

Our Ref.: CJO-3113

15 January 2024

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 94th 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

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 January 2024

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 94th 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 94th 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

Your Ref:
Our Ref: 60479142/C/fyw2401161

By Email

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

Attn: Mr. Edmund Huen

16 January 2024

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 94th Monthly EM&A Report for December 2023

Reference is made to Environmental Team (ET)'s 94th Monthly EM&A Report for December 2023 (Rev. 0) submitted on 10 and 16 January 2024.

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.

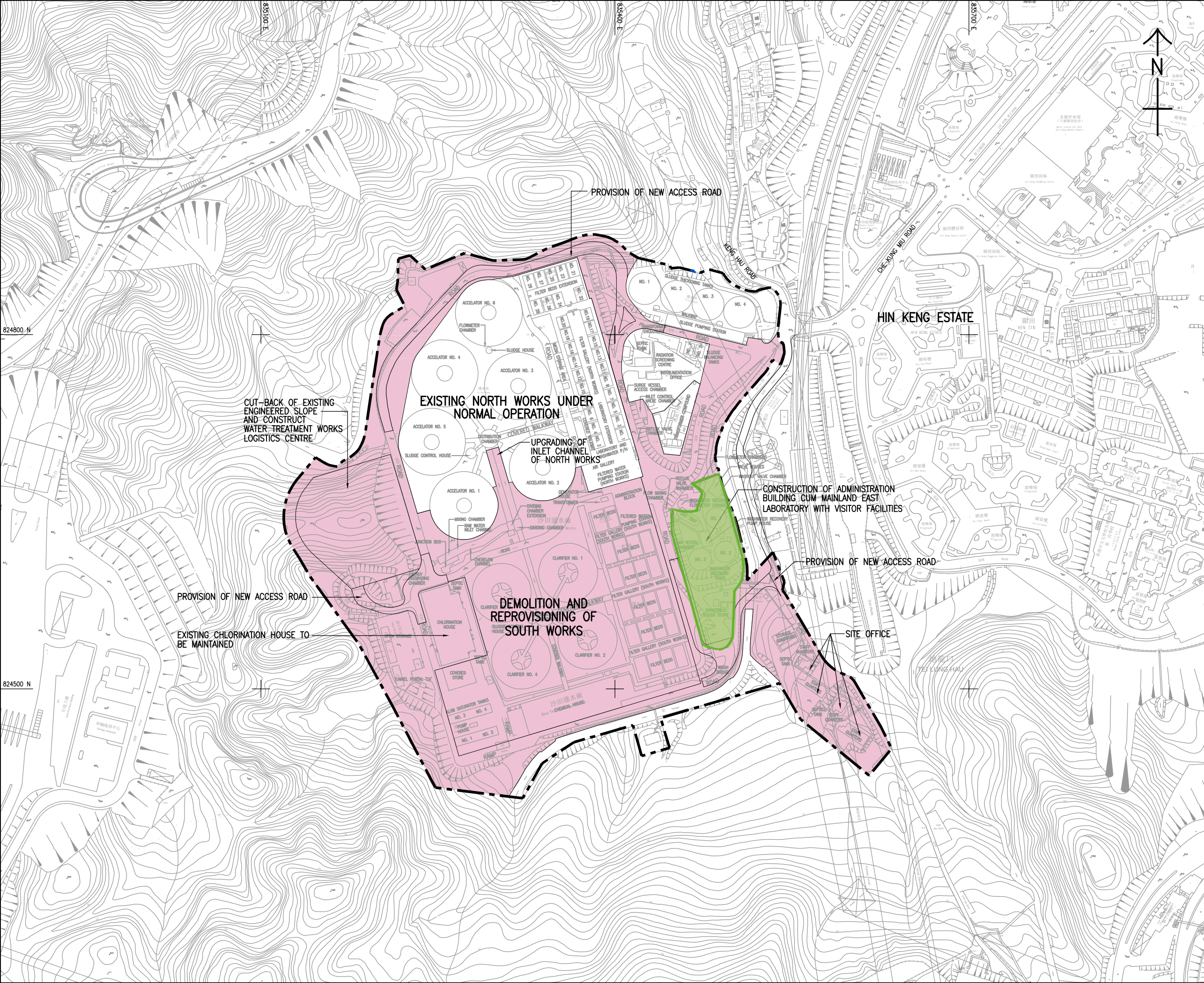


Y W Fung
Independent Environmental Checker

c.c. Environmental Team Leader (via email)

Appendix A

General Layout Plan



LEGEND:

--- SITE BOUNDARY OF SHA TIN WATER TREATMENT WORKS

WORKS AREA

1/WS/19

6/WS/21

REV.	DESCRIPTION	BY	CHK.	DATE
1	1/WS/19			
2	6/WS/21			

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. 60162073/EM&A/FIG 1

DESIGNED BY	CONTRACT NO.	P. O. APPROVED
GXH	60162073	

SCALE: A3 1 : 3000

CONTRIBUTOR: METRES

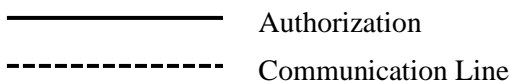
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Appendix B

Project Organization

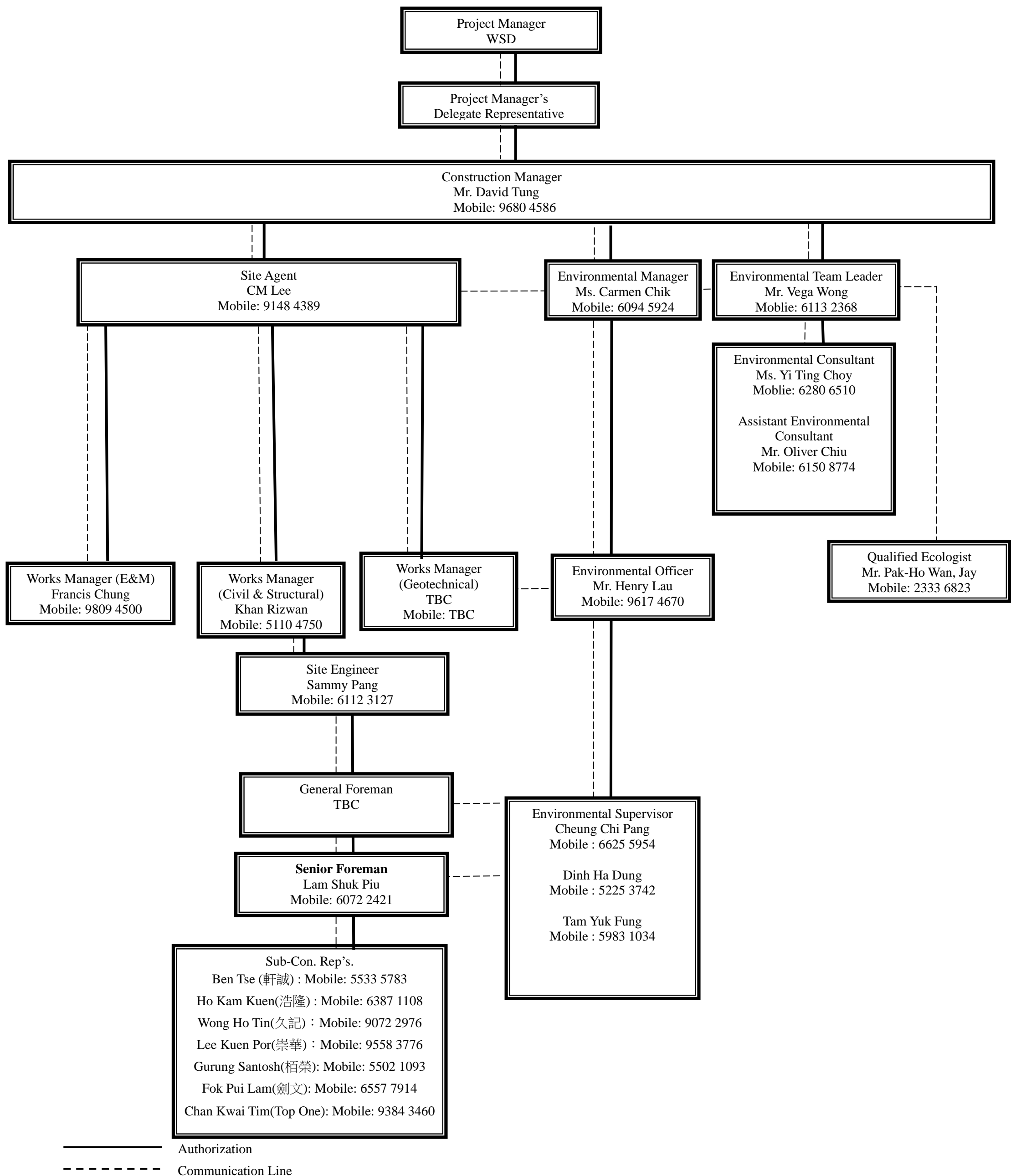
– Water Treatment Works and Ancillary Facilities

Date: 31 Mar 2023



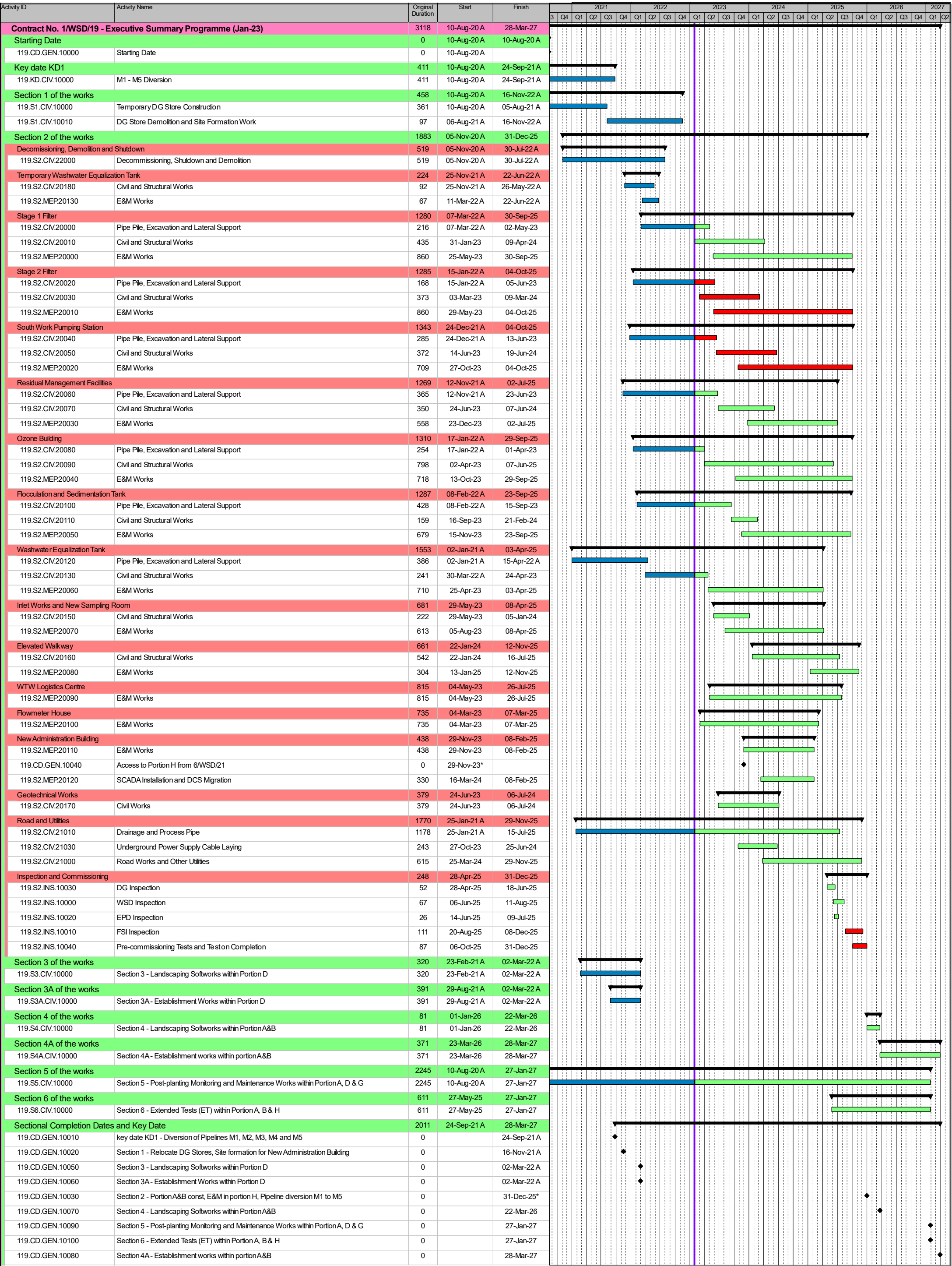
- **Administration Building**

Environmental Organizational Chart (2023.03)



Appendix C

Latest Construction Programme



C. ID	Activity Name		Dur.	Start	Finish	Total Float	Late Start	Late Finish	Working Calendars	2022												2023												2024												2025												2026												2027												2028																								
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 within 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 Refurbishment 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																																																																																																	

<ul style="list-style-type: none"> ◆ Milestone ▬ Near Critical Task ▬ Critical Task ▬ Time Risk AL 	<ul style="list-style-type: none"> ▬ Non-Critical Task ▬ Finished Task ▬ Tasks Summary ▬ P6 Hammock 	<h1 style="text-align: center;">FIRST PROGRAMME REV. 1</h1> <h2 style="text-align: center;">ALL ACTIVITIES</h2>				<table border="1"> <thead> <tr> <th>Date</th> <th>Revision</th> <th>Checked</th> <th>Approved</th> </tr> </thead> <tbody> <tr> <td>03-Nov-21</td> <td>Revision 0 First Issue</td> <td>AH</td> <td>WJ</td> </tr> <tr> <td>19-Jan-22</td> <td>Revision 1 First Issue</td> <td>PF</td> <td>AH</td> </tr> <tr> <td>08-Feb-22</td> <td>Revision 2 First Issue</td> <td></td> <td></td> </tr> </tbody> </table>	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		
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																					

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◆ Milestone	Non-Critical Task	<div style="text-align: center;"> <h2 style="color: red;">FIRST PROGRAMME REV. 1</h2> <h2 style="color: red;">ALL ACTIVITIES</h2> </div>	 <div style="text-align: center;">  <p>俊和 CHUN WO</p> </div>	Date	Revision	Checked	Approved
— Near Critical Task	Finished Task			03-Nov-21	Revision 0 First Issue	AH	WJ
Critical Task	Tasks Summary			19-Jan-22	Revision 1 First Issue	PF	AH
Time Risk AL	P6 Hammock			08-Feb-22	Revision 2 First Issue		

[illegible]

<div> <div>◆ Milestone</div> <div>■ Non-Critical Task</div> <div>■ Near Critical Task</div> <div>■ Critical Task</div> <div>■ Time Risk AL</div> </div> <div> <div>■ Finished Task</div> <div>■ Tasks Summary</div> <div>■ P6 Hammock</div> </div>	<div> <div>FIRST PROGRAMME REV. 1</div> <div>ALL ACTIVITIES</div> </div>	<div>   </div>	<table border="1"> <thead> <tr> <th>Date</th> <th>Revision</th> <th>Checked</th> <th>Approved</th> </tr> </thead> <tbody> <tr> <td>03-Nov-21</td> <td>Revision 0 First Issue</td> <td>AH</td> <td>WJ</td> </tr> <tr> <td>19-Jan-22</td> <td>Revision 1 First Issue</td> <td>PF</td> <td>AH</td> </tr> <tr> <td>08-Feb-22</td> <td>Revision 2 First Issue</td> <td></td> <td></td> </tr> </tbody> </table>	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		
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08-Feb-22	Revision 2 First Issue																		

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◆ Milestone	Non-Critical Task	<div>   </div>	Date	Revision	Checked	Approved
Near Critical Task	Finished Task		03-Nov-21	Revision 0 First Issue	AH	WJ
Critical Task	Tasks Summary		19-Jan-22	Revision 1 First Issue	PF	AH
Time Risk AL	P6 Hammock		08-Feb-22	Revision 2 First Issue		

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◆ Milestone	Non-Critical Task	 	Date	Revision	Checked	Approved
Near Critical Task	Finished Task		03-Nov-21	Revision 0 First Issue	AH	WJ
Critical Task	Tasks Summary		19-Jan-22	Revision 1 First Issue	PF	AH
Time Risk AL	P6 Hammock		08-Feb-22	Revision 2 First Issue		

[illegible]

◆ Milestone	Non-Critical Task	<div style="text-align: center;"> <h1>FIRST PROGRAMME REV. 1</h1> <h2>ALL ACTIVITIES</h2> </div>	 	Date	Revision	Checked	Approved
Near Critical Task	Finished Task			03-Nov-21	Revision 0 First Issue	AH	WJ
Critical Task	Tasks Summary			19-Jan-22	Revision 1 First Issue	PF	AH
Time Risk AL	P6 Hammock			08-Feb-22	Revision 2 First Issue		

