ACUMEN environmental
Member of the Aurecon Group

aurecon

Our Ref.: CJO-3113

15 May 2023

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

CONTRACT NO. 1/WSD/19 & 6/WSD/21

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 86th 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
2698 8032

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

Acumen Environmental Engineering and Technologies Co. Ltd.
Flat/RM D, 12/F, Ford Glory Plaza,
Nos. 37-39 Wing Hong Street, Kowloon, Hong Kong
tel +852 2698 8032
fax +852 2333 1316 | e-mail info@acumen-env.com
http www.acumenhk.com | www.aurecongroup.com

ACUMEN environmental
Member of the Aurecon Group

aurecon

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)

15 May 2023

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 86th 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 86th 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

Acumen Environmental Engineering and Technologies Co. Ltd.
Flat/RM D, 12/F, Ford Glory Plaza,
Nos. 37-39 Wing Hong Street, Kowloon, Hong Kong
tel +852 2698 8032
fax +852 2333 1316 | e-mail info@acumen-env.com
http www.acumenhk.com | www.aurecongroup.com

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/fyw2305151

By Email

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

Attn: Mr. Edmund Huen

15 May 2023

Dear Sir,

Contract No.1/WSD/19
In-situ reprovisioning of Sha Tin Water Treatment Works (South Works) – Water Treatment Works and Ancillary Facilities
Contract No.6/WSD/21
In-situ reprovisioning of Sha Tin Water Treatment Works (South Works) – Administration Building

Submission of 85th Monthly EM&A Report for April 2023

Reference is made to Environmental Team (ET)'s 86th Monthly EM&A Report for April 2023 (Rev. 0) submitted on 10, 12 and 15 May 2023.

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 (via email)

MONTHLY ENVIRONMENTAL MONITORING AND AUDIT

(EM&A) REPORT (NO. 86)

FOR

CONTRACT NO. 1/WSD/19 & 6/WSD/21
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. 86)

FOR

CONTRACT NO. 1/WSD/19 & 6/WSD/21
IN-SITU REPROVISIONING OF SHA TIN WATER TREATMENT WORKS (SOUTH WORKS) – WATER TREATMENT WORKS AND ANCILLARY FACILITIES

	Name	Signature
Prepared by	Mr. Chiu, Oliver, O. C.	
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 and 6/WSD/21, ATAL - CW - MH JV (ACMJV) is commissioned by WSD to undertake the construction of the main 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 construction phase of Contract No. 6/WSD/21 commenced on 16 March 2022. 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 86th monthly Environmental Monitoring and Audit Report for the Project which covers the period from 1 to 30 April 2023 (the reporting period) for Contract No. 1/WSD/19 and 6/WSD/21.

A.5 For Contract No. 1/WSD/19, as informed by the Contractor, major activities in the reporting period included:

- Major ELS Work (S1F, S2F, Ozone Building, SWPS, RMF)
  - ✧ Excavation
  - ✧ Soil nail installation
  - ✧ Lagging wall construction
  - ✧ Strut and waling installation
  - ✧ Pre-loading works
  - ✧ Plate load tests
- Grout curtain
- Shutdown of south works
- WET – structure construction, top slab construction, water test
- S1F:
  - ✧ Formation preparation (dewatering)
  - ✧ Blinding construction
  - ✧ Drilling works for earthing rods
  - ✧ Structure construction
- Demolition of TWRT
- Drilling works for King Posts
- Filter bed demolition and backfilling
- King Post installation work
- Valve chamber for M1-5 water pipe diversion
- Wall A & B construction works
- Fencing construction works
- Landscape works
- Installation of under structures pipes
- Installation of temporary steel decking at S2F

A.6 For Contract No. 6/WSD/21, as informed by the Contractor, major activities in the reporting period included:

- Waterproofing Works
- Carry Out Excavation Down to + 23.3mPD
- Concreting for Raft Slab (LG/F Level)
- Steel Plate Welding to Sheetpile for Waterproofing Works
- MIC Installation
- Excavation to Bottlm Rockfill Level & Rockfill Replacement Work

A.7 Environmental monitoring activities under the EM&A program in this reporting period are summarized below

Issues	Environmental Monitoring Parameters / Inspection	Occasions
Air	1-Hour TSP	18
Noise	$L_{eq(30mins)}$ Daytime	6
Water Quality	Water Sampling	11
Inspection / Audit	ET Regular Environmental Site Inspection	4
	IEC Monthly Environmental Site Audit	1

Remark: During public holiday, no monitoring was conducted on 5th ,7th ,8th and 10th April.

A.8 No exceedance of air quality and noise monitoring was recorded in this reporting period. There was no exceedance in action level and 1 exceedance in limit level for water quality monitoring was recorded in this reporting period.

A.9 No environmental complaint was received via EPD in this reporting period.

A.10 No notification of any summons and successful prosecutions was received in this reporting period.

A.11 No reporting change was made in this reporting period.

A.12 EPD site inspection was conducted on 20 April 2023 in the reporting period.

A.13 As informed by the Contractor, the major works for Contract No. 1/WSD/19 between May 2023 to July 2023 will be:

- Major ELS Work (S1F, S2F, Ozone Building, SWPS, RMF)
  - ✧ Excavation
  - ✧ Soil nail installation
  - ✧ Lagging wall construction
  - ✧ Strut and waling installation
  - ✧ Pre-loading works
  - ✧ Plate load tests
- Grout curtain
- Shutdown of south works
- WET – structure construction, top slab construction, water test
- S1F:
  - ✧ Formation preparation (dewatering)
  - ✧ Blinding construction
  - ✧ Drilling works for earthing rods
  - ✧ Structure construction
- Demolition of TWRT
- Drilling works for King Posts
- Filter bed demolition and backfilling
- King Post installation work
- Valve chamber for M1-5 water pipe diversion

- Wall A & B construction works
- Fencing construction works
- Landscape works
- Installation of under structures pipes
- Installation of temporary steel decking at S2F
- ABWF Works for 6 major buildings
- Scaffolding Works for WET ABWF & Metal Works
- Structural Steelworks for WET
- Excavation for Stainless Steel Pipework under Structures of Six Major Buildings in Portion A

A.14 As informed by the Contractor, the major works for Contract No. 6/WSD/21 between May 2023 to July 2023 will be:

- Waterproofing Works
- Carry Out Excavation Down to +23.3mPD
- Concreting for Raft Slab (LG/F Level)
- Steel Plate Welding to Sheetpile for Waterproofing Works
- Carry Out Excavation to Final Excavation Level +21.0mPD
- MIC Installation
- Excavation to Bottlm Rockfill Level & Rockfill Replacement Work

A.15 EM&A monitoring for the 86th reporting period for Contract No. 1/WSD/19 and 6/WSD/21 has been completed. The 87th monthly EM&A report will cover the period from 1 to 31 May 2023.

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 and 6/WSD/21, ATAL – CW – MH JV (ACMJV) and CW–FWS–JV are commissioned by WSD to undertake the construction of the main 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 construction phase of Contract No. 6/WSD/21 commenced on 16 March 2022. 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. Leung, W. C.	3758 8373
	Site Agent	Ms. Cheung, S. Y.	6323 4716
CW-FWS JV	Construction Manager	Mr. Tung, K. M.	9680 4586
	Site Agent	Mr. Lee, C. M.	9148 4389
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 86th monthly EM&A Report under the Contract No. 1/WSD/19 and 6/WSD/21 In-situ Reprovisioning of Sha Tin Water Treatment Works (South Works) – Water Treatment Works and Ancillary Facilities covering the period from 1 to 30 April 2023 (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 April 2023 are:

- Major ELS Work (S1F, S2F, Ozone Building, SWPS, RMF)
  - ✧ Excavation
  - ✧ Soil nail installation
  - ✧ Lagging wall construction
  - ✧ Strut and waling installation
  - ✧ Pre-loading works
  - ✧ Plate load tests
- Grout curtain
- Shutdown of south works
- WET – structure construction, top slab construction, water test
- S1F:

  - ✧ Formation preparation (dewatering)
  - ✧ Blinding construction
  - ✧ Drilling works for earthing rods
  - ✧ Structure construction
- Demolition of TWRT
- Drilling works for King Posts
- Filter bed demolition and backfilling
- King Post installation work
- Valve chamber for M1-5 water pipe diversion
- Wall A & B construction works
- Fencing construction works
- Landscape works
- Installation of under structures pipes
- Installation of temporary steel decking at S2F

1.4.3 As informed by the Contractor, no major works for Contract No.3/WSD/15 will be conducted. The major works for Contract No. 6/WSD/21 in April 2023 are:

- Waterproofing Works
- Carry Out Excavation Down to + 23.3mPD
- Concreting for Raft Slab (LG/F Level)
- Steel Plate Welding to Sheetpile for Waterproofing Works
- MIC Installation
- Excavation to Bottlm Rockfill Level & Rockfill Replacement Work

1.4.4 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	Qingdao Jingcheng Model PC-3A (E)
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 six (6) sampling days perform air quality monitoring at the two designated locations. The results for 1-hour TSP are summarized in Table 2-5 and Table 2-6.

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

Date	**Weather**	**1-hour TSP (μg/m^3)**				
		Start Time	**End Time**	**1st Measurement**	**2nd Measurement**	**3rd Measurement**
1/4/2023	cloudy	12:55	15:55	54	52	62
6/4/2023	cloudy	09:33	12:33	80	73	68
12/4/2023	sunny	09:24	12:24	56	61	54
18/4/2023	fine	09:25	12:25	75	82	72
24/4/2023	fine	12:45	15:45	83	77	65
29/4/2023	cloudy	12:51	15:51	52	46	51
Average				64.6		
Range				46 – 83		

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

Date	**Weather**	**1-hour TSP (μg/m^3)**				
		Start Time	**End Time**	**1st Measurement**	**2nd Measurement**	**3rd Measurement**
1/4/2023	cloudy	12:59	15:59	65	60	56
6/4/2023	cloudy	09:37	12:37	75	72	65
12/4/2023	sunny	09:28	12:28	55	58	49
18/4/2023	fine	09:29	12:29	72	69	83
24/4/2023	fine	12:49	15:49	65	60	69
29/4/2023	cloudy	12:55	15:55	40	62	45
Average				62.2		
Range				40 – 83		

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.

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	Rion NC-75
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 six (6) occasions noise monitoring was undertaken in Reporting period. The noise monitoring results at the designated locations are summarized in Tables 2-9 to 2-11.

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

Date	Time	Weather	1st Leq_{5min}	2nd Leq_{5min}	3rd Leq_{5min}	4th Leq_{5min}	5th Leq_{5min}	6th Leq_{5min}	Leq_{30min}
1/4/2023	12:55 - 13:25	cloudy	55.8	53.9	53.3	51.0	54.3	50.1	53.5
6/4/2023	10:15 - 10:45	cloudy	56.5	56.1	58.7	54.8	58.2	54.4	56.7
12/4/2023	09:24 - 09:54	sunny	55.4	51.8	50.1	49.2	51.2	50.9	51.9
18/4/2023	09:25 - 09:55	fine	55.5	54.2	53.1	53.8	50.2	51.6	53.4
24/4/2023	13:45 - 14:15	fine	52.1	53.9	55.7	50.3	49.8	51.1	52.7
29/4/2023	12:51 - 13:21	cloudy	57.7	59.4	53.1	57.5	56.5	53.0	56.8
Limit Level >75dB(A)								**Average**	54.6
								Range	51.9 – 56.8

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}
1/4/2023	13:31 - 14:01	cloudy	53.1	49.6	48.6	47.1	49.9	48.8	49.9
6/4/2023	10:51 - 11:21	cloudy	48.4	54.2	51.6	52.0	53.3	49.0	51.9
12/4/2023	09:58 - 10:28	sunny	49.3	48.0	51.9	46.9	48.5	46.3	48.9
18/4/2023	09:59 - 10:29	fine	51.7	51.3	49.5	47.3	48.3	47.7	49.6
24/4/2023	14:19 - 14:49	fine	49.2	50.3	51.7	46.9	48.5	50.6	49.8
29/4/2023	13:25 - 13:55	cloudy	52.1	51.8	50.1	47.2	48.4	49.5	50.2
Limit Level >75dB(A)								**Average**	50.2
								Range	48.9 – 51.9

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}
1/4/2023	14:05 - 14:35	cloudy	49.5	47.9	46.8	48.9	48.5	47.0	48.2
6/4/2023	11:25 - 11:55	cloudy	49.5	47.5	48.6	46.3	45.9	45.4	47.5
12/4/2023	10:22 - 10:52	sunny	49.8	48.9	48.4	47.7	47.3	46.4	48.2
18/4/2023	10:33 - 11:03	fine	50.5	49.7	51.3	48.9	46.5	45.8	49.2
24/4/2023	14:53 - 15:23	fine	50.9	50.4	48.9	49.3	47.6	47.3	49.3
29/4/2023	13:59 - 14:29	cloudy	49.7	50.4	48.6	49.2	48.2	47.9	49.1
Limit Level 70dB(A) during normal teaching periods ~~or 65dB(A) during examination periods~~			**Average**						48.6
			Range						47.5 – 49.3

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 eleven (11) 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.

2.4.10 During public holiday, no monitoring was conducted on 5th ,7th ,8th and 10th April.

Table 2-14: Summary of Water Quality Monitoring Results

Dissolved Oxygen – Mid Depth (mg/L)	**C1**	**C2**	**C3**	**M1**	**M2**	**M3**
Average	11.44	12.00	N/A	12.87	12.42	13.78
Min.	10.04	9.54	N/A	11.58	10.23	12.23
Max.	12.74	13.96	N/A	14.94	14.56	14.80
Turbidity – Mid Depth (NTU)	**C1**	**C2**	**C3**	**M1**	**M2**	**M3**
Average	1.63	1.06	N/A	2.51	2.08	0.54
Min.	0.46	0.12	N/A	0.80	0.88	0.00
Max.	3.93	1.98	N/A	4.31	4.88	0.95
Suspended Solid – Mid depth (mg/L)	**C1**	**C2**	**C3**	**M1**	**M2**	**M3**
Average	1.31	1.00	N/A	1.50	1.40	1.05
Min.	<1	<1	N/A	<1	<1	<1
Max.	2.70	1.00	N/A	2.20	3.40	**<u>1.60</u>**
pH value (unit)	**C1**	**C2**	**C3**	**M1**	**M2**	**M3**
Average	7.55	8.01	N/A	7.82	8.49	8.35
Min.	6.64	7.06	N/A	7.01	8.21	8.16
Max	7.81	8.62	N/A	8.19	8.74	8.53

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

Remark 4: Details of exceedance of action level and or limit level, please refer to appendix R

2.4.11 In this reporting month, most of the monitoring results were below or within the action level. There was no exceedance of action level and 1 exceedance of limit level in the reporting period, all was found non-project related. Detailed monitoring results including in-situ measurements, laboratory analysis data are shown in Appendix R.

2.4.12 Investigation report for the exceedance of water quality in April 2023 are supplemented in Appendix V.

2.5. ECOLOGY

2.5.1 The condition of TA572 was observed in fair health despite in poor form. 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 New small sprouts keep emerging from the two *Desmos chinensis* that have been reported dead previously. Construction materials was also found too close to the planter. An eye-catching protective fence shall be set up as a protection zone. No construction materials shall be placed near/ within the protection zone.

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

2.5.6 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.

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

2.5.8 Signs of ploughed soil by wild boar(s) at the two groups of transplanted *Cibotium barometz* were reported in previous monitoring. A robust fencing was recently installed to protect the group of *Cibotium barometz* from further damage caused by wild boars.

2.5.9 Given that leftover/ garbage was observed nearby, illegal feeding of wild pigs or other wild animals was also suspected to occur. Warning signs of illegal feeding and plant protection zone may be put along the receptor site to remind the hikers. Reporting the case to the relevant government department, i.e. AFCD, is suggested to prevent further aggregation of wild boars in the area.

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

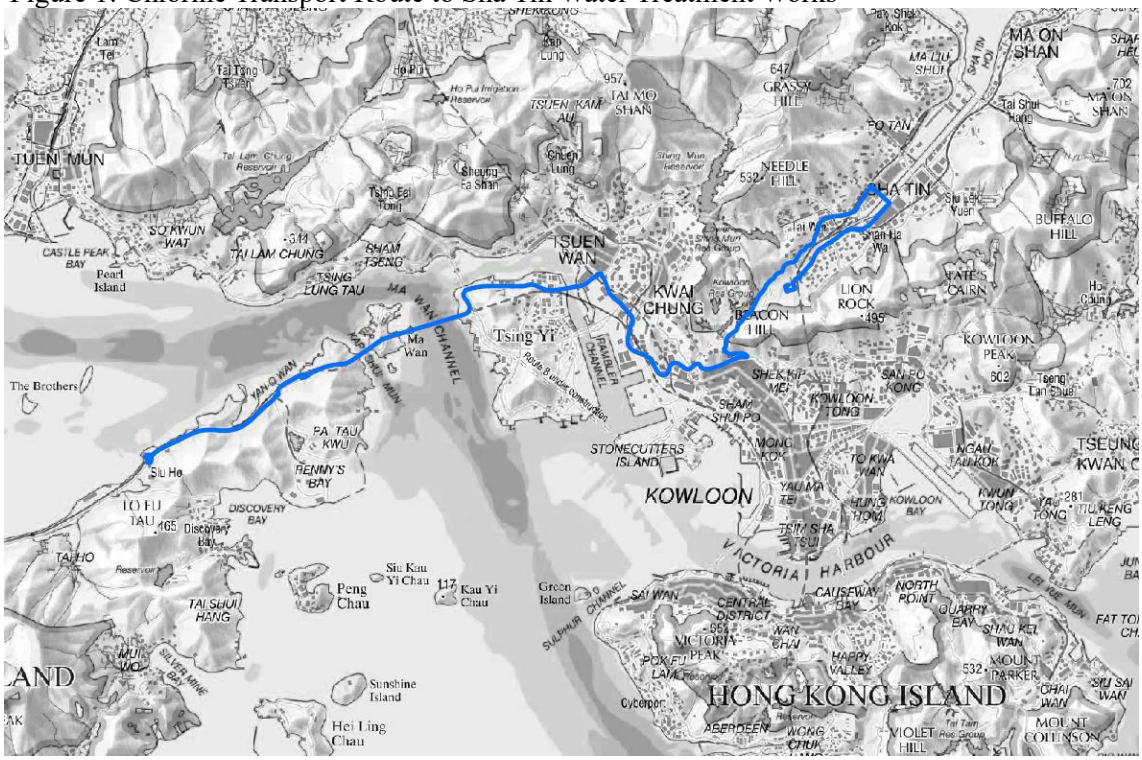


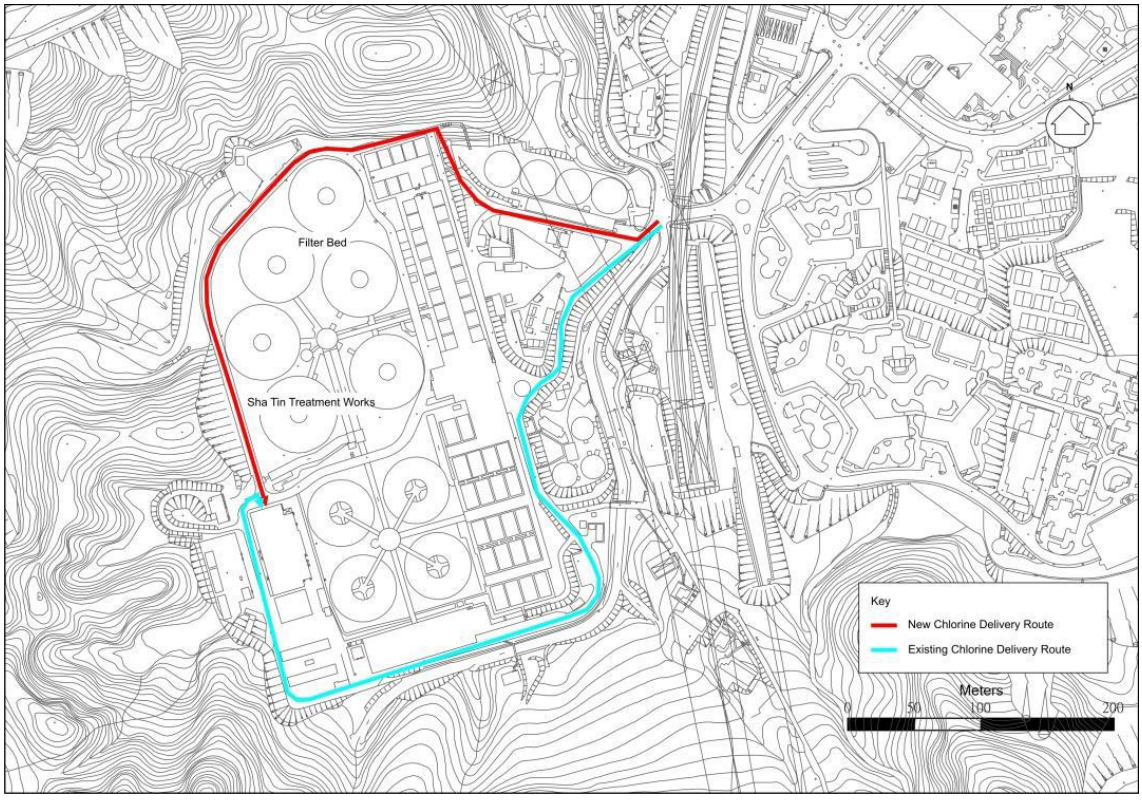
Table 2-15: Chlorine Truck Transport Route

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, contract No. 1/WSD/19 were four (4) site inspections carried out on 4, 11, 19 and 24 April 2023. Contract No. 6/WSD/21 were four (4) site inspections carried out on 4, 11, 18 and 24 April 2023.

2.8.2 One joint site inspection with IEC also undertaken on 24 April 2023. Minor deficiencies were observed during weekly site inspection or joint site inspection. Key observations during the site inspections are summarized in Table 2-16 (a) and Table 2-16 (b).

Table 2-16 (a): Site Observations (1/WSD/19)

Date	Environmental Observations	Follow-up Status
4 April 2023	It is observed that puddle near main haul road. Contractor was reminded to remove the puddly at main haul road	Puddle have been cleared up.
11 April 2023	No environmental issue was observed during the site inspection.	N/A
19 April 2023	It is observed that general refuse near S2F.Contractor was reminded to remove the general refuse at S2f	General refuse have been removed at S2F
24 April 2023	Contractor was reminded to monitor and clean up the treatment facility more frequently.	Treatment facility have been cleaned up.

Table 2-16 (b): Site Observations (6/WSD/21)

Date	Environmental Observations	Follow-up Status
4 April 2023	It is observed that puddle near car washing area. Contractor was reminded to remove the puddly at car washing area	Puddle have been cleared up.
11 April 2023	No environmental issue was observed during the site inspection.	N/A
18 April 2023	It is observed that water accumulated at site office. Contractor was reminded to clean up the site office.	Site office have been cleaned up.
24 April 2023	No environmental issue was observed during the site inspection.	N/A

2.8.3 The Contractor has rectified all 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 (a) and Table 2-17 (b) below:

Table 2-17(a): Summary of Environmental License and Permit (1/WSD/19)

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	
Notification of Commencement of Asbestos Abatement Work	AX210503	30/8/2021	N/A	ACMJV	
Construction Noise Permit	GW-RN0244-23	16/03/2023	15/06/2023	ACMJV	

Table 2-17(b): Summary of Environmental License and Permit (6/WSD/21)

License / Permit	License / Permit No.	Date of Issue	Date of Expiry	License / Permit Holder	Remark
Notification of Construction Works under the Air Pollution Control (Construction Dust) Regulation (Form NA)	Reference No: 474147	24/11/2021	N/A	ACMJV	
Registration of Chemical Waste Producer	WPN5218-759-C4678-01	5/1/2022	N/A	ACMJV	
Trip Ticket (Chit) Account	7042460	8/12/2021	N/A	ACMJV	
Waste Water Discharge Licence	WT00040939-2022	11/5/2022	31/5/2027	ACMJV	
Construction Noise Permit	GW-RN0194-23	4/3/2023	4/6/2023	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

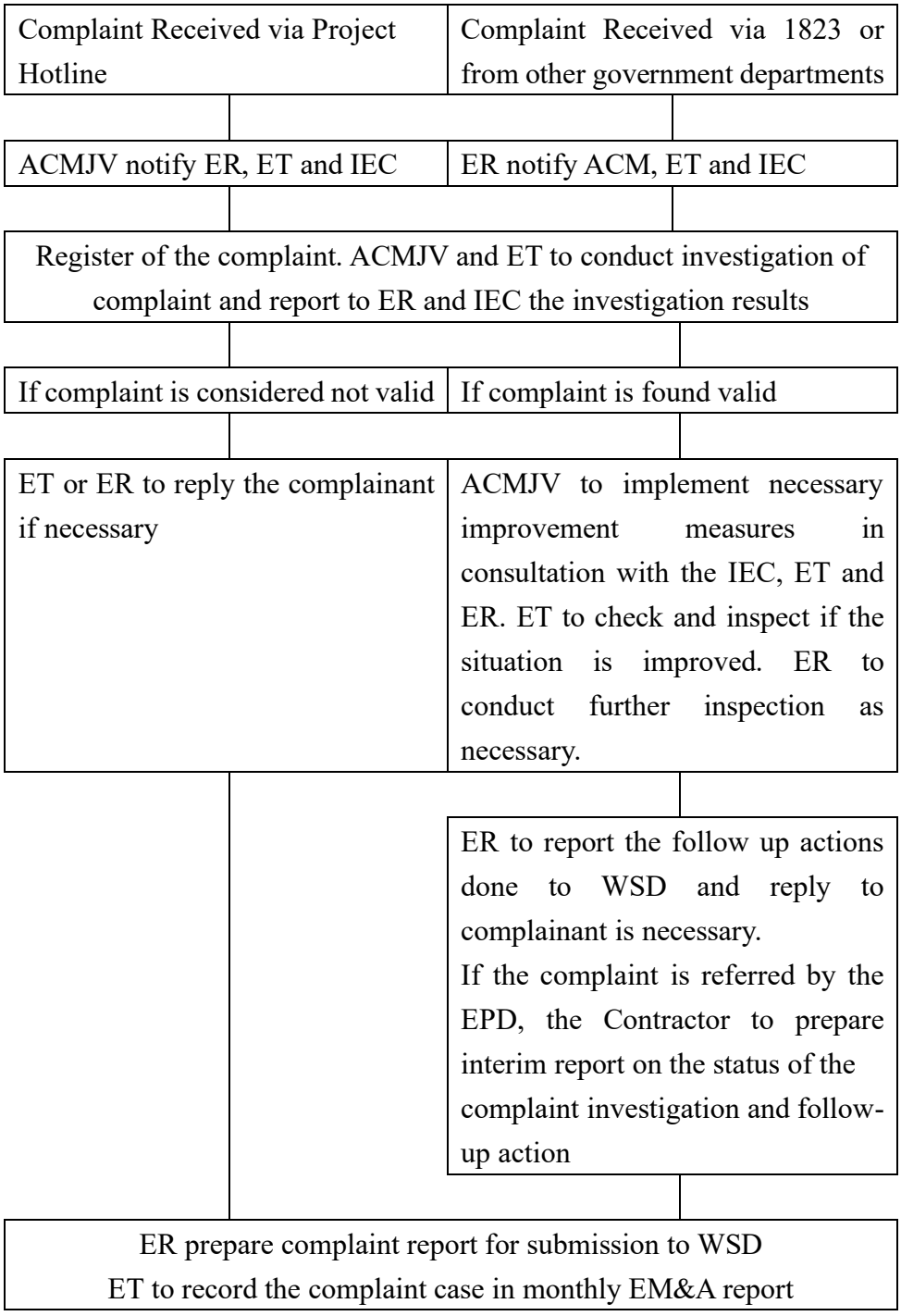
2.11.1 Results for 1-hour TSP and noise monitoring complied with the Action/ Limit levels in the reporting period. Results for water quality monitoring mostly complied with the Action/ Limit levels in the reporting period.

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 EPD site inspection was conducted on 20 April 2023 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 May 2023 to July 2023 will be:

- Major ELS Work (S1F, S2F, Ozone Building, SWPS, RMF)
  - ✧ Excavation
  - ✧ Soil nail installation
  - ✧ Lagging wall construction
  - ✧ Strut and waling installation
  - ✧ Pre-loading works
  - ✧ Plate load tests
- Grout curtain
- Shutdown of south works
- WET – structure construction, top slab construction, water test
- S1F:
  - ✧ Formation preparation (dewatering)
  - ✧ Blinding construction
  - ✧ Drilling works for earthing rods
  - ✧ Structure construction
- Demolition of TWRT
- Drilling works for King Posts
- Filter bed demolition and backfilling
- King Post installation work
- Valve chamber for M1-5 water pipe diversion
- Wall A & B construction works
- Fencing construction works
- Landscape works
- Installation of under structures pipes
- Installation of temporary steel decking at S2F
- ABWF Works for 6 major buildings
- Scaffolding Works for WET ABWF & Metal Works
- Structural Steelworks for WET
- Excavation for Stainless Steel Pipework under Structures of Six Major Buildings in Portion A

3.1.2 As informed by the Contractor, the major works for Contract No. 6/WSD/21 between May 2023 to July 2023 will be:

- Waterproofing Works
- Carry Out Excavation Down to +23.3mPD
- Concreting for Raft Slab (LG/F Level)
- Steel Plate Welding to Sheetpile for Waterproofing Works
- Carry Out Excavation to Final Excavation Level +21.0mPD
- MIC Installation
- Excavation to Bottlm Rockfill Level & Rockfill Replacement Work

3.2. KEY ISSUES FOR COMING MONTH

3.2.1 Potential environmental impacts arising from the above upcoming construction activities in April 2023 are mainly associated with dust, noise, water quality issues and waste management issues.

3.2.2 The tentative monitoring schedule for May 2023 to July 2023 can be found in **Appendix W**.

4. ONCLUSIONS 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, there was no exceedance of action level and 1 exceedance of limit level for water monitoring results in the reporting month was found and NOE and Investigation Report was 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 24 April 2023. 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 was received in reporting period.

4.1.5 No notification of summons or prosecution was received since commencement of the Contract.

4.1.6 The ET will keep track on the construction works to confirm compliance of environmental requirements and the proper implementation of all necessary mitigation measures.

Appendix A
General Layout Plan

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

N

LEGEND:

SITE BOUNDARY OF SHA TIN WATER TREATMENT WORKS

WORKS AREA

1/WSD/19

6/WSD/21

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. Dir. 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		

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

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 Mar 2023

Project Manager
WSD

Project Manager's
Delegate Representative

Construction Manager
Mr. William Leung
Mobile: 37588373

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

Project Manager
Ms. Elaine Leung 9302 1996

Environmental Officer
Mr. Yip Yun Lam
Mobile: 9532 7174

Environmental Consultant
Ms. YiTing Choy
Mobile: 4680 1105

Assistant Project Manager
Mr. Rock Chu 6480 8665 Mr. Benson LO 9875 5667

Assistant Environmental Officer
Ms. Winnie LI
Mobile: 6896 1544

Assistant Environmental Consultant
Mr. Oliver Chiu
Mobile: 61508774

Assistant Construction Manager Mr. Fred NG 5466 6459

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

Sub Agent
Mr. Wilson Luk
Mobile: 6271 1428

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

G. Foreman
Mr. Calvin Ho Mr. Chan Ka Leung
5565 2513 9319 7706

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

Environmental Supervisor

Ms. Winnie LI
Mobile : 6896 1544

Mr. Calvin Ho
Mobile: 5565 2513

Mr. Luk Ka Man
Mobile:6271 1428

Mr. Lin Tsz Kit
Mobile:9188 0821

Senior Forman
Mr. Chiu Wai Man Mr. Lee Foo Yung
Mobile: 9780 8168 5691 4386
Mr. Wong Hoi Pui Mr. Chan Chun Chau
61603837 6422 1123

Assistant Engineer
Sapkota Bibek
Mobile: 9036 4830

Foreman
Mr. Wong Ying Choi 9623 6957

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

Mr. Michael Tai Mr. Knight Lee
9273 1350 9878 8300

Mr. Ryan Tam
6628 4802

Assistant Foreman
Mr. John Ng Mr. Michael, Chan
5220 9580 6463 6800

Site Supervisor
Mr. Yam Kim Pang
Mobile: 9446 2998

Technical Apprentice
Mr. Yeung Chung Shing Mr. Wong Ho Hin Mr. Alex Hu Hongbin
Mobile: 9332 7090 6847 4497 6808 6236

Sub-Con. Rep's.

