period : 21/10/2020 – 22/10/2020  
Test Required : 1. pH Value;  
2. Total Suspended Solids (TSS);  
3. Chemical Oxygen Demand (COD)  
Method Used : 1. QPL-15d, APHA 22ed 4500-H<sup>+</sup> 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 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.

Acumen Laboratory & Testing Limited | Lot 12 Tam Kon Shan Road, Tsing Yi (N), Hong Kong

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

E-mail: [hthui@acumenhk.com](mailto:hthui@acumenhk.com) / [jleung@acumenhk.com](mailto:jleung@acumenhk.com)

# Acumen Laboratory and Testing Limited

Lot 12, Tam Kon Shan Road, Tsing Yi (N), Hong Kong  
Tel: (852) 2333 6823 Fax: (852) 2333 1316

## Test Report

Page 2 of 2

Report Number : Q200003aR201033

Job Number : R201033

Issue Date : 09/11/2020

### 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 O <sub>2</sub> /L
R201033/1	21/10/2020	Hing Keng, Wall C	7.9 (23)	<2.5	<50

- Note:
1. mg/L indicates milligram per liter
  2. mg O<sub>2</sub>/ 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.

Acumen Laboratory & Testing Limited | Lot 12 Tam Kon Shan Road, Tsing Yi (N), Hong Kong  
Tel: (852) 2333 6823 Fax: (852) 2333 1316  
E-mail: [htthui@acumenhk.com](mailto:htthui@acumenhk.com) / [jleung@acumenhk.com](mailto:jleung@acumenhk.com)

Date	Time	Weather	Location	Co-ordinates		Water Depth m	Sample Depth m	Temp. °C	DO con.		DO Saturation %	Turbidity NTU	pH unit	SS mg/L
				East	North				mg/L	%				
3 Oct 2020	11:40	Sunny	C1	835110	824716	0.04	0.02	28.2	8.46	8.46	90.3	2.3	7.25	1.8
	12:01	Sunny	C2	835403	824470	0.02	0.01	27.5	8.34	8.34	88.4	2.5	7.66	2.3
	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
	11:32	Sunny	M1	835215	824827	0.8	0.4	28.9	8.87	8.87	92.7	2.3	7.80	2.1
	10:50	Sunny	M2	835536	824775	0.05	0.025	28.7	9.18	9.18	96.5	2.4	7.71	3.2
	11:02	Sunny	M3	835501	824648	0.02	0.01	27.5	9.54	9.54	99.7	0.6	7.66	<1
5 Oct 2020	11:05	Sunny	C1	835110	824716	0.04	0.02	27.8	8.61	8.61	94.1	2.4	7.42	3.7
	11:22	Sunny	C2	835403	824470	0.02	0.01	27.9	8.67	8.68	92.5	2.6	7.41	4.0
	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
	10:41	Sunny	M1	835215	824827	0.8	0.4	28.8	9.12	9.12	96.6	2.1	7.77	2.8
	10:13	Sunny	M2	835536	824775	0.05	0.025	27.6	9.21	9.21	95.8	1.6	7.84	5.2
	10:25	Sunny	M3	835501	824648	0.02	0.01	28.9	9.18	9.18	96.1	0.7	7.62	<1
7 Oct 2020	11:24	Cloudy	C1	835110	824716	0.04	0.02	29.8	8.56	8.56	90.1	2.4	7.57	3.2
	11:45	Cloudy	C2	835403	824470	0.02	0.01	30.2	8.26	8.26	88.7	2.5	7.77	2.8
	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
	11:08	Cloudy	M1	835215	824827	0.8	0.4	28.7	9.18	9.18	96.5	2.3	7.79	1.7
	10:30	Cloudy	M2	835536	824775	0.05	0.025	29.9	9.16	9.17	95.5	2.7	7.62	3.6
	10:53	Cloudy	M3	835501	824648	0.02	0.01	28.8	9.21	9.21	97.2	0.6	7.70	<1
9 Oct 2020	13:29	Sunny	C1	835110	824716	0.04	0.02	28.9	8.54	8.55	89.3	2.7	7.75	3.2
	13:51	Sunny	C2	835403	824470	0.02	0.01	27.9	8.48	8.48	89.6	2.7	7.51	2.8
	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
	13:02	Sunny	M1	835215	824827	0.8	0.4	29.1	9.06	9.06	95.5	2.2	7.63	2.3
	12:35	Sunny	M2	835536	824775	0.05	0.025	28.5	9.32	9.34	98.5	2.7	7.78	3.7
	12:50	Sunny	M3	835501	824648	0.02	0.01	28.9	9.21	9.21	95.8	0.4	7.51	<1
12 Oct 2020	14:54	Sunny	C1	835110	824716	0.04	0.02	28.7	8.43	8.43	87.6	2.6	7.71	3.3
	15:04	Sunny	C2	835403	824470	0.02	0.01	28.5	8.53	8.53	89.2	2.6	7.80	3.0
	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
	14:36	Sunny	M1	835215	824827	0.8	0.4	28.6	9.14	9.15	95.6	1.9	7.75	2.1
	14:06	Sunny	M2	835536	824775	0.05	0.025	27.8	8.82	8.82	97.5	2.2	7.88	3.8
	14:22	Sunny	M3	835501	824648	0.02	0.01	27.7	9.51	9.52	96.2	0.7	7.56	<1
14 Oct 2020	13:13	Cloudy	C1	835110	824716	0.04	0.02	29.9	8.65	8.65	93.5	2.6	7.65	2.7
	13:29	Cloudy	C2	835403	824470	0.02	0.01	28.9	8.52	8.51	87.4	2.5	7.31	3.0
	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
	12:56	Cloudy	M1	835215	824827	0.8	0.4	28.7	8.93	8.92	93.2	2.1	7.82	2.4
	12:24	Cloudy	M2	835536	824775	0.05	0.025	27.9	8.88	8.89	95.3	2.7	7.86	4.1
	12:41	Cloudy	M3	835501	824648	0.02	0.01	27.5	9.41	9.41	94.2	0.6	7.70	<1