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◆ Milestone	Non-Critical Task	 	Date	Revision	Checked	Approved
Near Critical Task	Finished Task		03-Nov-21	Revision 0 First Issue	AH	WJ
Critical Task	Tasks Summary		19-Jan-22	Revision 1 First Issue	PF	AH
Time Risk AL	P6 Hammock		08-Feb-22	Revision 2 First Issue		

C. ID	Activity Name	Dur.	Start	Finish	Total Float	Late Start	Late Finish	Working Calendars	2022												2023												2024												2025												2026												2027												2028
									N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F																					
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	<div><div></div><div>FSD - DG Drawings First Submission</div></div>																																																																								
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	<div><div></div><div>FSD - DG Drawings Second Amendment</div></div>																																																																								
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	<div><div></div><div>FSD - DG Drawings Third Amendment</div></div>																																																																								
WSD-IA-F04	FSD - DG Inspection & Rectification	30	15-Mar-24	13-Apr-24	219	20-Oct-24	18-Nov-24	7d/w x10	<div><div></div><div>FSD - DG Inspection & Rectification</div></div>																																																																								
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	<div><div></div><div>FSD - VD Review & Inspection/ Rectification Works</div></div>																																																																								
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	<div><div></div><div>FSD - VD issue letter of compliance</div></div>																																																																								
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	<div><div></div><div>FSD - Issue of DG License</div></div>																																																																								
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	<div><div></div><div>EPD - EPD Drawing Submission & Approval</div></div>																																																																								
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	<div><div></div><div>EPD - Site Inspection & Rectification Works</div></div>																																																																								
WSD-IA-E03	EPD - Approval Issue	6	06-Aug-24	11-Aug-24	153	06-Jan-25	11-Jan-25	7d/w x10	<div><div></div><div>EPD - Approval Issue</div></div>																																																																								
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	<div><div></div><div>WSD - Submit WWO 46 Part IV (PD) & Arrange Inspection by WSD</div></div>																																																																								
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	<div><div></div><div>WSD - Site Inspection & Rectification Works by WSD (PD)</div></div>																																																																								
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	<div><div></div><div>WSD - Issue WWO 46 Part V (PD)</div></div>																																																																								
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	<div><div></div><div>WSD - Submit WWO 46 Part IV (FS) & Arrange Inspection by WSD</div></div>																																																																								
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	<div><div></div><div>WSD - Site Inspection & Rectification Works by WSD (FS)</div></div>																																																																								
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	<div><div></div><div>WSD - Issue WWO 46 Part V (FS)</div></div>																																																																								
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	<div><div></div><div>FSD - Submit Form FS251/314/501</div></div>																																																																								
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	<div><div></div><div>FSD - FSD processes Form 215/314/501 & arranging for Inspection</div></div>																																																																								
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	<div><div></div><div>FSD - FS Inspection, Rectification and Reinspection</div></div>																																																																								
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	<div><div></div><div>FSD - FSD processes FS Certificate Form 172</div></div>																																																																								
WSD-IA-OP01d	FSD - Issued Form 172 Issued by FSD (Fire Certificate)	0		08-Mar-25	0		08-Mar-25	7d/w x10	<div><div></div><div>FSD - Issued Form 172 Issued by FSD (Fire Certificate)</div></div>																																																																								
WSD-IA-OP02	BD - Submit Form BA13	0	27-Feb-25		0	27-Feb-25		7d/w x10	<div><div></div><div>BD - Submit Form BA13</div></div>																																																																								
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	<div><div></div><div>BD - BD processes Form BA13 & Arranging for Inspection</div></div>																																																																								
WSD-IA-OP04	BD - Inspection & Rectification Works	28	13-Mar-25	09-Apr-25	0	13-Mar-25	09-Apr-25	7d/w x10	<div><div></div><div>BD - Inspection & Rectification Works</div></div>																																																																								
WSD-IA-OP05	BD - Issue OP Certificate	14	10-Apr-25	23-Apr-25	0	10-Apr-25	23-Apr-25	7d/w x10	<div><div></div><div>BD - Issue OP Certificate</div></div>																																																																								
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	<div><div></div><div>Final Inspection & Handover to Client</div></div>																																																																								
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	<div><div></div><div>G.Roof 2/F Level - Construction of Planter Separation</div></div>																																																																								
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	<div><div></div><div>G.Roof 2/F Level - Installation of Irrigation Pipeworks & Irrigation Point</div></div>																																																																								
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	<div><div></div><div>G.Roof 2/F Level - Laying of Waterproof Membrane with Protection Screeding & Root Barrier</div></div>																																																																								
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	<div><div></div><div>G.Roof 2/F Level - Laying of Drainage, Filter, Moisture Retention Membrane, Erosion Protection Mat</div></div>																																																																								
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	<div><div></div><div>G.Roof 2/F Level - Filling of Soil Layer</div></div>																																																																								
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	<div><div></div><div>G.Roof 2/F Level - Vegetation/ Planting</div></div>																																																																								
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	<div><div></div><div>G.Roof 2/F Level - Installation of Paving Stones on Walkway</div></div>																																																																								
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	<div><div></div><div>G.Roof 2/F Level - Installation Lighting</div></div>																																																																								
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	<div><div></div><div>G.Roof R/F Level - Construction of Planter Separation</div></div>																																																																								
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	<div><div></div><div>G.Roof R/F Level - Installation of Irrigation Pipeworks & Irrigation Point</div></div>																																																																								
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	<div><div></div><div>G.Roof R/F Level - Laying of Waterproof Membrane with Protection Screeding & Root Barrier</div></div>																																																																								
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	<div><div></div><div>G.Roof R/F Level - Laying of Drainage, Filter, Moisture Retention Membrane, Erosion Protection Mat</div></div>																																																																								
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	<div><div></div><div>G.Roof R/F Level - Filling of Soil Layer</div></div>																																																																								
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	<div><div></div><div>G.Roof R/F Level - Turf Laying on Roof</div></div>																																																																								
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	<div><div></div><div>G.Roof R/F Level - Installation of Paving Stones on Walkway</div></div>																																																																								

<p>◆ Milestone</p> <p>■ Near Critical Task</p> <p>■ Critical Task</p> <p>■ Time Risk AL</p>	<p>■ Non-Critical Task</p> <p>■ Finished Task</p> <p>■ Tasks Summary</p> <p>■ P6 Hammock</p>	<p>FIRST PROGRAMME REV. 1</p> <p>ALL ACTIVITIES</p>		 	<table border="1"> <thead> <tr> <th>Date</th> <th>Revision</th> <th>Checked</th> <th>Approved</th> </tr> </thead> <tbody> <tr> <td>03-Nov-21</td> <td>Revision 0 First Issue</td> <td>AH</td> <td>WJ</td> </tr> <tr> <td>19-Jan-22</td> <td>Revision 1 First Issue</td> <td>PF</td> <td>AH</td> </tr> <tr> <td>08-Feb-22</td> <td>Revision 2 First Issue</td> <td></td> <td></td> </tr> </tbody> </table>	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		
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																				

[illegible]

◆ Milestone

▬ Near Critical Task

▬ Critical Task

▬ Time Risk AL

▬ Non-Critical Task

▬ Finished Task

▬ Tasks Summary

▬ P6 Hammock

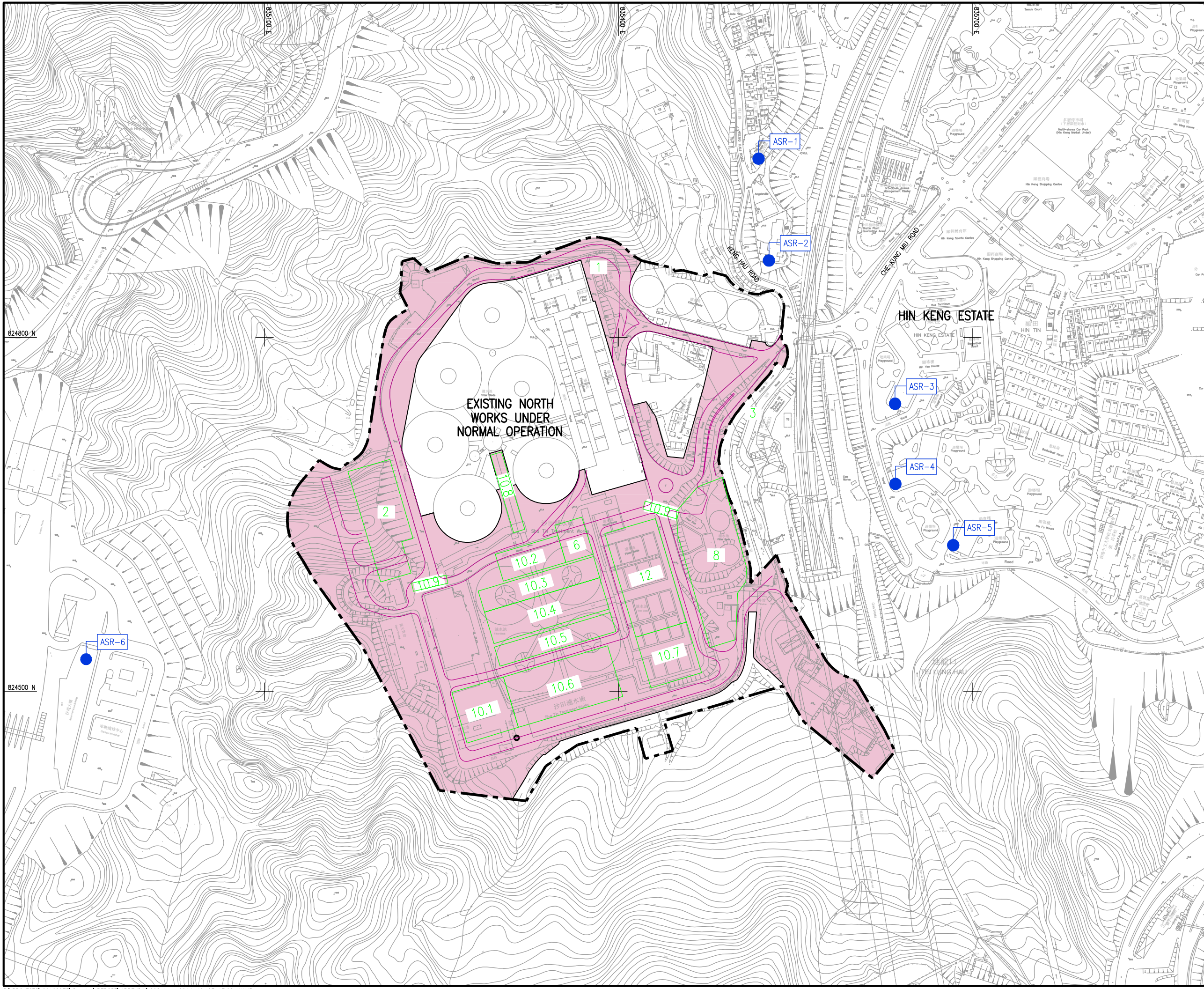
FIRST PROGRAMME REV. 1

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		

Appendix D

Location of Construction Activities



LEGEND:

1

2

3

6

8

10

10.1

10.2

10.3

10.4

10.5

10.6

10.7

10.8

10.9

12

13

SITE BOUNDARY OF SHA TIN WATER TREATMENT WORKS

WORKS AREA

RESPRESENTATIVE AIR SENSITIVE RECEIVERS (ASRS)

THE BLOSSOM PHASE 4

THE L LOUEY

HIN KENG ESTATE – HIN YAU HOUSE

HIN KENG ESTATE – HIN WAN HOUSE

HIN KENG ESTATE – HIN KWAI HOUSE

SHA TIN HEIGHT TUNNEL ADMINISTRATION BUILDING

RETAINING WALL AND NEW ACCESS ROAD

WATER TREATMENT WORKS LOGISTICS CENTRE

UPGRADED MAIN ENTRY ROAD

WASHWATER EQUALIZATION TANKS (NORTH WORKS)

DEMOLITION OF EXISTING WASHWATER RECOVERY TANKS

CONSTRUCTION OF SOUTH WORKS

RESIDUAL MANAGEMENT FACILITIES

PRE-OZONATION HOUSE AND COAGULATION TANKS

FLOCCULATION TANKS

HIGH RATE SEDIMENTATION TANKS

INTERMEDIATE OZONATION HOUSE

STAGE 1 BIOLOGICAL FILTERS

SOUTH WORKS PUMPING STATION

INLET CHANNEL STATIC MIXERS (NORTH WORKS)

PEDESTRIAN WALKWAY

STAGE 2 GRANULAR MEDIA FILTERS & UV REACTORS

OPERATION OF HAUL ROAD

REV.	DESCRIPTION	DATE	BY	CHECKED	DATE
1	ISSUED FOR TENDER	2014-10-23	YANJP		

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	CONTRACT NO.	P. NO. APPROVED
NHP	60162073	1

SCALE
比例尺

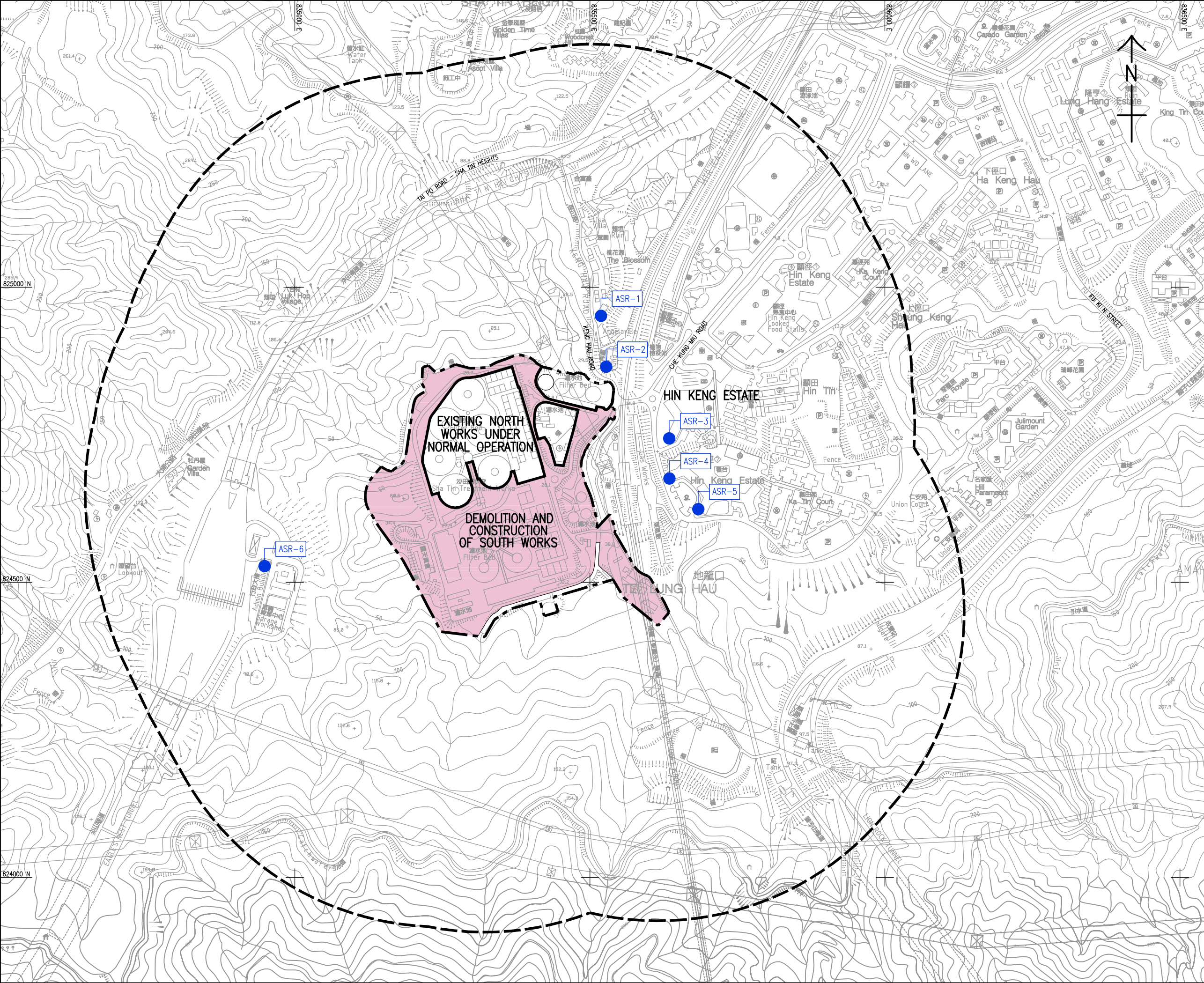
A3 1 : 3000

CONSTRUCTION AREA IN METRES

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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	DESCRIPTION	BY	CHK	DATE
01	ISSUED FOR TENDER			