Harvest	Harvest	Harvest	Sung Wah	Wing Wo
Mr. Ho Kam Kuen	Mr. Chan Fat	Mr. Tam Chi Kwan	Mr. Chan Kuen Por	Mr. Ben Chung
Mobile: 6387 1108	6153 8582	6918 3262	9558 3776	6480 7623

Authorization

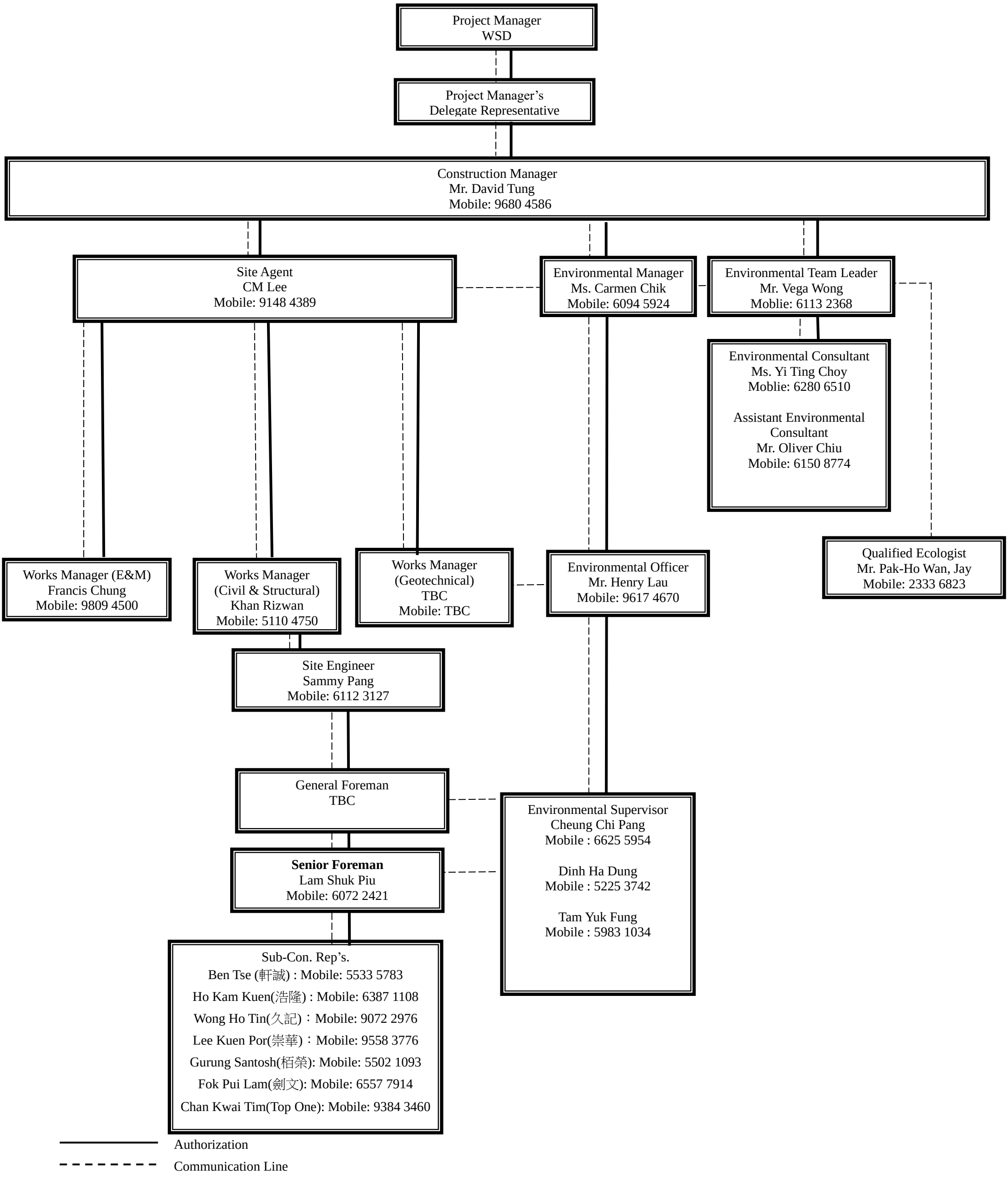
Communication Line

Contract No. 6/WSD/21

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

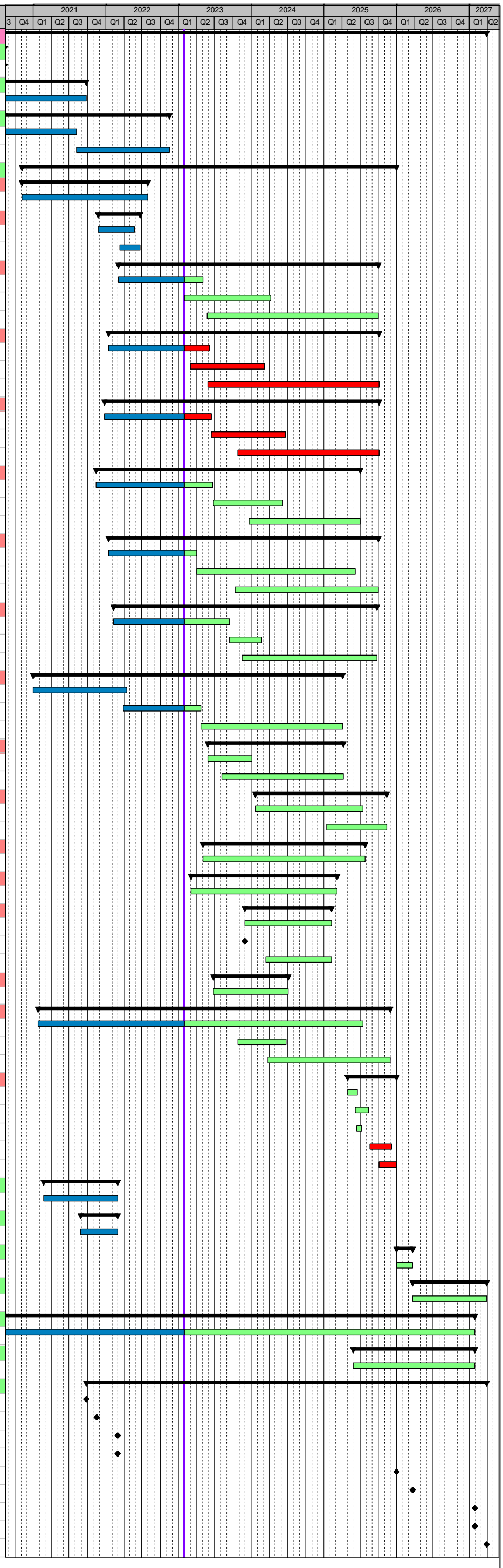
- **Administration Building**

Environmental Organizational Chart (2023.03)



Appendix C
Latest Construction Programme

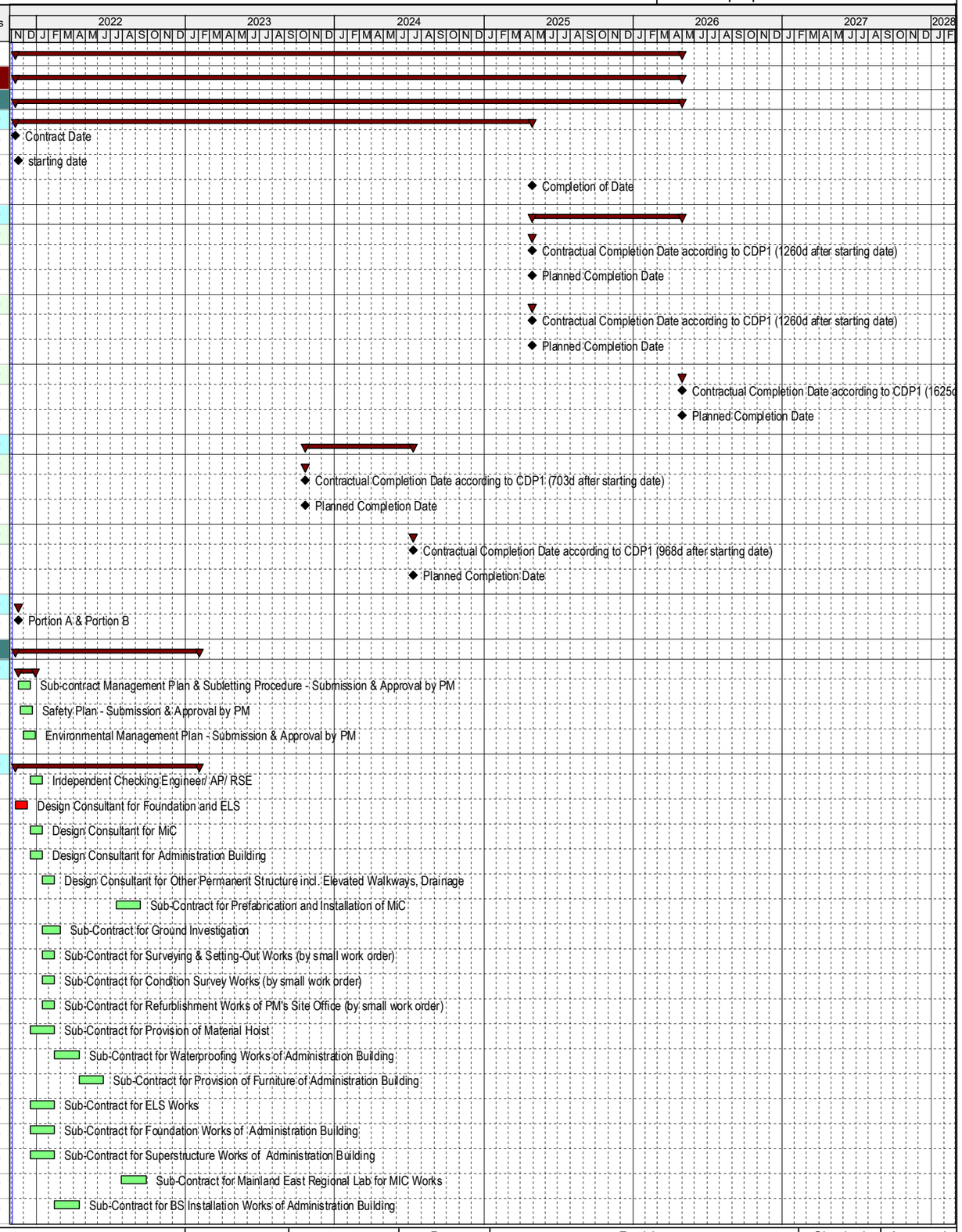
Activity ID	Activity Name	Original Duration	Start	Finish
Contract No. 1/WSD/19 - Executive Summary Programme (Jan-23)		3118	10-Aug-20 A	28-Mar-27
Starting Date		0	10-Aug-20 A	10-Aug-20 A
119.CD.GEN.10000	Starting Date	0	10-Aug-20 A	
Key date KD1		411	10-Aug-20 A	24-Sep-21 A
119.KD.CIV.10000	M1 - M5 Diversion	411	10-Aug-20 A	24-Sep-21 A
Section 1 of the works		458	10-Aug-20 A	16-Nov-22 A
119.S1.CIV.10000	Temporary DG Store Construction	361	10-Aug-20 A	05-Aug-21 A
119.S1.CIV.10010	DG Store Demolition and Site Formation Work	97	06-Aug-21 A	16-Nov-22 A
Section 2 of the works		1883	05-Nov-20 A	31-Dec-25
Decomissioning, Demolition and Shutdown		519	05-Nov-20 A	30-Jul-22 A
119.S2.CIV.22000	Decommissioning, Shutdown and Demolition	519	05-Nov-20 A	30-Jul-22 A
Temporary Washwater Equalization Tank		224	25-Nov-21 A	22-Jun-22 A
119.S2.CIV.20180	Civil and Structural Works	92	25-Nov-21 A	26-May-22 A
119.S2.MEP.20130	E&M Works	67	11-Mar-22 A	22-Jun-22 A
Stage 1 Filter		1280	07-Mar-22 A	30-Sep-25
119.S2.CIV.20000	Pipe Pile, Excavation and Lateral Support	216	07-Mar-22 A	02-May-23
119.S2.CIV.20010	Civil and Structural Works	435	31-Jan-23	09-Apr-24
119.S2.MEP.20000	E&M Works	860	25-May-23	30-Sep-25
Stage 2 Filter		1285	15-Jan-22 A	04-Oct-25
119.S2.CIV.20020	Pipe Pile, Excavation and Lateral Support	168	15-Jan-22 A	05-Jun-23
119.S2.CIV.20030	Civil and Structural Works	373	03-Mar-23	09-Mar-24
119.S2.MEP.20010	E&M Works	860	29-May-23	04-Oct-25
South Work Pumping Station		1343	24-Dec-21 A	04-Oct-25
119.S2.CIV.20040	Pipe Pile, Excavation and Lateral Support	285	24-Dec-21 A	13-Jun-23
119.S2.CIV.20050	Civil and Structural Works	372	14-Jun-23	19-Jun-24
119.S2.MEP.20020	E&M Works	709	27-Oct-23	04-Oct-25
Residual Management Facilities		1269	12-Nov-21 A	02-Jul-25
119.S2.CIV.20060	Pipe Pile, Excavation and Lateral Support	365	12-Nov-21 A	23-Jun-23
119.S2.CIV.20070	Civil and Structural Works	350	24-Jun-23	07-Jun-24
119.S2.MEP.20030	E&M Works	558	23-Dec-23	02-Jul-25
Ozone Building		1310	17-Jan-22 A	29-Sep-25
119.S2.CIV.20080	Pipe Pile, Excavation and Lateral Support	254	17-Jan-22 A	01-Apr-23
119.S2.CIV.20090	Civil and Structural Works	798	02-Apr-23	07-Jun-25
119.S2.MEP.20040	E&M Works	718	13-Oct-23	29-Sep-25
Flocculation and Sedimentation Tank		1287	08-Feb-22 A	23-Sep-25
119.S2.CIV.20100	Pipe Pile, Excavation and Lateral Support	428	08-Feb-22 A	15-Sep-23
119.S2.CIV.20110	Civil and Structural Works	159	16-Sep-23	21-Feb-24
119.S2.MEP.20050	E&M Works	679	15-Nov-23	23-Sep-25
Washwater Equalization Tank		1553	02-Jan-21 A	03-Apr-25
119.S2.CIV.20120	Pipe Pile, Excavation and Lateral Support	386	02-Jan-21 A	15-Apr-22 A
119.S2.CIV.20130	Civil and Structural Works	241	30-Mar-22 A	24-Apr-23
119.S2.MEP.20060	E&M Works	710	25-Apr-23	03-Apr-25
Inlet Works and New Sampling Room		681	29-May-23	08-Apr-25
119.S2.CIV.20150	Civil and Structural Works	222	29-May-23	05-Jan-24
119.S2.MEP.20070	E&M Works	613	05-Aug-23	08-Apr-25
Elevated Walkway		661	22-Jan-24	12-Nov-25
119.S2.CIV.20160	Civil and Structural Works	542	22-Jan-24	16-Jul-25
119.S2.MEP.20080	E&M Works	304	13-Jan-25	12-Nov-25
WTW Logistics Centre		815	04-May-23	26-Jul-25
119.S2.MEP.20090	E&M Works	815	04-May-23	26-Jul-25
Flowmeter House		735	04-Mar-23	07-Mar-25
119.S2.MEP.20100	E&M Works	735	04-Mar-23	07-Mar-25
New Administration Building		438	29-Nov-23	08-Feb-25
119.S2.MEP.20110	E&M Works	438	29-Nov-23	08-Feb-25
119.CD.GEN.10040	Access to Portion H from 6/WSD/21	0	29-Nov-23*	
119.S2.MEP.20120	SCADA Installation and DCS Migration	330	16-Mar-24	08-Feb-25
Geotechnical Works		379	24-Jun-23	06-Jul-24
119.S2.CIV.20170	Civil Works	379	24-Jun-23	06-Jul-24
Road and Utilities		1770	25-Jan-21 A	29-Nov-25
119.S2.CIV.21010	Drainage and Process Pipe	1178	25-Jan-21 A	15-Jul-25
119.S2.CIV.21030	Underground Power Supply Cable Laying	243	27-Oct-23	25-Jun-24
119.S2.CIV.21000	Road Works and Other Utilities	615	25-Mar-24	29-Nov-25
Inspection and Commissioning		248	28-Apr-25	31-Dec-25
119.S2.INS.10030	DG Inspection	52	28-Apr-25	18-Jun-25
119.S2.INS.10000	WSD Inspection	67	06-Jun-25	11-Aug-25
119.S2.INS.10020	EPD Inspection	26	14-Jun-25	09-Jul-25
119.S2.INS.10010	FSI Inspection	111	20-Aug-25	08-Dec-25
119.S2.INS.10040	Pre-commissioning Tests and Test on Completion	87	06-Oct-25	31-Dec-25
Section 3 of the works		320	23-Feb-21 A	02-Mar-22 A
119.S3.CIV.10000	Section 3 - Landscaping Softworks within Portion D	320	23-Feb-21 A	02-Mar-22 A
Section 3A of the works		391	29-Aug-21 A	02-Mar-22 A
119.S3A.CIV.10000	Section 3A - Establishment Works within Portion D	391	29-Aug-21 A	02-Mar-22 A
Section 4 of the works		81	01-Jan-26	22-Mar-26
119.S4.CIV.10000	Section 4 - Landscaping Softworks within Portion A&B	81	01-Jan-26	22-Mar-26
Section 4A of the works		371	23-Mar-26	28-Mar-27
119.S4A.CIV.10000	Section 4A - Establishment works within portion A&B	371	23-Mar-26	28-Mar-27
Section 5 of the works		2245	10-Aug-20 A	27-Jan-27
119.S5.CIV.10000	Section 5 - Post-planting Monitoring and Maintenance Works within Portion A, D & G	2245	10-Aug-20 A	27-Jan-27
Section 6 of the works		611	27-May-25	27-Jan-27
119.S6.CIV.10000	Section 6 - Extended Tests (ET) within Portion A, B & H	611	27-May-25	27-Jan-27
Sectional Completion Dates and Key Date		2011	24-Sep-21 A	28-Mar-27
119.CD.GEN.10010	key date KD1 - Diversion of Pipelines M1, M2, M3, M4 and M5	0		24-Sep-21 A
119.CD.GEN.10020	Section 1 - Relocate DG Stores, Site formation for New Administration Building	0		16-Nov-21 A
119.CD.GEN.10050	Section 3 - Landscaping Softworks within Portion D	0		02-Mar-22 A
119.CD.GEN.10060	Section 3A - Establishment Works within Portion D	0		02-Mar-22 A
119.CD.GEN.10030	Section 2 - Portion A&B const, E&M in portion H, Pipeline diversion M1 to M5	0		31-Dec-25*
119.CD.GEN.10070	Section 4 - Landscaping Softworks within Portion A&B	0		22-Mar-26
119.CD.GEN.10090	Section 5 - Post-planting Monitoring and Maintenance Works within Portion A, D & G	0		27-Jan-27
119.CD.GEN.10100	Section 6 - Extended Tests (ET) within Portion A, B & H	0		27-Jan-27
119.CD.GEN.10080	Section 4A - Establishment works within portion A&B	0		28-Mar-27



1/WSD/19 In-Situ Reprovisioning of Sha Tin Water Treatment Works (South Works) - Water Treatment Works and Ancillary Facilities
EXECUTIVE SUMMARY PROGRAMME

Milestone · Critical Work · Actual Level of Effort · Actual Work · Summary · Works · Level of Effort

P6. ID	Activity Name	Dur.	Start	Finish	Total Float	Late Start	Late Finish	Working Calendars
Total		1633	10-Nov-21	30-Apr-26	0	10-Nov-21	30-Apr-26	
In-situ Reprovisioning of Sha Tin WTW (South Works) - Admin. Bldg. (1st Programme)		1633	10-Nov-21	30-Apr-26	0	10-Nov-21	30-Apr-26	
Contract Dates		1633	10-Nov-21	30-Apr-26	0	10-Nov-21	30-Apr-26	7d/w x10
Key Dates		1268	10-Nov-21	30-Apr-25	0	10-Nov-21	30-Apr-25	7d/w x10
WSD-CD-01	Contract Date	0	10-Nov-21*		0	10-Nov-21		7d/w x10
WSD-CD-02	starting date	0	17-Nov-21		0	17-Nov-21		7d/w x10
WSD-CD-03	Completion of Date	0		30-Apr-25*	0		30-Apr-25	7d/w x10
Sectional Completion		365	30-Apr-25	30-Apr-26	0	30-Apr-25	30-Apr-26	7d/w x10
Section 1 - All Works except the Works in Section 2 & 2A		0	30-Apr-25	30-Apr-25	0	30-Apr-25	30-Apr-25	7d/w x10
WSD-SC-1-01	Contractual Completion Date according to CDP1 (1260d after starting date)	0		30-Apr-25*	0		30-Apr-25	7d/w x10
WSD-SC-1-02	Planned Completion Date	0		30-Apr-25*	0		30-Apr-25	7d/w x10
Section 2 - Landscaping Softworks within Portion A		0	30-Apr-25	30-Apr-25	0	30-Apr-25	30-Apr-25	7d/w x10
WSD-SC-2-01	Contractual Completion Date according to CDP1 (1260d after starting date)	0		30-Apr-25*	0		30-Apr-25	7d/w x10
WSD-SC-2-02	Planned Completion Date	0		30-Apr-25*	0		30-Apr-25	7d/w x10
Section 2A - Establishment Works wihin Portion A		0	30-Apr-26	30-Apr-26	0	30-Apr-26	30-Apr-26	7d/w x10
WSD-SC-3-01	Contractual Completion Date according to CDP1 (1625d after starting date)	0		30-Apr-26*	0		30-Apr-26	7d/w x10
WSD-SC-3-02	Planned Completion Date	0		30-Apr-26*	0		30-Apr-26	7d/w x10
Key Dates-1		265	21-Oct-23	12-Jul-24	0	21-Oct-23	12-Jul-24	7d/w x10
KD1 - Completion of the Works as specified in Clause PS 0.21		0	21-Oct-23	21-Oct-23	0	21-Oct-23	21-Oct-23	7d/w x10
WSD-KD-1-01	Contractual Completion Date according to CDP1 (703d after starting date)	0		21-Oct-23*	0		21-Oct-23	7d/w x10
WSD-KD-1-02	Planned Completion Date	0		21-Oct-23*	0		21-Oct-23	7d/w x10
KD2 - Completion of the Works as specified in Clause PS 0.22		0	12-Jul-24	12-Jul-24	0	12-Jul-24	12-Jul-24	7d/w x10
WSD-KD-2-01	Contractual Completion Date according to CDP1 (968d after starting date)	0		12-Jul-24*	0		12-Jul-24	7d/w x10
WSD-KD-2-02	Planned Completion Date	0		12-Jul-24*	0		12-Jul-24	7d/w x10
Access Date		0	17-Nov-21	17-Nov-21	118	15-Mar-22	15-Mar-22	7d/w x10
WSD-PS-01	Portion A & Portion B	0	17-Nov-21		118	15-Mar-22		7d/w x10
Major Submission / Procurement		452	10-Nov-21	04-Feb-23	684	10-Nov-21	19-Dec-24	7d/w x10
Major Submission		44	17-Nov-21	30-Dec-21	132	15-Dec-21	11-May-22	7d/w x10
WSD-MS-01	Sub-contract Management Plan & Subletting Procedure - Submission & Approval by PM	30	17-Nov-21	16-Dec-21	28	15-Dec-21	13-Jan-22	7d/w x10
WSD-MS-02	Safety Plan - Submission & Approval by PM	30	24-Nov-21	23-Dec-21	139	12-Apr-22	11-May-22	7d/w x10
WSD-MS-03	Environmental Management Plan - Submission & Approval by PM	30	01-Dec-21	30-Dec-21	132	12-Apr-22	11-May-22	7d/w x10
Subletting Package		452	10-Nov-21	04-Feb-23	684	10-Nov-21	19-Dec-24	7d/w x10
WSD-P-00	Independent Checking Engineer/ AP/ RSE	30	17-Dec-21	15-Jan-22	118	14-Apr-22	13-May-22	7d/w x10
WSD-P-01	Design Consultant for Foundation and ELS	30	10-Nov-21	09-Dec-21	0	10-Nov-21	09-Dec-21	7d/w x10
WSD-P-02	Design Consultant for MiC	30	17-Dec-21	15-Jan-22	118	14-Apr-22	13-May-22	7d/w x10
WSD-P-03	Design Consultant for Administration Building	30	17-Dec-21	15-Jan-22	145	11-May-22	09-Jun-22	7d/w x10
WSD-P-04	Design Consultant for Other Permanent Structure incl. Elevated Walkways, Drainage	30	16-Jan-22	14-Feb-22	725	11-Jan-24	09-Feb-24	7d/w x10
WSD-P-05	Sub-Contract for Prefabrication and Installation of MiC	60	15-Jul-22	12-Sep-22	88	11-Oct-22	09-Dec-22	7d/w x10
WSD-P-06	Sub-Contract for Ground Investigation	45	15-Jan-22	28-Feb-22	28	12-Feb-22	28-Mar-22	7d/w x10
WSD-P-07	Sub-Contract for Surveying & Setting-Out Works (by small work order)	30	15-Jan-22	13-Feb-22	53	09-Mar-22	07-Apr-22	7d/w x10
WSD-P-08	Sub-Contract for Condition Survey Works (by small work order)	30	15-Jan-22	13-Feb-22	53	09-Mar-22	07-Apr-22	7d/w x10
WSD-P-09	Sub-Contract for Refurblishment Works of PM's Site Office (by small work order)	30	15-Jan-22	13-Feb-22	1040	20-Nov-24	19-Dec-24	7d/w x10
WSD-P-12	Sub-Contract for Provision of Material Hoist	60	17-Dec-21	14-Feb-22	412	02-Feb-23	02-Apr-23	7d/w x10
WSD-P-13	Sub-Contract for Waterproofing Works of Administration Building	60	15-Feb-22	15-Apr-22	287	29-Nov-22	27-Jan-23	7d/w x10
WSD-P-14	Sub-Contract for Provision of Furniture of Administration Building	60	16-Apr-22	14-Jun-22	729	14-Apr-24	12-Jun-24	7d/w x10
WSD-P-15	Sub-Contract for ELS Works	60	17-Dec-21	14-Feb-22	129	25-Apr-22	23-Jun-22	7d/w x10
WSD-P-16	Sub-Contract for Foundation Works of Administration Building	60	17-Dec-21	14-Feb-22	77	04-Mar-22	02-May-22	7d/w x10
WSD-P-17	Sub-Contract for Superstructure Works of Administration Building	60	17-Dec-21	14-Feb-22	222	27-Jul-22	24-Sep-22	7d/w x10
WSD-P-18	Sub-Contract for Mainland East Regional Lab for MIC Works	60	29-Jul-22	26-Sep-22	478	19-Nov-23	17-Jan-24	7d/w x10
WSD-P-19	Sub-Contract for BS Installation Works of Administration Building	60	15-Feb-22	15-Apr-22	361	11-Feb-23	11-Apr-23	7d/w x10



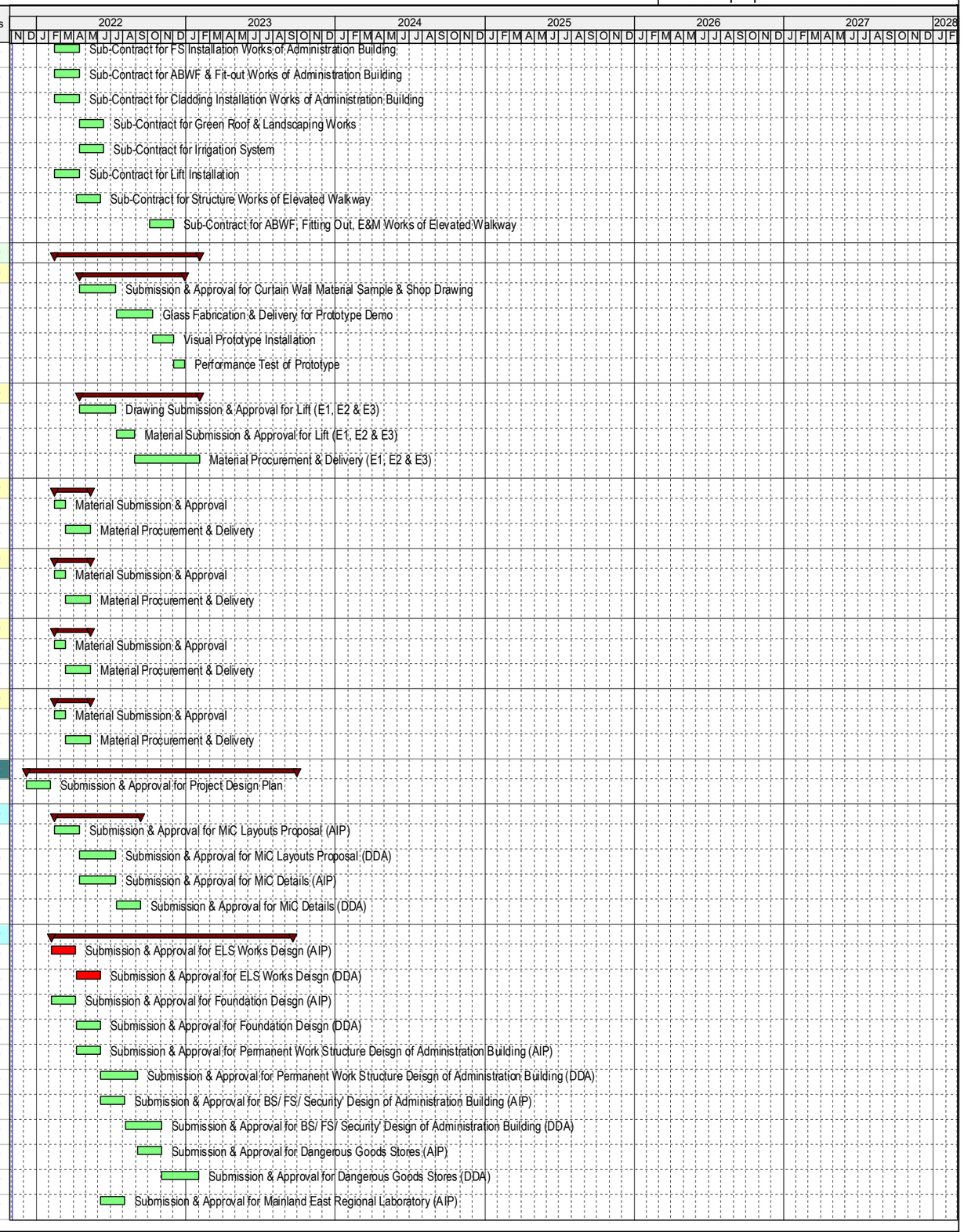
Milestone
Near Critical Task
Critical Task
Time Risk Al.
Non-Critical Task
Finished Task
Tasks Summary
P6 Hammock

FIRST PROGRAMME REV. 1
ALL ACTIVITIES

俊和 CHUN WO

Date	Revision	Checked	Approved
03-Nov-21	Revision 0 First Issue	AH	WJ
19-Jan-22	Revision 1 First Issue	PF	AH
08-Feb-22	Revision 2 First Issue		

P6. ID	Activity Name	Dur.	Start	Finish	Total Float	Late Start	Late Finish	Working Calendars
WSD-P-20	Sub-Contract for FS Installation Works of Administration Building	60	15-Feb-22	15-Apr-22	361	11-Feb-23	11-Apr-23	7d/w x10
WSD-P-21	Sub-Contract for ABWF & Fit-out Works of Administration Building	60	15-Feb-22	15-Apr-22	112	07-Jun-22	05-Aug-22	7d/w x10
WSD-P-22	Sub-Contract for Cladding Installation Works of Administration Building	60	15-Feb-22	15-Apr-22	112	07-Jun-22	05-Aug-22	7d/w x10
WSD-P-23	Sub-Contract for Green Roof & Landscaping Works	60	16-Apr-22	14-Jun-22	112	06-Aug-22	04-Oct-22	7d/w x10
WSD-P-24	Sub-Contract for Irrigation System	60	16-Apr-22	14-Jun-22	748	03-May-24	01-Jul-24	7d/w x10
WSD-P-25	Sub-Contract for Lift Installation	60	15-Feb-22	15-Apr-22	557	26-Aug-23	24-Oct-23	7d/w x10
WSD-P-26	Sub-Contract for Structure Works of Elevated Walkway	60	08-Apr-22	06-Jun-22	63	10-Jun-22	08-Aug-22	7d/w x10
WSD-P-27	Sub-Contract for ABWF, Fitting Out, E&M Works of Elevated Walkway	60	05-Oct-22	03-Dec-22	63	07-Dec-22	04-Feb-23	7d/w x10
Material Procurement		356	14-Feb-22	04-Feb-23	557	11-Mar-22	14-Aug-24	7d/w x10
Curtain Wall/ Glazing		258	16-Apr-22	29-Dec-22	271	12-Jan-23	26-Sep-23	7d/w x10
WSD-P-M-03	Submission & Approval for Curtain Wall Material Sample & Shop Drawing	90	16-Apr-22	14-Jul-22	271	12-Jan-23	11-Apr-23	7d/w x10
WSD-P-M-04	Glass Fabrication & Delivery for Prototype Demo	90	15-Jul-22	12-Oct-22	271	12-Apr-23	10-Jul-23	7d/w x10
WSD-P-M-05	Visual Prototype Installation	50	13-Oct-22	01-Dec-22	271	11-Jul-23	29-Aug-23	7d/w x10
WSD-P-M-06	Performance Test of Prototype	28	02-Dec-22	29-Dec-22	271	30-Aug-23	26-Sep-23	7d/w x10
Lift E1, E2 & E3		295	16-Apr-22	04-Feb-23	557	25-Oct-23	14-Aug-24	7d/w x10
WSD-P-M-07	Drawing Submission & Approval for Lift (E1, E2 & E3)	90	16-Apr-22	14-Jul-22	557	25-Oct-23	22-Jan-24	7d/w x10
WSD-P-M-08	Material Submission & Approval for Lift (E1, E2 & E3)	45	15-Jul-22	28-Aug-22	557	23-Jan-24	07-Mar-24	7d/w x10
WSD-P-M-09	Material Procurement & Delivery (E1, E2 & E3)	160	29-Aug-22	04-Feb-23	557	08-Mar-24	14-Aug-24	7d/w x10
Sheetpile		88	14-Feb-22	12-May-22	25	11-Mar-22	06-Jun-22	7d/w x10
WSD-P-M-10	Material Submission & Approval	28	14-Feb-22	13-Mar-22	25	11-Mar-22	07-Apr-22	7d/w x10
WSD-P-M-11	Material Procurement & Delivery	60	14-Mar-22	12-May-22	25	08-Apr-22	06-Jun-22	7d/w x10
ELS Steel Member		88	14-Feb-22	12-May-22	71	26-Apr-22	22-Jul-22	7d/w x10
WSD-P-M-12	Material Submission & Approval	28	14-Feb-22	13-Mar-22	71	26-Apr-22	23-May-22	7d/w x10
WSD-P-M-13	Material Procurement & Delivery	60	14-Mar-22	12-May-22	71	24-May-22	22-Jul-22	7d/w x10
Concrete		88	14-Feb-22	12-May-22	209	11-Sep-22	07-Dec-22	7d/w x10
WSD-P-M-14	Material Submission & Approval	28	14-Feb-22	13-Mar-22	209	11-Sep-22	08-Oct-22	7d/w x10
WSD-P-M-15	Material Procurement & Delivery	60	14-Mar-22	12-May-22	209	09-Oct-22	07-Dec-22	7d/w x10
Rebar		88	14-Feb-22	12-May-22	209	11-Sep-22	07-Dec-22	7d/w x10
WSD-P-M-16	Material Submission & Approval	28	14-Feb-22	13-Mar-22	209	11-Sep-22	08-Oct-22	7d/w x10
WSD-P-M-17	Material Procurement & Delivery	60	14-Mar-22	12-May-22	209	09-Oct-22	07-Dec-22	7d/w x10
Contractor's Design		661	08-Dec-21	29-Sep-23	944	07-Feb-22	30-Apr-26	7d/w x10
WSD-S-01	Submission & Approval for Project Design Plan	60	08-Dec-21	05-Feb-22	97	15-Mar-22	13-May-22	7d/w x10
Design for MiC		210	15-Feb-22	12-Sep-22	88	14-May-22	09-Dec-22	7d/w x10
WSD-D-M01	Submission & Approval for MiC Layouts Proposal (AIP)	60	15-Feb-22*	15-Apr-22	88	14-May-22	12-Jul-22	7d/w x10
WSD-D-M02	Submission & Approval for MiC Layouts Proposal (DDA)	90	16-Apr-22	14-Jul-22	88	13-Jul-22	10-Oct-22	7d/w x10
WSD-D-M03	Submission & Approval for MiC Details (AIP)	90	16-Apr-22	14-Jul-22	88	13-Jul-22	10-Oct-22	7d/w x10
WSD-D-M04	Submission & Approval for MiC Details (DDA)	60	15-Jul-22	12-Sep-22	88	11-Oct-22	09-Dec-22	7d/w x10
Design for Administration Building		590	07-Feb-22	19-Sep-23	954	07-Feb-22	30-Apr-26	7d/w x10
WSD-D-AB00A	Submission & Approval for ELS Works Deisgn (AIP)	60	07-Feb-22	07-Apr-22	0	07-Feb-22	07-Apr-22	7d/w x10
WSD-D-AB00B	Submission & Approval for ELS Works Deisgn (DDA)	60	08-Apr-22	06-Jun-22	0	08-Apr-22	06-Jun-22	7d/w x10
WSD-D-AB01A	Submission & Approval for Foundation Deisgn (AIP)	60	07-Feb-22	07-Apr-22	25	04-Mar-22	02-May-22	7d/w x10
WSD-D-AB01B	Submission & Approval for Foundation Deisgn (DDA)	60	08-Apr-22	06-Jun-22	25	03-May-22	01-Jul-22	7d/w x10
WSD-D-AB02A	Submission & Approval for Permanent Work Structure Deisgn of Administration Building (AIP)	60	08-Apr-22	06-Jun-22	63	10-Jun-22	08-Aug-22	7d/w x10
WSD-D-AB02B	Submission & Approval for Permanent Work Structure Deisgn of Administration Building (DDA)	90	07-Jun-22	04-Sep-22	110	25-Sep-22	23-Dec-22	7d/w x10
WSD-D-AB03A	Submission & Approval for BS/ FS/ Security' Design of Administration Building (AIP)	60	07-Jun-22	05-Aug-22	249	11-Feb-23	11-Apr-23	7d/w x10
WSD-D-AB03B	Submission & Approval for BS/ FS/ Security' Design of Administration Building (DDA)	90	06-Aug-22	03-Nov-22	249	12-Apr-23	10-Jul-23	7d/w x10
WSD-D-AB04A	Submission & Approval for Dangerous Goods Stores (AIP)	60	05-Sep-22	03-Nov-22	583	10-Apr-24	08-Jun-24	7d/w x10
WSD-D-AB04B	Submission & Approval for Dangerous Goods Stores (DDA)	90	04-Nov-22	01-Feb-23	583	09-Jun-24	06-Sep-24	7d/w x10
WSD-D-AB05A	Submission & Approval for Mainland East Regional Laboratory (AIP)	60	07-Jun-22	05-Aug-22	470	20-Sep-23	18-Nov-23	7d/w x10



