浩科環境工業有限公司
Acumen Environmental Engineering & Technologies Co., Ltd.
香港青衣(北)担杆山路12號地段
Lot 12, Tam Kon Shan Road, Tsing Yi (N), Hong Kong
(852) 2333-6823 www.acumenhk.com
(852) 2333-1316

Our Ref.: CJO-3113

14 March 2022

The EIA Ordinance Register Office,
Environmental Protection Department,
27th floor, Southorn Centre,
130 Hennessy Road,
Wanchai, Hong Kong

CONTRACT NO. 1/WSD/19

IN-SITU REPROVISIONING OF SHA TIN WATER TREATMENT WORKS (SOUTH WORKS) – WATER TREATMENT WORKS AND ANCILLARY FACILITIES
Environmental Permit EP-494/2015

We are enclosing the following information for your kind considerations of our application:

(a) Three hard copies,
(b) Two copies of the 72nd monthly Environmental Monitoring and Audit (EM&A) Report (Rev.0). (Register No.: AEIAR-187/2015)

Please feel free to contact us should you need further information.

Yours sincerely,
Acumen Environmental Engineering and Technologies Co. Ltd.

Mr. Vega Wong
2333 6823

c.c. Water Supplies Department
c.c. AECOM

浩科環境工業有限公司
Acumen Environmental Engineering & Technologies Co., Ltd.
香港青衣(北)担杆山路11號地段
Lot 11, Tam Kon Shan Road, Tsing Yi (N), Hong Kong
(852) 2333-6823 www.acumen-env.com
(852) 2333-1316

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)

14 March, 2022

Dear Sir,

In-Situ Reprovisioning of Sha Tin Water Treatment Works (South Works) – Water Treatment Works and Ancillary Facilities
Environmental Permit EP-494/2015
Submission of 72nd monthly EM&A Report

In accordance with the Condition 3.4 of the Environmental Permit (No. EP-494/2015), we submit herewith 3 hard copies and 2 electronic copies of the 72nd 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,

Mr. Wong, Vega, T. L.
Environmental Team Leader

c.c. Independent Environmental Checker

AECOM
12/F, Grand Central Plaza, Tower 2,
138 Shatin Rural Committee Road,
Shatin, Hong Kong
香港新界沙田鄉事會路 138 號
新城市中央廣場第 2 座 12 樓
www.aecom.com

+852 3922 9000 tel
+852 3922 9797 fax

Your Ref:
Our Ref: 60479142/C/fyw2203141

By Hand & By Email

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

Attn: Mr. Edmund Huen

14 March 2022

Dear Sir,

Contract No.1/WSD/19
In-situ reprovisioning of Sha Tin Water Treatment Works (South Works) – Water Treatment Works and Ancillary Facilities
Submission of 72nd Monthly EM&A Report for February 2022

Reference is made to Environmental Team (ET)'s 72nd Monthly EM&A Report for February 2022 (Rev. 0) submitted on 14 March 2022.

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

MONTHLY ENVIRONMENTAL MONITORING AND AUDIT

(EM&A) REPORT (NO. 72)

FOR

CONTRACT NO. 1/WSD/19
IN-SITU REPROVISIONING OF SHA TIN WATER TREATMENT WORKS (SOUTH WORKS) – Water Treatment Works and Ancillary Facilities

(Rev. 0)

MONTHLY ENVIRONMENTAL MONITORING AND AUDIT (EM&A) REPORT (NO. 72)

FOR

CONTRACT NO. 1/WSD/19
IN-SITU REPROVISIONING OF SHA TIN WATER TREATMENT WORKS (SOUTH WORKS) – WATER TREATMENT WORKS AND ANCILLARY FACILITIES

	Name	Signature
Prepared and Reviewed by	Ms. Choy, Yiting, Y. T.	
Approved & Certified by	Mr. Wong, Vega, T. L. Environmental Team Leader (ETL)	
Verified & Confirmed by	Mr. Fung, Y. W. Independent Environmental Checker (IEC)	

TABLE OF CONTENTS

LIST OF APPENDICES

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. 1/WSD/19, ATAL - CW - MH JV (ACMJV) 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 ACMJV 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 Contract No. 3/WSD/15 commenced on 30 October 2015 for completion by 31 December 2020. The construction phase of Contract No. 1/WSD/19 commenced on 01 January 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 72th monthly Environmental Monitoring and Audit Report for Contract No. 1/WSD/19 covering the period from 1 to 28 February 2022 (the Reporting Period). As informed by the Contractor, major activities in the reporting period included:

- Washwater Equalization Tank (WET)- Excavation Works
- Demolition of Chemical Building, Filter Bed Corridor demolition on 1a and 1b and Backfilling, Aluminum Tank
- DN1200 drainage work in Administration Building - drainage pile laying (60/60)
- Tree felling, transplantation and landscape works
- MIC office Construction
- Remove Asbestos
- Pipe pile work at Stage 1 Filter, RMF, Stage 2 Filter, FST & Ozone.
- Existing South Pump Hall Demolition.
- Holes coring for existing filter bed raft slab for pipe pile construction at SWPS and Stage II Filter.
- Relocation of Existing Emergency Power Generator for Chlorination House
- Temporary Washwater Equalization Tank (WET) – Excavation and pipe works

A.5 Environmental monitoring activities under the EM&A program in this reporting period are summarized below

Issues	Environmental Monitoring Parameters / Inspection	Occasions
Air	1-Hour TSP	12
Noise	$L_{eq(30mins)}$ Daytime	4
Water Quality	Water Sampling	10
Inspection / Audit	ET Regular Environmental Site Inspection	4
	IEC Monthly Environmental Site Audit	1

A.6 No exceedance of air quality and noise monitoring were recorded in this reporting period. 4 exceedances in action level and 1 exceedance in limit level of suspended solid for water quality monitoring were recorded in this reporting period, which were found non-project related.

A.7 No environmental complaint was 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 Contract No. 1/WSD/19 between March 2022 to May 2022 will be:

- M1-M5 Water Main Diversion (Valve chamber No. 1 testing)
- Washwater Equalization Tank (WET)- Excavation Works, blinding & R.C. footing
- Demolition of Chemical Building, Filter Bed Gallery and Existing Pipelines inside the Filter Gallery, Aluminum Tank
- DN1200 drainage work in Administration Building – concrete surround for MH39 precast concrete pipeline
- Tree felling, transplantation, and landscape works
- Remove Asbestos
- Pipe pile work at Stage 1 Filter, Stage 2 Filter, RMF, SWPS, FST & Ozone.
- Excavation Work at SWPS and Stage 1 Filter.
- Holes coring for existing filter bed raft slab for pipe pile construction at SWPS and Stage II Filter.
- Backing/Erection Scaffolding Platform to +25m PD for pipe piles and king posts construction at SWPS and Stage II Filter.
- Excavation Works at Stage 2 Filter
- Relocation of Existing Emergency Power Generator for Chlorination House and Demolition of Existing Emergency Power Generator Steel Structure.
- Temporary Washwater Equalization Tank (WET) – Excavation and pipe works
- Temporary Washwater Equalization Tank (WET) – E&M Installation

A.12 EM&A monitoring for the 72nd reporting period for Contract No. 1/WSD/19 has been completed. The 73rd monthly EM&A report will cover the period from 1 to 31 March 2022.

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. 1/WSD/19, ATAL – CW – MH JV (ACMJV) 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 ACMJV 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 Contract No. 3/WSD/15 commenced on 30 October 2015 for completion by 31 December 2020. The construction phase of Contract No. 1/WSD/19 commenced on 01 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	Senior Engineer	Mr. Ng, Horace, C. K.	2829 5693
AECOM	Chief Resident Engineer	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
ATAL-CW-MH Joint Venture	Project Manager	Mr. Tam, Wilson, Y. C.	9031 5600
	Site Agent	Ms. Cheung, S. Y.	6323 4716
Acumen Env. Eng. & Tech. Co. Ltd.	Project Director	Ir Dr. Lam, Gabriel, C. K.	2333 6823
	Environmental Team Leader	Mr. Wong, Vega, T. L.	6113 2368
	Ecologist	Mr. Wan, Jay, P. H.	2333 6823

1.3. SCOPE OF REPORT

1.3.1 This is the 72nd monthly EM&A Report under the Contract No. 1/WSD/19 In-situ Reprovisioning of Sha Tin Water Treatment Works (South Works) – Water Treatment Works and Ancillary Facilities covering the period from 1 to 28 February 2022 (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 are shown in **Appendix C**.

1.4.2 As informed by the Contractor, no major works for Contract No.3/WSD/15 will be conducted. The major works for Contract No. 1/WSD/19 in February 2022 are:

- Washwater Equalization Tank (WET)- Excavation Works
- Demolition of Chemical Building, Filter Bed Corridor demolition on 1a and 1b and Backfilling, Aluminum Tank
- DN1200 drainage work in Administration Building - drainage pile laying (60/60)
- Tree felling, transplantation and landscape works
- MIC office Construction
- Remove Asbestos
- Pipe pile work at Stage 1 Filter, RMF, Stage 2 Filter, FST & Ozone.
- Existing South Pump Hall Demolition.
- Holes coring for existing filter bed raft slab for pipe pile construction at SWPS and Stage II Filter.
- Relocation of Existing Emergency Power Generator for Chlorination House
- Temporary Washwater Equalization Tank (WET) – Excavation and pipe works

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 ● Dissolved Oxygen (mg/L); ● Dissolved Oxygen Saturation (%); ● Turbidity (NTU); ● pH value; ● Water depth (m); and ● Temperature (ºC)
	Laboratory analysis ● Suspended Solids (mg/L)

2.1.3 Summary of determination of Action/Limit (A/L) Levels for air quality, noise and water quality are presented in **Appendix F**.

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

2.1.5 The impact monitoring schedules are presented in **Appendix H** and the monitoring results are detailed in the following sub-sections.

2.2. AIR QUALITY MONITORING

2.2.1 Impact monitoring for air quality had been carried out in accordance with Sections 2.29 of the approved EM&A Manual to determine the ambient 1-hour total suspended particulates (TSP) levels at the monitoring locations. 1-hour TSP sampling should be undertaken at least 3 times in every six-days at each monitoring station when the highest dust impacts are expected. General meteorological conditions (wind speed, direction and precipitation) and notes regarding any significant adjacent dust producing sources had also been recorded throughout the impact monitoring period.

2.2.2 Two (2) designated monitoring stations, AM1 located at the L Louey and AM2 located at Hin Keng Estate - Hin Wan House, were recommended in Section 2.18 of the approved EM&A Manual. In order to identify and seek for the access of the air monitoring locations designated in the EM&A Manual, site visit was conducted among ET, IEC and EPD.

2.2.3 During the site visit, all designated air monitoring locations were identified. Details of air monitoring stations are described in Table 2-3. The location plan of air quality monitoring stations is shown in **Appendix I**.

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	TSI Model AM 510
	TSI Model AM 520
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^{o} 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 four (4) 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 (μg/m³)**				
		Start Time	**End Time**	**1st Measurement**	**2nd Measurement**	**3rd Measurement**
5/2/2022	Sunny	13:25	16:25	32	33	38
11/2/2022	Fine	09:12	12:12	21	15	25
17/2/2022	Fine	13:48	16:48	68	70	74
23/2/2022	Fine	09:18	12:18	11	13	14
Average				34.5		
Range				11 – 74		

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

Date	**Weather**	**1-hour TSP (μg/m³)**				
		Start Time	**End Time**	**1st Measurement**	**2nd Measurement**	**3rd Measurement**
5/2/2022	Sunny	13:28	16:28	30	34	48
11/2/2022	Fine	09:17	12:17	20	33	22
17/2/2022	Fine	13:52	16:52	66	77	69
23/2/2022	Fine	09:22	12:22	39	36	35
Average				42.4		
Range				20 – 77		

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	Lutron SL-4033SD
Acoustic Calibrator	Svantek SV 33B
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 ms^{-1} or wind with gusts exceeding 10 ms^{-1}. The wind speed was checked with a portable wind speed meter capable of measuring with speeds in ms^{-1}.

2.3.8 In this Reporting Period, a total four (4) 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**	**1st Leq_{5min}**	**2nd Leq_{5min}**	**3rd Leq_{5min}**	**4th Leq_{5min}**	**5th Leq_{5min}**	**6th Leq_{5min}**	**Leq_{30min}**
5/2/2022	13:25 - 13:55	Sunny	51.1	48.8	47.4	49.8	48.2	49.1	49.2
11/2/2022	09:12 - 09:42	Fine	53.4	52.1	50.2	49.9	51.7	50.8	51.5
17/2/2022	13:48 - 14:18	Fine	55.6	52.0	53.8	54.9	54.2	52.8	54.0
23/2/2022	09:18 - 09:48	Fine	54.8	53.8	51.5	52.4	51.7	54.6	53.3
Limit Level >75dB(A)								**Average**	52.4
								Range	49.2 – 54.0

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

Date	**Time**	**Weather**	**1st Leq_{5min}**	**2nd Leq_{5min}**	**3rd Leq_{5min}**	**4th Leq_{5min}**	**5th Leq_{5min}**	**6th Leq_{5min}**	**Leq_{30min}**
5/2/2022	14:00 - 14:30	Sunny	45.4	46.0	48.8	47.2	47.6	44.6	46.8
11/2/2022	09:46 - 10:16	Fine	51.6	50.6	51.2	49.6	46.9	48.2	50.0
17/2/2022	14:22 - 14:52	Fine	48.6	53.1	47.0	46.5	49.2	46.7	49.2
23/2/2022	11:19 - 11:49	Fine	48.7	49.6	45.4	48.1	47.5	48.9	48.2
Limit Level >75dB(A)								**Average**	48.7
								Range	46.8 – 50.0

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

Date	Time	Weather	1st Leq_{5min}	2nd Leq_{5min}	3rd Leq_{5min}	4th Leq_{5min}	5th Leq_{5min}	6th Leq_{5min}	Leq_{30min}
5/2/2022	14:34 - 15:04	Sunny	47.6	46.3	48.5	49.2	48.7	49.0	48.3
11/2/2022	11:50 - 12:20	Fine	46.7	49.6	47.3	48.4	49.1	47.7	48.3
17/2/2022	14:55 - 15:25	Fine	49.5	48.9	47.6	48.7	49.2	47.4	48.6
23/2/2022	11:53 - 12:23	Fine	48.6	46.2	49.4	45.7	47.3	44.2	47.2
Limit Level 70dB(A) during normal teaching periods ~~or 65dB(A) during examination periods~~			**Average**						48.1
			Range						47.2 – 48.6

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

Water quality	
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.
Turbidmeter	The instrument is a portable and weatherproof turbidity measuring instrument using a DC power source. It has a photoelectric sensor capable of measuring turbidity between 0 - 1000 NTU.
Laboratory Analysis	
Suspended Solids	HOKLAS-accredited laboratory (Acumen Laboratory and Testing Limited)

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 ten (10) sampling days perform water monitoring at the six designated locations. Monitoring results of 4 key parameters: dissolved oxygen (DO), turbidity, suspended solids and pH in this Reporting Months, are summarized in Table 2-14.

Table 2-14: Summary of Water Quality Monitoring Results

Dissolved Oxygen – Mid Depth (mg/L)	**C1**	**C2**	**C3**	**M1**	**M2**	**M3**
Average	8.78	8.74	N/A	9.23	9.24	9.60
Min.	7.55	8.13	N/A	8.91	8.93	9.17
Max.	10.03	9.77	N/A	9.91	9.63	11.57
Turbidity – Mid Depth (NTU)	**C1**	**C2**	**C3**	**M1**	**M2**	**M3**
Average	1.25	1.30	N/A	1.40	1.26	0.83
Min.	0.02	0.13	N/A	0.23	0.00	0.06
Max.	2.27	2.63	N/A	2.64	2.44	1.09
Suspended Solid – Mid depth (mg/L)	**C1**	**C2**	**C3**	**M1**	**M2**	**M3**
Average	3.77	2.67	N/A	2.15	1.96	<1
Min.	1.00	1.30	N/A	1.20	1.10	<1
Max.	**7.40**	**6.00**	N/A	**3.50**	3.00	<1
pH value (unit)	**C1**	**C2**	**C3**	**M1**	**M2**	**M3**
Average	7.48	7.54	N/A	7.72	7.87	7.97
Min.	7.16	7.24	N/A	7.21	7.44	7.71
Max	7.78	7.96	N/A	8.10	8.31	8.30

Remark 1: Exceedance of action level of suspended solids on 9 February 2022 at C1, C2 and M1.
Remark 2: Exceedance of action level of suspended solids on 25 February 2022 at C1.
Remark 3: Exceedance of limit level of suspended solids on 16 February 2022 at C1.

2.4.10 In this Reporting Month, most of the monitoring results were below or within the action level. Exceedances in action level of suspended solid for water quality monitoring were recorded in this reporting period on 9 and 25 February 2022. There were 4 exceedances of Action Level at C1, C2 and M1 respectively, and 1 exceedance of limit level of suspended solid for water quality monitoring was recorded in this reporting period on 16 February 2022 at C1, which were found non-project related. Detailed monitoring results including in-situ measurements, laboratory analysis data are shown in Appendix R.

2.4.11 Investigation reports for the exceedance of Suspended Solid in February 2022 are supplemented in Appendix V.

2.5. ECOLOGY

2.5.1 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.

2.5.2 Compensatory planting of TA326 has been completed on 25 March 2020 by planting two Syzygium levinei and one Schefflera heptaphylla. However, the two native Syzygium levinei were mis-planted by two exotic Syzygium jambos, which has been replaced by another native tree species Celtis sinensis on 31 May 2021.

2.5.3 Desmos chinensis has been finalized as the candidate to compensate the loss of Artabotrys hongkongensis. Two individuals were planted at Wall C in STWTW on 1 April 2021.

2.5.4 All Lamb of Tartary (Cibotium barometz) previously stored at the nursery have been severely damaged by Typhon Wipha on 30-31 July 2019. During the monitoring in December 2020, all are dehydrated without foliage in poor condition; however, 27 nos. new individuals are propagated from previously collected spores since then.

2.5.5 They are at acceptable condition to be transplanted back at Portion E of STSFWSR on 23 April 2021.

2.5.6 In order to enhance a sustainable survival during the post-transplantation stage, a shelter (such as 遮光網) has been installed to reduce intensity of direct sunlight received and avoid direct hit of rainstorm/ typhoon to the 27 nos. Cibotium barometz.

2.5.7 Regular irrigation, set up of protection zone and weeding by hand held tools within protection zone, shall also be provided to the transplanted/ compensated plants in order to sustain their survival during the post-transplantation (establishment) stage.

2.5.8 Root ball of TA572 and TA327 tree should be kept moisture especially during dry and 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

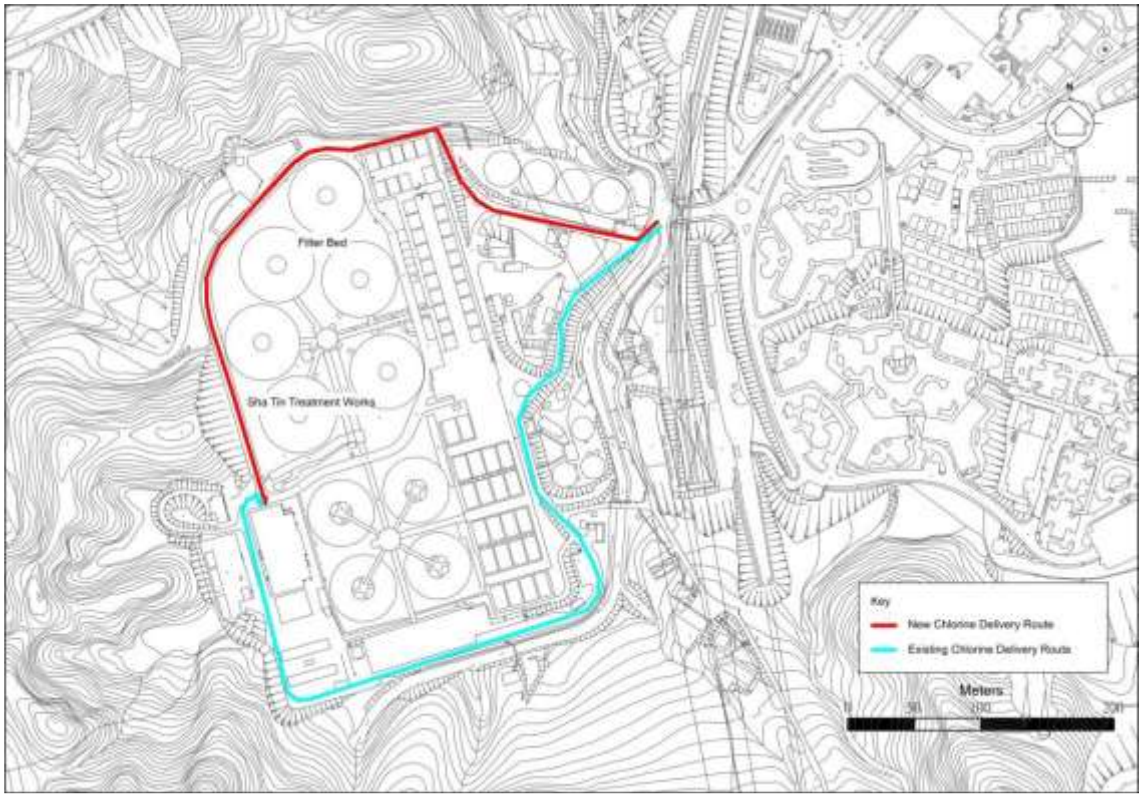
Table 2-15: Chlorine Truck Transport Route

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 8, 16, 23 and 28 February 2022.

2.8.2 One joint site inspection with IEC also undertaken on 28 February 2022. 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

Date	Environmental Observations	Follow-up Status
8 February 2022	No environmental issue was observed during the site inspection.	N/A
16 February 2022	No environmental issue was observed during the site inspection.	N/A
23 February 2022	Accumulated waste are observed near WET. Contractor is reminded to remove them.	Accumulated waste are bring removed by the contractor.
28 February 2022	No environmental issue was observed during the site inspection.	N/A

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

2.9. ENVIRONMENTAL LICENSES AND PERMITS

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

Table 2-17: Summary of Environmental License and Permit

License / Permit	License / Permit No.	Date of Issue	Date of Expiry	License / Permit Holder	Remark
Environmental Permit	EP- 494/2015	28/01/2015	N/A	WSD	
Notification of Construction Works under the Air Pollution Control (Construction Dust) Regulation (Form NA)	Reference No: 458807	10/8/2020	N/A	ACMJV	
Registration of Chemical Waste Producer	WPN5296-759-A3012-01	28/09/2020	N/A	ACMJV	
Trip Ticket (Chit) Account	7038091	26/8/2020	N/A	ACMJV	
Waste Water Discharge Licence	WT00037213-2020	19/1/2021	31/1/2026	ACMJV	
Construction Noise Permit	GW-RN0584-21	13/8/2021	18/2/2022	ACMJV	valid until 18/2/2022
Special Wastes Permit	16676	16/12/2021	29/6/2022	ACMJV	

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

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

2.11. SUMMARY OF EXCEEDANCES OF THE ENVIRONMENTAL QUALITY PERFORMANCE LIMIT

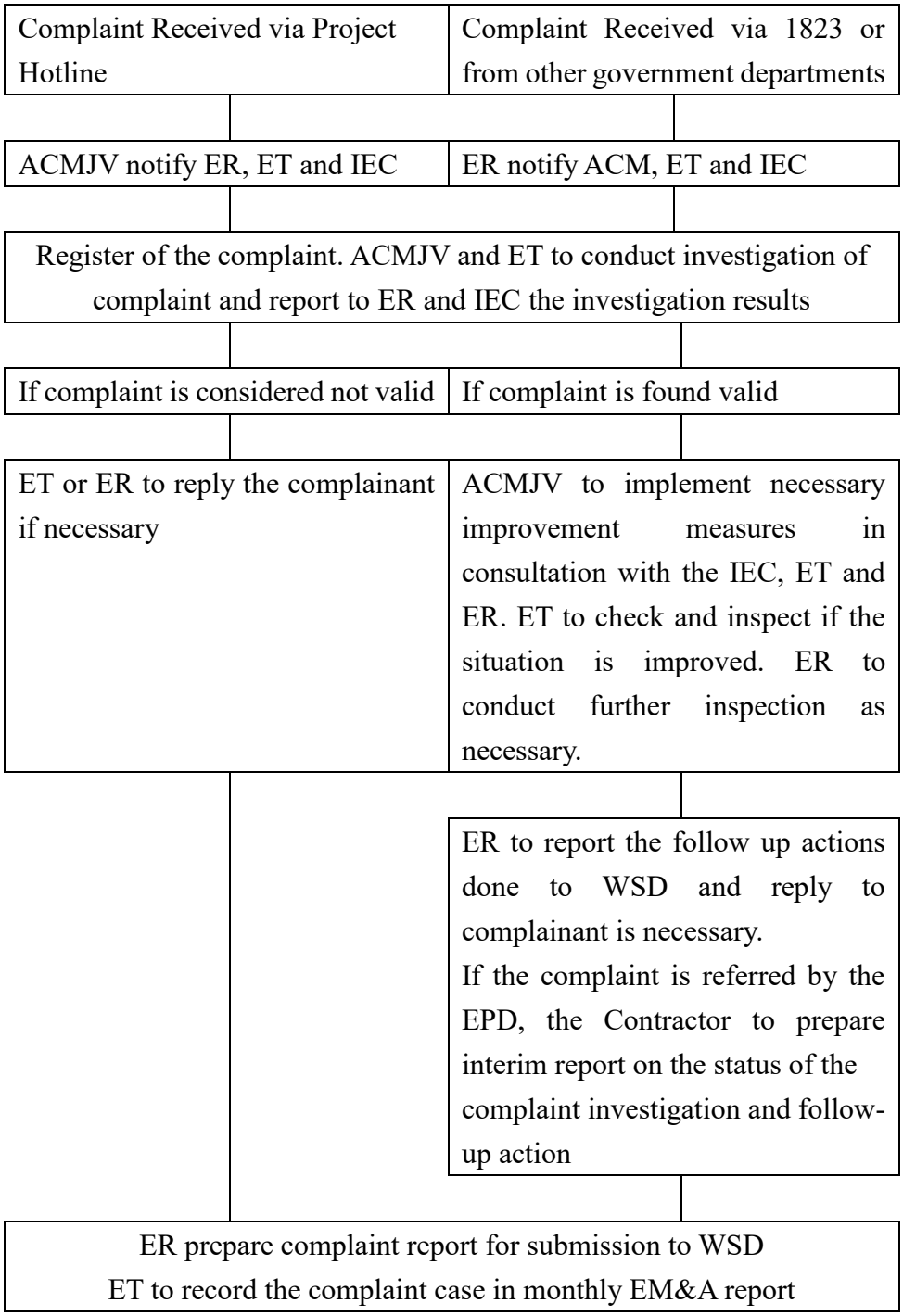
2.11.1 Results for 1-hour TSP and noise monitoring complied with the Action/ Limit levels in the reporting period. Results for water quality monitoring mostly complied with the Action/ Limit levels in the reporting period.

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



2.12.2 No environmental complaint was 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 Contract No. 1/WSD/19 between March 2022 to May 2022 will be:

- M1-M5 Water Main Diversion (Valve chamber No. 1 testing)
- Washwater Equalization Tank (WET)- Excavation Works, blinding & R.C. footing
- Demolition of Chemical Building, Filter Bed Gallery and Existing Pipelines inside the Filter Gallery, Aluminum Tank
- DN1200 drainage work in Administration Building – concrete surround for MH39 precast concrete pipeline
- Tree felling, transplantation, and landscape works
- Remove Asbestos
- Pipe pile work at Stage 1 Filter, Stage 2 Filter, RMF, SWPS, FST & Ozone.
- Excavation Work at SWPS and Stage 1 Filter.
- Holes coring for existing filter bed raft slab for pipe pile construction at SWPS and Stage II Filter.
- Backing/Erection Scaffolding Platform to +25m PD for pipe piles and king posts construction at SWPS and Stage II Filter.
- Excavation Works at Stage 2 Filter
- Relocation of Existing Emergency Power Generator for Chlorination House and Demolition of Existing Emergency Power Generator Steel Structure.
- Temporary Washwater Equalization Tank (WET) – Excavation and pipe works
- Temporary Washwater Equalization Tank (WET) – E&M Installation

3.2. KEY ISSUES FOR COMING MONTH

3.2.1 Potential environmental impacts arising from the above upcoming construction activities in March 2022 are mainly associated with dust, noise, water quality issues and waste management issues.

3.2.2 The tentative monitoring schedule for March 2022 to May 2022 can be found in **Appendix W**.

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. Most of the monitoring results are satisfactory, 4 exceedances of action level and 1 exceedance of limit level of suspended solids for water monitoring results in the reporting month were found and NOEs and Investigation Reports were therefore issued.

4.1.2 Four (4 nos.) environmental site inspections were conducted during the reporting period. Joint site inspection with IEC were carried out on 28 February 2022. 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.

835100 E

835400 E

835700 E

824800 N

824500 N

PROVISION OF NEW ACCESS ROAD

KENG HAU ROAD

CHE KUNG MIU ROAD

HIN KENG ESTATE

CUT-BACK OF EXISTING ENGINEERED SLOPE AND CONSTRUCT WATER TREATMENT WORKS LOGISTICS CENTRE

EXISTING NORTH WORKS UNDER NORMAL OPERATION

UPGRADING OF INLET CHANNEL OF NORTH WORKS

CONSTRUCTION OF ADMINISTRATION BUILDING CUM MAINLAND EAST LABORATORY WITH VISITOR FACILITIES

PROVISION OF NEW ACCESS ROAD

PROVISION OF NEW ACCESS ROAD

DEMOLITION AND REPROVISIONING OF SOUTH WORKS

EXISTING CHLORINATION HOUSE TO BE MAINTAINED

SITE OFFICE

TEI LUNG HAU

LEGEND:

SITE BOUNDARY OF SHA TIN WATER TREATMENT WORKS

WORKS AREA

N

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

水 務 署
WATER SUPPLIES DEPARTMENT

AGREEMENT NO. CE 13/2009 (WS)
IN-SITU REPROVISIONING OF SHA TIN WATER TREATMENT WORKS-SOUTH WORKS
DESIGN AND CONSTRUCTION

LOCATION PLAN AND THE MAJOR SCOPE OF WORKS

AECOM

DRG.NO. 圖紙編號 60162073/EM&A/FIG 1

DESIGNED BY 設計	–	CONTRACT NO. 合約編號	P. Dy. APPROVED 批准人
DRAWN BY 繪圖	GXH	STATUS 階段	
SCALE 比例	A3 1 : 3000		
DIMENSIONS ARE IN 尺寸單位	METRES	© COPYRIGHT RESERVED 版 權 所 有	

P:\Projects\60162073\Drawing\REPORT\EM&A\804.dwg 2013-02-27 15:42 FENGYL

Appendix A
General Layout Plan

Appendix B
Project Organization

E **Contract No. 1/WSD/19**

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

- **Water Treatment Works and Ancillary Facilities**

Environmental Organizational Chart

Date: 31 Dec 2021

Project Manager
WSD

Project Manager's
Delegate Representative

Construction Manager
TBC

Site Agent
Ms. S Y Cheung
Mobile: 6323 4716

Deputy Site Agent
Mr. Yau Ming Hong
Mobile: 6973 0138

Environmental Manager
Mr. Clarence Yeung
Mobile: 6140 1886

Environmental Team Leader
Mr. Vega Wong
Mobile: 6113 2368

Works Manager (E&M)
Mr. Alfred Wong
Mobile:6277 6095

Works Manager
(Civil & Structural)
Mr. Calvin Hui
Mobile: 9318 6693

Environmental Officer
Mr. Yip Yun Lam
Mobile: 9532 7174

Environmental Consultant
Ms. YiTing Choy
Mobile: 9143 5086

Project Manager
Mr. Christopher Ho
Mobile: 9322 4514

Sub-Agent
Mr. Roger Chang Mr. Rock Chu Mr. Gordon Li
Mobile: 9015 9059 6480 8665 6016 6130

Assistant Environmental
Officer
Ms. Mani Wong
Mobile: 5661 6795

Qualified Ecologist
Mr. Pak-Ho Wan, Jay
Mobile: 2333 6823

Engineer (ELL)
Mr. Henry Tsang Mr. Louie Yeung
9418 5514 6771 1577

Engineer (MCL)

Mr. Billy Tong Mr. Eric Siu
6359 0494 9121 5622

Mr. Herman Tang
6277 6515

Superintendent
Mr. Wong Yat Hong Mr. Lam Wai Hon
9640 8057 9868 3194

Senior Engineer
Mr Wilson Luk
Mobile: 6271 1428

G. Foreman
Mr. Calvin Ho Mr. Chan Ka Leung
5565 2513 9319 7706
Mr. Chan Wai Yung
9868 3194

Site Engineer
Mr. Curtis Lam Ms Sophia So
Mobile: 6777 4936 9040 4078

Mr. George Wong Mr. Andy To
6436 6828 6354 3628

Environmental Supervisor

Roger Chang
Mobile : 9015 9059

Mr. Calvin Ho
Mobile: 5565 2513

Senior Forman
Mr. Chiu Wai Man Mr. Lee Foo Yung
Mobile: 9780 8168 5691 4386

Graduated Engineer
Mr. Ryan Tam Mr. Adam Lai
6628 4802 6117 6387

Mr. Michael Tai Mr. Kyle Lo
9273 1350 9011 8779

Mr. Alfred Lin
9188 0821

Foreman
Mr. Cheung Chong Ying Mr. Sony, Chan Chun Chau
Mobile:9456 9883 6422 1123
Mr. Wong Ying Choi
9623 6957

Assistant Foreman
Mr. Wong Chun Him
Mobile:5410 3416

Site Supervisor
Mr. Yam Kim Pang
Mobile: 9446 2998

Technical Apprentice
Mr. Lee Chi Shing Mr. Wong Ho Hin
Mobile: 6859 2631 6847 4497

Sub-Con. Rep's.