16 Oct 2020	12:48	Sunny	C1	835110	824716	0.04	0.02	29.9	30.2	8.26	8.27	86.4	86.4	2.7	2.6	7.76	7.75	3.3	
	12:58	Sunny	C2	835403	824470	0.02	0.01	29.7	30.2	8.74	8.74	94.8	94.7	2.1	2.0	7.33	7.32	3.0	
	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	N/A
	11:36	Sunny	M1	835215	824827	0.8	0.4	29.5	30.2	9.16	9.16	95.6	95.6	2.2	2.3	7.84	7.82	2.5	
	11:00	Sunny	M2	835536	824775	0.05	0.025	29.4	30.5	9.22	9.22	96.9	96.8	1.6	1.7	7.67	7.65	3.9	
	11:16	Sunny	M3	835501	824648	0.02	0.01	28.9	29.5	9.48	9.48	97.5	97.4	0.6	0.7	7.78	7.79	<1	
19 Oct 2020	13:25	Cloudy	C1	835110	824716	0.04	0.02	27.5	28.5	8.65	8.65	86.5	86.5	2.6	2.5	7.76	7.74	3.3	
	13:36	Cloudy	C2	835403	824470	0.02	0.01	27.1	27.5	8.46	8.46	91.2	91.3	2.6	2.7	7.79	7.78	2.9	
	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	N/A
	13:12	Cloudy	M1	835215	824827	0.8	0.4	28.9	29.3	9.20	9.20	95.8	95.8	2.3	2.4	7.78	7.80	2.6	
	12:40	Cloudy	M2	835536	824775	0.05	0.025	28.3	28.5	9.24	9.25	94.4	94.4	2.5	2.6	7.81	7.81	4.2	
	12:56	Cloudy	M3	835501	824648	0.02	0.01	27.6	27.9	9.51	9.51	96.7	96.7	0.4	0.4	7.61	7.62	<1	
21 Oct 2020	15:02	Cloudy	C1	835110	824716	0.04	0.02	29.5	30.0	8.56	8.57	91.7	91.6	2.5	2.5	7.48	7.49	3.1	
	15:22	Cloudy	C2	835403	824470	0.02	0.01	29.5	29.6	8.33	8.34	86.9	86.7	2.6	2.7	7.30	7.30	2.6	
	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	N/A
	14:47	Cloudy	M1	835215	824827	0.8	0.4	29.1	29.5	9.34	9.34	97.2	97.3	2.0	2.1	7.76	7.78	2.3	
	14:05	Cloudy	M2	835536	824775	0.05	0.025	28.3	29.5	9.12	9.12	95.5	95.6	1.6	1.5	7.70	7.70	3.6	
	14:26	Cloudy	M3	835501	824648	0.02	0.01	28.7	31.3	9.40	9.40	95.8	95.8	0.8	0.9	7.63	7.62	<1	
23 Oct 2020	12:55	Sunny	C1	835110	824716	0.04	0.02	29.5	30.0	8.54	8.55	92.2	92.3	2.4	2.3	7.55	7.53	3.0	
	13:13	Sunny	C2	835403	824470	0.02	0.01	28.1	28.3	8.35	8.36	86.6	86.7	2.7	2.6	7.87	7.86	3.4	
	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	N/A
	12:46	Sunny	M1	835215	824827	0.8	0.4	28.3	28.5	9.10	9.20	92.3	92.4	2.3	2.2	7.62	7.63	1.7	
	12:14	Sunny	M2	835536	824775	0.05	0.025	29.3	29.5	9.30	9.20	93.5	93.5	2.5	2.4	7.89	7.88	4.4	
	12:29	Sunny	M3	835501	824648	0.02	0.01	30.2	30.2	9.54	9.54	98.6	98.6	0.7	0.8	7.76	7.75	<1	
27 Oct 2020	11:16	Sunny	C1	835110	824716	0.04	0.02	30.5	30.5	8.56	8.56	93.2	93.3	2.4	2.5	7.60	7.62	3.2	
	11:32	Sunny	C2	835403	824470	0.02	0.01	30.3	30.5	8.46	8.47	90.6	90.5	2.5	2.5	7.32	7.32	3.5	
	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	N/A
	10:57	Sunny	M1	835215	824827	0.8	0.4	29.5	29.8	9.31	9.31	97.6	97.6	2.3	2.2	7.69	7.69	1.8	
	10:32	Sunny	M2	835536	824775	0.05	0.025	29.6	30.0	9.20	9.30	95.4	95.4	2.1	2.2	7.63	7.64	4.5	
	10:46	Sunny	M3	835501	824648	0.02	0.01	28.5	28.6	9.51	9.51	98.5	98.4	0.8	0.8	7.72	7.71	<1	
29 Oct 2020	11:35	Cloudy	C1	835110	824716	0.04	0.02	31.2	31.5	8.45	8.45	89.6	89.5	2.5	2.6	7.31	7.30	2.7	
	11:43	Cloudy	C2	835403	824470	0.02	0.01	29.9	30.0	8.36	8.36	87.9	87.8	2.7	2.8	7.35	7.35	3.3	
	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	N/A
	12:22	Cloudy	M1	835215	824827	0.8	0.4	30.1	30.3	9.18	9.18	95.8	95.9	2.2	2.3	7.63	7.62	2.7	
	11:48	Cloudy	M2	835536	824775	0.05	0.025	30.8	30.7	9.10	9.12	98.5	98.4	1.7	1.6	7.78	7.80	3.6	
	11:06	Cloudy	M3	835501	824648	0.02	0.01	29.5	29.4	9.34	9.34	96.6	96.6	0.8	0.8	7.66	7.67	<1	
31 Oct 2020	13:59	Cloudy	C1	835110	824716	0.04	0.02	29.2	29.5	8.23	8.24	89.6	89.6	2.6	2.5	7.55	7.56	2.6	
	14:21	Cloudy	C2	835403	824470	0.02	0.01	28.8	28.9	8.56	8.56	92.8	92.8	2.4	2.5	7.47	7.47	2.9	
	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	N/A
	13:52	Cloudy	M1	835215	824827	0.8	0.4	29.5	30.0	9.18	9.17	96.5	96.5	2.1	2.2	7.67	7.67	2.2	
	13:20	Cloudy	M2	835536	824775	0.05	0.025	28.5	28.8	9.12	9.12	95.6	95.6	1.7	1.6	7.66	7.66	4.2	
	13:34	Cloudy	M3	835501	824648	0.02	0.01	28.9	30.1	9.58	9.58	98.5	98.5	0.6	0.5	7.80	7.81	<1	

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## Test Report

Page 1 of 2

Report Number : Q200003aR201020  
Job Number : R201020  
Issue Date : 09/11/2020  
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-3113-748  
Sample Description : SS test  
Laboratory ID : R201020/1-5  
Date of Sampling : 03/10/2020  
Date Received : 03/10/2020  
Test Period : 03/10/2020 – 04/10/2020  
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 : Q200003aR201020