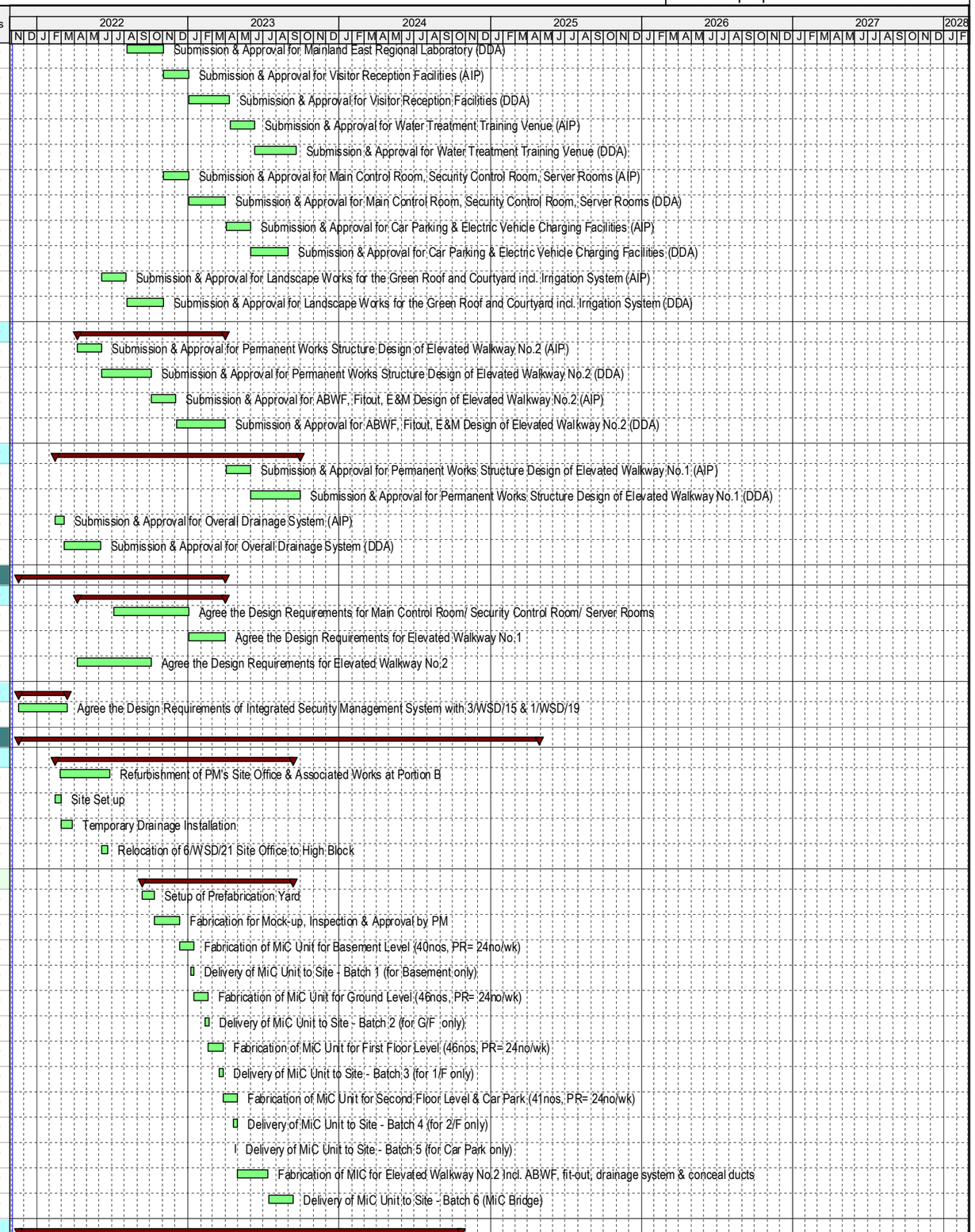
Milestone
Near Critical Task
Critical Task
Time Risk Al.
Non-Critical Task
Finished Task
Tasks Summary
P6 Hammock

FIRST PROGRAMME REV. 1
ALL ACTIVITIES

俊和 CHUN WO

Date	Revision	Checked	Approved
03-Nov-21	Revision 0 First Issue	AH	WJ
19-Jan-22	Revision 1 First Issue	PF	AH
08-Feb-22	Revision 2 First Issue		

P6. ID	Activity Name	Dur.	Start	Finish	Total Float	Late Start	Late Finish	Working Calendars
WSD-D-AB05B	Submission & Approval for Mainland East Regional Laboratory (DDA)	90	06-Aug-22	03-Nov-22	470	19-Nov-23	16-Feb-24	7d/w x10
WSD-D-AB06A	Submission & Approval for Visitor Reception Facilities (AIP)	60	04-Nov-22	02-Jan-23	267	29-Jul-23	26-Sep-23	7d/w x10
WSD-D-AB06B	Submission & Approval for Visitor Reception Facilities (DDA)	100	03-Jan-23	12-Apr-23	267	27-Sep-23	04-Jan-24	7d/w x10
WSD-D-AB07A	Submission & Approval for Water Treatment Training Venue (AIP)	60	13-Apr-23	11-Jun-23	267	05-Jan-24	04-Mar-24	7d/w x10
WSD-D-AB07B	Submission & Approval for Water Treatment Training Venue (DDA)	100	12-Jun-23	19-Sep-23	267	05-Mar-24	12-Jun-24	7d/w x10
WSD-D-AB08A	Submission & Approval for Main Control Room, Security Control Room, Server Rooms (AIP)	60	04-Nov-22	02-Jan-23	249	11-Jul-23	08-Sep-23	7d/w x10
WSD-D-AB08B	Submission & Approval for Main Control Room, Security Control Room, Server Rooms (DDA)	90	03-Jan-23	02-Apr-23	249	09-Sep-23	07-Dec-23	7d/w x10
WSD-D-AB09A	Submission & Approval for Car Parking & Electric Vehicle Charging Facilities (AIP)	60	03-Apr-23	01-Jun-23	974	02-Dec-25	30-Jan-26	7d/w x10
WSD-D-AB09B	Submission & Approval for Car Parking & Electric Vehicle Charging Facilities (DDA)	90	02-Jun-23	30-Aug-23	974	31-Jan-26	30-Apr-26	7d/w x10
WSD-D-AB10A	Submission & Approval for Landscape Works for the Green Roof and Courtyard incl. Irrigation System (AII	60	07-Jun-22	05-Aug-22	685	22-Apr-24	20-Jun-24	7d/w x10
WSD-D-AB10B	Submission & Approval for Landscape Works for the Green Roof and Courtyard incl. Irrigation System (DI	90	06-Aug-22	03-Nov-22	685	21-Jun-24	18-Sep-24	7d/w x10
Design for Elevated Walkway No.2		360	08-Apr-22	02-Apr-23	63	10-Jun-22	04-Jun-23	7d/w x10
WSD-D-SB02A	Submission & Approval for Permanent Works Structure Design of Elevated Walkway No.2 (AIP)	60	08-Apr-22	06-Jun-22	63	10-Jun-22	08-Aug-22	7d/w x10
WSD-D-SB02B	Submission & Approval for Permanent Works Structure Design of Elevated Walkway No.2 (DDA)	120	07-Jun-22	04-Oct-22	63	09-Aug-22	06-Dec-22	7d/w x10
WSD-D-SB03A	Submission & Approval for ABWF, Fitout, E&M Design of Elevated Walkway No.2 (AIP)	60	05-Oct-22	03-Dec-22	63	07-Dec-22	04-Feb-23	7d/w x10
WSD-D-SB03B	Submission & Approval for ABWF, Fitout, E&M Design of Elevated Walkway No.2 (DDA)	120	04-Dec-22	02-Apr-23	63	05-Feb-23	04-Jun-23	7d/w x10
Other Major Design Packages		592	15-Feb-22	29-Sep-23	244	05-Jun-23	30-May-24	7d/w x10
WSD-D-OT02A	Submission & Approval for Permanent Works Structure Design of Elevated Walkway No.1 (AIP)	60	03-Apr-23	01-Jun-23	63	05-Jun-23	03-Aug-23	7d/w x10
WSD-D-OT02B	Submission & Approval for Permanent Works Structure Design of Elevated Walkway No.1 (DDA)	120	02-Jun-23	29-Sep-23	63	04-Aug-23	01-Dec-23	7d/w x10
WSD-D-OT03A	Submission & Approval for Overall Drainage System (AIP)	21	15-Feb-22	07-Mar-22	725	10-Feb-24	01-Mar-24	7d/w x10
WSD-D-OT03B	Submission & Approval for Overall Drainage System (DDA)	90	08-Mar-22	05-Jun-22	725	02-Mar-24	30-May-24	7d/w x10
Interface Management		502	17-Nov-21	02-Apr-23	677	07-Mar-23	07-Feb-25	7d/w x10
Liaison with 1/WSD/19		360	08-Apr-22	02-Apr-23	677	07-Mar-23	07-Feb-25	7d/w x10
WSD-IM-01	Agree the Design Requirements for Main Control Room/ Security Control Room/ Server Rooms	180	07-Jul-22	02-Jan-23	249	13-Mar-23	08-Sep-23	7d/w x10
WSD-IM-02	Agree the Design Requirements for Elevated Walkway No.1	90	03-Jan-23	02-Apr-23	63	07-Mar-23	04-Jun-23	7d/w x10
WSD-IM-03	Agree the Design Requirements for Elevated Walkway No.2	180	08-Apr-22	04-Oct-22	857	12-Aug-24	07-Feb-25	7d/w x10
Liaison with 3/WSD/15		120	17-Nov-21	16-Mar-22	545	16-May-23	12-Sep-23	7d/w x10
WSD-IM-04	Agree the Design Requirements of Integrated Security Management System with 3/WSD/15 & 1/WSD/19	120	17-Nov-21	16-Mar-22	545	16-May-23	12-Sep-23	7d/w x10
Section 1 of the Works		1261	17-Nov-21	30-Apr-25	365	15-Mar-22	30-Apr-26	
Preliminary Works		575	15-Feb-22	12-Sep-23	961	12-May-22	30-Apr-26	
WSD-W-PW01	Refurbishment of PM's Site Office & Associated Works at Portion B	120	26-Feb-22	25-Jun-22	1040	01-Jan-25	30-Apr-25	7d/w x10
WSD-W-PW02	Site Set up	12	15-Feb-22	28-Feb-22	68	12-May-22	25-May-22	6d/w x10
WSD-W-PW03	Temporary Drainage Installation	24	01-Mar-22	28-Mar-22	68	26-May-22	23-Jun-22	6d/w x10
WSD-W-PW04	Relocation of 6/WSD/21 Site Office to High Block	12	07-Jun-22	20-Jun-22	1159	17-Apr-26	30-Apr-26	6d/w x10
Prefabrication Yard		365	13-Sep-22	12-Sep-23	542	10-Dec-22	07-Mar-25	
WSD-W-PY-01	Setup of Prefabrication Yard	30	13-Sep-22	12-Oct-22	88	10-Dec-22	08-Jan-23	7d/w x10
WSD-W-PY-02	Fabrication for Mock-up, Inspection & Approval by PM	60	13-Oct-22	11-Dec-22	88	09-Jan-23	09-Mar-23	7d/w x10
WSD-W-PY-03	Fabrication of MiC Unit for Basement Level (40nos, PR= 24no/wk)	35	12-Dec-22	15-Jan-23	88	10-Mar-23	13-Apr-23	7d/w x10
WSD-W-PY-04	Delivery of MiC Unit to Site - Batch 1 (for Basement only)	7	09-Jan-23	16-Jan-23	133	23-Jun-23	30-Jun-23	6d/w x10
WSD-W-PY-05	Fabrication of MiC Unit for Ground Level (46nos, PR= 24no/wk)	35	16-Jan-23	19-Feb-23	88	14-Apr-23	18-May-23	7d/w x10
WSD-W-PY-06	Delivery of MiC Unit to Site - Batch 2 (for G/F only)	8	11-Feb-23	20-Feb-23	116	05-Jul-23	13-Jul-23	6d/w x10
WSD-W-PY-07	Fabrication of MiC Unit for First Floor Level (46nos, PR= 24no/wk)	35	20-Feb-23	26-Mar-23	88	19-May-23	22-Jun-23	7d/w x10
WSD-W-PY-08	Delivery of MiC Unit to Site - Batch 3 (for 1/F only)	8	18-Mar-23	27-Mar-23	94	14-Jul-23	22-Jul-23	6d/w x10
WSD-W-PY-09	Fabrication of MiC Unit for Second Floor Level & Car Park (41nos, PR= 24no/wk)	35	27-Mar-23	30-Apr-23	88	23-Jun-23	27-Jul-23	7d/w x10
WSD-W-PY-10	Delivery of MiC Unit to Site - Batch 4 (for 2/F only)	7	22-Apr-23	02-May-23	73	21-Jul-23	28-Jul-23	6d/w x10
WSD-W-PY-11	Delivery of MiC Unit to Site - Batch 5 (for Car Park only)	1	26-Apr-23	26-Apr-23	77	29-Jul-23	29-Jul-23	6d/w x10
WSD-W-PY-13	Fabrication of MIC for Elevated Walkway No.2 Incl. ABWF, fit-out, drainage system & conceal ducts	75	01-May-23	14-Jul-23	542	24-Oct-24	06-Jan-25	7d/w x10
WSD-W-PY-14	Delivery of MiC Unit to Site - Batch 6 (MiC Bridge)	60	15-Jul-23	12-Sep-23	542	07-Jan-25	07-Mar-25	7d/w x10
Construction of Administration Building		1072	17-Nov-21	23-Oct-24	554	15-Mar-22	30-Apr-26	



Milestone
Near Critical Task
Critical Task
Time Risk Al.
Non-Critical Task
Finished Task
Tasks Summary
P6 Hammock

FIRST PROGRAMME REV. 1
ALL ACTIVITIES

Date	Revision	Checked	Approved
03-Nov-21	Revision 0 First Issue	AH	WJ
19-Jan-22	Revision 1 First Issue	PF	AH
08-Feb-22	Revision 2 First Issue		

P6. ID	Activity Name	Dur.	Start	Finish	Total Float	Late Start	Late Finish	Working Calendars
Foundation		556	17-Nov-21	26-May-23	1070	15-Mar-22	30-Apr-26	
Preparation Works		106	21-Jan-22	06-May-22	48	15-Mar-22	23-Jun-22	
WSD-W-F01	Fdn. - Surveying, Trial Pit, UU Detection, Installation of Monitoring Strumentation, Site Haul Road	80	21-Jan-22	03-May-22	42	15-Mar-22	23-Jun-22	6d/w x10
WSD-W-F02	Fdn. - G.I. & Instrumentation	12	03-Mar-22	16-Mar-22	24	31-Mar-22	14-Apr-22	6d/w x10
WSD-W-F03	Fdn. - Conduct Laboratory Test & Issue Preliminary Report	30	17-Mar-22	15-Apr-22	31	17-Apr-22	16-May-22	7d/w x10
WSD-W-F04	Fdn. - Design Review	21	16-Apr-22	06-May-22	31	17-May-22	06-Jun-22	7d/w x10
Phase 1 (Grid J-Q/1-7)		318	17-Nov-21	30-Sep-22	84	07-Jun-22	23-Dec-22	
WSD-W-F-101	Temporary Retaining Structure (Grid J-Q/1-7), 120m long, to be constructed by Contract 1/WSD/19	0	17-Nov-21		202	07-Jun-22		7d/w x10
WSD-W-F-102	Install Strut and Excavation at Portion 1 from 23.3mPD to 21.5mPD (2400m³, PR=100m³/d)	24	24-Jun-22	22-Jul-22	0	24-Jun-22	22-Jul-22	6d/w x10
WSD-W-F-103	Carry Out Plate Load Test at Portion 1	14	23-Jul-22	05-Aug-22	86	17-Oct-22	30-Oct-22	7d/w x10
WSD-W-F-104	Footing - 1m thk Footing @ +21.5mPD incl. blinding layer (7 batches @ 6d/batch)	42	06-Aug-22	24-Sep-22	70	31-Oct-22	17-Dec-22	6d/w x10
WSD-W-F-105	Time Risk Allowance for Phase 1 Foundation	6	25-Sep-22	30-Sep-22	84	18-Dec-22	23-Dec-22	7d/w x10
Phase 2 (Grid A'-J/1-9)		556	17-Nov-21	26-May-23	1070	07-Jun-22	30-Apr-26	
WSD-W-F-201	Temporary Retaining Structure (Grid A'-C/1), 48m long, to be constructed by Contract 1/WSD/19	0	17-Nov-21		1626	30-Apr-26		7d/w x10
WSD-W-F-201.5	Temporary Retaining Structure (Grid F-J/7-9), 30m long, to be constructed by Contract 1/WSD/19	0	17-Nov-21		1626	30-Apr-26		7d/w x10
WSD-W-F-202	B.Footing - Sheet Piling (GL C-J/ 1), 50m on plan/ 12m deep, PR =12sheet/d	12	07-Jun-22	20-Jun-22	0	07-Jun-22	20-Jun-22	6d/w x10
WSD-W-F-202.5	B.Footing - Sheet Piling (GL A1-F/9), 60m on plan/ 16m deep, PR =10sheet/d	15	07-Jun-22	23-Jun-22	0	07-Jun-22	23-Jun-22	6d/w x10
WSD-W-F-203	Forming of Slope and Carry Out Excavation to + 20 mPD (11500m³, PR=100m³/d)	115	23-Jul-22	07-Dec-22	0	23-Jul-22	07-Dec-22	6d/w x10
WSD-W-F-204	Construct Partial Raft (10 batches @ 6d/batch)	60	08-Dec-22	22-Feb-23	0	08-Dec-22	22-Feb-23	6d/w x10
WSD-W-F-205	Install Raking Struts for Further Excavation	5	23-Feb-23	28-Feb-23	0	23-Feb-23	28-Feb-23	6d/w x10
WSD-W-F-206	Excavate Slope in front of Sheetpile to +20 mPD (500m³, PR=100m³/d)	5	01-Mar-23	06-Mar-23	0	01-Mar-23	06-Mar-23	6d/w x10
WSD-W-F-207	Construct Remaining Raft (10 batches @ 6d/batch)	60	07-Mar-23	19-May-23	0	07-Mar-23	19-May-23	6d/w x10
WSD-W-F-208	Time Risk Allowance for Phase 2 Foundation	7	20-May-23	26-May-23	0	20-May-23	26-May-23	7d/w x10
Structure		478	03-Oct-22	23-Jan-24	828	24-Dec-22	30-Apr-26	
Phase 1 (Grid J-Q/1-7)		241	03-Oct-22	31-May-23	104	24-Dec-22	12-Sep-23	
Underground		12	03-Oct-22	17-Oct-22	70	24-Dec-22	10-Jan-23	6d/w x10
WSD-W-UG10	U/G R.C. - Beam / Column Construction	12	03-Oct-22	17-Oct-22	70	24-Dec-22	10-Jan-23	6d/w x10
Basement Level		61	03-Oct-22	02-Dec-22	89	11-Jan-23	01-Mar-23	
WSD-W-SB101	B/F R.C. - Suspended Slab	12	18-Oct-22	31-Oct-22	70	11-Jan-23	27-Jan-23	6d/w x10
WSD-W-SB102	B/F R.C. - Formwork and Rebar to RC Column	12	01-Nov-22	14-Nov-22	70	28-Jan-23	10-Feb-23	6d/w x10
WSD-W-SB103	B/F R.C. - Formwork and Rebar RC Wall	12	01-Nov-22	14-Nov-22	70	28-Jan-23	10-Feb-23	6d/w x10
WSD-W-SB104	B/F R.C. - Formwork and Rebar RC Concrete Beam/Slab (Ground Slab) incl. Erect Scaffold	12	12-Nov-22	25-Nov-22	70	09-Feb-23	22-Feb-23	6d/w x10
WSD-W-SB105	B/F R.C. - Concreting	1	26-Nov-22	26-Nov-22	70	23-Feb-23	23-Feb-23	6d/w x10
WSD-W-SB106	B/F R.C. - Haul Road Preparation for Mobilization Mobile Crane	10	03-Oct-22	14-Oct-22	107	13-Feb-23	23-Feb-23	6d/w x10
WSD-W-SB107	B/F MiC - Installation of MiC Module (16 units) by Mobile Crane @ Basement level <<PR=6no/d>>	3	28-Nov-22	30-Nov-22	70	24-Feb-23	27-Feb-23	6d/w x10
WSD-W-SB108	Time Risk Allowance for Structural Works @ Basement Level Phase 1	2	01-Dec-22	02-Dec-22	89	28-Feb-23	01-Mar-23	7d/w x10
Ground Floor Level		36	03-Dec-22	07-Jan-23	85	02-Mar-23	02-Apr-23	
WSD-W-SG101	G/F R.C. - Formwork and Rebar to RC Column	12	03-Dec-22	16-Dec-22	70	02-Mar-23	15-Mar-23	6d/w x10
WSD-W-SG102	G/F R.C. - Formwork and Rebar to RC Wall	12	03-Dec-22	16-Dec-22	70	02-Mar-23	15-Mar-23	6d/w x10
WSD-W-SG103	G/F R.C. - Formwork and Rebar to RC Concrete Slab (First Floor Slab) incl. Erect Scaffold	12	15-Dec-22	30-Dec-22	70	14-Mar-23	27-Mar-23	6d/w x10
WSD-W-SG104	G/F R.C. - Concreting	1	31-Dec-22	31-Dec-22	70	28-Mar-23	28-Mar-23	6d/w x10
WSD-W-SG105	G/F MiC - Installation of MiC Module (18 units) by Mobile Crane @ Ground Floor level <<PR=6no/d>>	3	03-Jan-23	05-Jan-23	70	29-Mar-23	31-Mar-23	6d/w x10
WSD-W-SG106	Time Risk Allowance for Structural Works @ Ground Level Phase 1	2	06-Jan-23	07-Jan-23	85	01-Apr-23	02-Apr-23	7d/w x10
First Floor Level		36	09-Jan-23	13-Feb-23	86	03-Apr-23	10-May-23	
WSD-W-S1101	1/F R.C. - Formwork and Rebar to RC Column	12	09-Jan-23	21-Jan-23	69	03-Apr-23	19-Apr-23	6d/w x10
WSD-W-S1102	1/F R.C. - Formwork and Rebar to RC Wall	12	09-Jan-23	21-Jan-23	69	03-Apr-23	19-Apr-23	6d/w x10
WSD-W-S1103	1/F R.C. - Formwork and Rebar to RC Concrete Slab (Secound Floor Slab) incl. Erect Scaffold	12	20-Jan-23	06-Feb-23	69	18-Apr-23	02-May-23	6d/w x10
WSD-W-S1104	1/F R.C. - Concreting	1	07-Feb-23	07-Feb-23	69	03-May-23	03-May-23	6d/w x10
WSD-W-S1105	1/F MiC - Installation of MiC Module (24 units) by Mobile Crane @ First Floor level <<PR=6no/d>>	4	08-Feb-23	11-Feb-23	69	04-May-23	08-May-23	6d/w x10

Milestone
Near Critical Task
Critical Task
Time Risk Al.
Non-Critical Task
Finished Task
Tasks Summary
P6 Hammock

FIRST PROGRAMME REV. 1
ALL ACTIVITIES

俊和 CHUN WO

Date	Revision	Checked	Approved
03-Nov-21	Revision 0 First Issue	AH	WJ
19-Jan-22	Revision 1 First Issue	PF	AH
08-Feb-22	Revision 2 First Issue		

P6. ID	Activity Name	Dur.	Start	Finish	Total Float	Late Start	Late Finish	Working Calendars
WSD-W-S1106	Time Risk Allowance for Structural Works @ First Floor Level Phase 1	2	12-Feb-23	13-Feb-23	86	09-May-23	10-May-23	7d/w x10
Second Floor Level		31	14-Feb-23	16-Mar-23	88	11-May-23	12-Jun-23	
WSD-W-S2101	2/F R.C. - Formwork and Rebar to RC Column	12	14-Feb-23	27-Feb-23	70	11-May-23	24-May-23	6d/w x10
WSD-W-S2102	2/F R.C. - Formwork and Rebar to RC Wall	12	14-Feb-23	27-Feb-23	70	11-May-23	24-May-23	6d/w x10
WSD-W-S2103	2/F R.C. - Formwork and Rebar to RC Concrete Slab (Third Floor Slab) incl. Erect Scaffold	12	25-Feb-23	10-Mar-23	70	23-May-23	06-Jun-23	6d/w x10
WSD-W-S2104	2/F R.C. - Concreting	1	11-Mar-23	11-Mar-23	70	07-Jun-23	07-Jun-23	6d/w x10
WSD-W-S2105	2/F MiC - Installation of MiC Module (16 units) by Mobile Crane @ Second Floor level <<PR=6no/d>>	3	13-Mar-23	15-Mar-23	70	08-Jun-23	10-Jun-23	6d/w x10
WSD-W-S2106	Time Risk Allowance for Structural Works @ Second Floor Level Phase 1	1	16-Mar-23	16-Mar-23	88	12-Jun-23	12-Jun-23	7d/w x10
Third Floor Level		76	17-Mar-23	31-May-23	104	13-Jun-23	12-Sep-23	
WSD-W-S3101	3/F R.C. - Formwork and Rebar to RC Column	12	17-Mar-23	30-Mar-23	70	13-Jun-23	27-Jun-23	6d/w x10
WSD-W-S3102	3/F R.C. - Formwork and Rebar to RC Wall	12	17-Mar-23	30-Mar-23	70	13-Jun-23	27-Jun-23	6d/w x10
WSD-W-S3103	3/F R.C. - Formwork and Rebar to RC Concrete Slab (Third Floor Slab) incl. Erect Scaffold	12	29-Mar-23	14-Apr-23	70	26-Jun-23	10-Jul-23	6d/w x10
WSD-W-S3104	3/F R.C. - Concreting	1	15-Apr-23	15-Apr-23	70	11-Jul-23	11-Jul-23	6d/w x10
WSD-W-S3105	3/F R.C. - Roof Construction	24	17-Apr-23	15-May-23	70	12-Jul-23	08-Aug-23	6d/w x10
WSD-W-S3106	Time Risk Allowance for Structural Works @ Third Floor Level Phase 1	4	16-May-23	19-May-23	85	09-Aug-23	12-Aug-23	7d/w x10
WSD-W-S3107	Erect Material Hoist	12	20-May-23	31-May-23	104	01-Sep-23	12-Sep-23	7d/w x10
Phase 2 (Grid C-J/1-4)		125	27-May-23	28-Sep-23	945	27-May-23	30-Apr-26	
Underground		24	27-May-23	24-Jun-23	0	27-May-23	24-Jun-23	6d/w x10
WSD-W-UG20	U/G R.C. - Beam / Column Construction	24	27-May-23	24-Jun-23	0	27-May-23	24-Jun-23	6d/w x10
Basement Level		15	26-Jun-23	10-Jul-23	1025	26-Jun-23	30-Apr-26	
WSD-W-SB201	B/F R.C. - Suspended Slab	12	26-Jun-23	10-Jul-23	846	17-Apr-26	30-Apr-26	6d/w x10
WSD-W-SB203	B/F MiC - Installation of MiC Module (34 units) by Mobile Crane @ Basement level <<PR=6no/d>>	6	26-Jun-23	03-Jul-23	0	26-Jun-23	03-Jul-23	6d/w x10
WSD-W-SB204	Time Risk Allowance for MiC Installation @Basement Level	2	04-Jul-23	05-Jul-23	0	04-Jul-23	05-Jul-23	7d/w x10
Ground Floor Level		9	06-Jul-23	14-Jul-23	0	06-Jul-23	14-Jul-23	
WSD-W-SG05	G/F MiC - Installation of MiC Module (40 units) by Mobile Crane @ Ground level <<PR=6no/d>>	7	06-Jul-23	13-Jul-23	0	06-Jul-23	13-Jul-23	6d/w x10
WSD-W-SG06	Time Risk Allowance for MiC Installation @ Ground Level	1	14-Jul-23	14-Jul-23	0	14-Jul-23	14-Jul-23	7d/w x10
First Floor Level		11	15-Jul-23	25-Jul-23	0	15-Jul-23	25-Jul-23	
WSD-W-S1201	1/F MiC - Installation of MiC Module (46 units) by Mobile Crane @ First Floor level <<PR=6no/d>>	8	15-Jul-23	24-Jul-23	0	15-Jul-23	24-Jul-23	6d/w x10
WSD-W-S1202	Time Risk Allowance for MiC Installation @ First Floor Level	1	25-Jul-23	25-Jul-23	0	25-Jul-23	25-Jul-23	7d/w x10
Second Floor Level		4	26-Jul-23	29-Jul-23	0	26-Jul-23	29-Jul-23	
WSD-W-S2201	2/F MiC - Installation of MiC Module (18 units) by Mobile Crane @ Second Floor level <<PR=6no/d>>	3	26-Jul-23	28-Jul-23	0	26-Jul-23	28-Jul-23	6d/w x10
WSD-W-S2202	Time Risk Allowance for MiC Installation @ Second Floor Level	1	29-Jul-23	29-Jul-23	0	29-Jul-23	29-Jul-23	7d/w x10
WSD-W-S2203	2/F MiC - Demobilization of Mobile Crane	0		29-Jul-23	0		29-Jul-23	6d/w x10
Third Floor Level		60	31-Jul-23	28-Sep-23	264	31-Jul-23	18-Jun-24	
WSD-W-S3201	3/F R.C. - Formwork and Rebar to RC Column	12	31-Jul-23	12-Aug-23	0	31-Jul-23	12-Aug-23	6d/w x10
WSD-W-S3202	3/F R.C. - Formwork and Rebar to RC Wall	12	31-Jul-23	12-Aug-23	0	31-Jul-23	12-Aug-23	6d/w x10
WSD-W-S3203	3/F R.C. - Formwork and Rebar to RC Concrete Slab (Third Floor Slab) incl. Erect Scaffold	12	11-Aug-23	24-Aug-23	0	11-Aug-23	24-Aug-23	6d/w x10
WSD-W-S3204	3/F R.C. - Concreting	1	25-Aug-23	25-Aug-23	0	25-Aug-23	25-Aug-23	6d/w x10
WSD-W-S3205	3/F MiC - Installation of MiC Module (14 units) by Mobile Crane @ Second Floor level <<PR=6no/d>>	3	26-Aug-23	29-Aug-23	0	26-Aug-23	29-Aug-23	6d/w x10
WSD-W-S3206	Time Risk Allowance for Structural Works @ Third Floor Level Phase 2	2	30-Aug-23	31-Aug-23	0	30-Aug-23	31-Aug-23	7d/w x10
WSD-W-S3207	3/F R.C. - Roof Construction	24	01-Sep-23	28-Sep-23	210	21-May-24	18-Jun-24	6d/w x10
Phase 3 (Grid A'-C/1-4)		167	06-Jul-23	19-Dec-23	273	07-Jul-23	17-Sep-24	
Basement Floor Level		45	06-Jul-23	19-Aug-23	1	07-Jul-23	20-Aug-23	
WSD-W-SB301	B/F R.C. - Suspended Slab	12	06-Jul-23	19-Jul-23	1	07-Jul-23	20-Jul-23	6d/w x10
WSD-W-SB302	B/F R.C. - Formwork and Rebar to RC Column	12	20-Jul-23	02-Aug-23	1	21-Jul-23	03-Aug-23	6d/w x10
WSD-W-SB303	B/F R.C. - Formwork and Rebar RC Wall	12	20-Jul-23	02-Aug-23	1	21-Jul-23	03-Aug-23	6d/w x10
WSD-W-SB304	B/F R.C. - Formwork and Rebar RC Concrete Beam/Slab (Ground Slab) incl. Erect Scaffold	12	01-Aug-23	14-Aug-23	1	02-Aug-23	15-Aug-23	6d/w x10
WSD-W-SB305	B/F R.C. - Concreting	1	15-Aug-23	15-Aug-23	1	16-Aug-23	16-Aug-23	6d/w x10
WSD-W-SB306	B/F MiC - Installation of MiC Module (8 units) by Mobile Crane @ Basement Floor level <<PR=6no/d>>	2	16-Aug-23	17-Aug-23	1	17-Aug-23	18-Aug-23	6d/w x10
WSD-W-SB307	Time Risk Allowance for Structural Works @ Basement Level Phase 3	2	18-Aug-23	19-Aug-23	1	19-Aug-23	20-Aug-23	7d/w x10