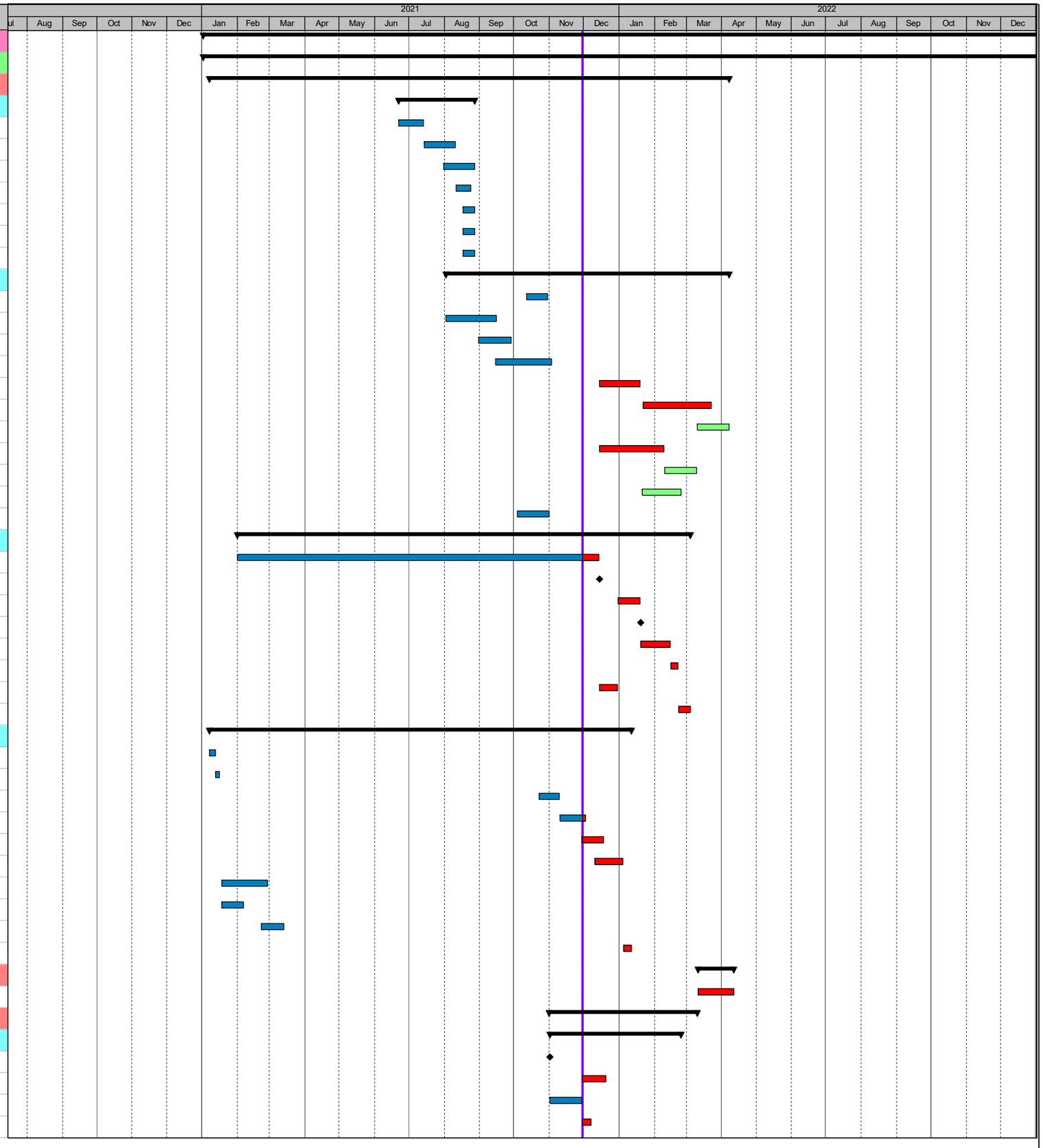
Dickie's	Mly	Harvest	Sung Wah	Wing Wo	Wing Hing Ironware	Toyo Greenland	City landscape
Mr. Chan Lok Fung	Mr. Joseph Ng	Mr. Chan Chi Kuen	Mr. Chan Kuen Por	Mr. Ben Chung	Mr. Barry Cheng	Ms. Yannis Chow	Mr. Mick Tong
Mobile: 9081 3715	6851 8202	6851 8202	9558 3776	6480 7623	9886 7788	3760 1918	9444 1738

易特	宏基	Wise	Kai Cheuk. Engineering	Lai Ming	Teemway
Ray Tse	Mr. Leung Tat Yin	Mr. Tong Kam Man	Mr.Lee Ying Tung	Timothy Leung	Mr. Chan Wan Chuen
Mobile: 9016 0667	6222 9655	9371 7876	6880 1111	9231 7779	9054 7420

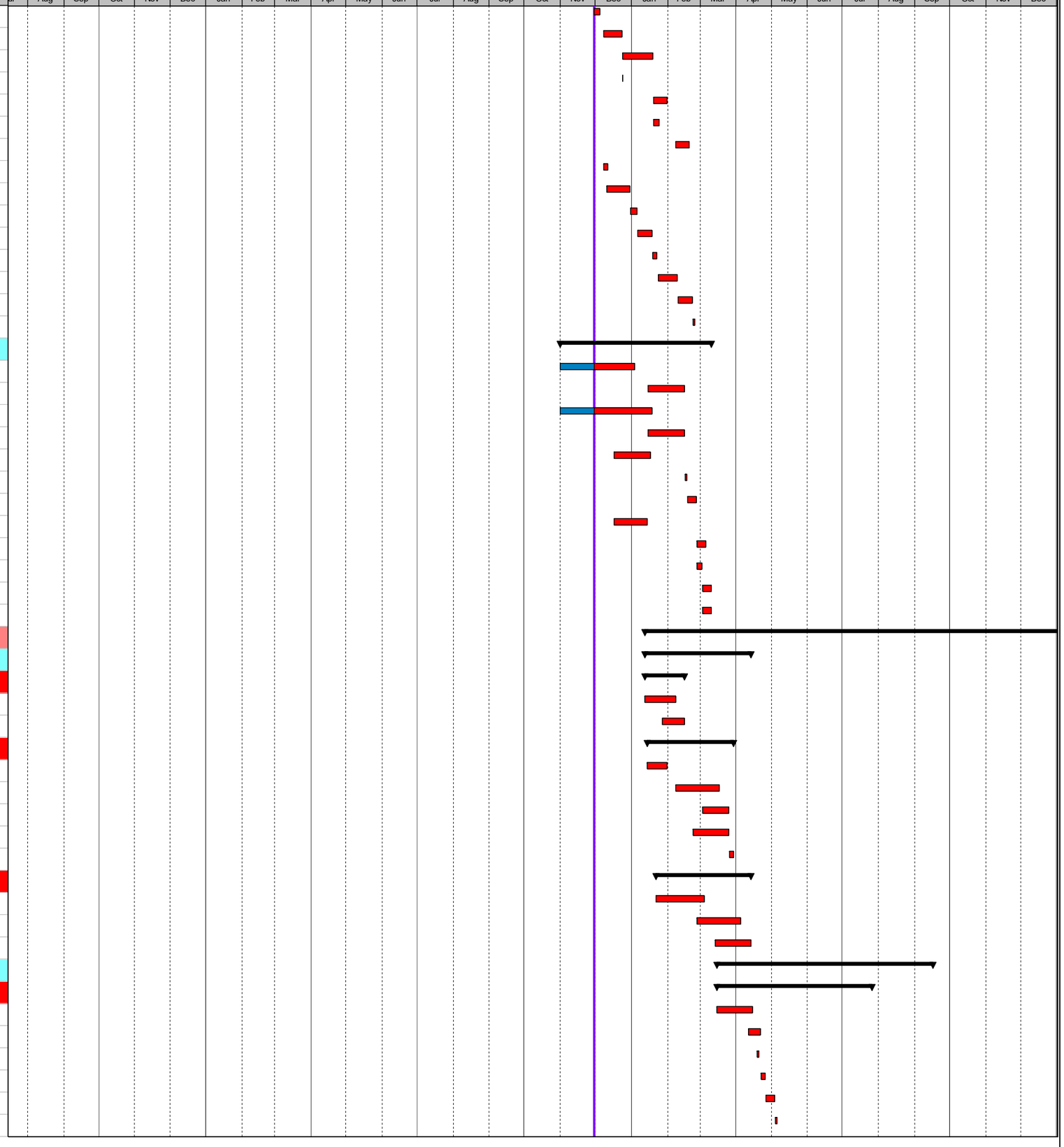
UBW	集運
Mr. Law Chi Yan	Mr. Chow
6888 0666	9026 6423

Appendix C
Latest Construction Programme

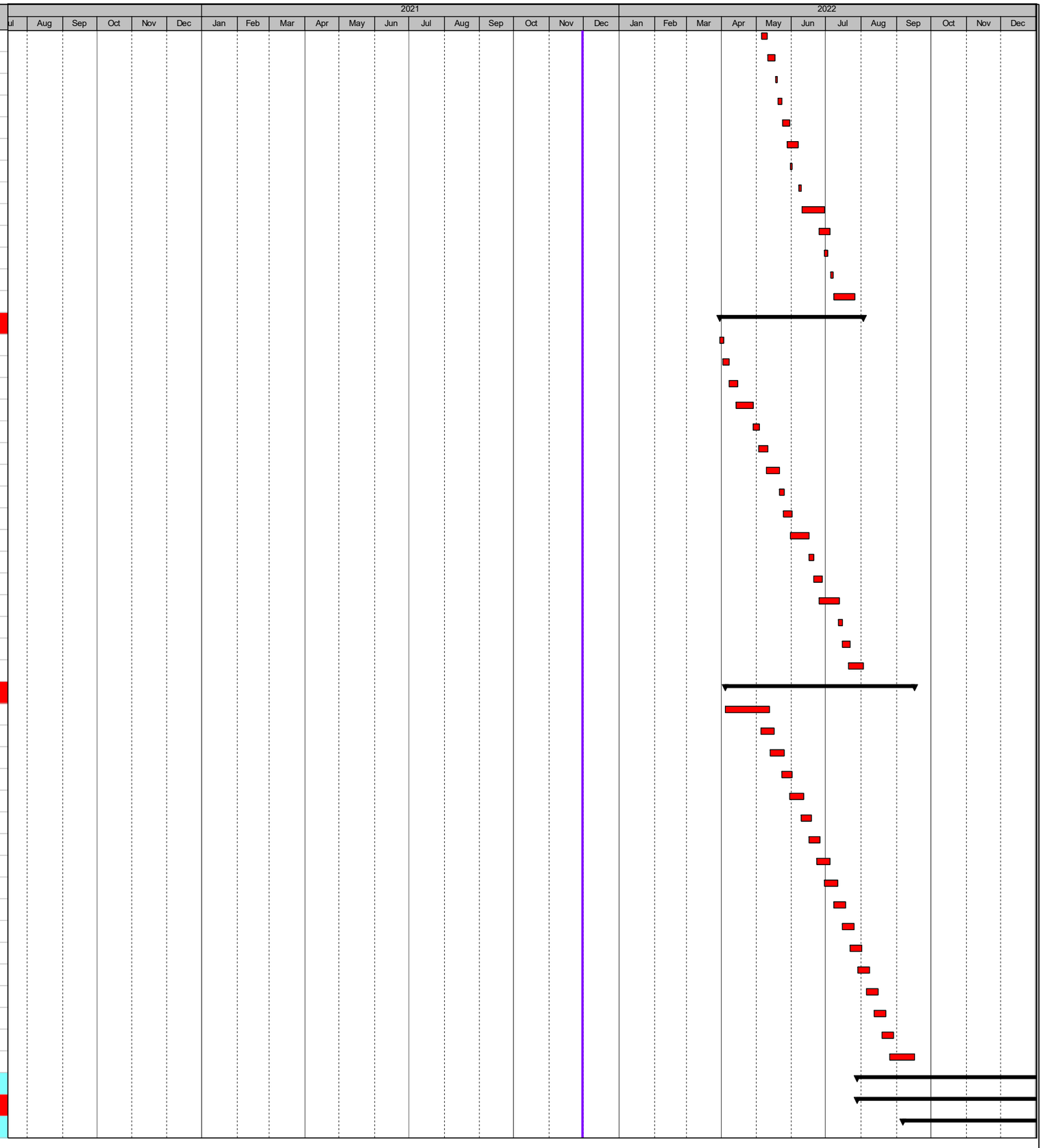
Activity ID	Activity Name	Original Duration	Start	Finish
Contract No. 1/WSD/19 - Monthly Update		652	02-Jan-21 A	15-Apr-23
Section 2 - Const new plant in Portion A&B, E&M in portion H, Pipeline diversion M1 to M5		652	02-Jan-21 A	15-Apr-23
Decommissioning, Shut Down & Relocation of Works Except Temporary Washwater Tank		355	07-Jan-21 A	07-Apr-22
Shut Down of South Works		57	22-Jun-21 A	27-Aug-21 A
119.DS.GW.10010	Disconnect Filtered Water Tank	18	22-Jun-21 A	13-Jul-21 A
119.DS.GW.10020	Disconnect SW air receiver from Air Compressor at NW Pumping Station	24	14-Jul-21 A	10-Aug-21 A
119.DS.GW.10030	Abandon Washwater Pump inside SW Pumping Station	24	31-Jul-21 A	27-Aug-21 A
119.DS.GW.10040	Relocate Air Compressors at SW Filter Gallery for NW Surge Vessels	12	11-Aug-21 A	24-Aug-21 A
119.DS.GW.10050	Remove Existing Dosing Pipes from Chemical House	10	17-Aug-21 A	27-Aug-21 A
119.DS.GW.10060	Disconnect SW Raw Water Channel at Raw Water Dividing Chamber	10	17-Aug-21 A	27-Aug-21 A
119.DS.GW.10070	Disconnect Sludge Pipe at existing Sludge Collect Chamber	10	17-Aug-21 A	27-Aug-21 A
Demolition of Major Existing Facilities		142	02-Aug-21 A	07-Apr-22
119.DS.GW.10150	Demolition of Existing Alum Saturation Tanks to Facilitate Pipe Pile Construction	15	12-Oct-21 A	30-Oct-21 A
119.DS.GW.10170	Preparation and Demolition of Existing Clarifiers No.3	21	02-Aug-21 A	15-Sep-21 A
119.DS.GW.10171	Preparation and Demolition of Existing Clarifiers No.4	21	31-Aug-21 A	28-Sep-21 A
119.DS.GW.10172	Preparation and Demolition of Existing Clarifiers No. 2	38	15-Sep-21 A	02-Nov-21 A
119.DS.GW.10185	Demolition of Existing South Work Corridor	28	15-Dec-21	19-Jan-22
119.DS.GW.10190	Demolition of Existing Chemical House	45	22-Jan-22	22-Mar-22
119.DS.GW.10200	Demolition of Existing Raw Water Channel	24	10-Mar-22	07-Apr-22
119.DS.GW.10380	Demolish existing South Works Pump Station	40	15-Dec-21	09-Feb-22
119.DS.GW.10390	Demolish part of existing Main Pump Sump	24	10-Feb-22	09-Mar-22
119.DS.GW.10400	Demolition of Existing Sampling Room	24	21-Jan-22	24-Feb-22
119.DS.GW.10470	Relocation the equipment and associate item inside existing SWPS and South Work Corridor	30	04-Oct-21 A	31-Oct-21 A
Demolition of E&M Workshop &Relocation of Existing Emergency Power Generator for Chlorination House		100	01-Feb-21 A	04-Mar-22
119.DS.GW.10070a	Handover of M&E WorkShop	100	01-Feb-21 A	14-Dec-21
119.DS.GW.10080	Handover existing M&E Workshop area (by Client)	0	15-Dec-21	
119.DS.GW.10090	Construct New Steel Shed for Emergency Power Generator	16	31-Dec-21	19-Jan-22
119.DS.GW.10100	Handover Steel Shed for E&M Installation	0	20-Jan-22	
119.DS.GW.10110	Installation of Building Services and Electrical Works	16	20-Jan-22	14-Feb-22
119.DS.GW.10120	Relocation of the Existing Genset to Chlorine Building & Resume operation	6	15-Feb-22	21-Feb-22
119.DS.GW.10210	Demolition of Existing M&E Workshop	12	15-Dec-21	30-Dec-21
119.DS.GW.10220	Demolition of Existing Emergency Generator for Chlorine House	10	22-Feb-22	04-Mar-22
Isolation of Clarifiers		288	07-Jan-21 A	11-Jan-22
119.DS.GW.10300	Mass wall construction to close up the void	12	07-Jan-21 A	12-Jan-21 A
119.DS.GW.10310	Stage 2 - Construction of RC walls for Settled Water Isolation (Wall 1 & 2) - Stage 2	12	13-Jan-21 A	16-Jan-21 A
119.DS.GW.10320	Stage 4 - Construction of RC walls for Settled Water Isolation (Wal 3)	15	23-Oct-21 A	09-Nov-21 A
119.DS.GW.10321	Stage 4 - Construction of RC walls for Settled Water Isolation (Wall 4 & Wall 5)	22	10-Nov-21 A	02-Dec-21
119.DS.GW.10322	Stage 4 - Construction of RC walls for Settled Water Isolation (Wall 8)	18	29-Nov-21 A	18-Dec-21
119.DS.GW.10323	Stage 4 - Construction of RC walls for Settled Water Isolation (Wall 9)	18	11-Dec-21	04-Jan-22
119.DS.GW.10330	STWTW request to reinstate opening from 1500x1500mm into 900x900mm with 150mm height kerb with hinged cover	30	18-Jan-21 A	27-Feb-21 A
119.DS.GW.10340	Stage 2 - Defect repairing of wall 1 & 2 and grouting mass wall - Partly Settled Water Channel	12	18-Jan-21 A	06-Feb-21 A
119.DS.GW.10350	Stage 3 - Construction of RC walls for Settled Water Isolation (Wall 6 & 7) - Raw Water Channel	18	22-Feb-21 A	13-Mar-21 A
119.DS.GW.10360	Stage 5- Disconnect SW & NW settled water channel / raw water channel	6	05-Jan-22	11-Jan-22
Demolition of Temporary Washwater Tank		26	11-Mar-22	11-Apr-22
119.DEM.100000	Demolition of Temporary Wash Water Tank and Existing Distribution Chamber (Removal of all associate material)	26	11-Mar-22	11-Apr-22
TWET scheme		78	01-Nov-21 A	10-Mar-22
Civil Works		66	01-Nov-21 A	24-Feb-22
119.CIV.TWET.09995	Confirmation of TWET Scheme	0	01-Nov-21 A	
119.CIV.TWET.10000	Shutdown of southwork wall 8 (Interconnection of Sump Tank) ** Same work as Activity ID: 119.DS.GW.10322	18	30-Nov-21	20-Dec-21
119.CIV.TWET.10005	Documentation Preparation (Design, MS etc.) and Subletting work	18	01-Nov-21 A	29-Nov-21 A
119.CIV.TWET.10010	Drain down the Sump Tank, Preparation of opening & access	7	30-Nov-21	07-Dec-21



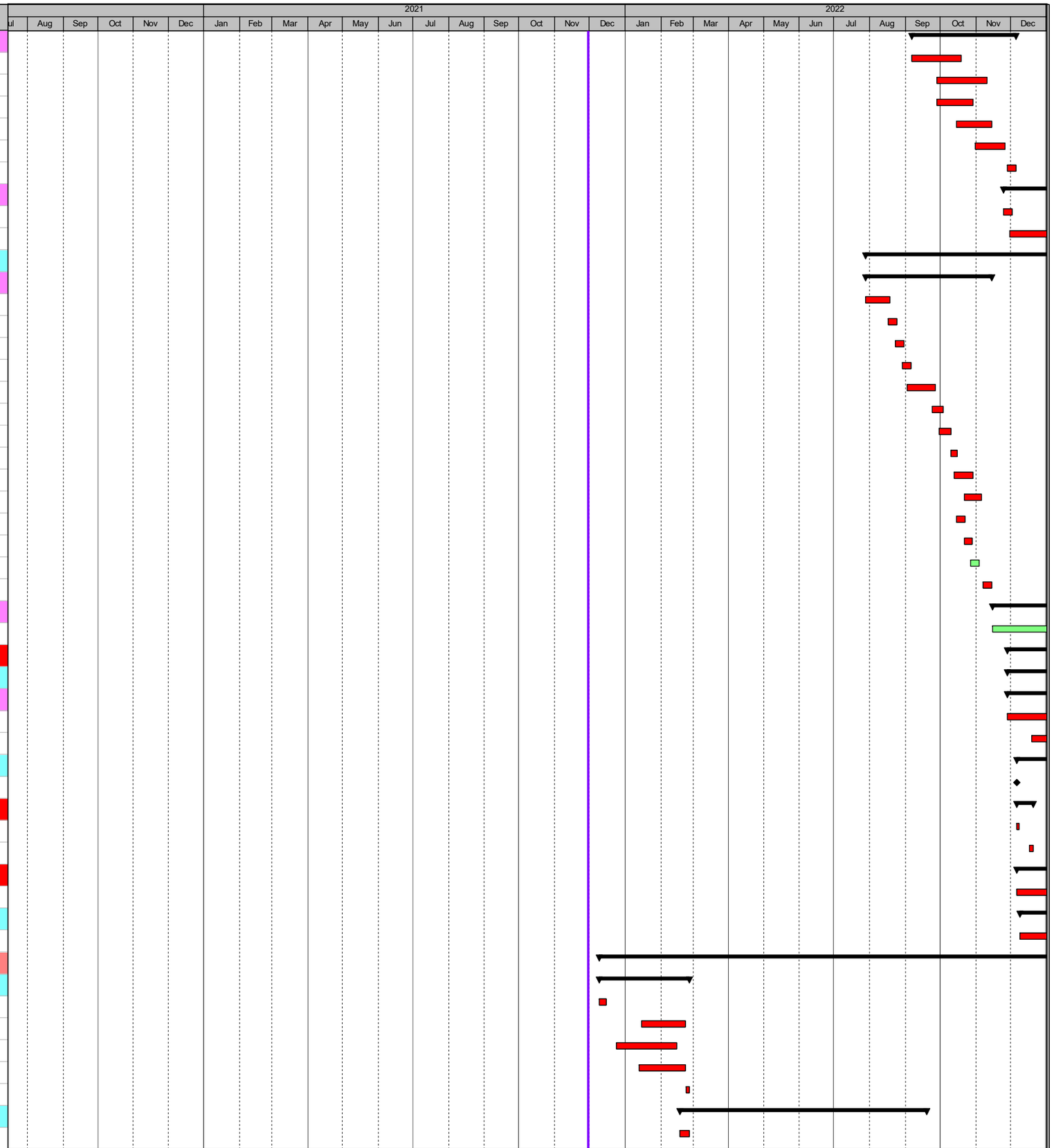
Activity ID	Activity Name	Original Duration	Start	Finish
119.CIV.TWET.10015	Trial pit and UU diversion for alignment of DN400 Pipe	5	30-Nov-21	04-Dec-21
119.CIV.TWET.10020	Construction of isolation / disconnection wall (Inside Pump Tank) -(60m3) Include Drill-in rebar and support	14	08-Dec-21	23-Dec-21
119.CIV.TWET.10030	Construction of isolation/disconnection wall (Inside Clearwater Tank)-(88m3) Include Drill-in rebar and support	20	24-Dec-21	19-Jan-22
119.CIV.TWET.10031	Construction of opening at existing overflow weir	1	24-Dec-21	24-Dec-21
119.CIV.TWET.10040	DN400- Installation and footing construction of PIpe Supporting Framework	10	20-Jan-22	31-Jan-22
119.CIV.TWET.10041	DN400- excavation and opening in existing structure (15m)	4	20-Jan-22	24-Jan-22
119.CIV.TWET.10042	DN400- Installation and connection of DN 400 - 50m length (include thrust block)	11	08-Feb-22	19-Feb-22
119.CIV.TWET.10050	DN900 - Sheet Pipe Installaiton - 4 pcs (inlcude 1 day each for mobilisation and demobilisation)	4	08-Dec-21	11-Dec-21
119.CIV.TWET.10051	DN900 - Excavation from level +27.0 to +25.5mPD (32.4m3)	15	11-Dec-21	30-Dec-21
119.CIV.TWET.10052	DN900 - Install Wailing and Corner Strut level +25.5mPD (2 nos.)	4	31-Dec-21	05-Jan-22
119.CIV.TWET.10053	DN900 - Excavation from level +25.5 to +23.4 PD (22.7m3)	11	06-Jan-22	18-Jan-22
119.CIV.TWET.10054	DN900 - Install Wailing and Corner Strut level +25.5mPD (2 nos.)	4	19-Jan-22	22-Jan-22
119.CIV.TWET.10055	DN900 - Excavation from level +23.4 to +21.69 mPD (18.5m3)	9	24-Jan-22	09-Feb-22
119.CIV.TWET.10056	DN900 - Installation of DN900 Pipe (5m length) and bend block construction	11	10-Feb-22	22-Feb-22
119.CIV.TWET.10060	Caping works for DN900 pipe to existing TWRT and site clearance works	2	23-Feb-22	24-Feb-22
E&M Works		78	01-Nov-21 A	10-Mar-22
119.MEP.TWET.1000	Procurement and Delivery of E&M Equipment (General Items)	52	01-Nov-21 A	03-Jan-22
119.MEP.TWET.1010	Mechanical Installation of the Sump Pump (Spare) (1 set/gang/70 days -2.5 gangs)	21	15-Jan-22	15-Feb-22
119.MEP.TWET.1012	Procurement and Delivery of Duck Foot and Local Control Panel	65	01-Nov-21 A	18-Jan-22
119.MEP.TWET.1020	Electrical Installation of the Sump Pump (Spare) (1 set/gang/70 days -2.5 gangs)	21	15-Jan-22	15-Feb-22
119.MEP.TWET.1027	DDA Submission and Approval	24	17-Dec-21	17-Jan-22
119.MEP.TWET.1030	Trial run test including preparation works of Sump Pump (Spare)	2	16-Feb-22	17-Feb-22
119.MEP.TWET.1040	T&C of the Sump Pump (Spare)	7	18-Feb-22	25-Feb-22
119.MEP.TWET.1042	Method Statement and T&C Plan Submission and Approval	22	17-Dec-21	14-Jan-22
119.MEP.TWET.1050	Relocation and installation of Sump Pump (Existing)	7	26-Feb-22	05-Mar-22
119.MEP.TWET.1060	Relocation of the existing EM Flowmeter and Level Sensor	4	26-Feb-22	02-Mar-22
119.MEP.TWET.1070	T&C of the instrumentation and DCS System	7	03-Mar-22	10-Mar-22
119.MEP.TWET.1080	T&C of the Sump Pump (Existing)	7	03-Mar-22	10-Mar-22
Stage 2 Filters		351	12-Jan-22	27-Mar-23
Pipe Pile, Grout Curtain and H-Pile (if any)		72	12-Jan-22	13-Apr-22
Area 1 - Diagonal Strut Area		24	12-Jan-22	15-Feb-22
119.CIV.S2F.09980	Area 1 - Pipe Piling Work Including 3 Nos. of Ranking H-Pile PP 001 to PP 023 (28 nos.) Include 5 hos. raking Pipe	17	12-Jan-22	08-Feb-22
119.CIV.S2F.09985	Area 1 - Grout Curtain (23 nos.) PP001 to PP023	11	27-Jan-22	15-Feb-22
Area 2 - ELS Area (After Isolation Wall of TWET Scheme has completed)		58	14-Jan-22	29-Mar-22
119.CIV.S2F.09995	Backfilling for Pipe Pile Construction on Filter Bed	15	14-Jan-22	31-Jan-22
119.CIV.S2F.10005	Area 2 - Pipe Piling Work PP 24 to PP 83 (60 nos.)	33	08-Feb-22	17-Mar-22
119.CIV.S2F.10010	King Post Installation (18 nos.) of Area 2 - KPA01 to KPA18	20	03-Mar-22	25-Mar-22
119.CIV.S2F.10015	Area 2 - Grout Curtain (60 nos.) PP 24 to PP 83	27	23-Feb-22	25-Mar-22
119.CIV.S2F.10025	Pumping Test (only area 2)	3	26-Mar-22	29-Mar-22
Area 3 - Soil Nail Area (After Removal of Most of the Asbestos)		63	22-Jan-22	13-Apr-22
119.CIV.S2F.09990	Backfilling for Pipe Pile Construction on Filter Bed	30	22-Jan-22	04-Mar-22
119.CIV.S2F.10000	Area 3 -Pipe Piling Work (57 nos.) PP140 to PP084	32	26-Feb-22	04-Apr-22
119.CIV.S2F.10020	Area 3 - Grout Curtain PP140 to PP084 (57 nos.)	26	14-Mar-22	13-Apr-22
Excavation and ELS/Soil Nail Area Works		151	15-Mar-22	16-Sep-22
Area 1 : Diagonal Strut Work Area		107	15-Mar-22	26-Jul-22
119.CIV.S2F.10411	Soil Slope Excavation From 28mPD To +10.66mPD (40680m3)	26	15-Mar-22	14-Apr-22
119.CIV.S2F.10412	Install Steel Kicker	7	11-Apr-22	21-Apr-22
119.CIV.S2F.10413	Wailing Installation (31m)	2	19-Apr-22	20-Apr-22
119.CIV.S2F.10414	Install Diagonal Strut KSAA1 at +27 mPD (6 nos.)	3	22-Apr-22	25-Apr-22
119.CIV.S2F.10415	Soil Slope Excavation From +27mPD to +23.5 mPD (5988m3)	6	26-Apr-22	03-May-22
119.CIV.S2F.10416	Wailing Installation (31m)	2	04-May-22	05-May-22



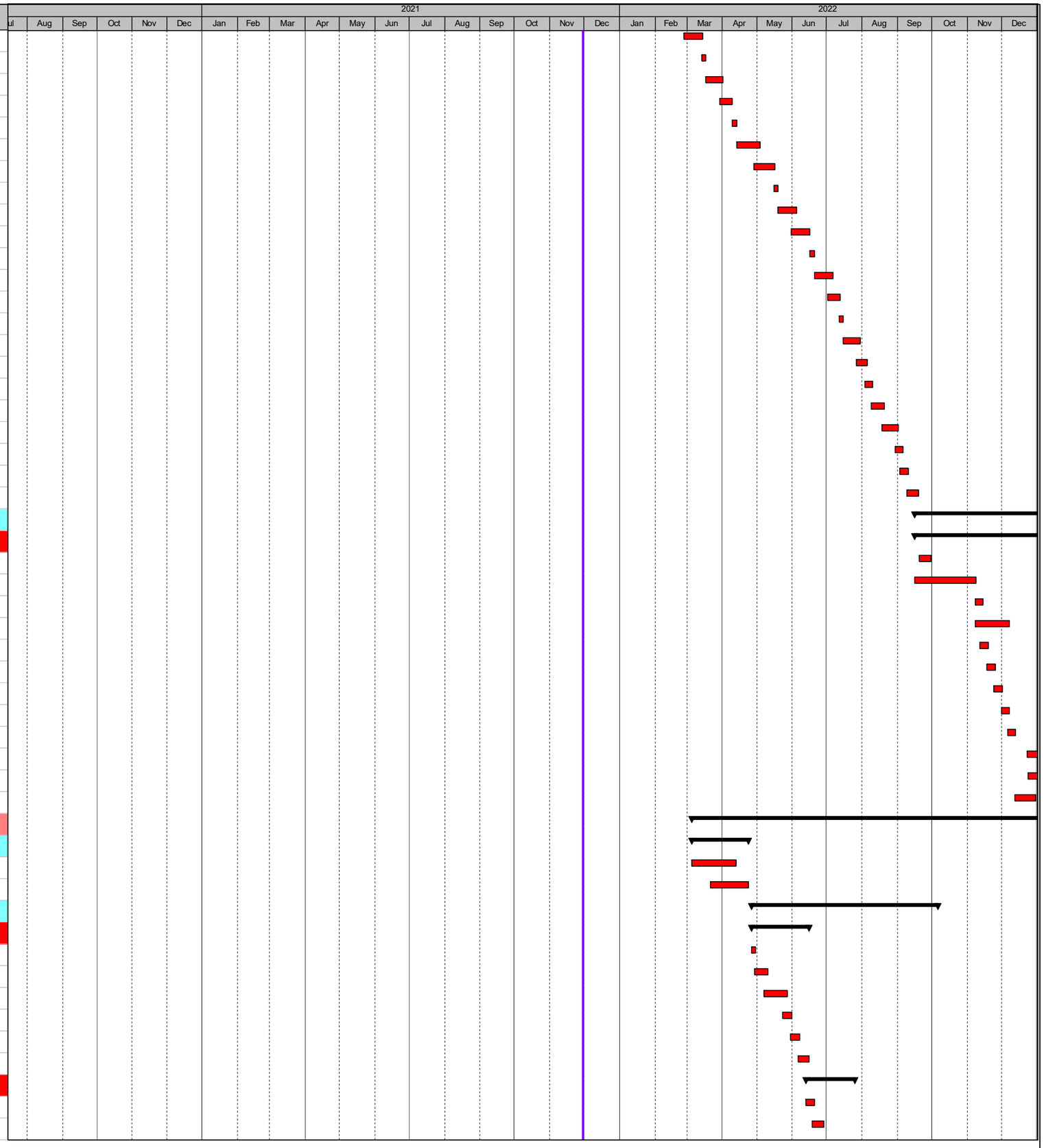
Activity ID	Activity Name	Original Duration	Start	Finish
119.CIV.S2F.10417	Install Diagonal Strut KSAA2 at +23.5 mPD (6 nos.)	3	06-May-22	10-May-22
119.CIV.S2F.10418	Soil Slope Excavation From +23.5mPD to +20 mPD (5988m3)	6	11-May-22	17-May-22
119.CIV.S2F.10419	Wailing Installation (31m)	2	18-May-22	19-May-22
119.CIV.S2F.10420	Install Diagonal Strut KSAA3 at +20 mPD (6 nos.)	3	20-May-22	23-May-22
119.CIV.S2F.10421	Soil Slope Excavation From +20mPD to +16.5 mPD (5988m3)	6	24-May-22	30-May-22
119.CIV.S2F.10422	Construction of Kicker	7	28-May-22	06-Jun-22
119.CIV.S2F.10423	Wailing Installation (31m)	2	31-May-22	01-Jun-22
119.CIV.S2F.10424	Install Diagonal Strut KSAA4 at +16.5 mPD (6 nos.)	3	07-Jun-22	09-Jun-22
119.CIV.S2F.10425	Rock Slope Excavation From +16.5 mPD to +13 mPD (5988m3)	17	10-Jun-22	29-Jun-22
119.CIV.S2F.10426	Construction of Kicker	7	25-Jun-22	04-Jul-22
119.CIV.S2F.10427	Wailing Installation (31m)	2	30-Jun-22	02-Jul-22
119.CIV.S2F.10428	Install Diagonal Strut KSAA5 at +13 mPD (6 nos.)	3	05-Jul-22	07-Jul-22
119.CIV.S2F.10429	Rock Slope Excavation From +13 mPD to +10.66mPD (4004m3)	16	08-Jul-22	26-Jul-22
Area 2 : Excavation and ELS Work Area		100	30-Mar-22	02-Aug-22
119.CIV.S2F.10290	Excavation from +29.5 mPD to +27 mPD (1687.5m3)	4	30-Mar-22	02-Apr-22
119.CIV.S2F.10291	Wailing Installation (100m)	4	02-Apr-22	07-Apr-22
119.CIV.S2F.10292	Strutting Installation layer 1 (35 nos.)	7	07-Apr-22	14-Apr-22
119.CIV.S2F.10293	Excavation from +27 mPD to +23.5 mPD (5906 m3)	11	13-Apr-22	28-Apr-22
119.CIV.S2F.10294	Wailing Installation (100m)	4	28-Apr-22	03-May-22
119.CIV.S2F.10295	Strutting Installation layer 2 (35 nos.)	7	03-May-22	11-May-22
119.CIV.S2F.10320	Excavation from +23.5 mPD to +20 mPD (5906 m3)	11	10-May-22	21-May-22
119.CIV.S2F.10321	Wailing Installation (100m)	4	21-May-22	25-May-22
119.CIV.S2F.10322	Strutting Installation layer 3 (35 nos.)	7	25-May-22	01-Jun-22
119.CIV.S2F.10350	Excavation from +20 mPD to +16.5 mPD (5906 m3)	14	31-May-22	16-Jun-22
119.CIV.S2F.10351	Wailing Installation (100m)	4	16-Jun-22	20-Jun-22
119.CIV.S2F.10352	Strutting Installation layer 4 (35 nos.)	7	20-Jun-22	27-Jun-22
119.CIV.S2F.10353	Excavation from +16.5 mPD to +13 mPD (5906 m3)	14	25-Jun-22	12-Jul-22
119.CIV.S2F.10354	Wailing Installation (100m)	4	12-Jul-22	15-Jul-22
119.CIV.S2F.10355	Strutting Installation layer 5 (35 nos.)	7	15-Jul-22	22-Jul-22
119.CIV.S2F.10410	Excavation from +13 mPD to +10.66mPD (3949 m3)	11	21-Jul-22	02-Aug-22
Area 3 : Soil Nail Construction Area		134	04-Apr-22	16-Sep-22
119.CIV.S2F.10040	Excavation from Existing Ground Profile +29.5 mPD to +24.5 mPD (15000m3)	28	04-Apr-22	12-May-22
119.CIV.S2F.10045	Soil Nail Construction : Layer 1 (+25Mpd) (46 nos.)	9	05-May-22	16-May-22
119.CIV.S2F.10060	Excavation from +24.5 mPD to + 22.5 mPD (6000m3)	11	13-May-22	25-May-22
119.CIV.S2F.10065	Soil Nail Construction : Layer 2 (+23 Mpd) (46 nos.)	9	23-May-22	01-Jun-22
119.CIV.S2F.10080	Excavation from +22.5 mPD to + 20.5 mPD (6000m3)	11	30-May-22	11-Jun-22
119.CIV.S2F.10085	Soil Nail Construction : Layer 3 (+21 Mpd) (46 nos.)	9	09-Jun-22	18-Jun-22
119.CIV.S2F.10100	Excavation from +20.5 mPD to + 19 mPD (4500m3)	9	16-Jun-22	25-Jun-22
119.CIV.S2F.10101	Soil Nail Construction : Layer 4 (+19.5 Mpd) (46 nos.)	9	23-Jun-22	04-Jul-22
119.CIV.S2F.10102	Excavation from +19 mPD to + 17.5mPD (4500m3)	9	30-Jun-22	11-Jul-22
119.CIV.S2F.10103	Soil Nail Construction : Layer 5 (+18 Mpd) (46 nos.)	9	08-Jul-22	18-Jul-22
119.CIV.S2F.10104	Excavation from +17.5 mPD to + 16 mPD (4500m3)	9	15-Jul-22	25-Jul-22
119.CIV.S2F.10105	Soil Nail Construction : Layer 6 (+16.5 Mpd)(46 nos.)	9	22-Jul-22	01-Aug-22
119.CIV.S2F.10120	Excavation from + 16 mPD to + 14.5 mPD (4500m3)	9	29-Jul-22	08-Aug-22
119.CIV.S2F.10121	Soil Nail Construction : Layer 7 (+15 Mpd)(46 nos.)	9	05-Aug-22	15-Aug-22
119.CIV.S2F.10122	Excavation from + 14.5 mPD to + 13 mPD (4500m3)	9	12-Aug-22	22-Aug-22
119.CIV.S2F.10123	Soil Nail Construction : Layer 8 (+13.5 Mpd)(46 nos.)	9	19-Aug-22	29-Aug-22
119.CIV.S2F.10140	Excavation from + 13 mPD to + 9.91 mPD (9270m3)	18	26-Aug-22	16-Sep-22
Structure Works & ABWF Work		161	28-Jul-22	14-Feb-23
East South and North Section (East Section)		161	28-Jul-22	14-Feb-23
Structure Work (East South Section)		111	06-Sep-22	19-Jan-23