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

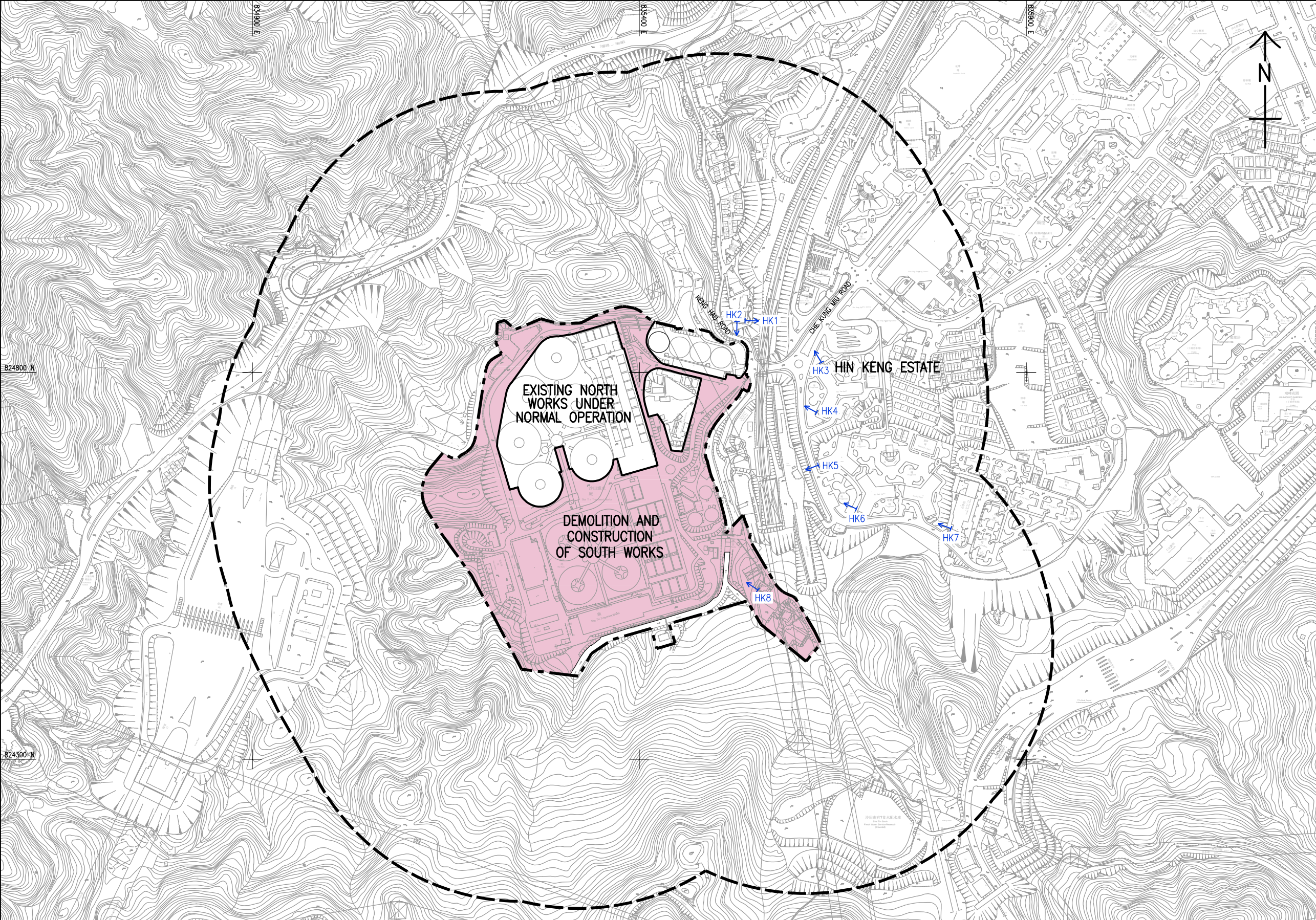
圖紙編號

60162073/EIA/FIG 4.1

DESIGNED BY	CONTRACT NO.	P. R. APPROVED
CHK	合約編號	批准人
DRAWN BY	STATUS	
繪圖	階段	
SCALE		
比例		
CONVERSION ARE IN		
尺寸單位		
METRES		

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LEGEND:

HK1

SITE BOUNDARY OF SHA TIN WATER TREATMENT WORKS

300m STUDY AREA

WORKS AREA

REPRESENTATIVE NOISE SENSITIVE RECEIVERS

N

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	Y

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 設計人

CONTRACT NO. 合約編號

P. E. APPROVED 專業人士

DRAWN BY 繪圖人

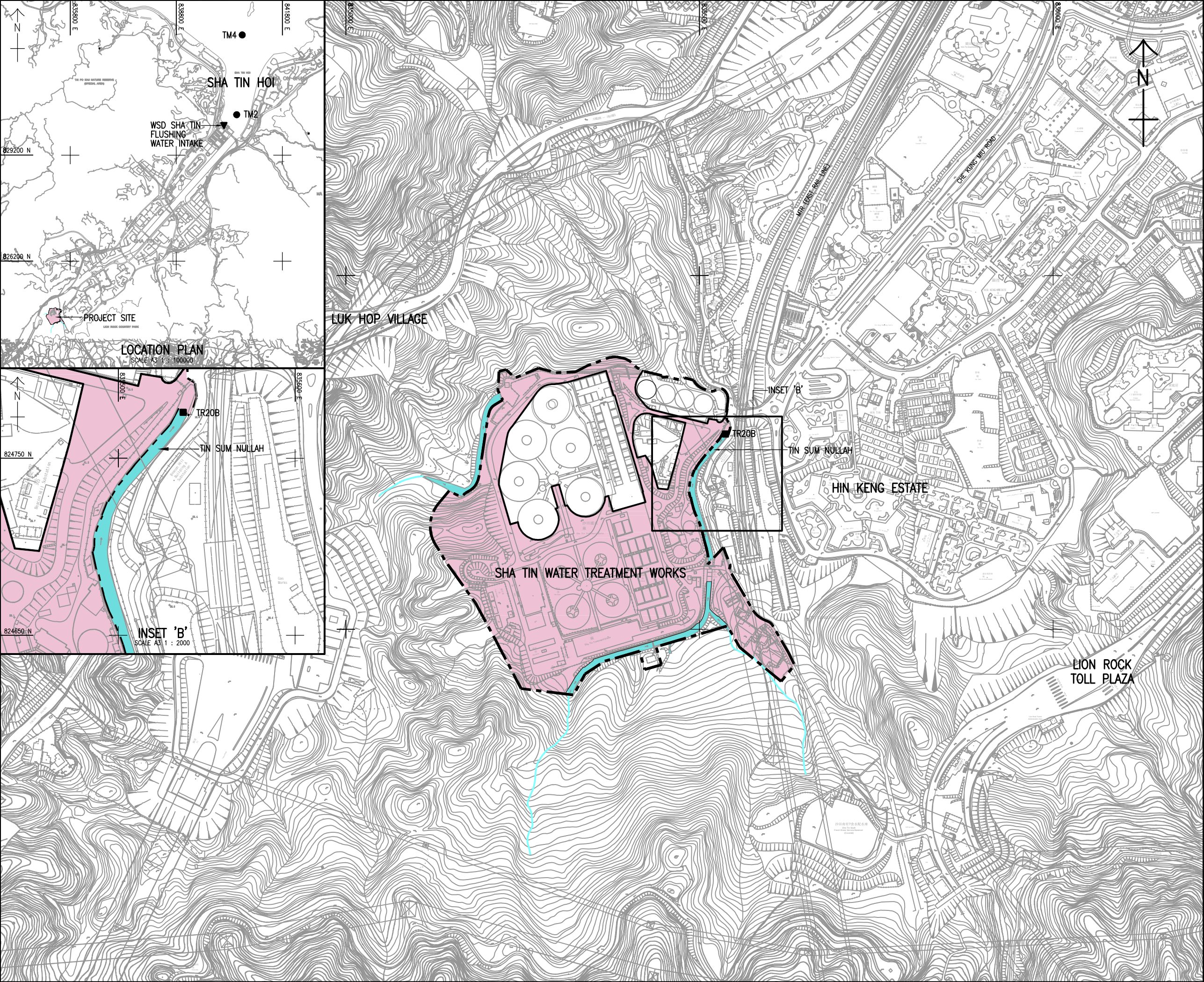
SCALE 比例尺

CONSTRUCTION AREA IN METRES 工程範圍以公尺計

A3 1 : 5000

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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.	DESCRIPTION	BY	CHKD	DATE
001	INITIAL DESIGN			

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. 60162073/EIA/FIG 6.1
圖紙編號

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

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Appendix F

Summary of Action and Limit Levels

Determination of Action and Limit Levels for Air Quality

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

Determination of Action and Limit Levels for Noise

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

Determination of Action and Limit Levels for Water Quality

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

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

Appendix G

Event/Action Plan

Air Quality

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

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

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

EVENT	ACTION			
	ET Leader	IEC	ER	CONTRACTOR
Action level being exceeded by one sampling day	<ul style="list-style-type: none"> ● Repeat <i>in situ</i> 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. 	<ul style="list-style-type: none"> ● 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. 	<ul style="list-style-type: none"> ● 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. 	<ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ● Repeat <i>in situ</i> 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; 	<ul style="list-style-type: none"> ● 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. 	<ul style="list-style-type: none"> ● 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. 	<ul style="list-style-type: none"> ● 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.

	<ul style="list-style-type: none"> ● Repeat measurement on next day of exceedance. 			
	ET Leader	IEC	ER	CONTRACTOR
Limit level being exceeded by one sampling day	<ul style="list-style-type: none"> ● Repeat <i>in situ</i> 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; 	<ul style="list-style-type: none"> ● 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. 	<ul style="list-style-type: none"> ● 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. 	<ul style="list-style-type: none"> ● 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.

	<ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ● Repeat <i>in situ</i> 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 	<ul style="list-style-type: none"> ● 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. 	<ul style="list-style-type: none"> ● 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 	<ul style="list-style-type: none"> ● 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.	<ul style="list-style-type: none">● As directed by the ER, to slow down or to stop all or part of the construction activities.
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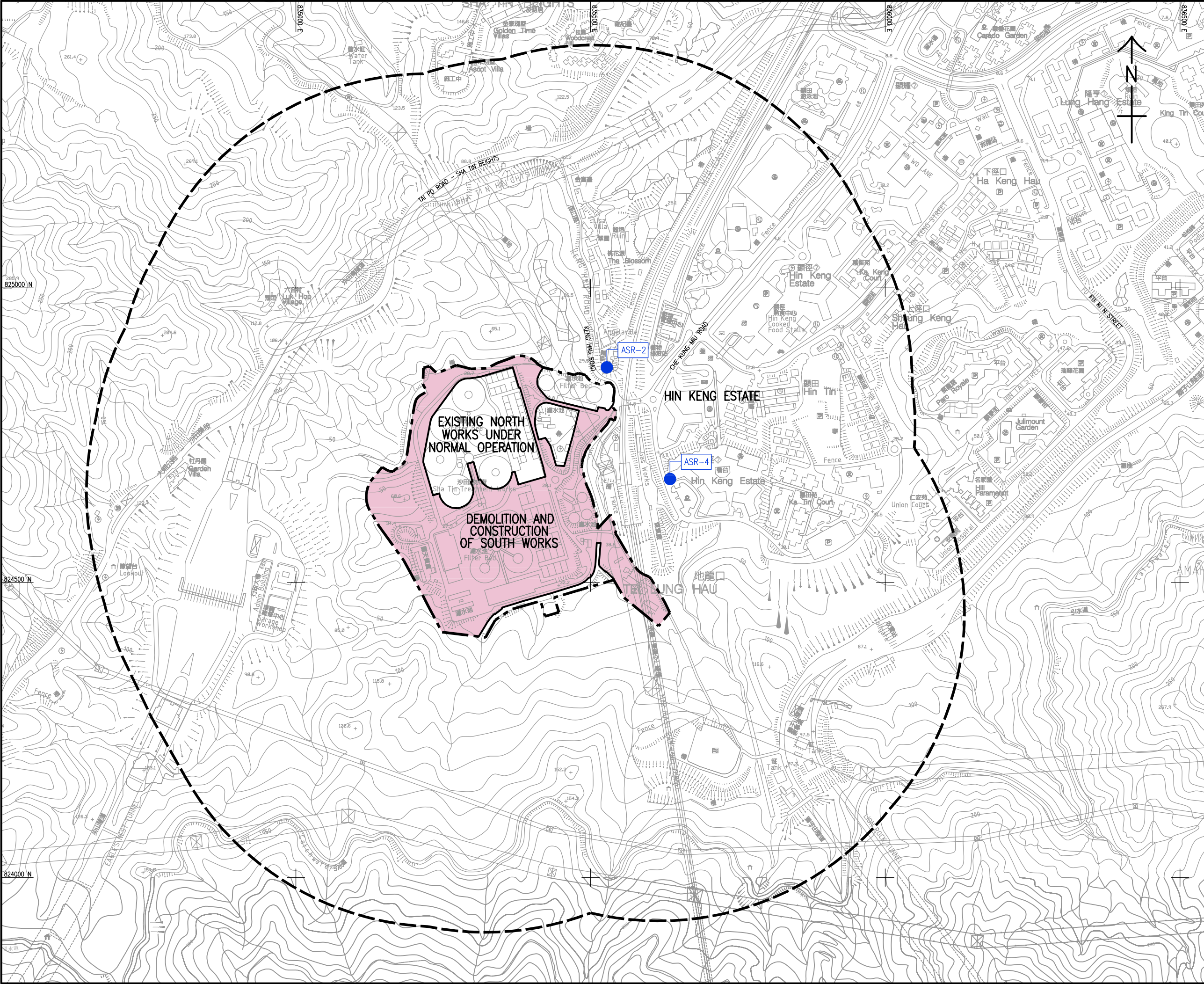
Appendix H

Impact Monitoring Schedules

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



Appendix I

Location Plan of Air Quality Monitoring Station



LEGEND:

- SITE BOUNDARY OF SHA TIN WATER TREATMENT WORKS
- STUDY AREA (500m BOUNDARY)
- WORKS AREA
- REPRESENTATIVE 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 繪圖	CHK 校核	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 PROPOSED DUST MONITORING STATIONS				
				
DRG.NO. 圖紙編號 60162073/EM&A/FIG 3				
DESIGNED BY 設計	CONTRACT NO. 合約編號	P. R. APPROVED 批准人		
DRAWN BY 繪圖	NHP	STATUS 階段		
SCALE 比例		DRAWING AREA IN 圖紙範圍		
A3 1 : 6000		METRES 公尺		
© COPYRIGHT RESERVED 版權所有				

Appendix J

Calibration Certificates

(Air Monitoring)



Certificate of Conformity

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

Methods Used in Calibration and Testing

Wind Speed:

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

Temperature:

Temperature response is verified in comparison with a Eutechnics 4600 Precision Thermometer or a standard Kestrel 4000 Weather and Environmental Meter calibrated weekly against the Eutechnics 4600. The Eutechnics 4600 is calibrated annually and is traceable to NIST with a system accuracy of $\pm 0.05^\circ\text{C}$.