Milestone
Near Critical Task
Critical Task
Time Risk Al.
Non-Critical Task
Finished Task
Tasks Summary
P6 Hammock

FIRST PROGRAMME REV. 1
ALL ACTIVITIES

俊和 CHUN WO

Date	Revision	Checked	Approved
03-Nov-21	Revision 0 First Issue	AH	WJ
19-Jan-22	Revision 1 First Issue	PF	AH
08-Feb-22	Revision 2 First Issue		

P6. ID	Activity Name	Dur.	Start	Finish	Total Float	Late Start	Late Finish	Working Calendars
Ground Floor Level		28	21-Aug-23	17-Sep-23	0	21-Aug-23	17-Sep-23	
WSD-W-SG301	G/F R.C. - Formwork and Rebar to RC Column	12	21-Aug-23	02-Sep-23	0	21-Aug-23	02-Sep-23	6d/w x10
WSD-W-SG302	G/F R.C. - Formwork and Rebar to RC Wall	12	21-Aug-23	02-Sep-23	0	21-Aug-23	02-Sep-23	6d/w x10
WSD-W-SG303	G/F R.C. - Formwork and Rebar to RC Concrete Slab (First Floor Slab) incl. Erect Scaffold	12	01-Sep-23	14-Sep-23	0	01-Sep-23	14-Sep-23	6d/w x10
WSD-W-SG304	G/F R.C. - Concreting	1	15-Sep-23	15-Sep-23	0	15-Sep-23	15-Sep-23	6d/w x10
WSD-W-SG305	G/F MiC - Installation of MiC Module (3 units) by Mobile Crane @ Ground Floor level <<PR=6no/d>>	1	16-Sep-23	16-Sep-23	0	16-Sep-23	16-Sep-23	6d/w x10
WSD-W-SG306	Time Risk Allowance for Structural Works @ Ground Level Phase 3	1	17-Sep-23	17-Sep-23	0	17-Sep-23	17-Sep-23	7d/w x10
First Floor Level		93	18-Sep-23	19-Dec-23	273	18-Sep-23	17-Sep-24	
WSD-W-S1301	1/F R.C. - Formwork and Rebar to RC Column	12	18-Sep-23	03-Oct-23	0	18-Sep-23	03-Oct-23	6d/w x10
WSD-W-S1302	1/F R.C. - Formwork and Rebar to RC Wall	12	18-Sep-23	03-Oct-23	0	18-Sep-23	03-Oct-23	6d/w x10
WSD-W-S1303	1/F R.C. - Formwork and Rebar to RC Concrete Slab (Secound Floor Slab) incl. Erect Scaffold	12	29-Sep-23	14-Oct-23	0	29-Sep-23	14-Oct-23	6d/w x10
WSD-W-S1304	1/F R.C. - Concreting	1	16-Oct-23	16-Oct-23	0	16-Oct-23	16-Oct-23	6d/w x10
WSD-W-S1305	1/F MiC - Installation of MiC Module (3 units) by Mobile Crane @ First Floor level <<PR=6no/d>>	1	17-Oct-23	17-Oct-23	0	17-Oct-23	17-Oct-23	6d/w x10
WSD-W-S1306	Time Risk Allowance for Structural Works @ First Floor Level Phase 3	1	18-Oct-23	18-Oct-23	0	18-Oct-23	18-Oct-23	7d/w x10
WSD-W-S1307	1/F R.C. - RC Roof Construction (Lower Roof, GL A'-E/1-4)	2	19-Oct-23	20-Oct-23	37	02-Dec-23	04-Dec-23	6d/w x10
WSD-W-S1308	1/F R.C. - Architectural Facade/ Concrete Plinth/ Drainage System/ Balustrade on Roof Terrace @ Secon	50	21-Oct-23	19-Dec-23	220	22-Jul-24	17-Sep-24	6d/w x10
Phase 4 (Car Park and Ramp)		138	31-Jul-23	15-Dec-23	171	31-Jul-23	03-Jun-24	
WSD-W-CP01	Carpark/Ramp - Installation of MiC Module (5 units) by Mobile Crane @ Car Park <<PR=6no/d>>	1	31-Jul-23	31-Jul-23	0	31-Jul-23	31-Jul-23	6d/w x10
WSD-W-CP02	Carpark/Ramp - RC Column 5.7m x 19nos @ Basement Level (GL A'-J/ 5-7)<<PR= 7d/ column, 7 mould>>	21	01-Aug-23	24-Aug-23	0	01-Aug-23	24-Aug-23	6d/w x10
WSD-W-CP03	Carpark/Ramp - RC Concrete Slab (Ground Slab) incl. Erect Scaffold	20	25-Aug-23	16-Sep-23	0	25-Aug-23	16-Sep-23	6d/w x10
WSD-W-CP04	Carpark/Ramp - RC Column fr 4.7m to 9.4m x 9nos @ Ground Level (GL A'-J/ 5-7)<<PR= 14d/ column, 5	28	18-Sep-23	21-Oct-23	0	18-Sep-23	21-Oct-23	6d/w x10
WSD-W-CP05	Carpark/Ramp - Concrete Structure for Ramp between G/F & 1/F including landing	18	24-Oct-23	13-Nov-23	0	24-Oct-23	13-Nov-23	6d/w x10
WSD-W-CP06	Carpark/Ramp - Concrete Structure for Ramp between 1/F & 2/F including	22	14-Nov-23	08-Dec-23	0	14-Nov-23	08-Dec-23	6d/w x10
WSD-W-CP07	Carpark/Ramp - Construction of Roadworks for Emergency Vehicle Access heading to Administration Buil	45	18-Sep-23	11-Nov-23	163	10-Apr-24	03-Jun-24	6d/w x10
WSD-W-CP08	Carpark/Ramp - Completion of Structure for Car Park	0		11-Nov-23	163		03-Jun-24	6d/w x10
WSD-W-CP09	Time Risk Allowance for Activities WSD-D-CP01 to WSD-D-CP-06	7	09-Dec-23	15-Dec-23	0	09-Dec-23	15-Dec-23	7d/w x10
Glazing/ Curtain Wall		118	01-Sep-23	23-Jan-24	0	27-Sep-23	23-Jan-24	6d/w x10
WSD-W-GL01	Glazing/Curtain Wall - Bracket Installation for Building <<PR=4d/storey>>	24	01-Sep-23	28-Sep-23	22	27-Sep-23	27-Oct-23	6d/w x10
WSD-W-GL02	Glazing/Curtain Wall - Curtain Wall Panel Installation for Building <<PR=5d/storey>>	48	29-Sep-23	27-Nov-23	22	28-Oct-23	22-Dec-23	6d/w x10
WSD-W-GL03	Glazing/Curtain Wall - Bracket Installation for Ramp <<PR=4d/storey>>	6	16-Dec-23	22-Dec-23	0	16-Dec-23	22-Dec-23	6d/w x10
WSD-W-GL04	Glazing/Curtain Wall - Curtain Wall Panel Installation for Ramp <<PR=5d/storey>>	24	23-Dec-23	23-Jan-24	0	23-Dec-23	23-Jan-24	6d/w x10
WSD-W-GL05	Glazing/Curtain Wall - Steel Frame Installation @ Ground Floor Entrance Lobby	6	24-Nov-23	30-Nov-23	37	10-Jan-24	16-Jan-24	6d/w x10
WSD-W-GL06	Glazing/Curtain Wall - Glazing Panel Installation	6	01-Dec-23	07-Dec-23	37	17-Jan-24	23-Jan-24	6d/w x10
WSD-W-GL07	Glazing/Curtain Wall - Completion of Building Envelope	0		23-Jan-24	0		23-Jan-24	6d/w x10
ABWF/ MEP/ FS/ Fitout Works		421	31-Jul-23	23-Sep-24	110	14-Aug-23	11-Jan-25	
Basement - Transformer Room/ LV Switch Room/ Utility Riser Room/ ServiceTunnel & Yard		246	01-Aug-23	30-May-24	28	14-Aug-23	04-Jul-24	6d/w x10
WSD-B-TR01	Tx & LVSB Rooms - MiC Connection Works/ Falsework Removal/ Preparation for ABWF & MEP Works	24	01-Aug-23	28-Aug-23	11	14-Aug-23	09-Sep-23	6d/w x10
WSD-B-TR02	Tx & LVSB Rooms - ABWF Deg1 - Deg3	48	29-Aug-23	26-Oct-23	11	11-Sep-23	08-Nov-23	6d/w x10
WSD-B-TR03	Tx & LVSB Rooms - BS 1st Fix - 3rd Fix	72	27-Oct-23	22-Jan-24	11	09-Nov-23	03-Feb-24	6d/w x10
WSD-B-TR05	Tx & LVSB Rooms - CLP Inspection & Defect Rectification	12	23-Jan-24	05-Feb-24	28	28-Feb-24	12-Mar-24	6d/w x10
WSD-B-TR06	Tx & LVSB Rooms - Installation of Tx & Testing by CLP	90	06-Feb-24	30-May-24	28	13-Mar-24	04-Jul-24	6d/w x10
WSD-B-TR06.5	Construction of Riser/Shaft/Tunnel for Cable Containment	46	23-Jan-24	19-Mar-24	79	03-May-24	27-Jun-24	6d/w x10
WSD-B-TR07	Tx & LVSB Rooms - Completion of CLP Cable Laying Leading to Administration Building (to be constructe	0	25-May-24	25-May-24	28	27-Jun-24	27-Jun-24	6d/w x10
WSD-B-TR08	Tx & LVSB Rooms - CLP Power-on Date	0		30-May-24	28		04-Jul-24	6d/w x10
Basement - Emergency Generator Room		132	23-Jan-24	06-Jul-24	42	05-Feb-24	24-Aug-24	6d/w x10
WSD-B-EG01	EGM - MiC Connection Works/ Falsework Removal/ Preparation for ABWF & MEP Works	10	23-Jan-24	02-Feb-24	11	05-Feb-24	19-Feb-24	6d/w x10
WSD-B-EG02	EGM - Concrete Plinth, Waterproofing & Test	11	03-Feb-24	19-Feb-24	11	20-Feb-24	02-Mar-24	6d/w x10
WSD-B-EG03	EGM - Floor Screeding, Wall Plastering & Doors & Wall Lining	28	20-Feb-24	22-Mar-24	11	04-Mar-24	09-Apr-24	6d/w x10

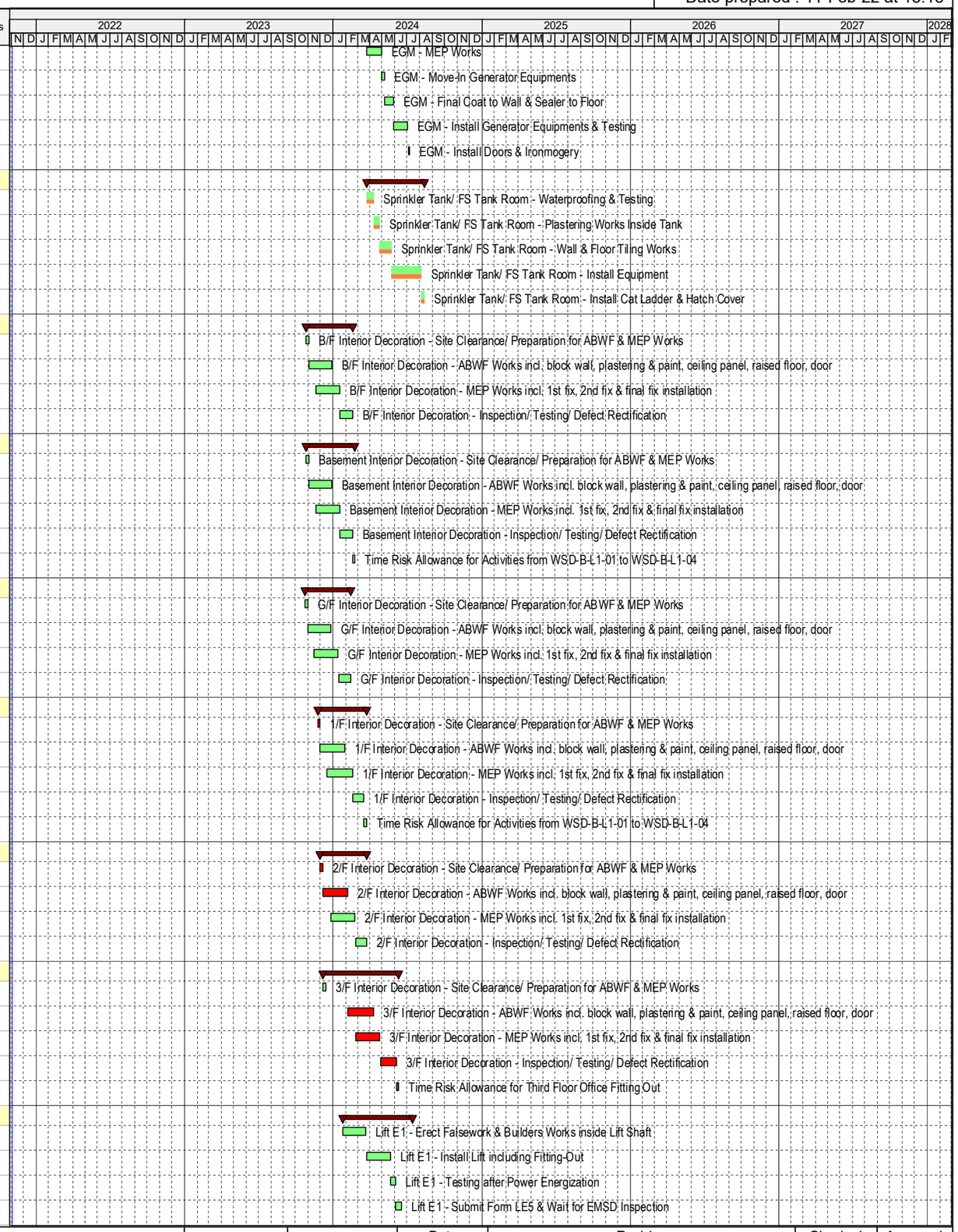
Milestone
Near Critical Task
Critical Task
Time Risk Al.
Non-Critical Task
Finished Task
Tasks Summary
P6 Hammock

FIRST PROGRAMME REV. 1
ALL ACTIVITIES

Date	Revision	Checked	Approved
03-Nov-21	Revision 0 First Issue	AH	WJ
19-Jan-22	Revision 1 First Issue	PF	AH
08-Feb-22	Revision 2 First Issue		

俊和 CHUN WO

P6. ID	Activity Name	Dur.	Start	Finish	Total Float	Late Start	Late Finish	Working Calendars
WSD-B-EG04	EGM - MEP Works	28	23-Mar-24	29-Apr-24	42	18-May-24	20-Jun-24	6d/w x10
WSD-B-EG05	EGM - Move-In Generator Equipments	6	30-Apr-24	07-May-24	42	21-Jun-24	27-Jun-24	6d/w x10
WSD-B-EG06	EGM - Final Coat to Wall & Sealer to Floor	18	08-May-24	29-May-24	42	28-Jun-24	19-Jul-24	6d/w x10
WSD-B-EG07	EGM - Install Generator Equipments & Testing	28	30-May-24	03-Jul-24	42	20-Jul-24	21-Aug-24	6d/w x10
WSD-B-EG08	EGM - Install Doors & Ironmogery	3	04-Jul-24	06-Jul-24	42	22-Aug-24	24-Aug-24	6d/w x10
Basement - Sprinkler/FS Water Tank		114	23-Mar-24	12-Aug-24	11	10-Apr-24	24-Aug-24	6d/w x10
WSD-B-FS01	Sprinkler Tank/ FS Tank Room - Waterproofing & Testing	12	23-Mar-24	10-Apr-24	11	10-Apr-24	23-Apr-24	6d/w x10
WSD-B-FS02	Sprinkler Tank/ FS Tank Room - Plastering Works Inside Tank	12	11-Apr-24	24-Apr-24	11	24-Apr-24	08-May-24	6d/w x10
WSD-B-FS03	Sprinkler Tank/ FS Tank Room - Wall & Floor Tiling Works	24	25-Apr-24	24-May-24	11	09-May-24	06-Jun-24	6d/w x10
WSD-B-FS04	Sprinkler Tank/ FS Tank Room - Install Equipment	60	25-May-24	05-Aug-24	11	07-Jun-24	17-Aug-24	6d/w x10
WSD-B-FS05	Sprinkler Tank/ FS Tank Room - Install Cat Ladder & Hatch Cover	6	06-Aug-24	12-Aug-24	11	19-Aug-24	24-Aug-24	6d/w x10
Basement - Office Fitting-Out		92	27-Oct-23	17-Feb-24	62	11-Jan-24	06-May-24	6d/w x10
WSD-B-BA-01	B/F Interior Decoration - Site Clearance/ Preparation for ABWF & MEP Works	6	27-Oct-23	02-Nov-23	62	11-Jan-24	17-Jan-24	6d/w x10
WSD-B-BA-02	B/F Interior Decoration - ABWF Works incl. block wall, plastering & paint, ceiling panel, raised floor, door	48	03-Nov-23	30-Dec-23	62	18-Jan-24	16-Mar-24	6d/w x10
WSD-B-BA-03	B/F Interior Decoration - MEP Works incl. 1st fix, 2nd fix & final fix installation	48	20-Nov-23	17-Jan-24	62	03-Feb-24	06-Apr-24	6d/w x10
WSD-B-BA-04	B/F Interior Decoration - Inspection/ Testing/ Defect Rectification	24	18-Jan-24	17-Feb-24	62	08-Apr-24	06-May-24	6d/w x10
Basement - Dangerous Goods Store Fitting Out		121	27-Oct-23	24-Feb-24	316	07-Sep-24	05-Jan-25	
WSD-B-DG01	Basement Interior Decoration - Site Clearance/ Preparation for ABWF & MEP Works	6	27-Oct-23	02-Nov-23	257	07-Sep-24	13-Sep-24	6d/w x10
WSD-B-DG02	Basement Interior Decoration - ABWF Works incl. block wall, plastering & paint, ceiling panel, raised floor,	48	03-Nov-23	30-Dec-23	257	14-Sep-24	12-Nov-24	6d/w x10
WSD-B-DG03	Basement Interior Decoration - MEP Works incl. 1st fix, 2nd fix & final fix installation	48	20-Nov-23	17-Jan-24	257	03-Oct-24	28-Nov-24	6d/w x10
WSD-B-DG04	Basement Interior Decoration - Inspection/ Testing/ Defect Rectification	24	18-Jan-24	17-Feb-24	257	29-Nov-24	28-Dec-24	6d/w x10
WSD-B-DG05	Time Risk Allowance for Activities from WSD-B-L1-01 to WSD-B-L1-04	7	18-Feb-24	24-Feb-24	316	30-Dec-24	05-Jan-25	7d/w x10
Ground Floor Laboratory/ Vistory Reception Facility/ Water Treatment Training Venue		92	24-Oct-23	14-Feb-24	181	05-Jun-24	23-Sep-24	6d/w x10
WSD-B-LG-01	G/F Interior Decoration - Site Clearance/ Preparation for ABWF & MEP Works	6	24-Oct-23	30-Oct-23	181	05-Jun-24	12-Jun-24	6d/w x10
WSD-B-LG-02	G/F Interior Decoration - ABWF Works incl. block wall, plastering & paint, ceiling panel, raised floor, door	48	31-Oct-23	27-Dec-23	181	13-Jun-24	08-Aug-24	6d/w x10
WSD-B-LG-03	G/F Interior Decoration - MEP Works incl. 1st fix, 2nd fix & final fix installation	48	16-Nov-23	13-Jan-24	181	29-Jun-24	24-Aug-24	6d/w x10
WSD-B-LG-04	G/F Interior Decoration - Inspection/ Testing/ Defect Rectification	24	15-Jan-24	14-Feb-24	181	26-Aug-24	23-Sep-24	6d/w x10
First Floor Laboratory Fitting-Out		121	24-Nov-23	23-Mar-24	79	24-Nov-23	10-Jun-24	
WSD-B-L1-01	1/F Interior Decoration - Site Clearance/ Preparation for ABWF & MEP Works	6	24-Nov-23	30-Nov-23	0	24-Nov-23	30-Nov-23	6d/w x10
WSD-B-L1-02	1/F Interior Decoration - ABWF Works incl. block wall, plastering & paint, ceiling panel, raised floor, door	48	01-Dec-23	29-Jan-24	61	17-Feb-24	17-Apr-24	6d/w x10
WSD-B-L1-03	1/F Interior Decoration - MEP Works incl. 1st fix, 2nd fix & final fix installation	48	18-Dec-23	17-Feb-24	61	05-Mar-24	04-May-24	6d/w x10
WSD-B-L1-04	1/F Interior Decoration - Inspection/ Testing/ Defect Rectification	24	19-Feb-24	16-Mar-24	61	06-May-24	03-Jun-24	6d/w x10
WSD1	Time Risk Allowance for Activities from WSD-B-L1-01 to WSD-B-L1-04	7	17-Mar-24	23-Mar-24	79	04-Jun-24	10-Jun-24	7d/w x10
Second Floor Office Fitting-Out		92	01-Dec-23	23-Mar-24	148	01-Dec-23	23-Sep-24	6d/w x10
WSD-B-L2-01	2/F Interior Decoration - Site Clearance/ Preparation for ABWF & MEP Works	6	01-Dec-23	07-Dec-23	0	01-Dec-23	07-Dec-23	6d/w x10
WSD-B-L2-02	2/F Interior Decoration - ABWF Works incl. block wall, plastering & paint, ceiling panel, raised floor, door	48	08-Dec-23	05-Feb-24	0	08-Dec-23	05-Feb-24	6d/w x10
WSD-B-L2-03	2/F Interior Decoration - MEP Works incl. 1st fix, 2nd fix & final fix installation	48	27-Dec-23	24-Feb-24	56	06-Mar-24	06-May-24	6d/w x10
WSD-B-L2-04	2/F Interior Decoration - Inspection/ Testing/ Defect Rectification	24	26-Feb-24	23-Mar-24	148	26-Aug-24	23-Sep-24	6d/w x10
Third Floor Office Fitting-Out		186	08-Dec-23	10-Jun-24	0	30-Jan-24	10-Jun-24	
WSD-B-L3-01	3/F Interior Decoration - Site Clearance/ Preparation for ABWF & MEP Works	6	08-Dec-23	14-Dec-23	42	30-Jan-24	05-Feb-24	6d/w x10
WSD-B-L3-02	3/F Interior Decoration - ABWF Works incl. block wall, plastering & paint, ceiling panel, raised floor, door	48	06-Feb-24	09-Apr-24	0	06-Feb-24	09-Apr-24	6d/w x10
WSD-B-L3-03	3/F Interior Decoration - MEP Works incl. 1st fix, 2nd fix & final fix installation	48	26-Feb-24	25-Apr-24	0	26-Feb-24	25-Apr-24	6d/w x10
WSD-B-L3-04	3/F Interior Decoration - Inspection/ Testing/ Defect Rectification	33	26-Apr-24	05-Jun-24	0	26-Apr-24	05-Jun-24	6d/w x10
WSD-B-L3-05	Time Risk Allowance for Third Floor Office Fitting Out	5	06-Jun-24	10-Jun-24	0	06-Jun-24	10-Jun-24	7d/w x10
MEP Lift Installation (E1)		173	24-Jan-24	14-Jul-24	181	25-Jul-24	11-Jan-25	
WSD-B-LT1-01	Lift E1 - Erect Falsework & Builders Works inside Lift Shaft	48	24-Jan-24	22-Mar-24	146	25-Jul-24	19-Sep-24	6d/w x10
WSD-B-LT1-02	Lift E1 - Install Lift including Fitting-Out	60	23-Mar-24	21-May-24	181	20-Sep-24	18-Nov-24	7d/w x10
WSD-B-LT1-03	Lift E1 - Testing after Power Energization	12	22-May-24	02-Jun-24	181	19-Nov-24	30-Nov-24	7d/w x10
WSD-B-LT1-04	Lift E1 - Submit Form LE5 & Wait for EMSD Inspection	14	03-Jun-24	16-Jun-24	181	01-Dec-24	14-Dec-24	7d/w x10



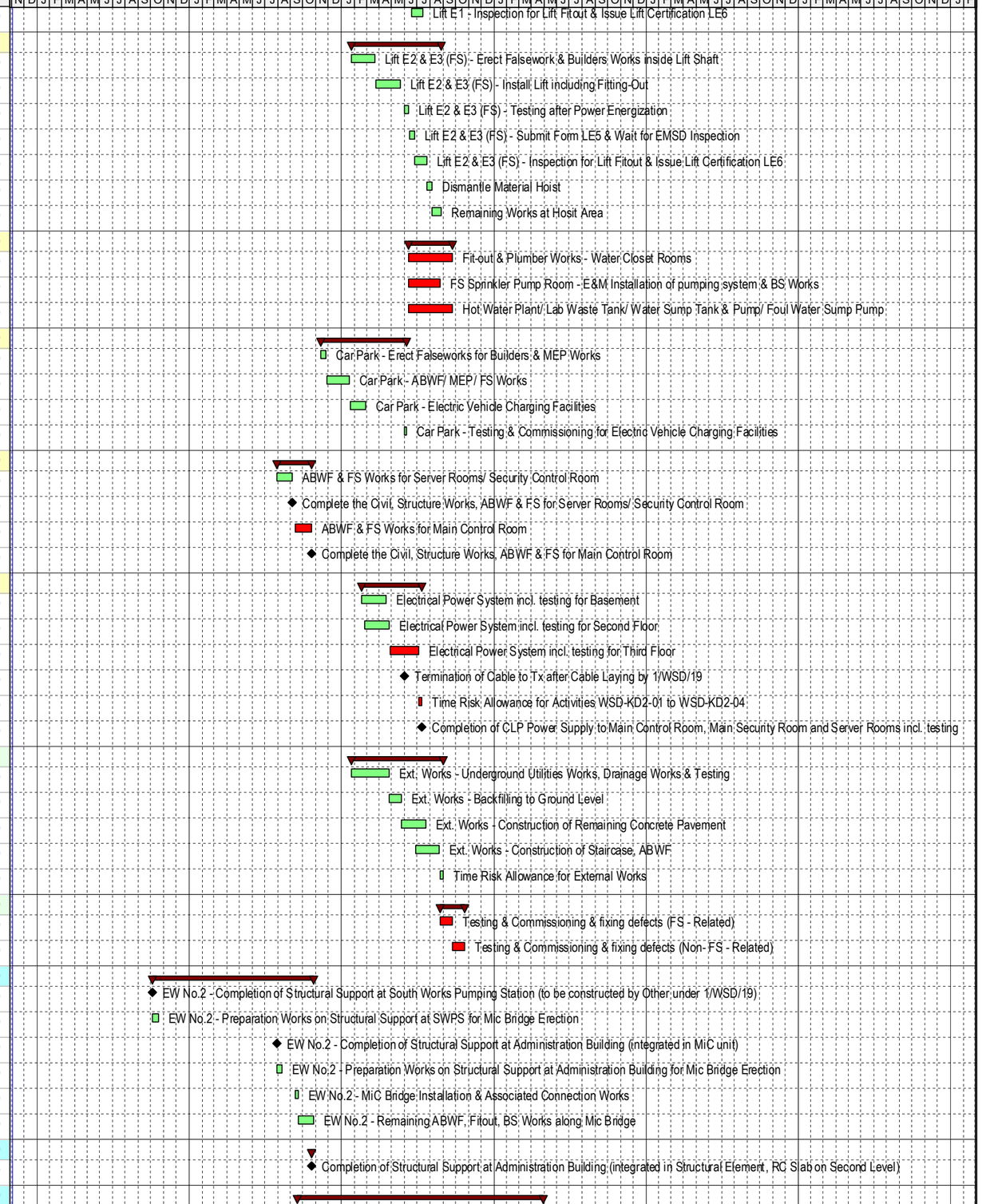
Milestone
Near Critical Task
Critical Task
Time Risk AL
Non-Critical Task
Finished Task
Tasks Summary
P6 Hammock

FIRST PROGRAMME REV. 1
ALL ACTIVITIES

俊和 CHUN WO

Date	Revision	Checked	Approved
03-Nov-21	Revision 0 First Issue	AH	WJ
19-Jan-22	Revision 1 First Issue	PF	AH
08-Feb-22	Revision 2 First Issue		

P6. ID	Activity Name	Dur.	Start	Finish	Total Float	Late Start	Late Finish	Working Calendars
WSD-B-LT1-05	Lift E1 - Inspection for Lift Fitout & Issue Lift Certification LE6	28	17-Jun-24	14-Jul-24	181	15-Dec-24	11-Jan-25	7d/w x10
MEP Lift Installation (E2 & E3)		218	24-Jan-24	28-Aug-24	136	19-Jun-24	11-Jan-25	
WSD-B-LT2-01	Lift E2 & E3 (FS) - Erect Falsework & Builders Works inside Lift Shaft	48	24-Jan-24	22-Mar-24	116	19-Jun-24	14-Aug-24	6d/w x10
WSD-B-LT2-02	Lift E2 & E3 (FS) - Install Lift including Fitting-Out	60	23-Mar-24	21-May-24	145	15-Aug-24	13-Oct-24	7d/w x10
WSD-B-LT2-03	Lift E2 & E3 (FS) - Testing after Power Energization	12	31-May-24	11-Jun-24	136	14-Oct-24	25-Oct-24	7d/w x10
WSD-B-LT2-04	Lift E2 & E3 (FS) - Submit Form LE5 & Wait for EMSD Inspection	14	12-Jun-24	25-Jun-24	136	26-Oct-24	08-Nov-24	7d/w x10
WSD-B-LT2-05	Lift E2 & E3 (FS) - Inspection for Lift Fitout & Issue Lift Certification LE6	28	26-Jun-24	23-Jul-24	136	09-Nov-24	06-Dec-24	7d/w x10
WSD-B-LT2-06	Dismantle Material Hoist	12	24-Jul-24	04-Aug-24	136	07-Dec-24	18-Dec-24	7d/w x10
WSD-B-LT2-07	Remaining Works at Hosit Area	24	05-Aug-24	28-Aug-24	136	19-Dec-24	11-Jan-25	7d/w x10
Other Facilities		88	11-Jun-24	23-Sep-24	0	11-Jun-24	23-Sep-24	6d/w x10
WSD-B-OF-01	Fit-out & Plumber Works - Water Closet Rooms	88	11-Jun-24	23-Sep-24	0	11-Jun-24	23-Sep-24	6d/w x10
WSD-B-OF-02	FS Sprinkler Pump Room - E&M Installation of pumping system & BS Works	64	11-Jun-24	24-Aug-24	0	11-Jun-24	24-Aug-24	6d/w x10
WSD-B-OF-03	Hot Water Plant/ Lab Waste Tank/ Water Sump Tank & Pump/ Foul Water Sump Pump	88	11-Jun-24	23-Sep-24	0	11-Jun-24	23-Sep-24	6d/w x10
Car Park - MEP Works		166	13-Nov-23	06-Jun-24	90	04-Jun-24	23-Sep-24	6d/w x10
WSD-B-CP-01	Car Park - Erect Falseworks for Builders & MEP Works	12	13-Nov-23	25-Nov-23	163	04-Jun-24	18-Jun-24	6d/w x10
WSD-B-CP-02	Car Park - ABWF/ MEP/ FS Works	45	27-Nov-23	20-Jan-24	163	19-Jun-24	10-Aug-24	6d/w x10
WSD-B-CP-03	Car Park - Electric Vehicle Charging Facilities	30	22-Jan-24	28-Feb-24	163	12-Aug-24	14-Sep-24	6d/w x10
WSD-B-CP-04	Car Park - Testing & Commissioning for Electric Vehicle Charging Facilities	6	31-May-24	06-Jun-24	90	16-Sep-24	23-Sep-24	6d/w x10
Works for KD-1		70	31-Jul-23	21-Oct-23	0	13-Sep-23	21-Oct-23	6d/w x10
WSD-KD1-01	ABWF & FS Works for Server Rooms/ Security Control Room	32	31-Jul-23	05-Sep-23	38	13-Sep-23	21-Oct-23	6d/w x10
WSD-KD1-02	Complete the Civil, Structure Works, ABWF & FS for Server Rooms/ Security Control Room	0		05-Sep-23	38		21-Oct-23	6d/w x10
WSD-KD1-03	ABWF & FS Works for Main Control Room	32	13-Sep-23	21-Oct-23	0	13-Sep-23	21-Oct-23	6d/w x10
WSD-KD1-04	Complete the Civil, Structure Works, ABWF & FS for Main Control Room	0		21-Oct-23	0		21-Oct-23	6d/w x10
Works for KD-2		145	19-Feb-24	12-Jul-24	0	26-Apr-24	12-Jul-24	
WSD-KD2-01	Electrical Power System incl. testing for Basement	48	19-Feb-24	18-Apr-24	62	07-May-24	04-Jul-24	6d/w x10
WSD-KD2-02	Electrical Power System incl. testing for Second Floor	48	26-Feb-24	25-Apr-24	56	07-May-24	04-Jul-24	6d/w x10
WSD-KD2-03	Electrical Power System incl. testing for Third Floor	56	26-Apr-24	04-Jul-24	0	26-Apr-24	04-Jul-24	6d/w x10
WSD-KD2-04	Termination of Cable to Tx after Cable Laying by 1/WSD/19	0		30-May-24	28		04-Jul-24	6d/w x10
WSD-KD2-05	Time Risk Allowance for Activities WSD-KD2-01 to WSD-KD2-04	8	05-Jul-24	12-Jul-24	0	05-Jul-24	12-Jul-24	7d/w x10
WSD-KD2-06	Completion of CLP Power Supply to Main Control Room, Main Security Room and Server Rooms incl. tes	0		12-Jul-24	0		12-Jul-24	6d/w x10
External Works		221	24-Jan-24	31-Aug-24	133	31-May-24	11-Jan-25	
WSD-W-X-01	Ext. Works - Underground Utilities Works, Drainage Works & Testing	72	24-Jan-24	24-Apr-24	101	31-May-24	24-Aug-24	6d/w x10
WSD-W-X-02	Ext. Works - Backfilling to Ground Level	24	25-Apr-24	24-May-24	108	03-Sep-24	02-Oct-24	6d/w x10
WSD-W-X-03	Ext. Works - Construction of Remaining Concrete Pavement	48	25-May-24	22-Jul-24	108	03-Oct-24	28-Nov-24	6d/w x10
WSD-W-X-04	Ext. Works - Construction of Staircase, ABWF	48	28-Jun-24	23-Aug-24	108	06-Nov-24	03-Jan-25	6d/w x10
WSD-W-X-05	Time Risk Allowance for External Works	8	24-Aug-24	31-Aug-24	133	04-Jan-25	11-Jan-25	7d/w x10
Testing & Commissioning		48	26-Aug-24	23-Oct-24	0	26-Aug-24	23-Oct-24	6d/w x10
WSD-B-TC-01	Testing & Commissioning & fixing defects (FS - Related)	24	26-Aug-24	23-Sep-24	0	26-Aug-24	23-Sep-24	6d/w x10
WSD-B-TC-02	Testing & Commissioning & fixing defects (Non- FS - Related)	24	24-Sep-24	23-Oct-24	0	24-Sep-24	23-Oct-24	6d/w x10
Elevated Walkway No.2		317	05-Oct-22	27-Oct-23	439	08-Feb-25	23-Apr-25	6d/w x10
WSD-W-W2-01	EW No.2 - Completion of Structural Support at South Works Pumping Station (to be constructed by Other	0	05-Oct-22		696	08-Feb-25		6d/w x10
WSD-W-W2-02	EW No.2 - Preparation Works on Structural Support at SWPS for Mic Bridge Erection	12	05-Oct-22	18-Oct-22	696	08-Feb-25	21-Feb-25	6d/w x10
WSD-W-W2-03	EW No.2 - Completion of Structural Support at Administration Building (integrated in MiC unit)	0	31-Jul-23		465	22-Feb-25		6d/w x10
WSD-W-W2-04	EW No.2 - Preparation Works on Structural Support at Administration Building for Mic Bridge Erection	12	31-Jul-23	12-Aug-23	465	22-Feb-25	07-Mar-25	6d/w x10
WSD-W-W2-11	EW No.2 - MiC Bridge Installation & Associated Connection Works	6	13-Sep-23	19-Sep-23	439	08-Mar-25	14-Mar-25	6d/w x10
WSD-W-W2-12	EW No.2 - Remaining ABWF, Fitout, BS Works along Mic Bridge	30	20-Sep-23	27-Oct-23	439	15-Mar-25	23-Apr-25	6d/w x10
Elevated Walkway No.1 (Structural Support only)		0	21-Oct-23	21-Oct-23	444	24-Apr-25	24-Apr-25	6d/w x10
WSD-W-W1-01	Completion of Structural Support at Administration Building (integrated in Structural Element, RC Slab on	0	21-Oct-23		444	24-Apr-25		6d/w x10
Inspection & Approval by Government Authorities		592	17-Sep-23	30-Apr-25	0	23-Apr-24	30-Apr-25	7d/w x10