Activity ID	Activity Name	Original Duration	Start	Finish
Substructure		75	06-Sep-22	05-Dec-22
119.CIV.S2F.10160	Blinding Layer and Base Slab Construction +9.91 mPD to +12.74 mPD (Include Pipe Gallary) (3058m3)	35	06-Sep-22	19-Oct-22
119.CIV.S2F.10170	Formwork, Rebar Fixing and Concreting of External Wall Construction +12.74mPD to +30.5mPD (1050m3)	36	28-Sep-22	10-Nov-22
119.CIV.S2F.10180	Formwork, Rebar Fixing and Concreting of Internal Wall and Column +12.74mPD to +19mPD (Include Pipe Gallary) (741.5m3)	26	28-Sep-22	29-Oct-22
119.CIV.S2F.10181	Formwork, Rebar Fixing and Concreting of Internal Slab and Beam +19 mPD (1143m3)	26	15-Oct-22	14-Nov-22
119.CIV.S2F.10200	Formwork, Rebar Fixing and Concreting of Internal and Column Wall+19 mPD to +30.5mPD (Include Pipe Gallary) (1362m3)	24	31-Oct-22	26-Nov-22
119.CIV.S2F.10201	Water Test	7	28-Nov-22	05-Dec-22
Superstructure		45	25-Nov-22	19-Jan-23
119.CIV.S2F.10220	Formwork, Rebar Fixing and Concreting of Internal Slab and Beam +30.5 mPD (286m3)	7	25-Nov-22	02-Dec-22
119.CIV.S2F.10230	Formwork, Rebar Fixing and Concreting of Internal and External Wall and Column Construction+30.5 mPD to+38.65mPD(1222m3)	41	30-Nov-22	19-Jan-23
Structure Work (North Section)		161	28-Jul-22	14-Feb-23
Substructure		91	28-Jul-22	14-Nov-22
119.CIV.S2F.10430	Blinding Layer and Base Slab Construction +9.91 mPD to +12.74 mPD (Include Pipe Gallary) (5097m3)	19	28-Jul-22	18-Aug-22
119.CIV.S2F.10430a	Strutting and Wailing Removal +13mPD	7	17-Aug-22	24-Aug-22
119.CIV.S2F.10440	Formwork, Rebar Fixing and Concreting of External Wall Construction+10.74 mPD to +16.5 mPD (352m3)	7	23-Aug-22	30-Aug-22
119.CIV.S2F.10440a	Strutting and Wailing Removal +16.5mPD	7	29-Aug-22	05-Sep-22
119.CIV.S2F.10440b	Formwork, Rebar Fixing and Concreting of Internal Wall and Column +10.74 mPD to +19mPD (Include Pipe Gallary)(2921.5m3)	20	02-Sep-22	26-Sep-22
119.CIV.S2F.10450	Formwork, Rebar Fixing and Concreting of External Wall Construction +16.5 mPD to +20mPD(345m3)	7	24-Sep-22	03-Oct-22
119.CIV.S2F.10450a	Strutting and Wailing Removal +20mPD	7	30-Sep-22	10-Oct-22
119.CIV.S2F.10470	Formwork, Rebar Fixing and Concreting of External Wall Construction+20 mPD to +23.5mPD((327m3)	6	10-Oct-22	15-Oct-22
119.CIV.S2F.10470a	Formwork, Rebar Fixing and Concreting of Internal Slab and Beam +19mPD (1904.5m3)	15	13-Oct-22	29-Oct-22
119.CIV.S2F.10470b	Formwork, Rebar Fixing and Concreting of Internal Wall and Column Construction +19mpd to +27mPD (1461m3)	13	22-Oct-22	05-Nov-22
119.CIV.S2F.10470c	Strutting and Wailing Removal +23.5mPD	7	15-Oct-22	22-Oct-22
119.CIV.S2F.10480	Formwork, Rebar Fixing and Concreting of External Wall Construction +23.5 mpd to +27mPD (327m3)	6	22-Oct-22	28-Oct-22
119.CIV.S2F.10480a	Strutting and Wailing Removal +27mPD	7	27-Oct-22	03-Nov-22
119.CIV.S2F.10510	Water Test	7	07-Nov-22	14-Nov-22
Stage 2 Filters (2nd Half - Eastern Section) - ABWF Works		70	15-Nov-22	14-Feb-23
119.S2.ABWF.10006	Stage 2 Filter (2nd Half - Eastern) - Wall tiling	70	15-Nov-22	14-Feb-23
West South Section (West Section)		49	28-Nov-22	02-Feb-23
Structure Work (West South Section)		49	28-Nov-22	02-Feb-23
Substructure		49	28-Nov-22	02-Feb-23
119.CIV.S2F.10620	Blinding Layer and Base Slab Construction+9.91 mPD to +12.74 mPD (Include Pipe Gallary) (2039m3)	35	28-Nov-22	10-Jan-23
119.CIV.S2F.10660	Formwork, Rebar Fixing and Concreting of External Wall Construction +12.74mPD to +30.5mPD(700m3)	31	19-Dec-22	02-Feb-23
Stage 2 Filters - M&E Works		87	06-Dec-22	27-Mar-23
119.CIV.S2F.10940	Stage 2 Filters - M&E Access and Work Commencement for Eastern of Stage 2 Filter (Include Pipe Gallery)	0	06-Dec-22	
Stage 2 Filters - Delivery to Installation Area		13	06-Dec-22	20-Dec-22
119.MEP.S2F.1000	Stage 2 Filters - Delivery for Installation - LALG PS 0.14.5(6)	3	06-Dec-22	08-Dec-22
119.MEP.S2F.1030	Stage 2 Filters - Delivery for Installation - Chemical dosing facilities PS 0.14.5(3)	3	17-Dec-22	20-Dec-22
Stage 2 Filter - Installation		87	06-Dec-22	27-Mar-23
119.MEP.S2F.1010	Stage 2 Filters - Installation of Temporary Backwash Water Treatment Facilities - Stage 1 (1 set/gang/60 days)	63	06-Dec-22	27-Feb-23
Lower Floor		84	09-Dec-22	27-Mar-23
119.MEP.S2F.1020	Stage 2 Filters - LG - Installation of LALG (1 set/gang/80 days)	84	09-Dec-22	27-Mar-23
South Works Pumping Station		316	09-Dec-21	07-Jan-23
Pipe Pile, Grout Curtain and H-Pile (if any)		59	09-Dec-21	25-Feb-22
119.CIV.SWPS.09990	Backfilling for Pipe Pile Construction on Filter Bed	6	09-Dec-21	15-Dec-21
119.CIV.SWPS.10000	King Post Installation KPC 01 to KPC 24(24 nos.)	27	15-Jan-22	22-Feb-22
119.CIV.SWPS.10010	Pipe Pile Installation PP 203 to PP 141 (63 nos.)	36	24-Dec-21	14-Feb-22
119.CIV.SWPS.10020	Grout Curtain installation PP 203 to PP 141 (63 nos.)	29	13-Jan-22	22-Feb-22
119.CIV.SWPS.10030	Pumping Test	3	23-Feb-22	25-Feb-22
Excavation and ELS/Soil Nail Works		175	17-Feb-22	19-Sep-22
119.CIV.SWPS.10035	Soil Nail Construction (41 nos.) (+30Mpd)	8	17-Feb-22	25-Feb-22

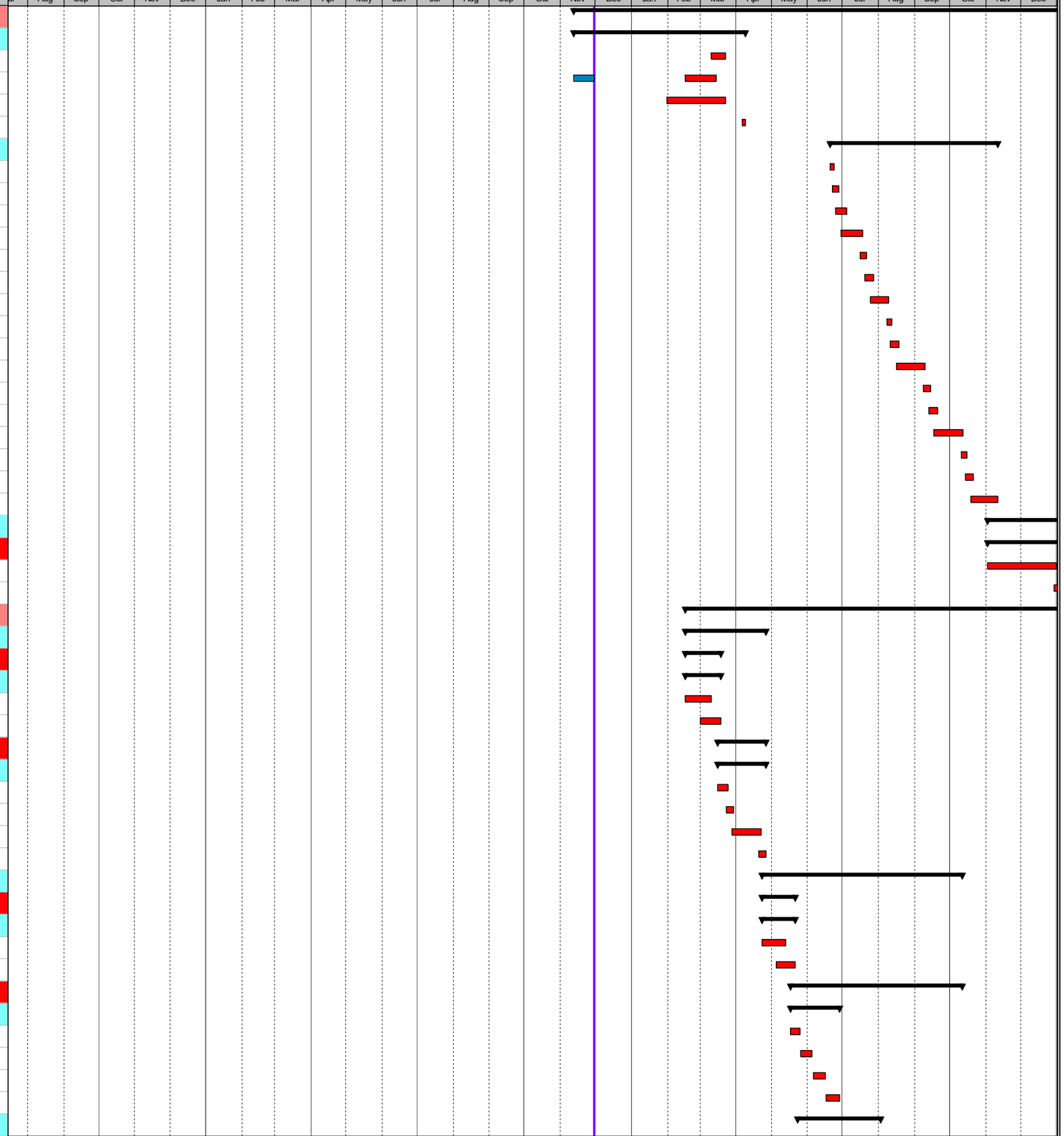


Activity ID	Activity Name	Original Duration	Start	Finish
119.CIV.SWPS.10040	Soil Excavation from +30 mPD to + 26.5 mPD (13650m3)	14	26-Feb-22	14-Mar-22
119.CIV.SWPS.10050	Wailing Installation (107 m) (+27 Mpd)	4	14-Mar-22	17-Mar-22
119.CIV.SWPS.10060	Strutting Installation layer 1 (35 nos.) (+27 Mpd)	14	17-Mar-22	01-Apr-22
119.CIV.SWPS.10070	Soil Excavation from +26.5 mPD to + 24 mPD (9750m3)	10	29-Mar-22	09-Apr-22
119.CIV.SWPS.10080	Wailing Installation (107 m) (+24.5 Mpd)	4	09-Apr-22	13-Apr-22
119.CIV.SWPS.10090	Strutting Installation layer 2 (35 nos.) (+24.5 Mpd)	14	13-Apr-22	03-May-22
119.CIV.SWPS.10100	Soil Excavation from +24 mPD to + 20.5 mPD (13650m3)	14	28-Apr-22	16-May-22
119.CIV.SWPS.10110	Wailing Installation (107 m) (+21 Mpd)	4	16-May-22	19-May-22
119.CIV.SWPS.10120	Strutting Installation layer 3 (35 nos.) (+21 Mpd)	14	19-May-22	04-Jun-22
119.CIV.SWPS.10130	Soil Excavation from +20.5 mPD to + 17.5 mPD (11700m3)	14	31-May-22	16-Jun-22
119.CIV.SWPS.10140	Wailing Installation (107 m) +18 mPD	4	16-Jun-22	20-Jun-22
119.CIV.SWPS.10150	Strutting Installation layer 4 (35 nos.) (+18 Mpd)	14	20-Jun-22	06-Jul-22
119.CIV.SWPS.10160	Soil Excavation from +17.5 mPD to + 15.5 mPD (7800m3)	9	02-Jul-22	12-Jul-22
119.CIV.SWPS.10170	Wailing Installation (107 m) +16mPD	4	12-Jul-22	15-Jul-22
119.CIV.SWPS.10180	Strutting Installation layer 5 (35 nos.) +16 mPD	14	15-Jul-22	30-Jul-22
119.CIV.SWPS.10190	Soil Excavation from +15.5 mPD to + 13.5 mPD (7800m3)	9	27-Jul-22	05-Aug-22
119.CIV.SWPS.10191	Soil Nail Construction (31 nos.) +14mPD	7	03-Aug-22	10-Aug-22
119.CIV.SWPS.10192	Soil Excavation from +13.5 mPD to 11.5MPD (7800m3)	11	09-Aug-22	20-Aug-22
119.CIV.SWPS.10193	Soil Nail Construction (+12Mpd) - 31nos.	13	18-Aug-22	01-Sep-22
119.CIV.SWPS.10194	Soil Excavation from +11.5 mPD to +10.5mPD (3900m3)	6	30-Aug-22	05-Sep-22
119.CIV.SWPS.10195	Soil Nail Construction (+10.5Mpd) - 31nos.	7	03-Sep-22	10-Sep-22
119.CIV.SWPS.10196	Soil Excavation from +10.5 mPD to +9.175mPD (5167.5m3)	8	09-Sep-22	19-Sep-22
Structure Work & ABWF Works		93	16-Sep-22	07-Jan-23
Substructure Work		93	16-Sep-22	07-Jan-23
119.CIV.SWPS.10200	Tower Crane Erection	10	20-Sep-22	30-Sep-22
119.CIV.SWPS.10210	Blinding Layer and Base Slab Construction +9.175mPD to +12.8mPD (including Slump Pit) (7868m3)	44	16-Sep-22	08-Nov-22
119.CIV.SWPS.10211	Formwork, Rebar Fixing and Concreting For External Wall and Column +12.8mPD to +16mPD(291m3)	6	08-Nov-22	14-Nov-22
119.CIV.SWPS.10212	Formwork, Rebar Fixing and Concreting For Internal Wall and Column +12.8mPD to +21 mPD (745m3)	26	08-Nov-22	07-Dec-22
119.CIV.SWPS.10220	Removal of 5th layer of Strut and Waling +16 mPD	7	12-Nov-22	19-Nov-22
119.CIV.SWPS.10230	Formwork, Rebar Fixing and Concreting For External Wall and Column +16mPD to +18 mPD (182m3)	7	18-Nov-22	25-Nov-22
119.CIV.SWPS.10250	Removal of 4th layer of Strut and Waling +18 mPD	7	24-Nov-22	01-Dec-22
119.CIV.SWPS.10260	Formwork, Rebar Fixing and Concreting For External Wall and Column +18mPD to 21mPD (273m3)	6	01-Dec-22	07-Dec-22
119.CIV.SWPS.10270	Removal of 3th layer of Strut and Waling +21 mPD	7	06-Dec-22	13-Dec-22
119.CIV.SWPS.10280	Formwork, Rebar Fixing and Concreting For External Wall and Column +21mPD to +24.5MPD (318m3)	11	23-Dec-22	07-Jan-23
119.CIV.SWPS.10281	Formwork, Rebar Fixing and Concreting For Internal wall and Column +21mPD to 23.84mPD (258m3)	9	24-Dec-22	06-Jan-23
119.CIV.SWPS.10290	Formwork, Rebar Fixing and Concreting For Slab and Beam +21 mPD (1244m3)	15	12-Dec-22	30-Dec-22
Stage 1 Filters		277	05-Mar-22	14-Feb-23
Pipe Pile, Grout Curtain and H-Pile (if any)		39	05-Mar-22	23-Apr-22
119.CIV.S1F.10000	Pipe Pile Installation (114 nos.) PP 204 to PP318	32	05-Mar-22	12-Apr-22
119.CIV.S1F.10010	Grout Curtain installation (114 nos.) PP 204 to PP318	26	21-Mar-22	23-Apr-22
Excavation and ELS/Soil Nail Works		134	26-Apr-22	06-Oct-22
Phase 1 - All Area (North and South Section)		41	26-Apr-22	15-Jun-22
119.CIV.S1F.10040	Major Excavation from +30mPD to +29.5mPD (All Area) (3083m3)	4	26-Apr-22	29-Apr-22
119.CIV.S1F.10041	Soil Nail Construction : Layer 1 (+30Mpd) (58 nos.)	8	29-Apr-22	10-May-22
119.CIV.S1F.10042	Major Excavation from +29.5mPD to +26 mPD (16835m3)	17	07-May-22	27-May-22
119.CIV.S1F.10043	Soil Nail Construction : Layer 2 (+27.5Mpd)(58 nos.)	8	23-May-22	31-May-22
119.CIV.S1F.10044	Major Excavation from +26mPD to +24 mPD (6413 m3)	7	30-May-22	07-Jun-22
119.CIV.S1F.10045	Soil Nail Construction : Layer 3 (+24.5 Mpd)(86 nos.)	9	06-Jun-22	15-Jun-22
Phase 2 -Area 1 of Stage 1 Filter		36	13-Jun-22	25-Jul-22
119.CIV.S1F.10046	Major Excavation from +24mPD to +22 mPD - Area 1 (6413 m3)	7	13-Jun-22	20-Jun-22
119.CIV.S1F.10047	Soil Nail Construction : Layer 4 (+22.5 Mpd) (86 nos.)	9	18-Jun-22	28-Jun-22

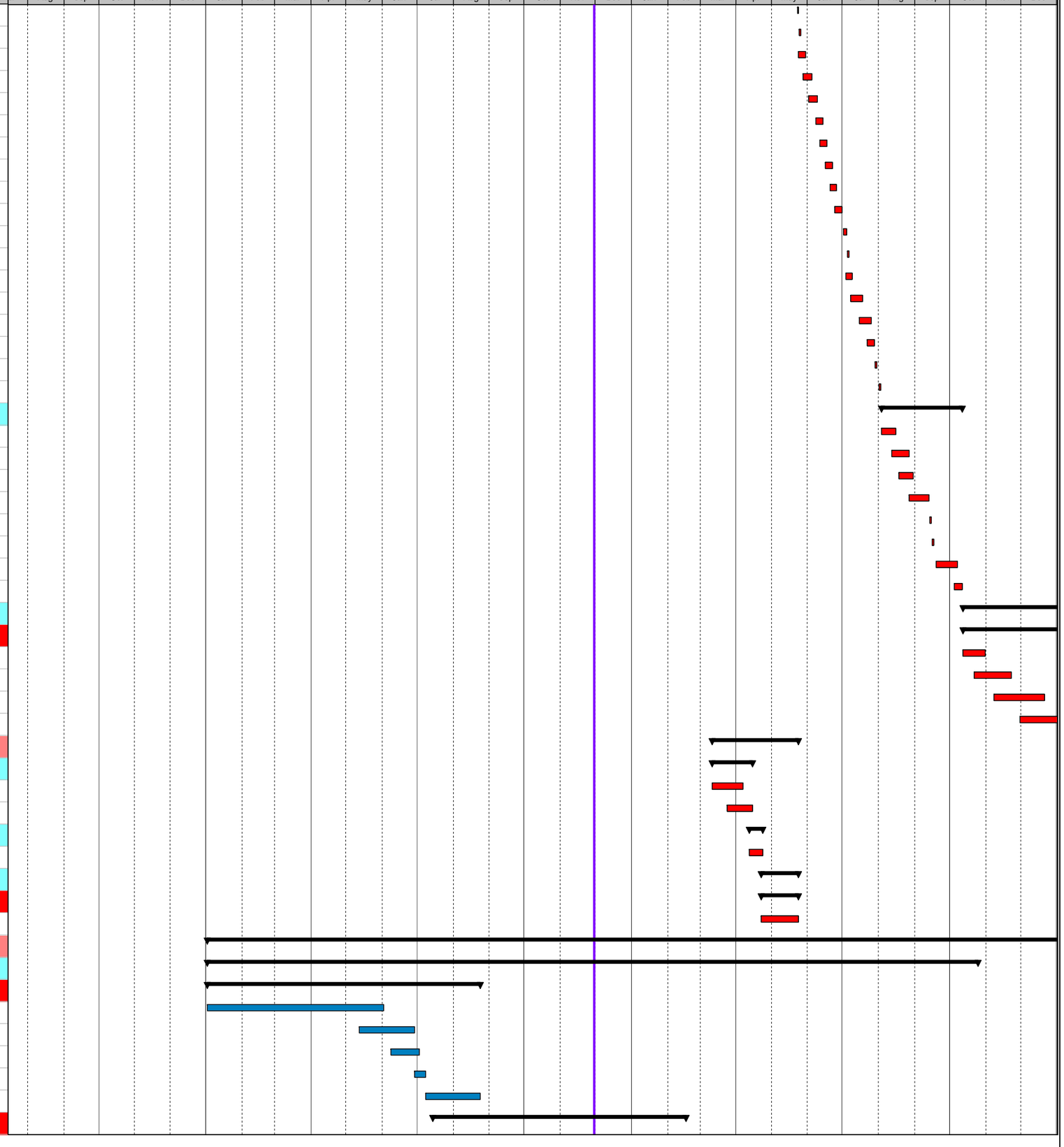


Activity ID	Activity Name	Original Duration	Start	Finish
119.CIV.S1F.10048	Major Excavation from +22mPD to +19.5 mPD- Area 1 (8017 m3)	8	25-Jun-22	05-Jul-22
119.CIV.S1F.10049	Soil Nail Construction : Layer 5 (+20 Mpd) (86 nos.)	9	04-Jul-22	13-Jul-22
119.CIV.S1F.10051	Major Excavation from +19.5mPD to +17.75 mPD - Area 1 (5611 m3)	6	11-Jul-22	16-Jul-22
119.CIV.S1F.10052	Soil Nail Construction : Layer 6 (+18.25 Mpd) (86 nos.)	9	15-Jul-22	25-Jul-22
Phase 2 -Area 2 of Stage 1 Filter		25	13-Jun-22	12-Jul-22
119.CIV.S1F.10230	Major Excavation from +26mPD to +24.5 mPD (2405 m3)	6	13-Jun-22	18-Jun-22
119.CIV.S1F.10260	Major Excavation from +24.5mPD to +23 mPD(2405 m3)	6	17-Jun-22	23-Jun-22
119.CIV.S1F.10290	Major Excavation from +23mPD to +21.5 mPD (2405 m3)	6	22-Jun-22	28-Jun-22
119.CIV.S1F.10320	Major Excavation from +21.5mPD to +20 mPD (2405 m3)	6	27-Jun-22	04-Jul-22
119.CIV.S1F.10350	Major Excavation from +20 mPD to +18.5 mPD (2405 m3)	6	02-Jul-22	08-Jul-22
119.CIV.S1F.10351	Major Excavation from +18.5 mPD to +17.75mPD (1203 m3)	4	08-Jul-22	12-Jul-22
Phase 3 - North Section		19	22-Jul-22	12-Aug-22
119.CIV.S1F.10352	Major Excavation from +17.75 mPD to +15.5 mPD (7215 m3)	8	22-Jul-22	30-Jul-22
119.CIV.S1F.10353	Major Excavation from +15.5 mPD to +14 mPD (4810 m3)	6	29-Jul-22	04-Aug-22
119.CIV.S1F.10354	Major Excavation from +14 mPD to +12.5 mPD (4810 m3)	6	03-Aug-22	09-Aug-22
119.CIV.S1F.10355	Major Excavation from +12.5 mPD to +11.875 mPD(2005 m3)	3	10-Aug-22	12-Aug-22
Phase 4 - South Section		61	25-Jul-22	06-Oct-22
119.CIV.S1F.10356	Excavation from +17.75 mPD to +16 mPD (1684 m3)	4	25-Jul-22	28-Jul-22
119.CIV.S1F.10357	Soil Nail Construction : Layer 7 (+16 Mpd)- (93 nos.)	18	28-Jul-22	17-Aug-22
119.CIV.S1F.10358	Excavation from +16 mPD to +14 mPD (1924 m3)	5	16-Aug-22	20-Aug-22
119.CIV.S1F.10359	Soil Nail Construction : Layer 8 (+14 Mpd) -including layer 9 (+13 mPD) (106 nos.)	20	20-Aug-22	13-Sep-22
119.CIV.S1F.10361	Excavation from +14 mPD to +11.875 mPD (Including Sump Pit to 11.5MPD) (1704 m3)	4	13-Sep-22	16-Sep-22
119.CIV.S1F.10362	Soil Nail Construction : Layer 10 (+11.5 Mpd) on Sump Pit Area (10 nos.)	5	16-Sep-22	21-Sep-22
119.CIV.S1F.10363	Excavation from +11.875 mPD to +10 mPD (258 m3)	2	23-Sep-22	24-Sep-22
119.CIV.S1F.10364	Soil Nail Construction : Layer 11 (+10 Mpd) on Sump Pit Area (10 nos.)	5	26-Sep-22	30-Sep-22
119.CIV.S1F.10365	Excavation from +10 mPD to +8.725 mPD (175m3)	2	05-Oct-22	06-Oct-22
Structure Work & ABWF Work (North Section)		148	12-Aug-22	14-Feb-23
Substructure		84	12-Aug-22	21-Nov-22
119.CIV.S1F.10050	Tower Crane Erection	10	13-Aug-22	24-Aug-22
119.CIV.S1F.10060	Blinding Layer and Base Slab Construction (including Slump Pit) (7205m3) +8.725mPD to +14.15mPD	28	12-Aug-22	14-Sep-22
119.CIV.S1F.10070	Formwork , rebar fixing and concreting wall and Column construction (1388m3) +14.15mPD to +22.12mPD	16	01-Sep-22	20-Sep-22
119.CIV.S1F.10080	Formwork, rebar fixing and concreting for slab and beam construction (3377m3) +22.12mPD	26	10-Sep-22	13-Oct-22
119.CIV.S1F.10090	Formwork , rebar fixing and concreting wall and Column construction (640m3) +22.12 mPD to 25.8mPD	11	07-Oct-22	19-Oct-22
119.CIV.S1F.10100	Formwork, rebar fixing and concreting for slab and beam construction (2026m3) +25.8mPD	16	14-Oct-22	01-Nov-22
119.CIV.S1F.10110	Formwork , rebar fixing and concreting wall and Column construction (610m3) +25.8 mPD to 29.3 mPD	11	26-Oct-22	07-Nov-22
119.CIV.S1F.10120	Formwork, rebar fixing and concreting for slab and beam construction (678m3) +29.3 mPD	8	04-Nov-22	12-Nov-22
119.CIV.S1F.10130	Water Test	7	14-Nov-22	21-Nov-22
Superstructure		32	09-Nov-22	15-Dec-22
119.CIV.S1F.10170	Formwork , rebar fixing and concreting wall and Column construction (Inlcuding Roof Level) (1600m3) +29.3 mPD to +38.5	27	09-Nov-22	09-Dec-22
119.CIV.S1F.10180	Formwork, rebar fixing and concreting for slab and beam construction (Inlcuding Roof Level) (675m3) +38.5 mPD	16	28-Nov-22	15-Dec-22
ABWF Works		64	22-Nov-22	14-Feb-23
119.S1.ABWF.10000	Stage 1 Filter (1st Half - Northern) - Wall tiling	60	22-Nov-22	09-Feb-23
119.S1.ABWF.10004	Stage 1 Filter (1st Half - Northern) - Steel roofing & Skylight installation	48	10-Dec-22	14-Feb-23
Structure Work & ABWF Work (South Section)		62	14-Nov-22	03-Feb-23
Substructure		62	14-Nov-22	03-Feb-23
119.CIV.S1F.10360	Blinding Layer and Base Slab Construction (including Slump Pit) (4803m3) +8.725mPD to +14.15mPD	41	14-Nov-22	03-Jan-23
119.CIV.S1F.10370	Formwork , rebar fixing and concreting wall and Column construction (925m3) +14.15mPD to +22.12mPD	41	08-Dec-22	03-Feb-23
Stage 1 Filters - M&E Works		63	22-Nov-22	13-Feb-23
119.CIV.S1F.10640	Stage 1 Filters - M&E Access and Work Commencement for North of Stage 1 Filter (Include PIpe Gallary)	0	22-Nov-22	
Stage 1 Filters - Installation		63	22-Nov-22	13-Feb-23
119.MEP.S1F.1000	Stage 1 Filters - Installation of Temporary Backwash Water Treatment Facilities - Stage 1 (1 set/gang/60 days)	63	22-Nov-22	13-Feb-23

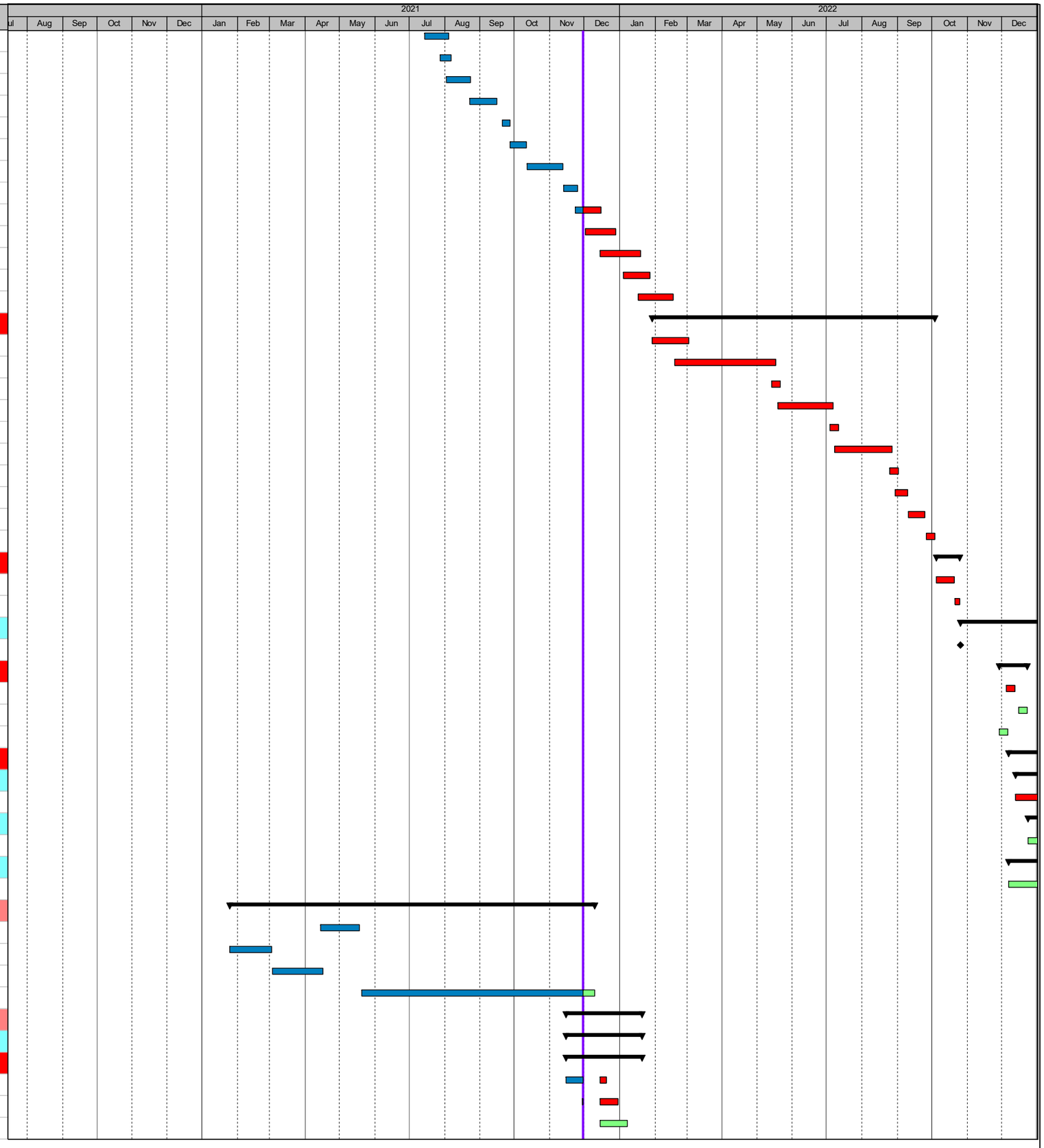
Activity ID	Activity Name	Original Duration	Start	Finish
Residuals Management Factilities		273	12-Nov-21 A	06-Jan-23
Pipe Pile, Grout Curtain and H-Pile (if any)		56	12-Nov-21 A	08-Apr-22
119.CIV.RMF.10000	King Post Installation KPE 01 to KPE 10(10 nos.)	11	10-Mar-22	22-Mar-22
119.CIV.RMF.10010	Pipe Pile Installation PP403 to PP319 (85 nos.)	48	12-Nov-21 A	14-Mar-22
119.CIV.RMF.10020	Grout Curtain installation PP403 to PP 319 (85 nos.)	38	31-Jan-22	22-Mar-22
119.CIV.RMF.10030	Pumping Test	3	06-Apr-22	08-Apr-22
Excavation and ELS/Soil Nail Works		121	20-Jun-22	11-Nov-22
119.CIV.RMF.10040	Excavation from +29 mPD to + 28 mPD (1800m3)	4	20-Jun-22	23-Jun-22
119.CIV.RMF.10050	Wailing Installation (125 m) (+28.5 Mpd)	5	22-Jun-22	27-Jun-22
119.CIV.RMF.10060	Strutting Installation layer 1 (33 nos.) (+28.5 Mpd)	7	25-Jun-22	04-Jul-22
119.CIV.RMF.10070	Excavation from +28 mPD to + 24 mPD (15600m3)	15	30-Jun-22	18-Jul-22
119.CIV.RMF.10080	Wailing Installation (125 m) (+24.5 Mpd)	5	16-Jul-22	21-Jul-22
119.CIV.RMF.10090	Strutting Installation layer 2 (33 nos.) (+24.5 Mpd)	7	20-Jul-22	27-Jul-22
119.CIV.RMF.10100	Excavation from +24 mPD to + 21 mPD (11700 m3)	14	25-Jul-22	09-Aug-22
119.CIV.RMF.10110	Wailing Installation (125 m) (+21.5 Mpd)	5	08-Aug-22	12-Aug-22
119.CIV.RMF.10120	Strutting Installation layer 3 (33 nos.) (+21.5 Mpd)	7	11-Aug-22	18-Aug-22
119.CIV.RMF.10130	Excavation from +21 mPD to + 18.5 mPD (9750m3)	22	16-Aug-22	09-Sep-22
119.CIV.RMF.10140	Wailing Installation (125 m) (+19 Mpd)	5	08-Sep-22	14-Sep-22
119.CIV.RMF.10150	Strutting Installation layer 4 (33 nos.) (+19 Mpd)	7	13-Sep-22	20-Sep-22
119.CIV.RMF.10160	Excavation from +18.5 mPD to + 15 mPD (13650m3)	20	17-Sep-22	12-Oct-22
119.CIV.RMF.10161	Wailing Installation (125 m) (+15.5 Mpd)	5	11-Oct-22	15-Oct-22
119.CIV.RMF.10162	Strutting Installation layer 5 (18 nos.) (+15.5 Mpd)	7	14-Oct-22	21-Oct-22
119.CIV.RMF.10163	Excavation from +15mPD to +11.275 mPD (14527.5m3)	21	19-Oct-22	11-Nov-22
Structure Work & ABWF Work		54	02-Nov-22	06-Jan-23
Substructure Work		54	02-Nov-22	06-Jan-23
119.CIV.RMF.10180	Blinding Layer and Base Slab Construction (8910m3) +11.275mPD to +15mPD	50	02-Nov-22	31-Dec-22
119.CIV.RMF.10185	Removal of 5th layer of Strut and Waling +15.5 mPD	7	29-Dec-22	06-Jan-23
Ozone Building		328	16-Feb-22	28-Mar-23
Before Demolition of Temporary Washwater Recovery Tank		56	16-Feb-22	26-Apr-22
Pipe Pile, Grout Curtain and H-Pile (if any))		27	16-Feb-22	18-Mar-22
Along Vertical Alignment		27	16-Feb-22	18-Mar-22
119.CIV.OB.10000	Pipe Piling Work PP404 to PP438 (35 nos.)	20	16-Feb-22	10-Mar-22
119.CIV.OB.10010	Grout Curtain PP404 to PP438 (35 nos.)	16	01-Mar-22	18-Mar-22
Excavation and ELS/ Soil Nail Work		32	16-Mar-22	26-Apr-22
Phase 1: Whole Area Except Temporary WashWater Recovery Tank		32	16-Mar-22	26-Apr-22
119.CIV.OB.10040	Excavation from +29.5mpD to 28.5 mPD (3960 m3)	8	16-Mar-22	24-Mar-22
119.CIV.OB.10041	Soil Nail Construction(+28.5mPD) (15 nos. - TFA1 to TFA15)	6	23-Mar-22	29-Mar-22
119.CIV.OB.10070	Excavation from +28.5mPD to +26.00 mPD (9900 m3)	19	28-Mar-22	22-Apr-22
119.CIV.OB.10072	Soil Nail Construction(+26.5MPD) (15 nos. - TFB1 to TFB15)	6	20-Apr-22	26-Apr-22
After Demolition of Temporary Washwater Recovery Tank		140	23-Apr-22	11-Oct-22
Pipe Pile, Grout Curtain and H-Pile (if any)		23	23-Apr-22	21-May-22
Along Horizontal Alignment		23	23-Apr-22	21-May-22
119.CIV.OB.10011	Pipe Piling Work (28 nos.)	16	23-Apr-22	13-May-22
119.CIV.OB.10012	Grout Curtain (28 nos.)	14	05-May-22	21-May-22
Excavation and ELS/Soil Nail Works		122	17-May-22	11-Oct-22
Phase 2: East Side		36	17-May-22	28-Jun-22
119.CIV.OB.10140	Excavation from +26 to 24.00 mPD (3960 m3)	8	17-May-22	25-May-22
119.CIV.OB.10141	Excavation from +24 to 22.00 mPD (3960 m3)	8	26-May-22	04-Jun-22
119.CIV.OB.10142	Excavation from +22 to 19.5 mPD (4950 m3)	10	06-Jun-22	16-Jun-22
119.CIV.OB.10143	Excavation from +19.5 to 17 mPD(4950m3)	10	17-Jun-22	28-Jun-22
Phase 2 : West Side		60	23-May-22	02-Aug-22