Direction / Heading

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

Relative Humidity:

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

Barometric Pressure:

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

Approved By:

Michael Naughton, Engineering Manager

SENSORS																				
SENSOR	1000	2000	2500	3000	3500	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 ft	0.6 to 40.0 m/s 110 to 7874 ft/min 2.2 to 144.0 km/h 1.3 to 89.5 mph 1.2 to 77.6 knots 0 to 12 ft	0.6 to 60.0 m/s 110 to 11811 ft/min 2.2 to 216.0 km/h 1.3 to 134.2 mph 1.2 to 116.6 knots 0 to 12 ft	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 (0.9 mph) 0.8 m/s after impeller startup. Off-axis accuracy: ±1% @ 90° off-axis, ±2% @ 10° & 15°. Calibration drift < 1% after 100 hours use at 16 MPH (7 m/s). Replacement impeller (NK-PN-0801) fits impeller without tools (US Patent 5,763,753). 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 insulation 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 ftH ₂ O 0.01 PSI	0.01 inHg 0.1 ftH ₂ O 0.01 PSI	8.86 to 32.49 inHg 300.0 to 1100.0 ftH ₂ O 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 ftH ₂ O 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	4000	4200	4250	4300	4400	4500	4500 HOR	ACCURACY (+/-)°	RESOLUTION	SPECIFICATION RANGE	SENSORS EMPLOYED	NOTES			
Air Density							•	•					0.0002 lb/ft ³ 0.0003 kg/m ³	0.001 lb/ft ³ 0.001 kg/m ³	Refer to Ranges for Sensors Employed	Temperature Relative Humidity Pressure	Mass of air per unit volume			
Air Flow							•						6.71%	1 m ³ /hr 0.1 m ³ /s 1 L/s	Refer to Ranges for Sensors Employed	Air Flow User Input (Duct Shape & Size)	Volume of air flowing through an opening. Automatically calculated from Air Velocity measurement and user-specified duct shape (circle or rectangle) and dimensions (units: ft, in, cm or m). Maximum duct dimension input: 258.0 in (215 ft) (655.3 cm) (6.55 m).			
Altitude	•	•	•	•	•	•	•	•	•	•	•	•	typical: 23.8 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 ftH ₂ O 0.03 PSI	0.01 inHg 0.1 ftH ₂ O 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											•	•	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 bar/ft 0.06 kg/m ² /hr	0.01 bar/ft 0.01 kg/m ² /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 thermometer 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 g/g g/kg	0.1 g/g 0.01 g/kg	Refer to Ranges for Sensors Employed	Temperature Relative Humidity Pressure	Mass of water vapor in a mass of air.			
Relative Air Density											•		0.3%	0.1%	Refer to Ranges for Sensors Employed	Temperature Relative Humidity Pressure	The ratio, expressed as a percentage, of measured air density to the air density of a standard atmosphere as defined by the ICAO.			
Thermal Work Limit (TWL)											•		10.9 W/m ²	0.1 W/m ²	Refer to Ranges for Sensors Employed	Wind Speed Temperature Globe Temperature Relative Humidity Pressure	Estimated safe maximum continuously sustainable human metabolic rate (W/m ²) 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 (Tw _n), globe temperature (Tg), and dry bulb temperature (Td). User selectable on-screen warning zones.			
Wet Bulb Temperature - Naturally Aspirated (Tw _n)											•		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, Tw _n only undergoes forced convection from the ambient air velocity. Tw _n 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 0.25 in / 9 mm. Aviation green electroluminescent backlight. Manual activation with auto-off.					Reflective 5 digit LCD. Digit height 0.36 in / 9 mm. Choice of aviation green or visible red (NV models only) electroluminescent backlight. Manual activation with auto-off.		
Response Time & Display Update	•	•	•	•	•	•	•	•	•	•	•	•	Multi-function, multi-digit monochrome dot-matrix display. Choice of aviation green or visible red (NV models only) electroluminescent backlight. Automatic or manual activation.					All measurements except those based on relative humidity respond accurately within 1 second. Relative humidity and all measurements which include RH in their calculation may require as long as 1 minute to fully equilibrate to a large change in the measurement environment. Display updates every 1 second.		
Max/Avg Wind													One-button clear and restart of Max Wind Gust and Average Wind measurement.					Max and average wind calculation may be started and stopped independently of data logging of other values, along with all other wind-related functions: air velocity, crosswind, headwind/tailwind, wind chill, WBGT, TWL, evaporation rate.		
Data Storage & Graphical Display, Min/Max/Avg History							4000 points	3200 points	3200 points	3600 points	2300 points	2000 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.					Requires optional PC interface (USB or RS-232) or Bluetooth data transfer option and provided software.		
Data Upload & Bluetooth® Data Connect Option													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.					Requires optional PC interface (USB or RS-232) or Bluetooth data transfer option and provided software.		
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.							
Shock Resistance	•	•	•	•	•	•	•	•	•	•	•	•	Standard Models: AAA Alkaline, two, included. Average life, 400 hours of use, reduced by backlight or Bluetooth radio transmission use.							
Sealing	•	•	•	•	•	•	•	•	•	•	•	•	MIL-STD-883C, Transil Shock, Method 516.5 Procedure IV, unit only, impact may damage replaceable impeller.							
Operational Temperature Limits	•	•	•	•	•	•	•	•	•	•	•	•	Waterproof (IP67) and NEMA-6.							
Storage Temperature	•	•	•	•	•	•	•	•	•	•	•	•	14 °F to 131 °F -10 °C to 55 °C. Measurements may be taken beyond the limits of the operational temperature range 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.							
Size & Weight	•	•	•	•	•	•	•	•	•	•	•	•	22.0 °F to 140.0 °F -30.0 °C to 60.0 °C							
	•	•	•	•	•	•	•	•	•	•	•	•	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 combined 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.

PC-3A(E) K-Factor Verification Test by Total Suspended Particulates HVS Test Report

Information of Calibrated Equipment

Verification Test Date:	1-Mar-23	to	2-Mar-23	Next Verification Test Date:	2-Mar-24
Unit-under-Test- Model No.:	PC-3A(E)				
Unit-under-Test Serial No.:	JC-2002223				
Our Report Reference No.:	RPT-23-HVS-0048				
Calibration Location:	Emax				

Standard Equipment Information

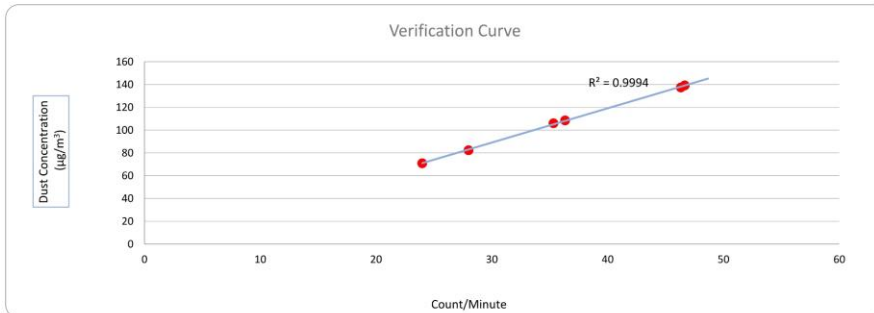
Verification Equipment Type:	Tisch TSP HVS	Tisch HVS Calibrator
Standard Equipment Model No.:	TE-5170X	TE-5025A
Equipment serial no.:	1049	3465
Last Calibration Date:	1-Mar-23	28-Jun-22
Next Calibration Date:	30-Apr-23	27-Jun-23

Equipment Verification Result

Verification Test No.	Date	Duration			Results from Calibrated Equipment		Results from Standard Equipment
		Start-time	End-time	Elapsed Time (in min)	Total Counts	Counts/ Minute x-axis	Dust Concentration (µg/m³) y-axis
1	1/3/2023	5013.27	5016.34	184.20	8596	47	139
2	1/3/2023	5016.34	5019.34	180.00	6540	36	109
3	1/3/2023	5019.34	5022.34	180.00	8340	46	137
4	2/3/2023	5022.34	5025.34	180.00	5040	28	82
5	2/3/2023	5025.34	5028.34	180.00	4320	24	71
6	2/3/2023	5028.34	5031.34	180.00	6360	35	106

Linear Regression of y on x

Slope, K factor:	3.0065	Intercept:	-1.1293	*Correlation Coefficient, R:	0.9997
Verification Test Result: Strong Correlation, Results were accepted.					* If the Correlation Coefficient, R is <0.5. Checking and Re-verification are required.



Operated By:

Andy Li
Project Technician, Environmental

Date: 02-03-2023

Checked By:

Tandy Tse
Senior Consultant, Environmental

Date: 02-03-2023

PC-3A(E) K-Factor Verification Test by Total Suspended Particulates HVS Test Report

Information of Calibrated Equipment

Verification Test Date:	8-Apr-23	to	9-Apr-23	Next Verification Test Date:	8-Apr-24
Unit-under-Test- Model No.:	PC-3A(E)				
Unit-under-Test Serial No.:	JC-2105804				
Our Report Reference No.:	RPT-23-HVS-0032				
Calibration Location:	Emax				

Standard Equipment Information

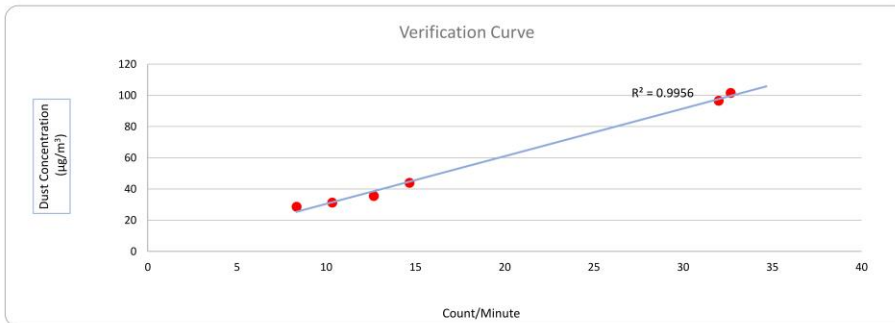
Verification Equipment Type:	Tisch TSP HVS	Tisch HVS Calibrator
Standard Equipment Model No.:	TE-5170X	TE-5028A
Equipment serial no.:	1049	3702
Last Calibration Date:	8-Apr-23	31-Mar-23
Next Calibration Date:	7-Jun-23	30-Mar-24

Equipment Verification Result

Verification Test No.	Date	Duration			Results from Calibrated Equipment		Results from Standard Equipment
		Start-time	End-time	Elapsed Time (in min)	Total Counts	Counts/ Minute x-axis	Dust Concentration ($\mu\text{g}/\text{m}^3$) y-axis
1	8/4/2023	7339.85	7342.85	180.00	2640	15	44
2	8/4/2023	7342.85	7345.85	180.00	2280	13	36
3	8/4/2023	7345.85	7348.85	180.00	5760	32	97
4	9/4/2023	7349.74	7352.74	180.00	1500	8	29
5	9/4/2023	7352.76	7355.76	180.00	1860	10	31
6	9/4/2023	7355.77	7358.77	180.00	5880	33	102

Linear Regression of y on x

Slope, K factor:	3.0528	Intercept:	-0.0510	*Correlation Coefficient, R:	0.9978
Verification Test Result: Strong Correlation, Results were accepted.				* If the Correlation Coefficient, R is <0.5. Checking and Re-verification are required.	



Operated By:

Andy Li
Project Technician, Environmental

Date: 10-04-2023

Checked By:

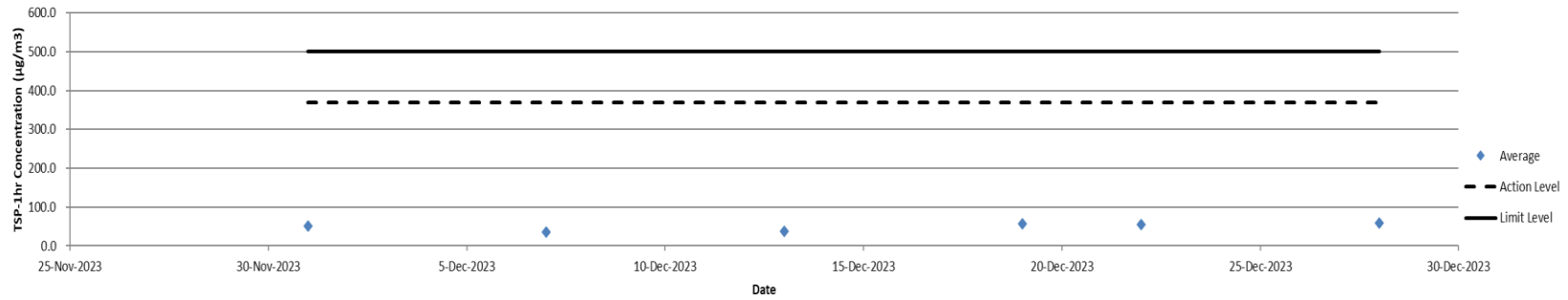
Tandy Tse
Senior Consultant, Environmental

Date: 10-04-2023

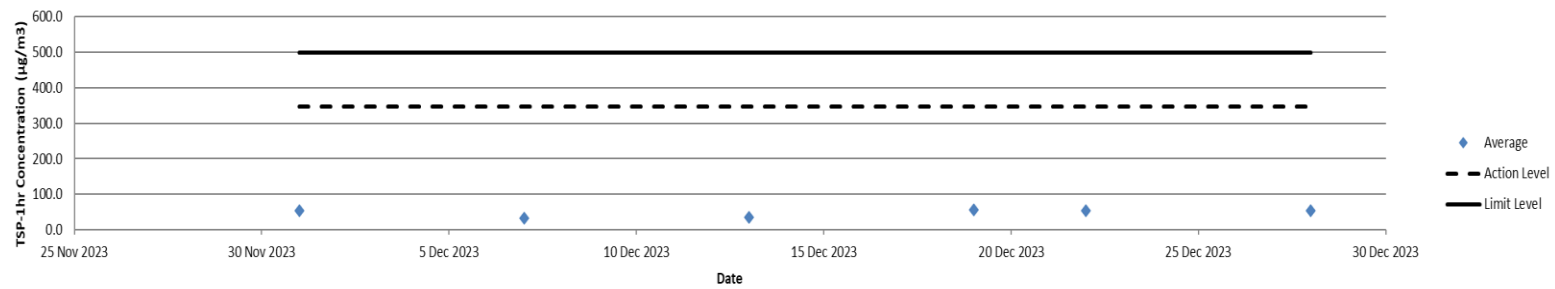
Appendix K

Impact Air Quality Monitoring Results and Graphical Presentation

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

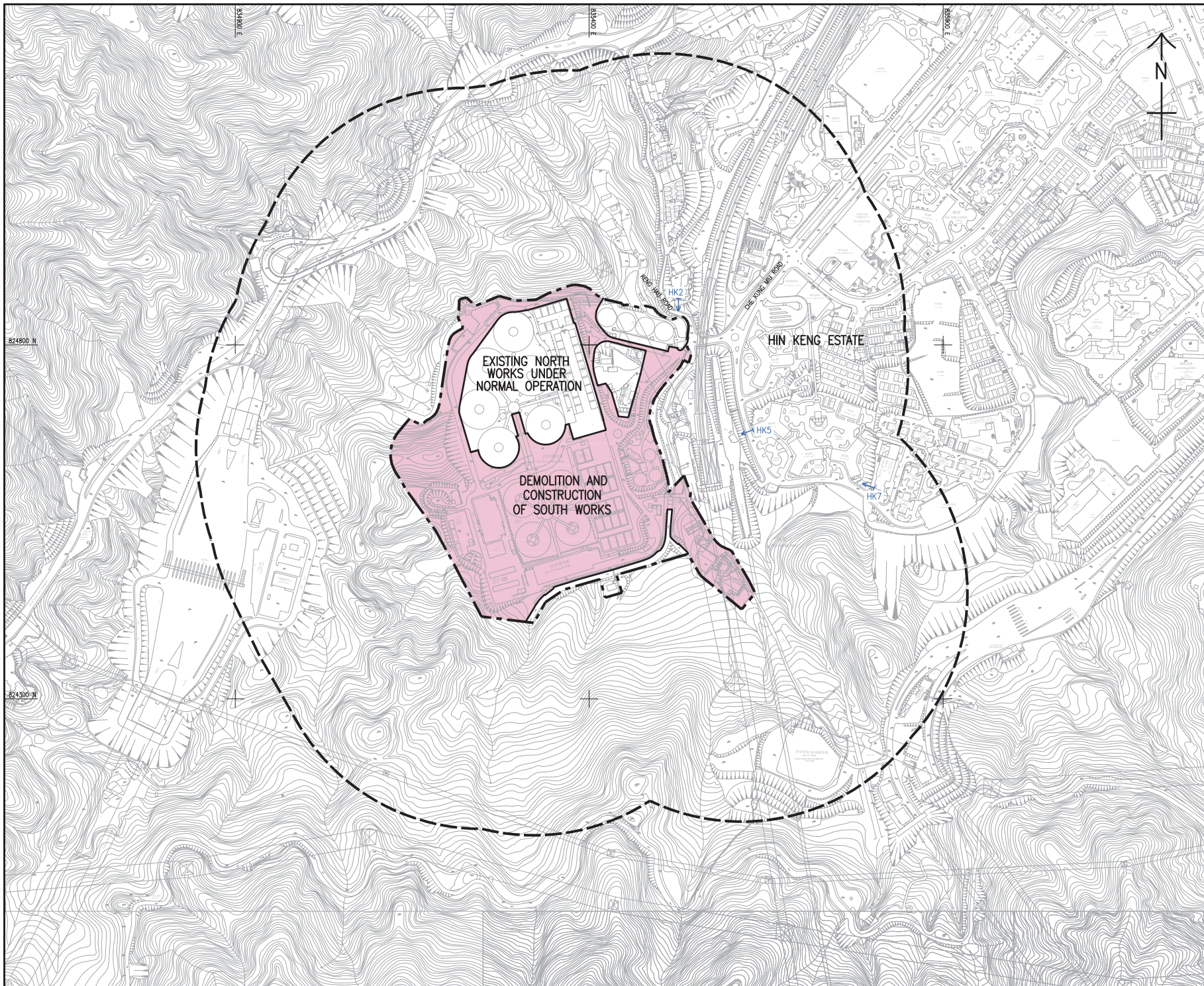


**The Summary of TSP-1hr Concentration ($\mu\text{g}/\text{m}^3$) at AM2
Hin Keng Estate - Hin Wan House**



Appendix L

Location Plan of Noise Monitoring Station



LEGEND:

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

DATE	PROJECT	NO.	REV.
01/01/2011	WATER SUPPLIES DEPARTMENT	60162073/EM&A/FIG 4	01
<p>水務署</p> <p>AGREEMENT NO. CE 13/2009 (WS)</p> <p>IN-SITU REPROVISIONING OF SHA TIN WATER TREATMENT WORKS-- SOUTH WORKS</p> <p>DESIGN AND CONSTRUCTION</p>			
<p>LOCATIONS OF PROPOSED NOISE MONITORING STATIONS</p>			
<p>AECOM</p>			
<p>DRG NO. 60162073/EM&A/FIG 4</p>			
DESIGNED BY	CHECKED BY	APPROVED BY	
NHP	NHP		
SCALE A3 1 : 5000	DATE	BY	
11/01/2011			
<p>© COPYRIGHT RESERVED</p>			

Appendix M

Calibration Certificates (Noise)



CALIBRATION CERTIFICATE

Product : SOUND CALIBRATOR
Type : NC-75
Serial number : 35124528
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 °C, Relative humidity 49 %,
Static pressure 100.6 kPa
Calibration date : 02/11/2022 (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 : 09/11/2022 (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



This certificate is based on article 144 of the Measurement Law and indicates the result of calibration in accordance with measurement standards traceable to Primary Measurement Standards (National Standards) which realizes the physical units of measurement according to the International System of Units (SI).