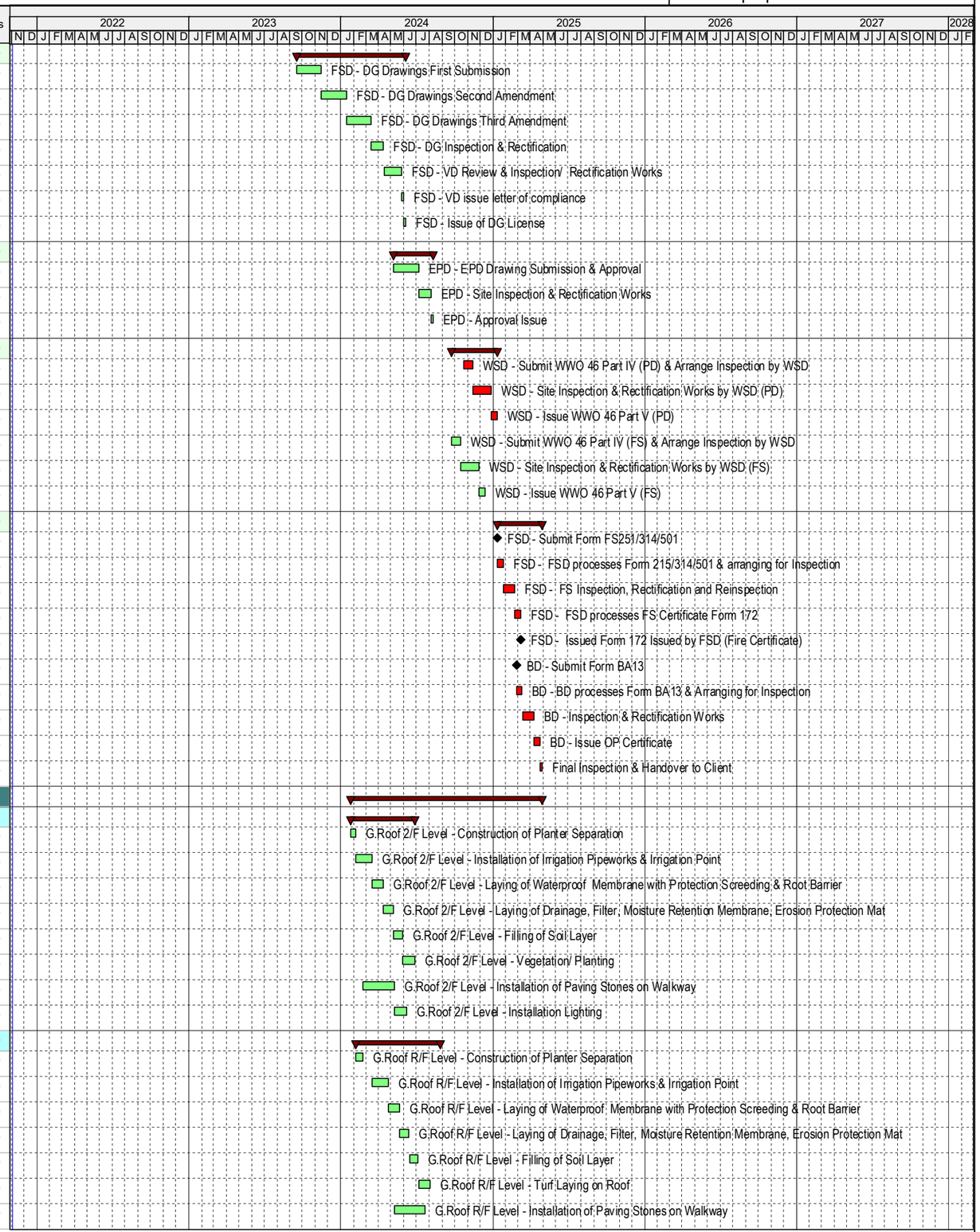


Milestone
Near Critical Task
Critical Task
Time Risk Al.
Non-Critical Task
Finished Task
Tasks Summary
P6 Hammock

FIRST PROGRAMME REV. 1
ALL ACTIVITIES

Date	Revision	Checked	Approved
03-Nov-21	Revision 0 First Issue	AH	WJ
19-Jan-22	Revision 1 First Issue	PF	AH
08-Feb-22	Revision 2 First Issue		

P6. ID	Activity Name	Dur.	Start	Finish	Total Float	Late Start	Late Finish	Working Calendars
FSD - DG Licence		264	17-Sep-23	06-Jun-24	219	23-Apr-24	11-Jan-25	7d/w x10
WSD-IA-F01	FSD - DG Drawings First Submission	60	17-Sep-23	15-Nov-23	219	23-Apr-24	21-Jun-24	7d/w x10
WSD-IA-F02	FSD - DG Drawings Second Amendment	60	16-Nov-23	14-Jan-24	219	22-Jun-24	20-Aug-24	7d/w x10
WSD-IA-F03	FSD - DG Drawings Third Amendment	60	15-Jan-24	14-Mar-24	219	21-Aug-24	19-Oct-24	7d/w x10
WSD-IA-F04	FSD - DG Inspection & Rectification	30	15-Mar-24	13-Apr-24	219	20-Oct-24	18-Nov-24	7d/w x10
WSD-IA-F05	FSD - VD Review & Inspection/ Rectification Works	42	14-Apr-24	25-May-24	219	19-Nov-24	30-Dec-24	7d/w x10
WSD-IA-F06	FSD - VD issue letter of compliance	6	26-May-24	31-May-24	219	31-Dec-24	05-Jan-25	7d/w x10
WSD-IA-F07	FSD - Issue of DG License	6	01-Jun-24	06-Jun-24	219	06-Jan-25	11-Jan-25	7d/w x10
EPD - Emergency Generator		96	08-May-24	11-Aug-24	153	08-Oct-24	11-Jan-25	7d/w x10
WSD-IA-E01	EPD - EPD Drawing Submission & Approval	60	08-May-24	06-Jul-24	153	08-Oct-24	06-Dec-24	7d/w x10
WSD-IA-E02	EPD - Site Inspection & Rectification Works	30	07-Jul-24	05-Aug-24	153	07-Dec-24	05-Jan-25	7d/w x10
WSD-IA-E03	EPD - Approval Issue	6	06-Aug-24	11-Aug-24	153	06-Jan-25	11-Jan-25	7d/w x10
WSD - WWO 046 (FS)/(PD)		110	24-Sep-24	11-Jan-25	0	24-Oct-24	11-Jan-25	7d/w x10
WSD-IA-W01	WSD - Submit WWO 46 Part IV (PD) & Arrange Inspection by WSD	21	24-Oct-24	13-Nov-24	0	24-Oct-24	13-Nov-24	7d/w x10
WSD-IA-W02	WSD - Site Inspection & Rectification Works by WSD (PD)	45	14-Nov-24	28-Dec-24	0	14-Nov-24	28-Dec-24	7d/w x10
WSD-IA-W03	WSD - Issue WWO 46 Part V (PD)	14	29-Dec-24	11-Jan-25	0	29-Dec-24	11-Jan-25	7d/w x10
WSD-IA-W04	WSD - Submit WWO 46 Part IV (FS) & Arrange Inspection by WSD	21	24-Sep-24	14-Oct-24	30	24-Oct-24	13-Nov-24	7d/w x10
WSD-IA-W05	WSD - Site Inspection & Rectification Works by WSD (FS)	45	15-Oct-24	28-Nov-24	30	14-Nov-24	28-Dec-24	7d/w x10
WSD-IA-W06	WSD - Issue WWO 46 Part V (FS)	14	29-Nov-24	12-Dec-24	30	29-Dec-24	11-Jan-25	7d/w x10
FSD / OP Inspection		109	11-Jan-25	30-Apr-25	0	11-Jan-25	30-Apr-25	7d/w x10
WSD-IA-OP01	FSD - Submit Form FS251/314/501	0		11-Jan-25	0		11-Jan-25	7d/w x10
WSD-IA-OP01a	FSD - FSD processes Form 215/314/501 & arranging for Inspection	14	12-Jan-25	25-Jan-25	0	12-Jan-25	25-Jan-25	7d/w x10
WSD-IA-OP01b	FSD - FS Inspection, Rectification and Reinspection	28	26-Jan-25	22-Feb-25	0	26-Jan-25	22-Feb-25	7d/w x10
WSD-IA-OP01c	FSD - FSD processes FS Certificate Form 172	14	23-Feb-25	08-Mar-25	0	23-Feb-25	08-Mar-25	7d/w x10
WSD-IA-OP01d	FSD - Issued Form 172 Issued by FSD (Fire Certificate)	0		08-Mar-25	0		08-Mar-25	7d/w x10
WSD-IA-OP02	BD - Submit Form BA13	0	27-Feb-25		0	27-Feb-25		7d/w x10
WSD-IA-OP03	BD - BD processes Form BA13 & Arranging for Inspection	14	27-Feb-25	12-Mar-25	0	27-Feb-25	12-Mar-25	7d/w x10
WSD-IA-OP04	BD - Inspection & Rectification Works	28	13-Mar-25	09-Apr-25	0	13-Mar-25	09-Apr-25	7d/w x10
WSD-IA-OP05	BD - Issue OP Certificate	14	10-Apr-25	23-Apr-25	0	10-Apr-25	23-Apr-25	7d/w x10
WSD-IA-OP06	Final Inspection & Handover to Client	7	24-Apr-25	30-Apr-25	0	24-Apr-25	30-Apr-25	7d/w x10
Site Works for Section 2		463	24-Jan-24	30-Apr-25	0	24-Jan-24	30-Apr-25	
Green Roof at Roof Terrace (Second Level)		156	24-Jan-24	27-Jun-24	300	19-Sep-24	23-Apr-25	
WSD-W2-RT01	G.Roof 2/F Level - Construction of Planter Separation	12	24-Jan-24	06-Feb-24	193	19-Sep-24	03-Oct-24	6d/w x10
WSD-W2-RT02	G.Roof 2/F Level - Installation of Irrigation Pipeworks & Irrigation Point	30	07-Feb-24	15-Mar-24	213	29-Oct-24	02-Dec-24	6d/w x10
WSD-W2-RT03	G.Roof 2/F Level - Laying of Waterproof Membrane with Protection Screeding & Root Barrier	20	16-Mar-24	12-Apr-24	219	10-Dec-24	04-Jan-25	6d/w x10
WSD-W2-RT04	G.Roof 2/F Level - Laying of Drainage, Filter, Moisture Retention Membrane, Erosion Protection Mat	20	13-Apr-24	07-May-24	219	06-Jan-25	28-Jan-25	6d/w x10
WSD-W2-RT05	G.Roof 2/F Level - Filling of Soil Layer	18	08-May-24	29-May-24	219	01-Feb-25	21-Feb-25	6d/w x10
WSD-W2-RT06	G.Roof 2/F Level - Vegetation/ Planting	24	30-May-24	27-Jun-24	219	22-Feb-25	21-Mar-25	6d/w x10
WSD-W2-RT07	G.Roof 2/F Level - Installation of Paving Stones on Walkway	60	24-Feb-24	09-May-24	193	19-Oct-24	30-Dec-24	6d/w x10
WSD-W2-RT08	G.Roof 2/F Level - Installation Lighting	30	10-May-24	08-Jun-24	319	25-Mar-25	23-Apr-25	7d/w x10
Green Roof at Roof Level		162	07-Feb-24	26-Aug-24	193	04-Oct-24	23-Apr-25	6d/w x10
WSD-W2-RL01	G.Roof R/F Level - Construction of Planter Separation	12	07-Feb-24	23-Feb-24	193	04-Oct-24	18-Oct-24	6d/w x10
WSD-W2-RL02	G.Roof R/F Level - Installation of Irrigation Pipeworks & Irrigation Point	30	16-Mar-24	24-Apr-24	213	03-Dec-24	09-Jan-25	6d/w x10
WSD-W2-RL03	G.Roof R/F Level - Laying of Waterproof Membrane with Protection Screeding & Root Barrier	20	25-Apr-24	20-May-24	213	10-Jan-25	05-Feb-25	6d/w x10
WSD-W2-RL04	G.Roof R/F Level - Laying of Drainage, Filter, Moisture Retention Membrane, Erosion Protection Mat	20	21-May-24	13-Jun-24	213	06-Feb-25	28-Feb-25	6d/w x10
WSD-W2-RL05	G.Roof R/F Level - Filling of Soil Layer	18	14-Jun-24	05-Jul-24	213	01-Mar-25	21-Mar-25	6d/w x10
WSD-W2-RL06	G.Roof R/F Level - Turf Laying on Roof	24	06-Jul-24	02-Aug-24	213	22-Mar-25	23-Apr-25	6d/w x10
WSD-W2-RL07	G.Roof R/F Level - Installation of Paving Stones on Walkway	60	10-May-24	22-Jul-24	193	31-Dec-24	14-Mar-25	6d/w x10

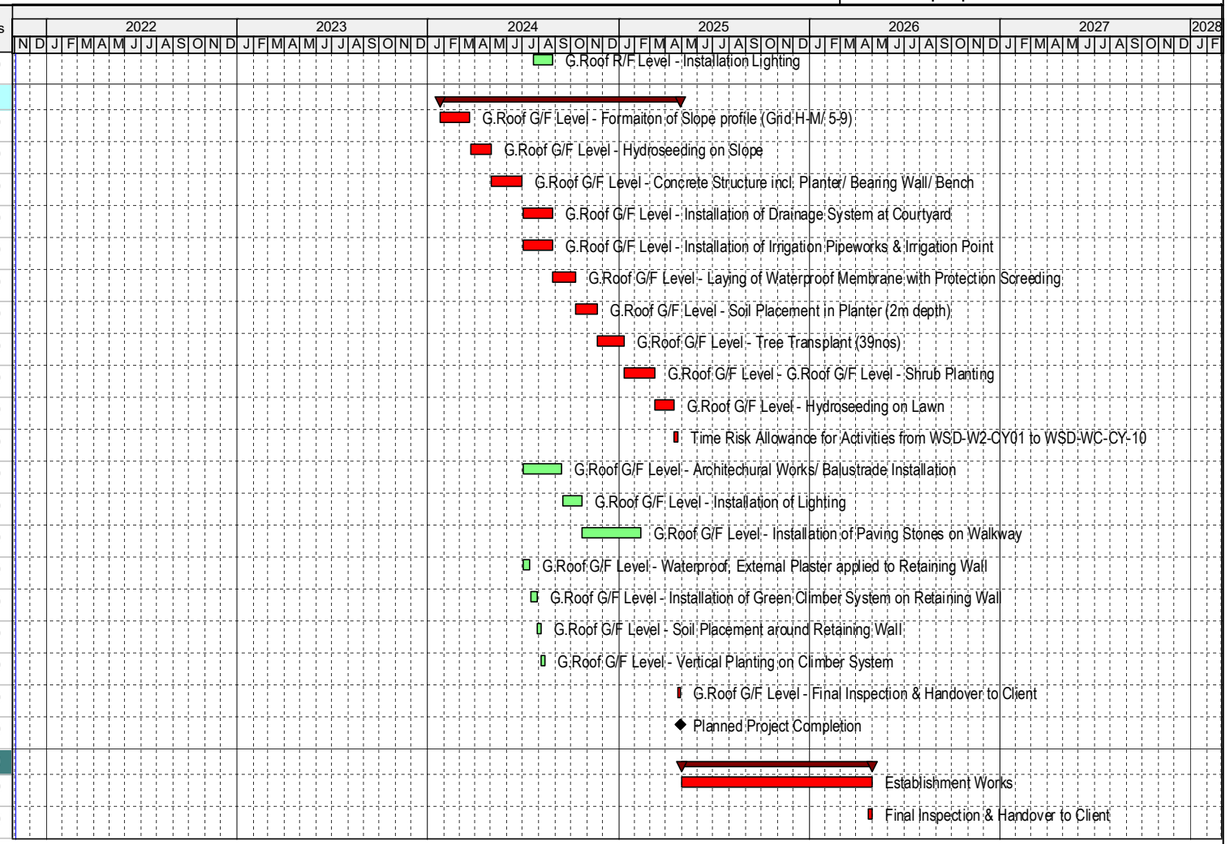


Milestone
Near Critical Task
Critical Task
Time Risk AL
Non-Critical Task
Finished Task
Tasks Summary
P6 Hammock

FIRST PROGRAMME REV. 1
ALL ACTIVITIES

Date	Revision	Checked	Approved
03-Nov-21	Revision 0 First Issue	AH	WJ
19-Jan-22	Revision 1 First Issue	PF	AH
08-Feb-22	Revision 2 First Issue		

P6. ID	Activity Name	Dur.	Start	Finish	Total Float	Late Start	Late Finish	Working Calendars
WSD-W2-RL08	G.Roof R/F Level - Installation Lighting	30	23-Jul-24	26-Aug-24	193	15-Mar-25	23-Apr-25	6d/w x10
Courtyard at Ground Level		463	24-Jan-24	30-Apr-25	0	24-Jan-24	30-Apr-25	
WSD-W2-CY01	G.Roof G/F Level - Formaiton of Slope profile (Grid H-M/ 5-9)	48	24-Jan-24	22-Mar-24	0	24-Jan-24	22-Mar-24	6d/w x10
WSD-W2-CY02	G.Roof G/F Level - Hydroseeding on Slope	30	23-Mar-24	02-May-24	0	23-Mar-24	02-May-24	6d/w x10
WSD-W2-CY03	G.Roof G/F Level - Concrete Structure incl. Planter/ Bearing Wall/ Bench	48	03-May-24	29-Jun-24	0	03-May-24	29-Jun-24	6d/w x10
WSD-W2-CY04	G.Roof G/F Level - Installation of Drainage System at Courtyard	48	02-Jul-24	26-Aug-24	0	02-Jul-24	26-Aug-24	6d/w x10
WSD-W2-CY05	G.Roof G/F Level - Installation of Irrigation Pipeworks & Irrigation Point	48	02-Jul-24	26-Aug-24	0	02-Jul-24	26-Aug-24	6d/w x10
WSD-W2-CY06	G.Roof G/F Level - Laying of Waterproof Membrane with Protection Screeding	36	27-Aug-24	09-Oct-24	0	27-Aug-24	09-Oct-24	6d/w x10
WSD-W2-CY07	G.Roof G/F Level - Soil Placement in Planter (2m depth)	36	10-Oct-24	21-Nov-24	0	10-Oct-24	21-Nov-24	6d/w x10
WSD-W2-CY08	G.Roof G/F Level - Tree Transplant (39nos)	40	22-Nov-24	10-Jan-25	0	22-Nov-24	10-Jan-25	6d/w x10
WSD-W2-CY09	G.Roof G/F Level - G.Roof G/F Level - Shrub Planting	48	11-Jan-25	11-Mar-25	0	11-Jan-25	11-Mar-25	6d/w x10
WSD-W2-CY10	G.Roof G/F Level - Hydroseeding on Lawn	28	12-Mar-25	17-Apr-25	0	12-Mar-25	17-Apr-25	6d/w x10
WSD-W2-CY10.5	Time Risk Allowance for Activities from WSD-W2-CY01 to WSD-WC-CY-10	6	18-Apr-25	23-Apr-25	0	18-Apr-25	23-Apr-25	7d/w x10
WSD-W2-CY11	G.Roof G/F Level - Architechural Works/ Balustrade Installation	65	02-Jul-24	14-Sep-24	56	05-Sep-24	22-Nov-24	6d/w x10
WSD-W2-CY12	G.Roof G/F Level - Installation of Lighting	30	16-Sep-24	23-Oct-24	56	23-Nov-24	30-Dec-24	6d/w x10
WSD-W2-CY13	G.Roof G/F Level - Installation of Paving Stones on Walkway	90	24-Oct-24	12-Feb-25	56	31-Dec-24	23-Apr-25	6d/w x10
WSD-W2-CY14	G.Roof G/F Level - Waterproof, External Plaster applied to Retaining Wall	12	02-Jul-24	15-Jul-24	205	08-Mar-25	21-Mar-25	6d/w x10
WSD-W2-CY15	G.Roof G/F Level - Installation of Green Climber System on Retaining Wall	12	16-Jul-24	29-Jul-24	205	22-Mar-25	05-Apr-25	6d/w x10
WSD-W2-CY16	G.Roof G/F Level - Soil Placement around Retaining Wall	6	30-Jul-24	05-Aug-24	205	07-Apr-25	16-Apr-25	6d/w x10
WSD-W2-CY17	G.Roof G/F Level - Vertical Planting on Climber System	6	06-Aug-24	12-Aug-24	205	17-Apr-25	23-Apr-25	6d/w x10
WSD-W2-CY18	G.Roof G/F Level - Final Inspection & Handover to Client	7	24-Apr-25	30-Apr-25	0	24-Apr-25	30-Apr-25	7d/w x10
WSD-W2-CY19	Planned Project Completion	0		30-Apr-25	0		30-Apr-25	7d/w x10
Site Works for Section 2A		365	01-May-25	30-Apr-26	0	01-May-25	30-Apr-26	7d/w x10
WSD-W2A-01	Establishment Works	365	01-May-25	30-Apr-26	0	01-May-25	30-Apr-26	7d/w x10
WSD-W2A-02	Final Inspection & Handover to Client	6	25-Apr-26	30-Apr-26	0	25-Apr-26	30-Apr-26	7d/w x10



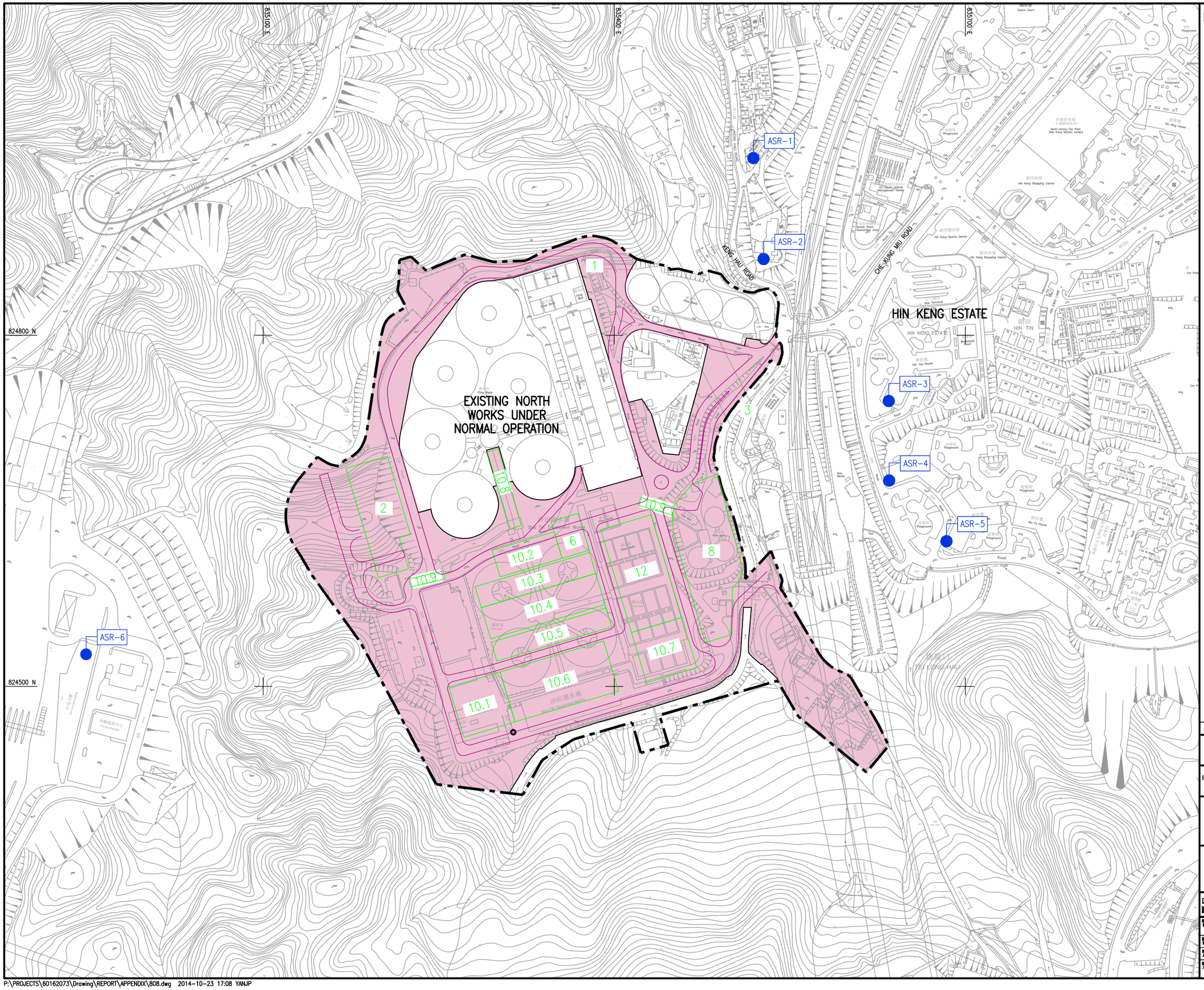
Milestone
Near Critical Task
Critical Task
Time Risk Al.
Non-Critical Task
Finished Task
Tasks Summary
P6 Hammock

FIRST PROGRAMME REV. 1
ALL ACTIVITIES

俊和 CHUN WO

Date	Revision	Checked	Approved
03-Nov-21	Revision 0 First Issue	AH	WJ
19-Jan-22	Revision 1 First Issue	PF	AH
08-Feb-22	Revision 2 First Issue		

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 內容摘要	BY 由	CHKD'D 審核	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

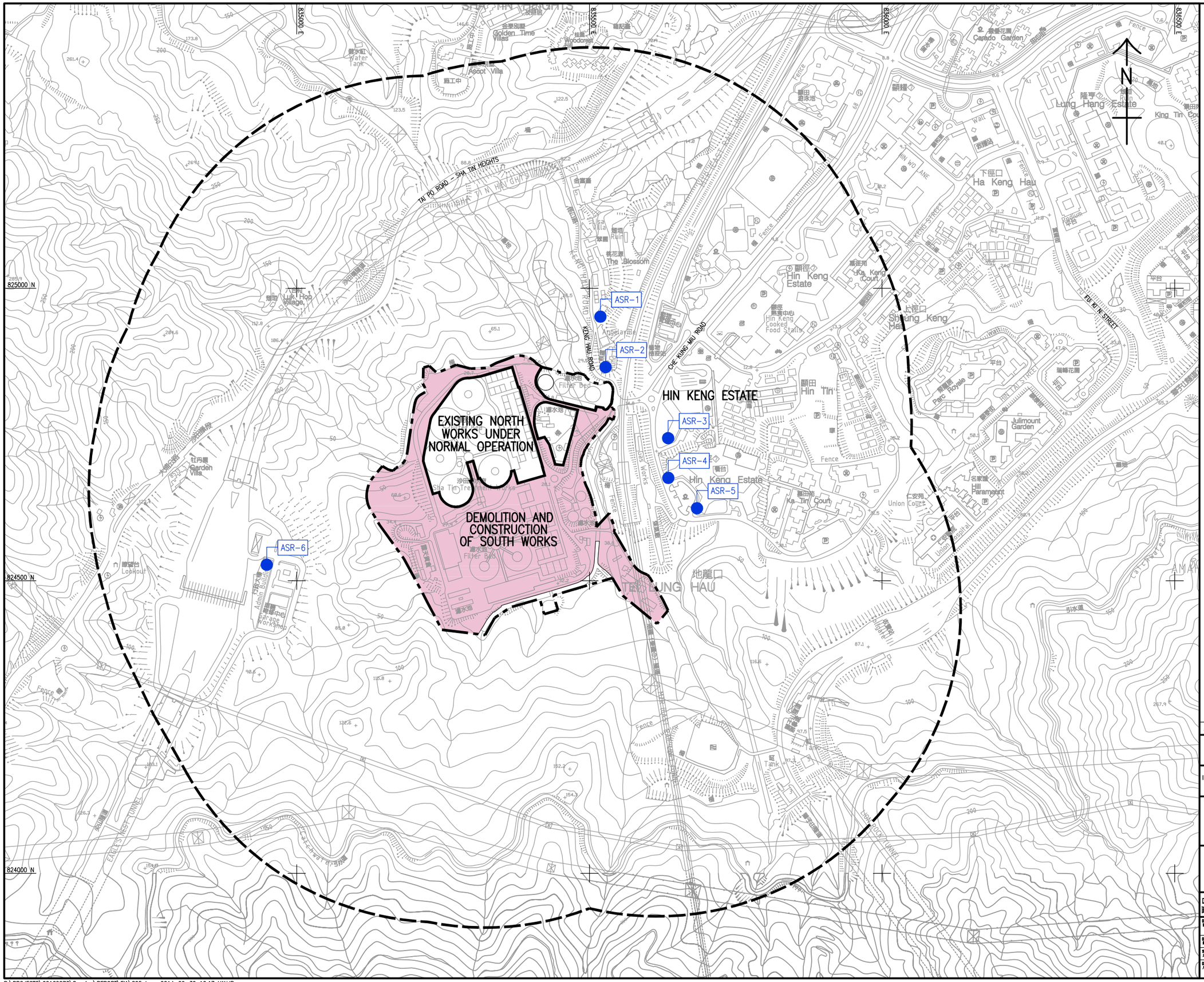
AECOM

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	SHEETS 張次	
SCALE 比例 A3 1 : 3000		
DIMENSIONS ARE IN 尺寸單位 METRES		

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

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. 修訂	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