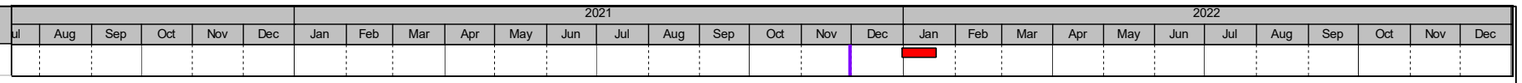
Activity ID	Activity Name	Original Duration	Start	Finish
119.CIV.OB.10080	Wailing Installation (30 m) +26.00mPD	2	23-May-22	24-May-22
119.CIV.OB.10090	Strutting Installation layer 1 (3 nos.)+26.00mPD	2	25-May-22	26-May-22
119.CIV.OB.10144	Excavation from +26mPD to 24.5mPD (2970 m3)	6	24-May-22	30-May-22
119.CIV.OB.10145	Soil Nail Construction +25mPD (15 nos. - TFC1 to TFC15)	6	28-May-22	04-Jun-22
119.CIV.OB.10146	Excavation from +24.5mPD to 23mPD (2970 m3)	6	02-Jun-22	09-Jun-22
119.CIV.OB.10147	Soil Nail Construction(+22mPD) (15 nos. - TFD1 toTFD15)	6	08-Jun-22	14-Jun-22
119.CIV.OB.10147a	Excavation from +23 mPD to 21.5 mPD (2970 m3)	6	11-Jun-22	17-Jun-22
119.CIV.OB.10147b	Soil Nail Construction +22mPD (15 nos. - TFE1 toTFE15)	6	16-Jun-22	22-Jun-22
119.CIV.OB.10148	Excavation from +21.5mPD to 20 mPD (2970 m3)	6	20-Jun-22	25-Jun-22
119.CIV.OB.10149	Soil Nail Construction +20.5mPD (15 nos. - TFF1 toTFF15)	6	24-Jun-22	30-Jun-22
119.CIV.OB.10151	Wailing Installation layer 2 +20 MpD (30 m)	2	02-Jul-22	04-Jul-22
119.CIV.OB.10152	Strutting Installation layer 2 +20 MpD (3 nos.)	2	05-Jul-22	06-Jul-22
119.CIV.OB.10153	Excavation from +20mPD to 18.5mPD (2970 m3)	6	04-Jul-22	09-Jul-22
119.CIV.OB.10154	Soil Nail Construction +20mpD to 18.5mPD (45 nos. - T1A1 to T1A13, T1B1 to T1B17, TFG1 to TFG15)	9	08-Jul-22	18-Jul-22
119.CIV.OB.10155	Excavation from +19mPD to 17 mPD (4455 m3)	9	15-Jul-22	25-Jul-22
119.CIV.OB.10156	Soil Nail Construction +17.5 MpD (15 nos. - TFH1 to TFH14)	6	22-Jul-22	28-Jul-22
119.CIV.OB.10157	Wailing Installation layer 3 +17.5 mPD (30 m)	2	29-Jul-22	30-Jul-22
119.CIV.OB.10158	Strutting Installation layer 3 +17.5 mPD (3 nos.)	2	01-Aug-22	02-Aug-22
Phase 3 : East and West Side		57	03-Aug-22	11-Oct-22
119.CIV.OB.10159	Excavation from +17 mPD to 15.5mPD (5940 m3)	11	03-Aug-22	15-Aug-22
119.CIV.OB.10161	Soil Nail Construction +16.5 to 16 MpD (34 nos. - T1C1 to T1C19 and TFI1 to TFI15)	14	12-Aug-22	27-Aug-22
119.CIV.OB.10162	Excavation from +15.5mPD to 14mPD (5940 m3)	11	18-Aug-22	30-Aug-22
119.CIV.OB.10163	Soil Nail Construction +14.5 MpD (34 nos. - T1D1 to T1D19 and TFJ1 to TFJ15)	14	27-Aug-22	13-Sep-22
119.CIV.OB.10164	Wailing Installation layer 4 (30 m) +14.5 mPD	2	14-Sep-22	15-Sep-22
119.CIV.OB.10165	Strutting Installation layer 4 (3 nos.) +14.5 mPD	2	16-Sep-22	17-Sep-22
119.CIV.OB.10166	Excavation from +14 to 12.5mPD - Including Slope Excavation for East Side to +8.3 mPD (7325 m3)	15	19-Sep-22	07-Oct-22
119.CIV.OB.10167	Soil Nail Construction +13 mPD(15 nos. - TFK1 to TFK14)	6	05-Oct-22	11-Oct-22
Structure Work & ABWF Work		135	12-Oct-22	28-Mar-23
Substructure		135	12-Oct-22	28-Mar-23
119.CIV.OB.10160	Blinding Layer and Base Slab Construction(Services Gallary, Inlet Chamber,Contact,and etc.)(1424.5m3)	17	12-Oct-22	31-Oct-22
119.CIV.OB.10170	Formwork, Rebar Fixing and Concreting For Wall (Services Gallary, Inlet Chamber and etc.)(782 m3)	27	22-Oct-22	22-Nov-22
119.CIV.OB.10171	Blinding Layer and Base Slab Construction (All Area) (3323 m3) +18.25mPD to +19.95 mPD	38	08-Nov-22	21-Dec-22
119.CIV.OB.10240	Formwork, Rebar Fixing and Concreting For All Structure (2770 m3) (+19.95mPD to +30.45mPD)	93	30-Nov-22	28-Mar-23
Flocculation and Sedimentation Tanks (FST)		58	11-Mar-22	24-May-22
Pipe Pile, Grout Curtain and H-Pile (if any)		29	11-Mar-22	14-Apr-22
119.CIV.FST.10000a	Pipe Piling Work PP439 to PP 478 (40 nos.)	22	11-Mar-22	06-Apr-22
119.CIV.FST.10000b	Grout Curtain PP439 to PP 478 (40nos.)	18	24-Mar-22	14-Apr-22
Phase 1- Whole Area Except Temporary WashWater Recovery Tank (Afrer Excavate to 26MPD)		8	12-Apr-22	23-Apr-22
119.CIV.FST.10010	Excavation from +29.5 to +26.00 mPD (3960 m3)	8	12-Apr-22	23-Apr-22
Excavation and ELS/Soil Nail Works		26	22-Apr-22	24-May-22
Phase 2-Whole Area include Temporary WashWater Recovery Tank		26	22-Apr-22	24-May-22
119.CIV.FST.10110	Slope Excavation For Haul Road +29.5 to 22.00 mPD to facilitate the tranportation (East) (13406 m3)	26	22-Apr-22	24-May-22
Washwater Equalization Tanks		640	02-Jan-21 A	15-Apr-23
Washwater Equalization Tanks - Civil Works		505	02-Jan-21 A	25-Oct-22
Pipe Pile, Grout Curtain and H-Pile (if any)		264	02-Jan-21 A	24-Aug-21 A
119.CIV.WET.09995	Uncharted Cable Diversion	118	02-Jan-21 A	02-Jun-21 A
119.CIV.WET.10000	Pipe Pile Installation (105 nos.)	59	12-May-21 A	29-Jun-21 A
119.CIV.WET.10010	Grout Curtain installation (105 nos.)	47	08-Jun-21 A	03-Jul-21 A
119.CIV.WET.10020	King Post Installation (7 nos.)	8	29-Jun-21 A	08-Jul-21 A
119.PMI.10000	PMI Item : UU detection and Utility Relocation	41	08-Jul-21 A	24-Aug-21 A
Excavation and ELS Work (If any)		218	14-Jul-21 A	16-Feb-22



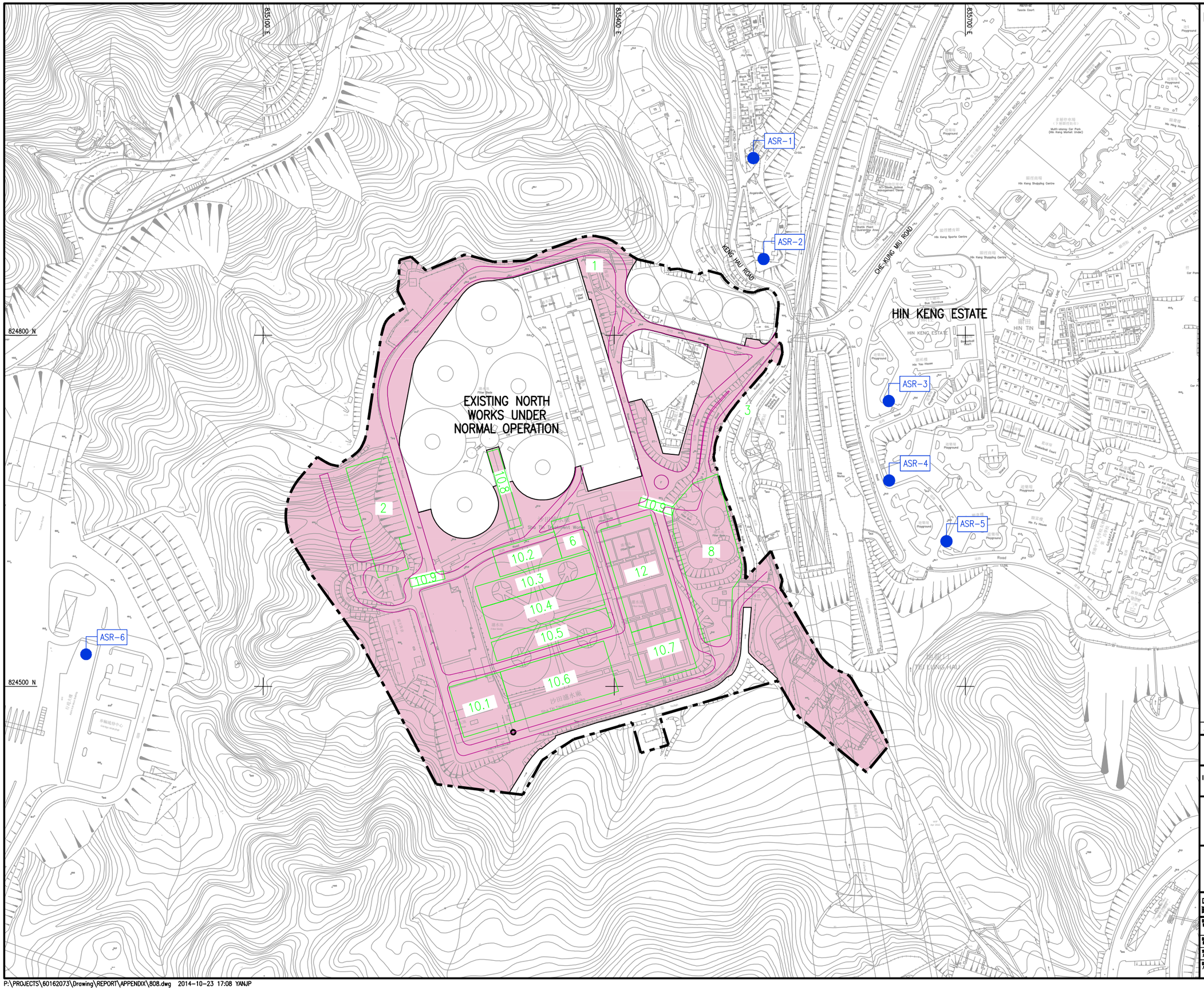
Activity ID	Activity Name	Original Duration	Start	Finish
119.CIV.WET.10030	1st layer of excavation from +28.5 to +27mPD (Soil) - S1 (925 m3)	3	14-Jul-21 A	04-Aug-21 A
119.CIV.WET.10040	1st layer of waling installation at +28mPD - S1 (145 m)	6	28-Jul-21 A	06-Aug-21 A
119.CIV.WET.10050	1st layer of strut and tie beam installation at +28mPD - S1 (37 nos.)	15	02-Aug-21 A	23-Aug-21 A
119.CIV.WET.10060	2nd layer of excavation from +27.5 to 22.5mPD (Soil) - S2 (5088m3)	10	23-Aug-21 A	15-Sep-21 A
119.CIV.WET.10070	2nd layer of waling installation at +23mPD - S2 (145 m)	6	20-Sep-21 A	27-Sep-21 A
119.CIV.WET.10080	2nd layer of strut and tie beam installation at +23mPD - S2 (37 nos.)	15	27-Sep-21 A	11-Oct-21 A
119.CIV.WET.10090	3rd layer of excavation from +22 to 17.5 mPD (Soil) - S3 (4163m3)	10	12-Oct-21 A	12-Nov-21 A
119.CIV.WET.10100	3rd layer of waling installation at +18.7 mPD - S3 (145 m)	6	13-Nov-21 A	25-Nov-21 A
119.CIV.WET.10110	3rd layer of strut and tie beam installation at +17.5mPD - S3 (37 nos.)	15	23-Nov-21 A	15-Dec-21
119.CIV.WET.10120	4th layer of excavation from +18.7 to +16.5mPD (Rock) - S4 (1850m3)	21	02-Dec-21	28-Dec-21
119.CIV.WET.10130	5th layer of excavation from +16.5 to +14.35PD (Rock) - S5 (1850m3)	28	15-Dec-21	19-Jan-22
119.CIV.WET.10140	6th layer of excavation from +14.3 to +12.1PD (Rock) - S6 (1850m3)	21	04-Jan-22	27-Jan-22
119.CIV.WET.10150	7th layer of excavation from +12.1 to +9.925mPD (Rock) - S7 (1850m3)	21	17-Jan-22	16-Feb-22
Substructure Work		196	29-Jan-22	03-Oct-22
119.CIV.WET.10160	Blinding Layer and Base Slab Construction (Tank Room + Pump Room + Staircase (2000m3))	22	29-Jan-22	02-Mar-22
119.CIV.WET.10170	Formwork, rebar fixing and concreting 1st pour +12mPD to +17 mPD (Tank Room + Pump Room + Staircase(1050m3))	70	18-Feb-22	17-May-22
119.CIV.WET.10180	Removal of 3rd layer of Strut and Waling	7	14-May-22	21-May-22
119.CIV.WET.10190	Formwork , rebar fixing and concreting 2nd pour wall +17mPD to +22 mPD (Tank Room + Pump Room+Staircase(600m3))	40	19-May-22	06-Jul-22
119.CIV.WET.10200	Removal of 2nd layer of Strut and Waling	7	04-Jul-22	11-Jul-22
119.CIV.WET.10210	Formwork , rebar fixing and concreting 3rd pour wall +22mPD to +27.5 mPD(Tank Room + Pump Room+ Staircase(660m3))	44	08-Jul-22	27-Aug-22
119.CIV.WET.10220	Removal of 1st layer of Strut and Waling	7	25-Aug-22	01-Sep-22
119.CIV.WET.10230	Formwork, rebar fixing and concreting for Ground Floor Slab (416m3)	10	30-Aug-22	09-Sep-22
119.CIV.WET.10240	Formwork removal & defects repair	12	10-Sep-22	24-Sep-22
119.CIV.WET.10270	Water test	6	26-Sep-22	03-Oct-22
Superstructure Work		18	05-Oct-22	25-Oct-22
119.CIV.WET.10280	Formwork, rebar fixing and concrete for walls +27.325mPD to +33.135mPD (Up to Roof level)- (400m3)	14	05-Oct-22	20-Oct-22
119.CIV.WET.10290	Formwork,rebar fixing and concrete for Roof slab (+33.135mPD level)- (120 m3)	4	21-Oct-22	25-Oct-22
Washwater Equalization Tanks - M&E Works		135	26-Oct-22	15-Apr-23
119.CIV.WET.10320	Washwater Equilization Tank - Access and Work Commencement for Permanant E&M Provision Work	0	26-Oct-22	
Washwater Equalization Tanks - Delivery to Installation Area		22	29-Nov-22	23-Dec-22
119.MEP.WET.1020	Washwater Equilization Tank - Delivery for Installation - LALG	7	05-Dec-22	12-Dec-22
119.MEP.WET.1050	Washwater Equilization Tank - Delivery for Installation - Other Plants and Materials for BS Works (EM 4)	7	16-Dec-22	23-Dec-22
119.MEP.WET.1070	Washwater Equilization Tank - Delivery for Installation - Other Plants and Materials for Electrical Works (EM 3.1.1)	7	29-Nov-22	06-Dec-22
Washwater Equalization Tanks - Installation		99	07-Dec-22	15-Apr-23
Washwater Equalization Tanks - Installation - Mechanical		84	13-Dec-22	30-Mar-23
119.MEP.WET.1030	Washwater Equilization Tank - Installation of LALG (1 set/gang/ 80 days)	84	13-Dec-22	30-Mar-23
Washwater Equalization Tanks - Installation - BS		84	24-Dec-22	15-Apr-23
119.MEP.WET.1060	Washwater Equilization Tank - Installation of BS Electrical (1 set/gang/ 80 days)	84	24-Dec-22	15-Apr-23
Washwater Equalization Tanks - Installation - Electrical		63	07-Dec-22	28-Feb-23
119.MEP.WET.1080	Washwater Equilization Tank - Installation of Cable Containments - Stage 1 (1 set/gang/ 60 days)	63	07-Dec-22	28-Feb-23
DN1200 Drainage near New Administration Building (ADB) Area		185	25-Jan-21 A	10-Dec-21
119.CE0016.10000	PMI0012/CE16 - Modification of Stormwater Drainage from SMH39 to SMH40	29	14-Apr-21 A	18-May-21 A
119.DN1200.10000	Drainage Works near ADB (DN1200) - Excavation for 1st Section (Outfall headwall to SMH40) (160m3 @ 6.5 m3/d/team)	24	25-Jan-21 A	02-Mar-21 A
119.DN1200.10002	Drainage Works near ADB (DN1200) - 1st Section drainage pipe laying (Outfall headwall to SMH40) (10m @ 0.5 m/d/team)	35	03-Mar-21 A	16-Apr-21 A
119.DN1200.10004	Drainage Works near ADB (DN1200) - Trenchless Excavation and Pipe laying for 2nd Section (SMH40 to SMH39)	118	20-May-21 A	10-Dec-21
Sitewide, Utilities & Road Works		29	15-Nov-21 A	20-Jan-22
Remaining M1-M5 Diversion		29	15-Nov-21 A	20-Jan-22
Phase 6		29	15-Nov-21 A	20-Jan-22
119.CIV.M1M5.10180	Phase 6 - ELS for for Chambers Work and Pipe Instllation	16	15-Nov-21 A	20-Dec-21
119.CIV.M1M5.10190	Phase 6 - Remaining Work - Remove M4 & M5 existing pipes / Install M4 & M5 from V02 to V01	16	29-Nov-21 A	30-Dec-21
119.CIV.M1M5.10200	Phase 6 - Removal of Pump 1 - 8	18	15-Dec-21	07-Jan-22



Activity ID	Activity Name	Original Duration	Start	Finish
119.CIV.M1M5.10210	Phase 6 - Chamber 1 Construction	17	31-Dec-21	20-Jan-22



Appendix D
Location of Construction Activities



LEGEND:

	SITE BOUNDARY OF SHA TIN WATER TREATMENT WORKS
	WORKS AREA
	RESPRESENTATIVE AIR SENSITIVE RECEIVERS (ASRS)
ASR-1	THE BLOSSOM PHASE 4
ASR-2	THE L LOUEY
ASR-3	HIN KENG ESTATE – HIN YAU HOUSE
ASR-4	HIN KENG ESTATE – HIN WAN HOUSE
ASR-5	HIN KENG ESTATE – HIN KWAI HOUSE
ASR-6	SHA TIN HEIGHT TUNNEL ADMINISTRATION BUILDING
1	RETAINING WALL AND NEW ACCESS ROAD
2	WATER TREATMENT WORKS LOGISTICS CENTRE
3	UPGRADED MAIN ENTRY ROAD
6	WASHWATER EQUALIZATION TANKS (NORTH WORKS)
8	DEMOLITION OF EXISTING WASHWATER RECOVERY TANKS
10	CONSTRUCTION OF SOUTH WORKS
10.1	RESIDUAL MANAGEMENT FACILITIES
10.2	PRE-OZONATION HOUSE AND COAGULATION TANKS
10.3	FLOCCULATION TANKS
10.4	HIGH RATE SEDIMENTATION TANKS
10.5	INTERMEDIATE OZONATION HOUSE
10.6	STAGE 1 BIOLOGICAL FILTERS
10.7	SOUTH WORKS PUMPING STATION
10.8	INLET CHANNEL STATIC MIXERS (NORTH WORKS)
10.9	PEDESTRIAN WALKWAY
12	STAGE 2 GRANULAR MEDIA FILTERS & UV REACTORS
13	OPERATION OF HAUL ROAD

REV. 修訂 | DESCRIPTION 內容修訂 | BY 由 | CHKD'D 核准 | DATE 日期

水 務 署
WATER SUPPLIES DEPARTMENT

AGREEMENT NO. CE 13/2009 (WS)
IN-SITU REPROVISIONING OF SHA TIN WATER TREATMENT WORKS-SOUTH WORKS
DESIGN AND CONSTRUCTION

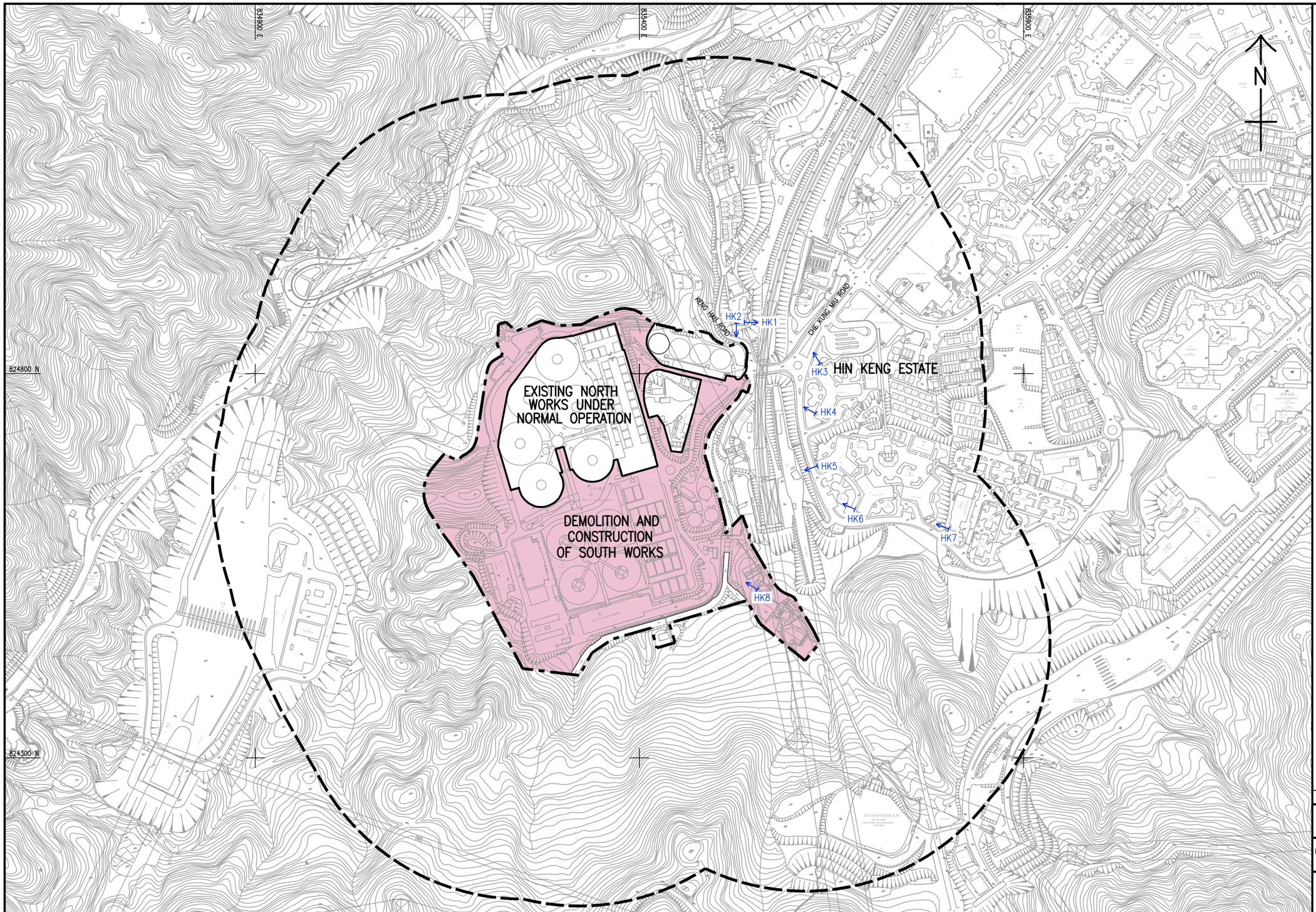
LOCATIONS OF CONSTRUCTION WORKS AREA

AECOM

DRG.NO. 圖紙編號 60162073/FIGURE 4.2

DESIGNED BY 設計 –	CONTRACT NO. 合約編號	P. CK. APPROVED 批准人
DRAWN BY 繪圖 NHP	STATUS 階段	
SCALE 比例 A3 1 : 3000		
DIMENSIONS ARE IN 尺寸單位 METRES	© COPYRIGHT RESERVED 版 權 所 有	

P:\PROJECTS\60162073\Drawing\REPORT\APPENDIX\808.dwg 2014-10-23 17:08 YANJP



LEGEND:

- SITE BOUNDARY OF SHA TIN WATER TREATMENT WORKS
- 300m STUDY AREA
- WORKS AREA
- HK1 — REPRESENTATIVE NOISE SENSITIVE RECEIVERS

ID	DESCRIPTION	CONSTRUCTION NOISE	OPERATIONAL FIXED PLANT NOISE
HK1	THE L LOUEY (EAST)	Y	Y
HK2	THE L LOUEY (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	CUHKFAA THOMAS CHEUNG SCHOOL	Y	Y
HK8	SHA TIN WTW STAFF QUARTERS		Y

REV. 修訂 | DESCRIPTION 內容修訂 | BY 由 | CHECKED 核准 | DATE 日期

水 務 署
WATER SUPPLIES DEPARTMENT

AGREEMENT NO. CE 13/2009 (WS)
IN-SITU REPROVISIONING OF SHA TIN WATER TREATMENT WORKS-SOUTH WORKS
DESIGN AND CONSTRUCTION

LOCATIONS OF REPRESENTATIVE NOISE SENSITIVE RECEIVERS

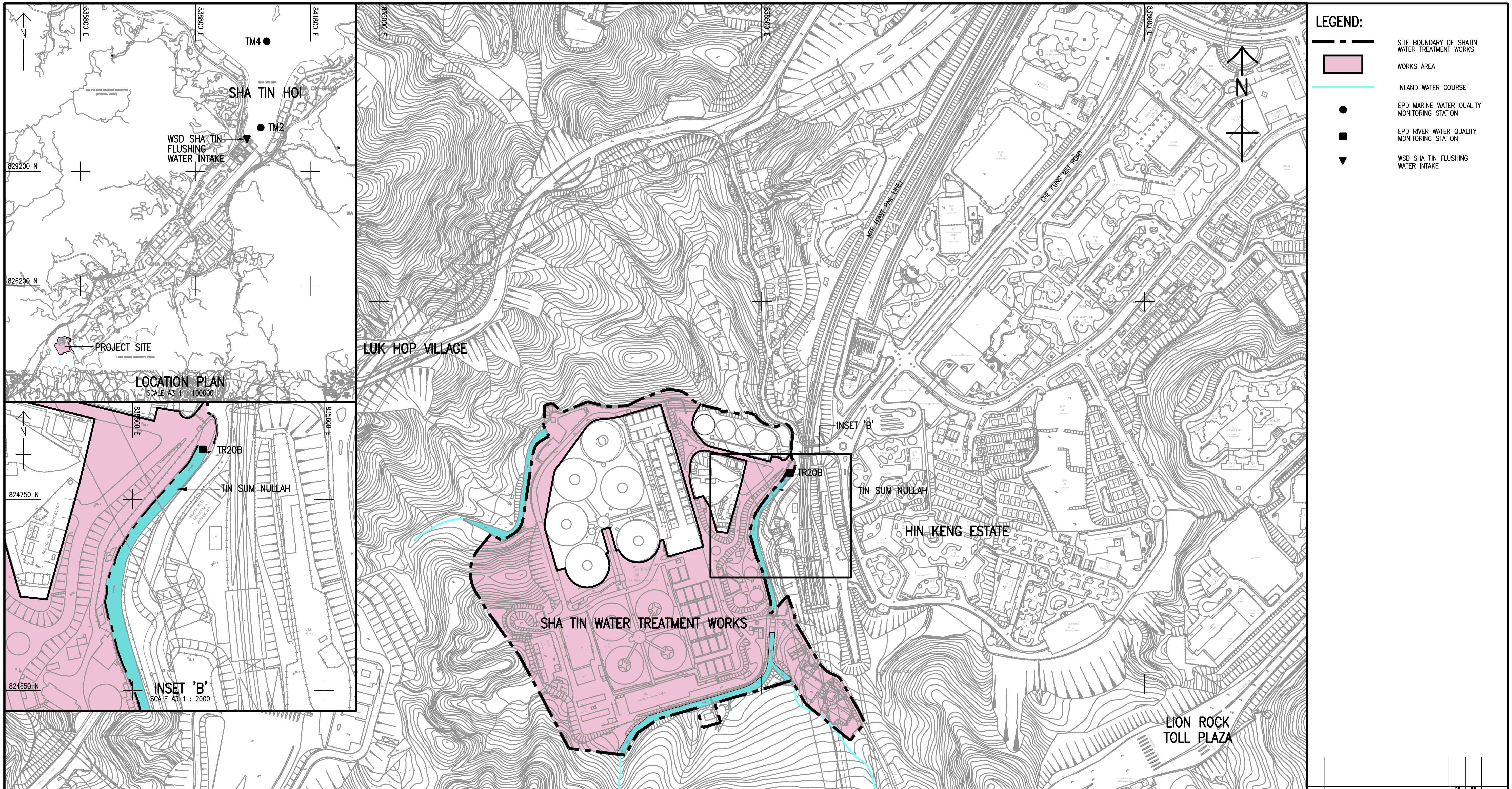
AECOM

DRG.NO. 圖紙編號 60162073/EIA/FIG 5.1

DESIGNED BY 設計 –
CONTRACT NO. 合約編號
P. DIR. APPROVED 批准人
DRAWN BY 繪圖 LJ
STATUS 種類
SCALE 比例 A3 1 : 5000
DIMENSIONS ARE IN 尺寸單位 METRES

© COPYRIGHT RESERVED 版 權 所 有

P:\Projects\60162073\Drawing\REPORT\EIA\829.dwg 2012-11-08 17:38 HED3



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

水 務 署
WATER SUPPLIES DEPARTMENT

AGREEMENT NO. CE 13/2009 (WS)
IN-SITU REPROVISIONING OF SHA TIN WATER TREATMENT WORKS–SOUTH WORKS
DESIGN AND CONSTRUCTION