The accreditation symbol is attestation of which the result of calibration is traceable to Primary Measurement Standards (National Standards).

The certificate shall not be reproduced except in full, without the written approval of the issuing laboratory.

The calibration laboratory who issued this calibration certificate conforms to ISO/IEC 17025:2017.

This calibration certificate was issued by the calibration laboratory accredited by IAJapan who is a signatory to the Mutual Recognition Arrangement (MRA) of International Laboratory Accreditation Cooperation (ILAC) and Asia Pacific Accreditation Cooperation (APAC). This (These) calibration result(s) may be accepted internationally through ILAC/APAC MRA.

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	2.7×10^{-4} Hz

Working measurement standard universal counter:

Type : 53132A

Serial number : MY40005574

(JCSS Calibration Certificate No. 2208001889940)

2. Total distortion

Measured value
0.2 %

Working measurement standard distortion meter:

Type : VA-2230A

Serial number : 11076061

(A2LA Calibration Certificate No. 1502-03109)

- closing -



Certificate of Conformity

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

Methods Used in Calibration and Testing

Wind Speed:

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

Temperature:

Temperature response is verified in comparison with a Eutechnics 4600 Precision Thermometer or a standard Kestrel 4000 Weather and Environmental Meter calibrated weekly against the Eutechnics 4600. The Eutechnics 4600 is calibrated annually and is traceable to NIST with a system accuracy of $\pm 0.05^\circ\text{C}$.

Direction / Heading

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

Relative Humidity:

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

Barometric Pressure:

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

Approved By:

Michael Naughton, Engineering Manager

SENSORS																							
SENSOR	1000	2000	2500	3000	3500	3500 DT	4000	4200	4250	4300	4400	4500	4500 HOR	ACCURACY (±1)°	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 ft	0.6 to 40.0 m/s 110 to 7874 ft/min 2.2 to 144.0 km/h 1.3 to 89.5 mph 1.2 to 77.6 knots 0 to 12 ft	0.6 to 60.0 m/s 110 to 11811 ft/min 2.2 to 216.0 km/h 1.3 to 134.2 mph 1.2 to 116.6 knots 0 to 12 ft	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 (0.9 mph) 0.8 m/s after impeller startup. Off-axis accuracy: ±1% @ 90° off-axis, ±2% @ 10° & 15°. Calibration drift < 1% after 100 hours use at 16 MPH (7 m/s). Replacement impeller (NK-PN-0801) fits impeller without tools (US Patent 5,763,753). 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 insulation 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												•		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 ftH ₂ O 0.01 PSI	0.01 inHg 0.1 ftH ₂ O 0.01 PSI	8.86 to 32.49 inHg 300.0 to 1100.0 ftH ₂ O 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 ftH ₂ O 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 (±1)°	RESOLUTION	SPECIFICATION RANGE	SENSORS EMPLOYED	NOTES					
Air Density								•	•					0.0002 lb/ft ³ 0.003 kg/m ³	0.001 lb/ft ³ 0.001 kg/m ³	Refer to Ranges for Sensors Employed	Temperature Relative Humidity Pressure	Mass of air per unit volume					
Air Flow								•						6.71%	1 m ³ /hr 1 m ³ /m 0.1 m ³ /s 1 L/s	Refer to Ranges for Sensors Employed	Air Flow User Input (Duct Shape & Size)	Volume of air flowing through an opening. Automatically calculated from Air Velocity 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: 23.8 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 ftH ₂ O 0.03 PSI	0.01 inHg 0.1 ftH ₂ O 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 bar/hr 0.06 kg/m ² /hr	0.01 bar/hr 0.01 kg/m ² /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 thermometer 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 g/g g/kg	0.1 g/g 0.01 g/kg	Refer to Ranges for Sensors Employed	Temperature Relative Humidity Pressure	Mass of water vapor in a mass of air.					
Relative Air Density								•						0.3%	0.1%	Refer to Ranges for Sensors Employed	Temperature Relative Humidity Pressure	The ratio, expressed as a percentage, of measured air density to the air density of a standard atmosphere as defined by the ICAO.					
Thermal Work Limit (TWL)												•		10.9 W/m ²	0.1 W/m ²	Refer to Ranges for Sensors Employed	Wind Speed Temperature Globe Temperature Relative Humidity Pressure	Estimated safe maximum continuously sustainable human metabolic rate (W/m ²) 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 (Tw _n), globe temperature (Tg), and dry bulb temperature (Td). User selectable on-screen warning zones.					
Wet Bulb Temperature - Naturally Aspirated (Tw _n)												•		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, Tw _n only undergoes forced convection from the ambient air velocity. Tw _n 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 0.25 in / 9 mm. Aviation green electroluminescent backlight. Manual activation with auto-off.					Reflective 5 digit LCD. Digit height 0.36 in / 9 mm. Choice of aviation green or visible red (NV models only) electroluminescent backlight. Manual activation with auto-off.				
Response Time & Display Update	•	•	•	•	•	•	•	•	•	•	•	•	•	Multi-function, multi-digit monochrome dot-matrix display. Choice of aviation green or visible red (NV models only) electroluminescent backlight. Automatic or manual activation.					All measurements except those based on relative humidity respond accurately within 1 second. Relative humidity and all measurements which include RH in their calculation may require as long as 1 minute to fully equilibrate to a large change in the measurement environment. Display updates every 1 second.				
Max/Avg Wind								•	•	•	•	•	•	One-button clear and restart of Max Wind Gust and Average Wind measurement.					Max and average wind calculation may be started and stopped independently of data logging of other values, along with all other wind-related functions: air velocity, crosswind, headwind/tailwind, wind chill, WBGT, TWL, evaporation rate.				
Data Storage & Graphical Display, Min/Max/Avg History								4000 points	3200 points	3200 points	3600 points	2300 points	2000 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.					Requires optional PC interface (USB or RS-232) or Bluetooth data transfer option and provided software.				
Data Upload & Bluetooth® Data Connect Option														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.					Requires optional PC interface (USB or RS-232) or Bluetooth data transfer option and provided software.				
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.									
Shock Resistance	•	•	•	•	•	•	•	•	•	•	•	•	•	Standard Models: AAA Alkaline, two, included. Average life, 400 hours of use, reduced by backlight or Bluetooth radio transmission use.									
Sealing	•	•	•	•	•	•	•	•	•	•	•	•	•	MIL-STD-883C, Transil Shock, Method 516.5 Procedure IV, unit only, impact may damage replaceable impeller.									
Operational Temperature Limits	•	•	•	•	•	•	•	•	•	•	•	•	•	Waterproof (IP67) and NEMA-6.									
Storage Temperature	•	•	•	•	•	•	•	•	•	•	•	•	•	14° F to 131° F / -10° C to 55° C. Measurements may be taken beyond the limits of the operational temperature range 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.									
Size & Weight	•	•	•	•	•	•	•	•	•	•	•	•	•	22.0° F to 140.0° F / -30.0° C to 60.0° C									
	•	•	•	•	•	•	•	•	•	•	•	•	•	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 combined 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.

Certificate of Calibration

for

Description: Sound Level Meter
Manufacturer: Svantek
Type No.: 971 (Serial No.: 103449)
Microphone: ACO 7052E (Serial No.: 78092)
Preamplifier: SV 18 (Serial No.: 78763)

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 (31.5Hz – 8kHz)
☐ 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: 2 February 2023

Date of calibration: 6 February 2023

Date of NEXT calibration: 5 February 2024

Calibrated by:

Calibration Technician

Certified by:

Mr. Ng Yan Wa
Laboratory Manager

Date of issue: 6 February 2023

Certificate No.: APJ22-136-CC001



Page 1 of 4

1. Calibration Precaution:

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

2. Calibration Conditions:

Air Temperature:	23.9 °C
Air Pressure:	1006 hPa
Relative Humidity:	47.9 %

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,	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
25-124.3	dBA SPL	Fast	94	1000	94.0	±0.4

Linearity

Setting of Unit-under-test (UUT)			Applied value		UUT Reading,	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
25-124.3	dBA SPL	Fast	94	1000	94.0	Ref
			104		104.0	±0.3
			114		114.0	±0.3

Time Weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading,	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
25-124.3	dBA SPL	Fast	94	1000	94.0	Ref
		Slow			94.0	±0.3

Certificate No.: APJ22-136-CC001



Page 2 of 4

Frequency Response

Linear Response

Setting of Unit-under-test (UUT)			Applied value		UUT Reading	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
25-124.3	dB	SPL	94	31.5	94.2	±2.0
				63	94.1	±1.5
				125	94.1	±1.5
				250	94.1	±1.4
				500	94.0	±1.4
				1000	94.0	Ref
				2000	93.9	±1.6
				4000	93.6	±1.6
				8000	90.9	+2.1; -3.1

A-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
25-124.3	dBA	SPL	94	31.5	54.8	-39.4 ±2.0
				63	68.0	-26.2 ±1.5
				125	78.0	-16.1 ±1.5
				250	85.4	-8.6 ±1.4
				500	90.8	-3.2 ±1.4
				1000	94.0	Ref
				2000	95.1	+1.2 ±1.6
				4000	94.6	+1.0 ±1.6
				8000	90.0	-1.1 ±2.1; -3.1

C-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
25-124.3	dBC	SPL	94	31.5	91.2	-3.0 ±2.0
				63	93.3	-0.8 ±1.5
				125	93.9	-0.2 ±1.5
				250	94.0	-0.0 ±1.4
				500	94.1	-0.0 ±1.4
				1000	94.0	Ref
				2000	93.7	-0.2 ±1.6
				4000	92.9	-0.8 ±1.6
				8000	88.1	-3.0 ±2.1; -3.1

Certificate No.: APJ22-136-CC001



Page 3 of 4

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	± 0.10
	500 Hz	± 0.05
	1000 Hz	± 0.05
	2000 Hz	± 0.05
	4000 Hz	± 0.05
	8000 Hz	± 0.10
104 dB	1000 Hz	± 0.05
114 dB	1000 Hz	± 0.05

The uncertainties are evaluated for a 95% confidence level.

Note:

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

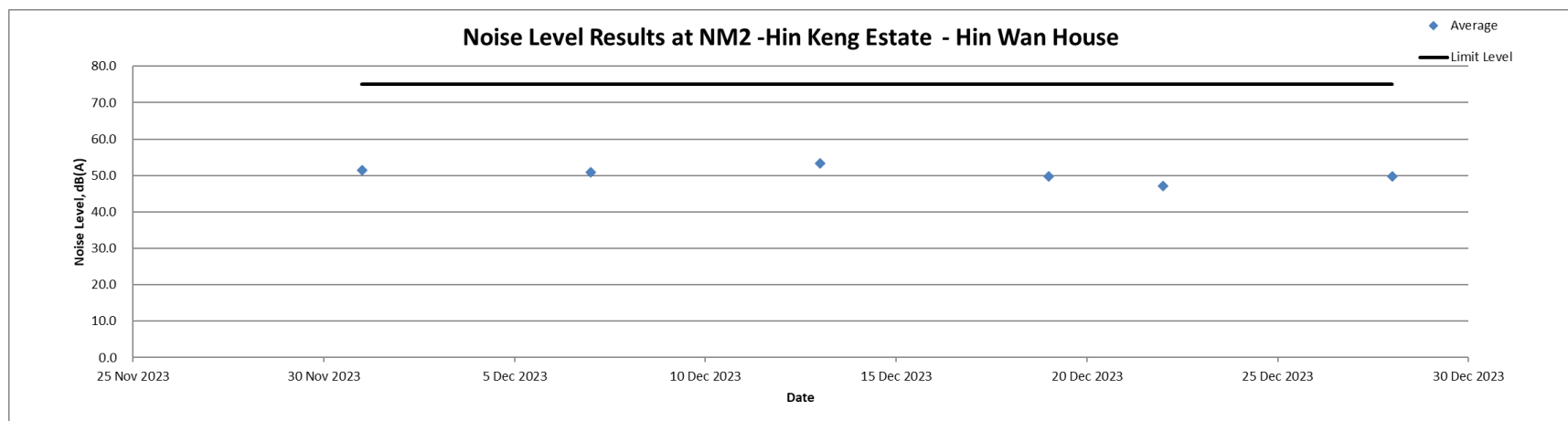
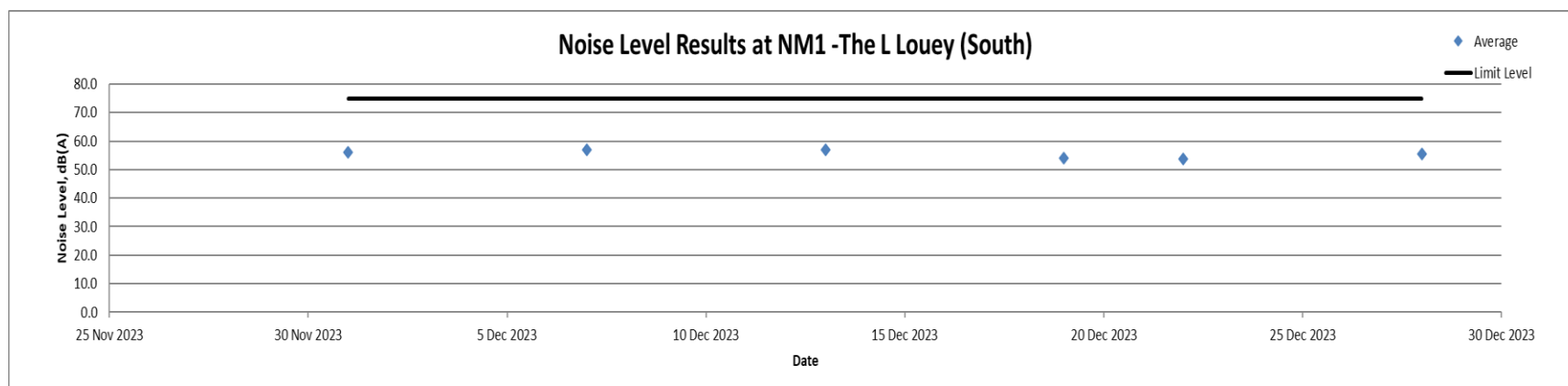
Certificate No.: APJ22-136-CC001