Job Number : R201020

Issue Date : 09/11/2020

### Test Result:

Lab ID	Date of Sampling	Client Sample ID	Suspended Solids (SS), mg/L
R201020/1	03/10/2020	C1	1.8
R201020/2	03/10/2020	C2	2.3
R201020/3	03/10/2020	M1	2.1
R201020/4	03/10/2020	M2	3.2
R201020/5	03/10/2020	M3	<1

- Note:
1. mg/L indicates milligram per liter
  2. mg O<sub>2</sub>/ 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 : Q200003aR201021  
Job Number : R201021  
Issue Date : 09/11/2020  
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-3113-749  
Sample Description : SS test  
Laboratory ID : R201021/1-5  
Date of Sampling : 05/10/2020  
Date Received : 05/10/2020  
Test Period : 05/10/2020 – 06/10/2020  
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 : Q200003aR201021

Job Number : R201021

Issue Date : 09/11/2020

### Test Result:

Lab ID	Date of Sampling	Client Sample ID	Suspended Solids (SS), mg/L
R201021/1	05/10/2020	C1	3.7
R201021/2	05/10/2020	C2	4.0
R201021/3	05/10/2020	M1	2.8
R201021/4	05/10/2020	M2	5.2
R201021/5	05/10/2020	M3	<1

- Note:
1. mg/L indicates milligram per liter
  2. mg O<sub>2</sub>/ 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 : Q200003aR201022  
Job Number : R201022  
Issue Date : 09/11/2020  
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-3113-750  
Sample Description : SS test  
Laboratory ID : R201022/1-5  
Date of Sampling : 07/10/2020  
Date Received : 07/10/2020  
Test Period : 07/10/2020 – 08/10/2020  
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 : Q200003aR201022

Job Number : R201022

Issue Date : 09/11/2020

### Test Result:

Lab ID	Date of Sampling	Client Sample ID	Suspended Solids (SS), mg/L
R201022/1	07/10/2020	C1	3.2
R201022/2	07/10/2020	C2	2.8
R201022/3	07/10/2020	M1	1.7
R201022/4	07/10/2020	M2	3.6
R201022/5	07/10/2020	M3	<1

- Note:
1. mg/L indicates milligram per liter
  2. mg O<sub>2</sub>/ 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 : Q200003aR201023  
Job Number : R201023  
Issue Date : 09/11/2020  
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-3113-751  
Sample Description : SS test  
Laboratory ID : R201023/1-5  
Date of Sampling : 09/10/2020  
Date Received : 09/10/2020  
Test Period : 09/10/2020 – 10/10/2020  
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 : Q200003aR201023  
Job Number : R201023  
Issue Date : 09/11/2020

### Test Result:

Lab ID	Date of Sampling	Client Sample ID	Suspended Solids (SS), mg/L
R201023/1	09/10/2020	C1	3.2
R201023/2	09/10/2020	C2	2.8
R201023/3	09/10/2020	M1	2.3
R201023/4	09/10/2020	M2	3.7
R201023/5	09/10/2020	M3	<1

- Note:
1. mg/L indicates milligram per liter
  2. mg O<sub>2</sub>/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 : Q200003aR201024  
Job Number : R201024  
Issue Date : 09/11/2020  
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-3113-752  
Sample Description : SS test  
Laboratory ID : R201024/1-5  
Date of Sampling : 12/10/2020  
Date Received : 12/10/2020  
Test Period : 12/10/2020 – 13/10/2020  
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 : Q200003aR201024  
Job Number : R201024  
Issue Date : 09/11/2020

### Test Result:

Lab ID	Date of Sampling	Client Sample ID	Suspended Solids (SS), mg/L
R201024/1	12/10/2020	C1	3.3
R201024/2	12/10/2020	C2	3.0
R201024/3	12/10/2020	M1	2.1
R201024/4	12/10/2020	M2	3.8
R201024/5	12/10/2020	M3	<1

- Note:
1. mg/L indicates milligram per liter
  2. mg O<sub>2</sub>/ 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 : Q200003aR201025  
Job Number : R201025  
Issue Date : 09/11/2020  
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-3113-753  
Sample Description : SS test  
Laboratory ID : R201025/1-5  
Date of Sampling : 14/10/2020  
Date Received : 14/10/2020  
Test Period : 14/10/2020 – 15/10/2020  
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 : Q200003aR201025  
Job Number : R201025  
Issue Date : 09/11/2020

### Test Result:

Lab ID	Date of Sampling	Client Sample ID	Suspended Solids (SS), mg/L
R201025/1	14/10/2020	C1	2.7
R201025/2	14/10/2020	C2	3.0
R201025/3	14/10/2020	M1	2.4
R201025/4	14/10/2020	M2	4.1
R201025/5	14/10/2020	M3	<1

- Note:
1. mg/L indicates milligram per liter
  2. mg O<sub>2</sub>/ 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 : Q200003aR201026  
Job Number : R201026  
Issue Date : 09/11/2020  
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-3113-754  
Sample Description : SS test  
Laboratory ID : R201026/1-5  
Date of Sampling : 16/10/2020  
Date Received : 16/10/2020  
Test Period : 16/10/2020 – 17/10/2020  
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 : Q200003aR201026  
Job Number : R201026  
Issue Date : 09/11/2020

### Test Result:

Lab ID	Date of Sampling	Client Sample ID	Suspended Solids (SS), mg/L
R201026/1	16/10/2020	C1	3.3
R201026/2	16/10/2020	C2	3.0
R201026/3	16/10/2020	M1	2.5
R201026/4	16/10/2020	M2	3.9
R201026/5	16/10/2020	M3	<1

- Note:
1. mg/L indicates milligram per liter
  2. mg O<sub>2</sub>/ 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 : Q200003aR201027  
Job Number : R201027  
Issue Date : 09/11/2020  
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-3113-755  
Sample Description : SS test  
Laboratory ID : R201027/1-5  
Date of Sampling : 19/10/2020  
Date Received : 19/10/2020  
Test Period : 19/10/2020 – 20/10/2020  
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 : Q200003aR201027  
Job Number : R201027  
Issue Date : 09/11/2020

### Test Result:

Lab ID	Date of Sampling	Client Sample ID	Suspended Solids (SS), mg/L
R201027/1	19/10/2020	C1	3.3
R201027/2	19/10/2020	C2	2.9
R201027/3	19/10/2020	M1	2.6
R201027/4	19/10/2020	M2	4.2
R201027/5	19/10/2020	M3	<1