LOCATIONS OF WATER SENSITIVE RECEIVERS

AECOM

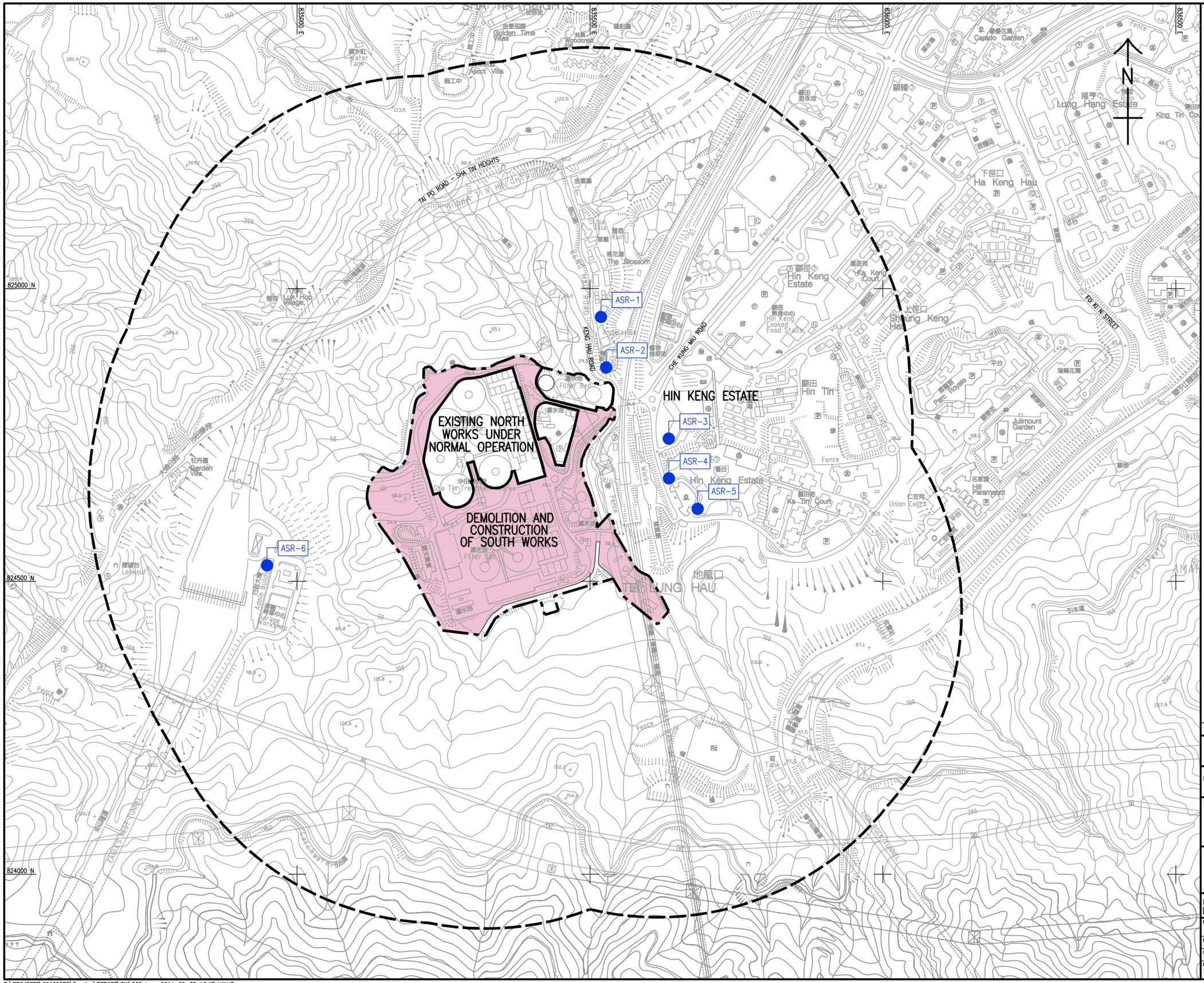
DRG.NO. 圖紙編號 60162073/EIA/FIG 6.1

DESIGNED BY 設計 –	CONTRACT NO. 合約編號	P. Dir. APPROVED 批准人
DRAWN BY 繪圖 DXL	STATUS 階段	
SCALE 比例 A3 1 : 5000		
DIMENSIONS ARE IN 尺寸單位 METRES		

© COPYRIGHT RESERVED 版 權 所 有

P:\Projects\60162073\Drawing\REPORT\EIA\841.dwg 2012-11-08 17:25 HED3

Appendix E
Environmental Sensitive Receivers in the Vicinity of the Projects



LEGEND:

- SITE BOUNDARY OF SHA TIN WATER TREATMENT WORKS
- STUDY AREA (500m BOUNDARY)
- WORKS AREA
- RESPRESENTATIVE AIR SENSITIVE RECEIVERS (ASRS)

ASR-1	THE BLOSSOM PHASE 4
ASR-2	THE L LOUEY
ASR-3	HIN KENG ESTATE – HIN YAU HOUSE
ASR-4	HIN KENG ESTATE – HIN WAN HOUSE
ASR-5	HIN KENG ESTATE – HIN KWAI HOUSE
ASR-6	SHA TIN HEIGHT TUNNEL ADMINISTRATION BUILDING

REV. 版次	DESCRIPTION 內容摘要	BY 由	CHECKED 核准	DATE 日期

水 務 署
WATER SUPPLIES DEPARTMENT

AGREEMENT NO. CE 13/2009 (WS)
IN-SITU REPROVISIONING OF SHA TIN WATER TREATMENT WORKS-SOUTH WORKS
DESIGN AND CONSTRUCTION

LOCATIONS OF REPRESENTATIVE AIR SENSITIVE RECEIVERS

AECOM

DRG.NO. 圖紙編號 60162073/EIA/FIG 4.1

DESIGNED BY 設計	–	CONTRACT NO. 合約編號
DRAWN BY 繪圖	NHP	STATUS 階段
SCALE 比例	A3 1 : 6000	
DIMENSIONS ARE IN 尺寸單位	METRES	

© COPYRIGHT RESERVED 版 權 所 有

P:\PROJECTS\60162073\Drawing\REPORT\EIA\825.dwg 2014-09-30 16:17 YANJP

Appendix F
Summary of Action and Limit Levels

Determination of Action and Limit Levels for Air Quality

Monitoring Locations	Action Level 1-hour TSP, (μg/m^3)	Limit Level 1-hour TSP, (μg/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

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

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

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

Noise

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

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

Water Quality

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

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

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

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

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

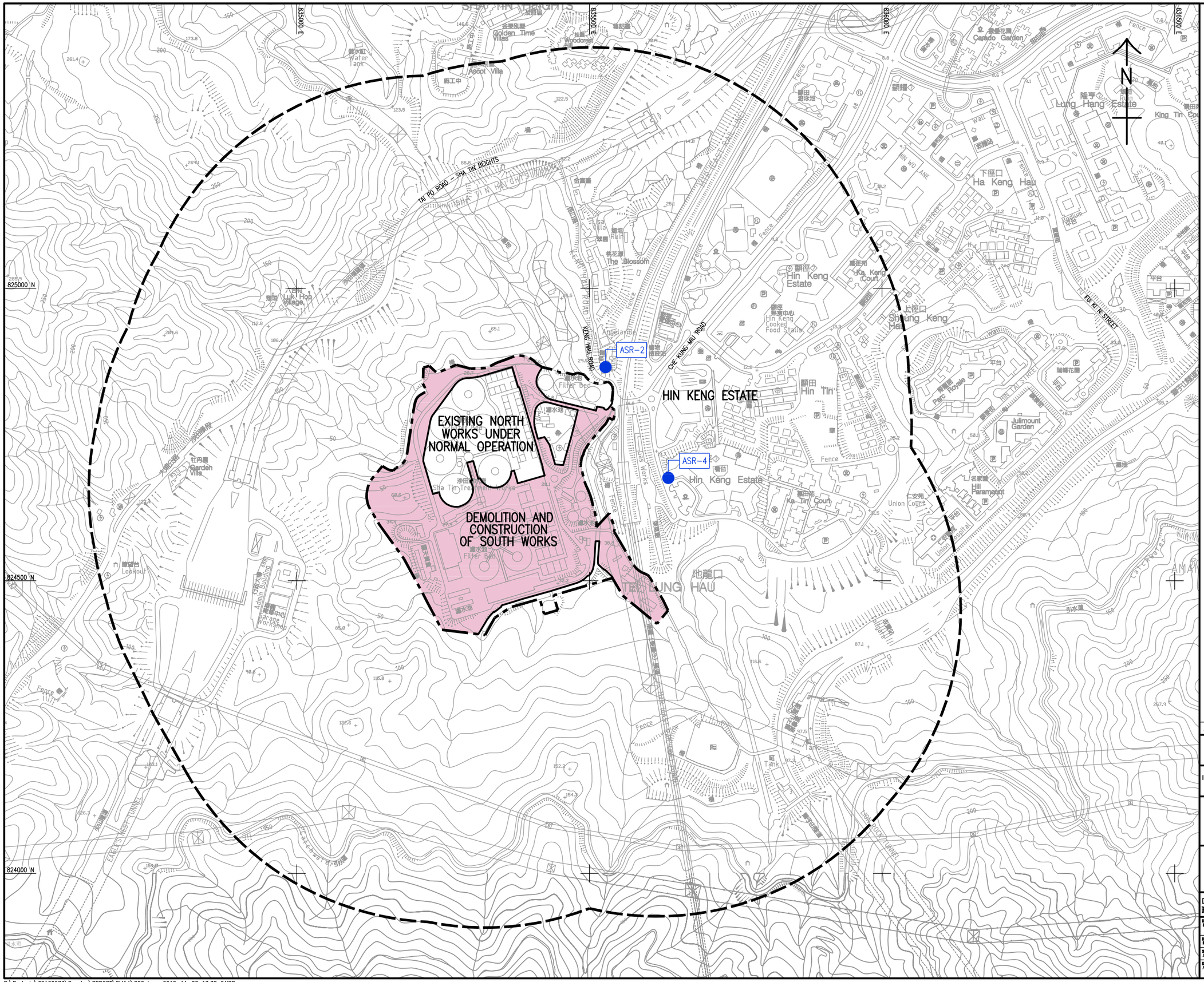
Appendix H
Impact Monitoring Schedules

Impact Monitoring Schedule for STWTW

Feb-22

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

Appendix I
Location Plan of Air Quality Monitoring Station



LEGEND:

- SITE BOUNDARY OF SHA TIN WATER TREATMENT WORKS
- STUDY AREA (500m BOUNDARY)
- WORKS AREA
- RESPRESENTATIVE AIR SENSITIVE RECEIVERS (ASRS)
- ASR-2 THE L LOUEY
- ASR-4 HIN KENG ESTATE – HIN WAN HOUSE

REV. 修訂	DESCRIPTION 內容摘要	BY 由	CHECKED 核查	DATE 日期

水 務 署
WATER SUPPLIES DEPARTMENT

AGREEMENT NO. CE 13/2009 (WS)
IN-SITU REPROVISIONING OF SHA TIN WATER TREATMENT WORKS-SOUTH WORKS
DESIGN AND CONSTRUCTION

LOCATIONS OF PROPOSED DUST MONITORING STATIONS

AECOM

DRG.NO. 圖紙編號 60162073/EM&A/FIG 3

DESIGNED BY 設計 –	CONTRACT NO. 合約編號	P. Dir. APPROVED 批准人
DRAWN BY 繪圖 NHP	STATUS 階段	
SCALE 比例 A3 1 : 6000		
DIMENSIONS ARE IN 尺寸單位 METRES	© COPYRIGHT RESERVED 版 權 所 有	

P:\Projects\60162073\Drawing\REPORT\EM&A\802.dwg 2012-11-08 13:38 CAIZP

Appendix J
Calibration Certificates
(Air Monitoring)

CERTIFICATE OF CALIBRATION AND TESTING

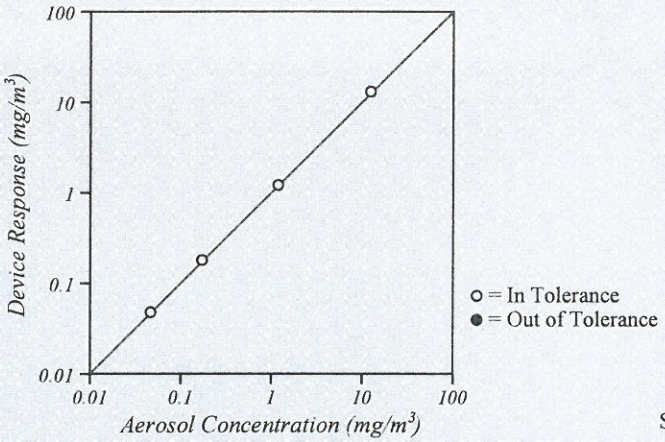
TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA
Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 http://www.tsi.com

Environment Conditions		
Temperature	75.29 (24.1)	°F (°C)
Relative Humidity	47.4	%RH
Barometric Pressure	29.11 (985.8)	inHg (hPa)

Model	**AM510**
Serial Number	**10712016**

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

Concentration Linearity Plot



System ID: DTII01-02

CONCENTRATION *Unit: mg/m3*

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	1.176	1.143	1.058~1.294	3	0.046	0.045	0.032~0.060
2	0.170	0.169	0.144~0.196	4	12.285	12.277	11.056~13.514

TSI Incorporated does hereby certify that all materials, components, and workmanship used in the manufacture of this equipment are in strict accordance with the applicable specifications agreed upon by TSI and the customer and with all published specifications. All performance and acceptance tests required under this contract were successfully conducted according to required specifications. There is no NIST standard for optical mass measurements. Calibration of this instrument performed by TSI has been done using emery oil and has been nominally adjusted to respirable mass per standard ISO 12103-1, A1 test dust (Arizona dust). Our calibration ratio is greater than 4:1

Measurement Variable	System ID	Last Cal.	Cal. Due	Measurement Variable	System ID	Last Cal.	Cal. Due
DC Voltage	E003314	01-11-21	01-31-22	Photometer	E003319	02-15-21	08-31-21
Microbalance	M001324	01-29-21	01-31-23	Pressure	E003511	10-26-20	10-31-21
Flowmeter	E005626	03-09-21	03-31-22	DC Voltage	E003315	01-11-21	01-31-22

Tom Vang
Calibrated

June 28, 2021
Date

CERTIFICATE OF CALIBRATION AND TESTING

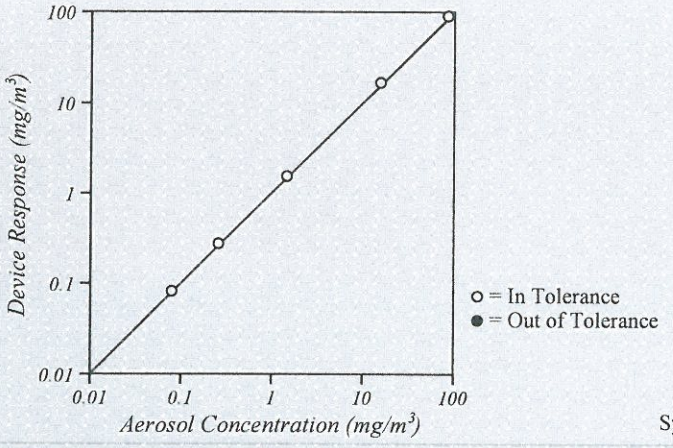
TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA
Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 http://www.tsi.com

Environment Conditions		
Temperature	75.5 (24.2)	°F (°C)
Relative Humidity	47	%RH
Barometric Pressure	28.87 (977.7)	inHg (hPa)

Model	**AM520**
Serial Number	**5202124001**

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

Concentration Linearity Plot



System ID: DTII01-01

CONCENTRATION *Unit: mg/m3*

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	0.078	0.077	0.055~0.101	4	15.409	15.755	13.868~16.950
2	0.256	0.258	0.218~0.294	5	83.928	84.980	75.535~92.321
3	1.442	1.442	1.298~1.586				

TSI Incorporated does hereby certify that all materials, components, and workmanship used in the manufacture of this equipment are in strict accordance with the applicable specifications agreed upon by TSI and the customer and with all published specifications. All performance and acceptance tests required under this contract were successfully conducted according to required specifications. There is no NIST standard for optical mass measurements. Calibration of this instrument performed by TSI has been done using emery oil and has been nominally adjusted to respirable mass per standard ISO 12103-1, A1 test dust (Arizona dust). Our calibration ratio is greater than 4:1

Measurement Variable	System ID	Last Cal.	Cal. Due
Photometer	E003433	03-26-21	09-30-21
DC Voltage(Keithley)	E002859	06-15-20	06-30-21
Pressure	E005651	07-06-20	07-31-21

Measurement Variable	System ID	Last Cal.	Cal. Due
Flowmeter	E005922	06-29-20	06-30-21
Microbalance	M001324	01-29-21	01-31-23

Whitney Yerg
Calibrated

June 7, 2021
Date

TSI P/N 2300157

Kestrel®
Weather & Environmental Meters
by NK

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 +/–1.04% within the airspeed range 706.6 to 3923.9 fpm (3.59 to 19.93 m/s), and +/–1.66% within the airspeed range 166.6 to 706.6 fpm (0.85 to 3.59 m/s).

Temperature:

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

Direction / Heading

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

Relative Humidity:

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

Barometric Pressure:

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

Approved By:

Michael Naughton, Engineering Manager

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

SENSORS

SENSOR	1000	2000	2500	3000	3500	3500 DT	4000	4200	4250	4300	4400	4500	4500 HOR	ACCURACY (+/-)*	RESOLUTION	SPECIFICATION RANGE	OPERATIONAL RANGE	NOTES
Wind Speed | Air Flow	•	•	•	•	•	•	•	•	•	•	•	•	•	Larger of 3% of reading, least significant digit or 20 ft/min	0.1 m/s 1 ft/min 0.1 km/h 0.1 mph 0.1 knots 1 B	0.6 to 40.0 m/s 118 to 7,874 ft/min 2.2 to 144.0 km/h 1.3 to 89.5 mph 1.2 to 77.8 knots 0 to 12 B	0.6 to 60.0 m/s 118 to 11,811 ft/min 2.2 to 216.0 km/h 1.3 to 134.2 mph 1.2 to 116.6 knots 0 to 12 B	1 inch|25 mm diameter impeller with precision axle and low-friction Zytel® bearings. Startup speed stated as lower limit, readings may be taken down to 0.4 m/s | 79 ft/min | 1.5 km/h | .9 mph | .8 kt after impeller startup. Off-axis accuracy -1% @ 5° off-axis; -2% @ 10°; -3% @ 15°. Calibration drift < 1% after 100 hours use at 16 MPH | 7 m/s. Replacement impeller (NK PN-0801) field installs without tools. (US Patent 5,783,753). Wind speed calibration and testing should be done with triangle on impeller located at the top front face of the Kestrel.
Ambient Temperature		•	•	•	•	•	•	•	•	•	•	•	•	0.9 °F 0.5 °C	0.1 °F 0.1 °C	-20.0 to 158.0 °F -29.0 to 70.0 °C	14.0 to 131.0 °F -10.0 to 55.0 °C	Hermetically-sealed, precision thermistor mounted externally and thermally isolated (US Patent 5,939,645) for rapid response. Airflow of 2.2 mph|1 m/s or greater provides fastest response and reduction of insolation effect. Calibration drift negligible. Thermistor may also be used to measure temperature of water or snow by submerging thermistor 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											•			°F 1.4 °C	0.1 °F 0.1 °C	-20.0 to 140.0 °F -29.0 to 60.0 °C	14.0 to 131.0 °F -10.0 to 55.0 °C	Temperature inside 1in|25 mm black powder coated copper globe converted to Tg equivalent for standard 6 in|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 6,257,074). 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 Kestrel Humidity Calibration Kit (NK PN-0802).
Pressure				•			•	•	•	•	•	•	•	inHg 0.03 1.0 hPa|mbar 0.01 PSI	0.01 inHg 0.1 hPa|mbar 0.01 PSI	8.86 to 32.49 inHg 300.0 to 1100.0 hPa|mbar 4.35 to 15.95 PSI *and* 32.0 to 185.0 °F 0.0 to 85.0 °C	0.30 to 48.87 inHg 10.0 to 1654.7 hPa|mbar 0.14 to 24.00 PSI *and* 14.0 to 131.0 °F -10.0 to 55.0 °C	Monolithic silicon piezoresistive pressure sensor with second-order temperature correction. Pressure sensor may be recalibrated at factory or in field. Adjustable reference altitude allows display of station pressure or barometric pressure corrected to MSL. Kestrel 4200 displays station pressure on a dedicated screen. Kestrel 2500 and 3500 display continuously updating three-hour barometric pressure trend indicator: rising rapidly, rising, steady, falling, falling rapidly. Kestrel 4000 series displays pressure trend through graphing function. PSI display on Kestrel 4000 series only.
Compass												•	•	5°	1° 1/16th Cardinal Scale	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 position. Self-calibration routine eliminates magnetic error from batteries or unit and must be run after every full power-down (battery removal or change). Readout indicates direction to which the back of the unit is pointed 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	4250	4300	4400	4500	4500 HOR	ACCURACY (+/-)*	RESOLUTION	SPECIFICATION RANGE	SENSORS EMPLOYED	NOTES
Air Density								•	•					0.0002 lb/ft³ 0.0033 kg/m³	0.001 lbs/ft³ 0.001 kg/m³	Refer to Ranges for Sensors Employed	Temperature Relative Humidity Pressure	Mass of air per unit volume
Air Flow								•						6.71%	1 cfm 1 m³/hr 1 m³/m 0.1m³/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 (units: in, ft, cm or m). Maximum duct dimension input: 258.0 in | 21.5 ft | 655.3 cm | 6.55 m.
Altitude			•		•	•	•	•	•	•	•	•	•	typical: 23.6 ft 7.2 m max: 48.2 ft 14.7 m	1 ft 1 m	typical: 750 to 1100 mBar max: 300 to 750 mBar	Pressure User Input (Reference Pressure)	Height above Mean Sea Level ("MSL"). Temperature compensated pressure (barometric) altimeter requires accurate reference barometric pressure to produce maximum absolute accuracy. Both accuracy specs corresponds to a reference pressure anywhere from 850 to 1100 mBar.
Barometric Pressure			•		•	•	•	•	•	•	•	•	•	0.07 inHg 2.4 hPa|mbar 0.03 PSI	0.01 inHg 0.1 hPa|mbar 0.01 PSI	Refer to Ranges for Sensors Employed	Pressure User Input (Reference Altitude)	Air pressure that would be present in identical conditions at MSL. Station pressure compensated for local elevation provided by reference altitude. Requires accurate reference altitude to produce maximum absolute accuracy.
Crosswind & Headwind/Tailwind												•	•	7.1%	1 mph 1 ft/min 0.1 km/h 0.1 m/s 0.1 knots	Refer to Ranges for Sensors Employed	Wind Speed Compass	Effective wind relative to a target or travel direction. Auto-switching 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. Safe range for pesticide spraying is 4 to 16 °F / 2 to 9 °C.
Density Altitude							•	•	•	•	•	•	•	226 ft 69 m	1 ft 1 m	Refer to Ranges for Sensors Employed	Temperature Relative Humidity Pressure	Local air density converted to equivalent elevation above sea level in a uniform layer 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 Range for Temperature Sensor	Temperature Relative Humidity	Temperature that a volume of air must be cooled to at constant pressure for the water vapor present to condense into dew and form on a solid surface. Can also be considered to be the water-to-air saturation temperature.
Evaporation Rate										•				0.01 lb/ft²/hr 0.06 kg/m2/hr	0.01 lb/ft²/hr 0.01 kg/m²/hr	Refer to Ranges for Sensors Employed	Wind Speed Temperature Relative Humidity Pressure User Input (Concrete Temperature)	The rate at which moisture is lost from the surface of curing concrete. Requires user measurement and entry of concrete temperature obtained with an accurate IR or probe thermometer (°F or °C, not included). Readings should be taken 20 inches above pour surface with the thermistor shaded, and averaged for 6-10 seconds using built-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 Index (HI) tables. Measurement range limited by extent of published tables.
Moisture Content | Humidity Ratio ("Grains")								•	•					3 gpp .04 g/kg	0.1 gpp 0.01 g/kg	Refer to Ranges for Sensors Employed	Temperature Relative Humidity Pressure	Mass of water vapor in a mass of air.
Relative Air Density									•					0.3%	0.1%	Refer to Ranges for Sensors Employed	Temperature Relative Humidity Pressure	The ratio, expressed as a percentage, of measured air density to the air density of a standard atmosphere as defined by the ICAO.
Thermal Work Limit (TWL)											•			10.9 W/m²	0.1 W/m²	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 (Tnwb), globe temperature (Tg), and dry bulb temperature (Td). User settable on-screen warning zones.
Wet Bulb Temperature - Naturally Aspirated (Tnwb)											•			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, Tnwb only undergoes forced convection from the ambient air velocity. Tnwb is a measure of the evaporative cooling that the air will allow. This is accounted for by combining the effects of, mainly, relative humidity and windspeed.
Wet Bulb Temperature - Psychrometric					•	•	•	•	•	•	•	•	•	3.2 °F 1.8 °C	0.1 °F 0.1 °C	Refer to Ranges for Sensors Employed	Temperature Relative Humidity Pressure	Temperature indicated by a sling psychrometer. Due to nature of the psychrometric ratio for 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		•	•	•	•		•	•	•	•	•	•	•	1.6 °F 0.9 °C	0.1 °F 0.1 °C	Refer to Ranges for Sensors Employed	Wind Speed Temperature	Perceived temperature resulting from combined effect of wind speed and temperature. 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

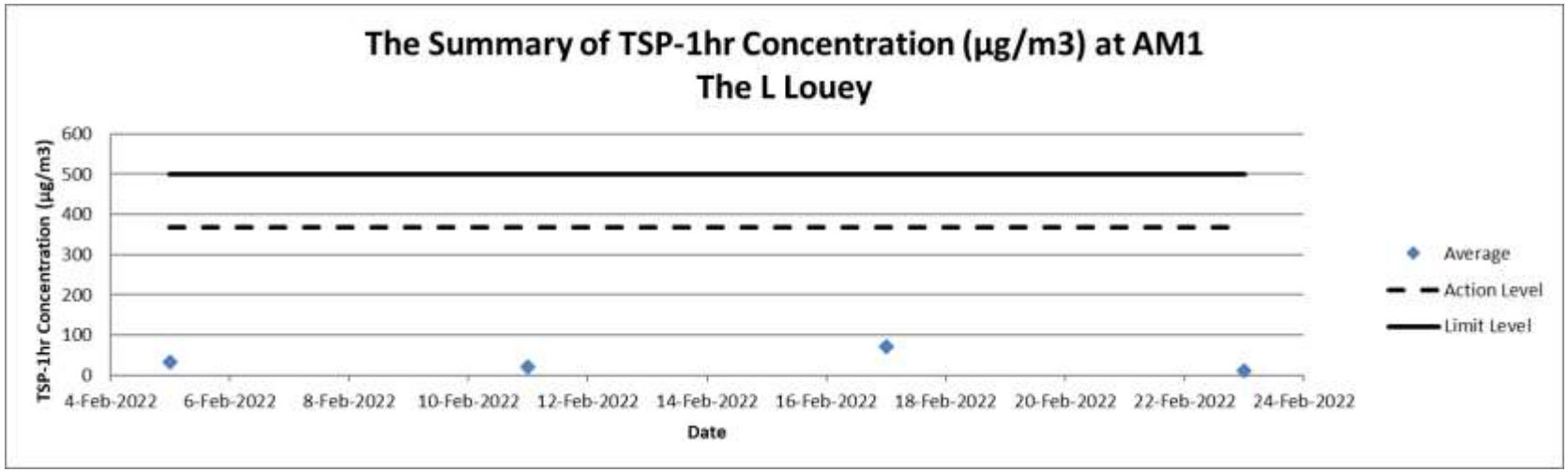
Display & Backlight	•	•		•										Reflective 3 1/2 digit LCD. Digit height 0.55 in / 9 mm. Aviation green electroluminescent backlight. Manual activation with auto-off.
			•		•	•								Reflective 5 digit LCD. Digit height 0.36 in / 9 mm. Choice of aviation green or visible red (NV models only) electroluminescent backlight. Manual activation with auto-off.
Response Time & Display Update							•	•	•	•	•	•	•	Multifunction, multi-digit monochrome dot-matrix display. Choice of aviation green or visible red (NV models only) electroluminescent backlight. Automatic or manual activation.
	•	•	•	•	•	•	•	•	•	•	•	•	•	All measurements except those based on relative humidity respond accurately within 1 second. Relative humidity and all measurements which include RH in their calculation may require as long as 1 minute to fully equilibrate to a large change in the measurement environment. Display updates every 1 second.
	•	•	•	•	•	•								One-button clear and restart of Max Wind Gust and Average Wind measurement.
Max/Avg Wind							•	•	•	•	•	•	•	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, TWL, evaporation rate.
Data Storage & Graphical Display, Min/Max/Avg History							4000 points	3200 points	3200 points	3600 points	2300 points	2900 points	2500 points	Minimum, maximum, average and logged 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, overwrite on or off. Logs even when display off except for 2 and 5 second intervals (code version 4.18 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:** Adjustable power consumption and radio range from up to 30 ft | 9 meters. Individual unit ID and 4-digit PIN code preprogrammed for easy identification and data security when pairing and transmitting. 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.
							•	•	•	•	•	•	•	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.
							•	•	•	•	•	•	•	Requires optional PC interface (USB or RS-232) or Bluetooth data transfer option and provided software.
Languages							•	•	•	•	•	•	•	English, French, German, Italian, Spanish.
Certifications	•	•	•	•	•	•	•	•	•	•	•	•	•	CE certified, RoHS and WEEE compliant. Individually tested to NIST-traceable standards (written certificate of tests available at additional charge).
Origin	•	•	•	•	•	•	•	•	•	•	•	•	•	Designed and manufactured in the USA from US and imported components. Complies with Regional Value Content and Tariff Code Transformation requirements for NAFTA Preference Criterion B.
Battery Life	•	•	•	•	•	•								CR2032, one, included. Average life, 300 hours. Battery life reduced by backlight use in 2000 to 3500 models.
							•	•	•	•	•	•	•	**Standard Models:** AAA Alkaline, two, included. Average life, 400 hours of use, reduced by backlight or Bluetooth radio transmission use.
Shock Resistance	•	•	•	•	•	•	•	•	•	•	•	•	•	MIL-STD-810g, Transit Shock, Method 516.5 Procedure IV; unit only; impact may damage replaceable impeller.
Sealing	•	•	•	•	•	•	•	•	•	•	•	•	•	Waterproof (IP67 and NEMA-6).
Operational Temperature Limits	•	•	•	•	•	•	•	•	•	•	•	•	•	14° F to 131° F | -10 °C to 55 °C. Measurements may be taken beyond the limits of the operational temperature range of 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 to take reading.
Storage Temperature	•	•	•	•	•	•	•	•	•	•	•	•	•	-22.0 °F to 140.0 °F | -30.0 °C to 60.0 °C
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 slip-on cover).
							•	•	•	•		•	•	5.0 x 1.8 x 1.1 in / 12.7 x 4.5 x 2.8 cm, 3.6 oz / 102 g.
											•			6.5 x 2.3 x 1.1 in / 16.5 x 5.9 x 2.8 cm, 4.4 oz / 125 g.

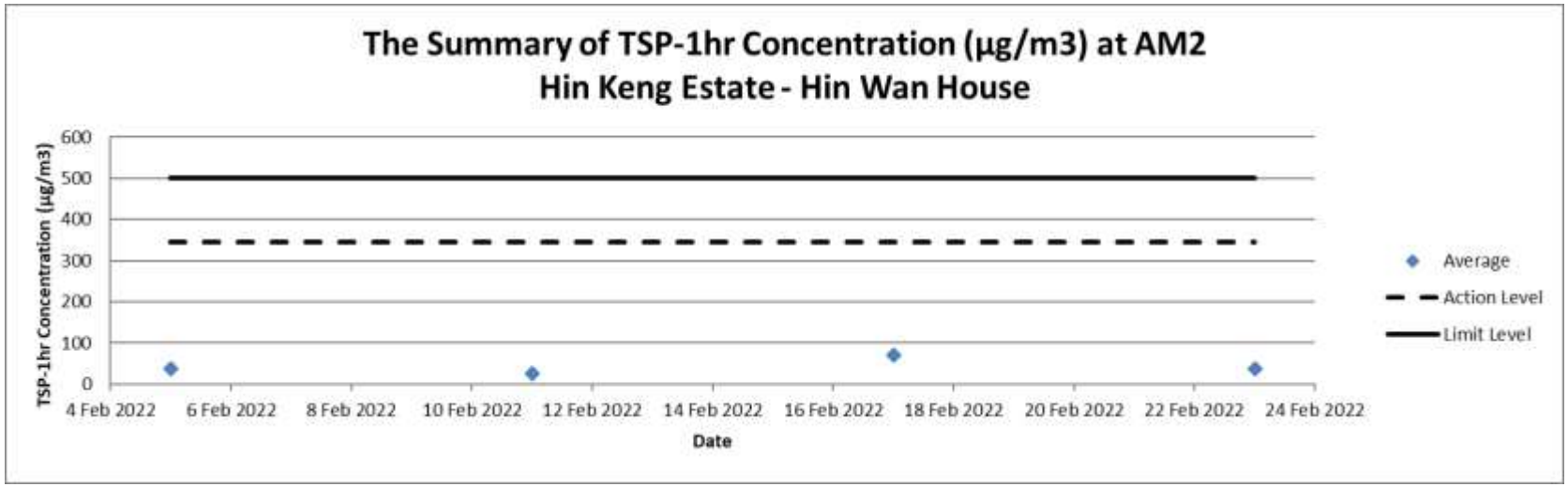
* NOTE. Accuracy calculated as uncertainty of the measurement derived from statistical analysis considering the comined effects from primary sensor specifications, circuit conversions, and all other sources of error using a coverage factor of k=2, or two standard deviations (2Σ).

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

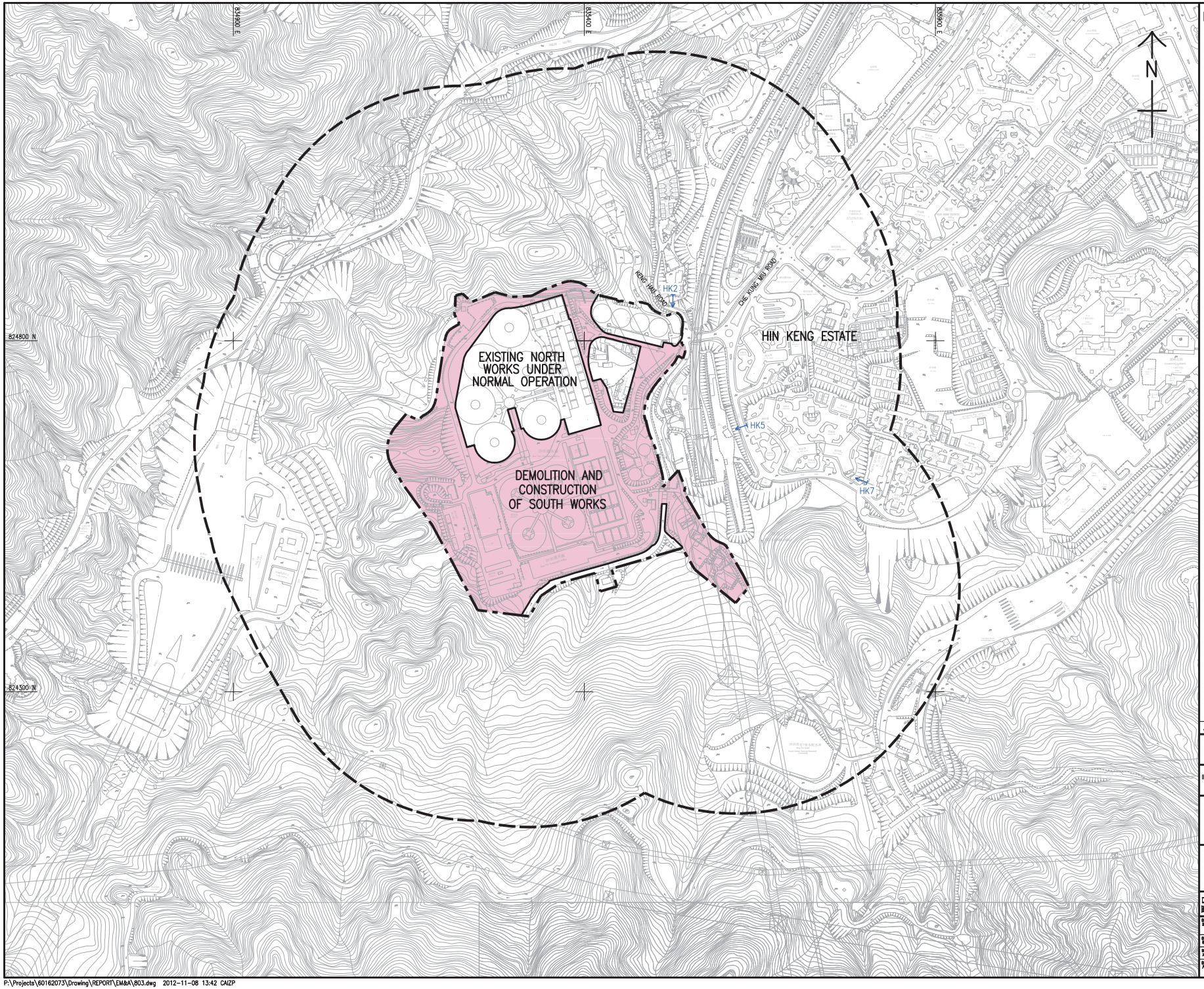
© 2013 Nielsen-Kellerman | 21 Creek Circle Boothwyn PA 19061 USA | www.NKhome.com

Appendix K
Impact Air Quality Monitoring Results and Graphical Presentation


The Summary of TSP-1hr Concentration (µg/m3) at AM1
The L Louey
TSP-1hr Concentration (µg/m3)
600
500
400
300
200
100
0
4-Feb-2022
6-Feb-2022
8-Feb-2022
10-Feb-2022
12-Feb-2022
14-Feb-2022
16-Feb-2022
18-Feb-2022
20-Feb-2022
22-Feb-2022
24-Feb-2022
Date
Average
Action Level
Limit Level


The Summary of TSP-1hr Concentration (µg/m3) at AM2
Hin Keng Estate - Hin Wan House
TSP-1hr Concentration (µg/m3)
600
500
400
300
200
100
0
4 Feb 2022
6 Feb 2022
8 Feb 2022
10 Feb 2022
12 Feb 2022
14 Feb 2022
16 Feb 2022
18 Feb 2022
20 Feb 2022
22 Feb 2022
24 Feb 2022
Date
Average
Action Level
Limit Level

Appendix L
Location Plan of Noise Monitoring Station



LEGEND:

- SITE BOUNDARY OF SHA TIN WATER TREATMENT WORKS
- 300m STUDY AREA
- WORKS AREA
- HK2 — THE L LOUEY (SOUTH)
- HK5 — HIN KENG ESTATE – HIN WAN HOUSE
- HK7 — CUHKFAA THOMAS CHEUNG SCHOOL

REV. 修訂	DESCRIPTION 內容摘要	BY 由	CHECKED 核對	DATE 日期

水務署
WATER SUPPLIES DEPARTMENT

AGREEMENT NO. CE 13/2009 (WS)
IN-SITU REPROVISIONING OF SHA TIN WATER TREATMENT WORKS – SOUTH WORKS
DESIGN AND CONSTRUCTION

LOCATIONS OF PROPOSED NOISE MONITORING STATIONS

AECOM

DRG. NO. 圖表編號: 60162073/EM&A/FIG 4

DESIGNED BY 設計	CONTRACT NO. 合約編號	P. IN. APPROVED 批准人
DRAWN BY 繪圖 NHP	STATUS 狀況	
SCALE 比例 A3 1 : 5000		
DIMENSIONS ARE IN 尺寸單位 METRES	© COPYRIGHT RESERVED 版權所有	

P:\Projects\60162073\Drawing\REPORT\EM&A\803.dwg 2012-11-08 13:42 CAIZP

Appendix M
Calibration Certificates (Noise)

MAXLAB

CALIBRATION CERTIFICATE

Certificate Information

Date of Issue	8-Dec-2021	**Certificate Number**	MLCN213465S

Customer Information

Company Name	Acumen Environmental Engineering and Technologies Co. Ltd.
Address	Unit D, 12/F, Ford Glory Plaza, Nos. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong

Equipment-under-Test (EUT)

Description	Sound Level Meter
Manufacturer	Lutron
Model Number	SL-4033SD
Serial Number	I.485446
Equipment Number	--

Calibration Particular

Date of Calibration	8-Dec-2021		
Calibration Equipment	4231(MLTE008) / AV200063 / 23-Jun-2023		
Calibration Procedure	MLCG00, MLCG15		
Calibration Conditions	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. All calibration results were within EUT specification. The cover of the microphone was found damaged.		