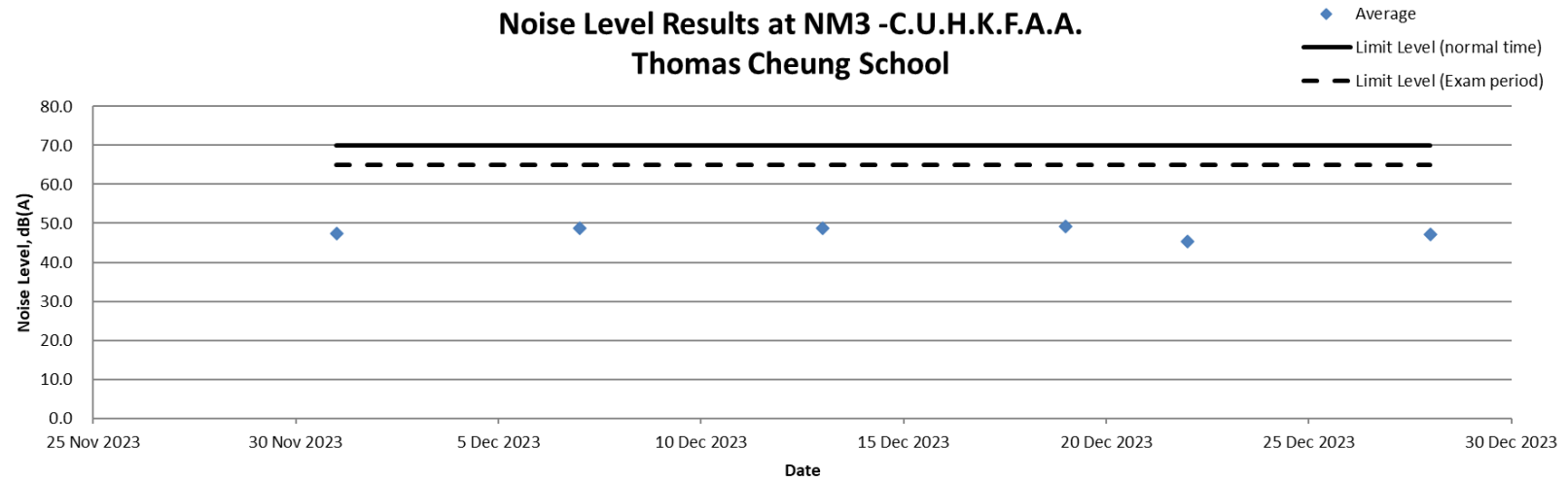
Page 4 of 4

Appendix N

Impact Noise Monitoring Results and Graphical Presentation

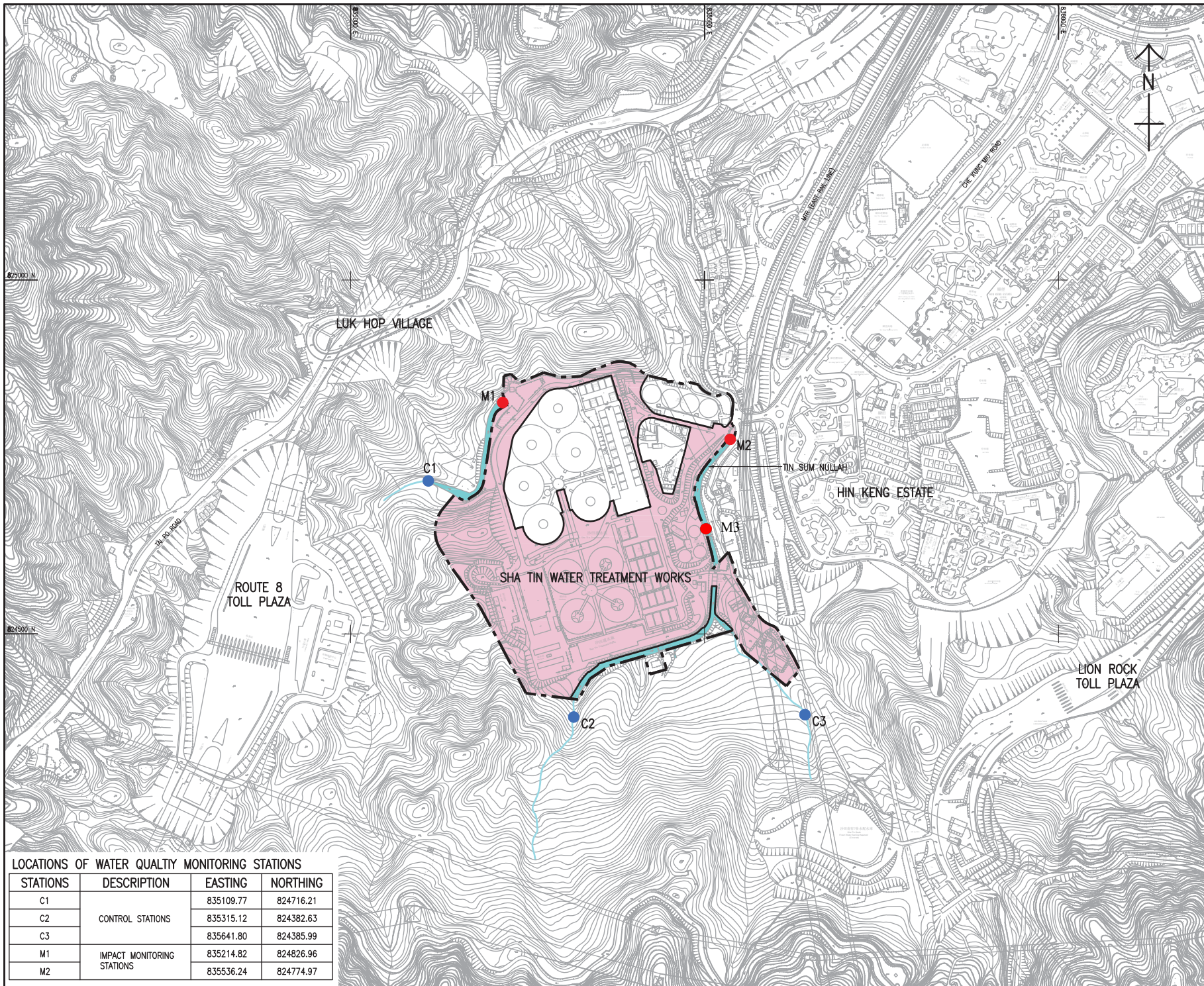


Noise Level Results at NM3 -C.U.H.K.F.A.A. Thomas Cheung School



Appendix O

Location Plan of Water Quality Monitoring Station



LEGEND:

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

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

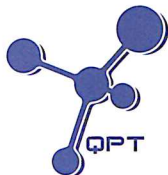
DRG NO 60162073/EM&A/FIG 5
圖紙編號

DESIGNED BY A3 1 : 5000	CHECKED BY A3 1 : 5000	APPROVED BY A3 1 : 5000
SCALE A3 1 : 5000	DATE 2012-11-08	BY CAI ZP

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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-BC100051
Date of Issue : 24 October 2023
Page No. : 1 of 2

PART A - CUSTOMER INFORMATION

Acuity Sustainability Consulting Limited

Unit E, 12/F, Ford Glory Plaza 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong

PART B - SAMPLE INFORMATION

Name of Equipment : YSI ProDSS (Multi-Parameters)
Manufacturer : YSI (a xylem brand)
Serial Number : 22C106561
Date of Received : 19 October 2023
Date of Calibration : 24 October 2023
Date of Next Calibration : 23 January 2024
Request No. : D-BC100051

PART C - REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

Test Parameter	Reference Method
pH value	APHA 21e 4500-H ⁺ B
Temperature	Section 6 of international Accreditation New Zealand Technical Guide no. 3 Second edition March 2008: Working Thermometer Calibration Procedure
Salinity	APHA 21e 2520 B
Dissolved oxygen	APHA 23e 4500-O G (Membrane Electrode Method)
Turbidity	APHA 21e 2130 B (Nephelometric Method)

PART D - CALIBRATION RESULT

(1) pH value

Target (pH unit)	Display Reading (pH unit)	Tolerance	Result
4.00	4.09	0.09	Satisfactory
7.42	7.46	0.04	Satisfactory
10.01	10.08	0.07	Satisfactory

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

(2) Temperature

Reading of Ref. thermometer (°C)	Display Reading (°C)	Tolerance	Result
16	15.6	-0.4	Satisfactory
23	22.1	-0.9	Satisfactory
38	36.9	-1.1	Satisfactory

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

(3) Salinity

Expected Reading (g/L)	Display Reading (g/L)	Tolerance (%)	Result
10	10.01	0.10	Satisfactory
20	20.63	3.15	Satisfactory
30	31.63	5.43	Satisfactory

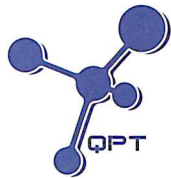
Tolerance of Salinity should be less than ± 10.0 (%)

--- CONTINUED ON NEXT PAGE ---

AUTHORIZED
SIGNATORY:


LEE Chun-ning
Assistant Manager

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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-BC100051
Date of Issue : 24 October 2023
Page No. : 2 of 2

(4) Dissolved oxygen

Expected Reading (mg/L)	Display Reading (mg/L)	Tolerance	Result
8.17	8.55	0.38	Satisfactory
5.47	5.83	0.36	Satisfactory
1.43	1.21	-0.22	Satisfactory
0.05	0.27	0.22	Satisfactory

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

(5) Turbidity

Expected Reading (NTU)	Display Reading (NTU)	Tolerance (%)	Result
0	0.79	--	Satisfactory
10	9.66	-3.4	Satisfactory
20	18.21	-9.0	Satisfactory
100	97.55	-2.5	Satisfactory
800	753.80	-5.8	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 from 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 from relevant international standards.

--- END OF REPORT ---

Appendix Q

The Certification of Laboratory with HOKLAS accredited Analytical Tests



Hong Kong Accreditation Service
香港認可處

Certificate of Accreditation

認可證書

This is to certify that
特此證明

ACUMEN LABORATORY AND TESTING LIMITED

浩科檢測中心有限公司

**Flat/Rm D, 12/F, Ford Glory Plaza, Nos. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon,
Hong Kong**

香港九龍長沙灣永康街37-39號福源廣場12樓D室

*is accredited by the Hong Kong Accreditation Service (HKAS) to ISO/IEC 17025:2017
for performing specific laboratory activities as listed in the scope of accreditation within the test category of*
獲香港認可處根據ISO/IEC 17025:2017認可
進行載於認可範圍內下述測試類別中的指定實驗所活動

Environmental Testing

環境測試

*This accreditation to ISO/IEC 17025:2017 demonstrates technical competence for a defined scope and
the implementation of a management system relevant to laboratory operation
(see joint IAF-ILAC-ISO Communiqué).*

此項 ISO/IEC 17025:2017 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
實施一套與實驗所運作相關的管理體系
(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 HKAS 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


SHUM Wai-leung, Executive Administrator
執行幹事 沈偉良
Issue Date: 15 November 2021
簽發日期：二零二一年十一月十五日

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



Appendix R

Impact Water Quality Monitoring Results



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

Page 1 of 2

Report Number : Q230002aR231976

Job Number : R231976

Issue Date : 06/12/2023

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-3113-1234

Test Required : Total Suspended Solids (TSS)

Sampling Date : 01/12/2023

Date Samples Received : 01/12/2023

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 : R231976/1-5

Test Period : 01/12/2023 – 02/12/2023


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

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

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 | Email: AcumenLAB@aurecongroup.com



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

Page 2 of 2

Report Number : Q230002aR231976
Job Number : R231976
Issue Date : 06/12/2023

Test Result:

Lab ID	Sampling Date	Client Sample ID	Total Suspended Solids (TSS), mg/L
R231976/1	01/12/2023	C1	<1
R231976/2	01/12/2023	C2	<1
R231976/3	01/12/2023	M1	<1
R231976/4	01/12/2023	M2	1.0
R231976/5	01/12/2023	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 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

Page 1 of 2


Report Number : Q230002aR232008
Job Number : R232008
Issue Date : 12/12/2023
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-3113-1235
Test Required : Total Suspended Solids (TSS)
Sampling Date : 04/12/2023
Date Samples Received : 04/12/2023
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 : R232008/1-5
Test Period : 04/12/2023 – 05/12/2023
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 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

Page 2 of 2

Report Number : Q230002aR232008

Job Number : R232008

Issue Date : 12/12/2023

Test Result:

Lab ID	Sampling Date	Client Sample ID	Total Suspended Solids (TSS), mg/L
R232008/1	04/12/2023	C1	2.5
R232008/2	04/12/2023	C2	<1
R232008/3	04/12/2023	M1	2.8
R232008/4	04/12/2023	M2	1.0
R232008/5	04/12/2023	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 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

Page 1 of 2


Report Number : Q230002aR232026
Job Number : R232026
Issue Date : 14/12/2023
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-3113-1236
Test Required : Total Suspended Solids (TSS)
Sampling Date : 06/12/2023
Date Samples Received : 06/12/2023
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 : R232026/1-5
Test Period : 06/12/2023 – 07/12/2023
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 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

Page 2 of 2

Report Number : Q230002aR232026

Job Number : R232026

Issue Date : 14/12/2023

Test Result:

Lab ID	Sampling Date	Client Sample ID	Total Suspended Solids (TSS), mg/L
R232026/1	06/12/2023	C1	<1
R232026/2	06/12/2023	C2	<1
R232026/3	06/12/2023	M1	<1
R232026/4	06/12/2023	M2	<1
R232026/5	06/12/2023	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 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

Page 1 of 2

Report Number : Q230002aR232047
Job Number : R232047
Issue Date : 20/12/2023
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-3113-1237
Test Required : Total Suspended Solids (TSS)
Sampling Date : 08/12/2023
Date Samples Received : 08/12/2023
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 : R232047/1-5
Test Period : 08/12/2023 – 09/12/2023
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 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

Page 2 of 2

Report Number : Q230002aR232047

Job Number : R232047

Issue Date : 20/12/2023

Test Result:

Lab ID	Sampling Date	Client Sample ID	Total Suspended Solids (TSS), mg/L
R232047/1	08/12/2023	C1	<1
R232047/2	08/12/2023	C2	<1
R232047/3	08/12/2023	M1	1.1
R232047/4	08/12/2023	M2	<1
R232047/5	08/12/2023	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



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Test Report

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Report Number : Q230002aR232048
Job Number : R232048
Issue Date : 20/12/2023
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-3113-1238
Test Required : Total Suspended Solids (TSS)
Sampling Date : 11/12/2023
Date Samples Received : 11/12/2023
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 : R232048/1-5
Test Period : 11/12/2023 – 12/12/2023
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

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Test Report

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Report Number : Q230002aR232048

Job Number : R232048

Issue Date : 20/12/2023

Test Result:

Lab ID	Sampling Date	Client Sample ID	Total Suspended Solids (TSS), mg/L
R232048/1	11/12/2023	C1	2.1
R232048/2	11/12/2023	C2	<1
R232048/3	11/12/2023	M1	1.4
R232048/4	11/12/2023	M2	<1
R232048/5	11/12/2023	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



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Test Report

Page 1 of 2


Report Number : Q230002aR232049
Job Number : R232049
Issue Date : 20/12/2023
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-3113-1239
Test Required : Total Suspended Solids (TSS)
Sampling Date : 13/12/2023
Date Samples Received : 13/12/2023
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 : R232049/1-5
Test Period : 13/12/2023 – 14/12/2023
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

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Test Report

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Report Number : Q230002aR232049

Job Number : R232049

Issue Date : 20/12/2023

Test Result:

Lab ID	Sampling Date	Client Sample ID	Total Suspended Solids (TSS), mg/L
R232049/1	13/12/2023	C1	<1
R232049/2	13/12/2023	C2	<1
R232049/3	13/12/2023	M1	1.1
R232049/4	13/12/2023	M2	<1
R232049/5	13/12/2023	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



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Test Report

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Report Number : Q230002aR240066
Job Number : R240066
Issue Date : 04/01/2024
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-3113-1240
Test Required : Total Suspended Solids (TSS)
Sampling Date : 15/12/2023
Date Samples Received : 15/12/2023
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 : R240066/1-5
Test Period : 15/12/2023 – 15/12/2023
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

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Test Report

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Report Number : Q230002aR240066
Job Number : R240066
Issue Date : 04/01/2024

Test Result:

Lab ID	Sampling Date	Client Sample ID	Total Suspended Solids (TSS), mg/L
R240066/1	15/12/2023	C1	<1
R240066/2	15/12/2023	C2	<1
R240066/3	15/12/2023	M1	<1
R240066/4	15/12/2023	M2	<1
R240066/5	15/12/2023	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.

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Test Report

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Report Number : Q230002aR240067

Job Number : R240067

Issue Date : 04/01/2024

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-3113-1241

Test Required : Total Suspended Solids (TSS)

Sampling Date : 18/12/2023

Date Samples Received : 18/12/2023

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 : R240067/1-5

Test Period : 18/12/2023 – 19/12/2023


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 Laboratory and Testing Limited

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Test Report

Page 2 of 2

Report Number : Q230002aR240067

Job Number : R240067

Issue Date : 04/01/2024

Test Result:

Lab ID	Sampling Date	Client Sample ID	Total Suspended Solids (TSS), mg/L
R240067/1	18/12/2023	C1	<1
R240067/2	18/12/2023	C2	<1
R240067/3	18/12/2023	M1	<1
R240067/4	18/12/2023	M2	<1
R240067/5	18/12/2023	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



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Test Report

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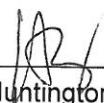
Report Number : Q230002aR240068
Job Number : R240068
Issue Date : 04/01/2024
Applicant Name : Acumen Environmental Engineering and Technologies Co, Ltd.
Applicant Address : Unit D, 12/F, Ford Glory Plaza, No.37-39 Wing Hong Street,
Cheung Sha Wan, Kowloon, Hong Kong
Project Name : CJO-3113-1242
Test Required : Total Suspended Solids (TSS)
Sampling Date : 20/12/2023
Date Samples Received : 20/12/2023
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 : R240068/1-5
Test Period : 20/12/2023 – 21/12/2023
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

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Test Report

Page 2 of 2

Report Number : Q230002aR240068

Job Number : R240068

Issue Date : 04/01/2024

Test Result:

Lab ID	Sampling Date	Client Sample ID	Total Suspended Solids (TSS), mg/L
R240068/1	20/12/2023	C1	<1
R240068/2	20/12/2023	C2	<1
R240068/3	20/12/2023	M1	<1
R240068/4	20/12/2023	M2	<1
R240068/5	20/12/2023	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



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Test Report

Page 1 of 2

Report Number : Q240002aR240135

Job Number : R240135

Issue Date : 09/01/2024

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-3113-1243

Test Required : Total Suspended Solids (TSS)

Sampling Date : 22/12/2023

Date Samples Received : 22/12/2023

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 : R240135/1-5

Test Period : 22/12/2023 – 23/12/2023

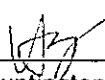
Method Used : In-house Method, QPL-15e for Total Suspended Solids

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

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Test Report

Page 2 of 2

Report Number : Q240002aR240135

Job Number : R240135

Issue Date : 09/01/2024

Test Result:

Lab ID	Sampling Date	Client Sample ID	Total Suspended Solids (TSS), mg/L
R240135/1	22/12/2023	C1	1.4
R240135/2	22/12/2023	C2	<1
R240135/3	22/12/2023	M1	<1
R240135/4	22/12/2023	M2	<1
R240135/5	22/12/2023	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