- Note:
1. mg/L indicates milligram per liter
  2. mg O<sub>2</sub>/ 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 : Q200003aR201028  
Job Number : R201028  
Issue Date : 09/11/2020  
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-3113-756  
Sample Description : SS test  
Laboratory ID : R201028/1-5  
Date of Sampling : 21/10/2020  
Date Received : 21/10/2020  
Test Period : 21/10/2020 – 22/10/2020  
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 : Q200003aR201028  
Job Number : R201028  
Issue Date : 09/11/2020

### Test Result:

Lab ID	Date of Sampling	Client Sample ID	Suspended Solids (SS), mg/L
R201028/1	21/10/2020	C1	3.1
R201028/2	21/10/2020	C2	2.6
R201028/3	21/10/2020	M1	2.3
R201028/4	21/10/2020	M2	3.6
R201028/5	21/10/2020	M3	<1

- Note:
1. mg/L indicates milligram per liter
  2. mg O<sub>2</sub>/ 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 : Q200003aR201029  
Job Number : R201029  
Issue Date : 09/11/2020  
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-3113-757  
Sample Description : SS test  
Laboratory ID : R201029/1-5  
Date of Sampling : 23/10/2020  
Date Received : 23/10/2020  
Test Period : 23/10/2020 – 24/10/2020  
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 : Q200003aR201029  
Job Number : R201029  
Issue Date : 09/11/2020

### Test Result:

Lab ID	Date of Sampling	Client Sample ID	Suspended Solids (SS), mg/L
R201029/1	23/10/2020	C1	3.0
R201029/2	23/10/2020	C2	3.4
R201029/3	23/10/2020	M1	1.7
R201029/4	23/10/2020	M2	4.4
R201029/5	23/10/2020	M3	<1

Note:  
1. mg/L indicates milligram per liter  
2. mg O<sub>2</sub>/ 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 : Q200003aR201030  
Job Number : R201030  
Issue Date : 09/11/2020  
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-3113-758  
Sample Description : SS test  
Laboratory ID : R201030/1-5  
Date of Sampling : 27/10/2020  
Date Received : 27/10/2020  
Test Period : 27/10/2020 – 28/10/2020  
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 : Q200003aR201030  
Job Number : R201030  
Issue Date : 09/11/2020

### Test Result:

Lab ID	Date of Sampling	Client Sample ID	Suspended Solids (SS), mg/L
R201030/1	27/10/2020	C1	3.2
R201030/2	27/10/2020	C2	3.5
R201030/3	27/10/2020	M1	1.8
R201030/4	27/10/2020	M2	4.5
R201030/5	27/10/2020	M3	<1

- Note:
1. mg/L indicates milligram per liter
  2. mg O<sub>2</sub>/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 : Q200003aR201031  
Job Number : R201031  
Issue Date : 09/11/2020  
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-3113-759  
Sample Description : SS test  
Laboratory ID : R201031/1-5  
Date of Sampling : 29/10/2020  
Date Received : 29/10/2020  
Test Period : 29/10/2020 – 30/10/2020  
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 : Q200003aR201031

Job Number : R201031

Issue Date : 09/11/2020

### Test Result:

Lab ID	Date of Sampling	Client Sample ID	Suspended Solids (SS), mg/L
R201031/1	29/10/2020	C1	2.7
R201031/2	29/10/2020	C2	3.3
R201031/3	29/10/2020	M1	2.7
R201031/4	29/10/2020	M2	3.6
R201031/5	29/10/2020	M3	<1

- Note:
1. mg/L indicates milligram per liter
  2. mg O<sub>2</sub>/ 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 : Q200003aR201032  
Job Number : R201032  
Issue Date : 09/11/2020  
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-3113-760  
Sample Description : SS test  
Laboratory ID : R201032/1-5  
Date of Sampling : 31/10/2020  
Date Received : 31/10/2020  
Test Period : 31/10/2020 – 01/11/2020  
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 : Q200003aR201032

Job Number : R201032

Issue Date : 09/11/2020

### Test Result:

Lab ID	Date of Sampling	Client Sample ID	Suspended Solids (SS), mg/L
R201032/1	31/10/2020	C1	2.6
R201032/2	31/10/2020	C2	2.9
R201032/3	31/10/2020	M1	2.2
R201032/4	31/10/2020	M2	4.2
R201032/5	31/10/2020	M3	<1

- Note:
1. mg/L indicates milligram per liter
  2. mg O<sub>2</sub>/L indicates milligram oxygen per liter
  3. < indicates less than.
  4. > indicates more than.
  5. NA indicates Not Applicable.

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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.74**

**October 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 20 and 27 October 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 it 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). Plough is required before planting on to this open corner of short grassland.
- 2.3 Other compensatory trees have been planted at STWTW and STSFWSR. Lamb of Tartary (*Cibotium barometz*) to be transplanted was temporarily stored at a nursery garden at Shui Mei Tsuen, Kam Tin. Once the planting site at STSFWSR was ready; while the Lamb of Tartary (*Cibotium barometz*) are in acceptable (fair) condition, they will be planted at the planting site within one day.

## 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 20 and 27 October 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 9 individuals with fair to poor condition; however, the next few monitoring will be critical to assess their survival and recovery progress of all individuals.
- 4.4 Joint site meeting with our ecologist, Project Manager, Contractor and Landscape Contractor on 20 October 2020 revealed that the designated recipient site at STSFWSR was under excessive exposure of direct sunlight, strong winds, far from riparian zone/ moist valley and low in soil moisture. This is not a favourable microhabitat for *Cibotium barometz* to be transplanted back. Two best (but still sub-optimal) portions within this recipient site would be a corner with shading canopy from trees on a man-made feature nearby; as well as understory zone of an existing tree (photos illustrated in Appendix I). Mitigation measures are proposed in Section 5 to enhance a sustainable survival of *Cibotium barometz* during the post-transplantation stage.
- 4.5 In general, 9 transplanted Lamb of Tartary (*Cibotium barometz*) were in fair to poor condition with foliage, while the other 18 remained in poor condition without regrowth of new foliage. 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 (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**

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

- 5.2 Among 27 transplanted Lamb of Tartary (*Cibotium barometz*), 18 of them had shown either yellow foliage or loss of 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) has been provided to reduce the amount of sunlight received and avoid direct hit of rainstorm/ typhoon. Irrigation spray head has been installed to facilitate watering frequency whenever necessary. Once their condition has recovered to acceptable level, they can be moved to the recipient site at STSFWSR when the site is ready.
- 5.3 In order to enhance a sustainable survival of 27 nos. *Cibotium barometz* during the post-transplantation stage, the recipient site at STSFWSR shall install shelter (such as 遮光網) to reduce intensity of direct sunlight received and avoid direct hit of rainstorm/ typhoon. Transplanted *Cibotium barometz* shall be watered at least once in the morning and once in the afternoon; before irrigation spray head has been installed to facilitate watering frequency whenever necessary.
- 5.4 Robust fencing (protection zone) shall be set up to enclose the 27 nos. transplanted *Cibotium barometz* (in two groups: one at the corner with shading canopy from trees on a man-made feature nearby; another at understory zone of an existing tree) to avoid unnecessary disturbance/ damage to them.