Approved By & Date

K.O. Lo 8-Dec-2021

Statements

* Calibration equipment used for this calibration are traceable to national / international standards.
* 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.
* MaxLab Calibration Centre Limited shall not be liable for any loss or damage resulting from the use of the EUT.
* 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.

萬儀校正中心有限公司
MaxLab Calibration Centre Limited
香港新界葵涌華星街 16-18 號保盈工業大廈 9 樓 B 室
Unit B, 9/F., Boldwin Industrial Bldg., 16-18 Wah Sing Street, Kwai Chung, N.T., Hong Kong Tel: (852) 2116 1380 Fax: (852) 2264 6480 Email: info@maxlab.com.hk

MAXLAB

Certificate No. MLCN213465S

Calibration Data

Frequency / Time Weighting	Range	EUT Reading	Standard Reading	EUT Error	Calibration Uncertainty	EUT Specification
A / FAST	50 - 100 dB	93.9 dB	94.0 dB	-0.1 dB	0.2 dB	± 1.1 dB
(1 kHz Input)	80 - 130 dB	93.8 dB	94.0 dB	-0.2 dB	0.2 dB	± 1.1 dB
		113.8 dB	114.0 dB	-0.2 dB	0.2 dB	± 1.1 dB
C / FAST	50 - 100 dB	94.1 dB	94.0 dB	0.1 dB	0.2 dB	± 1.1 dB
(1 kHz Input)	80 - 130 dB	93.8 dB	94.0 dB	-0.2 dB	0.2 dB	± 1.1 dB
		113.9 dB	114.0 dB	-0.1 dB	0.2 dB	± 1.1 dB
A / SLOW	50 - 100 dB	93.9 dB	94.0 dB	-0.1 dB	0.2 dB	± 1.1 dB
(1 kHz Input)	80 - 130 dB	113.8 dB	114.0 dB	-0.2 dB	0.2 dB	± 1.1 dB
C / SLOW	50 - 100 dB	94.1 dB	94.0 dB	0.1 dB	0.2 dB	± 1.1 dB
(1 kHz Input)	80 - 130 dB	113.9 dB	114.0 dB	-0.1 dB	0.2 dB	± 1.1 dB

- END -

Calibrated By : Dan
Date : 8-Dec-2021

Checked By : K.O. Lo
Date : 8-Dec-2021

萬儀校正中心有限公司
MaxLab Calibration Centre Limited
香港新界葵涌華星街 16-18 號保盈工業大廈 9 樓 B 室
Unit B, 9/F., Boldwin Industrial Bldg., 16-18 Wah Sing Street, Kwai Chung, N.T., Hong Kong Tel: (852) 2116 1380 Fax: (852) 2264 6480 Email: info@maxlab.com.hk

MAXLAB

CALIBRATION CERTIFICATE

Certificate Information

Date of Issue	20-Mar-2021	**Certificate Number**	MLCN210569S

Customer Information

Company Name	Acuity Sustainability Consulting Limited
Address	Unit C, 11/F., Ford Glory Plaza, Nos. 37-39 Wing Hing Street, Cheung Sha Wan, Kowloon, HK

Equipment-under-Test (EUT)

Description	Sound Calibrator
Manufacturer	Svantek
Model Number	SV 33B
Serial Number	83042
Equipment Number	--

Calibration Particular

Date of Calibration	20-Mar-2021		
Calibration Equipment	4231(MLTE008) / AV200063 / 23-Jun-23 1357(MLTE190) / MLEC20/05/02 / 26-May-21		
Calibration Procedure	MLCG00, MLCG15		
Calibration Conditions	Laboratory	Temperature	23 °C ± 5 °C
		Relative Humidity	55% ± 25%
	EUT	Stabilizing Time	Over 3 hours
		Warm-up Time	Not applicable
		Power Supply	Internal battery
Calibration Results	Calibration data were detailed in the continuation pages. All calibration results were within EUT specification.		

Approved By & Date

K.O. Lo 20-Mar-2021

Statements

* Calibration equipment used for this calibration are traceable to national / international standards.
* 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.
* MaxLab Calibration Centre Limited shall not be liable for any loss or damage resulting from the use of the EUT.
* 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.

萬儀校正中心有限公司
MaxLab Calibration Centre Limited
香港新界葵涌華星街 16-18 號保盈工業大廈 9 樓 B 室
Unit B, 9/F., Boldwin Industrial Bldg., 16-18 Wah Sing Street, Kwai Chung, N.T., Hong Kong Tel: (852) 2116 1380 Fax: (852) 2264 6480 Email: info@maxlab.com.hk

MAXLAB

Certificate No. MLCN210569S

Calibration Data

EUT Setting	Standard Reading	EUT Error	Calibration Uncertainty	EUT Specification
114 dB	114.0 dB	0.0 dB	0.15 dB	± 0.3 dB

- END -

Calibrated By : Dan
Date : 20-Mar-21

Checked K.O. Lo
Date : 20-Mar-21

萬儀校正中心有限公司
MaxLab Calibration Centre Limited
香港新界葵涌華星街 16-18 號保盈工業大廈 9 樓 B 室
Unit B, 9/F., Boldwin Industrial Bldg., 16-18 Wah Sing Street, Kwai Chung, N.T., Hong Kong Tel: (852) 2116 1380 Fax: (852) 2264 6480 Email: info@maxlab.com.hk

Kestrel®
Weather & Environmental Meters
by NK

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 +/–1.04% within the airspeed range 706.6 to 3923.9 fpm (3.59 to 19.93 m/s), and +/–1.66% within the airspeed range 166.6 to 706.6 fpm (0.85 to 3.59 m/s).

Temperature:

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

Direction / Heading

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

Relative Humidity:

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

Barometric Pressure:

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

Approved By:

Michael Naughton, Engineering Manager

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

SENSORS

SENSOR	1000	2000	2500	3000	3500	3500 DT	4000	4200	4250	4300	4400	4500	4500 HOR	ACCURACY (+/-)*	RESOLUTION	SPECIFICATION RANGE	OPERATIONAL RANGE	NOTES
Wind Speed | Air Flow	•	•	•	•	•	•	•	•	•	•	•	•	•	Larger of 3% of reading, least significant digit or 20 ft/min	0.1 m/s 1 ft/min 0.1 km/h 0.1 mph 0.1 knots 1 B	0.6 to 40.0 m/s 118 to 7,874 ft/min 2.2 to 144.0 km/h 1.3 to 89.5 mph 1.2 to 77.8 knots 0 to 12 B	0.6 to 60.0 m/s 118 to 11,811 ft/min 2.2 to 216.0 km/h 1.3 to 134.2 mph 1.2 to 116.6 knots 0 to 12 B	1 inch|25 mm diameter impeller with precision axle and low-friction Zytel® bearings. Startup speed stated as lower limit, readings may be taken down to 0.4 m/s | 79 ft/min | 1.5 km/h | .9 mph | .8 kt after impeller startup. Off-axis accuracy -1% @ 5° off-axis; -2% @ 10°; -3% @ 15°. Calibration drift < 1% after 100 hours use at 16 MPH | 7 m/s. Replacement impeller (NK PN-0801) field installs without tools. (US Patent 5,783,753). Wind speed calibration and testing should be done with triangle on impeller located at the top front face of the Kestrel.
Ambient Temperature		•	•	•	•	•	•	•	•	•	•	•	•	0.9 °F 0.5 °C	0.1 °F 0.1 °C	-20.0 to 158.0 °F -29.0 to 70.0 °C	14.0 to 131.0 °F -10.0 to 55.0 °C	Hermetically-sealed, precision thermistor mounted externally and thermally isolated (US Patent 5,939,645) for rapid response. Airflow of 2.2 mph|1 m/s or greater provides fastest response and reduction of insolation effect. Calibration drift negligible. Thermistor may also be used to measure temperature of water or snow by submerging thermistor 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											•			°F 1.4 °C	0.1 °F 0.1 °C	-20.0 to 140.0 °F -29.0 to 60.0 °C	14.0 to 131.0 °F -10.0 to 55.0 °C	Temperature inside 1in|25 mm black powder coated copper globe converted to Tg equivalent for standard 6 in|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 6,257,074). 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 Kestrel Humidity Calibration Kit (NK PN-0802).
Pressure				•			•	•	•	•	•	•	•	inHg 0.03 1.0 hPa|mbar 0.01 PSI	0.01 inHg 0.1 hPa|mbar 0.01 PSI	8.86 to 32.49 inHg 300.0 to 1100.0 hPa|mbar 4.35 to 15.95 PSI *and* 32.0 to 185.0 °F 0.0 to 85.0 °C	0.30 to 48.87 inHg 10.0 to 1654.7 hPa|mbar 0.14 to 24.00 PSI *and* 14.0 to 131.0 °F -10.0 to 55.0 °C	Monolithic silicon piezoresistive pressure sensor with second-order temperature correction. Pressure sensor may be recalibrated at factory or in field. Adjustable reference altitude allows display of station pressure or barometric pressure corrected to MSL. Kestrel 4200 displays station pressure on a dedicated screen. Kestrel 2500 and 3500 display continuously updating three-hour barometric pressure trend indicator: rising rapidly, rising, steady, falling, falling rapidly. Kestrel 4000 series displays pressure trend through graphing function. PSI display on Kestrel 4000 series only.
Compass												•	•	5°	1° 1/16th Cardinal Scale	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 position. Self-calibration routine eliminates magnetic error from batteries or unit and must be run after every full power-down (battery removal or change). Readout indicates direction to which the back of the unit is pointed 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	4250	4300	4400	4500	4500 HOR	ACCURACY (+/-)*	RESOLUTION	SPECIFICATION RANGE	SENSORS EMPLOYED	NOTES
Air Density								•	•					0.0002 lb/ft³ 0.0033 kg/m³	0.001 lbs/ft³ 0.001 kg/m³	Refer to Ranges for Sensors Employed	Temperature Relative Humidity Pressure	Mass of air per unit volume
Air Flow								•						6.71%	1 cfm 1 m³/hr 1 m³/m 0.1m³/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 (units: in, ft, cm or m). Maximum duct dimension input: 258.0 in | 21.5 ft | 655.3 cm | 6.55 m.
Altitude			•		•	•	•	•	•	•	•	•	•	typical: 23.6 ft 7.2 m max: 48.2 ft 14.7 m	1 ft 1 m	typical: 750 to 1100 mBar max: 300 to 750 mBar	Pressure User Input (Reference Pressure)	Height above Mean Sea Level ("MSL"). Temperature compensated pressure (barometric) altimeter requires accurate reference barometric pressure to produce maximum absolute accuracy. Both accuracy specs corresponds to a reference pressure anywhere from 850 to 1100 mBar.
Barometric Pressure			•		•	•	•	•	•	•	•	•	•	0.07 inHg 2.4 hPa|mbar 0.03 PSI	0.01 inHg 0.1 hPa|mbar 0.01 PSI	Refer to Ranges for Sensors Employed	Pressure User Input (Reference Altitude)	Air pressure that would be present in identical conditions at MSL. Station pressure compensated for local elevation provided by reference altitude. Requires accurate reference altitude to produce maximum absolute accuracy.
Crosswind & Headwind/Tailwind												•	•	7.1%	1 mph 1 ft/min 0.1 km/h 0.1 m/s 0.1 knots	Refer to Ranges for Sensors Employed	Wind Speed Compass	Effective wind relative to a target or travel direction. Auto-switching 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. Safe range for pesticide spraying is 4 to 16 °F / 2 to 9 °C.
Density Altitude							•	•	•	•	•	•	•	226 ft 69 m	1 ft 1 m	Refer to Ranges for Sensors Employed	Temperature Relative Humidity Pressure	Local air density converted to equivalent elevation above sea level in a uniform layer 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 Range for Temperature Sensor	Temperature Relative Humidity	Temperature that a volume of air must be cooled to at constant pressure for the water vapor present to condense into dew and form on a solid surface. Can also be considered to be the water-to-air saturation temperature.
Evaporation Rate										•				0.01 lb/ft²/hr 0.06 kg/m2/hr	0.01 lb/ft²/hr 0.01 kg/m²/hr	Refer to Ranges for Sensors Employed	Wind Speed Temperature Relative Humidity Pressure User Input (Concrete Temperature)	The rate at which moisture is lost from the surface of curing concrete. Requires user measurement and entry of concrete temperature obtained with an accurate IR or probe thermometer (°F or °C, not included). Readings should be taken 20 inches above pour surface with the thermistor shaded, and averaged for 6-10 seconds using built-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 Index (HI) tables. Measurement range limited by extent of published tables.
Moisture Content | Humidity Ratio ("Grains")								•	•					3 gpp .04 g/kg	0.1 gpp 0.01 g/kg	Refer to Ranges for Sensors Employed	Temperature Relative Humidity Pressure	Mass of water vapor in a mass of air.
Relative Air Density									•					0.3%	0.1%	Refer to Ranges for Sensors Employed	Temperature Relative Humidity Pressure	The ratio, expressed as a percentage, of measured air density to the air density of a standard atmosphere as defined by the ICAO.
Thermal Work Limit (TWL)											•			10.9 W/m²	0.1 W/m²	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 (Tnwb), globe temperature (Tg), and dry bulb temperature (Td). User settable on-screen warning zones.
Wet Bulb Temperature - Naturally Aspirated (Tnwb)											•			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, Tnwb only undergoes forced convection from the ambient air velocity. Tnwb is a measure of the evaporative cooling that the air will allow. This is accounted for by combining the effects of, mainly, relative humidity and windspeed.
Wet Bulb Temperature - Psychrometric					•	•	•	•	•	•	•	•	•	3.2 °F 1.8 °C	0.1 °F 0.1 °C	Refer to Ranges for Sensors Employed	Temperature Relative Humidity Pressure	Temperature indicated by a sling psychrometer. Due to nature of the psychrometric ratio for 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		•	•	•	•		•	•	•	•	•	•	•	1.6 °F 0.9 °C	0.1 °F 0.1 °C	Refer to Ranges for Sensors Employed	Wind Speed Temperature	Perceived temperature resulting from combined effect of wind speed and temperature. 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

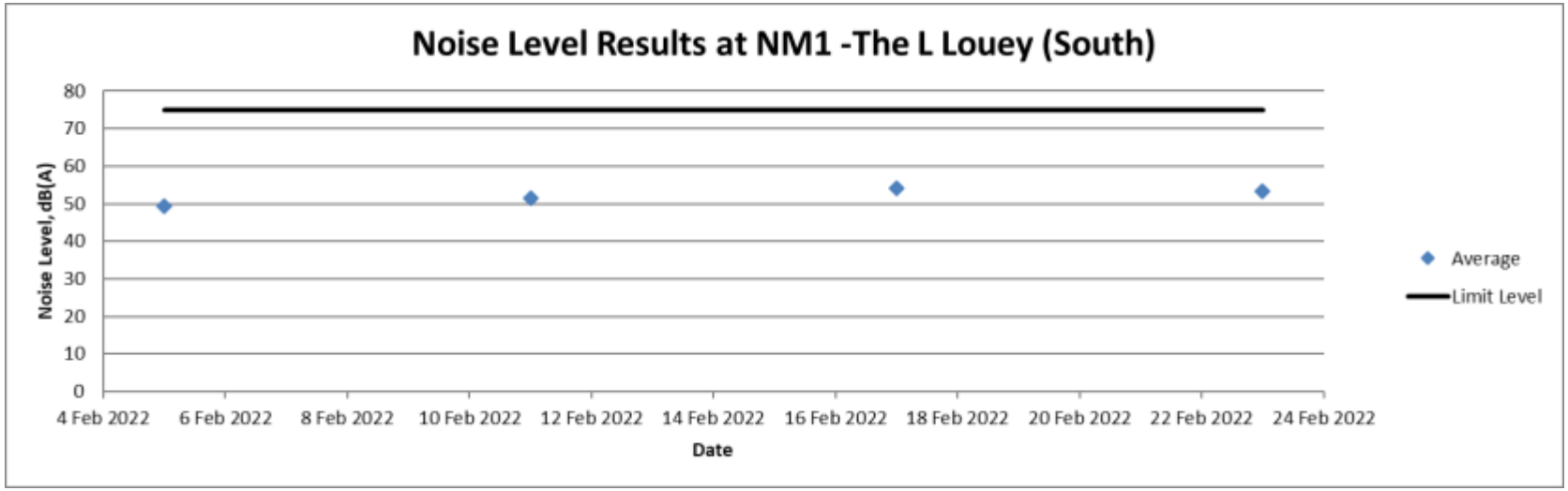
Display & Backlight	•	•		•										Reflective 3 1/2 digit LCD. Digit height 0.55 in / 9 mm. Aviation green electroluminescent backlight. Manual activation with auto-off.
			•		•	•								Reflective 5 digit LCD. Digit height 0.36 in / 9 mm. Choice of aviation green or visible red (NV models only) electroluminescent backlight. Manual activation with auto-off.
Response Time & Display Update							•	•	•	•	•	•	•	Multifunction, multi-digit monochrome dot-matrix display. Choice of aviation green or visible red (NV models only) electroluminescent backlight. Automatic or manual activation.
	•	•	•	•	•	•	•	•	•	•	•	•	•	All measurements except those based on relative humidity respond accurately within 1 second. Relative humidity and all measurements which include RH in their calculation may require as long as 1 minute to fully equilibrate to a large change in the measurement environment. Display updates every 1 second.
	•	•	•	•	•	•								One-button clear and restart of Max Wind Gust and Average Wind measurement.
Max/Avg Wind							•	•	•	•	•	•	•	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, TWL, evaporation rate.
Data Storage & Graphical Display, Min/Max/Avg History							4000 points	3200 points	3200 points	3600 points	2300 points	2900 points	2500 points	Minimum, maximum, average and logged 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, overwrite on or off. Logs even when display off except for 2 and 5 second intervals (code version 4.18 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:** Adjustable power consumption and radio range from up to 30 ft | 9 meters. Individual unit ID and 4-digit PIN code preprogrammed for easy identification and data security when pairing and transmitting. 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.
							•	•	•	•	•	•	•	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.
							•	•	•	•	•	•	•	Requires optional PC interface (USB or RS-232) or Bluetooth data transfer option and provided software.
Languages							•	•	•	•	•	•	•	English, French, German, Italian, Spanish.
Certifications	•	•	•	•	•	•	•	•	•	•	•	•	•	CE certified, RoHS and WEEE compliant. Individually tested to NIST-traceable standards (written certificate of tests available at additional charge).
Origin	•	•	•	•	•	•	•	•	•	•	•	•	•	Designed and manufactured in the USA from US and imported components. Complies with Regional Value Content and Tariff Code Transformation requirements for NAFTA Preference Criterion B.
Battery Life	•	•	•	•	•	•								CR2032, one, included. Average life, 300 hours. Battery life reduced by backlight use in 2000 to 3500 models.
							•	•	•	•	•	•	•	**Standard Models:** AAA Alkaline, two, included. Average life, 400 hours of use, reduced by backlight or Bluetooth radio transmission use.
Shock Resistance	•	•	•	•	•	•	•	•	•	•	•	•	•	MIL-STD-810g, Transit Shock, Method 516.5 Procedure IV; unit only; impact may damage replaceable impeller.
Sealing	•	•	•	•	•	•	•	•	•	•	•	•	•	Waterproof (IP67 and NEMA-6).
Operational Temperature Limits	•	•	•	•	•	•	•	•	•	•	•	•	•	14° F to 131° F | -10 °C to 55 °C. Measurements may be taken beyond the limits of the operational temperature range of 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 to take reading.
Storage Temperature	•	•	•	•	•	•	•	•	•	•	•	•	•	-22.0 °F to 140.0 °F | -30.0 °C to 60.0 °C
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 slip-on cover).
							•	•	•	•		•	•	5.0 x 1.8 x 1.1 in / 12.7 x 4.5 x 2.8 cm, 3.6 oz / 102 g.
											•			6.5 x 2.3 x 1.1 in / 16.5 x 5.9 x 2.8 cm, 4.4 oz / 125 g.

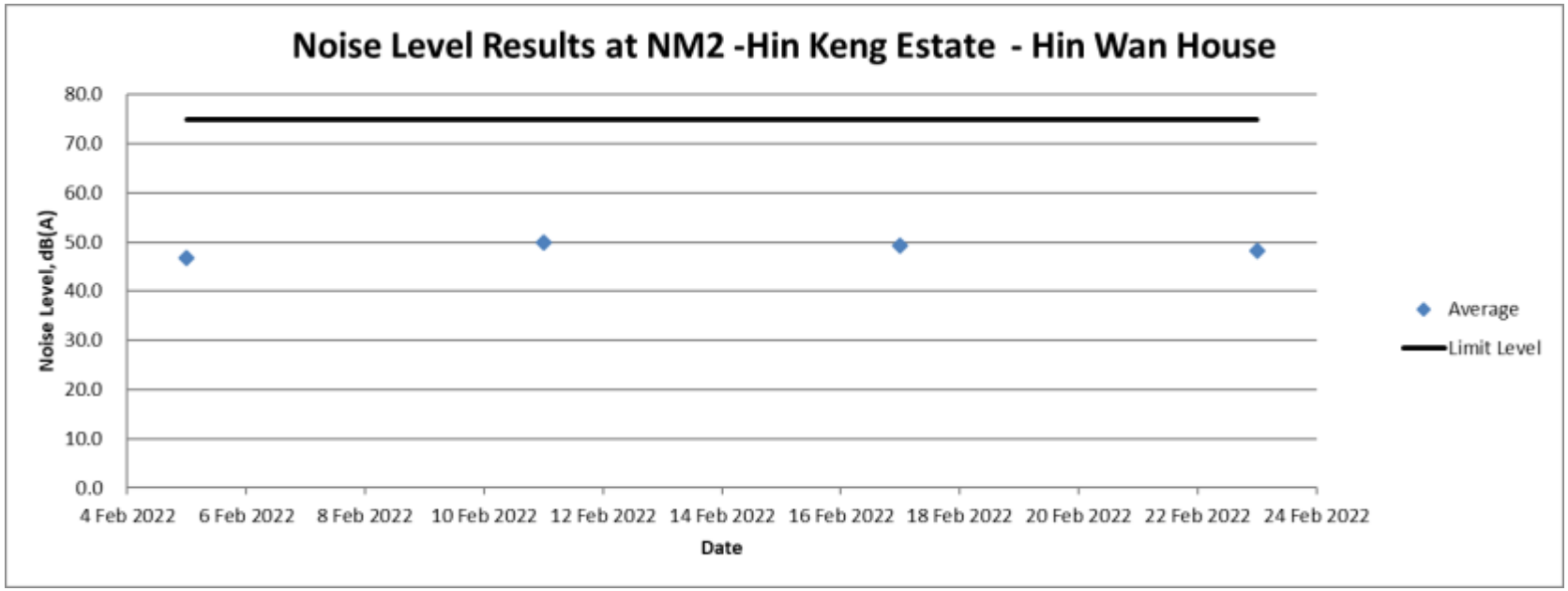
* NOTE. Accuracy calculated as uncertainty of the measurement derived from statistical analysis considering the comined effects from primary sensor specifications, circuit conversions, and all other sources of error using a coverage factor of k=2, or two standard deviations (2Σ).

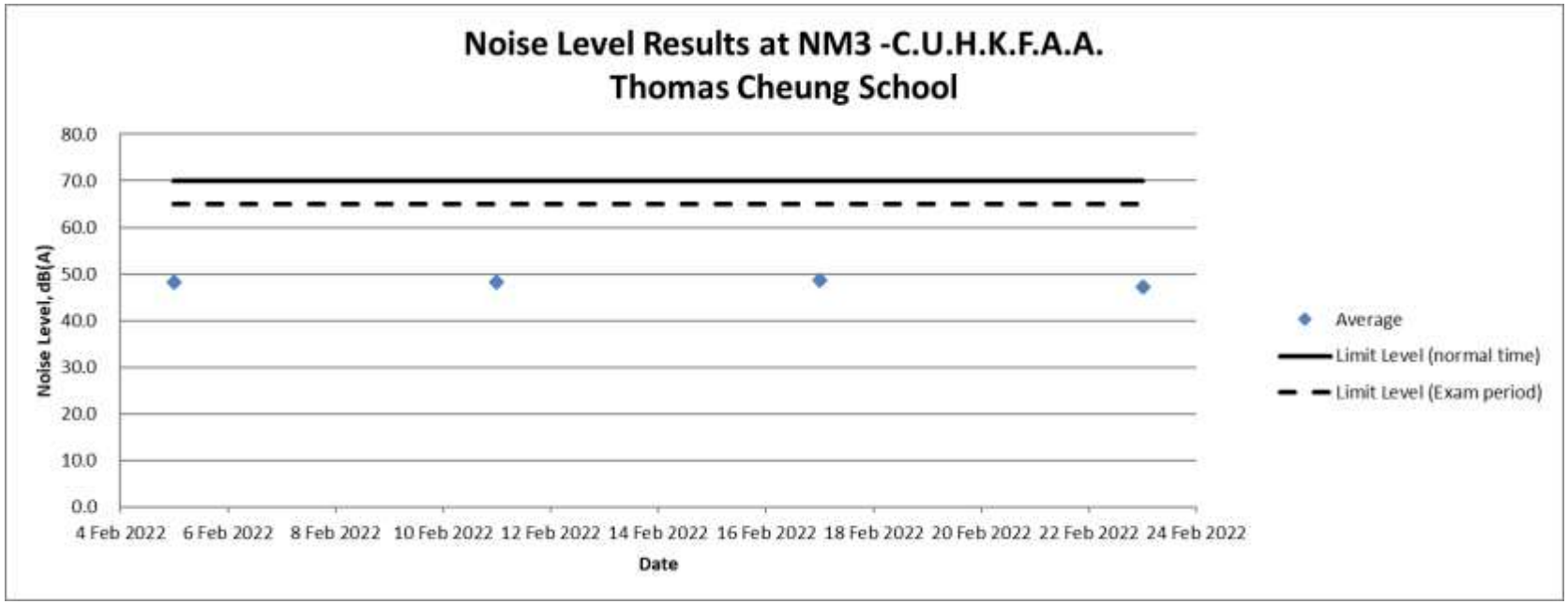
Please note, these specifications are valid for all Kestrel 4400 products and all other Kestrel 4000 series with a serial number higher than 659340. If your product has a lower serial number, please reference the previous version of the specifications.

© 2013 Nielsen-Kellerman | 21 Creek Circle Boothwyn PA 19061 USA | www.NKhome.com

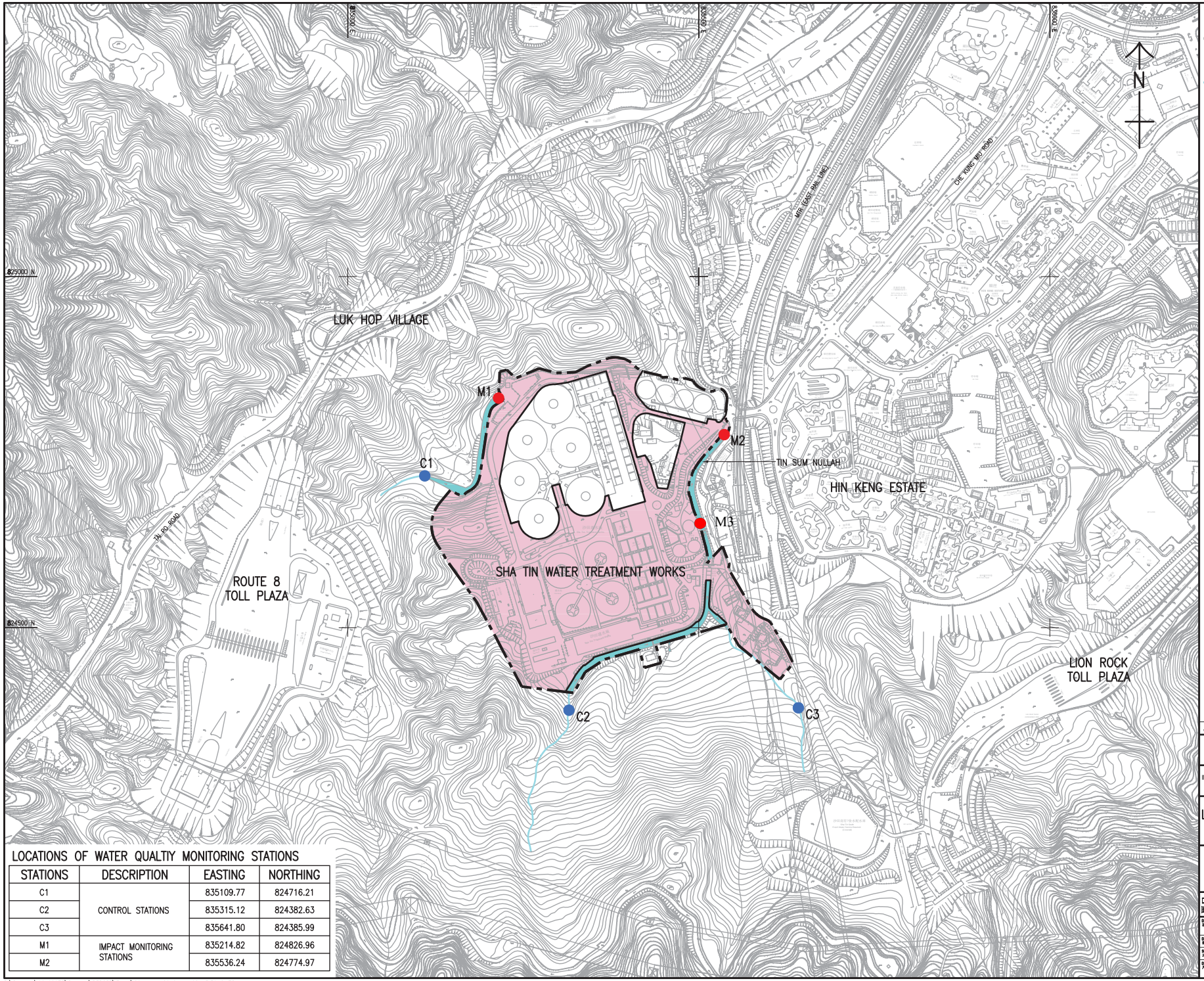
Appendix N
Impact Noise Monitoring Results and Graphical Presentation


Noise Level Results at NM1 -The L Louey (South)
Noise Level, dB(A)
80
70
60
50
40
30
20
10
0
4 Feb 2022
6 Feb 2022
8 Feb 2022
10 Feb 2022
12 Feb 2022
14 Feb 2022
16 Feb 2022
18 Feb 2022
20 Feb 2022
22 Feb 2022
24 Feb 2022
Date
Average
Limit Level


Noise Level Results at NM2 -Hin Keng Estate - Hin Wan House
Noise Level, dB(A)
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
4 Feb 2022
6 Feb 2022
8 Feb 2022
10 Feb 2022
12 Feb 2022
14 Feb 2022
16 Feb 2022
18 Feb 2022
20 Feb 2022
22 Feb 2022
24 Feb 2022
Date
Average
Limit Level


Noise Level Results at NM3 -C.U.H.K.F.A.A.
Thomas Cheung School
Noise Level, dB(A)
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
4 Feb 2022
6 Feb 2022
8 Feb 2022
10 Feb 2022
12 Feb 2022
14 Feb 2022
16 Feb 2022
18 Feb 2022
20 Feb 2022
22 Feb 2022
24 Feb 2022
Date
Average
Limit Level (normal time)
Limit Level (Exam period)

Appendix O
Location Plan of Water Quality Monitoring Station



LEGEND:

- SITE BOUNDARY OF SHATIN WATER TREATMENT WORKS
- WORKS AREA
- INLAND WATER COURSE
- IMPACT MONITORING STATION
- CONTROL STATION

LOCATIONS OF WATER QUALTIY MONITORING STATIONS

STATIONS	DESCRIPTION	EASTING	NORTHING
C1	CONTROL STATIONS	835109.77	824716.21
C2		835315.12	824382.63
C3		835641.80	824385.99
M1	IMPACT MONITORING STATIONS	835214.82	824826.96
M2		835536.24	824774.97

水務署
WATER SUPPLIES DEPARTMENT

AGREEMENT NO. CE 13/2009 (WS)
IN-SITU REPROVISIONING OF SHA TIN WATER TREATMENT WORKS-SOUTH WORKS
DESIGN AND CONSTRUCTION

LOCATIONS OF PROPOSED WATER QUALITY MONITORING STATIONS

AECOM

DRG.NO. 60162073/EM&A/FIG 5

DESIGNED BY: _
DRAWN BY: DXL
SCALE: A3 1 : 5000
DIMENSIONS ARE IN: METRES

© COPYRIGHT RESERVED 版權所有

P:\Projects\60162073\Drawing\REPORT\EM&A\801.dwg 2012-11-08 13:39 CAIZP

Appendix P
Calibration Certificate (Water Quality)

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

Test Report No. : R-BA120081
Date of Issue : 16 December 2021
Page No. : 1 of 2

PART A - CUSTOMER INFORMATION

Acuity Sustainability Consulting Limited
Unit E, 12/F, Ford Glory Plaza 37-39 Wing
Hong Street, Cheung Sha Wan
Kowloon (HK) Hong Kong
Attn :

PART B - SAMPLE INFORMATION

Name of Equipment :	HORIBA U-53
Manufacturer :	HORIBA
Serial Number :	NEKVM2XU
Date of Received :	09 December 2021
Date of Calibration :	15 December 2021
Date of Next Calibration :	14 March 2022

PART C - REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

Test Parameter	Reference Method
pH value	APHA 21e 4500 H+
Temperature	Section 6 of international Accreditation New Zealand Technical Guide no. 3 Second edition March 2008: Working Thermometer Calibration Procedure
Dissolved oxygen	APHA 21e 4500 O
Salinity	APHA 21e 2520B
Turbidity	APHA 21e 2130B

PART D - CALIBRATION RESULT

(1) pH value

TARGET (PH UNIT)	DISPLAY READING	TOLERANCE	RESULT
4.00	3.99	-0.01	Satisfactory
7.42	7.22	-0.20	Satisfactory
10.01	9.81	-0.20	Satisfactory

Tolerance of pH value should be less than ± 0.2 (pH unit)

(2) Temperature

READING OF REF. THERMOMETER (°C)	DISPLAY READING (°C)	TOLERANCE (°C)	RESULT
16	16.30	0.30	Satisfactory
22	22.00	0.00	Satisfactory
34	33.38	-0.62	Satisfactory

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

(3) Dissolved oxygen

EXPECTED READING (MG/L)	DISPLAY READING (MG/L)	TOLERANCE (MG/L)	RESULT
8.39	8.17	-0.22	Satisfactory
6.59	6.79	0.20	Satisfactory

--- CONTINUED ON NEXT PAGE ---

AUTHORIZED SIGNATORY:

Lee Chun-ning
Assistant Manager (Chemical Testing)

This report shall not be reproduced unless with prior written approval from this laboratory

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

Test Report No. : R-BA120081
Date of Issue : 16 December 2021

EXPECTED READING (MG/L)	DISPLAY READING (MG/L)	TOLERANCE (MG/L)	RESULT
5.96	6.10	0.14	Satisfactory
2.21	1.76	-0.45	Satisfactory

Tolerance of Dissolved oxygen should be less than ± 0.5 (mg/L)

(4) Salinity

EXPECTED READING (G/L)	DISPLAY READING (G/L)	TOLERANCE (%)	RESULT
10	9.69	-3.10	Satisfactory
20	20.50	2.50	Satisfactory
30	31.18	3.93	Satisfactory

Tolerance of Salinity should be less than ± 10.0 (%)

(5) Turbidity

EXPECTED READING (NTU)	DISPLAY READING (NTU)	TOLERANCE (%)	RESULT
0	0.17	--	Satisfactory
10	9.90	-1.0	Satisfactory
20	19.7	-1.5	Satisfactory
100	104	4.0	Satisfactory
800	796	-0.5	Satisfactory

Tolerance of Turbidity should be less than ± 10.0 (%)

Remark(s)

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

·The results relate only to the calibrated equipment as received

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

·"Displayed Reading" denotes the figure shown on item under calibration/ checking regardless of equipment precision or significant figures.