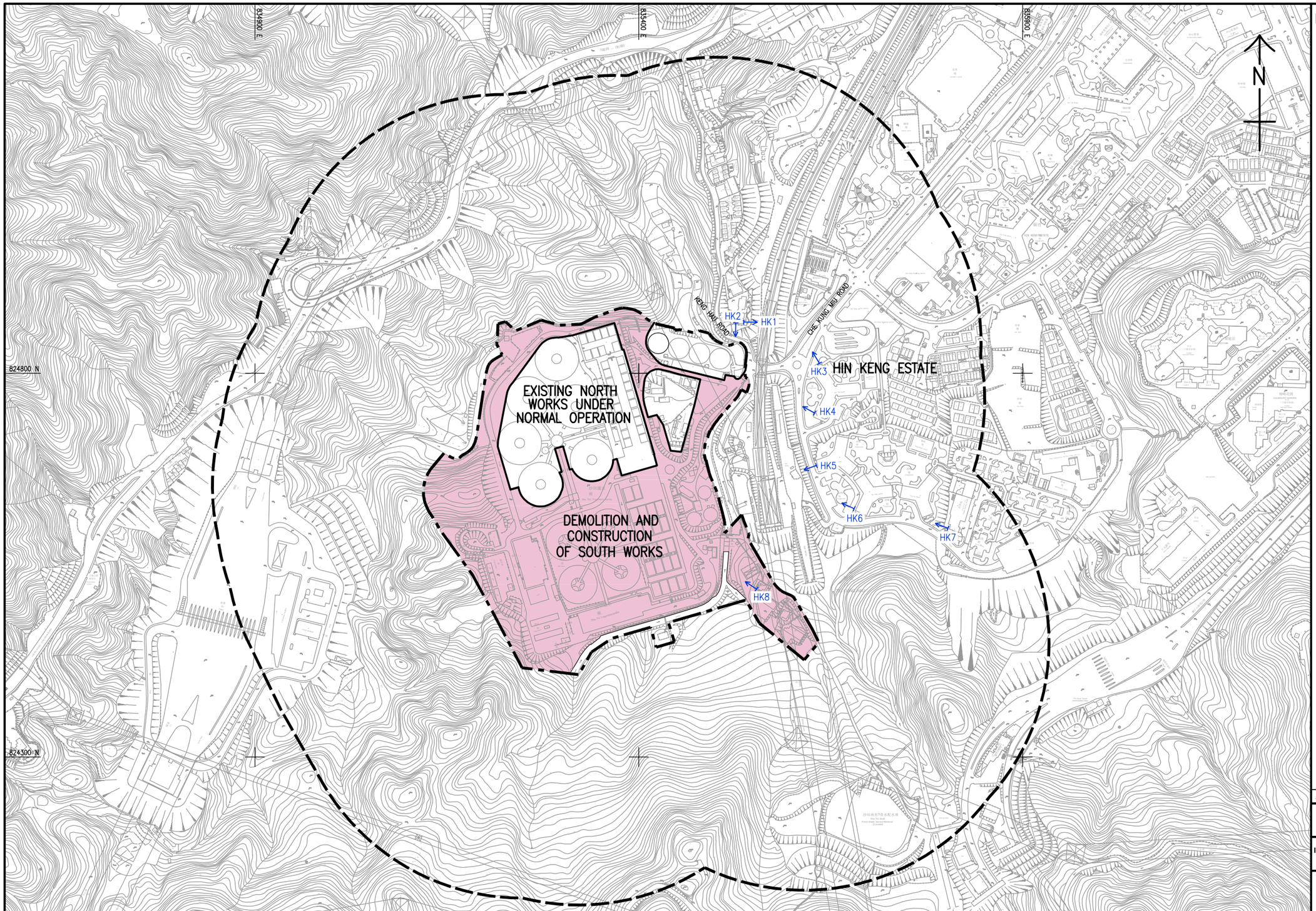
LOCATIONS OF REPRESENTATIVE AIR SENSITIVE RECEIVERS

AECOM

DRG.NO. 圖紙編號 60162073/EIA/FIG 4.1

DESIGNED BY 設計	–	CONTRACT NO. 合約編號	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		

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

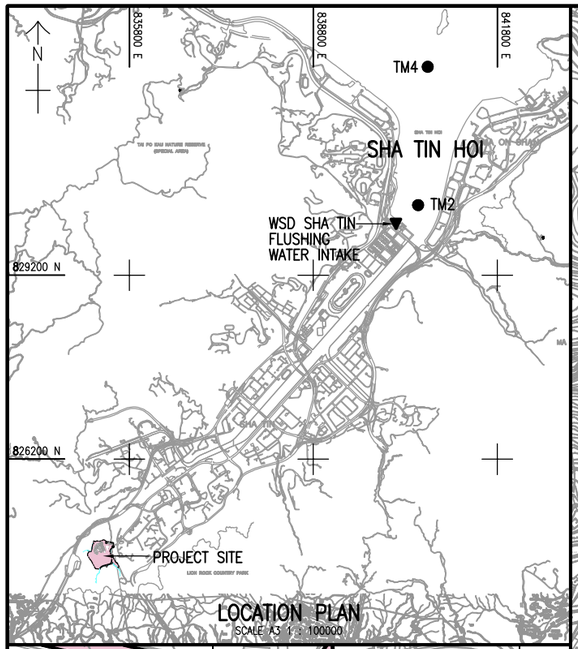
LOCATIONS OF REPRESENTATIVE NOISE SENSITIVE RECEIVERS

AECOM

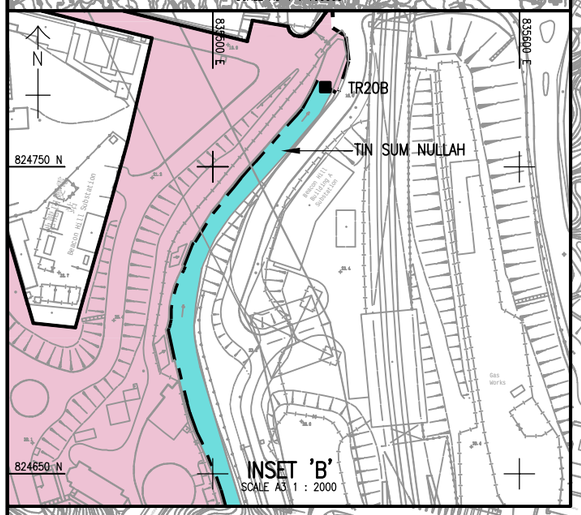
DRG.NO. 圖紙編號 60162073/EIA/FIG 5.1

DESIGNED BY 設計 –
CONTRACT NO. 合約編號
P. DR. 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

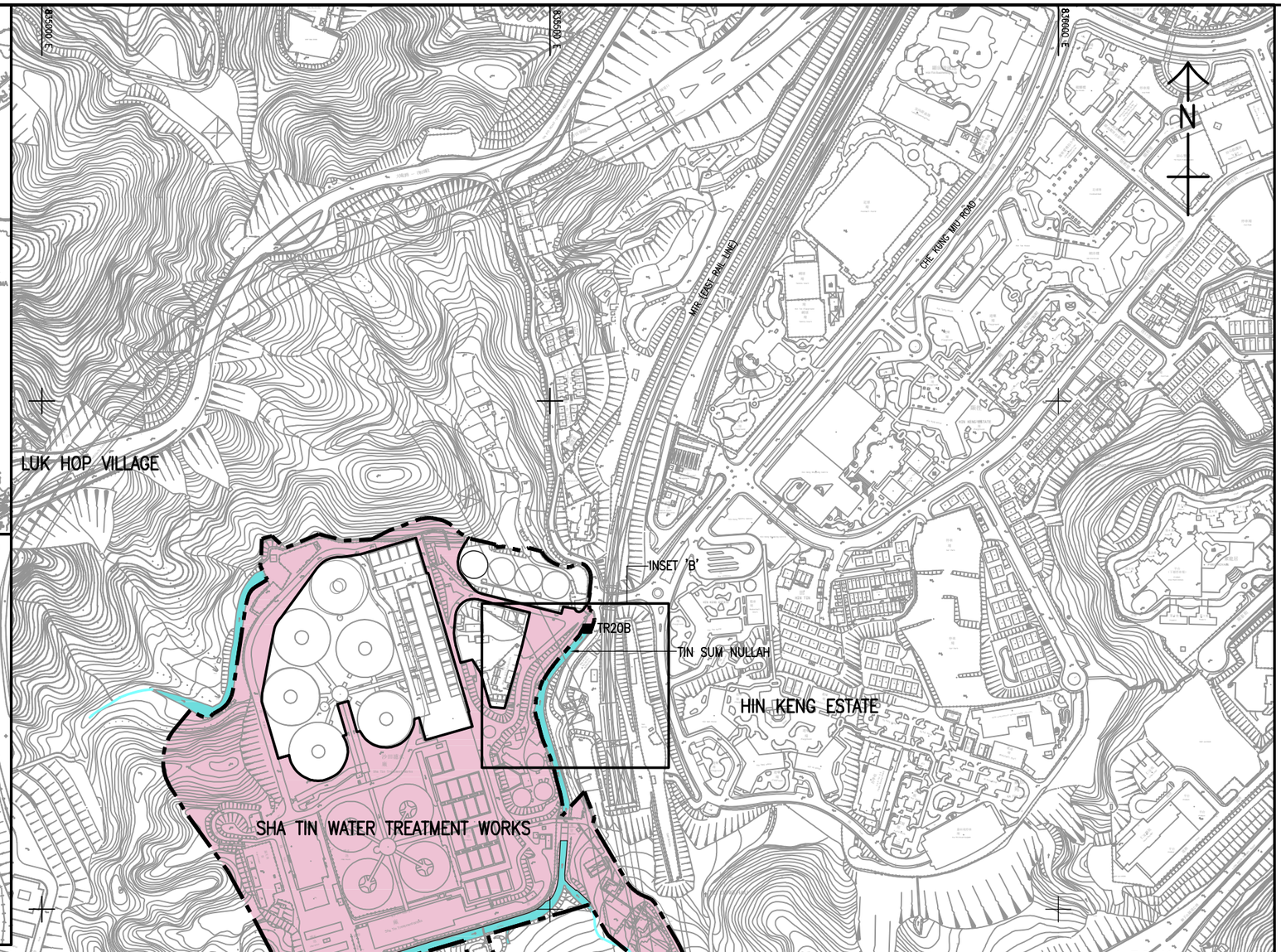
P:\Projects\60162073\Drawing\REPORT\EIA\829.dwg 2012-11-08 17:38 HED3



LOCATION PLAN
SCALE A3 1 : 100000



INSET 'B'
SCALE A3 1 : 2000



LEGEND:

- SITE BOUNDARY OF SHATIN WATER TREATMENT WORKS
- WORKS AREA
- INLAND WATER COURSE
- EPD MARINE WATER QUALITY MONITORING STATION
- EPD RIVER WATER QUALITY MONITORING STATION
- WSD SHA TIN FLUSHING WATER INTAKE

REV. 修訂	DESCRIPTION 內容摘要	DR.	CHECKED 查核	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. Dr. APPROVED 批准人
DRAWN BY 繪圖 DXL	STATUS 狀況	
SCALE 比例 A3 1 : 5000		
DIMENSIONS ARE IN 尺寸單位 METRES		

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

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;

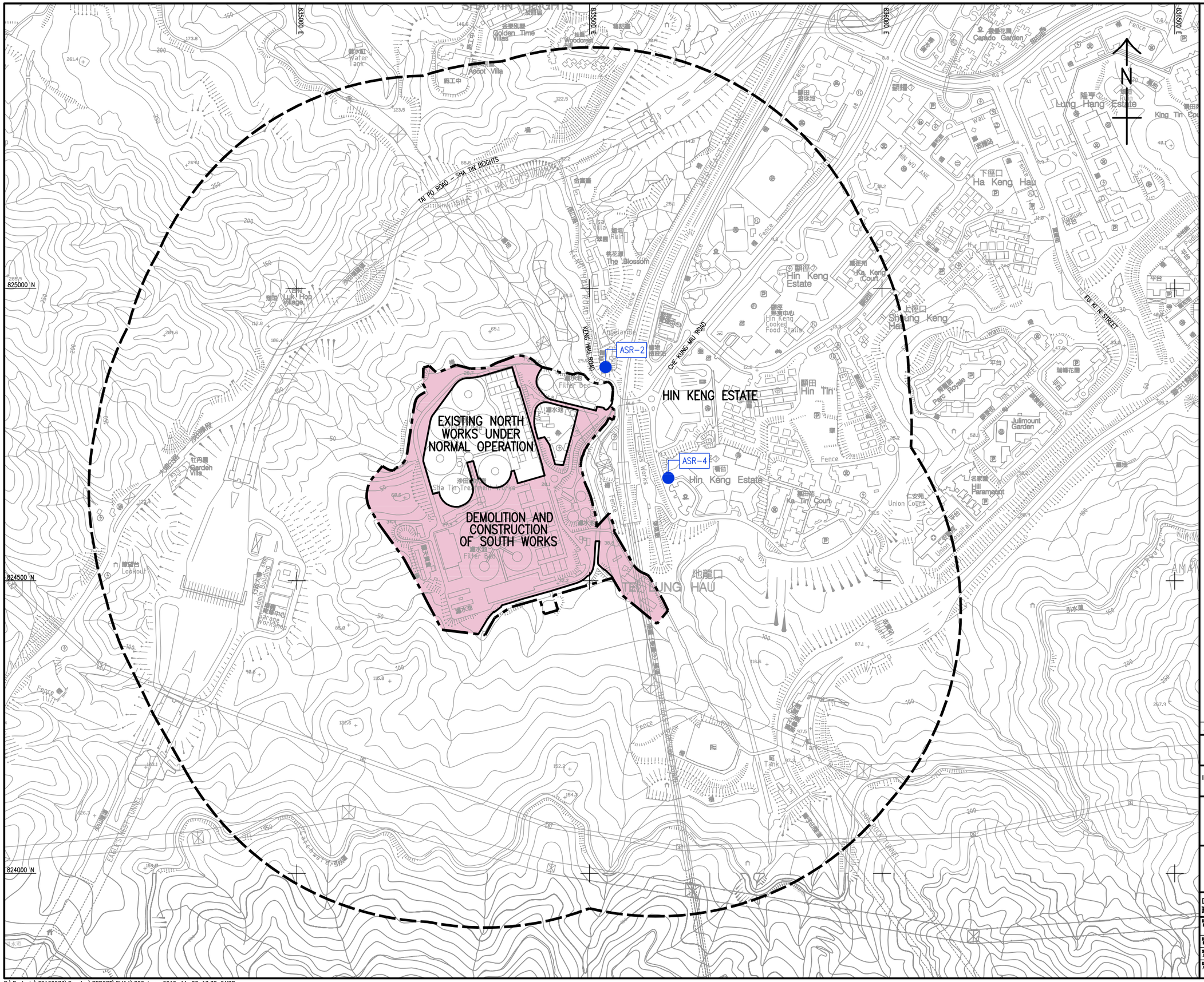
	implemented; Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days.		down or to stop all or part of the construction activities until no exceedance of Limit level.	● As directed by the ER, to slow down or to stop all or part of the construction activities.

Appendix H
Impact Monitoring Schedules

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

Remark: During public holiday, no monitoring was conducted on 5th ,7th ,8th and 10th April.

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)

北京航天计量测试技术研究所

中国航天 CASC Beijing Aerospace Institute for Metrology and Measurement Technology

证书编号：NO.HD1e-2022-07- 28517845
CERTIFICATE №:

校准证书

CALIBRATION CERTIFICATE

委托方 CLIENT

名 称：Acumen Environmental Engineering and Technologies Co. Ltd.
NAME:

地 址：Flat/RM D, 12/F, Ford Glory Plaza, Nos. 37-39 Wing Hong Street, Kowloon, Hong Kong
ADDRESS:

计量器具 MEASURING INSTRUMENTS

名 称：TSP 全尘浓度检测仪
NAME:

型号：PC-3A(E)
TYPE:

制造者：青岛精诚仪器仪表有限公司
MANUFACTURER:

编号：JC-220710225
№:

校准人：沈北珍 核验人：孙景波 签发人：杨广强
OPERATOR: INSPECTOR: APPROVED SIGNATORY:

发证机构(专用章)
ISSUED BY(STAMP)

接收日期：RECEIVED DATE:	2022	年 YEAR	07	月 MONTH	08	日 DAY
校准日期：CAL. DATE:	2022	年 YEAR	07	月 MONTH	08	日 DAY
建议下次校准日期：NEXT TIME TO CALIBRAT:	2023	年 YEAR	07	月 MONTH	07	日 DAY

本结果仅对所校准样品有效，证书未经本实验室批准，不得部分复印。

These results apply only to the calibrated sample, this certificate can't be partly copied without authorization.

地址：中国北京市丰台区东高地南大红门路 1 号
通讯：北京 9200 信箱 24 分箱 邮政编码：100076
电话：86-10-68383637，86-10-68383657
传真：86-10-88522409
网址：http://www.102.com.cn

Address:No.1 South Dahongmen Road ,Beijing ,China.
P.O.Box: 9200-24,Beijing ,China. Zip:100076
Tel.:86-10-68383637，86-10-68383657
Fax:86-10-88522409
E-mail:jiliang102@163.com

证书编号：NO.HD1e-2022-07- 28517845 第 2 页 共 3 页
CERTIFICATE №: PAGE 2 OF 3 PAGES

本实验室是法定计量检定机构（包括被授权的计量检定机构）
This body is an institute of legal verification (including authorized body)
授权单位：国家国防科技工业局
Authorized by: State Administration of Science Technology and Industry for National Defence
授权证书号：国防军工-JLJG-1-003
Authorization certificate № 国防军工-JLJG-1-003
本实验室的质量管理体系符合 ISO/IEC17025 标准的要求，并经中国合格评定国家认可委员会认可，认可证书号：CNAS L0283
This body is a CNAS accredited laboratory with a qualified quality management system in compliance with the ISO/IEC17025 standard, Accreditation certificate № CNAS L0283
本实验室通过国家认证认可监督管理委员会的资质认定，认定证书编号：170020180155
This body is accredited by Certification and Accreditation administration of the People's Republic of China , Accreditation Certificate №170020180155
测量溯源性的说明：国家计量基准
A statement of Measurement traceability: National Metrology Standards

校准所使用的计量标准及主要测量设备
STANDARD AND EQUIPMENT USED IN THE CALIBRATION

名称/编号 NAME/NO.	测量范围 MEASURING RANGE	扩展不确定度/准确度等级/最大允许误差 EXPANDED UNCERTAINTY /ACCURACY CLASS /MAX.PERMISSIBLE ERROR	证书编号 CERTIFICATE NO.	证书有效期至 DUE DATE
低浓度粉尘发生装置	（0~10）mg/m^3	5.0%	2021D11-09-10227	2022-08-25

校准所依据的技术文件（编号、名称）
BASIS OF CALIBRATION (CODE、NAME)
JJG 846-2015 粉尘浓度测量仪

校准的环境条件、地点，限制使用条件和测量范围
ENVIROMENTAL CONDITION IN THE CALIBRATION, LOCATION, LIMITED USING CONDITION AND MEASURING RANGE
温度 Temperature: 20.2 ℃
湿度 Moisture: 53 %RH
地点 Location：北京市丰台区南大红门路一号
限制使用条件和测量范围 **Limited using condition and measuring range:**

证书编号：NO.HD1e-2022-07- 28517845
CERTIFICATE №:

校准结果

RESULTS OF CALIBRATION

校准项目	技术要求	校准结果
外观及标志	名牌内容及标识	完整
	粉尘仪表面及采样头	无缺陷
示值误差	±20%	-2.6%
示值重复性	±10%	1.3%
绝缘强度	应能承受 1500V、50Hz 的电压，泄露电流不大于 5mA，持续时间 1min，无飞弧和击穿现象	符合要求

说明 1. 本次校准测量结果的扩展不确定度：U_{rel}=5.2% ； (k=2)。
2. 经校准，所校项目符合检定规程技术要求。

以 下 空 白

Blank Below

北京航天计量测试技术研究所

中国航天 CASC Beijing Aerospace Institute for Metrology and Measurement Technology

证书编号：NO.HD1e-2022-07- 28517842
CERTIFICATE №:

校准证书

CALIBRATION CERTIFICATE

委托方 CLIENT

名 称：Acumen Environmental Engineering and Technologies Co. Ltd.
NAME:

地 址：Flat/RM D, 12/F, Ford Glory Plaza, Nos. 37-39 Wing Hong Street, Kowloon, Hong Kong
ADDRESS:

计量器具 MEASURING INSTRUMENTS

名 称：TSP 全尘浓度检测仪
NAME:

型号：PC-3A(E)
TYPE:

制造者：青岛精诚仪器仪表有限公司
MANUFACTURER:

编号：JC-220710222
№:

校准人：沈北珍 核验人：孙景波 签发人：杨广德
OPERATOR: INSPECTOR: APPROVED SIGNATORY:

发证机构(专用章)
ISSUED BY(STAMP)

接收日期：RECEIVED DATE:	2022	年 YEAR	07	月 MONTH	08	日 DAY
校准日期：CAL. DATE:	2022	年 YEAR	07	月 MONTH	08	日 DAY
建议下次校准日期：NEXT TIME TO CALIBRAT:	2023	年 YEAR	07	月 MONTH	07	日 DAY

本结果仅对所校准样品有效，证书未经本实验室批准，不得部分复印。

These results apply only to the calibrated sample, this certificate can't be partly copied without authorization.

地址：中国北京市丰台区东高地南大红门路 1 号
通讯：北京 9200 信箱 24 分箱 邮政编码：100076
电话：86-10-68383637，86-10-68383657
传真：86-10-88522409
网址：http://www.102.com.cn

Address:No.1 South Dahongmen Road ,Beijing ,China.
P.O.Box: 9200-24,Beijing ,China. Zip:100076
Tel.:86-10-68383637，86-10-68383657
Fax:86-10-88522409
E-mail:jiliang102@163.com

证书编号：NO.HD1e-2022-07- 28517842
CERTIFICATE №:

本实验室是法定计量检定机构（包括被授权的计量检定机构）
This body is an institute of legal verification (including authorized body)
授权单位：国家国防科技工业局
Authorized by: State Administration of Science Technology and Industry for National Defence
授权证书号：国防军工-JLJG-1-003
Authorization certificate № 国防军工-JLJG-1-003
本实验室的质量管理体系符合 ISO/IEC17025 标准的要求，并经中国合格评定国家认可委员会认可，认可证书号：CNAS L0283
This body is a CNAS accredited laboratory with a qualified quality management system in compliance with the ISO/IEC17025 standard, Accreditation certificate № CNAS L0283
本实验室通过国家认证认可监督管理委员会的资质认定，认定证书编号：170020180155
This body is accredited by Certification and Accreditation administration of the People's Republic of China , Accreditation Certificate №170020180155
测量溯源性的说明：国家计量基准
A statement of Measurement traceability: National Metrology Standards

校准所使用的计量标准及主要测量设备
STANDARD AND EQUIPMENT USED IN THE CALIBRATION

名称/编号 NAME/NO.	测量范围 MEASURING RANGE	扩展不确定度/准确度等级/最大允许误差 EXPANDED UNCERTAINTY /ACCURACY CLASS /MAX.PERMISSIBLE ERROR	证书编号 CERTIFICATE NO.	证书有效期至 DUE DATE
低浓度粉尘发生装置	（0~10）mg/m^3	5.0%	2021D11-09-10227	2022-08-25

校准所依据的技术文件（编号、名称）
BASIS OF CALIBRATION (CODE、NAME)
JJG 846-2015 粉尘浓度测量仪

校准的环境条件、地点，限制使用条件和测量范围
ENVIROMENTAL CONDITION IN THE CALIBRATION, LOCATION, LIMITED USING CONDITION AND MEASURING RANGE

温度 Temperature: 20.2 ℃
湿度 Moisture: 53 %RH
地点 Location：北京市丰台区南大红门路一号
限制使用条件和测量范围 **Limited using condition and measuring range:**

证书编号：NO.HD1e-2022-07- 28517842
CERTIFICATE №:

校准结果

RESULTS OF CALIBRATION

校准项目	技术要求	校准结果
外观及标志	名牌内容及标识	完整
	粉尘仪表面及采样头	无缺陷
示值误差	±20%	-1.4%
示值重复性	±10%	2.0%
绝缘强度	应能承受 1500V、50Hz 的电压，泄露电流不大于 5mA，持续时间 1min，无飞弧和击穿现象	符合要求

说明 1. 本次校准测量结果的扩展不确定度：U_{rel}=5.2% ； (k=2)。
2. 经校准，所校项目符合检定规程技术要求。

以 下 空 白

Blank Below

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				•		•	•	•	•	•	•	•	•	0.03 inHg 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.

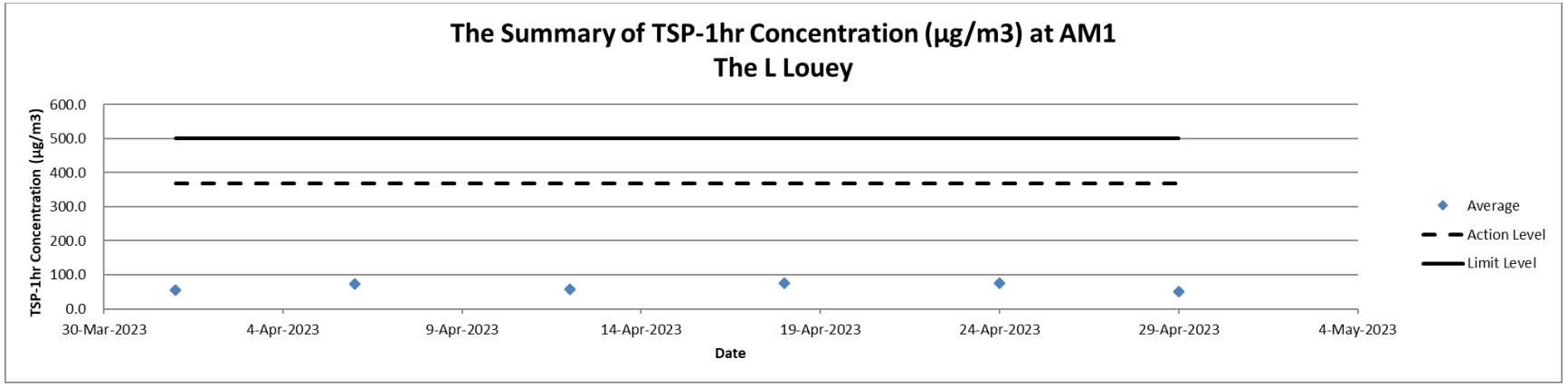
ADDITIONAL SPECIFICATIONS

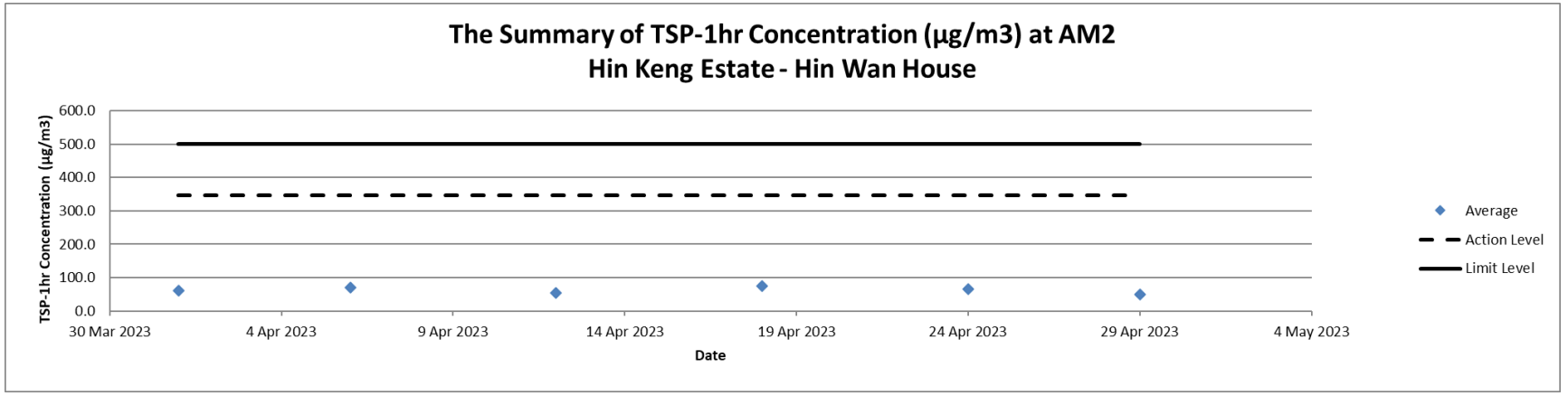
Display & Backlight	•	•		•										Reflective 3 1/2 digit LCD. Digit height 0.55 in / 9 mm. Aviation green electroluminescent backlight. Manual activation with auto-off.
			•		•	•								Reflective 5 digit LCD. Digit height 0.36 in / 9 mm. Choice of aviation green or visible red (NV models only) electroluminescent backlight. Manual activation with auto-off.
							•	•	•	•	•	•	•	Multifunction, multi-digit monochrome dot-matrix display. Choice of aviation green or visible red (NV models only) electroluminescent backlight. Automatic or manual activation.
Response Time & Display Update	•	•	•	•	•	•	•	•	•	•	•	•	•	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.

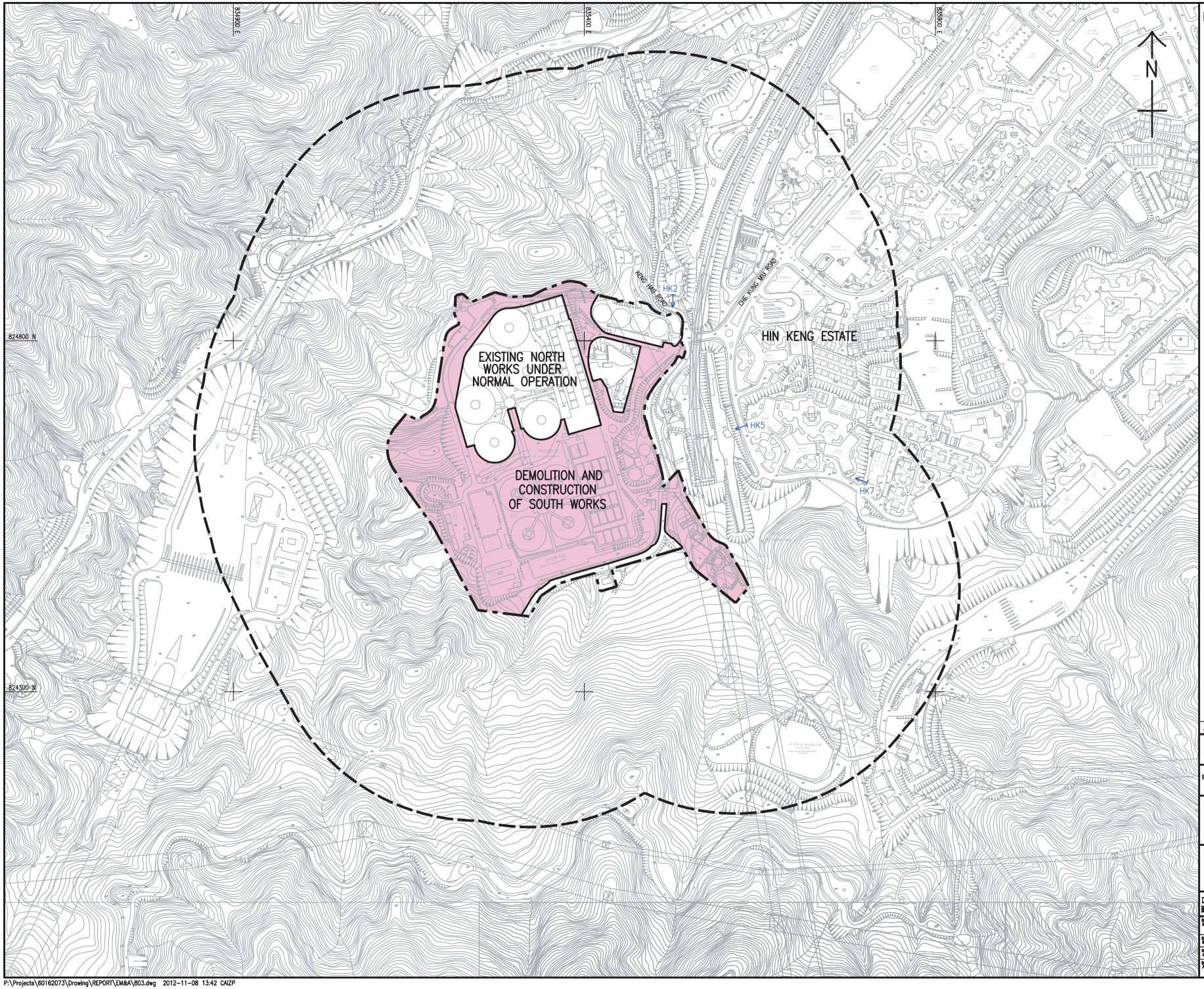
* NOTE. Accuracy calculated as uncertainty of the measurement derived from statistical analysis considering the comined effects from primary sensor specifications, circuit conversions, and all other sources of error using a coverage factor of k=2, or two standard deviations (2Σ).

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.

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)
600.0
500.0
400.0
300.0
200.0
100.0
0.0
30-Mar-2023
4-Apr-2023
9-Apr-2023
14-Apr-2023
19-Apr-2023
24-Apr-2023
29-Apr-2023
4-May-2023
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)
600.0
500.0
400.0
300.0
200.0
100.0
0.0
30 Mar 2023
4 Apr 2023
9 Apr 2023
14 Apr 2023
19 Apr 2023
24 Apr 2023
29 Apr 2023
4 May 2023
Date
Average
Action Level
Limit Level



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

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. 圖形編號 60162073/EM&A/FIG 4

DESIGNED BY 設計	CONTRACT NO. 合約編號	P. IN. APPROVED 核准人
DRAWN BY 繪圖 NHP	CHECKED 核對	
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 L
Location Plan of Noise Monitoring Station

Appendix M
Calibration Certificates (Noise)

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				•		•	•	•	•	•	•	•	•	0.03 inHg 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.
							•	•	•	•	•	•	•	Multifunction, multi-digit monochrome dot-matrix display. Choice of aviation green or visible red (NV models only) electroluminescent backlight. Automatic or manual activation.
Response Time & Display Update	•	•	•	•	•	•	•	•	•	•	•	•	•	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.

(A+A)*L Acoustics and Air Testing Laboratory Co. Ltd.
聲學及空氣測試實驗室有限公司

Certificate of Calibration

for

Description:	***Sound Level Meter***
Manufacturer:	***Lutron***
Type No.:	***SL-4033SD (Serial No.: I.518013)***

Submitted by:

Customer:	*Acuity Sustainability Consulting Limited*
Address:	*Unit E, 12/F., Ford Glory Plaza,*
	Nos. 37-39 Wing Hong Street,
	Cheung Sha Wan, Kowloon, Hong Kong

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

☑ **Within (31.5 Hz to 4k Hz)**
☐ **Outside**

the allowable tolerance.

The test equipment used for calibration are traceable to National Standards via:
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory

Date of receipt: 30 July 2022

Date of calibration: 3 August 2022

Date of NEXT calibration: 2 August 2023

Calibrated by: _____
Calibration Technician

Certified by: _____
Mr. Ng Yan Wa
Laboratory Manager

Date of issue: **3 August 2022**

Certificate No.: APJ22-037-CC001

ACOUSTICS AND AIR TESTING LABORATORY CO. LTD. (A+A)*L

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

1. *Calibration Precaution:*

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 24 hours, and switched on to warm up for over 10 minutes before the commencement of the test.