- 5.5 Weeding within the two protection zones of *Cibotium barometz* shall only be conducted by hand-held tools rather than grass cutting machine. No fire/ chemical weeding shall be allowed.
- 5.6 The 27 nos. transplanted *Cibotium barometz* shall be maintained with measures mentioned in Section 5.3-5.5 above for 12 months for establishment. A 12-month post-transplantation monitoring period helps to assess their survival during the establishment period.
- 5.7 Any dead individuals/ those in poor condition before transplant back to STSFWSR or during the post-transplantation period shall be replaced by planting healthy individuals of *Cibotium barometz*. Other possible fern candidate such as *Brainea insignis*, which is more adaptive to open grassland under direct sunlight, shall be sourced for compensatory planting.
- 5.8 The designated recipient site for transplanting 27 nos. *Cibotium barometz* at STSFWSR was under excessive exposure of direct sunlight, strong winds, far from riparian zone/ moist valley and low in soil moisture. This is not a favourable microhabitat for *Cibotium barometz*. Two best (but still sub-optimal) portions within this recipient site would be a corner with shading canopy from trees on a man-made feature nearby; as well as understory zone of an existing tree.
- 5.9 After transplantation, root ball of TA572 and TA327 tree should be kept moisture especially during non-raining day.
- 5.10 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.
- 5.11 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**

<u>Native Tree Species</u>			
Common Name	Latin Name	Chinese Name	Growing Form
Ivy Tree	<i>Schefflera heptaphylla</i>	鴨腳木	Tree
Levine's Syzygium	<i>Syzygium levinei</i>	山蒲桃	Tree
Chekiang Machilus	<i>Machilus chekiangensis</i>	浙江潤楠	Tree
Aporusa	<i>Aporusa dioica</i>	銀柴	Tree

Mountain Tallow Tree	<i>Sapium discolor</i>	山烏柏	Tree
Fragrant Litsea	<i>Litsea cubeba</i>	山蒼樹	Tree
Chinese Apea Ear-ring	<i>Archidendron lucidum</i>	亮葉猴耳環	Tree
Chinese Hackberry	<i>Celtis sinensis</i>	朴樹	Tree
Turn-in-the-wind	<i>Mallotus paniculatus</i>	白楸	Tree
Acronychia	<i>Acronychia pedunculata</i>	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. In general, 9 transplanted Lamb of Tartary (*Cibotium barometz*) were in fair to poor condition with foliage, while the other 18 remained in poor condition without regrowth of new foliage. Next few monitoring will be critical to assess survival and recovery progress of all individuals.
- 6.3 Currently, Lamb of Tartary was temporally stored in a nursery garden at Shui Mei Tsuen, Kam Tin. Shelter (遮光網) has been set up to reduce the intensity of sunlight and avoid direct hit of rainstorm/ typhoon. It is recommended to retain them at the nursery garden under proper maintenance during current recovery stage. In case their poor condition does not recover to acceptable level, a total of 27 new, healthy individuals of *Cibotium barometz* (or other possible candidate such as *Brainea insignis*) shall be sourced for compensatory planting at the STSFWSR recipient site.
- 6.4 Shelter, regular irrigation, protection zone and weeding by hand held tools within protection zone, shall also be provided to the 27 nos. *Cibotium barometz* after being transplanted to the STSFWSR recipient site in order to sustain their survival during the post-transplantation stage.
- 6.5 The 27 nos. transplanted *Cibotium barometz* shall be maintained for 12 months for their establishment at the STSFWSR recipient site, followed with a 12-month post-transplantation monitoring to assess their survival.
- 6.6 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 and Incense Tree TA326, 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.

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



## **APPENDIX I**

### Photo

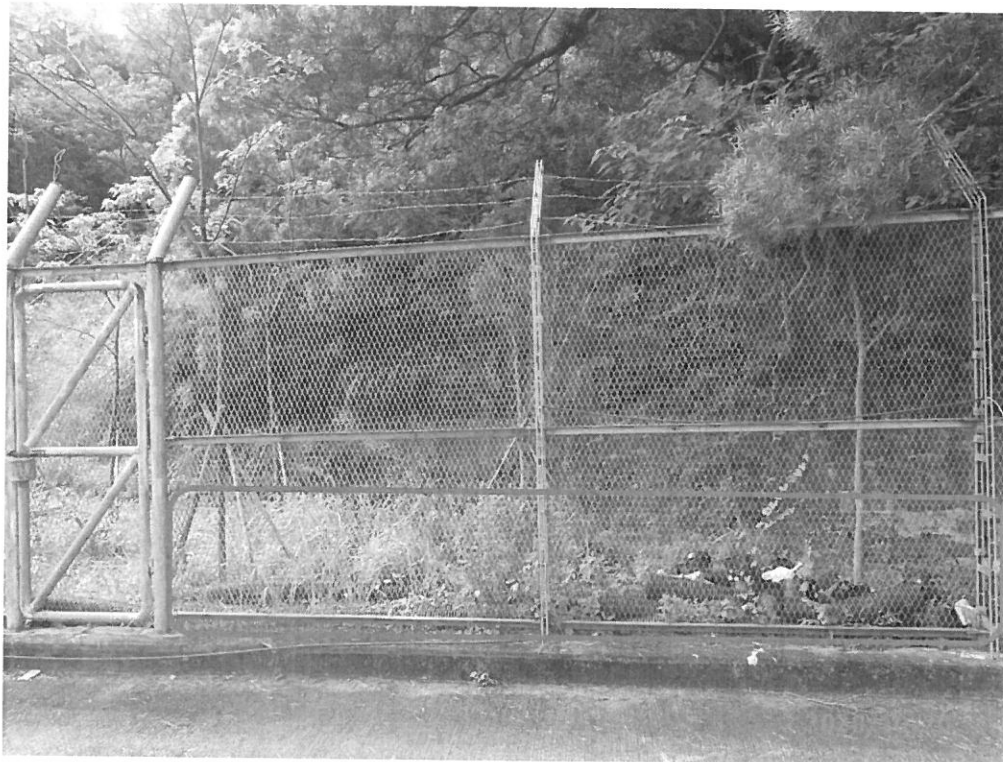


Photo 1 &2. Within recipient site at STSFWSR, two portions under shading canopy from an existing tree (above) or from trees on a man-made feature (below) are considered as a better (but still sub-optimum) area for transplantation of 27 nos. of *Cibotium barometz*.