·The "Tolerance Limit" mentioned is the acceptance criteria applicable for similar equipment used by Quality Pro Test-Consult Ltd. or quoted form relevant international standards.

--- END OF REPORT ---

This report shall not be reproduced unless with prior written approval from this laboratory

Appendix Q
The Certification of Laboratory with HOKLAS accredited Analytical Tests

Hong Kong Accreditation Service
香港認可處

Certificate of Accreditation
認可證書

This is to certify that
特此證明

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

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

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

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

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

Environmental Testing

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

環境測試

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

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

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

Date	Time	Weather	Location	Co-ordinates		Water Depth	Sample Depth	Temp.		DO con.		Turbidity		pH		SS
				East	North	m	m	°C		mg/L		NTU		unit		mg/L
4/2/2022	12:36	Fine	C1	835110	824716	0.04	0.02	17.12	17.33	8.84	8.01	0.56	0.84	7.51	7.78	1.1
	12:58	Fine	C2	835403	824470	0.02	0.01	18.93	19.05	8.23	8.42	0.55	0.48	7.96	7.67	<1
	N/A	Fine	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
	12:06	Fine	M1	835215	824827	0.8	0.4	17.03	17.39	9.32	8.92	1.17	1.07	8.03	8.1	1.5
	11:18	Fine	M2	835536	824775	0.05	0.025	17.77	17.79	9.47	9.51	0.54	0	8.31	8.29	<1
	11:30	Fine	M3	835501	824648	0.02	0.01	17.87	17.77	9.19	9.18	0.82	0.06	8.27	8.27	<1
7/2/2022	11:50	Sunny	C1	835110	824716	0.04	0.02	17.14	17.19	9.59	9.93	1.38	0.99	7.48	7.58	<1
	12:15	Sunny	C2	835403	824470	0.02	0.01	17.43	17.39	8.76	9.07	1.44	1.2	7.82	7.84	3.7
	N/A	Sunny	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
	11:25	Sunny	M1	835215	824827	0.8	0.4	17.52	17.48	9.44	8.97	1.47	1.29	7.86	7.95	2.0
	10:39	Sunny	M2	835536	824775	0.05	0.025	17.52	17.51	9.63	9.04	1.22	1.18	8.03	8.02	<1
	10:52	Sunny	M3	835501	824648	0.02	0.01	17.52	17.53	9.65	9.27	0.85	1.05	8.01	8.04	<1
9/2/2022	12:08	Cloudy	C1	835110	824716	0.04	0.02	19.19	19.31	8.14	7.92	1.19	1.39	7.39	7.36	**5.2**
	12:29	Cloudy	C2	835403	824470	0.02	0.01	19.24	19.4	9.14	8.13	1.4	1.35	7.45	7.4	**6.0**
	N/A	Cloudy	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
	11:42	Cloudy	M1	835215	824827	0.8	0.4	17.96	18.96	9.02	9.11	1.08	0.89	7.73	7.56	**3.5**
	10:53	Cloudy	M2	835536	824775	0.05	0.025	17.88	17.81	8.94	8.98	1.03	1.2	8.07	8.07	2.8
	11:07	Cloudy	M3	835501	824648	0.02	0.01	17.99	18.87	9.33	9.41	0.97	0.97	7.81	7.74	<1
11/2/2022	11:05	Sunny	C1	835110	824716	0.04	0.02	19.92	20.42	8.58	8.7	0.27	0.69	7.52	7.51	<1
	10:40	Sunny	C2	835403	824470	0.02	0.01	19.91	20.31	8.54	8.25	0.13	0.56	7.39	7.44	<1
	N/A	Sunny	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
	10:55	Sunny	M1	835215	824827	0.8	0.4	19.8	19.86	8.96	9.36	0.53	0.23	7.91	7.6	<1
	10:25	Sunny	M2	835536	824775	0.05	0.025	18.64	18.53	9.1	9.3	0.08	0	8.19	8.19	<1
	10:30	Sunny	M3	835501	824648	0.02	0.01	19.04	18.41	9.79	9.69	0.96	0.07	7.87	8	<1
14/2/2022	12:41	Fine	C1	835110	824716	0.04	0.02	17.6	17.61	9.03	8.35	0.36	0.02	7.39	7.4	<1
	13:05	Fine	C2	835403	824470	0.02	0.01	17.9	17.77	9.33	8.16	1.22	1.13	7.54	7.54	<1
	N/A	Fine	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
	12:15	Fine	M1	835215	824827	0.8	0.4	17.57	17.6	9.25	8.99	0.78	0.78	7.57	7.52	<1
	11:29	Fine	M2	835536	824775	0.05	0.025	17.59	17.58	9.55	9.18	1.68	0.63	7.65	7.58	2.1
	11:43	Fine	M3	835501	824648	0.02	0.01	17.92	17.73	9.69	9.31	0.31	0.09	8.3	8.16	<1
16/2/2022	10:15	Fine	C1	835110	824716	0.04	0.02	17.44	17.45	9.14	9.37	1.44	1.59	7.26	7.16	**7.4**
	10:00	Fine	C2	835403	824470	0.02	0.01	17.55	17.65	8.94	8.54	1.05	1.22	7.38	7.29	<1
	N/A	Fine	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
	10:25	Fine	M1	835215	824827	0.8	0.4	17.52	17.55	9.22	9.08	1.36	1.31	7.24	7.21	<1
	9:30	Fine	M2	835536	824775	0.05	0.025	18.16	18.16	9.49	9.21	1.03	1.16	7.51	7.44	<1
	9:35	Fine	M3	835501	824648	0.02	0.01	17.75	17.8	9.17	9.28	1.02	1.07	7.71	7.77	<1

18/2/2022	12:26	Cloudy	C1	835110	824716	0.04	0.02	17.41	17.41	10.03	9.27	1.51	1.47	7.61	7.76	3.6
	12:42	Cloudy	C2	835403	824470	0.02	0.01	17.36	17.48	9.77	9.35	1.13	1.23	7.82	7.84	1.4
	N/A	Cloudy	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
	11:48	Cloudy	M1	835215	824827	0.8	0.4	17.32	17.28	9.79	9.19	1.17	1.19	7.92	7.91	<1
	11:02	Cloudy	M2	835536	824775	0.05	0.025	17.49	17.35	9.56	9.2	1.25	1.17	7.93	7.93	1.2
	11:17	Cloudy	M3	835501	824648	0.02	0.01	17.5	17.51	9.22	9.34	1.02	1.09	7.96	7.98	<1
21/2/2022	10:10	Cloudy	C1	835110	824716	0.04	0.02	11.67	11.63	9.32	8.42	2.1	2.1	7.68	7.62	1.4
	9:55	Cloudy	C2	835403	824470	0.02	0.01	12.73	12.71	9.39	9.03	1.96	1.9	7.58	7.6	2.0
	N/A	Cloudy	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
	10:20	Cloudy	M1	835215	824827	0.8	0.4	11.7	11.62	9.91	9.81	2.23	2.44	7.62	7.67	3.2
	9:35	Cloudy	M2	835536	824775	0.05	0.025	12.2	12.06	9.37	9.13	2.2	2.18	7.6	7.59	1.7
	9:30	Cloudy	M3	835501	824648	0.02	0.01	10.35	10.38	11.57	11.47	1.05	1.06	7.78	7.8	<1
23/2/2022	9:50	Fine	C1	835110	824716	0.04	0.02	14.19	14.12	8.57	9.03	2.13	2.27	7.41	7.44	1.0
	9:35	Fine	C2	835403	824470	0.02	0.01	14.16	14.2	8.18	9.01	2.57	2.63	7.35	7.37	1.6
	N/A	Fine	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
	10:00	Fine	M1	835215	824827	0.8	0.4	14.27	14.29	8.91	9.24	2.51	2.64	7.49	7.55	1.2
	10:25	Fine	M2	835536	824775	0.05	0.025	14.22	14.24	8.94	9	2.34	2.44	7.59	7.64	1.1
	10:30	Fine	M3	835501	824648	0.02	0.01	13.99	14.02	9.3	9.21	1.03	1	7.99	8.03	<1
25/2/2022	10:46	Fine	C1	835110	824716	0.04	0.02	15.96	15.93	7.87	7.55	1.35	1.43	7.32	7.37	**6.7**
	11:07	Fine	C2	835403	824470	0.02	0.01	16.01	15.99	8.21	8.37	1.62	1.19	7.24	7.27	1.3
	N/A	Fine	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
	10:28	Fine	M1	835215	824827	0.8	0.4	15.76	15.8	9.09	8.93	1.84	1.99	7.96	7.91	1.5
	9:36	Fine	M2	835536	824775	0.05	0.025	15.73	15.71	8.93	9.3	2.06	1.82	7.81	8.02	3.0
	9:25	Fine	M3	835501	824648	0.02	0.01	15.7	15.77	9.41	9.5	1.01	1.09	8.11	7.75	<1

Remark 1: Values that are <1 is assumed to be 1 during calculation.
Remark 2: Bolded values indicated exceedance of action level.
Remark 3: Underlined values indicated exceedance of limit level.

There were 4 exceedances of Action Level and 1 exceedance of Limit Level.
All exceedances were found non project related.

acumen

Acumen Laboratory and Testing Limited
Unit D, 12/F, Ford Glory Plaza, No. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number	: Q220002aR220208
Job Number	: R220208
Issue Date	: 08/02/2022
Name of Applicant	: Acumen Environmental Engineering and Technologies Co., Ltd.
Address of Applicant	: Unit D, 12/F, Ford Glory Plaza, No. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Project Name	: CJO-3113-956
Sample Description	: SS test
Laboratory ID	: R220208/1-5
Date of Sampling	: 04/02/2022
Date Received	: 04/02/2022
Test Period	: 04/02/2022 – 05/02/2022
Test Required	: 1. Suspended Solids (SS)
Method Used	: 1. In-house Method, QPL-15e
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

Acumen Laboratory and Testing Limited

Unit D, 12/F, Ford Glory Plaza, No. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number : Q220002aR220208

Job Number : R220208

Issue Date : 08/02/2022

Test Result:

Lab ID	Date of Sampling	Client Sample ID	Suspended Solids (SS), mg/L
R220208/1	04/02/2022	C1	1.1
R220208/2	04/02/2022	C2	<1
R220208/3	04/02/2022	M1	1.5
R220208/4	04/02/2022	M2	<1
R220208/5	04/02/2022	M3	<1

Note:
1. mg/L indicates milligram per liter
2. mg O_2/ L indicates milligram oxygen per liter
3. < indicates less than.
4. > indicates more than.
5. NA indicates Not Applicable.

End of Report

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

Acumen Laboratory and Testing Limited
Unit D, 12/F, Ford Glory Plaza, No. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number	: Q220002aR220219
Job Number	: R220219
Issue Date	: 09/02/2022
Name of Applicant	: Acumen Environmental Engineering and Technologies Co., Ltd.
Address of Applicant	: Unit D, 12/F, Ford Glory Plaza, No. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Project Name	: CJO-3113-957
Sample Description	: SS test
Laboratory ID	: R220219/1-5
Date of Sampling	: 07/02/2022
Date Received	: 07/02/2022
Test Period	: 07/02/2022 – 08/02/2022
Test Required	: 1. Suspended Solids (SS)
Method Used	: 1. In-house Method, QPL-15e
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

Acumen Laboratory and Testing Limited

Unit D, 12/F, Ford Glory Plaza, No. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number : Q220002aR220219

Job Number : R220219

Issue Date : 09/02/2022

Test Result:

Lab ID	Date of Sampling	Client Sample ID	Suspended Solids (SS), mg/L
R220219/1	07/02/2022	C1	<1
R220219/2	07/02/2022	C2	3.7
R220219/3	07/02/2022	M1	2.0
R220219/4	07/02/2022	M2	<1
R220219/5	07/02/2022	M3	<1

Note:
1. mg/L indicates milligram per liter
2. mg O_2/ L indicates milligram oxygen per liter
3. < indicates less than.
4. > indicates more than.
5. NA indicates Not Applicable.

End of Report

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

Acumen Laboratory and Testing Limited
Unit D, 12/F, Ford Glory Plaza, No. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number	: Q220002aR220232
Job Number	: R220232
Issue Date	: 16/02/2022
Name of Applicant	: Acumen Environmental Engineering and Technologies Co., Ltd.
Address of Applicant	: Unit D, 12/F, Ford Glory Plaza, No. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Project Name	: CJO-3113-958
Sample Description	: SS test
Laboratory ID	: R220232/1-5
Date of Sampling	: 09/02/2022
Date Received	: 09/02/2022
Test Period	: 09/02/2022 – 10/02/2022
Test Required	: 1. Suspended Solids (SS)
Method Used	: 1. In-house Method, QPL-15e
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

Acumen Laboratory and Testing Limited
Unit D, 12/F, Ford Glory Plaza, No. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number : Q220002aR220232

Job Number : R220232

Issue Date : 16/02/2022

Test Result:

Lab ID	Date of Sampling	Client Sample ID	Suspended Solids (SS), mg/L
R220232/1	09/02/2022	C1	5.2
R220232/2	09/02/2022	C2	6.0
R220232/3	09/02/2022	M1	3.5
R220232/4	09/02/2022	M2	2.8
R220232/5	09/02/2022	M3	<1

Note:
1. mg/L indicates milligram per liter
2. mg O_2/ L indicates milligram oxygen per liter
3. < indicates less than.
4. > indicates more than.
5. NA indicates Not Applicable.

End of Report

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

Acumen Laboratory and Testing Limited
Unit D, 12/F, Ford Glory Plaza, No. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number	: Q220002aR220256
Job Number	: R220256
Issue Date	: 21/02/2022
Name of Applicant	: Acumen Environmental Engineering and Technologies Co., Ltd.
Address of Applicant	: Unit D, 12/F, Ford Glory Plaza, No. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Project Name	: CJO-3113-959
Sample Description	: SS test
Laboratory ID	: R220256/1-5
Date of Sampling	: 11/02/2022
Date Received	: 11/02/2022
Test Period	: 11/02/2022 – 12/02/2022
Test Required	: 1. Suspended Solids (SS)
Method Used	: 1. In-house Method, QPL-15e
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

Acumen Laboratory and Testing Limited
Unit D, 12/F, Ford Glory Plaza, No. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number : Q220002aR220256

Job Number : R220256

Issue Date : 21/02/2022

Test Result:

Lab ID	Date of Sampling	Client Sample ID	Suspended Solids (SS), mg/L
R220256/1	11/02/2022	C1	<1
R220256/2	11/02/2022	C2	<1
R220256/3	11/02/2022	M1	<1
R220256/4	11/02/2022	M2	<1
R220256/5	11/02/2022	M3	<1

Note:
1. mg/L indicates milligram per liter
2. mg O_2/ L indicates milligram oxygen per liter
3. < indicates less than.
4. > indicates more than.
5. NA indicates Not Applicable.

End of Report

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

Acumen Laboratory and Testing Limited

Unit D, 12/F, Ford Glory Plaza, No. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number	: Q220002aR220257
Job Number	: R220257
Issue Date	: 21/02/2022
Name of Applicant	: Acumen Environmental Engineering and Technologies Co., Ltd.
Address of Applicant	: Unit D, 12/F, Ford Glory Plaza, No. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Project Name	: CJO-3113-960
Sample Description	: SS test
Laboratory ID	: R220257/1-5
Date of Sampling	: 14/02/2022
Date Received	: 14/02/2022
Test Period	: 14/02/2022 – 15/02/2022
Test Required	: 1. Suspended Solids (SS)
Method Used	: 1. In-house Method, QPL-15e
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

Acumen Laboratory and Testing Limited
Unit D, 12/F, Ford Glory Plaza, No. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number : Q220002aR220257

Job Number : R220257

Issue Date : 21/02/2022

Test Result:

Lab ID	Date of Sampling	Client Sample ID	Suspended Solids (SS), mg/L
R220257/1	14/02/2022	C1	<1
R220257/2	14/02/2022	C2	<1
R220257/3	14/02/2022	M1	<1
R220257/4	14/02/2022	M2	2.1
R220257/5	14/02/2022	M3	<1

Note:
1. mg/L indicates milligram per liter
2. mg O_2/ L indicates milligram oxygen per liter
3. < indicates less than.
4. > indicates more than.
5. NA indicates Not Applicable.

End of Report

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

Acumen Laboratory and Testing Limited

Unit D, 12/F, Ford Glory Plaza, No. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number	: Q220002aR220268
Job Number	: R220268
Issue Date	: 21/02/2022
Name of Applicant	: Acumen Environmental Engineering and Technologies Co., Ltd.
Address of Applicant	: Unit D, 12/F, Ford Glory Plaza, No. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Project Name	: CJO-3113-961
Sample Description	: SS test
Laboratory ID	: R220268/1-5
Date of Sampling	: 16/02/2022
Date Received	: 16/02/2022
Test Period	: 16/02/2022 – 17/02/2022
Test Required	: 1. Suspended Solids (SS)
Method Used	: 1. In-house Method, QPL-15e
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

Acumen Laboratory and Testing Limited

Unit D, 12/F, Ford Glory Plaza, No. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number : Q220002aR220268

Job Number : R220268

Issue Date : 21/02/2022

Test Result:

Lab ID	Date of Sampling	Client Sample ID	Suspended Solids (SS), mg/L
R220268/1	16/02/2022	C1	7.4
R220268/2	16/02/2022	C2	<1
R220268/3	16/02/2022	M1	<1
R220268/4	16/02/2022	M2	<1
R220268/5	16/02/2022	M3	<1

Note:
1. mg/L indicates milligram per liter
2. mg O_2/ L indicates milligram oxygen per liter
3. < indicates less than.
4. > indicates more than.
5. NA indicates Not Applicable.

End of Report

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

Acumen Laboratory and Testing Limited

Unit D, 12/F, Ford Glory Plaza, No. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number	: Q220002aR220312
Job Number	: R220312
Issue Date	: 01/03/2022
Name of Applicant	: Acumen Environmental Engineering and Technologies Co., Ltd.
Address of Applicant	: Unit D, 12/F, Ford Glory Plaza, No. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Project Name	: CJO-3113-962
Sample Description	: SS test
Laboratory ID	: R220312/1-5
Date of Sampling	: 18/02/2022
Date Received	: 18/02/2022
Test Period	: 18/02/2022 – 19/02/2022
Test Required	: 1. Suspended Solids (SS)
Method Used	: 1. In-house Method, QPL-15e
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

Acumen Laboratory and Testing Limited

Unit D, 12/F, Ford Glory Plaza, No. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number : Q220002aR220312

Job Number : R220312

Issue Date : 01/03/2022

Test Result:

Lab ID	Date of Sampling	Client Sample ID	Suspended Solids (SS), mg/L
R220312/1	18/02/2022	C1	3.6
R220312/2	18/02/2022	C2	1.4
R220312/3	18/02/2022	M1	<1
R220312/4	18/02/2022	M2	1.2
R220312/5	18/02/2022	M3	<1

Note:
1. mg/L indicates milligram per liter
2. mg O_2/ L indicates milligram oxygen per liter
3. < indicates less than.
4. > indicates more than.
5. NA indicates Not Applicable.

End of Report

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

Acumen Laboratory and Testing Limited
Unit D, 12/F, Ford Glory Plaza, No. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number	: Q220002aR220313
Job Number	: R220313
Issue Date	: 01/03/2022
Name of Applicant	: Acumen Environmental Engineering and Technologies Co., Ltd.
Address of Applicant	: Unit D, 12/F, Ford Glory Plaza, No. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Project Name	: CJO-3113-963
Sample Description	: SS test
Laboratory ID	: R220313/1-5
Date of Sampling	: 21/02/2022
Date Received	: 21/02/2022
Test Period	: 21/02/2022 – 22/02/2022
Test Required	: 1. Suspended Solids (SS)
Method Used	: 1. In-house Method, QPL-15e
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

Acumen Laboratory and Testing Limited

Unit D, 12/F, Ford Glory Plaza, No. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number : Q220002aR220313

Job Number : R220313

Issue Date : 01/03/2022

Test Result:

Lab ID	Date of Sampling	Client Sample ID	Suspended Solids (SS), mg/L
R220313/1	21/02/2022	C1	1.4
R220313/2	21/02/2022	C2	2.0
R220313/3	21/02/2022	M1	3.2
R220313/4	21/02/2022	M2	1.7
R220313/5	21/02/2022	M3	<1

Note:
1. mg/L indicates milligram per liter
2. mg O_2/ L indicates milligram oxygen per liter
3. < indicates less than.
4. > indicates more than.
5. NA indicates Not Applicable.

End of Report

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

Acumen Laboratory and Testing Limited

Unit D, 12/F, Ford Glory Plaza, No. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number	: Q220002aR220314
Job Number	: R220314
Issue Date	: 01/03/2022
Name of Applicant	: Acumen Environmental Engineering and Technologies Co., Ltd.
Address of Applicant	: Unit D, 12/F, Ford Glory Plaza, No. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Project Name	: CJO-3113-964
Sample Description	: SS test
Laboratory ID	: R220314/1-5
Date of Sampling	: 23/02/2022
Date Received	: 23/02/2022
Test Period	: 23/02/2022 – 24/02/2022
Test Required	: 1. Suspended Solids (SS)
Method Used	: 1. In-house Method, QPL-15e
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

Acumen Laboratory and Testing Limited

Unit D, 12/F, Ford Glory Plaza, No. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number : Q220002aR220314

Job Number : R220314

Issue Date : 01/03/2022

Test Result:

Lab ID	Date of Sampling	Client Sample ID	Suspended Solids (SS), mg/L
R220314/1	23/02/2022	C1	1.0
R220314/2	23/02/2022	C2	1.6
R220314/3	23/02/2022	M1	1.2
R220314/4	23/02/2022	M2	1.1
R220314/5	23/02/2022	M3	<1

Note:
1. mg/L indicates milligram per liter
2. mg O_2/ L indicates milligram oxygen per liter
3. < indicates less than.
4. > indicates more than.
5. NA indicates Not Applicable.

End of Report

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

Acumen Laboratory and Testing Limited
Unit D, 12/F, Ford Glory Plaza, No. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number	: Q220002aR220315
Job Number	: R220315
Issue Date	: 01/03/2022
Name of Applicant	: Acumen Environmental Engineering and Technologies Co., Ltd.
Address of Applicant	: Unit D, 12/F, Ford Glory Plaza, No. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Project Name	: CJO-3113-965
Sample Description	: SS test
Laboratory ID	: R220315/1-5
Date of Sampling	: 25/02/2022
Date Received	: 25/02/2022
Test Period	: 25/02/2022 – 26/02/2022
Test Required	: 1. Suspended Solids (SS)
Method Used	: 1. In-house Method, QPL-15e
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

Acumen Laboratory and Testing Limited

Unit D, 12/F, Ford Glory Plaza, No. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number : Q220002aR220315

Job Number : R220315

Issue Date : 01/03/2022

Test Result:

Lab ID	Date of Sampling	Client Sample ID	Suspended Solids (SS), mg/L
R220315/1	25/02/2022	C1	6.7
R220315/2	25/02/2022	C2	1.3
R220315/3	25/02/2022	M1	1.5
R220315/4	25/02/2022	M2	3.0
R220315/5	25/02/2022	M3	<1

Note:
1. mg/L indicates milligram per liter
2. mg O_2/ L indicates milligram oxygen per liter
3. < indicates less than.
4. > indicates more than.
5. NA indicates Not Applicable.

End of Report

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.

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.90

February 2022

TABLE OF CONTENTS

ANNEXES

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 26 February 2022. It contains the following information:

- Introduction (Section 1)
- Description of Tree Monitoring Area (Section 2)
- Monitoring Methodology (Section 3)
- Result (Section 4)
- Mitigation Measures (Section 5)
- Summary (Section 6)

- Photos (Annex I)
- Summary table (Annex II)
- Typhoon information (Annex 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.

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 is 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 26 February 2022. Three trees TA572, TA326 and TA327 were transplanted to tree compensation area within the Sha Tin Water Treatment Works (STWTW) on 20 June 2016.

4.2 The condition of TA572 was observed in fair health despite in poor form due to the damage of the two main trunks. TA327 was 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 The 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 was not a favourable microhabitat for *Cibotium barometz* to be transplanted back. Two best 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. Mitigation measures are proposed in Section 5 to enhance a sustainable survival of *Cibotium barometz* during the post-transplantation stage.

4.4 All 27 nos. of *Cibotium barometz* transplanted from the nursery at Shui Mei Tsuen, Kam Tin are generally in fair condition at their current location at STSFWSR.

4.5 The Hong Kong Eagle's Claw (*Artabotrys hongkongensis)* was observed dead during inspection on 20 August 2016.

4.6 Transplantation of the 27 nos. of *Cibotium barometz*; and compensatory planting of TA326 and the climber *Artabotrys hongkongensis* have been conducted as detailed in Section 5 during this monitoring month.

5. MITIGATION MEASURE

5.1 In order to compensate for the loss of transplanted *Artabotrys hongkongensis* which is in climber growing form, it is recommended to plant an individual of native climber species at compensatory planting site together with compensatory tree planting. Recommended list of species is given in the Table 1 below. It is suggested that about 1 species of climber to be selected from the following list according to availability of the nursery source. The recommended plant species have been recorded from adjacent secondary woodland in an approved EIA Report (AEIAR-187/2015). These species would have certain ecological value in terms of plant ecology and the associated wildlife including birds.

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

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

5.2 *Desmos chinensis* has been finalized as the candidate. Two individuals were planted at Wall C in STWTW on 1 April 2021 (Annex I).

5.3 Under proper maintenance in the nursery, with provision of sufficient shelter and irrigation spray head, all 27 nos. Lamb of Tartary (*Cibotium barometz*) are generally in fair condition. They are at acceptable condition to be transplanted back to the designated recipient site at STSFWSR in accordance with Project Programme.

5.4 All 27 nos. Lamb of Tartary (*Cibotium barometz*) were transplanted successfully back to Portion E of STSFWSR on 23 April 2021 (Annex I). In order to enhance a sustainable survival during the post-transplantation stage, a shelter (such as 遮光網) has been installed to reduce intensity of direct sunlight received and avoid direct hit of rainstorm/ typhoon.

5.5 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.

5.6 Robust fencing has been set up to enclose the 27 nos. transplanted *Cibotium barometz* (in groups when planted together) to avoid unnecessary disturbance/ damage to them. Any collapsed shelter and fencing shall be rectified promptly.

5.7 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.

5.8 The 27 nos. transplanted *Cibotium barometz* shall be maintained with proposed mitigated measures mentioned for 12 months for establishment. A 12-month post-transplantation monitoring period helps to assess their survival during the establishment period.

5.9 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 more exposed habitat under direct sunlight, can be sourced for compensatory planting.

5.10 Root ball of TA572 and TA327 tree should be kept moisture especially during non-raining day.

5.11 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.

5.12 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 is 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

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

5.13 Based on the Tree Survey Report, the following trees transplanted under Contract No. 3/WSD/15 were found dead. In accordance with GS 3.97 (3), replacement planting of TB0054, B0056, TB0101 and TC0138 has been completed on 25 March 2021 (Annex I).

5.14 Two *Syzygium levinei* and one *Schefflera heptaphylla* have been chosen from Table 2 as compensation for the loss of TA0326.

5.15 However, the two native *Syzygium levinei* (山蒲桃) were mis-planted by two exotic *Syzygium jambos* (蒲桃), of which both of their Chinese names and Scientific names are different by one word.

5.16 The two mis-planted *Syzygium jambos* was replaced by another native tree species *Celtis sinensis* chosen from Table 2 due to market availability at this moment. Replacement works was conducted on 31 May 2021.

Table 3. Summary table compensatory planting.

Tree No.	Species	Compensatory/ Replacement Planting
TA0326	*Aquilaria sinensis* 土沉香	Compensated by 1 no. of *Schefflera heptaphylla* and 2 nos. of *Celtis sinensis*

5.17 With completion of compensatory planting for the loss of *Artabotrys hongkongensis* and TA0326 (*Aquilaria sinensis*), survival is monitored for the replaced species from now on (i.e. 2 nos. of *Desmos chinensis*; 1 no. of *Schefflera heptaphylla* and 2 nos. of *Celtis sinensis*).

5.18 Survival of the 27 nos. of Lamb of Tartary (*Cibotium barometz*) transplanted back to STSFWSR is monitored too. No more individual is stored at the nursery.

5.19 Health condition and survival rate (started from 100% in this monitoring month) is shown in Annex II.

6. SUMMARY

6.1 The condition of TA572 was observed in fair health despite in poor form. TA327 was 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 Compensatory planting of TA326 has been completed on 25 March 2020 by planting two *Syzygium levinei* and one *Schefflera heptaphylla*. However, the two native *Syzygium levinei* were mis-planted by two exotic *Syzygium jambos*, which has been replaced by another native tree species *Celtis sinensis* on 31 May 2021.

6.3 *Desmos chinensis* has been finalized as the candidate to compensate the loss of *Artabotrys hongkongensis*. Two individuals were planted at Wall C in STWTW on 1 April 2021.

6.4 All Lamb of Tartary (*Cibotium barometz*) previously stored at the nursery have been severely damaged by Typhon Wipha on 30-31 July 2019. During the monitoring in December 2020, all are dehydrated without foliage in poor condition; however, 27 nos. new individuals are propagated from previously collected spores since then.

6.5 They are at acceptable condition to be transplanted back at Portion E of STSFWSR on 23 April 2021.

6.6 In order to enhance a sustainable survival during the post-transplantation stage, a shelter (such as 遮光網) has been installed to reduce intensity of direct sunlight received and avoid direct hit of rainstorm/ typhoon to the 27 nos. *Cibotium barometz*.

6.7 Regular irrigation, set up of protection zone and weeding by hand held tools within protection zone, shall also be provided to the transplanted/ compensated plants in order to sustain their survival during the post-transplantation (establishment) stage.

6.8 Root ball of TA572 and TA327 tree should be kept moisture especially during dry and non-raining day.

ANNEX I
Photo

	
Photo 1. Broken fencing to be rectified	Photo 2. Broken fencing to be rectified
	
Photo 3. Broken fencing to be rectified	Photo 4. The shelter effectively reduced the amount of direct sunlight to *Cibotium barometz*
	
Photo 5. *Cibotium barometz* showing yellow foliage outside the shelter	Photo 6. Collapsed shelter to be rectified to cover the exposed *Cibotium barometz*

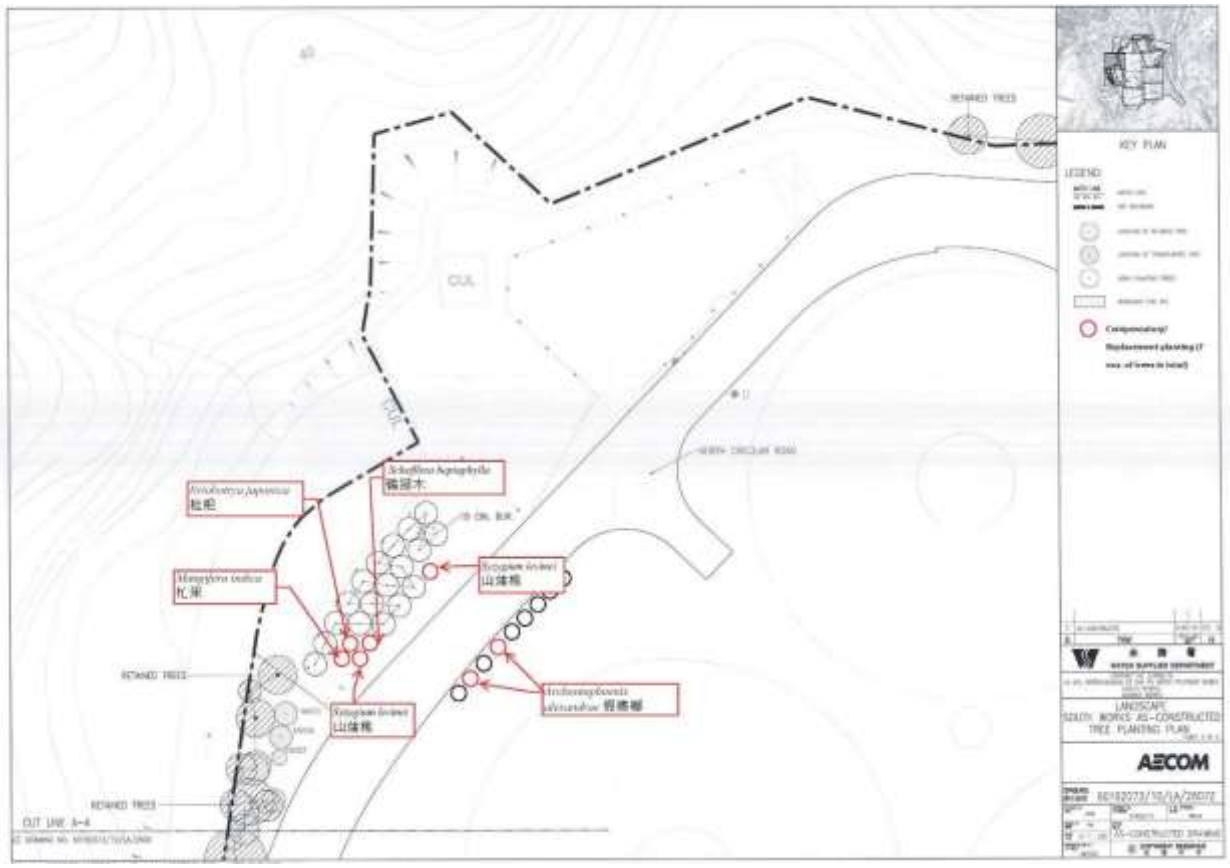
Photo 7. Transplanted Incense Tree (*Aquilaria sinensis*) – TA327 (left); and Ailanthus (*Ailanthus fordii*) – TA572 (right)

Photo 8. TA327

Photo 9. TA572, broken fencing to be rectified

	
Photo 10. *Desmos chinensis* as compensatory planting of *Artabotrys hongkongensis*	Photo 11. *Schefflera heptaphylla* as compensatory planting of TA326;

Photo 12 to 14. The two exotic *Syzygium jambos* (mis-treated as the native *Syzygium levine*i) are replaced by another native tree *Celtis sinensis* (due to market availability at this moment) as compensatory planting of TA326. *Celtis sinensis* is a deciduous species.