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Test Report

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
Report Number : Q240002aR240136
Job Number : R240136
Issue Date : 09/01/2024
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-3113-1244
Test Required : Total Suspended Solids (TSS)
Sampling Date : 28/012/2023
Date Samples Received : 28/012/2023
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 : R240136/1-5
Test Period : 28/012/2023 – 29/12/2023
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

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Test Report

Page 2 of 2

Report Number : Q240002aR240136

Job Number : R240136

Issue Date : 09/01/2024

Test Result:

Lab ID	Sampling Date	Client Sample ID	Total Suspended Solids (TSS), mg/L
R240136/1	28/012/2023	C1	<1
R240136/2	28/012/2023	C2	<1
R240136/3	28/012/2023	M1	<1
R240136/4	28/012/2023	M2	<1
R240136/5	28/012/2023	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 Laboratory and Testing Limited

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Test Report

Page 1 of 2

Report Number : Q230002aR240071

Job Number : R240071

Issue Date : 15/01/2024

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-3113-1245

Test Required : Total Suspended Solids (TSS)

Sampling Date : 30/12/2023

Date Samples Received : 30/12/2023

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 : R240071/1-5

Test Period : 30/12/2023 – 31/12/2023

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 Laboratory and Testing Limited

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Test Report

Page 2 of 2

Report Number : Q230002aR240071

Job Number : R240071

Issue Date : 15/01/2024

Test Result:

Lab ID	Sampling Date	Client Sample ID	Total Suspended Solids (TSS), mg/L
R240071/1	30/12/2023	C1	<1
R240071/2	30/12/2023	C2	<1
R240071/3	30/12/2023	M1	<1
R240071/4	30/12/2023	M2	<1
R240071/5	30/12/2023	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

Date	Time	Weather	Location	Co-ordinates		Water Depth m	Sample Depth m	Temp. °C		DO con. mg/L		Turbidity NTU		pH unit		SS mg/L	
				East	North												
1/12/2023	9:31	Fine	C1	835110	824716	0.04	0.02	18.61	17.8	10.59	10.23	0	0	6.88	6.86	<1	
	9:56	Fine	C2	835403	824470	0.02	0.01	17.69	17.52	11.78	11.64	0	0	7.07	7.05	<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	
		9:36	Fine	M1	835215	824827	0.8	0.4	17.7	17.77	11.22	11.69	0	0	7.56	7.58	<1
		9:51	Fine	M2	835536	824775	0.05	0.025	17.58	17.55	11.11	11.8	0	0	7.49	7.55	1.0
9:53	Fine	M3	835501	824648	0.02	0.01	17.35	17.39	11.37	10.71	0	0	7.23	7.16	<1		
4/12/2023	9:37	Fine	C1	835110	824716	0.04	0.02	17.94	17.6	12.49	12.34	0	0	6.72	6.81	2.5	
	10:02	Fine	C2	835403	824470	0.02	0.01	17.48	17.56	11.73	11.69	0	0	6.97	6.89	<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	
		9:42	Fine	M1	835215	824827	0.8	0.4	17.65	17.34	11.29	11.48	0	0	7.06	7.09	2.8
		9:57	Fine	M2	835536	824775	0.05	0.025	17.52	17.53	11.56	12.08	0	0	7.17	7.11	1.0
	9:59	Fine	M3	835501	824648	0.02	0.01	17.35	17.48	10.7	11.49	0	0	7.13	7.14	<1	
6/12/2023	9:41	Fine	C1	835110	824716	0.04	0.02	17.58	17.44	10.58	9.9	0	0	7.2	7.3	<1	
	10:04	Fine	C2	835403	824470	0.02	0.01	17.42	17.47	10.62	10.37	0	0	7.34	7.38	<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	
		9:46	Fine	M1	835215	824827	0.8	0.4	17.73	17.23	11.66	11.57	0	0	7.51	7.5	<1
		10:01	Fine	M2	835536	824775	0.05	0.025	17.58	17.58	10.2	10.21	0	0	7.8	7.65	<1
	10:03	Fine	M3	835501	824648	0.02	0.01	17.4	17.37	12.77	12.73	0	0	7.23	7.2	<1	
8/12/2023	9:35	Fine	C1	835110	824716	0.04	0.02	16.96	16.78	11.61	11.87	0	0	7.14	7.04	<1	
	10:00	Fine	C2	835403	824470	0.02	0.01	17.27	17.31	10.35	10.53	0	0	7.22	7.29	<1	
	N/A	Fine	C3	835642	824386	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		9:40	Fine	M1	835215	824827	0.8	0.4	16.73	16.58	10.29	10.95	0	0	7.74	7.8	1.1
		9:55	Fine	M2	835536	824775	0.05	0.025	17.38	17.4	11.02	11.28	0	0	7.5	7.37	<1
	9:57	Fine	M3	835501	824648	0.02	0.01	16.99	17.1	12.48	11.79	0	0	7.69	7.55	<1	
11/12/2023	13:01	Fine	C1	835110	824716	0.04	0.02	18.71	18.71	11.77	11.15	0	0	7.36	7.45	2.1	
	13:26	Fine	C2	835403	824470	0.02	0.01	18.56	18.55	10.94	10.4	0	0	7.26	7.31	<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	
		13:06	Fine	M1	835215	824827	0.8	0.4	18.7	18.68	11.97	11.57	0	0	7.63	7.71	1.4
		13:21	Fine	M2	835536	824775	0.05	0.025	18.74	18.75	10.92	10.75	0	0	7	7.08	<1
	13:23	Fine	M3	835501	824648	0.02	0.01	18.61	18.49	10.98	10.45	0	0	7.46	7.46	<1	
13/12/2023	9:41	Fine	C1	835110	824716	0.04	0.02	17.73	17.65	10.74	10.78	0	0	7.06	7.05	<1	
	10:04	Fine	C2	835403	824470	0.02	0.01	17.94	17.95	12.2	13.04	0	0	6.85	6.88	<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	
		9:46	Fine	M1	835215	824827	0.8	0.4	17.64	17.64	11.21	10.47	0	0	7.48	7.54	1.1
		10:01	Fine	M2	835536	824775	0.05	0.025	17.93	17.9	11.81	12.83	0	0	7.04	7.13	<1
	10:03	Fine	M3	835501	824648	0.02	0.01	17.79	17.75	12.82	12.72	0	0	7.36	7.28	<1	

15/12/2023	9:37	Fine	C1	835110	824716	0.04	0.02	18.19	18.2	12.03	11.05	0	0	6.96	6.96	<1
	10:02	Fine	C2	835403	824470	0.02	0.01	18.12	18.09	11.34	10.34	0	0	6.99	7.04	<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
	9:42	Fine	M1	835215	824827	0.8	0.4	18.24	18.24	12.79	12.32	0	0	7.37	7.36	<1
	9:57	Fine	M2	835536	824775	0.05	0.025	18.02	17.92	11.92	11.6	0	0	7.17	7.27	<1
	9:59	Fine	M3	835501	824648	0.02	0.01	18.22	18.2	12.31	12.44	0	0	7.35	7.31	<1
18/12/2023	9:40	Fine	C1	835110	824716	0.04	0.02	15.64	15.26	10.38	11.01	0	0	7.58	7.69	<1
	10:05	Fine	C2	835403	824470	0.02	0.01	16.18	16.26	10.51	10.6	0	0	7.06	7.01	<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
	9:45	Fine	M1	835215	824827	0.8	0.4	15.55	15.6	12.8	11.79	0	0	7.73	7.72	<1
	10:00	Fine	M2	835536	824775	0.05	0.025	16.26	16.27	10.83	11.45	0	0	7.58	7.57	<1
	10:02	Fine	M3	835501	824648	0.02	0.01	15.83	16.04	11.38	10.39	0	0	7.36	7.29	<1
20/12/2023	9:35	Fine	C1	835110	824716	0.04	0.02	14.32	13.94	11.27	11.98	0	0	6.73	6.77	<1
	10:00	Fine	C2	835403	824470	0.02	0.01	15.31	15.33	11.62	10.7	0	0	6.88	6.86	<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
	9:42	Fine	M1	835215	824827	0.8	0.4	14.23	14.25	10.7	10.06	0	0	7.45	7.47	<1
	9:55	Fine	M2	835536	824775	0.05	0.025	15.48	15.48	10.11	10.64	0	0	6.94	6.88	<1
	9:57	Fine	M3	835501	824648	0.02	0.01	14.83	15.06	12.36	12.97	0	0	7.18	7.21	<1
22/12/2023	9:39	cloudy	C1	835110	824716	0.04	0.02	13.46	13.53	9.46	9.13	0	0	6.73	6.73	1.4
	10:04	cloudy	C2	835403	824470	0.02	0.01	13.24	13.13	10.32	10.18	0	0	6.85	6.76	<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
	9:44	cloudy	M1	835215	824827	0.8	0.4	13.7	12.51	9.58	9.34	0	0	6.98	6.95	<1
	9:59	cloudy	M2	835536	824775	0.05	0.025	13.25	13.26	10.09	10.07	0	0	6.91	6.89	<1
	10:01	cloudy	M3	835501	824648	0.02	0.01	12.82	12.12	10.1	10.43	0	0	7.13	7.08	<1
28/12/2023	9:48	Fine	C1	835110	824716	0.04	0.02	15.7	15.72	11.07	11.54	0	0	6.65	6.65	<1
	9:34	Fine	C2	835403	824470	0.02	0.01	15.66	15.66	10.63	10.2	0	0	6.85	6.85	<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
	9:53	Fine	M1	835215	824827	0.8	0.4	15.67	15.72	10.83	10.8	0	0	7.53	7.48	<1
	9:29	Fine	M2	835536	824775	0.05	0.025	15.58	15.58	10.08	10.26	0	0	7.36	7.26	<1
	9:31	Fine	M3	835501	824648	0.02	0.01	15.76	15.77	10.73	11.08	0	0	7.71	7.69	<1
30/12/2023	15:30	Cloudy	C1	835110	824716	0.04	0.02	16.5	16.4	10.45	10.32	0	0	6.79	6.81	<1
	15:47	Cloudy	C2	835403	824470	0.02	0.01	15.2	15.2	10.85	10.77	0	0	7.51	7.55	<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
	15:59	Cloudy	M1	835215	824827	0.8	0.4	16.4	16.4	10.75	10.69	0	0	7.14	7.18	<1
	16:10	Cloudy	M2	835536	824775	0.05	0.025	17	17.1	10.56	10.49	0	0	7.51	7.46	<1
	16:23	Cloudy	M3	835501	824648	0.02	0.01	17.2	17.2	10.63	10.71	0	0	7.44	7.48	<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 0 exceedances of Limit Level

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. 112
Dec 2023

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1. INTRODUCTION

- 1.1 Pursuant to the Environmental Impact Assessment (EIA) Ordinance, the Director of Environmental Protection (DEP) granted the Environmental Permit (No. EP- 494/2015) to the Water Supplies Department (WSD) to construct and operate the designated project for “In-situ Reprovisioning of Sha Tin Water Treatment Works - South Works” (“The Project”).
- 1.2 Upon the requirement of the Environmental Permit, a detailed vegetation report presenting the baseline vegetation condition for flora species with conservation interest, transplanting and monitoring programme for the Project has been prepared and approved by DEP in February 2016.
- 1.3 There were 4 flora species of conservation importance were recorded in the woodland habitat within project site including Ailanthus (*Ailanthus fordii*), Incense Tree (*Aquilaria sinensis*), Lamb of Tartary (*Cibotium barometz*) and Hong Kong Eagle’s Claw (*Artabotrys hongkongensis*). In total, 2 nos. of Incense Tree (*Aquilaria sinensis*), 1 no. of Ailanthus (*Ailanthus fordii*) 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 sinensis*) 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 7 December 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 7 December 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 fair 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.

- 4.8 Rapid recolonization/ invasion of weeds/ exotic species/ climbers on the transplanted plants has been observed since past few monitoring. Climbers on TA327 and one of the *Celtis sinensis* should be removed, including the roots, to reduce rapid colonization covering the canopy. Weeding within the two protection zones of *Cibotium barometz* at Portion E of STSFWSR shall only be conducted by hand-held tools rather than grass cutting machine. No fire/ chemical weeding shall be allowed.

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

- 5.2 *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	<i>Schefflera heptaphylla</i>	鴨腳木	Tree
Levine's Syzygium	<i>Syzygium levinei</i>	山蒲桃	Tree
Chekiang Machilus	<i>Machilus chekiangensis</i>	浙江潤楠	Tree
Aporosa	<i>Aporosa dioica</i>	銀柴	Tree
Mountain Tallow Tree	<i>Sapium discolor</i>	山烏柏	Tree
Fragrant Litsea	<i>Litsea cubeba</i>	山蒼樹	Tree
Chinese Apea Ear-ring	<i>Archidendron lucidum</i>	亮葉猴耳環	Tree
Chinese Hackberry	<i>Celtis sinensis</i>	朴樹	Tree
Turn-in-the-wind	<i>Mallotus paniculatus</i>	白楸	Tree
Acronychia	<i>Acronychia pedunculata</i>	降真香	Tree

- 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	<i>Aquilaria sinensis</i> 土沉香	Compensated by 1 no. of <i>Schefflera heptaphylla</i> and 2 nos. of <i>Celtis sinensis</i>

- 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 fair 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. Climbing vines on TA327 should be removed, including the roots, to reduce rapid colonization covering the canopy.
- 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. Climbing vines on one of the *Celtis sinensis* should be removed, including the roots, to reduce rapid colonization covering the canopy.
- 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 Weeding by hand held tools within protection zone of *Cibotium barometz* is urgently needed.
- 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. Collapsed protection zone of *Cibotium barometz* shall be rectified.



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



Photo 3. Fast-growing weeds and climbers shall be cleared including the roots, otherwise it recolonizes quickly after recent clearance.



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



Photo 5 & 6. Despite the *Cibotium barometz* (red) are growing in satisfactory condition, it has already been hidden by weeds and climbers, which may deplete their health/ growth condition.

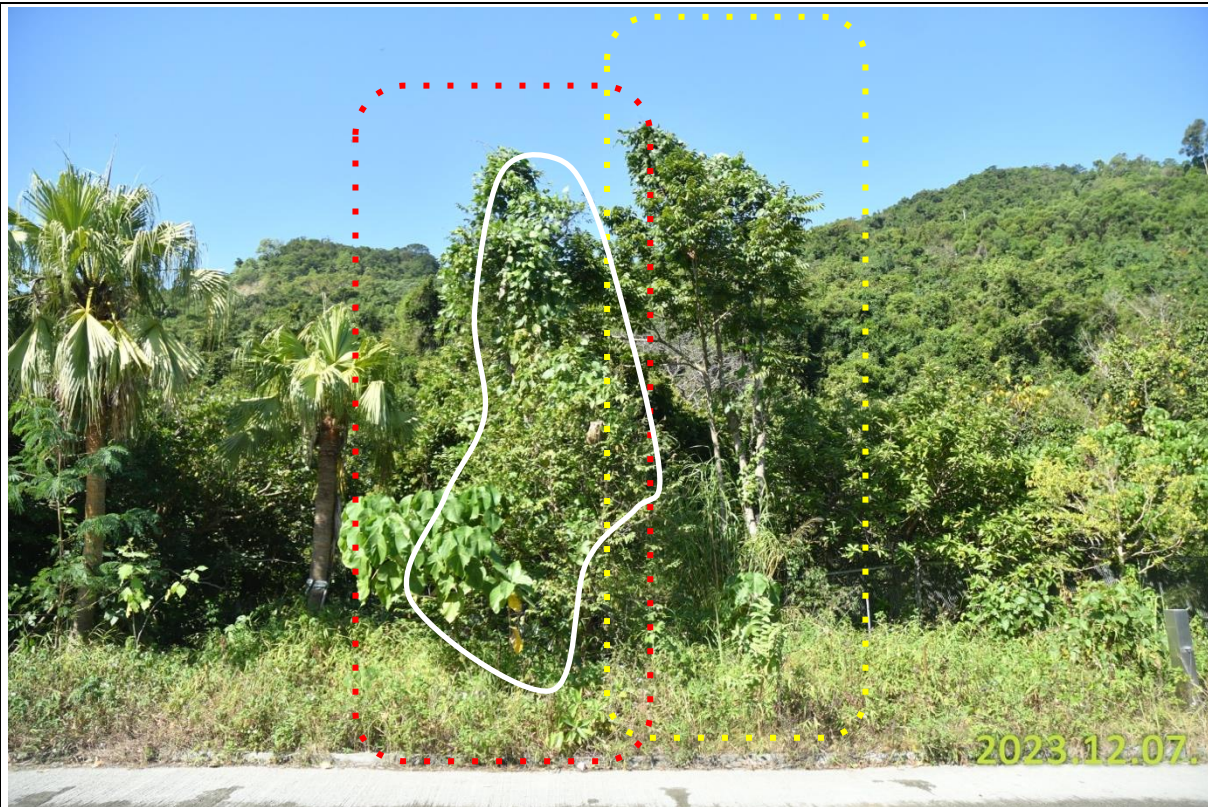


Photo 7. Transplanted Incense Tree (*Aquilaria sinensis*) – TA327 (red); and Ailanthus (*Ailanthus fordii*) – TA572 (yellow). Climber (white) should be removed, including the roots, to relieve the canopy