Photo 3. Recovering *Cibotium barometz* with new fronds



Photo 4. Recovering *Cibotium barometz* with new fronds



Photo 5. *Cibotium barometz* in poor condition (occupied by weeds)



Photo 6. *Cibotium barometz* in poor condition (occupied by weeds)



Photo 7. Collapsed shelter to be rectified. The shelter helps to reduce intensity of sunlight and avoid direct hit of rainstorm/ typhoon on the plants.



Photo 8. Transplanted Incense Tree (*Aquilaria sinensis*) – TA327 (left); and Ailanthus (*Ailanthus fordii*) – TA572 (right); this site is too exposed under direct sunlight for *Cibotium barometz*.

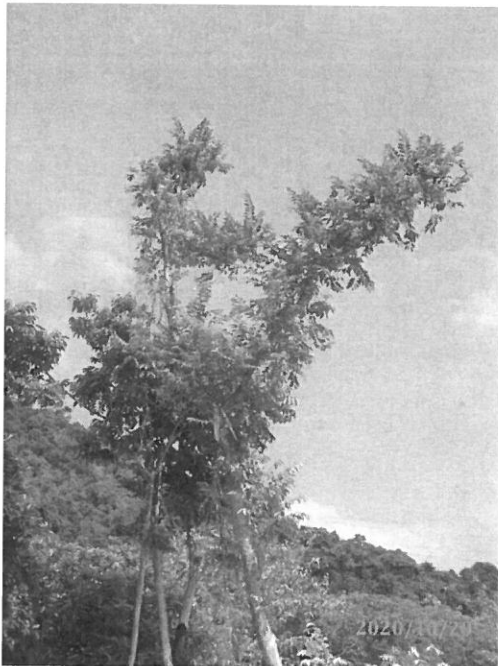


Photo 9. Weak crown with dead twigs observed in of TA327.



Photo 10. Sprouts with new leaves at trunk base of TA327.



Photo 11. Cracks and wounds observed in one of the trunks of TA572.

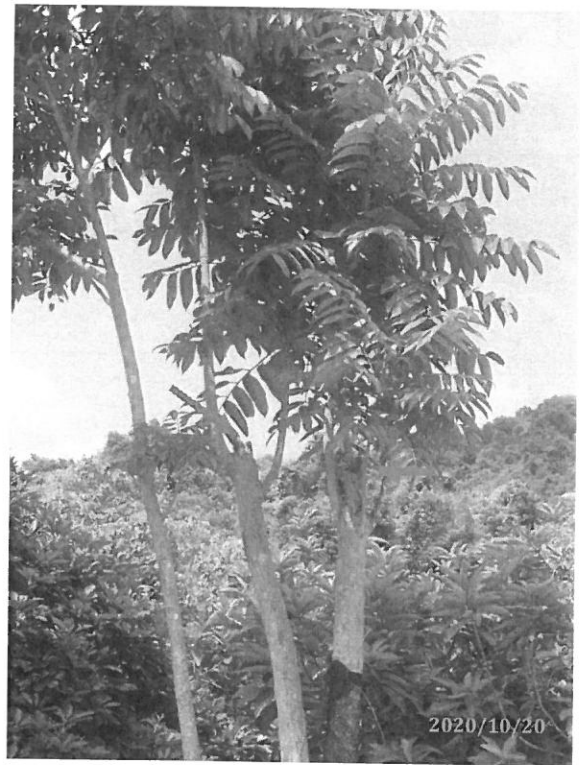


Photo 12. Weak crown and two broken trunks of TA572.

## **APPENDIX II**

Table for condition of transplanted plant

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

No.	Species	Condition	Alive/Dead	Remark
1	<i>Cibotium barometz</i>	Fair	Alive	<p>Severely damaged by Typhon Wipha on 30-31 July 2019; the next few monitoring will be critical to assess their survival and recovery progress.</p> <p>9 individuals were in fair to poor condition with foliage, the other 18 remained as poor before healthy foliage can sustain in coming monitoring.</p> <p>All individuals at this stage are not at acceptable level for transplantation back to STSFWSR.</p>
2	<i>Cibotium barometz</i>	Fair	Alive	
3	<i>Cibotium barometz</i>	Fair-poor	Alive	
4	<i>Cibotium barometz</i>	Fair-poor	Alive	
5	<i>Cibotium barometz</i>	Fair-poor	Alive	
6	<i>Cibotium barometz</i>	Fair-poor	Alive	
7	<i>Cibotium barometz</i>	Fair-poor	Alive	
8	<i>Cibotium barometz</i>	Fair-poor	Alive	
9	<i>Cibotium barometz</i>	Fair-poor	Alive	
10	<i>Cibotium barometz</i>	Poor	Alive	
11	<i>Cibotium barometz</i>	Poor	Alive	
12	<i>Cibotium barometz</i>	Poor	Alive	
13	<i>Cibotium barometz</i>	Poor	Alive	
14	<i>Cibotium barometz</i>	Poor	Alive	
15	<i>Cibotium barometz</i>	Poor	Alive	
16	<i>Cibotium barometz</i>	Poor	Alive	
17	<i>Cibotium barometz</i>	Poor	Alive	
18	<i>Cibotium barometz</i>	Poor	Alive	
19	<i>Cibotium barometz</i>	Poor	Alive	
20	<i>Cibotium barometz</i>	Poor	Alive	
21	<i>Cibotium barometz</i>	Poor	Alive	
22	<i>Cibotium barometz</i>	Poor	Alive	
23	<i>Cibotium barometz</i>	Poor	Alive	
24	<i>Cibotium barometz</i>	Poor	Alive	
25	<i>Cibotium barometz</i>	Poor	Alive	
26	<i>Cibotium barometz</i>	Poor	Alive	
27	<i>Cibotium barometz</i>	Poor	Alive	
	Collapsed shelter (such as 遮光網) to be rectified for reducing intensity of sunlight and direct hit of rainstorm/ typhoon on the plants.			
28	<i>Artabotrys hongkongensis</i>	--	Dead	--
Survival rate (%)			96%	