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

2. *Calibration Conditions:*

Air Temperature:	24.9 °C
Air Pressure:	1005 hPa
Relative Humidity:	53.5 %

3. *Calibration Equipment:*

	Type	Serial No.	Calibration Report Number	Traceable to
Multifunction Calibrator	B&K 4226	2288467	AV220061	HOKLAS

4. *Calibration Results*

Sound Pressure Level

Reference Sound Pressure Level

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

Linearity

Setting of Unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz		
30-130	dBA SPL	Fast	94	1000	94.0	Ref
			104		104.1	±0.3
			114		114.0	±0.3

Time Weighting

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

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

Frequency Response

A-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz		
30-130	dBA SPL	Fast	94	31.5	55.3	-39.4 ±2.0
				63	67.9	-26.2 ±1.5
				125	77.8	-16.1 ±1.5
				250	85.3	-8.6 ±1.4
				500	90.8	-3.2 ±1.4
				1000	94.0	Ref
				2000	94.9	+1.2 ±1.6
				4000	94.0	+1.0 ±1.6

5. *Calibration Results Applied*

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

Uncertainties of Applied Value:

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

The uncertainties are evaluated for a 95% confidence level.

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

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

Certificate No. D224349E

JCSS 0197

CALIBRATION CERTIFICATE

Product	:	SOUND CALIBRATOR
Type	:	NC-75
Serial number	:	34724243
Manufacturer	:	RION CO., LTD.
Calibration quantities	:	Sound pressure level (with reference standard microphone)
Calibration method	:	Measured by specified secondary standard microphone according to JCSS calibration procedure specified by RION.
Ambient conditions	:	Temperature 23.9 ℃, Relative humidity 49 %, Static pressure 99.9 kPa
Calibration date	:	05/07/2022 (DD/MM/YYYY)
Calibration location	:	3-20-41 Higashimotomachi, Kokubunji, Tokyo 185-8533, Japan RION CO., LTD. Calibration Room

We hereby certify that the results of this calibration were as follows.

Issue date : 11/07/2022 (DD/MM/YYYY)

Junichi Kawamura
Manager
Quality Assurance Section,
Quality Assurance Department,
Environmental Instrument Division,
RION CO., LTD.
3-20-41 Higashimotomachi, Kokubunji,
Tokyo 185-8533, Japan

Certificate No. D224349E

CALIBRATION RESULT

1. Sound pressure level (with reference standard microphone)

Measured value	Expanded uncertainty *1
93.99 dB	0.09 dB

Specified secondary standard microphone:
Type : 4160
Serial number : 2973341
Reference Sound pressure : 2×10^{-5} Pa

*1 Defines an interval estimated to have a level of confidence of approximately 95 %.
Coverage factor k=2

Calibration result is the calibration value in ambient conditions during calibration.

BE OUT OF JCSS CALIBRATION

1. Frequency

Measured value	Measurement uncertainty (k=2)
1000.0 Hz	3.9×10^{-4} Hz

Working measurement standard universal counter:
Type : 53132A
Serial number : MY40005574
(JCSS Calibration Certificate No. 21081499079575510)

2. Total distortion

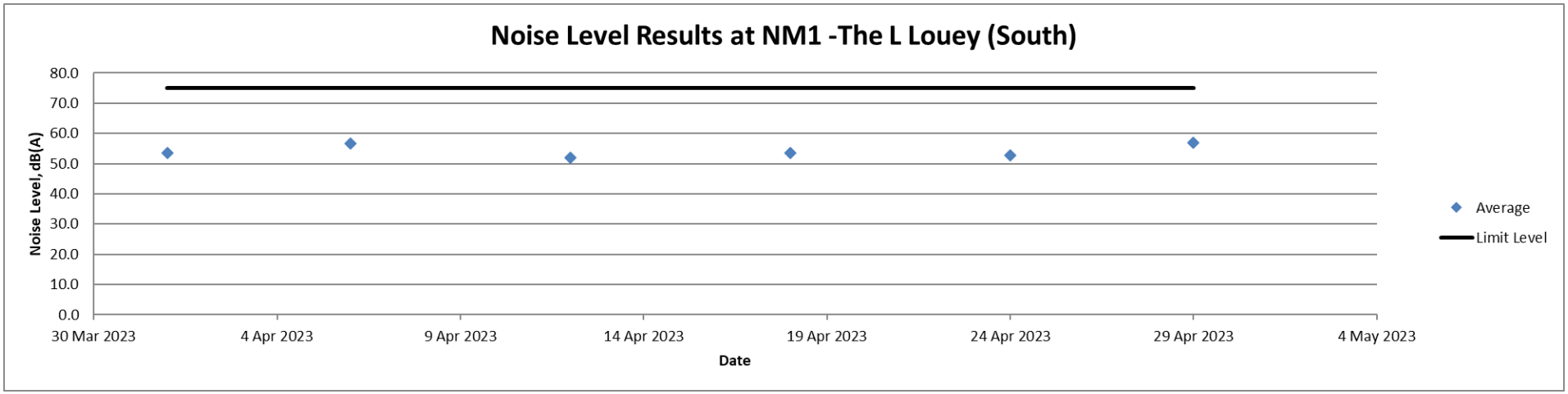
Measured value
0.2 %

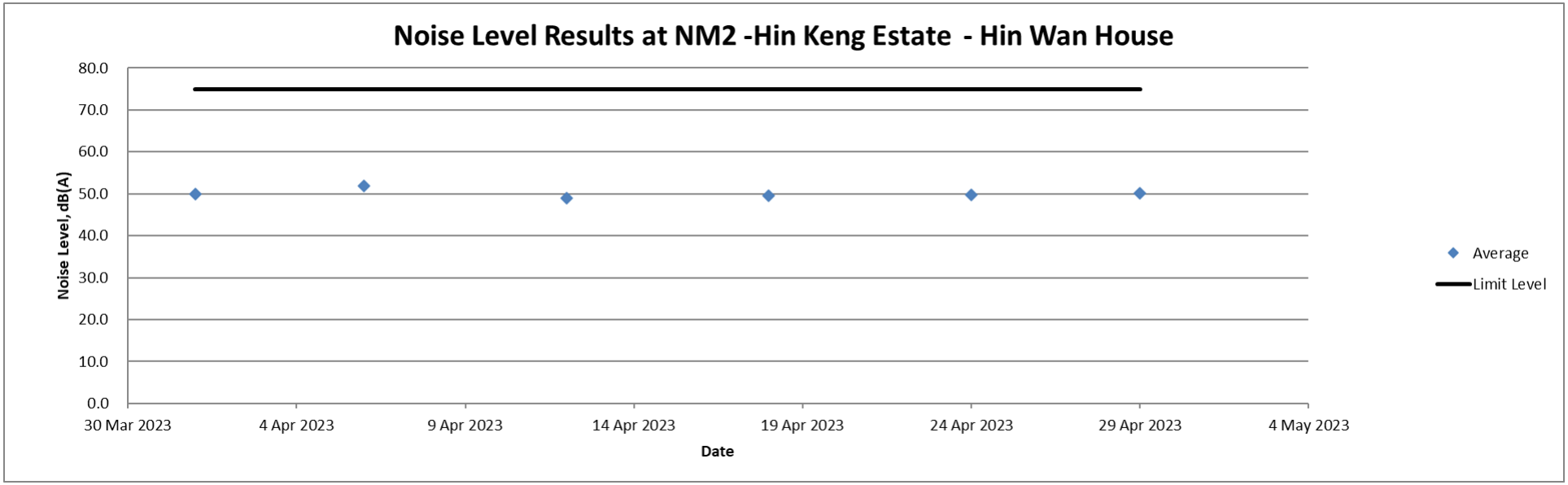
Working measurement standard distortion meter:
Type : VA-2230A
Serial number : 11076061
(A2LA Calibration Certificate No. 1501-03080)

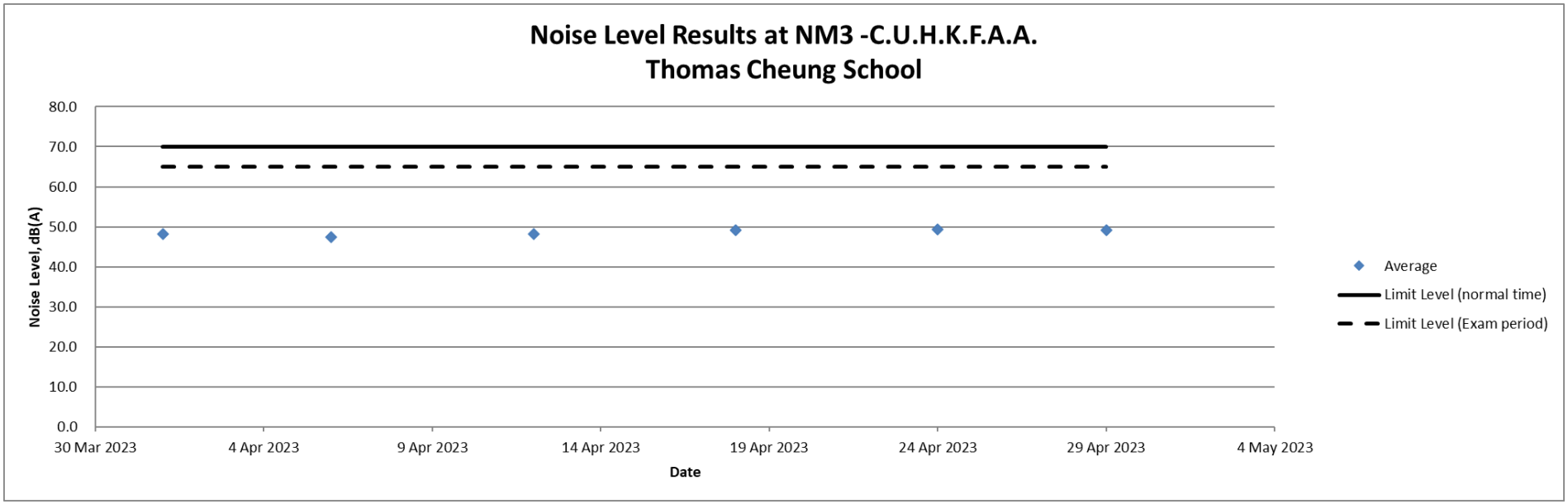
- closing -

RION

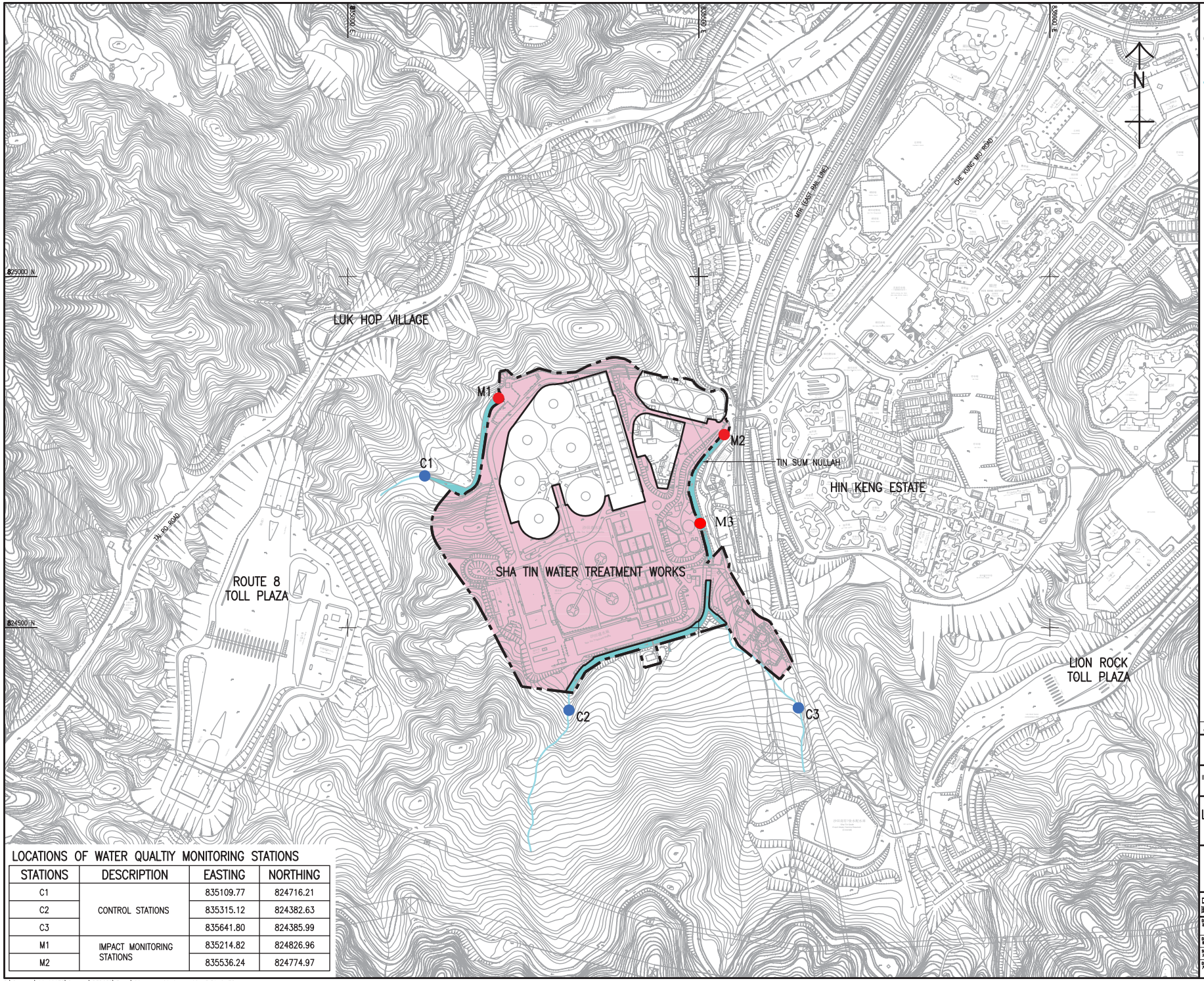
Appendix N
Impact Noise Monitoring Results and Graphical Presentation


Noise Level Results at NM1 -The L Louey (South)
Noise Level, dB(A)
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
30 Mar 2023
4 Apr 2023
9 Apr 2023
14 Apr 2023
19 Apr 2023
24 Apr 2023
29 Apr 2023
4 May 2023
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
30 Mar 2023
4 Apr 2023
9 Apr 2023
14 Apr 2023
19 Apr 2023
24 Apr 2023
29 Apr 2023
4 May 2023
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
30 Mar 2023
4 Apr 2023
9 Apr 2023
14 Apr 2023
19 Apr 2023
24 Apr 2023
29 Apr 2023
4 May 2023
Date
Average
Limit Level (normal time)
Limit Level (Exam period)

Appendix O
Location Plan of Water Quality Monitoring 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 DXL
SCALE A3 1 : 5000
DIMENSIONS ARE IN METRES

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, 5/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-BC020051
Date of Issue : 14 February 2023

PART A - CUSTOMER INFORMATION

Acumen Environmental Engineering and Technologies Company Limited
Unit D, 12/F Ford Glory Plaza No. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong

PART B - SAMPLE INFORMATION

Name of Equipment :	HORIBA U-53
Manufacturer :	HORIBA
Serial Number :	TY4X3U54
Date of Received :	10 February 2023
Date of Calibration :	14 February 2023
Date of Next Calibration :	13 May 2023
Request No. :	D-BC020051

PART C - REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

Test Parameter	Reference Method
pH value	APHA 21e 4500 H^+
Dissolved oxygen	APHA 21e 4500 O
Oxidation-Reduction Potential	APHA 22e 2580 B
Salinity	APHA 21e 2520 B
Temperature	Section 6 of international Accreditation New Zealand Technical Guide no. 3 Second edition March 2008: Working Thermometer Calibration Procedure
Turbidity	APHA 21e 2130 B

PART D - CALIBRATION RESULT

(1) pH value

Target (pH unit)	Display Reading (pH unit)	Tolerance	Result
4.00	4.18	0.18	Satisfactory
7.42	7.60	0.18	Satisfactory
10.01	10.08	0.07	Satisfactory

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

(2) Dissolved oxygen

Expected Reading (mg/L)	Display Reading (mg/L)	Tolerance	Result
0.32	0.36	0.04	Satisfactory
2.91	2.48	-0.43	Satisfactory
5.15	5.22	0.07	Satisfactory
8.24	8.30	0.06	Satisfactory

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

(3) Oxidation-Reduction Potential

Expected Reading	Display Reading	Tolerance	Result
229	229	0	Satisfactory

Tolerance of Oxidation-Reduction Potential should be less than ± 10.0 (mV)

--- CONTINUED ON NEXT PAGE ---

AUTHORIZED SIGNATORY:

LEE Chun-ning
Assistant Manager (Chemical Testing)

專業化驗有限公司
QUALITY PRO TEST-CONSULT LIMITED
Unit 10, 5/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-BC020051
Date of Issue : 14 February 2023

(4) Salinity

Expected Reading (g/L)	Display Reading (g/L)	Tolerance (%)	Result
10	10.01	0.10	Satisfactory
20	20.25	1.25	Satisfactory
30	30.71	2.37	Satisfactory

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

(5) Temperature

Reading of Ref. thermometer (°C)	Display Reading (°C)	Tolerance	Result
14	14.78	0.78	Satisfactory
22	22.30	0.30	Satisfactory
39	38.82	-0.18	Satisfactory

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

(6) Turbidity

Expected Reading (NTU)	Display Reading (NTU)	Tolerance (%)	Result
0	0.00	--	Satisfactory
10	10.8	8.0	Satisfactory
20	20.7	3.5	Satisfactory
100	99.9	-0.1	Satisfactory
800	806	0.8	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 ---

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 Q
The Certification of Laboratory with HOKLAS accredited Analytical Tests

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
3/4/2023	12:35	Fine	C1	835110	824716	0.04	0.02	23.06	23.07	12.27	12.27	1.13	1.26	7.71	7.75	<1
	12:59	Fine	C2	835403	824470	0.02	0.01	23.32	23.34	11.31	12.29	1.14	1.21	7.68	7.49	<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
	12:03	Fine	M1	835215	824827	0.8	0.4	23.32	23.31	14.94	13.86	1.83	2.06	7.95	7.99	<1
	11:15	Fine	M2	835536	824775	0.05	0.025	22.86	22.92	11.76	11.96	1.28	1.45	8.51	8.59	<1
	11:32	Fine	M3	835501	824648	0.02	0.01	22.54	22.53	14.8	14.48	0.75	0.89	8.41	8.45	<1
6/4/2023	11:55	cloudy	C1	835110	824716	0.04	0.02	24.1	24.1	10.55	10.56	0.96	0.91	7.77	7.72	<1
	12:17	cloudy	C2	835403	824470	0.02	0.01	24.11	24.07	12.37	12.26	0.49	0.48	8.1	8.18	<1
	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
	11:27	cloudy	M1	835215	824827	0.8	0.4	24.08	24.07	11.67	11.68	4.31	4.3	7.71	7.76	2.2
	10:35	cloudy	M2	835536	824775	0.05	0.025	23.99	24.07	12.69	12.75	4.68	4.88	8.26	8.27	3.4
	10:53	cloudy	M3	835501	824648	0.02	0.01	24.08	24.08	14.49	13.14	0.22	0.22	8.42	8.44	<1
11/4/2023	12:20	Fine	C1	835110	824716	0.04	0.02	23.56	23.53	12.74	12.41	1.09	1.04	7.64	7.69	<1
	12:43	Fine	C2	835403	824470	0.02	0.01	23.38	23.39	13.96	13.08	1.14	1.16	8.53	8.55	<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
	11:43	Fine	M1	835215	824827	0.8	0.4	23.46	23.47	11.91	12.94	4.09	4.11	7.43	7.47	2.2
	10:57	Fine	M2	835536	824775	0.05	0.025	23.34	23.47	13.32	14.56	4.83	4.71	8.25	8.21	2.9
	11:09	Fine	M3	835501	824648	0.02	0.01	23.65	23.65	13.17	13.91	0.38	0.33	8.45	8.46	**1.6**
13/4/2023	11:22	Fine	C1	835110	824716	0.04	0.02	23.99	23.99	11.41	11.02	1.64	1.75	6.64	6.73	<1
	11:41	Fine	C2	835403	824470	0.02	0.01	23.71	23.72	11.73	11.33	1.28	1.32	7.73	7.86	<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
	10:35	Fine	M1	835215	824827	0.8	0.4	23.93	23.92	13.03	12.67	1.9	1.97	7.01	7.08	1.2
	9:47	Fine	M2	835536	824775	0.05	0.025	23.71	23.68	11.18	11.14	1.71	1.61	8.69	8.7	<1
	10:06	Fine	M3	835501	824648	0.02	0.01	23.58	23.59	12.23	12.85	0.62	0.64	8.36	8.43	<1
15/4/2023	12:42	Fine	C1	835110	824716	0.04	0.02	25.14	25.14	11.44	12.48	1.22	1.2	7.7	7.81	1.6
	13:04	Fine	C2	835403	824470	0.02	0.01	24.44	24.46	12.87	13.05	1.01	0.95	7.23	7.42	<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
	12:16	Fine	M1	835215	824827	0.8	0.4	25.17	25.17	13.34	13.09	1.58	1.53	8.07	8.04	1.7
	11:27	Fine	M2	835536	824775	0.05	0.025	24.76	24.8	13.29	13.33	1.23	1.3	8.66	8.74	<1
	11:45	Fine	M3	835501	824648	0.02	0.01	25.16	25.16	13.85	14.67	0.83	0.79	8.25	8.22	<1
17/4/2023	12:21	Fine	C1	835110	824716	0.04	0.02	24.56	24.56	10.98	10.04	0.53	0.49	7.5	7.41	1.1
	12:43	Fine	C2	835403	824470	0.02	0.01	24.62	24.63	12.65	11.64	0.12	0.12	8.36	8.36	<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
	11:42	Fine	M1	835215	824827	0.8	0.4	24.54	24.54	11.58	11.75	0.81	0.89	7.66	7.68	1.1
	10:58	Fine	M2	835536	824775	0.05	0.025	24.62	24.63	13.58	13.02	0.92	0.92	8.36	8.38	1.1
	11:10	Fine	M3	835501	824648	0.02	0.01	24.64	24.64	14.18	14.52	0	0	8.4	8.4	<1

19/4/2023	12:28	Fine	C1	835110	824716	0.04	0.02	24.78	24.78	12.47	12.36	0.52	0.46	7.27	7.29	<1
	12:45	Fine	C2	835403	824470	0.02	0.01	24.69	24.69	10.71	11.44	0.46	0.42	8.23	8.25	<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
	11:51	Fine	M1	835215	824827	0.8	0.4	24.8	24.8	13.94	13.06	0.8	0.83	7.73	7.79	<1
	11:04	Fine	M2	835536	824775	0.05	0.025	24.63	24.64	13.47	12.43	0.88	0.9	8.58	8.6	<1
	11:19	Fine	M3	835501	824648	0.02	0.01	24.7	24.7	13.88	14	0.21	0.21	8.51	8.53	<1
21/4/2023	13:55	Cloudy	C1	835110	824716	0.04	0.02	24.35	24.32	11.38	11.78	3.9	3.76	7.71	7.62	2.0
	14:11	Cloudy	C2	835403	824470	0.02	0.01	24.22	24.22	12.19	11.66	1.38	1.47	8.28	8.31	<1
	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
	13:15	Cloudy	M1	835215	824827	0.8	0.4	24.38	24.38	12.03	12.51	4.1	4.03	7.93	7.91	1.9
	12:29	Cloudy	M2	835536	824775	0.05	0.025	24.22	24.2	13.63	12.26	1.69	1.52	8.32	8.33	<1
	12:45	Cloudy	M3	835501	824648	0.02	0.01	24.21	24.2	13.61	14.04	0.93	0.95	8.16	8.19	<1
24/4/2023	12:05	Fine	C1	835110	824716	0.04	0.02	24.84	24.86	10.34	11.64	1.24	1.15	7.79	7.7	<1
	12:21	Fine	C2	835403	824470	0.02	0.01	24.81	24.82	11.72	11.8	1.15	1.18	8.59	8.62	<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
	12:24	Fine	M1	835215	824827	0.8	0.4	24.84	24.7	13.53	12.93	1.39	1.63	8.19	8.16	<1
	10:32	Fine	M2	835536	824775	0.05	0.025	24.72	24.73	12.52	11.65	1.73	1.61	8.7	8.73	<1
	10:44	Fine	M3	835501	824648	0.02	0.01	24.76	24.77	13.72	13.44	0.46	0.3	8.37	8.42	<1
26/4/2023	10:36	Fine	C1	835110	824716	0.04	0.02	24.26	24.17	10.85	11.73	3.92	3.93	7.68	7.54	2.7
	10:52	Fine	C2	835403	824470	0.02	0.01	24.3	24.32	13.02	13.2	1.98	1.79	7.06	7.12	1.0
	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
	10:17	Fine	M1	835215	824827	0.8	0.4	24.25	24.04	12.26	12.54	4.18	4.27	8.15	8.13	2.2
	9:32	Fine	M2	835536	824775	0.05	0.025	24.33	24.34	12.06	12.01	2.3	2.23	8.36	8.39	<1
	9:30	Fine	M3	835501	824648	0.02	0.01	24.24	24.25	13.76	13.71	0.78	0.83	8.22	8.24	<1
28/4/2023	10:17	Sunny	C1	835110	824716	0.04	0.02	24.13	24.7	10.52	10.37	1.95	1.83	7.71	7.7	<1
	10:29	Sunny	C2	835403	824470	0.02	0.01	24.32	24.28	10.17	9.54	1.51	1.52	8.1	8.12	<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
	10:00	Sunny	M1	835215	824827	0.8	0.4	24.12	24.13	14.65	13.29	2.4	2.24	8.05	8.05	<1
	9:41	Sunny	M2	835536	824775	0.05	0.025	24.25	24.23	10.4	10.23	1.68	1.7	8.52	8.63	<1
	9:44	Sunny	M3	835501	824648	0.02	0.01	24.08	24.1	13.97	12.77	0.71	0.78	8.16	8.19	<1

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

There were 0 exceedances of Action Level and 1 exceedances of Limit Level

acumen

Acumen Laboratory and Testing Limited

Flat/Rm D, 12/F, Ford Glory Plaza, Nos. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number	:	Q230002aR230477
Job Number	:	R230477
Issue Date	:	12/04/2023
Applicant Name	:	Acumen Environmental Engineering and Technologies Co, Ltd.
Applicant Address	:	Unit D, 12/F, Ford Glory Plaza, No.37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Project Name	:	CJO-3113-1134
Test Required	:	Total Suspended Solids (TSS)
Sampling Date	:	03/04/2023
Date Samples Received	:	03/04/2023
Sample Nature	:	Water
Number of Samples Received	:	5
Condition Received	:	Sample(s) arrived laboratory in chilled condition
Type of Container	:	HDPE Plastic Bottles
Laboratory ID	:	R230477/1-5
Test Period	:	03/04/2023 – 04/04/2023
Method Used	:	In-house Method, QPL-15e for Total Suspended Solids
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 and Microbiological Division

acumen

Acumen Laboratory and Testing Limited

Flat/Rm D, 12/F, Ford Glory Plaza, Nos. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number : Q230002aR230477

Job Number : R230477

Issue Date : 12/04/2023

Test Result:

Lab ID	Sampling Date	Client Sample ID	Total Suspended Solids (TSS), mg/L
R230477/1	03/04/2023	C1	<1
R230477/2	03/04/2023	C2	<1
R230477/3	03/04/2023	M1	<1
R230477/4	03/04/2023	M2	<1
R230477/5	03/04/2023	M3	<1

Note:
1. mg/L indicates milligram per liter
2. < indicates less than.
3. Reporting limit is 2.5mg/L for 1L sample
4. Reporting limit is 1 mg/L for 2.5L sample
5. Applicant name, applicant address, project name, sampling date, sample ID and sample nature are provided by applicant.
6. The result(s) relate only to the item(s) tested.
7. The result(s) are applied only to the sample(s) received.

End of Report

acumen

Acumen Laboratory and Testing Limited

Flat/Rm D, 12/F, Ford Glory Plaza, Nos. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number	:	Q230002aR230491
Job Number	:	R230491
Issue Date	:	14/04/2023
Applicant Name	:	Acumen Environmental Engineering and Technologies Co, Ltd.
Applicant Address	:	Unit D, 12/F, Ford Glory Plaza, No.37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Project Name	:	CJO-3113-1135
Test Required	:	Total Suspended Solids (TSS)
Sampling Date	:	06/04/2023
Date Samples Received	:	06/04/2023
Sample Nature	:	Water
Number of Samples Received	:	5
Condition Received	:	Sample(s) arrived laboratory in chilled condition
Type of Container	:	HDPE Plastic Bottles
Laboratory ID	:	R230491/1-5
Test Period	:	06/04/2023 – 07/04/2023
Method Used	:	In-house Method, QPL-15e for Total Suspended Solids
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 and Microbiological Division

acumen

Acumen Laboratory and Testing Limited

Flat/Rm D, 12/F, Ford Glory Plaza, Nos. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number : Q230002aR230491

Job Number : R230491

Issue Date : 14/04/2023

Test Result:

Lab ID	Sampling Date	Client Sample ID	Total Suspended Solids (TSS), mg/L
R230491/1	06/04/2023	C1	<1
R230491/2	06/04/2023	C2	<1
R230491/3	06/04/2023	M1	2.2
R230491/4	06/04/2023	M2	3.4
R230491/5	06/04/2023	M3	<1

Note:
1. mg/L indicates milligram per liter
2. < indicates less than.
3. Reporting limit is 2.5mg/L for 1L sample
4. Reporting limit is 1 mg/L for 2.5L sample
5. Applicant name, applicant address, project name, sampling date, sample ID and sample nature are provided by applicant.
6. The result(s) relate only to the item(s) tested.
7. The result(s) are applied only to the sample(s) received.

End of Report

acumen

Acumen Laboratory and Testing Limited

Flat/Rm D, 12/F, Ford Glory Plaza, Nos. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number	:	Q230002aR230511
Job Number	:	R230511
Issue Date	:	17/04/2023
Applicant Name	:	Acumen Environmental Engineering and Technologies Co, Ltd.
Applicant Address	:	Unit D, 12/F, Ford Glory Plaza, No.37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Project Name	:	CJO-3113-1136
Test Required	:	Total Suspended Solids (TSS)
Sampling Date	:	11/04/2023
Date Samples Received	:	11/04/2023
Sample Nature	:	Water
Number of Samples Received	:	5
Condition Received	:	Sample(s) arrived laboratory in chilled condition
Type of Container	:	HDPE Plastic Bottles
Laboratory ID	:	R230511/1-5
Test Period	:	11/04/2023 – 12/04/2023
Method Used	:	In-house Method, QPL-15e for Total Suspended Solids
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 and Microbiological Division

acumen

Acumen Laboratory and Testing Limited

Flat/Rm D, 12/F, Ford Glory Plaza, Nos. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number : Q230002aR230511

Job Number : R230511

Issue Date : 17/04/2023

Test Result:

Lab ID	Sampling Date	Client Sample ID	Total Suspended Solids (TSS), mg/L
R230511/1	11/04/2023	C1	<1
R230511/2	11/04/2023	C2	<1
R230511/3	11/04/2023	M1	2.2
R230511/4	11/04/2023	M2	2.9
R230511/5	11/04/2023	M3	1.6

Note:
1. mg/L indicates milligram per liter
2. < indicates less than.
3. Reporting limit is 2.5mg/L for 1L sample
4. Reporting limit is 1 mg/L for 2.5L sample
5. Applicant name, applicant address, project name, sampling date, sample ID and sample nature are provided by applicant.
6. The result(s) relate only to the item(s) tested.
7. The result(s) are applied only to the sample(s) received.

End of Report

acumen

Acumen Laboratory and Testing Limited

Flat/Rm D, 12/F, Ford Glory Plaza, Nos. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number	:	Q230002aR230518
Job Number	:	R230518
Issue Date	:	18/04/2023
Applicant Name	:	Acumen Environmental Engineering and Technologies Co, Ltd.
Applicant Address	:	Unit D, 12/F, Ford Glory Plaza, No.37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Project Name	:	CJO-3113-1136
Test Required	:	Total Suspended Solids (TSS)
Sampling Date	:	13/04/2023
Date Samples Received	:	13/04/2023
Sample Nature	:	Water
Number of Samples Received	:	5
Condition Received	:	Sample(s) arrived laboratory in chilled condition
Type of Container	:	HDPE Plastic Bottles
Laboratory ID	:	R230518/1-5
Test Period	:	13/04/2023 – 14/04/2023
Method Used	:	In-house Method, QPL-15e for Total Suspended Solids
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 and Microbiological Division

acumen

Acumen Laboratory and Testing Limited

Flat/Rm D, 12/F, Ford Glory Plaza, Nos. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number : Q230002aR230518

Job Number : R230518

Issue Date : 18/04/2023

Test Result:

Lab ID	Sampling Date	Client Sample ID	Total Suspended Solids (TSS), mg/L
R230518/1	13/04/2023	C1	<1
R230518/2	13/04/2023	C2	<1
R230518/3	13/04/2023	M1	1.2
R230518/4	13/04/2023	M2	<1
R230518/5	13/04/2023	M3	<1

Note:
1. mg/L indicates milligram per liter
2. < indicates less than.
3. Reporting limit is 2.5mg/L for 1L sample
4. Reporting limit is 1 mg/L for 2.5L sample
5. Applicant name, applicant address, project name, sampling date, sample ID and sample nature are provided by applicant.
6. The result(s) relate only to the item(s) tested.
7. The result(s) are applied only to the sample(s) received.

End of Report

acumen

Acumen Laboratory and Testing Limited

Flat/Rm D, 12/F, Ford Glory Plaza, Nos. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number	:	Q230002aR230534
Job Number	:	R230534
Issue Date	:	19/04/2023
Applicant Name	:	Acumen Environmental Engineering and Technologies Co, Ltd.
Applicant Address	:	Unit D, 12/F, Ford Glory Plaza, No.37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Project Name	:	CJO-3113-1138
Test Required	:	Total Suspended Solids (TSS)
Sampling Date	:	15/04/2023
Date Samples Received	:	15/04/2023
Sample Nature	:	Water
Number of Samples Received	:	5
Condition Received	:	Sample(s) arrived laboratory in chilled condition
Type of Container	:	HDPE Plastic Bottles
Laboratory ID	:	R230534/1-5
Test Period	:	15/04/2023 – 16/04/2023
Method Used	:	In-house Method, QPL-15e for Total Suspended Solids
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 and Microbiological Division

acumen

Acumen Laboratory and Testing Limited

Flat/Rm D, 12/F, Ford Glory Plaza, Nos. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number : Q230002aR230534

Job Number : R230534

Issue Date : 19/04/2023

Test Result:

Lab ID	Sampling Date	Client Sample ID	Total Suspended Solids (TSS), mg/L
R230534/1	15/04/2023	C1	1.6
R230534/2	15/04/2023	C2	<1
R230534/3	15/04/2023	M1	1.7
R230534/4	15/04/2023	M2	<1
R230534/5	15/04/2023	M3	<1

Note:
1. mg/L indicates milligram per liter
2. < indicates less than.
3. Reporting limit is 2.5mg/L for 1L sample
4. Reporting limit is 1 mg/L for 2.5L sample
5. Applicant name, applicant address, project name, sampling date, sample ID and sample nature are provided by applicant.
6. The result(s) relate only to the item(s) tested.
7. The result(s) are applied only to the sample(s) received.