Photo 8. Sprouts at lower trunk of TA327 (*Aquilaria sinensis*). Climber (red) should be removed, including the roots, to relieve the canopy



Photo 9. TA572 (*Ailanthus fordii*) was found vigorous and in generally good condition. Surrounding weeds/ grass should be removed



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

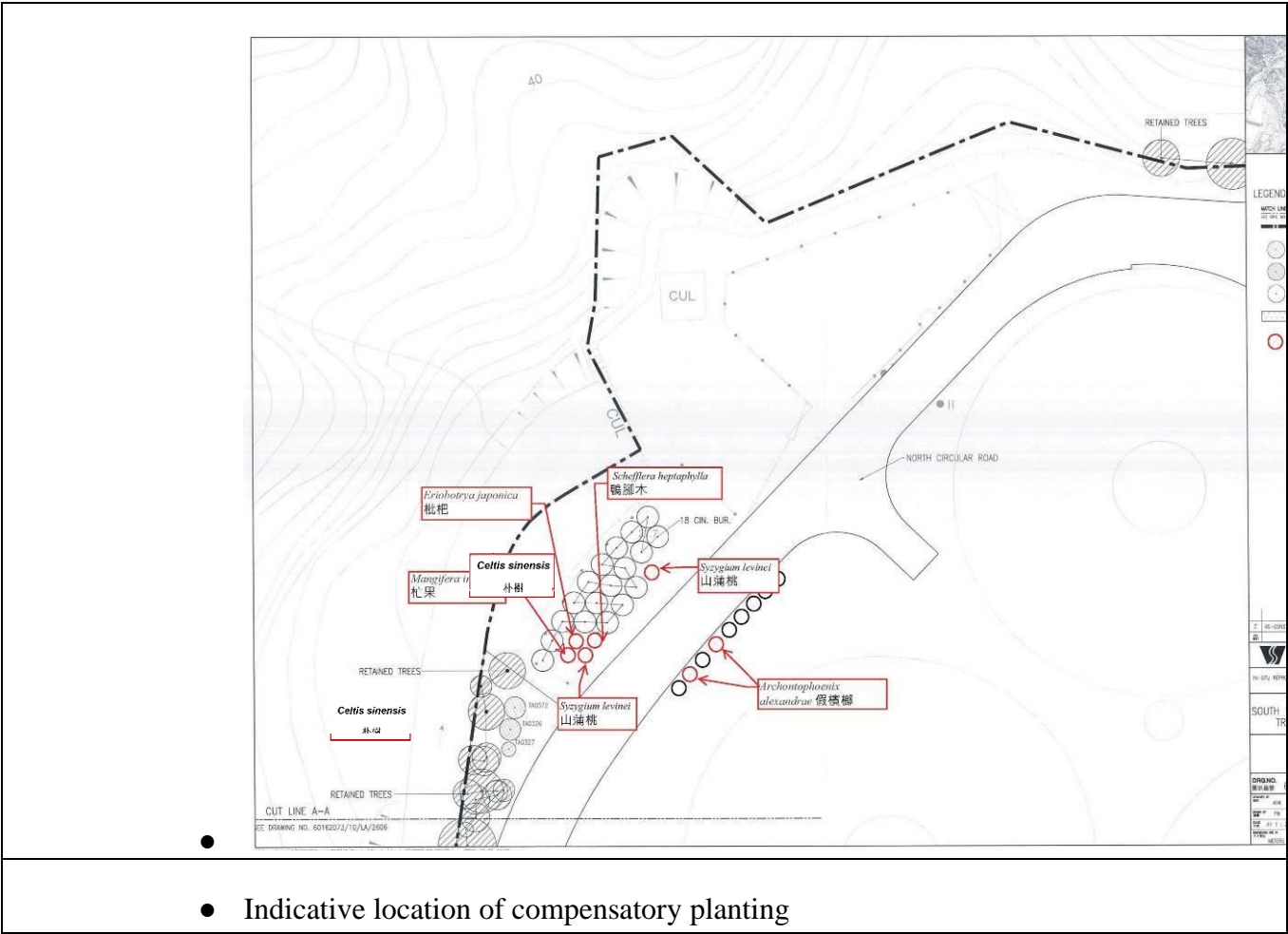


Photo 11. *Schefflera heptaphylla* as compensatory planting of TA326.



Photo 12 and 13. The two exotic *Syzygium jambos* (mis-treated as the native *Syzygium levinei*) are replaced by another native tree *Celtis sinensis* (due to market availability) as compensatory planting of TA326. Note: *Celtis sinensis* is a deciduous species.

Fast-growing climber was observed in one of the *Celtis sinensis* (right; compared to the left). The climber should be removed immediately otherwise it will affect the health of the tree. Root removal is necessary when recolonization of weeds is fast after recent routine maintenance work.



ANNEX II

Table for condition of transplanted plant

Fern *Cibotium barometz* and climber *Desmos chinensis*

No.	Species	Condition	Alive/Dead	Remark
1	<i>Cibotium barometz</i>	Fair	Alive	<p>27 individuals were transplanted back to STSFWSR on 23 April 2021.</p> <p>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.</p>
2	<i>Cibotium barometz</i>	Fair	Alive	
3	<i>Cibotium barometz</i>	Fair	Alive	
4	<i>Cibotium barometz</i>	Fair	Alive	
5	<i>Cibotium barometz</i>	Fair	Alive	
6	<i>Cibotium barometz</i>	Fair	Alive	
7	<i>Cibotium barometz</i>	Fair	Alive	
8	<i>Cibotium barometz</i>	Fair	Alive	
9	<i>Cibotium barometz</i>	Fair	Alive	
10	<i>Cibotium barometz</i>	Fair	Alive	
11	<i>Cibotium barometz</i>	Fair	Alive	
12	<i>Cibotium barometz</i>	Fair	Alive	
13	<i>Cibotium barometz</i>	Fair	Alive	
14	<i>Cibotium barometz</i>	Fair	Alive	
15	<i>Cibotium barometz</i>	Fair	Alive	
16	<i>Cibotium barometz</i>	Fair	Alive	
17	<i>Cibotium barometz</i>	Fair	Alive	
18	<i>Cibotium barometz</i>	Fair	Alive	
19	<i>Cibotium barometz</i>	Fair	Alive	
20	<i>Cibotium barometz</i>	Fair	Alive	
21	<i>Cibotium barometz</i>	Fair	Alive	
22	<i>Cibotium barometz</i>	Fair	Alive	
23	<i>Cibotium barometz</i>	Fair	Alive	
24	<i>Cibotium barometz</i>	Fair	Alive	
25	<i>Cibotium barometz</i>	Fair	Alive	
26	<i>Cibotium barometz</i>	Fair	Alive	
27	<i>Cibotium barometz</i>	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	<i>Desmos chinensis</i>	Poor-Fair	Alive	Two individuals were planted at Wall C in STWTW on 1 April 2021; Resprouted since monitoring made on 30 November 2022. Dehydration
Survival rate (%)			100	

Transplanted/ compensatory Trees

No.	Species	Condition	Alive/Dead	Remark
TA572	<i>Ailanthus fordii</i>	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	<i>Aquilaria sinensis</i>	Fair	Alive	Tree crown of TA327 was thinner after transplantation. Water sprouts, cracks on tree bark and wound at trunk base observed. Climber should be cleared to relieve the canopy.
N/A	<i>Celtis sinensis</i>	Fair	Alive	Compensate for TA326; <i>Syzygium jambos</i> replaced by <i>Celtis sinensis</i> on 31 May 2021.
N/A	<i>Celtis sinensis</i>	Fair	Alive	Compensate for TA326; <i>Syzygium jambos</i> replaced by <i>Celtis sinensis</i> on 31 May 2021. Climber should be cleared to relieve the canopy.
N/A	<i>Schefflera heptaphylla</i>	Fair	Alive	Compensate for TA326; old leaved replaced by new leaf buds
Survival rate (%)			100%	

Appendix T

Monthly Summary of Waste Flow Table

Monthly Summary Waste Flow Table for 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 '000m ³)						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, plas tic 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	25.42917	1.30078	0.00000	24.07151	0.05688	1.25313	100.8400	0.00000	0.00000	0.00000	0.02243
Apr	16.76824	2.55390	1.02564	12.46633	0.72238	0.07514	9.1200	0.00000	0.00000	0.00000	0.03613
May	23.46874	0.62600	0.00000	22.28436	0.55838	2.49430	0.0000	0.00000	0.00000	0.00000	0.03846
Jun	8.60790	0.00000	0.00000	8.23532	0.37258	0.07696	34.0300	0.00000	0.00000	0.00000	0.04152
Sub-total	124.65074	4.79833	1.02564	116.65331	2.17346	4.50503	196.3600	0.00000	0.00000	0.00000	0.19548
Jul	11.97417	0.11118	0.00000	11.55559	0.30740	1.40670	0.0000	0.00000	0.00000	0.00000	0.08802
Aug	9.52968	0.10462	0.00000	9.29376	0.13130	0.76460	0.0000	0.00000	0.00000	0.00000	0.04487
Sep	8.25255	0.02177	0.00000	8.14904	0.08174	0.85210	0.0000	0.00000	0.00000	0.00000	0.04164
Oct	7.16179	0.04551	0.00000	7.05738	0.05891	1.93500	0.0000	0.00000	0.00000	0.00000	0.10916
Nov	7.70437	0.23198	0.00000	7.46203	0.01037	1.79960	0.0000	0.00000	0.00000	0.00000	0.12170
Dec	1.88930	0.00000	0.00000	1.88930	0.00000	0.81530	0.0000	0.00000	0.00000	0.00000	0.07181
Total	171.16261	5.31338	1.02564	162.06041	2.76318	12.07833	196.36000	0.00000	0.00000	0.00000	0.67268

SUMMARY TABLE FOR WORK PROCESSES OR ACTIVITIES REQUIRING TIMBER FOR TEMPORARY WORKS

Contract No.: 1/WSD/19

Monthly/Year: 12/2023

Contract Title: In-situ Reprovisioning of Sha Tin Water Treatment Works (South Works) – Water Treatment Works and Ancillary Facilities

Item No.	Description of Works Process or Activity [see note (a) below]	Justifications for Using Timber in Temporary Construction Works	Est. Quantities of Timber Used (000m ³)	Actual Quantities Used (000m ³)	Remarks
1	S1F, S2F, RMF, SWPS, WET & OZONE	Concreting formwork	3.6	3.3	
		Total Estimated Quantity of Timber Used	3.6		

Notes: (a) The Contractor shall list out all the work items requiring timber for use in temporary construction works. Several minor work items may be grouped into one for ease of updating.



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	13254.17	0.00	0.00	10000.02	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	5806.90	0.00	0.00	1724.82	2665.37	1404.55	4.12	0.09	0.01	0.00	7.93
May-23	2484.77	0.00	0.00	1301.97	601.63	569.10	0.00	0.00	0.00	0.00	12.07
Jun-23	2813.62	0.00	0.00	46.96	1754.73	994.78	6.23	0.05	0.00	0.00	10.86
Sub-total	22384.21	0	0	12090.06	6902.59	3300.603	42.8123	0.1632	0.0197	0	47.97
Jul-23	2798.10	0.00	0.00	616.79	1972.09	190.99	5.2	0.0464	0.0083	0	12.98
Aug-23	2615.24	0.00	0.00	846.52	1400.97	344.10	8.54	0	0	0	15.11
Sep-23	525.62	0.00	0.00	0.00	0.00	505.21	4.52	0	0	0	14.74
Oct-23	3840.03	0	0	754.90	2356.18	698.29	0	0.04	0.007	0	30.61
Nov-23	1579.30	0	0	1132.17	428.72	0	0	0.097	0	0	18.31
Dec-23	18.09	0	0	0.00	0.00	0	0	0.016	0	0	18.07
Total	46681.36	0.00	0.00	25440.46	15756.27	5246.34	80.51	0.44	0.04	0.00	157.31

- 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 / cardboard 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

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		√		Y
7.6.2	Implementation of good site practices for waste management	All works areas	Contractor	DEVB TCW No. 6/2010,		√		Y
7.6.3	Implementation of trip ticket system to control waste disposal	All works areas	Contractor	ETWB TCW No. 19/2005 Land		√		Y
7.6.4	Implementation of good site practices to reduce waste generations	All works areas	Contractor	(Miscellaneous Provisions) Ordinance		√		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	Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes		√		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			√		N/A
7.6.9	All storage of asbestos waste should be carried out properly in a secure place isolated from other substances so as to prevent any possible release of asbestos fibres into the atmosphere and contamination of other substances. The storage area should bear warning panels to alert people of the presence of asbestos waste.	All works areas	Contractor			√		N/A
7.6.10	A licensed asbestos waste collector will be appointed to collect the asbestos waste and deliver to the designated landfill for disposal. Application should be submitted to EPD.	All works areas	Contractor			√		N/A
7.6.11	If chemical wastes were to be produced at the construction site, the Contractor would be required to register with the EPD as a Chemical Waste Producer, and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the waste, such as explosive, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport the chemical wastes. The licensed collector shall deliver the waste to the Chemical Waste Treatment Centre at Tsing Yi, or other licenced facility, in accordance with	All works areas	Contractor			√		Y

	the Waste Disposal (Chemical Waste) (General) Regulation.							
Ecology								
8.8.1	Ecological impacts on important habitats and the associated wildlife caused by the proposed development should be mitigated and compensation approaches to the maximum practical extent	All works areas in particular important habitats 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 (<i>Livistona chinensis</i>) removal is required, these should be checked by suitably qualified ecologist with over 7 years relevant experience for roosting bats prior to their removal. If roosting bats are observed, a strategy for passive removal will be agreed with the AFCD and implemented. This could include undertaking the works just after the bats have left the roost (i.e. dusk).		The Engineer/ Contractor			√		N/A
8.8.6	The inclusion of Chinese Fan-palm of similar size as the affected plant within the areas of compensatory planting or other suitable areas is recommended to replace affected specimens, and compensate for the impact to roosting opportunities for this bat species		The Engineer/ Contractor			√		N/A
8.8.7	Implement good site measures to minimize the disturbance impacts to terrestrial habitat and associated wildlife arising from the land-based construction activities.		The Engineer/ Contractor			√		Y
8.8.8	To minimize the contamination of wastewater discharge, accidental chemical spillage and construction site run-off to the receiving water bodies, mitigation measures such as diverting the site runoff to silt trap facilities before discharging into storm drain, proper waste and dumping management and standard good site practice for land-based construction.		The Engineer/ Contractor			√		Y
8.8.9-8.8.11	Implement woodland compensation		The Engineer/ Contractor			√		N/A

Landscape and Visual								
9.8.1	Existing trees to be retained on site shall be carefully protected during construction. Trees unavoidably affected by the works shall be transplanted as far as possible.	All works areas	Contractor	DEVB TCW No. 10/2013		√		Y
	Compensatory Planting shall be provided in accordance with DEVB TCW No. 10/2013 – Tree Preservation.	All works areas	Contractor	EIAO TM		√		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		√	
	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		√

Training should be provided for the use of the GPS fleet management and improved safe driving. Ensured that independent checks are performed to ensure proper chlorine drum latching and clamping. 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. Training should be provided to driver and driver attendant for the emergency use of the new 2 x 9L AFFF extinguishers. 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 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 To keep under review alternate chlorine receiving dock in Sha Tin/Tai Po area for chlorine delivery to STWTW.					√		k.i.v.
					√		F
					√		k.i.v.
					√		F
					√		k.i.v.
					√		F
					√		k.i.v.
<u>Legend</u> 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 (December 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	0	0	0

There was 0 exceedances of Action Level and 0 exceedance of Limit Level in November 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	18	4	1	10	8	3	44
C2	0	1	12	1	5	9	6	1	35
C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0
M1	0	1	7	1	7	6	26	7	55
M2	0	0	0	0	9	3	2	0	14
M3	0	0	0	2	10	22	46	0	80

Statistical Summary of Environmental Complaints

Reporting Period	Environmental Complaint Statistics		
	Frequency	Complaint Nature	Cumulative
1 December– 31 December 2023	0	N/A	4

Statistical Summary of Environmental Summons

Reporting Period	Environmental Summons Statistics		
	Frequency	Details	Cumulative
1 December– 31 December 2023	0	N/A	0

Statistical Summary of Environmental Prosecution

Reporting Period	Environmental Prosecution Statistics		
	Frequency	Details	Cumulative
1 December– 31 December 2023	0	N/A	0

Appendix W

Tentative Schedule of Impact Monitoring

Tentative Impact Monitoring Schedule for STWTW						
Jan-24						
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 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2 & NM3		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3
7	8	9	10	11	12	13
	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3 Air monitoring for AM1 & AM2 Noise monitoring for NM1, NM2 & NM3		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3	
14	15	16	17	18	19	20
	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3	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	
21	22	23	24	25	26	27
	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
28	29	30	31			
	Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3		Impact Water Quality monitoring for C1, C2, C3, M1, M2 & M3			

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