Trees of Ailanthus and Incense Tree

No.	Species	Condition	Alive/Dead	Remark
TA572	<i>Ailanthus fordii</i>	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	<i>Aquilaria sinensis</i>	Poor	Alive	Tree crown of TA327 was thinner after transplantation. Water sprouts, cracks on tree bark and wound at trunk base observed.
TA326	<i>Aquilaria sinensis</i>	Dead	Dead	Collapsed due to the Signal No.10 typhoon Mangkhut in September 2018.
Survival rate (%)			67%	

# 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: 2020**  
**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)*

Month	Actual Quantities of Inert C&D Materials Generated / Imported (in '000 m <sup>3</sup> )						Actual Quantities of Other C&D Materials / Wastes Generated					
	Total Quantities Generated [a+b+c+d]	Broken Concrete (including rock for recycling into aggregates)	Reused in the Contract	Reused in Other Projects	Disposed as Public Fill (d)	Imported C&D Material	Metal (in '000kg)	Paper/ Cardboard Packaging (in '000kg)	Plastic (bottles/containers, plastic sheets/ foams from package material) (in '000kg)	Chemical Waste (in '000kg)	Others (e.g. General Refuse etc.) (in '000m <sup>3</sup> )	
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	0.149	0.086	0.000	0.000	0.063	0.465	0.000	0.000	0.000	0.000	0.085	
May	0.216	0.095	0.000	0.000	0.121	0.161	0.039	0.000	5.675	0.000	0.096	
June	0.143	0.010	0.000	0.000	0.133	0.000	0.000	0.000	0.000	0.000	0.052	
Half-year total	1.632	0.661	0.000	0.000	0.972	1.991	3.379	0.000	5.675	0.000	0.508	
July	0.223	0.201	0.000	0.000	0.022	0.000	0.000	0.000	0.000	0.000	0.036	
August	0.136	0.012	0.000	0.000	0.125	0.036	21.280	0.000	0.000	0.000	0.066	
September	0.135	0.015	0.000	0.000	0.120	0.046	0.000	0.000	0.000	0.000	0.027	
October	0.000	0.000	0.000	0.000	0.000	0.000	115.290	0.000	0.000	0.000	0.018	
November												
December												
Yearly Total	2.127	0.888	0.000	0.000	1.239	2.073	139.949	0.000	5.675	0.000	0.656	

# 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	Relevant Legislation and Guidelines	Implementation Phase			Status
					D	C	O	
<b>Air Quality</b>								
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	✓			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 Dust) Regulation	✓			Y
4.7.1	Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations.	All works areas	Contractor	EM&A Manual	✓			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		✓			Y
4.7.1	Imposition of speed controls for vehicles on site haul roads.	All works areas	Contractor		✓			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
<b>Noise</b>								
5.6.4	Implement good site practices to reduce noise level	All works areas	Contractor	Noise Control Ordinance	✓			Y
5.6.5	Adoption of Quiet PME	All works areas	Contractor		✓			N/A
5.6.6	Use of Movable Noise Barrier	All works areas	Contractor		✓			N/A
5.8	Noise monitoring	Monitoring points	Contractor		✓			Y
<b>Water Quality</b>								
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	✓			Y



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			✓				Y
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			✓				N/A
6.8.13	All surface run-off must be properly collected and discharge at designated location. The discharge quality must meet the requirements specified in the discharge license.	All works areas	Contractor			✓				Y
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			✓				Y
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			✓				Y
6.8.17	Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance.	All works areas	Contractor			✓				Y
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			✓				Y
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			✓				Y
6.10	Water quality monitoring	Monitoring points	Contractor			✓				Y
Waste Management										

7.6.1	Appropriate waste handling, transportation and disposal methods for all waste arisings generated during the construction works for the Project should be implemented to ensure that construction wastes do not enter the nearby streams or drainage channel.	All works areas	Contractor	Waste Disposal Ordinance	✓	Y
7.6.2	Implementation of good site practices for waste management	All works areas	Contractor	DEVB TCW No. 6/2010,	✓	Y
7.6.3	Implementation of trip ticket system to control waste disposal	All works areas	Contractor	ETWB TCW No. 19/2005 Land	✓	Y
7.6.4	Implementation of good site practices to reduce waste generations	All works areas	Contractor		✓	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 C&D material and to facilitate the sorting process.	All works areas	Contractor	(Miscellaneous Provisions) Ordinance	✓	Y
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 Storage of Chemical Wastes	✓	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		✓	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		✓	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		✓	Y



	the Waste Disposal (Chemical Waste) (General) Regulation.								
Ecology									
8.8.1	Ecological impacts on important habitats and the associated wildlife caused by the proposed development should be mitigated and compensation approaches to the maximum practical extent	All works areas in particular important habitats	The Engineer/ Contractor	EIAO-TM EM&A Manual	√				Y
8.8.2	Reduce the amount of vegetation removal required and thereby minimize the footprint of the slope at the woodland habitat	All works areas	The Engineer/ Contractor		√				Y
8.8.3	Conduct detailed vegetation survey and implement suggested measures for species of conservation importance.		The Engineer/ Contractor		√				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		√				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 ( <i>Livistona chinensis</i> ) 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		√				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		√				N/A

Landscape and Visual		Contractor	DEVB TCW No.			
9.8.1	Existing trees 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	10/2013	✓		Y
	Compensatory Planting shall be provided in accordance with DEVB TCW No. 10/2013 – Tree Preservation.	All works areas	EIAO TM	✓		Y
	Control of night-time lighting glare.	All works areas		✓		Y
	Erection of decorative screen hoarding compatible with the surrounding setting.	All works areas		✓		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		✓		Y
Cultural Heritage						
10.6.2	Vibration monitoring at Ex KCR Beacon Hill Tunnel during piling works of Administration Building	Work site		✓		N/A
Land Contamination						
11.7	Identify contamination and implement appropriate remedial measures on site. Provide relevant submission and obtain approval from EPD if necessary.	All works areas			✓	N/A
Guidance Note for Contaminated Land Assessment and Remediation						
Guidance Manual for Use of Risk based Remediation Goals for Contaminated Land Management (Guidance Manual)						
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	EIAO-TM	✓		Y
	Develop an audit procedure to ensure enforcement of speed limits and to ensure adequate site access control	All works areas		✓		Y
	Ensure construction method statement is endorsed by the Engineer (AECOM)	All works areas		✓		Y