End of Report

acumen

Acumen Laboratory and Testing Limited

Flat/Rm D, 12/F, Ford Glory Plaza, Nos. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number	:	Q230002aR230546
Job Number	:	R230546
Issue Date	:	20/04/2023
Applicant Name	:	Acumen Environmental Engineering and Technologies Co, Ltd.
Applicant Address	:	Unit D, 12/F, Ford Glory Plaza, No.37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Project Name	:	CJO-3113-1139
Test Required	:	Total Suspended Solids (TSS)
Sampling Date	:	17/04/2023
Date Samples Received	:	17/04/2023
Sample Nature	:	Water
Number of Samples Received	:	5
Condition Received	:	Sample(s) arrived laboratory in chilled condition
Type of Container	:	HDPE Plastic Bottles
Laboratory ID	:	R230546/1-5
Test Period	:	17/04/2023 – 18/04/2023
Method Used	:	In-house Method, QPL-15e for Total Suspended Solids
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 and Microbiological Division

acumen

Acumen Laboratory and Testing Limited

Flat/Rm D, 12/F, Ford Glory Plaza, Nos. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number : Q230002aR230546

Job Number : R230546

Issue Date : 20/04/2023

Test Result:

Lab ID	Sampling Date	Client Sample ID	Total Suspended Solids (TSS), mg/L
R230546/1	17/04/2023	C1	1.1
R230546/2	17/04/2023	C2	<1
R230546/3	17/04/2023	M1	1.1
R230546/4	17/04/2023	M2	1.1
R230546/5	17/04/2023	M3	<1

Note:
1. mg/L indicates milligram per liter
2. < indicates less than.
3. Reporting limit is 2.5mg/L for 1L sample
4. Reporting limit is 1 mg/L for 2.5L sample
5. Applicant name, applicant address, project name, sampling date, sample ID and sample nature are provided by applicant.
6. The result(s) relate only to the item(s) tested.
7. The result(s) are applied only to the sample(s) received.

End of Report

acumen

Acumen Laboratory and Testing Limited

Flat/Rm D, 12/F, Ford Glory Plaza, Nos. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number	:	Q230002aR230570
Job Number	:	R230570
Issue Date	:	24/04/2023
Applicant Name	:	Acumen Environmental Engineering and Technologies Co, Ltd.
Applicant Address	:	Unit D, 12/F, Ford Glory Plaza, No.37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Project Name	:	CJO-3113-1140
Test Required	:	Total Suspended Solids (TSS)
Sampling Date	:	19/04/2023
Date Samples Received	:	19/04/2023
Sample Nature	:	Water
Number of Samples Received	:	5
Condition Received	:	Sample(s) arrived laboratory in chilled condition
Type of Container	:	HDPE Plastic Bottles
Laboratory ID	:	R230570/1-5
Test Period	:	19/04/2023 – 20/04/2023
Method Used	:	In-house Method, QPL-15e for Total Suspended Solids
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 and Microbiological Division

acumen

Acumen Laboratory and Testing Limited

Flat/Rm D, 12/F, Ford Glory Plaza, Nos. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number : Q230002aR230570

Job Number : R230570

Issue Date : 24/04/2023

Test Result:

Lab ID	Sampling Date	Client Sample ID	Total Suspended Solids (TSS), mg/L
R230570/1	19/04/2023	C1	<1
R230570/2	19/04/2023	C2	<1
R230570/3	19/04/2023	M1	<1
R230570/4	19/04/2023	M2	<1
R230570/5	19/04/2023	M3	<1

Note:
1. mg/L indicates milligram per liter
2. < indicates less than.
3. Reporting limit is 2.5mg/L for 1L sample
4. Reporting limit is 1 mg/L for 2.5L sample
5. Applicant name, applicant address, project name, sampling date, sample ID and sample nature are provided by applicant.
6. The result(s) relate only to the item(s) tested.
7. The result(s) are applied only to the sample(s) received.

End of Report

acumen

Acumen Laboratory and Testing Limited

Flat/Rm D, 12/F, Ford Glory Plaza, Nos. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number	:	Q230002aR230580
Job Number	:	R230580
Issue Date	:	26/04/2023
Applicant Name	:	Acumen Environmental Engineering and Technologies Co, Ltd.
Applicant Address	:	Unit D, 12/F, Ford Glory Plaza, No.37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Project Name	:	CJO-3113-1141
Test Required	:	Total Suspended Solids (TSS)
Sampling Date	:	21/04/2023
Date Samples Received	:	21/04/2023
Sample Nature	:	Water
Number of Samples Received	:	5
Condition Received	:	Sample(s) arrived laboratory in chilled condition
Type of Container	:	HDPE Plastic Bottles
Laboratory ID	:	R230580/1-5
Test Period	:	21/04/2023 – 22/04/2023
Method Used	:	In-house Method, QPL-15e for Total Suspended Solids
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 and Microbiological Division

acumen

Acumen Laboratory and Testing Limited

Flat/Rm D, 12/F, Ford Glory Plaza, Nos. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number : Q230002aR230580

Job Number : R230580

Issue Date : 26/04/2023

Test Result:

Lab ID	Sampling Date	Client Sample ID	Total Suspended Solids (TSS), mg/L
R230580/1	21/04/2023	C1	2.0
R230580/2	21/04/2023	C2	<1
R230580/3	21/04/2023	M1	1.9
R230580/4	21/04/2023	M2	<1
R230580/5	21/04/2023	M3	<1

Note:
1. mg/L indicates milligram per liter
2. < indicates less than.
3. Reporting limit is 2.5mg/L for 1L sample
4. Reporting limit is 1 mg/L for 2.5L sample
5. Applicant name, applicant address, project name, sampling date, sample ID and sample nature are provided by applicant.
6. The result(s) relate only to the item(s) tested.
7. The result(s) are applied only to the sample(s) received.

End of Report

acumen

Acumen Laboratory and Testing Limited

Flat/Rm D, 12/F, Ford Glory Plaza, Nos. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number	:	Q230002aR230592
Job Number	:	R230592
Issue Date	:	27/04/2023
Applicant Name	:	Acumen Environmental Engineering and Technologies Co, Ltd.
Applicant Address	:	Unit D, 12/F, Ford Glory Plaza, No.37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Project Name	:	CJO-3113-1142
Test Required	:	Total Suspended Solids (TSS)
Sampling Date	:	24/04/2023
Date Samples Received	:	24/04/2023
Sample Nature	:	Water
Number of Samples Received	:	5
Condition Received	:	Sample(s) arrived laboratory in chilled condition
Type of Container	:	HDPE Plastic Bottles
Laboratory ID	:	R230592/1-5
Test Period	:	24/04/2023 – 25/04/2023
Method Used	:	In-house Method, QPL-15e for Total Suspended Solids
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 and Microbiological Division

acumen

Acumen Laboratory and Testing Limited

Flat/Rm D, 12/F, Ford Glory Plaza, Nos. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number	:	Q230002aR230592
Job Number	:	R230592
Issue Date	:	27/04/2023

Test Result:

Lab ID	Sampling Date	Client Sample ID	Total Suspended Solids (TSS), mg/L
R230592/1	24/04/2023	C1	<1
R230592/2	24/04/2023	C2	<1
R230592/3	24/04/2023	M1	<1
R230592/4	24/04/2023	M2	<1
R230592/5	24/04/2023	M3	<1

Note:
1. mg/L indicates milligram per liter
2. < indicates less than.
3. Reporting limit is 2.5mg/L for 1L sample
4. Reporting limit is 1 mg/L for 2.5L sample
5. Applicant name, applicant address, project name, sampling date, sample ID and sample nature are provided by applicant.
6. The result(s) relate only to the item(s) tested.
7. The result(s) are applied only to the sample(s) received.

End of Report

acumen

Acumen Laboratory and Testing Limited

Flat/Rm D, 12/F, Ford Glory Plaza, Nos. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number	:	**Q230002aR230616**
Job Number	:	**R230616**
Issue Date	:	**03/05/2023**
Applicant Name	:	**Acumen Environmental Engineering and Technologies Co, Ltd.**
Applicant Address	:	**Unit D, 12/F, Ford Glory Plaza, No.37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong**
Project Name	:	**CJO-3113-1143**
Test Required	:	**Total Suspended Solids (TSS)**
Sampling Date	:	26/04/2023
Date Samples Received	:	26/04/2023
Sample Nature	:	Water
Number of Samples Received	:	5
Condition Received	:	Sample(s) arrived laboratory in chilled condition
Type of Container	:	HDPE Plastic Bottles
Laboratory ID	:	R230616/1-5
Test Period	:	26/04/2023 – 27/04/2023
Method Used	:	In-house Method, QPL-15e for Total Suspended Solids
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 and Microbiological Division

acumen

Acumen Laboratory and Testing Limited

Flat/Rm D, 12/F, Ford Glory Plaza, Nos. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number	:	**Q230002aR230616**
Job Number	:	**R230616**
Issue Date	:	**03/05/2023**

Test Result:

Lab ID	Sampling Date	Client Sample ID	Total Suspended Solids (TSS), mg/L
R230616/1	26/04/2023	C1	2.7
R230616/2	26/04/2023	C2	1.0
R230616/3	26/04/2023	M1	2.2
R230616/4	26/04/2023	M2	<1
R230616/5	26/04/2023	M3	<1

Note:
1. mg/L indicates milligram per liter
2. < indicates less than.
3. Reporting limit is 2.5mg/L for 1L sample
4. Reporting limit is 1 mg/L for 2.5L sample
5. Applicant name, applicant address, project name, sampling date, sample ID and sample nature are provided by applicant.
6. The result(s) relate only to the item(s) tested.
7. The result(s) are applied only to the sample(s) received.

End of Report

acumen

Acumen Laboratory and Testing Limited

Flat/Rm D, 12/F, Ford Glory Plaza, Nos. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number	:	Q230002aR230621
Job Number	:	R230621
Issue Date	:	05/05/2023
Applicant Name	:	Acumen Environmental Engineering and Technologies Co, Ltd.
Applicant Address	:	Unit D, 12/F, Ford Glory Plaza, No.37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Project Name	:	CJO-3113-1144
Test Required	:	Total Suspended Solids (TSS)
Sampling Date	:	28/04/2023
Date Samples Received	:	28/04/2023
Sample Nature	:	Water
Number of Samples Received	:	5
Condition Received	:	Sample(s) arrived laboratory in chilled condition
Type of Container	:	HDPE Plastic Bottles
Laboratory ID	:	R230621/1-5
Test Period	:	28/04/2023 – 29/04/2023
Method Used	:	In-house Method, QPL-15e for Total Suspended Solids
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 and Microbiological Division

acumen

Acumen Laboratory and Testing Limited

Flat/Rm D, 12/F, Ford Glory Plaza, Nos. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Test Report

Report Number : Q230002aR230621

Job Number : R230621

Issue Date : 05/05/2023

Test Result:

Lab ID	Sampling Date	Client Sample ID	Total Suspended Solids (TSS), mg/L
R230621/1	28/04/2023	C1	<1
R230621/2	28/04/2023	C2	<1
R230621/3	28/04/2023	M1	<1
R230621/4	28/04/2023	M2	<1
R230621/5	28/04/2023	M3	<1

Note:
1. mg/L indicates milligram per liter
2. < indicates less than.
3. Reporting limit is 2.5mg/L for 1L sample
4. Reporting limit is 1 mg/L for 2.5L sample
5. Applicant name, applicant address, project name, sampling date, sample ID and sample nature are provided by applicant.
6. The result(s) relate only to the item(s) tested.
7. The result(s) are applied only to the sample(s) received.

End of Report

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. 104

April 2023

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 sinensi*s), 1 no. of Ailanthus (*Ailanthus fordii)* tree, 5 colonies of Lamb of Tartary (*Cibotium barometz)* and 1 no. Hong Kong Eagle's Claw (*Artabotrys hongkongensis)* were recommended to be transplanted in the approved detailed vegetation survey report.

1.4 As planned in the detailed vegetation report, Incense Tree (*Aquilaria sinensi*s) and Ailanthus (*Ailanthus fordii)* trees would 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)* would 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 Tree Report presents survey findings on 30 April 2023. 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); and
- Typhoon information (Annex III).

2. DESCRIPTION OF TREE MONITORING SITE

2.1 Incense Tree (*Aquilaria sinensis*) and Ailanthus (*Ailanthus fordii*) tree were transplanted to the extended compensatory plantation area within existing Sha Tin Water Treatment Works (STWTW). 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). Ploughing 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 was carried out by walking through the transplanting area. Health condition and survival rate were 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 is classified as being **fair**; and
- Transplanted vegetation that was badly damaged or clearly suffering from decay die back or the effects of very heavy vine growth is classified as **poor**.

3.5 Survival rate for each of transplanted vegetation species will be calculated based on site observation.

4. RESULT

4.1 The monthly monitoring inspection was conducted on 30 April 2023.

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

4.3 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.

4.4 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.

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

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

4.7 The transplantation of the 27 nos. of *Cibotium barometz* and the compensatory planting of TA326 and the climber *Artabotrys hongkongensis* have been conducted as detailed in Section 5.

5. MITIGATION MEASURE

5.1 In order to compensate for the loss of the transplanted *Artabotrys hongkongensis* which is in climber growing form, it is recommended to plant an individual of native climber species at the 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 native climber species list to be planted

Common Name	Latin Name	Chinese Name	Growing Form
Climbing Bauhinia	*Bauhinia glauca*	粉葉羊蹄甲	Climber
Spiny-fruited Vine	*Byttneria aspera*	刺果藤	Climber
Bentham's Rose-wood	*Dalbergia benthamii*	兩廣黃檀	Climber
Desmos	*Desmos chinensis*	假鷹爪	Climber
Glaucescent Diploclisia	*Diploclisia glaucescens*	蒼白秤鈎風	Climber
Luofushan Joint-fir	*Gnetum luofuense*	羅浮買麻藤	Climber
Australian Cow-plant	*Gymnema sylvestre*	匙羹藤	Climber
Shining Hypserpa	*Hypserpa nitida*	夜花藤	Climber
Large-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 New small sprouts keep emerging from the two *Desmos chinensis* that have been reported dead previously. Construction materials was also found too close to the planter. An eye-catching protective fence shall be set up as a protection zone. No construction materials shall be placed near/ within the protection zone.

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 An eye-catching protective net has been set up to enclose the 27 nos. transplanted ***Cibotium barometz*** (in groups when planted together) to avoid disturbance/ damage from works activities. Any collapsed shelter and fencing shall be rectified promptly.

5.7 Sign of disturbance by wild boar(s) were found at the two groups of transplanted *Cibotium barometz* previously. A robust fencing was installed so as to prevent them from any further disturbance.

5.8 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.

5.9 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.

5.10 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.

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

5.12 The Incense Tree (*Aquilaria sinensis*) tagged as TA326 was observed dead during inspection on 10 August 2017. Its DBH was measured as 346mm. In accordance with the Tree Preservation, Development Bureau Technical Circular (Works) No. 7/2015, the compensatory planting aimed to achieve the compensatory planting ratio of 1:1 in terms of aggregated DBH.

5.13 In total, 3 individual of native tree species with heavy standard size were planted with 2.5-3 meters (center to center) spacing at compensatory planting site. Recommended list of species was given in the Table 2 below. It was 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 was 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 native tree species list to be planted

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

5.14 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 was completed on 25 March 2021 (Annex I).

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

5.16 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.

5.17 The two mis-planted *Syzygium jambos* were then replaced by another native tree species *Celtis sinensis* chosen from Table 2 due to market availability at that time. Replacement work 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*

5.18 With completion of compensatory planting for the loss of *Artabotrys hongkongensis* and TA0326 (*Aquilaria sinensis*), the survival of the replaced species has been monitored since then (i.e. 2 nos. of *Desmos chinensis*; 1 no. of *Schefflera heptaphylla* and 2 nos. of *Celtis sinensis*).

5.19 Survival of the 27 nos. of Lamb of Tartary (*Cibotium barometz*) transplanted back to STSFWSR has also been monitored too. No more individual was stored at the nursery.

5.20 Health condition and survival rate are 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 have 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 for the loss of *Artabotrys hongkongensis*. Two individuals were planted at Wall C in STWTW on 1 April 2021.

6.4 New small sprouts keep emerging from the two *Desmos chinensis* that have been reported dead previously. Construction materials was also found too close to the planter. An eye-catching protective fence shall be set up as a protection zone. No construction materials shall be placed near/ within the protection zone.

6.5 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. of transplanted *Cibotium barometz* at Portion E of STSFWSR.

6.6 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.

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

6.8 Signs of ploughed soil by wild boar(s) at the two groups of transplanted *Cibotium barometz* were reported in previous monitoring. A robust fencing was recently installed to protect the group of *Cibotium barometz* from further damage caused by wild boars.

6.9 Given that leftover/ garbage was observed nearby, illegal feeding of wild pigs or other wild animals was also suspected to occur. Warning signs of illegal feeding and plant protection zone may be put along the receptor site to remind the hikers. Reporting the case to the relevant government department, i.e. AFCD, is suggested to prevent further aggregation of wild boars in the area.

ANNEX I

Photo

Photo 1. A robust protection zone with eye-catching color was set up in both patches of *Cibotium barometz*.

Photo 2. A protective fence for another patch of *Cibotium barometz*.

Photo 3. Garbage was cleared out of the protection zone

Photo 4. The protective fence provides half-shade for the *Cibotium barometz*.

Photo 5 & 6. All *Cibotium barometz* individuals are now protected by robust fencing and growing in satisfactory condition.

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

Photo 8. Sprouts at lower trunk of TA327 (*Aquilaria sinensis*).

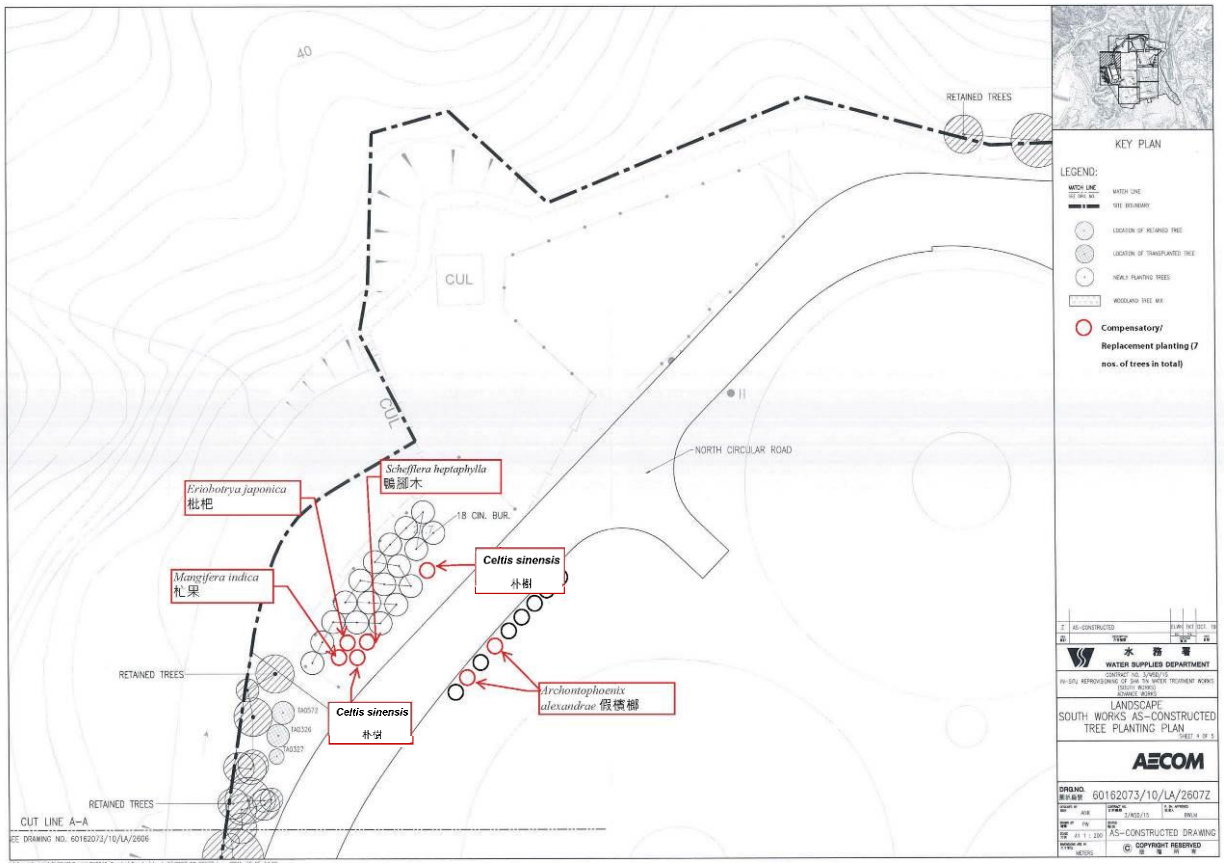
Photo 9. TA572 (*Ailanthus fordii*) was found vigorous and in good condition.

Photo 10. New sprouts keep emerging from the *Desmos chinensis* that reported dead previously.

Photo 11. *Schefflera heptaphylla* as compensatory planting of TA326.

Construction materials nearby have been taken away.	

Photo 12 and 13. 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) as compensatory planting of TA326. *Celtis sinensis* is a deciduous species and they were found producing new leaves. Weeding shall be carried out during routine maintenance work



Indicative location of compensatory planting

ANNEX II

Table for condition of transplanted plant

Fern *Cibotium barometz* and climber *Desmos chinensis*

No.	Species	Condition	Alive/Dead	Remark
1	*Cibotium barometz*	Fair	Alive	27 individuals were transplanted back to STSFWSR on 23 April 2021. The shelter has been repeatedly damaged by wild boars, resulting the plants vulnerable to uprooting. Some individuals were exposed under direct sunlight due to the damage of shelter. A robust protection zone was recently set up in February 2023 which should prevent the plants from further disturbance by the wild boars. Any illegal feeding by hikers shall be reported to AFCD/ hotline 1823.
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*	Poor-Fair	Alive	Two individuals were planted at Wall C in STWTW on 1 April 2021; Resprouted since monitoring made on 30 November 2022
		Survival rate (%)	100	

Transplanted/ compensatory Trees

No.	Species	Condition	Alive/Dead	Remark
TA572	*Ailanthus fordii*	Fair	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*	Fair	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

俊和－方永勝聯營
CW - FWS JV

Name of Department: WSD Contract No.: 6/WSD/21

Monthly Summary Waste Flow Table for 2023 (year)

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 3)	Chemical Waste	Others, e.g. general refuse
	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)
2022	12958.40	0.00	0.00	10000.00	2695.72	207.15	19.43	0.19	0.01	0.00	35.90
Jan-23	964.64	0.00	0.00	957.42	0.00	0.00	0.00	0.02	0.00	0.00	7.20
Feb-23	9404.28	0.00	0.00	7518.52	1880.86	0.00	2.73	0.00	0.00	0.00	2.17
Mar-23	910.01	0.00	0.00	540.37	0.00	332.17	29.73	0.00	0.00	0.00	7.74
Apr-23	5836.62	0.00	0.00	1724.82	2665.37	1404.55	33.84	0.09	0.01	0.00	7.93
May-23											
Jun-23											
Sub-total	17115.55	0	0	10741.13	4546.23	1736.72	66.3023	0.1135	0.0161	0	25.04
Jul-23											
Aug-23											
Sep-23											
Oct-23											
Nov-23											
Dec-23											
Total	30073.95	0.00	0.00	20741.13	7241.95	1943.87	85.74	0.30	0.02	0.00	60.94

Notes: (1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
(2) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material
(3) All recyclable materials, including metals, paper / carboard packaging, plastics, etc. will be collected by registered collector for recycling.
(4) Conversion factors for reporting purpose:
in-situ: rock = 2.5 tonnes/m3; soil = 2.0 tonnes/m3
excavated: rock = 2.0 tonnes/m3; soil = 1.8 tonnes/m3; broken concrete and bitumen = 2.4 tonnes/m3
C&D Waste = 0.9 tonnes/m3; bentonite slurry = 2.8 tonnes/m3

Monthly Summary Waste Flow Table for 2023

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	29.38182	0.14400	0.00000	28.90055	0.33727	0.45850	0.0000	0.00000	0.00000	0.00000	0.01788
Feb	20.99489	0.17365	0.00000	20.69526	0.12598	0.14700	52.3700	0.00000	0.00000	0.00000	0.03906
Mar	25.39687*	1.32622*	0.00000	24.01378*	0.05688	1.25313^	100.8400^	0.00000	0.00000	0.00000	0.02243
Apr	17.07085*	3.00429*	1.00658	12.33760*	0.72238	0.00000*	0.0000*	0.00000	0.00000	0.00000	0.03154
May	0.00000										
Jun	0.00000										
Sub-total	92.84442	4.64816	1.00658	85.94718	1.24250	1.85863	153.2100	0.00000	0.00000	0.00000	0.11092
Jul	0.00000										
Aug	0.00000										
Sep	0.00000										
Oct	0.00000										
Nov	0.00000										
Dec	0.00000										
Total	92.84442	4.64816	1.00658	85.94718	1.24250	1.85863	153.21000	0.00000	0.00000	0.00000	0.11092

Note: ^The waste record for Mar 2023 has been updated.

* The waste record will be updated in the next reporting month.

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 (April 2023)

Air Quality									
Location	**Action Level**				**Limit Level**				**Total**
AM1	0				0				0
AM2	0				0				0
Noise									
Location	**Action Level**				**Limit Level**				**Total**
NM1	0				0				0
NM2	0				0				0
NM3	0				0				0
Water Quality									
Location	**Action Level**				**Limit Level**				**Total**
	DO	**Turbidity**	**SS**	**pH**	**DO**	**Turbidity**	**SS**	**pH**	
C1	0	0	0	0	0	0	0	0	0
C2	0	0	0	0	0	0	0	0	0
C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0
M1	0	0	0	0	0	0	0	0	0
M2	0	0	0	0	0	0	0	0	0
M3	0	0	0	0	0	0	1	0	1

There were 0 exceedance of Action Level and 1 exceedances of Limit Level in April 2023

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	17	4	1	10	7	3	42
C2	0	1	11	1	5	9	6	1	34
C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0
M1	0	1	6	1	7	6	24	7	52
M2	0	0	0	0	9	3	2	0	14
M3	0	0	0	2	10	21	38	0	71

Statistical Summary of Environmental Complaints

Reporting Period	Environmental Complaint Statistics		
	Frequency	**Complaint Nature**	**Cumulative**
1 April – 30 April 2023	0	N/A	4

Statistical Summary of Environmental Summons

Reporting Period	Environmental Summons Statistics		
	Frequency	**Details**	**Cumulative**
1 April – 30 April 2023	0	N/A	0

Statistical Summary of Environmental Prosecution

Reporting Period	Environmental Prosecution Statistics		
	Frequency	**Details**	**Cumulative**
1 April – 30 April 2023	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	IEC (AECOM), ER (AECOM), Contractor (ATAL - CW - MH JV (ACMJV), CW-FWS JV)	Fax No	By-email
From	Oliver Chiu	Date	21 April 2023
Our Ref	CJO - 3113		
RE	Contract No. 1/WSD/19 & 6/WSD/21 In-situ Provisioning of Sha Tin Water Treatment Works (South Works) – Water Treatment Works and Ancillary Facilities – Environmental Team Notification of Exceedance (NOE) for Water Quality Monitoring on 11 April 2023		

Dear Sir/ Madam,

Exceedances of water quality were found in the monitoring on 11 April 2023.
Please find the exceedances in the table below. Investigation report will be submitted separately.

Station	Parameter	Weather	Action Level	Limit Level	Measured Level	Range of Baseline	Exceedance
C1	Suspended Solids (mg/L)	Fine	4.19	6.73	<1	<1 – 9.7	-
C2	Suspended Solids (mg/L)	Fine	4.33	8.16	<1	<1 – 12.0	-
M1	Suspended Solids (mg/L)	Fine	3.30	3.56	2.2	<1 – 4.7	-
M2	Suspended Solids (mg/L)	Fine	18.84	26.80	2.9	<1 - 38	-
M3	Suspended Solids (mg/L)	Fine	1.00	1.00	1.6	<1 – 1.3	Limit Level

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.

Oliver Chiu
Assistant Environmental Consultant

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

Investigation Report on Limit Level Non-compliance on 11 April 2023

CONTRACT NO. 1/WSD/19 & 6/WSD/21
IN-SITU REPROVISIONING OF SHA TIN WATER TREATMENT WORKS (SOUTH WORKS) – WATER TREATMENT WORKS AND ANCILLARY FACILITIES
Date: 26 April 2023

(I) Summary of exceedance on 11 April 2023

Station	Parameter	Weather	Action Level	Limit Level	Measured Level	Range of Baseline	Exceedance
C1	Suspended Solids (mg/L)	Fine	4.19	6.73	<1	<1 – 9.7	-
C2	Suspended Solids (mg/L)	Fine	4.33	8.16	<1	<1 – 12.0	-
M1	Suspended Solids (mg/L)	Fine	3.30	3.56	2.2	<1 – 4.7	-
M2	Suspended Solids (mg/L)	Fine	18.84	26.80	2.9	<1 - 38	-
M3	Suspended Solids (mg/L)	Fine	1.00	1.00	1.6	<1 – 1.3	Limit Level

(II) Investigation Results, Recommendations & Mitigation Measures

1) According to the field observation from the Environmental Team (ET) on 11 April 2023, no polluted discharge was made from construction site to the Impact Monitoring Station M3 (Photo 1). In general, the condition of water at Impact Station M3 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 11 April 2023 to audit the site environmental performance. The overall condition was in compliance.

3) In our investigation on 11 April 2023, the Contractor had implemented water quality mitigation measures (eg. sandbags were put within the site to avoid wastewater from leaking out of the site) and wastewater have been properly treated (Photo 2 & 4). No adverse water quality impact was observed during the site inspection (Photo 3). 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.

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

Photo Record

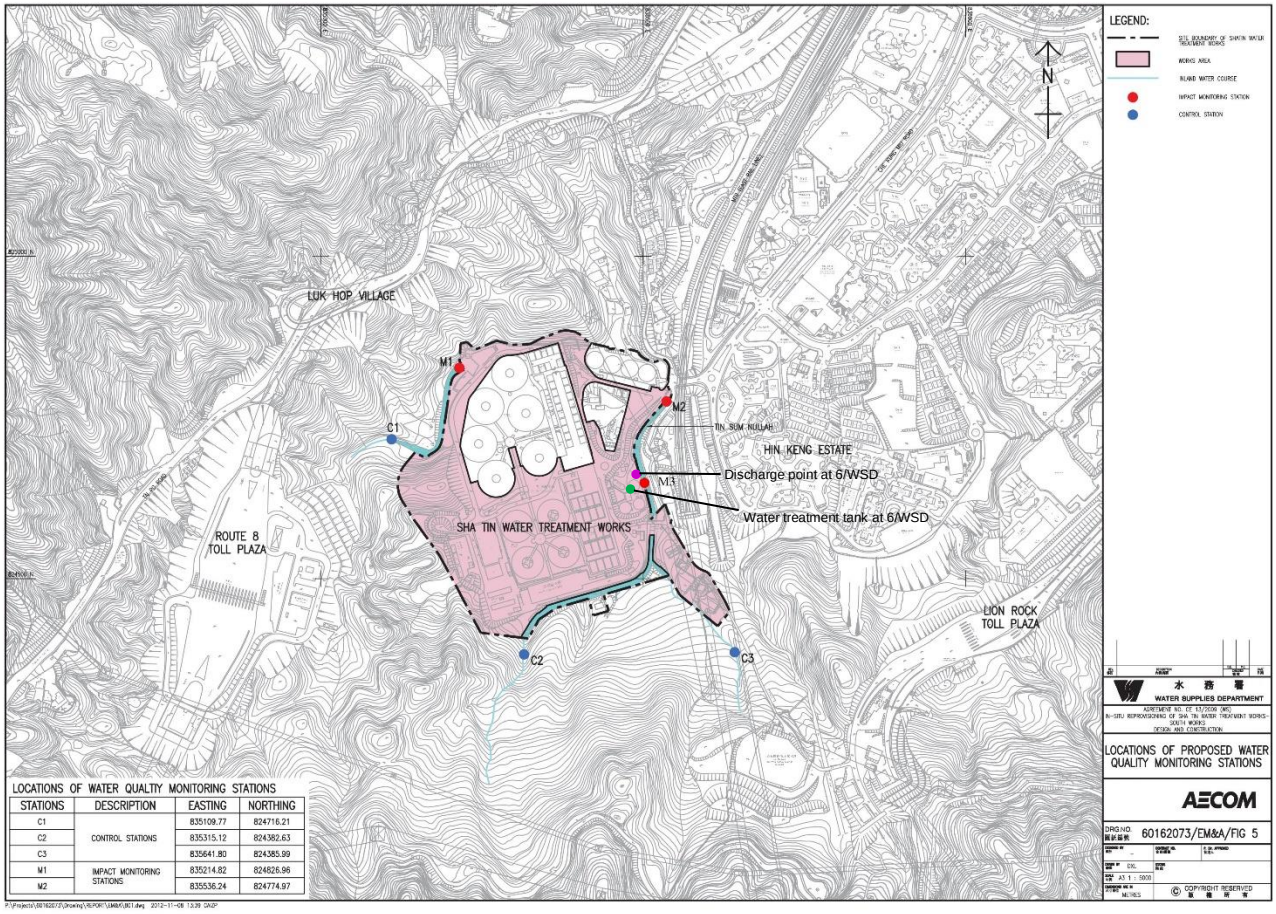
Photo 1 (M3)

Photo 2 (Water quality of water treatment tank at 6/WSD)

Photo 3 (Discharge point at 6/WSD)

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

Photo 4 (Water quality of water treatment tank at 1/WSD)



LOCATIONS OF WATER QUALITY 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

Figure 1 Location Map Water Quality Monitoring Location

Appendix W
Tentative Schedule of Impact Monitoring

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

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

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