Indicative location of compensatory planting

ANNEX 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	*Cibotium barometz*	Fair	Alive	27 individuals are transplanted back to STSFWSR on 23 April 2021.
2	*Cibotium barometz*	Fair	Alive	
3	*Cibotium barometz*	Fair	Alive	
4	*Cibotium barometz*	Fair	Alive	
5	*Cibotium barometz*	Fair	Alive	
6	*Cibotium barometz*	Fair	Alive	
7	*Cibotium barometz*	Fair	Alive	
8	*Cibotium barometz*	Fair	Alive	
9	*Cibotium barometz*	Fair	Alive	
10	*Cibotium barometz*	Fair	Alive	
11	*Cibotium barometz*	Fair	Alive	
12	*Cibotium barometz*	Fair	Alive	
13	*Cibotium barometz*	Fair	Alive	
14	*Cibotium barometz*	Fair	Alive	
15	*Cibotium barometz*	Fair	Alive	
16	*Cibotium barometz*	Fair	Alive	
17	*Cibotium barometz*	Fair	Alive	
18	*Cibotium barometz*	Fair	Alive	
19	*Cibotium barometz*	Fair	Alive	
20	*Cibotium barometz*	Fair	Alive	
21	*Cibotium barometz*	Fair	Alive	
22	*Cibotium barometz*	Fair	Alive	
23	*Cibotium barometz*	Fair	Alive	
24	*Cibotium barometz*	Fair	Alive	
25	*Cibotium barometz*	Fair	Alive	
26	*Cibotium barometz*	Fair	Alive	
27	*Cibotium barometz*	Fair	Alive	
	The shelter (such as 遮光網) has been set up to provide shading and against direct hit of rainstorm/ typhoon on the plants.			
28	*Desmos chinensis*	Fair	Alive	Two individuals were planted at Wall C in STWTW on 1 April 2021
		Survival rate (%)	100%	

Transplanted/ compensatory Trees

No.	Species	Condition	Alive/Dead	Remark
TA572	*Ailanthus fordii*	Fair-Poor	Alive	Two main trunks were broken during typhoon on 23 August 2017. Cracks and wounds observed in one of the trunks. Canopy formed by sprouts.
TA327	*Aquilaria sinensis*	Poor	Alive	Tree crown of TA327 was thinner after transplantation. Water sprouts, cracks on tree bark and would at trunk base observed.
N/A	*Celtis sinensis*	Fair	Alive	Compensate for TA326; *Syzygium jambos* replaced by *Celtis sinensis* on 31 May 2021.
N/A	*Celtis sinensis*	Fair	Alive	Compensate for TA326; *Syzygium jambos* replaced by *Celtis sinensis* on 31 May 2021.
N/A	*Schefflera heptaphylla*	Fair	Alive	Compensate for TA326; old leaved replaced by new leaf buds
		Survival rate (%)	100%	

Appendix T
Monthly Summary of Waste Flow Table

Monthly Summary Waste Flow Table for 2022

Contract No.: 1/WSD/19 Contract Title: In-situ Reprovisioning of Sha Tin Water Treatment Works (South Works)
-Water Treatment Works and Ancillary Facilities

Month	Actual Quantities of Inert C&D Materials Generated / Imported (in '000m3)						Actual Quantities of C&D Wastes Generated				
	Total Quantity Generated	Broken Concrete (including rock for recycling into aggregates)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported C&D Material	Metals	Paper/ cardboard packaging	Plastics (bottles/containers,plastic sheets/foam package material)	Chemical Waste	Others, e.g. general refuse
	(a+b+c+d)	(a)	(b)	(c)	(d)		(in '000kg)	(in '000kg)	(in '000kg)	(in '000m ^{3})	(in '000m^3)
Jan	2.595	0.079	2.356	0	0.160	0.122	306.112	0	0	0.050	0.053
Feb	2.556	0.261	1.772	0	0.523	0.137	22.420	0	0	0.035	0.011
Mar											
Apr											
May											
Jun											
Sub-total	5.152	0.340	4.128	0	0.684	0.259	328.532	0	0	0.085	0.064
Jul											
Aug											
Sep											
Oct											
Nov											
Dec											
Total	5.152	0.340	4.128	0	0.684	0.259	328.532	0	0	0.085	0.064

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	
Air Quality								
4.7.1	Use of regular watering to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather.	All works areas	Contractor	Air Pollution Control Ordinance and Air Pollution Control (Construction Dust) Regulation EM&A Manual		√		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			√		Y
4.7.1	Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations.	All works areas	Contractor			√		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
Noise								
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
Water Quality								
6.8.1	Surface run-off from construction sites should be discharged into storm drains via adequately designed sand/silt removal facilities such as sand	All works areas	Contractor	ProPECC PN 1/94 Construction		√		Y

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

	drains.							
6.8.11	Wastewater generated from building construction activities including concreting, plastering, internal decoration, cleaning of works and similar activities should not be discharged into the stormwater drainage system. If the wastewater is to be tankered off site for disposal into foul sewers, it should undergo the removal of settleable solids in a silt removal facility, and pH adjustment as necessary.	All works areas	Contractor			√		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 proper 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 DEVB TCW No. 6/2010, ETWB TCW No. 19/2005 Land (Miscellaneous Provisions) Ordinance Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes		√		Y
7.6.2	Implementation of good site practices for waste management	All works areas	Contractor			√		Y
7.6.3	Implementation of trip ticket system to control waste disposal	All works areas	Contractor			√		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			√		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			√		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 wildfile caused by the proposed development should be mitigated and compensation approaches to the maximum practical extent	All works areas in particular important habitats All works areas	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		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 (Livistona chinensis) removal is required, these should be checked by suitably qualified ecologist with over 7 years relevant experience for roosting bats prior to their removal. If roosting bats are observed, a strategy for passive removal will be agreed with the AFCD and implemented. This could include undertaking the works just after the bats have left the roost (i.e. dusk).		The Engineer/ Contractor			√		N/A
8.8.6	The inclusion of Chinese Fan-palm of similar size as the affected plant within the areas of compensatory planting or other suitable areas is recommended to replace affected specimens, and compensate for the impact to roosting opportunities for this bat species		The Engineer/ Contractor			√		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								
9.8.1	Existing tress to be retained on site shall be carefully protected during construction. Trees unavoidably affected by the works shall be transplanted as far as possible.	All works areas	Contractor	DEVB TCW No. 10/2013 EIAO TM		√		Y
	Compensatory Planting shall be provided in accordance with DEVB TCW No. 10/2013 – Tree Preservation.	All works areas	Contractor			√		Y
	Control of night-time lighting glare.	All works areas	Contractor			√		Y
	Erection of decorative screen hoarding compatible with the surrounding setting.	All works areas	Contractor			√		Y
	Management of facilities on work sites which give control on the height and disposition/arrangement of all facilities on the works site to minimize visual impact to adjacent VSRs.	All works areas	Contractor			√		Y
Cultural Heritage								
10.6.2	Vibration monitoring at Ex KCR Beacon Hill Tunnel during piling works of Administration Building	Work site	The Engineer /Contractor			√		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	Contractor	Guidance Note for Contaminated Land Assessment and Remediation Guidance Manual for Use of Risk based Remediation Goals for Contaminated Land Management (Guidance Manual)		√		N/A
Hazard to Life								
Table 12.22	Ensure speed limit enforcement is specified in the contractor's Method Statement to limit the speed of construction vehicles on site	All works areas	The Engineer	EIAO-TM		√		Y
	Develop an audit procedure to ensure enforcement of speed limits and to ensure adequate site access control	All works areas	The Engineer			√		Y
	Ensure construction method statement is endorsed by the Engineer (AECOM)	All works areas	The Engineer			√		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

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

12.15.4, 12.18.1, 12.22.9	GPS fleet management system with driver training to help enforce truck speeds	Chlorine delivery trucks, fleet management centre	WSD / Chlorine Supply Contractor	EIAO-TM		√		k.i.v.
	Improved clamps with independent checks to prevent load shedding	Chlorine delivery trucks				√		F
	Installation of fire screen and larger fire extinguishers to prevent engine and wheel fires from spreading to the cargo area					√		F
	Adoption of the chlorine delivery route from Sham Shui Kok Dock to Sha Tin WTW					√		F
	Provision of emergency repair kit					√		F
12.34.3 Table 12.37 & 12.38	Ban the use of retreaded tyres and perform regular visual checks on the tyres.					√		F
	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.					√		F
	Limit fuel tanks capacity at the beginning of the Project (Item 2.3 of Table 12.37 – advance measure).					√		F
	Review the practicality of reducing combustible materials or use of fire retardant materials in the cab. (Item 2.3 of Table 12.37 – further measure)					√		k.i.v.
	Annual periodic radiography or ultrasonic test inspections of the chlorine drums should be considered for implementation as soon as feasible (Item 3.8 of Table 12.37).	Chlorine drums				√		k.i.v.
	Implement side, front and rear crash guards with high energy absorption in coordination and accordance with the relevant authorities.	Chlorine delivery trucks				√		k.i.v.
	Implement a sturdy steel frame to minimize the potential for chlorine release due to truck rollover					√		k.i.v.
12.34.4	WSD will continue to keep under review the latest development of use of alternative disinfectants in water supply industry to aim at minimising on-site chlorine storage.4	Chlorine delivery Route	WSD			√		k.i.v.

	Training should be provided for the use of the GPS fleet management and improved safe driving.					√		k.i.v.
	Ensured that independent checks are performed to ensure proper chlorine drum latching and clamping.					√		F
	Chlorine truck drivers or driver attendants should be further trained to check and detect potential chlorine leaks during transport. This should include the timely application of the emergency kit.					√		k.i.v.
	Training should be provided to driver and driver attendant for the emergency use of the new 2 × 9L AFFF extinguishers.					√		F
	Induction training for new drivers and driver attendant should include familiarisation with the route, familiarisation with chlorine risks, defensive driving, application of emergency kits, use of fire extinguishers and emergency response					√		k.i.v.
	Provision of a fire screen between the cab and cargo as well as fire retardant materials for the wheel arches on the chlorine truck should be planned and provided					√		F
	To keep under review alternate chlorine receiving dock in Sha Tin/Tai Po area for chlorine delivery to STWTW.					√		k.i.v.

Legend

D – Design Phase

C – Construction Phase

O – Operation Phase

Y - Compliance of Mitigation Measures

N/A – Not Applicable in Reporting Period

k.i.v – Keep In View

F - Completed

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

Statistical Summary of Exceedances (February 2022)

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	2	0	0	0	1	0	3
C2	0	0	1	0	0	0	0	0	1
C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0
M1	0	0	1	0	0	0	0	0	1
M2	0	0	0	0	0	0	0	0	0
M3	0	0	0	0	0	0	0	0	0

There were 4 exceedances of Action Level and 1 exceedance of Limit Level in February 2022. All exceedances were found non project related.

Statistical Summary of Exceedances (Cumulative)

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	7	0	0	0	2	0	9
C2	0	0	7	0	0	0	0	0	7
C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0
M1	0	0	4	0	0	0	2	0	6
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 February - 28 February 2022	0	N/A	4

Statistical Summary of Environmental Summons

Reporting Period	Environmental Summons Statistics		
	Frequency	Details	Cumulative
1 February - 28 February 2022	0	N/A	0

Statistical Summary of Environmental Prosecution

Reporting Period	Environmental Prosecution Statistics		
	Frequency	Details	Cumulative
1 February - 28 February 2022	0	N/A	0

浩科環境工業有限公司
Acumen Environmental Engineering & Technologies Co., Ltd.
香港青衣(北)担杆山路12號地段
Lot 12, Tam Kon Shan Road, Tsing Yi (N), Hong Kong
(852) 2333-6823 www.acumenhk.com
(852) 2333-1316

To	Mr. Fung, Y. W.	Fax No	By-email
Company	AECOM		
cc			
From	Yiting Choy	Date	21 February 2022
Our Ref	CJO - 3113		
RE	Contract No. 1/WSD/19 In-situ Provisioning of Sha Tin Water Treatment Works (South Works) – Water Treatment Works and Ancillary Facilities – Environmental Team Notification of Exceedance (NOE) and Investigation Report for Water Quality Monitoring on 09 February 2022		

Dear Sir,

Please find attached the “Investigation Report on Action Level Non-compliance” referenced above for your information.

Should you have any queries or need further information, please do not hesitate to contact us or the undersigned at Tel: 2333-6823 or Fax: 2333-1316.

Yours Faithfully,
For and on Behalf of
Acumen Environmental Engineering & Technologies Co., Ltd.

Yiting

Yiting Choy
Assistant Environmental Consultant

Encl.
cc.
Mr. Clarence Yeung (Contractor, ATAL - CW - MH JV (ACMJV)) By email

CONTRACT NO. 1/WSD/19
IN-SITU REPROVISIONING OF SHA TIN WATER TREATMENT WORKS (SOUTH WORKS) – WATER TREATMENT WORKS AND ANCILLARY FACILITIES

Investigation Report on Action Level Non-compliance

(I) Summary of exceedance on 9 February 2022

Station	Parameter	Weather	Action Level	Limit Level	Measured Level	Range of Baseline	Exceedance
C1	Suspended Solids (mg/L)	Fine	4.19	6.73	5.2	<1 – 9.7	Action Level
C2	Suspended Solids (mg/L)	Fine	4.33	8.16	6.0	<1 – 12.0	Action Level
M1	Suspended Solids (mg/L)	Fine	3.30	3.56	3.5	<1 – 4.7	Action Level
M2	Suspended Solids (mg/L)	Fine	18.84	26.80	2.8	<1 - 38	-
M3	Suspended Solids (mg/L)	Fine	1.00	1.00	<1	<1 – 1.3	-

(II) Investigation Results, Recommendations & Mitigation Measures

1) According to the field observation from the Environmental Team (ET) on 9 February 2022, no polluted discharge made from construction site to the Control Station C1, since C1 is a control station upstream of Impact Monitoring Station M1 and out of the site boundary. Moreover, the construction of Logistic center (next to C1, Photo 3) have been completed in December 2020, no construction work was conducted nearby C1. In general, the condition of water at Control Station C1 was in order and no discharge from construction was observed (Photo 1). The water quality monitoring locations and contract site area are illustrated in Figure 1.

2) According to the field observation from the Environmental Team (ET) on 9 February 2022, no polluted discharge made from construction site to Impact Monitoring Station M1 (Photo 2). Exceedance of action level of suspended solid was found at Control Station C1, the exceedance of action level of M1 is most likely to be carry over to M1 by the upstream C1.

3) According to the field observation from the Environmental Team (ET) on 9 February 2022, no polluted discharge made from construction site to the Control Station C2, since C2 is a control station upstream of Impact Monitoring Stations and out of the site boundary. In general, the condition of water at Impact Station C2 was in order and no discharge from construction was observed (Photo 4). The water quality monitoring locations and contract site area are illustrated in Figure 1.

4) Weekly site inspection by the Contractor and ET was conducted on 8 February 2022 to audit the site environmental performance. The overall site condition was in compliance.

5) In our investigation, the Contractor had implemented water quality mitigation measures and no adverse water quality impact was observed during the site inspection. It is noted the value of suspended solid recorded at C1 and M1 was within the range of baseline. Based on the site observation, it is concluded that the exceedance of action level was non-project related.

6) Nevertheless, the Contractor should continually fully implement the water mitigation measures as recommended in the implementation schedule for environmental mitigation measures in the EM&A Manual.

Photo Record

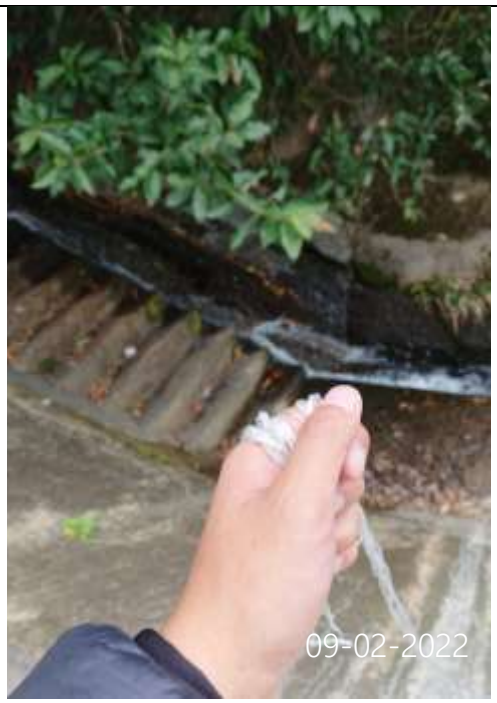


Photo 1 (C1)

Photo 2 (M1)

Photo 3 (Logistic Center)

Photo 4

According to the field observation from ET on 8 February 2022, no polluted discharge was observed at C1 and M1 during the water monitoring and the water condition C1 and M1 was generally in order. The construction of Logistic center (next to C1, Photo 3) have been completed in December 2020, thus no construction work was conducted nearby.

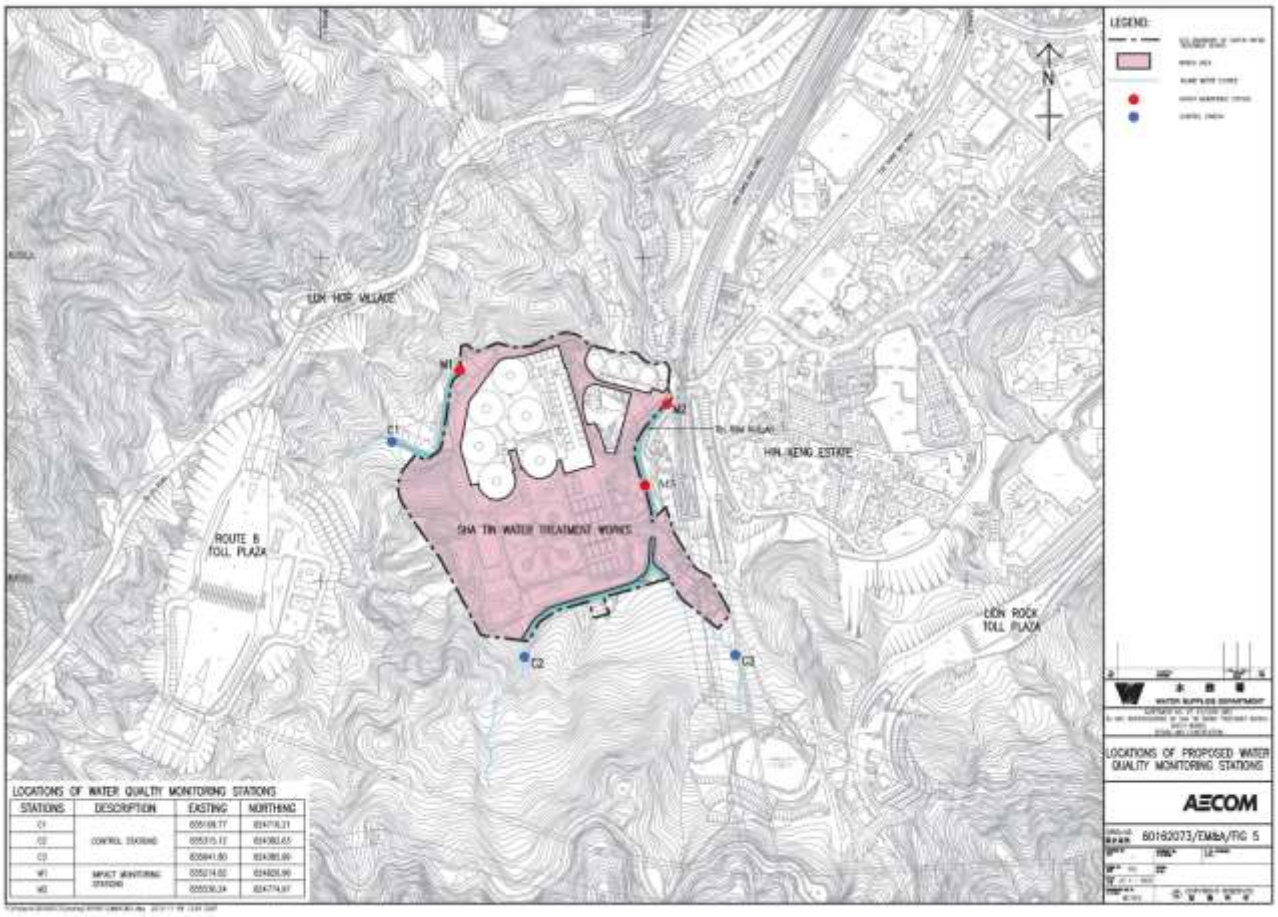


Figure 1 Location Map Water Quality Monitoring Location

浩科環境工業有限公司
Acumen Environmental Engineering & Technologies Co., Ltd.
香港青衣(北)担杆山路12號地段
Lot 12, Tam Kon Shan Road, Tsing Yi (N), Hong Kong
(852) 2333-6823 www.acumenhk.com
(852) 2333-1316

To	Mr. Fung, Y. W.	Fax No	By-email
Company	AECOM		
cc			
From	Yiting Choy	Date	25 February 2022
Our Ref	CJO - 3113		
RE	Contract No. 1/WSD/19 In-situ Provisioning of Sha Tin Water Treatment Works (South Works) – Water Treatment Works and Ancillary Facilities – Environmental Team Notification of Exceedance (NOE) and Investigation Report for Water Quality Monitoring on 16 February 2022		

Dear Sir,

Please find attached the “Investigation Report on Limit Level Non-compliance” referenced above for your information.

Should you have any queries or need further information, please do not hesitate to contact us or the undersigned at Tel: 2333-6823 or Fax: 2333-1316.

Yours Faithfully,
For and on Behalf of
Acumen Environmental Engineering & Technologies Co., Ltd.

Yiting Choy
Assistant Environmental Consultant

Encl.
cc.
Mr. Clarence Yeung (Contractor, ATAL - CW - MH JV (ACMJV)) By email

CONTRACT NO. 1/WSD/19
IN-SITU REPROVISIONING OF SHA TIN WATER TREATMENT WORKS (SOUTH WORKS) – WATER TREATMENT WORKS AND ANCILLARY FACILITIES

Investigation Report on Limit Level Non-compliance

(I) Summary of exceedance on 16 February 2022

Station	Parameter	Weather	Action Level	Limit Level	Measured Level	Range of Baseline	Exceedance
C1	Suspended Solids (mg/L)	Sunny	4.19	6.73	7.4	<1 – 9.7	Limit Level
C2	Suspended Solids (mg/L)	Sunny	4.33	8.16	<1	<1 – 12.0	-
M1	Suspended Solids (mg/L)	Sunny	3.30	3.56	<1	<1 – 4.7	-
M2	Suspended Solids (mg/L)	Sunny	18.84	26.80	<1	<1 - 38	-
M3	Suspended Solids (mg/L)	Sunny	1.00	1.00	<1	<1 – 1.3	-

(II) Investigation Results, Recommendations & Mitigation Measures

1) According to the field observation from the Environmental Team (ET) on 16 February 2022, no polluted discharge made from construction site to the Control Station C1, since C1 is a control station upstream and out of the site boundary. Moreover, the construction of Logistic center (next to C1, Photo 3) have been completed in December 2020, no construction work was conducted nearby C1. In general, the condition of water at Control Station C1 was in order and no discharge from construction was observed (Photo 1). The water quality monitoring locations and contract site area are illustrated in Figure 1.

2) Weekly site inspection by the Contractor and ET was conducted on 16 February 2022 to audit the site environmental performance. The overall site condition was in compliance.

3) In our investigation, the Contractor had implemented water quality mitigation measures and no adverse water quality impact was observed during the site inspection. It is noted the value of suspended solid recorded at C1 was within the range of baseline. Based on the site observation, it is concluded that the exceedance of limit level was non-project related.

4) Nevertheless, the Contractor should continually fully implement the water mitigation measures as recommended in the implementation schedule for environmental mitigation measures in the EM&A Manual.

Photo Record

Photo 1 (C1)

Photo 2 (Logistic Center)

According to the field observation from ET on 16 February 2022, no polluted discharge was observed at C1 during the water monitoring and the water condition C1 was generally in order. The construction of Logistic center (next to C1, Photo 2) have been completed in December 2020, thus no construction work was conducted nearby.

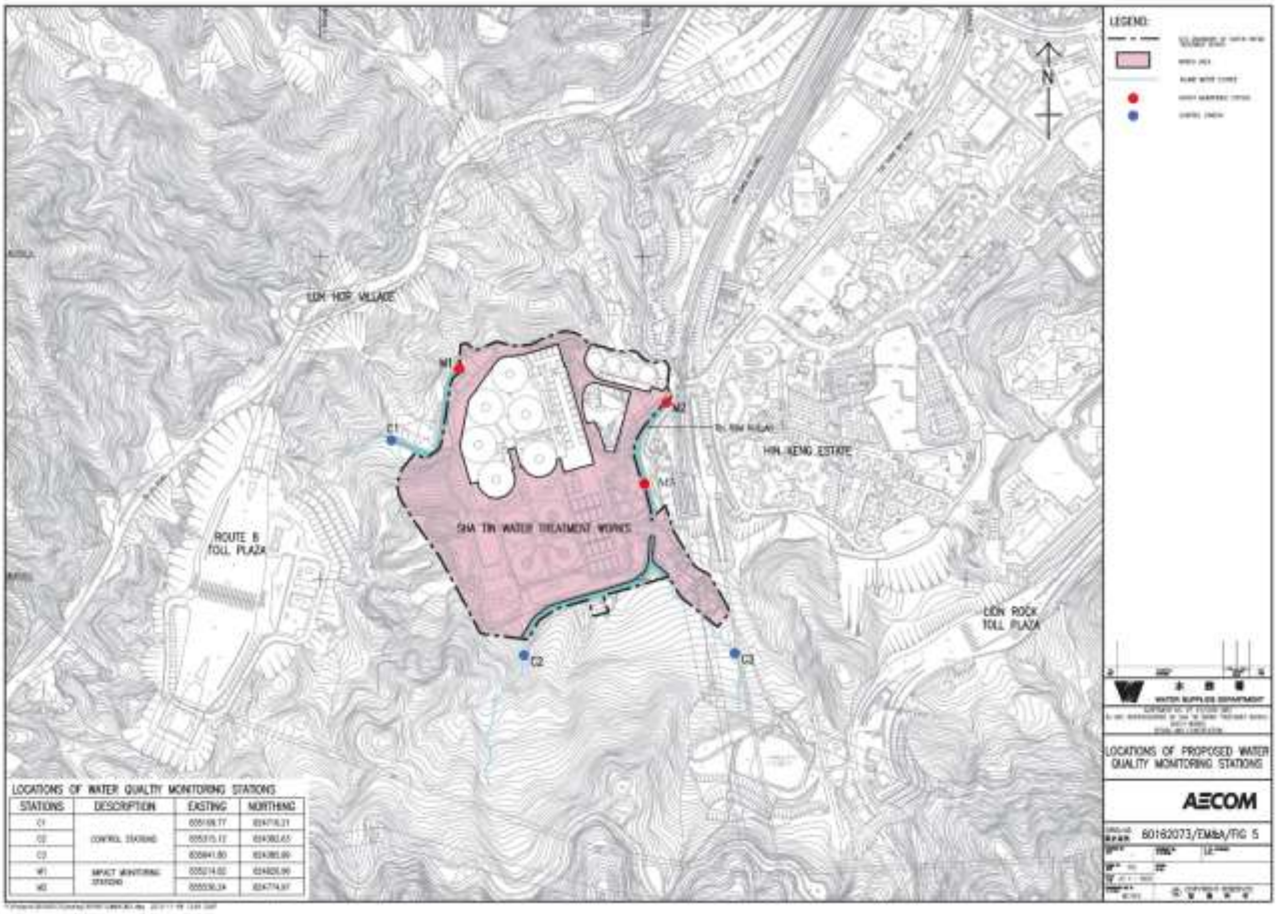


Figure 1 Location Map Water Quality Monitoring Location

浩科環境工業有限公司
Acumen Environmental Engineering & Technologies Co., Ltd.
香港青衣(北)担杆山路12號地段
Lot 12, Tam Kon Shan Road, Tsing Yi (N), Hong Kong
(852) 2333-6823 www.acumenhk.com
(852) 2333-1316

To	Mr. Fung, Y. W.	Fax No	By-email
Company	AECOM		
cc			
From	Yiting Choy	Date	10 March 2022
Our Ref	CJO - 3113		
RE	Contract No. 1/WSD/19 In-situ Provisioning of Sha Tin Water Treatment Works (South Works) – Water Treatment Works and Ancillary Facilities – Environmental Team Notification of Exceedance (NOE) and Investigation Report for Water Quality Monitoring on 25 February 2022		

Dear Sir,

Please find attached the “Investigation Report on Action Level Non-compliance” referenced above for your information.

Should you have any queries or need further information, please do not hesitate to contact us or the undersigned at Tel: 2333-6823 or Fax: 2333-1316.

Yours Faithfully,
For and on Behalf of
Acumen Environmental Engineering & Technologies Co., Ltd.

Yiting Choy
Assistant Environmental Consultant

Encl.
cc.
Mr. Clarence Yeung (Contractor, ATAL - CW - MH JV (ACMJV)) By email

CONTRACT NO. 1/WSD/19
IN-SITU REPROVISIONING OF SHA TIN WATER TREATMENT WORKS (SOUTH WORKS) – WATER TREATMENT WORKS AND ANCILLARY FACILITIES

Investigation Report on Action Level Non-compliance

(I) Summary of exceedance on 25 February 2022

Station	Parameter	Weather	Action Level	Limit Level	Measured Level	Range of Baseline	Exceedance
C1	Suspended Solids (mg/L)	Sunny	4.19	6.73	6.7	<1 – 9.7	Action Level
C2	Suspended Solids (mg/L)	Sunny	4.33	8.16	1.3	<1 – 12.0	-
M1	Suspended Solids (mg/L)	Sunny	3.30	3.56	1.5	<1 – 4.7	-
M2	Suspended Solids (mg/L)	Sunny	18.84	26.80	3.0	<1 - 38	-
M3	Suspended Solids (mg/L)	Sunny	1.00	1.00	<1	<1 – 1.3	-

(II) Investigation Results, Recommendations & Mitigation Measures

1) According to the field observation from the Environmental Team (ET) on 25 February 2022, no polluted discharge made from construction site to the Control Station C1, since C1 is a control station upstream and out of the site boundary. Moreover, the construction of Logistic center (next to C1, Photo 3) have been completed in December 2020, no construction work was conducted nearby C1. In general, the condition of water at Control Station C1 was in order and no discharge from construction was observed (Photo 1). The water quality monitoring locations and contract site area are illustrated in Figure 1.

2) Weekly site inspection by the Contractor and ET was conducted on 23 February 2022 to audit the site environmental performance. The findings of the inspection are summarized below:

   (i) Accumulated waste are observed near WET. Contractor is reminded to remove them.

3) In our investigation, the Contractor had implemented water quality mitigation measures and no adverse water quality impact was observed during the site inspection. It is noted the value of suspended solid recorded at C1 was within the range of baseline. Based on the site observation, it is concluded that the exceedance of action level was non-project related.

4) Nevertheless, the Contractor should continually fully implement the water mitigation measures as recommended in the implementation schedule for environmental mitigation measures in the EM&A Manual.

Photo Record

Photo 1 (C1)

Photo 2 (Logistic Center)

According to the field observation from ET on 25 February 2022, no polluted discharge was observed at C1 during the water monitoring and the water condition C1 was generally in order. The construction of Logistic center (next to C1, Photo 2) have been completed in December 2020, thus no construction work was conducted nearby.

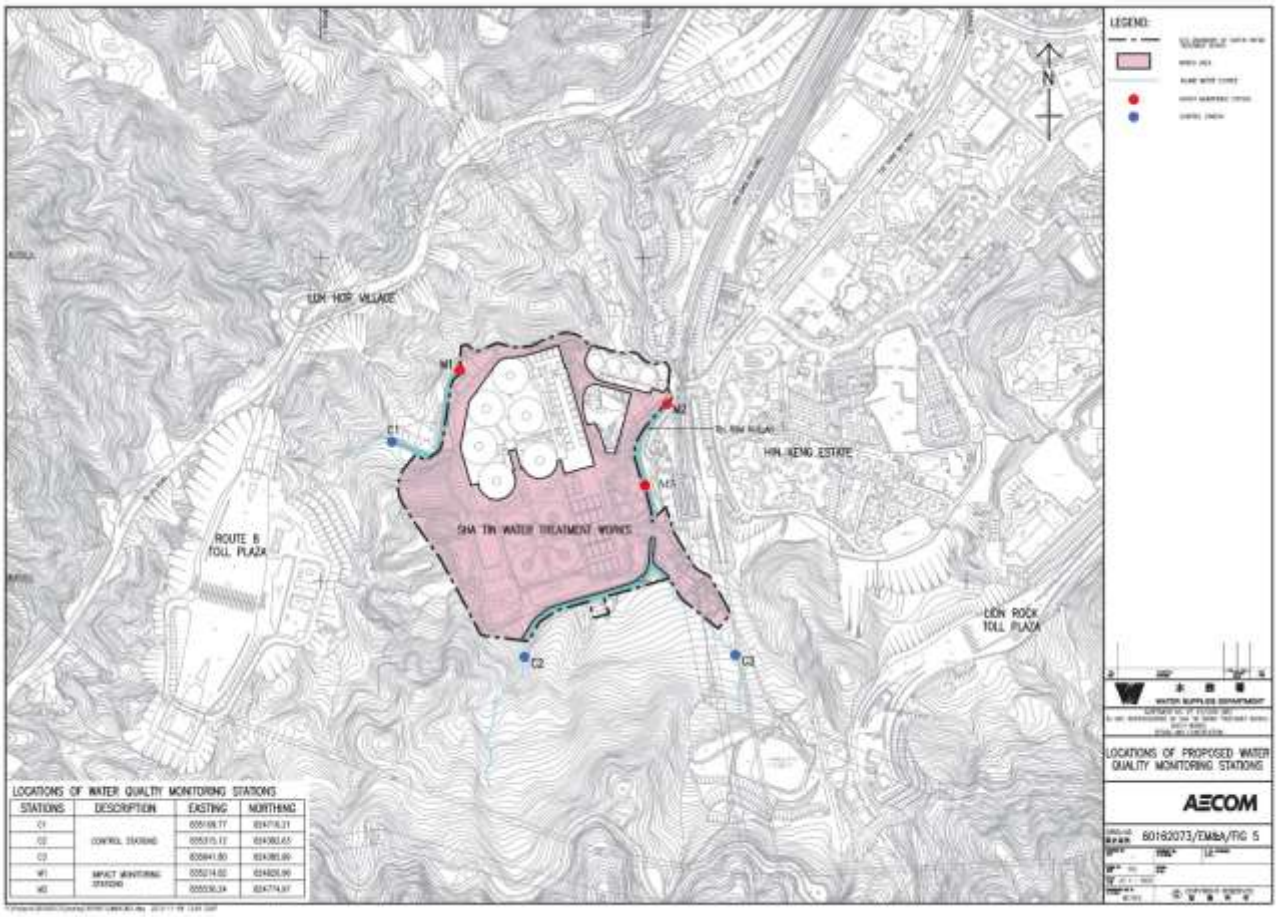


Figure 1 Location Map Water Quality Monitoring Location

Appendix W
Tentative Schedule of Impact Monitoring

Impact Monitoring Schedule for STWTW

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

Tentative Impact Monitoring Schedule for STWTW

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

Tentative Impact Monitoring Schedule for STWTW

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