Ensure designated manoeuvring area for the new access road construction is away from the Chlorination House	New access road area	Contractor/ The Engineer		✓		Y
Ensure that the emergency response plan and procedures (including drills) cover the reprovisioning activities	All works areas	Contractor/ The Engineer		✓		Y
Safety training to be provided to construction workers and WSD/Engineer staff regarding evacuation procedures	All works area	Contractor/ The Engineer		✓		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		✓		N/A
Ensure temporary suspension of crane operation and construction truck movements during chlorine delivery	All works areas	Contractor/ The Engineer		✓		Y
Provide a crash barrier between the construction site and the north side of the Chlorination House.	Chlorination House area	Contractor		✓		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		✓		Y
Provide settlement monitoring for the Chlorination House to ensure no subsidence occurs from nearby excavation works.	Chlorination House area	Contractor		✓		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		✓		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		✓		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		✓		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		✓		N/A



12.15.4, 12.18.1, 12.22.9	<p>GPS fleet management system with driver training to help enforce truck speeds</p> <p>Improved clamps with independent checks to prevent load shedding</p> <p>Installation of fire screen and larger fire extinguishers to prevent engine and wheel fires from spreading to the cargo area</p> <p>Adoption of the chlorine delivery route from Sham Shui Kok Dock to Sha Tin WTW</p> <p>Provision of emergency repair kit</p> <p>Ban the use of retreaded tyres and perform regular visual checks on the tyres.</p> <p>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.</p> <p>Limit fuel tanks capacity at the beginning of the Project (Item 2.3 of Table 12.37 – advance measure).</p> <p>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)</p> <p>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).</p> <p>Implement side, front and rear crash guards with high energy absorption in coordination and accordance with the relevant authorities.</p> <p>Implement a sturdy steel frame to minimize the potential for chlorine release due to truck rollover</p>	Chlorine delivery trucks, fleet management centre Chlorine delivery trucks	WSD / Chlorine Supply Contractor	EIAO-TM	<p>√</p> <p>√</p> <p>√</p> <p>√</p> <p>√</p> <p>√</p> <p>√</p> <p>√</p> <p>√</p> <p>√</p> <p>√</p> <p>√</p> <p>√</p> <p>√</p> <p>√</p> <p>√</p> <p>√</p> <p>√</p>	<p>k.i.v.</p> <p>F</p> <p>F</p> <p>F</p> <p>F</p> <p>F</p> <p>F</p> <p>F</p> <p>F</p> <p>k.i.v.</p> <p>k.i.v.</p> <p>k.i.v.</p> <p>k.i.v.</p> <p>k.i.v.</p> <p>k.i.v.</p>
12.34.3 Table 12.37 & 12.38	<p>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</p>	Chlorine delivery Route	WSD		√	k.i.v.
12.34.4					√	k.i.v.

<p>Training should be provided for the use of the GPS fleet management and improved safe driving.</p> <p>Ensured that independent checks are performed to ensure proper chlorine drum latching and clamping.</p> <p>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.</p> <p>Training should be provided to driver and driver attendant for the emergency use of the new 2 x 9L AFFF extinguishers.</p> <p>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</p> <p>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</p> <p>To keep under review alternate chlorine receiving dock in Sha Tin/Tai Po area for chlorine delivery to STWTW.</p>				<p>√</p> <p>√</p> <p>√</p> <p>√</p> <p>√</p> <p>√</p> <p>√</p>	<p>k.i.v.</p> <p>F</p> <p>k.i.v.</p> <p>F</p> <p>k.i.v.</p> <p>F</p> <p>k.i.v.</p>
<p><u>Legend</u></p> <p>D – Design Phase</p> <p>C – Construction Phase</p> <p>O – Operation Phase</p> <p>Y - Compliance of Mitigation Measures</p> <p>N/A – Not Applicable in Reporting Period</p> <p>k.i.v – Keep In View</p> <p>F - Completed</p>					

# Appendix V

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

### Statistical Summary of Exceedances

Air Quality									
Location	Action Level			Limit Level				Total	
AM1	0			0				0	
AM2	0			0				0	
Noise									
Location	Action Level			Limit Level				Total	
NM1	0			0				0	
NM2	0			0				0	
NM3	0			0				0	
Water Quality									
Location	Action Level				Limit Level				Total
	DO	Turbidity	SS	pH	DO	Turbidity	SS	pH	
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 Environmental Complaints

Reporting Period	Environmental Complaint Statistics		
	Frequency	Complaint Nature	Cumulative
1 October - 31 October 2020	0	N/A	4

### Statistical Summary of Environmental Summons

Reporting Period	Environmental Summons Statistics		
	Frequency	Details	Cumulative
1 October - 31 October 2020	0	N/A	0

### Statistical Summary of Environmental Prosecution

Reporting Period	Environmental Prosecution Statistics		
	Frequency	Details	Cumulative
1 October - 31 October 2020	0	N/A	0



# Appendix W

## Tentative schedule for environmental monitoring

Oct-20

Sun	Mon	Tue	Wed	Thur	Fri	Sat
				1	2	3
4	5	6	7	8	9	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 & NM3	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	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2 & NM3
11	12	13	14	15	16	17
	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	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	
18	19	20	21	22	23	24
	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		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3	
25	26	27	28	29	30	31
		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

Jan 21

Sun	Mon	Tue	Wed	Thur	Fri	Sat
					1	2
3	4	5	6	7	8	9
	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	
10	11	12	13	14	15	16
	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
	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	
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						

Nov-20

Sun	Mon	Tue	Wed	Thur	Fri	Sat
1	2	3	4	5	6	7
	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 & NM3	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2 & NM3	
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 & NM3	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3	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 & NM3		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 & NM3	
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 & NM3	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3	
29	30					
	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2 & NM3					

Dec-20

Sun	Mon	Tue	Wed	Thur	Fri	Sat
		1	2	3	4	5
			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 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2 & NM3	
6	7	8	9	10	11	12
	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		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3	
13	14	15	16	17	18	19
	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 & NM3	
20	21	22	23	24	25	26
	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			
27	28	29	30	31		
	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			